

Pursuant to the authority of Iowa Code section 101.1, the State Fire Marshal hereby adopts new Chapter 226, “Liquefied Petroleum Gas,” Iowa Administrative Code.

This chapter, all references contained therein and amendments become effective on or before January 1, 2008.

(Second Printing: January 1, 2008)

This document contains:

- ➔ Amendments to:
 - International Fire Code, 2006 edition, Section 3800
 - National Fire Protection Association 54, National Fuel Gas Code, 2006 edition
 - National Fire Protection Association 58, Liquefied Petroleum Gas Code, 2004 edition
- ➔ Sections of Chapter 226, Effective July 1, 2007, and
- ➔ Amended/New Sections of Chapter 226, Effective January 1, 2008

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Public Safety [661] Chapter 226, “Liquefied Petroleum Gas”, International Fire Code® 2006 Edition, Amended for Application within the State of Iowa

661—226.1(101) General requirements. The provisions of the International Fire Code (IFC), Chapter 38, 2006 edition, published by the International Code Council, 5203 Leesburg Pike, Suite 600, Falls Church, VA 22041, and all references contained therein, are hereby adopted by reference as the general requirements for transportation, storage, handling, and use of liquefied petroleum gas, with the following amendments.

Amended IFC, 2006 Edition Chapter 38, Liquefied Petroleum Gases (Effective July 1, 2007)

SECTION 3801

GENERAL

3801.1 Scope. Storage, handling and transportation of liquefied petroleum gas (LP-gas) and the installation of LP-gas equipment pertinent to systems for such uses shall comply with this chapter, NFPA 54, ANSI Z223.1-2006 National Fuel Gas Code, 2006 edition, and NFPA 58, Liquefied Petroleum Gas Code, 2004 edition, with the following amendments:

- Amend NFPA 54, ANSI Z223.1-2006 National Fuel Gas Code, 2006 edition, as follows:

- Delete section 7.3.5.2 and insert in lieu thereof the following new section:

7.3.5.2 Gas piping underground, outside a building, shall not be in physical contact with any concrete.

Where it is necessary to install piping that will extend through or under an exterior concrete slab for connection to a regulator or other part of the system, before entering a building, the gas piping shall be sleeved. The sleeve shall extend through the concrete and be sealed only at the end extending above grade to prevent the entrance of insects, debris, or moisture. All piping, fittings, and risers shall be protected against corrosion in accordance with NFPA 54, National Fuel Gas Code, 2004 edition, section 5.6.6.

- Amend NFPA 58, Liquefied Petroleum Gas Code, 2004 edition, as follows:

- Delete section 5.2.3.1 and insert in lieu thereof the following new section:

5.2.3.1 DOT cylinders in stationary service that are filled on site and therefore are not under the jurisdiction of DOT shall be either requalified in accordance with DOT requirements or visually inspected within 12 years of the date of manufacture and every 5 years thereafter, in accordance with 5.2.3.1(A) through 5.2.3.1(C). The effective date for qualification and requalification requirements of this section shall be July 1, 2010.

(A) Any cylinder that fails one or more of the criteria in 5.2.3.1(C) shall not be refilled or continued in service until the condition is corrected.

(B) Personnel shall be trained and qualified to perform inspections. Initial and refresher training shall be in accordance with rule 661—226.4(101).

(C) Visual inspection shall be performed in accordance with the following:

(1) The cylinder is checked for exposure to fire, dents, cuts, digs, gouges, and corrosion according to CGA C-6-2005, Standards for Visual Inspection of Steel Compressed Gas Cylinders, ninth edition, except that paragraph 5.2.1.1(1) of that standard (which requires tare weight verification) shall not be part of the required inspection criteria.

(2) The cylinder protective collar (where utilized) and the foot ring are intact and are firmly attached.

(3) The cylinder is painted or coated to retard corrosion.

(4) The cylinder pressure relief valve indicates no visible damage, corrosion of operating components, or obstructions.

(5) There is no leakage from the cylinder or its appurtenances that is detectable without the use of instruments.

(6) The cylinder is installed on a firm foundation and is not in contact with the soil.

(7) A cylinder that passes the visual examination shall be marked with the month and year of the examination followed by the letter “E” (for example, 10-01E, indicating requalification in October 2001 by the external inspection method) and the requalifier identification number (RIN) in accordance with the requalifying agency’s permit issued by the United States Department of Transportation.

(8) The results of the visual inspection shall be documented, and a record of the inspection shall be retained for a 5-year period or until the cylinder is again requalified, whichever occurs first.

- Delete section 6.6.7.1 and insert in lieu thereof the following:

6.6.7.1 Installation of permanent, stationary containers on roofs of buildings shall be prohibited.

- Delete section 6.6.7.2.

- Delete sections 6.12, 6.12.1, 6.12.2, and 6.12.3.

