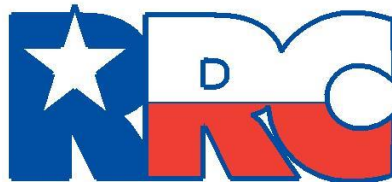


TEXAS LP-GAS EXAMINATION STUDY GUIDE

DOT Cylinder Filler
Employee Level



RAILROAD COMMISSION OF TEXAS

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LP-GAS EXAMINATION STUDY GUIDE

EMPLOYEE-LEVEL

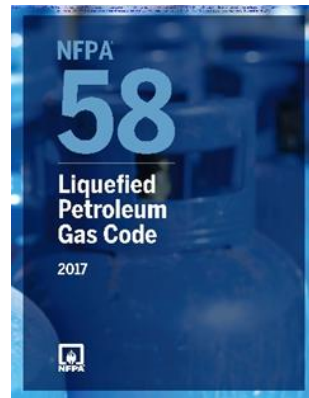
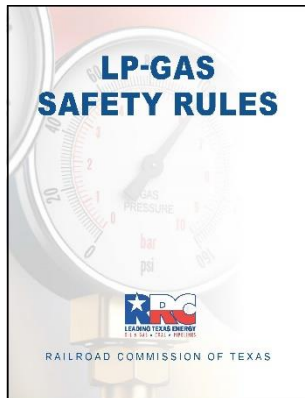
DOT Cylinder Filler

Who should use this guide?

You should use this guide to prepare for the Railroad Commission's employee-level qualifying examination to fill U.S. Department of Transportation (DOT) LP-gas cylinders. Passing this examination will qualify you to inspect, requalify, fill, disconnect and connect DOT cylinders, including forklift cylinders, and replace cylinder valves. To requalify cylinders, your employer must have a Re-qualifier Identification Number (RIN) issued by the U.S. Department of Transportation's Pipeline and Hazardous Materials Safety Administration.

This examination will not qualify you to fill ASME motor fuel tanks or mobile fuel containers.

What books do I need?



This examination tests your knowledge of the laws and standards that apply to LP-gas general installation and service activities in Texas. These laws and standards are found in three books:

LP-Gas Safety Rules (Texas Railroad Commission)
NFPA 58 Liquefied Petroleum Gas Code (National Fire Protection Association, 2008)

Where do I get these books?

You may download the current edition of the Railroad Commission's *LP-Gas Safety Rules* in PDF format free online at www.rrc.texas.gov. A printed copy of this book will be provided as part of the Category E course. If you need additional copies, they may be purchased for \$10.00, tax included, by calling the Railroad Commission's publications office at (512) 463-7309.

You may also order NFPA manuals online at www.nfpa.org; click on "Codes and Standards."

Sections and Topics

Before you take this examination, you should know the definitions found in this study guide and the contents of the sections of the codes and standards listed below. The actual examination questions may not cover all of the listed sections and topics.

NOTE: Section (§) 9.402(c) of the *LP-Gas Safety Rules* states, “The Commission does not adopt language in any NFPA rule, chart, figure, or table pertaining to any LP-gas container having a water capacity of one gallon (4.2 pounds LP-gas capacity) or less.”

Terms and Definitions

NOTE: The list below is not exhaustive. You are responsible for knowing all the terms and definitions that apply to the LP-gas activities you will perform, as well as the rules and standards highlighted in this guide.

NOTE: Informal terms that are sometimes used in the propane industry instead of formal technical terms are given in brackets.

Railroad Commission *LP-Gas Safety Rules*

Alternative Fuel Safety (AFS). The RRC department responsible for LP-Gas training and inspection.
LP-Gas Safety Rules, §9.2(1)

LP Gas Safety Rules. The rules adopted by the Railroad Commission in the Texas Administrative Code, Title 16, Part 1, Chapter 9, including any NFPA or other documents adopted by reference. The official text of the Commission’s rules is that which is on file with the Secretary of State’s office and available at www.sos.state.tx.us or through the Commission’s web site

LP-Gas Safety Rules, §9.2(22)

Rules examination. The Commission’s written examination that measures an examinee’s working knowledge of Chapter 113 of the Texas Natural Resources Code and/or the current LP-Gas Safety Rules.
LP-Gas Safety Rules, §9.2(41)

NFPA 58 (2017)

