



Fire Protection and Prevention

- *1926 Subpart F*

Objectives

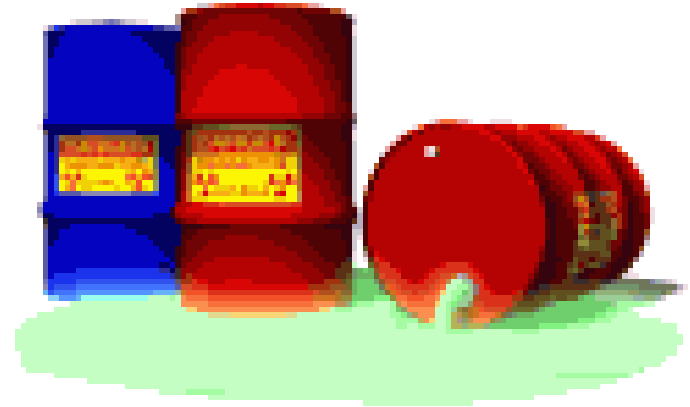
To understand the following:

- Employer responsibilities for the development of a fire protection program
- Fire classifications
- Fire extinguishers and small hose lines
- Firefighting equipment



Objectives

- Ignition hazards
- Temporary buildings
- Open yard storage of combustible materials
- Indoor storage of materials



General Requirements

1926.150(a)(1)

- **General requirements**

- The employer shall be responsible for the development of a fire protection program to be followed throughout all phases of the construction and demolition work, *and*
 - The employer shall provide for the firefighting equipment as specified in this subpart.
 - » As fire hazards occur, there shall be no delay in providing the necessary equipment.
-

Types of Fires

- **Fires are classified** by the type **FUEL** they burn.
- 4 Types:
 - **A:** Normal combustibles
 - **B:** Flammable liquids
 - **C:** Electrical fires
 - **D:** Combustible metals





Fire Classifications

- **Class A**
 - Normal combustibles
 - » Wood
 - » Paper
 - » Plastic
 - » Rags



Fire Classifications

- **Class B**

- Flammable liquids

- » Gasoline

- » Oil

- » Grease

- » Paint



Fire Classifications

- **Class C**
 - Electrical fires
 - » Electrical junctions
 - » Motors
 - » Generators
 - » Heaters



Fire Classifications

- **Class D**

- Metals

- » Potassium
 - » Sodium
 - » Aluminum
 - » Magnesium



Fire Protection

1926.150(c)(1)(i)

- A fire extinguisher, rated not less than 2A, shall be provided for each 3,000 square feet of the protected building area, or major fraction thereof.
- Travel distance from any point of the protected area to the nearest fire extinguisher shall not exceed 100 feet.



Fire Protection

1926.150(c)(1)(ii)

- One 55-gallon open drum of water with two fire pails may be substituted for a fire extinguisher having a 2A rating.



Fire Protection

1926.150(c)(1)(iii)

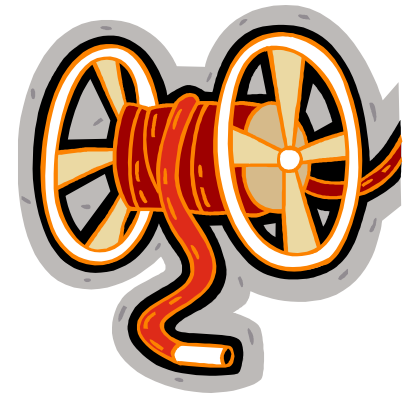
- A ½-inch diameter garden-type hose line, not to exceed 100 feet in length and equipped with a nozzle, may be substituted for a 2A-rated fire extinguisher, providing it is capable of discharging a minimum of 5 gallons per minute with a minimum hose stream range of 30 feet horizontally.



Fire Protection

1926.150(c)(1)(iii)

- The garden-type hose lines shall be mounted on conventional racks or reels.
- The number and location of hose racks or reels shall be such that at least one hose stream can be applied to all points in the area.



Fire Protection

1926.150(c)(1)(iv)-(v)

- One or more fire extinguishers, rated not less than 2A, shall be provided on each floor.
- In multistory buildings, at least one fire extinguisher shall be located adjacent to stairway.
- Water devices used shall be protected from freezing.



