

ANSI Z21.75-2007
CSA 6.27-2007

American National Standard/
CSA Standard For
**Connectors For Outdoor
Gas Appliances And
Manufactured Homes**

AMERICAN NATIONAL STANDARD
ANSI Z21.75-2007

CSA STANDARD
CSA 6.27-2007

Second Edition
This Standard is based on the Standard for

Connectors For Outdoor Gas Appliances And Manufactured Homes

ANSI Z21.75-2001 • CSA 6.27-2001
and Addenda Z21.75a-2002 • CSA 6.27a-2002,
Z21.75b-2003 • CSA 6.27b-2003

APPROVED



May 18, 2007
American National Standards Institute, Inc.

January 4, 2006
Interprovincial Advisory Council
Effective in Canada June 1, 2008

Secretariats

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Published - June 2007

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Preface

This publication represents a basic standard for safe operation, substantial and durable construction, and acceptable performance of connectors for outdoor gas appliances and manufactured homes. It is the result of years of experience in the manufacture, testing, installation, maintenance, inspection and research on connectors for outdoor gas appliances and manufactured homes designed for utilization of gas. There are risks of injury to persons inherent in some appliances that, if completely eliminated, would defeat the utility of the appliance. The provisions in this standard are intended to reduce such risks while retaining the normal operation of the appliance.

Nothing in this standard is to be considered in any way as indicating a measure of quality beyond compliance with the provisions it contains. It is designed to allow compliance of connectors for gas appliances and manufactured homes, the construction and performance of which may exceed the various provisions specified herein. In its preparation, full recognition has been given to possibilities of improvement through ingenuity of design. As progress takes place, revisions may become necessary. When they are believed desirable, recommendations should be forwarded to the Chairman of Accredited Standards Committee Z21/83, 8501 East Pleasant Valley Road, Cleveland, Ohio 44131, or the Chairman of the CSA Standards Steering Committee on Gas Burning Appliances and Related Accessories, 5060 Sprectrum Way, Suite 100; Mississauga, Ontario, Canada L4W 5N6.

Safe and satisfactory operation of a connectors for outdoor gas appliances and manufactured homes depends to a great extent upon its proper installation. It should be installed, as applicable, in accordance with the National Fuel Gas Code, ANSI Z223.1/NFPA 54; the Natural Gas and Propane Installation Code, CSA B149.1; the (U.S.) Manufactured Home Construction and Safety Standard, Title 24 CFR, Part 3280, or when such standard is not applicable, the Standard for Manufactured Home Installations, Sites and Communities, ANSI/NFPA 501A, or the Standard for Mobile Homes, CAN/CSA-Z240 MH Series; or the manufacturers' installation instructions and local municipal codes.

Users of this American National Standard/CSA Standard are advised that the devices, products and activities within its scope may be subject to regulation at the Federal, Territorial, Provincial, state or local level. Users are strongly urged to investigate this possibility through appropriate channels. In the event of a conflict with this standard, the Federal, Territorial, Provincial, state or local regulation should be followed.

THIS STANDARD IS INTENDED TO BE USED BY THE MANUFACTURING SECTOR AND BY THOSE APPLYING THE EQUIPMENT AND BY THOSE RESPONSIBLE FOR ITS PROPER INSTALLATION. IT IS THE RESPONSIBILITY OF THESE USERS TO DETERMINE THAT IN EACH CASE THIS STANDARD IS SUITABLE FOR AND APPLICABLE TO THE SPECIFIC USE THEY INTEND.

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EFFECTIVE DATE: An organization using this standard for product evaluation as a part of its certification program will normally establish the date by which all products certified by that organization should comply with this standard. In Canada the Interprovincial Gas Advisory Council normally stipulates an effective date for the standard, delayed sufficiently to permit suppliers (manufacturers) to make adjustments.

History Of The Development Of The Standard For Connectors For Outdoor Gas Appliances And Manufactured Homes

(This History is informative and is not part of the standard.)

With the onset of the Free Trade Agreement between the United States and Canada on January 2, 1988, significant attention was given to the harmonization of the United States and Canadian safety standards addressing gas-fired equipment for residential, commercial and industrial applications. It was believed that the elimination of the differences between the standards would remove potential trade barriers and provide an atmosphere in which North American manufacturers could market more freely in the United States and Canada. The harmonization of these standards was also seen as a step toward harmonization with international standards.

A draft harmonized standard for connectors for outdoor appliances and manufactured homes was prepared by the subcommittee members and CSA staff. On September 15, 1998, the Z21/CSA Joint Subcommittee on Connectors for Gas Appliances reviewed, by letter ballot, the first draft harmonized connectors for outdoor appliances and manufactured homes standard based on current coverage from the American National Standard/CGA Standard for Connectors for Gas Appliances, Z21.24/CGA 6.10-1997, and the U.S. Requirement for Gas Connectors for Connection of Fixed Appliances for Outdoor Installation, Park Trailers and Manufactured (Mobile) Homes to the Gas Supply, A.G.A. 3-87 and CSA Standard, CSA 6.27.

