



ANSI Z21.60-2012
CSA 2.26-2012

Standard for Decorative gas appliances for installation in solid-fuel burning fireplaces



Documents
Document Sharing Hub

Legal Notice for Standards

Canadian Standards Association and CSA America, Inc. (operating as "CSA Group") develop standards through a consensus standards development process approved by the Standards Council of Canada. This process brings together volunteers representing varied viewpoints and interests to achieve consensus and develop a standard. Although CSA Group administers the process and establishes rules to promote fairness in achieving consensus, it does not independently test, evaluate, or verify the content of standards.

Disclaimer and exclusion of liability

This document is provided without any representations, warranties, or conditions of any kind, express or implied, including, without limitation, implied warranties or conditions concerning this document's fitness for a particular purpose or use, its merchantability, or its non-infringement of any third party's intellectual property rights. CSA Group does not warrant the accuracy, completeness, or currency of any of the information published in this document. CSA Group makes no representations or warranties regarding this document's compliance with any applicable statute, rule, or regulation.

IN NO EVENT SHALL CSA GROUP, ITS VOLUNTEERS, MEMBERS, SUBSIDIARIES, OR AFFILIATED COMPANIES, OR THEIR EMPLOYEES, DIRECTORS, OR OFFICERS, BE LIABLE FOR ANY DIRECT, INDIRECT, OR INCIDENTAL DAMAGES, INJURY, LOSS, COSTS, OR EXPENSES, HOWSOEVER CAUSED, INCLUDING BUT NOT LIMITED TO SPECIAL OR CONSEQUENTIAL DAMAGES, LOST REVENUE, BUSINESS INTERRUPTION, LOST OR DAMAGED DATA, OR ANY OTHER COMMERCIAL OR ECONOMIC LOSS, WHETHER BASED IN CONTRACT, TORT (INCLUDING NEGLIGENCE), OR ANY OTHER THEORY OF LIABILITY, ARISING OUT OF OR RESULTING FROM ACCESS TO OR POSSESSION OR USE OF THIS DOCUMENT, EVEN IF CSA GROUP HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, INJURY, LOSS, COSTS, OR EXPENSES.

In publishing and making this document available, CSA Group is not undertaking to render professional or other services for or on behalf of any person or entity or to perform any duty owed by any person or entity to another person or entity. The information in this document is directed to those who have the appropriate degree of experience to use and apply its contents, and CSA Group accepts no responsibility whatsoever arising in any way from any and all use of or reliance on the information contained in this document.

CSA Group is a private not-for-profit company that publishes voluntary standards and related documents. CSA Group has no power, nor does it undertake, to enforce compliance with the contents of the standards or other documents it publishes.

Intellectual property rights and ownership

As between CSA Group and the users of this document (whether it be in printed or electronic form), CSA Group is the owner, or the authorized licensee, of all works contained herein that are protected by copyright, all trade-marks (except as otherwise noted to the contrary), and all inventions and trade secrets that may be contained in this document, whether or not such inventions and trade secrets are protected by patents and applications for patents. Without limitation, the unauthorized use, modification, copying, or disclosure of this document may violate laws that protect CSA Group's and/or others' intellectual property and may give rise to a right in CSA Group and/or others to seek legal redress for such use, modification, copying, or disclosure. To the extent permitted by licence or by law, CSA Group reserves all intellectual property rights in this document.

Patent rights

Attention is drawn to the possibility that some of the elements of this standard may be the subject of patent rights. CSA Group shall not be held responsible for identifying any or all such patent rights. Users of this standard are expressly advised that determination of the validity of any such patent rights is entirely their own responsibility.

Authorized use of this document

This document is being provided by CSA Group for informational and non-commercial use only. The user of this document is authorized to do only the following:

If this document is in electronic form:

- load this document onto a computer for the sole purpose of reviewing it;
- search and browse this document; and
- print this document if it is in PDF format.

Limited copies of this document in print or paper form may be distributed only to persons who are authorized by CSA Group to have such copies, and only if this Legal Notice appears on each such copy.

In addition, users may not and may not permit others to

- alter this document in any way or remove this Legal Notice from the attached standard;
- sell this document without authorization from CSA Group; or
- make an electronic copy of this document.

If you do not agree with any of the terms and conditions contained in this Legal Notice, you may not load or use this document or make any copies of the contents hereof, and if you do make such copies, you are required to destroy them immediately. Use of this document constitutes your acceptance of the terms and conditions of this Legal Notice.



AMERICAN NATIONAL STANDARD
ANSI Z21.60-2012

CSA 2.26-2012

Third Edition - 2012

This Standard is based on the Standard for
Decorative gas appliances for installation
in solid-fuel burning fireplaces

ANSI Z21.60-2003 • CSA 2.26-2003,
ANSI Z21.60a-2003 • CSA 2.26a-2003, and
ANSI Z21.60b-2004 • CSA 2.26b-2004

APPROVED



February 23, 2012
American National Standards Institute, Inc.

IGAC

March 22, 2012
Interprovincial Gas Advisory Council
Effective in Canada September 1, 2013

Standard Developers

CSA AMERICA INC.
Operating as "CSA Group"
8501 East Pleasant Valley Road
Cleveland, Ohio 44131

CANADIAN STANDARDS ASSOCIATION
Operating as "CSA Group"
5060 Spectrum Way, Suite 100
Mississauga, Ontario, Canada L4W 5N6



TM A trade-mark of the Canadian Standards Association, operating as "CSA Group"

Published in June 2012 by CSA Group

Visit our Online Store at shop.csa.ca

CSA Group

The Canadian Standards Association (operating as “CSA Group”), under whose auspices this National Standard has been produced, was chartered in 1919 and accredited by the Standards Council of Canada to the National Standards system in 1973. It is a not-for-profit, nonstatutory, voluntary membership association engaged in standards development and certification activities.

CSA Group standards reflect a national consensus of producers and users — including manufacturers, consumers, retailers, unions and professional organizations, and governmental agencies. The standards are used widely by industry and commerce and often adopted by municipal, provincial, and federal governments in their regulations, particularly in the fields of health, safety, building and construction, and the environment.

Individuals, companies, and associations across Canada indicate their support for CSA Group’s standards development by volunteering their time and skills to Committee work and supporting CSA Group’s objectives through sustaining memberships. The more than 7000 committee volunteers and the 2000 sustaining memberships together form CSA Group’s total membership from which its Directors are chosen. Sustaining memberships represent a major source of income for CSA Group’s standards development activities.

CSA Group offers certification and testing services in support of and as an extension to its standards development activities. To ensure the integrity of its certification process, CSA Group regularly and continually audits and inspects products that bear the CSA Group Mark.

In addition to its head office and laboratory complex in Toronto, CSA Group has regional branch offices in major centres across Canada and inspection and testing agencies in eight countries. Since 1919, CSA Group has developed the necessary expertise to meet its corporate mission: CSA Group is an independent service organization whose mission is to provide an open and effective forum for activities facilitating the exchange of goods and services through the use of standards, certification and related services to meet national and international needs.

L’Association canadienne de normalisation (qui exerce ses activités sous le nom «Groupe CSA»), sous les auspices de laquelle cette Norme nationale a été préparée, a reçu ses lettres patentes en 1919 et son accréditation au sein du Système de Normes nationales par le Conseil canadien des normes en 1973. Association d’affiliation libre, sans but lucratif ni pouvoir de réglementation, le Groupe CSA se consacre à l’élaboration de normes et à la certification.

Les normes du Groupe CSA reflètent le consensus de producteurs et d’usagers de partout au pays, au nombre desquels se trouvent des fabricants, des consommateurs, des détaillants et des représentants de syndicats, de corps professionnels et d’agences gouvernementales. L’utilisation des normes du Groupe CSA est très répandue dans l’industrie et le commerce, et leur adoption à divers ordres de législation, tant municipal et provincial que fédéral, est chose courante, particulièrement dans les domaines de la santé, de la sécurité, du bâtiment, de la construction et de l’environnement.

Les Canadiens d’un bout à l’autre du pays témoignent de leur appui au travail de normalisation mené par le Groupe CSA en participant bénévolement aux travaux des comités du Groupe CSA et en appuyant ses objectifs par leurs cotisations de membres de soutien. Les quelque 7000 volontaires faisant partie des comités et les 2000 membres de soutien constituent l’ensemble des membres du Groupe CSA parmi lesquels ses administrateurs sont choisis. Les cotisations des membres de soutien représentent une source importante de revenu pour les services de soutien à la normalisation volontaire.

