CHAPTER 226
LIQUEFIED PETROLEUM GAS

[Prior to 5/23/07, see rules 661—51.100(101) to 661—51.102(101)]

Chapter rescission date pursuant to Iowa Code section 17A.7: 1/1/28

661—226.1(101) General requirements. The provisions of the National Fire Protection Association, NFPA 54, ANSI Z223.1-2018 National Fuel Gas Code, 2018 edition, and NFPA 58, Liquefied Petroleum Gas Code, 2017 edition, published by the National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471, 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:

Amend NFPA 54, ANSI Z223.1-2018 National Fuel Gas Code, 2018 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, 2018 edition, section 7.2.2.

Delete section 8.2.1 and insert in lieu thereof the following new section:

8.2.1 Leak checks using fuel gas (propane vapor) shall be permitted in piping systems that have been pressure-tested in accordance with 661—subrule 226.5(1).

Amend NFPA 58, Liquefied Petroleum Gas Code, 2017 edition, as follows:

Properties of LP-gases shall be determined in accordance with Annex B of NFPA 58.

Delete section 4.3.1 and insert in lieu thereof the following new section:

4.3.1 Stationary installations. Where a stationary installation utilizes a storage container of more than 2,000 gallons (7,570 L) of individual water capacity, or the aggregate water capacity of storage containers is more than 4,000 gallons (15,140 L) in water capacity, the installer shall submit plans (Liquid Propane Plan – DIVISION OF STATE FIRE MARSHAL) for such installation to the state fire marshal for review and approval. Installation shall not commence until written approval from the state fire marshal has been received. The local fire department [city or county where the tank(s) is located] shall be advised of each installation.

Delete section 5.2.3 and insert in lieu thereof the following new section:

5.2.3 Cylinders filled on site at the point of use.

5.2.3.1 Cylinders in stationary service that are filled on site at the point of use and, therefore, are not under the jurisdiction of the DOT shall comply with one of the following criteria:

(1) The cylinders shall be requalified in accordance with DOT requirements.

(2) The cylinders shall be visually inspected within 12 years of the date of manufacture and within every 5 years thereafter, in accordance with 5.2.3.2 through 5.2.3.4.

5.2.3.2 Any cylinder that fails to meet one or more of the criteria in 5.2.3.4 shall not be refilled or continued in service until the condition is corrected.

5.2.3.3 Personnel shall be trained and qualified to perform inspections. Training shall be documented in accordance with rule 661—226.4(101).

5.2.3.4 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-6-2013, Standard for Visual Inspection of Steel Compressed Gas Cylinders, eleventh edition, except that 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 minimize 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 is marked with the month and year of the examination followed by the letter E (e.g., "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 DOT.

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

Delete section 6.8.7.1 and insert in lieu thereof the following new section:

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

Delete section 6.8.7.2.

Delete section 6.9.2.7 and insert in lieu thereof the following new section:

6.9.2.7 The pressure relief valve discharge on each aboveground container of more than 2000-gal (7.6 m^3) water capacity shall be piped vertically upward to a point at least 7 ft (2.1 m) above the top of the container, and the discharge opening shall be unobstructed to the open air.

Delete section 6.11.3.14 and insert in lieu thereof the following new section:

6.11.3.14 Metallic piping shall be protected against corrosion in accordance with 6.11.3.14(A) through 6.11.3.14(C). Underground gas piping that is outside a building shall not be in physical contact with any concrete.

(A) Piping and tubing of 1-inch (25 mm) nominal diameter or smaller shall be protected in accordance with 6.19.1 or 6.19.2.

(B) Piping and tubing larger than 1-inch (25 mm) nominal diameter and installed aboveground shall be protected in accordance with 6.19.1.

(C) Steel piping installed underground shall have a cathodic protection system in accordance with 6.19.2(C) unless technical justification is approved by the Authority Having Jurisdiction.

Delete section 6.16 in its entirety.

Delete section 6.17 in its entirety.

Delete paragraph 6.22.1.2(C) and insert in lieu thereof the following new paragraph:

6.22.1.2(C) Cylinders installed permanently on roofs of buildings shall be prohibited.

