

**COLORADO DEPARTMENT OF
LABOR AND EMPLOYMENT**

DIVISION OF OIL AND PUBLIC SAFETY

**LIQUEFIED PETROLEUM GAS (LPG)
REGULATIONS**

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Effective: February 1, 2011



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ARTICLE 1 GENERAL PROVISIONS

Section 1-1 Basis and Purpose

The basis and purpose of these regulations is to adopt nationally recognized codes and standards; to add or clarify terminology; to add or clarify the duties of LPG facility owners, delivery drivers, and certain users; and to improve the effectiveness of the division LPG program.

Section 1-2 Technical Rationale

The technical requirements of these regulations are generally accepted as national and international codes and standards governing the minimum levels of acceptability for the design, construction, location installation, and operation of equipment for storing, handling, transporting, dispensing, and utilizing LPG. The adoption of these consistent standards is necessary for the preservation of the public health, safety and welfare of the citizens of Colorado.

Section 1-3 Statutory Authority

The amendments to these regulations are created pursuant to 8-20-302, 8-20-402 and 8-20-405 of the Colorado Revised Statutes.

Section 1-4 Effective Date

These amended regulations shall be effective on February 1, 2011. The previous version of these regulations was effective September 1, 2005.

Section 1-5 Codes Incorporated by Reference

Section 1-5-1 Codes incorporated by reference

The following codes are incorporated by reference:

- (a) NFPA 58, *Liquefied Petroleum Gas Code*, 2011 edition excluding Chapters 11, 13 and all *reserved* sections.
- (b) NFPA 54, *National Fuel Gas Code*, 2009 edition.
- (c) NFPA 30-A, *Code for Motor Fuel Dispensing Facilities & Repair Garages*, 2008 edition.

Section 1-5-2 Inspection of incorporated codes

Interested parties may inspect the referenced incorporated materials by contacting the LPG Program Manager, 633 17th Street, Suite 500, Denver, CO 80202 or the State Depository Libraries.

Section 1-5-3 Later amendments not included

These regulations do not include later amendments to or editions of the incorporated material.

Section 1-6 Definitions

- (a) Terms in these regulations shall have the same meaning as those found in Title 8, Article 20 and Title 9, Article 4 of the Colorado Revised Statutes. In addition, unless the context otherwise requires:

- (1) **ASME International** – **ASME International** was formerly the American Society of Mechanical Engineers (ASME).
- (2) **ASTM International** – **ASTM International** was formerly the American Society for Testing and Materials.
- (3) **Condemned** – A **condemned container assembly and piping system** is one determined by a state inspector to be so unsafe that further use is prohibited until it is satisfactorily repaired or replaced.
- (4) **Container assembly** – A **container assembly** includes US Department of Transportation (DOT) and ASME containers, commonly known as tanks or cylinders.
- (5) **CRS** – **CRS** means the Colorado Revised Statutes.
- (6) **Division** – The **Division of Oil and Public Safety**, is the regulatory agency of the Colorado Department of Labor and Employment having jurisdiction over propane container assemblies and piping systems as defined in these regulations.
- (7) **Existing installation** – An **existing installation** includes any LPG container assembly and piping system that has been placed into service and received its initial inspection by a state inspector.
- (8) **FSA** – **FSA** means Fire Safety Analysis, also known as *Product Release Prevention and Incident Preparedness Review* or *Incident Prevention Review*. An FSA is a plan incorporating the various safety features used to control the product and operations at the facility, an evaluation of hazard to the immediate neighborhood, and a tool to be used by an emergency response agency such as the local fire department.
- (9) **Handling** – **Handling** LPG means transferring LPG into a DOT container or an ASME tank. Handling does not include transporting of LPG.
- (10) **Incident** – An **incident** means a reportable accident, as defined by 8-20-407(1), CRS.
- (11) **Incident Prevention Review** – See definition under *FSA*.
- (12) **Installer** – **Installer** means a person or company responsible for setting up for use any container assembly and piping system required by LPG statute or regulation to be inspected.
- (13) **Interruption of service** – **Interruption of service** means an interruption of gas service including an out-of-gas call except for conducting a test
- (14) **LPG facility**– An **LPG facility** is a facility that has an LPG container assembly and piping system.
- (15) **NACE** – **NACE** means the National Association of Corrosion Engineers.
- (16) **National Board** – **National Board** means the National Board of Boiler and Pressure Vessel Inspectors.
- (17) **New installation** – A **new installation** means any container assembly that has been placed into service and has not received its initial inspection by a state inspector.
- (18) **NFPA** – **NFPA** means the National Fire Protection Association.