Le Groupe CSA offre des services de certification et de mise à l’essai qui appuient et complètent ses activités dans le domaine de l’élaboration de normes. De manière à assurer l’intégrité de son processus de certification, le Groupe CSA procède de façon régulière et continue à l’examen et à l’inspection des produits portant la marque du Groupe CSA.

Outre son siège social et ses laboratoires à Toronto, le Groupe CSA possède des bureaux régionaux dans des centres vitaux partout au Canada, de même que des agences d’inspection et d’essai dans huit pays. Depuis 1919, le Groupe CSA a parfait les connaissances techniques qui lui permettent de remplir sa mission d’entreprise, à savoir le Groupe CSA est un organisme de services indépendant dont la mission est d’offrir une tribune libre et efficace pour la réalisation d’activités facilitant l’échange de biens et de services par l’intermédiaire de services de normalisation, de certification et autres, pour répondre aux besoins de nos clients, tant à l’échelle nationale qu’internationale.

For further information on CSA Group services, write to

CSA Group
5060 Spectrum Way, Suite 100, Mississauga, Ontario,
Canada L4W 5N6

Pour plus de renseignements sur les services de
du Groupe CSA, s’adresser au

5060, Spect
Way, bureau 100
Mississauga, Ontario, Canada L4W 5N6

American National Standards Institute

The American National Standards Institute (ANSI), Inc. is the nationally recognized coordinator of voluntary standards development in the United States through which voluntary organizations, representing virtually every technical discipline and every facet of trade and commerce, organized labor and consumer interests, establish and improve the some 10,000 national consensus standards currently approved as American National Standards.

ANSI provides that the interests of the public may have appropriate participation and representation in standardization activity, and cooperates with departments and agencies of U.S. Federal, state and local governments in achieving compatibility between government codes and standards and the voluntary standards of industry and commerce.

ANSI represents the interests of the United States in international nontreaty organizations such as the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC). The Institute maintains close ties with regional organizations such as the Pacific Area Standards Congress (PASC) and the Pan American Standards Commission (COPANT). As such, ANSI coordinates the activities involved in the U.S. participation in these groups.

ANSI approval of standards is intended to verify that the principles of openness and due process have been followed in the approval procedure and that a consensus of those directly and materially affected by the standards has been achieved. ANSI coordination is intended to assist the voluntary system to ensure that national standards needs are identified and met with a set of standards that are without conflict or unnecessary duplication in their requirements.

Responsibility of approving American National Standards rests with the

***American National Standards Institute, Inc.
25 West 43rd Street, Fourth Floor
New York, NY
10036***

Preface

This publication represents a basic standard for safe operation, substantial and durable construction, and acceptable performance of storage a decorative gas appliance for installation in solid-fuel burning fireplaces. It is the result of years of experience in the manufacture, testing, installation, maintenance, inspection and research on a decorative gas appliance for installation in solid-fuel burning fireplaces 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 decorative gas appliance for installation in solid-fuel burning fireplaces, 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 CSA Group, 8501 East Pleasant Valley Road, Cleveland, Ohio 44131, or the CSA Group, 5060 Spectrum Way, Suite 100, Mississauga, Ontario, Canada L4W 5N6.

Safe and satisfactory operation of a decorative gas appliance for installation in solid-fuel burning fireplaces 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/NFPA 54; the Natural Gas and Propane Installation Code, CSA B149.1.

Users of this American National Standard/Canadian Standards Association 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 Standards For Decorative Gas Appliances For Installation In Solid-Fuel Burning Fireplaces

(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.

A Z21/CGA joint working group on harmonizing decorative gas appliance standards was established. On October 27-28, 1992 the Z21/CGA Joint Decorative Appliance Subcommittee reviewed the first draft harmonized Standard for Decorative Gas Appliances Installation in Solid Fuel Burning Fireplaces based on current coverage from the American National Standard for Decorative Gas Appliances for Installation in Solid Fuel Burning Fireplaces, ANSI Z21.60-1991, and the National Standard of Canada for Decorative Gas Appliances for Installation in Vented Fireplaces, CAN/CGA 2.26-M86. Following its review, the joint subcommittee modified the draft document and agreed to distribute a second draft for industry review during March 1993.

With the formation of joint subcommittees, a Canadian Gas Association Standards Steering Committee on Gas Burning Appliances and Related Accessories was established to parallel Accredited Standards Committee Z21 and Z83, and to support the formation of joint subcommittees. Operating procedures for joint subcommittees were developed in accordance with American National Standards Institute procedures and subsequently approved by ANSI on April 1, 1993.

During its October 6-7, 1993 meeting, the joint decorative gas appliance subcommittee reconsidered the proposed second draft of the harmonized Standard for Decorative Gas Appliances for Installation in Solid-Fuel Burning Appliances dated March 1993, in light of comments received. Changes to the combustion section of the draft standard were redistributed for review and comment.

At its May 26-27, 1994 meeting, the joint decorative appliance subcommittee reconsidered the proposed combustion section of the draft standard, in light of comments received. As a result a third draft, comprised of the second draft and the proposed combustion section, was recommended to the Z21 Committee and the CGA Standards Steering Committee for approval.

The proposed third draft of the harmonized Standard for Decorative Gas Appliances for Installation in Solid-Fuel Burning Fireplaces was approved by the Z21 Committee by letter ballot dated August 5, 1994, and by the CGA Standards Steering Committee on April 14, 1994.

The first edition of the harmonized Z21/CGA Standard for Decorative Gas Appliances for Installation in Solid Fuel Burning Appliances was approved by The Canadian Interprovincial Gas Advisory Council and the CGA Standards Advisory Committee in September 1995 and by the American National Standards Institute, Inc., on February 7, 1996.

This the second edition of the harmonized Z21/Canadian Standards Association Standard for Decorative Gas Appliances for Installation in Solid-Fuel Burning Fireplaces, was approved by the Canadian Interprovincial Gas Advisory Council on February 17, 2003 and by the American National Standards Institute Inc. on July 10, 2002.

The previous editions of Decorative Gas Appliances for Installation in Solid-Fuel Burning Fireplaces, and addenda thereto, approved by the Interprovincial Gas Advisory Council and American National Standards Institute, Inc. are as follows:

Z21.60-1996 • CGA 2.26-M96

Z21.60a-2000 • CGA 2.26a-2000

Z21.60b-2001 • CGA 2.26b-2001

Z21.60-2003 • CSA 2.26-2003

Z21.60-2003a • CSA 2.26a-2003

Z21.60-2004b • CSA 2.26b-2004

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

ANSI Z21.60-2012 • CSA Group 2.26-2012

Note: This the third edition of Z21.60 • CSA Group 2.26 incorporates changes to the second 2003 edition of Z21.60 • CSA 2.26 and addenda thereto. Changes are denoted by a vertical line in the margin.

Interprovincial Gas Advisory Council

(February, 2012)

A. Ali	Government of Nunavut Community & Government Services	
R. Brousseau	Régie du bâtiment du Québec	<i>(Alternate Member)</i>
M. Davidson	Province of New Brunswick Dept. of Public Safety	
D. Eastman	Government of Newfoundland and Labrador	
D. Hird	SaskPower Corporation	<i>(Alternate Member)</i>
S. Manning	Alberta Municipal Affairs	
J. Marshall	Technical Standards & Safety Authority (TSSA)	
R. McRae	Government of the NWT Public Works & Services	
V. Pao	Manitoba Department of Labour and Immigration	
B. Reid	Department of Environment, Energy and Forestry	
J. Renaud	Régie du bâtiment du Québec	
E. Skehor	British Columbia Safety Authority (BCSA)	
D.C. Stewart	Nova Scotia Labour and Advanced Education	
I. Tilgner	Human Resources and Skills Development Canada (HRSDC)	
G. Williams	SaskPower Corporation	
C. Wolfe	Government of Nunavut Community & Government Services	<i>(Alternate Member)</i>
D. Young	Government of Yukon Territory	



Documents
Document Sharing Hub

Z21/83 Committee on Performance and Installation of Gas Burning Appliances and Related Accessories

DARYL L. HOSLER, Chairman

CATHY L. RAKE, Program Manager, CSA America, Inc. (Non-Voting)

AMERICAN GAS ASSOCIATION:

James Ranfone

Amy Wagner

Matthew Wilber

ASSOCIATION OF HOME APPLIANCE MANUFACTURERS (AHAM):

Matthew Williams

AIR CONDITIONING, HEATING AND REFRIGERATION INSTITUTE (AHRI):

Charles Adams

Mark Diesch

Gary Potter

ATMOS ENERGY:

Ronnie Ray Frazier

BURNER TECHNOLOGY UNLIMITED, INC.:

Carl Suchovsky

DIRECT ENERGY:

Alan Wainwright

DLHX2 ENTERPRISES, LLC:

Daryl Hosler

GAS APPLIANCE MANUFACTURERS ASSOCIATION, INC (GAMA):

Paul Beach

Frank Myers

HEARTH PATIO & BARBECUE ASSOCIATION (HPBA):

Thomas Stroud

LOWE'S COMPANIES, INC.:

George Ruzicka

Z21/83 Committee on Performance and Installation of Gas Burning Appliances and Related Accessories (con't.)

