



Second Revision No. 2-NFPA 52-2024 [Section No. 2.3]

2.3 Other Publications.

2.3.1 ACI Publications.

American Concrete Institute, 38800 Country Club Drive, Farmington Hills, MI 48331-3439.

ACI 376, *Code Requirements for Design and Construction of Concrete Structures for the Containment of Refrigerated Liquefied Gases and Commentary*, 2011.

2.3.2 AMPP Publications.

Association for Materials Protection and Performance (formerly NACE International and SSPC), 15835 Park Ten Place, Houston, Texas 77084.

NACE SP0169, *Control of External Corrosion of on Underground or Submerged Metallic Piping Systems*, 2013 2024 .

SSPC-PA 1, *Shop, Field and Maintenance Painting Coating of Steel Metals* , 2016 2024 .

SSPC-PA 2, *Procedure for Determining Compliance to Required DFT Conformance to Dry Coating Thickness Requirements* , 2022.

SSPC-SP 6/NACE No. 3, *Commercial Brush-Off Blast Cleaning*, reaffirmed 2006.

2.3.3 API Publications.

American Petroleum Institute, 200 Massachusetts Avenue, NW, Suite 1100, Washington, DC 20001-5571.

API 510, *Pressure Vessel Inspection Code: In-service Inspection, Rating, Repair, and Alteration*, 2022.

API STD 620, *Design and Construction of Large, Welded, Low-Pressure Storage Tanks*, 2013.

API RP 576, *Inspection of Pressure-Relieving Devices*, 2017.

2.3.4 ASCE Publications.

American Society of Civil Engineers, 1801 Alexander Bell Drive, Reston, VA 20191-4400.

ASCE 7, *Minimum Design Loads and Associated Criteria for Buildings and Other Structures*, 2022.

2.3.5 ASME Publications.

American Society of Mechanical Engineers, Two Park Avenue, New York, NY 10016-5990.

ANSI/ASME B31.3, *Process Piping*, 2023.

ASME *Boiler and Pressure Vessel Code*, 2023.

2.3.6 ASTM Publications.

ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959.

ASTM A47/A47M, *Standard Specification for Ferritic Malleable Iron Castings*, 1999, reaffirmed 2022e1.

ASTM A395/A395M, *Standard Specification for Ferritic Ductile Iron Pressure-Retaining Castings for Use at Elevated Temperatures*, 1999, reaffirmed 2022.

ASTM A536, *Standard Specification for Ductile Iron Castings*, 1984, ~~reaffirmed 2019e1~~ 2024.

ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials*, 2023 2024.

ASTM E136, *Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750°C*, 2022 2024c.

ASTM E2652, *Standard Test Method for Assessing Combustibility of Materials Using a Tube Furnace with a Cone-shaped Airflow Stabilizer, at 750°C*, 2022.

ASTM E2965, *Standard Test Method for Determination of Low Levels of Heat Release Rate for Materials and Products Using an Oxygen Consumption Calorimeter*, 2022 2022a.

2.3.7 CGA Publications.

Compressed Gas Association, 8484 Westpark Drive, Suite 220, McLean, VA 22102.

CGA 341, *Standard Specification for Insulated Cargo Tank Specification for Nonflammable Cryogenic Liquids*, 2017 2023.

CGA C-6.4, *Methods for External Visual Inspection of Natural Gas Vehicle (NGV) and Hydrogen Gas Vehicle (HGV) Fuel Containers and Their Installations*, 2012, reaffirmed 2018.

CGA S-1.1, *Pressure Relief Device Standards — Part 1 — Cylinders for Compressed Gases*, 2022.

CGA S-1.2, *Pressure Relief Device Standards — Part 2 — Portable Containers for Compressed Gases*, 2019.

CGA S-1.3, *Pressure Relief Device Standards — Part 3 — Stationary Storage Containers for Compressed Gases*, 2020.

2.3.8 CSA Group Publications.

CSA Group, 178 Rexdale Blvd., Toronto, ON M9W 1R3, Canada.

CSA B51, *Boiler, pressure vessel, and pressure piping code*, ~~Part 3, 2019~~ 2024.