- (19) **Out-of-gas call** – An *out-of-gas call* means a request for LPG delivery to an empty tank.
- (20) **PERC** – *PERC* means the Propane Education and Resource Council.
- (21) **Product Release Prevention and Incident Preparedness Review** – see definition under *FSA*.
- (22) **PSI** – *PSI* means pounds per square inch.
- (23) **State Inspector** – *State Inspector* means a person who is employed or authorized by the division to perform inspections of LPG facilities.

Section 1-7 Applicability

- (a) The regulations contained herein shall apply to the operation of all LPG container assembly and piping systems including the following:
 - (1) Containers, piping and associated equipment, when delivering LPG to a building for use as a fuel gas;
 - (2) Pipeline terminals, natural gasoline plants, refineries, tank farms, underground storage facilities, aboveground storage facilities, and chemical plants utilizing LPG in the manufacture of their products;
 - (3) The design, construction, installation, and operation of pipeline terminals that receive LPG from pipelines under the jurisdiction of the US Department of Transportation, whose primary purpose is the receipt of LPG for delivery to transporters, distributors or users. Coverage shall begin downstream of the last pipeline valve or tank manifold inlet.

Section 1-8 Condemning an LPG Container Assembly and Piping System

- (a) Conditions which a state inspector may determine to be unsafe include: bypassed safety controls, inoperative relief valves, any gas leak from an LPG container assembly, any excessive gas leak from the piping system, missing nameplate or any other condition deemed by a state inspector to be unsafe. A container assembly or piping system that meets any condition described above may be condemned by a state inspector.
- (b) The owner or user must shut down the condemned LPG container assembly and piping system as directed by a state inspector. If neither the owner nor user is available, a state inspector will cause the system to be shut down.
- (c) A state inspector will affix a notice to a condemned LPG container assembly and piping system stating that it has been condemned and may not be used until satisfactory repairs are made, as determined by a re-inspection by a state inspector or other person authorized by the division.

ARTICLE 2 INSTALLATION

Section 2-1 General Requirements

All new and existing LPG installations shall be in accordance with the 2011 edition of NFPA 58, including any retroactive requirements adopted by the division at the time of installation.

Section 2-2 Installation Applications

(a) Plans for all installations utilizing LPG storage containers of over two thousand gallons water capacity shall be submitted to the division for approval before construction of such installations begins.

(b) Plans for any of the following shall be submitted to the division for approval before installation:

- (1) Service stations supplying liquefied petroleum gas for motor fuel;
- (2) Installations for filling of cylinders (bottles) or other portable containers meeting U.S. Department of Transportation specifications;
- (3) Industrial bulk storage installations and all other bulk storage installations utilizing storage containers for liquefied petroleum gas of over two thousand gallons aggregate water capacity.

