



Coffee Break Training - Fire Protection Series

Hazardous Materials: Bulk LPG Groups

No. FP-2009-11 March 17, 2009

Learning Objective: The student shall be able to identify the maximum number of bulk liquefied petroleum gas (LPG) containers that may be grouped together.

LPG storage and transfer depots may have numerous aboveground containers clustered together. When pressure vessels like those pictured (known as ASME containers) have an individual water capacity of 12,000 gal (45 m³) or more and are installed for use in a single location, the number of containers in one group must be limited, and there must be adequate separation from other groups based on the type of fire protection provided.



Photo courtesy Eastern Propane & Oil, Hudson, New Hampshire. In some instances, as many as nine of these bulk LPG containers may be arranged together.

The following table describes the limit on the number of containers and the spacing requirements.

Protection Provided By	Maximum Number of Containers in One Group	Minimum Separation Between Groups	
		Feet	Meters
Portable hose streams only	6	50	15
Fixed master stream monitors	6	25	7.6
Fixed water spray	9	25	7.6
Container insulation	9	25	7.6

Used with permission from NFPA[®] 58, *Liquefied Petroleum Gas Code*, Copyright[®] 2008, National Fire Protection Association.

Coffee Break Training 2006-25 described some of the ways bulk LPG containers can be protected to satisfy the codes:

- If a water spray system is employed, it has to meet the requirements of NFPA 15, *Standard for Water Spray Fixed Systems for Fire Protection*.
- If insulation is used, it must be able to limit the container temperature to not more than 800 °F (427 °C) for at least 50 minutes. This performance metric is determined by testing the insulation applied to a steel plate and subjected to a test flame. The flame temperature from the simulated hydrocarbon fuel torch must be 2,200 °F ± 100 °F (1,200 °C ± 38 °C) throughout the test. The torch velocity must be 40 mph ± 10 mph (64 km/h ± 16 km/h).

For additional information, refer to NFPA[®] 1, *Uniform Fire Code*[®], Chapter 69, *International Fire Code*[®], Chapter 38, or NFPA[®] 58, *Liquefied Petroleum Gas Code*, Chapter 6 and Annex H.



Eligible for Continuing Education Units (CEUs)
at www.nfaonline.dhs.gov

For archived downloads, go to:
www.usfa.dhs.gov/nfa/coffee-break/