CSA/ANSI NGV 1, *Compressed natural gas vehicle (NGV) fueling connection devices*, 2022.

CSA/ANSI NGV 2, *Compressed natural gas vehicle fuel containers*, 2023.

CSA/ANSI NGV 3.1, *Fuel system components for compressed natural gas powered vehicles*, 2020.

CSA/ANSI NGV4.4, *Breakaway devices for natural gas dispensing hoses and systems*, 2021.

CSA/ANSI NGV 5.1, *Residential fueling appliances*, 2023.

CSA/ANSI NGV 5.2, *Vehicle fueling appliances (VFA)*, 2023.

CSA/ANSI NGV 6.1, *Compressed natural gas (CNG) fuel storage and delivery systems for road vehicles*, 2021 2024.

CSA/ANSI PRD 1, *Pressure relief devices for natural gas vehicle (NGV) fuel containers*, 2020.

2.3.9 IEEE Publications.

IEEE Operations Center, 445 Hoes Lane, Piscataway, NJ 08854-4141.

IEEE/ASTM SI 10, *American National Standard for Metric Practice*, 2016.

2.3.10 National Board Publications.

National Board of Boiler and Pressure Vessel Inspectors, 1055 Crupper Avenue, Columbus, OH 43229.

NB-23, *National Board Inspection Code*, 2021 2023 .

NB-514, *Accreditation of "VR" Repair Organizations*, 2022.

2.3.11 UL Publications.

Underwriters Laboratories Inc., 333 Pfingsten Road, Northbrook, IL 60062-2096.

UL 723, *Test for Surface Burning Characteristics of Building Materials*, 2018, revised 2023.

UL 969, *Marking and Labeling Systems*, 2017, revised 2023.

2.3.12 US Government Publications.

US Government Publishing Office, 732 North Capitol Street, NW, Washington, DC 20401-0001 .

Title 29, Code of Federal Regulations, Part 1910- , "Occupational Safety and Health Standards."

Title 49, Code of Federal Regulations, Part 178.57, "Specification 4L Welded Insulated Cylinders."

Title 49, Code of Federal Regulations, Part 390.5, "Federal Motor Carrier Safety Regulations; General."

Title 49, Code of Federal Regulations, Part 390.21, "Marking of Commercial Motor Vehicles."

Title 49, Code of Federal Regulations, Part 571.304, "Compressed Natural Gas Fuel Container Integrity."

49 U.S.C. 5103, "General Regulatory Authority."

2.3.13 Other Publications.

Merriam-Webster's Collegiate Dictionary, 11th edition, Merriam-Webster, Inc., Springfield, MA, 2020.

Submitter Information Verification

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Committee Statement: Mandatory references have been updated to their most current editions per the NFPA Manual of Style.

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Public Comment No. 1-NFPA 52-2024 [Section No. 2.3.6]



Second Revision No. 3-NFPA 52-2024 [Section No. 2.4]

2.4 References for Extracts in Mandatory Sections.

NFPA 30, *Flammable and Combustible Liquids Code*, 2024 edition.

NFPA 55, *Compressed Gases and Cryogenic Fluids Code*, 2023 edition.

NFPA 59A, *Standard for the Production, Storage, and Handling of Liquefied Natural Gas (LNG)*, 2019 edition.

NFPA 96, *Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations*, 2024 edition.

NFPA 1451, *Standard for a Fire and Emergency Service Vehicle Operations Training Program*, 2018 2022 edition.

NFPA 1910, *Standard for the Inspection, Maintenance, Refurbishment, Testing, and Retirement of In-Service Emergency Vehicles and Marine ~~Fire Fighting~~ Firefighting Vessels*, 2024 edition.

NFPA 5000[®], *Building Construction and Safety Code*[®], 2024 2024 edition.

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6.3.1.4

When the electric power is interrupted (i.e., brownout condition) or the station is equipped with backup power, the system that shut down ~~should~~ shall be ~~allowed~~ permitted to reset after power is restored.

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Second Revision No. 7-NFPA 52-2024 [Chapter 8]

Chapter 8 CNG Facility Equipment Components

8.1 Scope.

This chapter shall apply to equipment used for storage and dispensing of CNG as an engine fuel in fleet and public dispensing operations.