(c) The application procedures are as follows:

- (1) The application shall be submitted on an application form approved and provided by the division.
- (2) The application shall include a plot plan containing all elements required by the division.
- (3) The division may deny the application if the proposed installation does not conform to the division LPG statute or regulation, or to codes adopted by the division, or if the application is incomplete or determined to be inaccurate.
- (4) Construction and installation of tank and piping shall conform to code(s) in effect at time of installation.
- (5) The division may revoke an approved application if construction is not performed per the approved application, or if the construction fails to meet operating or fire safety regulations established by the division or by the applicable NFPA Code.
- (6) An installation application approved by the division is automatically revoked if construction does not begin within 6 months of approval, unless a written request for an extension is submitted to and approved by the division.
- (7) For new installations with an aggregate over 4,000 gallons, a fire safety analysis (FSA) must be in effect prior to the operation of the installation per NFPA 58, following guidance from Annex A, A.6.23.2 and A.6.23.3, or another nationally accepted standard approved in advance by the division.
- (8) A local authority having jurisdiction, including fire departments, may require and enforce more stringent requirements than these regulations.

Section 2-3 Access Requirements

(a) The division may inspect an LPG facility at any time during its construction. Access shall be provided to the division or its agent for such purpose upon request.

(b) After an LPG ASME container has been installed, the division may inspect the container to verify compliance with design, construction, location, installation and operation requirements. LPG facility owners, tank owners, and owners of locations where an LPG ASME container is installed shall grant inspection access to the division or its agent for such purpose upon request.

Section 2-4 Corrosion Prevention Requirements

- (a) Cathodic protection is required for all underground steel LPG tanks and piping installed after September 1, 2005, and all other underground steel LPG tanks by January 1, 2011.
- (b) A corrosion protection system shall be installed on new installations of underground steel containers, unless technical justification is provided to and is approved by the authority having jurisdiction. The corrosion protection system shall include the following:
 - (1) A container coating that is recommended for the service, which is applied in accordance with the coating manufacturer's instructions.
 - (2) A cathodic protection system that consists of a sacrificial anode(s) or an impressed current anode.
 - (3) A means to test the performance of the cathodic protection system.
- (c) Cathodic protection systems installed in accordance with (b) shall be monitored by testing and the results documented. Confirming tests shall be described by one of the following:
 - (1) Producing a voltage of -0.85 volts or more negative, with reference to a saturated copper-copper sulfate half cell.
 - (2) Producing a voltage of -0.78 volts or more negative, with reference to a saturated KCl calomel half cell.
 - (3) Producing a voltage of -0.80 volts or more negative, with reference to a silver-silver chloride half cell.
 - (4) Any other method approved by the division.
- (d) Sacrificial anodes installed in accordance with subsection (b) above shall be tested in accordance with the following schedule:
 - (1) Upon installation of the cathodic protection system, unless prohibited by climatic conditions, in which case testing shall be done within 180 days after the installation of the system.
 - (2) For continued verification of the effectiveness of the system, 12 to 18 months after the initial test.
 - (3) Upon successful verification testing and in consideration of previous test results, periodic follow-up testing shall be performed at intervals not to exceed 36 months.
 - (4) Systems failing a test shall be repaired as soon as practical unless climatic conditions prohibit this action, in which case the repair shall be made not more than 180 days thereafter. The testing schedule shall be restarted as required in subsection (d)(1) and (2) above, and the results shall comply with subsection (c) above.
 - (5) Documentation of the results of the two most recent tests shall be retained.
- (e) Where an impressed current cathodic protection system is installed, it shall be inspected and tested in accordance with the following schedule:
 - (1) All sources of impressed current shall be inspected and tested at intervals not exceeding two months.

- (2) All impressed current cathodic protection installations shall be inspected and tested annually.
- (f) Prior to burial, the container shall be visually examined for damage to the coating. Damaged areas shall be repaired with a coating recommended for underground service and compatible with the existing coating.
- (g) The installer of the cathodic protection system should be qualified in the proper installation of anodes to be used for cathodic protection, but is not required to be certified by NACE.

