Mail Application To:		**For Department use only:**
New Mexico Environment Department Air Quality Bureau Permits Section 525 Camino de los Marquez, Suite 1 Santa Fe, New Mexico, 87505 Phone: (505) 476-4300 Fax: (505) 476-4375 www.env.nm.gov/aqb		

Universal Air Quality Permit Application

Use this application for NOI, NSR, or Title V sources.

Use this application for: the initial application, modifications, technical revisions, and renewals. For technical revisions, complete Sections, 1-A, 1-B, 2-E, 3, 9 and any other sections that are relevant to the requested action; coordination with the Air Quality Bureau permit staff prior to submittal is encouraged to clarify submittal requirements and to determine if more or less than these sections of the application are needed. Use this application for streamline permits as well.

This application is submitted as (check all that apply)**:** ☐ Request for a No Permit Required Determination (no fee)
☐ **Updating** an application currently under NMED review. Include this page and all pages that are being updated (no fee required).
Construction Status: **X** Not Constructed ☐ Existing Permitted (or NOI) Facility ☐ Existing Non-permitted (or NOI) Facility
Minor Source: ☐ a NOI 20.2.73 NMAC **X** 20.2.72 NMAC application or revision ☐ 20.2.72.300 NMAC Streamline application
Title V Source: ☐ Title V (new) ☐ Title V renewal ☐ TV minor mod. ☐ TV significant mod. TV Acid Rain: ☐ New ☐ Renewal
PSD Major Source: ☐ PSD major source (new) ☐ minor modification to a PSD source ☐ a PSD major modification

Acknowledgements:

X I acknowledge that a pre-application meeting is available to me upon request. ☐ Title V Operating, Title IV Acid Rain, and NPR applications have no fees.

X $500 NSR application Filing Fee enclosed OR ☐ The full permit fee associated with 10 fee points (required w/ streamline applications).

X Check No.: 0006750404 in the amount of $500

X I acknowledge the required submittal format for the hard copy application is printed double sided 'head-to-toe', 2-hole punched (except the Sect. 2 landscape tables is printed 'head-to-head'), numbered tab separators. Incl. a copy of the check on a separate page.

X I acknowledge there is an annual fee for permits in addition to the permit review fee: www.env.nm.gov/air-quality/permit-fees-2/.

☐ This facility qualifies for the small business fee reduction per 20.2.75.11.C. NMAC. The full $500.00 filing fee is included with this application and I understand the fee reduction will be calculated in the balance due invoice. The Small Business Certification Form has been previously submitted or is included with this application. (Small Business Environmental Assistance Program Information: www.env.nm.gov/air-quality/small-biz-eap-2/.)

Citation: Please provide the **low level citation** under which this application is being submitted: **20.2.72.200 NMAC**
(e.g. application for a new minor source would be 20.2.72.200.A NMAC, one example for a Technical Permit Revision is 20.2.72.219.B.1.b NMAC, a Title V acid rain application would be: 20.2.70.200.C NMAC)

Section 1 – Facility Information

Section 1-A: Company Information

		AI # if known (see 1st 3 to 5 #s of permit IDEA ID No.):	Updating Permit/NOI #:
1	Facility Name: Arcosa Wind Tower, INC	Plant primary SIC Code (4 digits): 3441	
		Plant NAIC code (6 digits): 332420	
a	Facility Street Address (If no facility street address, provide directions from a prominent landmark): 1951 NM-304, Belen, NM 87002		
2	Plant Operator Company Name: Arcosa Wind Tower, INC	Phone/Fax: (972) 942 - 6500	
a	Plant Operator Address: 500 N Akard St. Suite 400 Dallas, TX 75201		
b	Plant Operator's New Mexico Corporate ID or Tax ID: 75-2868770		

3	Plant Owner(s) name(s): Arcosa Wind Towers, INC	Phone/Fax: (615) 792 - 8288
a	Plant Owner(s) Mailing Address(s):500 N Akard St. Suite 400 Dallas, TX 75201	
4	Bill To (Company): Arcosa Wind Towers, INC	Phone/Fax: (972) 942 - 6500
a	Mailing Address: 500 N Akard St. Suite 400 Dallas, TX 75201	E-mail: jeri.shull@arcosa.com
5	☐ Preparer: **X** Consultant: Chris Larson	Phone/Fax: (763) 489 – 3153
a	Mailing Address: 13400 15th ave N Suite A, Minneapolis, MN 55441	E-mail: Chris.Larson@Terracon.com
6	Plant Operator Contact: Deepak Sundaram	Phone/Fax: (505) 414-8704
a	Address: 1951 NM-304, Belen, NM 87002	E-mail: Deepak.sundaram@arcosa.com
7	Air Permit Contact: Jeri Shull	Title: Corporate Environmental Director
a	E-mail: jeri.shull@arcosa.com	Phone/Fax: (615) 585 - 9273
b	Mailing Address: 1050 Trinity Road, Ashland City, TN 37015	
c	The designated Air permit Contact will receive all official correspondence (i.e. letters, permits) from the Air Quality Bureau.	

Section 1-B: Current Facility Status

1.a	Has this facility already been constructed? ☐ Yes **X** No	1.b If yes to question 1.a, is it currently operating in New Mexico? ☐ Yes ☐ No
2	If yes to question 1.a, was the existing facility subject to a Notice of Intent (NOI) (20.2.73 NMAC) before submittal of this application? ☐ Yes ☐ No	If yes to question 1.a, was the existing facility subject to a construction permit (20.2.72 NMAC) before submittal of this application? ☐ Yes ☐ No
3	Is the facility currently shut down? ☐ Yes **X** No	If yes, give month and year of shut down (MM/YY):
4	Was this facility constructed before 8/31/1972 and continuously operated since 1972? ☐ Yes **X** No	
5	If Yes to question 3, has this facility been modified (see 20.2.72.7.P NMAC) or the capacity increased since 8/31/1972? ☐Yes ☐No **X** N/A	
6	Does this facility have a Title V operating permit (20.2.70 NMAC)? ☐ Yes **X** No	If yes, the permit No. is:
7	Has this facility been issued a No Permit Required (NPR)? ☐ Yes **X** No	If yes, the NPR No. is:
8	Has this facility been issued a Notice of Intent (NOI)? ☐ Yes **X** No	If yes, the NOI No. is:
9	Does this facility have a construction permit (20.2.72/20.2.74 NMAC)? ☐ Yes **X** No	If yes, the permit No. is:
10	Is this facility registered under a General permit (GCP-1, GCP-2, etc.)? ☐ Yes **X** No	If yes, the register No. is:

Section 1-C: Facility Input Capacity & Production Rate

1	What is the facility's maximum input capacity, specify units (reference here and list capacities in Section 20, if more room is required)			
a	Current	Hourly: ----------	Daily: ----------	Annually: ----------
b	Proposed	Hourly: N/A materials purchased in bulk	Daily: N/A materials purchased in bulk	Annually: N/A materials purchased in bulk
2	What is the facility's maximum production rate, specify units (reference here and list capacities in Section 20, if more room is required)			
a	Current	Hourly: ----------	Daily: ----------	Annually: ----------
b	Proposed	Hourly: 0.06 Towers/hour	Daily: 0.96 Towers/day	Annually: 300 Towers/year

Section 1-D: Facility Location Information

1	Section: 00	Range: 2E	Township: 5N	County: Valencia	Elevation (ft): 4900
2	UTM Zone: ☐ 12 or ■ 13			Datum: ☐ NAD 27 ☐ NAD 83 ☐ WGS 84	
a	UTM E (in meters, to nearest 10 meters): 340940			UTM N (in meters, to nearest 10 meters): 3831090	
b	**AND** Latitude (deg., min., sec.): 34, 36, 33.7752			Longitude (deg., min., sec.): 106,44,5.118	
3	Name and zip code of nearest New Mexico town: Jarales, New Mexico 87023				
4	Detailed Driving Instructions from nearest NM town (attach a road map if necessary): Follow NM-109N / Jareales Rd to Reinken Ave in Belen for 4.0 Miles. Then turn East and follow NM-309 E/E River Road and NM-304 S for 4.4 miles to the site.				
5	The facility is 1 (distance) miles East (direction) of Jarales (nearest town).				
6	Status of land at facility (check one): ■ Private ☐ Indian/Pueblo ☐ Federal BLM ☐ Federal Forest Service ☐ Other (specify)				
7	List all municipalities, Indian tribes, and counties within a ten (10) mile radius (20.2.72.203.B.2 NMAC) of the property on which the facility is proposed to be constructed or operated: Valencia County, Scorro County, City of Belen, and City of Rio Communities				
8	**20.2.72** NMAC applications **only**: Will the property on which the facility is proposed to be constructed or operated be closer than 50 km (31 miles) to other states, Bernalillo County, or a Class I area (see www.env.nm.gov/air-quality/modeling-publications/)? ☐ Yes **X** No (20.2.72.206.A.7 NMAC) If yes, list all with corresponding distances in kilometers:				
9	Name nearest Class I area: Besque del Apache				
10	Shortest distance (in km) from facility boundary to the boundary of the nearest Class I area (to the nearest 10 meters): 80 km				
11	Distance (meters) from the perimeter of the Area of Operations (AO is defined as the plant site inclusive of all disturbed lands, including mining overburden removal areas) to nearest residence, school or occupied structure: 160 m				
12	Method(s) used to delineate the Restricted Area: The site will have fencing with barbed wire around the entire property, effectively having the whole facility be a restricted area. "**Restricted Area**" is an area to which public entry is effectively precluded. Effective barriers include continuous fencing, continuous walls, or other continuous barriers approved by the Department, such as rugged physical terrain with steep grade that would require special equipment to traverse. If a large property is completely enclosed by fencing, a restricted area within the property may be identified with signage only. Public roads cannot be part of a Restricted Area.				
13	Does the owner/operator intend to operate this source as a portable stationary source as defined in 20.2.72.7.X NMAC? ☐ Yes ■ No A portable stationary source is not a mobile source, such as an automobile, but a source that can be installed permanently at one location or that can be re-installed at various locations, such as a hot mix asphalt plant that is moved to different job sites.				
14	Will this facility operate in conjunction with other air regulated parties on the same property? ■ No ☐ Yes If yes, what is the name and permit number (if known) of the other facility?				

Section 1-E: Proposed Operating Schedule (The 1-E.1 & 1-E.2 operating schedules may become conditions in the permit.)

1	Facility **maximum** operating ($\frac{\text{hours}}{\text{day}}$): 24	($\frac{\text{days}}{\text{week}}$): 7	($\frac{\text{weeks}}{\text{year}}$): 52	($\frac{\text{hours}}{\text{year}}$): 8760		
2	Facility's maximum daily operating schedule (if less than 24 $\frac{\text{hours}}{\text{day}}$)? Start:	☐AM ☐PM	End:	☐AM ☐PM		
3	Month and year of anticipated start of construction: 10/23					
4	Month and year of anticipated construction completion: 1/24					
5	Month and year of anticipated startup of new or modified facility: 1/24					
6	Will this facility operate at this site for more than one year? **X** Yes ☐ No					

Section 1-F: Other Facility Information

1	Are there any current Notice of Violations (NOV), compliance orders, or any other compliance or enforcement issues related to this facility? ☐ Yes **X** No If yes, specify:		
a	If yes, NOV date or description of issue:		NOV Tracking No:
b	Is this application in response to any issue listed in 1-F, 1 or 1a above? ☐ Yes **X** ☐ No If Yes, provide the 1c & 1d info below:		
c	Document Title:	Date:	Requirement # (or page # and paragraph #):
d	Provide the required text to be inserted in this permit:		
2	Is air quality dispersion modeling or modeling waiver being submitted with this application? **X** Yes ☐ No		
3	Does this facility require an "Air Toxics" permit under 20.2.72.400 NMAC & 20.2.72.502, Tables A and/or B? **X** Yes ☐ No		
4	Will this facility be a source of federal Hazardous Air Pollutants (HAP)? **X** Yes ☐ No		
a	If Yes, what type of source? **X Major** (☐ ≥10 tpy of any single HAP **OR** **X** ≥25 tpy of any combination of HAPS) **OR** ☐ **Minor** (☐ <10 tpy of any single HAP **AND** ☐ <25 tpy of any combination of HAPS)		
5	Is any unit exempt under 20.2.72.202.B.3 NMAC? ☐ Yes **X** No		
a	If yes, include the name of company providing commercial electric power to the facility: _____ Commercial power is purchased from a commercial utility company, which specifically does not include power generated on site for the sole purpose of the user.		

Section 1-G: Streamline Application **(This section applies to 20.2.72.300 NMAC Streamline applications only)**

1	☐ I have filled out Section 18, "Addendum for Streamline Applications." **X** N/A (This is not a Streamline application.)

Section 1-H: Current Title V Information - Required for all applications from TV Sources

(Title V-source required information for all applications submitted pursuant to 20.2.72 NMAC (Minor Construction Permits), or 20.2.74/20.2.79 NMAC (Major PSD/NNSR applications), and/or 20.2.70 NMAC (Title V))

1	Responsible Official (R.O.) (20.2.70.300.D.2 NMAC):		Phone:
a	R.O. Title:	R.O. e-mail:	
b	R. O. Address:		
2	Alternate Responsible Official (20.2.70.300.D.2 NMAC):		Phone:
a	A. R.O. Title:	A. R.O. e-mail:	
b	A. R. O. Address:		
3	Company's Corporate or Partnership Relationship to any other Air Quality Permittee (List the names of any companies that have operating (20.2.70 NMAC) permits and with whom the applicant for this permit has a corporate or partnership relationship):		
4	Name of Parent Company ("Parent Company" means the primary name of the organization that owns the company to be permitted wholly or in part.):		
a	Address of Parent Company:		
5	Names of Subsidiary Companies ("Subsidiary Companies" means organizations, branches, divisions or subsidiaries, which are owned, wholly or in part, by the company to be permitted.):		
6	Telephone numbers & names of the owners' agents and site contacts familiar with plant operations:		

7	Affected Programs to include Other States, local air pollution control programs (i.e. Bernalillo) and Indian tribes: Will the property on which the facility is proposed to be constructed or operated be closer than 80 km (50 miles) from other states, local pollution control programs, and Indian tribes and pueblos (20.2.70.402.A.2 and 20.2.70.7.B)? If yes, state which ones and provide the distances in kilometers:

Section 1-I – Submittal Requirements

Each 20.2.73 NMAC (**NOI**), a 20.2.70 NMAC (**Title V**), a 20.2.72 NMAC (**NSR** minor source), or 20.2.74 NMAC (**PSD**) application package shall consist of the following:

Hard Copy Submittal Requirements:

1) One hard copy **original signed and notarized application package** **printed double sided** **'head-to-toe'** **2-hole punched** as we bind the document on top, not on the side; except Section 2 (landscape tables), which should be head-to-head. Please use **numbered tab separators** in the hard copy submittal(s) as this facilitates the review process. For NOI submittals only, hard copies of UA1, Tables 2A, 2D & 2F, Section 3 and the signed Certification Page are required. Please include a copy of the check on a separate page.

2) If the application is for a minor NSR, PSD, NNSR, or Title V application, include one working hard **copy** for Department use. This copy should be printed in book form, 3-hole punched, and **must be double sided**. Note that this is in addition to the head-to-to 2-hole punched copy required in 1) above. Minor NSR Technical Permit revisions (20.2.72.219.B NMAC) only need to fill out Sections 1-A, 1-B, 3, and should fill out those portions of other Section(s) relevant to the technical permit revision. TV Minor Modifications need only fill out Sections 1-A, 1-B, 1-H, 3, and those portions of other Section(s) relevant to the minor modification. NMED may require additional portions of the application to be submitted, as needed.

3) The entire NOI or Permit application package, including the full modeling study, should be submitted electronically. Electronic files for applications for NOIs, any type of General Construction Permit (GCP), or technical revisions to NSRs must be submitted with compact disk (CD) or digital versatile disc (DVD). For these permit application submittals, **two** CD copies are required (in sleeves, not crystal cases, please), with additional CD copies as specified below. NOI applications require only a single CD submittal. Electronic files for other New Source Review (construction) permits/permit modifications or Title V permits/permit modifications can be submitted on CD/DVD or sent through AQB's secure file transfer service.

Electronic files sent by (check one):

☐ CD/DVD attached to paper application

X secure electronic transfer. Air Permit Contact Name Chris Larson Email Chris.Larson@Terracon.com Phone number 763-489-3153

a. If the file transfer service is chosen by the applicant, after receipt of the application, the Bureau will email the applicant with instructions for submitting the electronic files through a secure file transfer service. Submission of the electronic files through the file transfer service needs to be completed within 3 business days after the invitation is received, so the applicant should ensure that the files are ready when sending the hard copy of the application. The applicant will not need a password to complete the transfer. **Do not use the file transfer service for NOIs, any type of GCP, or technical revisions to NSR permits.**

4) Optionally, the applicant may submit the files with the application on compact disk (CD) or digital versatile disc (DVD) following the instructions above and the instructions in 5 for applications subject to PSD review.

5) If **air dispersion modeling** is required by the application type, include the **NMED Modeling Waiver** and/or electronic air dispersion modeling report, input, and output files. The dispersion modeling ***summary report only*** should be submitted as hard copy(ies) unless otherwise indicated by the Bureau.

6) If the applicant submits the electronic files on CD and the application is subject to PSD review under 20.2.74 NMAC (PSD) or NNSR under 20.2.79 NMC include,
   a. one additional CD copy for US EPA,
   b. one additional CD copy for each federal land manager affected (NPS, USFS, FWS, USDI) and,
   c. one additional CD copy for each affected regulatory agency other than the Air Quality Bureau.

   If the application is submitted electronically through the secure file transfer service, these extra CDs do not need to be submitted.

Electronic Submittal Requirements [in addition to the required hard copy(ies)]:

1) All required electronic documents shall be submitted as 2 separate CDs or submitted through the AQB secure file transfer service. Submit a single PDF document of the entire application as submitted and the individual documents comprising the application.

2) The documents should also be submitted in Microsoft Office compatible file format (Word, Excel, etc.) allowing us to access the text and formulas in the documents (copy & paste). Any documents that cannot be submitted in a Microsoft Office compatible format shall be saved as a PDF file from within the electronic document that created the file. If you are unable to provide Microsoft office compatible electronic files or internally generated PDF files of files (items that were not created electronically: i.e. brochures, maps, graphics, etc,), submit these items in hard copy format. We must be able to review the formulas and inputs that calculated the emissions.

3) It is preferred that this application form be submitted as 4 electronic files (3 MSWord docs: Universal Application section 1 [UA1], Universal Application section 3-19 [UA3], and Universal Application 4, the modeling report [UA4]) and 1 Excel file of the tables (Universal Application section 2 [UA2]). Please include as many of the 3-19 Sections as practical in a single MS Word electronic document. Create separate electronic file(s) if a single file becomes too large or if portions must be saved in a file format other than MS Word.

4) The electronic file names shall be a maximum of 25 characters long (including spaces, if any). The format of the electronic Universal Application shall be in the format: "A-3423-FacilityName". The "A" distinguishes the file as an application submittal, as opposed to other documents the Department itself puts into the database. Thus, all electronic application submittals should begin with "A-". Modifications to existing facilities should use the core permit number (i.e. '3423') the Department assigned to the facility as the next 4 digits. Use 'XXXX' for new facility applications. The format of any separate electronic submittals (additional submittals such as non-Word attachments, re-submittals, application updates) and Section document shall be in the format: "A-3423-9-description", where "9" stands for the section # (in this case Section 9-Public Notice). Please refrain, as much as possible, from submitting any scanned documents as this file format is extremely large, which uses up too much storage capacity in our database. Please take the time to fill out the header information throughout all submittals as this will identify any loose pages, including the Application Date (date submitted) & Revision number (0 for original, 1, 2, etc.; which will help keep track of subsequent partial update(s) to the original submittal. Do not use special symbols (#, @, etc.) in file names. The footer information should not be modified by the applicant.

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Change Log – Do **not** submit this page with your application.

If you are using a form older than the most current form posted on the website, you are required to incorporate the changes listed. Periodically, AQB will announce when older form versions will no longer be accepted.

Version Date	Changes Incorporated
4/1/2021	Current version of this form. Older versions are not accepted.

Table 2-A: Regulated Emission Sources

Unit and stack numbering must correspond throughout the application package. If applying for a NOI under 20.2.73 NMAC, equipment exemptions under 2.72.202 NMAC do not apply.

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufacturer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] / Date of Construction/ Reconstruction[2]	Controlled by Unit # / Emissions vented to Stack #	Source Classification Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
PB-1	Paint Booth #1	Custom	Custom	Custom	N/A	72000 gal Epxoy 54000 gal Topcoat 7200 gal cleaning solvent	10/1/2023	CE-4 to 9 / EPN 4 to 9		☐ Existing (unchanged) ☐ To be Removed X New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
PB-2	Paint Booth #2	Custom	Custom	Custom	N/A	Shared with PB-1	10/1/2023	CE-11 to 16 / EPN 11 to 16		☐ Existing (unchanged) ☐ To be Removed X New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
AB-1	Plate Blast	BlastOne	VL31-1	TBD	22,000 lb/hr	22,000 lb/hr	10/1/2023	CE-1 / EPN-1		☐ Existing (unchanged) ☐ To be Removed X New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
AB-2	Blast Booth	Abrasive Blast Systems	Custom	TBD	25,500 lb/hr	25,500 lb/hr	10/1/2023	CE-3 / EPN-17		☐ Existing (unchanged) ☐ To be Removed X New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
HE-1	Curing Oven #1	TBD	TBD	TBD	4.235 MMBtu/hr	4.235 MMBtu/hr	10/1/2023	EPN 4 to 10		☐ Existing (unchanged) ☐ To be Removed X New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
HE-2	Curing Oven #2	TBD	TBD	TBD	4.235 MMBtu/hr	4.235 MMBtu/hr	10/1/2023	EPN 11 to 16		☐ Existing (unchanged) ☐ To be Removed X New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
PT-1	Plasma Table	Messer	Element 400	TBD	N/A	N/A	10/1/2023	CE-2 / EPN-2		☐ Existing (unchanged) ☐ To be Removed X New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
ME-1	Metalizing Coating	TBD	TBD	TBD	N/A	300 towers per year 225 lb/tower	10/1/2023	EPN-3		☐ Existing (unchanged) ☐ To be Removed X New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
WE-1	Welding	Varies	Varies	Varies	Varies	1183 tpy SAW 15.4 tpy GMAW 113.9 tpy FCAW	10/1/2023	EPN-2a-2F		☐ Existing (unchanged) ☐ To be Removed X New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
										☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		

[1] Unit numbers must correspond to unit numbers in the previous permit unless a complete cross reference table of all units in both permits is provided.

[2] Specify dates required to determine regulatory applicability.

[3] To properly account for power conversion efficiencies, generator set rated capacity shall be reported as the rated capacity of the engine in horsepower, not the kilowatt capacity of the generator set.

[4] "4SLB" means four stroke lean burn engine, "4SRB" means four stroke rich burn engine, "2SLB" means two stroke lean burn engine, "CI" means compression ignition, and "SI" means spark ignition

Table 2-B: Insignificant Activities[1] (20.2.70 NMAC) OR Exempted Equipment (20.2.72 NMAC)

All 20.2.70 NMAC (Title V) applications must list all Insignificant Activities in this table. All 20.2.72 NMAC applications must list Exempted Equipment in this table. If equipment listed on this table is exempt under 20.2.72.202.B.5, include emissions calculations and emissions totals for 202.B.5 "similar functions" units, operations, and activities in Section 6, Calculations. Equipment and activities exempted under 20.2.72.202 NMAC may not necessarily be Insignificant under 20.2.70 NMAC (and vice versa). Unit & stack numbering must be consistent throughout the application package. Per Exemptions Policy 02-012.00 (see http://www.env.nm.gov/aqb/permit/aqb_pol.html), 20.2.72.202.B NMAC Exemptions do not apply, but 20.2.72.202.A NMAC exemptions do apply to NOI facilities under 20.2.73 NMAC. List 20.2.72.301.D.4 NMAC Auxiliary Equipment for Streamline applications in Table 2-A. The List of Insignificant Activities (for TV) can be found online at https://www.env.nm.gov/wp-content/uploads/sites/2/2017/10/InsignificantListTitleV.pdf. TV sources may elect to enter both TV Insignificant Activities and Part 72 Exemptions on this form.

Unit Number	Source Description	Manufacturer	Model No.	Max Capacity	List Specific 20.2.72.202 NMAC Exemption (e.g. 20.2.72.202.B.5)	Date of Manufacture /Reconstruction[2]	For Each Piece of Equipment, Check Onc
			Serial No.	Capacity Units	Insignificant Activity citation (e.g. IA List Item #1.a)	Date of Installation /Construction[2]	
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
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							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced

[1] Insignificant activities exempted due to size or production rate are defined in 20.2.70.300.D.6, 20.2.70.7.Q NMAC, and the NMED/AQB List of Insignificant Activities, dated September 15, 2008. Emissions from these insignificant activities do not need to be reported, unless specifically requested.

[2] Specify date(s) required to determine regulatory applicability.

Table 2-C: Emissions Control Equipment

Unit and stack numbering must correspond throughout the application package. Only list control equipment for TAPs if the TAP's maximum uncontrolled emissions rate is over its respective threshold as listed in 20.2.72 NMAC, Subpart V, Tables A and B. In accordance with 20.2.72.203.A(3) and (8) NMAC, 20.2.70.300.D(5)(b) and (e) NMAC, and 20.2.73.200.B(7) NMAC, the permittee shall report all control devices and list each pollutant controlled by the control device regardless if the applicant takes credit for the reduction in emissions.

Control Equipment Unit No.	Control Equipment Description	Date Installed	Controlled Pollutant(s)	Controlling Emissions for Unit Number(s)[1]	Efficiency (% Control by Weight)	Method used to Estimate Efficiency
CE-1	Dust Cartirdge Filter	NEW	PM, PM10, PM2.5	AB-1	<3 mg/m3	Manu. Spec
CE-2	Dust Cartirdge Filter	NEW	PM, PM10, PM2.5	PT-1	>98%	Manu. Spec
CE-3	Dust Cartirdge Filter	NEW	PM, PM10, PM2.5	AB-2	99.900%	Manu. Spec
CE-4	Paint Booth Panel Filter	NEW	PM, PM10, PM2.5	PB-1	>99.8%	Manu. Spec
CE-5	Paint Booth Panel Filter	NEW	PM, PM10, PM2.5	PB-1	>99.8%	Manu. Spec
CE-6	Paint Booth Panel Filter	NEW	PM, PM10, PM2.5	PB-1	>99.8%	Manu. Spec
CE-7	Paint Booth Panel Filter	NEW	PM, PM10, PM2.5	PB-1	>99.8%	Manu. Spec
CE-8	Paint Booth Panel Filter	NEW	PM, PM10, PM2.5	PB-1	>99.8%	Manu. Spec
CE-9	Paint Booth Panel Filter	NEW	PM, PM10, PM2.5	PB-1	>99.8%	Manu. Spec
CE-10	Paint Booth Panel Filter	NEW	PM, PM10, PM2.5	PB-2	>99.8%	Manu. Spec
CE-11	Paint Booth Panel Filter	NEW	PM, PM10, PM2.5	PB-2	>99.8%	Manu. Spec
CE-12	Paint Booth Panel Filter	NEW	PM, PM10, PM2.5	PB-2	>99.8%	Manu. Spec
CE-13	Paint Booth Panel Filter	NEW	PM, PM10, PM2.5	PB-2	>99.8%	Manu. Spec
CE-14	Paint Booth Panel Filter	NEW	PM, PM10, PM2.5	PB-2	>99.8%	Manu. Spec
CE-15	Paint Booth Panel Filter	NEW	PM, PM10, PM2.5	PB-2	>99.8%	Manu. Spec

[1] List each control device on a separate line. For each control device, list all emission units controlled by the control device.

Table 2-D: Maximum Emissions (under normal operating conditions)

☐ **This Table was intentionally left blank because it would be identical to Table 2-E.**

Maximum Emissions are the emissions at maximum capacity and prior to (in the absence of) pollution control, emission-reducing process equipment, or any other emission reduction. Calculate the hourly emissions using the worst case hourly emissions for each pollutant. For each pollutant, calculate the annual emissions as if the facility were operating at maximum plant capacity without pollution controls for 8760 hours per year, unless otherwise approved by the Department. List Hazardous Air Pollutants (HAP) & Toxic Air Pollutants (TAPs) in Table 2-I. Unit & stack numbering must be consistent throughout the application package. Fill all cells in this table with the emission numbers or a "-" symbol. A "-" symbol indicates that emissions of this pollutant are not expected. Numbers shall be expressed to at least 2 decimal points (e.g. 0.41, 1.41, or 1.41E-4).

Unit No.	NOx		CO		VOC		SOx		PM[1]		PM10[1]		PM2.5[1]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
PB-1	-	-	-	-	226.29	991.15	-	-	215.40	943.46					-	-	-	-
PB-2	-	-	-	-	226.29	991.15	-	-	215.40	943.46					-	-	-	-
AB-1	-	-	-	-	-	-	-	-	109.36	479.00	76.55	335.30	15.31	67.06	-	-	-	-
AB-2	-	-	-	-	-	-	-	-	109.36	479.00	76.55	335.30	17.77	77.82	-	-	-	-
HE-1	0.42	1.82	0.35	1.53	0.02	0.10	0.00	0.01	0.03	0.14	0.03	0.14	0.03	0.14	-	-	-	-
HE-2	0.42	1.82	0.35	1.53	0.02	0.10	0.00	0.01	0.03	0.14	0.03	0.14	0.03	0.14	-	-	-	-
PT-1	0.45	1.98	-	-	-	-	-	-	3.02	13.21	3.017	13.212	0.507	2.220	-	-	-	-
ME-1	-	-	-	-	-	-	-	-	0.08	0.36	0.08	0.36			-	-	-	-
WE-1	-	-	-	-	-	-	-	-	0.14	0.60	0.14	0.60	0.14	0.60	-	-		
Totals	1.28	5.61	0.70	3.06	452.63	1982.50	0.00	0.02	652.82	2859.35	156.40	685.04	33.78	147.97	0.00	0.00	0.00	0.00

[1]**Condensable Particulate Matter:** Include condensable particulate matter emissions for PM10 and PM2.5 if the source is a combustion source. Do not include condensable particulate matter for PM unless PM is set equal to PM10 and PM2.5. Particulate matter (PM) is not subject to an ambient air quality standard, but PM is a regulated air pollutant under PSD (20.2.74 NMAC) and Title V (20.2.70 NMAC).

Table 2-E: Requested Allowable Emissions

Unit & stack numbering must be consistent throughout the application package. Fill all cells in this table with the emission numbers or a "-" symbol. A "-" symbol indicates that emissions of this pollutant are not expected. Numbers shall be expressed to at least 2 decimal points (e.g. 0.41, 1.41, or $1.41E^{-4}$).

Unit No.	NOx		CO		VOC		SOx		PM[1]		PM10[1]		PM2.5[1]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
PB-1/2	-	-	-	-	452.58	197.64	-	-	0.86	0.45	0.86	0.45	0.00	0.00	-	-	-	-
AB-1	-	-	-	-	-	-	-	-	0.22	0.96	0.15	0.67	0.02	0.07	-	-	-	-
AB-2	-	-	-	-	-	-	-	-	0.25	1.11	0.18	0.78	0.02	0.08	-	-	-	-
HE-1	0.42	1.82	0.35	1.53	0.02	0.10	0.00	0.01	0.03	0.14	0.03	0.14	0.03	0.14	-	-	-	-
HE-2	0.42	1.82	0.35	1.53	0.02	0.10	0.00	0.01	0.03	0.14	0.03	0.14	0.03	0.14	-	-	-	-
PT-1	0.45	1.98	-	-	-	-	-	-	0.66	2.89	0.66	2.89	0.16	0.69	-	-	-	-
ME-1	-	-	-	-	-	-	-	-	0.08	0.08	0.08	0.08			-	-	-	-
Welding	-	-	-	-	-	-	-	-	0.14	0.60	0.14	0.60	0.14	0.60	-	-	-	-
Totals	1.28	5.61	0.70	3.06	452.63	197.84	0.00	0.02	2.27	6.37	2.13	5.74	0.39	1.70	0.00	0.00	0.00	0.00

[1] **Condensable Particulate Matter:** Include condensable particulate matter emissions for PM10 and PM2.5 if the source is a combustion source. Do not include condensable particulate matter for PM unless PM is set equal to PM10 and PM2.5. Particulate matter (PM) is not subject to an ambient air quality standard, but it is a regulated air pollutant under PSD (20.2.74 NMAC) and Title V (20.2.70 NMAC).

Table 2-F: Additional Emissions during Startup, Shutdown, and Routine Maintenance (SSM)

X This table is intentionally left blank since all emissions at this facility due to routine or predictable startup, shutdown, or scehduled maintenance are no higher than those listed in Table 2-E and a malfunction emission limit is not already permitted or requested. If you are required to report GHG emissions as described in Section 6a, include any GHG emissions during Startup, Shutdown, and/or Scheduled Maintenance (SSM) in Table 2-P. Provide an explanations of SSM emissions in Section 6 and 6a.

All applications for facilities that have emissions during routine our predictable startup, shutdown or scheduled maintenance (SSM)[1], including NOI applications, must include in this table the Maximum Emissions during routine or predictable startup, shutdown and scheduled maintenance (20.2.7 NMAC, 20.2.72.203.A.3 NMAC, 20.2.73.200.D.2 NMAC). In Section 6 and 6a, provide emissions calculations for all SSM emissions reported in this table. Refer to "Guidance for Submittal of Startup, Shutdown, Maintenance Emissions in Permit Applications (https://www.env.nm.gov/aqb/permit/aqb_pol.html) for more detailed instructions. Numbers shall be expressed to at least 2 decimal points (e.g. 0.41, 1.41, or 1.41E-4).

Unit No.	NOx		CO		VOC		SOx		PM^2		$PM10^2$		$PM2.5^2$		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
Totals																		

[1] **For instance**, if the short term steady-state Table 2-E emissions are 5 lb/hr and the SSM rate is 12 lb/hr, enter 7 lb/hr in this table. If the annual steady-state Table 2-E emissions are 21.9 TPY, and the number of scheduled SSM events result in annual emissions of 31.9 TPY, enter 10.0 TPY in the table below.

[2] **Condensable Particulate Matter:** Include condensable particulate matter emissions for PM10 and PM2.5 if the source is a combustion source. Do not include condensable particulate matter for PM unless PM is set equal to PM10 and PM2.5. Particulate matter (PM) is not subject to an ambient air quality standard, but it is a regulated air pollutant under PSD (20.2.74 NMAC) and Title V (20.2.70 NMAC).

Table 2-H: Stack Exit Conditions

Unit and stack numbering must correspond throughout the application package. Include the stack exit conditions for each unit that emits from a stack, including blowdown venting parameters and tank emissions. If the facility has multiple operating scenarios, complete a separate Table 2-H for each scenario and, for each, type scenario name here:

Stack Number	Serving Unit Number(s) from Table 2-A	Orientation (H-Horizontal V=Vertical)	Rain Caps (Yes or No)	Height Above Ground (ft)	Temp. (F)	Flow Rate		Moisture by Volume (%)	Velocity (ft/sec)	Inside Diameter (ft)
						(acfs)	(dscfs)			
EPN-1	AB-1	V	No	55	68	253	250	0	80.65	2.00
EPN-2a-2F	PT-1, WE-1	V	No	55	68	84	83	0	47.79	1.50
EPN-3	ME-1	V	No	40	68	270	267	0	48.27	2.67
EPN-4	PB-1, HE-1	V	No	40	68	282	278	0	39.82	3.00
EPN-5	PB-1, HE-1	V	No	40	68	282	278	0	39.82	3.00
EPN-6	PB-1, HE-1	V	No	40	68	282	278	0	39.82	3.00
EPN-7	PB-1, HE-1	V	No	40	68	282	278	0	39.82	3.00
EPN-8	PB-1, HE-1	V	No	40	68	282	278	0	39.82	3.00
EPN-9	PB-1, HE-1	V	No	40	68	282	278	0	39.82	3.00
EPN-10	PB-2, HE-2	V	No	40	68	282	278	0	39.82	3.00
EPN-11	PB-2, HE-2	V	No	40	68	282	278	0	39.82	3.00
EPN-12	PB-2, HE-2	V	No	40	68	282	278	0	39.82	3.00
EPN-13	PB-2, HE-2	V	No	40	68	282	278	0	39.82	3.00
EPN-14	PB-2, HE-2	V	No	40	68	282	278	0	39.82	3.00
EPN-15	PB-2, HE-2	V	No	40	68	282	278	0	39.82	3.00
EPN-16	PT-1	V	No	55	68	110	108	0	62.13	1.50
EPN-17	AB-2	V	No	40	68	620	612	0	71.18	3.33
Notes*	EPN-2a-2f is PER stack.									

Stack Number	Serving Unit Number(s) from Table 2-A	Orientation (H-Horizontal V=Vertical)	Rain Caps (Yes or No)	Height Above Ground (ft)	Temp. (F)	Flow Rate		Moisture by Volume (%)	Velocity (ft/sec)	Inside Diameter (ft)
						(acfs)	(dscfs)			

Table 2-G: Stack Exit and Fugitive Emission Rates for Special Stacks

☐ I have elected to leave this table blank because this facility does not have any stacks/vents that split emissions from a single source or combine emissions from more than one source listed in table 2-A. Additionally, the emission rates of all stacks match the Requested allowable emission rates stated in Table 2-E.

Use this table to list stack emissions (requested allowable) from split and combined stacks. List Toxic Air Pollutants (TAPs) and Hazardous Air Pollutants (HAPs) in Table 2-I. List all fugitives that are associated with the normal, routine, and non-emergency operation of the facility. Unit and stack numbering must correspond throughout the application package. Refer to Table 2-E for instructions on use of the "-" symbol and on significant figures.

Stack No.	Serving Unit Number(s) from Table 2-A	NOx		CO		VOC		SOx		PM		PM10		PM2.5		☐ H_2S or X Lead	
		lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
EPN-1	AB-1	-	-	-	-	-	-	-	-	0.22	0.958	0.15	0.671	0.02	0.067	-	-
EPN-2a-2F	PT-1, WE-1	0.09	0.395	-	-	-	-	-	-	0.74	3.238	0.74	3.238	0.24	1.040	-	-
EPN-3	ME-1	-	-	-	-	-	-	-	-	0.08	0.084	0.08	0.084	0.00	0.000	-	-
EPN-4	PB-1, HE-1	0.07	0.303	0.06	0.255	37.72	16.487	0.00	0.002	0.08	0.061	0.08	0.061	0.01	0.023	3.46E-07	1.52E-06
EPN-5	PB-1, HE-1	0.07	0.303	0.06	0.255	37.72	16.487	0.00	0.002	0.08	0.061	0.08	0.061	0.01	0.023	3.46E-07	1.52E-06
EPN-6	PB-1, HE-1	0.07	0.303	0.06	0.255	37.72	16.487	0.00	0.002	0.08	0.061	0.08	0.061	0.01	0.023	3.46E-07	1.52E-06
EPN-7	PB-1, HE-1	0.07	0.303	0.06	0.255	37.72	16.487	0.00	0.002	0.08	0.061	0.08	0.061	0.01	0.023	3.46E-07	1.52E-06
EPN-8	PB-1, HE-1	0.07	0.303	0.06	0.255	37.72	16.487	0.00	0.002	0.08	0.061	0.08	0.061	0.01	0.023	3.46E-07	1.52E-06
EPN-9	PB-1, HE-1	0.07	0.303	0.06	0.255	37.72	16.487	0.00	0.002	0.08	0.061	0.08	0.061	0.01	0.023	3.46E-07	1.52E-06
EPN-10	PB-2, HE-2	0.07	0.303	0.06	0.255	37.72	16.487	0.00	0.002	0.08	0.061	0.08	0.061	0.01	0.023	3.46E-07	1.52E-06
EPN-11	PB-2, HE-2	0.07	0.303	0.06	0.255	37.72	16.487	0.00	0.002	0.08	0.061	0.08	0.061	0.01	0.023	3.46E-07	1.52E-06
EPN-12	PB-2, HE-2	0.07	0.303	0.06	0.255	37.72	16.487	0.00	0.002	0.08	0.061	0.08	0.061	0.01	0.023	3.46E-07	1.52E-06
EPN-13	PB-2, HE-2	0.07	0.303	0.06	0.255	37.72	16.487	0.00	0.002	0.08	0.061	0.08	0.061	0.01	0.023	3.46E-07	1.52E-06
EPN-14	PB-2, HE-2	0.07	0.303	0.06	0.255	37.72	16.487	0.00	0.002	0.08	0.061	0.08	0.061	0.01	0.023	3.46E-07	1.52E-06
EPN-15	PB-2, HE-2	0.07	0.303	0.06	0.255	37.72	16.487	0.00	0.002	0.08	0.061	0.08	0.061	0.01	0.023	3.46E-07	1.52E-06
EPN-16	PT-1	0.36	1.580	-	-	-	-	-	-	0.056	0.244	0.056	0.244	0.056	0.244	-	-
EPN-17	AB-2	-	-	-	-	-	-	-	-	0.254	1.112	0.178	0.778	0.018	0.078	-	-
Totals:		1.28	5.613	0.70	3.055	452.63	197.843	0.00	0.022	2.27	6.365	2.13	5.744	0.39	1.705	4.15E-06	1.82E-05

Table 2-I: Stack Exit and Fugitive Emission Rates for HAPs and TAPs

In the table below, report the Potential to Emit for each HAP from each regulated emission unit listed in Table 2-A, only if the entire facility emits the HAP at a rate greater than or equal to one (1) ton per year For each such emission unit, HAPs shall be reported to the nearest 0.1 tpy. Each facility-wide Individual HAP total and the facility-wide Total HAPs shall be the sum of all HAP sources calculated to the nearest 0.1 ton per year. Per 20.2.72.403.A.1 NMAC, facilities not exempt [see 20.2.72.402.C NMAC] from TAP permitting shall report each TAP that has an uncontrolled emission rate in excess of its pounds per hour screening level specified in 20.2.72.502 NMAC. TAPs shall be reported using one more significant figure than the number of significant figures shown in the pound per hour threshold corresponding to the substance. Use the HAP nomenclature as it appears in Section 112 (b) of the 1990 CAAA and the TAP nomenclature as it listed in 20.2.72.502 NMAC. Include tank-flashing emissions estimates of HAPs in this table. For each HAP or TAP listed, fill all cells in this table with the emission numbers or a "-" symbol. A "-" symbol indicates that emissions of this pollutant are not expected or the pollutant is emitted in a quantity less than the threshold amounts described above.

Stack No.	Unit No.(s)	Total HAPs		Xylenes X HAP or □ TAP		Benzene X HAP or □ TAP		Trimethyl Benzene □ HAP or X TAP		N-Butytl Acetate □ HAP or X TAP		Iron Oxide □ HAP or X TAP		Zinc Oxide □ HAP or X TAP		Manganese □ HAP or X TAP		□ HAP or□ TAP	
		lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
EPN-1	AB-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EPN-2a-2F	PT-1, WE-1	-	-	-	-	-	-	-	-	-	-	0.7295	3.1954	-	-	0.01971	0.08634	-	-
EPN-3	ME-1	-	-	-	-	-	-	-	-	-	-	-	-	0.0812	0.0843	-	-	-	-
EPN-4	PB-1, HE-1	7.9	3.3	6.4	2.6	1.5	0.6	1.613	0.323	0.3000	0.0600	0.0075	0.0015	-	-	-	-	-	-
EPN-5	PB-1, HE-1	7.9	3.3	6.4	2.6	1.5	0.6	1.613	0.323	0.3000	0.0600	0.0075	0.0015	-	-	-	-	-	-
EPN-6	PB-1, HE-1	7.9	3.3	6.4	2.6	1.5	0.6	1.613	0.323	0.3000	0.0600	0.0075	0.0015	-	-	-	-	-	-
EPN-7	PB-1, HE-1	7.9	3.3	6.4	2.6	1.5	0.6	1.613	0.323	0.3000	0.0600	0.0075	0.0015	-	-	-	-	-	-
EPN-8	PB-1, HE-1	7.9	3.3	6.4	2.6	1.5	0.6	1.613	0.323	0.3000	0.0600	0.0075	0.0015	-	-	-	-	-	-
EPN-9	PB-1, HE-1	7.9	3.3	6.4	2.6	1.5	0.6	1.613	0.323	0.3000	0.0600	0.0075	0.0015	-	-	-	-	-	-
EPN-10	PB-2, HE-2	7.9	3.3	6.4	2.6	1.5	0.6	1.613	0.323	0.3000	0.0600	0.0075	0.0015	-	-	-	-	-	-
EPN-11	PB-2, HE-2	7.9	3.3	6.4	2.6	1.5	0.6	1.613	0.323	0.3000	0.0600	0.0075	0.0015	-	-	-	-	-	-
EPN-12	PB-2, HE-2	7.9	3.3	6.4	2.6	1.5	0.6	1.613	0.323	0.3000	0.0600	0.0075	0.0015	-	-	-	-	-	-
EPN-13	PB-2, HE-2	7.9	3.3	6.4	2.6	1.5	0.6	1.613	0.323	0.3000	0.0600	0.0075	0.0015	-	-	-	-	-	-
EPN-14	PB-2, HE-2	7.9	3.3	6.4	2.6	1.5	0.6	1.613	0.323	0.3000	0.0600	0.0075	0.0015	-	-	-	-	-	-
EPN-15	PB-2, HE-2	7.9	3.3	6.4	2.6	1.5	0.6	1.613	0.323	0.3000	0.0600	0.0075	0.0015	-	-	-	-	-	-
EPN-16	PT-1	-	-	-	-	-	-	-	-	-	-	0.0556	0.2435	-	-	0.00123	0.00537	-	-
EPN-17	AB-2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Totals:		94.2	39.0	76.5	31.5	17.7	7.4	19.35	3.870	3.600	0.7200	0.8751	3.457	0.0812	0.0843	0.02094	0.0917	0.0	0.0

Table 2-K: Liquid Data for Tanks Listed in Table 2-L

For each tank, list the liquid(s) to be stored in each tank. If it is expected that a tank may store a variety of hydrocarbon liquids, enter "mixed hydrocarbons" in the Composition column for that tank and enter the corresponding data of the most volatile liquid to be stored in the tank. If tank is to be used for storage of different materials, list all the materials in the "All Calculations" attachment, run the newest version of TANKS on each, and use the material with the highest emission rate to determine maximum uncontrolled and requested allowable emissions rate. The permit will specify the most volatile category of liquids that may be stored in each tank. Include appropriate tank-flashing modeling input data. Use additional sheets if necessary. Unit and stack numbering must correspond throughout the application package.

Tank No.	SCC Code	Material Name	Composition	Liquid Density (lb/gal)	Vapor Molecular Weight (lb/lb*mol)	Average Storage Conditions		Max Storage Conditions	
						Temperature (°F)	True Vapor Pressure (psia)	Temperature (°F)	True Vapor Pressure (psia)
N/A									

Table 2-J: Fuel

Specify fuel characteristics and usage. Unit and stack numbering must correspond throughout the application package.

Unit No.	Fuel Type (low sulfur Diesel, ultra low sulfur diesel, Natural Gas, Coal, …)	Fuel Source: purchased commercial, pipeline quality natural gas, residue gas, raw/field natural gas, process gas (e.g. SRU tail gas) or other	Specify Units				
			Lower Heating Value	Hourly Usage	Annual Usage	% Sulfur	% Ash
HE-1	Natural Gas	purchased commercial natural gas	1020 btu/scf	4152 SCF/hr	36.37 MMSCF/yr	0.5 gr/100 scf	<0.1%
HE-2	Natural Gas	purchased commercial natural gas	1020 btu/scf	4152 SCF/hr	36.37 MMSCF/yr	0.5 gr/100 scf	<0.1%

Table 2-L: Tank Data

Include appropriate tank-flashing modeling input data. Use an addendum to this table for unlisted data categories. Unit and stack numbering must correspond throughout the application package. Use additional sheets if necessary. See reference Table 2-L2. Note: 1.00 bbl = 10.159 M3 = 42.0 gal

Tank No.	Date Installed	Materials Stored	Seal Type (refer to Table 2-LR below)	Roof Type (refer to Table 2-LR below)	Capacity		Diameter (M)	Vapor Space (M)	Color (from Table VI-C)		Paint Condition (from Table VI-C)	Annual Throughput (gal/yr)	Turn-overs (per year)
					(bbl)	(M^3)			Roof	Shell			

Table 2-L2: Liquid Storage Tank Data Codes Reference Table

Roof Type	Seal Type, Welded Tank Seal Type		Seal Type, Riveted Tank Seal Type		Roof, Shell Color	Paint Condition
FX: Fixed Roof	**Mechanical Shoe Seal**	**Liquid-mounted resilient seal**	**Vapor-mounted resilient seal**	**Seal Type**	**WH**: White	Good
IF: Internal Floating Roof	**A**: Primary only	**A**: Primary only	**A**: Primary only	**A**: Mechanical shoe, primary only	**AS**: Aluminum (specular)	Poor
EF: External Floating Roof	**B**: Shoe-mounted secondary	**B**: Weather shield	**B**: Weather shield	**B**: Shoe-mounted secondary	**AD**: Aluminum (diffuse)	
P: Pressure	**C**: Rim-mounted secondary	**C**: Rim-mounted secondary	**C**: Rim-mounted secondary	**C**: Rim-mounted secondary	**LG**: Light Gray	
					MG: Medium Gray	
					BL: Black	
					OT: Other (specify)	

Note: 1.00 bbl = 0.159 M^3 = 42.0 gal

Table 2-M: Materials Processed and Produced (Use additional sheets as necessary.)

Material Processed				Material Produced			
Description	**Chemical Composition**	**Phase (Gas, Liquid, or Solid)**	**Quantity (specify units)**	**Description**	**Chemical Composition**	**Phase**	**Quantity (specify units)**
N/A							

Table 2-N: CEM Equipment

Enter Continuous Emissions Measurement (CEM) Data in this table. If CEM data will be used as part of a federally enforceable permit condition, or used to satisfy the requirements of a state or federal regulation, include a copy of the CEM's manufacturer specification sheet in the Information Used to Determine Emissions attachment. Unit and stack numbering must correspond throughout the application package. Use additional sheets if necessary.

Stack No.	Pollutant(s)	Manufacturer	Model No.	Serial No.	Sample Frequency	Averaging Time	Range	Sensitivity	Accuracy
N/A									

Table 2-O: Parametric Emissions Measurement Equipment

Unit and stack numbering must correspond throughout the application package. Use additional sheets if necessary.

Unit No.	Parameter/Pollutant Measured	Location of Measurement	Unit of Measure	Acceptable Range	Frequency of Maintenance	Nature of Maintenance	Method of Recording	Averaging Time
CE-1	Differential pressure of filters	at the collector	inches of water column	1"-4"	1200-2300 hrs-typ.	Replace Filters		
CE-2	Differential pressure of filters	2 ports (clean air port and dirty air port)	inches of water column	0” to 8”	2000 to 4000 hours of operation	remove and replace filter cartridges with original equipment replacement cartridge filters.	Write down the date, time and part number of item that was replaced and keep it in the IOM Manual.	
CE-3	Differential Pressure	at the collector	Inches of Water	1"-4"	1200-2300 hrs-typ.	Replace Filters		
CE-4	Differential Pressure manometer	at each filter bank	inches of water column	< .5" WC	as needed based on dP	replace filters		
	Visual Inspection	face of the filter inside of booth	visual		as needed based on inspections	replace filters		
CE-5	Differential Pressure	at each filter bank	inches of water column	< .5" WC	as needed based on dP	replace filters		
	Visual Inspection	face of the filter inside of booth	visual		as needed based on inspections	replace filters		
CE-6	Differential Pressure manometer	at each filter bank	inches of water column	< .5" WC	as needed based on dP	replace filters		
	Visual Inspection	face of the filter inside of booth	visual		as needed based on inspections	replace filters		
CE-7	Differential Pressure	at each filter bank	inches of water column	< .5" WC	as needed based on dP	replace filters		
	Visual Inspection	face of the filter inside of booth	visual		as needed based on inspections	replace filters		
CE-8	Differential Pressure manometer	at each filter bank	inches of water column	< .5" WC	as needed based on dP	replace filters		
	Visual Inspection	face of the filter inside of booth	visual		as needed based on inspections	replace filters		
CE-9	Differential Pressure	at each filter bank	inches of water column	< .5" WC	as needed based on dP	replace filters		
	Visual Inspection	face of the filter inside of booth	visual		as needed based on inspections	replace filters		
CE-10	Differential Pressure manometer	at each filter bank	inches of water column	< .5" WC	as needed based on dP	replace filters		
	Visual Inspection	face of the filter inside of booth	visual		as needed based on inspections	replace filters		
CE-11	Differential Pressure	at each filter bank	inches of water column	< .5" WC	as needed based on dP	replace filters		
	Visual Inspection	face of the filter inside of booth	visual		as needed based on inspections	replace filters		

Unit No.	Parameter/Pollutant Measured	Location of Measurement	Unit of Measure	Acceptable Range	Frequency of Maintenance	Nature of Maintenance	Method of Recording	Averaging Time
CE-12	Differential Pressure manometer	at each filter bank	inches of water column	< .5" WC	as needed based on dP	replace filters		
	Visual Inspection	face of the filter inside of booth	visual		as needed based on inspections	replace filters		
CE-13	Differential Pressure	at each filter bank	inches of water column	< .5" WC	as needed based on dP	replace filters		
	Visual Inspection	face of the filter inside of booth	visual		as needed based on inspections	replace filters		
CE-14	Differential Pressure manometer	at each filter bank	inches of water column	< .5" WC	as needed based on dP	replace filters		
	Visual Inspection	face of the filter inside of booth	visual		as needed based on inspections	replace filters		
CE-15	Differential Pressure	at each filter bank	inches of water column	< .5" WC	as needed based on dP	replace filters		
	Visual Inspection	face of the filter inside of booth	visual		as needed based on inspections	replace filters		

Table 2-P: Greenhouse Gas Emissions

Applications submitted under 20.2.70, 20.2.72, & 20.2.74 NMAC are required to complete this Table. Power plants, Title V major sources, and PSD major sources must report and calculate all GHG emissions for each unit. Applicants must report potential emission rates in short tons per year (see Section 6.a for assistance). Include GHG emissions during Startup, Shutdown, and Scheduled Maintenance in this table. For minor source facilities that are not power plants, are not Title V, or are not PSD, there are three options for reporting GHGs 1) report GHGs for each individual piece of equipment; 2) report all GHGs from a group of unit types, for example report all combustion source GHGs as a single unit and all venting GHG as a second separate unit; OR 3) check the following box **X** By checking this box, the applicant acknowledges the total CO2e emissions are less than 75,000 tons per year.

		CO_2 ton/yr	**N_2O** ton/yr	**CH_4** ton/yr	**SF_6** ton/yr	**PFC/HFC** ton/yr[2]									**Total GHG** Mass Basis ton/yr[4]	**Total CO_2e** ton/yr[5]
Unit No.	**GWPs [1]**	**1**	**298**	**25**	**22,800**	**footnote 3**										
HE-1	**mass GHG**	498.235	0.009	0.010											498.254	498.254
	CO_2e	498.235	2.722	0.239											501.196	501.196
HE-2	**mass GHG**	498.235	0.010	0.009											498.254	498.254
	CO_2e	498.235	2.846	0.228											501.309	501.309
	mass GHG															
	CO_2e															
	mass GHG															
	CO_2e															
	mass GHG															
	CO_2e															
	mass GHG															
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	mass GHG															
	CO_2e															
	mass GHG															
	CO_2e															
	mass GHG															
	CO2e															
Total	**mass GHG**	996.471	0.019	0.019												996.508
	CO_2e	996.471	5.568	0.467												1002.505

[5] **CO_2e** means Carbon Dioxide Equivalent and is calculated by multiplying the TPY mass emissions of the green house gas by its GWP.

Emission Summary

Criteria Pollutants

Source	EPN(s)	PM	PM	PM10	PM10	PM2.5	PM2.5	VOC	VOC	NOX	NOX	SOX	SOX	CO	CO	CO2e	CO2e	Total HAPS	Total HAPS	Pb	Pb
		lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
PB-1 & 2	EPN-4 to 15	0.86	0.453	0.86	0.453			452.58	197.643									94.20	38.940		
HE-1	EPN-4 to 9	0.03	0.138	0.03	0.138	0.03	0.138	0.02	0.100	0.42	1.819	0.00	0.011	0.35	1.528	501.20	2195.239	0.01	0.034	2.08E-06	9.093E-06
HE-2	EPN 10 to 15	0.03	0.138	0.03	0.138	0.03	0.138	0.02	0.100	0.42	1.819	0.00	0.011	0.35	1.528	501.20	2195.239	0.01	0.034	2.08E-06	9.093E-06
AB-1	EPN-1	0.22	0.958	0.15	0.671	0.02	0.067														
AB-2	EPN-3	0.25	1.112	0.18	0.778	0.02	0.078														
PT-1	EPN-2	0.60	2.64	0.60	2.64	0.10	0.44			0.09	0.395										
PT-1	EPN-16	0.06	0.24	0.06	0.24	0.06	0.24			0.36	1.580										
ME-1	EPN-3	0.08	0.084	0.08	0.084																
Welding	EPN-2	0.14	0.596	0.14	0.596	0.14	0.596														
Total		2.27	6.365	2.13	5.744	0.39	1.705	452.63	197.843	1.28	5.613	0.00	0.022	0.70	3.055	1002.39	4390.477	94.22	39.009	4.15E-06	1.819E-05

HAPS and TAPS

Source	EPN(s)	Xylenes	Xylenes	Ethylbenzen	Ethylbenzen	methyl Benz	methyl Benz	Butytl Acet	Butytl Acet	Iron Oxide	Iron Oxide	Zinc Oxide	Zinc Oxide	Iron	Iron	Manganese	Manganese	Silicon	Silicon
		lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
PB-1 & 2	EPN-4 to 15	76.5	31.5	17.7	7.44	19.35	3.87	3.6	0.72	0.09	0.018								
HE-1	EPN-4 to 9																		
HE-2	EPN 10 to 15																		
AB-1	EPN-1																		
AB-2	EPN-3																		
PT-1	EPN-2													0.602	2.637	0.013	0.058	0.006	0.026
PT-1	EPN-16													0.056	0.244	0.001	0.005	0.001	0.002
ME-1	EPN-3											0.081	0.084						
Welding	EPN-2													0.127	0.558	0.006	0.028	0.002	0.008
Total		76.50	31.500	17.70	7.440	19.35	3.870	3.60	0.720	0.09	0.018	0.08	0.084	0.79	3.439	0.02	0.092	0.01	0.036

HAPS and TAPS cont.

Source	EPN(s)	Copper	Copper	Nickel	Nickel	minum Ox	minum Ox	alcium Oxi	alcium Oxi	conium Ox	conium Ox	nium Compo	nium Compo	alt Compou	alt Compou	Molybdenum	Molybdenum	Carbon	Carbon
		lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
PB-1 & 2	EPN-4 to 15																		
HE-1	EPN-4 to 9																		
HE-2	EPN 10 to 15																		
AB-1	EPN-1																		
AB-2	EPN-3																		
PT-1	EPN-2	0.006	0.026	0.012	0.053							0.018	0.079			0.006	0.026	0.006	0.026
PT-1	EPN-16	0.001	0.002	0.001	0.005							0.002	0.007			0.001	0.002	0.001	0.002
ME-1	EPN-3																		
Welding	EPN-2	6.31E-05	2.76E-04	1.43E-03	6.27E-03	1.49E-03	6.54E-03	1.47E-03	6.46E-03	1.12E-03	4.89E-03	9.06E-04	3.97E-03	1.81E-05	7.94E-05	1.81E-05	7.94E-05		
Total		0.01	0.029	0.01	0.064	0.00	0.007	0.00	0.006	0.00	0.005	0.02	0.091	0.00	0.000	0.01	0.029		

Plasma Table

Emission Unit Identification No.:	PT-1	
Emission Unit Description:	Plasma Table	
Steel Cuting Rate[1]:	30	in./min.
Steel Thickness:	1.5	in.
Width of Cut[2]:	0.157	in.
Density of Steel:	0.284	lb/cu. in.
Steel Emission Fumes As % of Material Released[2]:	5.00%	
Capture Efficiency (Downdraft Table)	80.00%	
Exhaust Air Flowrate	6,500	dscfm
Dust Collector Grain Loading Factor	0.001	gr/dscf
Plasma Torch Uptimes[5]	50.00%	

NOx Emissions

Gas Generation Usage Rate	5.500	L/Min/laser
Converstion	22.400	L / gmol
Emission Rate	0.246	gmol/min/laser
Molecular Weight	27.800	g/mol
Emission Rate	6.826	grams NOx / min / laser
Emission Rate	0.451	lbs NOx / hr / laser

Metal Sheet Composition[a]

Pollutant	CAS #	Steel (%)
Iron	7439-89-6	99.80%
Chromium	7440-47-3	3%
Manganese	7439-96-5	2%
Nickel	7440-02-0	2%
Carbon	7440-44-0	1%
Copper	7440-50-8	1%
Silicon	7440-21-3	1%
Molybdenum	7439-98-7	1%

Total Metal Removed	120.661	lbs/hr

Total Fumes Emitted	3.017	lbs/hr

Metal Cutting Potential to Emit

Pollutant	Uncontrolled Emission Rate (lbs/hr)	Uncontrolled PTE (tons/yr)	Fugitive Emission Rate (lbs/hr)	Fugitive Annual Emissions (tons/yr)	Stack Emission Rate (lbs/hr)	Stack Annual Emissions (tons/yr)	Total Emissions Rate (lb/hr)	Total Emissions (tons/yr)
NOx	0.451	1.976	0.090	0.395	0.361	1.580	0.451	1.976
PM	3.017	13.212	0.603	2.642	0.056	0.244	0.659	2.887
PM_{10}	3.017	13.212	0.603	2.642	0.056	0.244	0.659	2.887
$PM_{2.5}$	0.507	2.220	0.101	0.444	0.056	0.244	0.157	0.688
Iron	3.010	13.186	0.602	2.637	0.056	0.244	0.658	2.881
Chromium	0.090	0.396	0.018	0.079	0.002	0.007	0.020	0.087
Manganese	0.066	0.291	0.013	0.058	0.001	0.005	0.014	0.064
Nickel	0.060	0.264	0.012	0.053	0.001	0.005	0.013	0.058
Carbon	0.030	0.132	0.006	0.026	0.001	0.002	0.007	0.029
Copper	0.030	0.132	0.006	0.026	0.001	0.002	0.007	0.029
Silicon	0.030	0.132	0.006	0.026	0.001	0.002	0.007	0.029
Molybdenum	0.030	0.132	0.006	0.026	0.001	0.002	0.007	0.029

[1]Cutting rate was provided by Arcosa.

[2]Bromeen B. et al. 1994. The Swedish Institute of Production Engineering Research. *Emission of Fume, Nitrogen Oxide and Noise in Plasma Cutting of Stainless and Mild Steel.*

[3]Metal composition and PTE calculations are based off of the worst-case steel compositions. Metal compositions were provided by Arcosa.

[4]Size Distribution and rate of Production of Airborne Particulate Matter Generated During Metal Cutting - Hemispheric Center for Environmental Technology. Table 4A. Assumes 16.8 % of total PM is PM2.5.

[5]Based on historical data from other Arcosa facilities, due to set-up and removal time around cut time, the cut time on the plasma torch is less than 50% of the cycle time required to cut plates.

Surface Coating
PB1 & PB2

Tower Limited Throughput **300** **towers / year**

PB-1 & PB-2. EPN-4 to 9 and EPN-10 to 15

Product	Spray rate (gal/tower)	Spray rate (gal/hr)	Total Amount (gal/yr)	Solid Content (lb/gal)	VOC Content[1] (lb/gal)	HAP Content[2] (lbs/gal)	Density (lb/gal	Total Weight (lbs/yr)	Transfer Efficiency[3] (%)	Booth Capture Efficiency[4] (%)	Filter Control Efficiency[5] (%)	PM Emissions[6,7] (lb/hr)	PM Emissions (tons/yr)	VOC Emissions (lb/hr)	VOC Emissions (tons/yr)	HAP Emissions (lb/hr)	HAP Emissions (tons/yr)
Intergard 345	280	60	84,000	9.35	3.5	0.67	12.02	1,009,680	50%	100%	99.80%	0.561	0.393	210	147	40.20	28.14
990	60	45	18,000	6.68	3.5	1.2	10.18	183,240	50%	100%	99.80%	0.301	0.060	157.5	31.5	54.00	10.80
Cleaning Solvent	18	12	5,400	0.00	7.09	0	7.09	38,286	50%	100%	99.80%	0.000	0.000	85.08	19.143	0.00	0.00
Totals			107,400	--	--	--	--	1,231,206	--	--	--	0.862	0.453	452.580	197.643	94.200	38.940

Speciated HAPS	Spray rate (gal/section)	Spray rate (gal/hr)	Total Amount (gal/yrl)	Xylenes 1330-20-7 lbs/gal	Xylenes 1330-20-7 lbs/hr	Xylenes 1330-20-7 tons/yr	Ethyl Benzene 100-41-1 lbs/gal	Ethyl Benzene 100-41-1 lbs/hr	Ethyl Benzene 100-41-1 tons/yr	Trimethyl Benzene (95-63-6 & 108-67-8) lb/gal	Trimethyl Benzene (95-63-6 & 108-67-8) lb/hr	Trimethyl Benzene (95-63-6 & 108-67-8) tons/yr	N-Butytl Acetate 123-86-4 lbs/gal	N-Butytl Acetate 123-86-4 lbs/hr	N-Butytl Acetate 123-86-4 tons/yr	Black Iron Oxide (1333-86-4) lbs/gal	Black Iron Oxide (1333-86-4) lbs/hr	Black Iron Oxide (1333-86-4) tons/yr
Intergard 345	280	60	84,000	0.54	32.4	22.68	0.13	7.8	5.46	0	0	0	0	0	0	0	0	0
990	60	45	18,000	0.98	44.1	8.82	0.22	9.9	1.98	0.43	19.35	3.87	0.08	3.6	0.72	0.002	0.09	0.018
Totals			102,000	--	76.5	31.5	--	17.7	7.44	--	19.35	3.87	--	3.6	0.72	--	0.09	0.018

1 - VOC Limiit. Site will utilize coatings that have a maximum VOC content of 3.5 lb/gal to comply with MACT MMMM
2 - HAP Limit. Site will utilize coatings that have a maximum HAP content of 1.9 lb/gal to comply with MACT MMMM
3 - Transfer Efficiency - Coating is applied via air atomized application technology onto a flat surface.
4 - Capture Efficiency - Based on client provided information, it is expected that the booth will meet 100% capture efficiecy.
5 - Filter Control Efficiency - Based on the client provided information, the fitlers are expected to meet 99.8% PM removal efficiency.
6 - The assumption is made that all PM emissions are the same as PM10.
7 - Assumes no PM2.5 component from coating application

Maximum Emissions *

Product	Spray rate (gal/hr)	Total Amount (gal/yr)	Solid Content (lb/gal)	VOC Content[1] (lb/gal)	HAP Content[2] (lbs/gal)	Density (lb/gal	Total Weight (lbs/yr)	Transfer Efficiency[3] (%)	PM Emissions[6] (lb/hr)	PM Emissions (tons/yr)	VOC Emissions (lb/hr)	VOC Emissions (tons/yr)	HAP Emissions (lb/hr)	HAP Emissions (tons/yr)
Intergard 345	60	525,600	9.35	3.5	0.67	12.02	6,317,712	50%	280.547	1228.795	210	919.8	40.20	176.08
990	45	394,200	6.68	3.5	1.2	10.18	4,012,956	50%	150.257	658.125	157.5	689.85	54.00	236.52
Cleaning Solvent	12	105,120	0.00	7.09	0	7.09	745,301	50%	0.000	0.000	85.08	372.6504	0.00	0.00
Totals		##########	--	--	--	--	11,075,969	--	430.804	1,886.920	452.580	1,982.300	94.200	412.596

* Emissions without control or throughput limits considered

Abrasive Blasting Operations
AB-1 & AB-2

Plate Blasting: AB-1 | EPN-1

Pollutant	Flow Rate of Gun (lb abrasive / hr)[3]	Emission Factor[1] (lb pollutant / lb abrasive)	Uncontrolled Emission Rate (lb/hr)	Uncontrolled Emission Rate (ton/yr)	Control Efficiency[2]	Controlled Emission Rate (lb/hr)	Controlled Emission Rate (ton/yr)
PM	21872	0.01	218.72	958.0	99.9%	0.219	0.958
PM10	21872	0.007	153.104	670.6	99.9%	0.153	0.671
PM2.5	21872	0.0007	15.3104	67.1	99.9%	0.015	0.067

Blast Booth: AB-2 | EPN-3

Pollutant	Flow Rate of Gun (lb abrasive / hr)[4]	Emission Factor[1] (lb pollutant / lb abrasive)	Uncontrolled Emission Rate (lb/hr)	Uncontrolled Emission Rate (ton/yr)	Control Efficiency[2]	Controlled Emission Rate (lb/hr)	Controlled Emission Rate (ton/yr)
PM	25380	0.01	253.8	1111.6	99.9%	0.254	1.112
PM10	25380	0.007	177.66	778.2	99.9%	0.178	0.778
PM2.5	25380	0.0007	17.766	77.8	99.9%	0.018	0.078

[1] Emission factors from the Minnesota Pollution Control Agency (MPCA) Abrasive Blasting Emission calculation Spreadsheet.
PM10 emissions derived from STAPPA/ALAPCO PM10 factors which were based on the amount of PM generated: grit= 0.7 lb PM10 per lb of PM
[2] Unit specifications have higher expected control efficiencies than provided here.
[3] Each blasting gun is a #8 nozzel (1/2" dia) at 100 psi. That equates to 5,468 lbs/hr of steel grit per gun. There are 4 guns in the unit for 21,872 lbs/hr.
[4] Each blasting gun is a #12 nozzel (3/4" dia) at 100 psi. That equates to 12,160 lbs/hr of steel grit per gun. There are 2 guns in the unit for 25,380 lbs/hr.
[5] Per AP-42 Chapter 13.2.6-1, PM2.5 emissions are 1/10 those of PM10.