NOTE: Properties of LP-gases shall be determined in accordance with Appendix B of NFPA 58.

Public Safety [661] Chapter 226, “Liquefied Petroleum Gas”, International Fire Code® 2006 Edition, Amended for Application within the State of Iowa

- Delete paragraph 6.17.1.2(C) and insert in lieu thereof the following new paragraph:
6.17.1.2(C) Cylinders installed permanently on roofs of buildings shall be prohibited.
- Delete section 6.17.11.1, including paragraphs (A) through (F), and insert in lieu thereof the following new section:
6.17.11.1 Cylinders installed permanently on roofs of buildings shall be prohibited.
- Delete section 6.17.11.2.
- Delete section 7.2.1.1 and insert in lieu thereof the following new section:
7.2.1.1 Transfer operations shall be conducted by qualified personnel meeting the provisions of rule 661—226.4(101).

3801.2 Permits. Deleted

3801.3 Construction documents. Where a single container is more than 2,000 gallons (7,570 L) in water capacity or the aggregate capacity of containers is more than 4,000 gallons (15,140 L) in water capacity, the installer shall submit construction documents for such installation to the fire marshal for review and approval. Installation shall not commence until written approval from the fire marshal has been received.

SECTION 3802

DEFINITIONS

3802.1 Definition. The following word and term shall, for the purposes of this chapter and as used elsewhere in this code, have the meaning shown herein.

LIQUEFIED PETROLEUM GAS (LP-gas). A material which is composed predominantly of the following hydrocarbons or mixtures of them: propane, propylene, butane (normal butane or iso-butane) and butylenes.

SECTION 3803

INSTALLATION OF EQUIPMENT

3803.1 General. LP-gas equipment shall be installed in accordance with NFPA 54, ANSI Z223.1-2006 National Fuel Gas Code, 2006 edition, and NFPA 58, Liquefied Petroleum Gas Code, 2004 edition.

3803.2 Use of LP-gas containers in buildings. The use of LP-gas containers in buildings shall be in accordance with Sections 3803.2.1 and 3803.2.2.

3803.2.1 Portable containers. Portable LP-gas containers, as defined in NFPA 58, shall not be used in buildings except as specified in NFPA 58 and Sections 3803.2.1.1 through 3803.2.1.7.

3803.2.1.1 Use in basement, pit or similar location.

LP-gas containers shall not be used in a basement, pit or similar location where heavier-than-air gas might collect. LP-gas containers shall not be used in an above-grade underfloor space or basement unless such location is provided with an approved means of ventilation.

Exception: Use with self-contained torch assemblies in accordance with Section 3803.2.1.6.

3803.2.1.2 Construction and temporary heating. Portable containers are allowed to be used in buildings or areas of buildings undergoing construction or for temporary heating as set forth in Sections 6.17.4, 6.17.5 and 6.17.8 of NFPA 58.

3803.2.1.3 Group F occupancies. In Group F occupancies, portable LP-gas containers are allowed to be used to supply quantities necessary for processing, research or experimentation. Where manifolded, the aggregate water capacity of such containers shall not exceed 735 pounds (334 kg) per manifold. Where multiple manifolds of such containers are present in the same room, each manifold shall be separated from other manifolds by a distance of not less than 20 feet (6096 mm).

3803.2.1.4 Group E and I occupancies. In Group E and I occupancies, portable LP-gas containers are allowed to be used for research and experimentation. Such containers shall not be used in classrooms. Such containers shall not exceed a 50-pound (23 kg) water capacity in occupancies used for educational purposes and shall not exceed a 12-pound (5 kg) water capacity in occupancies used for institutional purposes. Where more than one such container is present in the same room, each container shall be separated from other containers by a distance of not less than 20 feet (6096 mm).

Public Safety [661] Chapter 226, “Liquefied Petroleum Gas”, International Fire Code® 2006 Edition, Amended for Application within the State of Iowa

3803.2.1.5 Demonstration uses. Portable LP-gas containers are allowed to be used temporarily for demonstrations and public exhibitions. Such containers shall not exceed a water capacity of 12 pounds (5 kg). Where more than one such container is present in the same room, each container shall be separated from other containers by a distance of not less than 20 feet (6096 mm).

3803.2.1.6 Use with self-contained torch assemblies.

Portable LP-gas containers are allowed to be used to supply approved self-contained torch assemblies or similar appliances. Such containers shall not exceed a water capacity of 2.7 pounds (1.1 kg). (Amended to 2.7 pounds, not gallons.)

3803.2.1.7 Use for food preparation. Where approved, listed LP-gas commercial food service appliances are allowed to be used for food preparation within restaurants and in attended commercial food catering operations in accordance with NFPA 54, ANSI Z223.1-2006 National Fuel Gas Code, 2006 edition, the International Mechanical Code, 2006 edition, and NFPA 58, Liquefied Petroleum Gas Code, 2004 edition.