NATIONAL PROPANE GAS ASSOCIATION:

Bruce Swiecicki

NORTH AMERICAN ASSOCIATION OF FOOD EQUIPMENT MANUFACTURERS (NAAFEM):

Charlie Souhrada

SEMPRA ENERGY UTILITY:

Lance DeLaura

UNDERWRITERS' LABORATORIES, INC.:

Robert Wozniak

Travis Hardin (Alternate)

CONSUMER REPRESENTATIVE:

JoAnn Emmel

Hall Virgil

INDIVIDUAL:

Issac Sargunam



Documents
Document Sharing Hub

CSA Technical Committee On Gas Appliances And Related Accessories

(November, 2011)

Z. Fraczkowski	Technical Standards & Safety Authority (TSSA)	<i>(Chairman)</i>
D. Baxter	Enbridge Gas Distribution	<i>(Vice-Chairman)</i>
J. Boros	Rheem Manufacturing Co.	<i>(Alternate Member)</i>
C. Côté	Gaz Métro Inc.	
C. Gibbs	Consumer Representative	
A. Gould	Reliance Comfort Ltd.	
E. Grzesik	Ontario Ministry of Energy	
D. Jamieson	GHP Group Inc.	
J. Jones	J. M. Jones Consulting Services	
C. Jorgenson	British Columbia Safety Authority (BCSA)	
T. Poulin	GSW Water Heating Company	
G. Prociw	Union Gas Limited	
C. L. Rake	Canadian Standards Association (CSA)	<i>(Secretary)</i>

Joint Technical Advisory Group on Standards for Decorative Gas Appliances for Installation in Solid-fuel Burning Fireplaces

S. RON CAUDLE, Chairman

ANTHONY JAMES, Vice-Chairman

Gregg Achman
Eric Adair
Thomas Beal
James Buezis
Jennifer Cittadini
Rick Curkeet
Glen Edgar
Don Emen (Alternate)
Kerry Leason
Ruben Mateos Martin
Martin Miles
Ronald Smith
Jared Sorenson (Alternate)
Frank Stanonik
Thomas Stroud
Carl Suchovsky
Daniel Szubra
David Troscinski
James York



Documents
Document Sharing Hub

ANSI Z21.60-2012 • CSA 2.26-2012
***Decorative gas appliances for installation
in solid-fuel burning fireplaces***



™A trade-mark of the Canadian Standards Association, operating as "CSA Group"

Published in June 2012 by CSA Group
A not-for-profit private sector organization
5060 Spectrum Way, Suite 100, Mississauga, Ontario, Canada L4W 5N6
1-800-463-6727 • 416-747-4044

Visit our Online Store at shop.csa.ca

*To purchase standards and related publications, visit our Online Store at **shop.csa.ca** or call toll-free 1-800-463-6727 or 416-747-4044.*

ISBN 978-1-55491-977-2

© 2012 CSA Group

All rights reserved. No part of this publication may be reproduced in any form whatsoever without the prior permission of the publisher.

Contents

Page

Part I Construction

1.1	Scope	4
1.2	General Construction And Assembly	5
1.3	Materials	6
1.4	Main Burners	6
1.5	Primary Air Adjustment Means	7
1.6	Orifices And Orifice Fittings	7
1.7	Automatic Gas Ignition Systems	8
1.8	Appliance Main Gas Valves	10
1.9	Gas Supply Lines	11
1.10	Thermostats	12
1.11	Automatic Valves	12
1.12	Gas Appliance Pressure Regulators	13
1.13	Pilot Gas Filters	13
1.14	Instructions	14
1.15	Markings	16

Part II Performance

2.1	General	22
2.2	Test Gases	23
2.3	Test Pressures And Burner Adjustments	23
2.4	Combustion	24
2.5	Burner Operating Characteristics	25
2.6	Pilot Operating Characteristics	27
2.7	Loose Burner Materials	28
2.8	Proved Igniter Systems	28
2.9	Automatic Gas Ignition Systems	30
2.10	Direct Ignition Systems	33
2.11	Appliance Main Gas Valves	35
2.12	Gas Appliance Pressure Regulators	35
2.13	Automatic Valves	35
2.14	Manifold And Control Assembly Capacity	36
2.15	Handle Temperatures	36
2.16	Marking Material Adhesion And Legibility	36
2.17	Burner Durability	37

Tables

Table I	Minimum Sheet Metal Thickness	39
Table II	Maximum Tubing And Fitting Temperatures	39
Table III	Minimum Acceptable Wall Thickness For Semirigid Tubing	40
Table IV-A	(A) - For Factory Built Fireplaces Free Opening Area Of Chimney Damper For Venting Combustion Products From Decorative Appliances For Installation In Solid-Fuel Burning Fireplaces (See 1.14.1-b)	40

Contents (Continued)

	Page
Table IV-B (B) - For Masonry Built Fireplaces Free Opening Area Of Chimney Damper For Venting Combustion Products From Decorative Appliances For Installation In Solid-Fuel Burning Fireplaces (See 1.14.1-b)	41
Table V Characteristics Of Test Gases	41
Table VI Inlet Test Pressures	41
Table VII Maximum Safety Control Timings	42
Table D-I Free Space Per Conductor	43
Table D-II Minimum Average Thickness Of Sheet-Metal Junction Boxes*	44
Table D-III Electrical Clearances, Inch (mm)	45
Table D-IV Maximum Allowable Rise Above Room Temperature For Various Component Parts	46
Figures	
Figure 1. Simulated Fireplace Test Enclosure	48
Figure 2. Combustion Sampling Tube	49
Figure 3. Factory Built Fireplace	50
EXHIBIT A Outline Of Lighting Instructions For Appliances Equipped With Continuous Pilots	51
EXHIBIT B Outline Of Operating Instructions For Appliances Equipped With Intermittent Pilot Or Interrupted Pilot Systems	54
EXHIBIT C Outline Of Operating Instructions For Appliances Equipped With Direct Ignition Systems	57
EXHIBIT D Items Unique To The U.S.A.	60
EXHIBIT E Items Unique To Canada	68
EXHIBIT F Optional Provisions For Listed Gas Appliance Conversion Kits	81
EXHIBIT G List Of Reference Standards	85
Part III Manufacturing And Production Tests	88
Part IV Definitions	89
APPENDIX A Pertinent References to ANSI Y14.15	97
APPENDIX B Wire color designations	98
APPENDIX C Recommended wire color usage	99

Contents (Continued)

	Page
APPENDIX D Preferred Graphic Symbols Of Commonly Used Items, Extracted From Standard ANSI/IEEE 315, Graphic Symbols For Electrical And Electronics Diagrams, And Abbreviations For These Items	100
APPENDIX E Table of Conversion Factors	102

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 10 or Metric Practice Guide, 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.

ANSI Z21.60-2012 • CSA 2.26-2012

Standard for decorative gas appliances for installation in solid-fuel burning fireplaces

Part I: Construction

1.1 Scope

1.1.1

The standard applies to decorative gas appliances for installation in solid-fuel burning fireplaces, (see Part IV, Definitions), hereinafter referred to as appliances, which are constructed entirely of new, unused parts and materials, and having input ratings up to and including 400,000 Btu/hr (117 228 W).

