TEXAS LP-GAS EXAMINATION STUDY GUIDE

ASME Motor/Mobile Fuel Dispenser Employee Level

RAILROAD COMMISSION OF TEXAS

September 2012

NOTICE

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Exam administration

Taking an examination in Austin

You may take any LPG qualifying examination in Austin without pre-registering ("walk-in") on any business day, excluding holidays, from 8:00 a.m. to 12:00 noon at the AFRED Training Center. The Training Center is located at 6506 Bolm Road, at the intersection of U.S. Highway 183.

Tuesdays and Thursdays are the preferred days for walk-in examinations.

(See map to Training Center on page 15.)

Taking an examination outside of Austin

You may also take any Railroad Commission qualifying examination at more than two dozen other locations statewide. Exam dates, times and locations are listed three months in advance on the Commission's web site. To view a complete schedule, go to www.rrc.state.tx.us. From the drop-down menu under "Education and Training," choose "Training Classes & Qualifying Exams" and click on "Class/Exam Schedule." The online schedule has links to maps showing each class and exam location.

You must register at least two business days in advance to take an examination outside of Austin. To register online, go to www.rrc.state.tx.us. From the drop-down menu under "Education and Training," choose "Training Classes & Qualifying Exams" and click on "Register Now." The web site allows you to register up to four people for an examination, a training class, or both.

When you register online, you will receive a return e-mail confirming the registration and the dates and locations of the exams. You will also receive advance notification of any changes in the examination date, time or location.

Payment for exams; LPG Form 16; ID required

The fee is $40.00 for each employee-level exam and $70.00 for each management-level exam. Fees are non-refundable by state law, and cash cannot be accepted.

You may pay the required examination fee at any exam location by check or money order payable to the Railroad Commission of Texas. LP-Gas Form 16, "Application for Examination," may also be completed at the examination site. Examinees must also present an official state-issued driver's license or photo ID at the exam site.

You may also pay your examination fee by credit card in advance online. To pay by credit card, go to www.rrc.state.tx.us. From the drop-down menu under "Education and Training," choose "Training Classes & Qualifying Exams" and click on "Pay Online." Be sure to print out the confirmation page in Step 6. Make a copy of the confirmation page for your records and bring a copy with you to the examination site.

Open-book examinations

All Railroad Commission LP-gas employee-level qualifying examinations are open book.

Examinees may use a copy of NFPA 58, 2008 edition; the Railroad Commission's *LP-Gas Safety Rules*; or a Railroad Commission Texas Propane Training course manual to take their ASME motor/mobile fuel dispenser examination. This study guide may not be used during any employee-level examination.

The questions on the examination are not organized by topic as they are in this study guide.

Examination time limit

The ASME motor/mobile fuel dispenser examination must be completed within two hours after the examination is given to you, including any breaks you elect to take. The examination proctor is the official timekeeper. You must submit both your examination and your answer sheet to the proctor within the two-hour limit.

Grades, reports and retakes

The minimum passing grade is 75 percent on all LP-gas examinations.

All examinations administered at the Training Center in Austin are graded on-site, and examinees are immediately informed of the results. If you fail an examination that you took in Austin, you may retake that same examination only one additional time during a business day. Any subsequent examination must be taken on another business day, unless approved by the Commission.

Exams taken outside of Austin are graded as soon as possible, and the results of the examination are reported within 10 working days. If you pass an examination, the Railroad Commission will issue you a blue certification card within 10 working days. You will be notified by letter if you fail an examination.

Required first-year training class

Certified motor/mobile fuel dispenser operators are subject to Railroad Commission training and continuing-education requirements. To maintain your certification, you must complete one of the following Railroad Commission eight-hour courses by the next May 31 after you pass your initial examination. (NOTE: If you pass the examination between March 1 and May 31, you have until May 31 the next year to complete your training requirement.)