Section 2-5 Nameplates

- (a) When a container assembly and piping system has a nameplate whose stamping becomes indistinct, or the nameplate is lost or illegible, but trace-ability to the original container assembly item is still possible, the owner or user shall have the stamped data replaced as follows:
- (1) All re-stamping shall be done in accordance with the version of the code in effect at the time of container construction.
 - (2) A request for permission to re-stamp or replace a nameplate shall be made in advance to the division. Proof of the original stamping and the manufacturer's data report, shall be furnished with the request.
 - (3) Permission from the division is not required for the reattachment of nameplates that are partially attached.
 - (4) Re-stamping or replacement authorized by the division shall be witnessed by a state inspector.
 - (5) The stamping shall be identical to the original stamping. When the Code symbol is to be re-stamped, it shall be done by the original manufacturer and witnessed by a state inspector.
 - (6) Replacement nameplates shall be clearly marked "replacement".
 - (7) After replacing a nameplate, the owner or user shall file with the division a facsimile of the stamping or nameplate as applied and shall include the signature of the state inspector who witnessed the replacement.
- (b) If replacement of the nameplate is not possible because the container assembly cannot be traced, a hydrostatic test or other test approved by the division must be performed if the container is to remain in service.
- (1) Such test shall be performed by an independent contractor experienced in hydrostatic tests. The test shall be conducted according to the procedure outlined in ASTM International Designation: E 1003 – 95 (Reapproved 2000) at 1.5 times working pressure (250 psi x 1.5 = 375 psi) to evaluate the integrity of the container.
 - (2) The owner/operator may then make application, including the results of the hydrostatic test, to the division for an exception. If granted, the division shall assign a number to the container and issue an identifying tag with that number to be permanently attached to the container by a state inspector.
 - (3) With the division's approval, the container may continue to operate at that location indefinitely. The container shall not be moved and reinstalled at any location, including elsewhere at the same facility.

- (c) If a container was installed prior to September 1, 2005 and is missing the nameplate, one of the following shall be performed:
 - (1) The nameplate shall be replaced per Section 2-5-1 (a), or
 - (2) A hydrostatic test or other test approved by the division shall be performed and approval to operate the container granted by the division per Section 2-5 (b), or
 - (3) The container shall be permanently removed from service by July 1, 2008.

Section 2-6 Fire Safety Analysis (FSA)

- (a) For LPG installations in excess of 4,000 gallons in aggregate, approved for installation by the division before September 1, 2005, and with no significant modifications to the approved installation, the FSA shall be completed by August 31, 2006.
- (b) For all new LPG installations in excess of 4,000 gallons in aggregate, approved for installation by the division after September 1, 2005, the FSA is required to be completed by the operational date of the installation.
- (c) The FSA shall be prepared in accordance with the requirements of NFPA-58, including Annex A, A.6.25.2 and A.6.25.3, or any other nationally accepted standard approved by the division in advance.
- (d) It is not required that the FSA be prepared or approved by a professional engineer, however, the preparation should be completed by someone who at minimum, is familiar with the properties of propane, the application of NFPA 58, and the physical layout of the installation. The preparer shall consult with the local fire protection district to complete the section of the FSA entitled "Evaluation of Fire Services and Water Supply Requirements." Some modifications to the installation may require the services of a registered professional engineer.
- (e) The most current FSA document shall be maintained at the LPG installation, where it shall be available for inspection by the division upon request.

Section 2-7 Protection from Snow Load

- (a) LPG piping, regulators, meters, and other equipment installed in the piping system shall be protected from forces anticipated as a result of accumulated snow.
- (b) For LPG systems installed after February 1, 2012, LPG piping, regulators, meters, and other equipment shall be protected from forces described in (a) of this Section. The following methods of protection shall be acceptable:
 - (1) A structure built over the top of piping, regulators, meters, and other equipment on buildings.
 - (2) By installing piping, regulators, meters, and other equipment on the gable end of buildings.
- (c) In areas where deep snow can be expected to cover aboveground containers or the dome lids of underground containers, the containers shall be marked so that emergency and propane service company personnel can locate the tank for emergency shut down purposes or to service the tank. Such marking shall be accomplished by placing a stake or other marking that shall be installed higher than the anticipated maximum snow level up to a height of 15 feet.