ASME. American Society of Mechanical Engineers.
NFPA 58, §3.3.6

Container. Any vessel, including cylinders, tanks, portable tanks, and cargo tanks, used for the transporting or storing of LP-Gases.
NFPA 58, §3.3.14

Container Appurtenances. Devices installed in container openings for safety, control, or operating purposes. [Examples include pressure-relief devices; shutoff valves, backflow check valves, excess-flow valves and internal valves; liquid level gauges; pressure gauges; and plugs].
NFPA 58, §3.3.15

Container Assembly. An assembly consisting of the container and fittings for all container openings such as shutoff valves, excess-flow valves, liquid level gauging devices, pressure relief devices, and protective housings.

NFPA 58, §3.3.16

Cylinder. A portable container with a marked water capacity of 1000 lb (454 kg) or less that is designed to transport and store LP-Gas.

NFPA 58, §3.3.17

Dispensing System. An assembly of equipment that includes a dispenser and storage container(s) for storing and transferring LP-Gas from storage to cylinders, portable and mobile containers, and vehicle fuel containers.

NFPA 58, §3.3.22

DOT. U.S. Department of Transportation.

NFPA 58, §3.3.24

Fixed Maximum Liquid Level Gauge [“bleeder valve,” “outage gauge,” “spitter valve,” “spew gauge”]. A fixed liquid level gauge that indicates the liquid level at which the container is filled to its maximum permitted filling limit.

NFPA 58, §3.3.34.2

Liquefied Petroleum Gas (LP-Gas). Any material having a vapor pressure not exceeding that allowed for commercial propane that is composed predominantly of the following hydrocarbons, either by themselves (except propylene) or as mixtures: propane, propylene, butane (normal butane or isobutane), and butylenes.

NFPA 58, §3.3.43

NFPA. National Fire Protection Association.

NFPA 58, §3.3.53

Overfilling Prevention Device [“OPD,” “stop valve”]. A device that is designed to provide an automatic means to prevent the filling of a container beyond a predetermined level.

NFPA 58, §3.3.55

Point of Transfer. The location where connections and disconnections are made or where LP-Gas is vented to the atmosphere in the course of transfer operations.

NFPA 58, §3.3.60

Portable Container. A container designed to transport LP-Gas.

NFPA 58, §3.3.61

Pressure Relief Device [“popoff valve”]. A device designed to open to prevent a rise of internal pressure in excess of a specified value.

NFPA 58, §3.3.65

Sources of Ignition. Devices or equipment that, because of their modes of use or operation, are capable of providing sufficient thermal energy to ignite flammable LP-Gas vapor–air mixtures when introduced into such a mixture or when such a mixture comes into contact with them, and that will permit propagation of flame away from them.

NFPA 58, §3.3.78

Universal Cylinder. A cylinder that can be connected for service in either the vertical or the horizontal position so that the fixed maximum liquid level gauge, pressure relief device, and filling and withdrawal appurtenances function properly in either position.

NFPA 58, §3.3.17.1

Water Capacity. The amount of water at 60°F (16°C) required to fill a container.

NFPA 58, §3.3.90

Sample Question 1

A cylinder that can be used in either the vertical or horizontal position and whose fixed maximum liquid level gauge, pressure relief valve and withdrawal appurtenances will work properly in either position, is called a _____ cylinder.

- A. Universal
- B. Combination
- C. Dual purpose
- D. VP or HP

Answer on last page

Key Topics

NOTE: The list below is not exhaustive. You are responsible for knowing all the facts, rules, standards and procedures that apply to the LP-gas activities you will perform, as well as the rules and standards highlighted in this guide.

As you study the applicable codes and standards, pay special attention to the facts, rules and procedures related to the following key topics. When you take the examination, read each question very carefully.

ADMINISTRATIVE RULES - GENERAL REQUIREMENTS

Dot Cylinder Filler

The DOT Cylinder Filler examination qualifies an individual to inspect, re-qualify, fill, disconnect and connect cylinders, including industrial truck cylinders, and to exchange cylinder valves.

The DOT Cylinder Filler examination does not authorize an individual to fill ASME motor or mobile fuel containers.