1.1 Introduction to Propane
2.1 Dispenser Operations [preferred]

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LP-Gas Operations

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LP-GAS EXAMINATION STUDY GUIDE
EMPLOYEE-LEVEL ASME MOTOR/MOBILE FUEL DISPENSER

Who should use this guide?

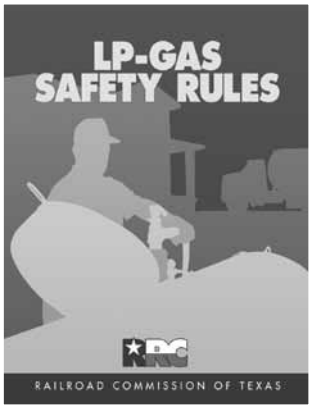
You should use this guide if you plan to take the Railroad Commission's employee-level motor/mobile fuel dispenser examination. This exam will qualify you to inspect and fill American Society of Mechanical Engineers (ASME) motor-fuel and mobile-fuel containers on vehicles, including recreational vehicles, cars, trucks, and buses.

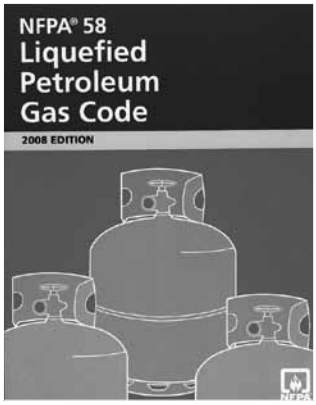
This examination will not qualify you to fill DOT LP-gas cylinders or stationary containers.

What books do I need?

This examination tests your knowledge of the laws and standards that apply to motor fuel and mobile fuel container filling operations in Texas. These laws and standards are found in two 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 free online at www.propane.tx.gov. Click on "Training and Examinations," select "Examinations and Certification" from the drop-down menu, and scroll down to "LPG Safety Rules (PDF)." You may also buy a printed copy of the book for $10.00, tax included, by calling the Railroad Commission's publications office at (512) 463-7309. Printed copies of NFPA 58 are available for purchase from the Texas Propane Gas Association by calling toll-free (800) 392-0023. 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 on pages 7 and 8 of this study guide. You should also know the contents of the following sections of the codes and standards. The actual examination may not include questions on all of the listed sections and topics.

NOTE: Section (§) 9.402(c) of the *LP-Gas Safety Rules* states, "Container capacity, piping system, and appliance exceptions. 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, or to any LP-gas piping system or appliance attached or connected to such a container."

LP-Gas Safety Rules

§9.2(26)	Mobile Fuel Container
§9.2(28)	Motor Fuel Container
§9.129(a),(d),(e),(g)	Manufacturer's Nameplate and Markings on ASME Containers
§9.135	Unsafe or Unapproved Containers, Cylinders or Piping
§9.137	Inspection of Containers at Each Filling
§9.140(g); Table 1	Uniform Protection Standards: Warning Signs and Labels
§9.141(a),(b)	Uniform Safety Requirements
§9.403	§§6.24.3.13, 6.24.3.14

NFPA 58 (2008)

§3.3	General Definitions
§5.2	Containers
§5.9.6	Hose, Quick Connectors, Hose Connections, and Flexible Connectors
§6.4	Other Container Location Requirements
§6.23	LP-Gas Systems on Vehicles Other Than Engine Fuel Systems
§6.24	Vehicle Fuel Dispenser and Dispensing Stations
§6.25	Fire Protection
§7.2	Operational Safety
§11.3	Containers
§11.4	Container Appurtenances
§11.7	Installation of Containers and Container Appurtenances
§11.8	Installation in the Interior of Vehicles
§11.11	Marking

Terms and Definitions

As a motor/mobile fuel dispenser, you need to know the terms, definitions, facts, rules and procedures relating to propane dispenser operations, including dispenser equipment, required signs and labels, and the specifications, design features, markings, inspection requirements and procedures for filling motor/mobile fuel containers.