These appliances are:

- a. For use with natural gas;
- b. For use with propane;
- c. For use with natural and convertible for use with propane gas (see Part IV, Definitions);
- d. For manufactured home (U.S. only) or mobile home installation for use with natural and convertible for use with propane gas; and
- e. For manufactured home (U.S. only) or mobile home installation for use with propane gas only.

The construction of decorative appliances for installation in solid-fuel burning fireplaces for use with the above-mentioned gases is covered under Part I.

The performance of decorative appliances for installation in solid-fuel burning fireplaces for use with the above-mentioned gases is covered under Part II.

1.1.2

Decorative appliances for installation in solid-fuel burning fireplaces shall not be thermostatically controlled.

1.1.3

This standard does not cover unvented room heaters.

1.1.4

The use of the term “appliance” henceforth in this standard is in reference to a decorative gas appliance for installation in a solid-fuel burning fireplace.

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. (Also see E.3.1.)

1.1.6

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

1.1.7

Exhibit D, Items Unique to the U.S.A., contains provisions that are unique to the United States.

1.1.8

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

1.1.9

Special construction provisions applicable to an appliance designed for use with an optional listed conversion kit are outlined under Exhibit F, Optional Provisions For Listed Gas Appliances Conversion Kits.

1.1.10

Exhibit G (List of Reference Standards) contains a list of standards specifically referenced in this standard and sources from which they may be obtained. Exhibit G includes both U.S. and Canadian reference standards where applicable. It is the responsibility of the user of this standard to determine which referenced standard applies based on the requirements of the authority having jurisdiction at the location of the installation.

1.2 General Construction And Assembly**1.2.1**

The construction of an appliance, whether specifically covered in this standard or not, shall be in accordance with reasonable concepts of safety, substantiality and durability.

Component parts shall be secured against distortion, warpage or other damage and supported to maintain a fixed relationship between essential parts under normal and reasonable conditions of handling and usage.

Component parts, i.e. burner media and decorative parts, not positively located shall be designed so that the method of assembly is apparent during installation cleaning and servicing. (See 2.4, Combustion.)

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

Asbestos shall not be used in the construction of an appliance.

1.2.3

In submitting an appliance for test, the manufacturer may furnish a list of manufacturing tolerances applicable thereto and may have the appliance tested for compliance with this standard in both extremes of tolerances specified.

1.2.4

Exposed edges which might reasonably be contacted during normal adjustment or usage shall be smooth.

1.2.5

Bolts, nuts and screws employed in the assembly of an appliance shall not require the use of special tools (see Part IV, Definitions) for removal or replacement.

1.2.6

Fastening means, used for securing parts that may need servicing, shall be of a reusable type.

1.2.7

All sections concerning accessibility and visual checks shall be evaluated with the appliance installed as it would be in service in accordance with the manufacturer's instructions in a minimum sized fireplace (see 1.14.1-e, Instructions).

1.2.8

Controls shall be accessible for normal servicing and functional adjustment in position and shall be replaceable during normal servicing. Manifold assemblies which permit removal of the control(s) intact shall be considered to meet this provision for servicing. Removal of an access panel or door to secure access to a control compartment shall be considered acceptable.

1.2.9

Appliances shall not be equipped with a flue collar or any other means for flue connections.

1.2.10

If the appliance is for manufactured home (U.S. only) or mobile home installation, means for permanent attachment of the burner/grate assembly to the solid-fuel burning fireplace shall be available from the manufacturer.

1.3 Materials**1.3.1**

When sheet metal is used in the construction of an appliance, the thickness shall be in conformance with Table I, Minimum Sheet Metal Thickness.

1.3.2

Materials shall be of such composition that they will not disintegrate to the extent that particles will separate and drop upon the burner and affect combustion.

1.4 Main Burners**1.4.1**

The burner shall be a single casting or of an equally gastight and durable construction.

1.4.2

Burner parts shall be accurately made.

1.4.3

Ports shall be clear and free of burrs inside the burner.

1.4.4

Bolt holes shall not intersect gasways unless provision is made to provide gastightness.

1.4.5

Ribbon burners shall be constructed so the ribbon assembly is securely fixed in position.

1.4.6

Burners shall be mounted so they will not move out of their proper operating position.

1.4.7

Provisions shall be made to permit observation of the pilot and main burner flames when the manual valve is being operated.

1.4.8

The construction shall be such that the burner cannot be installed in other than the correct position.

1.4.9

Burners shall be easily removable without the use of special tools, for repair and cleaning.

1.4.10

If a burner tray is used, the means for fastening shall be accessible and shall be designed so that one person can perform the removal and replacement unassisted.

1.5 Primary Air Adjustment Means**1.5.1**

It is recommended that air shutters, when used, be of such design that they can be adjusted not to have more than two primary air openings, each approximating a circle near point of closure, or be of such design and construction as can be demonstrated to provide equally effective protection against stoppage by lint and dust.

1.5.2

Means shall be provided to fix air shutters securely in any desired position. Such means shall be conveniently accessible for adjustment with the burners in place and the appliance in operation.

1.5.3

Sheet-metal air shutters and locking screws shall be constructed of corrosion-resistant material or have a corrosion-resistant finish.

1.5.4

Sheet-metal air shutters shall be at least 0.0304 in (0.772 mm) thick.

1.5.5

Sheet-metal air shutters less than 0.0508 in (1.29 mm) thick shall have the outer edge turned at 90 degrees (1.57 rad).

1.6 Orifices And Orifice Fittings**1.6.1**

Fixed orifices shall be provided for main burners.

1.6.2

Main burners of convertible appliances shall be provided with fixed orifices or double coaxial orifices. When double coaxial orifices are used, the fixed orifice in the needle shall be sized for propane gas and the orifice in the hood sized for natural gas at the burner rating and manifold pressure specified by the manufacturer (see 2.3.2). When fixed orifices are used, one set of orifices shall be in place when the appliance is shipped from the factory.

1.6.3

Orifice hoods and needles of double coaxial orifices shall be constructed so neither the orifice hood nor the needle will be damaged or grooved when the hood is turned down tightly against the needle. The needle containing the inner orifice shall not project beyond the outer edge of the orifice hood in any position of the hood.

1.6.4

Orifice fittings shall be readily accessible and positively secured to prevent misalignment with the burner mixer.

1.6.5

Orifice spuds and orifice spud holders shall be constructed of metal having a melting point of not less than 1450°F (788°C).

1.6.6

Readily removable fixed orifice spuds shall be provided, independent of the operation of the pilot gas valve, for limiting the amount of gas consumed by the pilot to not more than 1,500 Btu/hr (440 W) at normal inlet test pressure.

When a separate gas appliance pressure regulator is installed in the pilot line, the outlet pressure specified by the manufacturer shall be employed in determining the maximum rating of the pilot.

1.6.7

Main burner orifice spuds shall be threaded to their holders at least $3\frac{1}{2}$ fully formed threads.

1.7 Automatic Gas Ignition Systems

1.7.1

Each appliance shall be equipped with an automatic gas ignition system (see Part IV, Definitions). This system(s) shall be designed to function in one of the following manners:

- a. Provide for ignition of main burner gas by means of proved pilot.

If the presence of the pilot is not proved, provide for automatic to the main burner(s) and to the pilot burner(s), if used.

- b. Provide for ignition of main burner gas using a direct ignition system, which only supervises the main burner(s) flame.

If the presence of the main burner flame is not proved, provide for automatic shut-off of main burner gas.

In the event of main burner flame outage during an operating cycle, provide for automatic shut off of main burner gas without re-energizing the direct ignition device or provide for prompt and safe re-ignition of main burner gas by re-energizing the direct ignition device.

The application of this type of direct ignition systems is limited to appliances having input ratings up to and including 400,000 Btu/hr (117 228 W) per combustion chamber under control of the ignition system.

- c. Provide for ignition of main burner gas using a direct ignition system incorporating a proved igniter which proves that the igniter is capable of ignition prior to initiation of main burner gas flow.

For systems, which supervise main burner flame during an operating cycle and de-energize the igniter, provide for automatic shut-off of main burner gas in the event of main burner flame outage.

