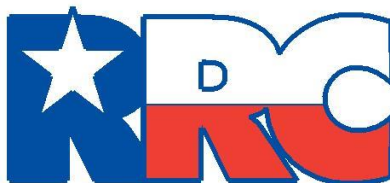


TEXAS LP-GAS EXAMINATION STUDY GUIDE

Mobile Fuel
Employee Level



RAILROAD COMMISSION OF TEXAS

Rev 1.2

NOTICE

This publication is intended for use in its entirety as a guide for persons preparing to take a Railroad Commission LP-gas qualifying examination. Any other use or distribution of this publication or use or distribution of any portion of this publication for any purpose whatsoever is considered by the Railroad Commission of Texas to be misuse of this publication.

This publication is not intended to be an exhaustive treatment of the subjects covered and should not be interpreted as precluding the use of other safety programs or procedures that comply with (1) applicable federal, state, and/or local code provisions, statutes, ordinances, and/or other regulations, including, but not limited to, the Railroad Commission of Texas' LP-Gas Safety Rules and codes adopted by the Railroad Commission of Texas, and/or (2) other industry standards and/or practices.

Every effort was made to ensure that this publication was accurate and up-to-date as of the date of publication. The reader is cautioned, however, about reliance on this publication or any portion thereof at any time thereafter, particularly because changes in technology are likely to occur that might make portions of this publication inaccurate and out-of-date. The Railroad Commission of Texas assumes no liability, under any circumstances, for any actions taken or omissions made in reliance of the contents of this publication, from whatever source, or any other consequences of any such reliance.

All rights reserved. No part of this publication may be reproduced or transmitted in any form without written permission from the Railroad Commission of Texas.

LP-GAS EXAMINATION STUDY GUIDE

Employee-LEVEL

Mobile Fuel

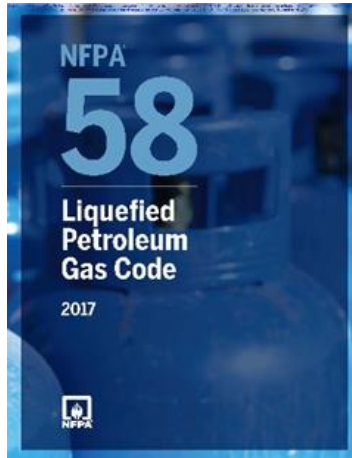
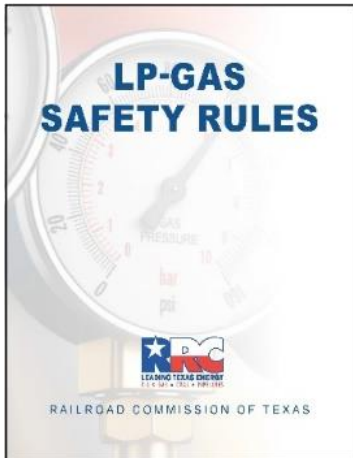
Who should use this guide?

You should use this guide to prepare for the Railroad Commission's employee-level qualifying examination to apply for:

The mobile fuel examination qualifies you to install LP-gas mobile fuel containers, cylinders, and LP-gas mobile fuel systems, and replace container valves on mobile LP-gas equipment such as trailers, catering trucks, mobile kitchens, tar kettles, hot oil units, and portable auxiliary engines.

The Mobile Fuel examination does NOT authorize you to fill LP-gas 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 two books:

LP-Gas Safety Rules
(Texas Railroad Commission, 2020)

NFPA 58 Liquefied Petroleum Gas Code (National Fire Protection Association, 2017)

Where do I get these books?

You may download or print the current edition of the Railroad Commission's LP-Gas Safety Rules in PDF format online at <https://www.rrc.texas.gov/alternative-fuels/alternative-fuels-regulations>. To order additional copies of the LP-Gas Safety Rules, please contact the Railroad Commission's Central Records Section at PublicSales@rrc.texas.gov or (512) 463-6882.

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: 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)

Company Representative. The individual designated to the Commission by a license applicant or a licensee as the principal individual in authority.
LP-Gas Safety Rules, §9.2(12)

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)

Mobile Fuel Container. An LP-gas container mounted on a vehicle to store LP-gas as the fuel supply to an auxiliary engine other than the engine to propel the vehicle or for other uses on the vehicle.
LP-Gas Safety Rules, §9.2(25)

Operations Supervisor. The individual who is certified by the Commission to actively supervise a licensee’s LP-gas operations and is authorized by the licensee to implement operational changes.
LP-Gas Safety Rules, §9.2(31)

Outlet. A site operated by an LP-gas licensee from which any regulated LP-gas activity is performed.
LP-Gas Safety Rules, §9.2(32)

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)

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.