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

NFPA 58 (2008)

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 storage of LP-gases.
NFPA 58, §3.3.13

Container Appurtenances ["valves and fittings"]. 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, §3.3.14

Fixed Maximum Liquid Level Gauge ["outage gauge," "spitter valve," "spew gauge"]. A fixed liquid level gauge that indicates when the liquid level in a container has reached its maximum permitted filling limit.
NFPA 58, §3.3.29

Maximum Allowable Working Pressure (MAWP). The maximum pressure at which a pressure vessel is to operate as described by the ASME Boiler and Pressure Vessel Code.
NFPA 58, §3.3.39

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, §3.3.54

Pressure Relief Device ["popoff valve"]. A device designed to open to prevent a rise of internal pressure in excess of a specified value due to emergency or abnormal conditions.
NFPA 58, §3.3.58

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, §3.3.67

LP-Gas Safety Rules

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(26)

Motor Fuel Container ["engine fuel container"]. An LP-gas container mounted on a vehicle to store LP-gas as the fuel supply to an engine used to propel the vehicle.
LP-Gas Safety Rules, §9.2(28)

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. Then, when you take the examination, read each question very carefully.

1. Containers

ASME LP-gas motor/mobile fuel containers must be designed, fabricated, tested, and marked in accordance with the "Rules for Construction of Unfired Pressure Vessels," Section VIII, *ASME Boiler and Pressure Vessel Code*.
NFPA 58, §5.2.1.1

ASME LP-gas engine fuel and mobile containers must be designed to provide at least the following maximum allowable working pressure:

(1) 250 psig or 312 psig where required if constructed prior to April 1, 2001
(2) 312 psig if constructed on or after April 1, 2001.
NFPA 58, §6.23.3.1(A)

LP-gas fuel containers installed on a passenger-carrying vehicle must not exceed 200 gallons total water capacity.
NFPA 58, §6.23.3.1(D)

ASME containers installed in enclosed spaces on vehicles, and all engine fuel containers for vehicles, industrial trucks, buses (including school buses), recreational vehicles, and multipurpose passenger vehicles, must be constructed with a maximum allowable working pressure of at least 312 psig.
NFPA 58, §11.3.2.2

Containers that show excessive denting, bulging, gouging, or corrosion must be removed from service.
NFPA 58, §11.3.3.1

Engine fuel containers constructed of steel must be painted or powder-coated to minimize corrosion. Stainless steel cylinders are not required to be painted or powder-coated.
NFPA 58, §11.3.7

LP-gas must not be introduced into an ASME container unless the container is equipped with an original nameplate or a Railroad Commission identification nameplate, duplicate nameplate, modification (or alteration) nameplate or replacement nameplate.
LP-Gas Safety Rules, §9.129(a)

Nameplates on containers built prior to September 1, 1984, must include at least the following legible information:
(1) manufacturer's name,
(2) serial number,
(3) water capacity, and
(4) working pressure.
LP-Gas Safety Rules, §9.129(d)

Nameplates on LP-gas motor or mobile fuel tanks must be permanently attached in a manner which will minimize corrosion of the nameplate or its fastening means and not contribute to corrosion of the container.
LP-Gas Safety Rules, §9.129(g)

SAMPLE QUESTION

Containers that show excessive _____ must be removed from service.