1.7.2

Ignition and safety shut-off devices shall comply with the applicable construction provisions of:

- a. The *Standard for Automatic Gas Ignition Systems and Components, ANSI Z21.20*, or *Combination Gas Controls for Gas Appliances, ANSI Z21.78 • CSA 6.20*; or the *Standard for Manually Operated Electric Gas Ignition Systems and Components, ANSI Z21.92 • CSA 6.29*; and/or
- b. The *Standard for Automatic Gas Ignition Systems and Components, CAN1-6.4*, for ignition and safety shut-off devices other than types utilizing low, extra low, or high voltages. Assemblies utilizing low, extra low or high voltages, shall comply with the applicable provisions of *Standard for Combustion Safety Controls and Solid-State Igniters for Gas and Oil-Burning Equipment, CSA C22.2 No. 199*.

1.7.3

If a piezo-electric spark device is used for pilot burner ignition it shall comply with the *Standard for Manually-Operated Piezo-Electric Spark Gas Ignition Systems and Components, ANSI Z21.77 • CGA 6.23*.

1.7.4

In addition to the automatic gas ignition system functions specified in 1.7.1-a, a system having an interrupted ignition source shall provide for supervision of the main burner flame only following the main burner flame-establishing period. If the presence of the main burner flame is not proved within the flame-establishing period, the system shall provide for automatic shutoff of the gas supply to the pilot and main burner(s).

1.7.5

When a manually lighted pilot is provided, the design of the control shall be such that main burner gas flow cannot occur while the pilot is being lighted. The interruption of main burner gas flow shall not depend on the operation of an appliance main gas valve which is not mechanically interlocked with the pilot gas control, nor on the thermostat or a separate switch. After the pilot has been established and the safety shutoff device remains in a position that would permit main burner gas flow, an additional manual operation of the control shall be necessary to permit main burner gas flow.

1.7.6

Automatic ignition devices shall be placed so as to be easily seen. A pilot burner shall be placed so as to be easily seen, readily lighted with a paper match, and readily removed.

1.7.7

Automatic ignition devices shall be positively positioned with respect to the main burner.

1.7.8

Pilot burner assemblies shall be constructed so it is impossible to direct the pilot in other than the correct direction.

1.7.9

Adjustment screws for pilot burners shall be concealed, protected or enclosed, and fully accessible for servicing and adjustment.

1.7.10

When an automatic relight pilot system is used, the system shall act to reestablish the ignition means in 0.8 second or less, or a mechanical or electrical interlocking means shall be provided to prevent the flow of gas to the main burner(s) when the automatic relight pilot system is energized.

1.7.11

When the pilot burner supply line is taken from a horizontal line, the connection shall be made either on the side or top. If taken from a vertical line, it shall be above the main burner supply line. Pilot supply lines may be taken from the bottom of a horizontal line if means are provided to prevent condensate from entering the pilot line.

1.7.12

Tips of aerated pilot burners shall be made from AISI 416 steel or material having at least equivalent heat- and corrosion-resistant characteristics. Alloys of greater than 1.0 percent nickel, because of catalytic cracking effect, are not acceptable.

1.8 Appliance Main Gas Valves

1.8.1

An appliance main gas valve shall be provided to control the gas to the burner(s).

1.8.2

Appliance main gas valves shall comply with the applicable provisions of the *Standard for Manually Operated Gas Valves for Appliances, Appliance Connector Valves, and Hose End Valves, ANSI Z21.15 • CGA 9.1*, or *Combination Gas Controls for Gas Appliances, ANSI Z21.78 • CSA 6.20*.

1.8.3

When the valve is exposed to view, lever or tee handles shall be at 90 degrees (1.57 rad) to the line of flow when in the "off" position and parallel when in the "on" position. If this cannot be done, if the valve handle only is exposed to view, or if a knob-type handle is used, the "on" and "off" positions or directions of rotation to open and close shall be clearly indicated by means of a Class IIIA or IIIB marking.

1.8.4

Removable handles shall be constructed so they cannot be attached so as to confuse the "on" and "off" positions.

1.8.5

Gas valves shall be located or constructed so they will not be liable to accidental change of setting.

1.8.6

A separate gas valve (see 1.8.1) shall be supplied to control the gas to a pilot burner, unless other means are provided for shut-off of the pilot gas supply. Construction requiring the use of a special tool or device for such shut-off is not acceptable.

1.8.7

Pilot burner valves shall be easily distinguishable from other valves.

1.8.8

The location of the pilot burner valve and point of ignition shall be easily accessible and within convenient reaching distance of each other.

1.8.9

Latching type valves, if provided, shall be positive in their action, shall not require for their operation an axial displacement of the plug in contact with the barrel nor application of undue pressure on the plug which might cause the valve to stick, and shall permit ready operation with one hand and accessibility to all parts for repair and replacement.

1.8.10

Lubricants used on valves shall be resistant to the action of propane.

1.9 Gas Supply Lines

The following construction provisions apply to the gas supply lines within an appliance.

1.9.1

Steel pipe employed as gas conduit on an appliance shall comply dimensionally with the *Standard for Welded and Seamless Wrought Steel Pipe, ANSI/ASME B36.10M*.

1.9.2

Piping tapped for gas valves, pilots or other branch supply lines shall provide a continuous run of not less than 3¹/₂ taper pipe threads in accordance with the *Standard for Pipe Threads, General Purpose (Inch), ANSI/ASME B1.20.1*.

1.9.3

Series 300 stainless steel corrugated tubing used as part of a manifold assembly shall not be exposed to temperatures in excess of 900°F (482°C) when the appliance is operated as specified in 2.15, Handle Temperatures. The tubing shall demonstrate compliance with the Tubing Structure, Bending Test, and Bursting Test requirements specified in the American National Standard/Canadian Gas Association *Standard for Metal Connectors for Gas Appliances, ANSI Z21.24 • CGA 5.10*.

1.9.4

Ends of piping and tubing shall be carefully reamed and cleaned to remove obstructions and burrs. Bent supply piping shall have the bends smoothly made without any appreciable reduction in the cross-sectional area and shall reveal no imperfections occasioned by the bending process.

1.9.5

Copper semi-rigid tubing or tubing having internal copper surfaces, when used for conveying gas, shall be internally tinned or equivalently treated to resist corrosion by sulphur compounds.

1.9.6

Tubing and fittings used as gas conduits shall be capable of withstanding a temperature of 1000°F (538°C) without melting.

Tubing and fittings used as gas conduits shall not be exposed to temperatures in excess of those specified in Table II, Maximum Tubing and Fitting Temperature, when the appliance is operated as specified in 2.15, Handle Temperatures.

1.9.7

When aluminum tubing is used for pilot burner lines, it shall be Type 1100 or Type 3003 with temper either O (fully annealed) or F (as extruded).

1.9.8

Semi-rigid tubing employed as gas conduit shall have a wall thickness in accordance with Table III, Minimum Acceptable Wall Thickness for Semi-Rigid Tubing.

1.9.9

Gas supply piping to which connections are made for burners, pilots, lighters or other branch supply lines shall be readily removable, yet rigidly supported, to prevent turning or lateral displacement in making connection to the building piping or during the ordinary handling of the appliance.

1.9.10

Compounds used on threaded joints of gas piping on appliances for use with propane shall be resistant to the action of such gas.

1.9.11

Unions in gas lines shall be of the ground joint type.

1.9.12

A test gage connection shall be furnished downstream from the last main line gas control for measuring gas pressure at the burner. The connection shall be a minimum $\frac{1}{8}$ -in NPT plug or cap with cleanly cut taper pipe threads in accordance with the *Standard for Pipe Threads, General Purpose (Inch)*, ANSI/ASME B1.20.1.

When the pressure tap is provided as part of the control this pressure test gage connection shall be:

- a. A tapping sealed by a $\frac{1}{8}$ -in NPT plug or cap with cleanly cut taper pipe threads in accordance with the *Standard for Pipe Threads, General Purpose (Inch)*, ANSI/ASME B1.20.1. If the plug is of the slotted type, it shall also incorporate square or hex flats; or
- b. A hose fitting with a minimum length of 0.355 in (9.02 mm) and a 0.355 in (9.02 mm) maximum/0.335 in (8.05 mm) minimum outside diameter and which incorporates a sealing means. The construction of the hose fitting shall incorporate an internal restriction not greater than 0.0394 in (1.0 mm) in diameter.

1.9.13

Sizes of gas connections to the inlet of the appliance shall not be less than $\frac{1}{4}$ -inch standard pipe size or equivalent semi-rigid tubing size.