LP-Gas Safety Rules, §9.10(d)(1)(F)

Application for a New Certificate

An applicant for a new certificate shall:

- (1) file with AFS a properly completed LPG Form 16 and the applicable nonrefundable rules examination fee specified in §9.10 of this title (relating to Rules Examination); pass the applicable rules examination with a score of at least 75%
- (2) pass the applicable rules examination with a score of at least 75%; and
- (3) complete any required training and/or AFT in §9.51 and §9.52 of this title.
LP-Gas Safety Rules, §9.8(c)

Certificate Renewal

Certificate holders shall remit the nonrefundable \$35 annual certificate renewal fee to AFS on or before May 31 of each year. Individuals who hold more than one certificate shall pay only one annual renewal fee.

- (1) Failure to pay the nonrefundable annual renewal fee by the deadline shall result in a lapsed certificate

(A) To renew a lapsed certification, the individual must pay the nonrefundable \$35 annual renewal fee plus a nonrefundable \$20 late-filing fee.

(B) If an individual's certificate lapses or expires, that individual shall immediately cease performance of any LP-gas activities authorized by the certificate.

(C) If an individual's certificate has been expired for more than two years from May 31 of the year in which the certificate lapsed, that individual shall comply with the requirements in §9.8 of this title (relating to Requirements and Application for a New Certificate) or §9.13 of this title.

LP-Gas Safety Rules, §9.9(c)

Continuing education. A certificate holder shall complete at least eight hours of continuing education every four years as specified in this subsection.

- (1) Upon fulfillment of this requirement, the certificate holder's next continuing education deadline shall be four years after the May 31 following the date of the most recent class the certificate holder has completed, unless the course was completed on May 31, in which case the deadline shall be four years from that date.

LP-Gas Safety Rules, §9.52(b)

Rules Examination

Failure of any exam shall immediately disqualify the individual from performing any LP-gas related activities covered by the exam which is failed, except for activities covered by a separate exam which the individual has passed.

LP-Gas Safety Rules, §9.10(f)

Trainees

A licensee or ultimate consumer may employ an individual as a trainee for a period not to exceed 45 calendar days without that individual having successfully completed the rules examination

The trainee shall be directly and individually supervised at all times by an individual who has successfully completed the Commission's rules examination for the areas of work being performed by the trainee.

LP-Gas Safety Rules, §9.12

Sample Question 2

A licensee or ultimate consumer may employ an individual as a trainee for a period not to exceed _____ calendar days without that individual having successfully completed the rules examination.

- A. 18
- B. 31
- C. 45
- D. 60

Answer on last page

TRANSFER LOCATION RULES - GENERAL REQUIREMENTS

Qualified Personnel

Persons whose duties fall within the scope of this code shall be provided with training that is consistent with the scope of their job activities and that includes proper handling and emergency response procedures.

NFPA 58, §4.4.1

Refresher training shall be provided at least every 3 years.

NFPA 58, §4.4.3

Initial and subsequent refresher training shall be documented.

NFPA 58, §4.4.4

At least one qualified person shall remain in attendance at the transfer operation from the time connections are made until the transfer is completed, shutoff valves are closed, and lines are disconnected.

NFPA 58, §7.2.1.2

Report of LP-Gas Incident/Accident

At the earliest practical moment or within two hours following discovery, a licensee owning, operating, or servicing equipment or an installation shall notify AFS by telephone of any event involving LP-gas which.

- (1) caused a death or any personal injury requiring hospitalization;
- (2) required taking an operating facility out of service;
- (3) resulted in unintentional gas ignition requiring an emergency response;
- (4) involved the LP-gas installation on any vehicle propelled by or transporting LP-gas;
- (5) caused an estimated damage to the property of the operator, others, or both totaling \$5,000 or more, including gas loss;
- (6) could reasonably be judged as significant because of rerouting of traffic, evacuation of buildings, or media interest even though it does not meet paragraphs (1) - (5) of this subsection; or
- (7) is required to be reported to any other state or federal agency (such as the Texas Department of Public Safety or the United States Department of Transportation).

LP-Gas Safety Rules, §9.36(a)

Each industrial plant, bulk plant, and distributing point shall be provided with at least one portable fire extinguisher having a minimum capacity of 18lb of dry chemical.

NFPA 58, §6.29.4.2

Have a minimum capacity of dry chemical with an A:B:C rating. (Required Fire Extinguishers)

NFPA 58, §4.7(2)

LP-Gas fires shall not be extinguished until the source of the burning gas has been shut off.