NFPA 58, §3.3.15

DOT. U.S. Department of Transportation.

NFPA 58, §3.3.24

Fixed Maximum Liquid Level 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

Flexible Connector. A short [not exceeding 60 in. (1.52 m) overall length] fixed piping system component that is fabricated from a flexible material and equipped with connections at both ends.

NFPA 58, §3.3.28

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

Mobile Container. A container that is permanently mounted on a vehicle and connected for uses other than supplying engine fuel.

NFPA 58, §3.3.48

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

Universal Cylinder. A cylinder that can be connected for service in either the vertical or 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 required to fill a container.

NFPA 58, §3.3.90

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

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

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)

Individuals who pass an employee level rules examination between March 1 and May 31 of any year shall have until May 31 of the next year to complete any required training. Individuals who pass an employee level rules examination at other times shall have until the next May 31 to complete any required training.

LP-Gas Safety Rules, §9.52(a)(3)

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.

(1) 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

No person shall perform work, directly supervise LP-gas activities, or be employed in any capacity requiring contact with LP-gas unless:

(1) that individual is a certificate holder

(2) that individual is a trainee

LP-Gas Safety Rules, §9.8(a)

Sample Question 1

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. 20
- B. 31
- C. 45
- D. 75

Answer on last page

Appliances

LP-Gas appliances used on commercial vehicles shall be approved for the service.

(A) Gas-fired heating appliances and water heaters shall be equipped with automatic devices designed to shut off the flow of gas to the main burner and the pilot in the event the pilot flame is extinguished.

(B) Catalytic heating appliances shall be equipped with an approved automatic device to shut off the flow of gas in the event of combustion failure.

(C) Gas-fired heating appliances and water heaters to be used in vehicles intended for human occupancy shall be designed for complete separation of the combustion system and the living space.

(D) If the separation between the combustion system and the living space is not integral with the appliance, it shall be provided in accordance with installation requirements in 6.26.7.5.

NFPA 58, §5.23.7

Parking, Servicing, and Repair

Where vehicles with LP-Gas fuel systems used for purposes other than propulsion are parked, serviced, or repaired inside buildings, the requirements of 6.26.8.2 through 6.26.8.4 shall apply.

NFPA 58, §6.26.8.1

The fuel system shall be leak-free, and the container(s) shall not be filled beyond the limits specified in Chapter 7.

NFPA 58, §6.26.8.2

The container shutoff valve shall be closed, except that the container shutoff valve shall not be required to be closed when fuel is required for test or repair.

NFPA 58, §6.26.8.3

The vehicle shall not be parked near sources of heat, open flames, or similar sources of ignition, or near unventilated pits.

NFPA 58, §6.26.8.4

Vehicles having containers with water capacities larger than 300 gallons shall comply with the requirements of Section 9.7.

NFPA 58, §6.26.8.5

Appliance Installation

Appliances shall be located so that a fire at any appliance will not block egress of persons from the vehicle.

NFPA 58, §6.26.7.9

Container Installation Requirements

Containers shall comply with 6.26.3.1(A) through 6.26.3.1(E).

(A) ASME mobile containers shall be in accordance with one of the following:

- (1) A MAWP of 312 psig or higher where installed in enclosed spaces of vehicles
- (2) A MAWP of 312 psig or higher where installed on passenger vehicles
- (3) A MAWP of 250 psig or higher for containers where installed on the exterior of non-passenger vehicles

(B) LP-Gas fuel containers used on passenger-carrying vehicles shall not exceed 200 gal (0.8 m³) aggregate water capacity.

(C) The capacity of individual LP-Gas containers on highway nonpassenger vehicles shall be 1000 gal (3.8 m³) or in accordance with U.S. Department of Transportation regulations.

(D) The capacity of cargo tank motor vehicles shall not be limited by this code.

(E) Containers designed for stationary service only and not in compliance with the container appurtenance protection requirements of 5.2.6 shall not be used.

NFPA 58, §6.26.3.1

Containers shall be mounted securely on the vehicle or within the enclosing recess or cabinet.

(A) Containers shall be installed with road clearance in accordance with 11.8.3.

(B) Fuel containers shall be mounted to prevent jarring loose and slipping or rotating, and the fastenings shall be designed and constructed to withstand, without permanent visible deformation, static loading in any direction equal to four times the weight of the container filled with fuel.

(C) Where containers are mounted within a vehicle housing, the securing of the housing to the vehicle shall comply with this provision. Any removable portions of the housing or cabinet shall be secured while in transit.