Metallizing
ME-1

Site Tower Limited Throughput **300** **towers / year**

Material Name	Metalized Area per Tower (ft2/tower)	Coverage (ft2/lb zinc)	Coating Thickness (mm)	Spray Time (hrs)	Total Arc Hours	Total Time Per Tower (hrs)	Zinc Wire Required per Tower (lbs)	PM/PM10 Emission Factor[1] (lb/ton)	PM/PM10 Emissions (lb/hr)	PM/PM10 Emissions (lb/yr)	PM/PM10 Emissions (ton/yr)
Zinc Alloy	562	2.5	8	0.5	3.46	6.92	224.8	5	0.081	168.6	0.084

[1]AP-42 Table 12.14-2 - Galvanizing

(1) The three tower sections are made up as follows: Section 1 - 142 sq. ft. Section 2 - 182 sq. ft., and Section 3 - 238 st. ft = 562 sq. ft
(2) The total arc hours = pounds of zinc coated (per each section) / 65 pounds of zinc per arc hour
The total Zinc Wire required = metalized area per tower section / square foot per pound coverage
Section 1: 142 sq. ft. / 2.5 sq. ft/lb=57.0 lbs--->57.0 lbs / 65lbs/arc hr = 0.88 arc hours
Section 2: 182 sq. ft. / 2.5 sq. ft/lb=72.8 lbs--->72.8 lbs / 65lbs/arc hr = 1.12 arc hours
Section 3: 238 sq. ft. / 2.e sq. ft/lb=95.2 lbs--->95.2 lbs / 65lbs/arc hr = 1.46 arc hours
(3) Total time per tower = 1.76 hours for section 1, 2.24 hours for section 2, and 2.92 hours for section 3 = 6.92 hours
(4) Approximately two to three towers will be manufactured per day for a max of 300 towers per year. Typical operations will be 16 hrs/day and 5 days/wk at 52 wks/yr
(5) Emission factor for metalizing operations provided by Arcosa per AP-42, Table 12.14-2 (see PM emission factor for galvinizing)
(6) emission calculation methodology:
Total Emissions (lbs/hr) = Total Emissions (lbs/yr) / (total hours per tower x max# of towers per year)
Total Emissions (lbs/yr) = (((zinc wire required per tower (lbs/tower) x max # of towers per yr) / 2,000 lbs/ton) x lbs PM/ton of zinc used)
Total Emissions (tons/yr) = Total Emissions (lbs/yr) / 2,000 lbs/ton

Unlimited Tower throughput 1265.896 towers/year

Material Name	Metalized Area per Tower (ft2/tower)	Coverage (ft2/lb zinc)	Coating Thickness (mm)	Spray Time (hrs)	Total Arc Hours	Total Time Per Tower (hrs)	Zinc Wire Required per Tower (lbs)	PM/PM10 Emission Factor[1] (lb/ton)	PM/PM10 Emissions (lb/hr)	PM/PM10 Emissions (lb/yr)	PM/PM10 Emissions (ton/yr)
Zinc Alloy	562	2.5	8	0.5	3.46	6.92	224.8	5	0.081	711.4	0.356

Welding
WE-1

Type	Maximum Usage (lb/hr)	Maximum Annual Usage (tons/year)
SAW	270.0	1182.6
GMAW	3.5	15.3
FCAW	26.0	113.9

Pollutant	Total		Lincoln ER70S-6	Lincoln ER70S-6	Lincoln L-61	Lincoln L-61	WTX	WTX	Lincoln Ultracore 712A80 (E71T)	Lincoln Ultracore 712A80 (E71T)	Lincoln Ultracore 309L	Lincoln Ultracore 309L
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
PM	1.36E-01	5.96E-01	1.82E-02	7.97E-02	4.50E-03	1.97E-02	9.00E-03	3.94E-02	1.02E-01	4.49E-01	1.81E-03	7.94E-03
Iron	1.27E-01	5.58E-01	1.82E-02	7.97E-02	4.50E-03	1.97E-02	4.50E-04	1.97E-03	1.02E-01	4.49E-01	1.81E-03	7.94E-03
Manganese	6.44E-03	2.82E-02	9.10E-04	3.99E-03	2.25E-04	9.86E-04	9.00E-05	3.94E-04	5.12E-03	2.24E-02	9.06E-05	3.97E-04
Silicon	1.72E-03	7.53E-03	1.82E-04	7.97E-04	4.50E-05	1.97E-04	4.50E-04	1.97E-03	1.02E-03	4.49E-03	1.81E-05	7.94E-05
Copper	6.31E-05	2.76E-04			4.50E-05	1.97E-04					1.81E-05	7.94E-05
Nickel	1.43E-03	6.27E-03			4.50E-05	1.97E-04			1.02E-03	4.49E-03	3.62E-04	1.59E-03
Aluminum Oxide	1.49E-03	6.54E-03					4.50E-04	1.97E-03	1.02E-03	4.49E-03	1.81E-05	7.94E-05
Calcium Oxide	1.47E-03	6.46E-03					4.50E-04	1.97E-03	1.02E-03	4.49E-03		
Zirconium Oxide	1.12E-03	4.89E-03							1.02E-03	4.49E-03	9.06E-05	3.97E-04
Chromium Compounds	9.06E-04	3.97E-03									9.06E-04	3.97E-03
Cobalt Compounds	1.81E-05	7.94E-05									1.81E-05	7.94E-05
Molybdenum	1.81E-05	7.94E-05									1.81E-05	7.94E-05

Lincoln ER70S-6	Emission Factor lb/1000 lb electrode consumed	Composition for Calcs	Hourly (lbs/hr)	Annual (tpy)
	5.2		3.50	15.33
PM	100%	100%	1.82E-02	7.972E-02
Iron	50-100%	100%	1.82E-02	7.972E-02
Manganese	1-5%	5%	9.10E-04	3.986E-03
Silicon	.1-1%	1%	1.82E-04	7.972E-04

AP-42 Chapter 12.9 Table 12.19-1 GMAW Electrode E70S

Lincoln L-61	Emission Factor lb/1000 lb electrode consumed	Composition for Calcs	Hourly (lbs/hr)	Annual (tpy)
	0.05		90.000	394.2
PM	100%	100%	4.50E-03	1.97E-02
Iron	50-100%	100%	4.50E-03	1.97E-02
manganese	1-5%	5%	2.25E-04	9.86E-04
silicon	.1-1%	1%	4.50E-05	1.97E-04
Copper and/or copper alloys as compounds (as CU)	.1-1%	1%	4.50E-05	1.97E-04
Nickel	.1-1%	1%	4.50E-05	1.97E-04

AP-42 Chapter 12.9 Table 12.19-1 SAW Electrode EM12K

Welding
WE-1

Type	Maximum Usage (lb/hr)	Maximum Annual Usage (tons/year)
SAW	270.0	1182.6
GMAW	3.5	15.3
FCAW	26.0	113.9

WTX	Emission Factor lb/1000 lb electrode consumed	Composition for Calcs	Hourly (lbs/hr)	Annual (tpy)
	0.05		180.000	788.4
PM	100%	100%	9.00E-03	3.94E-02
Magnesium Oxide	20-50%	50%	4.50E-03	1.97E-02
Calcium Fluoride	10-20%	20%	1.80E-03	7.88E-03
Manganese Oxide	5-10%	10%	9.00E-04	3.94E-03
Sodium Silicate	5-10%	10%	9.00E-04	3.94E-03
limestone	1-5%	5%	4.50E-04	1.97E-03
titanium dioxide	1-5%	5%	4.50E-04	1.97E-03
potassium silicate	1-5%	5%	4.50E-04	1.97E-03
silicion dioxide	1-5%	5%	4.50E-04	1.97E-03
iron oxide	1-5%	5%	4.50E-04	1.97E-03
silicon	1-5%	5%	4.50E-04	1.97E-03
aluminum oxide	1-5%	5%	4.50E-04	1.97E-03
calcium oxide	1-5%	5%	4.50E-04	1.97E-03
Manganese Oxide	.1-1%	1%	9.00E-05	3.94E-04
quartz	.1-1%	1%	9.00E-05	3.94E-04
potassium oxide	.1-1%	1%	9.00E-05	3.94E-04

AP-42 Chapter 12.9 Table 12.19-1 SAW Electrode EM12K

Lincoln Ultracore 712A80 (E71T)	Emission Factor lb/1000 lb electrode consumed	Composition for Calcs	Hourly (lbs/hr)	Annual (tpy)
	12.2		8.40	36.792
PM	100%	100%	1.02E-01	4.49E-01
Iron	50-100%	100%	1.02E-01	4.49E-01
Titanium Dioxide	5-10%	10%	1.02E-02	4.49E-02
Manganese	1-5%	5%	5.12E-03	2.24E-02
Magnesium	.1-1%	1%	1.02E-03	4.49E-03
Silicon	.1-1%	1%	1.02E-03	4.49E-03
Nickel	.1-1%	1%	1.02E-03	4.49E-03
Sodium oxide	.1-1%	1%	1.02E-03	4.49E-03
Soilicon Dioxide	.1-1%	1%	1.02E-03	4.49E-03
Iron Oxide	.1-1%	1%	1.02E-03	4.49E-03
Zirconium Oxide	.1-1%	1%	1.02E-03	4.49E-03
Aluminum Oxide	.1-1%	1%	1.02E-03	4.49E-03
Aluminum Potassium Fluoride	.1-1%	1%	1.02E-03	4.49E-03

AP-42 Chapter 12.9 Table 12.19-1 FCAW Electrode E71T

Lincoln Ultracore 309L	Emission Factor lb/1000 lb electrode consumed	Composition for Calcs	Hourly (lbs/hr)	Annual (tpy)
	15.1		0.12	0.5256
PM	100%	100%	1.81E-03	7.94E-03
Iron	50-100%	100%	1.81E-03	7.94E-03
Chromium and chromium alloys or compounds (As Cr	20-50%	50%	9.06E-04	3.97E-03
Nickel	10-20%	20%	3.62E-04	1.59E-03
Titanium Dioxide	1-5%	5%	9.06E-05	3.97E-04
Zircon	1-5%	5%	9.06E-05	3.97E-04
Manganese	1-5%	5%	9.06E-05	3.97E-04
Nepheline Syenite	1-5%	5%	9.06E-05	3.97E-04
Silicon	.1-1%	1%	1.81E-05	7.94E-05
Sodium Fluorosilicate	.1-1%	1%	1.81E-05	7.94E-05
Sodium Oxide	.1-1%	1%	1.81E-05	7.94E-05
Cobalt and Compounds (As CO)	.1-1%	1%	1.81E-05	7.94E-05
Quartz	.1-1%	1%	1.81E-05	7.94E-05
Manganese Oxide	.1-1%	1%	1.81E-05	7.94E-05
Molybdenum	.1-1%	1%	1.81E-05	7.94E-05
Aluminum and/or Aluminum alloys (as AL)	.1-1%	1%	1.81E-05	7.94E-05
Copper and/or copper alloys as compounds (as CU)	.1-1%	1%	1.81E-05	7.94E-05

AP-42 Chapter 12.9 Table 12.19-1 FCAW Electrode E70T

Paint Booth 1 - Makeup Air Unit
HE-1

Emission Unit Identification No.: HE-1
Stack/Vent Designation No.: EPN004-009
Control Equipment No.:
Emission Unit Description: Paint Booth 1 - Makeup Air Unit
Maximum Rated Boiler Capacity: 4,235,000 Btu/hr

Fuel Parameters

Fuel Type	% Sulfur (gr/100scf)	% Ash	Heat Value[1] (Btu/scf)	Maximum Fuel Consumption Rate (cf/hr)	Maximum Fuel Consumption Rate (MMScf/yr)
Natural Gas	0.2	negligible	1,020	4,152.0	36.4

Natural Gas Criteria Pollutants Potential To Emit

Pollutant	Emission Factor	Emissions Factor Units	Emissions Factor Source	Natural Gas Usage (ft^3/year)	Emission Rate (lbs/hr)	PTE (tons/year)
PM	7.6E-06	lb/ft^3	AP-42 Section 1.4.1	4,152.0	0.032	0.138
PM_{10}	7.6E-06	lb/ft^3	AP-42 Section 1.4.1	4,152.0	0.032	0.138
SO_2	6E-07	lb/ft^3	AP-42 Section 1.4.1	4,152.0	0.002	0.011
NO_x	0.0001	lb/ft^3	AP-42 Section 1.4.1	4,152.0	0.415	1.819
VOC	5.5E-06	lb/ft^3	AP-42 Section 1.4.1	4,152.0	0.023	0.100
CO	0.000084	lb/ft^3	AP-42 Section 1.4.1	4,152.0	0.349	1.528
Lead	5E-10	lb/ft^3	AP-42 Section 1.4.1	4,152.0	0.000	0.000
Total Critical Pollutants	2.053E-04	lb/ft^3		4,152.0	0.852	3.734

Natural Gas Hazardous Air Pollutants Potential To Emit

Pollutant	Emission Factor	Emissions Factor Units	Emissions Factor Source	Natural Gas Usage (ft^3/year)	Emission Rate (lbs/hr)	PTE (tons/year)
Benzene	2.1E-09	lb/ft^3	AP-42 Section 1.4.1	4,152.0	0.000	0.000
Formaldehyde	7.50E-08	lb/ft^3	AP-42 Section 1.4.1	4,152.0	0.000	0.001
Hexane	1.80E-06	lb/ft^3	AP-42 Section 1.4.1	4,152.0	0.007	0.033
Naphthalene	6.1E-10	lb/ft^3	AP-42 Section 1.4.1	4,152.0	0.000	0.000
Toluene	3.4E-09	lb/ft^3	AP-42 Section 1.4.1	4,152.0	0.000	0.000
Arsenic	2E-10	lb/ft^3	AP-42 Section 1.4.1	4,152.0	0.000	0.000
Beryllium	1.2E-11	lb/ft^3	AP-42 Section 1.4.1	4,152.0	0.000	0.000
Cadmium	1.1E-09	lb/ft^3	AP-42 Section 1.4.1	4,152.0	0.000	0.000
Chromium	1.4E-09	lb/ft^3	AP-42 Section 1.4.1	4,152.0	0.000	0.000
Cobalt	8.4E-11	lb/ft^3	AP-42 Section 1.4.1	4,152.0	0.000	0.000
Manganese	3.8E-10	lb/ft^3	AP-42 Section 1.4.1	4,152.0	0.000	0.000
Mercury	2.6E-10	lb/ft^3	AP-42 Section 1.4.1	4,152.0	0.000	0.000
Nickel	2.1E-09	lb/ft^3	AP-42 Section 1.4.1	4,152.0	0.000	0.000
Selenium	2.4E-11	lb/ft^3	AP-42 Section 1.4.1	4,152.0	0.000	0.000
Total HAPs	1.887E-06	lb/ft^3		4,152.0	0.008	0.034

Natural Gas Greenhouse Gas Potential to Emit

Pollutant	Emission Factor	Emissions Factor Units	Emissions Factor Source	Natural Gas Usage (ft^3/year)	Emission Rate (lbs/hr)	PTE (tons/year)	Multiplier[2]	CO_{2e} PTE (tons/year)
CO_2	0.12	lb/ft^3	AP-42 Section 1.4.1	4,152.0	498.235	2182.271	1	2,182.271
CH_4	2.30E-06	lb/ft^3	AP-42 Section 1.4.1	4,152.0	0.010	0.042	25	1.046
N_2O	2.20E-06	lb/ft^3	AP-42 Section 1.4.1	4,152.0	0.009	0.040	298	11.922
				Total (CO2e)	501.196		Total	2,195.239

[1]Natural gas heat value is from AP-42 Section 1.4.1 (July 1998)
[2]40 CFR 98 Subpart A Table A-1

Paint Booth 2 - Makeup Air Unit
HE-2

Emission Unit Identification No.: HE-2
Stack/Vent Designation No.: EPN10-15
Control Equipment No.:
Emission Unit Description: Paint Booth 2 - Makeup Air Unit
Maximum Rated Boiler Capacity: 4,235,000 Btu/hr

Fuel Parameters

Fuel Type	% Sulfur (gr/100scf)	% Ash	Heat Value[1] (Btu/scf)	Maximum Fuel Consumption Rate (cf/hr)	Maximum Fuel Consumption Rate (MMScf/yr)
Natural Gas	0.2	negligible	1,020	4,152.0	36.4

Natural Gas Criteria Pollutants Potential To Emit

Pollutant	Emission Factor	Emissions Factor Units	Emissions Factor Source	Natural Gas Usage (ft^3/year)	Emission Rate (lbs/hr)	PTE (tons/year)
PM	0.0000076	lb/ft^3	AP-42 Section 1.4.1	4,152.0	0.032	0.138
PM_{10}	0.0000076	lb/ft^3	AP-42 Section 1.4.1	4,152.0	0.032	0.138
SO_2	0.0000006	lb/ft^3	AP-42 Section 1.4.1	4,152.0	0.002	0.011
NO_x	0.0001	lb/ft^3	AP-42 Section 1.4.1	4,152.0	0.415	1.819
VOC	0.0000055	lb/ft^3	AP-42 Section 1.4.1	4,152.0	0.023	0.100
CO	0.000084	lb/ft^3	AP-42 Section 1.4.1	4,152.0	0.349	1.528
Lead	5E-10	lb/ft^3	AP-42 Section 1.4.1	4,152.0	0.000	0.000
Total Critical Pollutants	2.053E-04	lb/ft^3		4,152.0	0.852	3.734

Natural Gas Hazardous Air Pollutants Potential To Emit

Pollutant	Emission Factor	Emissions Factor Units	Emissions Factor Source	Natural Gas Usage (ft^3/year)	Emission Rate (lbs/hr)	PTE (tons/year)
Benzene	2.1E-09	lb/ft^3	AP-42 Section 1.4.1	4,152.0	0.000	0.000
Formaldehyde	7.50E-08	lb/ft^3	AP-42 Section 1.4.1	4,152.0	0.000	0.001
Hexane	1.80E-06	lb/ft^3	AP-42 Section 1.4.1	4,152.0	0.007	0.033
Naphthalene	6.1E-10	lb/ft^3	AP-42 Section 1.4.1	4,152.0	0.000	0.000
Toluene	3.4E-09	lb/ft^3	AP-42 Section 1.4.1	4,152.0	0.000	0.000
Arsenic	2E-10	lb/ft^3	AP-42 Section 1.4.1	4,152.0	0.000	0.000
Beryllium	1.2E-11	lb/ft^3	AP-42 Section 1.4.1	4,152.0	0.000	0.000
Cadmium	1.1E-09	lb/ft^3	AP-42 Section 1.4.1	4,152.0	0.000	0.000
Chromium	1.4E-09	lb/ft^3	AP-42 Section 1.4.1	4,152.0	0.000	0.000
Cobalt	8.4E-11	lb/ft^3	AP-42 Section 1.4.1	4,152.0	0.000	0.000
Manganese	3.8E-10	lb/ft^3	AP-42 Section 1.4.1	4,152.0	0.000	0.000
Mercury	2.6E-10	lb/ft^3	AP-42 Section 1.4.1	4,152.0	0.000	0.000
Nickel	2.1E-09	lb/ft^3	AP-42 Section 1.4.1	4,152.0	0.000	0.000
Selenium	2.4E-11	lb/ft^3	AP-42 Section 1.4.1	4,152.0	0.000	0.000
Total HAPs	1.887E-06	lb/ft^3		4,152.0	0.008	0.034

Natural Gas Greenhouse Gas Potential to Emit

Pollutant	Emission Factor	Emissions Factor Units	Emissions Factor Source	Natural Gas Usage (ft^3/year)	Emission Rate (lbs/hr)	PTE (tons/year)	Multiplier[2]	CO_{2e} PTE (tons/year)
CO_2	0.12	lb/ft^3	AP-42 Section 1.4.1	4,152.0	498.235	2182.271	1	2,182.271
CH_4	2.30E-06	lb/ft^3	AP-42 Section 1.4.1	4,152.0	0.010	0.042	25	1.046
N_2O	2.20E-06	lb/ft^3	AP-42 Section 1.4.1	4,152.0	0.009	0.040	298	11.922
				Total (CO_2e)	501.196		Total	2,195.239

[1]Natural gas heat value is from AP-42 Section 1.4.1 (July 1998)
[2]40 CFR 98 Subpart A Table A-1

Model Document

Process Name	Parameter Emission Point	Stack Height (above ground) ft	Stack Diameter ft	Air Flow Rate scfm	 scfm	 ft/s	Air Temperature Deg F	Building Height at that point ft	Veritical or Horizontal Discharge?
Plate Blast	EPN-1	55	2	13,537	13,537	71.82	68	40	Vertical
Weld Building	EPN-2a	55	1.5	5000	5000	47.16	68	40	Vertical
Weld Building	EPN-2b	55	1.5	5000	5000	47.16	68	40	Vertical
Weld Building	EPN-2c	55	1.5	5000	5000	47.16	68	40	Vertical
Weld Building	EPN-2d	55	1.5	5000	5000	47.16	68	40	Vertical
Weld Building	EPN-2e	55	1.5	5000	5000	47.16	68	40	Vertical
Weld Building	EPN-2f	55	1.5	5000	5000	47.16	68	40	Vertical
Metalizing	EPN-3	40	2.666667	16000	16000	47.75	68	28’6”	Vertical
Paint Booth 1	EPN-4	40	3.00	100,000 CFM/6	16,667	39.30	68	28’6”	Veritical
Paint Booth 1	EPN-5	40	3.00	100,000 CFM/6	16,667	39.30	68	28’6”	Veritical
Paint Booth 1	EPN-6	40	3.00	100,000 CFM/6	16,667	39.30	68	28’6”	Veritical
Paint Booth 1	EPN-7	40	3.00	100,000 CFM/6	16,667	39.30	68	28’6”	Veritical
Paint Booth 1	EPN-8	40	3.00	100,000 CFM/6	16,667	39.30	68	28’6”	Veritical
Paint Booth 1	EPN-9	40	3.00	100,000 CFM/6	16,667	39.30	68	28’6”	Veritical
Paint Booth 2	EPN-10	40	3.00	100,000 CFM/6	16,667	39.30	68	28’6”	Veritical
Paint Booth 2	EPN-11	40	3.00	100,000 CFM/6	16,667	39.30	68	28’6”	Veritical
Paint Booth 2	EPN-12	40	3.00	100,000 CFM/6	16,667	39.30	68	28’6”	Veritical
Paint Booth 2	EPN-13	40	3.00	100,000 CFM/6	16,667	39.30	68	28’6”	Veritical
Paint Booth 2	EPN-14	40	3.00	100,000 CFM/6	16,667	39.30	68	28’6”	Veritical
Paint Booth 2	EPN-15	40	3.00	100,000 CFM/6	16,667	39.30	68	28’6”	Veritical
Plasma Table	EPN-16	55	1.50	6,500	6,500	61.30	68	40	Veritical
Blast Booth	EPN-17	40	3.33	36800	36800	70.28	68	28’6”	Vertical

Model Document

Process Name	Parameter Emission Point	PM lb/hr	PM tpy	PM10 lb/hr	PM10 tpy	PM2.5 lb/hr	PM2.5 tpy	VOC lb/hr	VOC tpy
Plate Blast	EPN-1	0.2187	0.9580	0.1531	0.6706	0.0153	0.0671		
Weld Building	EPN-2a	0.1232	0.5397	0.1232	0.5397	0.0396	0.1733		
Weld Building	EPN-2b	0.1232	0.5397	0.1232	0.5397	0.0396	0.1733		
Weld Building	EPN-2c	0.1232	0.5397	0.1232	0.5397	0.0396	0.1733		
Weld Building	EPN-2d	0.1232	0.5397	0.1232	0.5397	0.0396	0.1733		
Weld Building	EPN-2e	0.1232	0.5397	0.1232	0.5397	0.0396	0.1733		
Weld Building	EPN-2f	0.1232	0.5397	0.1232	0.5397	0.0396	0.1733		
Metalizing	EPN-3	0.0812	0.0843	0.0812	0.0843	0.0000	0.0000		
Paint Booth 1	EPN-4	0.0771	0.0608	0.0771	0.0608	0.0053	0.0230	37.7188	16.4869
Paint Booth 1	EPN-5	0.0771	0.0608	0.0771	0.0608	0.0053	0.0230	37.7188	16.4869
Paint Booth 1	EPN-6	0.0771	0.0608	0.0771	0.0608	0.0053	0.0230	37.7188	16.4869
Paint Booth 1	EPN-7	0.0771	0.0608	0.0771	0.0608	0.0053	0.0230	37.7188	16.4869
Paint Booth 1	EPN-8	0.0771	0.0608	0.0771	0.0608	0.0053	0.0230	37.7188	16.4869
Paint Booth 1	EPN-9	0.0771	0.0608	0.0771	0.0608	0.0053	0.0230	37.7188	16.4869
Paint Booth 2	EPN-10	0.0771	0.0608	0.0771	0.0608	0.0053	0.0230	37.7188	16.4869
Paint Booth 2	EPN-11	0.0771	0.0608	0.0771	0.0608	0.0053	0.0230	37.7188	16.4869
Paint Booth 2	EPN-12	0.0771	0.0608	0.0771	0.0608	0.0053	0.0230	37.7188	16.4869
Paint Booth 2	EPN-13	0.0771	0.0608	0.0771	0.0608	0.0053	0.0230	37.7188	16.4869
Paint Booth 2	EPN-14	0.0771	0.0608	0.0771	0.0608	0.0053	0.0230	37.7188	16.4869
Paint Booth 2	EPN-15	0.0771	0.0608	0.0771	0.0608	0.0053	0.0230	37.7188	16.4869
Plasma Table	EPN-16	0.0557	0.2440	0.0557	0.2440	0.0557	0.2440		
Blast Booth	EPN-17	0.2538	1.1116	0.1777	0.7782	0.0178	0.0778		

Model Document

Process Name	Parameter Emission Point	NOX lb/hr	NOX tpy	SOX lb/hr	SOX tpy	CO lb/hr	CO tpy	Pb lb/hr	Pb tpy
Plate Blast	EPN-1								
Weld Building	EPN-2a	0.0150	0.0659						
Weld Building	EPN-2b	0.0150	0.0659						
Weld Building	EPN-2c	0.0150	0.0659						
Weld Building	EPN-2d	0.0150	0.0659						
Weld Building	EPN-2e	0.0150	0.0659						
Weld Building	EPN-2f	0.0150	0.0659						
Metalizing	EPN-3								
Paint Booth 1	EPN-4	0.0692	0.3031	0.0004	0.0018	0.0581	0.2546	3.46E-07	1.52E-06
Paint Booth 1	EPN-5	0.0692	0.3031	0.0004	0.0018	0.0581	0.2546	3.46E-07	1.52E-06
Paint Booth 1	EPN-6	0.0692	0.3031	0.0004	0.0018	0.0581	0.2546	3.46E-07	1.52E-06
Paint Booth 1	EPN-7	0.0692	0.3031	0.0004	0.0018	0.0581	0.2546	3.46E-07	1.52E-06
Paint Booth 1	EPN-8	0.0692	0.3031	0.0004	0.0018	0.0581	0.2546	3.46E-07	1.52E-06
Paint Booth 1	EPN-9	0.0692	0.3031	0.0004	0.0018	0.0581	0.2546	3.46E-07	1.52E-06
Paint Booth 2	EPN-10	0.0692	0.3031	0.0004	0.0018	0.0581	0.2546	3.46E-07	1.52E-06
Paint Booth 2	EPN-11	0.0692	0.3031	0.0004	0.0018	0.0581	0.2546	3.46E-07	1.52E-06
Paint Booth 2	EPN-12	0.0692	0.3031	0.0004	0.0018	0.0581	0.2546	3.46E-07	1.52E-06
Paint Booth 2	EPN-13	0.0692	0.3031	0.0004	0.0018	0.0581	0.2546	3.46E-07	1.52E-06
Paint Booth 2	EPN-14	0.0692	0.3031	0.0004	0.0018	0.0581	0.2546	3.46E-07	1.52E-06
Paint Booth 2	EPN-15	0.0692	0.3031	0.0004	0.0018	0.0581	0.2546	3.46E-07	1.52E-06
Plasma Table	EPN-16	0.3608	1.5805						
Blast Booth	EPN-17								

Section 3

Application Summary

The **Application Summary** shall include a brief description of the facility and its process, the type of permit application, the applicable regulation (i.e. 20.2.72.200.A.X, or 20.2.73 NMAC) under which the application is being submitted, and any air quality permit numbers associated with this site. If this facility is to be collocated with another facility, provide details of the other facility including permit number(s). In case of a revision or modification to a facility, provide the lowest level regulatory citation (i.e. 20.2.72.219.B.1.d NMAC) under which the revision or modification is being requested. Also describe the proposed changes from the original permit, how the proposed modification will affect the facility's operations and emissions, de-bottlenecking impacts, and changes to the facility's major/minor status (both PSD & Title V).

The **Process Summary** shall include a brief description of the facility and its processes.

Startup, Shutdown, and Maintenance (SSM) routine or predictable emissions: Provide an overview of how SSM emissions are accounted for in this application. Refer to "Guidance for Submittal of Startup, Shutdown, Maintenance Emissions in Permit Applications (http://www.env.nm.gov/aqb/permit/app_form.html) for more detailed instructions on SSM emissions.

Application Summary
Arcosa Wind Towers (Arcosa) is applying for an air permit under 20.2.72.200.A(1) and A(4) for a major source new construction. The facility will be major source for VOCs and HAPs, but will be taking a limit to remain a synthetic minor source under PSD. The facility also is not emitting any TAPs above the screening levels once correction factors are applied to the emission rates.

Process Summary
Arcosa will be manufacturing the tower portions of wind towers for the wind energy field. They will not be manufacturing the turbines or blades . At the site, Arcosa will take sheet steel and prepare it for coating. This will include using plasma cutters, an abrasive blasting table, and metalizing operations. The steel will then be rolled and welded to form the tower sections. There are three sections per towers. Once rolled, the towers will be blasted again in a blast booth using abrasive grit. From there, the towers will go through two paint booths to have a top-coat and epoxy applied. The booths will also have heaters in them to assist with the curing of the coatings. Once the coating is completed, the towers are sent off for distribution.

The blasting operations are controlled via fabric filter baghouses. The plasma table also has a downdraft table with a fabric filter baghouse. The coating booths are subject to NESHAP MMMM and are complying via the compliance coating option.

Startup, Shutdown, and Maintenance (SSM) routine or predictable emissions
The facility has no intention of having any emissions that would fall under SSM operations.

Section 4

Process Flow Sheet

A **process flow sheet** and/or block diagram indicating the individual equipment, all emission points and types of control applied to those points. The unit numbering system should be consistent throughout this application.

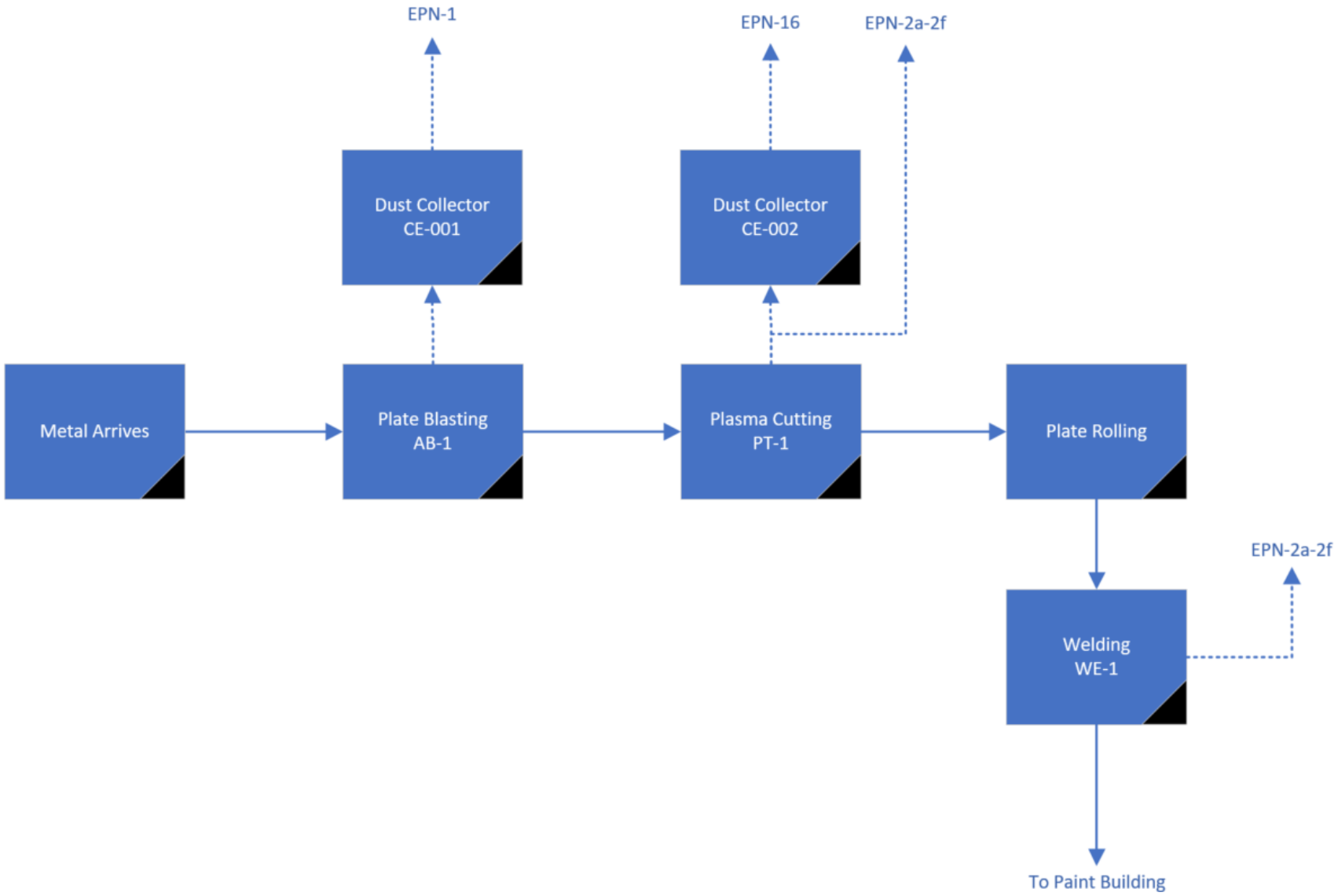


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager:	CEL
Drawn by:	CEL
Checked by:	TWK
Approved by:	TWK

Project No.	MP237101
Scale:	N.T.S.
File Name:	PFD-1
Date:	8/24/2023

Terracon
Consulting Engineers & Scientists
13400 15th Avenue North Minneapolis, Minnesota 55441
PH. (763) 489-3100 FAX. (763) 489-3101

BLOCK FLOW DIAGRAM – WELD BUILDING

Arcosa Wind Towers Inc.

1951 NM-304, Belen, NM 87002

Figure 1

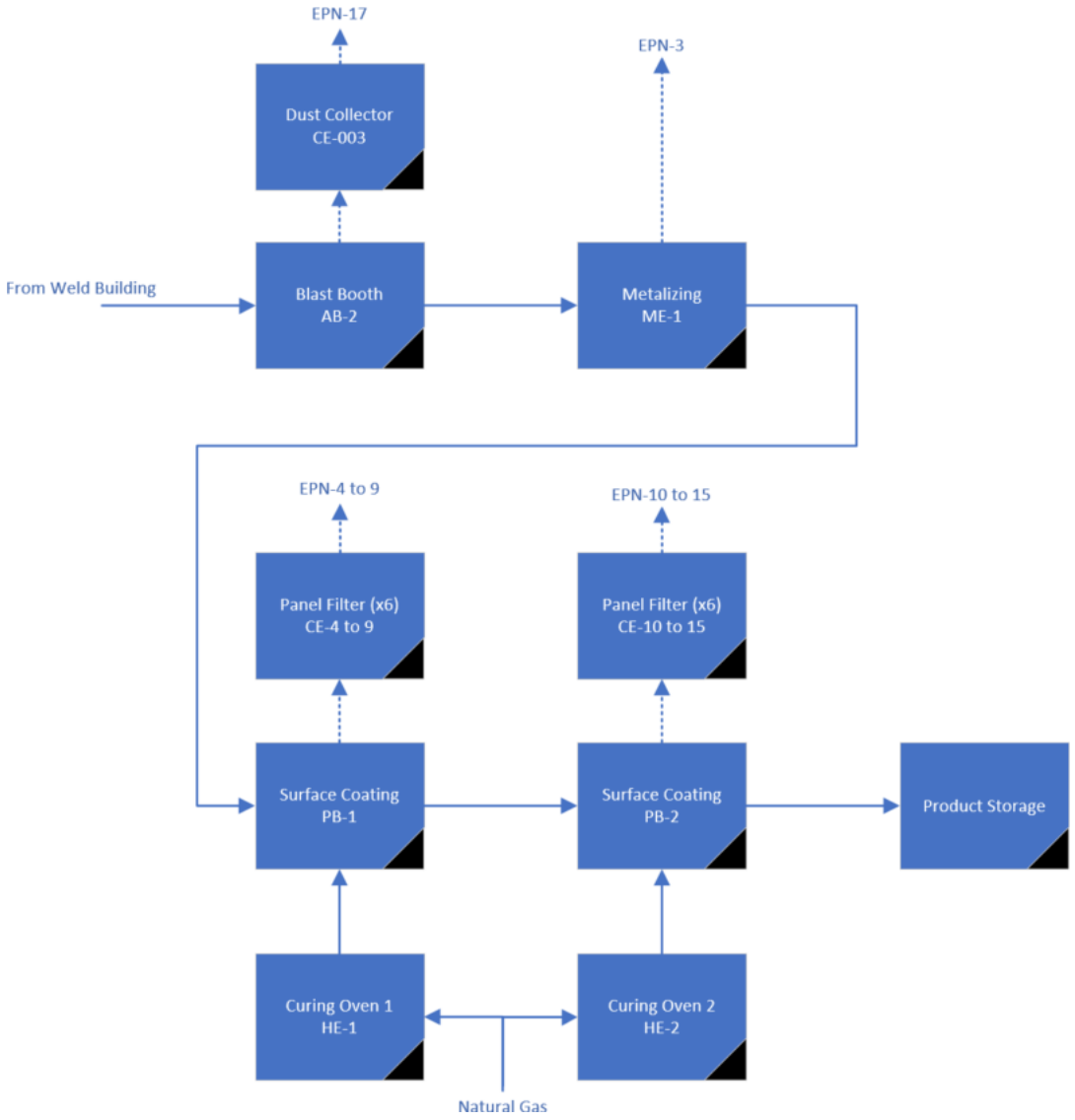


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager:	CEL
Drawn by:	CEL
Checked by:	TWK
Approved by:	TWK

Project No.	MP237101
Scale:	N.T.S.
File Name:	PFD-2
Date:	8/24/2023

Terracon
Consulting Engineers & Scientists
13400 15th Avenue North Minneapolis, Minnesota 55441
PH. (763) 489-3100 FAX. (763) 489-3101

BLOCK FLOW DIAGRAM – PAINT BUILDING

Arcosa Wind Towers Inc.

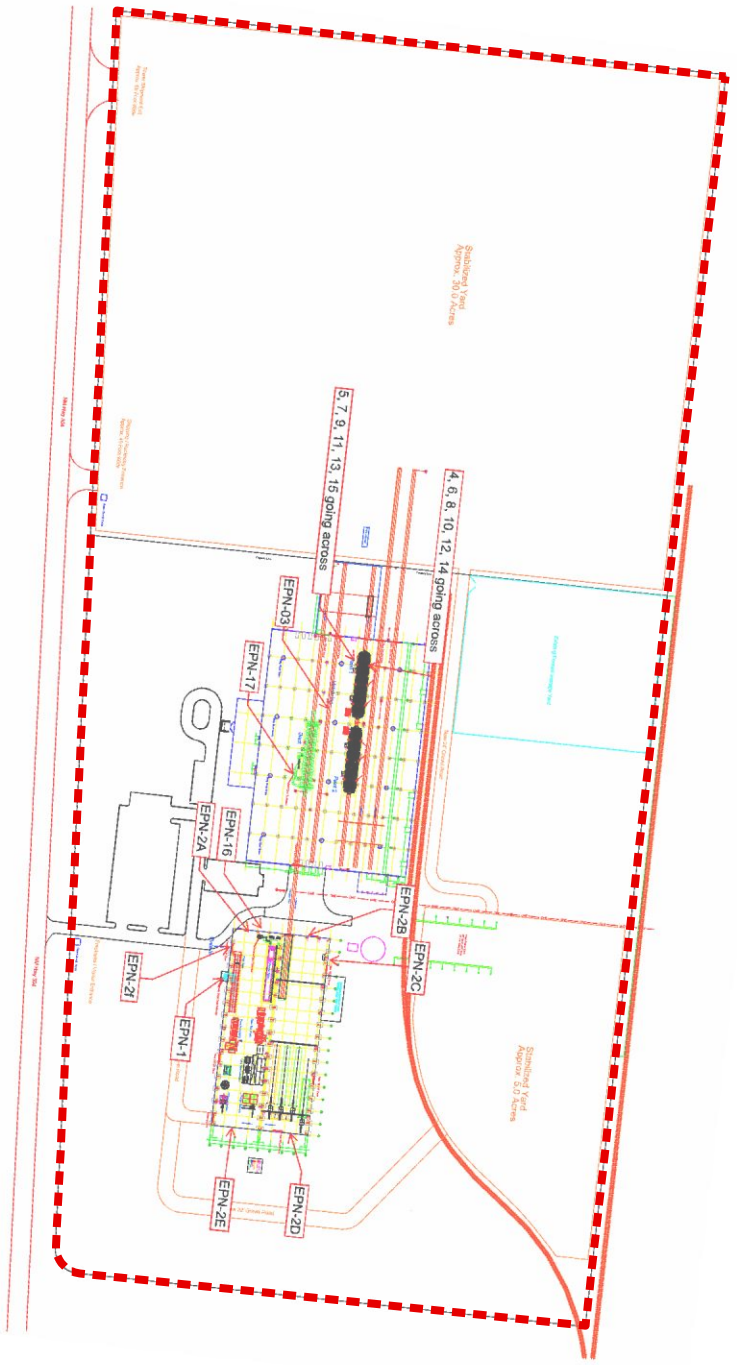
1951 NM-304, Belen, NM 87002

Figure 2

Section 5

Plot Plan Drawn To Scale

A **plot plan drawn to scale** showing emissions points, roads, structures, tanks, and fences of property owned, leased, or under direct control of the applicant. This plot plan must clearly designate the restricted area as defined in UA1, Section 1-D.12. The unit numbering system should be consistent throughout this application.



LEGEND

APPROXIMATE SITE BOUNDARY

Feet

0 200 400 800

DATA SOURCES:
ESRI - BING HYBRID BASEMAP
PLANT LAYOUT OVERLAY PROVIDED BY CLIENT
OVERLAY IS SCALED APPROXIMATELY

C:\Users\jlmarkel\OneDrive - Terracon Consultants Inc\Desktop\GIS\Projects\MP237101_Arcosa_Belen_NM\Maps\MP237101_Arcosa_Belen_NMMP237101_Arcosa_Belen_NM.aprx

Project No.:	MP237101
Date:	Sep 2023
Drawn By:	JLM
Reviewed By:	CL

Terracon
13400 15th Ave N
Plymouth, MN
PH. 763-489-3100 terracon.com

PLOT PLAN DRAWN TO SCALE

ENVIRONMENTAL REPORT
ARCOSA, INC
1951 HIGHWAY 304
BELEN, VALENCIA COUNTY, NM

Exhibit

2

Section 6

All Calculations

Show all calculations used to determine both the hourly and annual controlled and uncontrolled emission rates. All calculations shall be performed keeping a minimum of three significant figures. Document the source of each emission factor used (if an emission rate is carried forward and not revised, then a statement to that effect is required). If identical units are being permitted and will be subject to the same operating conditions, submit calculations for only one unit and a note specifying what other units to which the calculations apply. All formulas and calculations used to calculate emissions must be submitted. The "Calculations" tab in the UA2 has been provided to allow calculations to be linked to the emissions tables. Add additional "Calc" tabs as needed. If the UA2 or other spread sheets are used, all calculation spread sheet(s) shall be submitted electronically in Microsoft Excel compatible format so that formulas and input values can be checked. Format all spread sheets and calculations such that the reviewer can follow the logic and verify the input values. Define all variables. If calculation spread sheets are not used, provide the original formulas with defined variables. Additionally, provide subsequent formulas showing the input values for each variable in the formula. All calculations, including those calculations are imbedded in the Calc tab of the UA2 portion of the application, the printed Calc tab(s), should be submitted under this section.

Tank Flashing Calculations: The information provided to the AQB shall include a discussion of the method used to estimate tank-flashing emissions, relative thresholds (i.e., NOI, permit, or major source (NSPS, PSD or Title V)), accuracy of the model, the input and output from simulation models and software, all calculations, documentation of any assumptions used, descriptions of sampling methods and conditions, copies of any lab sample analysis. If Hysis is used, all relevant input parameters shall be reported, including separator pressure, gas throughput, and all other relevant parameters necessary for flashing calculation.

SSM Calculations: It is the applicant's responsibility to provide an estimate of SSM emissions or to provide justification for not doing so. In this Section, provide emissions calculations for Startup, Shutdown, and Routine Maintenance (SSM) emissions listed in the Section 2 SSM and/or Section 22 GHG Tables and the rational for why the others are reported as zero (or left blank in the SSM/GHG Tables). Refer to "Guidance for Submittal of Startup, Shutdown, Maintenance Emissions in Permit Applications (http://www.env.nm.gov/aqb/permit/app_form.html) for more detailed instructions on calculating SSM emissions. If SSM emissions are greater than those reported in the Section 2, Requested Allowables Table, modeling may be required to ensure compliance with the standards whether the application is NSR or Title V. Refer to the Modeling Section of this application for more guidance on modeling requirements.

Glycol Dehydrator Calculations: The information provided to the AQB shall include the manufacturer's maximum design recirculation rate for the glycol pump. If GRI-Glycalc is used, the full input summary report shall be included as well as a copy of the gas analysis that was used.

Road Calculations: Calculate fugitive particulate emissions and enter haul road fugitives in Tables 2-A, 2-D and 2-E for:

1. If you transport raw material, process material and/or product into or out of or within the facility and have PER emissions greater than 0.5 tpy.
2. If you transport raw material, process material and/or product into or out of the facility more frequently than one round trip per day.

Significant Figures:

A. All emissions standards are deemed to have at least two significant figures, but not more than three significant figures.

B. At least 5 significant figures shall be retained in all intermediate calculations.

C. In calculating emissions to determine compliance with an emission standard, the following rounding off procedures shall be used:

(1) If the first digit to be discarded is less than the number 5, the last digit retained shall not be changed;

(2) If the first digit discarded is greater than the number 5, or if it is the number 5 followed by at least one digit other than the number zero, the last figure retained shall be increased by one unit; **and**

(3) If the first digit discarded is exactly the number 5, followed only by zeros, the last digit retained shall be rounded upward if it is an odd number, but no adjustment shall be made if it is an even number.

(4) The final result of the calculation shall be expressed in the units of the standard.

Control Devices: In accordance with 20.2.72.203.A(3) and (8) NMAC, 20.2.70.300.D(5)(b) and (e) NMAC, and 20.2.73.200.B(7) NMAC, the permittee shall report all control devices and list each pollutant controlled by the control device regardless if the applicant takes credit for the reduction in emissions. The applicant can indicate in this section of the

application if they chose to not take credit for the reduction in emission rates. For notices of intent submitted under 20.2.73 NMAC, only uncontrolled emission rates can be considered to determine applicability unless the state or federal Acts require the control. This information is necessary to determine if federally enforceable conditions are necessary for the control device, and/or if the control device produces its own regulated pollutants or increases emission rates of other pollutants.

Calculations were included in the UA-2 spreadsheet.

Section 6.a

Green House Gas Emissions

(Submitting under 20.2.70, 20.2.72 20.2.74 NMAC)

Title V (20.2.70 NMAC), Minor NSR (20.2.72 NMAC), and PSD (20.2.74 NMAC) applicants must estimate and report greenhouse gas (GHG) emissions to verify the emission rates reported in the public notice, determine applicability to 40 CFR 60 Subparts, and to evaluate Prevention of Significant Deterioration (PSD) applicability. GHG emissions that are subject to air permit regulations consist of the sum of an aggregate group of these six greenhouse gases: carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6).

Calculating GHG Emissions:

1. Calculate the ton per year (tpy) GHG mass emissions and GHG CO_2e emissions from your facility.

2. GHG mass emissions are the sum of the total annual tons of greenhouse gases without adjusting with the global warming potentials (GWPs). GHG CO_2e emissions are the sum of the mass emissions of each individual GHG multiplied by its GWP found in Table A-1 in 40 CFR 98 Mandatory Greenhouse Gas Reporting.

3. Emissions from routine or predictable start up, shut down, and maintenance must be included.

4. Report GHG mass and GHG CO_2e emissions in Table 2-P of this application. Emissions are reported in **short** tons per year and represent each emission unit's Potential to Emit (PTE).

5. All Title V major sources, PSD major sources, and all power plants, whether major or not, must calculate and report GHG mass and CO2e emissions for each unit in Table 2-P.

6. For minor source facilities that are not power plants, are not Title V, and are not PSD there are three options for reporting GHGs in Table 2-P: 1) report GHGs for each individual piece of equipment; 2) report all GHGs from a group of unit types, for example report all combustion source GHGs as a single unit and all venting GHGs as a second separate unit; 3) or check the following **X** By checking this box, the applicant acknowledges the total CO2e emissions are less than 75,000 tons per year.

Sources for Calculating GHG Emissions:

- Manufacturer's Data
- AP-42 Compilation of Air Pollutant Emission Factors at http://www.epa.gov/ttn/chief/ap42/index.html
- EPA's Internet emission factor database WebFIRE at http://cfpub.epa.gov/webfire/
- 40 CFR 98 Mandatory Green House Gas Reporting except that tons should be reported in short tons rather than in metric tons for the purpose of PSD applicability.
- API Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry. August 2009 or most recent version.
- Sources listed on EPA's NSR Resources for Estimating GHG Emissions at http://www.epa.gov/nsr/clean-air-act-permitting-greenhouse-gases:

Global Warming Potentials (GWP):

Applicants must use the Global Warming Potentials codified in Table A-1 of the most recent version of 40 CFR 98 Mandatory Greenhouse Gas Reporting. The GWP for a particular GHG is the ratio of heat trapped by one unit mass of the GHG to that of one unit mass of CO_2 over a specified time period.

"Greenhouse gas" for the purpose of air permit regulations is defined as the aggregate group of the following six gases: carbon dioxide, nitrous oxide, methane, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. **(20.2.70.7 NMAC, 20.2.74.7 NMAC).** You may also find GHGs defined in 40 CFR 86.1818-12(a).

Metric to Short Ton Conversion:

Short tons for GHGs and other regulated pollutants are the standard unit of measure for PSD and title V permitting programs. 40 CFR 98 Mandatory Greenhouse Reporting requires metric tons.
1 metric ton = 1.10231 short tons (per Table A-2 to Subpart A of Part 98 – Units of Measure Conversions)

Section 7

Information Used To Determine Emissions

Information Used to Determine Emissions shall include the following:

- □ If manufacturer data are used, include specifications for emissions units and control equipment, including control efficiencies specifications and sufficient engineering data for verification of control equipment operation, including design drawings, test reports, and design parameters that affect normal operation.
- □ If test data are used, include a copy of the complete test report. If the test data are for an emissions unit other than the one being permitted, the emission units must be identical. Test data may not be used if any difference in operating conditions of the unit being permitted and the unit represented in the test report significantly effect emission rates.
- □ If the most current copy of AP-42 is used, reference the section and date located at the bottom of the page. Include a copy of the page containing the emissions factors, and clearly mark the factors used in the calculations.
- □ If an older version of AP-42 is used, include a complete copy of the section.
- □ If an EPA document or other material is referenced, include a complete copy.
- □ Fuel specifications sheet.
- □ If computer models are used to estimate emissions, include an input summary (if available) and a detailed report, and a disk containing the input file(s) used to run the model. For tank-flashing emissions, include a discussion of the method used to estimate tank-flashing emissions, relative thresholds (i.e., permit or major source (NSPS, PSD or Title V)), accuracy of the model, the input and output from simulation models and software, all calculations, documentation of any assumptions used, descriptions of sampling methods and conditions, copies of any lab sample analysis.

In Order

- AP-42 1.4-3 – Natural Gas Emission Factor
- AP-42 12.14 – Metallizing Emission Factors
- AP-42 12.19 - Welding Emission Factors
- Abrasive Grit Blasting Emission Factor
- Safety Data Sheets
  - PB-1 & PB-2
  - Metalizing
  - Welding
- PB-1 & PB-2 Control & HE-1 & HE-2 Firing Capacity
- AB-1 Control
- AB-2 Control
- PT-1 Control

Table 1.4-1. EMISSION FACTORS FOR NITROGEN OXIDES (NO_x) AND CARBON MONOXIDE (CO) FROM NATURAL GAS COMBUSTION[a]

Combustor Type (MMBtu/hr Heat Input) [SCC]	NO_x[b]		CO	
	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
Large Wall-Fired Boilers (>100) [1-01-006-01, 1-02-006-01, 1-03-006-01]				
Uncontrolled (Pre-NSPS)[c]	280	A	84	B
Uncontrolled (Post-NSPS)[c]	190	A	84	B
Controlled - Low NO_x burners	140	A	84	B
Controlled - Flue gas recirculation	100	D	84	B
Small Boilers (<100) [1-01-006-02, 1-02-006-02, 1-03-006-02, 1-03-006-03]				
Uncontrolled	100	B	84	B
Controlled - Low NO_x burners	50	D	84	B
Controlled - Low NO_x burners/Flue gas recirculation	32	C	84	B
Tangential-Fired Boilers (All Sizes) [1-01-006-04]				
Uncontrolled	170	A	24	C
Controlled - Flue gas recirculation	76	D	98	D
Residential Furnaces (<0.3) [No SCC]				
Uncontrolled	94	B	40	B

[a] Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. To convert from $lb/10^6$ scf to $kg/10^6$ m^3, multiply by 16. Emission factors are based on an average natural gas higher heating value of 1,020 Btu/scf. To convert from $lb/10^6$ scf to lb/MMBtu, divide by 1,020. The emission factors in this table may be converted to other natural gas heating values by multiplying the given emission factor by the ratio of the specified heating value to this average heating value. SCC = Source Classification Code. ND = no data. NA = not applicable.

[b] Expressed as NO_2. For large and small wall fired boilers with SNCR control, apply a 24 percent reduction to the appropriate NO_X emission factor. For tangential-fired boilers with SNCR control, apply a 13 percent reduction to the appropriate NO_X emission factor.

[c] NSPS=New Source Performance Standard as defined in 40 CFR 60 Subparts D and Db. Post-NSPS units are boilers with greater than 250 MMBtu/hr of heat input that commenced construction modification, or reconstruction after August 17, 1971, and units with heat input capacities between 100 and 250 MMBtu/hr that commenced construction modification, or reconstruction after June 19, 1984.

TABLE 1.4-2. EMISSION FACTORS FOR CRITERIA POLLUTANTS AND GREENHOUSE GASES FROM NATURAL GAS COMBUSTION[a]

Pollutant	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
CO_2[b]	120,000	A
Lead	0.0005	D
N_2O (Uncontrolled)	2.2	E
N_2O (Controlled-low-NO_X burner)	0.64	E
PM (Total)[c]	7.6	D
PM (Condensable)[c]	5.7	D
PM (Filterable)[c]	1.9	B
SO_2[d]	0.6	A
TOC	11	B
Methane	2.3	B
VOC	5.5	C

[a] Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. Data are for all natural gas combustion sources. To convert from $lb/10^6$ scf to $kg/10^6$ m^3, multiply by 16. To convert from $lb/10^6$ scf to 1b/MMBtu, divide by 1,020. The emission factors in this table may be converted to other natural gas heating values by multiplying the given emission factor by the ratio of the specified heating value to this average heating value. TOC = Total Organic Compounds. VOC = Volatile Organic Compounds.

[b] Based on approximately 100% conversion of fuel carbon to CO_2. $CO_2[lb/10^6 scf] = (3.67) (CON) (C)(D)$, where CON = fractional conversion of fuel carbon to CO_2, C = carbon content of fuel by weight (0.76), and D = density of fuel, $4.2x10^4$ $lb/10^6$ scf.

[c] All PM (total, condensible, and filterable) is assumed to be less than 1.0 micrometer in diameter. Therefore, the PM emission factors presented here may be used to estimate PM_{10}, $PM_{2.5}$ or PM_1 emissions. Total PM is the sum of the filterable PM and condensible PM. Condensible PM is the particulate matter collected using EPA Method 202 (or equivalent). Filterable PM is the particulate matter collected on, or prior to, the filter of an EPA Method 5 (or equivalent) sampling train.

[d] Based on 100% conversion of fuel sulfur to SO_2. Assumes sulfur content is natural gas of 2,000 grains/10^6 scf. The SO_2 emission factor in this table can be converted to other natural gas sulfur contents by multiplying the SO_2 emission factor by the ratio of the site-specific sulfur content (grains/10^6 scf) to 2,000 grains/10^6 scf.

Table 12.14-2 (English Units). UNCONTROLLED PARTICULATE EMISSION FACTORS FOR SECONDARY ZINC SMELTING[a]

Operation	Emissions	EMISSION FACTOR RATING
Reverberatory sweating[b] (in mg/Mg feed material)		
Clean metallic scrap (SCC 3-04-008-18)	Negligible	C
General metallic scrap (SCC 3-04-008-28)	13	C
Residual scrap (SCC 3-04-008-38)	32	C
Rotary sweating[c] (SCC 3-04-008-09)	11 - 25	C
Muffle sweating[c] (SCC 3-04-008-10)	10.8 - 32	C
Kettle sweating[b]		
Clean metallic scrap (SCC 3-04-008-14)	Negligible	C
General metallic scrap (SCC 3-04-008-24)	11	C
Residual scrap (SCC 3-04-008-34)	25	C
Electric resistance sweating[c] (SCC 3-04-008-11)	<10	C
Sodium carbonate leaching calcining[d] (SCC 3-04-008-06)	89	C
Kettle pot[d], mg/Mg product (SCC 3-04-008-03)	0.1	C
Crucible melting (SCC 3-04-008-41)	ND	NA
Reverberatory melting (SCC 3-04-008-42)	ND	NA
Electric induction melting (SCC 3-04-008-43)	ND	NA
Alloying (SCC 3-04-008-40)	ND	NA
Retort and muffle distillation, in lb/ton of product		
Pouring[c] (SCC 3-04-008-51)	0.4 - 0.8	C
Casting[c] (SCC 3-04-008-52)	0.2 - 0.4	C
Muffle distillation[d] (SCC 3-04-008-02)	45	C
Graphite rod distillation[c,e] (SCC 3-04-008-53)	Negligible	C
Retort distillation/oxidation[f] (SCC 3-04-008-54)	20 - 40	C
Muffle distillation/oxidation[f] (SCC 3-04-008-55)	20 - 40	C
Retort reduction (SCC 3-04-008-01)	47	C
Galvanizing[d] (SCC 3-04-008-05)	5	C

[a] Factors are for lb/ton of zinc used, except as noted. SCC = Source Classification Code. ND = no data. NA = not applicable.
[b] Reference 4.
[c] Reference 5.
[d] References 6-8.
[e] Reference 2.
[f] Reference 5. Factors are for lb/ton of ZnO produced. All product zinc oxide dust is carried over in the exhaust gas from the furnace and is recovered with 98 - 99% efficiency.

Table 12.19-1 (Metric And English Units). PM-10 EMISSION FACTORS FOR WELDING OPERATIONS[a]

Welding Process	Electrode Type (With Last 2 Digits Of SCC)		Total Fume Emission Factor (g/kg [lb/10^3 lb] Of Electrode Consumed)[b]	EMISSION FACTOR RATING
SMAW[c]	14Mn-4Cr	(-04)	81.6	C
(SCC 3-09-051)	E11018	(-08)[h]	16.4	C
	E308	(-12)[j]	10.8	C
	E310	(-16)[k]	15.1	C
	E316	(-20)[m]	10.0	C
	E410	(-24)[n]	13.2	D
	E6010	(-28)	25.6	B
	E6011	(-32)	38.4	C
	E6012	(-36)	8.0	D
	E6013	(-40)	19.7	B
	E7018	(-44)	18.4	C
	E7024	(-48)	9.2	C
	E7028	(-52)	18.0	C
	E8018	(-56)[p]	17.1	C
	E9015	(-60)[q]	17.0	D
	E9018	(-64)[r]	16.9	C
	ECoCr	(-68)[s]	27.9	C
	ENi-Cl	(-72)	18.2	C
	ENiCrMo	(-76)[t]	11.7	C
	ENi-Cu	(-80)[u]	10.1	C
GMAW[d,e]	E308L	(-12)[v]	5.4	C
(SCC 3-09-052)	E70S	(-54)[w]	5.2	A
	ER1260	(-10)	20.5	D
	ER5154	(-26)	24.1	D
	ER316	(-20)[x]	3.2	C
	ERNiCrMo	(-76)[y]	3.9	C
	ERNiCu	(-80)[z]	2.0	C

Table 12.19-1 (cont.).

Welding Process	Electrode Type (With Last 2 Digits Of SCC)		Total Fume Emission Factor (g/kg [lb/10^3 lb] Of Electrode Consumed)[b]	EMISSION FACTOR RATING
FCAW[f,g] (SCC 3-09-053)	E110	(-06)[aa]	20.8	D
	E11018	(-08)	57.0	D
	E308LT	(-12)[bb]	9.1	C
	E316LT	(-20)[cc]	8.5	B
	E70T	(-54)[dd]	15.1	B
	E71T	(-55)[ee]	12.2	B
SAW[g] (SCC 3-09-054)	EM12K	(-10)[ff]	0.05	C

[a] References 7-18. SMAW = shielded metal arc welding; GMAW = gas metal arc welding; FCAW = flux cored arc welding; SAW = submerged arc welding. SCC = Source Classification Code.
[b] Mass of pollutant emitted per unit mass of electrode consumed. All welding fume is considered to be PM-10 (particles ≤ 10 μm in aerodynamic diameter).
[c] Current = 102 to 229 A; voltage = 21 to 34 V.
[d] Current = 160 to 275 A; voltage = 20 to 32 V.
[e] Current = 275 to 460 A; voltage = 19 to 32 V.
[f] Current = 450 to 550 A; voltage = 31 to 32 V.
[g] Type of shielding gas employed will influence emission factor.
[h] Includes E11018-M
[j] Includes E308-16 and E308L-15
[k] Includes E310-16
[m] Includes E316-15, E316-16, and E316L-16
[n] Includes E410-16
[p] Includes E8018C3
[q] Includes E9015B3
[r] Includes E9018B3 and E9018G
[s] Includes ECoCr-A
[t] Includes ENiCrMo-4
[u] Includes ENi-Cu-2
[v] Includes E308LSi
[w] Includes E70S-3, E70S-5, and E70S-6
[x] Includes ER316I-Si and ER316L-Si
[y] Includes ENiCrMo-3 and ENi-CrMo-4
[z] Includes ERNiCu-7
[aa] Includes E110TS-K3
[bb] Includes E308LT-3
[cc] Includes E316LT-3
[dd] Includes E70T-1, E70T-2, E70T-4, E70T-5, E70T-7, and E70T-G
[ee] Includes E71T-1 and E71T-11
[ff] Includes EM12K1 and F72-EM12K2

Air emissions from abrasive blasting

Flow Rate at the nozzle (lb abrasive/hr)* **0 lb/hr (adjusted with material density)**

Internal Nozzle Diameter (inches)	Nozzle Pressure (psig)														Diameter	Pressure	Flow rate	Material
	30	40	50	60	70	80	90	100	110	120	130	140	Coefficient	Area	0	0	0	Choose one
1/8	28	35	42	49	55	63	70	77	84	91	97	104	14	0.012			0	
3/16	65	80	94	107	122	135	149	165	178	190	203	215	31.5	0.028			0	
1/4	109	138	168	195	221	255	280	309	329	349	368	388	56	0.049			0	
5/16	205	247	292	354	377	420	462	507	534	561	588	615	87.5	0.077			0	
3/8	285	355	417	477	540	600	657	720	752	784	816	847	126	0.110			0	
7/16	385	472	560	645	755	820	905	940	975	1009	1044	1078	171.5	0.150			0	
1/2	503	615	725	835	945	1050	1160	1265	1304	1343	1382	1421	224	0.196			0	
5/8	820	990	1170	1336	1510	1680	1850	2030	2075	2120	2165	2210	350	0.307			0	
3/4	1140	1420	1670	1915	2160	2400	2630	2880	2928	2975	3023	3071	504	0.442			0	
1	2030	2460	2900	3340	3780	4200	4640	5060	5111	5162	5212	5263	896	0.785			0	

*The flow rates in the above chart are for sand. If you are using steel or aluminum oxide as your abrasive blast material, the spreadsheet will automatically convert the flow rate provided to these other abrasive material types. Flow rates in grey are using the original guidance ratio equation from SCAQMD Memorandum from J. Nenzell to Metallurgical Engineers, Subject: Abrasive Blasting, March 13, 1975.

Emission Factors for Abrasives*	PM (lb PM/lb abrasive)	PM10 (lb PM10/lb of Abrasive)**
Sand	0.041	0.029
Grit	0.010	0.007
Shot	0.004	0.0034
Other	0.01	0.01

PM10 emissions derived from STAPPA/ALAPCO PM10 factors which were based on the amount of PM generated: sand = 0.7 lbs PM10 per lb of PM; grit= 0.7 lb PM10 per lb of PM; Steel shot = 0.86 lb PM10 per lb of PM
For "Other", assume PM10=PM

SAFETY DATA SHEET

INTERGARD 345 LIGHT BASE PART A

Section 1. Chemical product and company identification

GHS product identifier : **INTERGARD 345 LIGHT BASE PART A**

Product code : **AAA130**

Relevant identified uses of the substance or mixture and uses advised against

Identified uses
Professional application of coatings and inks

Uses advised against	Reason
All Other Uses	

Supplier's details : International Farg AB
Holmedalen 3
Aspereds Industriomrade
SE-424 22 Angered
Sweden

Tel: +46 (0) 31 928500 Fax: +46 (0) 31 928530

Emergency telephone number (with hours of operation) : +46 8 33 12 31

National advisory body/ Poison Centre (For use only by licensed medical professionals.) : +7 343 229 98 57

e-mail address of person responsible for this SDS : sdsfellinguk@akzonobel.com

Akzo Nobel N.V., International Paint Ltd., 1990020, St. Petersburg, Russia

Tel: +7 812 747 30 52 Fax: +7 812 747 30 51

Section 2. Hazards identification

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 3
SKIN CORROSION/IRRITATION - Category 2
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
SKIN SENSITIZATION - Category 1
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
ACUTE AQUATIC HAZARD - Category 2
LONG-TERM AQUATIC HAZARD - Category 2

GHS label elements

Section 2. Hazards identification

Hazard pictograms :

Signal word : Danger

Hazard statements : Flammable liquid and vapour.
Causes serious eye damage.
Causes skin irritation.
May cause an allergic skin reaction.
May cause respiratory irritation.
Toxic to aquatic life with long lasting effects.

Precautionary statements

Prevention : Wear protective gloves. Wear eye or face protection. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Avoid breathing vapour. Wash hands thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace.

Response : Collect spillage. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or physician if you feel unwell. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and wash it before reuse. If skin irritation or rash occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician.

Storage : Store locked up. Store in a well-ventilated place. Keep cool.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Supplemental label elements : Wear appropriate respirator when ventilation is inadequate.

Other hazards which do not result in classification : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	% by weight	CAS number	Classification
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2,2'-[(1-methylethylidene)bis(4, 1-phenyleneoxymethylene)]bis[oxirane]	≥10 - ≤25	25036-25-3	Skin Irrit. 2, H315 Eye Irrit. 2A, H319 Skin Sens. 1, H317
Solvent naphtha (petroleum), light arom.	≤13	64742-95-6	Flam. Liq. 3, H226 STOT SE 3, H335 STOT SE 3, H336 Asp. Tox. 1, H304 Aquatic Chronic 2, H411
reaction product: bisphenol-A-(epichlorhydrin); epoxy resin	≤10	25068-38-6	Skin Irrit. 2, H315 Eye Irrit. 2A, H319

Section 3. Composition/information on ingredients

			Skin Sens. 1, H317 Aquatic Chronic 2, H411
xylene	≤10	1330-20-7	Flam. Liq. 3, H226 Acute Tox. 4, H312 Acute Tox. 4, H332 Skin Irrit. 2, H315 Eye Irrit. 2A, H319 STOT SE 3, H335 Asp. Tox. 1, H304
butan-1-ol	≤6.7	71-36-3	Flam. Liq. 3, H226 Acute Tox. 4, H302 Skin Irrit. 2, H315 Eye Dam. 1, H318 STOT SE 3, H335 STOT SE 3, H336
trizinc bis(orthophosphate)	≤10	7779-90-0	Aquatic Acute 1, H400 Aquatic Chronic 1, H410
zinc oxide	≤0.3	1314-13-2	Aquatic Acute 1, H400 Aquatic Chronic 1, H410

There are no ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.

Inhalation : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Get medical attention immediately. Call a poison center or physician. Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Section 4. First aid measures

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : May cause respiratory irritation.

Skin contact : Causes skin irritation. May cause an allergic skin reaction.

Ingestion : Irritating to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:
pain
watering
redness

Inhalation : Adverse symptoms may include the following:
respiratory tract irritation
coughing
headache
drowsiness/fatigue
dizziness/vertigo
muscle weakness
unconsciousness

Skin contact : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur

Ingestion : Adverse symptoms may include the following:
stomach pains

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Firefighting measures

Extinguishing media

Suitable extinguishing media : Use dry chemical, CO_2, water spray (fog) or foam.

Unsuitable extinguishing media : Do not use water jet.

Specific hazards arising from the chemical : Flammable liquid and vapour. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. Runoff to sewer may create fire or explosion hazard. This material is toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Section 5. Firefighting measures

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
phosphorus oxides
metal oxide/oxides

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

Methods and material for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not breathe vapour or mist. Do not ingest. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating,

Section 7. Handling and storage

lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container. Dry sanding, flame cutting and/or welding of the dry paint film will give rise to dust and/or hazardous fumes. Wet sanding/flatting should be used wherever possible. If exposure cannot be avoided by the provision of local exhaust ventilation, suitable respiratory protective equipment should be used.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Vapours are heavier than air and may spread along floors. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
xylene	**РО МинЗдраСоц ПДК (Russian Federation, 9/2011).** TWA: 50 mg/m³ 8 hours. Form: vapor and/or gases CEIL: 150 mg/m³ Form: vapor and/or gases
butan-1-ol	**РО МинЗдраСоц ПДК (Russian Federation, 9/2011).** TWA: 10 mg/m³ 8 hours. Form: vapor and/or gases CEIL: 30 mg/m³ Form: vapor and/or gases
zinc oxide	**РО МинЗдраСоц ПДК (Russian Federation, 9/2011).** TWA: 0.5 mg/m³ 8 hours. Form: Aerosol CEIL: 1.5 mg/m³ Form: Aerosol

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapour or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Section 8. Exposure controls/personal protection

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead.

Skin protection

Hand protection : Use chemical resistant gloves classified under Standard EN 374: Protective gloves against chemicals and micro-organisms. Recommended: Viton® or Nitrile gloves. When prolonged or frequently repeated contact may occur, a glove with a protection class of 6 (breakthrough time greater than 480 minutes according to EN 374) is recommended. When only brief contact is expected, a glove with a protection class of 2 or higher (breakthrough time greater than 30 minutes according to EN 374) is recommended. The user must check that the final choice of type of glove selected for handling this product is the most appropriate and takes into account the particular conditions of use, as included in the user's risk assessment. NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/ puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier. Barrier creams may help to protect the exposed areas of the skin but should not be applied once exposure has occurred.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid.

Colour : White.

Odour : Solvent.

Odour threshold : Not available.

pH : Not applicable.

Melting point : Not available.

Boiling point : Lowest known value: 140 to 200°C (284 to 392°F)(Solvent naphtha (petroleum), light arom.).

Flash point : Closed cup: 33°C (91.4°F)

Evaporation rate : Not available.

Flammability (solid, gas) : Not available.

Section 9. Physical and chemical properties

Lower and upper explosive (flammable) limits : Greatest known range: Lower: 1.4% Upper: 11.3% (butan-1-ol)

Vapour pressure : Not available.

Vapour density : Not available.

Relative density : 1.528

Solubility : Insoluble in the following materials: cold water.

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Kinematic (room temperature): 513 mm^2/s (513 cSt)

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Solvent naphtha (petroleum), light arom.	LD50 Oral	Rat	8400 mg/kg	-
xylene	LD50 Oral	Rat	4300 mg/kg	-
butan-1-ol	LC50 Inhalation Vapour	Rat	24 mg/l	4 hours
	LD50 Dermal	Rabbit	3400 mg/kg	-
	LD50 Oral	Rat	790 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Solvent naphtha (petroleum), light arom.	Eyes - Mild irritant	Rabbit	-	24 hours 100 microliters	-
reaction product: bisphenol-A-(epichlorhydrin); epoxy resin	Eyes - Mild irritant	Rabbit	-	100 milligrams	-
	Eyes - Moderate irritant	Rabbit	-	24 hours 20 milligrams	-
	Eyes - Severe irritant	Rabbit	-	24 hours 5 milligrams	-
	Skin - Moderate irritant	Rabbit	-	24 hours 500 microliters	-

Section 11. Toxicological information

	Skin - Severe irritant	Rabbit	-	24 hours 2 milligrams	-
butan-1-ol	Eyes - Severe irritant	Rabbit	-	24 hours 2 milligrams	-
	Eyes - Severe irritant	Rabbit	-	0.005 Mililiters	-
	Skin - Moderate irritant	Rabbit	-	24 hours 20 milligrams	-
zinc oxide	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-

Sensitisation

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
Solvent naphtha (petroleum), light arom.	Category 3	Not applicable.	Respiratory tract irritation and Narcotic effects
xylene	Category 3	Not applicable.	Respiratory tract irritation
butan-1-ol	Category 3	Not applicable.	Respiratory tract irritation and Narcotic effects

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Name	Result
Solvent naphtha (petroleum), light arom.	ASPIRATION HAZARD - Category 1
xylene	ASPIRATION HAZARD - Category 1

Information on likely routes of exposure : Not available.

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : May cause respiratory irritation.

Skin contact : Causes skin irritation. May cause an allergic skin reaction.

Ingestion : Irritating to mouth, throat and stomach.

Symptoms related to the physical, chemical and toxicological characteristics

Section 11. Toxicological information

Eye contact : Adverse symptoms may include the following:
pain
watering
redness

Inhalation : Adverse symptoms may include the following:
respiratory tract irritation
coughing
headache
drowsiness/fatigue
dizziness/vertigo
muscle weakness
unconsciousness

Skin contact : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur

Ingestion : Adverse symptoms may include the following:
stomach pains

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral Dermal Inhalation (vapours)	14193.2 mg/kg 19368.3 mg/kg 193.7 mg/l

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Solvent naphtha (petroleum), light arom.	Acute EC50 6.14 mg/m³	Daphnia	48 hours
	Acute LC50 9.22 mg/m³	Fish - Mykiss	96 hours
xylene	Acute LC50 8500 µg/l Marine water	Crustaceans - Palaemonetes pugio	48 hours
	Acute LC50 13400 µg/l Fresh water	Fish - Pimephales promelas	96 hours
butan-1-ol	Acute EC50 1983 to 2072 mg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 1910 mg/l Fresh water	Fish - Pimephales promelas - Juvenile (Fledgling, Hatchling, Weanling)	96 hours
trizinc bis(orthophosphate)	Acute EC50 1.08 mg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute IC50 0.136 mg/l	Algae - Selenastrum capricornutum	72 hours
	Acute LC50 0.09 mg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
	Chronic NOEC 1.08 mg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Chronic NOEC 0.036 mg/l Fresh water	Fish - Oncorhynchus mykiss - Adult	25 days
zinc oxide	Acute EC50 0.042 mg/l Fresh water	Algae - Pseudokirchneriella subcapitata - Exponential growth phase	72 hours
	Acute EC50 1 mg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute IC50 0.17 mg/l	Algae - Selenastrum capricornutum	72 hours
	Acute LC50 1.1 mg/l	Fish - Oncorhynchus Mykiss	96 hours
	Chronic NOEC 0.017 mg/l Fresh water	Algae - Pseudokirchneriella subcapitata - Exponential growth phase	72 hours

Persistence and degradability

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
reaction product: bisphenol-A-(epichlorhydrin); epoxy resin	-	-	Not readily
trizinc bis(orthophosphate)	-	-	Not readily
zinc oxide	-	-	Not readily

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
reaction product: bisphenol-A-(epichlorhydrin); epoxy resin	2.64 to 3.78	-	low
xylene	3.12	8.1 to 25.9	low
butan-1-ol	1	-	low
zinc oxide	-	60960	high

Mobility in soil

Soil/water partition coefficient (K_{OC}) : Not available.

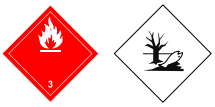
Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimised wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.

Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapour from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	ADR/RID	IMDG	IATA
UN number	UN1263	UN1263	UN1263
UN proper shipping name	PAINT	PAINT. Marine pollutant (Solvent naphtha (petroleum), light arom., reaction product: bisphenol-A-(epichlorhydrin); epoxy resin)	PAINT
Transport hazard class(es)	3 	3 	3 
Packing group	III	III	III
Environmental hazards	Yes.	Yes.	No.
Additional information	The environmentally hazardous substance mark is not required when transported in sizes of ≤5 L or ≤5 kg. **Special provisions** 640 (E) **Tunnel code** (D/E)	The marine pollutant mark is not required when transported in sizes of ≤5 L or ≤5 kg.	The environmentally hazardous substance mark may appear if required by other transportation regulations.

IMDG Code Segregation group : Not applicable.

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Section 15. Regulatory information

Safety, health and environmental regulations specific for the product : No known specific national and/or regional regulations applicable to this product (including its ingredients).

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol (Annexes A, B, C, E)

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Inform Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

References : STATE STANDARD OF RUSSIAN FEDERATION No. 19433-88 'Hazardous Cargo. Classification and Labelling'
Labour Code of the Russian Federation No. 197-FZ of 30 December 2001

Section 16. Other information

Justification

Classification	Justification
FLAMMABLE LIQUIDS - Category 3	On basis of test data
SKIN CORROSION/IRRITATION - Category 2	Calculation method
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1	Calculation method
SKIN SENSITIZATION - Category 1	Calculation method
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3	Calculation method
ACUTE AQUATIC HAZARD - Category 2	Calculation method
LONG-TERM AQUATIC HAZARD - Category 2	Calculation method

History

Date of printing : 18/07/2017

Date of issue/Date of revision : 18/07/2017

Date of previous issue : 26/04/2017

Version : 5

Key to abbreviations : ADN = European Provisions concerning the International Carriage of Dangerous Goods by Inland Waterway
ADR = The European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
RID = The Regulations concerning the International Carriage of Dangerous Goods by Rail
UN = United Nations

Section 16. Other information

References : Not available.

Indicates information that has changed from previously issued version.

Notice to reader

IMPORTANT NOTE: the information contained in this data sheet (as may be amended from time to time) is not intended to be exhaustive and is presented in good faith and believed to be correct as of the date on which it is prepared. It is the user's responsibility to verify that this data sheet is current prior to using the product to which it relates.

Persons using the information must make their own determinations as to the suitability of the relevant product for their purposes prior to use. Where those purposes are other than as specifically recommended in this safety data sheet, then the user uses the product at their own risk.

MANUFACTURER'S DISCLAIMER: the conditions, methods and factors affecting the handling, storage, application, use and disposal of the product are not under the control and knowledge of the manufacturer. Therefore the manufacturer does not assume responsibility for any adverse events which may occur in the handling, storage, application, use, misuse or disposal of the product and, so far as permitted by applicable law, the manufacturer expressly disclaims liability for any and all loss, damages and/or expenses arising out of or in any way connected to the storage, handling, use or disposal of the product. Safe handling, storage, use and disposal are the responsibility of the users. Users must comply with all applicable health and safety laws.