The September letter ballot was approved by the joint subcommittee to distribute the draft standard for review and comment in December 1998. At its July 14, 1999 meeting, following reconsideration and modifications in light of comments received on the proposed draft standard, the joint subcommittee recommended the proposed draft to the Accredited Standards Committee Z21/83 and the CSA Technical Committee for approval.

The proposed draft of the harmonized standard for connectors for outdoor appliances and manufactured homes, as modified by the joint subcommittee, was approved by the Z21/83 Committee on April 13, 2000, and by the CSA Technical Committee by letter ballot dated March 24, 2000.

The first edition of the harmonized American National Standard/CSA Standard for Connectors for Outdoor Appliances and Manufactured Homes was approved by the Canadian Interprovincial Gas Advisory Council on February 15, 2001 and by the American National Standards Institute, Inc., on November 27, 2001.

This, the second edition of the harmonized Standard for Connectors for Outdoor Gas Appliances and Manufactured Homes was approved by the IGAC on January 4, 2006, and by ANSI on May 18, 2007.

The previous edition of the Standard for Connectors for Outdoor Gas Appliances and Manufactured Homes, and addenda thereto, approved by the IGAC and ANSI are as follows:

Z21.75-2001 • CSA 6.27-2001
Z21.75a-2002 • CSA 6.27a-2002
Z21.75b-2003 • CSA 6.27b-2003

The following identifies the designation and year of the harmonized standard:

ANSI Z21.75-2007 • CSA 6.27-2007

NOTE: Changes, other than editorial, are denoted by a vertical line in the margin.

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NOTE

This standard contains SI (Metric) equivalents to the yard/pound quantities, the purpose being to allow the standard to be used in SI (Metric) units. (Standard for use of the International System of Units (SI): The Modern Metric System, IEEE/ASTM SI IO, is used as a guide in making metric conversion from yard/pound quantities.) If a value for a measurement and an equivalent value in other units, the first stated is to be regarded as the requirement. The given equivalent value may be approximate. If a value for a measurement and an equivalent value in other units, are both specified as a quoted marking requirement, the first stated unit, or both shall be provided.

Standard For Connectors For Outdoor Gas Appliances And Manufactured Homes

Part I: Construction

1.1 Scope

1.1.1 This standard applies to newly produced assembled connectors constructed entirely of new, unused parts and materials. Such connectors are intended for exterior use above ground for making the following nonrigid connections:

- a. Between the gas supply and the gas inlet of an appliance for outdoor installation that is not frequently moved after installation. These connectors are not intended for use with wheeled, caster mounted or portable appliances;
- b. Between the permanent gas outlet of a manufactured home community (mobile home park) or individual site and the piping inlet on a park trailer or a manufactured (mobile) home; or
- c. Between sections of a multiple section manufactured (mobile) home.

1.1.2 Connectors covered by this standard are considered suitable for use with natural, manufactured, mixed and liquefied petroleum (LP) gases and LP gas-air mixtures.

1.1.3 Connectors covered by this standard are for use on piping systems operating at fuel gas pressures not in excess of $\frac{1}{2}$ lb/in² (3.5 kPa).

1.1.4 Connectors covered by this standard shall have a nominal length of not less than 1 ft (0.31 m) nor more than 6 ft (1.83 m).

1.1.5 If a value for measurement as given in this standard is followed by an equivalent value in other units, the first stated value is to be regarded as the specification.

1.1.6 All references to "psi" throughout this standard are to be considered gage pressure unless otherwise specified.

1.1.7 Exhibit A contains provisions that are unique to Canada.

1.1.8 Exhibit B contains a list of standards specifically referenced in this standard and sources from which these reference standards may be obtained.

1.2 General

- 1.2.1** The construction of connectors not specifically covered by this standard shall be in accordance with reasonable concepts of safety, substantiality and durability.

All specifications as to construction set forth herein may be satisfied by the construction actually prescribed or such other construction as will provide at least equivalent performance.

- 1.2.2** A connector shall be free from acid residue, scale and loose oxides.
- 1.2.3** There shall be no visible porosity in welds.
- 1.2.4** The nominal length of a connector shall refer to the over-all length, including fittings. The actual length shall be within minus $\frac{1}{2}$ in (12.7 mm) to plus 2 in (50.8 mm) of the nominal length.
- 1.2.5** Tubing shall be constructed of metal of uniform thickness (commercial tolerances allowed) but no section of such tubing shall be less than 0.010 in (0.254 mm) thick. Tubing shall be free from dents, flaws or other defects. Austenitic stainless steel with a minimum thickness of 0.008 in (0.203 mm) is acceptable.

1.3 Materials

- 1.3.1** Materials used in the construction of connector assemblies shall comply with Table I, Materials for Fittings, within commercial tolerances.
- 1.3.2** Materials applied in the internal, gas-carrying construction of the connector shall be resistant to deterioration from natural and liquefied petroleum gases.
- 1.3.3** Materials applied in the exterior construction of a connector shall be resistant to deterioration from exposure to sunlight, ozone, and moisture.

