

## 527 CMR: BOARD OF FIRE PREVENTION REGULATIONS

## 527 CMR 26.00: COMPRESSED NATURAL GAS CONTAINERS AND SYSTEMS

## Section

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26.01: Purpose

The purpose of 527 CMR 26.00 is to provide minimum standards for CNG systems for the protection and safety of the public at large.

26.02: Scope

- (1) Effective as of November 1, 1995, 527 CMR 26.00 shall, except as provided in 527 CMR 26.02(3), apply to the design, construction, location, installation, and operation of CNG systems.
- (2) 527 CMR 26.00 shall not apply to the following:
  - (a) The transportation of compressed natural gases over the highways in interstate or intrastate commerce.
  - (b) OEM CNG powered Vehicles complying with Federal Motor Vehicle Safety Standards.
  - (c) CNG powered Vehicles certified that they are in compliance with NFPA 52.
- (3) Existing systems installed before November 1, 1995, may be continued in service provided that their continued operation does not constitute a threat to health or safety.

26.03: Definitions

The following terms shall have the meanings assigned to them unless the context clearly indicates otherwise.

Abandoned. Any container without use, either filling or draw off of CNG, for a continuous period in excess of 12 months.

Approved. Approved by the State Fire Marshal.

ASME. The American Society of Mechanical Engineers.

Bulk Storage. Storage in pressure vessels other than cylinders.

Capacity. The water volume of a container in standard cubic feet per gallons.

Cascade Storage System. Storage in multiple pressure vessels, cylinders, or containers.

Compressed Natural Gas (CNG). Mixtures of hydrocarbon gases and vapors, consisting principally of methane in gaseous form, that has been compressed.

Container. Any pressure vessel or cylinder used for storing CNG.

Cylinder. A container constructed, inspected, and maintained according to DOT or TC regulations, ANSI/AGA NGV2, or CSA B51 standards.

26.03: continued

Dispensing Station. A natural gas installation that dispenses CNG from storage containers or natural gas pipeline by means of a compressor into fuel supply containers or into portable containers.

Equipment. The container or containers, major devices such as vaporizers, relief valves, excess flow valves, regulators, etc., and interconnecting piping.

Equivalent Gallon. The amount of CNG that provides the Gasoline Gallon Equivalent, or the "equivalent energy" of a gallon of gasoline. The conversion factor is 1 GGE = 5.660 pounds of natural gas. (1 GGE of Natural Gas = 123.55 cubic feet)

Fuel Supply Container. A container mounted on a vehicle to store CNG as the fuel supply to the internal combustion engine of the vehicle.

Installation. A system that includes natural gas containers, pressure booster, compressors, and all attached valves, piping, and appurtenances. When the supply is from distribution pipelines, the installation includes all equipment after the shutoff valve between the pipeline and the compressor.

Identification Decal, Vehicle. A label or decal placed on a vehicle fueled by CNG identifying such vehicle for the fire service [See 527 CMR 26.07(7)(j)].

License. A license required by 527 CMR 26.00 and issued by the local licensing authority after a hearing in accordance with the provisions of M.G.L. c. 148, § 13.

Marshal. The State Fire Marshal.

Nationally Recognized Testing Laboratory (NRTL). An organization which tests for safety and lists, labels or accepts equipment or materials and which meets the criteria in 527 CMR 49.00 (Appendix C).

Person. Any individual, firm, association, or corporation.

Permit. A permit required by 527 CMR 26.00 and issued by the head of the fire department under authority of M.G.L. c. 148, § 10A.

Pressure Vessel. A container or other component designed in accordance with the ASME Code or DOT (Department of Transportation) regulations.

Qualified Person. A person selected by an employer and trained to perform a specific task or duty involving CNG, who has the degree of competency necessary to accomplish the work in a safe manner or the competent licensed motor vehicle operator of a CNG fueled vehicle.

Shall. A mandatory requirement.

USDOT. The U.S. Department of Transportation.

Vehicle Fueling Appliance: A fuel dispensing device, including all of its component parts, used for the delivery of CNG, that has a flow rate not in excess of 10 SCF/min. (0.28 standard cubic meter/min.). All VFA's shall be listed by an approved testing laboratory.

Vendor. Any individual, firm, or corporation who sells, installs, or dispenses CNG and/or related equipment.

Warning Label, Cylinder. A label or decal placed on a cylinder informing the user of certain precautions to take.