NOTE: The following are deletions from the adoption of the International Fire Code, 2006 edition.

3803.2.2 Industrial vehicles and floor maintenance machines. Containers on industrial vehicles and floor maintenance machines shall comply with NFPA58, Section 11.12 and 11.13.

3803.3 Location of equipment and piping. Equipment and piping shall not be installed in locations where such equipment and piping are prohibited by NFPA 54, ANSI Z223.1-2006 National Fuel Gas Code, 2006 edition.

SECTION 3804

LOCATION OF CONTAINERS

3804.1 General. The storage and handling of LP-gas and the installation and maintenance of related equipment shall comply with NFPA58 and be subject to the approval of the fire code official, except as provided in this chapter.

3804.2 Maximum capacity within established limits. Within the limits established by law restricting the storage of liquefied petroleum gas for the protection of heavily populated or congested areas, the aggregate capacity of any one installation shall not exceed a water capacity of 2,000 gallons (7570 L) (see Section 3 of the Sample Ordinance for Adoption of the *International Fire Code* on page v).

Exception: In particular installations, this capacity limit shall be determined by the fire code official, after consideration of special features such as topographical conditions, nature of occupancy, and proximity to buildings, capacity of proposed containers, degree of fire protection to be provided and capabilities of the local fire department.

3804.3 Container location. Containers shall be located with respect to buildings, public ways, and lot lines of adjoining property that can be built upon, in accordance with Table 3804.3.

3804.3.1 Special hazards. Containers shall also be located with respect to special hazards such as above-ground flammable or combustible liquid tanks, oxygen or gaseous hydrogen containers, flooding or electric power lines as specified in NFPA 58, Section 6.4.5.

Table 3804.3, Location of LP-Gas Containers

Container Capacity (water gallons)	Minimum Separation Between Containers and Buildings, Public Ways or Lot Lines of Adjoining Property That Can Be Built Upon		Minimum Separation Between Containers ^{b, c} (feet)
	Mounded or Underground Containers ^a (feet)	Above-Ground Containers ^b (feet)	
Less than 125 ^{c,d}	10	5 ^e	None
125 to 250	10	10	None
251 to 500	10	10	3
501 to 2,000	10	25 ^{e,f}	3
2,001 to 30,000	50	50	5
30,001 to 70,000	50	75	(0.25 of sum of diameters of adjacent containers)
70,001 to 90,000	50	100	
90,001 to 120,000	50	125	

For SI: 1 foot = 304.8 mm, 1 gallon = 3.785 L.

- Minimum distance for underground containers shall be measured from the pressure relief device and the filling or liquid-level gauge vent connection at the container, except that all parts of an underground container shall be 10 feet or more from a building or lot line of adjoining property which can be built upon.
- For other than installations in which the overhanging structure is 50 feet or more above the relief-valve discharge outlet. In applying the distance between buildings and ASME containers with a water capacity of 125 gallons or more, a minimum of 50 percent of this horizontal distance shall also apply to all portions of the building which project more than 5 feet from the building wall and which are higher than the relief valve discharge outlet. This horizontal distance shall be measured from a point determined by projecting the outside edge of such

Public Safety [661] Chapter 226, “Liquefied Petroleum Gas”, International Fire Code® 2006 Edition, Amended for Application within the State of Iowa

overhanging structure vertically downward to grade or other level upon which the container is installed. Distances to the building wall shall not be less than those prescribed in this table.

- c. When underground multi-container installations are comprised of individual containers having a water capacity of 125 gallons or more, such containers shall be installed so as to provide access at their ends or sides to facilitate working with cranes or hoists.
- d. At a consumer site, if the aggregate water capacity of a multi-container installation, comprised of individual containers having a water capacity of less than 125 gallons, is 500 gallons or more, the minimum distance shall comply with the appropriate portion of Table 3804.3, applying the aggregate capacity rather than the capacity per container. If more than one such installation is made, each installation shall be separated from other installations by at least 25 feet. Minimum distances between containers need not be applied.
- e. The following shall apply to above-ground containers installed alongside buildings:
 1. Containers of less than a 125-gallon water capacity are allowed next to the building they serve when in compliance with Items 2, 3 and 4.
 2. Department of Transportation (DOT) specification containers shall be located and installed so that the discharge from the container pressure relief device is at least 3 feet horizontally from building openings below the level of such discharge and shall not be beneath buildings unless the space is well ventilated to the outside and is not enclosed for more than 50 percent of its perimeter. The discharge from container pressure relief devices shall be located not less than 5 feet from exterior sources of ignition, openings into direct-vent (sealed combustion system) appliances or mechanical ventilation air intakes.
 3. ASME containers of less than a 125-gallon water capacity shall be located and installed such that the discharge from pressure relief devices shall not terminate in or beneath buildings and shall be located at least 5 feet horizontally from building openings below the level of such discharge and not less than 5 feet from exterior sources of ignition, openings into direct vent (sealed combustion system) appliances, or mechanical ventilation air intakes.
 4. The filling connection and the vent from liquid-level gauges on either DOT or ASME containers filled at the point of installation shall not be less than 10 feet from exterior sources of ignition, openings into direct vent (sealed combustion system) appliances or mechanical ventilation air intakes.
- f. This distance is allowed to be reduced to not less than 10 feet for a single container of 1,200-gallon water capacity or less, provided such container is at least 25 feet from other LP-gas containers of more than 125-gallon water capacity.