ARTICLE 3 DELIVERY AND DISPENSING

Section 3-1 LPG Delivery

- (a) A properly installed LPG system, including containers and piping, shall be filled by trained delivery personnel only after determining by observation that the accessible above ground outside components of the system comply with the design, fabrication, inspection, marking, and requalification provisions of NFPA 58, NFPA 54, Colorado LPG Regulations, and Colorado Revised Statutes. This observation is not intended to be a comprehensive inspection of the entire LPG system but shall be sufficiently detailed to determine that the accessible above ground outside components of the LPG system comply with provisions of NFPA 58, NFPA 54, Colorado LPG Regulations, and Colorado Revised Statutes.
- (b) No person shall deliver LPG into an improperly installed system, or into a container that does not have an ASME nameplate or a nameplate approved and stamped by the division per Section 2-5.
- (c) If delivery of LPG is refused due to an improperly installed system, the delivery personnel shall document the reason for refusing to deliver LPG into the system. Such documentation shall be included on a standard PERC stop service tag, or equivalent tag, which shall be affixed to the LPG tank service valve.
- (d) It is permissible to fill an ASME tank whose nameplate is damaged, provided the following information can be determined:
 - (1) If the container is registered with the National Board and the facility can produce the Manufacturer's Data Report (U-1A and/or U-2A) form, the manufacturer's name and container's serial number must be legible.
 - (2) If the container is not a National Board registered container, the manufacturer's name, the container's serial number, the ASME stamp, and the pressure rating must be legible.
- (e) If the nameplate is missing, delivery to the tank is prohibited. Refer to Section 2-5 for instructions on re-attaching or re-placing nameplates.
- (f) Delivery to a container with corrosion that appears to be greater than 1/3 of the thickness of the metal is prohibited.

Section 3-2 Delivery after Interruption of Service

- (a) When delivery is made to an LPG container assembly that has had an interruption of service, as defined by these regulations, a test for leakage shall be performed immediately after LPG being introduced into the piping.
- (b) The test for leakage shall be performed according to one of the methods set forth in Annex D (*Suggested Method of Checking for Leakage*) of NFPA 54 or other method approved by the division in advance.
- (c) The person performing the test for leakage shall document that the test was performed. The documentation shall include, at minimum, the following information:
 - (1) Date test was performed;
 - (2) Test start time;
 - (3) Test end time;

- (4) Name of person performing the test;
 - (5) Name of person's employer;
 - (6) Address and phone number of person's employer;
 - (7) Type of test;
 - (8) If a constant pressure is used, the test start pressure and end pressure.
- (d) Documentation of the test for leakage shall be retained for a minimum of one year by the employer of the person who performed the test.

Section 3-3 Filling Containers by Weight

- (a) All cylinders less than 200 pounds water capacity (i.e. 100 pound cylinders), with the exception of fork lift cylinders and hot air balloon containers, shall be filled by weight.
- (b) Volumetric filling of forklift cylinders from bobtail delivery trucks shall be allowed in accordance with NFPA 58, Section 6.5 and Table 6.5.3 and all personnel shall be trained in proper handling procedures in accordance with NFPA 58, Chapter 7, 2011 edition.
- (c) Scales used for filling LPG containers must be inspected annually and found to be in compliance with the specifications and tolerances published in the National Institute of Standards and Technology Handbook 44. This certification must be performed either by the Colorado Department of Agriculture, or by a person authorized by the Colorado Department of Agriculture. Any necessary repairs must be completed within 30 days.
- (d) If the Colorado Department of Agriculture fails to perform the annual inspection in a timely fashion, the scale may remain in operation provided the scale owner has not prohibited or hindered such inspection by the Colorado Department of Agriculture and further provided that any repairs required at the most recent previous inspection have been completed.