Unless we have agreed to the contrary, all products are supplied by us subject to our standard terms and conditions of business, which include limitations of liability. Please make sure to refer to these and / or the relevant agreement which you have with AkzoNobel (or its affiliate, as the case may be).

In accordance with the Standard for Classification and Labelling of Chemical Substance and Material Safety Data Sheet, Article 10 Paragraph 1

SAFETY DATA SHEET

Interthane 990 White Part A

Section 1. Chemical product and company identification

A. Product name : **Interthane 990 White Part A**

Product code : **PHB000**

B. Relevant identified uses of the substance or mixture and uses advised against

Identified uses
Professional application of coatings and inks

Uses advised against	Reason
All Other Uses	

C. Manufacturer : International Paint Ltd.
Stoneygate Lane
Felling
Gateshead
Tyne and Wear
NE10 0JY UK
Tel: +44 (0)191 469 6111 Fax: +44 (0)191 438 3711

Emergency telephone number (with hours of operation) : +44 (0)191 469 6111 (24H)

e-mail address of person responsible for this SDS : sdsfellinguk@akzonobel.com

Section 2. Hazards identification

A. Hazard classification : FLAMMABLE LIQUIDS - Category 3
SKIN CORROSION/IRRITATION - Category 2
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2
CARCINOGENICITY - Category 2
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1
LONG-TERM AQUATIC HAZARD - Category 3

B. GHS label elements, including precautionary statements

Symbol :

Signal word : Danger

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Section 2. Hazards identification

Hazard statements : Flammable liquid and vapour.
Causes serious eye irritation.
Causes skin irritation.
Suspected of causing cancer.
May cause respiratory irritation.
May cause drowsiness or dizziness.
Causes damage to organs through prolonged or repeated exposure.
Harmful to aquatic life with long lasting effects.

Precautionary statements

Prevention : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Wear protective gloves. Wear eye or face protection. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Do not breathe vapour. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling.

Response : Get medical attention if you feel unwell. IF exposed or concerned: Get medical attention. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or physician if you feel unwell. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing. If skin irritation occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.

Storage : Store locked up. Store in a well-ventilated place. Keep cool.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Supplemental label elements : Wear appropriate respirator when ventilation is inadequate.

C. Other hazards which do not result in classification : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	Common name	CAS number	%	Classification
titanium dioxide	Titanium dioxide	13463-67-7	≥15 - <20	Carc. 2, H351
Solvent naphtha (petroleum), light arom.	solvent naphtha (petroleum), light arom.	64742-95-6	≥10 - <20	Flam. Liq. 3, H226 STOT SE 3, H335 STOT SE 3, H336 Asp. Tox. 1, H304 Aquatic Chronic 2, H411
xylene	xylene	1330-20-7	≥10 - <15	Flam. Liq. 3, H226 Acute Tox. 4, H312 Acute Tox. 4, H332 Skin Irrit. 2, H315 Eye Irrit. 2, H319

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Section 3. Composition/information on ingredients

				STOT SE 3, H336 STOT RE 1, H372
1,2,4-trimethylbenzene	1,2,4-trimethylbenzene	95-63-6	<10	Flam. Liq. 3, H226 Acute Tox. 4, H332 Skin Irrit. 2, H315 Eye Irrit. 2, H319 STOT SE 3, H335 Aquatic Chronic 2, H411
ethylbenzene	ethylbenzene	100-41-4	≥0.1 - <5	Flam. Liq. 2, H225 Acute Tox. 4, H332 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Carc. 2, H351 STOT SE 3, H335 STOT RE 2, H373 (hearing organs) Asp. Tox. 1, H304
mesitylene	mesitylene	108-67-8	<10	Flam. Liq. 3, H226 Skin Irrit. 2, H315 Eye Irrit. 2, H319 STOT SE 3, H335 Aquatic Chronic 2, H411

There are no ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

A. Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.

B. Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.

C. Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

D. Ingestion : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. If necessary, call a poison center or physician. Never give anything by

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Section 4. First aid measures

mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

E. Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Firefighting measures

A. Extinguishing media

Suitable extinguishing media : Use dry chemical, CO_2, water spray (fog) or foam.

Unsuitable extinguishing media : Do not use water jet.

B. Specific hazards arising from the chemical : Flammable liquid and vapour. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. Runoff to sewer may create fire or explosion hazard. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
metal oxide/oxides

C. Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Special precautions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Section 6. Accidental release measures

A. Personal precautions, protective equipment and emergency procedures : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

B. Environmental precautions : Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

C. Methods and material for containment and cleaning up

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Section 6. Accidental release measures

Small spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

A. Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapour or mist. Do not ingest. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

B. Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Vapours are heavier than air and may spread along floors. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

A. Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
titanium dioxide	**Ministry of Labor (Republic of Korea, 8/2013).** TWA: 10 mg/m³ 8 hours. Form: total dust with less than 1% of free SiO2
xylene	**Ministry of Labor (Republic of Korea, 8/2013).** STEL: 655 mg/m³ 15 minutes. STEL: 150 ppm 15 minutes.

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Section 8. Exposure controls/personal protection

	TWA: 435 mg/m³ 8 hours. TWA: 100 ppm 8 hours.
1,2,4-trimethylbenzene	**Ministry of Labor (Republic of Korea, 8/2013).** TWA: 125 mg/m³ 8 hours. TWA: 25 ppm 8 hours.
ethylbenzene	**Ministry of Labor (Republic of Korea, 8/2013).** STEL: 545 mg/m³ 15 minutes. STEL: 125 ppm 15 minutes. TWA: 435 mg/m³ 8 hours. TWA: 100 ppm 8 hours.
mesitylene	**Ministry of Labor (Republic of Korea, 8/2013).** TWA: 125 mg/m³ 8 hours. TWA: 25 ppm 8 hours.

B. Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapour or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

C. Personal protective equipment

Respiratory protection : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Eye protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

Hand protection : Use chemical resistant gloves classified under Standard EN 374: Protective gloves against chemicals and micro-organisms. Recommended: Viton® or Nitrile gloves. When prolonged or frequently repeated contact may occur, a glove with a protection class of 6 (breakthrough time greater than 480 minutes according to EN 374) is recommended. When only brief contact is expected, a glove with a protection class of 2 or higher (breakthrough time greater than 30 minutes according to EN 374) is recommended. The user must check that the final choice of type of glove selected for handling this product is the most appropriate and takes into account the particular conditions of use, as included in the user's risk assessment. NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/ puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier. Barrier creams may help to protect the exposed areas of the skin but should not be applied once exposure has occurred.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.

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Section 8. Exposure controls/personal protection

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Section 9. Physical and chemical properties

A. Appearance

Physical state : Liquid.

Colour : White.

B. Odour : Solvent.

C. Odour threshold : Not available.

D. pH : Not applicable.

E. Melting/freezing point : Not available.

F. Boiling point/boiling range : Lowest known value: 136.16°C (277.1°F) (xylene).

G. Flash point : Closed cup: 34°C (93.2°F)

Fire point : Not available.

H. Evaporation rate : Not available.

I. Flammability (solid, gas) : Not available.

J. Lower and upper explosive (flammable) limits : Greatest known range: Lower: 1.4% Upper: 7.6% (Solvent naphtha (petroleum), light arom.)

K. Vapour pressure : Not available.

L. Solubility : Insoluble in the following materials: cold water.

M. Vapour density : Not available.

N. Relative density : 1.24

O. Partition coefficient: n-octanol/water : Not available.

P. Auto-ignition temperature : Not available.

Q. Decomposition temperature : Not available.

R. Viscosity : Kinematic (room temperature): 259 mm^2/s (259 cSt)

S. Molecular weight : Not applicable.

Section 10. Stability and reactivity

A. Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

B. Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

C. Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials

D. Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

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Section 11. Toxicological information

A. Information on likely routes of exposure : Not available.

Potential acute health effects

Inhalation : Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness. May cause respiratory irritation.

Ingestion : Can cause central nervous system (CNS) depression. Irritating to mouth, throat and stomach.

Skin contact : Causes skin irritation.

Eye contact : Causes serious eye irritation.

Over-exposure signs/symptoms

Inhalation : Adverse symptoms may include the following:
respiratory tract irritation
coughing
nausea or vomiting
headache
drowsiness/fatigue
dizziness/vertigo
muscle weakness
unconsciousness

Ingestion : No specific data.

Skin contact : Adverse symptoms may include the following:
irritation
redness

Eye contact : Adverse symptoms may include the following:
pain or irritation
watering
redness

B. Health hazards

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Solvent naphtha (petroleum), light arom.	LD50 Oral	Rat	8400 mg/kg	-
xylene	LD50 Oral	Rat	4300 mg/kg	-
1,2,4-trimethylbenzene	LC50 Inhalation Vapour	Rat	18000 mg/m³	4 hours
	LD50 Oral	Rat	5 g/kg	-
ethylbenzene	LC50 Inhalation Gas.	Rabbit	4000 ppm	4 hours
	LD50 Dermal	Rabbit	17800 mg/kg	-
	LD50 Oral	Rat	3500 mg/kg	-
mesitylene	LC50 Inhalation Vapour	Rat	24000 mg/m³	4 hours
	LD50 Oral	Rat	5000 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
titanium dioxide	Skin - Mild irritant	Human	-	72 hours 300 Micrograms Intermittent	-
Solvent naphtha (petroleum), light arom.	Eyes - Mild irritant	Rabbit	-	24 hours 100 microliters	-
ethylbenzene	Eyes - Severe irritant	Rabbit	-	500 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 15 milligrams	-

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Section 11. Toxicological information

mesitylene	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Moderate irritant	Rabbit	-	24 hours 20 milligrams	-

Sensitisation

Not available.

CMR - ISHA Article 42 Public Notice No 2013-38 Occupational Exposure Limits

Product/ingredient name	CAS number	Classification
Titanium dioxide	13463-67-7	Carc. 2
Ethyl benzene	100-41-4	Carc. 2

Mutagenicity

Not available.

Carcinogenicity

Not available.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
Solvent naphtha (petroleum), light arom.	Category 3	Not applicable.	Respiratory tract irritation and Narcotic effects
xylene	Category 3	Not applicable.	Narcotic effects
1,2,4-trimethylbenzene	Category 3	Not applicable.	Respiratory tract irritation
ethylbenzene	Category 3	Not applicable.	Respiratory tract irritation
mesitylene	Category 3	Not applicable.	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
xylene	Category 1	Not determined	Not determined
ethylbenzene	Category 2	Not determined	hearing organs

Aspiration hazard

Name	Result
Solvent naphtha (petroleum), light arom.	ASPIRATION HAZARD - Category 1
ethylbenzene	ASPIRATION HAZARD - Category 1

Potential chronic health effects

Chronic toxicity

Not available.

General : Causes damage to organs through prolonged or repeated exposure.

Carcinogenicity : Suspected of causing cancer. Risk of cancer depends on duration and level of exposure.

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Section 11. Toxicological information

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

ATE value

Route	Result
Oral	21542.6 mg/kg
Dermal	10246.9 mg/kg
Inhalation (vapours)	66.62 mg/l

Section 12. Ecological information

A. Ecotoxicity

Product/ingredient name	Result	Species	Exposure
Solvent naphtha (petroleum), light arom.	Acute EC50 6.14 mg/m³	Daphnia	48 hours
	Acute LC50 9.22 mg/m³	Fish - Mykiss	96 hours
xylene	Acute LC50 8500 µg/l Marine water	Crustaceans - Palaemonetes pugio	48 hours
	Acute LC50 13400 µg/l Fresh water	Fish - Pimephales promelas	96 hours
1,2,4-trimethylbenzene	Acute LC50 4910 µg/l Marine water	Crustaceans - Elasmopus pectenicrus - Adult	48 hours
	Acute LC50 22.4 mg/l Fresh water	Fish - Tilapia zillii	96 hours
ethylbenzene	Acute EC50 3.6 mg/l Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours
	Acute LC50 18.4 to 25.4 mg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 5.1 to 5.7 mg/l Marine water	Fish - Menidia menidia	96 hours
mesitylene	Acute LC50 13000 µg/l Marine water	Crustaceans - Cancer magister - Zoea	48 hours
	Acute LC50 12520 to 15050 µg/l Fresh water	Fish - Carassius auratus	96 hours
	Chronic NOEC 400 µg/l Fresh water	Daphnia - Daphnia magna	21 days

B. Persistence and degradability

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
ethylbenzene	-	-	Readily

C. Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
titanium dioxide	-	352	low
xylene	3.12	8.1 to 25.9	low
1,2,4-trimethylbenzene	3.63	243	low
ethylbenzene	3.6	15	low
mesitylene	3.42	186.208713666	low

D. Mobility in soil

Soil/water partition coefficient (K_{OC}) : Not available.

:

Section 12. Ecological information

E. Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

A. Disposal methods : The generation of waste should be avoided or minimised wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.

Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

B. Disposal precautions : This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapour from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	UN	IMDG	IATA
A. UN number	UN1263	UN1263	UN1263
B. UN proper shipping name	PAINT	PAINT	PAINT
C. Transport hazard class(es)	3 	3 	3 
D. Packing group	III	III	III
E. Environmental hazards	No.	No.	No.
F. Additional information	-	-	-

IMDG Code Segregation group : Not applicable.

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Section 15. Regulatory information

A. Regulation according to ISHA

ISHA article 37 (Harmful substances prohibited from manufacture) : None of the components are listed.

:

Section 15. Regulatory information

ISHA article 38 (Harmful substances requiring permission) : None of the components are listed.

Article 2 of Youth Protection Act on Substances Hazardous to Youth : Not applicable.

Exposure Limits of Chemical Substances and Physical Factors

The following components have an OEL:
titanium dioxide
Xylene
1,2,4-trimethylbenzene
ethylbenzene
mesitylene

ISHA Enforcement Regs Annex 11-3 (Exposure standards established for harmful factors) : None of the components are listed.

ISHA Enforcement Regs Annex 11-4 (Harmful factors subject to Work Environment Measurement) : The following components are listed: Titanium dioxide; Xylene, o,m,p-isomers; Ethylbenzene

ISHA Enforcement Regs Annex 12-2 (Harmful Factors Subject to Special Health Check-up) : The following components are listed: Xylene; Ethylbenzene

Standard of Industrial Safety and Health Annex 12 (Hazardous substances subject to control) : The following components are listed: Titanium dioxide; Xylene; Ethyl benzene

B. Regulation according to Chemicals Control Act

K-Reach Article 20 (Toxic chemicals) : Not applicable

K-Reach Article 27 (Prohibited) : None of the components are listed.

K-Reach Article 27 (Restricted) : None of the components are listed.

CSCA Article 11 (TRI) : The following components are listed: Xylene; Ethylbenzene

Korea inventory : Not determined.

CSCA Article 39 (Accident Precaution Chemicals) : None of the components are listed.

C. Dangerous Materials Safety Management Act : Class: Class 4 - Flammable Liquid
Item: 4. Class 2 petroleums - Water-insoluble liquid
Threshold: 1000 L
Danger category: III
Signal word: Contact with sources of ignition prohibited

D. Wastes regulation : Dispose of contents and container in accordance with all local, regional, national and international regulations.

E. Regulation according to other foreign laws

Europe inventory : Not determined.

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Section 15. Regulatory information

United States inventory (TSCA 8b) : Not determined.

Japan inventory : **Japan inventory (ENCS)**: Not determined.
Japan inventory (ISHL): Not determined.

Section 16. Other information

A. References : Not available.

B. Date of issue/Date of revision : 31/05/2017

C. Version : 3

Date of printing : **31/05/2017**

D. Other

Indicates information that has changed from previously issued version.

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

Notice to reader

IMPORTANT NOTE: the information contained in this data sheet (as may be amended from time to time) is not intended to be exhaustive and is presented in good faith and believed to be correct as of the date on which it is prepared. It is the user's responsibility to verify that this data sheet is current prior to using the product to which it relates.

Persons using the information must make their own determinations as to the suitability of the relevant product for their purposes prior to use. Where those purposes are other than as specifically recommended in this safety data sheet, then the user uses the product at their own risk.

MANUFACTURER'S DISCLAIMER: the conditions, methods and factors affecting the handling, storage, application, use and disposal of the product are not under the control and knowledge of the manufacturer. Therefore the manufacturer does not assume responsibility for any adverse events which may occur in the handling, storage, application, use, misuse or disposal of the product and, so far as permitted by applicable law, the manufacturer expressly disclaims liability for any and all loss, damages and/or expenses arising out of or in any way connected to the storage, handling, use or disposal of the product. Safe handling, storage, use and disposal are the responsibility of the users. Users must comply with all applicable health and safety laws.

Unless we have agreed to the contrary, all products are supplied by us subject to our standard terms and conditions of business, which include limitations of liability. Please make sure to refer to these and / or the relevant agreement which you have with AkzoNobel (or its affiliate, as the case may be).

Safety Data Sheet
INTERNATIONAL GTA220 THINNER/EQPT CLEANER

	Sales Order: {SalesOrd}
Bulk Sales Reference No.:	GTA220
SDS Revision Date:	01/16/2017
SDS Revision Number:	A4-6

International.

1. Identification of the preparation and company

1.1. Product identifier

Product Identity	INTERNATIONAL GTA220 THINNER/EQPT CLEANER
Bulk Sales Reference No.	GTA220

1.2. Relevant identified uses of the substance or mixture and uses advised against

Intended Use	See Technical Data Sheet.
Application Method	See Technical Data Sheet.

1.3. Details of the supplier of the safety data sheet

Company Name	International Paint LLC 6001 Antoine Drive Houston, Texas 77091

Emergency	
CHEMTREC (USA)	(800) 424-9300
International Paint	(713) 682-1711
Poison Control Center	(800) 854-6813
Customer Service	
International Paint	(800) 589-1267
Fax No.	(800) 631-7481

2. Hazard identification of the product

2.1. Classification of the substance or mixture

Flam. Liq. 3;H226	Flammable liquid and vapor.
Skin Irrit. 2;H315	Causes skin irritation.
Eye Dam. 1;H318	Causes serious eye damage.
STOT SE 3;H336	May cause drowsiness or dizziness.
Aquatic Chronic 2;H411	Toxic to aquatic life with long lasting effects.

2.2. Label elements

Using the Toxicity Data listed in section 11 & 12 the product is labelled as follows.

Danger.

H226 Flammable liquid and vapor.
H315 Causes skin irritation.
H318 Causes serious eye damage.
H335 May cause respiratory irritation.
H411 Toxic to aquatic life with long lasting effects.

P210 Keep away from heat / sparks / open flames / hot surfaces - No smoking.

P235 Keep cool.

P240 Ground / bond container and receiving equipment.

P241 Use explosion-proof electrical / ventilating / light / equipment.

P242 Use only non-sparking tools.

P243 Take precautionary measures against static discharge.

P260 Do not breathe mist / vapors / spray.

P261 Avoid breathing dust / fume / gas / mist / vapors / spray.

P262 Do not get in eyes, on skin, or on clothing.

P271 Use only outdoors or in a well-ventilated area.

P273 Avoid release to the environment.

P280 Wear protective gloves / eye protection / face protection.

P301+310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

P302+352 IF ON SKIN: Wash with soap and water.

P303+361+353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

P304+312 IF INHALED: Call a POISON CENTER or doctor/physician if you feel unwell.

P305+351+338 IF IN EYES: Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do - continue rinsing.

P310 Immediately call a POISON CENTER or doctor / physician.

P331 Do NOT induce vomiting.

P340 Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P362 Take off contaminated clothing and wash before reuse.

P370 In case of fire: Use water spray, fog, or regular foam..

P391 Collect spillage.

P403+233 Store in a well ventilated place. Keep container tightly closed.

P405 Store locked up.

P501 Dispose of contents / container in accordance with local / national regulations.

HMIS Rating Health: 3 Flammability: 3 Reactivity: 0

3. Composition/information on ingredients

This product contains the following substances that present a hazard within the meaning of the relevant State and Federal Hazardous Substances regulations.

Ingredient/Chemical Designations	Weight %	GHS Classification	Notes
Petroleum naphtha CAS Number: 0064742-95-6	25 - 50	Asp. Tox. 1;H304 Aquatic Chronic 2;H411 (Self Classification)	[1]
Butanol CAS Number: 0000071-36-3	25 - 50	Flam. Liq. 3;H226 Acute Tox. 4;H302 STOT SE 3;H335 Skin Irrit. 2;H315 Eye Dam. 1;H318 STOT SE 3;H336	[1][2]
1,2,4-Trimethyl benzene CAS Number: 0000095-63-6	25 - 50	Flam. Liq. 3;H226 Acute Tox. 4;H332 Eye Irrit. 2;H319 STOT SE 3;H335 Skin Irrit. 2;H315 Aquatic Chronic 2;H411	[1]
1,3,5-Trimethylbenzene CAS Number: 0000108-67-8	1.0 - 10	Flam. Liq. 3;H226 STOT SE 3;H335 Aquatic Chronic 2;H411	[1]
Xylenes (o-, m-, p- isomers) CAS Number: 0001330-20-7	1.0 - 10	Flam. Liq. 3;H226 Acute Tox. 4;H332 Acute Tox. 4;H312	[1][2]

		Skin Irrit. 2;H315 Eye Irrit. 2;H319 STOT SE 3;H335 Asp. Tox. 1;H304	
Cumene CAS Number: 0000098-82-8	1.0 - 10	Flam. Liq. 3;H226 Asp. Tox. 1;H304 STOT SE 3;H335 Aquatic Chronic 2;H411	[1][2]

[1] Substance classified with a health or environmental hazard.
[2] Substance with a workplace exposure limit.
[3] PBT-substance or vPvB-substance.

*The full texts of the phrases are shown in Section 16.

4. First aid measures

4.1. Description of first aid measures

General	Remove contaminated clothing and shoes. Get medical attention immediately. Wash clothing before reuse. Thoroughly clean or destroy contaminated shoes.
Inhalation	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.
Eyes	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention immediately.
Skin	In case of contact, immediately flush skin with soap and plenty of water. Get medical attention immediately.
Ingestion	If swallowed, immediately contact Poison Control Center at 1-800-854-6813. DO NOT induce vomiting unless instructed to do so by medical personnel. Never give anything by mouth to an unconscious person.

4.2. Most important symptoms and effects, both acute and delayed

Overview	NOTICE: Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal. Avoid contact with eyes, skin and clothing. Exposure to Cumene may cause depression of central nervous system, narcosis, and changes in respiratory system and sense of smell.
Inhalation	Harmful if inhaled. May cause allergic respiratory reaction. May cause mucous membrane and respiratory tract irritation, tightness of chest, headache, shortness of breath and dry cough. May cause asthma-like symptoms to occur. Vapors may affect the brain or nervous system causing dizziness, headache or nausea.
Eyes	Causes severe eye irritation. Avoid contact with eyes.
Skin	Causes skin irritation. May be harmful if absorbed through the skin.
Ingestion	Harmful if swallowed. May cause abdominal pain, nausea, vomiting, diarrhea, or drowsiness.
Chronic effects	

5. Fire-fighting measures

5.1. Extinguishing media

CAUTION: This product has a very low flashpoint. Use of water spray when fighting fire may be inefficient. SMALL FIRES: Use dry chemical, CO2, water spray or alcohol-resistant foam. LARGE FIRES: Use water spray, fog, or alcohol-resistant foam. Do not use straight streams. Move containers from fire area if you can do so without risk. Runoff from fire control may cause pollution. Dike fire control water for later disposal. Do not scatter the material.

5.2. Special hazards arising from the substance or mixture

FLAMMABLE/COMBUSTIBLE MATERIALS: Will be easily ignited by heat, sparks or flames. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks) creating a vapor explosion hazard. Runoff to sewers may create fire or explosion hazard. Containers may explode when heated.

5.3. Advice for fire-fighters

Cool closed containers exposed to fire by spraying them with water. Do not allow run off water and contaminants from fire fighting to enter drains or water courses.

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6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

ELIMINATE ALL IGNITION SOURCES (no smoking, flares, sparks or flames in immediate area). Use only non-sparking equipment to handle spilled material and absorbent. Do not touch or walk through spilled material. Stop leak if you can do so without risk. Prevent entry into waterways, sewers, basements or confined areas. A vapor suppressing foam may be used to reduce vapors. Absorb or cover with dry earth, sand, or other non-combustible material and transfer to containers. Use non-sparking tools to collect absorbed material.

6.2. Environmental precautions

Do not allow spills to enter drains or watercourses.

6.3. Methods and material for containment and cleaning up

CALL CHEMTREC at (800)-424-9300 for emergency response. Isolate spill or leak area immediately for at least 25 to 50 meters (80 to 160 feet) in all directions. Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Ventilate closed spaces before entering. LARGE SPILLS: Consider initial downwind evacuation for at least 300 meters (1000 feet).

7. Handling and storage

7.1. Precautions for safe handling

Handling

Vapors may cause flash fire or ignite explosively.

In Storage

Keep away from heat, sparks and flame.

7.2. Conditions for safe storage, including any incompatibilities

Store between 40-100F (4-38C).

Do not get in eyes, on skin or clothing.

Strong oxidizing agents.

Do not smoke. Extinguish all flames and pilot lights, and turn off stoves, heaters, electric motors and other sources of ignition during use and until all vapors are gone.

7.3. Specific end use(s)

Close container after each use.

Wash thoroughly after handling.

Prevent build-up of vapors by opening all windows and doors to achieve cross-ventilation.

8. Exposure controls and personal protection

8.1. Control parameters

Exposure

CAS No.	Ingredient	Source	Value
0000071-36-3	Butanol	OSHA	100 ppm TWA; 300 mg/m3 TWA50 ppm Ceiling; 150 mg/m3 Ceiling
		ACGIH	20 ppm TWA
		NIOSH	50 ppm Ceiling; 150 mg/m3 Ceiling1400 ppm IDLH (10% LEL)
		Supplier	
		OHSA, CAN	20 ppm TWA
		Mexico	
		Brazil	40 ppm TWA LT; 115 mg/m3 TWA LT
0000095-63-6	1,2,4-Trimethyl benzene	OSHA	
		ACGIH	
		NIOSH	25 ppm TWA; 125 mg/m3 TWA
		Supplier	
		OHSA, CAN	

		Mexico	
		Brazil	
0000098-82-8	Cumene	OSHA	50 ppm TWA; 245 mg/m3 TWA
		ACGIH	50 ppm TWA
		NIOSH	50 ppm TWA; 245 mg/m3 TWA900 ppm IDLH (10% LEL)
		Supplier	
		OHSA, CAN	50 ppm TWA
		Mexico	50 ppm TWA LMPE-PPT; 245 mg/m3 TWA LMPE-PPT75 ppm STEL [LMPE-CT]; 365 mg/m3 STEL [LMPE-CT]
		Brazil	39 ppm TWA LT; 190 mg/m3 TWA LT
0000108-67-8	1,3,5-Trimethylbenzene	OSHA	
		ACGIH	
		NIOSH	25 ppm TWA; 125 mg/m3 TWA
		Supplier	
		OHSA, CAN	
		Mexico	
		Brazil	
0001330-20-7	Xylenes (o-, m-, p- isomers)	OSHA	100 ppm TWA; 435 mg/m3 TWA150 ppm STEL; 655 mg/m3 STEL
		ACGIH	100 ppm TWA150 ppm STEL
		NIOSH	
		Supplier	
		OHSA, CAN	100 ppm TWA150 ppm STEL
		Mexico	100 ppm TWA LMPE-PPT; 435 mg/m3 TWA LMPE-PPT150 ppm STEL [LMPE-CT]; 655 mg/m3 STEL [LMPE-CT]
		Brazil	78 ppm TWA LT; 340 mg/m3 TWA LT
0064742-95-6	Petroleum naphtha	OSHA	
		ACGIH	
		NIOSH	
		Supplier	
		OHSA, CAN	
		Mexico	
		Brazil	

Health Data

CAS No.	Ingredient	Source	Value
0000071-36-3	Butanol	NIOSH	Eye and mucous membrane irritation CNS depression
0000095-63-6	1,2,4-Trimethyl benzene	NIOSH	
0000098-82-8	Cumene	NIOSH	Eye skin
0000108-67-8	1,3,5-Trimethylbenzene	NIOSH	
0001330-20-7	Xylenes (o-, m-, p- isomers)	NIOSH	Central nervous system depressant; respiratory and eye irritation
0064742-95-6	Petroleum naphtha	NIOSH	

Carcinogen Data

CAS No.	Ingredient	Source	Value
0000071-36-3	Butanol	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;
0000095-63-6	1,2,4-Trimethyl benzene	OSHA	Select Carcinogen: No

		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;
0000098-82-8	Cumene	OSHA	Select Carcinogen: Yes
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: Yes; Group 3: No; Group 4: No;
0000108-67-8	1,3,5-Trimethylbenzene	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;
0001330-20-7	Xylenes (o-, m-, p-isomers)	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: Yes; Group 4: No;
0064742-95-6	Petroleum naphtha	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;

8.2. Exposure controls

Respiratory	Select equipment to provide protection from the ingredients listed in Section 3 of this document. Ensure fresh air entry during application and drying. If you experience eye watering, headache or dizziness or if air monitoring demonstrates dust, vapor, or mist levels are above applicable limits, wear an appropriate, properly fitted respirator (NIOSH approved) during and after application. Follow respirator manufacturer's directions for respirator use. FOR USERS OF 3M RESPIRATORY PROTECTION ONLY: For information and assistance on 3M occupational health and safety products, call OH&ESD Technical Service toll free in U.S.A. 1-800-243-4630, in Canada call 1-800-267-4414. Please do not contact these numbers regarding other manufacturer's respiratory protection products. 3M does not endorse the accuracy of the information contained in this Material Safety Data Sheet.
Eyes	Avoid contact with eyes. Protective equipment should be selected to provide protection from exposure to the chemicals listed in Section 3 of this document. Depending on the site-specific conditions of use, safety glasses, chemical goggles, and/or head and face protection may be required to prevent contact. The equipment must be thoroughly cleaned, or discarded after each use.
Skin	Protective equipment should be selected to provide protection from exposure to the chemicals listed in Section 3 of this document. Depending on the site-specific conditions of use, protective gloves, apron, boots, head and face protection may be required to prevent contact. The equipment must be thoroughly cleaned, or discarded after each use.
Engineering Controls	Depending on the site-specific conditions of use, provide adequate ventilation.
Other Work Practices	Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Use good personal hygiene practices. Wash hands before eating, drinking, using toilet facilities, etc. Promptly remove soiled clothing and wash clothing thoroughly before reuse. Shower after work using plenty of soap and water.

9. Physical and chemical properties

Appearance	Coloured Liquid
Odour threshold	Not Measured
pH	No Established Limit
Melting point / freezing point	Not Measured
Initial boiling point and boiling range	117 (°C) 243 (°F)
Flash Point	34 (°C) 94 (°F)
Evaporation rate (Ether = 1)	Not Measured
Flammability (solid, gas)	Not Applicable
Upper/lower flammability or explosive limits	Lower Explosive Limit: 1 Upper Explosive Limit: No Established Limit

vapor pressure (Pa)	Not Measured
Vapor Density	Heavier than air
Specific Gravity	0.85
Solubility in Water	Not Measured
Partition coefficient n-octanol/water (Log Kow)	Not Measured
Auto-ignition temperature	Not Measured
Decomposition temperature	Not Measured
Viscosity (cSt)	No Established Limit Not Measured
VOC %	Refer to the Technical Data Sheet or label where information is available.
VOHAP content (gm/litre of paint)	2674.92 (as supplied)
VOHAP content (gm/litre of Solid Coating)	26.75 (as supplied)

10. Stability and reactivity

10.1. Reactivity

No data available

10.2. Chemical stability

This product is stable and hazardous polymerization will not occur. Not sensitive to mechanical impact. Excessive heat and fumes generation can occur if improperly handled.

10.3. Possibility of hazardous reactions

No data available

10.4. Conditions to avoid

No data available

10.5. Incompatible materials

Strong oxidizing agents.

10.6. Hazardous decomposition products

FLAMMABLE/COMBUSTIBLE MATERIALS: Will be easily ignited by heat, sparks or flames. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks) creating a vapor explosion hazard. Runoff to sewers may create fire or explosion hazard. Containers may explode when heated.

11. Toxicological information

Acute toxicity

NOTICE: Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal.

Ingredient	Oral LD50, mg/kg	Skin LD50, mg/kg	Inhalation Vapor LD50, mg/L/4hr	Inhalation Dust/Mist LD50, mg/L/4hr
Petroleum naphtha - (64742-95-6)	6,800.00, Rat - Category: NA	3,400.00, Rabbit - Category: 5	No data available	No data available
Butanol - (71-36-3)	2,292.00, Rat - Category: 5	3,430.00, Rabbit - Category: 5	No data available	No data available
1,2,4-Trimethyl benzene - (95-63-6)	3,400.00, Rat - Category: 5	3,160.00, Rabbit - Category: 5	18.00, Rat - Category: 4	No data available
1,3,5-Trimethylbenzene - (108-67-8)	No data available	No data available	24.00, Rat - Category: NA	No data available
Xylenes (o-, m-, p- isomers) - (1330-20-7)	4,299.00, Rat - Category: 5	1,548.00, Rabbit - Category: 4	20.00, Rat - Category: 4	No data available
Cumene - (98-82-8)	1,400.00, Rat - Category: 4	10,627.00, Rabbit -	No data available	No data available

		Category: NA		

Item	Category	Hazard
Acute Toxicity (mouth)	Not Classified	Not Applicable
Acute Toxicity (skin)	Not Classified	Not Applicable
Acute Toxicity (inhalation)	Not Classified	Not Applicable
Skin corrosion/irritation	2	Causes skin irritation.
Eye damage/irritation	1	Causes serious eye damage.
Sensitization (respiratory)	Not Classified	Not Applicable
Sensitization (skin)	Not Classified	Not Applicable
Germ toxicity	Not Classified	Not Applicable
Carcinogenicity	Not Classified	Not Applicable
Reproductive Toxicity	Not Classified	Not Applicable
Specific target organ systemic toxicity (single exposure)	3	May cause drowsiness or dizziness.
Specific target organ systemic Toxicity (repeated exposure)	Not Classified	Not Applicable
Aspiration hazard	Not Classified	Not Applicable

12. Ecological information

12.1. Toxicity

No additional information provided for this product. See Section 3 for chemical specific data.

Aquatic Ecotoxicity

Ingredient	96 hr LC50 fish, mg/l	48 hr EC50 crustacea, mg/l	ErC50 algae, mg/l
Petroleum naphtha - (64742-95-6)	9.22, Oncorhynchus mykiss	6.14, Daphnia magna	19.00 (72 hr), Selenastrum capricornutum
Butanol - (71-36-3)	1,376.00, Pimephales promelas	1,328.00, Daphnia magna	500.00 (96 hr), Scenedesmus subspicatus
1,2,4-Trimethyl benzene - (95-63-6)	7.72, Pimephales promelas	3.60, Daphnia magna	Not Available
1,3,5-Trimethylbenzene - (108-67-8)	12.52, Carassius auratus	6.00, Daphnia magna	25.00 (48 hr), Scenedesmus subspicatus
Xylenes (o-, m-, p- isomers) - (1330-20-7)	3.30, Oncorhynchus mykiss	8.50, Palaemonetes pugio	100.00 (72 hr), Chlorococcales
Cumene - (98-82-8)	2.70, Oncorhynchus mykiss	10.60, Daphnia magna	2.60 (72 hr), Pseudokirchneriella subcapitata

12.2. Persistence and degradability

No data available

12.3. Bioaccumulative potential

Not Measured

12.4. Mobility in soil

No data available

12.5. Results of PBT and vPvB assessment

This product contains no PBT/vPvB chemicals.

12.6. Other adverse effects

No data available

13. Disposal considerations

13.1. Waste treatment methods

Do not allow spills to enter drains or watercourses.

Dispose of in accordance with local, state and federal regulations. (Also reference RCRA information in Section 15 if listed).

14. Transport information

14.1. UN number UN 1263

14.2. UN proper shipping name PAINT RELATED MATERIAL

14.3. Transport hazard class(es)

DOT (Domestic Surface Transportation)		IMO / IMDG (Ocean Transportation)	
DOT Proper Shipping Name	PAINT RELATED MATERIAL	IMDG Proper Shipping Name	PAINT RELATED MATERIAL
DOT Hazard Class	3 - Flammable	IMDG Hazard Class Sub Class	3 - Flammable 3 - Flammable
UN / NA Number	UN 1263		
DOT Packing Group	III	IMDG Packing Group	III
CERCLA/DOT RQ	673 gal. / 4762 lbs.	System Reference Code	3

14.4. Packing group III

14.5. Environmental hazards

IMDG Marine Pollutant: No (Petroleum naphtha)

14.6. Special precautions for user

Not Applicable

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

Not Applicable

15. Regulatory information

Regulatory Overview The regulatory data in Section 15 is not intended to be all-inclusive, only selected regulations are represented. All ingredients of this product are listed on the TSCA (Toxic Substance Control Act) Inventory or are not required to be listed on the TSCA Inventory.

WHMIS Classification B2 D2B E

DOT Marine Pollutants (10%):
(No Product Ingredients Listed)

DOT Severe Marine Pollutants (1%):
(No Product Ingredients Listed)

EPCRA 311/312 Chemicals and RQs (>.1%) :

Cumene (5000 lb final RQ; 2270 kg final RQ)

Butanol (5000 lb final RQ; 2270 kg final RQ)

Xylenes (o-, m-, p- isomers) (100 lb final RQ; 45.4 kg final RQ)

EPCRA 302 Extremely Hazardous (>.1%) :
(No Product Ingredients Listed)

EPCRA 313 Toxic Chemicals (>.1%) :

1,2,4-Trimethyl benzene

Cumene

Butanol

Xylenes (o-, m-, p- isomers)

Mass RTK Substances (>1%) :

1,2,4-Trimethyl benzene

Cumene

Butanol

1,3,5-Trimethylbenzene

Xylenes (o-, m-, p- isomers)

Penn RTK Substances (>1%) :

1,2,4-Trimethyl benzene

Cumene

Butanol

Xylenes (o-, m-, p- isomers)

Penn Special Hazardous Substances (>.01%) :

(No Product Ingredients Listed)

RCRA Status:

(No Product Ingredients Listed)

N.J. RTK Substances (>1%) :

1,2,4-Trimethyl benzene

Cumene

Butanol

Xylenes (o-, m-, p- isomers)

N.J. Special Hazardous Substances (>.01%) :

Cumene

Butanol

Xylenes (o-, m-, p- isomers)

N.J. Env. Hazardous Substances (>.1%) :

1,2,4-Trimethyl benzene

Cumene

Butanol

Xylenes (o-, m-, p- isomers)

Proposition 65 - Carcinogens (>0%):

Cumene

Proposition 65 - Female Repro Toxins (>0%):

(No Product Ingredients Listed)

Proposition 65 - Male Repro Toxins (>0%):

(No Product Ingredients Listed)

Proposition 65 - Developmental Toxins (>0%):

(No Product Ingredients Listed)

16. Other information

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein. We accept no responsibility and disclaim all liability for any harmful effects which may be caused by exposure to our products. Customers/users of this product must comply with all applicable health and safety laws, regulations, and orders.

The full text of the phrases appearing in section 3 is:

H226 Flammable liquid and vapor.

H302 Harmful if swallowed.

H304 May be fatal if swallowed and enters airways.

H312 Harmful in contact with skin.

H315 Causes skin irritation.

H318 Causes serious eye damage.

H319 Causes serious eye irritation.

H332 Harmful if inhaled.

H335 May cause respiratory irritation.

H336 May cause drowsiness or dizziness.

H372 Causes damage to organs through prolonged or repeated exposure.

H411 Toxic to aquatic life with long lasting effects.

The following sections have changed since the previous revision.

End of Document

SAFETY DATA SHEET

1 PRODUCT AND COMPANY IDENTIFICATION

PLATT BROS. & CO.
2670 SOUTH MAIN ST.
WATERBURY, CT.
06706

Phone 203-753-4194
Fax 203-753-9709
Toll Free 800-752-8276

PRODUCT

Zinc (solid) ALLOYS INCLUDED; 300,302, 303, 304, 308 307,309

Zinc (Zn)

99.90% Zinc(min.)

UN Identification UN 1436 - zinc dust

EMERGENCY TELEPHONE 800-752-8276

Date Revised; 6/21/21

All previous versions are superseded by the current version.

Recommended Use; Corrosion protection and AC mitigation.

Restrictions on use; Any use of this product other than as described above, is beyond the prevue of this SDS and no guarantees or warranties, explicit or implied, on performance or safety of this product, its usage, the process or results is given.

2 COMPOSITION/ INFORMATION ON INGREDIENTS

Component	CAS#	Weight %
Total Zinc	7440-66-6	99.90% minimum

3 HAZARD IDENTIFICATION

Zinc is a relatively non-toxic chemical and poses little immediate health hazard to personnel or the environment in an emergency situation.

4 FIRST AID MEASURES

Inhalation; Inhalation of Zinc oxide fume from fire or welding on zinc or zinc coated surfaces may cause zinc shakes or meteal fume fever (a benign transient flu-like condition), stomach cramps,or diarrhea.

Carcinogenicity; this product is not listed by the NTP or LARC and is not regulated as a carcinogen by OSHA.

Recommendation for exposures;

Inhalation; Remove the exposed person to fresh air immedeately. Seek medical attention as soon as possible.

Ingestion; Give two or three cups of water or milk if victim is conscious. Do not induce vomiting. Get medical attenton immediately.

Skin; Wash with soap and water. Seek medical attention if irritation persists.

Eyes; Flush eyes and under eyelids with warm, gently running water for at least fifteen(15) minutes. If irritation persists, consult a physician.

5 FIRE-FIGHTING MEASURES

EXPLOSION; Avoid generating dust, fine dust,dispersed in air in sufficient concentrations and in the presence of an ignition source is a potential dust explosion hazard.

MEANS OF EXTINCTION; Blanket with class D dry powder type extinguisher or smother with dry sand. Avoid water. Do not disturb until extinguished. Contact with acids and alkali hydroxides results in the generation of potentionally explosive hydrogen gas. Firefighters should wear PPE and SCBA with full face piece operated in positive pressure mode.

Method Of Cleanup; Wet zinc dust should be collected into an open container and set into an open, well ventilated area to allow for drying. Dry dust can be disposed of in accordance with local, state, provincial and national regulations.

6 ACCIDENTAL RELEASE MEASURES

EMERGENCY PROCEDURES; Evacuate the area to prevent inhalation of zinc dust by unprotected workers. Remove potential for ignition by turning off sources of flame and other ignition sources. Allow airborne dust to settle then sweep up dust and dispose of in accordance with local , provincial, state, or national regulations.

7 HANDLING and STORAGE

ENVIRONMENTAL PRECAUTIONS; Transfer wet zinc dust to an open container and move to an open container and move to an open well ventilated area to allow for drying. Store in a dry area and avoid wetting Report leakage to water to local environmental authorities for appropriate cleanup measures. Leakage to roadways and ground should be swept up and nuisance dust kept to a minimum.

Chemical Hazards from Fire; Zinc dust deposits should not be allowed to accumulate on surfaces, as these may form an explosive mixture if they are released into the atmosphere in sufficient concentration. Avoid dispersal in the air(ie,clearing dust surfaces with compressed air). When exposed to fire, zinc dust decomposes to zinc oxide.Zinc oxide fume may be hazardous if inhaled.

Storage; Store in dry environment.

Storage Incompatibilities; Alkalis, sulphur, strong acids and bases, oxidizers, chlorinated solvents and water or other sources of moisture.

8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposurer Control; Only solid zinc and zinc alloys are produced and provided. Risks may be produced by customer processing or use, welding or cutting. Customer PPE policy needs to be followed in those situations.

PERSONAL PROTECTION; Recommended PPE for processing may include(but is not limited to) NIOSH N98-N99 respirator filters, latex, nitrile or other rubber gloves, eye protection as described under ANSI Z87.1 2003 standard and clothing sufficient to provide coverage from skin contact to airborne dust.

Regulatory Limits;

Component	Cas#	Limit	Value
Metallic Zinc	7440-66-6	SHA PEL	None Established
Metallic Zinc	7440-66-6	LD50/LC50	None Established
Zinc oxide dust	1314-13-2	OSHA PEL	15 mg/cu.m(total),5mg/cu.m respireable
Zinc Oxide Fume	1314-13-2	OSHA PEL	5mg/cu.m
Zinc Oxide	1314-13-2	ACGIH-TVL	2mg/cu.m(respirable)
Zinc Oxide	1314-13-2	ACGIH STEL	10mg/cu.m(respirable)
Zinc Oxide	1314-13-2	NIOSH REL	5mg/cu.m
Zinc Oxide	1314-13-2	NIOSH TWA	15mg/cu.m(10 hour ceiling)
Zinc Oxide	1314-13-2	NIOSH STEL	10mg/cu.m(15 minute sample)

ACGIH-----American Conference of Government Industrial Hygienists
NIOSH-----National Institute for Occupational Safety and Health
OSHA------Occupational Safety and Health Administration
PEL---------Permissible Exposure Limit
REL---------Recommended Exposure Limit
STEL-------Short Term Exposure Limit
TVL---------Threshold Limit Value
TWA--------Time Weighted Average

9 PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Metalic Silver Solid
Odor	Odorless
Specific Gravity	7.0-7.1
pH	NA
Flash Point	NA
Melting Point	787deg F(419degC)
Boiling Point	1665degF(906degC)

10 STABILITY AND REACTIVITY

CONDITIONS TO AVOID; Flames,iginition sources, and incompatibles like sulphur, strong oxidizing agents and alkaline hydroxides.

HAZARDOUS DECOMPOSITION; Contact with acids or alkaline hydroxides may generate hydrogen gas, which is flammable.

11 TOXICOLOGICAL INFORMATION

ROUTES OF EXPOSURE;

Inhalation; Zinc oxide fume from fire or welding on zinc coated surfaces may cause zinc shakes, metal fume fever, stomach cramps ans/or diarrhea.

Ingestion; Large oral intake may produce gastro- intestinal irritation.

Skin Contact; Zinc dust contact causes skin dryness.

Eye Contact;Zinc dust becomes a mechanical irritant in the eye.

Carciogenicity; This product is not listed by the NTP or LARC and is not regulated as a carcinogen by OSHA.

12 ECOLOGICAL INFORMATION

Zinc metal is insoluable but its processing or extended exposure in the aquatic and terrestrial environments may lead to the release of zinc in bioavailable forms. Zinc is mobile and can be toxic in the aquatic environment with water hardness, pH and dissolved organic carbon content being regulating factors. It bio caccumulates in both plants and animals as well as in terrestrial and aquatic systems. Zinc is modestly mobile in soils and is dependent on soil conditions such as cat plants, vertebrates and mammals with plant uptake dependent on soil composition.

13 DISPOSAL CONSIDERATIONS

If material cannot be returned to manufacturer with approval, dispose of in accordance with applicable local, stste, provincial or national regulations.

14 TRANSPORT INFORMATION

Proper Shipping Name	ZINC
Marine Pollutant	No

15 REGULATORY INFORMATION

NOT APPLICABLE.

16 OTHER INFORMATION

HMIS	
Health	0
Flammability	0
Physical Hazard	0

NFPA	
Health	0
Flammability	0
Stability	0
Specific Hazard	0

Disclaimer;

Although reasonable precautions have been taken in the preparation of the data contained herein, it is offered solely for your information, consideration and investigation. Platt Bros & co. provides no warranties either expressed or implied, and assumes no responsibility for the accuracy or completeness of the data contained herein and expressly disclaims all liability for reliance thereon. The SDS for this product is provided as a guide for the safe handling and usage. Those using the product should read and understand the information herein and properly train those using this product.

Japan ISHL Listing:	One or more components are not listed or are exempt from listing.
Japan Pharmacopoeia Listing:	One or more components are not listed or are exempt from listing.
Mexico INSQ:	On or in compliance with the inventory
Ontario Inventory:	On or in compliance with the inventory
Taiwan Chemical Substance Inventory:	On or in compliance with the inventory

16. OTHER INFORMATION

Definitions:

Revision Date: 07/02/2019

Further Information: Additional information is available by request.

Disclaimer: The Lincoln Electric Company urges each end user and recipient of this SDS to study it carefully. See also www.lincolnelectric.com/safety. If necessary, consult an industrial hygienist or other expert to understand this information and safeguard the environment and protect workers from potential hazards associated with the handling or use of this product. This information is believed to be accurate as of the revision date shown above. However, no warranty, expressed or implied, is given. Because the conditions or methods of use are beyond Lincoln Electric's control, we assume no liability resulting from the use of this product. Regulatory requirements are subject to change and may differ between various locations. Compliance with all applicable Federal, State, Provincial, and local laws and regulations remain the responsibility of the user.

SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: WTX

Other means of identification
SDS number: 200000008937

Recommended use and restriction on use
Recommended use: SAW (Submerged Arc Welding)
Restrictions on use: Not known. Read this SDS before using this product.

Manufacturer/Importer/Supplier/Distributor Information

Company Name:	Lincoln Electric Europe B.V.
Address:	Nieuwe Dukenburgseweg 20 Nijmegen 6534AD The Netherlands
Telephone:	+31 243 522 911
Contact Person:	Safety Data Sheet Questions: www.lincolnelectric.com/sds Arc Welding Safety Information: www.lincolnelectric.com/safety

Emergency telephone number:

USA/Canada/Mexico	+1 (888) 609-1762
Americas/Europe	+1 (216) 383-8962
Asia Pacific	+1 (216) 383-8966
Middle East/Africa	+1 (216) 383-8969

3E Company Access Code: 333988

2. HAZARDS IDENTIFICATION

Classified according to the criteria of the Globally Harmonized System of Classification and Labeling of Chemicals (GHS), The United States Occupational Safety and Health Administration's Hazard Communication Standard (29 CFR 1910.1200), Canada's Hazardous Product Regulations and Mexico's Harmonized System for the Identification and Communication of Hazards and Risks from Hazardous Chemicals in the Workplace.

The product contains less than 0.1% of respirable crystalline silica.

Hazard Classification
Health Hazards

Carcinogenicity	Category 2
Specific Target Organ Toxicity - Repeated Exposure	Category 2

Label Elements
Hazard Symbol:

Signal Word: Warning

Hazard Statement: Suspected of causing cancer.
May cause damage to organs *Nervous System* through prolonged or repeated exposure.

Precautionary Statements:

Prevention: Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Do not breathe dust/fume/gas/mist/vapors/spray.

Response: IF exposed or concerned: Get medical advice/attention.

Storage: Store locked up.

Disposal: Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Other hazards which do not result in GHS classification: Electrical Shock can kill. If welding must be performed in damp locations or with wet clothing, on metal structures or when in cramped positions such as sitting, kneeling or lying, or if there is a high risk of unavoidable or accidental contact with work piece, use the following equipment: Semiautomatic DC Welder, DC Manual (Stick) Welder, or AC Welder with Reduced Voltage Control.

Arc rays can injure eyes and burn skin. Welding arc and sparks can ignite combustibles and flammable materials. Overexposure to welding fumes and gases can be hazardous. Read and understand the manufacturer's instructions, Safety Data Sheets and the precautionary labels before using this product. Refer to Section 8.

Substance(s) formed under the conditions of use: The welding fume produced from this welding electrode may contain the following constituent(s) and/or their complex metallic oxides as well as solid particles or other constituents from the consumables, base metal, or base metal coating not listed below.

Chemical Identity	CAS-No.
Carbon dioxide	124-38-9
Carbon monoxide	630-08-0
Nitrogen dioxide	10102-44-0
Ozone	10028-15-6

3. COMPOSITION / INFORMATION ON INGREDIENTS

Reportable Hazardous Ingredients
Mixtures

Chemical Identity	CAS number	Content in percent (%)*
Magnesium oxide	1309-48-4	20 - <50%
Calcium fluoride	7789-75-5	10 - <20%
Manganese oxide (Mn3O4)	1317-35-7	5 - <10%

Sodium silicate	1344-09-8	5 - <10%
Limestone	1317-65-3	1 - <5%
Titanium dioxide	13463-67-7	1 - <5%
Potassium silicate	1312-76-1	1 - <5%
Silicon dioxide (amorphous)	7631-86-9	1 - <5%
Iron oxide	1309-37-1	1 - <5%
Silicon	7440-21-3	1 - <5%
Aluminum oxide	1344-28-1	1 - <5%
Calcium oxide	1305-78-8	1 - <5%
Manganese	7439-96-5	0.1 - <1%
Quartz	14808-60-7	0.1 - <1%
Potassium oxide	12136-45-7	0.1 - <1%

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

Composition Comments: The term “Hazardous Ingredients” should be interpreted as a term defined in Hazard Communication standards and does not necessarily imply the existence of a welding hazard. The product may contain additional non-hazardous ingredients or may form additional compounds under the condition of use. Refer to Sections 2 and 8 for more information.

4. FIRST AID MEASURES

Ingestion: Avoid hand, clothing, food, and drink contact with fluxes, metal fume or powder which can cause ingestion of particulate during hand to mouth activities such as drinking, eating, smoking, etc. If ingested, do not induce vomiting. Contact a poison control center. Unless the poison control center advises otherwise, wash out mouth thoroughly with water. If symptoms develop, seek medical attention at once.

Inhalation: Move to fresh air if breathing is difficult. If breathing has stopped, perform artificial respiration and obtain medical assistance at once.

Skin Contact: Remove contaminated clothing and wash the skin thoroughly with soap and water. For reddened or blistered skin, or thermal burns, obtain medical assistance at once.

Eye contact: Dust or fume from this product should be flushed from the eyes with copious amounts of clean, tepid water until transported to an emergency medical facility. Do not allow victim to rub or keep eyes tightly closed. Obtain medical assistance at once.

Arc rays can injure eyes. If exposed to arc rays, move victim to dark room, remove contact lenses as necessary for treatment, cover eyes with a padded dressing and rest. Obtain medical assistance if symptoms persist.

Most important symptoms/effects, acute and delayed

Symptoms: Short-term (acute) overexposure to fumes and gases from welding and allied processes may result in discomfort such as metal fume fever, dizziness, nausea, or dryness or irritation of nose, throat, or eyes. May aggravate pre-existing respiratory problems (e.g. asthma, emphysema). Long-term (chronic) overexposure to fumes and gases from welding and allied processes can lead to siderosis (iron deposits in lung), central nervous system effects, bronchitis and other pulmonary effects. Refer to Section 11 for more information.

Hazards:	The hazards associated with welding and its allied processes such as soldering and brazing are complex and may include physical and health hazards such as but not limited to electric shock, physical strains, radiation burns (eye flash), thermal burns due to hot metal or spatter and potential health effects of overexposure to fumes, gases or dusts potentially generated during the use of this product. Refer to Section 11 for more information.

Indication of immediate medical attention and special treatment needed

Treatment:	Treat symptomatically.

5. FIRE-FIGHTING MEASURES

General Fire Hazards:	As shipped, this product is nonflammable. However, welding arc and sparks as well as open flames and hot surfaces associated with brazing and soldering can ignite combustible and flammable materials. Read and understand American National Standard Z49.1, "Safety in Welding, Cutting and Allied Processes" and National Fire Protection Association NFPA 51B, "Standard for Fire Prevention during Welding, Cutting and Other Hot Work" before using this product.

Suitable (and unsuitable) extinguishing media

Suitable extinguishing media:	As shipped, the product will not burn. In case of fire in the surroundings: use appropriate extinguishing agent.
Unsuitable extinguishing media:	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical:	Welding arc and sparks can ignite combustibles and flammable products.

Special protective equipment and precautions for firefighters

Special fire fighting procedures:	Use standard firefighting procedures and consider the hazards of other involved materials.
Special protective equipment for fire-fighters:	Selection of respiratory protection for fire fighting: follow the general fire precautions indicated in the workplace. Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:	If airborne dust and/or fume is present, use adequate engineering controls and, if needed, personal protection to prevent overexposure. Refer to recommendations in Section 8.
Methods and material for containment and cleaning up:	Absorb with sand or other inert absorbent. Stop the flow of material, if this is without risk. Clean up spills immediately, observing precautions in the personal protective equipment in Section 8. Avoid generating dust. Prevent product from entering any drains, sewers or water sources. Refer to Section 13 for proper disposal.
Environmental Precautions:	Avoid release to the environment. Prevent further leakage or spillage if safe to do so. Do not contaminate water sources or sewer. Environmental manager must be informed of all major spillages.

7. HANDLING AND STORAGE

Precautions for safe handling: Prevent formation of dust. Provide appropriate exhaust ventilation at places where dust is formed.

Read and understand the manufacturer's instruction and the precautionary label on the product. Refer to Lincoln Safety Publications at www.lincolnelectric.com/safety. See American National Standard Z49.1, "Safety In Welding, Cutting and Allied Processes" published by the American Welding Society, http://pubs.aws.org and OSHA Publication 2206 (29CFR1910), U.S. Government Printing Office, www.gpo.gov. Do not handle until all safety precautions have been read and understood. Obtain special instructions before use. Use personal protective equipment as required.

Conditions for safe storage, including any incompatibilities: Store locked up.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Control Parameters

Occupational Exposure Limits: US

Chemical Identity	Type	Exposure Limit Values	Source
Magnesium oxide - Inhalable fraction.	TWA	10 mg/m3	US. ACGIH Threshold Limit Values, as amended (12 2010)
Magnesium oxide - Total particulate.	PEL	15 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Magnesium oxide	IDLH	750 mg/m3	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Calcium fluoride - as F	TWA	2.5 mg/m3	US. ACGIH Threshold Limit Values, as amended (12 2010)
Calcium fluoride	IDLH	250 mg/m3	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
	IDLH	250 mg/m3	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Calcium fluoride - as F	PEL	2.5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Calcium fluoride - Dust.	TWA	2.5 mg/m3	US. OSHA Table Z-2 (29 CFR 1910.1000) (02 2006)
Manganese oxide (Mn3O4) - Inhalable fraction. - as Mn	TWA	0.1 mg/m3	US. ACGIH Threshold Limit Values, as amended (02 2013)
Manganese oxide (Mn3O4) - Respirable fraction. - as Mn	TWA	0.02 mg/m3	US. ACGIH Threshold Limit Values, as amended (02 2013)
Manganese oxide (Mn3O4) - Fume. - as Mn	STEL	3 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	REL	1 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
Manganese oxide (Mn3O4) - as Mn	Ceiling	5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Manganese oxide (Mn3O4)	IDLH	500 mg/m3	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Limestone - Total dust.	PEL	15 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Limestone - Respirable fraction.	PEL	5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Limestone - Respirable.	REL	5 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
Limestone - Total	REL	10 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)

Titanium dioxide	TWA	10 mg/m3	US. ACGIH Threshold Limit Values, as amended (12 2010)
Titanium dioxide - Total dust.	PEL	15 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Titanium dioxide	IDLH	5,000 mg/m3	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Silicon dioxide (amorphous)	TWA	20 millions of particles per cubic foot of air	US. OSHA Table Z-3 (29 CFR 1910.1000) (2000)
	TWA	0.8 mg/m3	US. OSHA Table Z-3 (29 CFR 1910.1000) (2000)
	REL	6 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	IDLH	3,000 mg/m3	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Iron oxide - Respirable fraction.	TWA	5 mg/m3	US. ACGIH Threshold Limit Values, as amended (12 2010)
Iron oxide - Fume.	PEL	10 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Iron oxide - Dust and fume. - as Fe	REL	5 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
Iron oxide	IDLH	2,500 mg/m3	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Silicon - Total dust.	PEL	15 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Silicon - Respirable fraction.	PEL	5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Silicon - Respirable.	REL	5 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
Silicon - Total	REL	10 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
Aluminum oxide - Respirable fraction.	TWA	1 mg/m3	US. ACGIH Threshold Limit Values, as amended (12 2010)
	PEL	5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Aluminum oxide - Total dust.	PEL	15 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Aluminum oxide - Respirable fraction.	TWA	15 millions of particles per cubic foot of air	US. OSHA Table Z-3 (29 CFR 1910.1000) (03 2016)
	TWA	5 mg/m3	US. OSHA Table Z-3 (29 CFR 1910.1000) (03 2016)
Aluminum oxide - Total dust.	TWA	15 mg/m3	US. OSHA Table Z-3 (29 CFR 1910.1000) (03 2016)
	TWA	50 millions of particles per cubic foot of air	US. OSHA Table Z-3 (29 CFR 1910.1000) (03 2016)
Calcium oxide	TWA	2 mg/m3	US. ACGIH Threshold Limit Values, as amended (12 2010)
	PEL	5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	REL	2 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	IDLH	25 mg/m3	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Manganese - Fume. - as Mn	Ceiling	5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	REL	1 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	STEL	3 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
Manganese - Inhalable	TWA	0.1 mg/m3	US. ACGIH Threshold Limit Values, as

fraction. - as Mn			amended (03 2014)
Manganese - Respirable fraction. - as Mn	TWA	0.02 mg/m3	US. ACGIH Threshold Limit Values, as amended (03 2014)
Manganese	IDLH	500 mg/m3	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Quartz - Respirable fraction.	TWA	0.025 mg/m3	US. ACGIH Threshold Limit Values, as amended (12 2010)
Quartz - Respirable.	TWA	2.4 millions of particles per cubic foot of air	US. OSHA Table Z-3 (29 CFR 1910.1000) (2000)
	TWA	0.1 mg/m3	US. OSHA Table Z-3 (29 CFR 1910.1000) (2000)
Quartz - Respirable dust.	REL	0.05 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
Quartz - Respirable dust.	TWA	0.05 mg/m3	US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050) (03 2016)
	OSHA_ACT	0.025 mg/m3	US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050) (03 2016)
Quartz - Respirable dust.	PEL	0.05 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (03 2016)
Quartz	IDLH	50 mg/m3	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)

Occupational Exposure Limits: Canada

Chemical Identity	Type	Exposure Limit Values	Source
Magnesium oxide - Fume.	TWA	10 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
Magnesium oxide - Respirable dust and/or fume. - as Mg	STEL	10 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Magnesium oxide - Inhalable fume.	TWA	10 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Magnesium oxide - Respirable dust and/or fume. - as Mg	TWA	3 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Magnesium oxide - Inhalable fraction.	TWA	10 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2011)
	TWA	10 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (11 2010)
	8 HR ACL	10 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL	20 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
Magnesium oxide - Fume. - as Mg	TWA	10 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended (09 2017)
Calcium fluoride - as F	TWA	2.5 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	TWA	2.5 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table

			2), as amended (07 2009)
	TWA	2.5 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	2.5 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2011)
	TWA	2.5 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (11 2010)
	8 HR ACL	2.5 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL	5 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	TWA	2.5 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended (09 2017)
Manganese oxide (Mn3O4) - as Mn	TWA	0.2 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
Manganese oxide (Mn3O4) - Inhalable fraction. - as Mn	TWA	0.1 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2013)
Manganese oxide (Mn3O4) - Respirable fraction. - as Mn	TWA	0.02 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2013)
Manganese oxide (Mn3O4) - as Mn	TWA	0.2 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (11 2010)
	8 HR ACL	0.2 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL	0.6 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
Manganese oxide (Mn3O4)	TWA	1 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended (09 2017)
Manganese oxide (Mn3O4) - Respirable. - as Mn	TWA	0.02 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2018)
Manganese oxide (Mn3O4) - Total - as Mn	TWA	0.2 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2018)
Wollastonite - fibers, total dust	TWA	10 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended (09 2017)
Wollastonite - Fiber.	TWA	5 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended (09 2017)
Limestone	TWA	10 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
Limestone - Total dust.	STEL	20 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational

			Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	10 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Limestone - Respirable fraction.	TWA	3 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Limestone	8 HR ACL	10 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL	20 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
Limestone - Total dust.	TWA	10 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended (09 2017)
Titanium dioxide	TWA	10 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
Titanium dioxide - Total dust.	TWA	10 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Titanium dioxide - Respirable fraction.	TWA	3 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Titanium dioxide	TWA	10 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2011)
	TWA	10 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (11 2010)
	8 HR ACL	10 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL	20 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
Titanium dioxide - Total dust.	TWA	10 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended (09 2017)
Silicon dioxide (amorphous)	TWA	10 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (07 2010)
Iron oxide - Respirable.	TWA	5 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
Iron oxide - Total dust.	TWA	10 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Iron oxide - Dust. - as Fe	TWA	5 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Iron oxide - Fume. - as Fe	STEL	10 mg/m3	Canada. British Columbia OELs.

			(Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Iron oxide - Respirable fraction.	TWA	3 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Iron oxide - Fume. - as Fe	TWA	5 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Iron oxide - Respirable fraction.	TWA	5 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2011)
	TWA	5 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (11 2010)
Iron oxide	8 HR ACL	10 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL	20 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
Iron oxide - Dust and fume. - as Fe	15 MIN ACL	10 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	8 HR ACL	5 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
Iron oxide - Total dust.	TWA	10 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended (09 2017)
Iron oxide - Dust and fume. - as Fe	TWA	5 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended (09 2017)
Silicon - Total dust.	TWA	10 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (07 2010)
Silicon	8 HR ACL	10 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL	20 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
Silicon - Total dust.	TWA	10 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended (09 2017)
Aluminum oxide	TWA	10 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
Aluminum oxide - Respirable.	TWA	1 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Aluminum oxide - Respirable fraction.	TWA	3 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (05 2013)

Aluminum oxide - Total dust.	TWA	10 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (05 2013)
Aluminum oxide - Respirable fraction.	TWA	1 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2011)
	TWA	3 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (06 2015)
	TWA	1 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (11 2010)
Aluminum oxide - Inhalable fraction.	TWA	10 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (06 2015)
Aluminum oxide	8 HR ACL	10 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL	20 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
Aluminum oxide - Total dust. - as Al	TWA	10 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended (09 2017)
Calcium oxide	TWA	2 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	TWA	2 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	2 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2011)
	TWA	2 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (07 2010)
	15 MIN ACL	4 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	8 HR ACL	2 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	TWA	2 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended (09 2017)
Manganese - as Mn	TWA	0.2 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	8 HR ACL	0.2 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL	0.6 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
Manganese - Respirable fraction. - as Mn	TWA	0.02 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2014)
Manganese - Inhalable fraction. - as Mn	TWA	0.1 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2014)

Manganese - as Mn	TWA	0.2 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (06 2015)
Manganese - Fume, total dust. - as Mn	TWA	0.2 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended (09 2017)
Manganese - Respirable. - as Mn	TWA	0.02 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2018)
Manganese - Total - as Mn	TWA	0.2 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2018)
Quartz - Respirable particles.	TWA	0.025 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
Quartz - Respirable fraction.	TWA	0.025 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.025 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2011)
	8 HR ACL	0.05 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	TWA	0.10 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (06 2015)
Quartz - Respirable dust.	TWA	0.1 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended (09 2017)

Occupational Exposure Limits: Mexico

Chemical Identity	Type	Exposure Limit Values	Source
Magnesium oxide - Inhalable fraction.	VLE-PPT	10 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Calcium fluoride - as F	VLE-PPT	2.5 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Manganese oxide (Mn3O4) - as Mn	VLE-PPT	0.2 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Titanium dioxide	VLE-PPT	10 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Iron oxide - Respirable fraction.	VLE-PPT	5 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Aluminum oxide	VLE-PPT	10 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Calcium oxide	VLE-PPT	2 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)

Manganese - as Mn	VLE-PPT	0.2 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Quartz - Respirable fraction.	VLE-PPT	0.025 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Iron - as Fe	VLE-PPT	1 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)

Biological Limit Values: US

Chemical Identity	Exposure Limit Values	Source
Calcium fluoride (Fluoride: Sampling time: Prior to shift.)	2 mg/l (Urine)	ACGIH BEI (03 2013)
Calcium fluoride (Fluoride: Sampling time: End of shift.)	3 mg/l (Urine)	ACGIH BEI (03 2013)

Biological Limit Values: Mexico

Chemical Identity	Exposure Limit Values	Source
Calcium fluoride (fluorides: Sampling time: Prior to shift.)	3 mg/g (Creatinine in urine)	MX IBE (06 2012)
Calcium fluoride (fluorides: Sampling time: End of shift.)	10 mg/g (Creatinine in urine)	MX IBE (06 2012)

Additional exposure limits under the conditions of use: US

Chemical Identity	Type	Exposure Limit Values		Source
Carbon dioxide	TWA	5,000 ppm		US. ACGIH Threshold Limit Values, as amended (12 2010)
	STEL	30,000 ppm		US. ACGIH Threshold Limit Values, as amended (12 2010)
	PEL	5,000 ppm	9,000 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	STEL	30,000 ppm	54,000 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	REL	5,000 ppm	9,000 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	IDLH	40,000 ppm		US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Carbon monoxide	TWA	25 ppm		US. ACGIH Threshold Limit Values, as amended (12 2010)
	PEL	50 ppm	55 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	REL	35 ppm	40 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	Ceil_Time	200 ppm	229 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	IDLH	1,200 ppm		US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Nitrogen dioxide	TWA	0.2 ppm		US. ACGIH Threshold Limit Values, as amended (02 2012)
	Ceiling	5 ppm	9 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	STEL	1 ppm	1.8 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	IDLH	20 ppm		US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
	IDLH	13 ppm		US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Ozone	PEL	0.1 ppm	0.2 mg/m3	US. OSHA Table Z-1 Limits for Air

				Contaminants (29 CFR 1910.1000) (02 2006)
	Ceil_Time	0.1 ppm	0.2 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	TWA	0.05 ppm		US. ACGIH Threshold Limit Values, as amended (03 2014)
	TWA	0.20 ppm		US. ACGIH Threshold Limit Values, as amended (03 2014)
	TWA	0.10 ppm		US. ACGIH Threshold Limit Values, as amended (03 2014)
	TWA	0.08 ppm		US. ACGIH Threshold Limit Values, as amended (03 2014)
	IDLH	5 ppm		US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)

Additional exposure limits under the conditions of use: Canada

Chemical Identity	Type	Exposure Limit Values		Source
Carbon dioxide	STEL	30,000 ppm	54,000 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	TWA	5,000 ppm	9,000 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	TWA	5,000 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	STEL	15,000 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	5,000 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2011)
	STEL	30,000 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2011)
	STEL	30,000 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (11 2010)
	TWA	5,000 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (11 2010)
	8 HR ACL	5,000 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL	30,000 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	TWA	5,000 ppm	9,000 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended (09 2017)
	STEL	30,000 ppm	54,000 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended (09 2017)
Carbon monoxide	TWA	25 ppm	29 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	TWA	25 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)

	STEL	100 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	25 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2011)
	TWA	25 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (07 2010)
	8 HR ACL	25 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL	190 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	TWA	35 ppm	40 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended (09 2017)
	STEL	200 ppm	230 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended (09 2017)
Nitrogen dioxide	STEL	5 ppm	9.4 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	TWA	3 ppm	5.6 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	CEILING	1 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.2 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2012)
	STEL	5 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (11 2010)
	TWA	3 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (11 2010)
	8 HR ACL	3 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL	5 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	TWA	3 ppm	5.6 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended (09 2017)
Ozone	STEL	0.3 ppm	0.6 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	TWA	0.1 ppm	0.2 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	TWA	0.05 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.1 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for

				Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.08 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.2 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.1 ppm	0.2 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (07 2010)
	STEL	0.3 ppm	0.6 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (07 2010)
	15 MIN ACL	0.15 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	8 HR ACL	0.05 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	CEILING	0.1 ppm	0.2 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended (12 2008)
	TWA	0.20 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2014)
	TWA	0.05 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2014)
	TWA	0.08 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2014)
	TWA	0.10 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2014)

Additional exposure limits under the conditions of use: Mexico

Chemical Identity	Type	Exposure Limit Values	Source
Carbon dioxide	VLE-CT	30,000 ppm	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
	VLE-PPT	5,000 ppm	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Carbon monoxide	VLE-PPT	25 ppm	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Nitrogen dioxide	VLE-PPT	0.2 ppm	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Ozone	VLE-P	0.1 ppm	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)

Appropriate Engineering Controls

Ventilation: Use enough ventilation and local exhaust at the arc, flame or heat source to keep the fumes and gases from the worker's breathing zone and the general area. Train the operator to keep their head out of the fumes. **Keep exposure as low as possible.**

Individual protection measures, such as personal protective equipment

General information:

Exposure Guidelines: To reduce the potential for overexposure, use controls such as adequate ventilation and personal protective equipment (PPE). Overexposure refers to exceeding applicable local limits, the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs) or the Occupational Safety and Health Administration's (OSHA) Permissible Exposure Limits (PELs). Workplace exposure levels should be established by competent industrial hygiene assessments. Unless exposure levels are confirmed to be below the applicable local limit, TLV or PEL, whichever is lower, respirator use is required. Absent these controls, overexposure to one or more compound constituents, including those in the fume or airborne particles, may occur resulting in potential health hazards. According to the ACGIH, TLVs and Biological Exposure Indices (BEIs) "represent conditions under which ACGIH believes that nearly all workers may be repeatedly exposed without adverse health effects." The ACGIH further states that the TLV-TWA should be used as a guide in the control of health hazards and should not be used to indicate a fine line between safe and dangerous exposures. See Section 10 for information on constituents which have some potential to present health hazards. Welding consumables and materials being joined may contain chromium as an unintended trace element. Materials that contain chromium may produce some amount of hexavalent chromium (CrVI) and other chromium compounds as a byproduct in the fume. In 2018, the American Conference of Governmental Industrial Hygienists (ACGIH) lowered the Threshold Limit Value (TLV) for hexavalent chromium from 50 micrograms per cubic meter of air (50 µg/m³) to 0.2 µg/m³. At these new limits, CrVI exposures at or above the TLV may be possible in cases where adequate ventilation is not provided. CrVI compounds are on the IARC and NTP lists as posing a lung cancer and sinus cancer risk. Workplace conditions are unique and welding fume exposures levels vary. Workplace exposure assessments must be conducted by a qualified professional, such as an industrial hygienist, to determine if exposures are below applicable limits and to make recommendations when necessary for preventing overexposures.

Maximum Dust Exposure Guideline™(MDEG)™ for this product (based on content of Manganese oxide (Mn3O4)) is 0.3 mg/m3. This exposure guideline is calculated using the most conservative value of the ACGIH TLV or OSHA PEL for the stated substance.Handle to minimize generation of airborne dust. Use adequate ventilation and dust collection. Use respiratory protection, if required, to keep exposure below limits. If your local applicable exposure limits are lower than the ACGIH TLV or OSHA PEL for any of the substances listed in Section 3 of this SDS, you must take that into consideration before utilizing or applying this guideline.

Eye/face protection:

Wear helmet or use face shield with filter lens shade number 12 or darker for open arc processes – or follow the recommendations as specified in ANSI Z49.1, Section 4, based on your process and settings. No specific lens shade recommendation for submerged arc or electroslag processes. Shield others by providing appropriate screens and flash goggles.

Skin Protection

Hand Protection:

Wear protective gloves. Suitable gloves can be recommended by the glove supplier.