3804.4 Multiple container installation. Multiple container installations with a total water storage capacity of more than 180,000 gallons (681 300 L) [150,000-gallon (567 750 L) LP-gas capacity] shall be subdivided into groups containing not more than 180,000 gallons (681 300 L) in each group. Such groups shall be separated by a distance of not less than 50 feet (15 240 mm), unless the containers are protected in accordance with one of the following:

1. Mounded in an approved manner.
2. Protected with approved insulation on areas that are subject to impingement of ignited gas from pipelines or other leakage.
3. Protected by firewalls of approved construction.
4. Protected by an approved system for application of water as specified in NFPA 58, Table 6.4.2.
5. Protected by other approved means.

Where one of these forms of protection is provided, the separation shall not be less than 25 feet (7620 mm) between container groups.

SECTION 3805

PROHIBITED USE OF LP-GAS

3805.1 Nonapproved equipment. LP-gas shall not be used for the purpose of operating devices or equipment unless such device or equipment is approved for use with LP-gas in accordance with NFPA 58, Liquefied Petroleum Gas Code, 2004 edition, sections 1.5 through 1.5.3.

3805.2 Release to the atmosphere. LP-gas shall not be released to the atmosphere, except through an approved liquid-level gauge or other approved device.

SECTION 3806

DISPENSING AND OVERFILLING

3806.1 Attendants. Transfer operations shall be conducted by qualified personnel meeting the provisions of rule 661—226.4(101).

3806.2 Overfilling. LP-gas containers shall not be filled or maintained with LP-gas in excess of either the volume determined using the fixed liquid-level gauge installed by the manufacturer or the weight determined by the required percentage of the water capacity marked on the container. Portable containers shall not be refilled unless equipped with an overfilling prevention device (OPD) when required by Section 5.7.6 of NFPA58.

3806.3 Dispensing locations. The point of transfer of LP-gas from one container to another shall be separated from exposures as specified in NFPA 58.

Public Safety [661] Chapter 226, “Liquefied Petroleum Gas”, International Fire Code® 2006 Edition, Amended for Application within the State of Iowa

SECTION 3807

SAFETY PRECAUTIONS AND DEVICES

3807.1 Safety devices. Safety devices on LP-gas containers, equipment and systems shall not be tampered with or made ineffective.

3807.2 Smoking and other sources of ignition. “No Smoking” signs complying with Section 310 shall be posted when required by the fire code official. Smoking within 25 feet (7620 mm) of a point of transfer, while filling operations are in progress at containers or vehicles, shall be prohibited.

Control of other sources of ignition shall comply with Chapter 3 and NFPA 58, Section 6.20.

3807.3 Clearance to combustibles. Weeds, grass, brush, trash and other combustible materials shall be kept a minimum of 10 feet (3048 mm) from LP-gas tanks or containers.

3807.4 Protecting containers from vehicles. Where exposed to vehicular damage due to proximity to alleys, driveways or parking areas, LP-gas containers, regulators and piping shall be protected in accordance with Section 312.

SECTION 3808

FIRE PROTECTION

3808.1 General. Fire protection shall be provided for installations having storage containers with a water capacity of more than 4,000 gallons (15 140 L), as required by Section 6.23 of NFPA 58.

3808.2 Portable fire extinguishers. Portable fire extinguishers complying with Section 906 shall be provided as specified in NFPA 58.

SECTION 3809

STORAGE OF PORTABLE LP-GAS CONTAINERS AWAITING USE OR RESALE

3809.1 General. Storage of portable containers of 1,000 pounds (454 kg) or less, whether filled, partially filled or empty, at consumer sites or distributing points, and for resale by dealers or resellers shall comply with Sections 3809.2 through 3809.15.

Exceptions:

1. Containers that have not previously been in LP-gas service.
2. Containers at distributing plants.
3. Containers at consumer sites or distributing points, which are connected for use.

3809.2 Exposure hazards. Containers in storage shall be located in a manner which minimizes exposure to excessive temperature rise, physical damage or tampering.