A. Denting
B. Bulging
C. Gouging
D. Corrosion
E. All the above

Answer: E

2. Appurtenances (Valves and Fittings)

ASME containers fabricated after January 1, 1984, for use as engine fuel containers on vehicles must be equipped or fitted with an overfilling prevention device.
NFPA 58, §11.4.1.13

Where an overfilling prevention device is installed on the ASME container or exterior of the compartment and remote filling is used, a double backflow check valve must be installed in the container fill valve opening.
NFPA 58, §11.4.1.14

Main shutoff valves on a container for liquid or vapor must be readily accessible without using tools, or other equipment must be provided to shut off the container valves.
NFPA 58, §58-11.7.4.3

The pressure relief valve discharge from containers on vehicles must not directly impinge upon the container, the exhaust system or any part of the vehicle.
NFPA 58, §11.7.5.1(2)

3. Product Transfer; Hoses

LP-gas fires must not be extinguished until the source of the burning gas has been shut off.
NFPA 58, §6.25.4.3

Inspection of pressurized hose assemblies must include the following:

(1) Damage to outer cover that exposes reinforcement
(2) Kinked or flattened hose
(3) Soft spots or bulges in hose
(4) Couplings that have slipped on the hose, are damaged, have missing parts, or have loose bolts
(5) Leakage other than permeability leakage.
NFPA 58, §7.2.4.3(1)-(5)

Leaking or damaged hose must be immediately repaired or removed from service.
NFPA 58, §7.2.4.5

Hose, hose connections, and flexible connectors must be fabricated of materials that are resistant to the action of LP-gas both as liquid and vapor.
NFPA 58, §5.9.6.1

Hose must be designed for a working pressure of 350 psig with a safety factor of 5 to 1 and must be continuously marked with LP-GAS, PROPANE, 350 PSI WORKING PRESSURE, and with the manufacturer's name or trademark.
NFPA 58, §5.9.6.4(A)

A listed quick-acting shutoff valve or a listed quarter-turn ball valve with a locking handle must be installed at the discharge end of the transfer hose.
LP-Gas Safety Rules, §9.403 / NFPA 58, §6.24.3.13

The transfer hose on an LP-gas vehicle fuel dispenser may not be longer than 18 feet unless approved by the authority having jurisdiction.
NFPA 58, §6.24.4(1)

Dispenser locations must have at least one portable fire extinguisher having a minimum capacity of 18 lb. dry chemical with a B:C rating.
NFPA 58, §6.25.4.2

At least one qualified person must 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

Transfer of LP-gas to and from a container must be accomplished only by qualified individuals trained in proper handling and operating procedures.
NFPA 58, §7.2.2.1

Sources of ignition must 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

Smoking, open flame, portable electrical tools, and extension lights capable of igniting LP-gas must not be permitted within 25 feet of a point of transfer while filling operations are in progress.
NFPA 58, §7.2.3.2(B)

Sources of ignition must be turned off during the filling of any LP-gas container on a vehicle.
NFPA 58, §7.2.3.2(E)

Hose assemblies must be observed for leakage or for damage that could impair their integrity before each use.
NFPA 58, §7.2.4.1

Hose assemblies must be inspected at least annually.
NFPA 58, §7.2.4.2

A licensee or the licensee's employees must not introduce LP-gas into any container or cylinder if the licensee or employee has 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 *LP-Gas Safety Rules*.
LP-Gas Safety Rules, §9.135

Before filling a container or cylinder, the individual filling the container or cylinder must conduct a visual inspection of the exposed, readily accessible areas of the container or cylinder for any obvious defects. Where the container or cylinder is dented, bulged, gouged, or corroded such that the integrity of the container or cylinder is substantially reduced, such container or cylinder must not be filled.
LP-Gas Safety Rules, §9.137

SAMPLE QUESTION

Smoking, open flame, portable electrical tools, and extension lights capable of igniting LP-gas must not be permitted within _____ feet of a point of transfer while filling operations are in progress.