8.2 Application.

~~CNG and LNG equipment components~~ used shall be in accordance with ~~Section 8.3 and the fuel-specific paragraphs of Section 8.4~~ this chapter, as applicable. ~~Where there is a conflict between general requirements and fuel-specific requirements, the fuel-specific requirements shall apply.~~

8.2.1

Where there is a conflict between general requirements and fuel-specific requirements, the fuel-specific requirements shall apply.

8.3 General.

8.3.1 System Component Qualifications. (Reserved)

8.3.2* System Approvals.

The following subsystems or components associated with storage and dispensing of CNG ~~and LNG~~ as an engine fuel in fleet and public dispensing operations shall be listed or approved:

- (1) Pressure relief devices, including pressure relief valves
- (2) Pressure gauges
- (3) Pressure regulators
- (4) Valves
- (5) Hose and hose connections
- (6) Vehicle fueling connections (e.g., nozzle and receptacle)
- (7) Engine fuel systems
- (8) Electrical equipment related to storage or dispensing systems
- (9) Gas detection equipment and alarms
- (10) Fire protection and suppression equipment
- (11) Vehicle fueling appliances (VFAs)
- (12) Residential fueling appliances (RFAs)

8.3.3 Equal Level of Safety.

Subsystems or components that are not listed in 8.3.2 shall provide a level of safety equal to that required of those listed in 8.3.2.

8.4* Design and Construction of Containers.

8.4.1

Containers shall be fabricated of steel, aluminum, or composite materials.

8.4.2

The container shall be designed for CNG service.

8.4.3

The container shall be permanently marked “CNG” by the manufacturer.

8.4.4

Containers manufactured prior to the effective date of this code shall be permitted to be used in CNG service if recommended for CNG service by the container manufacturer or if approved by the authority having jurisdiction.

8.5 Reserved.**8.6** ASME Compliance.**8.6.1**

Pressure vessels shall be manufactured, inspected, marked, and tested in accordance with ASME *Boiler and Pressure Vessel Code*, Section VIII or Section X.

8.6.2

Adherence to applicable ASME *Boiler and Pressure Vessel Code* case interpretations and addenda shall be considered as compliant with the ASME *Boiler and Pressure Vessel Code*.

8.6.3*

Pressure vessels manufactured to the requirements of the ASME *Boiler and Pressure Vessel Code* shall be registered with the National Board of Boiler and Pressure Vessel Inspectors.

8.6.4

The repair or alteration of an ASME pressure vessel shall comply with the requirements of NB-23, *National Board Inspection Code*.

8.6.5

Other welding or brazing shall be permitted only on saddle plates, lugs, or brackets attached to the pressure vessel by the pressure vessel manufacturer.

8.6.6

The exchange or interchange of pressure vessel appurtenances intended for the same purpose shall not be considered a repair or alteration.

8.7 Pressure Gauges.

A pressure gauge, if provided, shall be capable of reading at least ~~4.20~~ 1.2 times the maximum allowable working pressure of the station.

8.8 Valves and Related Components .**8.8.1** General.

Shutoff valves for dispensing stations shall have a rated maximum allowable working pressure not less than the rated operating pressure of the system.

8.8.1.1

Shutoff valves shall have a rated operating pressure not less than the MAWP of the piping system on which it is installed.

8.8.1.2

Shutoff valves shall be capable of withstanding a hydrostatic test of at least four times the rated service pressure without rupture.

8.8.1.3

Valves, valve packing, and gaskets shall be designed or selected for the fuel over the full range of pressures and temperatures to which they are subjected under operating conditions.

8.3.6.3

~~Shutoff valves for dispensing stations shall have a rated maximum allowable working pressure not less than the rated operating pressure of the system and shall be capable of withstanding a hydrostatic test of at least 4 times the rated operating pressure.~~

8.8.1.4

Leakage shall not occur at less than 1.5 times the rated operating pressure.

8.8.1.5

Valves of a design that allows the valve stem to be removed without removal of the complete valve bonnet or without disassembly of the valve body shall not be used.