Other:	**Protective Clothing:** Wear hand, head, and body protection which help to prevent injury from radiation, open flames, hot surfaces, sparks and electrical shock. See Z49.1. At a minimum, this includes welder's gloves and a protective face shield when welding, and may include arm protectors, aprons, hats, shoulder protection, as well as dark substantial clothing when welding, brazing and soldering. Wear dry gloves free of holes or split seams. Train the operator not to permit electrically live parts or electrodes from contacting the skin . . . or clothing or gloves if they are wet. Insulate yourself from the work piece and ground using dry plywood, rubber mats or other dry insulation.
Respiratory Protection:	Keep your head out of fumes. Use enough ventilation and local exhaust to keep fumes and gases from your breathing zone and the general area. An approved respirator should be used unless exposure assessments are below applicable exposure limits.
Hygiene measures:	Do not eat, drink or smoke when using the product. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Determine the composition and quantity of fumes and gases to which workers are exposed by taking an air sample from inside the welder's helmet if worn or in the worker's breathing zone. Improve ventilation if exposures are not below limits. See ANSI/AWS F1.1, F1.2, F1.3 and F1.5, available from the American Welding Society, www.aws.org. Observe good industrial hygiene practices. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Granular welding flux.
Physical state:	Solid
Form:	Granular
Color:	No data available.
Odor:	No data available.
Odor threshold:	No data available.
pH:	No data available.
Melting point/freezing point:	No data available.
Initial boiling point and boiling range:	No data available.
Flash Point:	No data available.
Evaporation rate:	No data available.
Flammability (solid, gas):	No data available.
Upper/lower limit on flammability or explosive limits	
Flammability limit - upper (%):	No data available.
Flammability limit - lower (%):	No data available.
Explosive limit - upper (%):	No data available.
Explosive limit - lower (%):	No data available.
Vapor pressure:	No data available.
Vapor density:	No data available.
Density:	2.0 g/cm3
Relative density:	No data available.

Solubility(ies)	
Solubility in water:	No data available.
Solubility (other):	No data available.
Partition coefficient (n-octanol/water):	No data available.
Auto-ignition temperature:	No data available.
Decomposition temperature:	No data available.
Viscosity:	No data available.

10. STABILITY AND REACTIVITY

Reactivity:	The product is non-reactive under normal conditions of use, storage and transport.
Chemical Stability:	Material is stable under normal conditions.
Possibility of hazardous reactions:	None under normal conditions.
Conditions to avoid:	Avoid heat or contamination.
Incompatible Materials:	Strong acids. Strong oxidizing substances. Strong bases.
Hazardous Decomposition Products:	Fumes and gases from welding and its allied processes such as brazing and soldering cannot be classified simply. The composition and quantity of both are dependent upon the metal to which the joining or hot work is applied, the process, procedure - and where applicable - the electrode or consumable used. Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the metal being welded or worked (such as paint, plating, or galvanizing), the number of operators and the volume of the work area, the quality and amount of ventilation, the position of the operator's head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degreasing activities.) In cases where an electrode or other applied material is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section 3. Decomposition products of normal operation include those originating from the volatilization, reaction, or oxidation of the materials shown in Section 3, plus those from the base metal and coating, etc., as noted above. Reasonably expected fume constituents produced during arc welding and brazing include the oxides of iron, manganese and other metals present in the welding consumable or base metal. Hexavalent chromium compounds may be in the welding or brazing fume of consumables or base metals which contain chromium. Gaseous and particulate fluoride may be in the fume of consumables or flux materials which contain fluoride. Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc associated with welding.

11. TOXICOLOGICAL INFORMATION

General information: The International Agency for Research on Cancer (IARC) has determined welding fumes and ultraviolet radiation from welding are carcinogenic to humans (Group 1). According to IARC, welding fumes cause cancer of the lung and positive associations have been observed with cancer of the kidney. Also according to IARC, ultraviolet radiation from welding causes ocular melanoma. IARC identifies gouging, brazing, carbon arc or plasma arc cutting, and soldering as processes closely related to welding. Read and understand the manufacturer's instructions, Safety Data Sheets and the precautionary labels before using this product.

Information on likely routes of exposure

Inhalation: Potential chronic health hazards related to the use of welding consumables are most applicable to the inhalation route of exposure. Refer to Inhalation statements in Section 11.

Skin Contact: Arc rays can burn skin. Skin cancer has been reported.

Eye contact: Arc rays can injure eyes.

Ingestion: Health injuries from ingestion are not known or expected under normal use.

Symptoms related to the physical, chemical and toxicological characteristics

Inhalation: Overexposure to respirable crystalline silica, which may be present in dust created from the processing, handling or use of this product, can cause severe lung damage (silicosis). Respiratory overexposure to airborne crystalline silica is known to cause silicosis, a form of disabling pulmonary fibrosis which can be progressive and may lead to death. Crystalline silica is on the IARC (International Agency for Research on Cancer) and NTP (National Toxicology Program) lists as posing a cancer risk to humans. Note: All regional authorities do not use the same criteria for assigning carcinogenic classifications to chemicals. For example, the European Union (EU) CLP does not require classifying crystalline silica as a carcinogenic compound, or listing it in Section 3 of the SDS when concentrations are less than 1%. Short-term (acute) overexposure to fumes and gases from welding and allied processes may result in discomfort such as metal fume fever, dizziness, nausea, or dryness or irritation of nose, throat, or eyes. May aggravate pre-existing respiratory problems (e.g. asthma, emphysema). Long-term (chronic) overexposure to fumes and gases from welding and allied processes can lead to siderosis (iron deposits in lung), central nervous system effects, bronchitis and other pulmonary effects.

Information on toxicological effects

Acute toxicity (list all possible routes of exposure)

Oral

Product: ATEmix: 31,148.99 mg/kg

Specified substance(s):

Calcium fluoride	LD 50 (Rat): 4,250 mg/kg
Sodium silicate	LD 50 (Rat): 1.1 g/kg
Limestone	LD 50 (Rat): 6,450 mg/kg

Dermal

Product: Not classified for acute toxicity based on available data.

Inhalation

Product: ATEmix: 188.51 mg/l

Specified substance(s):

Aluminum oxide	LC 50 (Rat, 4 h): > 2.3 mg/l

Repeated dose toxicity
Product: No data available.

Skin Corrosion/Irritation
Product: Not classified

Serious Eye Damage/Eye Irritation
Product: Not classified

Respiratory or Skin Sensitization
Product: Respiratory Sensitization: Not classified
Skin Sensitization: Not classified

Carcinogenicity
Product: Suspected of causing cancer.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:

Titanium dioxide	Overall evaluation: 2B. Possibly carcinogenic to humans.
Quartz	Overall evaluation: 1. Carcinogenic to humans.

US. National Toxicology Program (NTP) Report on Carcinogens:

Quartz	Known To Be Human Carcinogen.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050), as amended:

Quartz	Cancer

Germ Cell Mutagenicity
In vitro
Product: Not classified

In vivo
Product: Not classified

Reproductive toxicity
Product: Not classified

Specific Target Organ Toxicity - Single Exposure
Product: Not classified

Specific Target Organ Toxicity - Repeated Exposure
Product: May cause damage to organs through prolonged or repeated exposure. Repeated overexposure to airborne manganese may affect the brain and central nervous system, resulting in poor coordination, difficulty speaking, and arm or leg tremor. This condition can be irreversible.

Target Organs
Specific Target Organ Toxicity - Repeated Exposure: Nervous System

Aspiration Hazard
Product: Not applicable

Other effects: Organic polymers may be used in the manufacture of various welding consumables. Overexposure to their decomposition byproducts may result in a condition known as polymer fume fever. Polymer fume fever usually occurs within 4 to 8 hours of exposure with the presentation of flu like symptoms, including mild pulmonary irritation with or without an increase in body temperature. Signs of exposure can include an increase in white blood cell count. Resolution of symptoms typically occurs quickly, usually not lasting longer than 48 hours.

Symptoms related to the physical, chemical and toxicological characteristics under the condition of use

Additional toxicological Information under the conditions of use:

Acute toxicity
Inhalation
Specified substance(s):

Carbon dioxide	LC Lo (Human, 5 min): 90000 ppm
Carbon monoxide	LC 50 (Rat, 4 h): 1300 ppm
Nitrogen dioxide	LC 50 (Rat, 4 h): 88 ppm
Ozone	LC Lo (Human, 30 min): 50 ppm

Other effects:
Specified substance(s):

Carbon dioxide	Asphyxia
Carbon monoxide	Carboxyhemoglobinemia
Nitrogen dioxide	Lower respiratory tract irritation

12. ECOLOGICAL INFORMATION

Ecotoxicity
Acute hazards to the aquatic environment:
Fish
Product: Not classified
Specified substance(s):

Calcium fluoride	LC 50 (48 h): 299 mg/l LC 50 (96 h): 108 mg/l LC 100 (Tinca vulgaris, 48 h): > 3,000 mg/l LC 50 (96 h): 340 mg/l LC 50 (96 h): 165 mg/l
Sodium silicate	LC 50 (Western mosquitofish (Gambusia affinis), 96 h): 1,800 mg/l

Aquatic Invertebrates
Product: Not classified
Specified substance(s):

Calcium fluoride	EC 50 (Daphnia magna; Daphnia sp., 120 h): 20 - 39 mg/l EC 50 (Daphnia magna; Daphnia sp., 24 h): 352 mg/l EC 50 (Daphnia magna; Daphnia sp., 96 h): 26 - 48 mg/l EC 50 (Daphnia magna; Daphnia sp., 48 h): 97 mg/l EC 50 (Daphnia magna; Daphnia sp., 48 h): 153 mg/l
Sodium silicate	EC 50 (Water flea (Ceriodaphnia dubia), 48 h): 22.94 - 49.01 mg/l
Manganese	EC 50 (Water flea (Daphnia magna), 48 h): 40 mg/l

Chronic hazards to the aquatic environment:
Fish
Product: Not classified

Aquatic Invertebrates
Product: Not classified

Toxicity to Aquatic Plants
Product: No data available.

Persistence and Degradability
Biodegradation
Product: No data available.

Bioaccumulative potential
Bioconcentration Factor (BCF)
Product: No data available.

Mobility in soil: No data available.

13. Disposal considerations

General information: The generation of waste should be avoided or minimized whenever possible. When practical, recycle in an environmentally acceptable, regulatory compliant manner. Dispose of non-recyclable products in accordance with all applicable Federal, State, Provincial, and Local requirements. Minerals such as Florida Zircon Sand are used as one of the components in the manufacturing of welding fluxes contain trace levels of Naturally Occurring Radioactive Material (NORM). Based on the radiological status of these materials, the scrap flux and waste slag generated in welding processes should be acceptable for disposal in RCRA Title D landfills. Flux materials containing sufficiently low concentrations of NORM are not subject to federal radiation control regulations. The regulation for classifying the flux material (zircon sand) is Title 10, Code of Federal Regulations, Part 40 Section 40.13 (10CRF40.13). **Materials which contain less than 0.05% (0,05%) by weight of uranium and/or thorium, are exempt from regulation**. The concentrations in the flux and slag are considerably lower than 0.05% (0,05%). Note: Many states are developing regulations pertaining to Naturally Occurring Radioactive Materials (NORM) above background levels. Consult with the applicable regulations and the authority with jurisdiction.

Disposal instructions: Disposal of this product may be regulated as a Hazardous Waste. The welding consumable and/or by-product from the welding process (including, but not limited to slag, dust, etc.) may contain levels of leachable heavy metals such as Barium or Chromium. Prior to disposal, a representative sample must be analyzed in accordance with US EPA's Toxicity Characteristic Leaching Procedure (TCLP) to determine if any constituents exist above regulated threshold levels. Discard any product, residue, disposable container, or liner in an environmentally acceptable manner according to Federal, State and Local Regulations. Discharge, treatment, or disposal may be subject to national, state, or local laws.

Contaminated Packaging: Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

14. TRANSPORT INFORMATION

DOT

UN Number:	
UN Proper Shipping Name:	NOT DG REGULATED
Transport Hazard Class(es)	
Class:	NR
Label(s):	–
Packing Group:	–
Marine Pollutant:	No

IMDG

UN Number:	
UN Proper Shipping Name:	NOT DG REGULATED
Transport Hazard Class(es)	
Class:	NR
Label(s):	–
EmS No.:	

Packing Group: –
Marine Pollutant: No

IATA
UN Number:
Proper Shipping Name: NOT DG REGULATED
Transport Hazard Class(es):
Class: NR
Label(s): –
Packing Group: –
Marine Pollutant: No
Cargo aircraft only: Allowed.

TDG
UN Number:
UN Proper Shipping Name: NOT DG REGULATED
Transport Hazard Class(es)
Class: NR
Label(s): –
Packing Group: –
Marine Pollutant: No

15. REGULATORY INFORMATION

US Federal Regulations

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)
None present or none present in regulated quantities.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050), as amended

Chemical Identity	OSHA hazard(s)
Quartz	kidney effects lung effects immune system effects Cancer

CERCLA Hazardous Substance List (40 CFR 302.4):

Chemical Identity	Reportable quantity
Manganese	Included in the regulation but with no data values. See regulation for further details.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories
Delayed (Chronic) Health Hazard
Carcinogenicity
Specific target organ toxicity (single or repeated exposure)

SARA 302 Extremely Hazardous Substance
None present or none present in regulated quantities.

SARA 304 Emergency Release Notification
None present or none present in regulated quantities.

SARA 311/312 Hazardous Chemical

Chemical Identity	Threshold Planning Quantity

SARA 313 (TRI Reporting)

Chemical Identity	Reporting threshold for other users	Reporting threshold for manufacturing and processing
Manganese oxide (Mn3O4)	10000 lbs	25000 lbs.

Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3)
None present or none present in regulated quantities.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):
None present or none present in regulated quantities.

US State Regulations

US. California Proposition 65

WARNING

Cancer - www.P65Warnings.ca.gov

WARNING: This product contains or produces a chemical known to the State of California to cause cancer and birth defects (or other reproductive harm). (California Health & Safety Code Section 25249.5 et seq.)
WARNING: Cancer and Reproductive Harm – www.P65Warnings.ca.gov

US. New Jersey Worker and Community Right-to-Know Act

Chemical Identity
Magnesium oxide
Calcium fluoride
Manganese oxide (Mn3O4)
Limestone
Titanium dioxide
Iron oxide
Silicon
Aluminum oxide
Calcium oxide
Quartz

US. Massachusetts RTK - Substance List

Chemical Identity
Magnesium oxide
Manganese oxide (Mn3O4)
Limestone
Titanium dioxide
Silicon dioxide (amorphous)
Iron oxide
Silicon
Aluminum oxide
Quartz

US. Pennsylvania RTK - Hazardous Substances

Chemical Identity
Magnesium oxide
Calcium fluoride
Manganese oxide (Mn3O4)
Limestone
Titanium dioxide
Silicon dioxide (amorphous)
Iron oxide
Silicon
Aluminum oxide
Calcium oxide

US. Rhode Island RTK

Chemical Identity

Calcium fluoride
Manganese oxide (Mn3O4)
Limestone
Aluminum oxide

Canada Federal Regulations

List of Toxic Substances (CEPA, Schedule 1)

Chemical Identity

Magnesium oxide
Titanium dioxide
Iron oxide
Aluminum oxide

Export Control List (CEPA 1999, Schedule 3)

Not Regulated

National Pollutant Release Inventory (NPRI)

Canada. National Pollutant Release Inventory (NPRI) Substances, Part 5, VOCs with Additional Reporting Requirements

NPRI PT5	Not Regulated

Canada. National Pollutant Release Inventory (NPRI) (Schedule 1, Parts 1-4)

NPRI	Not Regulated

Greenhouse Gases

Not Regulated

Controlled Drugs and Substances Act

CA CDSI	Not Regulated
CA CDSII	Not Regulated
CA CDSIII	Not Regulated
CA CDSIV	Not Regulated
CA CDSV	Not Regulated
CA CDSVII	Not Regulated
CA CDSVIII	Not Regulated

Precursor Control Regulations

Not Regulated

Mexico. Substances subject to reporting for the pollutant release and transfer registry (PRTR): Not applicable

Inventory Status:

Australia AICS:	One or more components are not listed or are exempt from listing.
Canada DSL Inventory List:	One or more components are not listed or are exempt from listing.
Canada NDSL Inventory:	One or more components are not listed or are exempt from listing.
Ontario Inventory:	One or more components are not listed or are exempt from listing.
China Inv. Existing Chemical Substances:	One or more components are not listed or are exempt from listing.
Japan (ENCS) List:	One or more components are not listed or are exempt from listing.
Japan ISHL Listing:	One or more components are not listed or are exempt from listing.
Japan Pharmacopoeia Listing:	One or more components are not listed or are exempt from listing.
Korea Existing Chemicals Inv. (KECI):	One or more components are not listed or are exempt from listing.

Mexico INSQ:	One or more components are not listed or are exempt from listing.
New Zealand Inventory of Chemicals:	One or more components are not listed or are exempt from listing.
Philippines PICCS:	One or more components are not listed or are exempt from listing.
Taiwan Chemical Substance Inventory:	On or in compliance with the inventory
US TSCA Inventory:	One or more components are not listed or are exempt from listing.
EINECS, ELINCS or NLP:	One or more components are not listed or are exempt from listing.

16. OTHER INFORMATION

Definitions:

The Maximum Dust Exposure Guideline™ (MDEG)™ is provided to assist with the management of workplace exposures where granular solid welding products or other materials are being utilized. It is derived from relevant compositional data and estimates the lowest level of total airborne dust exposure, for a given product, at which some specific constituent might potentially exceed its individual exposure limit. The specific exposure limits referenced are the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV®) and the U. S. OSHA Permissible Exposure Limit (PEL), which ever value is the lowest. If local applicable limits for any of the substances listed in Section 3 of this SDS are lower than the TLV or PEL this must be taken into consideration before utilizing or applying this guideline. The MDEG™ is never greater than 10 mg/m³ as this is the airborne exposure guideline for total particulate (total dust). **The MDEG™ is intended to serve as a general guideline to assist in the management of workplace exposure and does not replace the regular measurement and analysis of worker exposure to individual airborne dust constituents in accordance with recommended industrial hygiene practice.**

Combustible Dust Hazard Rating:	This material will not burn and has the Lincoln Electric Combustible Dust Hazard Rating: 0-CS. For additional information contact the Lincoln Electric EHS Department (216) 383-2669.
Combustible Dust Hazard Rating Information:	**Lincoln Electric's Combustible Dust Rating System is as follows:** 3: Fine solid powders or dusts which can ignite with contact with air, or have a Kst value ≥300, and/or would have an ignition flame front faster than the speed of sound. 2: Fine solid powders or dusts which can ignite with contact with air, have an MIE <3 mJ, or have a Kst value >200 & ≤299, and/or would have an ignition flame front faster than the speed of sound. 1.3: Fine solid powders or dusts which have an MIE >3 mJ <500mJ, and a Kst ≥25<200 mJ. 1.2: Fine solid powders or dusts which have an MIE >3 mJ <500mJ, and a Kst <25, or MIE >500mJ and Kst ≥25 but <200 mJ. 1.1: Fine solid powders or dusts which have an MIE >10 J and a positive Kst value <25. 0-CS: Materials that will not burn.
Revision Date:	01/30/2020
Further Information:	Additional information is available by request.
Disclaimer:	The Lincoln Electric Company urges each end user and recipient of this SDS to study it carefully. See also www.lincolnelectric.com/safety. If necessary, consult an industrial hygienist or other expert to understand this information and safeguard the environment and protect workers from potential hazards associated with the handling or use of this product. This information is believed to be accurate as of the revision date shown above. However, no warranty, expressed or implied, is given. Because the conditions or methods of use are beyond Lincoln Electric's control, we assume no liability resulting from the use of this product. Regulatory requirements are subject to change and may differ between various locations. Compliance with all applicable

Federal, State, Provincial, and local laws and regulations remain the responsibility of the user.

SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: Lincoln® ER70S-6
Product Size: .045" (1.1 mm)

Other means of identification
SDS number: 200000000233

Recommended use and restriction on use
Recommended use: GMAW (Gas Metal Arc Welding)
Restrictions on use: Not known. Read this SDS before using this product.

Manufacturer/Importer/Supplier/Distributor Information

Company Name:	The Lincoln Electric Company
Address:	22801 Saint Clair Avenue Cleveland, Ohio 44117 USA
Telephone:	+1 (216) 481-8100
Contact Person:	Safety Data Sheet Questions: www.lincolnelectric.com/sds Arc Welding Safety Information: www.lincolnelectric.com/safety
Company Name:	The Lincoln Electric Company of Canada LP
Address:	179 Wicksteed Avenue Toronto, Ontario M4G 2B9 Canada
Telephone:	+1 (416) 421-2600
Contact Person:	Safety Data Sheet Questions: www.lincolnelectric.com/sds Arc Welding Safety Information: www.lincolnelectric.com/safety

Emergency telephone number:

USA/Canada/Mexico	+1 (888) 609-1762
Americas/Europe	+1 (216) 383-8962
Asia Pacific	+1 (216) 383-8966
Middle East/Africa	+1 (216) 383-8969

3E Company Access Code: 333988

2. HAZARDS IDENTIFICATION

Classified according to the criteria of the Globally Harmonized System of Classification and Labeling of Chemicals (GHS), The United States Occupational Safety and Health Administration's Hazard Communication Standard (29 CFR 1910.1200), Canada's Hazardous Product Regulations and Mexico's Harmonized System for the Identification and Communication of Hazards and Risks from Hazardous Chemicals in the Workplace.

Hazard Classification Not classified as hazardous according to applicable GHS hazard classification criteria.

Label Elements

Hazard Symbol: No symbol

Signal Word: No signal word.

Hazard Statement: Not applicable

Precautionary Not applicable

Statements:

Other hazards which do not result in GHS classification:

Electrical Shock can kill. If welding must be performed in damp locations or with wet clothing, on metal structures or when in cramped positions such as sitting, kneeling or lying, or if there is a high risk of unavoidable or accidental contact with work piece, use the following equipment: Semiautomatic DC Welder, DC Manual (Stick) Welder, or AC Welder with Reduced Voltage Control.

Arc rays can injure eyes and burn skin. Welding arc and sparks can ignite combustibles and flammable materials. Overexposure to welding fumes and gases can be hazardous. Read and understand the manufacturer's instructions, Safety Data Sheets and the precautionary labels before using this product. Refer to Section 8.

Substance(s) formed under the conditions of use:

The welding fume produced from this welding electrode may contain the following constituent(s) and/or their complex metallic oxides as well as solid particles or other constituents from the consumables, base metal, or base metal coating not listed below. Fume from this product may contain low levels of copper, typically less than 1% by weight. Overexposure to copper may cause metal fume fever, as well as skin, eye and respiratory tract irritation.

Chemical Identity	CAS-No.
Carbon dioxide	124-38-9
Carbon monoxide	630-08-0
Nitrogen dioxide	10102-44-0
Ozone	10028-15-6
Manganese	7439-96-5
Nickel	7440-02-0

3. COMPOSITION / INFORMATION ON INGREDIENTS

Reportable Hazardous Ingredients

Mixtures

Chemical Identity	CAS number	Content in percent (%)*
Iron	7439-89-6	50 - <100%
Manganese	7439-96-5	1 - <5%
Silicon	7440-21-3	0.1 - <1%

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

Composition Comments:

The term "Hazardous Ingredients" should be interpreted as a term defined in Hazard Communication standards and does not necessarily imply the existence of a welding hazard. The product may contain additional non-hazardous ingredients or may form additional compounds under the condition of use. Refer to Sections 2 and 8 for more information.

4. FIRST AID MEASURES

Ingestion:

Avoid hand, clothing, food, and drink contact with fluxes, metal fume or powder which can cause ingestion of particulate during hand to mouth activities such as drinking, eating, smoking, etc. If ingested, do not induce

vomiting. Contact a poison control center. Unless the poison control center advises otherwise, wash out mouth thoroughly with water. If symptoms develop, seek medical attention at once.

Inhalation: Move to fresh air if breathing is difficult. If breathing has stopped, perform artificial respiration and obtain medical assistance at once.

Skin Contact: Remove contaminated clothing and wash the skin thoroughly with soap and water. For reddened or blistered skin, or thermal burns, obtain medical assistance at once.

Eye contact: Dust or fume from this product should be flushed from the eyes with copious amounts of clean, tepid water until transported to an emergency medical facility. Do not allow victim to rub or keep eyes tightly closed. Obtain medical assistance at once.

Arc rays can injure eyes. If exposed to arc rays, move victim to dark room, remove contact lenses as necessary for treatment, cover eyes with a padded dressing and rest. Obtain medical assistance if symptoms persist.

Most important symptoms/effects, acute and delayed

Symptoms: Short-term (acute) overexposure to fumes and gases from welding and allied processes may result in discomfort such as metal fume fever, dizziness, nausea, or dryness or irritation of nose, throat, or eyes. May aggravate pre-existing respiratory problems (e.g. asthma, emphysema). Long-term (chronic) overexposure to fumes and gases from welding and allied processes can lead to siderosis (iron deposits in lung), central nervous system effects, bronchitis and other pulmonary effects. Refer to Section 11 for more information.

Hazards: The hazards associated with welding and its allied processes such as soldering and brazing are complex and may include physical and health hazards such as but not limited to electric shock, physical strains, radiation burns (eye flash), thermal burns due to hot metal or spatter and potential health effects of overexposure to fumes, gases or dusts potentially generated during the use of this product. Refer to Section 11 for more information.

Indication of immediate medical attention and special treatment needed

Treatment: Treat symptomatically.

5. FIRE-FIGHTING MEASURES

General Fire Hazards: As shipped, this product is nonflammable. However, welding arc and sparks as well as open flames and hot surfaces associated with brazing and soldering can ignite combustible and flammable materials. Read and understand American National Standard Z49.1, "Safety in Welding, Cutting and Allied Processes" and National Fire Protection Association NFPA 51B, "Standard for Fire Prevention during Welding, Cutting and Other Hot Work" before using this product.

Suitable (and unsuitable) extinguishing media

Suitable extinguishing media: As shipped, the product will not burn. In case of fire in the surroundings: use appropriate extinguishing agent.

Unsuitable extinguishing media: Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical: Welding arc and sparks can ignite combustibles and flammable products.

Special protective equipment and precautions for firefighters

Special fire fighting procedures: Use standard firefighting procedures and consider the hazards of other involved materials.

Special protective equipment for fire-fighters: Selection of respiratory protection for fire fighting: follow the general fire precautions indicated in the workplace. Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: If airborne dust and/or fume is present, use adequate engineering controls and, if needed, personal protection to prevent overexposure. Refer to recommendations in Section 8.

Methods and material for containment and cleaning up: Absorb with sand or other inert absorbent. Stop the flow of material, if this is without risk. Clean up spills immediately, observing precautions in the personal protective equipment in Section 8. Avoid generating dust. Prevent product from entering any drains, sewers or water sources. Refer to Section 13 for proper disposal.

Environmental Precautions: Avoid release to the environment. Prevent further leakage or spillage if safe to do so. Do not contaminate water sources or sewer. Environmental manager must be informed of all major spillages.

7. HANDLING AND STORAGE

Precautions for safe handling: Prevent formation of dust. Provide appropriate exhaust ventilation at places where dust is formed.

Read and understand the manufacturer's instruction and the precautionary label on the product. Refer to Lincoln Safety Publications at www.lincolnelectric.com/safety. See American National Standard Z49.1, "Safety In Welding, Cutting and Allied Processes" published by the American Welding Society, http://pubs.aws.org and OSHA Publication 2206 (29CFR1910), U.S. Government Printing Office, www.gpo.gov.

Conditions for safe storage, including any incompatibilities: Store in closed original container in a dry place. Store in accordance with local/regional/national regulations. Store away from incompatible materials.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Control Parameters

Occupational Exposure Limits: US

Chemical Identity	Type	Exposure Limit Values	Source
Manganese - Fume. - as Mn	Ceiling	5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	REL	1 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
	STEL	3 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Manganese - Inhalable fraction. - as Mn	TWA	0.1 mg/m3	US. ACGIH Threshold Limit Values (03 2014)
Manganese - Respirable fraction. - as Mn	TWA	0.02 mg/m3	US. ACGIH Threshold Limit Values (03 2014)

Manganese	IDLH	500 mg/m3	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Silicon - Total dust.	PEL	15 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Silicon - Respirable fraction.	PEL	5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Silicon - Respirable.	REL	5 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Silicon - Total	REL	10 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)

Occupational Exposure Limits: Canada

Chemical Identity	Type	Exposure Limit Values	Source
Manganese - as Mn	TWA	0.2 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	0.2 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	8 HR ACL	0.2 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	0.6 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Manganese - Respirable fraction. - as Mn	TWA	0.02 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
Manganese - Inhalable fraction. - as Mn	TWA	0.1 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
Manganese - as Mn	TWA	0.2 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (06 2015)
Manganese - Fume, total dust. - as Mn	TWA	0.2 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (09 2017)
Silicon - Total dust.	TWA	10 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (07 2010)
Silicon	8 HR ACL	10 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	20 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Silicon - Total dust.	TWA	10 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (09 2017)

Occupational Exposure Limits: Mexico

Chemical Identity	Type	Exposure Limit Values	Source
Iron - as Fe	VLE-PPT	1 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control) (04 2014)
Manganese - as Mn	VLE-PPT	0.2 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control) (04 2014)

Additional exposure limits under the conditions of use: US

Chemical Identity	Type	Exposure Limit Values	Source

Carbon dioxide	TWA	5,000 ppm		US. ACGIH Threshold Limit Values (12 2010)
	STEL	30,000 ppm		US. ACGIH Threshold Limit Values (12 2010)
	PEL	5,000 ppm	9,000 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	STEL	30,000 ppm	54,000 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
	REL	5,000 ppm	9,000 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
	IDLH	40,000 ppm		US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Carbon monoxide	TWA	25 ppm		US. ACGIH Threshold Limit Values (12 2010)
	PEL	50 ppm	55 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	REL	35 ppm	40 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
	Ceil_Time	200 ppm	229 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
	IDLH	1,200 ppm		US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Nitrogen dioxide	TWA	0.2 ppm		US. ACGIH Threshold Limit Values (02 2012)
	Ceiling	5 ppm	9 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	STEL	1 ppm	1.8 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
	IDLH	20 ppm		US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
	IDLH	13 ppm		US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Ozone	PEL	0.1 ppm	0.2 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	Ceil_Time	0.1 ppm	0.2 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
	TWA	0.05 ppm		US. ACGIH Threshold Limit Values (03 2014)
	TWA	0.20 ppm		US. ACGIH Threshold Limit Values (03 2014)
	TWA	0.10 ppm		US. ACGIH Threshold Limit Values (03 2014)
	TWA	0.08 ppm		US. ACGIH Threshold Limit Values (03 2014)
	IDLH	5 ppm		US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Manganese - Fume. - as Mn	Ceiling		5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	REL		1 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
	STEL		3 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Manganese - Inhalable fraction. - as Mn	TWA		0.1 mg/m3	US. ACGIH Threshold Limit Values (03 2014)
Manganese - Respirable fraction. - as Mn	TWA		0.02 mg/m3	US. ACGIH Threshold Limit Values (03 2014)
Manganese	IDLH		500 mg/m3	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Nickel - Inhalable fraction.	TWA		1.5 mg/m3	US. ACGIH Threshold Limit Values (12 2010)
Nickel - as Ni	PEL		1 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	REL		0.015 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)

Nickel	IDLH	10 mg/m3	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)

Additional exposure limits under the conditions of use: Canada

Chemical Identity	Type	Exposure Limit Values		Source
Carbon dioxide	STEL	30,000 ppm	54,000 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	5,000 ppm	9,000 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	5,000 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	STEL	15,000 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	5,000 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2011)
	STEL	30,000 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2011)
	STEL	30,000 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	TWA	5,000 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	8 HR ACL	5,000 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	30,000 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	TWA	5,000 ppm	9,000 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (09 2017)
	STEL	30,000 ppm	54,000 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (09 2017)
Carbon monoxide	TWA	25 ppm	29 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	25 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	STEL	100 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	25 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2011)
	TWA	25 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (07 2010)
	8 HR ACL	25 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	190 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety

				Regulations, 1996, Table 21) (05 2009)
	TWA	35 ppm	40 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (09 2017)
	STEL	200 ppm	230 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (09 2017)
Nitrogen dioxide	STEL	5 ppm	9.4 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	3 ppm	5.6 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	CEILING	1 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.2 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2012)
	STEL	5 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	TWA	3 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	8 HR ACL	3 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	5 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	TWA	3 ppm	5.6 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (09 2017)
Ozone	STEL	0.3 ppm	0.6 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	0.1 ppm	0.2 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	0.05 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.1 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.08 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.2 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.1 ppm	0.2 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (07 2010)
	STEL	0.3 ppm	0.6 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (07 2010)
	15 MIN ACL	0.15 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)

	8 HR ACL	0.05 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	CEILING	0.1 ppm	0.2 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
	TWA	0.20 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
	TWA	0.05 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
	TWA	0.08 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
	TWA	0.10 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
Manganese - as Mn	TWA		0.2 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA		0.2 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	8 HR ACL		0.2 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL		0.6 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Manganese - Respirable fraction. - as Mn	TWA		0.02 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
Manganese - Inhalable fraction. - as Mn	TWA		0.1 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
Manganese - as Mn	TWA		0.2 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (06 2015)
Manganese - Fume, total dust. - as Mn	TWA		0.2 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (09 2017)
Nickel	TWA		1.5 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA		0.05 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (05 2013)
Nickel - Inhalable fraction.	TWA		1.5 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2011)
Nickel - Inhalable fraction. - as Ni	8 HR ACL		1.5 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL		3 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	TWA		1 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (06 2015)
Nickel	TWA		1 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (09 2017)

Additional exposure limits under the conditions of use: Mexico

Chemical Identity	Type	Exposure Limit Values	Source
Carbon dioxide	VLE-CT	30,000 ppm	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control) (04 2014)
	VLE-PPT	5,000 ppm	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control) (04 2014)
Carbon monoxide	VLE-PPT	25 ppm	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control) (04 2014)
Nitrogen dioxide	VLE-PPT	0.2 ppm	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control) (04 2014)
Ozone	VLE-P	0.1 ppm	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control) (04 2014)
Manganese - as Mn	VLE-PPT	0.2 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control) (04 2014)
Nickel - Inhalable fraction. - as Ni	VLE-PPT	1.5 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control) (04 2014)

Appropriate Engineering Controls

Ventilation: Use enough ventilation and local exhaust at the arc, flame or heat source to keep the fumes and gases from the worker's breathing zone and the general area. Train the operator to keep their head out of the fumes. **Keep exposure as low as possible.**

Individual protection measures, such as personal protective equipment

General information:

Exposure Guidelines: To reduce the potential for overexposure, use controls such as adequate ventilation and personal protective equipment (PPE). Overexposure refers to exceeding applicable local limits, the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs) or the Occupational Safety and Health Administration's (OSHA) Permissible Exposure Limits (PELs). Workplace exposure levels should be established by competent industrial hygiene assessments. Unless exposure levels are confirmed to be below the applicable local limit, TLV or PEL, whichever is lower, respirator use is required. Absent these controls, overexposure to one or more compound constituents, including those in the fume or airborne particles, may occur resulting in potential health hazards. According to the ACGIH, TLVs and Biological Exposure Indices (BEIs) "represent conditions under which ACGIH believes that nearly all workers may be repeatedly exposed without adverse health effects." The ACGIH further states that the TLV-TWA should be used as a guide in the control of health hazards and should not be used to indicate a fine line between safe and dangerous exposures. See Section 10 for information on constituents which have some potential to present health hazards. Welding consumables and materials being joined may contain chromium as an unintended trace element. Materials that contain chromium may produce some amount of hexavalent chromium (CrVI) and other chromium compounds as a byproduct in the fume. In 2018, the American Conference of Governmental Industrial Hygienists (ACGIH) lowered the Threshold Limit Value (TLV) for hexavalent chromium from 50 micrograms per cubic meter of air (50 µg/m³) to 0.2 µg/m³. At these new limits, CrVI exposures at or above the TLV may be possible in cases where adequate ventilation is not provided. CrVI compounds are on the IARC and NTP lists as posing a lung cancer and sinus cancer risk. Workplace conditions are unique and welding fume exposures levels vary. Workplace exposure assessments must be conducted by a qualified professional, such as an industrial hygienist, to determine if exposures are below applicable limits and to make recommendations when necessary for preventing

overexposures.

Eye/face protection: Wear helmet or use face shield with filter lens shade number 12 or darker for open arc processes – or follow the recommendations as specified in ANSI Z49.1, Section 4, based on your process and settings. No specific lens shade recommendation for submerged arc or electroslag processes. Shield others by providing appropriate screens and flash goggles.

Skin Protection

Hand Protection: Wear protective gloves. Suitable gloves can be recommended by the glove supplier.

Other: **Protective Clothing:** Wear hand, head, and body protection which help to prevent injury from radiation, open flames, hot surfaces, sparks and electrical shock. See Z49.1. At a minimum, this includes welder's gloves and a protective face shield when welding, and may include arm protectors, aprons, hats, shoulder protection, as well as dark substantial clothing when welding, brazing and soldering. Wear dry gloves free of holes or split seams. Train the operator not to permit electrically live parts or electrodes from contacting the skin . . . or clothing or gloves if they are wet. Insulate yourself from the work piece and ground using dry plywood, rubber mats or other dry insulation.

Respiratory Protection: Keep your head out of fumes. Use enough ventilation and local exhaust to keep fumes and gases from your breathing zone and the general area. An approved respirator should be used unless exposure assessments are below applicable exposure limits.

Hygiene measures: Do not eat, drink or smoke when using the product. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Determine the composition and quantity of fumes and gases to which workers are exposed by taking an air sample from inside the welder's helmet if worn or in the worker's breathing zone. Improve ventilation if exposures are not below limits. See ANSI/AWS F1.1, F1.2, F1.3 and F1.5, available from the American Welding Society, www.aws.org.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Solid welding wire or rod.
Physical state:	Solid
Form:	Solid
Color:	No data available.
Odor:	No data available.
Odor threshold:	No data available.
pH:	No data available.
Melting point/freezing point:	No data available.
Initial boiling point and boiling range:	No data available.
Flash Point:	No data available.
Evaporation rate:	No data available.
Flammability (solid, gas):	No data available.
Upper/lower limit on flammability or explosive limits	
Flammability limit - upper (%):	No data available.

Flammability limit - lower (%):	No data available.
Explosive limit - upper (%):	No data available.
Explosive limit - lower (%):	No data available.
Vapor pressure:	No data available.
Vapor density:	No data available.
Density:	No data available.
Relative density:	No data available.
Solubility(ies)	
Solubility in water:	No data available.
Solubility (other):	No data available.
Partition coefficient (n-octanol/water):	No data available.
Auto-ignition temperature:	No data available.
Decomposition temperature:	No data available.
Viscosity:	No data available.

10. STABILITY AND REACTIVITY

Reactivity: The product is non-reactive under normal conditions of use, storage and transport.

Chemical Stability: Material is stable under normal conditions.

Possibility of hazardous reactions: None under normal conditions.

Conditions to avoid: Avoid heat or contamination.

Incompatible Materials: Strong acids. Strong oxidizing substances. Strong bases.

Hazardous Decomposition Products: Fumes and gases from welding and its allied processes such as brazing and soldering cannot be classified simply. The composition and quantity of both are dependent upon the metal to which the joining or hot work is applied, the process, procedure - and where applicable - the electrode or consumable used. Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the metal being welded or worked (such as paint, plating, or galvanizing), the number of operators and the volume of the work area, the quality and amount of ventilation, the position of the operator's head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degreasing activities.)

In cases where an electrode or other applied material is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section 3. Decomposition products of normal operation include those originating from the volatilization, reaction, or oxidation of the materials shown in Section 3, plus those from the base metal and coating, etc., as noted above. Reasonably expected fume constituents produced during arc welding and brazing include the oxides of iron, manganese and other metals present in the welding consumable or base metal. Hexavalent chromium compounds may be in the welding or brazing fume of consumables or base metals which contain chromium. Gaseous and particulate fluoride may be in the fume of consumables or flux materials which contain fluoride. Gaseous reaction

products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc associated with welding.

11. TOXICOLOGICAL INFORMATION

General information: The International Agency for Research on Cancer (IARC) has determined welding fumes and ultraviolet radiation from welding are carcinogenic to humans (Group 1). According to IARC, welding fumes cause cancer of the lung and positive associations have been observed with cancer of the kidney. Also according to IARC, ultraviolet radiation from welding causes ocular melanoma. IARC identifies gouging, brazing, carbon arc or plasma arc cutting, and soldering as processes closely related to welding. Read and understand the manufacturer's instructions, Safety Data Sheets and the precautionary labels before using this product.

Information on likely routes of exposure

Inhalation: Potential chronic health hazards related to the use of welding consumables are most applicable to the inhalation route of exposure. Refer to Inhalation statements in Section 11.

Skin Contact: Arc rays can burn skin. Skin cancer has been reported.

Eye contact: Arc rays can injure eyes.

Ingestion: Health injuries from ingestion are not known or expected under normal use.

Symptoms related to the physical, chemical and toxicological characteristics

Inhalation: Short-term (acute) overexposure to fumes and gases from welding and allied processes may result in discomfort such as metal fume fever, dizziness, nausea, or dryness or irritation of nose, throat, or eyes. May aggravate pre-existing respiratory problems (e.g. asthma, emphysema). Long-term (chronic) overexposure to fumes and gases from welding and allied processes can lead to siderosis (iron deposits in lung), central nervous system effects, bronchitis and other pulmonary effects.

Information on toxicological effects

Acute toxicity (list all possible routes of exposure)

Oral

Product: Not classified

Specified substance(s):

Iron — LD 50 (Rat): 98.6 g/kg

Dermal

Product: Not classified

Inhalation

Product: Not classified

Repeated dose toxicity

Product: Not classified

Skin Corrosion/Irritation

Product: Not classified

Serious Eye Damage/Eye Irritation

Product: Not classified

Respiratory or Skin Sensitization
Product: Not classified

Carcinogenicity
Product: Arc rays: Skin cancer has been reported.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:
No carcinogenic components identified

US. National Toxicology Program (NTP) Report on Carcinogens:
No carcinogenic components identified

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050):
No carcinogenic components identified

Germ Cell Mutagenicity
In vitro
Product: Not classified

In vivo
Product: Not classified

Reproductive toxicity
Product: Not classified

Specific Target Organ Toxicity - Single Exposure
Product: Not classified

Specific Target Organ Toxicity - Repeated Exposure
Product: Not classified

Aspiration Hazard
Product: Not classified
Other effects: Organic polymers may be used in the manufacture of various welding consumables. Overexposure to their decomposition byproducts may result in a condition known as polymer fume fever. Polymer fume fever usually occurs within 4 to 8 hours of exposure with the presentation of flu like symptoms, including mild pulmonary irritation with or without an increase in body temperature. Signs of exposure can include an increase in white blood cell count. Resolution of symptoms typically occurs quickly, usually not lasting longer than 48 hours.

Symptoms related to the physical, chemical and toxicological characteristics under the condition of use

Inhalation:
Specified substance(s):

Manganese	Overexposure to manganese fumes may affect the brain and central nervous system, resulting in poor coordination, difficulty speaking, and arm or leg tremor. This condition can be irreversible.
Nickel	Nickel and its compounds are on the IARC and NTP lists as posing respiratory cancer risk, and are skin sensitizers with symptoms ranging from slight itch to severe dermatitis.

Additional toxicological Information under the conditions of use:

Acute toxicity

Inhalation
Specified substance(s):

Carbon dioxide	LC Lo (Human, 5 min): 90000 ppm
Carbon monoxide	LC 50 (Rat, 4 h): 1300 ppm
Nitrogen dioxide	LC 50 (Rat, 4 h): 88 ppm
Ozone	LC Lo (Human, 30 min): 50 ppm

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:
Specified substance(s):

Nickel	Overall evaluation: 2B. Possibly carcinogenic to humans.

US. National Toxicology Program (NTP) Report on Carcinogens:
Specified substance(s):

Nickel	Reasonably Anticipated to be a Human Carcinogen.

Other effects:
Specified substance(s):

Carbon dioxide	Asphyxia
Carbon monoxide	Carboxyhemoglobinemia
Nitrogen dioxide	Lower respiratory tract irritation
Nickel	Dermatitis Pneumoconiosis

12. ECOLOGICAL INFORMATION

Ecotoxicity
Acute hazards to the aquatic environment:
Fish
Product: Not classified

Aquatic Invertebrates
Product: Not classified
Specified substance(s):

Manganese	EC 50 (Water flea (Daphnia magna), 48 h): 40 mg/l

Chronic hazards to the aquatic environment:
Fish
Product: Not classified

Aquatic Invertebrates
Product: Not classified

Toxicity to Aquatic Plants
Product: Not classified

Persistence and Degradability
Biodegradation
Product: No data available.

Bioaccumulative potential
Bioconcentration Factor (BCF)
Product: No data available.

Mobility in soil: No data available.

13. Disposal considerations

General information:	The generation of waste should be avoided or minimized whenever possible. When practical, recycle in an environmentally acceptable, regulatory compliant manner. Dispose of non-recyclable products in accordance with all applicable Federal, State, Provincial, and Local requirements.
Disposal instructions:	Disposal of this product may be regulated as a Hazardous Waste. The welding consumable and/or by-product from the welding process (including, but not limited to slag, dust, etc.) may contain levels of leachable heavy metals such as Barium or Chromium. Prior to disposal, a representative sample must be analyzed in accordance with US EPA's Toxicity Characteristic Leaching Procedure (TCLP) to determine if any constituents exist above regulated threshold levels. Discard any product, residue, disposable container, or liner in an environmentally acceptable manner according to Federal, State and Local Regulations.
Contaminated Packaging:	Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

14. TRANSPORT INFORMATION

DOT

UN Number:	
UN Proper Shipping Name:	NOT DG REGULATED
Transport Hazard Class(es)	
Class:	NR
Label(s):	–
Packing Group:	–
Marine Pollutant:	No

IMDG

UN Number:	
UN Proper Shipping Name:	NOT DG REGULATED
Transport Hazard Class(es)	
Class:	NR
Label(s):	–
EmS No.:	
Packing Group:	–
Marine Pollutant:	No

IATA

UN Number:	
Proper Shipping Name:	NOT DG REGULATED
Transport Hazard Class(es):	
Class:	NR
Label(s):	–
Packing Group:	–
Marine Pollutant:	No
Cargo aircraft only:	Allowed.

TDG

UN Number:	
UN Proper Shipping Name:	NOT DG REGULATED
Transport Hazard Class(es)	
Class:	NR
Label(s):	–
Packing Group:	–

Marine Pollutant: No

15. REGULATORY INFORMATION

US Federal Regulations

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

None present or none present in regulated quantities.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

None present or none present in regulated quantities.

CERCLA Hazardous Substance List (40 CFR 302.4):

Chemical Identity	Reportable quantity
Manganese	Included in the regulation but with no data values. See regulation for further details.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories

Not classified
Not classified

SARA 302 Extremely Hazardous Substance

None present or none present in regulated quantities.

SARA 304 Emergency Release Notification

Chemical Identity	Reportable quantity
Manganese	Included in the regulation but with no data values. See regulation for further details.

SARA 311/312 Hazardous Chemical

Chemical Identity	Threshold Planning Quantity
Iron	10000 lbs
Manganese	10000 lbs
Silicon	10000 lbs

SARA 313 (TRI Reporting)

Chemical Identity	Reporting threshold for other users	Reporting threshold for manufacturing and processing
Manganese	10000 lbs	25000 lbs.

Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3)

None present or none present in regulated quantities.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):

None present or none present in regulated quantities.

US State Regulations

US. California Proposition 65

No ingredient requiring a warning under CA Prop 65.

WARNING: This product contains or produces a chemical known to the State of California to cause cancer and birth defects (or other reproductive harm). (California Health & Safety Code Section 25249.5 et seq.)
WARNING: Cancer and Reproductive Harm – www.P65Warnings.ca.gov

US. New Jersey Worker and Community Right-to-Know Act

Chemical Identity
Manganese

US. Massachusetts RTK - Substance List

Chemical Identity

Chromium and chromium alloys or compounds (as Cr)

US. Pennsylvania RTK - Hazardous Substances

Chemical Identity

Manganese

US. Rhode Island RTK

No ingredient regulated by RI Right-to-Know Law present.

Canada Federal Regulations

List of Toxic Substances (CEPA, Schedule 1)

Not Regulated

Export Control List (CEPA 1999, Schedule 3)

Not Regulated

National Pollutant Release Inventory (NPRI)

Canada. National Pollutant Release Inventory (NPRI) Substances, Part 5, VOCs with Additional Reporting Requirements

NPRI PT5	Not Regulated

Canada. National Pollutant Release Inventory (NPRI) (Schedule 1, Parts 1-4)

NPRI	Not Regulated

Greenhouse Gases

Not Regulated

Controlled Drugs and Substances Act

CA CDSI	Not Regulated
CA CDSII	Not Regulated
CA CDSIII	Not Regulated
CA CDSIV	Not Regulated
CA CDSV	Not Regulated
CA CDSVII	Not Regulated
CA CDSVIII	Not Regulated

Precursor Control Regulations

Not Regulated

Mexico. Substances subject to reporting for the pollutant release and transfer registry (PRTR): Not applicable

Inventory Status:

Australia AICS:	On or in compliance with the inventory
Canada DSL Inventory List:	On or in compliance with the inventory
EINECS, ELINCS or NLP:	On or in compliance with the inventory
Japan (ENCS) List:	One or more components are not listed or are exempt from listing.
China Inv. Existing Chemical Substances:	On or in compliance with the inventory
Korea Existing Chemicals Inv. (KECI):	On or in compliance with the inventory
Canada NDSL Inventory:	One or more components are not listed or are exempt from listing.
Philippines PICCS:	On or in compliance with the inventory
US TSCA Inventory:	On or in compliance with the inventory
New Zealand Inventory of Chemicals:	On or in compliance with the inventory

Japan ISHL Listing:	One or more components are not listed or are exempt from listing.
Japan Pharmacopoeia Listing:	One or more components are not listed or are exempt from listing.
Mexico INSQ:	On or in compliance with the inventory
Ontario Inventory:	On or in compliance with the inventory
Taiwan Chemical Substance Inventory:	On or in compliance with the inventory

16. OTHER INFORMATION

Definitions:

Revision Date: 07/02/2019

Further Information: Additional information is available by request.

Disclaimer: The Lincoln Electric Company urges each end user and recipient of this SDS to study it carefully. See also www.lincolnelectric.com/safety. If necessary, consult an industrial hygienist or other expert to understand this information and safeguard the environment and protect workers from potential hazards associated with the handling or use of this product. This information is believed to be accurate as of the revision date shown above. However, no warranty, expressed or implied, is given. Because the conditions or methods of use are beyond Lincoln Electric's control, we assume no liability resulting from the use of this product. Regulatory requirements are subject to change and may differ between various locations. Compliance with all applicable Federal, State, Provincial, and local laws and regulations remain the responsibility of the user.

SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: Excalibur® 309/309L-16
Product Size: 1/8" (3.2 mm)

Other means of identification
SDS number: 200000000506

Recommended use and restriction on use
Recommended use: SMAW (Shielded Metal Arc Welding)
Restrictions on use: Not known. Read this SDS before using this product.

Manufacturer/Importer/Supplier/Distributor Information

Company Name:	The Lincoln Electric Company
Address:	22801 Saint Clair Avenue Cleveland, Ohio 44117 USA
Telephone:	+1 (216) 481-8100
Contact Person:	Safety Data Sheet Questions: www.lincolnelectric.com/sds Arc Welding Safety Information: www.lincolnelectric.com/safety

Company Name:	The Lincoln Electric Company of Canada LP
Address:	179 Wicksteed Avenue Toronto, Ontario M4G 2B9 CANADA
Telephone:	+1 (416) 421-2600
Contact Person:	Safety Data Sheet Questions: www.lincolnelectric.com/sds Arc Welding Safety Information: www.lincolnelectric.com/safety

Emergency telephone number:

USA/Canada/Mexico	+1 (888) 609-1762
Americas/Europe	+1 (216) 383-8962
Asia Pacific	+1 (216) 383-8966
Middle East/Africa	+1 (216) 383-8969

3E Company Access Code: 333988

2. HAZARDS IDENTIFICATION

Classified according to the criteria of the Globally Harmonized System of Classification and Labeling of Chemicals (GHS), The United States Occupational Safety and Health Administration's Hazard Communication Standard (29 CFR 1910.1200), Canada's Hazardous Product Regulations and Mexico's Harmonized System for the Identification and Communication of Hazards and Risks from Hazardous Chemicals in the Workplace.

Hazard Classification Not classified as hazardous according to applicable GHS hazard classification criteria.

Label Elements

Hazard Symbol: No symbol

Signal Word: No signal word.

Hazard Statement: Not applicable

Precautionary Not applicable

Statements:

Other hazards which do not result in GHS classification:

Electrical Shock can kill. If welding must be performed in damp locations or with wet clothing, on metal structures or when in cramped positions such as sitting, kneeling or lying, or if there is a high risk of unavoidable or accidental contact with work piece, use the following equipment: Semiautomatic DC Welder, DC Manual (Stick) Welder, or AC Welder with Reduced Voltage Control.

Arc rays can injure eyes and burn skin. Welding arc and sparks can ignite combustibles and flammable materials. Overexposure to welding fumes and gases can be hazardous. Read and understand the manufacturer's instructions, Safety Data Sheets and the precautionary labels before using this product. Refer to Section 8.

Substance(s) formed under the conditions of use:

The welding fume produced from this welding electrode may contain the following constituent(s) and/or their complex metallic oxides as well as solid particles or other constituents from the consumables, base metal, or base metal coating not listed below.

Chemical Identity	CAS-No.
Carbon dioxide	124-38-9
Carbon monoxide	630-08-0
Nitrogen dioxide	10102-44-0
Ozone	10028-15-6
Manganese	7439-96-5
Chromium (VI)	18540-29-9
Nickel	7440-02-0
Chromium oxide	1308-38-9

3. COMPOSITION / INFORMATION ON INGREDIENTS

Reportable Hazardous Ingredients
Mixtures

Chemical Identity	CAS number	Content in percent (%)*
Iron	7439-89-6	20 - <50%
Chromium and chromium alloys or compounds (as Cr)	7440-47-3	10 - <20%
Titanium dioxide	13463-67-7	10 - <20%
Nickel	7440-02-0	5 - <10%
Limestone	1317-65-3	5 - <10%
Manganese	7439-96-5	1 - <5%
Potassium silicate	1312-76-1	1 - <5%
Feldspar	68476-25-5	1 - <5%
Aluminum oxide	1344-28-1	1 - <5%
Sodium silicate	1344-09-8	0.1 - <1%
Fluorides (as F)	16984-48-8	0.1 - <1%
Potassium oxide	12136-45-7	0.1 - <1%
Quartz	14808-60-7	0.1 - <1%
Hydroxyethyl cellulose	9004-62-0	0.1 - <1%

Kaolin	1332-58-7	0.1 - <1%
Silicon	7440-21-3	0.1 - <1%
Iron oxide	1309-37-1	0.1 - <1%
Molybdenum	7439-98-7	0.1 - <1%
Copper and/or copper alloys and compounds (as Cu)	7440-50-8	0.1 - <1%

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

Composition Comments: The term “Hazardous Ingredients” should be interpreted as a term defined in Hazard Communication standards and does not necessarily imply the existence of a welding hazard. The product may contain additional non-hazardous ingredients or may form additional compounds under the condition of use. Refer to Sections 2 and 8 for more information.

4. FIRST AID MEASURES

Ingestion: Unlikely due to form of product, except for granular materials. Avoid hand, clothing, food, and drink contact with metal fume or powder which can cause ingestion of particulate during hand to mouth activities such as drinking, eating, smoking, etc. If ingested, do not induce vomiting. Contact a poison control center. Unless the poison control center advises otherwise, wash out mouth thoroughly with water. If symptoms develop, seek medical attention at once.

Inhalation: Move to fresh air if breathing is difficult. If breathing has stopped, perform artificial respiration and obtain medical assistance at once.

Skin Contact: Remove contaminated clothing and wash the skin thoroughly with soap and water. For reddened or blistered skin, or thermal burns, obtain medical assistance at once.

Eye contact: Dust or fume from this product should be flushed from the eyes with copious amounts of clean, tepid water until transported to an emergency medical facility. Do not allow victim to rub or keep eyes tightly closed. Obtain medical assistance at once.

Arc rays can injure eyes. If exposed to arc rays, move victim to dark room, remove contact lenses as necessary for treatment, cover eyes with a padded dressing and rest. Obtain medical assistance if symptoms persist.

Most important symptoms/effects, acute and delayed

Symptoms: Short-term (acute) overexposure to fumes and gases from welding and allied processes may result in discomfort such as metal fume fever, dizziness, nausea, or dryness or irritation of nose, throat, or eyes. May aggravate pre-existing respiratory problems (e.g. asthma, emphysema). Long-term (chronic) overexposure to fumes and gases from welding and allied processes can lead to siderosis (iron deposits in lung), central nervous system effects, bronchitis and other pulmonary effects. Refer to Section 11 for more information.

Hazards: Welding and allied process hazards are complex and may include physical and health hazards such as but not limited to electric shock, physical strains, radiation burns (eye flash), thermal burns due to hot metal or spatter and potential health effects of overexposure to welding fume or dust. Refer to Section 11 for more information.

Indication of immediate medical attention and special treatment needed

Treatment: Treat symptomatically.

5. FIRE-FIGHTING MEASURES

General Fire Hazards: As shipped, this product is nonflammable. However, welding arc and sparks can ignite combustibles and flammable products. Read and understand American National Standard Z49.1, "Safety In Welding, Cutting and Allied Processes" and National Fire Protection Association NFPA 51B, "Standard for Fire Prevention During Welding, Cutting and Other Hot Work" before using this product.

Suitable (and unsuitable) extinguishing media

Suitable extinguishing media: As shipped, the product will not burn. In case of fire in the surroundings: use appropriate extinguishing agent.

Unsuitable extinguishing media: Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical: Welding arc and sparks can ignite combustibles and flammable products.

Special protective equipment and precautions for firefighters

Special fire fighting procedures: Use standard firefighting procedures and consider the hazards of other involved materials.

Special protective equipment for fire-fighters: Selection of respiratory protection for fire fighting: follow the general fire precautions indicated in the workplace. Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: If airborne dust and/or fume is present, use adequate engineering controls and, if needed, personal protection to prevent overexposure. Refer to recommendations in Section 8.

Methods and material for containment and cleaning up: Absorb with sand or other inert absorbent. Stop the flow of material, if this is without risk. Clean up spills immediately, observing precautions in the personal protective equipment in Section 8. Avoid generating dust. Prevent product from entering any drains, sewers or water sources. Refer to Section 13 for proper disposal.

Environmental Precautions: Avoid release to the environment. Prevent further leakage or spillage if safe to do so. Do not contaminate water sources or sewer. Environmental manager must be informed of all major spillages.

7. HANDLING AND STORAGE

Precautions for safe handling: Prevent formation of dust. Provide appropriate exhaust ventilation at places where dust is formed.

Read and understand the manufacturer's instruction and the precautionary label on the product. Refer to Lincoln Safety Publications at www.lincolnelectric.com/safety. See American National Standard Z49.1, "Safety In Welding, Cutting and Allied Processes" published by the American Welding Society, http://pubs.aws.org and OSHA Publication 2206 (29CFR1910), U.S. Government Printing Office, www.gpo.gov.

Conditions for safe storage, Store in closed original container in a dry place. Store in accordance with

including any incompatibilities: local/regional/national regulations. Store away from incompatible materials.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Control Parameters

Occupational Exposure Limits: US

Chemical Identity	Type	Exposure Limit Values	Source
Chromium and chromium alloys or compounds (as Cr) - as Cr	TWA	0.5 mg/m3	US. ACGIH Threshold Limit Values (12 2010)
	PEL	1 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	REL	0.5 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Titanium dioxide	TWA	10 mg/m3	US. ACGIH Threshold Limit Values (12 2010)
Titanium dioxide - Total dust.	PEL	15 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Nickel - Inhalable fraction.	TWA	1.5 mg/m3	US. ACGIH Threshold Limit Values (12 2010)
Nickel - as Ni	PEL	1 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	REL	0.015 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Limestone - Total dust.	PEL	15 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Limestone - Respirable fraction.	PEL	5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Limestone - Respirable.	REL	5 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Limestone - Total	REL	10 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Manganese - Fume. - as Mn	Ceiling	5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	REL	1 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
	STEL	3 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Manganese - Inhalable fraction. - as Mn	TWA	0.1 mg/m3	US. ACGIH Threshold Limit Values (03 2014)
Manganese - Respirable fraction. - as Mn	TWA	0.02 mg/m3	US. ACGIH Threshold Limit Values (03 2014)
Aluminum oxide - Respirable fraction.	TWA	1 mg/m3	US. ACGIH Threshold Limit Values (12 2010)
	PEL	5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Aluminum oxide - Total dust.	PEL	15 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Fluorides (as F) - as F	TWA	2.5 mg/m3	US. ACGIH Threshold Limit Values (12 2010)
	PEL	2.5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Fluorides (as F) - Dust.	TWA	2.5 mg/m3	US. OSHA Table Z-2 (29 CFR 1910.1000) (02 2006)
Quartz - Respirable fraction.	TWA	0.025 mg/m3	US. ACGIH Threshold Limit Values (12 2010)
Quartz - Respirable.	TWA	2.4 millions of	US. OSHA Table Z-3 (29 CFR 1910.1000)

		particles per cubic foot of air	(2000)
	TWA	0.1 mg/m3	US. OSHA Table Z-3 (29 CFR 1910.1000) (2000)
Quartz - Respirable dust.	REL	0.05 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Quartz - Respirable dust.	TWA	0.05 mg/m3	US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050) (03 2016)
	OSHA_ACT	0.025 mg/m3	US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050) (03 2016)
Quartz - Respirable dust.	PEL	0.05 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (03 2016)
Kaolin - Respirable fraction.	TWA	2 mg/m3	US. ACGIH Threshold Limit Values (12 2010)
	PEL	5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Kaolin - Total dust.	PEL	15 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Kaolin - Respirable.	REL	5 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Kaolin - Total	REL	10 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Silicon - Total dust.	PEL	15 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Silicon - Respirable fraction.	PEL	5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Silicon - Respirable.	REL	5 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Silicon - Total	REL	10 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Iron oxide - Respirable fraction.	TWA	5 mg/m3	US. ACGIH Threshold Limit Values (12 2010)
Iron oxide - Fume.	PEL	10 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Iron oxide - Dust and fume. - as Fe	REL	5 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Molybdenum - Total dust. - as Mo	PEL	15 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Molybdenum - Inhalable fraction. - as Mo	TWA	10 mg/m3	US. ACGIH Threshold Limit Values (03 2014)
Molybdenum - Respirable fraction. - as Mo	TWA	3 mg/m3	US. ACGIH Threshold Limit Values (03 2014)
Copper and/or copper alloys and compounds (as Cu) - Fume. - as Cu	REL	0.1 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
	PEL	0.1 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Copper and/or copper alloys and compounds (as Cu) - Dust and mist. - as Cu	PEL	1 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	REL	1 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
	TWA	1 mg/m3	US. ACGIH Threshold Limit Values (03 2014)
Copper and/or copper alloys and compounds (as Cu) - Fume. - as Cu	TWA	0.2 mg/m3	US. ACGIH Threshold Limit Values (03 2014)

Occupational Exposure Limits: CANADA

Chemical Identity	Type	Exposure Limit Values	Source
Chromium and chromium alloys or compounds (as Cr) - as Cr	TWA	0.5 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
Chromium and chromium alloys or compounds (as Cr)	TWA	0.5 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Chromium and chromium alloys or compounds (as Cr) - as Cr	TWA	0.5 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2011)
	TWA	0.5 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	8 HR ACL	0.5 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	1.5 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Chromium and chromium alloys or compounds (as Cr)	TWA	0.5 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Titanium dioxide	TWA	10 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
Titanium dioxide - Total dust.	TWA	10 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Titanium dioxide - Respirable fraction.	TWA	3 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Titanium dioxide	TWA	10 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2011)
	TWA	10 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	8 HR ACL	10 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	20 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Titanium dioxide - Total dust.	TWA	10 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Nickel	TWA	1.5 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	0.05 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (05 2013)
Nickel - Inhalable fraction.	TWA	1.5 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2011)
Nickel - Inhalable fraction. - as Ni	8 HR ACL	1.5 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	3 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Nickel	TWA	1 mg/m3	Canada. Quebec OELs. (Ministry of Labor

			- Regulation Respecting the Quality of the Work Environment) (12 2008)
Nickel - Inhalable fraction. - as Ni	TWA	1 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (06 2015)
Limestone	TWA	10 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
Limestone - Total dust.	STEL	20 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	10 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Limestone - Respirable fraction.	TWA	3 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Limestone	8 HR ACL	10 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	20 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Limestone - Total dust.	TWA	10 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Manganese - as Mn	TWA	0.2 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	0.2 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	8 HR ACL	0.2 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	0.6 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Manganese - Fume. - as Mn	TWA	1 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Manganese - Dust. - as Mn	TWA	5 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Manganese - Fume. - as Mn	STEL	3 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Manganese - Respirable fraction. - as Mn	TWA	0.02 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
Manganese - Inhalable fraction. - as Mn	TWA	0.1 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
Manganese - as Mn	TWA	0.2 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (06 2015)
Aluminum oxide	TWA	10 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
Aluminum oxide - Respirable.	TWA	1 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as

			amended) (07 2007)
Aluminum oxide - Respirable fraction.	TWA	1 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2011)
	TWA	1 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
Aluminum oxide	8 HR ACL	10 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	20 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Aluminum oxide - Total dust. - as Al	TWA	10 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Fluorides (as F) - as F	TWA	2.5 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	2.5 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	2.5 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	2.5 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2011)
	TWA	2.5 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	8 HR ACL	2.5 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	5 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	TWA	2.5 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Quartz - Respirable particles.	TWA	0.025 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
Quartz - Respirable fraction.	TWA	0.025 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.025 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2011)
	8 HR ACL	0.05 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Quartz - Respirable dust.	TWA	0.1 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Quartz - Respirable fraction.	TWA	0.10 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (06 2015)
Kaolin - Respirable.	TWA	2 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	2 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Kaolin - Respirable fraction.	TWA	2 mg/m3	Canada. Manitoba OELs (Reg. 217/2006,

			The Workplace Safety And Health Act) (03 2011)
	TWA	2 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	8 HR ACL	2 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	4 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Kaolin - Respirable dust.	TWA	5 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Silicon - Total dust.	TWA	10 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (07 2010)
Silicon	8 HR ACL	10 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	20 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Silicon - Total dust.	TWA	10 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Iron oxide - Respirable.	TWA	5 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
Iron oxide - Total dust.	TWA	10 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Iron oxide - Dust. - as Fe	TWA	5 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Iron oxide - Fume. - as Fe	STEL	10 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Iron oxide - Respirable fraction.	TWA	3 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Iron oxide - Fume. - as Fe	TWA	5 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Iron oxide - Respirable fraction.	TWA	5 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2011)
	TWA	5 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
Iron oxide	8 HR ACL	10 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	20 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Iron oxide - Dust and fume. - as Fe	15 MIN ACL	10 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	8 HR ACL	5 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety

			Regulations, 1996, Table 21) (05 2009)
Iron oxide - Total dust.	TWA	10 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Iron oxide - Dust and fume. - as Fe	TWA	5 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Molybdenum - Inhalable	TWA	10 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Molybdenum - Respirable.	TWA	3 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Molybdenum - Inhalable fraction. - as Mo	TWA	10 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	8 HR ACL	10 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Molybdenum - Respirable fraction. - as Mo	8 HR ACL	3 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Molybdenum - Inhalable fraction. - as Mo	15 MIN ACL	20 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Molybdenum - Respirable fraction. - as Mo	15 MIN ACL	6 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Molybdenum - as Mo	TWA	10 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Molybdenum - Respirable fraction. - as Mo	TWA	3 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
Molybdenum - Inhalable fraction. - as Mo	TWA	10 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
Molybdenum - Respirable fraction. - as Mo	TWA	3 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (06 2015)
Copper and/or copper alloys and compounds (as Cu) - Fume.	TWA	0.2 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
Copper and/or copper alloys and compounds (as Cu) - Dust and mist. - as Cu	TWA	1 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
Copper and/or copper alloys and compounds (as Cu) - Fume. - as Cu	TWA	0.2 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Copper and/or copper alloys and compounds (as Cu) - Dust and mist. - as Cu	TWA	1 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Copper and/or copper alloys and compounds (as Cu) - Fume.	TWA	0.2 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
Copper and/or copper alloys and compounds (as Cu) - Dust and mist. - as Cu	8 HR ACL	1 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Copper and/or copper alloys and compounds (as Cu) - Fume. - as Cu	15 MIN ACL	0.6 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Copper and/or copper alloys and compounds (as Cu) -	15 MIN ACL	3 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety

Dust and mist. - as Cu			Regulations, 1996, Table 21) (05 2009)
Copper and/or copper alloys and compounds (as Cu) - Fume. - as Cu	8 HR ACL	0.2 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	TWA	0.2 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Copper and/or copper alloys and compounds (as Cu) - Dust and mist. - as Cu	TWA	1 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
	TWA	1 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
Copper and/or copper alloys and compounds (as Cu) - Fume. - as Cu	TWA	0.2 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
Copper and/or copper alloys and compounds (as Cu) - Dust and fume. - as Cu	TWA	1 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (06 2015)

Occupational Exposure Limits: MEXICO

Chemical Identity	Type	Exposure Limit Values	Source
Chromium and chromium alloys or compounds (as Cr)	VLE-PPT	0.5 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control) (04 2014)
	VLE-PPT	0.05 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control) (04 2014)
	VLE-PPT	0.01 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control) (04 2014)
Titanium dioxide	VLE-PPT	10 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control) (04 2014)
Nickel - Inhalable fraction. - as Ni	VLE-PPT	1.5 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control) (04 2014)
Manganese - as Mn	VLE-PPT	0.2 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control) (04 2014)
Aluminum oxide	VLE-PPT	10 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control) (04 2014)
Fluorides (as F) - as F	VLE-PPT	2.5 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control) (04 2014)
Quartz - Respirable fraction.	VLE-PPT	0.025 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control) (04 2014)
Kaolin - Respirable fraction.	VLE-PPT	2 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control) (04 2014)
Iron oxide - Respirable fraction.	VLE-PPT	5 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control) (04 2014)
Molybdenum - Respirable fraction. - as Mo	VLE-PPT	0.5 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control) (04 2014)
Copper and/or copper alloys and compounds (as Cu) - Fume. - as Cu	VLE-PPT	0.2 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control) (04 2014)
Copper and/or copper alloys and compounds (as Cu) - Dust and mist. - as Cu	VLE-PPT	1 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control) (04 2014)

Biological Limit Values: US

Chemical Identity	Exposure Limit Values	Source

Fluorides (as F) (Fluoride: Sampling time: Prior to shift.)	2 mg/l (Urine)	ACGIH BEI (03 2013)
Fluorides (as F) (Fluoride: Sampling time: End of shift.)	3 mg/l (Urine)	ACGIH BEI (03 2013)

Biological Limit Values: MEXICO

Chemical Identity	Exposure Limit Values	Source
Fluorides (as F) (fluorides: Sampling time: Prior to shift.)	3 mg/g (Creatinine in urine)	MX IBE (06 2012)
Fluorides (as F) (fluorides: Sampling time: End of shift.)	10 mg/g (Creatinine in urine)	MX IBE (06 2012)
Fluorides (as F) (fluorides: Sampling time: Prior to shift.)	3 mg/g (Creatinine in urine)	MX IBE (06 2012)
Fluorides (as F) (fluorides: Sampling time: End of shift.)	10 mg/g (Creatinine in urine)	MX IBE (06 2012)

Additional exposure limits under the conditions of use: US

Chemical Identity	Type	Exposure Limit Values		Source
Carbon dioxide	TWA	5,000 ppm		US. ACGIH Threshold Limit Values (12 2010)
	STEL	30,000 ppm		US. ACGIH Threshold Limit Values (12 2010)
	PEL	5,000 ppm	9,000 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	STEL	30,000 ppm	54,000 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
	REL	5,000 ppm	9,000 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Carbon monoxide	TWA	25 ppm		US. ACGIH Threshold Limit Values (12 2010)
	PEL	50 ppm	55 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	REL	35 ppm	40 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
	Ceil_Time	200 ppm	229 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Nitrogen dioxide	TWA	0.2 ppm		US. ACGIH Threshold Limit Values (02 2012)
	Ceiling	5 ppm	9 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	STEL	1 ppm	1.8 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Ozone	PEL	0.1 ppm	0.2 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	Ceil_Time	0.1 ppm	0.2 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
	TWA	0.05 ppm		US. ACGIH Threshold Limit Values (03 2014)
	TWA	0.20 ppm		US. ACGIH Threshold Limit Values (03 2014)
	TWA	0.10 ppm		US. ACGIH Threshold Limit Values (03 2014)
	TWA	0.08 ppm		US. ACGIH Threshold Limit Values (03 2014)
Manganese - Fume. - as Mn	Ceiling		5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	REL		1 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
	STEL		3 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Manganese - Inhalable	TWA		0.1 mg/m3	US. ACGIH Threshold Limit Values (03

fraction. - as Mn			2014)
Manganese - Respirable fraction. - as Mn	TWA	0.02 mg/m3	US. ACGIH Threshold Limit Values (03 2014)
Chromium (VI) - as Cr	TWA	0.05 mg/m3	US. ACGIH Threshold Limit Values (12 2010)
Chromium (VI)	TWA	0.005 mg/m3	US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050) (02 2006)
	OSHA_ACT	0.0025 mg/m3	US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050) (02 2006)
	Ceiling	0.1 mg/m3	US. OSHA Table Z-2 (29 CFR 1910.1000) (02 2006)
Chromium (VI) - as Cr(VI)	REL	0.0002 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2016)
Nickel - Inhalable fraction.	TWA	1.5 mg/m3	US. ACGIH Threshold Limit Values (12 2010)
Nickel - as Ni	PEL	1 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	REL	0.015 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Chromium oxide - as Cr	TWA	0.5 mg/m3	US. ACGIH Threshold Limit Values (03 2012)
	PEL	0.5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	REL	0.5 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)

Additional exposure limits under the conditions of use: CANADA

Chemical Identity	Type	Exposure Limit Values		Source
Carbon dioxide	STEL	30,000 ppm	54,000 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	5,000 ppm	9,000 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	5,000 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	STEL	15,000 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	5,000 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2011)
	STEL	30,000 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2011)
	STEL	30,000 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	TWA	5,000 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	8 HR ACL	5,000 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	30,000 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	TWA	5,000 ppm	9,000 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)

	STEL	30,000 ppm	54,000 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Carbon monoxide	TWA	25 ppm	29 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	25 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	STEL	100 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	25 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2011)
	TWA	25 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (07 2010)
	8 HR ACL	25 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	190 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	TWA	35 ppm	40 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
	STEL	200 ppm	230 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Nitrogen dioxide	STEL	5 ppm	9.4 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	3 ppm	5.6 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	CEILING	1 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.2 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2012)
	STEL	5 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	TWA	3 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	8 HR ACL	3 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	5 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	TWA	3 ppm	5.6 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Ozone	STEL	0.3 ppm	0.6 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	0.1 ppm	0.2 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	0.05 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for

				Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.1 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.08 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.2 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.1 ppm	0.2 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (07 2010)
	STEL	0.3 ppm	0.6 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (07 2010)
	15 MIN ACL	0.15 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	8 HR ACL	0.05 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	CEILING	0.1 ppm	0.2 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
	TWA	0.20 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
	TWA	0.05 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
	TWA	0.08 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
	TWA	0.10 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
Manganese - as Mn	TWA		0.2 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA		0.2 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	8 HR ACL		0.2 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL		0.6 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Manganese - Fume. - as Mn	TWA		1 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Manganese - Dust. - as Mn	TWA		5 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Manganese - Fume. - as Mn	STEL		3 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Manganese - Respirable fraction. - as Mn	TWA		0.02 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)

Manganese - Inhalable fraction. - as Mn	TWA	0.1 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
Manganese - as Mn	TWA	0.2 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (06 2015)
Chromium (VI) - as Cr	TWA	0.01 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	0.05 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	0.025 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	CEILING	0.1 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.05 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2011)
	TWA	0.05 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	15 MIN ACL	0.03 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	0.15 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	8 HR ACL	0.01 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	8 HR ACL	0.05 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	TWA	0.05 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
	TWA	0.01 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Nickel	TWA	1.5 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	0.05 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (05 2013)
Nickel - Inhalable fraction.	TWA	1.5 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2011)
Nickel - Inhalable fraction. - as Ni	8 HR ACL	1.5 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	3 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Nickel	TWA	1 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Nickel - Inhalable fraction. - as Ni	TWA	1 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (06 2015)
Chromium oxide - as Cr	TWA	0.5 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table

			2) (07 2009)
	TWA	0.5 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (09 2011)
	TWA	0.5 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2012)
	TWA	0.5 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	8 HR ACL	0.5 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	1.5 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)

Additional exposure limits under the conditions of use: MEXICO

Chemical Identity	Type	Exposure Limit Values	Source
Carbon dioxide	VLE-CT	30,000 ppm	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control) (04 2014)
	VLE-PPT	5,000 ppm	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control) (04 2014)
Carbon monoxide	VLE-PPT	25 ppm	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control) (04 2014)
Nitrogen dioxide	VLE-PPT	0.2 ppm	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control) (04 2014)
Ozone	VLE-P	0.1 ppm	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control) (04 2014)
Manganese - as Mn	VLE-PPT	0.2 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control) (04 2014)
Chromium (VI)	VLE-PPT	0.05 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control) (04 2014)
Nickel - Inhalable fraction. - as Ni	VLE-PPT	1.5 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control) (04 2014)
Chromium oxide	VLE-PPT	0.5 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control) (04 2014)

Appropriate Engineering Controls

Ventilation: Use enough ventilation, local exhaust at the arc, or both to keep the fumes and gases from the worker's breathing zone and the general area. Train the welder to keep his head out of the fumes. **Keep exposure as low as possible.**

Individual protection measures, such as personal protective equipment

General information:

Exposure Guidelines: Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs) are values published by the American Conference of Government Industrial Hygienists (ACGIH). ACGIH Statement of Positions Regarding the TLVs® and BEIs® states that the TLV-TWA should be used as a guide in the control of health hazards and should not be used to indicate a fine line between safe and dangerous exposures. See Section 10 for information on potential fume constituents of health interest. Threshold Limit Values are figures published by the American Conference of Government Industrial Hygienists.