NFPA 58, §6.29.4.3

Ignition Sources

Sources of ignition shall be turned off during transfer operations, while connections or disconnections are made, or while LP-Gas is being vented to the atmosphere.

NFPA 58, §7.2.3.2

Internal combustion engines within 15 ft of a point of transfer shall be shut down while such transfer operations are in progress.

NFPA 58, §7.2.3.2 (A)

Smoking, open flame, portable electrical tools, and extension lights capable of igniting LP-Gas shall not be permitted within 25 ft of a point of transfer while filling operations are in progress.

NFPA 58, §7.2.3.2 (B)

Metal cutting, grinding, oxygen–fuel gas cutting, brazing, soldering, or welding shall not be permitted within 35 ft of a point of transfer while filling operations are in progress.

NFPA 58, §7.2.3.2 (C)

Combustible materials shall not accumulate or be stored within 10 ft of a container.

NFPA 58, §6.5.3.3

Dispenser Rules

Where a vehicle fuel dispenser or dispensing system is installed under a weather shelter or canopy, the area shall be ventilated and shall not be enclosed for more than 50 percent of its perimeter.

NFPA 58, §6.27.3.3

An identified and accessible remote emergency shutoff device for either the internal valve or the emergency shutoff valve shall be installed not less than 3 ft or more than 100 ft from the liquid transfer point.

NFPA 58, §6.27.3.9

A listed quick-acting shutoff valve or a listed quarter turn ball valve with a locking handle shall be installed at the discharge end of the transfer hose.

NFPA 58, §6.27.3.16;(with changes per LP-Gas Safety Rules 9.403)

An identified and accessible switch or circuit breaker shall be installed at a location not less than 20 ft or more than 100 ft from the dispensing device(s) to shut off the power in the event of a fire, accident, or other emergency.

NFPA 58, §6.27.3.17

Hose, hose connections, and flexible connectors shall be fabricated of materials that are resistant to the action of LP-Gas both as liquid and vapor.

NFPA 58, §5.11.6.1

Hoses shall comply with the following:

- (1) Hose length shall not exceed 18 ft unless approved by the authority having jurisdiction.
- (2) All hoses shall be listed.
- (3) When not in use, hoses shall be secured to protect them from damage.

NFPA 58, §6.27.4.1

Hose assemblies shall be observed for leakage or for damage that could impair their integrity before each use.

NFPA 58, §7.2.4

System Protection Requirements

Areas that include features required in 6.21.4.1(2) shall be enclosed with a minimum 6 ft (1.8 m) high industrial type fence, chain-link fence, or equivalent protection

NFPA 58, §6.21.4.2

Uprights, braces, and corner posts of the fence shall be composed of noncombustible material

LP-Gas Safety Rules, §9.140(c)(1)

Fencing shall not be required where devices are provided that can be locked in place and prevent unauthorized operation of valves, equipment, and appurtenances.

NFPA 58, §6.21.4.2(D)

Clearance of at least three feet shall be maintained between the vehicular barrier protection and any part of an LP-gas transfer system or container or clearance of two feet for retail service station installations.

LP-Gas Safety Rules, §9.140(d)(4)

In addition to NFPA 58 §5.2.8.1, LP-gas installations shall comply with the sign and lettering requirements specified in Table 1 of this subsection. An asterisk indicates that the requirement applies to the equipment or location listed in that column.

LP-Gas Safety Rules, §9.140(f)

(Partial chart shown below Full chart can be found in the 2020 LP- Gas Safety Rules)

**Figure: 16 TAC §9.140(f)
§9.140. Uniform Protection Standards -- Table 1 (Revised February 2008)**

Requirements	Self-service Dispenser Area	Storage Racks for DOT Portable or Forklift Containers	Licensee or Non-Licensee ASME 4001+ Gal. A.W.C.	Any Licensee Installation (DOT Container Filling and/or Service Station Only)
1. Red letters at least 2" high (or at least 1 1/4" high for storage racks for DOT portable or forklift cylinders) on white or aluminum background: NO SMOKING	*	*	*	*
2. Red letters at least 4" high on white or aluminum background: WARNING FLAMMABLE GAS			*	
3. Black letters at least 4" high: NO TRESPASSING AUTHORIZED PERSONNEL ONLY			*	
4. Letters at least 1/2" high: EXTINGUISH ALL PILOT LIGHTS AND OPEN FLAMES; VEHICLE MUST BE VACATED DURING FILLING PROCESS; TURN OFF ENGINE	*			*
5. Letters at least 2" high on each operating side of the dispenser: PROPANE	*			

DOT CYLINDER - GENERAL REQUIREMENTS

Sample Question 3

An identified and accessible switch or circuit breaker shall be installed at a location not less than ____ ft or more than ____ ft from the dispensing device(s) to shut off the power in the event of a fire, accident, or other emergency.