(D) Field welding on containers shall be limited to attachments to non-pressure parts such as saddle plates, wear plates, or brackets applied by the container manufacturer.

(E) All container valves, appurtenances, and connections shall be protected to prevent damage from accidental contact with stationary objects; from loose objects, stones, mud, or ice thrown up from the ground or floor; and from damage due to overturn or similar vehicular accident.

(F) Permanently mounted ASME containers shall be located on the vehicle to provide the protection specified in 6.26.3.4(E).

(G) Cylinders shall have permanent protection for cylinder valves and connections.

(H) Where cylinders are located on the outside of a vehicle, weather protection shall be provided.

(I) Containers mounted on the interior of passenger-carrying vehicles shall be installed in compliance with Section 11.9. Pressure relief valve installations for such containers shall comply with 11.8.5.

NFPA 58, §6.26.3.4

Installation of Container Appurtenances

The LP-Gas supply system, including the containers, shall be installed either on the outside of the vehicle or in a recess or cabinet vapor-tight to the inside of the vehicle but accessible from and vented to the outside, with the vents located near the top and bottom of the enclosure and 3 ft horizontally away from any opening into the vehicle below the level of the vents.

NFPA 58, §6.26.3.3

Container appurtenances shall be installed in accordance with the following:

(1) Pressure relief valve installation on ASME containers installed in the interior of vehicles complying with Section 11.9 shall comply with 11.8.5.

(2) Pressure relief valve installations on ASME containers installed on the outside of vehicles shall comply with 11.8.5 and 6.26.3.3.

(3) Main shutoff valves on containers for liquid and vapor shall be readily accessible.

(4) Cylinders shall be designed to be filled in either the vertical or horizontal position, or if they are the universal type, they are permitted to be filled in either position.

(5) All container inlets, outlets, or valves installed in container inlets or outlets, except pressure relief devices and gauging devices, shall be labeled to designate whether they communicate with the vapor or liquid space.

(6) Containers from which only vapor is to be withdrawn shall be installed and equipped with connections to minimize the possibility of the accidental withdrawal of liquid.

NFPA 58, §6.26.4.1

Sample Question 2

If a vehicle-mounted regulator is installed _____, it shall be installed in a compartment that provides protection against weather and wheel spray.

- A. Below floor level
- B. At floor level
- C. At or below floor level
- D. None of the above

Answer on last page

Regulators shall be installed in accordance with 6.10.2 and 6.26.4.2(A) through 6.26.4.2(E).

(A) Regulators shall be installed with the pressure relief vent opening pointing vertically downward to allow for drainage of moisture collected on the diaphragm of the regulator.

(B) Regulators not installed in compartments shall be equipped with a durable cover designed to protect the regulator vent opening from sleet, snow, freezing rain, ice, mud, and wheel spray.

(C) If vehicle-mounted regulators are installed at or below the floor level, they shall be installed in a compartment that provides protection against the weather and wheel spray.

(D) Regulator compartments shall comply with the following:

(1) The compartment shall be of sufficient size to allow tool operation for connection to and replacement of the regulator(s).

(2) The compartment shall be vapor-tight to the interior of the vehicle.

(3) The compartment shall have a 1 in.2 (650 mm²) minimum vent opening to the exterior located within 1 in. of the bottom of the compartment.

(4) The compartment shall not contain flame or spark producing equipment.

(E) A regulator vent outlet shall be at least 2 in. above the compartment vent opening.

NFPA 58, §6.26.4.2

Piping Requirements

Piping shall be installed in accordance with 6.11.3 and 6.26.5.1(A) through 6.26.5.1(M).

(A) Steel tubing shall have a minimum wall thickness of 0.049 in. (1.2 mm).

(B) A flexible connector shall be installed between the regulator outlet and the fixed piping system to protect against expansion, contraction, jarring, and vibration strains.

(C) Flexibility shall be provided in the piping between a cylinder and the gas piping system or regulator.

(D) Flexible connectors shall be installed in accordance with 6.11.6.

(E) Flexible connectors longer than the length allowed in the code, or fuel lines that incorporate hose, shall be used only where approved.

(F) The fixed piping system shall be designed, installed, supported, and secured to minimize the possibility of damage due to vibration, strains, or wear and to preclude any loosening while in transit.

(G) Piping shall be installed in a protected location.

(H) Where piping is installed outside the vehicle, it shall be installed as follows:

(1) Piping shall be under the vehicle and below any insulation or false bottom.

(2) Fastening or other protection shall be installed to prevent damage due to vibration or abrasion.

(3) At each point where piping passes through sheet metal or a structural member, a rubber grommet or equivalent protection shall be installed to prevent chafing.