Fire Protection

1926.150(c)(1)(vi)

- A fire extinguisher, rated not less than 10B, shall be provided within 50 feet of wherever more than 5 gallons of flammable or combustible liquids or 5 pounds of flammable gas are being used on the jobsite.
- This requirement does not apply to the integral fuel tanks of motor vehicles.



Fire Protection

1926.150(c)(1)(vii)

- Carbon tetrachloride and other toxic vaporizing liquid fire extinguishers are prohibited.



Fire Protection

1926.150(c)(1)(viii)

- Portable fire extinguishers shall be inspected periodically and maintained in accordance with Maintenance and Use of Portable Fire Extinguishers, NFPA 10.



Fire Protection

1926.150(c)(1)(viii)





Fire Protection

1926.150(c)(1)(x)

- Type of fire extinguishers are classified by the type fires on which they may be used.
 - This is found in Table F-1.

Table F-1

Heating Appliances	Minimum Clearance (Inches)		
	Sides	Rear	Chimney Connector
Room heater, circulating type	12	12	18
Room heater, radiant type	36	36	18

Types of Fire Extinguishers

1926.150(c)(1)

- **Class A**

- Used on wood, paper, plastic



- **Class B**

- Used on flammable liquids



Types of Fire Extinguishers

1926.150(c)(1)

- **Class C**

- Used on electrical fires



- **Class D**

- Used on metal fires



Use of Fire Extinguishers

1926.150

- Using a fire extinguisher
 - Type (classification of fire)
 - Correct extinguisher



Use of Fire Extinguishers

1926.150

- Use the **PASS** system



Use of Fire Extinguishers

1926.150

PASS

- Pull
- Aim
- Squeeze
- Sweep

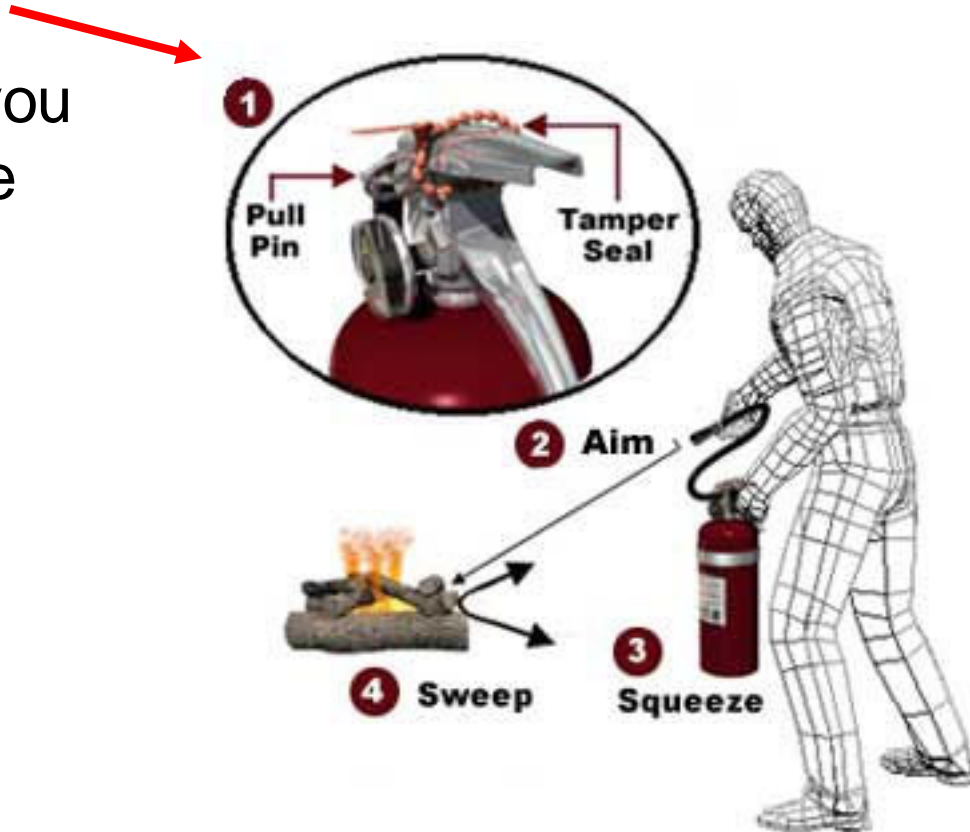


Use of Fire Extinguishers

1926.150

- **Pull the pin**

- This will allow you to discharge the extinguisher.