- A. 10 / 20
- B. 3 / 100
- C. 20 / 100
- D. 3 / 20

Answer on last page

Cylinder Inspection

Containers shall be designed, fabricated, tested, and marked (or stamped) in accordance with the regulations of the U.S. Department of Transportation (DOT 49 CFR); Federal Aviation Administration (FAA 14 CFR); the ASME Code, Section VIII, "Rules for the Construction of Unfired Pressure Vessels".
NFPA 58, §5.2.1.1

Containers that have been involved in a fire and show no distortion shall be re-qualified for continued service before being used or reinstalled
NFPA 58, §5.2.1.2

DOT 4E specification (aluminum) cylinders and composite cylinders involved in a fire shall be permanently removed from service.
NFPA 58, §5.2.1.2(D)

Containers that show excessive denting, bulging, gouging, or corrosion shall be removed from service.
NFPA 58, §5.2.1.4

A cylinder with an expired requalification date shall not be refilled until it is requalified by the methods prescribed in DOT regulations.
NFPA 58, §5.2.2.3

Where containers fabricated to earlier editions of regulations, rules, or codes listed in 5.2.1.1 and of the Interstate Commerce Commission (ICC) Rules for Construction of Unfired Pressure Vessels, prior to April 1, 1967, are used, the requirements of Section 1.4 shall apply.
NFPA 58, §5.2.1.1(c)

The service pressure of cylinders shall be in accordance with regulations published under Title 49 Code of Federal Regulations, "Transportation."

NFPA 58, §5.2.4.1

Cylinders shall be designed and constructed for at least a 240 psig service pressure.

NFPA 58, §5.2.4.6

Cylinders shall incorporate protection against physical damage to cylinder appurtenances and immediate connections to such appurtenances when not in use by any of the following means:

- (1) A ventilated cap
- (2) A ventilated collar
- (3) A cylinder valve providing inherent protection as defined by DOT in 49 CFR 173.301(h)(3)

NFPA 58, §5.2.6.1

When being transported, cylinders shall be marked and labeled in accordance with 49 CFR-Transportation.

NFPA 58, §5.2.8.1(B)

Cylinders shall be marked with the following:

- (1) The water capacity of the cylinder in pounds
- (2) The tare weight of the cylinder in pounds, fitted for service

NFPA 58, §5.2.8.2

Warning labels shall meet the following requirements:

- (1) Warning labels shall be applied to all cylinders of 100 lb (45.4 kg) propane capacity or less that are not filled onsite.
- (2) Warning labels shall include information on the potential hazards of LP-Gas.

NFPA 58, §5.2.8.4

Cylinders with 4.2 lb through 40 lb propane capacity for vapor service shall be equipped or fitted with a listed Overfilling Prevention Device and a fixed maximum liquid level gauge.

NFPA 58, §5.9.3.1; (with changes per LP-Gas Safety Rules 9.402.(c))

An overfilling prevention device shall not be the primary means to determine when a cylinder is filled to the maximum allowable filling limit.

NFPA 58, §7.4.4.1

The following types of cylinders shall be exempt from the requirements of 5.9.3.1 through 5.9.3.4:

- (1) Cylinders used in industrial truck service
- (2) Cylinders identified and used for industrial welding and cutting gases
- (3) Cylinders manufactured prior to October 1, 1998, and designed for use in the horizontal position and where an overfilling prevention device is not available

NFPA 58, §5.9.3.5

Exempted horizontal cylinders shall be marked with a label to indicate that they are not equipped with an overfilling prevention device.

NFPA 58, §5.9.3.6

Sample Question 4

Containers that show excessive denting, bulging, gouging, or corrosion shall be _____.

