ANSI Z83.19-2009
CSA 2.35-2009

American National Standard/
CSA Standard For
Gas-Fired High-Intensity Infrared Heaters

AMERICAN NATIONAL STANDARD
ANSI Z83.19-2009

CSA STANDARD
CSA 2.35-2009

Second Edition - 2009
This Standard is based on the Standard for
Gas-Fired High-Intensity Infrared Heaters
ANSI Z83.19-2001 • CSA 2.35-2001
and ANSI Z83.19a-2002 • CSA 2.35a-2002,
ANSI Z83.19b-2007 • CSA 2.35b-2007

APPROVED

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Standards Developer

CSA AMERICA INC.
8501 East Pleasant Valley Road
Cleveland, Ohio 44131

CANADIAN STANDARDS ASSOCIATION
5060 Spectrum Way, Suite 100
Mississauga, Ontario, Canada L4W 5N6

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Preface

This publication represents a basic standard for safe operation, substantial and durable construction, and acceptable performance of gas-fired high-intensity infrared heaters. It is the result of years of experience in the manufacture, testing, installation, maintenance, inspection and research on gas-fired high-intensity infrared heaters designed for utilization of gas. There are risks of injury to persons inherent in appliances that, if completely eliminated, would defeat the utility of the appliance. The provisions in this standard are intended to help 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 gas-fired high-intensity infrared heaters, the safety construction and performance of which may exceed the various provisions specified herein. In its preparation, 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 or suggestions should be forwarded to the Chairman Z21/83 Committee, CSA America, 8501 East Pleasant Valley Road, Cleveland, Ohio 44131, or the Chairman of CSA Technical Committee, CSA, 5060 Spectrum Way, Suite 100, Mississauga, Ontario, Canada L4W 5N6.

Safe and satisfactory operation of gas-fired high-intensity infrared heaters depends to a great extent upon its proper installation, use and maintenance. It should be installed, as applicable, in accordance with the *National Fuel Gas Code, ANSI Z223.1*; the *Natural Gas and Propane Installation Code, CSA B149.1*.

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.

CAUTION NOTICE: This American National Standard may be revised or withdrawn at any time. The procedures of the American National Standards Institute, Inc., require that action be taken to reaffirm, revise or withdraw this standard no later than five (5) years from the date of approval. Purchasers of American National Standards may receive current information on all standards by calling or writing the American National Standards Institute, Inc., 25 West 43rd Street, Fourth Floor, New York, N.Y. 10036, (212) 642-4900.

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.

History Of The Development Of The Standard For Gas-Fired High-Intensity Infrared Heaters

(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.

The draft harmonized standard was based on current coverage from the American National Standard for Gas-Fired Infrared Heaters, Z83.6-1990, and the Canadian Standard for Gas-Fired Infra-Red Heaters, CAN1-2.16-M81.

At the November 18, 1998 meeting of the Z21/(Interim) CSA Joint Subcommittee for Gas-Fired Infrared Heaters, the subcommittee approved the draft harmonized standard on Gas-Fired High-Intensity Infrared Heaters, Z83.19/CSA 2.35 for distribution for Public Review and Comment. The proposed draft harmonized standard was distributed for industry review on January 15, 1999.

At its October 1999 meeting, following reconsideration and modifications of the proposed draft standard for Gas-Fired High-Intensity Infrared Heaters, the subcommittee recommended the proposed draft standard to Accredited Standards Committee Z21/83 and the CSA Technical Committee on Gas Appliances and Related Accessories for approval.

The proposed draft harmonized standard for Gas-Fired High-Intensity Infrared Heaters was approved by the Z21/83 Committee on January 19, 2001, and by the CSA Technical Committee by letter ballot dated February 25, 2000.

The first edition of the harmonized American National Standard/CSA Standard for Gas-Fired High-Intensity Infrared Heaters was approved by the Canadian Interprovincial Gas Advisory Council on January 4, 2001 and by the American National Standards Institute, Inc., on March 14, 2001.