8.8.1.6

Valves of cast irons other than those complying with ASTM A47/A47M, *Standard Specification for Ferritic Malleable Iron Castings*; ASTM A395/A395M, *Standard Specification for Ferritic Ductile Iron Pressure-Retaining Castings for Use at Elevated Temperatures*; and ASTM A536, *Standard Specification for Ductile Iron Castings*, shall not be used as primary stop valves.

8.8.1.7

Access to an emergency manual shutoff valve(s) shall not require the use of any key or tool.

8.8.2 Marking.**8.8.2.1**

The manufacturer shall stamp or otherwise permanently mark the valve body to indicate the maximum allowable working pressure rating.

8.8.2.2

Container valves incorporating integral PRDs complying with 8.8.4.6 shall not require additional marking.

8.8.3 Pressure Regulators.**8.8.3.1**

Regulators shall be designed, installed, or protected so that their operation is not affected by freezing rain, sleet, snow, ice, mud, insects, or debris.

8.8.3.2

Regulator protection of 8.8.3.1 shall be permitted to be integral with the regulator.

8.8.4 Pressure Relief Valves (PRVs).**8.8.4.1**

PRVs shall not be fitted with lifting devices.

8.8.4.2

The adjustment to PRVs, if external, shall be provided with a means for sealing the adjustment to prevent tampering.

8.8.4.3

If at any time it is necessary to break such a seal as provided in 8.8.4.2, the valve shall be removed from service until it has been reset and sealed.

8.8.4.4

PRV adjustments shall be made only by the manufacturer or other companies having competent personnel and facilities for the repair, adjustment, and testing of such valves.

8.8.4.5

The organization making such PRV adjustments shall attach a permanent tag with the setting, capacity, and date.

8.8.4.6

Pressure vessels complying with 8.6 used in stationary storage shall be protected with one or more spring-loaded PRVs in accordance with the ASME *Boiler and Pressure Vessel Code*.

8.8.4.7

PRVs protecting ASME pressure vessels shall be repaired, adjusted, and tested in accordance with NB-23, *National Board Inspection Code*.

8.8.4.8

PRVs shall be maintained in safe operating condition.

8.8.4.9

PRVs shall have vent lines to convey escaping gas upward to prevent impinging on buildings, other equipment, or areas open to the public (e.g., sidewalks).

8.8.4.10

The PRV shall not have a setting greater than the maximum allowable working pressure of the line it protects.

8.8.4.11

Pressure relief valves on pressure vessels shall be installed so that any discharge is in a vertical position.

8.8.4.12

Pressure relief valve venting systems shall be designed to protect against the elements.

8.8.4.13

If approved, sized and lockable valves shall be permitted to be installed between the relief valves and the storage vessel or fueling transfer system.

8.8.4.14

The valves referenced in 8.8.4.13 shall be locked open under normal operating condition.

8.8.4.15

Natural gas shall be vented only to a safe point of discharge.

8.8.4.16

A vent pipe or stack shall have the open end protected to prevent entrance of rain, snow, and solid material.

8.8.4.17

Vertical vent pipes and stacks shall have provision for drainage.

8.4 ~~Equipment.~~**8.8.5 Pressure Relief Devices (PRDs).****8.8.5.1**

The minimum rate of discharge of PRDs on containers shall be in accordance with CGA S-1.3, *Pressure Relief Device Standards — Part 3 — Stationary Storage Containers for Compressed Gases*, or the ASME *Boiler and Pressure Vessel Code*, whichever is applicable.

8.8.5.2

The discharge flow rate of the PRD shall not be reduced below that required for the capacity of the container upon which the device is installed.

8.8.5.3

Pressure relief device venting systems shall be designed to protect against the elements.

8.8.5.4

Natural gas shall be vented only to a safe point of discharge.

8.8.5.5

A vent line shall have the open end protected to prevent the entrance of rain, snow, and solid material.

8.8.6 Excess Flow Check Valve(s).**8.8.6.1**

Where excess-flow check valves are used, the closing flow shall be greater than the maximum system design flow over the full range of operating pressures and less than the flow rating of the piping system that results from a complete line failure between the excess-flow valve and the equipment downstream of the excess-flow check valve.

8.8.6.2

Provisions shall be made for safe depressurization upstream of the device after it closes.