3809.3 Position. Containers in storage having individual water capacity greater than 2.7 pounds (1.1 kg) [nominal 1-pound (0.454 kg) LP-gas capacity] shall be positioned with the pressure relief valve in direct communication with the vapor space of the container. (Amended to 2.7 pounds, not gallons.)

3809.4 Separation from means of egress. Containers stored in buildings in accordance with Sections 3809.9 and 3809.11 shall not be located near exit access doors, exits, stairways, or in areas normally used, or intended to be used, as a means of egress.

3809.5 Quantity. Empty containers that have been in LP-gas service shall be considered as full containers for the purpose of determining the maximum quantities of LP-gas allowed in Sections 3809.9 and 3809.11.

3809.6 Storage on roofs. Containers which are not connected for use shall not be stored on roofs.

3809.7 Storage in basement, pit or similar location. LP-gas containers shall not be stored in a basement, pit or similar location where heavier-than-air gas might collect. LP-gas containers shall not be stored in above-grade under-floor spaces or basements unless such location is provided with an approved means of ventilation.

Exception: Department of Transportation (DOT) specification cylinders with a maximum water capacity of 2.7 pounds (1.1 kg) for use in completely self-contained hand torches and similar applications. (Amended to 2.7 pounds, not gallons.) The quantity of LP-gas shall not exceed 20 pounds (9 kg).

3809.8 Protection of valves on containers in storage. Container valves shall be protected by screw-on-type caps or collars which shall be securely in place on all containers stored regardless of whether they are full, partially full or empty. Container outlet valves shall be closed or plugged.

3809.9 Storage within buildings accessible to the public.

Department of Transportation (DOT) specification cylinders with maximum water capacity of 2.7 pounds (1.1 kg) used in completely self-contained hand torches and similar applications are allowed to be stored or displayed in a building accessible to the public. The quantity of LP-gas shall not exceed 200 pounds (91 kg) except as provided in Section 3809.11. (Amended to 2.7 pounds, not gallons.)

Public Safety [661] Chapter 226, “Liquefied Petroleum Gas”, International Fire Code® 2006 Edition, Amended for Application within the State of Iowa

3809.10 Storage within buildings not accessible to the public.

The maximum quantity allowed in one storage location in buildings not accessible to the public, such as industrial buildings, shall not exceed a water capacity of 735 pounds (334 kg) [nominal 300 pounds (136 kg) of LP-gas]. Where additional storage locations are required on the same floor within the same building, they shall be separated by a minimum of 300 feet (91 440 mm). Storage beyond these limitations shall comply with Section 3809.11.

3809.10.1 Quantities on equipment and vehicles. Containers carried as part of service equipment on highway mobile vehicles need not be considered in the total storage capacity in Section 3809.10, provided such vehicles are stored in private garages and do not carry more than three LP-gas containers with a total aggregate LP-gas capacity not exceeding 100 pounds (45.4 kg) per vehicle. Container valves shall be closed.

3809.11 Storage within rooms used for gas manufacturing.

Storage within buildings or rooms used for gas manufacturing, gas storage, gas-air mixing and vaporization, and compressors not associated with liquid transfer shall comply with Sections 3809.11.1 and 3809.11.2.

3809.11.1 Quantity limits. The maximum quantity of LP-gas shall be 10,000 pounds (4540 kg).

3809.11.2 Construction. The construction of such buildings and rooms shall comply with requirements for Group H occupancies in the *International Building Code*; Chapter 10 of NFPA 58, and both of the following:

1. Adequate vents shall be provided to the outside at both top and bottom, located at least 5 feet (1524 mm) from building openings.
2. The entire area shall be classified for the purposes of ignition source control in accordance with Section 6.20 of NFPA 58.

3809.12 Location of storage outside of buildings. Storage outside of buildings of containers awaiting use, resale or part of a cylinder exchange program shall be located in accordance with Table 3809.12.

TABLE 3809.12, Separation from Exposures of Containers Awaiting Use, Resale or Exchange Stored Outside of Buildings from Exposures

Quantity of LP-Gas Stored (pounds)	Minimum Separation Distance from Stored Cylinders (feet):						
	Nearest important building or group of buildings or line of adjoining property that may be build upon	Line of adjoining property occupied by schools, places of worship, hospitals, athletic fields or other points of public gathering; busy thoroughfares; or sidewalks	LP-Gas dispensing stations	Doorway or opening to a building with two or more means of egress	Doorway or opening to a building with one means of egress	Combustible materials	Motor vehicle fuel dispenser
720 or less	0	0	5	5	10	10	20
721 – 2,500	0	10	10	5	10	10	20
2,501 – 6,000	10	10	10	10	10	10	20
6,001 – 10,000	20	20	20	20	20	10	20
Over 10,000	25	25	15	25	25	10	20

For SI: 1 foot = 304.8 mm, 1 pound = 0.454 kg.