Use of Fire Extinguishers

1926.150

- **Aim**

- Aim at the base of the fire.
- If you aim at the flames, the extinguishing agent will fly right through and do no good.

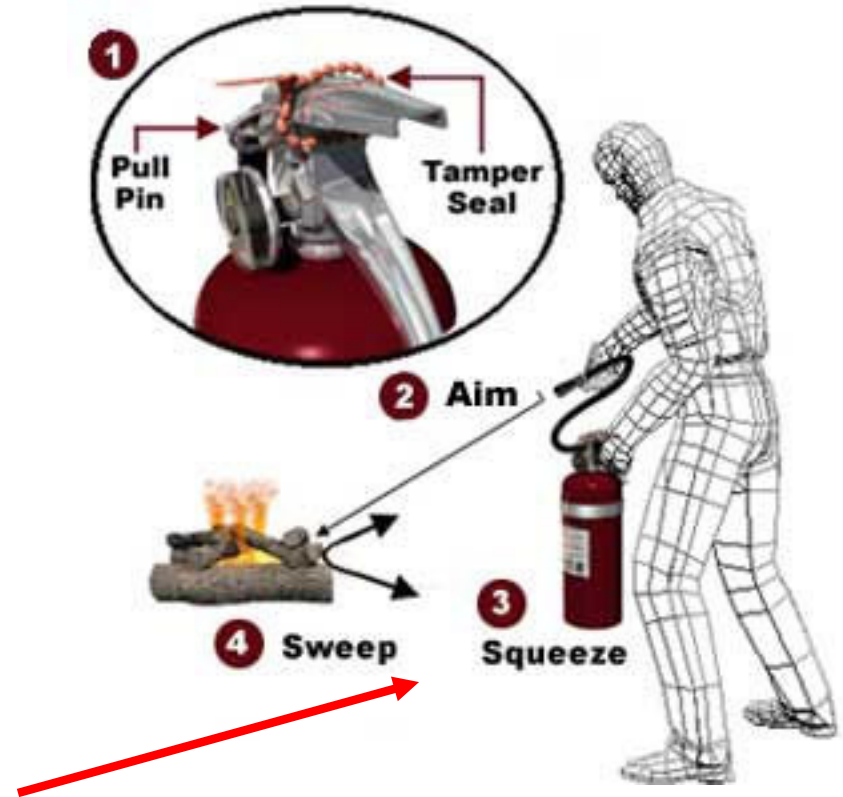


Use of Fire Extinguishers

1926.150

● Squeeze

- Squeeze the top handle or lever.
- This depresses a button that releases the pressurized extinguishing agent in the extinguisher.