ARTICLE 4 TRAINING REQUIREMENTS

Section 4-1 General Training Requirements

- (a) Any person who delivers or dispenses LPG, or who services or installs exterior piping of LPG vapor distribution systems, shall receive adequate training to perform all related duties safely and in compliance with requirements per sections 4.4 and 7.2.1.1 of NFPA 58 2011 edition.
- (b) The employer of any person who delivers or dispenses LPG, or services or installs exterior piping of LPG vapor distribution systems, shall document that person's training and shall make these records available to the division or its agent upon request. The records shall include the following information, at minimum:
 - (1) Person's name;
 - (2) Training date(s);
 - (3) Name of trainer;

- (4) Topics covered by training;
 - (5) Verification by the person's supervisor or certification described in this Article that the person has demonstrated adequate knowledge and skill to perform assigned duties.
- (c) For all training required under Sections 4-2 through 4-4, refresher training shall be required at least every three years. The training shall be documented.
- (d) The employer of the person who received the training shall maintain that documentation as long as the person remains an employee.

Section 4-2 Dispenser Operator Training

- (a) The minimum training requirements for dispenser operators, that shall be completed prior to operating LPG dispensers, may be satisfied by certification by either of the following:
- (1) Certified Employee Training Program (CETP) *1.0 Basic Principles and Practices* as published by PERC;
 - (2) A training program which contains at minimum, certification by the PERC *Dispensing Propane Safely* program.

Section 4-3 Delivery Personnel Training

- (a) The minimum training requirements for delivery personnel shall include:
- (1) Proper procedure for filling an ASME container;
 - (2) Knowledge of when a test for leakage is required;
 - (3) Proper procedure for conducting and documenting a test for leakage;
 - (4) Criteria for determining when filling a container is prohibited because of improper installation, or because of excessive corrosion, dents, or gouges;
 - (5) Emergency procedures as outlined in the employer's FSA.
 - (6) Certification by the Certified Employee Training Program (CETP) *1.0 Basic Principles and Practices* as published by PERC;
- (b) All CETP training for delivery personnel shall be completed within one year of hire date.

Section 4-4 Service and Installation Personnel Training

- (a) The minimum training requirements for those who service or install exterior piping of LPG vapor distribution systems may be satisfied by certification by the Certified Employee Training Program (CETP) *1.0 Basic Principles and Practices* and *4.2 Preparing & Installing Vapor Distribution System Components* as published by PERC.
- (b) All CETP training for those who service or install exterior piping of LPG vapor distribution systems shall be completed within one year of hire date.

ARTICLE 5 ACCIDENT REPORTS AND INVESTIGATIONS

Section 5-1 Reportable Accidents

- (a) Reports of accidents, fires, explosions, injuries, damage to property, or loss of life at installations using liquefied petroleum gas shall be reported to the division within twenty-four hours after their occurrence.
- (b) Subsection (a) of this Section includes accidents resulting from the improper use of equipment, appliances, and appurtenances to LPG systems. The division may investigate such occurrences and shall maintain a written record of findings, which shall be available to public examination.

Section 5-2 Reporting Requirements

- (a) The following persons are required to notify the division of an LPG accident that meets any of the criteria of Section 5-1:
 - (1) Owner or the owner's representative of the LPG facility, if the accident occurred at the facility;
 - (2) Employer of the delivery personnel, if the accident occurred during delivery;
 - (3) Employer of the delivery personnel, if the accident occurred post-delivery and the employer received notification of it.
- (b) Accidents may be reported by telephone, facsimile, or electronic mail.
- (c) The accident report shall include, at minimum, the following information:
 - (1) The names of the operator and person making the report and their telephone numbers;
 - (2) The date, time and location of the accident;
 - (3) The number of fatalities and personal injuries;
 - (4) All other significant facts known by the person making the report that are relevant to the cause of the accident or extent of the damages.