(I) Gas piping shall be installed to enter the vehicle through the floor directly beneath or adjacent to the appliance served.

(J) If a branch line is installed, the tee connection shall be located in the main gas line under the floor and outside the vehicle.

(K) Exposed parts of the fixed piping system either shall be of corrosion-resistant material or shall be coated or protected to minimize exterior corrosion.

(L) Hydrostatic relief valves shall be installed in isolated sections of liquid piping as provided in Section 6.15.

(M) Piping systems, including hose, shall be proven free of leaks in accordance with Section 6.16.

NFPA 58, §6.26.5.1

Sample Question 3

ASME mobile containers installed on recreational vehicles or on other vehicles shall be constructed for at least 275 psig maximum allowable working pressure.

- A. True
- B. False

Answer on last page

Appliance Installation on Vehicles

All appliances covered by 6.26.7 installed on vehicles shall be approved.
NFPA 58, §6.26.7.2

Where the device or appliance, such as a cargo heater or cooler, is designed to be in operation while the vehicle is in transit, means, such as an excess-flow valve, to stop the flow of gas in the event of a line break shall be installed.
NFPA 58, §6.26.7.3

A permanent caution plate shall be affixed to either the appliance or the vehicle outside of any enclosure, shall be adjacent to the container(s), and shall include the following instructions:

CAUTION:

- (1) Be sure all appliance valves are closed before opening container valve.
- (2) Connections at the appliances, regulators, and containers shall be checked periodically for leaks with soapy water or its equivalent.
- (3) Never use a match or flame to check for leaks.
- (4) Container valves shall be closed when equipment is not in use.

NFPA 58, §6.26.7.10

ASME Containers

ASME containers used for any LP-Gas application shall comply with the applicable requirements in 11.13.1.
NFPA 58, §12.4.2.1

ASME containers manufactured after April 1, 2001, and for use on vehicles within the scope of this chapter, shall have a design pressure of not less than 312 psig.
NFPA 58, §12.4.2.2

The capacity of individual containers shall comply with 6.26.3.1(C).

NFPA 58, §12.4.2.3

The number of ASME containers mounted on an LPGas vehicle shall be limited to three separate ASME containers with a maximum aggregate capacity of 300 gal water capacity.

NFPA 58, §12.4.2.4

Sample Question 4

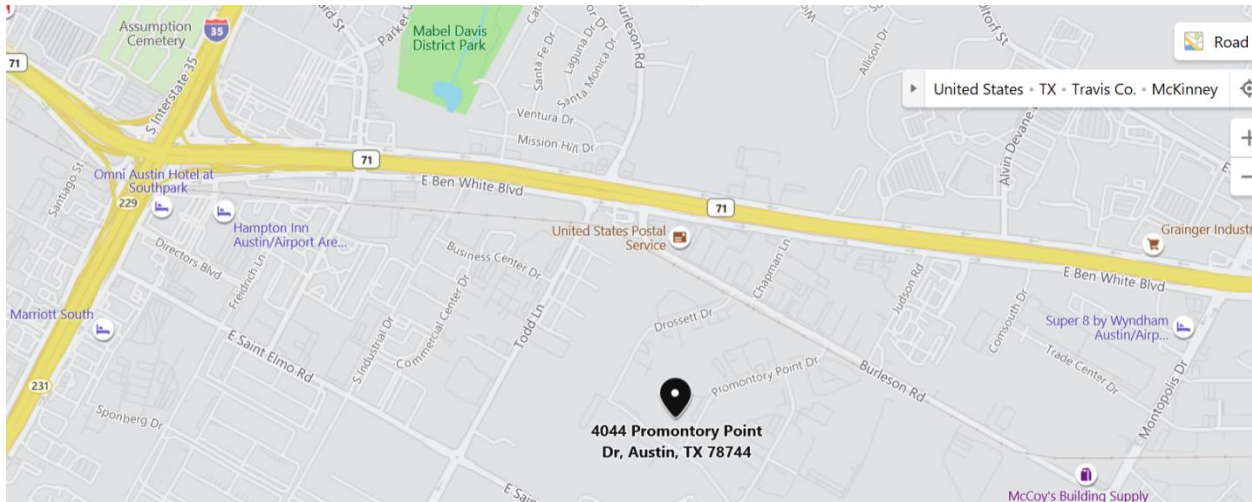
Piping systems, including hose, shall be pressure tested and proven free of leaks.

- A. True
- B. False

Answer on last page

ALTERNATIVE FUELS TRAINING CENTER

4044 Promontory Point Austin Texas 78744



Sample Question Answers

1. C
2. C
3. B
4. A