8.8.7 Vehicle Fueling Connection.**8.8.7.1**

CNG vehicle fueling connection devices shall be listed in accordance with CSA/ANSI NGV 1, *Compressed natural gas vehicle (NGV) fueling connection devices*.

8.8.7.2

The use of adapters to defeat the pressure-specific nozzle and receptacle connections shall be prohibited.

8.8.7.3

The refueling connection shall be permitted to be made of nonsparking wrought aluminum alloy designed for the pressure employed.

8.8.8 Breakaway Devices. (Reserved)**8.9 Piping, Tubing, and Fittings.****8.9.1**

The following components shall not be used for CNG service:

- (1) Fittings, street els, and other piping components of cast irons other than those complying with ASTM A47/A47M, *Standard Specification for Ferritic Malleable Iron Castings*; ASTM A395/A395M, *Standard Specification for Ferritic Ductile Iron Pressure-Retaining Castings for Use at Elevated Temperatures*; and ASTM A536, *Standard Specification for Ductile Iron Castings*
- (2) Plastic pipe, tubing, and fittings for high-pressure service
- (3) Galvanized pipe and fittings
- (4) Aluminum pipe, tubing, and fittings
- (5) Pipe nipples for the initial connection to a container
- (6) Copper alloy with copper content exceeding 70 percent

8.9.1.1

Pipe, tubing, fittings, gaskets, and packing material shall be compatible with the fuel under the maximum service conditions.

8.9.1.2

Pipe, tubing, fittings, and other components shall be designed with a minimum safety factor of 3.

8.9.1.3

Natural gas piping and tubing shall be fabricated and tested in accordance with ANSI/ASME B31.3, *Process Piping*.

8.9.1.4

Piping components such as strainers, snubbers, and expansion joints shall be permanently marked by the manufacturer to indicate the service rating.

8.9.2 Connections.**8.9.2.1 Piping Connections.****8.9.2.1.1**

Manifolds connecting fuel containers shall be fabricated to minimize vibration.

8.9.2.1.2

Manifolds shall be installed in a protected location or shielded to prevent damage from unsecured objects.

8.9.2.1.3

A pipe thread jointing material impervious to the action of the natural gas used in system shall be applied to all male pipe threads prior to assembly.

8.9.2.1.4

Threaded piping and fittings shall be clear and free from cutting or threading burrs and scales.

8.9.2.1.5

The ends of all piping shall be reamed.

8.9.2.1.6

A bend in piping or tubing shall be prohibited where such a bend weakens the pipe or tubing beyond its designed operating condition.

8.9.2.1.7

A joint or connection shall be located in an accessible location.

8.9.2.1.8

The number of joints shall be minimized and placed in a location considering personnel safety.

8.9.3 Installation of Piping and Hoses.**8.9.3.1***

Piping and hose shall be run directly with provisions for expansion, contraction, jarring, vibration, and settling.

8.9.3.2

Exterior piping shall be either buried or installed above ground and shall be supported and protected against mechanical damage.

8.9.3.2.1

Underground and aboveground piping shall be protected from corrosion in compliance with recognized practices.

8.9.3.2.2

Underground piping shall be buried not less than 18 in. (460 mm) below the surface of the ground unless otherwise protected from damage by movement of the ground.

8.9.3.2.3*

Piping installed in trench systems located below grade where the trench is open to above shall not be considered to be underground. [55:7.1.17.1.2]

8.9.3.2.4

Threaded pipe and fittings shall not be used underground.

8.9.4 Installation of Hose and Hose Connections.**8.9.4.1**

Hose shall be run directly with provisions for expansion, contraction, jarring, vibration, and settling.

8.9.4.2

The use of hose for natural gas service shall be limited to the following:

- (1) Vehicle fueling hose
- (2) Inlet connection to compression equipment
- (3) Section of hose not exceeding 36 in. (910 mm) in length to provide flexibility where necessary

8.9.4.3

Each section shall be installed so that it is protected against mechanical damage and is visible for inspection.

8.9.4.4

The manufacturer's identification shall be retained in each section.

8.9.4.5

Hose and metallic hose shall be constructed of or lined with materials that are resistant to corrosion and exposure to natural gas.