3809.13 Protection of containers. Containers shall be stored within a suitable enclosure or otherwise protected against tampering. Vehicular protection shall be provided as required by the fire code official.

3809.14 Alternative location and protection of storage.

Containers located outside of buildings shall not be located within 20 feet (6096 mm) of any exit access doors, exits, stairways or in areas normally used, or intended to be used, as a means of egress.

3809.15 Alternative location and protection of storage.

Where the provisions of Sections 3809.12 and 3809.13 are impractical at construction sites, or at buildings or structures undergoing major renovation or repairs, the storage of containers shall be as required by the fire code official.

Public Safety [661] Chapter 226, “Liquefied Petroleum Gas”, International Fire Code® 2006 Edition, Amended for Application within the State of Iowa

SECTION 3810

CONTAINERS NOT IN SERVICE

3810.1 Temporarily out of service. Containers whose use has been temporarily discontinued shall comply with all of the following:

1. Be disconnected from appliance piping.
2. Have container outlets, except relief valves, closed or plugged.
3. Be positioned with the relief valve in direct communication with container vapor space.

3810.2 Permanently out of service. Containers to be placed permanently out of service shall be removed from the site.

SECTION 3811

PARKING AND GARAGING

3811.1 General. Parking of LP-gas tank vehicles shall comply with Sections 3811.2 and 3811.3.

Exception: In cases of accident, breakdown or other emergencies, tank vehicles are allowed to be parked and left unattended at any location while the operator is obtaining assistance.

3811.2 Unattended parking. The unattended parking of LP-gas tank vehicle shall be in accordance with Sections 3811.2.1 and 3811.2.2.

3811.2.1 Near residential, educational and institutional occupancies and other high-risk areas. LP-gas tank vehicles shall not be left unattended at any time on residential streets or within 500 feet (152 m) of a residential area, apartment or hotel complex, educational facility, hospital or care facility. Tank vehicles shall not be left unattended at any other place that would, in the opinion of the fire code official, pose an extreme life hazard.

3811.2.2 Durations exceeding 1 hour. LP-gas tank vehicles parked at any one point for longer than 1 hour shall be located as follows:

1. Off public streets, highways, public avenues or public alleys.
2. Inside of a bulk plant.
3. At other approved locations not less than 50 feet (15 240 mm) from buildings other than those approved for the storage or servicing of such vehicles.

3811.3 Garaging. Garaging of LP-gas tank vehicles shall be as specified in NFPA 58. Vehicles with LP-gas fuel systems are allowed to be stored or serviced in garages as specified in Section 11.15 of NFPA 58.

SECTION 308 [IFC, 2006 Edition]

OPEN FLAMES

308.3.1.1 Liquefied-petroleum-gas-fueled cooking devices. LP-gas burners having an LP-gas container with a water capacity greater than 2.7 pounds [nominal 1 pound (0.454 kg) LP-gas capacity] shall not be located on combustible balconies or within 10 feet (3048 mm) of combustible construction. (Amended to 2.7 pounds, not gallons.)

Exception: One- and two-family dwellings.

661-226 ADDITIONAL REQUIREMENTS (*Effective July 1, 2007*)

661—226.2(101) Transfer into container. No person shall transfer any liquefied petroleum gas into a container, regardless of the container’s size, if the container has previously been used for the storage of any other product until the container has been thoroughly purged, inspected for contamination, provided with proper appurtenances, and determined suitable for use as a container for liquefied petroleum gas as prescribed in the standards established under rule 661— 226.1(101).

661—226.3(101) Prohibition of certain refrigerants. The distribution, sale or use of refrigerants containing liquefied petroleum gas, as defined in Iowa Code section 101.1, for use in mobile air conditioning systems is prohibited.

661—226.4(101) Qualifications of personnel.

226.4(1) Persons who transfer liquefied petroleum gas, who are employed to transport liquefied petroleum gas, or whose primary duties fall within the scope of this chapter shall be trained in proper handling procedures.

a. Training shall include both initial training and refresher training.

(1) Initial training shall include participation in a training program and shall include both a written qualification assessment (closed-book test) and a skills assessment, based on the objectives set forth in the recognized training program and the requirements of NFPA 54 National Fuel Gas Code, 2006 edition, NFPA 58 Liquefied Petroleum Gas Code, 2004 edition, and any applicable requirements established in this chapter.

Public Safety [661] Chapter 226, “Liquefied Petroleum Gas”, International Fire Code® 2006 Edition, Amended for Application within the State of Iowa

(2) Refresher training shall include both a written qualification assessment (closed-book test) and a hands-on skills assessment based on requirements of NFPA 54 National Fuel Gas Code, 2006 edition, NFPA 58 Liquefied Petroleum Gas Code, 2004 edition, and any applicable requirements established in this chapter.