Maximum Fume Exposure Guideline™ (MFEG)™ for this product (based on content of Chromium (VI)) is 0.2 mg/m3. This exposure guideline is calculated using the most conservative value of the ACGIH TLV or OSHA PEL for the stated substance. If your local applicable exposure limits are lower than the ACGIH TLV or OSHA PEL for any of the metallic substances listed in Section 2 or 3 of this SDS, you must take that into consideration before utilizing or applying this guideline.

Eye/face protection: Wear helmet or use face shield with filter lens shade number 12 or darker for open arc processes – or follow the recommendations as specified in ANSI Z49.1, Section 4, based on your process and settings. No specific lens shade recommendation for submerged arc or electroslag processes. Shield others by providing appropriate screens and flash goggles.

Skin Protection

Hand Protection: Wear protective gloves. Suitable gloves can be recommended by the glove supplier.

Other: **Protective Clothing:** Wear hand, head, and body protection which help to prevent injury from radiation, sparks and electrical shock. See Z49.1. At a minimum this includes welder's gloves and a protective face shield, and may include arm protectors, aprons, hats, shoulder protection, as well as dark substantial clothing. Wear dry gloves free of holes or split seams. Train the welder not to permit electrically live parts or electrodes to contact skin . . . or clothing or gloves if they are wet. Insulate yourself from the work piece and ground using dry plywood, rubber mats or other dry insulation.

Respiratory Protection: Keep your head out of fumes. Use enough ventilation and local exhaust to keep fumes and gases from your breathing zone and the general area. An approved respirator should be used unless exposure assessments are below applicable exposure limits.

Hygiene measures: Do not eat, drink or smoke when using the product. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Determine the composition and quantity of fumes and gases to which workers are exposed by taking an air sample from inside the welder's helmet if worn or in the worker's breathing zone. Improve ventilation if exposures are not below limits. See ANSI/AWS F1.1, F1.2, F1.3 and F1.5, available from the American Welding Society, www.aws.org.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Steel rod with extruded flux coating.
Physical state:	Solid
Form:	Solid
Color:	No data available.
Odor:	No data available.
Odor threshold:	No data available.
pH:	No data available.
Melting point/freezing point:	No data available.
Initial boiling point and boiling range:	No data available.
Flash Point:	No data available.
Evaporation rate:	No data available.

Flammability (solid, gas):	No data available.
Upper/lower limit on flammability or explosive limits	
Flammability limit - upper (%):	No data available.
Flammability limit - lower (%):	No data available.
Explosive limit - upper (%):	No data available.
Explosive limit - lower (%):	No data available.
Vapor pressure:	No data available.
Vapor density:	No data available.
Density:	No data available.
Relative density:	No data available.
Solubility(ies)	
Solubility in water:	No data available.
Solubility (other):	No data available.
Partition coefficient (n-octanol/water):	No data available.
Auto-ignition temperature:	No data available.
Decomposition temperature:	No data available.
Viscosity:	No data available.

10. STABILITY AND REACTIVITY

Reactivity: The product is non-reactive under normal conditions of use, storage and transport.

Chemical Stability: Material is stable under normal conditions.

Possibility of hazardous reactions: None under normal conditions.

Conditions to avoid: Avoid heat or contamination.

Incompatible Materials: Strong acids. Strong oxidizing substances. Strong bases.

Hazardous Decomposition Products: Fumes and gases from welding and allied processes cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedure and electrodes used. Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the metal being welded (such as paint, plating, or galvanizing), the number of welders and the volume of the worker area, the quality and amount of ventilation, the position of the welder's head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degreasing activities.)

When the electrode is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section 3. Decomposition products of normal operation include those originating from the volatilization, reaction, or oxidation of the materials shown in Section 3, plus those from the base metal and coating, etc., as noted above. Reasonably expected fume constituents produced during arc welding include the oxides of iron, manganese and other metals present in the welding consumable or base metal. Hexavalent chromium compounds may be in the welding fume of consumables or base metals which contain chromium. Gaseous and particulate fluoride may be in the

welding fume of consumables which contain fluoride. Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Inhalation: Potential chronic health hazards related to the use of welding consumables are most applicable to the inhalation route of exposure. Refer to Inhalation statements in Section 11.

Skin Contact: Arc rays can burn skin. Skin cancer has been reported.

Eye contact: Arc rays can injure eyes.

Ingestion: Health injuries from ingestion are not known or expected under normal use.

Symptoms related to the physical, chemical and toxicological characteristics

Inhalation: Respiratory exposure to the crystalline silica present in this welding electrode is not anticipated during normal use. Respiratory overexposure to airborne crystalline silica is known to cause silicosis, a form of disabling pulmonary fibrosis which can be progressive and may lead to death. Crystalline silica is on the IARC (International Agency for Research on Cancer) and NTP (National Toxicology Program) lists as posing a cancer risk to humans. Note: All regional authorities do not use the same criteria for assigning carcinogenic classifications to chemicals. For example, the European Union (EU) CLP does not require classifying crystalline silica as a carcinogenic compound. Short-term (acute) overexposure to fumes and gases from welding and allied processes may result in discomfort such as metal fume fever, dizziness, nausea, or dryness or irritation of nose, throat, or eyes. May aggravate pre-existing respiratory problems (e.g. asthma, emphysema). Long-term (chronic) overexposure to fumes and gases from welding and allied processes can lead to siderosis (iron deposits in lung), central nervous system effects, bronchitis and other pulmonary effects.

Information on toxicological effects

Acute toxicity (list all possible routes of exposure)

Oral

Product: Not classified

Specified substance(s):

Iron	LD 50 (Rat): 98.6 g/kg
Limestone	LD 50 (Rat): 6,450 mg/kg
Sodium silicate	LD 50 (Rat): 1.1 g/kg
Fluorides (as F)	LD 50 (Rat): 4,250 mg/kg
Copper and/or copper alloys and compounds (as Cu)	LD 50 (Rat): 481 mg/kg

Dermal

Product: Not classified

Inhalation

Product: Not classified

Specified substance(s):

Aluminum oxide	LC 50 (Rat, 1 h): 7.6 mg/l

Repeated dose toxicity

Product: Not classified

Skin Corrosion/Irritation
Product: Not classified

Serious Eye Damage/Eye Irritation
Product: Not classified

Respiratory or Skin Sensitization
Product: Not classified

Carcinogenicity
Product: Arc rays: Skin cancer has been reported.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:

Titanium dioxide	Overall evaluation: 2B. Possibly carcinogenic to humans.
Nickel	Overall evaluation: 2B. Possibly carcinogenic to humans.
Quartz	Overall evaluation: 1. Carcinogenic to humans.

US. National Toxicology Program (NTP) Report on Carcinogens:

Nickel	Reasonably Anticipated to be a Human Carcinogen.
Quartz	Known To Be Human Carcinogen.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050):

Quartz	Cancer

Germ Cell Mutagenicity
In vitro
Product: Not classified

In vivo
Product: Not classified

Reproductive toxicity
Product: Not classified

Specific Target Organ Toxicity - Single Exposure
Product: Not classified

Specific Target Organ Toxicity - Repeated Exposure
Product: Not classified

Aspiration Hazard
Product: Not classified
Other effects: Organic polymers may be used in the manufacture of various welding consumables. Overexposure to their decomposition byproducts may result in a condition known as polymer fume fever. Polymer fume fever usually occurs within 4 to 8 hours of exposure with the presentation of flu like symptoms, including mild pulmonary irritation with or without an increase in body temperature. Signs of exposure can include an increase in white blood cell count. Resolution of symptoms typically occurs quickly, usually not lasting longer than 48 hours.

Symptoms related to the physical, chemical and toxicological characteristics under the condition of use

Inhalation:
Specified substance(s):

Manganese	Overexposure to manganese fumes may affect the brain and central nervous system, resulting in poor coordination, difficulty speaking, and arm or leg tremor. This condition can be irreversible.
Chromium (VI)	Chromates may cause ulceration, perforation of the nasal septum, and severe irritation of the bronchial tubes and lungs. Liver damage and allergic reactions, including skin rash, have been reported. Asthma has been reported in some sensitized individuals. Skin contact may result in irritation, ulceration, sensitization, and contact dermatitis. Chromates contain the hexavalent form of chromium. Hexavalent chromium and its compounds are on the IARC (International Agency for Research on Cancer) and NTP (National Toxicology Program) lists as posing a cancer risk to humans.
Nickel	Nickel and its compounds are on the IARC and NTP lists as posing respiratory cancer risk, and are skin sensitizers with symptoms ranging from slight itch to severe dermatitis.

Additional toxicological Information under the conditions of use:

Acute toxicity

Oral

Specified substance(s):

Chromium (VI)	LD 50 (Rat): 27 - 59 mg/kg

Inhalation

Specified substance(s):

Carbon dioxide	LC Lo (Human, 5 min): 90000 ppm
Carbon monoxide	LC 50 (Rat, 4 h): 1,300 mg/l
Nitrogen dioxide	LC 50 (Rat, 4 h): 88 ppm
Ozone	LC Lo (Human, 30 min): 50 ppm
Chromium (VI)	LC 50 (Rat, 4 h): 33 - 70 mg/m3

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:

Specified substance(s):

Chromium (VI)	Overall evaluation: 1. Carcinogenic to humans.
Nickel	Overall evaluation: 2B. Possibly carcinogenic to humans.
Chromium oxide	Overall evaluation: 3. Not classifiable as to carcinogenicity to humans.

US. National Toxicology Program (NTP) Report on Carcinogens:

Specified substance(s):

Chromium (VI)	Known To Be Human Carcinogen.
Nickel	Reasonably Anticipated to be a Human Carcinogen.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050):

Specified substance(s):

Chromium (VI)	Cancer

Other effects:

Specified substance(s):

Carbon dioxide	Asphyxia
Carbon monoxide	Carboxyhemoglobinemia
Nitrogen dioxide	Lower respiratory tract irritation
Nickel	Dermatitis Pneumoconiosis

12. ECOLOGICAL INFORMATION

Ecotoxicity

Acute hazards to the aquatic environment:

Fish

Product:	Not classified
Specified substance(s):	
Nickel	LC 50 (Fathead minnow (Pimephales promelas), 96 h): 2.916 mg/l
Sodium silicate	LC 50 (Western mosquitofish (Gambusia affinis), 96 h): 1,800 mg/l
Molybdenum	LC 50 (Rainbow trout,donaldson trout (Oncorhynchus mykiss), 96 h): 800 mg/l
Copper and/or copper alloys and compounds (as Cu)	LC 50 (Fathead minnow (Pimephales promelas), 96 h): 1.6 mg/l

Aquatic Invertebrates

Product:	Not classified
Specified substance(s):	
Nickel	EC 50 (Water flea (Daphnia magna), 48 h): 1 mg/l
Manganese	EC 50 (Water flea (Daphnia magna), 48 h): 40 mg/l
Sodium silicate	EC 50 (Water flea (Ceriodaphnia dubia), 48 h): 22.94 - 49.01 mg/l
Copper and/or copper alloys and compounds (as Cu)	EC 50 (Water flea (Daphnia magna), 48 h): 0.102 mg/l

Chronic hazards to the aquatic environment:

Fish

Product: Not classified

Aquatic Invertebrates

Product: Not classified

Toxicity to Aquatic Plants

Product:	Not classified
Specified substance(s):	
Copper and/or copper alloys and compounds (as Cu)	LC 50 (Green algae (Scenedesmus dimorphus), 3 d): 0.0623 mg/l

Persistence and Degradability

Biodegradation

Product: No data available.

Bioaccumulative potential

Bioconcentration Factor (BCF)

Product:	No data available.
Specified substance(s):	
Nickel	Zebra mussel (Dreissena polymorpha), Bioconcentration Factor (BCF): 5,000 - 10,000 (Lotic) Bioconcentration factor calculated using dry weight tissue conc
Copper and/or copper alloys and compounds (as Cu)	Blue-green algae (Anacystis nidulans), Bioconcentration Factor (BCF): 36.01 (Static)

Mobility in soil: No data available.

13. DISPOSAL CONSIDERATIONS

General information: The generation of waste should be avoided or minimized whenever possible. When practical, recycle in an environmentally acceptable, regulatory compliant manner. Dispose of non-recyclable products in accordance with all applicable Federal, State, Provincial, and Local

requirements.

Disposal instructions: Disposal of this product may be regulated as a Hazardous Waste. The welding consumable and/or by-product from the welding process (including, but not limited to slag, dust, etc.) may contain levels of leachable heavy metals such as Barium or Chromium. Prior to disposal, a representative sample must be analyzed in accordance with US EPA's Toxicity Characteristic Leaching Procedure (TCLP) to determine if any constituents exist above regulated threshold levels. Discard any product, residue, disposable container, or liner in an environmentally acceptable manner according to Federal, State and Local Regulations.

Contaminated Packaging: Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

14. TRANSPORT INFORMATION

DOT

UN Number:	
UN Proper Shipping Name:	NOT DG REGULATED
Transport Hazard Class(es)	
Class:	NR
Label(s):	–
Packing Group:	–
Marine Pollutant:	No

IMDG

UN Number:	
UN Proper Shipping Name:	NOT DG REGULATED
Transport Hazard Class(es)	
Class:	NR
Label(s):	–
EmS No.:	
Packing Group:	–
Marine Pollutant:	No

IATA

UN Number:	
Proper Shipping Name:	NOT DG REGULATED
Transport Hazard Class(es):	
Class:	NR
Label(s):	–
Packing Group:	–
Marine Pollutant:	No
Cargo aircraft only:	Allowed.

TDG

UN Number:	
UN Proper Shipping Name:	NOT DG REGULATED
Transport Hazard Class(es)	
Class:	NR
Label(s):	–
Packing Group:	–
Marine Pollutant:	No

15. REGULATORY INFORMATION

US Federal Regulations

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

None present or none present in regulated quantities.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Chemical Identity	OSHA hazard(s)
Quartz	kidney effects lung effects immune system effects Cancer

CERCLA Hazardous Substance List (40 CFR 302.4):

Chemical Identity	Reportable quantity
Chromium and chromium alloys or compounds (as Cr)	5000lbs.
Nickel	100lbs.
Manganese	Included in the regulation but with no data values. See regulation for further details.
Copper and/or copper alloys and compounds (as Cu)	5000lbs.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories

Not listed.

SARA 302 Extremely Hazardous Substance

None present or none present in regulated quantities.

SARA 304 Emergency Release Notification

Chemical Identity	Reportable quantity
Chromium and chromium alloys or compounds (as Cr)	5000 lbs.
Nickel	100 lbs.
Manganese	Included in the regulation but with no data values. See regulation for further details.
Copper and/or copper alloys and compounds (as Cu)	5000 lbs.

SARA 311/312 Hazardous Chemical

Chemical Identity	Threshold Planning Quantity
Iron	10000 lbs
Chromium and chromium alloys or compounds (as Cr)	10000 lbs
Titanium dioxide	10000 lbs
Nickel	10000 lbs
Limestone	10000 lbs
Manganese	10000 lbs
Potassium silicate	10000 lbs
Feldspar	10000 lbs
Aluminum oxide	10000 lbs
Sodium silicate	10000 lbs
Fluorides (as F)	10000 lbs
Potassium oxide	10000 lbs
Quartz	10000 lbs
Hydroxyethyl cellulose	10000 lbs
Kaolin	10000 lbs

Silicon	10000 lbs
Iron oxide	10000 lbs
Molybdenum	10000 lbs
Copper and/or copper alloys and compounds (as Cu)	10000 lbs

SARA 313 (TRI Reporting)

Chemical Identity	Reporting threshold for other users	Reporting threshold for manufacturing and processing
Chromium and chromium alloys or compounds (as Cr)	10000 lbs	25000 lbs.
Nickel	10000 lbs	25000 lbs.
Manganese	10000 lbs	25000 lbs.

Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3)

None present or none present in regulated quantities.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):

None present or none present in regulated quantities.

US State Regulations

US. California Proposition 65

This product contains chemical(s) known to the State of California to cause cancer and/or to cause birth defects or other reproductive harm.

Titanium dioxide	Carcinogenic.
Nickel	Carcinogenic.
Quartz	Carcinogenic.

WARNING: This product contains or produces a chemical known to the State of California to cause cancer and birth defects (or other reproductive harm). (California Health & Safety Code Section 25249.5 et seq.)

US. New Jersey Worker and Community Right-to-Know Act

Chemical Identity

Chromium and chromium alloys or compounds (as Cr)
Titanium dioxide
Nickel
Limestone
Manganese
Aluminum oxide
Quartz

US. Massachusetts RTK - Substance List

Chemical Identity

Chromium and chromium alloys or compounds (as Cr)
Nickel
Quartz

US. Pennsylvania RTK - Hazardous Substances

Chemical Identity

Chromium and chromium alloys or compounds (as Cr)
Titanium dioxide
Nickel
Limestone
Manganese
Aluminum oxide

US. Rhode Island RTK

No ingredient regulated by RI Right-to-Know Law present.

Canada Federal Regulations

List of Toxic Substances (CEPA, Schedule 1)

Chemical Identity
Titanium dioxide
Aluminum oxide
Fluorides (as F)
Kaolin
Iron oxide

Export Control List (CEPA 1999, Schedule 3)

Not Regulated

National Pollutant Release Inventory (NPRI)

Canada. National Pollutant Release Inventory (NPRI) Substances, Part 5, VOCs with Additional Reporting Requirements

NPRI PT5 Not Regulated

Canada. Canadian Environmental Protection Act (CEPA). National Pollutant Release Inventory (NPRI) (Parts 1-4)

NPRI Not Regulated

Greenhouse Gases

Not Regulated

Controlled Drugs and Substances Act

CA CDSI	Not Regulated
CA CDSII	Not Regulated
CA CDSIII	Not Regulated
CA CDSIV	Not Regulated
CA CDSV	Not Regulated
CA CDSVII	Not Regulated
CA CDSVIII	Not Regulated

Precursor Control Regulations

Not Regulated

Mexico. Substances subject to reporting for the pollutant release and transfer registry (PRTR): not applicable

Inventory Status:

Australia AICS:	On or in compliance with the inventory
Canada DSL Inventory List:	One or more components are not listed or are exempt from listing.
EINECS, ELINCS or NLP:	One or more components are not listed or are exempt from listing.
Japan (ENCS) List:	One or more components are not listed or are exempt from listing.
China Inv. Existing Chemical Substances:	On or in compliance with the inventory
Korea Existing Chemicals Inv. (KECI):	On or in compliance with the inventory
Canada NDSL Inventory:	One or more components are not listed or are exempt from listing.
Philippines PICCS:	On or in compliance with the inventory
US TSCA Inventory:	On or in compliance with the inventory
New Zealand Inventory of Chemicals:	On or in compliance with the inventory
Japan ISHL Listing:	One or more components are not listed or are exempt from listing.
Japan Pharmacopoeia Listing:	One or more components are not listed or are exempt from listing.
Mexico INSQ:	One or more components are not listed or are exempt from listing.
Ontario Inventory:	One or more components are not listed or are exempt from listing.

Taiwan Chemical Substance Inventory: One or more components are not listed or are exempt from listing.

16. OTHER INFORMATION

Definitions:

The Maximum Fume Exposure Guideline™ (MFEG)™ is a guideline limit for total welding fume exposure for a specific consumable product which may be used by employers to manage worker exposure to welding fume where that product is used. The MFEG™ is an estimate of the level of total welding fume exposure for a given product above which the exposure limit for one of the fume constituents may be exceeded. The exposure limits referenced are the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV®) and the U.S. OSHA Permissible Exposure Limit (PEL) whichever limit is lower. If local applicable limits for substances listed in Section 2 or 3 of this SDS are lower than the TLV or PEL this must be taken into consideration before utilizing or applying this guideline. The MFEG™ never exceeds 5 mg/m³ which is the maximum recommended exposure limit for total welding fume. **The MFEG™ is intended to serve as a general guideline to assist in the management of workplace exposure to welding fume and does not replace the regular measurement and analysis of worker exposure to individual welding fume constituents in accordance with recommended industrial hygiene practice.**

Revision Date:	09/19/2017
Further Information:	Additional information is available by request.
Disclaimer:	The Lincoln Electric Company urges each end user and recipient of this SDS to study it carefully. See also www.lincolnelectric.com/safety. If necessary, consult an industrial hygienist or other expert to understand this information and safeguard the environment and protect workers from potential hazards associated with the handling or use of this product. This information is believed to be accurate as of the revision date shown above. However, no warranty, expressed or implied, is given. Because the conditions or methods of use are beyond Lincoln Electric's control, we assume no liability resulting from the use of this product. Regulatory requirements are subject to change and may differ between various locations. Compliance with all applicable Federal, State, Provincial, and local laws and regulations remain the responsibility of the user.

SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: L-61
Product Size: 4.0 mm (5/32")

Other means of identification
SDS number: 200000011100

Recommended use and restriction on use
Recommended use: SAW (Submerged Arc Welding)
Restrictions on use: Not known. Read this SDS before using this product.

Manufacturer/Importer/Supplier/Distributor Information

Company Name:	Lincoln Electric Europe B.V.
Address:	Nieuwe Dukenburgseweg 20 Nijmegen 6534AD The Netherlands
Telephone:	+31 243 522 911
Contact Person:	Safety Data Sheet Questions: www.lincolnelectric.com/sds Arc Welding Safety Information: www.lincolnelectric.com/safety

Emergency telephone number:

USA/Canada/Mexico	+1 (888) 609-1762
Americas/Europe	+1 (216) 383-8962
Asia Pacific	+1 (216) 383-8966
Middle East/Africa	+1 (216) 383-8969

3E Company Access Code: 333988

2. HAZARDS IDENTIFICATION

Classified according to the criteria of the Globally Harmonized System of Classification and Labeling of Chemicals (GHS), The United States Occupational Safety and Health Administration's Hazard Communication Standard (29 CFR 1910.1200), Canada's Hazardous Product Regulations and Mexico's Harmonized System for the Identification and Communication of Hazards and Risks from Hazardous Chemicals in the Workplace.

Hazard Classification Not classified as hazardous according to applicable GHS hazard classification criteria.

Label Elements

Hazard Symbol: No symbol

Signal Word: No signal word.

Hazard Statement: Not applicable

Precautionary Statements: Not applicable

Other hazards which do not result in GHS classification:

Electrical Shock can kill. If welding must be performed in damp locations or with wet clothing, on metal structures or when in cramped positions such as sitting, kneeling or lying, or if there is a high risk of unavoidable or accidental contact with work piece, use the following equipment: Semiautomatic DC Welder, DC Manual (Stick) Welder, or AC Welder with Reduced Voltage Control.

Arc rays can injure eyes and burn skin. Welding arc and sparks can ignite combustibles and flammable materials. Overexposure to welding fumes and gases can be hazardous. Read and understand the manufacturer's instructions, Safety Data Sheets and the precautionary labels before using this product. Refer to Section 8.

Substance(s) formed under the conditions of use:

The welding fume produced from this welding electrode may contain the following constituent(s) and/or their complex metallic oxides as well as solid particles or other constituents from the consumables, base metal, or base metal coating not listed below.

Chemical Identity	CAS-No.
Carbon dioxide	124-38-9
Carbon monoxide	630-08-0
Nitrogen dioxide	10102-44-0
Ozone	10028-15-6

3. COMPOSITION / INFORMATION ON INGREDIENTS

Reportable Hazardous Ingredients
Mixtures

Chemical Identity	CAS number	Content in percent (%)*
Iron	7439-89-6	50 - <100%
Manganese	7439-96-5	1 - <5%
Silicon	7440-21-3	0.1 - <1%
Copper and/or copper alloys and compounds (as Cu)	7440-50-8	0.1 - <1%
Nickel	7440-02-0	0.1 - <1%

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

Composition Comments:

The term "Hazardous Ingredients" should be interpreted as a term defined in Hazard Communication standards and does not necessarily imply the existence of a welding hazard. The product may contain additional non-hazardous ingredients or may form additional compounds under the condition of use. Refer to Sections 2 and 8 for more information.

4. FIRST AID MEASURES

Ingestion:

Avoid hand, clothing, food, and drink contact with fluxes, metal fume or powder which can cause ingestion of particulate during hand to mouth activities such as drinking, eating, smoking, etc. If ingested, do not induce vomiting. Contact a poison control center. Unless the poison control center advises otherwise, wash out mouth thoroughly with water. If symptoms develop, seek medical attention at once.

Inhalation:

Move to fresh air if breathing is difficult. If breathing has stopped, perform

artificial respiration and obtain medical assistance at once.

Skin Contact: Remove contaminated clothing and wash the skin thoroughly with soap and water. For reddened or blistered skin, or thermal burns, obtain medical assistance at once.

Eye contact: Dust or fume from this product should be flushed from the eyes with copious amounts of clean, tepid water until transported to an emergency medical facility. Do not allow victim to rub or keep eyes tightly closed. Obtain medical assistance at once.

Arc rays can injure eyes. If exposed to arc rays, move victim to dark room, remove contact lenses as necessary for treatment, cover eyes with a padded dressing and rest. Obtain medical assistance if symptoms persist.

Most important symptoms/effects, acute and delayed

Symptoms: Short-term (acute) overexposure to fumes and gases from welding and allied processes may result in discomfort such as metal fume fever, dizziness, nausea, or dryness or irritation of nose, throat, or eyes. May aggravate pre-existing respiratory problems (e.g. asthma, emphysema). Long-term (chronic) overexposure to fumes and gases from welding and allied processes can lead to siderosis (iron deposits in lung), central nervous system effects, bronchitis and other pulmonary effects. Refer to Section 11 for more information.

Hazards: The hazards associated with welding and its allied processes such as soldering and brazing are complex and may include physical and health hazards such as but not limited to electric shock, physical strains, radiation burns (eye flash), thermal burns due to hot metal or spatter and potential health effects of overexposure to fumes, gases or dusts potentially generated during the use of this product. Refer to Section 11 for more information.

Indication of immediate medical attention and special treatment needed

Treatment: Treat symptomatically.

5. FIRE-FIGHTING MEASURES

General Fire Hazards: As shipped, this product is nonflammable. However, welding arc and sparks as well as open flames and hot surfaces associated with brazing and soldering can ignite combustible and flammable materials. Read and understand American National Standard Z49.1, "Safety in Welding, Cutting and Allied Processes" and National Fire Protection Association NFPA 51B, "Standard for Fire Prevention during Welding, Cutting and Other Hot Work" before using this product.

Suitable (and unsuitable) extinguishing media

Suitable extinguishing media: As shipped, the product will not burn. In case of fire in the surroundings: use appropriate extinguishing agent.

Unsuitable extinguishing media: Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical: Welding arc and sparks can ignite combustibles and flammable products.

Special protective equipment and precautions for firefighters

Special fire fighting Use standard firefighting procedures and consider the hazards of other

procedures: involved materials.

Special protective equipment for fire-fighters: Selection of respiratory protection for fire fighting: follow the general fire precautions indicated in the workplace. Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: If airborne dust and/or fume is present, use adequate engineering controls and, if needed, personal protection to prevent overexposure. Refer to recommendations in Section 8.

Methods and material for containment and cleaning up: Absorb with sand or other inert absorbent. Stop the flow of material, if this is without risk. Clean up spills immediately, observing precautions in the personal protective equipment in Section 8. Avoid generating dust. Prevent product from entering any drains, sewers or water sources. Refer to Section 13 for proper disposal.

Environmental Precautions: Avoid release to the environment. Prevent further leakage or spillage if safe to do so. Do not contaminate water sources or sewer. Environmental manager must be informed of all major spillages.

7. HANDLING AND STORAGE

Precautions for safe handling: Prevent formation of dust. Provide appropriate exhaust ventilation at places where dust is formed.

Read and understand the manufacturer's instruction and the precautionary label on the product. Refer to Lincoln Safety Publications at www.lincolnelectric.com/safety. See American National Standard Z49.1, "Safety In Welding, Cutting and Allied Processes" published by the American Welding Society, http://pubs.aws.org and OSHA Publication 2206 (29CFR1910), U.S. Government Printing Office, www.gpo.gov.

Conditions for safe storage, including any incompatibilities: Store in closed original container in a dry place. Store in accordance with local/regional/national regulations. Store away from incompatible materials.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Control Parameters

Occupational Exposure Limits: US

Chemical Identity	Type	Exposure Limit Values	Source
Manganese - Fume. - as Mn	Ceiling	5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	REL	1 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	STEL	3 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
Manganese - Inhalable fraction. - as Mn	TWA	0.1 mg/m3	US. ACGIH Threshold Limit Values (03 2014)
Manganese - Respirable fraction. - as Mn	TWA	0.02 mg/m3	US. ACGIH Threshold Limit Values (03 2014)
Manganese	IDLH	500 mg/m3	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Silicon - Total dust.	PEL	15 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)

Silicon - Respirable fraction.	PEL	5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Silicon - Respirable.	REL	5 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
Silicon - Total	REL	10 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
Copper and/or copper alloys and compounds (as Cu) - Dust and mist. - as Cu	TWA	1 mg/m3	US. ACGIH Threshold Limit Values (03 2014)
Copper and/or copper alloys and compounds (as Cu) - Fume. - as Cu	TWA	0.2 mg/m3	US. ACGIH Threshold Limit Values (03 2014)
	REL	0.1 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2016)
Copper and/or copper alloys and compounds (as Cu) - Dust and mist. - as Cu	REL	1 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2016)
Copper and/or copper alloys and compounds (as Cu) - Fume. - as Cu	PEL	0.1 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Copper and/or copper alloys and compounds (as Cu) - Dust and mist. - as Cu	PEL	1 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Copper and/or copper alloys and compounds (as Cu)	IDLH	100 mg/m3	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Nickel - Inhalable fraction.	TWA	1.5 mg/m3	US. ACGIH Threshold Limit Values (12 2010)
Nickel - as Ni	REL	0.015 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
Nickel	IDLH	10 mg/m3	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Nickel - as Ni	PEL	1 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)

Occupational Exposure Limits: Canada

Chemical Identity	Type	Exposure Limit Values	Source
Manganese - as Mn	TWA	0.2 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	8 HR ACL	0.2 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL	0.6 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
Manganese - Respirable fraction. - as Mn	TWA	0.02 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2014)
Manganese - Inhalable fraction. - as Mn	TWA	0.1 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2014)
Manganese - as Mn	TWA	0.2 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (06 2015)
Manganese - Fume, total dust. - as Mn	TWA	0.2 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended (09 2017)
Manganese - Respirable. - as Mn	TWA	0.02 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2018)
Manganese - Total - as Mn	TWA	0.2 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for

			Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2018)
Silicon - Total dust.	TWA	10 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (07 2010)
Silicon	8 HR ACL	10 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL	20 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
Silicon - Total dust.	TWA	10 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended (09 2017)
Copper and/or copper alloys and compounds (as Cu) - Fume.	TWA	0.2 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
Copper and/or copper alloys and compounds (as Cu) - Dust and mist. - as Cu	TWA	1 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
Copper and/or copper alloys and compounds (as Cu) - Fume. - as Cu	TWA	0.2 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Copper and/or copper alloys and compounds (as Cu) - Dust and mist. - as Cu	TWA	1 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	1 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2014)
Copper and/or copper alloys and compounds (as Cu) - Fume. - as Cu	TWA	0.2 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2014)
Copper and/or copper alloys and compounds (as Cu) - Dust and fume. - as Cu	TWA	1 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (06 2015)
Copper and/or copper alloys and compounds (as Cu) - Dust and mist. - as Cu	8 HR ACL	1 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
Copper and/or copper alloys and compounds (as Cu) - Fume. - as Cu	15 MIN ACL	0.6 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
Copper and/or copper alloys and compounds (as Cu) - Dust and mist. - as Cu	15 MIN ACL	3 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
Copper and/or copper alloys and compounds (as Cu) - Fume. - as Cu	8 HR ACL	0.2 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
Copper and/or copper alloys and compounds (as Cu) - Dust and mist. - as Cu	TWA	1 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended (09 2017)
Copper and/or copper alloys and compounds (as Cu) - Fume. - as Cu	TWA	0.2 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended (09 2017)
	TWA	0.2 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (08 2017)
Nickel	TWA	1.5 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table

			2), as amended (07 2009)
Nickel - as Ni	TWA	0.05 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2018)
Nickel - Inhalable fraction.	TWA	1.5 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2011)
Nickel - Inhalable fraction. - as Ni	TWA	1 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (06 2015)
	8 HR ACL	1.5 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL	3 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
Nickel	TWA	1 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended (09 2017)

Occupational Exposure Limits: Mexico

Chemical Identity	Type	Exposure Limit Values	Source
Iron - as Fe	VLE-PPT	1 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Manganese - as Mn	VLE-PPT	0.2 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Copper and/or copper alloys and compounds (as Cu) - Fume. - as Cu	VLE-PPT	0.2 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Copper and/or copper alloys and compounds (as Cu) - Dust and mist. - as Cu	VLE-PPT	1 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Nickel - Inhalable fraction. - as Ni	VLE-PPT	1.5 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)

Additional exposure limits under the conditions of use: US

Chemical Identity	Type	Exposure Limit Values		Source
Carbon dioxide	TWA	5,000 ppm		US. ACGIH Threshold Limit Values (12 2010)
	STEL	30,000 ppm		US. ACGIH Threshold Limit Values (12 2010)
	PEL	5,000 ppm	9,000 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	STEL	30,000 ppm	54,000 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	REL	5,000 ppm	9,000 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	IDLH	40,000 ppm		US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Carbon monoxide	TWA	25 ppm		US. ACGIH Threshold Limit Values (12 2010)
	PEL	50 ppm	55 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02

				2006)
	REL	35 ppm	40 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	Ceil_Time	200 ppm	229 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	IDLH	1,200 ppm		US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Nitrogen dioxide	TWA	0.2 ppm		US. ACGIH Threshold Limit Values (02 2012)
	Ceiling	5 ppm	9 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	STEL	1 ppm	1.8 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	IDLH	20 ppm		US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
	IDLH	13 ppm		US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Ozone	PEL	0.1 ppm	0.2 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	Ceil_Time	0.1 ppm	0.2 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	TWA	0.05 ppm		US. ACGIH Threshold Limit Values (03 2014)
	TWA	0.20 ppm		US. ACGIH Threshold Limit Values (03 2014)
	TWA	0.10 ppm		US. ACGIH Threshold Limit Values (03 2014)
	TWA	0.08 ppm		US. ACGIH Threshold Limit Values (03 2014)
	IDLH	5 ppm		US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)

Additional exposure limits under the conditions of use: Canada

Chemical Identity	Type	Exposure Limit Values		Source
Carbon dioxide	STEL	30,000 ppm	54,000 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	TWA	5,000 ppm	9,000 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	TWA	5,000 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	STEL	15,000 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	5,000 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2011)
	STEL	30,000 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2011)
	STEL	30,000 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (11 2010)
	TWA	5,000 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (11 2010)
	8 HR ACL	5,000 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN	30,000 ppm		Canada. Saskatchewan OELs

	ACL			(Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	TWA	5,000 ppm	9,000 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended (09 2017)
	STEL	30,000 ppm	54,000 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended (09 2017)
Carbon monoxide	TWA	25 ppm	29 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	TWA	25 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	STEL	100 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	25 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2011)
	TWA	25 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (07 2010)
	8 HR ACL	25 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL	190 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	TWA	35 ppm	40 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended (09 2017)
	STEL	200 ppm	230 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended (09 2017)
Nitrogen dioxide	STEL	5 ppm	9.4 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	TWA	3 ppm	5.6 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	CEILING	1 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.2 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2012)
	STEL	5 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (11 2010)
	TWA	3 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (11 2010)
	8 HR ACL	3 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL	5 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety

				Regulations, 1996, Table 21), as amended (05 2009)
	TWA	3 ppm	5.6 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended (09 2017)
Ozone	STEL	0.3 ppm	0.6 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	TWA	0.1 ppm	0.2 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	TWA	0.05 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.1 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.08 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.2 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.1 ppm	0.2 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (07 2010)
	STEL	0.3 ppm	0.6 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (07 2010)
	15 MIN ACL	0.15 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	8 HR ACL	0.05 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	CEILING	0.1 ppm	0.2 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended (12 2008)
	TWA	0.20 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2014)
	TWA	0.05 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2014)
	TWA	0.08 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2014)
	TWA	0.10 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2014)

Additional exposure limits under the conditions of use: Mexico

Chemical Identity	Type	Exposure Limit Values	Source
Carbon dioxide	VLE-CT	30,000 ppm	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)

	VLE-PPT	5,000 ppm	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Carbon monoxide	VLE-PPT	25 ppm	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Nitrogen dioxide	VLE-PPT	0.2 ppm	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Ozone	VLE-P	0.1 ppm	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)

Appropriate Engineering Controls

Ventilation: Use enough ventilation and local exhaust at the arc, flame or heat source to keep the fumes and gases from the worker's breathing zone and the general area. Train the operator to keep their head out of the fumes. **Keep exposure as low as possible.**

Individual protection measures, such as personal protective equipment

General information:

Exposure Guidelines: To reduce the potential for overexposure, use controls such as adequate ventilation and personal protective equipment (PPE). Overexposure refers to exceeding applicable local limits, the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs) or the Occupational Safety and Health Administration's (OSHA) Permissible Exposure Limits (PELs). Workplace exposure levels should be established by competent industrial hygiene assessments. Unless exposure levels are confirmed to be below the applicable local limit, TLV or PEL, whichever is lower, respirator use is required. Absent these controls, overexposure to one or more compound constituents, including those in the fume or airborne particles, may occur resulting in potential health hazards. According to the ACGIH, TLVs and Biological Exposure Indices (BEIs) "represent conditions under which ACGIH believes that nearly all workers may be repeatedly exposed without adverse health effects." The ACGIH further states that the TLV-TWA should be used as a guide in the control of health hazards and should not be used to indicate a fine line between safe and dangerous exposures. See Section 10 for information on constituents which have some potential to present health hazards. Welding consumables and materials being joined may contain chromium as an unintended trace element. Materials that contain chromium may produce some amount of hexavalent chromium (CrVI) and other chromium compounds as a byproduct in the fume. In 2018, the American Conference of Governmental Industrial Hygienists (ACGIH) lowered the Threshold Limit Value (TLV) for hexavalent chromium from 50 micrograms per cubic meter of air (50 µg/m³) to 0.2 µg/m³. At these new limits, CrVI exposures at or above the TLV may be possible in cases where adequate ventilation is not provided. CrVI compounds are on the IARC and NTP lists as posing a lung cancer and sinus cancer risk. Workplace conditions are unique and welding fume exposures levels vary. Workplace exposure assessments must be conducted by a qualified professional, such as an industrial hygienist, to determine if exposures are below applicable limits and to make recommendations when necessary for preventing overexposures.

Eye/face protection:

Wear helmet or use face shield with filter lens shade number 12 or darker for open arc processes – or follow the recommendations as specified in ANSI Z49.1, Section 4, based on your process and settings. No specific lens shade recommendation for submerged arc or electroslag processes. Shield others by providing appropriate screens and flash goggles.

Skin Protection

Hand Protection:	Wear protective gloves. Suitable gloves can be recommended by the glove supplier.
Other:	**Protective Clothing:** Wear hand, head, and body protection which help to prevent injury from radiation, open flames, hot surfaces, sparks and electrical shock. See Z49.1. At a minimum, this includes welder's gloves and a protective face shield when welding, and may include arm protectors, aprons, hats, shoulder protection, as well as dark substantial clothing when welding, brazing and soldering. Wear dry gloves free of holes or split seams. Train the operator not to permit electrically live parts or electrodes from contacting the skin . . . or clothing or gloves if they are wet. Insulate yourself from the work piece and ground using dry plywood, rubber mats or other dry insulation.
Respiratory Protection:	Keep your head out of fumes. Use enough ventilation and local exhaust to keep fumes and gases from your breathing zone and the general area. An approved respirator should be used unless exposure assessments are below applicable exposure limits.
Hygiene measures:	Do not eat, drink or smoke when using the product. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Determine the composition and quantity of fumes and gases to which workers are exposed by taking an air sample from inside the welder's helmet if worn or in the worker's breathing zone. Improve ventilation if exposures are not below limits. See ANSI/AWS F1.1, F1.2, F1.3 and F1.5, available from the American Welding Society, www.aws.org.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Solid welding wire or rod.
Physical state:	Solid
Form:	Solid
Color:	No data available.
Odor:	No data available.
Odor threshold:	No data available.
pH:	No data available.
Melting point/freezing point:	No data available.
Initial boiling point and boiling range:	No data available.
Flash Point:	No data available.
Evaporation rate:	No data available.
Flammability (solid, gas):	No data available.
Upper/lower limit on flammability or explosive limits	
Flammability limit - upper (%):	No data available.
Flammability limit - lower (%):	No data available.
Explosive limit - upper (%):	No data available.
Explosive limit - lower (%):	No data available.
Vapor pressure:	No data available.
Vapor density:	No data available.

Density:	No data available.
Relative density:	No data available.
Solubility(ies)	
Solubility in water:	No data available.
Solubility (other):	No data available.
Partition coefficient (n-octanol/water):	No data available.
Auto-ignition temperature:	No data available.
Decomposition temperature:	No data available.
Viscosity:	No data available.

10. STABILITY AND REACTIVITY

Reactivity: The product is non-reactive under normal conditions of use, storage and transport.

Chemical Stability: Material is stable under normal conditions.

Possibility of hazardous reactions: None under normal conditions.

Conditions to avoid: Avoid heat or contamination.

Incompatible Materials: Strong acids. Strong oxidizing substances. Strong bases.

Hazardous Decomposition Products: Fumes and gases from welding and its allied processes such as brazing and soldering cannot be classified simply. The composition and quantity of both are dependent upon the metal to which the joining or hot work is applied, the process, procedure - and where applicable - the electrode or consumable used. Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the metal being welded or worked (such as paint, plating, or galvanizing), the number of operators and the volume of the work area, the quality and amount of ventilation, the position of the operator's head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degreasing activities.)

In cases where an electrode or other applied material is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section 3. Decomposition products of normal operation include those originating from the volatilization, reaction, or oxidation of the materials shown in Section 3, plus those from the base metal and coating, etc., as noted above. Reasonably expected fume constituents produced during arc welding and brazing include the oxides of iron, manganese and other metals present in the welding consumable or base metal. Hexavalent chromium compounds may be in the welding or brazing fume of consumables or base metals which contain chromium. Gaseous and particulate fluoride may be in the fume of consumables or flux materials which contain fluoride. Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc associated with welding.

11. TOXICOLOGICAL INFORMATION

General information: The International Agency for Research on Cancer (IARC) has determined welding fumes and ultraviolet radiation from welding are carcinogenic to humans (Group 1). According to IARC, welding fumes cause cancer of the lung and positive associations have been observed with cancer of the kidney. Also according to IARC, ultraviolet radiation from welding causes ocular melanoma. IARC identifies gouging, brazing, carbon arc or plasma arc cutting, and soldering as processes closely related to welding. Read and understand the manufacturer's instructions, Safety Data Sheets and the precautionary labels before using this product.

Information on likely routes of exposure

Inhalation: Potential chronic health hazards related to the use of welding consumables are most applicable to the inhalation route of exposure. Refer to Inhalation statements in Section 11.

Skin Contact: Arc rays can burn skin. Skin cancer has been reported.

Eye contact: Arc rays can injure eyes.

Ingestion: Health injuries from ingestion are not known or expected under normal use.

Symptoms related to the physical, chemical and toxicological characteristics

Inhalation: Short-term (acute) overexposure to fumes and gases from welding and allied processes may result in discomfort such as metal fume fever, dizziness, nausea, or dryness or irritation of nose, throat, or eyes. May aggravate pre-existing respiratory problems (e.g. asthma, emphysema). Long-term (chronic) overexposure to fumes and gases from welding and allied processes can lead to siderosis (iron deposits in lung), central nervous system effects, bronchitis and other pulmonary effects.

Information on toxicological effects

Acute toxicity (list all possible routes of exposure)

Oral

Product: Not classified

Specified substance(s):

Iron	LD 50 (Rat): 98.6 g/kg
Copper and/or copper alloys and compounds (as Cu)	LD 50 (Rat): 481 mg/kg

Dermal

Product: Not classified

Inhalation

Product: Not classified

Repeated dose toxicity

Product: Not classified

Skin Corrosion/Irritation

Product: Not classified

Serious Eye Damage/Eye Irritation

Product: Not classified

Respiratory or Skin Sensitization

Product: Not classified

Carcinogenicity

Product: Arc rays: Skin cancer has been reported.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:

Nickel	Overall evaluation: 2B. Possibly carcinogenic to humans.

US. National Toxicology Program (NTP) Report on Carcinogens:

Nickel	Reasonably Anticipated to be a Human Carcinogen.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050):

No carcinogenic components identified

Germ Cell Mutagenicity

In vitro

Product: Not classified

In vivo

Product: Not classified

Reproductive toxicity

Product: Not classified

Specific Target Organ Toxicity - Single Exposure

Product: Not classified

Specific Target Organ Toxicity - Repeated Exposure

Product: Not classified

Aspiration Hazard

Product: Not classified

Other effects: Organic polymers may be used in the manufacture of various welding consumables. Overexposure to their decomposition byproducts may result in a condition known as polymer fume fever. Polymer fume fever usually occurs within 4 to 8 hours of exposure with the presentation of flu like symptoms, including mild pulmonary irritation with or without an increase in body temperature. Signs of exposure can include an increase in white blood cell count. Resolution of symptoms typically occurs quickly, usually not lasting longer than 48 hours.

Symptoms related to the physical, chemical and toxicological characteristics under the condition of use

Additional toxicological Information under the conditions of use:

Acute toxicity

Inhalation

Specified substance(s):

Carbon dioxide	LC Lo (Human, 5 min): 90000 ppm
Carbon monoxide	LC 50 (Rat, 4 h): 1300 ppm
Nitrogen dioxide	LC 50 (Rat, 4 h): 88 ppm
Ozone	LC Lo (Human, 30 min): 50 ppm

Other effects:

Specified substance(s):

Carbon dioxide	Asphyxia
Carbon monoxide	Carboxyhemoglobinemia
Nitrogen dioxide	Lower respiratory tract irritation

12. ECOLOGICAL INFORMATION

Ecotoxicity
Acute hazards to the aquatic environment:

Fish

Product:	Not classified
Specified substance(s):	
Copper and/or copper alloys and compounds (as Cu)	LC 50 (Fathead minnow (Pimephales promelas), 96 h): 1.6 mg/l
Nickel	LC 50 (Fathead minnow (Pimephales promelas), 96 h): 2.916 mg/l

Aquatic Invertebrates

Product:	Not classified
Specified substance(s):	
Manganese	EC 50 (Water flea (Daphnia magna), 48 h): 40 mg/l
Copper and/or copper alloys and compounds (as Cu)	EC 50 (Water flea (Daphnia magna), 48 h): 0.102 mg/l
Nickel	EC 50 (Water flea (Daphnia magna), 48 h): 1 mg/l

Chronic hazards to the aquatic environment:

Fish

Product:	Not classified

Aquatic Invertebrates

Product:	Not classified

Toxicity to Aquatic Plants

Product:	Not classified
Specified substance(s):	
Copper and/or copper alloys and compounds (as Cu)	LC 50 (Green algae (Scenedesmus dimorphus), 3 d): 0.0623 mg/l

Persistence and Degradability

Biodegradation

Product:	No data available.

Bioaccumulative potential

Bioconcentration Factor (BCF)

Product:	No data available.
Specified substance(s):	
Copper and/or copper alloys and compounds (as Cu)	Blue-green algae (Anacystis nidulans), Bioconcentration Factor (BCF): 36.01 (Static)
Nickel	Zebra mussel (Dreissena polymorpha), Bioconcentration Factor (BCF): 5,000 - 10,000 (Lotic) Bioconcentration factor calculated using dry weight tissue conc

Mobility in soil: No data available.

13. Disposal considerations

General information: The generation of waste should be avoided or minimized whenever possible. When practical, recycle in an environmentally acceptable, regulatory compliant manner. Dispose of non-recyclable products in accordance with all applicable Federal, State, Provincial, and Local

requirements.

Disposal instructions: Dispose of this material and its container to hazardous or special waste collection point.

Contaminated Packaging: Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

14. TRANSPORT INFORMATION

DOT

UN Number:	
UN Proper Shipping Name:	NOT DG REGULATED
Transport Hazard Class(es)	
Class:	NR
Label(s):	–
Packing Group:	–
Marine Pollutant:	No

IMDG

UN Number:	
UN Proper Shipping Name:	NOT DG REGULATED
Transport Hazard Class(es)	
Class:	NR
Label(s):	–
EmS No.:	
Packing Group:	–
Marine Pollutant:	No

IATA

UN Number:	
Proper Shipping Name:	NOT DG REGULATED
Transport Hazard Class(es):	
Class:	NR
Label(s):	–
Packing Group:	–
Marine Pollutant:	No
Cargo aircraft only:	Allowed.

TDG

UN Number:	
UN Proper Shipping Name:	NOT DG REGULATED
Transport Hazard Class(es)	
Class:	NR
Label(s):	–
Packing Group:	–
Marine Pollutant:	No

15. REGULATORY INFORMATION

US Federal Regulations

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

None present or none present in regulated quantities.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

None present or none present in regulated quantities.

CERCLA Hazardous Substance List (40 CFR 302.4):

Chemical Identity	Reportable quantity
Manganese	Included in the regulation but with no data values. See regulation for further details.
Copper and/or copper alloys and compounds (as Cu)	5000lbs.
Nickel	100lbs.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories

Not classified

Not classified

SARA 302 Extremely Hazardous Substance

None present or none present in regulated quantities.

SARA 304 Emergency Release Notification

None present or none present in regulated quantities.

SARA 311/312 Hazardous Chemical

Chemical Identity	Threshold Planning Quantity

SARA 313 (TRI Reporting)

Chemical Identity	Reporting threshold for other users	Reporting threshold for manufacturing and processing
Manganese	10000 lbs	25000 lbs.
Nickel	10000 lbs	25000 lbs.

Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3)

None present or none present in regulated quantities.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):

None present or none present in regulated quantities.

US State Regulations

US. California Proposition 65

WARNING

Cancer - www.P65Warnings.ca.gov

WARNING: This product contains or produces a chemical known to the State of California to cause cancer and birth defects (or other reproductive harm). (California Health & Safety Code Section 25249.5 et seq.)
WARNING: Cancer and Reproductive Harm – www.P65Warnings.ca.gov

US. New Jersey Worker and Community Right-to-Know Act

Chemical Identity

Manganese

Nickel

US. Massachusetts RTK - Substance List

Chemical Identity

Nickel

US. Pennsylvania RTK - Hazardous Substances

Chemical Identity

Manganese

US. Rhode Island RTK
No ingredient regulated by RI Right-to-Know Law present.

Canada Federal Regulations
List of Toxic Substances (CEPA, Schedule 1)
Not Regulated

Export Control List (CEPA 1999, Schedule 3)
Not Regulated

National Pollutant Release Inventory (NPRI)
Canada. National Pollutant Release Inventory (NPRI) Substances, Part 5, VOCs with Additional Reporting Requirements

NPRI PT5	Not Regulated

Canada. National Pollutant Release Inventory (NPRI) (Schedule 1, Parts 1-4)

NPRI	Not Regulated

Greenhouse Gases
Not Regulated

Controlled Drugs and Substances Act

CA CDSI	Not Regulated
CA CDSII	Not Regulated
CA CDSIII	Not Regulated
CA CDSIV	Not Regulated
CA CDSV	Not Regulated
CA CDSVII	Not Regulated
CA CDSVIII	Not Regulated

Precursor Control Regulations
Not Regulated

Mexico. Substances subject to reporting for the pollutant release and transfer registry (PRTR): Not applicable

Inventory Status:

Australia AICS:	On or in compliance with the inventory
Canada DSL Inventory List:	On or in compliance with the inventory
Canada NDSL Inventory:	One or more components are not listed or are exempt from listing.
Ontario Inventory:	On or in compliance with the inventory
China Inv. Existing Chemical Substances:	On or in compliance with the inventory
Japan (ENCS) List:	One or more components are not listed or are exempt from listing.
Japan ISHL Listing:	One or more components are not listed or are exempt from listing.
Japan Pharmacopoeia Listing:	One or more components are not listed or are exempt from listing.
Korea Existing Chemicals Inv. (KECI):	On or in compliance with the inventory
Mexico INSQ:	On or in compliance with the inventory
New Zealand Inventory of Chemicals:	On or in compliance with the inventory
Philippines PICCS:	On or in compliance with the inventory
Taiwan Chemical Substance Inventory:	On or in compliance with the inventory
US TSCA Inventory:	On or in compliance with the inventory
EINECS, ELINCS or NLP:	On or in compliance with the inventory

16. OTHER INFORMATION

Definitions:

Revision Date:	10/07/2019
Further Information:	Additional information is available by request.
Disclaimer:	The Lincoln Electric Company urges each end user and recipient of this SDS to study it carefully. See also www.lincolnelectric.com/safety. If necessary, consult an industrial hygienist or other expert to understand this information and safeguard the environment and protect workers from potential hazards associated with the handling or use of this product. This information is believed to be accurate as of the revision date shown above. However, no warranty, expressed or implied, is given. Because the conditions or methods of use are beyond Lincoln Electric's control, we assume no liability resulting from the use of this product. Regulatory requirements are subject to change and may differ between various locations. Compliance with all applicable Federal, State, Provincial, and local laws and regulations remain the responsibility of the user.

SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: UltraCore® 712A80
Product Size: 1/16" (1.6 mm)

Other means of identification
SDS number: 200000000057

Recommended use and restriction on use
Recommended use: FCAW-G (Gas Shielded Flux Cored Arc Welding)
Restrictions on use: Not known. Read this SDS before using this product.

Manufacturer/Importer/Supplier/Distributor Information

Company Name:	The Lincoln Electric Company
Address:	22801 Saint Clair Avenue Cleveland, Ohio 44117 USA
Telephone:	+1 (216) 481-8100
Contact Person:	Safety Data Sheet Questions: www.lincolnelectric.com/sds Arc Welding Safety Information: www.lincolnelectric.com/safety

Company Name:	The Lincoln Electric Company of Canada LP
Address:	179 Wicksteed Avenue Toronto, Ontario M4G 2B9 Canada
Telephone:	+1 (416) 421-2600
Contact Person:	Safety Data Sheet Questions: www.lincolnelectric.com/sds Arc Welding Safety Information: www.lincolnelectric.com/safety

Emergency telephone number:

USA/Canada/Mexico	+1 (888) 609-1762
Americas/Europe	+1 (216) 383-8962
Asia Pacific	+1 (216) 383-8966
Middle East/Africa	+1 (216) 383-8969

3E Company Access Code: 333988

2. HAZARDS IDENTIFICATION

Classified according to the criteria of the Globally Harmonized System of Classification and Labeling of Chemicals (GHS), The United States Occupational Safety and Health Administration's Hazard Communication Standard (29 CFR 1910.1200), Canada's Hazardous Product Regulations and Mexico's Harmonized System for the Identification and Communication of Hazards and Risks from Hazardous Chemicals in the Workplace.

Hazard Classification Not classified as hazardous according to applicable GHS hazard classification criteria.

Label Elements

Hazard Symbol: No symbol

Signal Word: No signal word.

Hazard Statement: Not applicable

Precautionary Not applicable

Statements:

Other hazards which do not result in GHS classification:

Electrical Shock can kill. If welding must be performed in damp locations or with wet clothing, on metal structures or when in cramped positions such as sitting, kneeling or lying, or if there is a high risk of unavoidable or accidental contact with work piece, use the following equipment: Semiautomatic DC Welder, DC Manual (Stick) Welder, or AC Welder with Reduced Voltage Control.

Arc rays can injure eyes and burn skin. Welding arc and sparks can ignite combustibles and flammable materials. Overexposure to welding fumes and gases can be hazardous. Read and understand the manufacturer's instructions, Safety Data Sheets and the precautionary labels before using this product. Refer to Section 8.

Substance(s) formed under the conditions of use:

The welding fume produced from this welding electrode may contain the following constituent(s) and/or their complex metallic oxides as well as solid particles or other constituents from the consumables, base metal, or base metal coating not listed below.

Chemical Identity	CAS-No.
Carbon dioxide	124-38-9
Carbon monoxide	630-08-0
Nitrogen dioxide	10102-44-0
Ozone	10028-15-6
Manganese	7439-96-5
Nickel	7440-02-0
Fluorides (as F)	16984-48-8

3. COMPOSITION / INFORMATION ON INGREDIENTS

Reportable Hazardous Ingredients
Mixtures

Chemical Identity	CAS number	Content in percent (%)*
Iron	7439-89-6	50 - <100%
Titanium dioxide	13463-67-7	5 - <10%
Manganese	7439-96-5	1 - <5%
Magnesium	7439-95-4	0.1 - <1%
Silicon	7440-21-3	0.1 - <1%
Nickel	7440-02-0	0.1 - <1%
Sodium oxide	1313-59-3	0.1 - <1%
Silicon dioxide (amorphous)	7631-86-9	0.1 - <1%
Iron oxide	1309-37-1	0.1 - <1%
Zirconium oxide	1314-23-4	0.1 - <1%
Aluminum oxide	1344-28-1	0.1 - <1%
Aluminum potassium fluoride	60304-36-1	0.1 - <1%

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

Composition Comments:

The term "Hazardous Ingredients" should be interpreted as a term defined in Hazard Communication standards and does not necessarily imply the

existence of a welding hazard. The product may contain additional non-hazardous ingredients or may form additional compounds under the condition of use. Refer to Sections 2 and 8 for more information.

4. FIRST AID MEASURES

Ingestion: Avoid hand, clothing, food, and drink contact with fluxes, metal fume or powder which can cause ingestion of particulate during hand to mouth activities such as drinking, eating, smoking, etc. If ingested, do not induce vomiting. Contact a poison control center. Unless the poison control center advises otherwise, wash out mouth thoroughly with water. If symptoms develop, seek medical attention at once.

Inhalation: Move to fresh air if breathing is difficult. If breathing has stopped, perform artificial respiration and obtain medical assistance at once.

Skin Contact: Remove contaminated clothing and wash the skin thoroughly with soap and water. For reddened or blistered skin, or thermal burns, obtain medical assistance at once.

Eye contact: Dust or fume from this product should be flushed from the eyes with copious amounts of clean, tepid water until transported to an emergency medical facility. Do not allow victim to rub or keep eyes tightly closed. Obtain medical assistance at once.

Arc rays can injure eyes. If exposed to arc rays, move victim to dark room, remove contact lenses as necessary for treatment, cover eyes with a padded dressing and rest. Obtain medical assistance if symptoms persist.

Most important symptoms/effects, acute and delayed

Symptoms: Short-term (acute) overexposure to fumes and gases from welding and allied processes may result in discomfort such as metal fume fever, dizziness, nausea, or dryness or irritation of nose, throat, or eyes. May aggravate pre-existing respiratory problems (e.g. asthma, emphysema). Long-term (chronic) overexposure to fumes and gases from welding and allied processes can lead to siderosis (iron deposits in lung), central nervous system effects, bronchitis and other pulmonary effects. Refer to Section 11 for more information.

Hazards: The hazards associated with welding and its allied processes such as soldering and brazing are complex and may include physical and health hazards such as but not limited to electric shock, physical strains, radiation burns (eye flash), thermal burns due to hot metal or spatter and potential health effects of overexposure to fumes, gases or dusts potentially generated during the use of this product. Refer to Section 11 for more information.

Indication of immediate medical attention and special treatment needed

Treatment: Treat symptomatically.

5. FIRE-FIGHTING MEASURES

General Fire Hazards: As shipped, this product is nonflammable. However, welding arc and sparks as well as open flames and hot surfaces associated with brazing and soldering can ignite combustible and flammable materials. Read and understand American National Standard Z49.1, "Safety in Welding, Cutting and Allied Processes" and National Fire Protection Association NFPA 51B, "Standard for Fire Prevention during Welding, Cutting and Other Hot Work"

before using this product.

Suitable (and unsuitable) extinguishing media

Suitable extinguishing media:	As shipped, the product will not burn. In case of fire in the surroundings: use appropriate extinguishing agent.
Unsuitable extinguishing media:	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical:	Welding arc and sparks can ignite combustibles and flammable products.

Special protective equipment and precautions for firefighters

Special fire fighting procedures:	Use standard firefighting procedures and consider the hazards of other involved materials.
Special protective equipment for fire-fighters:	Selection of respiratory protection for fire fighting: follow the general fire precautions indicated in the workplace. Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:	If airborne dust and/or fume is present, use adequate engineering controls and, if needed, personal protection to prevent overexposure. Refer to recommendations in Section 8.
Methods and material for containment and cleaning up:	Absorb with sand or other inert absorbent. Stop the flow of material, if this is without risk. Clean up spills immediately, observing precautions in the personal protective equipment in Section 8. Avoid generating dust. Prevent product from entering any drains, sewers or water sources. Refer to Section 13 for proper disposal.
Environmental Precautions:	Avoid release to the environment. Prevent further leakage or spillage if safe to do so. Do not contaminate water sources or sewer. Environmental manager must be informed of all major spillages.

7. HANDLING AND STORAGE

Precautions for safe handling:	Prevent formation of dust. Provide appropriate exhaust ventilation at places where dust is formed. Read and understand the manufacturer's instruction and the precautionary label on the product. Refer to Lincoln Safety Publications at www.lincolnelectric.com/safety. See American National Standard Z49.1, "Safety In Welding, Cutting and Allied Processes" published by the American Welding Society, http://pubs.aws.org and OSHA Publication 2206 (29CFR1910), U.S. Government Printing Office, www.gpo.gov.
Conditions for safe storage, including any incompatibilities:	Store in closed original container in a dry place. Store in accordance with local/regional/national regulations. Store away from incompatible materials.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Control Parameters

Occupational Exposure Limits: US

Chemical Identity	Type	Exposure Limit Values	Source
Titanium dioxide	TWA	10 mg/m3	US. ACGIH Threshold Limit Values (12 2010)
Titanium dioxide - Total dust.	PEL	15 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Titanium dioxide	IDLH	5,000 mg/m3	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Manganese - Fume. - as Mn	Ceiling	5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	REL	1 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
	STEL	3 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Manganese - Inhalable fraction. - as Mn	TWA	0.1 mg/m3	US. ACGIH Threshold Limit Values (03 2014)
Manganese - Respirable fraction. - as Mn	TWA	0.02 mg/m3	US. ACGIH Threshold Limit Values (03 2014)
Manganese	IDLH	500 mg/m3	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Silicon - Total dust.	PEL	15 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Silicon - Respirable fraction.	PEL	5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Silicon - Respirable.	REL	5 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Silicon - Total	REL	10 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Nickel - Inhalable fraction.	TWA	1.5 mg/m3	US. ACGIH Threshold Limit Values (12 2010)
Nickel - as Ni	PEL	1 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	REL	0.015 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Nickel	IDLH	10 mg/m3	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Silicon dioxide (amorphous)	TWA	20 millions of particles per cubic foot of air	US. OSHA Table Z-3 (29 CFR 1910.1000) (2000)
	TWA	0.8 mg/m3	US. OSHA Table Z-3 (29 CFR 1910.1000) (2000)
	REL	6 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
	IDLH	3,000 mg/m3	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Iron oxide - Respirable fraction.	TWA	5 mg/m3	US. ACGIH Threshold Limit Values (12 2010)
Iron oxide - Fume.	PEL	10 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Iron oxide - Dust and fume. - as Fe	REL	5 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Iron oxide	IDLH	2,500 mg/m3	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Zirconium oxide - as Zr	STEL	10 mg/m3	US. ACGIH Threshold Limit Values (12 2010)
	TWA	5 mg/m3	US. ACGIH Threshold Limit Values (12 2010)
	REL	5 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
	STEL	10 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
	PEL	5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02

			2006)
Zirconium oxide	IDLH	25 mg/m3	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Aluminum oxide - Respirable fraction.	TWA	1 mg/m3	US. ACGIH Threshold Limit Values (12 2010)
	PEL	5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Aluminum oxide - Total dust.	PEL	15 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Aluminum potassium fluoride - as F	TWA	2.5 mg/m3	US. ACGIH Threshold Limit Values (12 2010)
	PEL	2.5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Aluminum potassium fluoride - Dust.	TWA	2.5 mg/m3	US. OSHA Table Z-2 (29 CFR 1910.1000) (02 2006)
Aluminum potassium fluoride	IDLH	250 mg/m3	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
	IDLH	250 mg/m3	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)

Occupational Exposure Limits: Canada

Chemical Identity	Type	Exposure Limit Values	Source
Titanium dioxide	TWA	10 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
Titanium dioxide - Total dust.	TWA	10 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Titanium dioxide - Respirable fraction.	TWA	3 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Titanium dioxide	TWA	10 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2011)
	TWA	10 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	8 HR ACL	10 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	20 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Titanium dioxide - Total dust.	TWA	10 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (09 2017)
Manganese - as Mn	TWA	0.2 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	0.2 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	8 HR ACL	0.2 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	0.6 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Manganese - Respirable fraction. - as Mn	TWA	0.02 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act)

			(03 2014)
Manganese - Inhalable fraction. - as Mn	TWA	0.1 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
Manganese - as Mn	TWA	0.2 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (06 2015)
Manganese - Fume, total dust. - as Mn	TWA	0.2 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (09 2017)
Silicon - Total dust.	TWA	10 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (07 2010)
Silicon	8 HR ACL	10 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	20 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Silicon - Total dust.	TWA	10 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (09 2017)
Nickel	TWA	1.5 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	0.05 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (05 2013)
Nickel - Inhalable fraction.	TWA	1.5 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2011)
Nickel - Inhalable fraction. - as Ni	8 HR ACL	1.5 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	3 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	TWA	1 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (06 2015)
Nickel	TWA	1 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (09 2017)
Silicon dioxide (amorphous) - Total	TWA	4 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Silicon dioxide (amorphous) - Respirable.	TWA	1.5 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Silicon dioxide (amorphous)	TWA	10 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (07 2010)
Silicon dioxide (amorphous) - Respirable dust.	TWA	6 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (09 2017)
Iron oxide - Respirable.	TWA	5 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
Iron oxide - Total dust.	TWA	10 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Iron oxide - Dust. - as Fe	TWA	5 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for

			Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Iron oxide - Fume. - as Fe	STEL	10 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Iron oxide - Respirable fraction.	TWA	3 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Iron oxide - Fume. - as Fe	TWA	5 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Iron oxide - Respirable fraction.	TWA	5 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2011)
	TWA	5 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
Iron oxide	8 HR ACL	10 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	20 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Iron oxide - Dust and fume. - as Fe	15 MIN ACL	10 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	8 HR ACL	5 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Iron oxide - Total dust.	TWA	10 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (09 2017)
Iron oxide - Dust and fume. - as Fe	TWA	5 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (09 2017)
Zirconium oxide - as Zr	TWA	5 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	STEL	10 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	STEL	10 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	5 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	STEL	10 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2011)
	TWA	5 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2011)
	TWA	5 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	STEL	10 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	8 HR ACL	5 mg/m3	Canada. Saskatchewan OELs

			(Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	10 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	TWA	5 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (09 2017)
	STEL	10 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (09 2017)
Aluminum oxide	TWA	10 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
Aluminum oxide - Respirable.	TWA	1 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Aluminum oxide - Respirable fraction.	TWA	1 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2011)
	TWA	1 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
Aluminum oxide	8 HR ACL	10 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	20 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Aluminum oxide - Total dust. - as Al	TWA	10 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (09 2017)
Aluminum potassium fluoride - as F	TWA	2.5 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	2.5 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	2.5 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	2.5 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2011)
	TWA	2.5 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	8 HR ACL	2.5 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	5 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Aluminum potassium fluoride - Dust. - as Al	15 MIN ACL	20 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	8 HR ACL	10 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Aluminum potassium fluoride - as F	TWA	2.5 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (09 2017)

Occupational Exposure Limits: Mexico

Chemical Identity	Type	Exposure Limit Values	Source

Iron - as Fe	VLE-PPT	1 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control) (04 2014)
Titanium dioxide	VLE-PPT	10 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control) (04 2014)
Manganese - as Mn	VLE-PPT	0.2 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control) (04 2014)
Nickel - Inhalable fraction. - as Ni	VLE-PPT	1.5 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control) (04 2014)
Iron oxide - Respirable fraction.	VLE-PPT	5 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control) (04 2014)
Zirconium oxide - as Zr	VLE-PPT	5 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control) (04 2014)
	VLE-CT	10 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control) (04 2014)
Aluminum oxide	VLE-PPT	10 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control) (04 2014)
Aluminum potassium fluoride - as F	VLE-PPT	2.5 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control) (04 2014)

Biological Limit Values: US

Chemical Identity	Exposure Limit Values	Source
Aluminum potassium fluoride (Fluoride: Sampling time: Prior to shift.)	2 mg/l (Urine)	ACGIH BEI (03 2013)
Aluminum potassium fluoride (Fluoride: Sampling time: End of shift.)	3 mg/l (Urine)	ACGIH BEI (03 2013)

Biological Limit Values: Mexico

Chemical Identity	Exposure Limit Values	Source
Aluminum potassium fluoride (fluorides: Sampling time: Prior to shift.)	3 mg/g (Creatinine in urine)	MX IBE (06 2012)
Aluminum potassium fluoride (fluorides: Sampling time: End of shift.)	10 mg/g (Creatinine in urine)	MX IBE (06 2012)

Additional exposure limits under the conditions of use: US

Chemical Identity	Type	Exposure Limit Values		Source
Carbon dioxide	TWA	5,000 ppm		US. ACGIH Threshold Limit Values (12 2010)
	STEL	30,000 ppm		US. ACGIH Threshold Limit Values (12 2010)
	PEL	5,000 ppm	9,000 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	STEL	30,000 ppm	54,000 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
	REL	5,000 ppm	9,000 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
	IDLH	40,000 ppm		US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Carbon monoxide	TWA	25 ppm		US. ACGIH Threshold Limit Values (12 2010)
	PEL	50 ppm	55 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02

				2006)
	REL	35 ppm	40 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
	Ceil_Time	200 ppm	229 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
	IDLH	1,200 ppm		US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Nitrogen dioxide	TWA	0.2 ppm		US. ACGIH Threshold Limit Values (02 2012)
	Ceiling	5 ppm	9 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	STEL	1 ppm	1.8 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
	IDLH	20 ppm		US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
	IDLH	13 ppm		US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Ozone	PEL	0.1 ppm	0.2 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	Ceil_Time	0.1 ppm	0.2 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
	TWA	0.05 ppm		US. ACGIH Threshold Limit Values (03 2014)
	TWA	0.20 ppm		US. ACGIH Threshold Limit Values (03 2014)
	TWA	0.10 ppm		US. ACGIH Threshold Limit Values (03 2014)
	TWA	0.08 ppm		US. ACGIH Threshold Limit Values (03 2014)
	IDLH	5 ppm		US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Manganese - Fume. - as Mn	Ceiling		5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	REL		1 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
	STEL		3 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Manganese - Inhalable fraction. - as Mn	TWA		0.1 mg/m3	US. ACGIH Threshold Limit Values (03 2014)
Manganese - Respirable fraction. - as Mn	TWA		0.02 mg/m3	US. ACGIH Threshold Limit Values (03 2014)
Manganese	IDLH		500 mg/m3	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Nickel - Inhalable fraction.	TWA		1.5 mg/m3	US. ACGIH Threshold Limit Values (12 2010)
Nickel - as Ni	PEL		1 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	REL		0.015 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Nickel	IDLH		10 mg/m3	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Fluorides (as F) - as F	TWA		2.5 mg/m3	US. ACGIH Threshold Limit Values (12 2010)
	PEL		2.5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Fluorides (as F) - Dust.	TWA		2.5 mg/m3	US. OSHA Table Z-2 (29 CFR 1910.1000) (02 2006)
Fluorides (as F)	IDLH		250 mg/m3	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)

Additional exposure limits under the conditions of use: Canada

Chemical Identity	Type	Exposure Limit Values		Source
Carbon dioxide	STEL	30,000 ppm	54,000 mg/m3	Canada. Alberta OELs (Occupational

				Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	5,000 ppm	9,000 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	5,000 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	STEL	15,000 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	5,000 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2011)
	STEL	30,000 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2011)
	STEL	30,000 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	TWA	5,000 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	8 HR ACL	5,000 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	30,000 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	TWA	5,000 ppm	9,000 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (09 2017)
	STEL	30,000 ppm	54,000 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (09 2017)
Carbon monoxide	TWA	25 ppm	29 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	25 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	STEL	100 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	25 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2011)
	TWA	25 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (07 2010)
	8 HR ACL	25 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	190 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	TWA	35 ppm	40 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (09 2017)
	STEL	200 ppm	230 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (09 2017)
Nitrogen dioxide	STEL	5 ppm	9.4 mg/m3	Canada. Alberta OELs (Occupational

				Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	3 ppm	5.6 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	CEILING	1 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.2 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2012)
	STEL	5 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	TWA	3 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	8 HR ACL	3 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	5 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	TWA	3 ppm	5.6 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (09 2017)
Ozone	STEL	0.3 ppm	0.6 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	0.1 ppm	0.2 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	0.05 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.1 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.08 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.2 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.1 ppm	0.2 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (07 2010)
	STEL	0.3 ppm	0.6 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (07 2010)
	15 MIN ACL	0.15 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	8 HR ACL	0.05 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	CEILING	0.1 ppm	0.2 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
	TWA	0.20 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act)

			(03 2014)
	TWA	0.05 ppm	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
	TWA	0.08 ppm	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
	TWA	0.10 ppm	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
Manganese - as Mn	TWA	0.2 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	0.2 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	8 HR ACL	0.2 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	0.6 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Manganese - Respirable fraction. - as Mn	TWA	0.02 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
Manganese - Inhalable fraction. - as Mn	TWA	0.1 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
Manganese - as Mn	TWA	0.2 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (06 2015)
Manganese - Fume, total dust. - as Mn	TWA	0.2 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (09 2017)
Nickel	TWA	1.5 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	0.05 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (05 2013)
Nickel - Inhalable fraction.	TWA	1.5 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2011)
Nickel - Inhalable fraction. - as Ni	8 HR ACL	1.5 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	3 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	TWA	1 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (06 2015)
Nickel	TWA	1 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (09 2017)
Fluorides (as F) - as F	TWA	2.5 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	2.5 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	2.5 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	2.5 mg/m3	Canada. Manitoba OELs (Reg. 217/2006,

			The Workplace Safety And Health Act) (03 2011)
	TWA	2.5 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	8 HR ACL	2.5 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	5 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	TWA	2.5 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (09 2017)

Additional exposure limits under the conditions of use: Mexico

Chemical Identity	Type	Exposure Limit Values	Source
Carbon dioxide	VLE-CT	30,000 ppm	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control) (04 2014)
	VLE-PPT	5,000 ppm	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control) (04 2014)
Carbon monoxide	VLE-PPT	25 ppm	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control) (04 2014)
Nitrogen dioxide	VLE-PPT	0.2 ppm	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control) (04 2014)
Ozone	VLE-P	0.1 ppm	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control) (04 2014)
Manganese - as Mn	VLE-PPT	0.2 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control) (04 2014)
Nickel - Inhalable fraction. - as Ni	VLE-PPT	1.5 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control) (04 2014)
Fluorides (as F) - as F	VLE-PPT	2.5 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control) (04 2014)

Appropriate Engineering Controls

Ventilation: Use enough ventilation and local exhaust at the arc, flame or heat source to keep the fumes and gases from the worker's breathing zone and the general area. Train the operator to keep their head out of the fumes. **Keep exposure as low as possible.**

Individual protection measures, such as personal protective equipment

General information:

Exposure Guidelines: To reduce the potential for overexposure, use controls such as adequate ventilation and personal protective equipment (PPE). Overexposure refers to exceeding applicable local limits, the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs) or the Occupational Safety and Health Administration's (OSHA) Permissible Exposure Limits (PELs). Workplace exposure levels should be established by competent industrial hygiene assessments. Unless exposure levels are confirmed to be below the applicable local limit, TLV or PEL, whichever is lower, respirator use is required. Absent these controls, overexposure to one or more compound constituents, including those in the fume or airborne particles, may occur resulting in potential health hazards. According to the ACGIH, TLVs and Biological Exposure Indices (BEIs) "represent conditions under which ACGIH believes that nearly all workers may be repeatedly exposed without adverse health effects." The ACGIH further states that the TLV-TWA should be used as a guide in the control of health hazards and should not be used

to indicate a fine line between safe and dangerous exposures. See Section 10 for information on constituents which have some potential to present health hazards. Welding consumables and materials being joined may contain chromium as an unintended trace element. Materials that contain chromium may produce some amount of hexavalent chromium (CrVI) and other chromium compounds as a byproduct in the fume. In 2018, the American Conference of Governmental Industrial Hygienists (ACGIH) lowered the Threshold Limit Value (TLV) for hexavalent chromium from 50 micrograms per cubic meter of air (50 µg/m³) to 0.2 µg/m³. At these new limits, CrVI exposures at or above the TLV may be possible in cases where adequate ventilation is not provided. CrVI compounds are on the IARC and NTP lists as posing a lung cancer and sinus cancer risk. Workplace conditions are unique and welding fume exposures levels vary. Workplace exposure assessments must be conducted by a qualified professional, such as an industrial hygienist, to determine if exposures are below applicable limits and to make recommendations when necessary for preventing overexposures.