1.9.14

If the manifold has to be removed to replace a valve, the manifold shall be easily removable.

1.9.15

Where the use of bushings cannot be avoided, only those of the face or recessed type shall be used. Nesting of bushings is prohibited.

1.10 Thermostats

Thermostats or other automatic cycling of the burner shall not be permitted.

1.11 Automatic Valves

1.11.1

Automatic valves, when provided, shall comply with the applicable provisions of the *Standard for Automatic Valves for Gas Appliances*, ANSI Z21.21 • CSA 6.5, or *Combination Gas Controls for Gas Appliances* ANSI Z21.78 • CSA 6.20.

1.11.2

Electrically operated automatic valves shall be of a type that will close upon current failure.

1.11.3

When an automatic valve is used with a gas supply line of semi-rigid tubing, the automatic valve shall be adequately supported.

1.12 Gas Appliance Pressure Regulators

1.12.1

A gas appliance pressure regulator shall be provided with each appliance. Each gas pressure regulator shall be equipped with a vent limiter.

1.12.2

Gas appliance pressure regulators, including vent limiters, shall comply with the applicable provisions of the *Standard for Gas Appliance Pressure Regulators, ANSI Z21.18 • CSA 6.3*, or the *Standard for Combination Gas Controls for Gas Appliances, ANSI Z21.78 • CSA 6.20*.

1.12.3

When a single gas appliance pressure regulator is used to control the pressure of both the pilot and main burner gas, it shall be of the type suitable for pilot and main burner load application as designated by the following symbol adjacent to the regulator model number:

- a.  for an appliance having a pilot gas flow rate less than 0.50 ft³/hr but not less than 0.15 ft³/hr (less than 3.93 but not less than 1.18 cm³/s); or
- b.  or  for an appliance having a pilot gas flow rate of 0.50 ft³/hr (3.93 cm³/s) or greater.

1.12.4

A gas appliance pressure regulator shall be of either the limited adjustment or nonadjustable type (see Part IV, Definitions). The outlet pressure shall approximate that specified by the manufacturer (see 1.15.2-d).

1.12.5

The gas appliance pressure regulator provided on an appliance for use with natural gas and convertible for use with propane gas shall control the pressure of the propane gas as well as the natural gas which will pass through it. It shall be constructed so that by use of a tool-operated device, it can be set to a previously adjusted operating pressure for either gas without the necessity of measuring the pressure.

1.12.6

The gas appliance pressure regulator shall be an assembled part of the manifold and located so as not to attain a temperature above 150°F (65.5°C) or a temperature in excess of that specified by the regulator manufacturer. These temperatures shall be determined in accordance with the test method specified in 2.15, Handle Temperatures (see 2.11.2).

1.13 Pilot Gas Filters

1.13.1

Pilot gas filters, when used shall comply with the *Standard for Pilot Gas Filters, ANSI Z21.35 • CGA 6.8*.

1.13.2

Manufacturer's specified capacities of pilot gas filters shall not be less than the rated capacities of the burners with which they are used.

1.13.3

A pilot gas filter, when used, shall be installed at the point of pilot gas take-off from the main gas supply line. When the pilot valve is combined with another control and does not constitute the pilot flow adjustment means, the filter may be installed in the pilot line take-off from the control.

1.14 Instructions

1.14.1

Each room heater shall be accompanied by printed instructions and diagrams adequate for proper field assembly, installation and safe operation of the appliance, including all controls and accessories.

The front cover or, in the absence of a cover, the first page shall bear the following boxed warnings. They shall be boxed as shown:

WARNING: If the information in this manual is not followed exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

- Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

WHAT TO DO IF YOU SMELL GAS

- Do not try to light any appliance.
 - Do not touch any electrical switch; do not use any phone in your building.
 - Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
 - If you cannot reach your gas supplier, call the fire department.
- Installation and service must be performed by a qualified installer, service agency or the gas supplier.

INSTALLER: Leave this manual with the appliance.
CONSUMER: Retain this manual for future reference.

The letters used for the boxed statements above shall be boldfaced type having a minimum uppercase letter height of 0.120 in (3.05 mm). The minimum vertical spacing between lines of type shall be 0.046 in (1.17 mm).^{*} Lowercase letters shall be compatible with the uppercase letter size specification.

These instructions shall include the following:

- a. A statement that the appliance must be installed only in a solid-fuel burning fireplace with a working flue and constructed of noncombustible material.
- b. The minimum permanent free opening (in square inches) that must be provided by either the fireplace chimney or chimney damper to vent the flue gases. The minimum vent area shall be determined by the manufacturer in accordance with the venting specifications in Table IV for each of the chimney heights indicated. (See 1.15.7.)

^{*} This letter height and line spacing corresponds to 12 point type.

- c. A statement that solid fuels shall not be burned in a fireplace where a decorative appliance is installed.
- d. A statement that any chimney damper must be fixed in a manner which will maintain the minimum permanent vent opening at all times (the manufacturer shall also recommend the means to accomplish this, such as by a screw or bolt in the edge of the damper to prevent its closing or by a hole or holes in the damper).
- e. The minimum size fireplace in which the appliance is to be installed: height and width of front opening, depth and chimney flue (see 1.15.2-i).
- f. A statement that a fireplace screen must be in place when the appliance is operating and, unless other provisions for combustion air are provided, the screen shall have an opening(s) for introduction of combustion air.
- g. The minimum inlet gas supply pressure for the purpose of input adjustment.
- h. The maximum inlet gas supply pressure.
- i. A statement that the installation and the provisions for combustion and ventilation air must conform with the *National Fuel Gas Code, ANSI Z223.1/NFPA 54*, or the *Natural Gas and Propane Installation Code, CSA B149.1*.
- j. A statement that the installation of appliances designed for manufactured home (U.S. only) or mobile home installation must conform with the *Standard for Mobile Housing, CAN/CSA Z240 MH*, in Canada, or with the *Manufactured Home Construction and Safety Standard, Title 24 CFR, Part 3280*, in the United States, or when such a standard is not applicable, *Manufactured Home Installations Standard, ANSI/NCSBCS A225.1/NFPA 501A*.
- k. The appliance and its appliance main gas valve must be disconnected from the gas supply piping system during any pressure testing of that system at test pressures in excess of $\frac{1}{2}$ psi (3.5 kPa).

The appliance must be isolated from the gas piping system by closing its equipment shut-off valve during any pressure testing of the gas supply piping system at test pressures equal to or less than $\frac{1}{2}$ psi (3.5 kPa).
- l. A convertible type appliance for use with natural gas and convertible for use with propane gas shall be provided with adequate instructions for converting from one gas to the other.

If replacement of fixed orifices is required, instructions for installing these orifices shall be included. The instructions shall contain a statement: "Save the orifices removed from the appliance for future use." The instructions shall also contain information required to convert the appliance back to the original gas.
- m. Instructions to keep the appliance area clear and free from combustible materials, gasoline and other flammable vapors and liquids.
- n. Information covering the cleaning of the appliance, including the burner(s).
- o. Lighting/operating instructions as specified in 1.15.3 through 1.15.5 including sketches or diagrams. See 1.15.5-e for type size.
- p. Periodic examination and cleaning of the venting system of the solid-fuel burning fireplace, including frequency of such examination and cleaning, by a qualified agency.

- q. The following statement: "Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control which has been under water."
- r. Specifications for periodic visual checks of the pilot and burner flames, with pictorial sketches or drawings.
- s. A list of replacement parts and the source where such parts are available.
- t. Identification of the testing agency.
- u. A pictorial diagram in at least two views or a single exploded view depicting proper positioning of field assembled parts. The following statement must be included with the pictorial diagrams: "WARNING: Failure to position the parts in accordance with these diagrams or failure to use only parts specifically approved with this appliance may result in property damage or personal injury."

These instructions shall be reviewed by the testing agency for accuracy and for compatibility with results of test from a technical standpoint only.

1.15 Markings

1.15.1

Marking material shall be identified by class number and shall meet the following specifications. All metal marking materials shall be rustproof. All marking shall be suitable for application to surfaces upon which applied and shall demonstrate suitable legibility as specified under 2.16, Marking Material Adhesion and Legibility. 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 enamelled surface.

Class IIA-1. Permanent Plate

Shall be made of metal having a minimum thickness of 0.012 in (0.30 mm) and shall be securely attached by mechanical means.