8.9.4.6 Hose Assemblies.**8.9.4.6.1**

Dispensing station hose, metallic hose, flexible metal hose, tubing, and their connections shall be designed or selected for the most severe pressures and temperatures under normal operating conditions with a burst pressure of at least four times the maximum allowable working pressure.

8.9.4.6.2

Metallic hose, flexible metal hose, tubing, and their connections shall be designed or selected for the most severe pressures and temperatures under normal operating conditions with a burst pressure of at least 4 times the operating pressure.

8.9.4.6.3

Hose and metallic hose shall be distinctly marked by the OEM or component manufacturer, either by the manufacturer's permanently attached tag or by distinct markings indicating the manufacturer's name or trademark, applicable service identifier, and design pressure.

8.5.7 Hose Assemblies. (Reserved)**8.10 System Testing.****8.10.1 Leak Testing.****8.10.1.1***

Piping, tubing and hose, and hose assemblies shall be leak tested after assembly to prove them free from leaks at a pressure equal to at least the maximum operating pressure of that portion of the system. ~~Compression equipment that has, by design, interstage air movement and ventilation through the crankcase shall not be subjected to leak testing as this design will give an erroneous test reading.~~

A.8.10.1.1

Compression equipment that, by design, has, ~~by design~~, interstage air movement and ventilation through the crankcase ~~shall not be subjected to leak testing as this design will can~~ give an erroneous ~~test reading~~ reading to the system test .

8.10.1.2

Prior to use, hose assemblies shall be tested by the OEM or its designated representative at a pressure of at least twice the maximum allowable working pressure (MAWP).

8.10.1.2

~~Compression equipment that has, by design, interstage air movement and ventilation through the crankcase shall not be subjected to this system testing, as its inclusion will give an erroneous reading to the system test.~~

8.11 Electrical Equipment. (Reserved)

Supplemental Information

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
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Committee Statement: The revisions to Chapter 8 have been made to consolidate the requirements and enhance the flow of the document for the user. Additionally, 8.6.1.1 has been split into a new annex section since compression equipment that has interstage air movement and ventilation through the crankcase still needs to be subject to the system testing since it does not always give errors and is still subject to leaks.

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Second Revision No. 8-NFPA 52-2024 [Section No. 9.3.3.6]

9.3.3.6 Breakaway Protection.

9.3.3.6.1

Breakaway protection shall be provided in a manner that, in the event of a pullaway, natural gas ceases to flow at any separation.

9.3.3.6.1.1

~~A breakaway device shall be arranged to separate using a force not greater than 150 lb (68 kg) when applied in any direction that the vehicle would move.~~

9.3.3.6.1.2

~~Breakaway devices shall comply with CSA/ANSI NGV 4.4, *Breakaway devices for natural gas dispensing hoses and systems*.~~

9.3.3.6.2

A breakaway device shall be installed at every dispensing point.

9.3.3.6.3

A breakaway device shall be arranged to separate using a force not greater than 150 lb (68 kg) when applied in any direction that the vehicle would move.

9.3.3.6.4

Breakaway devices shall comply with CSA/ANSI NGV 4.4, *Breakaway devices for natural gas dispensing hoses and systems*.

Supplemental Information

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Second Revision No. 1-NFPA 52-2024 [Section No. 11.4.2]

11.4.2* Building Construction Materials.

11.4.2.1* Noncombustible Material.

A material that complies with any one of the following shall be considered a noncombustible material:

- (1)* A The material ~~that~~, in the form in which it is used, and under the conditions anticipated, will not ignite, burn, support combustion, or release flammable vapors, when subjected to fire or heat.
- (2) A The material ~~that~~ is reported as passing ASTM E136, *Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750°C*.
- (3) A The material ~~that~~ is reported as complying with the pass/fail criteria of ASTM E136 when tested in accordance with the test method and procedure in ASTM E2652, *Standard Test Method for Assessing Combustibility of Materials Using a Tube Furnace with a Cone-shaped Airflow Stabilizer, at 750°C*.

[5000:7.1.4.1.1]

11.4.2.1.1

Where the term *limited-combustible* is used in this code, it shall also include the term *noncombustible*. [5000: 7.1.4.1.2]

11.4.2.2* Limited-Combustible Material.

