

Storage and Handling of Liquefied Petroleum Gases

Description:

The standard sets out minimum requirements for the storage, handling, and transfer of propane, butane, and other LP-gases. The OSHA standard was primarily based on NFPA 58 *Standard for the Storage and Handling of Liquefied Petroleum Gas*, 1969 edition.

Regulatory Reference

29 CFR § 1910.110 Storage and handling of liquefied petroleum gases

Applies to:

Workplaces where LP-gases are stored, handled, or transferred such as bulk plants, motor fuel and dispenser units, commercial and industrial LP-gas installations are covered by the standard. The standard addresses container specifications including relief venting, valves, piping and supporting structures; installation of aboveground and underground storage tanks; storage practices for small containers; transfer operations; ignition source control; and qualification of personnel.

The OSHA standard does not apply to marine and pipeline terminals, natural gas processing plants, refineries, or tank farms other than those at industrial sites, LP-gas refrigerated storage systems; LP-gas when used with oxygen (the requirements of §1910.253 applies to such use); nor to LP-gas when used in utility gas plants.

General Requirements:

Compliance with NFPA 58, *Liquefied Petroleum Gas Code*, current edition, or the edition adopted by the jurisdiction having authority for the location will meet the requirements of the OSHA standard. Compliance with NFPA 54, *National Fuel Gas Code*, and other LP-gas standards adopted by reference in the OSHA standard will also demonstrate compliance.

Major elements of 29 CFR § 1910.110 are:

- (1) Definitions that apply are found in section (a).
- (2) Basic rules are found in section (b) and includes rules for odorizing gas; construction and testing of containers; welding of containers; marking of containers; location of containers (Table H-23 minimum distance requirements); container valves and accessories; piping, tubing and fitting requirements; hose specifications; safety devices (relief valves); vaporizer construction and markings; tank heaters; container filling densities; LP-gas piped into buildings; transfer of liquids; railcar and transport loading and unloading; instruction (training) of personnel; electrical equipment and sources of ignition; fixed electrical equipment in classified areas; liquid-level gauging devices; and requirements for appliances.
- (3) DOT cylinder systems are covered by section (c). All requirements given in section (b) apply to cylinder system requirements of section (c), unless a specific exception is set out in (c). The DOT cylinder section includes rules for marking of cylinders; regulators and components of cylinder supply systems; limitations on size of cylinders used or stored

inside buildings or structures; rules for cylinders stored or installed outside of buildings; cylinder valves and accessories; safety devices (relief valves); reinstallation of containers (cylinders shall not be reinstalled unless they are requalified in accordance with DOT regulations); and, maximum vapor pressure of product permitted for DOT cylinders.

- (4) Section (d) of the standard covers systems that use ASME containers. The ASME tank system section includes rules concerning container valves, accessories, filler pipes and discharge pipes; safety devices (relief valves both container and regulator relief valves); vent stacks on tanks over 2,000 gallons water capacity; reinstallation of containers; capacity of containers; installation of containers; protection of container accessories; drips for condenses liquid; protection from damage by vehicles; general provisions for industrial plants of 2,000 gallons water capacity or more, and bulk storage plants; cylinder filling and dispenser operations; fire protection; lighting; and LP-gas motor fuel system vaporizer/regulator (converters).
- (5) Section (e) contains rules for use of LP-gas as a motor fuel. The section includes rules for use of cargo tanks for motor fuel supply; operation of cargo tank motor fuel vehicle engines during pumping operations; rules for fueling powered industrial trucks; design requirements for ASME and DOT motor fuel tanks; container opening labeling requirements; location of fuel containers on or within vehicles; container valves and accessories; motor fuel system piping and fittings; safety devices (relief valves and venting discharge deflection); fuel system vaporizers and regulators; stationary engines in buildings; portable engines in buildings; powered industrial trucks in buildings; and garaging of LP-gas fueled vehicles.
- (6) Section (f) applies to storage of containers not in excess of 1,000 gallons water capacity awaiting use or resale. The section does not apply to storage of containers at propane marketer bulk plants.
- (7) LP-gas service stations are covered in section (h). Rules include ASME tank and valve requirements, relief valve and discharge stack requirements; underground tank installation requirements, and tank capacity, location, and protection standards. Minimum requirements for pumps, dispensing devices, valving, piping, warning notices and fire protection are set out in the section as well.
- (8) Section (i) sets out the scope of the OSHA standard for storage and handling of LP-gases. It says that, unless otherwise stated in § 1910.110, the provisions of the standard are not intended to be retroactive.

Training Requirements:

Training requirements are set out in the standard for propane industry personnel and employees of secondary marketers who operate LP-gas dispensing equipment, as quoted below:

Instructions. Personnel performing installation, removal, operation, and maintenance work shall be properly trained in such function.

The dispensing of LP-Gas into the fuel container of a vehicle shall be performed by a competent attendant who shall remain at the LP-Gas dispenser during the entire transfer operation.

Companies whose OSHA compliance efforts are based on complying with the latest edition of NFPA 58 should pay particular attention to the specific training requirements embodied in the paragraph concerning **Qualification of Personnel** in Chapter 1 of NFPA 58, as they are more stringent than the OSHA standard. DOT hazmat employee training can also be used to meet

OSHA and NFPA 58 training requirements if the training is properly designed, administered, and documented.

Specific OSHA training requirements can be met with the use of components of National Propane Gas Association's *Certified Employee Training Program* (CETP), dispenser operator training program, GAS Check® training program and other NPGA resource materials. Use of CETP or Gas Check will meet documentation needs as well.

In addition to NPGA training materials, there are other LP-gas employee training programs available to meet compliance-training requirements.

Maintenance and Review

Documented periodic facilities inspections are a practical method for compliance program maintenance. Systematic observation of equipment, processes, and employee behavior will often detect needed repairs, modifications, or corrections.

Affected employee training records should be periodically reviewed to verify that employees assigned LP-gas storage or handling tasks are qualified as competent persons.

Managers and supervisors need to take into consideration working conditions at customer sites as well. Conformance with the requirements of 29 CFR § 1910.110 (and by reference, NFPA 58 and 54) is an employee and employer responsibility at any location where company employees handle or store LP-gas, including customer locations.

Additional Information and Resources

NFPA 58, *Liquefied Petroleum Gas Code*, National Fire Protection Association, Quincy, MA

NFPA 54, *National Fuel Gas Code*, National Fire Protection Association, Quincy, MA

Certified Employee Training Program, National Propane Gas Association, Lisle, IL

GAS Check® Training Program, National Propane Gas Association, Lisle, IL

Dispensing Propane Safely, National Propane Gas Association, Lisle, IL

Certified Propane Training, Propane Resources, Mission, KS

Initial OSHA and DOT Training: For the Handling and Transport of Hazardous Materials, Propane Education and Research Council, Washington, DC