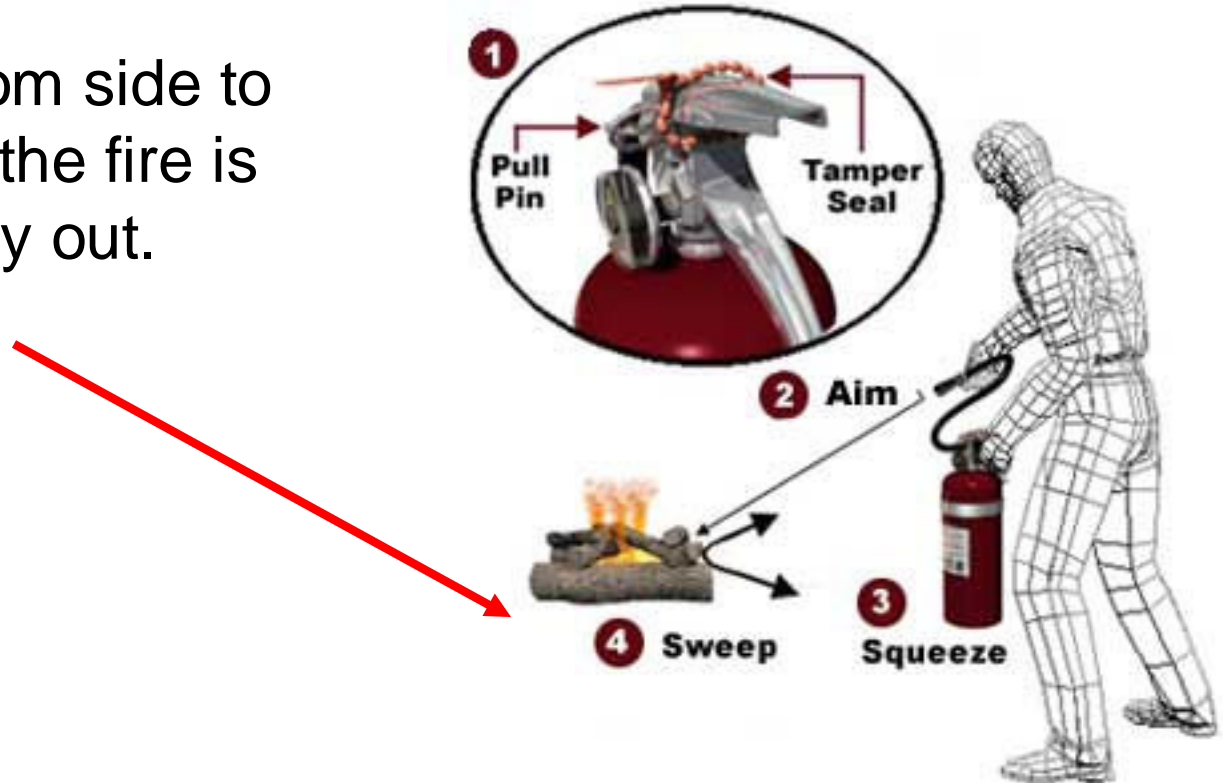


Use of Fire Extinguishers

1926.150

- **Sweep**

- Sweep from side to side until the fire is completely out.



Use of Fire Extinguishers

1926.150

PASS

- Pull
- Aim
- Squeeze
- Sweep



Use of Fire Extinguishers

1926.150



Equipment

1926.150(c)(2)(i)

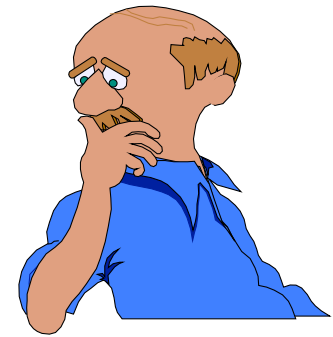
- Fire hose and connections
 - One hundred feet, or less, of 1½ -inch hose, with a nozzle capable of discharging water at 25 gallons or more per minute, may be substituted for a fire extinguisher rated not more than 2A in the designated area provided that the hose line can reach all points in the area.



Equipment

1926.150(c)(2)(ii)-(iii)

- Fire hose and connections
 - If fire hose connections are not compatible with local firefighting equipment, the contractor shall provide adapters, or equivalent, to permit connections.
 - During demolition involving combustible materials, charged hose lines, supplied by hydrants, water tank trucks with pumps, or equivalent, shall be made available.



Equipment

1926.150(d)(1)(i)

- Fixed firefighting equipment
 - Sprinkler protection
 - » If the facility being constructed includes the installation of automatic sprinkler protection, the installation shall closely follow the construction and be placed in service as soon as applicable laws permit following completion of each story.

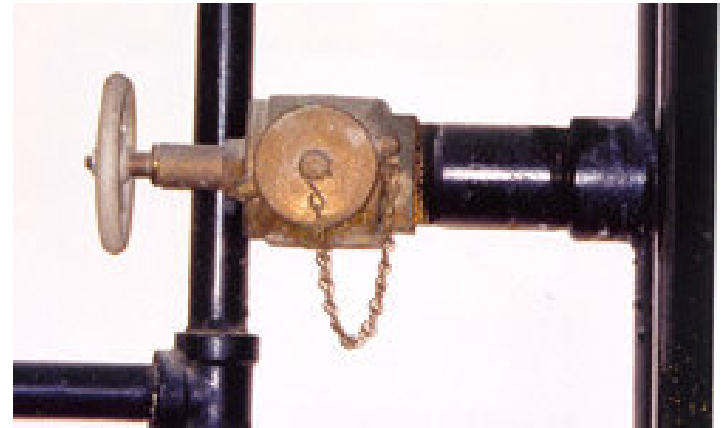


- Fixed firefighting equipment
 - Sprinkler protection
 - » During demolition or alterations, existing automatic sprinkler installations shall be retained in service as long as reasonable. The operation of sprinkler control valves shall be permitted only by properly authorized persons.
 - » Modification of sprinkler systems to permit alterations or additional demolition should be expedited so that the automatic protection may be returned to service as quickly as possible. Sprinkler control valves shall be checked daily at close of work to ascertain that the protection is in service.
-

Equipment

1926.150(d)(2)

- Fixed firefighting equipment
 - Standpipes
 - » In all structures in which standpipes are required, or where standpipes exist in structures being altered, they shall be brought up as soon as applicable laws permit, and shall be maintained as construction progresses.