Delete section 6.22.11.1, including paragraphs (A) through (F), and insert in lieu thereof the following new section:

6.22.11.1 Cylinders installed permanently on roofs of buildings shall be prohibited.

Delete section 6.22.11.2.

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).

Delete section 11.2 and insert in lieu thereof the following new section:

11.2 Each person engaged in installing, repairing, filling, or otherwise servicing an LP-gas engine fuel system shall be trained in accordance with rule 661—226.4(101) and trained under the applicable installation and maintenance procedures established by the manufacturer.

Delete section 12.4.7.4.3 and insert in lieu thereof the following new section:

12.4.7.4.3 A label indicating the date of the successful test and/or the date of the next required verification test shall be affixed in a clearly identified and easily accessible location. A clearly identified and easily accessible location could be (1) on the container near the fill point, (2) on the stepwell of a bus, (3) on the inside of the doorframe nearest the remote fill location on the vehicle, or (4) on another location as approved by the Authority Having Jurisdiction (AHJ).

Delete section 12.5.2.1 and insert in lieu thereof the following new section:

12.5.2.1* Each person engaged in installing or maintaining an LP-gas engine fuel system shall be trained as follows:

(1) In accordance with rule 661—226.4(101).

(2) With general training on the nature of LP-gas engine fuel systems and their components.

(3) With training on the specific LP-gas engine fuel system to be installed or maintained.

All training shall be documented.

[**ARC 9235B**, IAB 11/17/10, effective 1/1/11; **ARC 1868C**, IAB 2/18/15, effective 3/25/15; **ARC 4642C**, IAB 8/28/19, effective 10/2/19]

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 and emergency response procedures.

a. Training shall include both initial training and refresher training that addresses but is not limited to safe work practices, the health and safety hazards of liquefied petroleum gas, emergency response procedures, and supervised on-the-job training.

(1) Initial training shall include participation in a recognized 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, 2018 edition, NFPA 58 Liquefied Petroleum Gas Code, 2017 edition, and any applicable requirements established in this chapter.

(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, 2018 edition, NFPA 58 Liquefied Petroleum Gas Code, 2017 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, 2018 edition, NFPA 58 Liquefied Petroleum Gas Code, 2017 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, 2018 edition, NFPA 58 Liquefied Petroleum Gas Code, 2017 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) All training programs shall be instructor-led by a competent trainer.

226.4(4) 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).

226.4(5) The training requirements of subrules 226.4(1) through 226.4(4) shall not apply to users as defined in subrule 226.10(2). If the user is also a person who transfers or is employed to transport liquefied petroleum gas, or whose primary duties fall within the scope of this chapter, then the person must comply with the requirements of subrules 226.4(1) through 226.4(4).

[**ARC 9235B**, IAB 11/17/10, effective 1/1/11; **ARC 1868C**, IAB 2/18/15, effective 3/25/15; **ARC 2874C**, IAB 12/21/16, effective 1/25/17; **ARC 4642C**, IAB 8/28/19, effective 10/2/19]

661—226.5(101) Pressure testing.

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 visually 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.

(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.

(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 a double block and bleed valve is installed. 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) Prior to testing the system, the interior of the pipe shall be cleared of all foreign material.

(8) The test medium shall be air, nitrogen, carbon dioxide, or an inert gas. Oxygen shall not be used.

(9) 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.

(10) The test pressure to be used shall be no less than 50 psi and shall not exceed 75 psi.

(11) Expansion joints shall be provided with temporary restraints, if required, for the additional thrust load under test.

(12) 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.

(13) 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).

(14) 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).

(15) All testing of piping systems shall be performed in a manner that protects the safety of employees and the public during the test.

(16) Test duration shall be not less than one-half hour for each 500 ft^3 (14 m^3) 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 ft^3 (0.28 m^3) 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, 2015 edition, is applicable shall be tested in accordance with that code.