- A. Removed from service
- B. Confiscated
- C. Destroyed
- D. Requalified

Answer on last page

Universal Cylinders

Cylinders shall be designed, constructed, or fitted for installation and filling in either the vertical or horizontal position or, if the cylinder is a universal cylinder, in either position.

NFPA 58, §11.13.2.1

Universal cylinders intended for use in the horizontal position shall be installed with the positioning slot correctly positioned prior to use or filling.

NFPA 58, §11.13.2.2

The fixed maximum liquid level gauge shall indicate the maximum permitted filling level in either position.

NFPA 58, §11.13.2.3

The cylinder vapor or liquid withdrawal valves shall function in either position.

NFPA 58, §11.13.2.5

The cylinder pressure relief valve discharge shall be directed upward within 45 degrees of vertical and shall not impinge on the cylinder, the exhaust system, or any other part of the industrial truck.

NFPA 58, §11.13.2.6

All cylinders used in industrial truck service (including forklift truck cylinders) shall have the cylinder's pressure relief valve replaced by a new or unused valve within 12 years of the date of manufacture of the cylinder and every 10 years thereafter.

NFPA 58, §5.9.2.14

Filling Cylinders

Before filling a cylinder, the individual shall conduct a visual inspection of the exposed, readily accessible areas of the cylinder for any obvious defects. Where the cylinder is dented, bulged, gouged or corroded such that the integrity of the cylinder is substantially reduced, it shall not be filled.

LP-Gas Safety Rules, §9.137

Containers shall be filled only after determination that they comply with the design, fabrication, inspection, marking, and requalification provisions of this code.

NFPA 58, §7.2.2.8

A licensee or the licensee's employees shall not introduce LP-Gas into any container or cylinder if the licensee or employee have knowledge or reason to believe that such container, cylinder, piping or the system or the appliance to which it is attached is unsafe or is not installed in accordance with the statutes or the rules in this chapter

LP-Gas Safety Rules, §9.135

Filling a container to not more than the maximum permitted filling limit by weighing the LP-Gas in the container.

NFPA 58, §3.3.26.2

Single-opening DOT containers of less than 101 pounds LP-gas capacity, shall be filled by weight only.

LP-Gas Safety Rules, §9.136(a)

The weight of such containers shall be determined by scales that meet the specifications of NIST Handbook 44. Scales at licensees' facilities shall be currently registered with the Texas Department of Agriculture. The scales shall have a rated weighing capacity which exceeds the total weight of the cylinders being filled. The scales shall be accurate during the filling of the cylinder.

LP-Gas Safety Rules, §9.136(a)

The propane capacity in pounds is determined by multiplying the total water capacity in pounds by .42.

LP-Gas Safety Rules, §9.136(a)(1)

The formula for filling LP-gas containers by weight under this section is as follows:

The proper scale setting is the total of

1. The Tare weight of the Cylinder
2. The propane capacity in pounds
3. The weight of the hose and nozzle

LP-Gas Safety Rules, §9.136(a)(2)

Containers designed to be used on forklifts or industrial trucks shall be filled as specified in NFPA 58, §11.13.

LP-Gas Safety Rules, §9.136(b)

Sample Question 5

An LP-gas fire must be put out _____.

- A. Immediately
- B. Only after the source of the burning gas has been shutoff
- C. Only after the Railroad Commission has been notified
- D. Only after local fire officials have arrived

Answer on last page

STORAGE AND TRANSPORTATION OF CYLINDERS

Storing Cylinders

Cylinders in storage shall be located to minimize exposure to excessive temperature rises, physical damage, or tampering.

NFPA 58, §8.2.1.1

Cylinders in storage having individual water capacity greater than 2.7 lb [1 lb LP-Gas capacity] shall be positioned so that the pressure relief valve is in direct communication with the vapor space of the cylinder.

NFPA 58, §8.2.1.2

If empty cylinders that have been in LP-Gas service are stored indoors, they shall be considered as full cylinders for the purposes of determining the maximum quantities of LP-Gas permitted.

NFPA 58, §8.2.1.4

Screw-on-type caps or collars shall be in place on all cylinders stored, whether they are full, partially full, or empty, and cylinder outlet valves shall be closed.