1.4 Fittings

- 1.4.1** Both ends of each connector shall have a union terminating in a standard taper pipe thread. For the purpose of this standard, a flare-type tube connection is considered a union.
- 1.4.2** Threads on pipe-end connections of fittings shall be taper pipe threads conforming to the Standard for *Pipe Threads, General Purpose (Inch)*, ANSI/ASME B1.20.1.
- 1.4.3** Union seats shall not depend upon gaskets for gastightness.
- 1.4.4** Fittings shall be faced or otherwise finished externally to provide adequate hexagonal or octagonal wrench grips.
- 1.4.5** Soldering or brazing shall not be used in the construction of connectors.
- 1.4.6** Surfaces of fittings which normally may come in contact with the tubing shall have a smooth finish.

- 1.4.7** A connector shall not incorporate a connector nut employing threads which are capable of being assembled to standard taper pipe threads.

1.5 Instructions

Instructions covering proper usage and installation shall be attached to each assembled appliance connector. Instructions may be in a language(s) other than English when distributed in areas outside the U.S. and Canada.

- 1.5.1** The instructions shall include a statement that the connector is for use on a piping system operating at fuel gas pressures not in excess of $1/2$ lb/in² (3.5 kPa).
- 1.5.2** The instructions shall include a statement concerning the intended use of the connector. This statement shall state in effect that the connector is suitable for those installations in section [1.1.1](#) (Scope), as applicable.
- 1.5.3** The instructions shall indicate the maximum capacity of the connector capacity in Btu per hour.
- 1.5.4** The instructions shall include statements that the connector:
- a. Is not to be used for connection to an LP-gas container mounted on or adjacent to a park trailer or the manufactured (mobile) home;
 - b. Is not to be installed underground or for use in contact with the ground; and
 - c. Is designed for occasional movement after installation. Repeated bending, flexing or vibration must be avoided. Normal operation of a clothes dryer, rooftop HVAC unit or similar outdoor appliance does not constitute extreme vibration or movement.
- 1.5.5** Unless tested for such use under another standard, the instructions shall include statements that the connector is not for connecting appliances within a recreational vehicle, park trailer, manufactured (mobile) home, a residence or commercial building.
- 1.5.6** The instructions shall include statements to the effect that:
- a. A readily accessible manual shutoff valve must be available upstream of the connector assembly.
 - b. The connector must not be concealed within or run through any wall, floor, or partition. The entire connector must be visible for inspection.
 - c. The connector shall be of an appropriate length for the intended application. Do not stretch the connector nor bend it smaller than $1\frac{1}{2}$ in (38.1 mm) internal diameter (approximately the size of a golf ball). Make sharp bends with pipe fittings.
 - d. The connector must not be kinked or twisted about its own axis.
 - e. Contact with foreign objects or substances must be avoided.

- f. The final assembly must be tested for leaks. CAUTION: Test for leaks only with leak test solution. Rinse with clear water after leak testing to remove any corrosive residue. DO NOT USE OPEN FLAME TO TEST FOR GAS LEAKS.
- g. The connector must not be reused for any other installation. A new connector must be installed. All connectors shall bear the following warning in 10 point type provided on a Class IIIA marking material: "DO NOT REUSE."
- h. The connector must be replaced if the connector is damaged or deteriorated.
- i. This connector complies with the Standard for Connectors for Outdoor Gas Appliances and Manufactured Homes, ANSI Z21.75 • CSA 6.27 (unless this is shown as a marking, see 1.6.2-d).

1.5.7 The instructions shall be sufficiently durable and attached in a manner which meets or exceeds a Class IIIA permanent label (see 1.6.1).

1.5.8 The instructions shall be examined by the testing agency for readability, accuracy, and durability.

1.6 Marking

1.6.1 Marking material shall be identified by class number and shall meet the following specifications. All metal marking materials shall be rustproof. All markings shall be suitable for application to the type of surface upon which applied. The designation of any class of marking shall not preclude the use of marking of a lower number class.

Class I. Integral Marking

Marking that is embossed, cast, stamped or otherwise formed in the part. This includes markings baked into an enameled surface.

Class IIA-3. Permanent Plate

Shall be made of metal having a thickness less than 0.006 in (0.152 mm). Such plates shall be attached by means of nonwater-soluble adhesive.

Class IIA-4. Permanent Plate

Shall be made of pressure-sensitive metal foil requiring no solvent or activator.

Class IIIA-1. Permanent Label

Shall be made of material not adversely affected by water, shall be attached by means of nonwater-soluble adhesive.

Class IIIA-2. Permanent Label

Shall be made of material not adversely affected by water, shall be attached by means of nonwater-soluble adhesive. These materials shall not be located on surfaces having temperatures exceeding 175°F (79.5°C).