226.5(2) Testing for leakage. Immediately after the gas is turned on into a new system or into a system that has been initially restored after an interruption of service, the piping system shall be checked for leakage in accordance with this chapter and Section 8.2 of NFPA 54, National Fuel Gas Code, 2015 edition. Where leakage is indicated, the gas supply shall be shut off until the necessary repairs have been made.

a. All LP-gas piping systems that have 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 of NFPA 54, National Fuel Gas Code, 2018 edition.

b. Piping systems that serve industrial occupancies with LP-gas vapor pressures between 20 psig and 50 psig shall be tested in accordance with the requirements of the authority having jurisdiction.

c. All LP-gas liquid piping systems and vapor piping systems operating at pressures greater than 20 psig shall be tested for leakage in accordance with this chapter as follows:

(1) Propane liquid shall not be used.

(2) Propane vapor may be utilized.

(3) Methods utilized to perform leak tests may be measurement of flow, measurement of sustained pressure for a period of time sufficient to disclose any leaks, or other procedures adequate to verify the system is gas-tight.

226.5(3) Tests shall not be made with flame.

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, 2018 edition, before turning on the container service valve. Further action is the responsibility of the customer.

[**ARC 9235B**, IAB 11/17/10, effective 1/1/11; **ARC 1868C**, IAB 2/18/15, effective 3/25/15; **ARC 4642C**, IAB 8/28/19, effective 10/2/19]

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).

661—226.7(101) Use of railroad tank cars in stationary service. On or after January 1, 2012, the use of railroad tank cars in stationary propane service shall be prohibited.

Exception:

Existing installations for which prior written approval of the state fire marshal is documented in writing shall be permitted to remain in service.

[**ARC 9235B**, IAB 11/17/10, effective 1/1/11]

661—226.8(101) Installation and use of DOT specification MC330 or MC331 cargo tanks in stationary service. The installation and use of DOT specification MC330 or MC331 cargo tanks in stationary service shall be in accordance with NFPA 58, 2017 edition, and this chapter.

226.8(1) Containers shall be repaired or altered to prevent moisture or water from collecting in any container well. Repairs or alterations to pressure vessels must meet the requirements of the National Board Inspection Code (NBIC) [5] and must be performed by a repair organization accredited by the NBIC and authorized to utilize the "R" code symbol stamp.

226.8(2) Following a repair or alteration and final inspection by a National Board-commissioned inspector, the repair organization will affix a "Repair" nameplate to the pressure vessel which is similar to the ASME nameplate.

226.8(3) Alternate methods for preventing moisture or water from collecting in any container well may be considered in accordance with the equivalency requirements set forth in NFPA 58, 2017 edition, Section 1.5, Equivalency.

[**ARC 9235B**, IAB 11/17/10, effective 1/1/11; **ARC 1868C**, IAB 2/18/15, effective 3/25/15; **ARC 4642C**, IAB 8/28/19, effective 10/2/19]

661—226.9(101) NFPA standards. To the extent that NFPA standards are inconsistent with International Fire Code standards, the NFPA standards shall control.

[**ARC 1868C**, IAB 2/18/15, effective 3/25/15]

661—226.10(101) Public fueling of LP-gas motor fuel vehicles.

226.10(1) Self-service LP-gas dispensing systems, including key, code, and card lock dispensing systems, shall be limited to the filling of permanently mounted containers providing fuel to the LP-gas powered vehicle.

226.10(2) The owner of the LP-gas motor fuel dispensing facility or the owner's designee shall provide for the safe operation of the system and the training of users. "Users" means the person or persons using an LP-gas motor fuel dispensing facility to dispense LP-gas motor fuel into an LP-gas fueled motor vehicle.

[**ARC 2874C**, IAB 12/21/16, effective 1/25/17]

These rules are intended to implement Iowa Code chapter 101.

[Filed 5/3/07, Notice 3/28/07—published 5/23/07, effective 7/1/07]
[Filed 10/31/07, Notice 9/12/07—published 11/21/07, effective 1/1/08]
[Filed ARC 9235B (Notice ARC 9098B, IAB 9/22/10), IAB 11/17/10, effective 1/1/11]
[Filed ARC 1868C (Notice ARC 1722C, IAB 11/12/14), IAB 2/18/15, effective 3/25/15]
[Filed ARC 2874C (Notice ARC 2658C, IAB 8/3/16), IAB 12/21/16, effective 1/25/17]
[Filed ARC 4642C (Notice ARC 4521C, IAB 7/3/19), IAB 8/28/19, effective 10/2/19]