NFPA 58, §8.2.2.2

Cylinders at a location open to the public shall be protected by either of the following:

- (1) An enclosure in accordance with 6.21.4.2
- (2) A lockable ventilated enclosure of metal exterior construction

NFPA 58, §8.4.2.1

Transportation of Cylinders

The cargo space of the vehicle shall be isolated from the driver's compartment, the engine, and the engine's exhaust system.

NFPA 58, §9.3.2.5

Open-bodied vehicles shall be considered to be in compliance with this provision.

NFPA 58, §9.3.2.5 (A)

Closed-bodied vehicles having separate cargo, driver, and engine compartments shall be considered to be in compliance with this provision

NFPA 58, §9.3.2.5 (B)

Closed-bodied vehicles, such as passenger cars, vans, and station wagons, shall not be used for transporting more than 215 lb water capacity [nominal 90 lb propane capacity], but not more than 108 lb water capacity [nominal 45 lb propane capacity] per cylinder, unless the driver and engine compartments are separated from the cargo space by a vaportight partition that contains no means of access to the cargo space.

NFPA 58, §9.3.2.5 (C)

Cylinders shall be fastened in position to minimize the possibility of movement, tipping, and physical damage.

NFPA 58, §9.3.2.8

Cylinders and their appurtenances shall be determined to be leak-free before being loaded into vehicles.

NFPA 58, §9.3.2.6

Portable containers shall be transported with pressure relief devices in communication with the vapor space.

NFPA 58, §9.3.3.6

Cylinders being transported by vehicles shall be positioned in accordance with Table 9.3.2.9

NFPA 58, §9.3.2.9

Table 9.3.2.9 Orientation of Cylinders on Vehicles

Propane Capacity of Cylinder		Open Vehicles	Enclosed Spaces of Vehicles
lb	m ³		
≤45	0.17	Any position Relief valve in communication with the vapor space	Any position Relief valve in communication with the vapor space
>45	0.17		
≤4.2	0.016		Any position Relief valve in communication with the vapor space
>4.2	0.016		

Sample Question 6

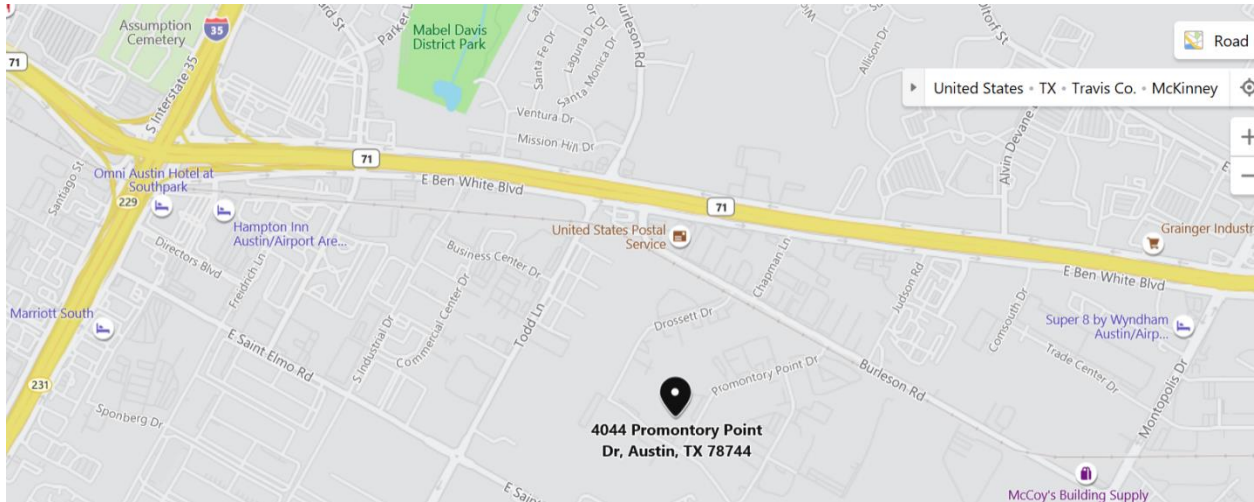
Hose, hose connections, and flexible connectors must be fabricated of materials that are resistant to the action of LP-gas as _____.

- A. Liquid
- B. Vapor
- C. A
- D. Both liquid and vapor

Answer on last Page

ALTERNATIVE FUELS TRAINING CENTER

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Sample Question Answers

1. A
2. C
3. C
4. A
5. B
6. D