Class IIA-2. Permanent Plate

Shall be made of metal having a thickness of 0.006 to 0.012 in (0.15 to 0.30 mm) and shall have mechanical attachment means at all corners with a maximum spacing of 6 in (152 mm) between mechanical fasteners.

Class IIA-3. Permanent Plate

Shall be made of metal having a thickness less than 0.006 in (0.15 mm). Such plates shall be attached by means of nonwater-soluble adhesive which will comply with 2.16, Marking Material Adhesion and Legibility. These materials shall not be located on surfaces having temperatures exceeding 300°F (149°C) as determined during conduct of 2.15, Handle Temperatures.

Class IIA-4. Permanent Plate

Shall be made of pressure-sensitive metal foil requiring no solvent or activator, provided such plates comply with 2.15, Marking Material Adhesion and Legibility. These materials shall not be located on surfaces having temperatures exceeding 300°F (149°C) as determined during conduct of 2.15, Handle Temperatures.

Class IIIA-1. Permanent Label

Shall be made of material not adversely affected by water, shall be attached by means of nonwater-soluble adhesive and shall comply with 2.16, Marking Material Adhesion and Legibility. These materials shall not be located on surfaces having temperatures exceeding 300°F (149°C) as determined during conduct of 2.15, Handle Temperatures.

Class IIIA-2. Permanent Label

Shall be made of material not adversely affected by water, shall be attached by means of nonwater-soluble adhesive and shall comply with 2.16, Marking Material Adhesion and Legibility. These materials shall not be located on surfaces having temperatures exceeding 175°F (79.5°C) as determined during conduct of 2.15, Handle Temperatures.

Class IIIB. Waterproof Marking

Shall be printed directly on the part with waterproof marking not adversely affected by a temperature of 175°F (79.5°C). This marking shall not be used on surfaces having temperatures exceeding 175°F (79.5°C) as determined during conduct of 2.15, Handle Temperatures.

Class IIIC. Waterproof Label

Shall be made of material not soluble in water, and may use water-soluble adhesive for attachment means.

Class IV. Semi-Permanent Plate or Label

Shall be made of material which may be soluble in water, and may use water-soluble adhesive for attachment means.

Class V. Printed Marking

Marking shall be clear and prominent and may be applied directly by any printing means.

Class VI. Attached Tags**1.15.2**

The appliance shall bear a permanent record of the following, affixed to the principal (main) assembly of the appliance on Class III marking material attached or printed in a location where it can be easily observed or is readily accessible for observation, when the appliance is installed as it would be in service.

- a. The manufacturer's or distributor's name and address.
- b. The manufacturer's or distributor's number of the appliance.
- c. A distinctive number which will identify an individual appliance.

- d. The manufacturer's normal hourly input rating "Input: Btuh (kW)" and manifold pressure " in wc (kPa)."
- e. The minimum inlet supply pressure for the purpose of input adjustment, as follows:
"Min. gas supply for input adj. inch wc (kPa)."
- f. The maximum inlet supply pressure, as follows:
"Max. gas supply in wc (kPa)."
- g. Type of gas for which equipped:
 - 1. A dedicated type appliance shall be marked for only the type of gas for which equipped, as follows: "Natural" or "Propane."
 - 2. A convertible type appliance shall be marked for only the two types of gases for which equipped, as follows: "Nat-Propane."

The appliance shall also be marked to the effect that:

"The gas appliance pressure regulator must be set for the gas with which the appliance is used."
(See 1.14.1-l.)

"This appliance can be used with Propane gas or Natural gas. It is shipped from the factory adjusted for use with _____ gas: UNIVERSAL ORIFICE HOODS MUST BE SCREWED TIGHT WHEN PROPANE GAS IS USED."

An appliance with fixed orifices shall also be marked: "Main burners are equipped with fixed orifices, located . Follow the instructions packaged with the orifices." [Each orifice shall be clearly identified with regard to the gas for which it will be used, and the orifice size shall be indicated on the spud. (See 1.14.1-l.)]

 - 3. A convertible appliance equipped with dual outlet burner valves requiring orifice spud substitution shall display a marking outlining the correct selection of the orifices for the gas with which the appliance is to be used when installed.
- h. Identification of this standard by indicating either this edition of the standard, or the most recent effective addenda thereto, with one of the following markings:
"ANS Z21.60-(year) • CSA 2.26-(year), Decorative Gas Appliances for Installation in Solid-Fuel Burning Fireplaces;"
"ANS Z21.60a-(year) • CSA 2.26a-(year), Decorative Gas Appliances for Installation in Solid-Fuel Burning Fireplaces;" or
"ANS Z21.60b-(year) • CSA 2.26b-(year), Decorative Gas Appliances for Installation in Solid-Fuel Burning Fireplaces."
- i. The minimum size fireplace in which the appliance is to be installed, including the height and width of the front opening, depth, and chimney flue (see 1.14.1-e).
- j. The symbol of the organization making the tests for compliance with this standard.

1.15.3

INSTRUCTIONS TO PUT THE APPLIANCE IN OPERATION. An appliance shall bear a single label or a series of adjacent labels of Class IIIA marking material located in a conspicuous position where the label(s) can be easily read by the operator during the lighting/operating and shutdown procedures.

Where a series of labels is used, they shall:

- a. Be capable of being viewed simultaneously (in the same plane) in the sequence as shown in Exhibit A, B or C, as applicable; and
- b. Not be separated from each other by more than 1 in (25.4 mm).

The label(s) may be on the interior of a removable panel which provides access to the gas controls.

A separate means may be provided for mounting the lighting/operating instructions label(s). This means shall be permanently attached to the appliance in a manner such that, when lighting the appliance, the lighting/operating instructions can be easily read without detachment from the appliance.

If the above label(s) is not visible on the appliance when all panels are in place, a Class IIIA marking shall be affixed on the exterior of the appliance in a location where it can be easily read when the appliance is installed at the minimum clearances for which the appliance is to be listed. This marking shall indicate where the lighting/operating instructions are to be found.

1.15.4

The lighting/operating instructions label(s) specified in 1.15.3 shall contain at least the following:

- a. For an appliance equipped with a continuous (piloted) ignition system, as outlined in Exhibit A, Outline of Lighting Instructions for Appliances Equipped with Continuous Pilots.
- b. For an appliance equipped with an intermittent pilot or interrupted pilot ignition system, as outlined in Exhibit B, Outline of Operating Instructions for Appliances Equipped with Intermittent Pilot or Interrupted Pilot Systems.
- c. For an appliance equipped with a direct ignition system, as outlined in Exhibit C, Outline of Operating Instructions for Appliances Equipped with Direct Ignition Systems.

The statements in quotes in the above referenced Exhibits shall be worded as shown in the applicable Exhibit.

1.15.5

The physical specifications of the lighting/operating instructions label(s) specified in 1.15.3 shall be as follows:

- a. Each of the three sections shall be boxed by a red border, the top dimensions being a minimum $\frac{1}{4}$ in (6.4 mm) solid red line.
- b. The titles of each section shall be black boldfaced type having a minimum letter height of 0.100 in (2.54 mm)* and located within the top border line.
- c. The word "WARNING" shall be black boldfaced type having a minimum letter height of 0.100 in (2.54 mm).*

* This letter height corresponds to 10 point type.

- d. The text of the label(s) shall be black boldfaced letters on a white background having a minimum uppercase letter height of 0.080 in (2.03 mm)** with a minimum vertical spacing between lines of type of 0.038 inch (0.96 mm).*** Lowercase letters shall be compatible with the uppercase letter size specification.
- e. Unless the type sizes used for “-b,” “-c” and “-d” above are at least 0.140 in (3.56 mm), 0.120 in (3.05 mm) and 0.100 in (2.54 mm), respectively, the instructions specified in 1.14.1-o shall be shown in these larger type sizes.

1.15.6

A label of Class IIIC marking material shall, when practical, be affixed to the appliance in a conspicuous location by the manufacturer. When not practical, this label shall be supplied by the manufacturer with explicit instructions to affix the label in a conspicuous location adjacent to the appliance. This label shall include the following information:

“WARNING: Improper installation, adjustment, alteration, service or maintenance can cause property damage, personal injury or loss of life. Refer to the owner’s information manual provided with this appliance. Installation and service must be performed by a qualified installer, service agency or the gas supplier.”