Equipment

1926.150(d)(2)

- Fixed firefighting equipment
 - Standpipes
 - » The standpipes shall be provided with Siamese fire department connections on the outside of the structure, at the street level, which shall be conspicuously marked.
 - » There shall be at least one standard hose outlet at each floor.

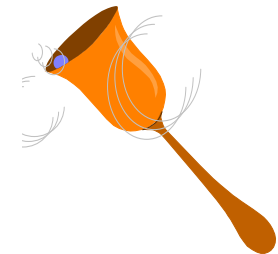




Fire Alarm Devices

1926.150(e)(1)-(2)

- Alarm system
 - e.g., telephone system, siren, etc., shall be established by the employer whereby employees on the site and the local fire department can be alerted for an emergency.
 - The alarm code and reporting instructions shall be conspicuously posted at phones and at employee entrances.



Fire Alarm Devices

1926.150(e)(1)

- Audible alarms

- Bells
- Horns
- Sirens



- Workplace announcement system

- Speakers used to play a live or recorded voice message



- Fire cutoffs
 - Fire walls and exit stairways, required for the completed buildings, shall be given construction priority.
 - Fire doors, with automatic closing devices, shall be hung on openings as soon as practicable.
 - Fire cutoffs shall be retained in buildings undergoing alterations or demolition until operations necessitate their removal.
-

Fire Protection

1926.151(a)(1)

- Ignition hazards
 - Electrical wiring and equipment for light, heat, or power purposes shall be installed in compliance with the requirements of Subpart K of this part.



Fire Protection

1926.151(a)(2)

- Ignition hazards
 - Internal combustion engine powered equipment shall be so located that the exhausts are well away from combustible materials.
 - When the exhausts are piped to outside the building under construction, a clearance of at least 6 inches shall be maintained between such piping and combustible material.



Fire Protection

1926.151(a)(3)

- Ignition hazards
 - Smoking shall be prohibited at or in the vicinity of operations which constitute a fire hazard, and shall be conspicuously posted: “No Smoking or Open Flame.”



Fire Protection

1926.151(b)(1)

- Temporary buildings
 - No temporary building shall be erected where it will adversely affect any means of exit.



Fire Protection

1926.151(b)(2)

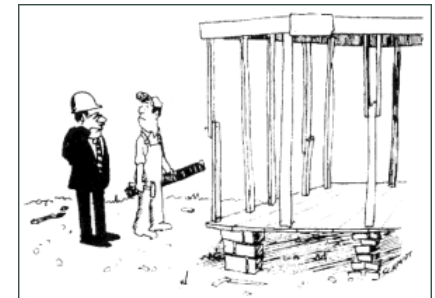
- Temporary buildings
 - Temporary buildings, when located within another building or structure, shall be of either noncombustible construction or of combustible construction having a fire resistance of not less than 1 hour.



Fire Protection

1926.151(b)(3)

- Temporary buildings
 - Temporary buildings, located other than inside another building and not used for the storage, handling, or use of flammable or combustible liquids, flammable gases, explosives, or blasting agents, or similar hazardous occupancies, shall be **located at a distance of not less than 10 feet from another building or structure.**



Fire Protection

1926.151(b)(3)

- Temporary buildings
 - Groups of temporary buildings, not exceeding 2,000 square feet in aggregate, shall, for the purposes of this part, be considered a single temporary building.



Fire Protection

1926.151(c)(1)-(2)

- Open yard storage
 - Combustible materials shall be piled with due regard to the stability of piles and in no case higher than 20 feet.
 - Driveways between and around combustible storage piles shall be at least 15 feet wide and maintained free from accumulation of rubbish, equipment, or other articles or materials.



- Open yard storage
 - The entire storage site shall be kept free from accumulation of unnecessary combustible materials.
 - Weeds and grass shall be kept down and a regular procedure provided for the periodic cleanup of the entire area.
 - When there is a danger of an underground fire, that land shall not be used for combustible or flammable storage.
-

Fire Protection

1926.151(c)(5)

- Open yard storage
 - Method of piling shall be solid wherever possible and in orderly and regular piles.
 - No combustible material shall be stored outdoors within 10 feet of a building or structure.