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26.04: Approval of Equipment

- (1) All CNG installations shall be approved by the State Fire Marshal, CNG vehicle fueling facilities shall be permitted, provided that the applicant for such a system has submitted complete plans and specifications of the proposed installation to the Marshal accompanied by the required examination fee as authorized in M.G.L. c. 7, § 3B and has obtained approval of such plans, and further provided that there is compliance with 527 CMR 26.00.
- (2) The approval of any equipment, container, or appliance shall be based on compliance with accepted principles or recognized engineering practice; and the Marshal may consider as approved any equipment, container, or appliance which meets the requirements of a nationally recognized testing laboratory (NRTL). Such equipment, container, or appliance shall bear some mark of identification to indicate the standard to which it conforms.
- (3) All parts of CNG systems not specifically provided for in 527 CMR 26.00 shall be designed and constructed to provide a reasonable degree of safety.

26.05: Installation of Equipment - Compliance Requirements

- (1) All CNG systems shall be installed and maintained in accordance with the requirements of 527 CMR 26.00 except as provided in 527 CMR 26.02(3).
- (2) No CNG equipment shall be connected to any appliance that is not designed, constructed, or adapted for CNG use.
- (3) The owner and/or operator of the CNG installation shall be responsible for the installation of the CNG facility and for maintaining it in a safe operating condition.
- (4) Only a qualified person shall install, remove, connect, disconnect, sell, fill, refill, deliver or permit to be delivered, or operate any CNG system.
- (5) The Marshal may order the user of a system to meet additional requirements:
  - (a) Where unusual conditions exist;
  - (b) When it necessary for the protection of life and property;
  - (c) Provided the additional requirements are within the intent and purpose of 527 CMR 26.00.

26.06: Emergency Reporting Procedure and Equipment

- (1) All CNG installations exceeding 3,000 cubic feet shall be provided with a marker plate or sign indicating who should be called in the event of an emergency involving the CNG installation. The marker or sign shall include the name and telephone number of the Natural Gas supplier, facility maintenance person, owner, or operator who will respond to the emergency.
- (2) The Natural Gas supplier, facility maintenance, owner or operator shall respond when notified of all CNG emergencies occurring at his installation and shall maintain a 24-hour phone service.

26.07: Installation Standards and Procedures

- (1) NFPA 52, Standards Adopted by Reference.
  - (a) The storage and handling of Compressed Natural Gas (CNG) shall be in accordance with NFPA 52, except as otherwise indicated in 527 CMR 26.02(2).
  - (b) Where any conflict occurs between NFPA 52 and 527 CMR 26.00, 527 CMR 26.00 shall prevail.

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26.07: continued

- (2) Container Markings. All CNG containers shall be legibly marked with labels meeting industry recognized standards by the tank manufacturers.
- (3) Container Storage Outside of Buildings.
- (a) Containers shall be installed outside of buildings in accordance with NFPA 52 , and 527 CMR 26.00, where there is a conflict between NFPA 52 and 527 CMR 26.00, 527 CMR 26.00 shall prevail.
- (b) Where there is a possibility of damage to storage systems from motor vehicles or other heavy objects, protection against such damage shall be provided.
- (c) Units installed directly under or near a window opening or gas accumulating overhang shall be provided with a vent line reaching over the roof line, interiors shall also be provided with methane detection devices capable of shutting down the appliance. Exception: if the VFA and all its component parts are located more than ten feet from the building it shall be exempted from 527 CMR 26.07(3)(c).
- (4) Underground Installation of Storage Containers. No underground storage shall be allowed.
- (5) Container Storage Inside Buildings.
- (a) Containers shall be considered as full containers for the purpose of determining the maximum quantities of CNG permitted.
- (b) Containers shall not be stored inside buildings used for habitation.
- (c) The maximum quantity of CNG stored in a building or room of special construction shall be 10,000 cubic feet. The building or room shall comply with NFPA 52.
- (d) A portable fire extinguisher having a rating of not less than 40-B:C shall be provided in the storage and dispensing area.
- (e) Container storage areas shall be posted in compliance with 527 CMR 26.07(3)(d).
- (6) Distributing Points, Distributing Plants, and Industrial Plants.
- (a) 527 CMR 26.07(6) shall apply to:
1. Distributing points of any capacity;
  2. Distributing plants of any capacity; or
  3. Industrial plants of 3,000 cubic feet aggregate water capacity or more.
- (b) If loading or unloading is normally done during other than daylight hours, adequate lights shall be provided to illuminate storage containers, control valves, and other CNG equipment.
- (c) Suitable roadways or means of access for extinguishing equipment, such as wheeled extinguishers or fire department apparatus, shall be provided.
- (d) The CNG system shall be enclosed within an industrial type fence at least six feet high with at least two egress gates opening outward and remotely located from each other, or be within an approved fence plant area, or protected from tampering, VFA operations shall be provided with a fenced area for vehicle containment while fueling, secured while unattended.
- (e) The CNG system shall be protected against vehicle damage, with four inch diameter bollards, metal guardrail, or other similar barriers approved by the Marshal.
- (f) The storage, loading, unloading, cylinder and vehicle filling areas, and other strategic points shall be adequately posted in accordance with 527 CMR 26.07.
- (g) Only a qualified person shall dispense CNG into any CNG container.
- (h) Before a container mounted on a vehicle is filled, the vehicle engine shall be shut off and all sources of ignition, such as pilot lights, smoking materials, etc., within the immediate area shall be extinguished.
- (i) "NO SMOKING" and "STOP ENGINE WHEN REFUELING" signs shall be displayed at the filling station. The signs shall have block letters at least two inches high with either red letters on a white background or white letters on a red background.
- (j) Every motor vehicle powered by CNG shall bear a reflective decal. The decal shall be placed on an exterior vertical or near-vertical surface on the lower right rear of the vehicle but not on the bumper inboard from any other markings. The diamond shape label shall be a minimum 4.75 inches (120 mm) long by 3.25 inches (83 mm) high. The marking shall consist of a border and letters "CNG" [one inch (25 mm) minimum height centered in the diamond] of silver or white reflective luminous material on a blue background.