This, the second edition of the American National Standard/CSA Standard for Gas-Fired High-Intensity Infrared Heaters was approved by the Canadian Interprovincial Gas Advisory Council (IGAC) on February 11, 2009 and by the American National Standards Institute, Inc. (ANSI) on July 8, 2009.

The previous editions of the Gas-Fired High-Intensity Infrared Heaters, and addendas thereto, approved by the IGAC and ANSI Institute, Inc. are as follows:

ANSI Z83.19-2001 • CSA 2.35-2001
ANSI Z83.19a-2002 • CSA 2.35a-2002
ANSI Z83.19b-2007 • CSA 2.35b-2007

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

ANSI Z83.19-2009 • CSA 2.35-2009

Note: This edition of Z83.19 • CSA 2.35 incorporates changes to the 2001 edition and addenda thereto. 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. (IEEE/ASTM-SI-10 or CAN/CSA Z234.1 are 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.

American National Standard/CSA Standard For Gas-Fired High-Intensity Infrared Heaters

Part I: Construction

1.1 Scope

1.1.1
This standard applies to newly produced, gas-fired high-intensity infrared heaters (see Part IV, Definitions), hereinafter referred to as heaters or appliances, constructed entirely of new, unused parts and materials with inputs up to and including 400,000 Btu per hour (117 228 W) per burner:

a. For use with natural gas;

b. For use with manufactured gas;

c. For use with mixed gas;

d. For use with liquefied petroleum (propane) gases;

e. For use with LP gas-air mixtures; or

f. Convertible for use with natural gas and liquefied petroleum (propane) gases, when provision is made for the simple conversion from one gas to the other.

1.1.2
The heaters covered by this standard are intended for installation in and heating of outdoor spaces or nonresidential indoor spaces and are intended for location where flammable gases or vapors are not generally present.

Although heaters covered by this standard may, in certain instances, be suitable for application in industrial processes, this standard does not cover industrial process burners.

1.1.3
High-intensity infrared heaters may be suspended overhead, angle mounted overhead, wall mounted or floor mounted. Floor-mounted heaters may be free-standing and, when for outdoor installation, also may be portable to the extent defined in Part IV, Definitions.

1.1.4
Overhead heaters complying with this standard are suitable for use in (1) aircraft hangars when installed in accordance with the Standard for *Aircraft Hangars, ANSI/NFPA 409,* and (2) garages when installed in accordance with the Standard for *Parking Structures, ANSI/NFPA 88A,* or the Standard for *Repair Garages, ANSI/NFPA 88B*; or the *Canadian Natural Gas and Propane Installation Code, CSA B149.1*, and are so marked.

1.1.5
The heaters covered by this standard may be:

a. Designed for connection to a vent; or

b. Not designed for connection to a vent.

1.1.6
The construction and performance of heaters covered by this standard are specified in Parts I and II, respectively. The definitions for certain terms used are in Part IV, Definitions.

1.1.7
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.

1.1.8
All references to "psi" are to be considered gage pressures unless otherwise specified.

1.1.9
Exhibit A, Items Unique to the United States, contains provisions that are unique to the United States.

1.1.10
Exhibit B, Items Unique to Canada, contains provisions that are unique to Canada.

1.1.11
Exhibit C, List of Reference Standards, contains a list of standards specifically referenced in this standard, and sources from which these reference standards may be obtained.

1.2 General Construction

1.2.1
The construction of the heater shall be such that it will not show signs of becoming warped, bent, broken or otherwise damaged during the initial test installation or during any of the tests specified, so as to prevent its compliance with this standard, and, whether specifically covered in this standard or not, 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 and durability.

1.2.2
Asbestos shall not be used.

1.2.3
Every part of the heater shall be secure against displacement and shall be constructed so as to maintain a fixed relationship between essential parts under normal and reasonable conditions of handling and usage. Parts not permanently secured shall be designed so they cannot be incorrectly assembled and cannot be improperly located or misaligned in removing or replacing during cleaning or other servicing.

1.2.4
A panel shall be designed so as to prevent its being attached in an improper position or being interchanged with other panels on the same heater in a manner that may interfere with proper operation of the heater.