A. 10
B. 15
C. 20
D. 25
E. 35

Answer: D

4. Supply Container and Dispenser Requirements

Each LP-gas private or public motor/mobile or forklift refueling installation that includes a liquid dispensing system must incorporate into that dispensing system a breakaway device. Any vapor return hose installed at such installations must also be equipped with a breakaway device. LP-gas installations at which forklift cylinders are completely removed from the forklift before being filled are not required to have a breakaway device.
LP-Gas Safety Rules, §9.141(b)

Loose or piled combustible material and weeds and long dry grass must be separated from containers by a minimum of 10 feet.
NFPA 58, §6.4.5.2

Where a vehicle fuel dispenser is installed under a weather shelter or canopy, the area must be ventilated and must not be enclosed for more than 50 percent of its perimeter.
NFPA 58, §6.24.3.3

Public access to areas where LP-gas is stored and transferred must be prohibited except where necessary for the conduct of normal business activities.
NFPA 58, §7.2.3.1

A nameplate on a stationary supply container built after August 31, 1984, must be stainless steel and permanently attached to the tank by continuous fusion welding around the nameplate's perimeter.
LP-Gas Safety Rules, §9.129(e)

ASME stationary supply tanks must be painted white or aluminum, or another heat-reflective color (such as light green, light blue, etc.). Darker, heat-absorbing colors (such as black, navy blue, etc.) are not permitted.
LP-Gas Safety Rules, §9.141(a)

An identified and accessible switch or circuit breaker must be installed at a location not less than 20 feet or more than 100 feet from the dispensing device(s) to shut off the power in the event of a fire, accident, or other emergency.
LP-Gas Safety Rules, §9.403 / NFPA 58, §6.24.3.14

SAMPLE QUESTION

ASME stationary supply tanks must be painted _____.

A. White
B. Aluminum
C. A heat reflective color
D. Any of the above

Answer: D

5. Markings, Signage and Labels

After an LP-gas motor/mobile fuel container is permanently installed on a vehicle, the container markings must be readable either directly or with a portable lamp and mirror.
NFPA 58, §11.7.1.4

Each over-the-road general-purpose vehicle powered by LP-gas must be identified with a weather-resistant diamond-shaped label located on an exterior vertical or near vertical surface on the lower right rear of the vehicle (on the trunk lid of a vehicle so equipped but not on the bumper of any vehicle) inboard from any other markings.
NFPA 58, §11.11.1.1

The marking on the decal required in §11.11.1.1 must consist of a border and the word PROPANE [1 inch minimum height centered in the diamond] in silver or white reflective luminous material on black or Pantone 2945 C Royal Blue or equivalent background.
LP-Gas Safety Rules, §9.403/NFPA 58, §11.11.2.2

6. Installation of Motor/Mobile Fuel Containers

Container valves, appurtenances, and connections must be protected by one of the following:

(1) By locating the container so that parts of the vehicle furnish the necessary protection
(2) By the use of a fitting guard furnished by the manufacturer of the container
(3) By other means to provide equivalent protection.
NFPA 58, §11.7.2.2

Containers must not be mounted directly on roofs or ahead of the front axle or beyond the rear bumper of the vehicles.
NFPA 58, §11.7.3.1

The installation of containers in the interior of vehicles must comply with either 11.8.1.2 or 11.8.1.3.
NFPA 58, §11.8.1.1

The container and its appurtenances must be installed in an enclosure that is securely mounted to the vehicle.

(A) The enclosure must be gas-tight with respect to driver or passenger compartments and to any space containing radio transmitters or other spark-producing equipment.
(B) The enclosure must be vented to the outside of the vehicle.
NFPA 58, §11.8.1.2

The container appurtenances and their connections must be installed in an enclosure that is securely mounted on the container.

(A) The appurtenances and their connections must be installed in an enclosure that is gas-tight with respect to the driver or passenger compartments or with any space carrying radio transmitters or other spark-producing equipment.
(B) The enclosure must be vented to the outside of the vehicle.
NFPA 58, §11.8.1.3

To prevent gas from leaking inside a vehicle, a permanently installed remote-fill device and a fixed maximum liquid level gauging device must be installed on the outside of the vehicle.
NFPA 58, §11.8.1.4

SAMPLE QUESTION

A container installed in a vehicle's passenger or luggage compartment must be filled from a remote location on the vehicle.

A. True
B. False

Answer: A

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