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26.08: Permits and Licenses(1) Installation and Inspection.

(a) No person shall install or connect any CNG equipment unless a permit to install CNG has been obtained from the head of the fire department. No permit shall be required, however, to make a connection in the fueling of CNG powered vehicles, replacement of a portable container, or the filling of a stationary container.

(b) Application for a permit to install CNG shall be made in the name of the owner or occupant of the premises by the person, firm, or corporation who will make the installation or connection. If the aggregate amount of CNG to be stored exceeds 10,000 cubic feet, then a license as required by 527 CMR 26.08(2)(b) must first be obtained and a copy of the license shall be submitted with the application for a permit to install CNG.

(c) The head of the fire department may limit the quantity of CNG that may be stored under a permit or order the installer of a system to meet additional requirements:

1. Where unusual conditions exist;
2. When it necessary for the protection of life and property;
3. Provided the additional requirements are within the intent and purpose of 527 CMR 26.00.

(d) Upon completion of an installation or connection authorized by a permit to install CNG, the person, firm or corporation having made the installation or connection shall certify in writing on a form approved by the Marshal to the head of the fire department that the work has been completed and in conformity with the requirements of 527 CMR 26.00.

(e) Upon receipt of such certification of completion, the head of the fire department shall make an inspection of the installation within a reasonable time; and if same is found to be in accordance with 527 CMR 26.00, he shall issue to the owner or occupant a permit for the keeping, storage, manufacture or sale CNG in connection therewith, except where such storage is otherwise authorized by license; provided, however, that if such installation is found not to be in accordance with these regulations, the permit shall be withheld and shall not be issued until the proper corrections have been made as directed, by written notice if requested, within a reasonably specified time and prior to any CNG being stored in the container(s).

(2) Storage License or Registration.

(a) No person shall keep or use any CNG or install or connect any CNG equipment to any appliance except in accordance with the requirements of 527 CMR 26.00.

(b) In accordance with the provisions of M.G.L. c. 148, § 13, 10,000 cubic feet of CNG, in the aggregate, is hereby prescribed as the maximum amount that may be kept, stored, manufactured or sold, in one or more containers without a license or registration, or either of them, provided that a permit for the keeping, storage, manufacture or sale of CNG has been obtained, except as hereinafter provided for.

(c) When more than 10,000 cubic feet of CNG will be stored, manufactured or sold, a license shall first be obtained from the local licensing authority by the owner or occupant of the premises in accordance with the provisions of M.G.L. c. 148, § 13.

(d) The permit for the keeping, storage, manufacture or sale of CNG must be obtained from the head of the fire department as provided by M.G.L. c. 148, §§ 10A and 23.

(e) The permit for the keeping, storage, manufacture or sale of CNG may be revoked by the head of the fire department as provided by M.G.L. c. 148, §§ 10A and 23, if the installation is changed or modified in any way or of the provisions of 527 CMR 26.00 are not complied with.

26.09: Referenced Publications

Documents or portions thereof that are referenced within 527 CMR 26.00 shall be considered a part of the requirements of 527 CMR 26.00. Refer to 527 CMR 49.00 for a complete listing of all documents referenced in 527 CMR.

## REGULATORY AUTHORITY

527 CMR 26.00: M.G.L. c. 22, § 14; c. 148, §§ 9, 10 and 28.

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