Eye/face protection: Wear helmet or use face shield with filter lens shade number 12 or darker for open arc processes – or follow the recommendations as specified in ANSI Z49.1, Section 4, based on your process and settings. No specific lens shade recommendation for submerged arc or electroslag processes. Shield others by providing appropriate screens and flash goggles.

Skin Protection

Hand Protection: Wear protective gloves. Suitable gloves can be recommended by the glove supplier.

Other: **Protective Clothing:** Wear hand, head, and body protection which help to prevent injury from radiation, open flames, hot surfaces, sparks and electrical shock. See Z49.1. At a minimum, this includes welder's gloves and a protective face shield when welding, and may include arm protectors, aprons, hats, shoulder protection, as well as dark substantial clothing when welding, brazing and soldering. Wear dry gloves free of holes or split seams. Train the operator not to permit electrically live parts or electrodes from contacting the skin . . . or clothing or gloves if they are wet. Insulate yourself from the work piece and ground using dry plywood, rubber mats or other dry insulation.

Respiratory Protection: Keep your head out of fumes. Use enough ventilation and local exhaust to keep fumes and gases from your breathing zone and the general area. An approved respirator should be used unless exposure assessments are below applicable exposure limits.

Hygiene measures: Do not eat, drink or smoke when using the product. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Determine the composition and quantity of fumes and gases to which workers are exposed by taking an air sample from inside the welder's helmet if worn or in the worker's breathing zone. Improve ventilation if exposures are not below limits. See ANSI/AWS F1.1, F1.2, F1.3 and F1.5, available from the American Welding Society, www.aws.org.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Cored welding wire.

Physical state: Solid

Form:	Solid
Color:	No data available.
Odor:	No data available.
Odor threshold:	No data available.
pH:	No data available.
Melting point/freezing point:	No data available.
Initial boiling point and boiling range:	No data available.
Flash Point:	No data available.
Evaporation rate:	No data available.
Flammability (solid, gas):	No data available.
Upper/lower limit on flammability or explosive limits	
Flammability limit - upper (%):	No data available.
Flammability limit - lower (%):	No data available.
Explosive limit - upper (%):	No data available.
Explosive limit - lower (%):	No data available.
Vapor pressure:	No data available.
Vapor density:	No data available.
Density:	No data available.
Relative density:	No data available.
Solubility(ies)	
Solubility in water:	No data available.
Solubility (other):	No data available.
Partition coefficient (n-octanol/water):	No data available.
Auto-ignition temperature:	No data available.
Decomposition temperature:	No data available.
Viscosity:	No data available.

10. STABILITY AND REACTIVITY

Reactivity:	The product is non-reactive under normal conditions of use, storage and transport.
Chemical Stability:	Material is stable under normal conditions.
Possibility of hazardous reactions:	None under normal conditions.
Conditions to avoid:	Avoid heat or contamination.
Incompatible Materials:	Strong acids. Strong oxidizing substances. Strong bases.
Hazardous Decomposition Products:	Fumes and gases from welding and its allied processes such as brazing and soldering cannot be classified simply. The composition and quantity of both are dependent upon the metal to which the joining or hot work is applied, the process, procedure - and where applicable - the electrode or consumable used. Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the metal being welded or worked (such as paint, plating, or galvanizing), the number of operators and the volume of the work area, the quality and amount of ventilation, the position of the operator's

head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degreasing activities.)

In cases where an electrode or other applied material is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section 3. Decomposition products of normal operation include those originating from the volatilization, reaction, or oxidation of the materials shown in Section 3, plus those from the base metal and coating, etc., as noted above. Reasonably expected fume constituents produced during arc welding and brazing include the oxides of iron, manganese and other metals present in the welding consumable or base metal. Hexavalent chromium compounds may be in the welding or brazing fume of consumables or base metals which contain chromium. Gaseous and particulate fluoride may be in the fume of consumables or flux materials which contain fluoride. Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc associated with welding.

11. TOXICOLOGICAL INFORMATION

General information: The International Agency for Research on Cancer (IARC) has determined welding fumes and ultraviolet radiation from welding are carcinogenic to humans (Group 1). According to IARC, welding fumes cause cancer of the lung and positive associations have been observed with cancer of the kidney. Also according to IARC, ultraviolet radiation from welding causes ocular melanoma. IARC identifies gouging, brazing, carbon arc or plasma arc cutting, and soldering as processes closely related to welding. Read and understand the manufacturer's instructions, Safety Data Sheets and the precautionary labels before using this product.

Information on likely routes of exposure

Inhalation: Potential chronic health hazards related to the use of welding consumables are most applicable to the inhalation route of exposure. Refer to Inhalation statements in Section 11.

Skin Contact: Arc rays can burn skin. Skin cancer has been reported.

Eye contact: Arc rays can injure eyes.

Ingestion: Health injuries from ingestion are not known or expected under normal use.

Symptoms related to the physical, chemical and toxicological characteristics

Inhalation: Short-term (acute) overexposure to fumes and gases from welding and allied processes may result in discomfort such as metal fume fever, dizziness, nausea, or dryness or irritation of nose, throat, or eyes. May aggravate pre-existing respiratory problems (e.g. asthma, emphysema). Long-term (chronic) overexposure to fumes and gases from welding and allied processes can lead to siderosis (iron deposits in lung), central nervous system effects, bronchitis and other pulmonary effects.

Information on toxicological effects

Acute toxicity (list all possible routes of exposure)

Oral

Product: Not classified

Specified substance(s):

Iron	LD 50 (Rat): 98.6 g/kg

Dermal
Product: Not classified

Inhalation
Product: Not classified
Specified substance(s):

Aluminum oxide	LC 50 (Rat, 1 h): 7.6 mg/l

Repeated dose toxicity
Product: Not classified

Skin Corrosion/Irritation
Product: Not classified

Serious Eye Damage/Eye Irritation
Product: Not classified

Respiratory or Skin Sensitization
Product: Not classified

Carcinogenicity
Product: Arc rays: Skin cancer has been reported.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:

Titanium dioxide	Overall evaluation: 2B. Possibly carcinogenic to humans.
Nickel	Overall evaluation: 2B. Possibly carcinogenic to humans.

US. National Toxicology Program (NTP) Report on Carcinogens:

Nickel	Reasonably Anticipated to be a Human Carcinogen.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050):
No carcinogenic components identified

Germ Cell Mutagenicity
In vitro
Product: Not classified

In vivo
Product: Not classified

Reproductive toxicity
Product: Not classified

Specific Target Organ Toxicity - Single Exposure
Product: Not classified

Specific Target Organ Toxicity - Repeated Exposure
Product: Not classified

Aspiration Hazard
Product: Not classified

Other effects: Organic polymers may be used in the manufacture of various welding consumables. Overexposure to their decomposition byproducts may result in a condition known as polymer fume fever. Polymer fume fever usually occurs within 4 to 8 hours of exposure with the presentation of flu like symptoms, including mild pulmonary irritation with or without an increase in body temperature. Signs of exposure can include an increase in white blood cell count. Resolution of symptoms typically occurs quickly, usually not lasting longer than 48 hours.

Symptoms related to the physical, chemical and toxicological characteristics under the condition of use

Inhalation:
Specified substance(s):

Manganese	Overexposure to manganese fumes may affect the brain and central nervous system, resulting in poor coordination, difficulty speaking, and arm or leg tremor. This condition can be irreversible.
Nickel	Nickel and its compounds are on the IARC and NTP lists as posing respiratory cancer risk, and are skin sensitizers with symptoms ranging from slight itch to severe dermatitis.

Additional toxicological Information under the conditions of use:

Acute toxicity
Oral
Specified substance(s):

Fluorides (as F)	LD 50 (Rat): 4,250 mg/kg

Inhalation
Specified substance(s):

Carbon dioxide	LC Lo (Human, 5 min): 90000 ppm
Carbon monoxide	LC 50 (Rat, 4 h): 1300 ppm
Nitrogen dioxide	LC 50 (Rat, 4 h): 88 ppm
Ozone	LC Lo (Human, 30 min): 50 ppm

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:
Specified substance(s):

Nickel	Overall evaluation: 2B. Possibly carcinogenic to humans.

US. National Toxicology Program (NTP) Report on Carcinogens:
Specified substance(s):

Nickel	Reasonably Anticipated to be a Human Carcinogen.

Other effects:
Specified substance(s):

Carbon dioxide	Asphyxia
Carbon monoxide	Carboxyhemoglobinemia
Nitrogen dioxide	Lower respiratory tract irritation
Nickel	Dermatitis Pneumoconiosis

12. ECOLOGICAL INFORMATION

Ecotoxicity
Acute hazards to the aquatic environment:
Fish
Product: Not classified
Specified substance(s):

Nickel	LC 50 (Fathead minnow (Pimephales promelas), 96 h): 2.916 mg/l

Aquatic Invertebrates

Product:	Not classified
Specified substance(s):	
Manganese	EC 50 (Water flea (Daphnia magna), 48 h): 40 mg/l
Nickel	EC 50 (Water flea (Daphnia magna), 48 h): 1 mg/l

Chronic hazards to the aquatic environment:

Fish

Product:	Not classified

Aquatic Invertebrates

Product:	Not classified

Toxicity to Aquatic Plants

Product:	Not classified

Persistence and Degradability

Biodegradation

Product:	No data available.

Bioaccumulative potential

Bioconcentration Factor (BCF)

Product:	No data available.
Specified substance(s):	
Nickel	Zebra mussel (Dreissena polymorpha), Bioconcentration Factor (BCF): 5,000 - 10,000 (Lotic) Bioconcentration factor calculated using dry weight tissue conc

Mobility in soil: No data available.

13. Disposal considerations

General information: The generation of waste should be avoided or minimized whenever possible. When practical, recycle in an environmentally acceptable, regulatory compliant manner. Dispose of non-recyclable products in accordance with all applicable Federal, State, Provincial, and Local requirements.

Disposal instructions: Disposal of this product may be regulated as a Hazardous Waste. The welding consumable and/or by-product from the welding process (including, but not limited to slag, dust, etc.) may contain levels of leachable heavy metals such as Barium or Chromium. Prior to disposal, a representative sample must be analyzed in accordance with US EPA's Toxicity Characteristic Leaching Procedure (TCLP) to determine if any constituents exist above regulated threshold levels. Discard any product, residue, disposable container, or liner in an environmentally acceptable manner according to Federal, State and Local Regulations.

Contaminated Packaging: Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

14. TRANSPORT INFORMATION

DOT

UN Number:
UN Proper Shipping Name: NOT DG REGULATED
Transport Hazard Class(es)
Class: NR
Label(s): –
Packing Group: –
Marine Pollutant: No

IMDG
UN Number:
UN Proper Shipping Name: NOT DG REGULATED
Transport Hazard Class(es)
Class: NR
Label(s): –
EmS No.:
Packing Group: –
Marine Pollutant: No

IATA
UN Number:
Proper Shipping Name: NOT DG REGULATED
Transport Hazard Class(es):
Class: NR
Label(s): –
Packing Group: –
Marine Pollutant: No
Cargo aircraft only: Allowed.

TDG
UN Number:
UN Proper Shipping Name: NOT DG REGULATED
Transport Hazard Class(es)
Class: NR
Label(s): –
Packing Group: –
Marine Pollutant: No

15. REGULATORY INFORMATION

US Federal Regulations

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)
None present or none present in regulated quantities.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)
None present or none present in regulated quantities.

CERCLA Hazardous Substance List (40 CFR 302.4):

Chemical Identity	Reportable quantity
Manganese	Included in the regulation but with no data values. See regulation for further details.
Nickel	100lbs.

Superfund Amendments and Reauthorization Act of 1986 (SARA)
Hazard categories
Not classified
Not classified

SARA 302 Extremely Hazardous Substance

None present or none present in regulated quantities.

SARA 304 Emergency Release Notification

Chemical Identity	Reportable quantity
Manganese	Included in the regulation but with no data values. See regulation for further details.
Nickel	100 lbs.

SARA 311/312 Hazardous Chemical

Chemical Identity	Threshold Planning Quantity
Iron	10000 lbs
Titanium dioxide	10000 lbs
Manganese	10000 lbs
Magnesium	10000 lbs
Silicon	10000 lbs
Nickel	10000 lbs
Sodium oxide	10000 lbs
Silicon dioxide (amorphous)	10000 lbs
Iron oxide	10000 lbs
Zirconium oxide	10000 lbs
Aluminum oxide	10000 lbs
Aluminum potassium fluoride	10000 lbs

SARA 313 (TRI Reporting)

Chemical Identity	Reporting threshold for other users	Reporting threshold for manufacturing and processing
Manganese	10000 lbs	25000 lbs.
Nickel	10000 lbs	25000 lbs.

Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3)

None present or none present in regulated quantities.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):

None present or none present in regulated quantities.

US State Regulations

US. California Proposition 65

WARNING

Cancer - www.P65Warnings.ca.gov

WARNING: This product contains or produces a chemical known to the State of California to cause cancer and birth defects (or other reproductive harm). (California Health & Safety Code Section 25249.5 et seq.)
WARNING: Cancer and Reproductive Harm – www.P65Warnings.ca.gov

US. New Jersey Worker and Community Right-to-Know Act

Chemical Identity

Titanium dioxide
Manganese
Nickel

US. Massachusetts RTK - Substance List

Chemical Identity

Nickel
Chromium and chromium alloys or compounds (as Cr)
Quartz

Vanadium pentoxide

US. Pennsylvania RTK - Hazardous Substances

Chemical Identity
Titanium dioxide
Manganese
Nickel

US. Rhode Island RTK

No ingredient regulated by RI Right-to-Know Law present.

Canada Federal Regulations

List of Toxic Substances (CEPA, Schedule 1)

Chemical Identity
Titanium dioxide
Iron oxide
Aluminum oxide

Export Control List (CEPA 1999, Schedule 3)

Not Regulated

National Pollutant Release Inventory (NPRI)

Canada. National Pollutant Release Inventory (NPRI) Substances, Part 5, VOCs with Additional Reporting Requirements

NPRI PT5	Not Regulated

Canada. National Pollutant Release Inventory (NPRI) (Schedule 1, Parts 1-4)

NPRI	Not Regulated

Greenhouse Gases

Not Regulated

Controlled Drugs and Substances Act

CA CDSI	Not Regulated
CA CDSII	Not Regulated
CA CDSIII	Not Regulated
CA CDSIV	Not Regulated
CA CDSV	Not Regulated
CA CDSVII	Not Regulated
CA CDSVIII	Not Regulated

Precursor Control Regulations

Not Regulated

Mexico. Substances subject to reporting for the pollutant release and transfer registry (PRTR): Not applicable

Inventory Status:

Australia AICS:	One or more components are not listed or are exempt from listing.
Canada DSL Inventory List:	On or in compliance with the inventory
EINECS, ELINCS or NLP:	On or in compliance with the inventory
Japan (ENCS) List:	One or more components are not listed or are exempt from listing.
China Inv. Existing Chemical Substances:	One or more components are not listed or are exempt from listing.
Korea Existing Chemicals Inv. (KECI):	On or in compliance with the inventory
Canada NDSL Inventory:	One or more components are not listed or are exempt from listing.

Philippines PICCS:	One or more components are not listed or are exempt from listing.
US TSCA Inventory:	On or in compliance with the inventory
New Zealand Inventory of Chemicals:	One or more components are not listed or are exempt from listing.
Japan ISHL Listing:	One or more components are not listed or are exempt from listing.
Japan Pharmacopoeia Listing:	One or more components are not listed or are exempt from listing.
Mexico INSQ:	On or in compliance with the inventory
Ontario Inventory:	On or in compliance with the inventory
Taiwan Chemical Substance Inventory:	On or in compliance with the inventory

16. OTHER INFORMATION

Definitions:

Revision Date: 06/17/2019

Further Information: Additional information is available by request.

Disclaimer: The Lincoln Electric Company urges each end user and recipient of this SDS to study it carefully. See also www.lincolnelectric.com/safety. If necessary, consult an industrial hygienist or other expert to understand this information and safeguard the environment and protect workers from potential hazards associated with the handling or use of this product. This information is believed to be accurate as of the revision date shown above. However, no warranty, expressed or implied, is given. Because the conditions or methods of use are beyond Lincoln Electric's control, we assume no liability resulting from the use of this product. Regulatory requirements are subject to change and may differ between various locations. Compliance with all applicable Federal, State, Provincial, and local laws and regulations remain the responsibility of the user.

Filtration:

- Exhaust Filters: RTT's RP Arrestor W-Series 5100 Ultra-Efficiency filtration roll media and FilterLoc filter management system. The RP Arrestor W-Series filtration has six layers of expanded paper to create an alternating labyrinth upstream of a heavy polyester backing. This combination yields higher efficiency while still providing ample holding capacity in a wide variety of applications. Filters are lab tested with over a 99.8% particulate removal efficiency. FilterLoc track is mounted to the exhaust chamber providing a tighter seal to help eliminate overspray bypass. The roll media is secured in the FilterLoc track using the provided FilterLoc Tool. The new technology provides savings by allowing the utilization of roll media reducing overall cost and decreases overall filter change out time.
- A Dwyer Mark II manometer will be provided with the unit to monitor the filter resistance and thereby offer a visual indicator of the filter's life and efficiency.
- Intake air filters: Rated by UL as Class 2 and are EPA registered as environmentally safe. Filters are self-supporting in an internal frame sized 20" x 20" x 1". One set of filters will be supplied with this unit.

(6) - 36" 5.0HP Exhaust fan rated for 16,667 CFM @ 0.75" Static Pressure
Total CFM exhausted: 100,000 CFM.

A tube axial type duct fan specifically designed and constructed for use in paint spray booths and similar applications is provided for exhaust. A precision balanced, fabricated, aluminum non-sparking fan blade moves the air through the fan. Bearings are mounted in rubber isolators for smooth operation. The motor, drive, and bearings are isolated from the exhaust air stream. The bearings are sized with a minimum average life, per AFBMA, in excess of 200,000 hours when operating at the maximum RPM of the fan size.

Two AMUs

Two vertical mounted, indoor air make up units are quoted to replace the air being exhausted and provide an elevated cure cycle for the fastest and most efficient finishing cycle. The units are equipped with VFDs for supply fan and exhaust fans, 2" npt gas manifolds, approximately 4,235 MBH natural gas burners, 100 degree F temp rise, cure at up to 160 degrees F, 30 Hp 480V supply fan, solid shaft grounding ring, 3 hinged and 2 drop out access doors, high and low airflow safety switches, high discharge limit switch, high/low volume auto-balancing profile damper, enclosed cooling circuit for VFD, side accessible filter section, motorized inlet damper, V-bank of aluminum cleanable inlet filters, digital control panel with heat switches and LED indicator lights, digital discharge temperature controls, magnehelic gauge, manual potentiometer for exhaust fans VFD, booth light switch and lighting circuitry, and a fire suppression interlock (Fire Suppression Equipment supplied by others.

Warranty:

Compliant Paint Booths warrants to the buyer that the equipment be free from defects of materials or workmanship under normal use and maintenance for a period of one year. All components supplied by not produced by Compliant Paint Booths shall carry the warranty of the manufacturer and shall be at least one year. Labor is not a part of warranty.

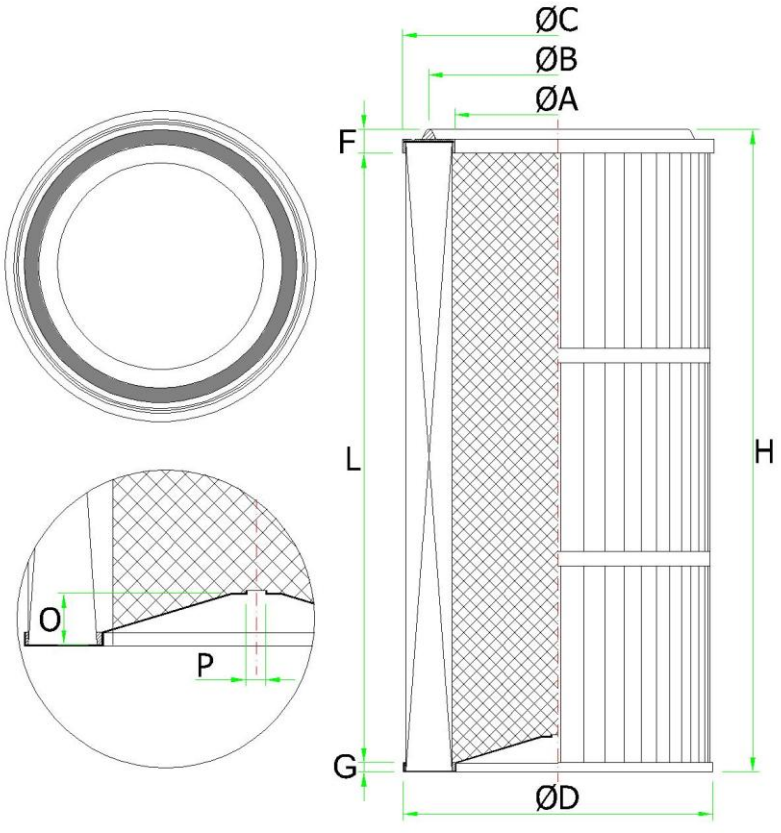
ALTAIR® S.r.l.
Via Caselle 113
10040 LEINI' (TURIN)
ITALY
Tel. +39-011-9973113 (8 linee r.a.)
Fax. +39-011-9988546
http: www.altair-srl.com
e.mail: info@altair-srl.com
Certified ISO 9001-2000 N° I1251/8526D

Cap.Soc. € 500.000,00 int.vers.-R.E.A di Torino 1197305
Codice fiscale 11223690014-Partita IVA IT 11223690014

OFFER N°	4826/19/GV	**REV.**	00	**DATE**	14/11/2019
ARTICLE CODE: CAR325/OF/660/220/COL270B-TF-FR/SV					
DIAMETER: 325 mm					
HEIGHT: 1000 mm					
KIND OF FILTERING FABRIC: 100 % POLYESTER SPUNBONDED					

FILTER			**FILTERING SURFACE**	
MODEL	**H**	**L**	**– –**	**220***
CAR325/OF660	670	637		13,93**

A	**B**	**C**	**D**	**F**	**G**	**O**	**P**
235	272	325	325	23	10	37	13



*** Number of pleats**
**** m²**

ALTAIR® S.r.l.
Via Caselle 113
10040 LEINI' (TURIN)
ITALY
Tel. +39-011-9973113 (8 linee r.a.)
Fax. +39-011-9988546
http: www.altair-srl.com
e.mail: info@altair-srl.com
Certified ISO 9001-2000 N° I1251/8526D

Cap.Soc. € 500.000,00 int.vers.-R.E.A di Torino 1197305
Codice fiscale 11223690014-Partita IVA IT 11223690014

TECHNICAL SHEET OF FILTERING FABRIC

OFFER N°	4826/19/GV	**REV.**	00	**DATE**	14/11/2019
Article				COL270B-TF-FR	
Composition				100% POLYESTER SPUNBONDED + FIRE RETARDANT TREATMENT	
Weight				270	
Thickness				0,60	
Density				--------	
Maximum resistance at the transversal traction				1200	
Maximum resistance at the longitudinal traction [N/5cm]				700	
Maximum lengthening at the transversal traction [%]				40	
Maximum lengthening at the longitudinal traction [%]				30	
Permeability to air [m³/m²/h]				1100 ca	
Size of pores [um]				NOT MEASURABLE	
Volume of pores [%]				66	
Water absorbency [%]				---------	
BIA Rating				USGC	
Color				WHITE	

The combination of polyester fabric and PTFE (Teflon) layer gives an excellent performance filtering fabrics. This fabric is very easy to clean thanks to its very smooth, non-stick surface.
The PTFE (Teflon) layer withholds even the smallest particles on the surface of the fabric. Furthermore, **COL270B-TF** is especially used to filter very fine, sticky, fibrous, critical powders. The BIA certification no.201520666/6210 of COL270B-TF (copy available upon request) complies with Directive ZH1/487 which establishes a release lower than 0.1% for powder with a granulometry in the range from 0.2 to 2 microns, at a crossing speed of 0.056 m/s which corresponds to class USGC. COL270B-TF offers high mechanical resistance, high chemical resistance to acid and organic solvent vapours. The maximum working temperature for continuous use is 150° C.

ALTAIR® S.r.l.
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ITALY
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Fax. +39-011-9988546
http: www.altair-srl.com
e.mail: info@altair-srl.com
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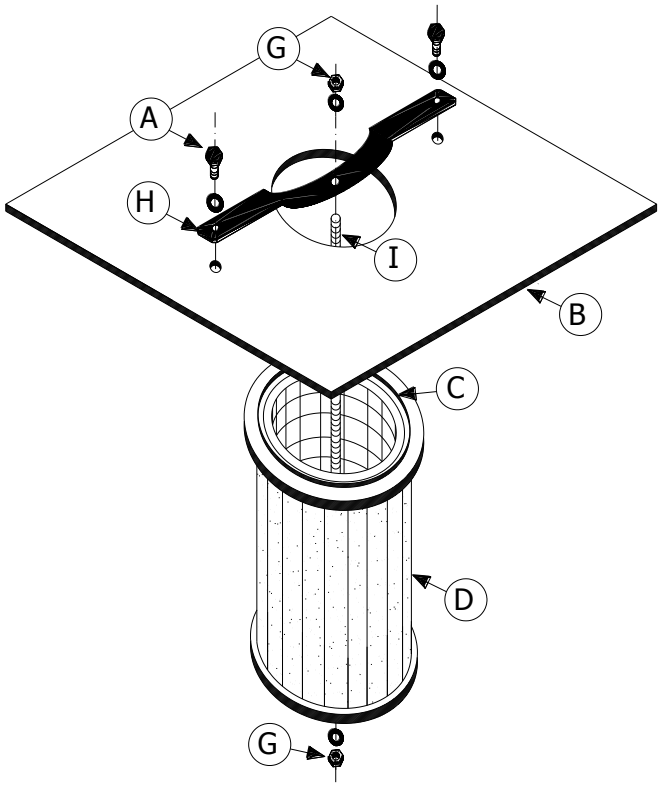
Codice fiscale 11223690014-Partita IVA IT 11223690014

"OF" FIXING SYSTEM TYPE

LEGENDA

A. M8 Bolt*
B. Filter-holder plate* (thickn. 3.5 mm)
C. Rubber gasket
D. Filter cartridge
E. Nut pre-welded on filter-holder plate*
G. Fixing nut*
H. Pre-formed steel strip*
I. Threaded bar*

*Material not supplied



- One (1) 500 cu. ft. "free standing" abrasive storage hopper with required support steel and abrasive shut-off gates to stop the flow of abrasive if required. **(Note: Hopper designed to feed four (4) 6.5 cu. ft. blast pots as well as (1) 120 cu. ft. dual-chambered blast pot – by others.)**

- **One (1) 3'W stairway and access work platform with hand railing for abrasive storage hopper** to allow easy access to the air-wash separator and elevator head section. (Note: Ladder and guards are painted "safety yellow".)

- All required 10-gauge room wall panels.

- All required 10-gauge room roof panels.

- Two (2) baffled air exhaust plenums.

- Four (4) baffled air inlet plenums.

- Two (2) 18'W x 22'H powered rubber roll-up door assembly, including structural steel frame, ¼" thick, 3-ply rubber panels formed steel "wind" bars, mounting hardware and controls.

- Four (4) panic type OSHA approved man escape doors with vision window and shield.

- All required 18-gauge panel clamping assemblies to seal all wall and roof panels.

- One hundred twenty (120) high output "LED" light assemblies including hinged sidewall fixtures, 1/4"-thick polycarbonate lens, gasketing, cutouts and fasteners. Fixtures are rated at 6,000 lumens each and have dimmable controls. (Note: Light fixtures are 277 volt, unless specified otherwise.)

- **One hundred twenty (120) inside the room lens protectors, including mounting frames, hardware and 1/16" polycarbonate removable lens.**

- Four (4) OSHA approved "LED" exit light assemblies with battery back-up emergency lights that come on if power is lost.

- One (1) 36,800 CFM **(@ 8" static pressure; wg)** cartridge dust collector, Model Number ADFT 4-64. The unit includes abrasive inlet plenum, fan and **"premium efficiency"** motor (75 HP). The dust collector is pre-wired to a photohelic pressure monitoring system and factory plumbed to a single connection point with an air regulator, air filter, and gauge. Slide gates, flex hose, and drum covers are also supplied. (Note: The room air-flow is **75 FPM** end-to-end ventilation.) The efficiency of the Nano Fiber filters is 99.999% down to a particle size of .5 micron; **MERV-15 rating. The air-to-filter ratio is 2.2:1.0.**

camfil
AIR POLLUTION CONTROL

Cartridge Filter Media Emission Statement

Camfil Air Pollution Control offers a wide variety of filtration media to meet our customers' air filtration requirements. The experience used to arrive at these values include in-house lab testing, thirty party testing, and in-field stack tests on a variety of dust types. Air filtration requirements vary by country, state, county, application or company standards. Guaranteed emission levels as discussed here are particles released after passing through a dust collection system's primary filter cartridge. Stack tests on a set of cartridge filters should be conducted after a minimum of 100 hours and prior to a maximum of 2000 hours of normal operation.

Media Grades	Emission Level	
Standard Media -Green, Carbon Impregnated, Flame Retardant	.005 gr/dscf	11.4 mg/m^3
eXtreme Media -Green, Carbon Impregnated, Flame Retardant	.001 gr/dscf	2.3 mg/m^3
Spunbond Media -Standard, Aluminized, Oleophobic	.005 gr/dscf	11.4 mg/m^3
Specialty Media -Flame retardant/PTFE	.00005 gr/dscf	.114 mg/m^3
Spunbond Media -PTFE	.00005 gr/dscf	.114 mg/m^3
Meltblown Media -High Efficiency	.002 gr/dscf	4.6 mg/m^3

Emission level refers to PM10 (10 micron and below) particulate.

To discuss media grade selection, establishing lower emission levels than stated above or adding secondary filtration please contact your Camfil representative.

Randi Huckaby

Product Manager- Dry Filtration APC Global

Camfil
Air Pollution Control
3505 Airport Road
Jonesboro, AR 72401
Tel 870-933-8048
Fax 870-933-8381
www.camfilapc.com

camfil
AIR POLLUTION CONTROL

Gold Cone X-Flo
Cartridge Filter

patent US 16/058,013

HEMIPLEAT®
SAVING YOU MONEY

WHAT IS THE GOLD CONE X-FLO

What it is: A patented, open bottom, pleated conical addition to the inside of a filter cartridge which adds more usable media.

This configuration increases the amount of air each filter can clean.

What it does: Gold Cone technology optimizes the reverse pulse energy of a filter during cleaning cycles. The open bottom and additional filtration area of the cone lower the working pressure drop of the filter and ejects dust directly out of the dust collector when pulsed. The aerodynamic shape of the cone accelerates the pulse wave providing better filter cleaning than alternative filter designs and a longer lasting filter that use less compressed air, saving you money.

KEY BENEFITS

- 2 piece cone initiates filter cleaning high on the filter's outer pleat pack and provides uniform pulse distribution
- Filter comprised of 100% HemiPleat media
- Industry leading amount of downward facing media pulses dust straight down and out of dust collector
- 30% lower pressure drop than most filters on the market today

HEMIPLEAT TECHNOLOGY

What it is: Synthetic beads are applied to our media in order to achieve even and open spacing. The open pleats create top-most utilization of media area resulting in longer lasting and highly efficient filter cartridges.

What it does: Camfil APC filter cartridges with HemiPleat technology have sizable dust loading capacity and allow for maximum dust release when pulsed. These industry superior characteristics result in a cleaner, safer and lower maintenance work environment.

MEDIA OPTIONS

- **HemiPleat Green** Our own blend of fibers with a moisture resistant treatment for the best dust release, long filter life and high filtration efficiencies.
- **HemiPleat Flame Retardant** Our own blend of fibers, chemically treated with a fire retardant.
- **HemiPleat FR Carbon Impregnated** Our own blend of fibers, impregnated with carbon for static dissipation and chemically treated with a fire retardant.
- **HemiPleat Synthetic** Light weight 100% synthetic polyester.
- **HemiPleat FR-PTFE** Cellulose based media chemically treated with flame retardant and PTFE membrane for high filtration efficiency and best release.

HEMIPLEAT EXTREME

HEMIPLEAT eXTREME eX

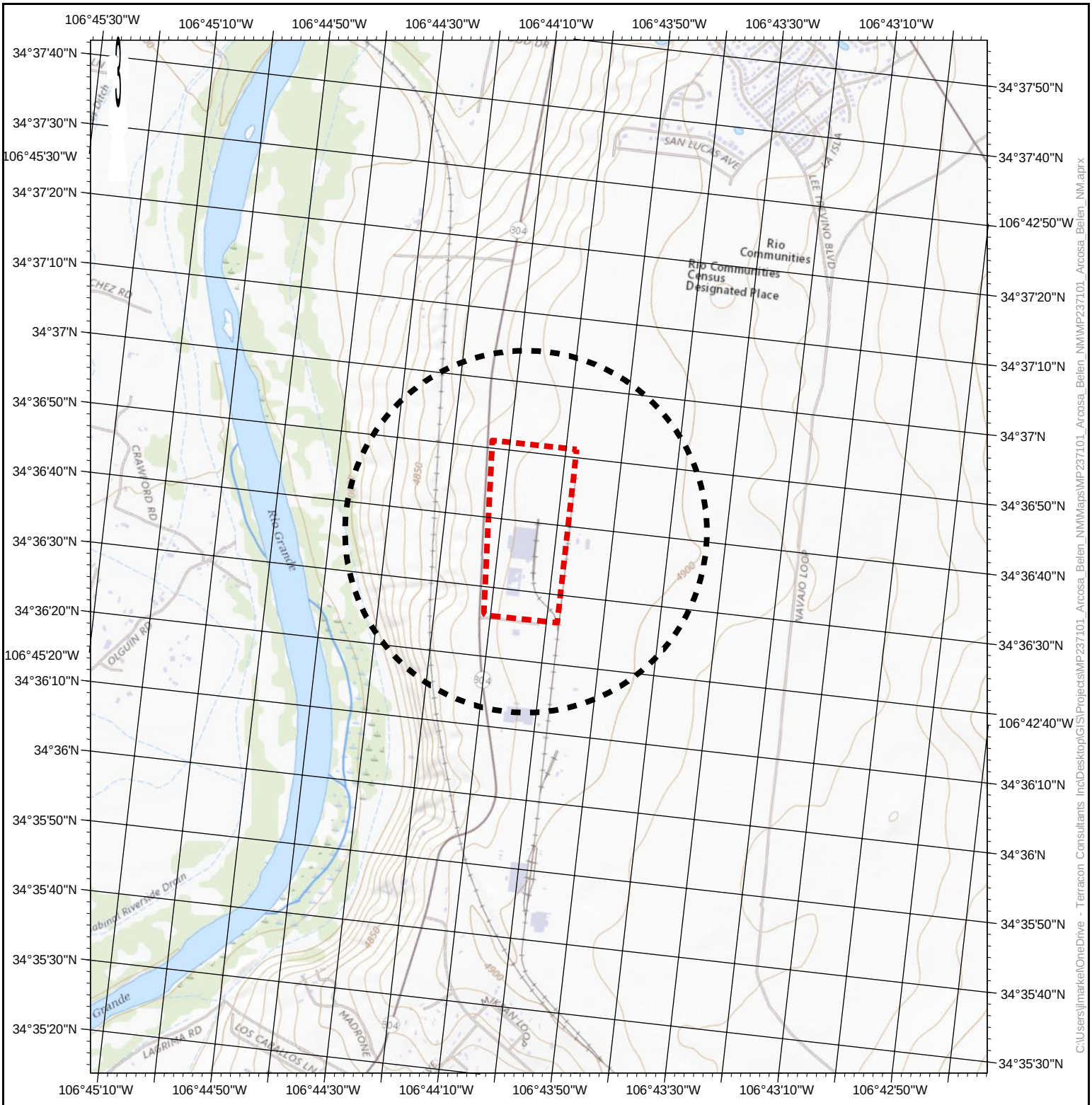
HemiPleat eXtreme provides all the benefits of HemiPleat technology. Additionally, a layer of nanofibers are directly applied to the surface of the base media providing superior efficiency and release. All Camfil base medias are available with this technology. All eXtreme filter media offerings are rated MERV 15 per ASHRAE 52.2:2007.

Section 8

Map(s)

A map such as a 7.5 minute topographic quadrangle showing the exact location of the source. The map shall also include the following:

The UTM or Longitudinal coordinate system on both axes	An indicator showing which direction is north
A minimum radius around the plant of 0.8km (0.5 miles)	Access and haul roads
Topographic features of the area	Facility property boundaries
The name of the map	The area which will be restricted to public access
A graphical scale	



LEGEND

APPROXIMATE SITE BOUNDARY

HALF MILE RADIUS

TURN, MN QUADRANGLE

Feet

0 1,000 2,000 4,000

DATA SOURCES:
ESRI - USGS TOPOGRAPHIC BASEMAP
WGS 1984 WEB MERCATOR (auxiliary sphere)
DATA REFRESHED FEBRUARY 2020

C:\Users\jlmarkel\OneDrive - Terracon Consultants Inc\Desktop\GIS\Projects\MP237101_Arcosa_Belen_NM\Maps\MP237101_Arcosa_Belen_NM\MP237101_Arcosa_Belen_NM.aprx

Project No.:	MP2371 01
Date:	Jul 20 23
Drawn By:	JLM
Reviewed By:	CEL

terracon
13400 15th Ave N
Plymouth, MN
PH. 763-489-3100 terracon.com

7.5 MINUTE TOPOGRAPHIC QUADRANGLE

ENVIRONMENTAL REPORT
ARCOSA, INC
1951 HIGHWAY 304
BELEN, VALENCIA COUNTY, NM

Exhibit

2

Section 9

Proof of Public Notice

(for NSR applications submitting under 20.2.72 or 20.2.74 NMAC)

(This proof is required by: 20.2.72.203.A.14 NMAC "Documentary Proof of applicant's public notice")

□ **I have read the AQB "Guidelines for Public Notification for Air Quality Permit Applications"** This document provides detailed instructions about public notice requirements for various permitting actions. It also provides public notice examples and certification forms. Material mistakes in the public notice will require a re-notice before issuance of the permit.

Unless otherwise allowed elsewhere in this document, the following items document proof of the applicant's Public Notification. Please include this page in your proof of public notice submittal with checkmarks indicating which documents are being submitted with the application.

New Permit and **Significant Permit Revision** public notices must include all items in this list.

Technical Revision public notices require only items 1, 5, 9, and 10.

Per the Guidelines for Public Notification document mentioned above, include:

1. □ A copy of the certified letter receipts with post marks (20.2.72.203.B NMAC)

   The letter for Lhoist was hand delivered to the front desk. They were not receiving mail on both attempts.

2. □ A list of the places where the public notice has been posted in at least four publicly accessible and conspicuous places, including the proposed or existing facility entrance. (e.g: post office, library, grocery, etc.)
   a. Belen City Hall
   b. Belen Municipal Court
   c. Belen Public Library
   d. Facility Entrance
   e. Longbow Diner
   f. Lowes Supermarket
   g. Rio Communities Public Library
   h. Rio Communities City Hall
3. □ A copy of the property tax record (20.2.72.203.B NMAC).

   Facility is tax-exempt. There is no property tax record
4. □ A sample of the letters sent to the owners of record.
5. □ A sample of the letters sent to counties, municipalities, and Indian tribes.
6. □ A sample of the public notice posted and a verification of the local postings.

   Refer to photos attached to this section.
7. □ A table of the noticed citizens, counties, municipalities and tribes and to whom the notices were sent in each group.
8. □ A copy of the public service announcement (PSA) sent to a local radio station and documentary proof of submittal.
9. □ A copy of the classified or legal ad including the page header (date and newspaper title) or its affidavit of publication stating the ad date, and a copy of the ad. When appropriate, this ad shall be printed in both English and Spanish.
10. □ A copy of the display ad including the page header (date and newspaper title) or its affidavit of publication stating the ad date, and a copy of the ad. When appropriate, this ad shall be printed in both English and Spanish.

11. □ A map with a graphic scale showing the facility boundary and the surrounding area in which owners of record were notified by mail. This is necessary for verification that the correct facility boundary was used in determining distance for notifying land owners of record.

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Aristech Acrylics, LLC
1945 NM-304
Belen, NM 87002

9590 9402 8316 3094 9768 95

7015 0640 0005 1968 9737

COMPLETE THIS SECTION ON DELIVERY

A. Signature

x [signature] ☐ Agent ☒ Addressee

B. Received by (Printed Name) [illegible] C. Date of Delivery 7/24/23

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type

- ☐ Adult Signature
- ☐ Adult Signature Restricted Delivery
- ☐ Certified Mail®
- ☐ Certified Mail Restricted Delivery
- ☐ Collect on Delivery
- ☐ Collect on Delivery Restricted Delivery
- ☐ Insured Mail
- ☐ Insured Mail Restricted Delivery (over $500)
- ☐ Priority Mail Express®
- ☐ Registered Mail™
- ☐ Registered Mail Restricted Delivery
- ☐ Signature Confirmation™
- ☐ Signature Confirmation Restricted Delivery

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

City of Belen
100 S. Main St.
Belen, NM 87002

9590 9402 8316 3094 9768 40

7015 0640 0005 1968 9775

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X [signature] ☐ Agent ☐ Addressee

B. Received by *(Printed Name)* | C. Date of Delivery 11/25

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type

- ☐ Adult Signature
- ☐ Adult Signature Restricted Delivery
- ☐ Certified Mail®
- ☐ Certified Mail Restricted Delivery
- ☐ Collect on Delivery
- ☐ Delivery Restricted Delivery
- ☐ ail
- ☐ ail Restricted Delivery (over $500)
- ☐ Priority Mail Express®
- ☐ Registered Mail™
- ☐ Registered Mail Restricted Delivery
- ☐ Signature Confirmation™
- ☐ Signature Confirmation Restricted Delivery

PS Form 3811, July 2020 PSN 7530-02-000-9053 Domestic Return Receipt

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Hydrocut LLC
8 Nevada Dr.
Belen, NM 87002

9590 9402 8316 3094 9768 64

2. Article Number (Transfer from service label)

7015 0640 0005 1968 9744

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X

☐ Agent
☐ Addressee

B. Received by (Printed Name)

C. Date of Delivery

7/24

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type

- ☐ Adult Signature
- ☐ Adult Signature Restricted Delivery
- ☐ Certified Mail®
- ☐ Certified Mail Restricted Delivery
- ☐ Collect on Delivery
- ☐ Collect on Delivery Restricted Delivery
- ☐ Priority Mail Express®
- ☐ Registered Mail™
- ☐ Registered Mail Restricted Delivery
- ☐ Signature Confirmation™
- ☐ Signature Confirmation Restricted Delivery

Restricted Delivery

PS Form 3811, July 2020 PSN 7530-02-000-9053

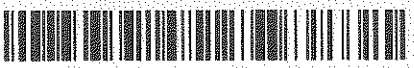
Domestic Return Receipt

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Socorro County
PO Box 1
Socorro, NM 87801



9590 9402 8316 3094 9767 72

7015 0640 0005 1968 9805

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X

☐ Agent
☐ Addressee

B. Received by (Printed Name)

C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

JUL 25 2023

3. Service Type

- ☐ Adult Signature
- ☐ Adult Signature Restricted Delivery
- ☐ Certified Mail®
- ☐ Certified Mail Restricted Delivery
- ☐ Collect on Delivery
- ☐ Collect on Delivery Restricted Delivery
- ☐ Insured Mail
- ☐ Insured Mail Restricted Delivery (over $500)
- ☐ Priority Mail Express®
- ☐ Registered Mail™
- ☐ Registered Mail Restricted Delivery
- ☐ Signature Confirmation™
- ☐ Signature Confirmation Restricted Delivery

PS Form 3811, July 2020 PSN 7530-02-000-9053 Domestic Return Receipt

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Valencia County
PO Box 1119
Los Lunas, NM 87031

9590 9402 8316 3094 9767 65

7015 0640 0005 1968 9829

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X Frances Mirabal

☑ Agent
☐ Addressee

B. Received by *(Printed Name)*

Frances Mirabal

C. Date of Delivery

7/24/23

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type

- ☐ Adult Signature
- ☐ Adult Signature Restricted Delivery
- ☐ Certified Mail®
- ☐ Certified Mail Restricted Delivery
- ☐ Collect on Delivery
- ☐ Collect on Delivery Restricted Delivery
- ☐ Mail
- ☐ Insured Mail Restricted Delivery (over $500)
- ☐ Priority Mail Express®
- ☐ Registered Mail™
- ☐ Registered Mail Restricted Delivery
- ☐ Signature Confirmation™
- ☐ Signature Confirmation Restricted Delivery

PS Form 3811, July 2020 PSN 7530-02-000-9053 Domestic Return Receipt

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Valencia Generation Station
55 Christine Drive
Belen, NM 87002

9590 9402 8316 3094 9768 71

2. Article Number (Transfer from service label)

7015 0640 0005 1968 9768

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X Rose Gould ☐ Agent ☐ Addressee

B. Received by (Printed Name) Rose Gould

C. Date of Delivery 7/24

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type

- ☐ Adult Signature
- ☐ Adult Signature Restricted Delivery
- ☐ Certified Mail®
- ☐ Certified Mail Restricted Delivery
- ☐ Collect on Delivery
- ☐ Collect on Delivery Restricted Delivery
- ☐ Insured Mail
- ☐ Insured Mail Restricted Delivery (over $500)
- ☐ Priority Mail Express®
- ☐ Registered Mail™
- ☐ Registered Mail Restricted Delivery
- ☐ Signature Confirmation™
- ☐ Signature Confirmation Restricted Delivery

PS Form 3811, July 2020 PSN 7530-02-000-9053 Domestic Return Receipt

7015 0640 0005 1968 9782

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

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Los Lunas, NM 87031

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☐ Adult Signature Required	$
☐ Adult Signature Restricted Delivery	$
Postage	$0.66
Total Postage and Fees	$8.56

0217 98

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AUG 11 2023

NASHVILLE

08/11/2023

Sent To: County of Valencia

Street and Apt. No., or PO Box No.: P.O. Box 1119

City, State, ZIP+4®: Los Lunas, NM 87031

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

County of Valencia
P.O. Box 1119
Los Lunas, NM 87031

9590 9402 8316 3094 9768 33

2. Article Number *(Transfer from service label)*

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X [signature] ☒ Agent ☐ Addressee

B. Received by *(Printed Name)*: R CRUZ-EN

C. Date of Delivery: 8/14/23

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type

- ☐ Adult Signature
- ☐ Adult Signature Restricted Delivery
- ☐ Certified Mail®
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- ☐ Registered Mail Restricted Delivery
- ☐ Signature Confirmation™
- ☐ Signature Confirmation Restricted Delivery

PS Form 3811, July 2020 PSN 7530-02-000-9053 Domestic Return Receipt

Arcosa, Inc.
500 N. Akard St. Suite 400
Dallas, TX 75201
arcosa.com

ARCOSA

July 17, 2023

Certified Mail: 7015 0640 0005 1968 9768

Valencia Generation Station
55 Christine Drive
Belen, New Mexico 87002

Re: Arcosa Wind Towers, Inc.
1951 NM-304
Belen, New Mexico 87002

Dear Valencia Generation Station,

Arcosa Wind Towers, Inc. announces submitting an application to the New Mexico Environment Department for an air quality permit for the construction of its surface coating and metal forming facility. The expected date of application submittal to the Air Quality Bureau is 08/01/2023**.**

The exact location for the proposed facility known as, Arcosa Wind Towers, will be at 1951 NM-304, Belen, NM 87002.The location is in Valencia County on State Highway 304, approximately 5 miles north of the intersection of State Highway 304 and State Highway 346.

Description of Construction – Arcosa Wind Towers will be repurposing existing buildings where they will manufacture the bodies for wind towers. The site will have metal forming, cutting, welding, and spray coating operations.

The estimated maximum quantities of any regulated air contaminant will be as follows in pound per hour (pph) and tons per year (tpy) and may change slightly during the course of the Department's review:

Pollutant:	Pounds per hour	Tons per year
Particulate Matter (PM)	10.00	25.00
PM_{10}	10.00	25.00
$PM_{2.5}$	10.00	20.00
Sulfur Dioxide (SO_2)	0.01	0.05
Nitrogen Oxides (NO_x)	2.50	10.00
Carbon Monoxide (CO)	1.5	6.00
Volatile Organic Compounds (VOC)	500.00	240.00
Total sum of all Hazardous Air Pollutants (HAPs)	120.00	60.00
Toxic Air Pollutant (TAP)	50.00	10.00
TAP – Trimethyl Benzene	40.00	10.00
TAP – N-Butyl Acetate	5.00	1.50
TAP – Iron Oxide as Fe	1.00	1.00
Green House Gas Emissions as Total CO_2e	n/a	5,000

The standard and maximum operating schedules of the facility will be from 7:00 a.m. to 11:00 p.m. 6 days a week and a maximum of 52 weeks per year.

The contact person for the owner and/or operator of the Facility is: Jeri Shull; Arcosa Wind Towers; 1951 NM-304, Belen, NM 87002.

If you have any comments about the construction or operation of this facility, and you want your comments to be made as part of the permit review process, you must submit your comments in writing to this address: Permit Programs Manager; New Mexico Environment Department; Air Quality Bureau; 525 Camino de los Marquez, Suite 1; Santa Fe, New Mexico; 87505-1816. Other comments and questions may be submitted verbally. (505) 476-4300; 1 800 224-7009.

Please refer to the company name and facility name or send a copy of this notice along with your comments, since the Department may have not yet received the permit application. Please include a legible return mailing address with your comments. Once the Department has performed a preliminary review of the application and its air quality impacts, the Department's notice will be published in the legal section of a newspaper circulated near the facility location.

Attención
Este es un aviso de la oficina de Calidad del Aire del Departamento del Medio Ambiente de Nuevo México, acerca de las emisiones producidas por un establecimiento en esta área. Si usted desea información en español, por favor comuníquese con esa oficina al teléfono 505-629-3395.

Notice of Non-Discrimination
NMED does not discriminate on the basis of race, color, national origin, disability, age or sex in the administration of its programs or activities, as required by applicable laws and regulations. NMED is responsible for coordination of compliance efforts and receipt of inquiries concerning non-discrimination requirements implemented by 40 C.F.R. Part 7, including Title VI of the Civil Rights Act of 1964, as amended; Section 504 of the Rehabilitation Act of 1973; the Age Discrimination Act of 1975, Title IX of the Education Amendments of 1972, and Section 13 of the Federal Water Pollution Control Act Amendments of 1972. If you have any questions about this notice or any of NMED's non-discrimination programs, policies or procedures, or if you believe that you have been discriminated against with respect to a NMED program or activity, you may contact: Kathryn Becker, Non-Discrimination Coordinator, NMED, 1190 St. Francis Dr., Suite N4050, P.O. Box 5469, Santa Fe, NM 87502, (505) 827-2855, nd.coordinator@env.nm.gov. You may also visit our website at https://www.env.nm.gov/non-employee-discrimination-complaint-page/ to learn how and where to file a complaint of discrimination.

Sincerely,

Jeri Shull
Corporate Environmental Director
1951 NM-304, Belen, NM 87002

Arcosa, Inc.
500 N. Akard St. Suite 400
Dallas, TX 75201
arcosa.com

ARCOSA

July 17, 2023

Certified Mail: 7015 0640 0005 1968 9799

Arcosa Wind Towers, Inc.
1951 NM-304
Belen, New Mexico 87002

Re: Arcosa Wind Towers, Inc.
1951 NM-304
Belen, New Mexico 87002

Dear Valencia County Official,

Arcosa Wind Towers, Inc. announces submitting an application to the New Mexico Environment Department for an air quality permit for the construction of its surface coating and metal forming facility. The expected date of application submittal to the Air Quality Bureau is 08/01/2023.

The exact location for the proposed facility known as, Arcosa Wind Towers, will be at 1951 NM-304, Belen, NM 87002.The location is in Valencia County on State Highway 304, approximately 5 miles north of the intersection of State Highway 304 and State Highway 346.

Description of Construction – Arcosa Wind Towers will be repurposing existing buildings where they will manufacture the bodies for wind towers. The site will have metal forming, cutting, welding, and spray coating operations.

The estimated maximum quantities of any regulated air contaminant will be as follows in pound per hour (pph) and tons per year (tpy) and may change slightly during the course of the Department's review:

Pollutant:	Pounds per hour	Tons per year
Particulate Matter (PM)	10.00	25.00
PM_{10}	10.00	25.00
$PM_{2.5}$	10.00	20.00
Sulfur Dioxide (SO_2)	0.01	0.05
Nitrogen Oxides (NO_x)	2.50	10.00
Carbon Monoxide (CO)	1.5	6.00
Volatile Organic Compounds (VOC)	500.00	240.00
Total sum of all Hazardous Air Pollutants (HAPs)	120.00	60.00
Toxic Air Pollutant (TAP)	50.00	10.00
TAP – Trimethyl Benzene	40.00	10.00
TAP – N-Butyl Acetate	5.00	1.50
TAP – Iron Oxide as Fe	1.00	1.00
Green House Gas Emissions as Total CO_2e	n/a	5,000

ARCOSA

The standard and maximum operating schedules of the facility will be from 7:00 a.m. to 11:00 p.m. 6 days a week and a maximum of 52 weeks per year.

The contact person for the owner and/or operator of the Facility is: Jeri Shull; Arcosa Wind Towers; 1951 NM-304, Belen, NM 87002.

If you have any comments about the construction or operation of this facility, and you want your comments to be made as part of the permit review process, you must submit your comments in writing to this address: Permit Programs Manager; New Mexico Environment Department; Air Quality Bureau; 525 Camino de los Marquez, Suite 1; Santa Fe, New Mexico; 87505-1816. Other comments and questions may be submitted verbally. (505) 476-4300; 1 800 224-7009.

Please refer to the company name and facility name or send a copy of this notice along with your comments, since the Department may have not yet received the permit application. Please include a legible return mailing address with your comments. Once the Department has performed a preliminary review of the application and its air quality impacts, the Department's notice will be published in the legal section of a newspaper circulated near the facility location.

Attención
Este es un aviso de la oficina de Calidad del Aire del Departamento del Medio Ambiente de Nuevo México, acerca de las emisiones producidas por un establecimiento en esta área. Si usted desea información en español, por favor comuníquese con esa oficina al teléfono 505-629-3395.

Notice of Non-Discrimination
NMED does not discriminate on the basis of race, color, national origin, disability, age or sex in the administration of its programs or activities, as required by applicable laws and regulations. NMED is responsible for coordination of compliance efforts and receipt of inquiries concerning non-discrimination requirements implemented by 40 C.F.R. Part 7, including Title VI of the Civil Rights Act of 1964, as amended; Section 504 of the Rehabilitation Act of 1973; the Age Discrimination Act of 1975, Title IX of the Education Amendments of 1972, and Section 13 of the Federal Water Pollution Control Act Amendments of 1972. If you have any questions about this notice or any of NMED's non-discrimination programs, policies or procedures, or if you believe that you have been discriminated against with respect to a NMED program or activity, you may contact: Kathryn Becker, Non-Discrimination Coordinator, NMED, 1190 St. Francis Dr., Suite N4050, P.O. Box 5469, Santa Fe, NM 87502, (505) 827-2855, nd.coordinator@env.nm.gov. You may also visit our website at https://www.env.nm.gov/non-employee-discrimination-complaint-page/ to learn how and where to file a complaint of discrimination.

Sincerely,

Jeri Shull
Corporate Environmental Director
1951 NM-304, Belen, NM 87002

Posted Notice

(20.2.72.203.C NMAC)

NOTICE

Arcosa Wind Towers announces its application to the New Mexico Environment Department for an air quality permit for the construction of its surface coating and metal forming facility. The expected date of application submittal to the Air Quality Bureau is 08/01/2023.

The exact location for the proposed facility known as, Arcosa Wind Towers, will be at 1951 NM-304, Belen, NM 87002. 5 miles north of the 304 and 346 state highway intersection on state highway 304, in Valencia county.

Description of Construction – Arcosa Wind Towers will be constructing a new building and repurposing an existing building where they will manufacture the bodies for wind towers. The site will have metal forming, cutting, welding, and spray coating operations.

The estimated maximum quantities of any regulated air contaminants will be as follows in pound per hour (pph) and tons per year (tpy). These reported emissions could change slightly during the course of the Department's review:

Pollutant:	Pounds per hour	Tons per year
Particulate Matter (PM)	10.00	25.00
PM_{10}	10.00	25.00
$PM_{2.5}$	10.00	20.00
Sulfur Dioxide (SO_2)	0.01	0.05
Nitrogen Oxides (NO_x)	2.50	10.00
Carbon Monoxide (CO)	1.5	6.00
Volatile Organic Compounds (VOC)	500.00	240.00
Total sum of all Hazardous Air Pollutants (HAPs)	120.00	60.00
Toxic Air Pollutant (TAP)	50.00	10.00
TAP – Trimethyl Benzene	40.00	10.00
TAP – N-Butyl Acetate	5.00	1.50
TAP – Iron Oxide as Fe	1.00	1.00
Green House Gas Emissions as Total CO_2e	n/a	5,000

The standard and maximum operating schedules of the facility will be from 7:00 a.m. to 11:00 p.m. 6 days a week and a maximum of 52 weeks per year.

The owner and/or operator of the Facility is: Jeri Schull; Arcosa Wind Towers; 1951 NM-304, Belen, NM, 87002

If you have any comments about the construction or operation of this facility, and you want your comments to be made as part of the permit review process, you must submit your comments in writing to this address: Permit Programs Manager; New Mexico Environment Department; Air Quality Bureau; 525 Camino de los Marquez, Suite 1; Santa Fe, New Mexico; 87505-1816. Other comments and questions may be submitted verbally. (505) 476-4300; 1 800 224-7009.

With your comments, please refer to the company name and facility name, or send a copy of this notice along with your comments. This information is necessary since the Department may have not yet received the permit application. Please include a legible return mailing address. Once the Department has completed its preliminary review of the application and its air quality impacts, the Department's notice will be published in the legal section of a newspaper circulated near the facility location.

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`General Posting of Notices – Certification

I, Deepak Sundaram, the undersigned, certify that on 7-21-23 posted a true and correct copy of the attached Public Notice in the following publicly accessible and conspicuous places in Rio Communities City of Valencia County, State of New Mexico on the following dates:

Long Bow Diner, on 07/21/23

Rio Communities City Hall, on 07/21/23

Rio Communities Public Library, on 07/21/23

Signed this 21st day of July, 2023.

Signature

7-21-23
Date

DEEPAK SUNDARAM
Printed Name

PLANT MANAGER, ARCOSA WIND TOWERS, BELEN.
Title

`General Posting of Notices – Certification

I, Deepak Sundaram, the undersigned, certify that on 7-21-23 posted a true and correct copy of the attached Public Notice in the following publicly accessible and conspicuous places in Belen City of Valencia County, State of New Mexico on the following dates:

Facility Entrance, on 07/21/23

Belen Public Library, on 07/21/23

Belen City Hall, on 07/21/23

Belen Municipal Court 07/21/23

Lowe's Supermarket in Belen, on 7/21/23

Signed this 21st day of July, 2023.

Signature

7-21-23
Date

DEEPAK SUNDARAM
Printed Name

PLANT MANAGER - ARCOSA WIND TOWERS, BELEN.
Title

UA-3 Section 9 Item 7 - noticed citizens, counties, municipalities and tribes and to whom the notices were sent in each group.

Property Owner Notifications	Name	Address
1	Aristech Acrylics	1945 NM-304, Belen, NM 87002
2	Lhoist North America	81 Christine Dr, Belen, NM 87002
3	Valencia Generation station	55 Christine Dr, Belen, NM 87002
4	Hydrocut Inc	8 Navarro Dr, Belen, NM 87002
5	65 christine Dr	65 Christine Dr, Belen, NM 87002

County Notifications	Name	Address
1	Valencia County	444 Luna Ave SE, Los Lunas, NM 87031, PO box 1119
2	Socorro County	PO Box I, Socorro NM 87801
3	City of Belen	100S Main st, Belen, NM 87002
4	City of Rio Comunities	360 Rio Comunities Blvd, Rio Comunities, NM 87002

Arcosa Wind Towers, a wind turbine tower fabrication company, is planning on constructing a new surface coating and metal forming facility south east of the City of Belen, New Mexico located at 1951 NM-304, Belen, NM 87002 in Valencia County on State Highway 304 approximately 5 miles north of the intersection of State Highway 304 and State Highway 346. The facility is principally operated by David Romero. The wind tower fabrication facility is applying for major source air construction permit**.** Notices for this construction has been posted at the entrance to the proposed facility, the Belen City Hall, Belen Walmart Supercenter, and the Belen Public Library. Comments may be directed to (615) 792-8288.

Misc.

Arcosa Wind Towers Notice for Construction

Arcosa Wind Towers, a wind turbine tower fabrication company, is planning on constructing a new surface coating and metal forming facility south east of the City of Belen, New Mexico located at 1951 NM-304, Belen, NM 87002 in Valencia County on State Highway 304 approximately 5 miles north of the intersection of State Highway 304 and State Highway 346. The facility is principally operated by David Romero. The wind tower fabrication facility is applying for major source air construction permit. Notices for this construction has been posted at the entrance to the proposed facility, the Belen City Hall, Belen Walmart Supercenter, and the Belen Public Library. Comments may be directed to (505) 476-4300.

Arcosa Wind Towers

12:00 PM - 11:59 PM on Thu, 20 Jul 2023

Arcosa Wind Towers
1951 NM-304
Belen, New Mexico 87002
6157928288

NON-GOV'T LEGALS

COUNTY OF VALENCIA
STATE OF NEW MEXICO
IN THE PROBATE COURT

No.4213

IN THE MATTER OF THE ESTATE OF FELICE G. PREVOT, Deceased.

NOTICE TO CREDITORS

NOTICE IS HEREBY GIVEN that the undersigned has been appointed Successor Personal Representative of the Estate of FELICE G. PREVOT. All persons having claims against this Estate are required to present their claims within four months after the date of the first publication of this Notice or the claims will be forever barred. Claims must be presented either to the undersigned Personal Representative at Post Office Box 949, Belen, New Mexico 87002, or filed with the Probate Court, Los Lunas, New Mexico 87031.

DATED this 30th day of June, 2023.

MARK PREVOT
Successor Personal Representative
Estate of FELICE G. PREVOT

Prepared by:

NORMAN McDONALD, P.A.
Attorney for Estate of FELICE G. PREVOT
Post Office Box 949
Belen, New Mexico 87002
(505) 864-3333

Published in the Valencia County News-Bulletin 13th, 20th, 27th July, 2023

NOTICE is hereby given that on January 23, 2023, C&O Spaces, c/o Kayla Otis, PO Box 609, Indian Hills, CO 80454 AND Silver Moon LLC, c/o Roman Chavez, PO Box 250, Jarales, NM 87023, filed with the STATE ENGINEER Application No. (SD-05311 into RG-56981)-T for Permit to Temporarily Change Point of Diversion, Place and Purpose of Use from Surface Water to Groundwater within the Rio Grande Underground Basin of the State of New Mexico.
Valencia County is the county affected by the diversion and in which the water has been or will be put to beneficial use. This notice is ordered to be published in the Valencia County News-Bulletin.
The applicants propose to temporarily discontinue the diversion and use of a farm delivery requirement (FDR) of 54 .51 acre-feet per annum of surface water, inclusive of a consumptive irrigation requirement (CIR) of 38.15 acre-feet per annum, from the Jarales Lateral Ditch, with a point of diversion on the Rio Grande at the Isleta Diversion Dam (SP-1690-3), on land owned by Isleta Pueblo, at a point where X = 346,037 meters and Y = 3,863,880 meters intersect, UTM Zone 13N, NAD 1983, for the irrigation of 18.17 acres of land owned by Silver Moon LLC, described as Tracts 6 (5.2 ac), 7A1 (3.47 ac), 10A2 (5.64 ac), 7A2A (0.67 ac), 10A1B1C (1.49 ac), 7A2B1 (0.2 ac), and 8A (1.5 ac), on MRGCD Map 105. This move-from land is generally located at 478 Jarales Rd., Belen, NM 87002.

The applicants further propose to temporarily transfer the above-described water right to well RG-56981, located at X = 338,370 and Y = 3,832,476 NAD83, for commercial uses on land described as Tracts 6 (5.2 ac), 7A1 (3.47 ac), 10A2 (5.64 ac), 7A2A (0.67 ac), 10A1B1C (1.49 ac), 7A2B1 (0.2 ac), and 8A (1.5 ac). The move-to land and move-to well are on land owned by Silver Moon LLC. This move-to land is generally located at 478 Jarales Rd., Belen, NM 87002.

This Application is filed under the Water-Use Leasing Act, NMSA 1978, Sections 72-6-1 through 72-6-7.

Application is made for a permit that, if granted, would expire on December 31, 2032. Upon termination or expiration of the desired permit, the subject water right will automatically revert to the move-from place of use pursuant to the applicable provisions in that permit.

To view the application and supporting documentation contact the State Engineer District Office to arrange a date and time for an appointment located at 5550 San Antonio Dr. NE, Albuquerque, NM 87109.

Any person, firm or corporation or other entity asserting standing to file objections or protests shall do so in writing (objection must be legible, signed, and include the writer's complete name, phone number, email address, and mailing address). If the protest does not include the complete name, phone number, email address, and mailing address, it may be deemed invalid and not accepted for filing unless Protestant provides with the protest an affidavit stating that it does not have one of the above-listed eleme nts/requirements (phone number, mailing address, email address, etc.). The objection to the approval of the application must be based on: (1) Impairment; if impairment, you must specifically identify your water rights; and/or (2) Public Welfare/Conservation of Water; if public welfare or conservation of water within the state of New Mexico, you shall be required to provide evidence showing how you will be substantially and specifically affected. The written protest must be filed, in triplicate, with the State Engineer, at 5550 San Antonio Dr. NE, Albuquerque, NM 87109, on or before September 1, 2023. Facsimiles (faxes) will be accepted as a valid protest if the hard copy is hand-delivered or mailed and postmarked within 24-hours of the facsimile. Mailing postmark will be used to validate the 24-hour period. Protests can be faxed to the Office of the State Engineer, 505-383-4030. If no valid protest or objection is filed, the State Engineer will evaluate the application in accordance with the provisions of Chapter 72 NMSA 1978.

Published in the Valencia County News-Bulletin 6th, 13th, 20th July, 2023

NOTICE is hereby given that on June 8, 2023, Ed and Jolynn Chacon, filed with the STATE ENGINEER Application No. SD-10122 for Permit to Change Purpose of Use of Surface Water within the Middle Rio Grande Basin within the State of New Mexico.
Valencia County is the county affected by the diversion and in which the water has been or will be put to beneficial use. This notice is ordered to be published in the Valencia County NewsBulletin.
The applicants propose to add an additional commercial purpose of use to an irrigation water right consisting of a farm delivery requirement (FDR) of 1.02 acre-feet per annum of surface water, inclusive of a consumptive irrigation requirement (CIR) of 0.714 acre-feet per annum, from the La Constancia Ditch, with a point of diversion on the Rio Grande at the Isleta Diversion Dam (SP1690-3), on land owned by Isleta Pueblo, at a point where X = 346,037 meters and Y = 3,863,880 meters intersect, UTM Zone 13N, NAD 1983, for the irrigation of 0.34 acre of land owned by Ed and Jolynn Chacon, described as Tract 17C1A1, on MRGCD Map 84, within Section 23, Township 6 North, Range 2 East, NMPM.
To view the application and supporting documentation contact the State Engineer District Office to arrange a date and time for an appointment located at 5550 San Antonio Dr. NE, Albuquerque, NM 87109.
Any person, firm or corporation or other entity asserting standing to file objections or protests shall do so in writing (objection must be legible, signed, and include the writer's complete name, phone number, email address, and mailing address). If the protest does not include the complete name, phone number, email address, and mailing address, it may be deemed invalid and not accepted for filing unless Protestant provides with the protest an affidavit stating that it does not have one of the above-listed elements/ requirements (phone number, mailing address, email address, etc.). The objection to the approval of the application must be based on: (1) Detriment; if detriment, you must specifically identify your water rights; and/or (2) Public Welfare/Conservation of Water; if public welfare or conservation of water within the state of New Mexico, you shall be required to provide evidence showing how you will be substantially and specifically affected. The written protest must be filed, in triplicate, with the State Engineer, at 5550 San Antonio Dr. NE, Albuquerque, NM 87109, on or before September 8, 2023. Facsimiles (faxes) will be accepted as a valid protest if the hard copy is hand-delivered or mailed and postmarked within 24-hours of the facsimile. Mailing postmark will be used to validate the 24-hour period. Protests can be faxed to the Office of the State Engineer, 505-383-4030. If no valid protest or objection is filed, the State Engineer will evaluate the application in accordance with the provisions of Chapter 72 NMSA 1978.