Fire Protection

1926.151(c)(6)

- Open yard storage
 - Portable fire extinguishing equipment, suitable for the fire hazard involved, shall be provided at convenient, conspicuously accessible locations in the yard area.
 - Portable fire extinguishers, rated not less than 2A, shall be placed so that maximum travel distance to the nearest unit shall not exceed 100 feet.



Fire Protection

1926.151(d)(1)-(3)

- Indoor storage
 - Storage shall not obstruct, or adversely affect, means of exit.
 - All materials shall be stored, handled, and piled with due regard to their fire characteristics.
 - Noncompatible materials, which may create a fire hazard, shall be segregated by a barrier having a fire resistance of at least 1 hour.



Fire Protection

1926.151(d)(4)

- Indoor storage
 - Material shall be piled to minimize the spread of fire internally and to permit convenient access for firefighting.
 - Stable piling shall be maintained at all times.
 - Aisle space shall be maintained to safely accommodate the widest vehicle that may be used within the building for firefighting purposes.



Fire Protection

1926.151(d)(5)-(6)

- Indoor storage
 - Clearance of at least 36 inches shall be maintained between the top level of the stored material and the sprinkler deflectors.
 - Clearance shall be maintained around lights and heating units to prevent ignition of combustible materials.



Fire Protection

1926.151(d)(7)

- Indoor storage
 - A clearance of 24 inches shall be maintained around the path of travel of fire doors.
 - Material shall not be stored within 36 inches of a fire door opening.





Fire Protection

1926.152(a)(1)-(2)

- Flammable and combustible liquids
 - Only approved containers and portable tanks shall be used for storage and handling of flammable and combustible liquids.
 - Flammable or combustible liquids shall not be stored in areas used for exits, stairways, or normally used for the safe passage of people.



Fire Protection

1926.152(b)(1)

- Indoor storage of flammable and combustible liquids
 - No more than 25 gallons of flammable or combustible liquids shall be stored in a room outside of an approved storage cabinet.



Fire Protection

1926.152(b)(2)

- Indoor storage of flammable and combustible liquids
 - Quantities of flammable and combustible liquid in excess of 25 gallons shall be stored in an acceptable or approved cabinet.
 - Cabinets shall be labeled in conspicuous lettering, “Flammable—Keep Fire Away.”



- Indoor storage of flammable and combustible liquids
 - Not more than 60 gallons of flammable or 120 gallons of combustible liquids shall be stored in any one storage cabinet.
 - Not more than three such cabinets may be located in a single storage area.
 - » Quantities in excess of this shall be stored in an inside storage room.
-

Fire Protection

1926.152(b)(4)

- Indoor storage of flammable and combustible liquids
 - Constructed to meet the required fire-resistive rating for their use.
 - Room shall have raised sills or ramps at least 4 inches in height.
 - Electrical wiring and equipment shall be approved for Class I, Division 1, Hazardous Locations.
 - Provided with either a gravity or a mechanical exhausting system.
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Fire Protection

1926.152(b)(5)

- Quantity

- The quantity of flammable or combustible liquids kept in the vicinity of spraying operations shall be the minimum required for operations and should ordinarily not exceed a supply for 1 day or one shift.



Fire Protection

1926.152

- 1926.152 Flammable and combustible liquids
 - General requirements
 - Indoor storage
 - Storage outside buildings
 - Fire control
 - Dispensing liquids
 - Handling liquids at point of final use
 - Service and refueling areas
 - Tank storage



Fire Protection

1926.153

- 1926.153 Liquefied petroleum
 - Approval of equipment and systems
 - Welding on LP-gas containers prohibited
 - Safety devices
 - Dispensing
 - Requirements for appliances
 - Containers and regulating equipment
 - Storage of LP containers



Temporary Heating Devices

1926.154

- Ventilation
- Clearance mounting
- Stability
- Solid fuel salamanders
- Oil-fired heaters



Summary

- Employer responsibilities
- Fire classifications
- Fire extinguishers
- Firefighting equipment
- Ignition hazards
- Temporary buildings
- Open yard storage of combustible materials
- Indoor storage of materials



Thank You For Attending!

Final Questions?