(3) The written qualification assessment shall be proctored through the training agency providing the refresher training or another qualified party.

(4) The hands-on skills assessment shall be completed by the training agency or another qualified party and shall include a verification of completion that shall be signed by the individual completing the required skills and the skills evaluator.

(5) Refresher training shall be provided at least every three years.

b. All training shall be documented. Documentation shall be maintained by the current employer of the person receiving the training.

226.4(2) Persons who install, service, test, or maintain propane gas utilization equipment, or gas piping systems of which the equipment is a part, or accessories shall be trained in the proper procedures in accordance with applicable codes.

a. Initial training shall include participation in a training program and shall include both a written qualification assessment (closed-book test) and a skills assessment, based on the objectives set forth in the recognized training program and the requirements of NFPA 54 National Fuel Gas Code, 2006 edition, NFPA 58 Liquefied Petroleum Gas Code, 2004 edition, and this chapter.

b. Refresher training shall include both a written qualification assessment (closed-book test) and a hands-on skills assessment based on requirements of NFPA 54 National Fuel Gas Code, 2006 edition, NFPA 58 Liquefied Petroleum Gas Code, 2004 edition, and this chapter.

c. The written qualification assessment shall be proctored through the training agency providing the refresher training or another qualified party.

d. The hands-on skills assessment shall be completed by the training agency or another qualified party and shall include a verification of completion that shall be signed by the individual completing the required skills and the skills evaluator.

e. Refresher training shall be provided at least every three years.

f. All training shall be documented. Documentation shall be maintained by the current employer of the person receiving the training.

226.4(3) Successful completion of the written qualification assessment and hands-on skills assessment shall satisfy the refresher training requirements of subrules 226.4(1) and 226.4(2).

661-226 ADDITIONAL REQUIREMENTS *(Effective January 1, 2008)*

Definitions. The following words and terms shall, for the purposes of this chapter and as used elsewhere in the applicable codes, have the meaning shown herein.

LEAK CHECK. An operation performed on a complete gas piping system, the connections and appliances, and equipment to verify that the system does not leak (see NFPA 54, 2006, 3.3.62).

PRESSURE TEST. An operation performed to verify the gastight integrity of gas piping following its installation or modification (see NFPA 54, 2006, 3.3.81).

ITEM 1. Amend rule 661-226.5(101) as follows:

Rescind subrule 226.5(1) and insert in lieu thereof the following new subrule:

226.5(1) Pressure testing required. After assembly and after any modification or repair, metallic LP-gas piping and hose shall be pressure-tested as follows:

a. Piping systems having operating pressures greater than 20 psig shall be pressure tested in accordance with the following:

(1) Prior to acceptance and initial operation, all piping installations shall be inspected and pressure-tested to determine that the materials, design, fabrication, and installation practices comply with the requirements of this chapter.

(2) Inspection shall consist of visual examination, during or after manufacture, fabrication, assembly, or pressure tests as appropriate. Supplementary types of nondestructive inspection techniques, such as magnetic-particle, radiographic, and ultrasonic, shall not be required unless specifically required in this chapter or a standard or code adopted by reference in this chapter or in the engineering design.

(3) When repairs or additions are made following the pressure test, the affected piping shall be tested. Minor repairs and additions are not required to be pressure-tested, provided that the work is inspected and connections are tested with a noncorrosive, leak-detecting fluid or other leak detecting methods approved by the authority having jurisdiction.

Public Safety [661] Chapter 226, "Liquefied Petroleum Gas", International Fire Code® 2006 Edition, Amended for Application within the State of Iowa

- (4) When new branches are installed to a new appliance or appliances, only the newly installed branch or branches shall be required to be pressure-tested. Connections between the new piping and the existing piping shall be tested with a noncorrosive, leak-detecting fluid or approved leak detecting methods.
- (5) A piping system shall be tested as a complete unit or in sections. A valve in a line shall not be used as a bulkhead between gas in one section of the piping system and test medium in an adjacent section, unless two valves are installed in series with a valved "telltale" located between these valves. A valve shall not be subjected to the test pressure unless it can be determined that the valve, including the valve-closing mechanism, is designed to safely withstand the pressure applied during the test.
- (6) Regulator and valve assemblies fabricated independently of the piping system in which they are to be installed shall be permitted to be tested with inert gas or air at the time of fabrication.
- (7) The test medium shall be air, nitrogen, carbon dioxide, or an inert gas. Oxygen shall not be used.
- (8) Test pressure shall be measured with a pressure measuring device designed and calibrated to read, record, or indicate a pressure loss due to leakage during the pressure test period. The source of pressure shall be isolated before the pressure tests are made. Mechanical gauges used to measure test pressures shall have a range such that the highest end of the scale is not greater than five times the test pressure.
- (9) The test pressure to be used shall be no less than 50 psi and shall not exceed 75 psi.
- (10) Expansion joints shall be provided with temporary restraints, if required, for the additional thrust load under test.
- (11) Appliances and equipment that are not to be included in the test shall be either disconnected from the piping or isolated by blanks, blind flanges, or caps. Flanged joints at which blinds are inserted to blank off other equipment during the test shall not be required to be tested.
- (12) Where the piping system is connected to appliances or equipment designed for operating pressures of less than the test pressure, such appliances or equipment shall be isolated from the piping system by disconnecting them and capping the outlet(s).
- (13) Where the piping system is connected to appliances or equipment designed for operating pressures equal to or greater than the test pressure, such appliances or equipment shall be isolated from the piping system by closing the individual appliance or equipment shutoff valve(s).
- (14) All testing of piping systems shall be done with due regard for the safety of employees and the public during the test. Bulkheads, anchorage, and bracing suitably designed to resist test pressures shall be installed if necessary. Prior to testing, the interior of the pipe shall be cleared of all foreign material.
- (15) Test duration shall be not less than one-half hour for each 500 ft³ (14 m³) of pipe volume or fraction thereof. The duration of the test shall not be required to exceed 24 hours.