Published in the Valencia County News-Bulletin 13th, 20th, 27th July, 2023

PUBLIC NOTICE

Notice is hereby given that First New Mexico Bank of Silver City located at 1928 Highway 180 East in Silver City, New Mexico 88061 has made an application to the Federal Deposit Insurance Corporation to establish a branch to be located at 260 Court House Road in Los Lunas, New Mexico 87031.
Any person wishing to comment on this application is encouraged to submit comments through the FDIC's website at https://www7.fdic.gov/CRA/ . Alternatively, comments may be filed in writing with the Regional Director of the Federal Deposit Insurance Corporation at its Regional Office at 600 North Pearl Street, Suite 700, Dallas, TX 75201. Comments must be submitted by August 4, 2023. Photocopies of information in the nonconfidential portion of the application file will be made available upon request

Published in the Valencia County News Bulletin 20 July, 2023

SECOND JUDICIAL DISTRICT COURT
COUNTY OF VALENCIA
STATE OF NEW MEXICO
No. D1314CV202300526
IN THE MATTER OF THE PETITION OF Jacob Arthuro Gutierrez FOR CHANGE OF NAME
NOTICE OF PETITION TO CHANGE NAME (ADULT)
NOTICE IS HEREBY GIVEN that Jacob Arthuro Gutierrez, a resident of the City of Los Lunas, County of Valencia State of New Mexico has filed a Petition to Change name in the Second Judicial District Court, Valencia County, New Mexico wherein he/she seeks to change his/her name as follows: Jacob Arthuro Gutierrez to Jacob Mace Chavez.
This Petition will be heard before the Honorable Judge James Lawrence Sanchez, Div. 1, District Judge on the 14th day of August, 2023, at the hour of 8;45 a.m. at the Valencia County Courthouse.
Respectfully Submitted,
/s/Jacob Arthuro Gutierrez
(SEAL)

Published in the Valencia County News-Bulletin 13th, 20th, July, 2023

STATE OF NEW MEXICO
COUNTY OF VALENCIA
13th JUDICIAL DISTRICT COURT
No. D1314CV202300433
IN THE MATTER OF A PETITION FOR NAME CHANGE FOR Josue Hernandez, minor(s).
1. Gabriela Perez, Petitioner (parent/guardian)
2. Miguel Hernandez, Petitioner (parent/guardian)
VIDEO CONFERENCE
NOTICE OF CHANGE OF NAME
TAKE NOTICE that in accordance with provision of NMSA 1978 Sections 40-8-1 through 40-8-3 the above-captioned Petitioner(s), will apply to the Honorable Cindy M. Mercer, District Judge of the 13th Judicial District, Valencia County, New Mexico, at 9:00 a.m. on the 28th day of August, 2023 for an ORDER FOR CHANGE OF NAME of listed minors from:
Josue Hernandez to Josue Migael Hernandez Perez.
(SEAL)
PHILLIP ROMERO, Court Manager
By: /s/Michael Garley, Judicial Specialist
Submitted by: Gabriela Perez for Josue Hernandez.

Published in the Valencia County News-Bulletin 13th, 20th July, 2023

STATE OF NEW MEXICO
COUNTY OF VALENCIA
13th JUDICIAL DISTRICT COURT
No. D-1314-CV-2023-00499
IN THE MATTER OF A PETITION FOR NAME CHANGE AND/OR BIRTHDATE CORRECTION FOR Kathryn Leigh Dean, Petitioner
NOTICE OF CHANGE OF NAME AND/OR BIRTHDATE CORRECTION
***VIDEO CONFERENCE**
TAKE NOTICE that in accordance with provision of NMSA 1978 Sections 40-8-1 through 40-8-3 the above captioned Petitioner will apply to the Honorable Judge Cindy M. Mercer, Div. VI, District Judge of the 13th Judicial District, Valencia County, New Mexico, at 9:45 a.m. on the 28th day of August, 2023 for an ORDER FOR CHANGE OF NAME AND/OR BIRTHDATE CORRECTION from Kathryn Leigh Dean to Roxanne Rae Dean.
PHILLIP ROMERO,
Court Manager

By: Michael Garley,
Judicial Specialist

Submitted by:
Kathryn Leigh Dean

Published in the Valencia County News-Bulletin 20, 27 July, 2023

STATE OF NEW MEXICO
COUNTY OF VALENCIA
13th JUDICIAL DISTRICT COURT
No. D1314CV202300510
IN THE MATTER OF A PETITION FOR NAME CHANGE AND/OR BIRTH DATE CORRECTION FOR Elizaida Aragon Gonzales, Petitioner
VIDEO CONFERENCE
NOTICE OF CHANGE OF NAME AND/OR BIRTHDATE CORRECTION
TAKE NOTICE that in accordance with provision of NMSA 1978 Sections 40-8-1 through 40-8-3 the above-captioned Petitioner, will apply to the Honorable Judge Cindy M. Mercer, Div. VI, District Judge of the 13th Judicial District, Valencia County, New Mexico, at 9:45 a.m. on the 28th day of August, 2023 for an ORDER FOR CHANGE OF NAME AND/OR BIRTHDATE CORRECTION from Elizaida A. Gonzales to Elizaida Trujillo Aragon.
Phillip Romero, Court Manager
By: /s/Michael Garley, Judicial Specialist
Submitted by: /s/Elizaida A. Gonzales

Published in the Valencia County News-Bulletin 13th, 20th July, 2023

STATE OF NEW MEXICO
COUNTY OF VALENCIA
THIRTEENTH JUDICIAL DISTRICT COURT
No. D-1314-PB-2023-00062
IN THE MATTER OF THE ESTATE OF JUAN ARISTEO GONZALES, DECEASED.
NOTICE TO CREDITORS
NOTICE IS HEREBY GIVEN that Gloria Tafoya has been appointed Personal Representative of the Estate of Decedent. All persons having claims against the Estate of Decedent are required to present their claims within four (4) months after the date of the first publication of any published notice to creditors, or the claims will be forever barred. Claims must be either be presented to Personal Representative, c/o The Law Offices of Erika E. Anderson, 105 Bryn Mawr Drive SE Albuquerque, New Mexico 87106, or filed with the Thirteenth Judicial District Court located at 18352 Hwy 314 SW, Los Lunas, New Mexico 87031.

PREPARED BY:

LAW OFFICES OF ERIKA E. ANDERSON

By: /s/ Erika E. Anderson
Erika E. Anderson, Esq.
Mitchel J. Olson, Esq.
105 Byrn Mawr Dr. SE
Albuquerque, NM 87106
Telephone: (505) 944-9039
erika@eandersonlaw.com
mitchel@enadersonlaw.com

Attorneys for Personal Representative

Published in the Valencia County News-Bulletin 6th, 13th, 20th July, 2023

STATE OF NEW MEXICO
IN THE PROBATE COURT
VALENCIA COUNTY

No. 5428

IN THE MATTER OF THE ESTATE OF KATHRYN A. SMITH, Deceased.

NOTICE TO CREDITORS

NOTICE IS HEREBY GIVEN that Sherry Walker has been appointed personal representative of the Estate of the Decedent Kathryn Walker. All persons having claims against the Estate of the Decedent are required to present their claims within four (4) months after the date of the first publication of any published notice to creditors or sixty (60) days after the date of mailing or other delivery of this Notice, whichever is later, or the claims will be forever barred. Claims must be presented either to the undersigned counsel of record for the Personal Representative at the address listed below, or filed with the Probate Court of Valencia County, New Mexico, located at the following address: 444 Luna Ave SE, Los Lunas, NM 87031.

Respectfully Submitted,
HIGGINS LAW FIRM
/s/John F. Higgins
John F. Higgins
500 Marquette Ave NW
Suite 1200
Albuquerque, NM 87102
Tel: (505) 944-5400
Fax: (505) 213-0900
john@higginslawfirm.com
Counsel for Personal Representative

Published in the Valencia County News-Bulletin 13th, 20th, 27th July, 2023

STATE OF NEW MEXICO
IN THE PROBATE COURT
VALENCIA COUNTY

No. 5441

IN THE MATTER OF THE ESTATE OF Frederick T. Smith, DECEASED
NOTICE TO CREDITORS
NOTICE IS HERE BY GIVEN that the undersigned has been appointed personal representative of the estate of the decedent, Frederick T. Smith. All persons having claims against the estate of the decedent are required to present their claims within four (4) months after the date of the first publication of any published notice to creditors or sixty (60) days after the date of mailing or other delivery of this notice, whichever is later, or the claims will be forever barred. Claims must be presented either to the undersigned personal representative at the address listed below, or filed with the Probate Court of Valencia County, New Mexico, located at the following address: Mary Ellen Wild, 5600 West US Highway 34, Loveland, CO 80537

Published in the Valencia County News-Bulletin 6th, 13th, 20th July, 2023

THIRTEENTH JUDICIAL DISTRICT COURT STATE OF NEW MEXICO COUNTY OF VALENCIA

No. D-1314-PB-2023-00061

In the Matter of the Estate of DARLENE LUCINDA PEREZ, Deceased.

NOTICE TO CREDITORS

EBONY SAAVEDRA has been appointed Personal Representative of the Estate of DARLENE LUCINDA PEREZ, deceased. All persons having claims against this Estate are required to present their claims within four months after the date of the first publication of this Notice or the claims will be forever barred. Claims must be presented either to the Personal Representative at the office of Douglas W. Fowles, 101 West Aztec, Suite A, P. O. Box 1027, Gallup, New Mexico 87305, attorney for the Personal Representative, or filed with the District Court of Valencia County, New Mexico.
Dated: June 26, 2023

EBONY SAAVEDRA
Personal Representative
Douglas W. Fowles
Rosebrough, Fowles & Foutz, P.C.
Attorney for Personal Representative
101 W. Aztec Ave., Suite A
P.O. Box 1027, Gallup, New Mexico 87305
(505) 722-9121

Published in the Valencia County News-Bulletin 6th, 13th, 20th July, 2023

20.2.72 NMAC – Construction Permits, Section 203.B

AVISO DE SOLICITUD DE PERMISO DE CALIDAD DEL AIRE

Arcosa Wind Towers, Inc. anuncia la presentación de su solicitud al Departamento de Medio Ambiente de Nuevo México para obtener un permiso de calidad del aire para la construcción de instalaciones de revestimiento de superficies y conformado de metales. La fecha prevista de presentación de la solicitud a la Oficina de Calidad del Aire es Agosto 01 2023.

La ubicación exacta de la instalación propuesta conocida como Arcosa Wind Towers será en 1951 NM-304, Belen, NM 87002. 5 millas al norte de la intersección de las carreteras estatales 304 y 346 en la carretera estatal 304, en el condado de Valencia.

Descripción de la construcción: Arcosa Wind Towers construirá un nuevo edificio y rehabilitará un edificio existente donde fabricará los cuerpos de las torres eólicas. El sitio contará con operaciones de formación de metales, corte, soldadura y revestimiento por aspersión.

las cantidades máximas estimadas de cualquier contaminante del aire regulado serán las siguientes en libras por hora (pph) y toneladas por año (tpy) y podrían cambiar ligeramente durante el curso de la revisión del Departamento:

Contaminante:	Libras por hora	Toneladas pro año
Partículas (PM)	10.00	25.00
PM_{10}	10.00	25.00
$PM_{2.5}$	10.00	20.00
Dióxido de azufre (SO_2)	0.01	0.05
Óxidos de nitrógeno (NO_x)	2.50	10.00
Monóxido de carbono (CO)	1.5	6.00
Compuestos Orgánicos Volátiles (VOC)	500.00	240.00
Suma total de todos los contaminantes atmosféricos peligrosos (HAPs)	120.00	60.00
Contaminante Tóxico del Aire (TAP)	50.00	10.00
TAP - Trimetilbenceno	40.00	10.00
TAP - Acetato de N-butilo	5.00	1.50
TAP - Óxido de hierro como Fe	1.00	1.00
Emisiones de gases de efecto invernadero como CO_2e	n/a	5,000

Los horarios estándar y máximo de funcionamiento de la instalación serán de 7:00am a 11pm. 6 días a la semana y un máximo de 52 semanas al año.
La persona a contactar para el propietario y/o operador de la Instalación es: Jeri Shull; Arcosa Wind Towers; 1951 NM-304, Belén, NM, 87002

Si tiene algún comentario sobre la construcción u operación de esta instalación, y desea que sus comentarios se hagan como parte del proceso de revisión del permiso, debe enviar sus comentarios por escrito a esta dirección: Gerente de Programas de Permisos; Departamento de Medio Ambiente de Nuevo México; Oficina de Calidad del Aire; 525 Camino de los Márquez, Suite 1; Santa Fe, Nuevo México; 87505-1816. Otros comentarios y preguntas pueden presentarse verbalmente. (505) 476-4300; 1 800 224-7009.

Indique el nombre de la empresa y el nombre del sitio, o envíe una copia de este aviso junto con sus comentarios, ya que es posible que el Departamento aún no haya recibido la solicitud de permiso. Incluya una dirección postal de devolución legible con sus comentarios. Una vez que el Departamento haya realizado una revisión preliminar de la solicitud y sus impactos en la calidad del aire, el aviso del Departamento se publicará en la sección legal de un periódico que circule cerca de la ubicación de la instalación.

Puede encontrar información general sobre la calidad del aire y el proceso de permisos, y los enlaces a las regulaciones en el sitio web de la Oficina de Calidad del Aire: www.env.nm.gov/air-quality/permitting-section-home-page/. El reglamento que trata sobre la participación pública en el proceso de revisión de permisos es 20.2.72.206 NMAC.

Attención
Este es un aviso de la oficina de Calidad del Aire del Departamento del Medio Ambiente de Nuevo México, acerca de las emisiones producidas por un establecimiento en esta área. Si usted desea información en español, por favor comuníquese con esa oficina al teléfono 505-629-3395.

Aviso de No Discriminación
NMED no discrimina por motivos de raza, color, origen nacional, discapacidad, edad o sexo en la administración de sus programas o actividades, según lo exigen las leyes y reglamentos aplicables. NMED es responsable de la coordinación de los esfuerzos de cumplimiento y la recepción de consultas sobre los requisitos de no discriminación implementados por 40 C.F.R. la Parte 7, incluido el Título VI de la Ley de Derechos Civiles de 1964, enmendada; Sección 504 de la Ley de Rehabilitación de 1973; la Ley de Discriminación por Edad de 1975, el Título IX de las Enmiendas de Educación de 1972 y la Sección 13 de las Enmiendas de la Ley Federal de Control de la Contaminación del Agua de 1972. Si tiene alguna pregunta sobre este aviso o cualquiera de los programas, políticas o procedimientos de no discriminación de NMED , o si cree que ha sido discriminado con respecto a un programa o actividad de NMED, puede comunicarse con: Kathryn Becker, coordinadora de no discriminación, NMED, 1190 St. Francis Dr., Suite N4050, P.O. Box 5469, Santa Fe, NM 87502, (505) 827-2855, nd.coordinator@env.nm.gov. También puede visitar nuestro sitio web en https://www.env.nm.gov
on-employee-discrimination-complaint-page/ para saber cómo y dónde presentar una queja por discriminación.

20.2.72 NMAC – Construction Permits, Section 203.B

NOTICE OF AIR QUALITY PERMIT APPLICATION

Arcosa Wind Towers, Inc. announces submitting an application to the New Mexico Environment Department for an air quality permit for the Construction of surface coating and metal forming facility. The expected date of application submittal to the Air Quality Bureau is 08/01/2023.

The exact location for the proposed facility known as, Arcosa Wind Towers, will be at 1951 NM-304, Belen, NM 87002. The location is in Valencia County on State Highway 304, approximately 5 miles north of the intersection of State Highway 304 and State Highway 346.

Description of Construction – Arcosa Wind Towers will be repurposing an existing building where they will manufacture the bodies for wind towers. The site will have metal forming, cutting, welding, and spray coating operations.

The estimated maximum quantities of any regulated air contaminant will be as follows in pound per hour (pph) and tons per year (tpy) and could change slightly during the course of the Department's review:

Pollutant:	Pounds per hour	Tons per year
Particulate Matter (PM)	10.00	25.00
PM_{10}	10.00	25.00
$PM_{2.5}$	10.00	20.00
Sulfur Dioxide (SO_2)	0.01	0.05
Nitrogen Oxides (NO_x)	2.50	10.00
Carbon Monoxide (CO)	1.5	6.00
Volatile Organic Compounds (VOC)	500.00	240.00
Total sum of all Hazardous Air Pollutants (HAPs)	120.00	60.00
Toxic Air Pollutant (TAP)	50.00	10.00
TAP – Trimethyl Benzene	40.00	10.00
TAP – N-Butyl Acetate	5.00	1.50
TAP – Iron Oxide as Fe	1.00	1.00
Green House Gas Emissions as Total CO_2e	n/a	5,000

The standard and maximum operating schedules of the facility will be from 7:00 a.m. to 11:00 p.m. 6 days a week and a maximum of 52 weeks per year.

The contact person for the owner and/or operator of the Facility is: Jeri Shull; Arcosa Wind Towers; 1951 NM-304, Belen, NM, 87002.

If you have any comments about the construction or operation of this facility, and you want your comments to be made as part of the permit review process, you must submit your comments in writing to this address: Permit Programs Manager; New Mexico Environment Department; Air Quality Bureau; 525 Camino de los Marquez, Suite 1; Santa Fe, New Mexico; 87505-1816. Other comments and questions may be submitted orally at (505) 476-4300 or 1 800 224-7009.

Please refer to the company name and site name, or send a copy of this notice along with your comments, since the Department may have not yet received the permit application. Please include a legible return mailing address with your comments. Once the Department has performed a preliminary review of the application and its air quality impacts, the Department's notice will be published in the legal section of a newspaper circulated near the facility location.

General information about air quality and the permitting process, and links to the regulations can be found at the Air Quality Bureau's website: www.env.nm.gov/air-quality/permitting-section-home-page/. The regulation dealing with public participation in the permit review process is 20.2.72.206 NMAC.

Attención
Este es un aviso de la oficina de Calidad del Aire del Departamento del Medio Ambiente de Nuevo México, acerca de las emisiones producidas por un establecimiento en esta área. Si usted desea información en español, por favor comuníquese con esa oficina al teléfono 505-629-3395.

Notice of Non-Discrimination
NMED does not discriminate on the basis of race, color, national origin, disability, age or sex in the administration of its programs or activities, as required by applicable laws and regulations. NMED is responsible for coordination of compliance efforts and receipt of inquiries concerning non-discrimination requirements implemented by 40 C.F.R. Part 7, including Title VI of the Civil Rights Act of 1964, as amended; Section 504 of the Rehabilitation Act of 1973; the Age Discrimination Act of 1975, Title IX of the Education Amendments of 1972, and Section 13 of the Federal Water Pollution Control Act Amendments of 1972. If you have any questions about this notice or any of NMED's non-discrimination programs, policies or procedures, or if you believe that you have been discriminated against with respect to a NMED program or activity, you may contact: Kathryn Becker, Non-Discrimination Coordinator, NMED, 1190 St. Francis Dr., Suite N4050, P.O. Box 5469, Santa Fe, NM 87502, (505) 827-2855, nd.coordinator@env.nm.gov. You may also visit our website at https://www.env.nm.gov/non-employee-discrimination-complaint-page/ to learn how and where to file a complaint of discrimination.

ARCOSA WIND
TOWERS - ENGLISH
VERSION

AFFIDAVIT OF PUBLICATION

STATE OF NEW MEXICO

County of Valencia SS

Wayne Barnard, the undersigned, authorized Representative of the Valencia County News-Bulletin (Clara Garcia Editor), on oath states that this newspaper is duly qualified to publish legal notices or advertisements within the meaning of Section 3, Chapter 167, Session Laws of 1937; that payment therefore has been made of assessed as court cost; and that the notice, copy of which is hereto attached, was published in said paper in the regular edition, for 1 time(s) on the following date(s):

07/20/2023

Sworn and subscribed before me, a Notary Public, in and for the County of ~~Valencia~~ and State of New Mexico this 20 day of July of 2023

AUDREY RAYLEENE CRESPIN
Notary Public - State of New Mexico
Commission # 1140072
My Comm. Expires Apr 6, 2027

Audrey Rayleene Crespin

PRICE $3,029.53

Statement to come at the end of month.

ACCOUNT NUMBER 1107821

20.2.72 NMAC – Construction Permits, Section 203.B

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Carbon Monoxide (CO)	1.5	6.00
Volatile Organic Compounds (VOC)	500.00	240.00
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Green House Gas Emissions as Total CO_2e	n/a	5,000

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The contact person for the owner and/or operator of the Facility is: Jeri Shull; Arcosa Wind Towers; 1951 NM-304, Belen, NM, 87002.

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Please refer to the company name and site name, or send a copy of this notice along with your comments, since the Department may have not yet received the permit application. Please include a legible return mailing address with your comments. Once the Department has performed a preliminary review of the application and its air quality impacts, the Department's notice will be published in the legal section of a newspaper circulated near the facility location.

General information about air quality and the permitting process, and links to the regulations can be found at the Air Quality Bureau's website: www.env.nm.gov/air-quality/permitting-section-home-page/. The regulation dealing with public participation in the permit review process is 20.2.72.206 NMAC.

Attención
Este es un aviso de la oficina de Calidad del Aire del Departamento del Medio Ambiente de Nuevo México, acerca de las emisiones producidas por un establecimiento en esta área. Si usted desea información en español, por favor comuníquese con esa oficina al teléfono 505-629-3395.

Notice of Non-Discrimination
NMED does not discriminate on the basis of race, color, national origin, disability, age or sex in the administration of its programs or activities, as required by applicable laws and regulations. NMED is responsible for coordination of compliance efforts and receipt of inquiries concerning non-discrimination requirements implemented by 40 C.F.R. Part 7, including Title VI of the Civil Rights Act of 1964, as amended; Section 504 of the Rehabilitation Act of 1973; the Age Discrimination Act of 1975, Title IX of the Education Amendments of 1972, and Section 13 of the Federal Water Pollution Control Act Amendments of 1972. If you have any questions about this notice or any of NMED's non-discrimination programs, policies or procedures, or if you believe that you have been discriminated against with respect to a NMED program or activity, you may contact: Kathryn Becker, Non-Discrimination Coordinator, NMED, 1190 St. Francis Dr., Suite N4050, P.O. Box 5469, Santa Fe, NM 87502, (505) 827-2855, nd.coordinator@env.nm.gov. You may also visit our website at https://www.env.nm.gov/non-employee-discrimination-complaint-page/ to learn how and where to file a complaint of discrimination.

ARCOSA WIND
TOWERS - SPANISH
VERSION

AFFIDAVIT OF PUBLICATION

STATE OF NEW MEXICO

County of Valencia SS

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07/20/2023

AUDREY RAYLEENE CRESPIN
Notary Public - State of New Mexico
Commission # 1140072
My Comm. Expires Apr 6, 2027

Audrey Rayleene Crespin

Sworn and subscribed before me, a Notary Public, in and for the County of Valencia and State of New Mexico this 20 day of July of 2023

PRICE $3,029.53

Statement to come at the end of month.

ACCOUNT NUMBER 1107821

AVISO DE SOLICITUD DE PERMISO DE CALIDAD DEL AIRE

Arcosa Wind Towers, Inc. anuncia la presentación de su solicitud al Departamento de Medio Ambiente de Nuevo México para obtener un permiso de calidad del aire para la construcción de instalaciones de revestimiento de superficies y conformado de metales. La fecha prevista de presentación de la solicitud a la Oficina de Calidad del Aire es Agosto 01 2023.

La ubicación exacta de la instalación propuesta conocida como Arcosa Wind Towers será en 1951 NM-304, Belen, NM 87002. 5 millas al norte de la intersección de las carreteras estatales 304 y 346 en la carretera estatal 304, en el condado de Valencia.

Descripción de la construcción: Arcosa Wind Towers construirá un nuevo edificio y rehabilitará un edificio existente donde fabricará los cuerpos de las torres eólicas. El sitio contará con operaciones de formación de metales, corte, soldadura y revestimiento por aspersión.

las cantidades máximas estimadas de cualquier contaminante del aire regulado serán las siguientes en libras por hora (pph) y toneladas por año (tpy) y podrían cambiar ligeramente durante el curso de la revisión del Departamento:

Contaminante:	Libras por hora	Toneladas pro año
Partículas (PM)	10.00	25.00
PM_{10}	10.00	25.00
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Óxidos de nitrógeno (NO_x)	2.50	10.00
Monóxido de carbono (CO)	1.5	6.00
Compuestos Orgánicos Volátiles (VOC)	500.00	240.00
Suma total de todos los contaminantes atmosféricos peligrosos (HAPs)	120.00	60.00
Contaminante Tóxico del Aire (TAP)		
TAP - Trimetilbenceno	50.00	10.00
TAP - Acetato de N-butilo	40.00	10.00
TAP - Óxido de hierro como Fe	5.00	1.50
Emisiones de gases de efecto invernadero como CO_2e	1.00	1.00
	n/a	5,000

Los horarios estándar y máximo de funcionamiento de la instalación serán de 7:00am a 11pm; 6 días a la semana y un máximo de 52 semanas al año.

La persona a contactar para el propietario y/o operador de la Instalación es: Jeri Shull; Arcosa Wind Towers; 1951 NM-304, Belén, NM, 87002

Si tiene algún comentario sobre la construcción u operación de esta instalación, y desea que sus comentarios se hagan como parte del proceso de revisión del permiso, debe enviar sus comentarios por escrito a esta dirección: Gerente de Programas de Permisos; Departamento de Medio Ambiente de Nuevo México; Oficina de Calidad del Aire; 525 Camino de los Márquez, Suite 1; Santa Fe, Nuevo México; 87505-1816. Otros comentarios y preguntas pueden presentarse verbalmente. (505) 476-4300; 1 800 224-7009.

Indique el nombre de la empresa y el nombre del sitio, o envíe una copia de este aviso junto con sus comentarios, ya que es posible que el Departamento aún no haya recibido la solicitud de permiso. Incluya una dirección postal de devolución legible con sus comentarios. Una vez que el Departamento haya realizado una revisión preliminar de la solicitud y sus impactos en la calidad del aire, el aviso del Departamento se publicará en la sección legal de un periódico que circule cerca de la ubicación de la instalación.

Puede encontrar información general sobre la calidad del aire y el proceso de permisos, y los enlaces a las regulaciones en el sitio web de la Oficina de Calidad del Aire: www.env.nm.gov/air-quality/permitting-section-home-page/. El reglamento que trata sobre la participación pública en el proceso de revisión de permisos es 20.2.72.206 NMAC.

Atención

Este es un aviso de la oficina de Calidad del Aire del Departamento del Medio Ambiente de Nuevo México, acerca de las emisiones producidas por un establecimiento en esta área. Si usted desea información en español, por favor comuníquese con esa oficina al teléfono 505-629-3395.

Aviso de No Discriminación

NMED no discrimina por motivos de raza, color, origen nacional, discapacidad, edad o sexo en la administración de sus programas o actividades, según lo exigen las leyes y reglamentos aplicables. NMED es responsable de la coordinación de los esfuerzos de cumplimiento y la recepción de consultas sobre los requisitos de no discriminación implementados por 40 C.F.R. la Parte 7, incluido el Título VI de la Ley de Derechos Civiles de 1964, enmendada; Sección 504 de la Ley de Rehabilitación de 1973; la Ley de Discriminación por Edad de 1975, el Título IX de las Enmiendas de Educación de 1972 y la Sección 13 de las Enmiendas de la Ley Federal de Control de la Contaminación del Agua de 1972. Si tiene alguna pregunta sobre este aviso o cualquiera de los programas, políticas o procedimientos de no discriminación de NMED , o si cree que ha sido discriminado con respecto a un programa o actividad de NMED, puede comunicarse con: Kathryn Becker, coordinadora de no discriminación, NMED, 1190 St. Francis Dr., Suite N4050, P.O. Box 5469, Santa Fe, NM 87502, (505) 827-2855, nd.coordinator@env.nm.gov. También puede visitar nuestro sitio web en https://www.env.nm.gov/non-employee-discrimination-complaint-page/ para saber cómo y dónde presentar una queja por discriminación.

20.2.72 NMAC – Construction Permits, Section 203.B

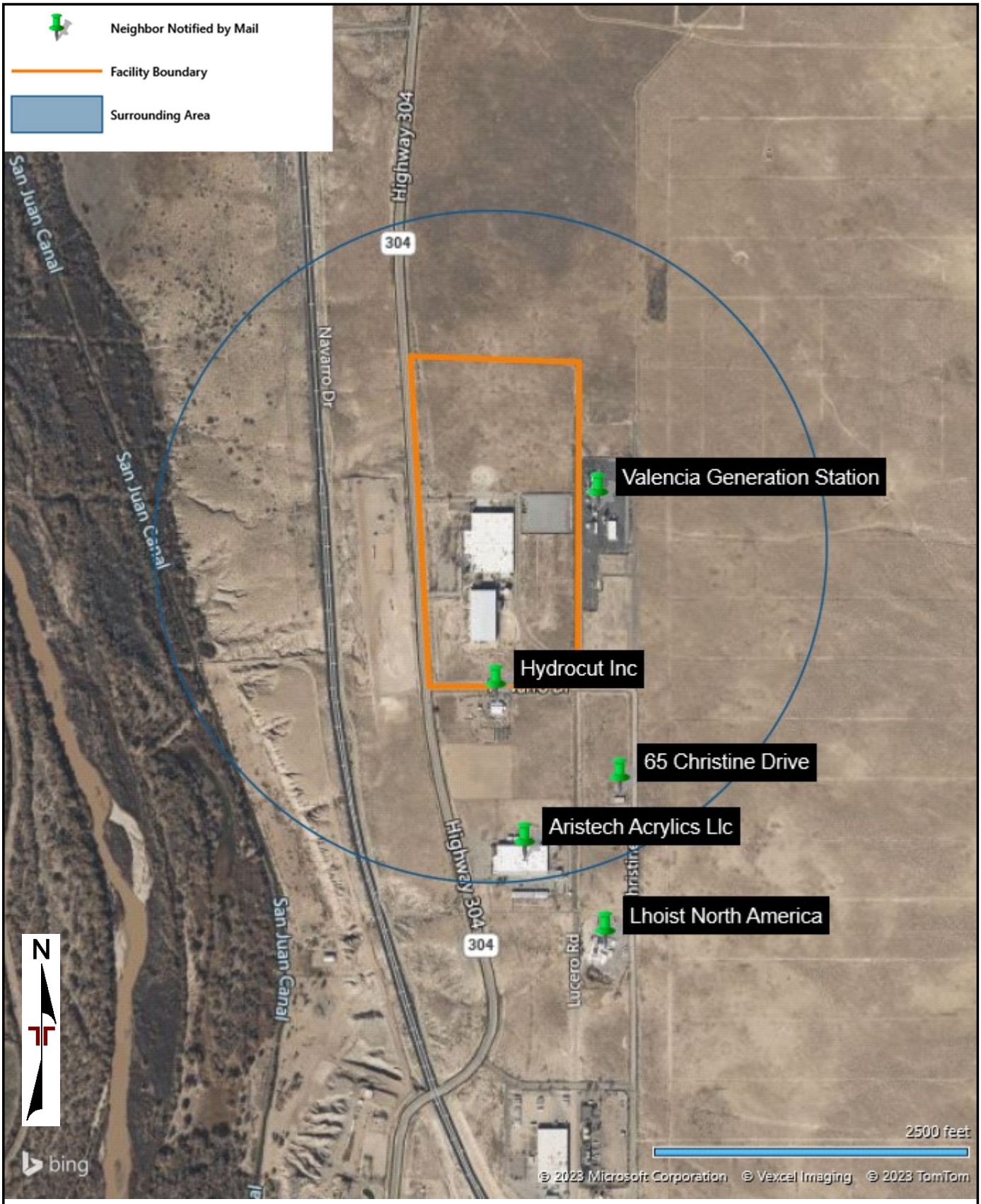

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

AERIAL PHOTOGRAPHY PROVIDED BY MICROSOFT BING MAPS

Project Manager: CEL	Project No. MP237101	Terracon 51 Lost Mound Drive, Suite 135 Chattanooga, Tennessee 37406	SITE DIAGRAM Arcosa Wind Towers inc. LLC 1951 NM-304, Belen, NM 87002
Drawn by: LAJ	Scale: AS SHOWN		
Checked by: CEL	File Name: Public Notice		Exhibit 1
Approved by: TWK	Date: 07/17/23		

Section 10

Written Description of the Routine Operations of the Facility

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A written description of the routine operations of the facility. Include a description of how each piece of equipment will be operated, how controls will be used, and the fate of both the products and waste generated. For modifications and/or revisions, explain how the changes will affect the existing process. In a separate paragraph describe the major process bottlenecks that limit production. The purpose of this description is to provide sufficient information about plant operations for the permit writer to determine appropriate emission sources.

Plate Blasting
Plate steel that is stored at the site is loaded into an abrasive blasting booth where a robotic abrasive blasting unit blasts it. The steel will be rolled into the unit and blasted until it meets specifications. The steel will then be removed from the blaster. The unit will achieve 100% capture of the particulate emissions generated from the blasting of the steel, which will be vented through a fabric filter baghouse. The particulate emissions that exhaust from the fabric filter will be vented outside of the building. The dust captured by the unit will be swept up and captured and then re-used as blast grit.

Plasma Cutting
After being abrasively blasted, plate steel is loaded onto the site's plasma cutter. The unit will be on a downdraft table and use a plasma torch to cut the pieces to meet the dimension specification, depending on what portion of the tower the unit will be a part of. The fumes collected by the downdraft table will be vented through a cartridge filter unit and will exhaust out of the building. Once cut to the appropriate specifications, the final part is removed and ready to be rolled. The waste material removed is sent to a waste hauler to be recycled.

Plate Rolling
After the plate is cut to the correct size, it is loaded into a piece of equipment called a plate roller that uses hydraulic rollers to bend and form the plate into a circular ring. The plate is pinched between the rollers and is manipulated until it is rolled into a ring of a predetermined size. This is not a source of emissions.

Welding
Once the plates have been rolled, welding must be completed to form the tower part itself. Welding employees at the site will utilize a multitude of welding methods, such as submerged arc welding, grounded metal arc welding, and flux-core arc welding, depending on the portion of the part that requires welding. The operators will manually weld all the equipment. The fumes from this process are collected in the building and exhausted via ports around the building. Once the tower parts are welded, they are moved to the north building for further preparation.

Blast Booth
The tower parts enter the blast booth, where manual and robotic arms blast them to prepare the surface for the coating operations. The tower parts will then be removed from the unit. The unit will achieve 100% capture of the particulate emissions generated from the blasting of the tower parts, which will be vented through a fabric filter baghouse. The dust that exhausts from the fabric filter will be vented through the roof. Any steel abrasive captured by the unit will be swept up, captured, and then re-used as blast grit. All steel abrasive material is recycled.

Metalizing
Once the surface has been prepared, Arcosa will be metalizing the outer surface of the unit. This involves spraying molten zinc metal onto the tower from very close proximity. This process occurs in a booth in the paint building. The emissions from the overspray of the metal will vent vertically through the roof of the building. The towers are then sent for coating.

Paint Boots 1 and 2 and Heaters 1 and 2
After being metalized, the towers will be rolled into the first paint booth. The towers will be manually coated with epoxy primer material via spray guns in that paint booth. The paint booth also has a natural gas heater in it that will be utilized to cure the paint. Once curing is complete, the tower will be moved into the second booth. A urethane top coating will be applied to the tower exterior via manual spray guns in that booth.

This paint booth also has a natural gas heater in it that will be utilized to cure the coating. Once cured, the towers will be removed and ready for storage and shipment. Each booth will be equipped with particulate matter filters inside the booth to remove any overspray from the painting operations. Each booth will have six stacks associated with their respective booth. Cleaning of the spray guns will be achieved using a cleaning solvent. The cleaning solvent is captured in 55-gallon drums and transported as waste. The site will be taking limits on how much paint and solvent are used on a gallon-per-year basis. These are explained in the UA-2 form Table 2A.

Process Bottlenecks

Arcosa has a few restrictions in the wind tower manufacturing process. Here are a few of those items below.

- Paint Cure Time
- Amount of Painting per Hour or per Tower
- Welding per Tower Section or per Tower

Section 11
Source Determination

Source submitting under 20.2.70, 20.2.72, 20.2.73, and 20.2.74 NMAC

Sources applying for a construction permit, PSD permit, or operating permit shall evaluate surrounding and/or associated sources (including those sources directly connected to this source for business reasons) and complete this section. Responses to the following questions shall be consistent with the Air Quality Bureau's permitting guidance, Single Source Determination Guidance, which may be found on the Applications Page in the Permitting Section of the Air Quality Bureau website.

Typically, buildings, structures, installations, or facilities that have the same SIC code, that are under common ownership or control, and that are contiguous or adjacent constitute a single stationary source for 20.2.70, 20.2.72, 20.2.73, and 20.2.74 NMAC applicability purposes. Submission of your analysis of these factors in support of the responses below is optional, unless requested by NMED.

A. Identify the emission sources evaluated in this section (list and describe)**:**
The only emission sources being evaluated in this permit application are those associated with this construction. There are no emission sources near the facility that have any similarity or involvement with the facility.

B. Apply the 3 criteria for determining a single source:

SIC Code: Surrounding or associated sources belong to the same 2-digit industrial grouping (2-digit SIC code) as this facility, OR surrounding or associated sources that belong to different 2-digit SIC codes are support facilities for this source.

X Yes □ **No**

Common Ownership or Control: Surrounding or associated sources are under common ownership or control as this source.

X Yes □ **No**

Contiguous or Adjacent: Surrounding or associated sources are contiguous or adjacent with this source.

X Yes □ **No**

C. Make a determination:

X The source, as described in this application, constitutes the entire source for 20.2.70, 20.2.72, 20.2.73, or 20.2.74 NMAC applicability purposes. If in "A" above you evaluated only the source that is the subject of this application, all "**YES**" boxes should be checked. If in "A" above you evaluated other sources as well, you must check **AT LEAST ONE** of the boxes "**NO**" to conclude that the source, as described in the application, is the entire source for 20.2.70, 20.2.72, 20.2.73, and 20.2.74 NMAC applicability purposes.

□ The source, as described in this application, **does not** constitute the entire source for 20.2.70, 20.2.72, 20.2.73, or 20.2.74 NMAC applicability purposes (A permit may be issued for a portion of a source). The entire source consists of the following facilities or emissions sources (list and describe):

Section 12

Section 12.A
PSD Applicability Determination for All Sources

(Submitting under 20.2.72, 20.2.74 NMAC)

A PSD applicability determination for all sources. For sources applying for a significant permit revision, apply the applicable requirements of 20.2.74.AG and 20.2.74.200 NMAC and to determine whether this facility is a major or minor PSD source, and whether this modification is a major or a minor PSD modification. It may be helpful to refer to the procedures for Determining the Net Emissions Change at a Source as specified by Table A-5 (Page A.45) of the EPA New Source Review Workshop Manual to determine if the revision is subject to PSD review.

A. This facility is:

- **X** **a minor PSD source before and after this modification (if so, delete C and D below).**
- □ **a major PSD source before this modification. This modification will make this a PSD minor source.**
- □ **an existing PSD Major Source that has never had a major modification requiring a BACT analysis.**
- □ **an existing PSD Major Source that has had a major modification requiring a BACT analysis**
- □ **a new PSD Major Source after this modification.**

B. **This facility is not one of the listed 20.2.74.501 Table I – PSD Source Categories. The "project" emissions** for this modification are **not significant as they are below the threshold levels. The "project" emissions listed below do only result from changes described in this permit application, thus no emissions from other revisions or modifications, past or future apply to this facility. Also, specifically discuss whether this project results in "de-bottlenecking", or other associated emissions resulting in higher emissions. The project emissions (before netting) for this project are as follows [see Table 2 in 20.2.74.502 NMAC for a complete list of significance levels]:**

a. **NOx: 5.61 TPY**
b. **CO: 3.1 TPY**
c. **VOC: 197.8 TPY**
d. **SOx: 0.0 TPY**
e. **PM: 6.4 TPY**
f. **PM10: 5.7 TPY**
g. **PM2.5: 1.70 TPY**
h. **Fluorides: 0.0 TPY**
i. **Lead: 0.0 TPY**
j. **Sulfur compounds (listed in Table 2): 0.0 TPY**
k. **GHG: 1002.5 TPY**

C. **Netting is not required (project is not significant)**

D. **BACT** is **not required for this application as this application as this is a minor application regarding PSD. .**

E. If this is an existing PSD major source, or any facility with emissions greater than 250 TPY (or 100 TPY for 20.2.74.501 Table 1 – PSD Source Categories), determine whether any permit modifications are related, or could be considered a single project with this action, and provide an explanation for your determination whether a PSD modification is triggered. The proposed source does not have emissions greater than 250 TPY, so a PSD application is not required.

Section 13

Determination of State & Federal Air Quality Regulations

This section lists each state and federal air quality regulation that may apply to your facility and/or equipment that are stationary sources of regulated air pollutants.

Not all state and federal air quality regulations are included in this list. Go to the Code of Federal Regulations (CFR) or to the Air Quality Bureau's regulation page to see the full set of air quality regulations.

Required Information for Specific Equipment:
For regulations that apply to specific source types, in the 'Justification' column **provide any information needed to determine if the regulation does or does not apply**. **For example**, to determine if emissions standards at 40 CFR 60, Subpart IIII apply to your three identical stationary engines, we need to know the construction date as defined in that regulation; the manufacturer date; the date of reconstruction or modification, if any; if they are or are not fire pump engines; if they are or are not emergency engines as defined in that regulation; their site ratings; and the cylinder displacement.

Required Information for Regulations that Apply to the Entire Facility:
See instructions in the 'Justification' column for the information that is needed to determine if an 'Entire Facility' type of regulation applies (e.g. 20.2.70 or 20.2.73 NMAC).

Regulatory Citations for Regulations That Do Not, but Could Apply:
If there is a state or federal air quality regulation that does not apply, but you have a piece of equipment in a source category for which a regulation has been promulgated, you must **provide the low level regulatory citation showing why your piece of equipment is not subject to or exempt from the regulation. For example** if you have a stationary internal combustion engine that is not subject to 40 CFR 63, Subpart ZZZZ because it is an existing 2 stroke lean burn stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions, your citation would be 40 CFR 63.6590(b)(3)(i). **We don't want a discussion of every non-applicable regulation, but if it is possible a regulation could apply, explain why it does not. For example,** if your facility is a power plant, you do not need to include a citation to show that 40 CFR 60, Subpart OOO does not apply to your non-existent rock crusher.

Regulatory Citations for Emission Standards:
For each unit that is subject to an emission standard in a source specific regulation, such as 40 CFR 60, Subpart OOO or 40 CFR 63, Subpart HH, include the low level regulatory citation of that emission standard. Emission standards can be numerical emission limits, work practice standards, or other requirements such as maintenance. **Here are examples:** a glycol dehydrator is subject to the general standards at 63.764C(1)(i) through (iii); an engine is subject to 63.6601, Tables 2a and 2b; a crusher is subject to 60.672(b), Table 3 and all transfer points are subject to 60.672(e)(1)

Federally Enforceable Conditions:
All federal regulations are federally enforceable. All Air Quality Bureau State regulations are federally enforceable except for the following: affirmative defense portions at 20.2.7.6.B, 20.2.7.110(B)(15), 20.2.7.11 through 20.2.7.113, 20.2.7.115, and 20.2.7.116; 20.2.37; 20.2.42; 20.2.43; 20.2.62; 20.2.63; 20.2.86; 20.2.89; and 20.2.90 NMAC. Federally enforceable means that EPA can enforce the regulation as well as the Air Quality Bureau and federally enforceable regulations can count toward determining a facility's potential to emit (PTE) for the Title V, PSD, and nonattainment permit regulations.

INCLUDE ANY OTHER INFORMATION NEEDED TO COMPLETE AN APPLICABILITY DETERMINATION OR THAT IS RELEVENT TO YOUR FACILITY'S NOTICE OF INTENT OR PERMIT.

EPA Applicability Determination Index for 40 CFR 60, 61, 63, etc: http://cfpub.epa.gov/adi/

To save paper and to standardize the application format, delete this sentence, and begin your submittal for this attachment on this page.

State Regulation Applicability:

State Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
20.2.1 NMAC	General Provisions	Yes	Facility	Facility will require a Title V permit.
20.2.3 NMAC	Ambient Air Quality Standards NMAAQS	Yes	Facility	Facility will require a Title V permit.
20.2.7 NMAC	Excess Emissions	Yes	Facility	Facility has excess emissions, including fugitive emissions.
20.2.23 NMAC	Fugitive Dust Control	No		Facility does not have disturbed surface area that is greater than one acre.
20.2.33 NMAC	Gas Burning Equipment - Nitrogen Dioxide	Yes	HE-1 HE-2	The facility has a gas burning equipment that has a heat input greater that 1,000,000 BTU/year
20.2.34 NMAC	Oil Burning Equipment: NO_2	No		The facility does not have oil burning equipment, this regulation is not applicable.
20.2.35 NMAC	Natural Gas Processing Plant – Sulfur	No		This facility is not a natural gas processing plant.
20.2.37 and 20.2.36 NMAC	Petroleum Processing Facilities and Petroleum Refineries	No		This facility is not a petroleum processing facility or petroleum refinery facility.
20.2.38 NMAC	Hydrocarbon Storage Facility	No		The facility does not have a tank that exceeds the thresholds under this regulation.
20.2.39 NMAC	Sulfur Recovery Plant - Sulfur	No		The facility is not a sulfur recovery plant.
20.2.50 NMAC	Oil and Gas Sector – Ozone Precursor Pollutants	No		The facility is not in the oil and gas sector.
20.2.61 NMAC	Smoke & Visible Emissions	No		The facility will not emit visible emissions that is equal to or exceed 20% opacity.
20.2.70 NMAC	Operating Permits	Yes	Facility	The facility is a major source.
20.2.71 NMAC	Operating Permit Fees	Yes	Facility	The facility is a major source.
20.2.72 NMAC	Construction Permits	Yes	Facility	The facility is a major source.
20.2.73 NMAC	NOI & Emissions Inventory Requirements	Yes	Facility	The facility has the potential to emit more than 10 tons per year of a regulated air contaminant.
20.2.74 NMAC	Permits – Prevention of Significant Deterioration (PSD)	No		The facility emits below the PSD thresholds.
20.2.75 NMAC	Construction Permit Fees	Yes	Facility	The facility is a major source.
20.2.77 NMAC	New Source Performance	No		No operations under the NSPS list represent the facility's operations.

State Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
20.2.78 NMAC	Emission Standards for HAPS	No		Facility is not described in 40 cfr subpart 61
20.2.79 NMAC	Permits – Nonattainment Areas	No		Facility is not located in a nonattainment area
20.2.80 NMAC	Stack Heights	Yes	Facility	The facility has stack emission points that are regulated by section 111(a)(3) of the Federal Act
20.2.82 NMAC	MACT Standards for source categories of HAPS	Yes	PB-1 PB-2	Facility is subject to subpart MMMM regulations under the NESHAP.

Applicable Federal Regulations:

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
40 CFR 50	NAAQS	Yes	Facility	Facility emits criteria pollutants.
40 CFR 52.21	NSR of PSD	No		Facility does not fall under prevention of significant deterioration.
NSPS 40 CFR 60, Subpart A	General Provisions	Yes	Facility	Facility is a major source pollutant.
40 CFR 60.40c, Subpart Dc	Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units	No		The facility is not a steam generating facility.
NSPS 40 CFR 60, Subpart Kb	Standards of Performance for **Volatile Organic Liquid Storage Vessels** (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced **After** July 23, 1984	No		The facility does not have a large volatile organic liquid storage vessel
NESHAP 40 CFR 61 Subpart A	General Provisions	No		Facility does not fall under NESHAP requirements.
NSPS 40 CFR 62 Subpart A	General Provisions	No		Facility does not fall under any of the subparts listed in this section.

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
NSPS 40 CFR 63, Subpart A	General Provisions	Yes	HE-1 HE-2	Applies if any other Subpart in 40 CFR 63 applies.
NSPS 40 CFR 63, Subpart DDDDD	Industrial, Commercial and Institutional Boilers and Process Heaters	No		Facility does not have any large boilers or process heaters.
NSPS 40 CFR 63, Subpart NNNN	Large Appliance Surface Coating	No		Facility does not do surface coating operation for large appliances.
NSPS 40 CFR 63, Subpart EE	Magnetic Tape Surface Coating	No		Facility does not do surface coating operations for magnetic tape
NSPS 40 CFR 63, Subpart KKKK	Metal Can Surface Coating	No		Facility does not do surface coating operations for metal cans.
NSPS 40 CFR 63, Subpart SSSS	Metal Coil Surface Coating	No		Facility does not do surface coating operations for metal coils.
NSPS 40 CFR 63, Subpart RRRR	Metal Furniture Surface Coating	No		Facility does not do surface coating operations for metal furniture.
NSPS 40 CFR 63, Subpart HHHHH	Miscellaneous Coating Manufacturing	No		Facility does not do surface coating operations for miscellaneous products.
NSPS 40 CFR 63, Subpart MMMM	Miscellaneous Metal Parts and Products Surface Coating	Yes	PB-1 PB-2	Facility does surface coating operations for miscellaneous metal parts and products surface coating. Site will comply with the limits by using low VOC coating option.
NSPS 40 CFR 63, Subpart PPPP	Plastic parts and products surface coating	No		Facility does not do surface coating operations for plastic parts.
40 CFR 64	**Compliance Assurance Monitoring**	Yes	PB-1 PB-2 AB-1 AB-2 PT-1 PT-2	Facility is a title V source.
40 CFR 68	**Chemical Accident Prevention**	No		Facility does not operate with any of the chemicals listed.
Title IV – Acid Rain 40 CFR 72	**Acid Rain**	No		Facility does not combust fossil fuel and generate electricity for wholesale or retail sale.

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
Title VI – 40 CFR 82	Protection of **Stratospheric Ozone**	No		Facility does not work with any of the chemicals listed.

Section 14

Operational Plan to Mitigate Emissions

(Submitting under 20.2.70, 20.2.72, 20.2.74 NMAC)

□ **Title V Sources** (20.2.70 NMAC)**:** By checking this box and certifying this application the permittee certifies that it has developed an **Operational Plan to Mitigate Emissions During Startups, Shutdowns, and Emergencies** defining the measures to be taken to mitigate source emissions during startups, shutdowns, and emergencies as required by 20.2.70.300.D.5(f) and (g) NMAC. This plan shall be kept on site to be made available to the Department upon request. This plan should not be submitted with this application.

X NSR (20.2.72 NMAC)**, PSD** (20.2.74 NMAC) **& Nonattainment** (20.2.79 NMAC) **Sources:** By checking this box and certifying this application the permittee certifies that it has developed an **Operational Plan to Mitigate Source Emissions During Malfunction, Startup, or Shutdown** defining the measures to be taken to mitigate source emissions during malfunction, startup, or shutdown as required by 20.2.72.203.A.5 NMAC. This plan shall be kept on site to be made available to the Department upon request. This plan should not be submitted with this application.

□ **Title V** (20.2.70 NMAC)**, NSR** (20.2.72 NMAC)**, PSD** (20.2.74 NMAC) **& Nonattainment** (20.2.79 NMAC) **Sources:** By checking this box and certifying this application the permittee certifies that it has established and implemented a Plan to Minimize Emissions During Routine or Predictable Startup, Shutdown, and Scheduled Maintenance through work practice standards and good air pollution control practices as required by 20.2.7.14.A and B NMAC. This plan shall be kept on site or at the nearest field office to be made available to the Department upon request. This plan should not be submitted with this application.

To save paper and to standardize the application format, delete this sentence, and begin your submittal for this attachment on this page.

This application is for a NSR source. The site will not be registering any MSS emissions, so therefore a plan has not been developed per this requirement. If MSS emissions are ever present at the facility, Arcosa will permit them accordingly and develop the appropriate Operational Plan to Mitigate Source Emissions.

Section 15

Alternative Operating Scenarios

(Submitting under 20.2.70, 20.2.72, 20.2.74 NMAC)

Alternative Operating Scenarios: Provide all information required by the department to define alternative operating scenarios. This includes process, material and product changes; facility emissions information; air pollution control equipment requirements; any applicable requirements; monitoring, recordkeeping, and reporting requirements; and compliance certification requirements. Please ensure applicable Tables in this application are clearly marked to show alternative operating scenario.

Construction Scenarios: When a permit is modified authorizing new construction to an existing facility, NMED includes a condition to clearly address which permit condition(s) (from the previous permit and the new permit) govern during the interval between the date of issuance of the modification permit and the completion of construction of the modification(s). There are many possible variables that need to be addressed such as: Is simultaneous operation of the old and new units permitted and, if so for example, for how long and under what restraints? In general, these types of requirements will be addressed in Section A100 of the permit, but additional requirements may be added elsewhere. Look in A100 of our NSR and/or TV permit template for sample language dealing with these requirements. Find these permit templates at: www.env.nm.gov/air-quality/permitting-section-procedures-and-guidance/. Compliance with standards must be maintained during construction, which should not usually be a problem unless simultaneous operation of old and new equipment is requested.

In this section, under the bolded title “Construction Scenarios”, specify any information necessary to write these conditions, such as: conservative-realistic estimated time for completion of construction of the various units, whether simultaneous operation of old and new units is being requested (and, if so, modeled), whether the old units will be removed or decommissioned, any PSD ramifications, any temporary limits requested during phased construction, whether any increase in emissions is being requested as SSM emissions or will instead be handled as a separate Construction Scenario (with corresponding emission limits and conditions, etc.

This section is not applicable to this application.

Section 16

Air Dispersion Modeling

1) Minor Source Construction (20.2.72 NMAC) and Prevention of Significant Deterioration (PSD) (20.2.74 NMAC) ambient impact analysis (modeling): Provide an ambient impact analysis as required at 20.2.72.203.A(4) and/or 20.2.74.303 NMAC and as outlined in the Air Quality Bureau's Dispersion Modeling Guidelines found on the Planning Section's modeling website. If air dispersion modeling has been waived for one or more pollutants, attach the AQB Modeling Section modeling waiver approval documentation.
2) SSM Modeling: Applicants must conduct dispersion modeling for the total short term emissions during routine or predictable startup, shutdown, or maintenance (SSM) using realistic worst case scenarios following guidance from the Air Quality Bureau's dispersion modeling section. Refer to "Guidance for Submittal of Startup, Shutdown, Maintenance Emissions in Permit Applications (http://www.env.nm.gov/aqb/permit/app_form.html) for more detailed instructions on SSM emissions modeling requirements.
3) Title V (20.2.70 NMAC) ambient impact analysis: Title V applications must specify the construction permit and/or Title V Permit number(s) for which air quality dispersion modeling was last approved. Facilities that have only a Title V permit, such as landfills and air curtain incinerators, are subject to the same modeling required for preconstruction permits required by 20.2.72 and 20.2.74 NMAC.

What is the purpose of this application?	Enter an X for each purpose that applies
New PSD major source or PSD major modification (20.2.74 NMAC). See #1 above.	
New Minor Source or significant permit revision under 20.2.72 NMAC (20.2.72.219.D NMAC). See #1 above. **Note:** Neither modeling nor a modeling waiver is required for VOC emissions.	X
Reporting existing pollutants that were not previously reported.	
Reporting existing pollutants where the ambient impact is being addressed for the first time.	
Title V application (new, renewal, significant, or minor modification. 20.2.70 NMAC). See #3 above.	
Relocation (20.2.72.202.B.4 or 72.202.D.3.c NMAC)	
Minor Source Technical Permit Revision 20.2.72.219.B.1.d.vi NMAC for like-kind unit replacements.	
Other: i.e. SSM modeling. See #2 above.	
This application does not require modeling since this is a No Permit Required (NPR) application.	
This application does not require modeling since this is a Notice of Intent (NOI) application (20.2.73 NMAC).	
This application does not require modeling according to 20.2.70.7.E(11), 20.2.72.203.A(4), 20.2.74.303, 20.2.79.109.D NMAC and in accordance with the Air Quality Bureau's Modeling Guidelines.	

Check each box that applies:

☐ See attached, approved modeling **waiver for all** pollutants from the facility.

X See attached, approved modeling **waiver for some** pollutants from the facility.

☐ Attached in Universal Application Form 4 (UA4) is a **modeling report for all** pollutants from the facility.

X Attached in UA4 is a **modeling report for some** pollutants from the facility.

☐ No modeling is required.

Universal Application 4

Air Dispersion Modeling Report

Refer to and complete Section 16 of the Universal Application form (UA3) to assist your determination as to whether modeling is required. If, after filling out Section 16, you are still unsure if modeling is required, e-mail the completed Section 16 to the AQB Modeling Manager for assistance in making this determination. If modeling is required, a modeling protocol would be submitted and approved prior to an application submittal. The protocol should be emailed to the modeling manager. A protocol is recommended but optional for minor sources and is required for new PSD sources or PSD major modifications. Fill out and submit this portion of the Universal Application form (UA4), the "Air Dispersion Modeling Report", only if air dispersion modeling is required for this application submittal. This serves as your modeling report submittal and should contain all the information needed to describe the modeling. No other modeling report or modeling protocol should be submitted with this permit application.

16-A: Identification

1	Name of facility:	Arcosa Wind Tower, INC
2	Name of company:	Arcosa Wind Tower, INC
3	Current Permit number:	Not Issued Yet
4	Name of applicant's modeler:	Matt Gregoire
5	Phone number of modeler:	763-489-3137
6	E-mail of modeler:	Matt.Gregoire@terracon.com

16-B: Brief

1	Was a modeling protocol submitted and approved?	Yes☒	No☐
2	Why is the modeling being done?	Other (describe below) New Construction	
3	Describe the permit changes relevant to the modeling.		
	The Facility was purchased and is being retrofitted for new processes on site.		
4	What geodetic datum was used in the modeling?	WGS84	
5	How long will the facility be at this location?	Indefinitely	
6	Is the facility a major source with respect to Prevention of Significant Deterioration (PSD)?	Yes☐	No☒

7	Identify the Air Quality Control Region (AQCR) in which the facility is located	152	
8	List the PSD baseline dates for this region (minor or major, as appropriate).		
	NO2	March 26, 1997	
	SO2	May 14, 1981	
	PM10	March 26, 1997	
	PM2.5	February 11, 2013	
9	Provide the name and distance to Class I areas within 50 km of the facility (300 km for PSD permits).		
	None		
10	Is the facility located in a non-attainment area? If so describe below	Yes☐	No☒
11	Describe any special modeling requirements, such as streamline permit requirements.		
	None		

16-C: Modeling History of Facility

Describe the modeling history of the facility, including the air permit numbers, the pollutants modeled, the National Ambient Air Quality Standards (NAAQS), New Mexico AAQS (NMAAQS), and PSD increments modeled. (Do not include modeling waivers).

1	Pollutant	Latest permit and modification number that modeled the pollutant facility-wide.	Date of Permit	Comments
	CO			
	NO_2			
	SO_2			
	H_2S			
	PM2.5			
	PM10			
	Lead			
	Ozone (PSD only)			
	NM Toxic Air Pollutants (20.2.72.402 NMAC)			

16-D: Modeling performed for this application

For each pollutant, indicate the modeling performed and submitted with this application.
Choose the most complicated modeling applicable for that pollutant, i.e., culpability analysis assumes ROI and cumulative analysis were also performed.

1	Pollutant	ROI	Cumulative analysis	Culpability analysis	Waiver approved	Pollutant not emitted or not changed.
	CO	☐	☐	☐	☐	☐
	NO_2	☐	☒	☐	☐	☐
	SO_2	☐	☐	☐	☐	☐

	H_2S	☐	☐	☐	☐	☐
	PM2.5	☐	☐	☒	☐	☐
	PM10	☐	☐	☒	☐	☐
	Lead	☒	☐	☐	☐	☐
	Ozone	☐	☐	☐	☐	☒
	State air toxic(s) (20.2.72.402 NMAC)	☐	☐	☐	☒	☐

16-E: New Mexico toxic air pollutants modeling

1 List any New Mexico toxic air pollutants (NMTAPs) from Tables A and B in 20.2.72.502 NMAC that are modeled for this application.
None

2 List any NMTAPs that are emitted but not modeled because stack height correction factor. Add additional rows to the table below, if required.

Pollutant	Emission Rate (pounds/hour)	Emission Rate Screening Level (pounds/hour)	Stack Height (meters)	Correction Factor	Emission Rate/ Correction Factor
Trimethyl Benzene	**19.4**	8.3	>10 m	5	3.9
N-Butyl Acetate	**3.6**	47.3	>10 m	5	0.7
Iron Oxide as Fe	**0.9**	0.333	>10 m	5	0.2

16-F: Modeling options

1	Was the latest version of AERMOD used with regulatory default options? If not explain below.	Yes☒	No☐

16-G: Surrounding source modeling

1	Date of surrounding source retrieval	September 11, 2023

2 If the surrounding source inventory provided by the Air Quality Bureau was believed to be inaccurate, describe how the sources modeled differ from the inventory provided. If changes to the surrounding source inventory were made, use the table below to describe them. Add rows as needed.

AQB Source ID	Description of Corrections
1587	Moved to a more appropriate location further south from the Arcosa Facility.
1598	Updated source types and emission rates based on NMED provided information.

16-H: Building and structure downwash

1	How many buildings are present at the facility?	Three; Office building, painting building, and welding building

2	How many above ground storage tanks are present at the facility?	Zero	
3	Was building downwash modeled for all buildings and tanks? If not explain why below.	Yes☒	No☐
4	Building comments		

16-I: Receptors and modeled property boundary

1	"Restricted Area" is an area to which public entry is effectively precluded. Effective barriers include continuous fencing, continuous walls, or other continuous barriers approved by the Department, such as rugged physical terrain with a steep grade that would require special equipment to traverse. If a large property is completely enclosed by fencing, a restricted area within the property may be identified with signage only. Public roads cannot be part of a Restricted Area. A Restricted Area is required in order to exclude receptors from the facility property. If the facility does not have a Restricted Area, then receptors shall be placed within the property boundaries of the facility. Describe the fence or other physical barrier at the facility that defines the restricted area.						
	The property boundary is lined with a chain link fence.						
2	Receptors must be placed along publicly accessible roads in the restricted area. Are there public roads passing through the restricted area?					Yes☐	No☒
3	Are restricted area boundary coordinates included in the modeling files?					Yes☐	No☒
4	Describe the receptor grids and their spacing. The table below may be used, adding rows as needed.						
	Grid Type	Shape	Spacing	Start distance from restricted area or center of facility	End distance from restricted area or center of facility	Comments	
	Fine	Cartesian	50 m	Start at fence line	1,500 m from center of Facility		
	Medium	Cartesian	100 m	1,500 m from center of Facility	2,500 m from center of Facility		
	Coarse	Cartesian	500 m	2,500 m from center of Facility	5,500 m from center of Facility	SIL models only	
	Extra Coarse	Cartesian	1,000 m	5,500 m from center of Facility	10,500 m from center of Facility	SIL models only	
5	Describe receptor spacing along the fence line.						
	Every 10 meters.						
6	Describe the PSD Class I area receptors.						
	Not applicable.						

16-J: Sensitive areas

1	Are there schools or hospitals or other sensitive areas near the facility? If so describe below. This information is optional (and purposely undefined) but may help determine issues related to public notice.	Yes☐	No☐
3	The modeling review process may need to be accelerated if there is a public hearing. Are there likely to be public comments opposing the permit application?	Yes☐	No☐

16-K: Modeling Scenarios

1	Identify, define, and describe all modeling scenarios. Examples of modeling scenarios include using different production rates, times of day, times of year, simultaneous or alternate operation of old and new equipment during transition periods, etc. Alternative operating scenarios should correspond to all parts of the Universal Application and should be fully described in Section 15 of the Universal Application (UA3).		
	No modeling scenarios performed.		
2	Which scenario produces the highest concentrations? Why?		
	N/A		
3	Were emission factor sets used to limit emission rates or hours of operation? (This question pertains to the "SEASON", "MONTH", "HROFDY" and related factor sets, not to the factors used for calculating the maximum emission rate.)	Yes☐	No☒
4	If so, describe factors for each group of sources. List the sources in each group before the factor table for that group. (Modify or duplicate table as necessary. It's ok to put the table below section 16-K if it makes formatting easier.) Sources:		

5

Hour of Day	Factor	Hour of Day	Factor								
1		13									
2		14									
3		15									
4		16									
5		17									
6		18									
7		19									
8		20									
9		21									
10		22									
11		23									
12		24									

If hourly, variable emission rates were used that were not described above, describe them below.

There were no hourly variations.

6	Were different emission rates used for short-term and annual modeling? If so describe below.	Yes☐	No☒
	NA		

16-L: NO_2 Modeling

1	Which types of NO_2 modeling were used? Check all that apply.	
	☒	ARM2
	☐	100% NO_X to NO_2 conversion
	☐	PVMRM
	☐	OLM
	☐	Other:
2	Describe the NO_2 modeling.	
3	Were default NO_2/NO_X ratios (0.5 minimum, 0.9 maximum or equilibrium) used? If not describe and justify the ratios used below.	Yes☒ No☐
4	Describe the design value used for each averaging period modeled.	
	1-hour: High first high Annual: One Year Annual Average	

16-M: Particulate Matter Modeling

1	Select the pollutants for which plume depletion modeling was used.	
	☐	PM2.5
	☐	PM10
	☒	None
2	Describe the particle size distributions used. Include the source of information.	
3	Does the facility emit at least 40 tons per year of NO_X or at least 40 tons per year of SO_2? Sources that emit at least 40 tons per year of NO_X or at least 40 tons per year of SO_2 are considered to emit significant amounts of precursors and must account for secondary formation of PM2.5.	Yes☐ No☒
4	Was secondary PM modeled for PM2.5?	Yes☐ No☒

5	If MERPs were used to account for secondary PM2.5 fill out the information below. If another method was used describe below.			
	NO_X (ton/yr)	SO_2 (ton/yr)	$[PM2.5]_{annual}$	$[PM2.5]_{24\text{-}hour}$

16-N: Setback Distances

1	Portable sources or sources that need flexibility in their site configuration requires that setback distances be determined between the emission sources and the restricted area boundary (e.g. fence line) for both the initial location and future locations. Describe the setback distances for the initial location.
	Not Applicable.
2	Describe the requested, modeled, setback distances for future locations, if this permit is for a portable stationary source. Include a haul road in the relocation modeling.
	Not Applicable.

16-O: PSD Increment and Source IDs

1	The unit numbers in the Tables 2-A, 2-B, 2-C, 2-E, 2-F, and 2-I should match the ones in the modeling files. Do these match? If not, provide a cross-reference table between unit numbers if they do not match below.	Yes☒	No☐

Unit Number in UA-2	Unit Number in Modeling Files

2	The emission rates in the Tables 2-E and 2-F should match the ones in the modeling files. Do these match? If not, explain why below.	Yes☒	No☐
3	Have the minor NSR exempt sources or Title V Insignificant Activities" (Table 2-B) sources been modeled?	Yes☐	No☒

4 Which units consume increment for which pollutants?

Unit ID	NO_2	SO_2	PM10	PM2.5

5	PSD increment description for sources. (for unusual cases, i.e., baseline unit expanded emissions after baseline date).	

6	Are all the actual installation dates included in Table 2A of the application form, as required? This is necessary to verify the accuracy of PSD increment modeling. If not please explain how increment consumption status is determined for the missing installation dates below.	Yes☒	No☐

16-P: Flare Modeling

1 For each flare or flaring scenario, complete the following

	Flare ID (and scenario)	Average Molecular Weight	Gross Heat Release (cal/s)	Effective Flare Diameter (m)
	None	NA	NA	NA

16-Q: Volume and Related Sources

1	Were the dimensions of volume sources different from standard dimensions in the Air Quality Bureau (AQB) Modeling Guidelines? If not please explain how increment consumption status is determined for the missing installation dates below.	Yes☐	No☐
2	Describe the determination of sigma-Y and sigma-Z for fugitive sources.		
	Not Applicable.		
3	Describe how the volume sources are related to unit numbers. Or say they are the same.		
	Not Applicable.		
4	Describe any open pits.		
	Not Applicable.		
5	Describe emission units included in each open pit.		
	Not Applicable.		

16-R: Background Concentrations

1	Were NMED provided background concentrations used? Identify the background station used below. If non-NMED provided background concentrations were used describe the data that was used.	Yes☒	No☐
	CO: N/A		
	NO_2: Del Norte High School (350010023)		
	PM2.5: Del Norte High School (350010023)		
	PM10: Choose an item.		
	SO_2: N/A		
	Other:		
	Comments: PM10 used Del Norte High School (350010023)		
2	Were background concentrations refined to monthly or hourly values? If so describe below.	Yes☐	No☒
	The specific hourly or annual background concentrations		

16-S: Meteorological Data

1	Was NMED provided meteorological data used? If so select the station used. Bernalillo	Yes☒	No☐

2	If NMED provided meteorological data was not used describe the data set(s) used below. Discuss how missing data were handled, how stability class was determined, and how the data were processed.		

16-T: Terrain

1	Was complex terrain used in the modeling? If not, describe why below.	Yes☒	No☐
2	What was the source of the terrain data?		
	Terrain data was sourced from the USGS national map downloader data base.		

16-U: Modeling Files

Describe the modeling files:
Will be submitted electronically once requested from the state.

	File name (or folder and file name)	Pollutant(s)	Purpose (ROI/SIA, cumulative, culpability analysis, other)
1	SIL – PM10 24 Hour	PM10	ROI (SIL)
	SIL – PM10 Annual	PM10	ROI (SIL)
	PSD – PM10 24 Hour	PM10	Cumulative, Culpability (PSD Increment)
	PSD – PM10 Annual	PM10	Cumulative, Culpability (PSD Increment)
	NAAQs – PM10 24 Hour	PM10	Cumulative, Culpability (NAAQs)
	SIL – PM2.5 24 Hour	PM2.5	ROI (SIL)
	SIL – PM2.5 Annual	PM2.5	ROI (SIL)
	PSD – PM2.5 24 Hour	PM2.5	Cumulative, Culpability (PSD Increment)
	PSD – PM2.5 Annual	PM2.5	Cumulative, Culpability (PSD Increment)
	NAAQs – PM2.5 24 Hour	PM2.5	Cumulative, Culpability (NAAQs)
	NAAQs – PM2.5 Annual	PM2.5	Cumulative, Culpability (NAAQs)
	SIL – NO2 24 Hour	NO2	ROI (SIL), Cumulative, Culpability (PSD Increment, NAAQs)
	SIL – NO2 Annual	NO2	ROI (SIL), Cumulative, Culpability (PSD Increment, NAAQs)
	SIL – LEAD Quarterly	LEAD	ROI (SIL)

16-V: PSD New or Major Modification Applications

1	A new PSD major source or a major modification to an existing PSD major source requires additional analysis.	Yes☐	No☐

	Was preconstruction monitoring done (see 20.2.74.306 NMAC and PSD Preapplication Guidance on the AQB website)?		
2	If not, did AQB approve an exemption from preconstruction monitoring?	Yes☐	No☐
3	Describe how preconstruction monitoring has been addressed or attach the approved preconstruction monitoring or monitoring exemption.		
4	Describe the additional impacts analysis required at 20.2.74.304 NMAC.		
5	If required, have ozone and secondary PM2.5 ambient impacts analyses been completed? If so describe below.	Yes☐	No☐

16-W: Modeling Results

	If ambient standards are exceeded because of surrounding sources, a culpability analysis is required for the source to show that the contribution from this source is less than the significance levels for the specific pollutant. Was culpability analysis performed? If so describe below.	Yes☒	No☐
1	**PM10 and PM2.5** Receptors around the Facility exceeded PM10 and PM2.5 PSD and NAAQs concentrations due to surrounding sources and background concentrations. Terracon compared the receptors that exceeded the SIL concentrations due to Arcosa's sources with the receptors that exceeded the PSD increment and NAAQs concentrations (concentrations took into account the background concentrations, surrounding sources, and Arcosa's contribution). None of the receptors that were above the SIL concentration thresholds were also above the PSD or NAAQs concentrations for the same modeling intervals.		
2	Identify the maximum concentrations from the modeling analysis. Rows may be modified, added and removed from the table below as necessary.		

Pollutant, Time Period and Standard	Modeled Facility Concentration (µg/m3)	Modeled Concentration with Surrounding Sources (µg/m3)	Secondary PM (µg/m3)	Background Concentration (µg/m3)	Cumulative Concentration (µg/m3)	Value of Standard (µg/m3)	Percent of Standard	Location		
								UTM E (m)	UTM N (m)	Elevation (ft)
PM10 24-Hour PSD increment	-	1040.4	-	-	1040.4	30	3,468%	340982.1	3830452.1	1490.62
PM10 Annual-2019 (Highest) PSD increment	-	241.5	-	-	241.5	17	1,4206%	340982.1	3830452.1	1490.62
PM2.5 24-Hour PSD increment	-	19.1	-	-	19.1	9	212.2%	341182.1	3830252.1	1492.15
PM2.5 Annual-2021 (Highest) PSD increment	-	5.6	-	-	5.6	4	140%	341182.1	3830252.1	1492.15
PM10 24-Hour NAAQS	-	1041.6	-	58.7	1100.3	150	733.3%	340982.1	3830452.1	1490.62
PM2.5 24-Hour NAAQS	-	1041.5	-	15.7	1057.2	35	3,020.6%	340982.1	3830452.1	1490.62

Pollutant, Time Period and Standard	Modeled Facility Concentration (µg/m3)	Modeled Concentration with Surrounding Sources (µg/m3)	Secondary PM (µg/m3)	Background Concentration (µg/m3)	Cumulative Concentration (µg/m3)	Value of Standard (µg/m3)	Percent of Standard	Location		
								UTM E (m)	UTM N (m)	Elevation (ft)
PM2.5 Annual-2019 (Highest) NAAQS	-	155.8	-	5.8	161.6	12	1,346.7%	341432.1	3829602.1	1494.97
NO2 Annual – 2019 (Highest) PSD Increment	1.7	-	-	17.2	18.9	25	75.6%	340754.7	3831170	1488.47
NO2 Hourly NAAQS	37.4	-	-	81.2	118.6	188.03	63.1%	340741.7	3831369.6	1488.79
NO2 Annual – 2019 (Highest) NAAQS	1.7	-	-	17.2	18.9	99.66	19.0%	340754.7	3831170	1488.47
Lead Quarterly	0.00001	-	-	-	0.00001	0.03	0.03%	340753.4	3831189.9	1488.6

16-X: Summary/conclusions

	A statement that modeling requirements have been satisfied and that the permit can be issued.
1	The Facility modeled PM10, PM2.5, NO2, and Lead for ROI (SIL) concentrations. Lead modeling results indicated values below the SIL thresholds. The NO2 SIL modeling results were added to the background concentration to show that the PSD increment and NMAAQS thresholds are not exceeded. PM10 and PM2.5 required a culpability analysis to determine that there were no receptors that exceeded both the NAAQS/PSD increment for the combined sources and the SIL for the Arcosa-only sources. As such, all modeling requirements have been satisfied.

New Mexico Environment Department
Air Quality Bureau
Modeling Section
525 Camino de Los Marquez - Suite 1
Santa Fe, NM 87505

Phone: (505) 476-4300
Fax: (505) 476-4375
www.env.nm.gov/air-quality/

For Department use only:

Approved by:

Date:

Air Dispersion Modeling Waiver Request Form

This form must be completed and submitted with all air dispersion modeling waiver requests.

If an air permit application requires air dispersion modeling, in some cases the demonstration that ambient air quality standards and Prevention of Significant Deterioration (PSD) increments will not be violated can be satisfied with a discussion of previous modeling. The purpose of this form is to document and streamline requests to certify that previous modeling satisfies all or some of the current modeling requirements. The criteria for requesting and approving modeling waivers are found in the Air Quality Bureau Modeling Guidelines. Typically, only construction permit applications submitted per 20.2.72, 20.2.74, or 20.2.79 NMAC require air dispersion modeling. However, modeling is sometimes also required for a Title V permit application.

A waiver may be requested by e-mailing this completed form in MS Word format to the modeling manager, sufi.mustafa@env.nm.gov.

This modeling waiver is not valid if the emission rates in the application are higher than those listed in the approved waiver request.