A material shall be considered a limited-combustible material where ~~both~~ one of the following ~~are~~ is met:

- (1) The conditions of 11.4.2.2.1 and 11.4.2.2.2 and the conditions of either 11.4.2.3 or 11.4.2.4 shall be met.
- (2) The conditions of 11.4.2.5 shall be met.

[5000:7.1.4.2]

11.4.2.2.1

The material does not comply with the requirements for a noncombustible material in accordance with 11.4.2.1. [5000:7.1.4.2.1]

11.4.2.2.2

The material, in the form in which it is used, exhibits a potential heat value not exceeding 3500 Btu/lb (8141 kJ/kg), when tested in accordance with NFPA 259. [5000:7.1.4.2.2]

11.4.2.3

The material shall have the structural base of ~~a~~ noncombustible material with a surfacing not exceeding a thickness of 1/8 in. (3.2 mm) where the surfacing exhibits a flame spread index not greater than 50 when tested in accordance with ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials*, or UL 723, *Test for Surface Burning Characteristics of Building Materials*. [5000:7.1.4.2.3]

11.4.2.4

The material shall be composed of materials that in the form and thickness used neither exhibit a flame spread index greater than 25 nor exhibit evidence of continued progressive combustion when tested in accordance with ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials*, or UL 723, *Test for Surface Burning Characteristics of Building Materials*, and are of such composition that all surfaces that would be exposed by cutting through the material on any plane would neither exhibit ~~neither~~ a flame spread index greater than 25 nor exhibit evidence of continued progressive combustion when tested in accordance with ASTM E84 or UL 723. [5000:7.1.4.2.4]

11.4.2.5

Materials shall be considered limited-combustible materials where tested in accordance with ASTM E2965, *Standard Test Method for Determination of Low Levels of Heat Release Rate for Materials and Products Using an Oxygen Consumption Calorimeter*, at an incident heat flux of 75 kW/m² for a 20-minute exposure, and both the following conditions are met:

- (1) The peak heat release rate shall not exceed 150 kW/m² for longer than 10 seconds.
- (2) The total heat released shall not exceed 8 MJ/m².

[5000:7.1.4.2.5]

11.4.2.6

Where the term *limited-combustible* is used in this code, it shall also include the term *noncombustible*. [5000:7.1.4.2.6]

Submitter Information Verification

Committee: VAF-AAA

Submittal Date: Mon Sep 23 08:58:13 EDT 2024

Committee Statement

Committee Statement: Updated the requirements for building construction materials per the NFPA extract policy in the Manual of Style.

Response Message: SR-1-NFPA 52-2024



Second Revision No. 5-NFPA 52-2024 [Section No. 14.1.13.1]

14.1.13.1

Containers used in a VFA shall comply by design with one of the following, as applicable:

- (1) Department of Transportation (DOT) or Transport Canada (TC) regulations, exemptions, or special permits
- (2) CSA B51, *Boiler, pressure vessel, and pressure piping code*, ~~Part 3~~
- (3) ASME *Boiler and Pressure Vessel Code*, Section VIII or X
- (4) CSA/ANSI NGV 2, *Compressed natural gas vehicle fuel containers*

Submitter Information Verification

Committee: VAF-AAA

Submittal Date: Mon Sep 23 12:45:57 EDT 2024

Committee Statement

Committee Statement: Updating reference title to reflect the current edition.

Response Message: SR-5-NFPA 52-2024



Second Revision No. 4-NFPA 52-2024 [Section No. D.1.2]

D.1.2 Other Publications.

D.1.2.1 AGA Publications.

American Gas Association, 400 North Capitol Street, NW, Washington, DC 20001.

Introduction to LNG for Personnel Safety, No. X08614 IN1, 1986.

LNG Plant Operator Training Guide, No. X01181-IN1, 1982.

LNG Preventive Maintenance Guide, No. X01084-IN1, 1984.

D.1.2.2 AMPP Publications.

Association for Materials Protection and Performance (formerly NACE International and SSPC), 15835 Park Ten Place, Houston, TX 77084-4906 .