EXCEPTION: When a system having a volume of less than 10 ft³ (0.28 m³) is tested, the test duration shall be a minimum of 10 minutes.

b. Piping systems having operating pressures of 20 psig or less, all polyethylene and polyamide piping, and piping to which NFPA 54 National Fuel Gas Code, 2006 edition, is applicable, shall be tested in accordance with that code.

Rescind subrule 226.5(2) and adopt the following new subrule in lieu thereof:

226.5(2) Testing for leakage. All LP-gas piping systems having operating pressures of 20 psig or less and all polyethylene and polyamide piping shall have system and equipment leakage tests performed in accordance with this chapter and Section 8.2 NFPA 54 National Fuel Gas Code, 2006 edition.

Public Safety [661] Chapter 226, "Liquefied Petroleum Gas", International Fire Code® 2006 Edition, Amended for Application within the State of Iowa

Adopt the following new subrule:

226.5(4) Out-of-gas customers or interruption of service system start-up procedure. When a delivery of propane is made to any on-site container which is out of gas, or if propane service was interrupted, the delivery person shall comply with the following procedures.

a. When the "out-of-gas customer" is not present:

- (1) The container service valve shall be shut off; and
- (2) A tag shall be placed on the container service valve for the equipment the container services, indicating the container is out of service. The tag shall inform the gas customer to contact a qualified person to perform a leak check or other test on the system, as required by rules of the fire marshal, before turning on the container. Further action is the responsibility of the customer.

b. When the "out-of-gas customer" is present:

- (1) The container service valve shall be shut off; and
- (2) The gas customer shall be informed that the container is out of service and a qualified person must perform a leak check or other test on the system as required by this chapter or Section 8.2 of NFPA 54 National Fuel Gas Code, 2006 edition, before turning on the container service valve. Further action is the responsibility of the customer.

ITEM 2. Adopt the following new rule 661-226.6(101):

661-226.6(101) Damages-reporting.

226.6(1) Responsibility to report.

a. Any person who causes damage to any LP-gas piping system, including hoses, other than a person qualified in accordance with rule 661-226.4(101) and who has been authorized by the owner or occupant to repair the LP-gas installation, shall immediately turn off the supply of propane to the affected system and shall immediately notify the local fire department. After the call to the fire department, the person shall immediately notify the occupant of the property of the damage and the shutoff. If the occupant of the property cannot be contacted immediately, the owner of the property shall immediately be notified.

b. If the occupant or owner of property on which an LP-gas system is located has received notification that the system has been damaged and the occupant or owner finds that the supply of propane to the system has not been shut off, then the occupant or owner shall immediately shut off the supply of propane to the system and shall immediately notify the local fire department.

c. If the occupant or owner of property on which an LP-gas system is located finds that an LP-gas piping system has been damaged and the damage has not been reported to the occupant or owner as required by paragraph "a" of this subrule, the occupant or owner shall immediately shut off the supply of propane to the system and shall immediately notify the local fire department.

226.6(2) Notification to qualified person. The occupant or owner of the property on which an LP-gas system is located shall notify a person qualified pursuant to rule 661-226.4(101) of any damage to an LP-gas piping system immediately after receiving notification or otherwise becoming aware of the damage and shall arrange for the qualified person to inspect, repair, and test the damaged system prior to restoration of service to the damaged or repaired system. Arrangement by the occupant or owner of the property for required repairs and testing shall not relieve the person who damaged the system of any liability, including the costs of repair or testing.

226.6(3) Restoration of service. LP-gas service shall not be restored to an LP-gas piping system which has been damaged until the system has been repaired and tested in accordance with rule 661-226.5(101).