Section 1 and Table 1: Contact and facility information:

Contact name	Jeri Shull
E-mail Address:	Jeri.Shull@arcosa.com
Phone	(615) 585-9273
Facility Name	Arcosa Wind Tower, Inc.
Air Quality Permit Number(s)	Not Issued Yet
Agency Interest Number (if known)	Unknown
Latitude and longitude of facility (decimal degrees)	34.61008N, 106.73525W

General Comments: (Add introductory remarks or comments here, including the purpose of and type of permit application.)
Construction permit application for a new source.

Section 2 – List All Regulated Pollutants from the Entire Facility - Required

In Table 2, below, list all regulated air pollutants emitted from your facility, except for New Mexico Toxic Air Pollutants, which are listed in Table 6 of this form. All pollutants emitted from the facility must be listed whether or not a modeling waiver is requested for that pollutant or if the pollutant emission rate is subject to the proposed permit changes.

Table 2: Air Pollutant summary table (Check all that apply. Include all pollutants emitted by the facility):

Pollutant	Pollutant is not emitted at the facility and modeling or waiver are not required.	Pollutant does not increase in emission rate at any emission unit (based on levels currently in the permit) and stack parameters are unchanged. Modeling or waiver are not required.	Stack parameters or stack location has changed.	Pollutant is new to the permit, but already emitted at the facility.	Pollutant is increased at any emission unit (based on levels currently in the permit).	A modeling waiver is being requested for this pollutant.	Modeling for this pollutant will be included in the permit application.
CO						x	
NO_2							x
SO_2						x	
PM10							x
PM2.5							x
H_2S	x						
Reduced S	x						
O_3 (PSD only)	x						
Pb							x

Section 3: Pollutants, other than NMTAPs, with very small emission rates

The Air Quality Bureau has performed generic modeling to demonstrate that small sources, as listed in Appendix 2 of this form, do not need computer modeling. This modeling compared emissions from a project (the increase in emissions from the previous permit or total facility emissions for a new facility) with significance levels. After comparing the project's emission rates for various pollutants to Appendix 2, list in Table 3 the pollutants that do not need to be modeled because of very small emission rates.

The facility must be at least 2 km from the nearest Class I area to qualify for a waiver due to very small emission rates. List the nearest Class I area and the distance from the facility in Section 3 comments.

Section 3 Comments. (If you are not requesting a waiver for any pollutants based on their low emission rate, then note that here. You do not need to complete the rest of Section 3 or Table 3.)

Table 3: List of Pollutants with very small emission rates from the project

Pollutant	Requested Allowable Emission Rate for Project (pounds/hour)	Release Type (select "all from stacks >20 ft" or "other")	Waiver Threshold (from appendix 2) (lb/hr)
CO	0.7	All from stacks >20 ft	16.037
SO2	0.005	All from stacks >20 ft	0.179

Section 4: Pollutants that have previously been modeled at equal or higher emission rates
List the pollutants and averaging periods in Table 4 for which you are requesting a modeling waiver based on previous modeling for this facility. The previous modeling reports that apply to the pollutant must be submitted with the modeling waiver request. Request previous modeling reports from the Modeling Section of the Air Quality Bureau if you do not have them and believe they exist in the AQB modeling file archive.

Section 4 Comments. (If you are not asking for a waiver based on previously modeled pollutants, note that here. You do not need to complete the rest of section 4 or table 4.)
Not requesting waiver based on previously modeled pollutants.

Table 4: List of previously modeled pollutants (facility-wide emission rates)

Pollutant	Averaging period	Proposed emission rate (pounds/hour)	Previously modeled emission rate (pounds/hour)	Proposed minus modeled emissions (lb/hr)	Modeled percent of standard or increment	Year modeled

Section 4, Table 5: Questions about previous modeling:

Question	Yes	No
Was AERMOD used to model the facility?		
Did previous modeling predict concentrations less than 95% of each air quality standard and PSD increment?		
Were all averaging periods modeled that apply to the pollutants listed above?		
Were all applicable startup/shutdown/maintenance scenarios modeled?		
Did modeling include all sources within 1000 meters of the facility fence line that now exist?		
Did modeling include background concentrations at least as high as current background concentrations?		
If a source is changing or being replaced, is the following equation true for all pollutants for which the waiver is requested? (Attach calculations if applicable.) $\frac{[(g) \times (h1)] + [(v1)^2/2] + [(c) \times (T1)]}{q1} <= \frac{[(g) \times (h2)] + [(v2)^2/2] + [(c) \times (T2)]}{q2}$ Where g = gravitational constant = 32.2 ft/sec^2 h1 = existing stack height, feet v1 = exhaust velocity, existing source, feet per second c = specific heat of exhaust, 0.28 BTU/lb-degree F T1 = absolute temperature of exhaust, existing source = degree F + 460 q1 = emission rate, existing source, lbs/hour h2 = replacement stack height, feet		

v2 = exhaust velocity, replacement source, feet per second T2 = absolute temperature of exhaust, replacement source = degree F + 460 q2 = emission rate, replacement source, lbs/hour		

If you checked "no" for any of the questions, provide an explanation for why you think the previous modeling may still be used to demonstrate compliance with current ambient air quality standards.

Section 5: Modeling waiver using scaled emission rates and scaled concentrations

At times it may be possible to scale the results of modeling one pollutant and apply that to another pollutant. Increases in emissions of one pollutant might also demonstrate compliance by applying a scaling factor to the modeling results. If the analysis for the waiver gets too complicated, then it becomes a modeling review rather than a modeling waiver, and applicable modeling fees will be charged for the modeling. Plume depletion, ozone chemical reaction modeling, post-processing, and unequal pollutant ratios from different sources are likely to invalidate scaling.

If you are not scaling previous results, note that here. You do not need to complete the rest of section 5. Scaling analyses are not intended to be used for previously modeled pollutants with decreasing emissions, which is already addressed in section 4.

To demonstrate compliance with standards for a pollutant describe scenarios below that you wish the modeling section to consider for scaling results.

Not scaling previous results

Section 6: New Mexico Toxic air pollutants – 20.2.72.400 NMAC

Modeling must be provided for any New Mexico Toxic Air Pollutant (NMTAP) with a facility-wide controlled emission rate in excess of the pound per hour emission levels specified in Tables A and B at 20.2.72.502 NMAC - Toxic Air Pollutants and Emissions. An applicant may use a stack height correction factor based on the release height of the stack for the purpose of determining whether modeling is required. See Table C - Stack Height Correction Factor at 20.2.72.502 NMAC. Divide the emission rate for each release point of a NMTAP by the correction factor for that release height and add the total values together to determine the total adjusted pound per hour emission rate for that NMTAP. If the total adjusted pound per hour emission rate is lower than the emission rate screening level found in Tables A and B, then modeling is not required.

In Table 6, below, list the total facility-wide emission rates for each New Mexico Toxic Air Pollutant emitted by the facility. The table is pre-populated with common examples. Extra rows may be added for NMTAPS not listed or for NMTAPS emitted from multiple stack heights. NMTAPS not emitted at the facility may be deleted, left blank, or noted as 0 emission rate. Toxics previously modeled may be addressed in Section 5 of this waiver form. For convenience, we have listed the stack height correction factors in Appendix 1 of this form.

Section 6 Comments. (If you are not requesting a waiver for any NMTAPs then note that here. You do not need to complete the rest of section 6 or Table 6.)

Table 6: New Mexico Toxic Air Pollutants emitted at the facility
If requesting a waiver for any NMTAP, all NMTAPs from this facility must be listed in Table 3 regardless of if a modeling waiver is requested for that pollutant or if the pollutant emission rate is subject to the proposed permit changes.

Pollutant	Requested Allowable Emission Rate (pounds/hour)	Release Height (Meters)	Correction Factor	Allowable Emission Rate Divided by Correction Factor	Emission Rate Screening Level (pounds/hour)
Ammonia	0				1.20
Asphalt (petroleum) fumes	0				0.333
Carbon black	0				0.233
Chromium metal	0				0.0333
Glutaraldehyde	0				0.0467
Nickel Metal	0				0.0667
Wood dust (certain hard woods as beech & oak)	0				0.0667
Wood dust (soft wood)	0				0.333
Trimethyl Benzene	19.4	>10	5	3.9	8.33
N-Butyl Acetate	3.6	>10	5	0.7	47.3
Iron Oxide as Fe	0.88	>10	5	0.18	0.333

Section 7: Approval or Disapproval of Modeling Waiver

The AQB air dispersion modeler should list each pollutant for which the modeling waiver is approved, the reasons why, and any other relevant information. If not approved, this area may be used to document that decision.

Appendix 1: Stack Height Release Correction Factor (adapted from 20.2.72.502 NMAC)

Release Height in Meters	Correction Factor
0 to 9.9	1
10 to 19.9	5
20 to 29.9	19
30 to 39.9	41
40 to 49.9	71
50 to 59.9	108
60 to 69.9	152
70 to 79.9	202
80 to 89.9	255
90 to 99.9	317
100 to 109.9	378
110 to 119.9	451
120 to 129.9	533
130 to 139.9	617
140 to 149.9	690
150 to 159.9	781
160 to 169.9	837
170 to 179.9	902
180 to 189.9	1002
190 to 199.9	1066
200 or greater	1161

Appendix 2. Very small emission rate modeling waiver requirements (updated 7/27/2023)
Modeling is waived if emissions of a pollutant for the project are below the amount:

Pollutant	If all emissions come from stacks 20 feet or greater in height and there are no horizontal stacks or raincaps (lb/hr)	If not all emissions come from stacks 20 feet or greater in height, or there are horizontal stacks, raincaps, volume, or area sources (lb/hr)
CO	16.037	2.580
H_2S (Pecos-Permian Basin)	0.114	0.015
H_2S (Not in Pecos-Permian Basin)	0.022	0.003
Lead	0.005	0.001
NO_2	0.189	0.024
PM2.5 – Point Sources	0.056	0.009
PM2.5 – Volume Sources		0.003
PM10 – Point Sources	0.255	0.039
PM10 – Volume Sources		0.015
SO_2	0.179	0.023
Reduced sulfur (Pecos-Permian Basin)	0.033	No waiver
Reduced sulfur (Not in Pecos-Permian Basin)	No waiver	No waiver

Air Dispersion Modeling Report

Arcosa Wind Tower

September 22, 2023 | Terracon Project #: MP237101

Prepared for:

Arcosa Wind Towers
500 N Akard St. Suite 400
Dallas, Texas

Terracon

Nationwide
Terracon.com

- Facilities
- Environmental
- Geotechnical
- Materials

1.0 Introduction

This document outlines the methodology and reports the results of the air dispersion modeling used to demonstrate that the proposed emission sources at the Arcosa facility in Belen, New Mexico will operate in compliance with the New Mexico Environment Department (NMED) Bureau of Air Quality (BAQ) 2022 Modeling Guidelines. Air dispersion modeling was conducted following the NMED BAQ modeling guidelines. This document is written, in conjunction with the NMED UA4, to supplement the facility's air permit application and fulfill the modeling requirements of the NMED.

2.0 Facility and Operations Description

2.1 Operations

The Arcosa facility is proposing a new operation in two existing buildings. The proposed facility will have seven distinct emission sources on site between the two process buildings. Those sources are: Plate Blasting, Plasma Cutting, Welding, Blast Booth, Metallizing, Paint Booths 1 and 2, and the paint booth associated Heaters 1 and 2.

Plate Blasting

Plate steel that is stored at the site is loaded into an abrasive blasting booth where a robotic abrasive blasting unit blasts it. The steel will be rolled into the unit and blasted until it meets specifications. The steel will then be removed from the blaster. The unit will achieve 100% capture of the emissions generated from the blasting of the steel, which will be vented through a fabric filter baghouse. The particulate emissions that exhaust from the fabric filter will be vented outside of the building. The abrasive media collected in the unit will be swept up and then re-used as blast grit. Emissions from plate blasting will be emitted through emission point EPN-1.

Plasma Cutting

After being abrasively blasted, plate steel is loaded onto the site's plasma cutter. The unit will utilize a downdraft table and a plasma torch to cut the pieces to meet the dimension specifications. The downdraft table is designed to capture 80% of the emissions generated from the plasma cutter. The fumes collected by the downdraft table will be vented through a cartridge filter unit and will exhaust out of the building. Once cut to the appropriate specifications, the final part is removed and ready to be rolled. The waste material removed is sent to a waste hauler to be recycled. Fugitive emissions from plasma cutting will be emitted through emission points EPN-2a through EPN-2f. Emissions captured and filtered from the plasma

Welding

Once the plates have been rolled, welding must be completed to form the tower part itself. Welding employees at the site will utilize a multitude of welding methods, such as submerged arc welding, grounded metal arc welding, and flux-core arc welding, depending on the portion of the part that requires welding. The operators will manually weld all the equipment. The fumes from this process are collected in the building and exhausted via vents around the building. Once the tower parts are welded, they are moved to the north building for further preparation. Emissions from welding will be emitted through emission points EPN-2a through EPN-2f.

Blast Booth

The tower parts enter the blast booth, where manual and robotic arms blast them to prepare the surface for the coating operations. The tower parts will then be removed from the unit. The unit will achieve 100% capture of the emissions generated from the blasting of the tower parts, which will be vented through a fabric filter baghouse. The dust that exhausts from the fabric filter will be vented through the roof. Any abrasive media collected in the unit will be swept up and then re-used as blast grit. All steel abrasive material is recycled. Emissions from the blast booth will be emitted through emission point EPN-17.

Metalizing

Once the surface has been prepared, Arcosa will be metalizing the outer surface of the unit. This involves spraying molten zinc metal onto the tower from very close proximity. This process occurs in a booth in the paint building. The emissions from the overspray of the metal will vent vertically through the roof of the building. The towers are then sent for coating. Emissions from metalizing will be emitted through emission point EPN-3.

Paint Booths 1 and 2 and Heaters 1 and 2

After being metalized, the towers will be rolled into the first paint booth. The towers will be manually coated with epoxy primer material via spray guns in that paint booth. The paint booth also has a natural gas heater in it that will be utilized to cure the paint. Once curing is complete, the tower will be moved into the second booth. A urethane top coating will be applied to the exterior tower via manual spray guns in that booth.

This paint booth also has a natural gas heater in it that will be utilized to cure the coating. Once cured, the towers will be removed and ready for storage and shipment. Each booth will be equipped with particulate matter filters inside the booth to remove any overspray from the painting operations. Each booth will have six stacks associated with their respective booth. Cleaning of the spray guns will be achieved using a cleaning solvent. The cleaning solvent is captured in 55-gallon drums and transported as waste.

The site will be taking limits on how much paint and solvent are used on a gallon-per-year basis. These are explained in the UA-2 form Table 2A. Emissions from paint booth 1 will be emitted through emission points EPN-4 through EPN-9 and emissions from paint booth 2 will be emitted through EPN-10 through EPN-15. Emissions from the heater associated with paint booth 1 will be emitted through emission points EPN-4 through EPN-9, while the emissions associated with the heater for paint booth 2 will be emitted through emission points EPN-10 through EPN-15.

2.2 Facility Location

The facility is located at an Easting of 340932 and a Northing of 3831201 in Zone 13. The current site has three existing buildings that will be retrofitted to include the Arcosa processes. The three buildings are named after the main activities taking place at each: Welding Building, Painting Building, and Office Building. See Figure A-1 through A-5 in Appendix A for a site map of the facility.

2.3 Modeling Thresholds – Criteria Pollutants

Terracon reviewed the modeling thresholds for criteria pollutants from each source to determine which sources exceed the exempt emission rates identified in the modeling guidelines. Emission rates from the facility for each pollutant are provided in Table 1 below.

The Site has emissions from paint booths, welding, plasma table, metalizing, and two separate plate blasting operations. PM-10, PM-2.5, NO_2 and lead emissions from these sources exceed the exempt emission rates and are included in the air dispersion modeling analysis.

Table 1
Criteria Pollutant Modeling Thresholds

Pollutant	Emission Rate (lb/hour)	Modeling Required?
CO	0.7	Exempt due to very small emission rate modeling waiver
Lead	$4.2x10^{-6}$	Required
NO_2	1.3	Required
PM2.5	0.4	Required

PM10	2.1	Required
SO_2	0.005	Exempt due to very small emission rate modeling waiver

2.4 Modeling Thresholds – Toxic Air Pollutants

Terracon reviewed the modeling thresholds in NMAC 20.2.72 for the toxic air pollutants emitted from the facility to determine if modeling of toxic air pollutants is required. It should be noted that all stacks at the facility have a release height greater than 10 meters and the emission rate will be divided by the correction factor of 5 per Table C in NMAC 20.2.72.

Table 2
Toxic Air Pollutants Modeling Thresholds

Pollutant	Emission Rate (lb/hour)	Emission Rate with Stack Height Release Correction Factor (lb/hour)	Exempt Emission Rate Threshold (lb/hour)	Modeling Required?
Trimethyl Benzene	19.4	3.9	8.33	Exempt
N-Butyl Acetate	3.6	0.7	47.3	Exempt
Iron Oxide as Fe	0.88	0.18	0.333	Exempt

2.5 Air Quality Control Region

The facility is located in AQCR 152. As such, PM10, PM2.5, and NO2 have minor source baseline dates and a PSD increment analysis is required for those pollutants.

3.0 Model Inputs

3.1 Air Dispersion Model

Air dispersion modeling was conducted with the most recent version of AERMOD (version 22112). The NO_2 modeling included a Tier 2 approach and used the Ambient Ratio Method 2 (ARM2) options in AERMOD to calculate ambient NO2 concentrations

surrounding the site by applying a default NO2/NOx equilibrium ratio of 0.90 and an NO2/NOx in-stack ratio (ISR) of 0.2.

3.2 Background Concentration

To compare modeling results to the New Mexico Ambient Air Quality Standards (NMAAQS) and the National Ambient Air Quality Standards (NAAQS), a background concentration must be selected and added to the modeling result. Terracon reviewed background concentrations provided by the NMED and, of the choices provided, selected the background concentrations from Del Norte High School, due to the monitor's proximity to the facility. Background concentration selected are presented in Table 3 below:

Table 3
Background Concentration

	Pollutant	Averaging Period	Background Concentration (µg/m3)
Del Norte High School	PM_{10}	24-Hour	58.7
Del Norte High School	PM10	Annual	19.9
Del Norte High School	PM2.5	24-Hour	15.7
Del Norte High School	PM2.5	Annual	5.8
Del Norte High School	NO_2	1-Hr	81.2
Del Norte High School	NO_2	Annual	17.2

3.3 Outside Sources

If the Facility does not pass SIL modeling, NMED requires the Facility to include already permitted sources in the modeling for PSD increment and NAAQS. Terracon incorporated the already permitted other sources for PM10 and PM2.5 in New Mexico by downloading the

specific PM10 and PM2.5 source files from NMED Merge Master Database. The NMED Merge Master Database was downloaded by Terracon on September 11, 2023.

After incorporating the other sources from the NMED database and confirming with NMED, Terracon made changes to the following permitted sources:

- Moved Facility 1587 and 1587 associated sources from the Arcosa site to the actual site location. Location of the site in the Merge Master Database was originally inside the property boundary of the Arcosa facility. The Merge Master Database location and the updated location for each of the three sources for 1587 can be seen below:
  - 1587E1 was originally located at 341051.485, 3830751.363 and was moved to 340985.3, 3830466.
  - 1587A1 was originally located at 341011.442, 3831191.263 and was moved to 340995.8, 3830466.
  - 1587A4 was originally located at 341018.978, 3831198.284 and was moved to 341007.1, 3830466.
- Updated stack parameters and PM2.5 emission rates for 1598 according to the information provided by NMED. The original emission points for 1598 were twelve volume sources but the updated information provided by NMED reduced the number of sources to nine with four of those sources being horizontal points and the remaining five being point sources. The source specific changes can be seen below:
  - 1598A1 was originally a volume source with an emission rate of 1.5046 lbs/hr. It is now called 1598DC1 and is a horizontal point with an emission rate of 0.04911 lbs/hr.
  - 1598A2 was originally a volume source with an emission rate of 0.10 lbs/hr. It is now called 1598DC2 and is a horizontal point with an emission rate of 0.04911 lbs/hr.
  - 1598A3 was originally a volume source with an emission rate of 0.80 lbs/hr. It is now called 1598DC3 and is a horizontal point with an emission rate of 0.0425 lbs/hr.
  - 1598A4 was originally a volume source with an emission rate of 0.22 lbs/hr. It is now called 1598DC4 and is a point source with an emission rate of 0.4032 lbs/hr.
  - 1598A5 was originally a volume source with an emission rate of 0.10 lbs/hr. It is now called 1598DC5 and is a point source with an emission rate of 0.1155 lbs/hr.
  - 1598A6 was originally a volume source with an emission rate of 0.07 lbs/hr. It is now called 1598DC6 and is a point source with an emission rate of 0.03567 lbs/hr.

- 1598A7 was originally a volume source with an emission rate of 0.07 lbs/hr. It is now called 1598DC7 and is a horizontal point with an emission rate of 0.07717 lbs/hr.
- 1598A8 was originally a volume source with an emission rate of 0.15 lbs/hr. It is now called 1598DC8 and is a point source with an emission rate of 0.03567 lbs/hr.
- 1598A9 was originally a volume source with an emission rate of 1.90 lbs/hr. It is now called 1598DC9 and is a point source with an emission rate of 0.9644 lbs/hr.
- 1598A10 was originally a volume source with an emission rate of 0.10 lbs/hr. It is no longer included in the modelling.
- 1598A11 was originally a volume source with an emission rate of 0.10 lbs/hr. It is no longer included in the modelling.
- 1598R4 was originally a volume source with an emission rate of 3.57 lbs/hr. It is no longer included in the modelling.

3.4 Emission Points

Table 4 below summarizes the emission rates modeled for each pollutant and Table 5 below summarizes the parameters for each emission source. It should be noted that the methodology of the fugitive sources in the building has been adjusted since the modeling protocol. The facility will be adding ventilation to the building and will have all of the doors closed during operation. With this change, it is assumed that all fugitive emissions in each building will be evenly distributed between the fans and stacks added to the buildings.

Table 4
Modeling Emission Rates

Emission Source	PM10 (lbs/hr)	PM2.5 (lbs/hr)	NO2 (lbs/hr)	Lead (lbs/hr)
EPN-1	0.1531	0.0153	-	-
EPN-2a-f (each)	0.1232	0.0396	0.0150	-
EPN-3	0.812	-	-	-
EPN-4	0.0771	0.0053	0.0692	3.46E-7

Emission Source	PM10 (lbs/hr)	PM2.5 (lbs/hr)	NO2 (lbs/hr)	Lead (lbs/hr)
EPN-5	0.0771	0.0053	0.0692	3.46E-7
EPN-6	0.0771	0.0053	0.0692	3.46E-7
EPN-7	0.0771	0.0053	0.0692	3.46E-7
EPN-8	0.0771	0.0053	0.0692	3.46E-7
EPN-9	0.0771	0.0053	0.0692	3.46E-7
EPN-10	0.0771	0.0053	0.0692	3.46E-7
EPN-11	0.0771	0.0053	0.0692	3.46E-7
EPN-12	0.0771	0.0053	0.0692	3.46E-7
EPN-13	0.0771	0.0053	0.0692	3.46E-7
EPN-14	0.0771	0.0053	0.0692	3.46E-7
EPN-15	0.0771	0.0053	0.0692	3.46E-7
EPN-16	0.0557	0.0557	0.3608	-
EPN-17	0.1777	0.0178	-	-

Table 5
Source Parameters

Emission Point	Stack Height (ft)	Stack Temperature (F)	Stack Velocity (ft/sec)	Stack Diameter (ft)
EPN-1	55	68	71.82	2

Emission Point	Stack Height (ft)	Stack Temperature (F)	Stack Velocity (ft/sec)	Stack Diameter (ft)
EPN-2a-f (each)	55	68	47.16	1.5
EPN-3	40	68	47.75	2.6667
EPN-4	40	68	39.30	3
EPN-5	40	68	39.30	3
EPN-6	40	68	39.30	3
EPN-7	40	68	39.30	3
EPN-8	40	68	39.30	3
EPN-9	40	68	39.30	3
EPN-10	40	68	39.30	3
EPN-11	40	68	39.30	3
EPN-12	40	68	39.30	3
EPN-13	40	68	39.30	3
EPN-14	40	68	39.30	3
EPN-15	40	68	39.30	3
EPN-16	55	68	61.30	1.5
EPN-17	40	68	70.28	3.3333

3.5 Receptor Grids

Terracon constructed a property-line grid with 10-meter spacing. Beyond the property boundary, a Cartesian receptor grid was used for SIL modeling with receptors at 50-meter intervals that extend to 1,500 meters from the center of the property. The interval was extended to 100-meter intervals out to 2,500 meters, 500-meter spacing out to 5,500 meters, and 1,000-meter spacing out to 10,500 meters. The modeling results indicated decreasing concentrations within this grid, so additional grids were not necessary.

3.6 Terrain Elevations

Terracon downloaded National Elevation Dataset (NED) terrain elevations from the USGS website. The elevation data was then incorporated into the model by running the AERMAP program included with the BREEZE AERMOD software. AERMAP computed elevations of the emission sources, buildings, and receptors.

3.7 Meterological Data

Terracon downloaded three years of meteorological data (from 2019 through 2021) for Bernalillo County provided by the NMED.

4.0 Modeling Results

Table 6 includes the radius of impact modeling determination for each of the criteria pollutants modeled. As indicated below, the facility exceeded SIL modeling thresholds for PM10, PM2.5, and NO2. The monthly SIL modeling results for lead were below the lead SIL thresholds and therefore no additional lead modeling was performed. For NAAQS and PSD increment modeling, receptors beyond 1,600 meters from the center of the site were removed since the maximum range that a pollutant was above the SIL was less than 1,500 meters. See the figures in Appendix B identifying the results of the radius of impact modeling.

Table 6
Radius of Impact Modeling Determination

	Averaging Period	Type	Modeling Result ($\mu g/m^3$)	SIL Threshold ($\mu g/m^3$)
PM_{10}	24-hour	H1H	13.0	5

	Averaging Period	Type	Modeling Result ($\mu g/m^3$)	SIL Threshold ($\mu g/m^3$)
	Annual	High (2019) High (2020) High (2021)	3.1 2.8 2.7	1
$PM_{2.5}$	24-Hour	H1H	1.8	1.2
	Annual	High (2019) High (2020) High (2021)	0.6 0.5 0.5	0.2
NO_2	1-Hour	H1H	37.4	7.52
	Annual	High (2019) High (2020) High (2021)	1.7 1.5 1.5	1
Lead	Quarterly	Monthly High	0.00001	0.03

The annual and 1-hour modeled NO_2 SIL concentrations with the addition of NO2 background concentrations were below the associated PSD increment and NMAAQS thresholds. The Annual and 1-Hour modeled NO_2 SIL concentrations, background concentrations, and PSD increment and NAAQS thresholds can be seen in Table 7.

Table 7
NO2 Modeling Results

	NO_2	
Averaging Period	1-Hour	Annual
Type	H1H	High (2019) High (2020) High (2021)
Modeling Result (µg/m3)	37.4	1.7 1.5

		1.5
Background Concentration (µg/m3)	81.2	17.2
Modeled Result plus Background Concentration (µg/m3)	116.8	18.9 18.7 18.7
PSD Increment (µg/m3)	-	25
NMAAQS/NAAQS Threshold (µg/m3)	188.03	94.02

The modeling results for PM10 and PM2.5 are included in Table 8 and Table 9.

Table 8
PM10 and PM2.5 PSD Increment Total Results

	PM_{10}		$PM_{2.5}$	
Averaging Period	24-Hour	Annual	24-Hour	Annual
Type	H1H	High (2019) High (2020) High (2021)	H1H	High (2019) High (2020) High (2021)
Highest Arcosa Modeling Result (µg/m3)	13.9	3.1 2.8 2.7	1.8	0.6 0.5 0.5
Highest Arcosa and Surrounding Sources Modeling Result (µg/m3)	1040.4	241.5	19.1	5.6
PSD Increment (µg/m3)	30	17	9	4

Table 9
PM10 and PM2.5 NAAQS Total Results

	PM_{10}	$PM_{2.5}$	
Averaging Period	24-Hour	24-Hour	Annual

	PM_{10}	$PM_{2.5}$	
Type	H1H	H1H	High (2019) High (2020) High (2021)
Background Concentration ($\mu g/m^3$)	58.7	15.7	5.8
Highest Arcosa Modeling Result ($\mu g/m^3$)	13.9	1.8	0.6 0.5 0.5
Highest Arcosa Modeled Result plus Background Concentration ($\mu g/m^3$)	72.6	17.5	6.4 6.3 6.3
Highest Arcosa and Surrounding Sources Modeling Result ($\mu g/m^3$)	1,041.6	1,041.5	155.8
Highest Arcosa and Surrounding Sources with Background Concentration Modeling Result ($\mu g/m^3$)	1,100.3	1,057.2	161.6
NMAAQS/NAAQS Threshold ($\mu g/m^3$)	150	35	12

It should be noted that the PM10 and PM2.5 modeling included the emissions from nearby sources. Since the cumulative modeling exceeded the NAAQS and PSD increment, a source contribution analysis was performed.

For the NAAQS modeling runs, a threshold file was setup to identify the receptors that exceeded the NAAQS minus background concentration. In addition, the threshold file also identified the receptors where the Arcosa sources exceeded the SIL. The resulting file was analyzed to determine if there were any instances where both thresholds were exceeded by a single receptor at the same time period. For instance, the maximum 24-hour value for PM-10 was 1,040.4 microg/m^3 at receptor (340982.1, 3830452.1) on January 31, 2019 (so it exceeded the NAAQS minus background concentration). However, receptor (340982.1, 3830452.1) on January 31, 2019 did not exceed the SIL

threshold for Arcosa-only sources. A similar analysis was performed for each day that exceeded NAAQS minus background concentrations for both PM10 and PM2.5. There were no time periods where a receptor exceeded both the NAAQS minus background thresholds for the combined sources and the SIL threshold for Arcosa-only sources.

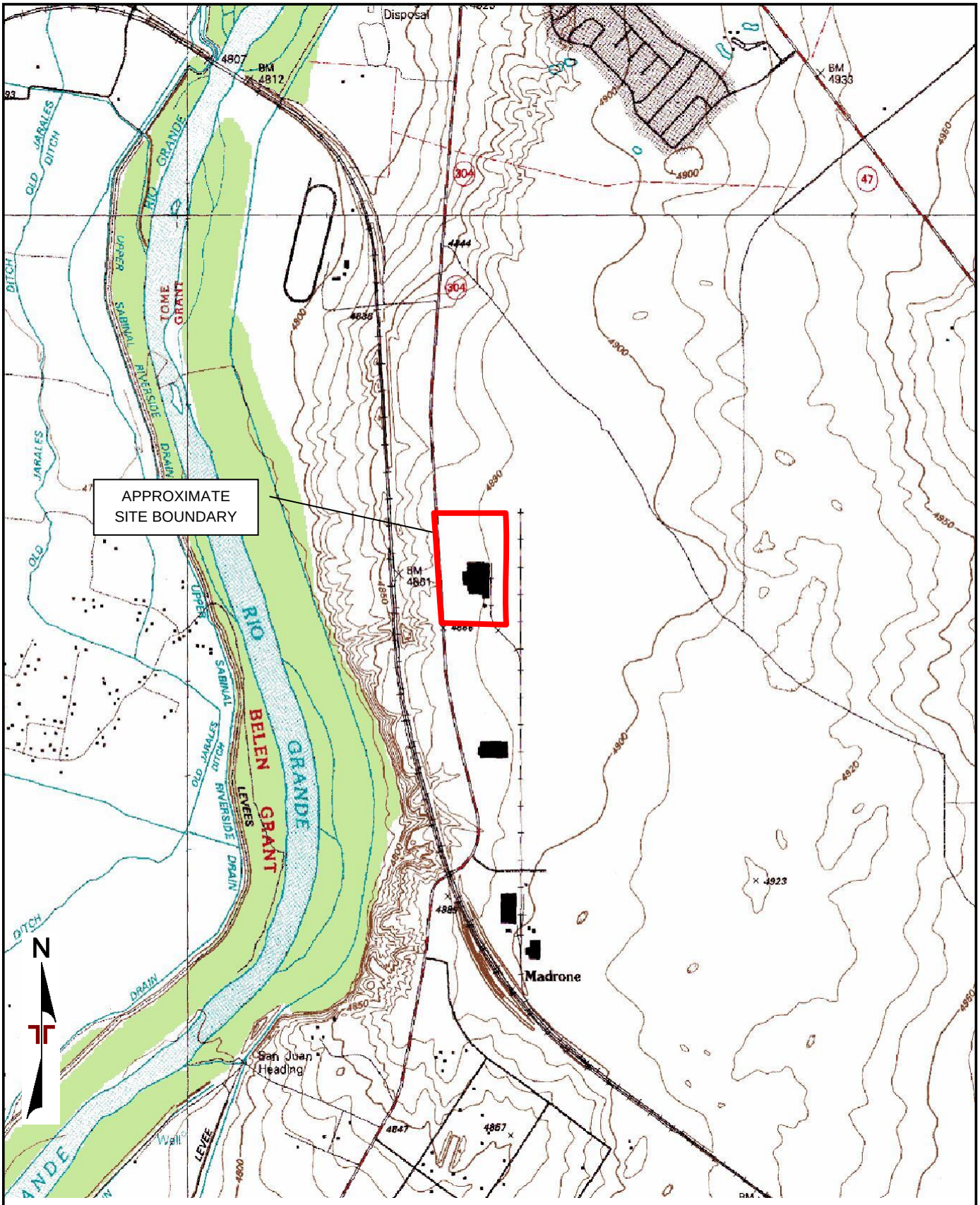
A similar analysis was performed for the PSD increment modeling runs. A threshold file was setup to identify the receptors that exceeded the PSD increment concentration. In addition, the threshold file also identified the receptors where the Arcosa sources exceeded the SIL. The resulting file was analyzed to determine if there were any instances where both thresholds were exceeded by a single receptor at the same time period. There were no time periods where a receptor exceeded both the PSD increment concentration for the combined sources and the SIL threshold for Arcosa-only sources.

The spreadsheet where the above analysis was performed and the PSD increment and NAAQS modeling files are included in the electronic submittal.

5.0 Findings and Conclusion

The Facility modeled PM10, PM2.5, NO2, and Lead for ROI (SIL) concentrations. Lead modeling results indicated values below the SIL thresholds. The NO2 SIL modeling results were added to the background concentration to show that the PSD increment and NMAAQS thresholds are not exceeded. PM10 and PM2.5 required a culpability analysis to determine that there were no receptors that exceeded both the NAAQS/PSD increment for the combined sources and the SIL for the Arcosa-only sources. As such, all modeling requirements have been satisfied.

Appendix A
Site Exhibits



TOPOGRAPHIC MAP IMAGE COURTESY OF THE U.S. GEOLOGICAL SURVEY
QUADRANGLES INCLUDE: BELEN, NM (1/1/1991), TOME, NM (1/1/1991), VEGUITA, NM (1/1/1991) and TURN, NM (1/1/1991).

Project Manager: Chris Larson	Project No. MP237101	Terracon	TOPOGRAPHIC MAP	Exhibit
Drawn by: Matt Gregoire	Scale: 1"=2,000'	13400 15th Ave N Plymouth, MN 55441-4532	Arcosa - Belen, NM Facility Air Permitting 1951 Highway 304 Belen, NM	A1
Checked by: Josh Kurtz	File Name: Arcosa			
Approved by: Josh Kurtz	Date: Sept 2023			

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

AERIAL PHOTOGRAPHY PROVIDED BY MICROSOFT BING MAPS

Project Manager:	Chris Larson
Drawn by:	Matt Gregoire
Checked by:	Josh Kurtz
Approved by:	Josh Kurtz

Project No.	MP237101
Scale:	AS SHOWN
File Name:	Arcosa
Date:	Sept 2023

Terracon
13400 15th Ave N
Plymouth, MN 55441-4532

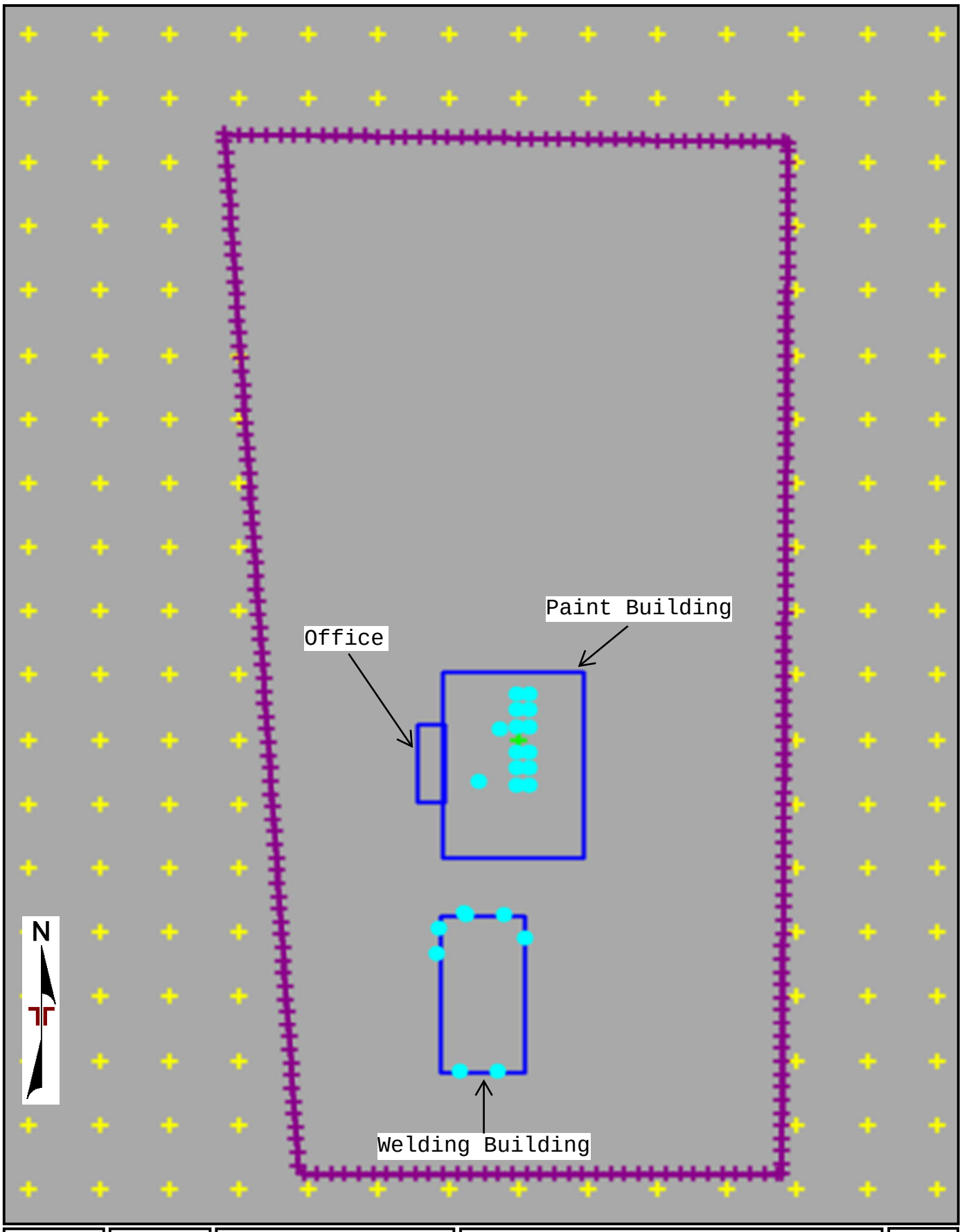
SITE DIAGRAM

Arcosa - Belen, NM Facility Air Permitting

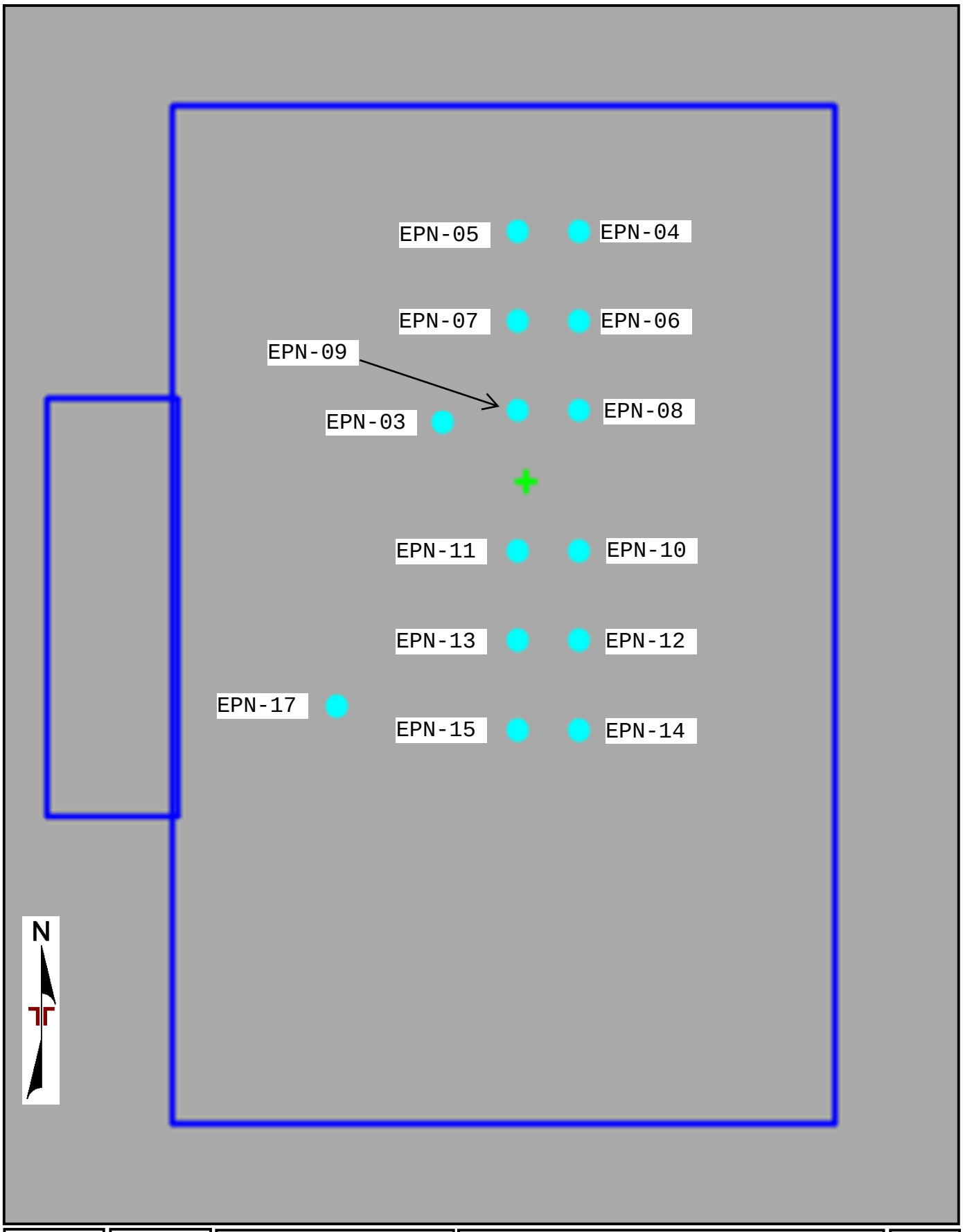
1951 Highway 304
Belen, NM

Exhibit

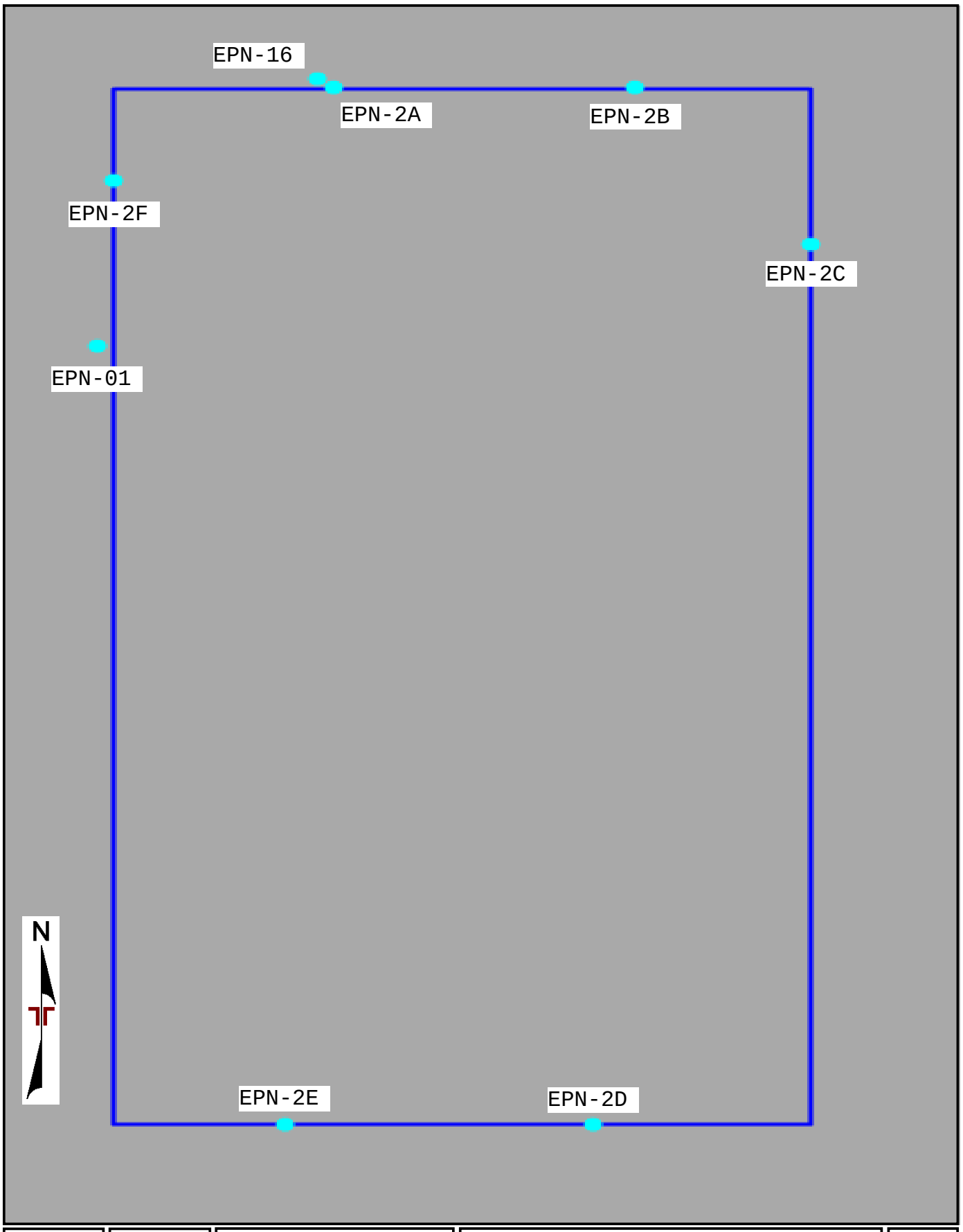
A2



Project Manager: Chris Larson Drawn by: Matt Gregoire Checked by: Josh Kurtz Approved by: Josh Kurtz	Project No. MP237101 Scale: 1"=2,000' File Name: Arcosa Date: Sept 2023	Terracon 13400 15th Ave N Plymouth, MN 55441-4532	Site Buildings Arcosa - Belen, NM Facility Air Permitting 1951 Highway 304 Belen, NM	Exhibit A3

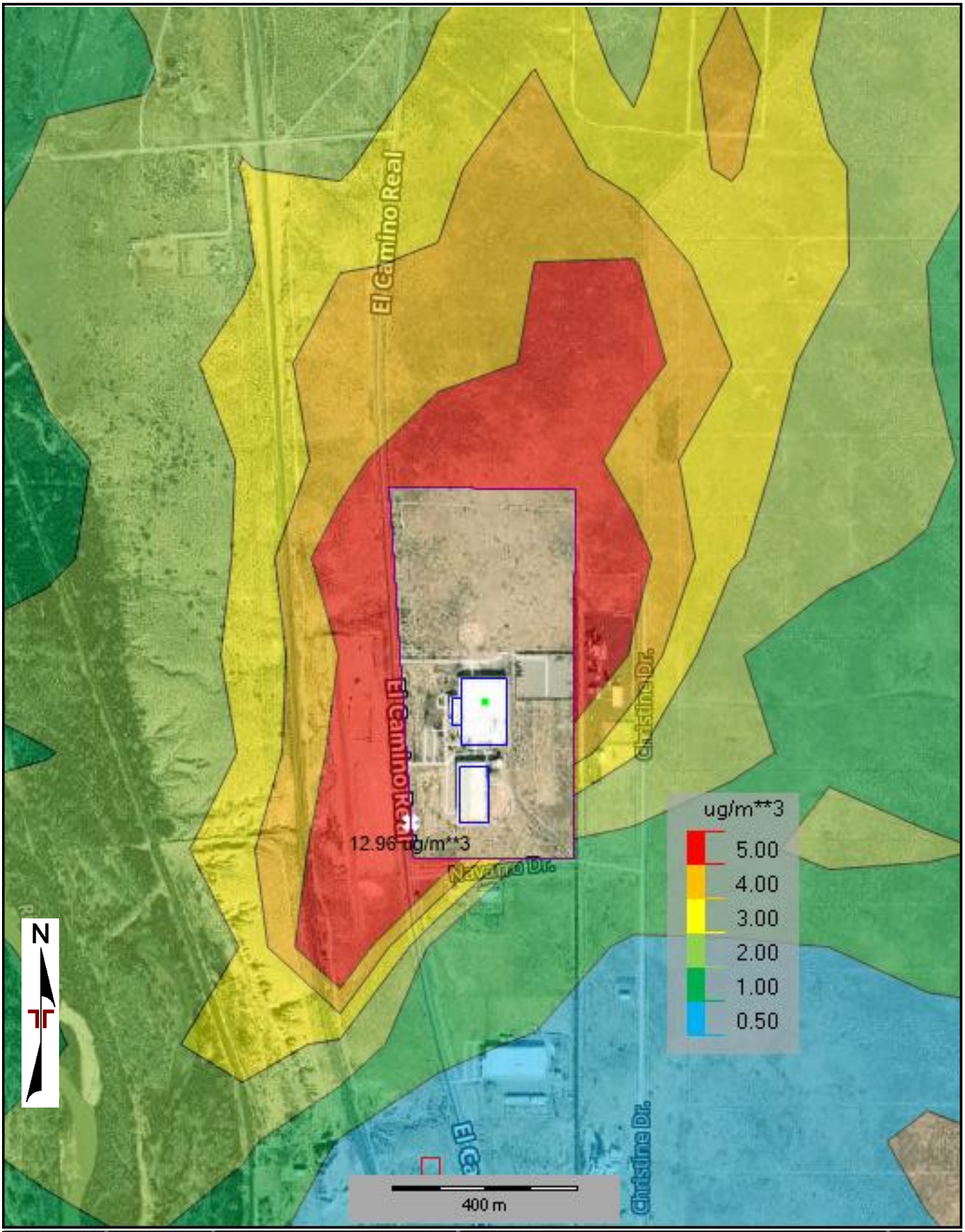


Project Manager: Chris Larson Drawn by: Matt Gregoire Checked by: Josh Kurtz Approved by: Josh Kurtz	Project No. MP237101 Scale: AS SHOWN File Name: Arcosa Date: Sept 2023	Terracon 13400 15th Ave N Plymouth, MN 55441-4532	Paint Building Sources Arcosa - Belen, NM Facility Air Permitting 1951 Highway 304 Belen, NM	Exhibit A4

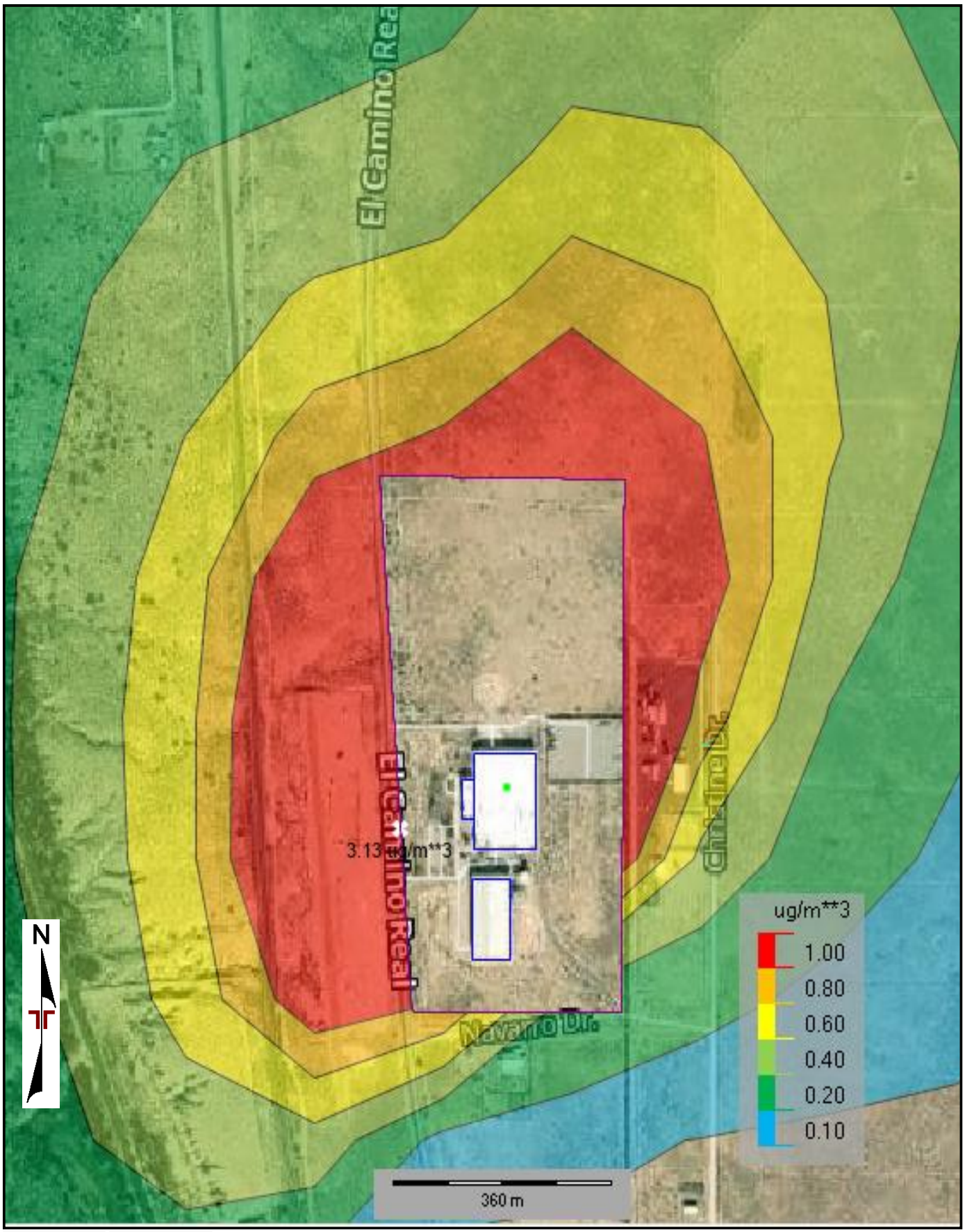


Project Manager: Chris Larson Drawn by: Matt Gregoire Checked by: Josh Kurtz Approved by: Josh Kurtz	Project No. MP237101 Scale: 1"=2,000' File Name: Arcosa Date: Sept 2023	Terracon 13400 15th Ave N Plymouth, MN 55441-4532	Weld Building Arcosa - Belen, NM Facility Air Permitting 1951 Highway 304 Belen, NM	Exhibit A5

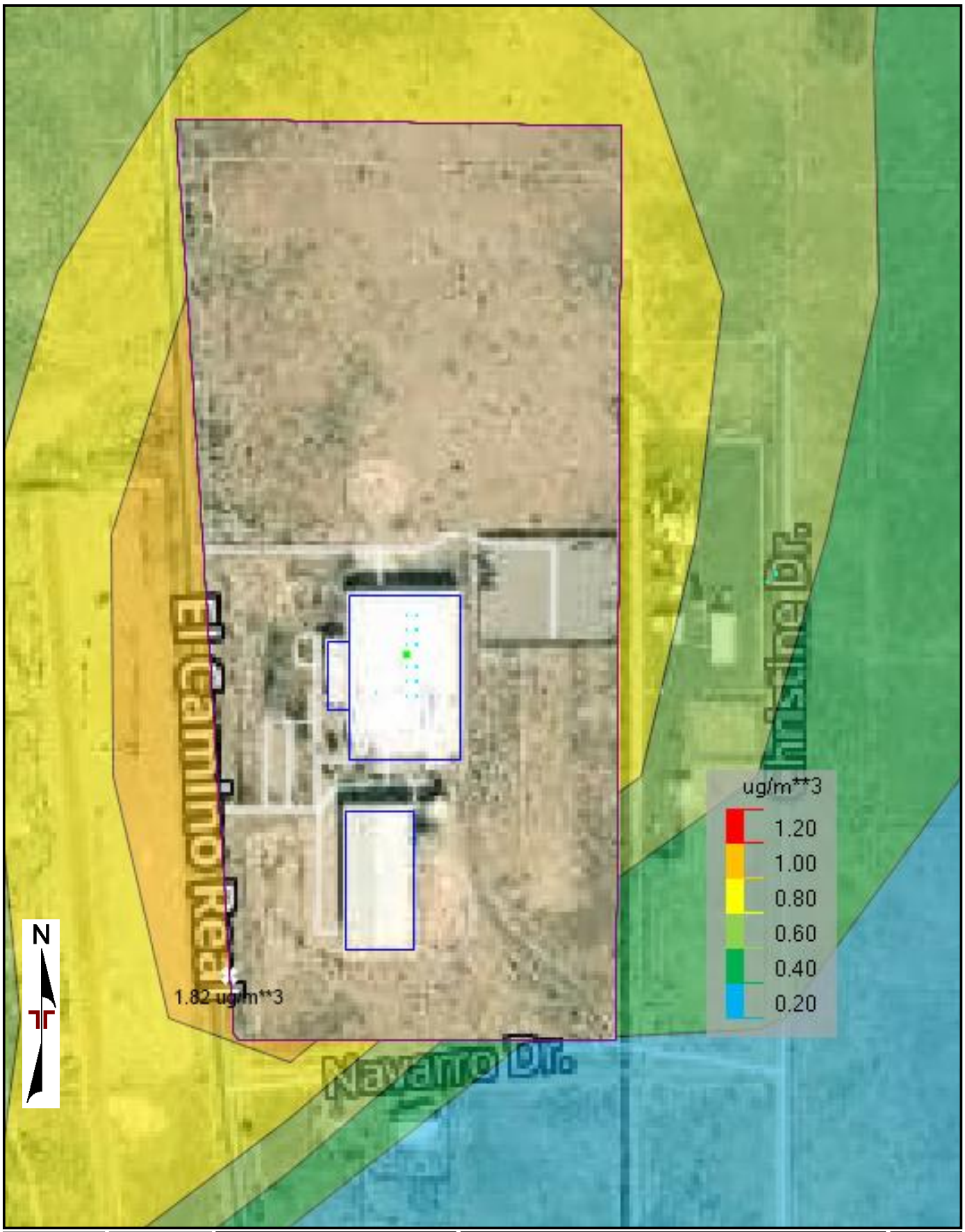
Appendix B
SIL Modeling - Threshold Maps



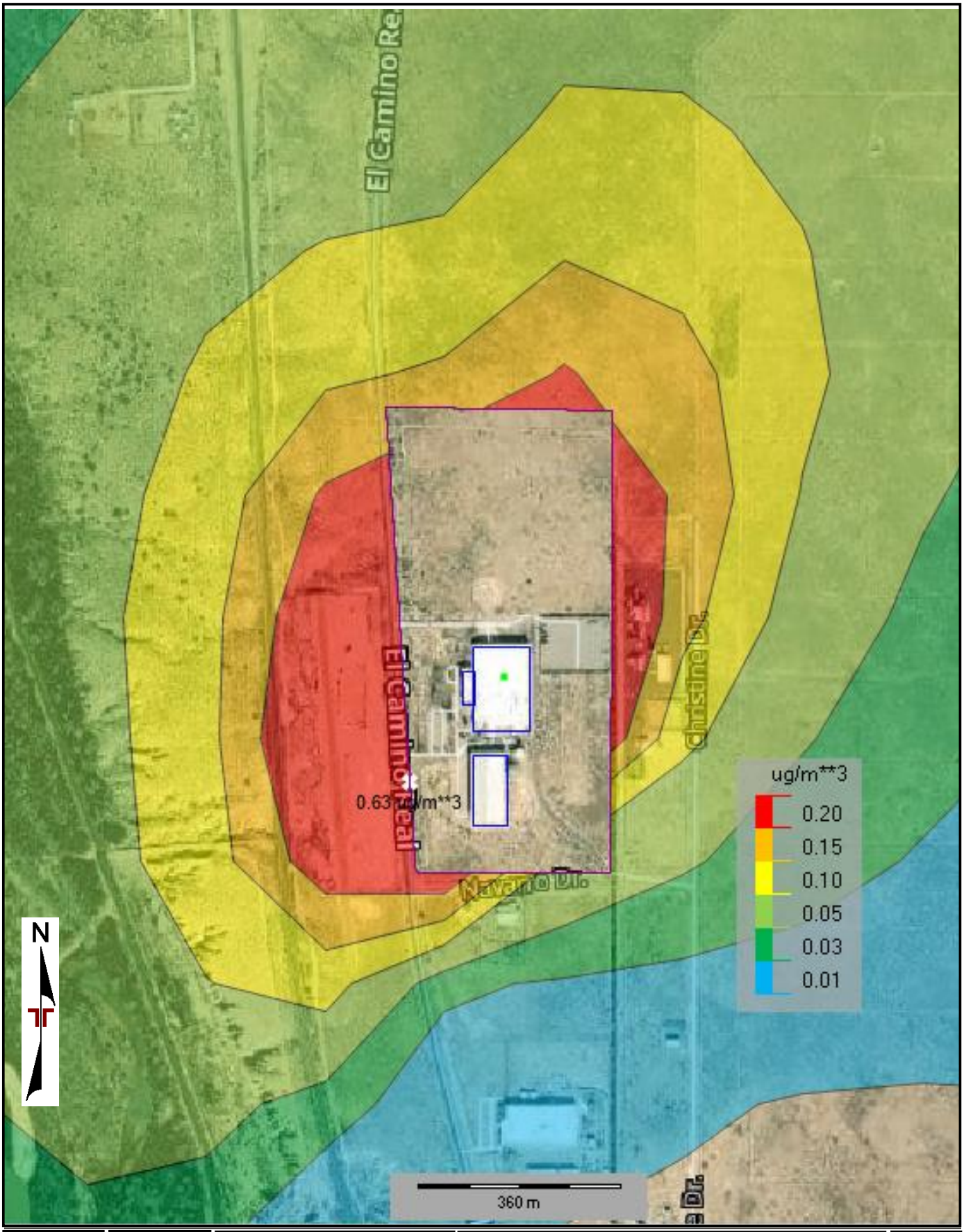
Project Manager: Chris Larson Drawn by: Matt Gregoire Checked by: Josh Kurtz Approved by: Josh Kurtz	Project No. MP237101 Scale: 1"=2,000' File Name: Arcosa Date: Sept 2023	Terracon 13400 15th Ave N Plymouth, MN 55441-4532	SIL Threshold Map – PM_{10} 24 Hour Arcosa - Belen, NM Facility Air Permitting **1951 Highway 304** **Belen, NM**	Exhibit B1



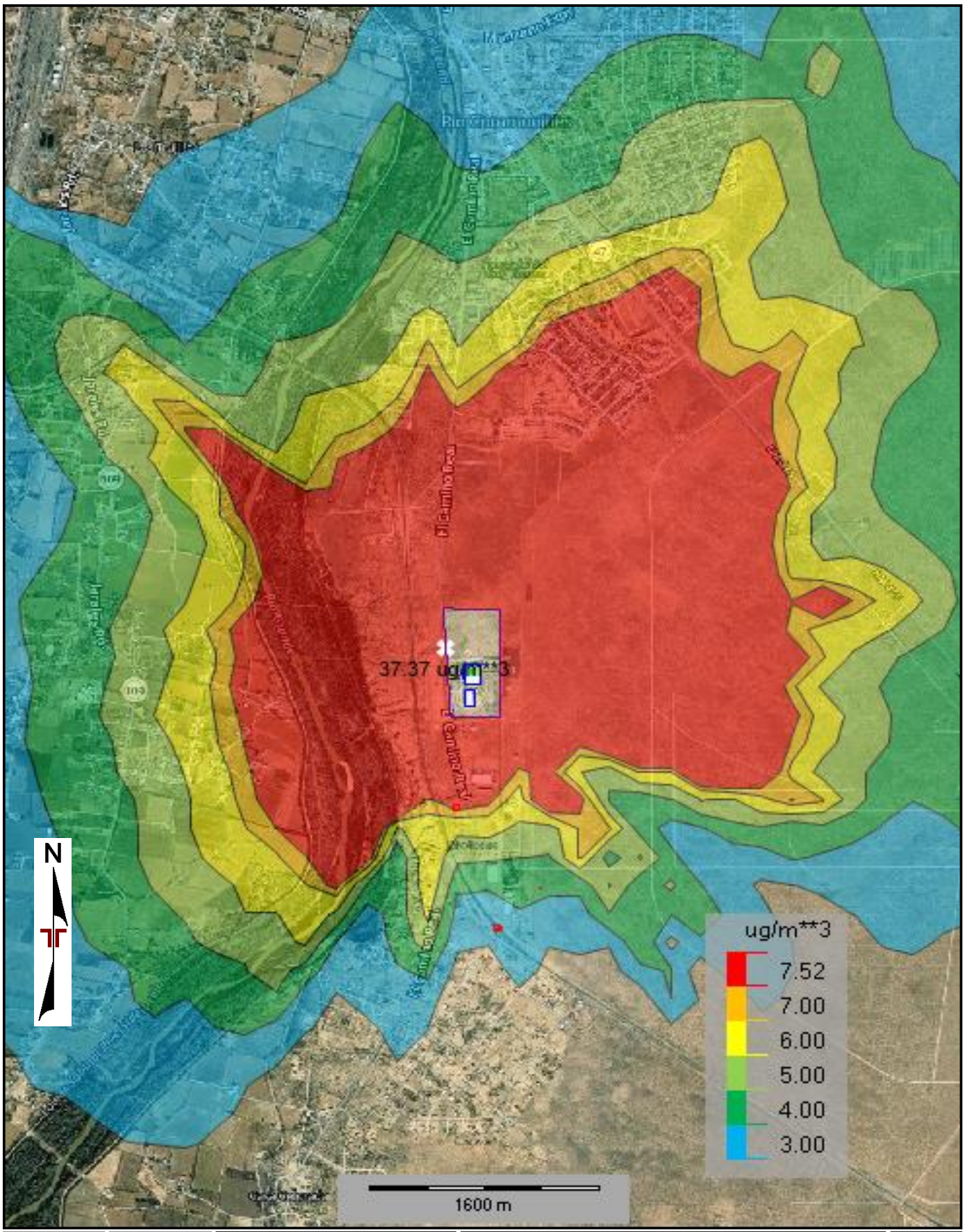
Project Manager: Chris Larson Drawn by: Matt Gregoire Checked by: Josh Kurtz Approved by: Josh Kurtz	Project No. MP237101 Scale: AS SHOWN File Name: Arcosa Date: Sept 2023	Terracon 13400 15th Ave N Plymouth, MN 55441-4532	SIL Threshold Map – PM_{10} Annual Arcosa - Belen, NM Facility Air Permitting **1951 Highway 304** **Belen, NM**	Exhibit B2



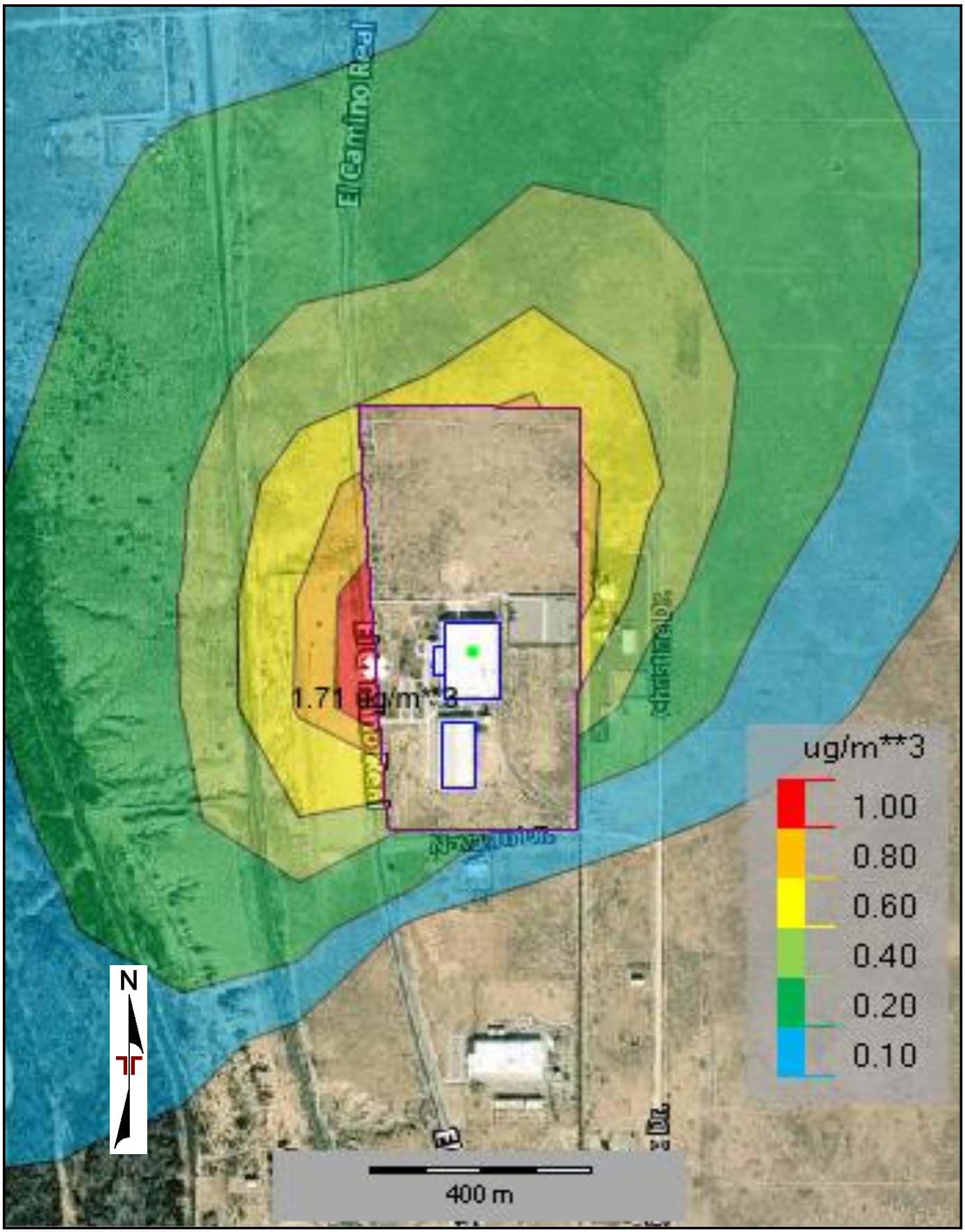
Project Manager: Chris Larson Drawn by: Matt Gregoire Checked by: Josh Kurtz Approved by: Josh Kurtz	Project No. MP237101 Scale: 1"=2,000' File Name: Arcosa Date: Sept 2023	Terracon 13400 15th Ave N Plymouth, MN 55441-4532	SIL Threshold Map – $PM_{2.5}$ 24 Hour Arcosa - Belen, NM Facility Air Permitting 1951 Highway 304 Belen, NM	Exhibit B3



Project Manager: Chris Larson Drawn by: Matt Gregoire Checked by: Josh Kurtz Approved by: Josh Kurtz	Project No. MP237101 Scale: AS SHOWN File Name: Arcosa Date: Sept 2023	Terracon 13400 15th Ave N Plymouth, MN 55441-4532	SIL Threshold Map – $PM_{2.5}$ Annual Arcosa - Belen, NM Facility Air Permitting **1951 Highway 304** **Belen, NM**	Exhibit B4



Project Manager: Chris Larson Drawn by: Matt Gregoire Checked by: Josh Kurtz Approved by: Josh Kurtz	Project No. MP237101 Scale: 1"=2,000' File Name: Arcosa Date: Sept 2023	Terracon 13400 15th Ave N Plymouth, MN 55441-4532	SIL Threshold Map – NO_2 1 Hour Arcosa - Belen, NM Facility Air Permitting 1951 Highway 304 Belen, NM	Exhibit B5



Project Manager: Chris Larson Drawn by: Matt Gregoire Checked by: Josh Kurtz Approved by: Josh Kurtz	Project No. MP237101 Scale: AS SHOWN File Name: Arcosa Date: Sept 2023	Terracon 13400 15th Ave N Plymouth, MN 55441-4532	SIL Threshold Map – NO_2 Annual Arcosa - Belen, NM Facility Air Permitting 1951 Highway 304 Belen, NM	Exhibit B6

Section 17

Compliance Test History

(Submitting under 20.2.70, 20.2.72, 20.2.74 NMAC)

To show compliance with existing NSR permits conditions, you must submit a compliance test history. The table below provides an example.

The source does not have any existing NSR permit conditions. Therefore this section is not applicable.

Compliance Test History Table

Unit No.	Test Description	Test Date
N/A	N/A	N/A

Section 20

Other Relevant Information

Other relevant information. Use this attachment to clarify any part in the application that you think needs explaining. Reference the section, table, column, and/or field. Include any additional text, tables, calculations or clarifying information.

Additionally, the applicant may propose specific permit language for AQB consideration. In the case of a revision to an existing permit, the applicant should provide the old language and the new language in track changes format to highlight the proposed changes. If proposing language for a new facility or language for a new unit, submit the proposed operating condition(s), along with the associated monitoring, recordkeeping, and reporting conditions. In either case, please limit the proposed language to the affected portion of the permit.

To save paper and to standardize the application format, delete this sentence, and begin your submittal for this attachment on this page.

No Additional Information

Section 22: Certification

Company Name: Arcosa Wind Towers, Inc.

I, Dylan Ellsworth, hereby certify that the information and data submitted in this application are true and as accurate as possible, to the best of my knowledge and professional expertise and experience.

Signed this 21st day of September, 2023, upon my oath or affirmation, before a notary of the State of Texas.

*Signature — Date: 9/21/23

Dylan Ellsworth
Printed Name

VP of Growth
Title

Scribed and sworn before me on this 21st day of September, 2023

My authorization as a notary of the State of Texas expires on the 5th day of October, 2023.

Notary's Signature — Date: 09/21/23

Monica Villegas
Notary's Printed Name

*For Title V applications, the signature must be of the Responsible Official as defined in 20.2.70.7.AE NMAC.

MONICA VILLEGAS
Notary Public, State of Texas
Comm. Expires 10-05-2023
Notary ID 11123269