NACE SP0169, *Control of External Corrosion on Underground or Submerged Metallic Piping Systems*, 2013 2024 .

D.1.2.3 ANSI Publications.

American National Standards Institute, ~~25 West 43rd Street, 4th~~ 1180 Avenue of the Americas, 10th Floor, New York, NY 10036.

ANSI Z535.4, *Product Safety Signs and Labels*, 2011 (R2017) 2023 .

D.1.2.4 API Publications.

American Petroleum Institute, 200 Massachusetts Avenue, NW, Suite 1100, Washington, DC 20001-5571.

API 510, *Pressure Vessel Inspection Code: In-Service Inspection, Rating, Repair, and Alteration*, 2022.

API Standard 520, *Sizing, Selection, and Installation of Pressure-Relieving Devices in Refineries*, Part I, 2014.

API RP 2003, *Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents*, 2015.

D.1.2.5 ASME Publications.

American Society of Mechanical Engineers, Two Park Avenue, New York, NY 10016-5990.

ASME *Boiler and Pressure Vessel Code*, 2023.

D.1.2.6 CGA Publications.

Compressed Gas Association, 8484 Westpark Drive, Suite 220, McLean, VA 22102.

CGA C-6, *Standard for Visual Inspection of Steel Compressed Gas Cylinders*, 2022.

CGA C-6.1, *Standard for Visual Inspection of High Pressure Aluminum Compressed Gas Cylinders*, 2019.

CGA C-6.2, *Standard for Visual Inspection and Requalification of Fiber Reinforced High Pressure Cylinders*, 2019.

CGA C-6.4, *Methods for External Visual Inspection of Natural Gas Vehicle (NGV) and Hydrogen Gas Vehicle (HGV) Fuel Containers and Their Installations*, 2012, reaffirmed 2018.

CGA C-10, *Guideline to Prepare Cylinders and Tubes for Gas Service and Changes in Gas Service*, 2019.

CGA S-1.1, *Pressure Relief Device Standards — Part 1 — Cylinders for Compressed Gases*, 2022.

CGA S-1.2, *Pressure Relief Device Standards — Part 2 — Portable Containers for Compressed Gases*, 2019.

D.1.2.7 CSA Group Publications.

CSA Group, 178 Rexdale Blvd., Toronto, ON M9W 1R3, Canada.

CSA/ANSI NGV 2, *Compressed natural gas vehicle fuel containers*, 2023.

CSA/ANSI NGV 3.1, *Fuel system components for compressed natural gas powered vehicles*, 2020.

CSA/ANSI NGV 4.2, *Hoses Hose and hose assemblies for compressed natural gas (CNG) dispensing systems for natural gas vehicles*, 2014, reaffirmed 2018 2022 .

CSA/ANSI NGV 5.1, *Residential fueling appliances*, 2023.

CSA SPE-2.1 SERIES-18, *Best practices for defueling, decommissioning, and disposal of compressed natural gas vehicle fuel containers and liquefied natural gas vehicle fuel tanks*, 2018.

D.1.2.8 GTI Publications.

GTI, 1700 S Mount Prospect Road, Des Plaines, IL 60018-1804. <https://www.gti.energy>

GRI-02/0013, *Reference Guide for Integration and Use of Natural Gas Vehicle Fuel Systems*, 2002.

D.1.2.9 National Board Publications.

National Board of Boiler and Pressure Vessel Inspectors, 1055 Crupper Avenue, Columbus, OH 43229.

NB-23, *National Board Inspection Code*, 2023.

D.1.2.10 SAE Publications.

SAE International, Society of Automotive Engineers, 901 15th Street, NW, Suite 520, Washington, DC 20005.

SAE J2343, *Recommended Practice for LNG Medium and Heavy-Duty Powered Vehicles*, February 2018.

D.1.2.11 US Government Publications.

US Government Publishing Office, 732 North Capitol Street, NW, Washington, DC 20401-0004 .

Title 49, Code of Federal Regulations, Part 173, "Shippers—General Requirements for Shipments and Packagings."

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Committee Statement

Committee Statement: Annex references have been updated to their most current editions per the NFPA Manual of Style.

Response Message: SR-4-NFPA 52-2024