



**CSA  
Group**

**ANSI Z83.4-2013  
CSA 3.7-2013**

# **Non-recirculating direct gas-fired industrial air heaters**

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AMERICAN NATIONAL STANDARD  
ANSI Z83.4-2013

CSA 3.7-2013

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This Standard is based on the Standard for  
Non-recirculating direct gas-fired industrial air heaters  
ANSI Z83.4-2003 • CSA 3.7-2003  
and ANSI Z83.4a-2004 • CSA 3.7a-2004,  
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# ***Preface***

This publication represents a basic standard for safe operation, substantial and durable construction, and acceptable performance of non-recirculating direct gas-fired industrial heaters. It is the result of years of experience in the manufacture, testing, installation, maintenance, inspection and research on appliances designed for the 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 function 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 non-recirculating direct gas-fired industrial air 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 technical advances take place, revisions may become necessary. When they are believed desirable, recommendations or suggestions should be forwarded to the CSA America, 8501 East Pleasant Valley Road, Cleveland, Ohio 44131. A proposal form is provided in the back of this document.

Safe and satisfactory operation of a non-recirculating direct gas-fired industrial air heater depends to a great extent upon its proper installation, use and maintenance. It should be installed in accordance with the *National Fuel Gas Code, ANSI Z223.1/NFPA 54*; manufacturers' installation instructions and local municipal codes.

Users of this American National Standard are advised that the devices, products and activities within its scope may be subject to regulation at the Federal, 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, state or local regulations should be followed.

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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.

# ***History of the development of the Standard For Non-Recirculating Direct Gas-Fired Industrial Air 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. Joint subcommittees were established to facilitate the standards harmonization process between the United States and Canada.

At its July 14-16, 1992 meeting, the Z21/CGA Joint Subcommittee on Standards for Gas-Fired, Heavy-Duty Forced Air Heaters group agreed to prepare a draft bi-national standard for Direct Gas-Fired Industrial Air Heaters. During its November 7-8, 1996 meeting the joint subcommittee agreed to send the draft standard for public review and comment.

The first draft harmonized standard was based on current coverage from the American National Standards/Canadian Gas Association Standards for Direct Gas-Fired Non-recirculating Make-up Air Heaters, ANSI Z83.4, Direct Gas-Fired Make-up Air Heaters, CGA-3.7, the Direct Gas Fired Door Air Heaters, Z83.17 and CGA-3.12, and Direct Gas Fired Industrial Air Heaters, Z83.18.

Following reconsideration and modification of the proposed draft standard, in light of comments received, the joint heavy duty heaters subcommittee at its July 22-24, 1997 meeting, recommended the proposed draft standard to Accredited Standards Committee Z21/83 and the (Interim CSA) Standards Steering Committee for approval.

The proposed draft of the harmonized standard for Non-Recirculating Direct Gas-Fired Industrial Air Heaters, as modified by the joint subcommittee, was approved by the Z21/83 Committee by letter ballot dated August 10, 1998 and by the CGA Standards Steering Committee by letter ballot dated October 6, 1997.

The first edition of the American National Standard/CSA Standard for Non-Recirculating Direct Gas-Fired Industrial Air Heaters was approved by the Canadian Interprovincial Gas Advisory Council on July 7, 1999, and by the American National Standards Institute, Inc., on November 9, 1999.

Following the procedures outlined above, further revisions to this standard, Z83.4 • CSA 3.7, were made in line with industry developments. The second edition of the American National Standard/CSA Standard for Non-Recirculating Direct Gas-Fired Industrial Air Heaters was approved by the Interprovincial Gas Advisory Council on September 11, 2003, and by the American National Standards Institute, Inc., on November 26, 2003.

Previous editions of the harmonized Non-Recirculating Direct Gas-Fired Industrial Air Heaters, and addenda thereto, approved by the Interprovincial Gas Advisory Council and the American National Standards Institute are as follows:

Z83.4-1999 • CSA 3.7-1999  
Z83.4a-2001 • CSA 3.7a-2001  
Z83.4b-2002 • CSA 3.7b-2002

Z83.4-2003 • CSA 3.7-2003  
Z83.4a-2004 • CSA 3.7a-2004  
Z83.4b-2006 • CSA 3.7b-2006

The following identifies the designation and year of the second edition of the standard:

ANSI Z83.4-2013 • CSA 3.7-2013

*NOTE: This the 2013 edition of Z83.4 • CSA 3.7 incorporates changes to the 2003 edition and addenda thereto. Changes, other than editorial, are denoted by a vertical line in the margin.*

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# **ANSI Z83.4-2013 • CSA 3.7-2013**

## ***Standard for non-recirculating direct gas-fired industrial air heaters***

### **1 Scope**

#### **1.1**

This standard applies to newly produced, direct gas-fired industrial air heaters of the non-recirculating type, hereinafter referred to as heaters, whose purpose is to offset building heat loss. All air to the heater shall be ducted directly from outdoors and the products of combustion generated by the heater are released into the air stream being heated.

Heaters covered by this standard are intended for use in industrial and commercial applications. Heaters covered by this standard are not intended for use in any area containing sleeping quarters. The installation shall conform with local codes, or in the absence of local codes, in accordance with the *National Fuel Gas Code, ANSI Z223.1/NFPA 54*, or the *Natural Gas and Propane Installation Code, CSA B149.1*.

This standard applies to heaters designed for heated discharge air temperature of 160°F (71°C) or less.

This standard is intended to cover only complete packaged heaters with integral air moving components, i.e., those which are designed by, cataloged by and built on a repetitive basis by the manufacturer.

#### **1.2**

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.

#### **1.3**

Items unique to the U.S. are shown in Section 6.

#### **1.4**

Items unique to Canada are shown in Section 7.

#### **1.5**

Section 2, List of Reference Standards, contains a list of standards specifically referenced in this standard, and sources from which these referenced standards may be obtained.

#### **1.6**

All references to p.s.i. through this standard are to be considered gage pressure unless otherwise specified.