1.15.7

The appliance shall bear a Class IIIA or IIIB marking in a location where it will be noticed when the appliance is installed as it would be in service stating:

“WARNING: For installation in a solid-fuel burning fireplace only. The fireplace chimney must have a permanent vent opening to atmosphere of not less than ____ square inches, or as determined from the manufacturer’s installation instructions.”

Note: The vent opening in the marking above shall be based on a 6 foot high chimney and the appliance input rate as shown in Table IV.

1.15.8

Each appliance shall bear a plate of Class IIIA marking material located so as to be easily read when the appliance is in a normally installed position, on which shall appear the following:

FOR YOUR SAFETY Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

1.15.9

Marking appliances for manufactured home (U.S. only) or mobile homes.

- a. An appliance for manufactured home (U.S. only) or mobile home installation only shall be marked: “For installation in a manufactured home (U.S. only) or mobile home only.”
- b. An appliance for household installation as well as for manufactured home (U.S. only) or mobile home installation shall be marked: “Also for installation in a manufactured home (U.S. only) or mobile home.”

** This letter height corresponds to 8 point type.

*** This line spacing corresponds to 10 point type.

- c. Any of the following may be substituted for the term “manufactured home (U.S. only) or mobile home” in “-a” or “-b” above:
1. mfd.home (mobile home);
 2. manufactured home (mobile home);
 3. mfd. (mobile) home;
 4. manufactured home; or
 5. mfd. home.

1.15.10

Also see 1.8.3, 1.14.1 and for U.S. certification D.1.4.

Part II: Performance

2.1 General

2.1.1

This standard covers decorative appliances for installation in solid-fuel burning fireplaces:

- a. For use with natural gas; and
- b. For use with propane.

2.1.2

Appliances submitted for examination under this standard shall be tested with the type(s) of gas selected by the manufacturer.

2.1.3

When a thermocouple is specified for the measurement of air, flue or vent gas temperatures, a thermocouple or an equivalent temperature measuring device complying with the *Performance Test Code - Temperature Measurement, ANSI/ASME PTC 19.3, Supplement on Instruments and Apparatus, Part 3*, shall be used.

2.1.4

Decorative appliances for installation in solid-fuel burning fireplaces are designed for installation only in a solid-fuel burning fireplace. Their designs may take many forms, so for their testing, principles must be established for the guidance of the testing agency which will assure compliance with basic standards for safe operation and acceptable performance, without restricting their design to preconceived forms. With this in mind, the principles stated within Part II are to be used by the testing agency in determining the acceptability of decorative appliances for installation in solid-fuel burning fireplaces.

2.1.5

Gas appliance pressure regulator vent limiters shall be in place during all performance tests.

2.1.6

Room temperature, when specified, shall be determined by means of four 24 AWG (0.20 mm²) iron-constantan bead-type thermocouples, the junctions of which are shielded from radiation. These thermocouple junctions shall be located so room air temperature can be measured at points approximately 24 in (610 mm) away from the approximate midpoints of each of the four sides of the appliance or test enclosure. The thermocouple leads shall be connected to a recording potentiometer, and room temperature shall be the average of the four individual temperature readings.

2.1.7

All performance tests shall be conducted with all nonpositively secured components other than burner media, in the most critical position.

2.1.8

All performance tests shall be conducted with the appliance in a fireplace test enclosure as shown in Figure 1, Simulated Fireplace Test Enclosure, or, as provided by the manufacturer, and with the manufacturer's minimum width opening specified in 1.14.1-e.

2.2 Test Gases

In conducting the performance tests specified herein, gases with characteristics approximately as shown in Table V, Characteristics of Test Gas, shall be used.

- a. An appliance for use with natural gas shall have the tests specified herein conducted with test Gas A. Additional tests shall be conducted with test Gas G at normal inlet test pressure with no change whatsoever in the natural gas adjustments, and shall comprise those tests specified in 2.5.1, 2.5.2, 2.5.3, 2.6.1, 2.9.2 and 2.9.4. Under conditions of these tests, yellow-tipped flames are considered acceptable. Resonance encountered during conduct of burner operating characteristics tests with test Gas G is not to be considered cause for rejection. Compliance with these supplemental tests does not imply the appliance has been examined under this standard for use with butane-air mixtures.
- b. An appliance for use with propane shall have the tests specified herein conducted with test Gas E. The tests specified in 2.5, Burner Operating Characteristics, 2.6, Pilot Operating Characteristics, 2.8.2 and 2.8.8 shall also be conducted with test Gas D with no change whatever in burner equipment.
- c. When use with more than one type of gas is desired, the tests specified in 2.11, Appliance Main Gas Valves, through 2.15, Handle Temperatures, need be conducted with only one test gas provided there are no changes in the appliance or input rating for different gases which, in the opinion of the testing agency, would affect the results of these tests.

2.3 Test Pressures And Burner Adjustments

2.3.1

Unless otherwise stated, each test specified herein shall consist of a series of three tests: one at normal inlet test pressure, one at reduced inlet test pressure and one at increased inlet test pressure, as shown in Table VI, Inlet Test Pressures.

When the manifold pressure at increased inlet test pressure is not greater than the manifold pressure at normal inlet test pressure, the tests at increased inlet test pressure need not be applied. However, tests at normal inlet test pressure shall be conducted whenever tests at increased inlet test pressure are specified.

2.3.2

The inlet test pressures stated in 2.3.1 shall be the pressures immediately ahead of all controls. The manifold pressure shall approximate that recommended by the manufacturer (see 1.12.4).

2.3.3

Unless otherwise specified herein, tests at increased input rate shall be conducted with the gas appliance pressure regulator adjusted to provide an increase in the input rate specified by the manufacturer of 12 percent for appliances for use with natural gas and 9 percent for appliances for use with propane. When the regulator outlet pressure cannot be readily adjusted to obtain this increase in input rate, the regulator may be removed or blocked in the open position, or the inlet test pressure may be increased as necessary. (Also see 2.3.4.)

2.3.4

Burners shall be adjusted to their Btu ratings at normal inlet test pressure, unless otherwise specified herein. After the appliance has been operated for 45 minutes, starting with all parts at room temperature, the burner adjustments shall be within 0 to + 5 percent of the manufacturer's specified hourly Btu input rating. When primary air control is provided, it shall be set at the manufacturer's specified opening and neither burner ratings nor primary air adjustments shall be changed during a series of tests on any one test

gas, unless otherwise specified. All carbon deposits formed during any of the tests specified herein shall not be removed during the remainder of the tests and shall not interfere with compliance to the requirements of this standard.

2.4 Combustion

2.4.1

Carbon deposits formed during the combustion process shall not affect the performance of the appliance.

Method of Test

A simulated fireplace enclosure as shown in Figure 1 shall be used. The width of the enclosure shall be the minimum width specified in the manufacturer's installation instruction (1.14.1-e). The appliance shall be positioned in accordance with the manufacturer's installation instruction.

The appliance shall be assembled as described in the installation instructions with any nonpositively located components placed in the position deemed most critical by the testing agency. Any media material will be evenly distributed over the burner ports as per the manufacturer's instructions.

The appliance shall be operated for 24 hours at normal inlet test pressure. Any carbon deposits that are developed shall not be removed during the remainder of the testing.

2.4.2

An appliance shall not produce a concentration of carbon monoxide in excess of:

- a. 25 ppm in a sample of the flue gases obtained during normal operations (Test Condition A), or if the sample obtained is over 25 ppm, 0.04 percent in an air free sample of the flue gases obtained.

A normal test condition is defined as installed per the manufacturer's instructions with the primary air adjustment on a burner, when supplied set at the manufacturer's specified setting and with all nonpositively located components placed in the position deemed most critical by the testing agency. Any media material will be evenly distributed over the burner ports as per the manufacturer's instructions.

- b. 40 ppm in a sample of the flue gases obtained during abnormal operations (Test Condition B), or if the sample obtained is over 40 ppm, 0.06 percent in an air free sample of the flue gases obtained.

An abnormal test condition is defined as a normal test condition with:

1. Increased input rate (see 2.3.3) with the primary air shutter closed to the minimum setting obtainable.
2. 50 percent of the burner media, when supplied, evenly removed and the air shutter closed to the minimum setting obtainable;
3. Reduced inlet test pressure (see 2.3.1) and with the primary air shutter closed to the minimum setting obtainable.