



**CSA  
Group**

**ANSI Z21.50-2014 • CSA 2.22-2014**

## **Vented gas fireplaces**

Currently in preview, click buy full version

# 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 and the American National Standards Institute. 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 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 printed 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 must 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.



# Revision History

ANSI Z21.50-2014 • CSA 2.22-2014, Vented gas fireplaces

Revision from sixth edition	Revision symbol (in margin)
Clauses <a href="#">3</a> , <a href="#">4.1.23</a> , <a href="#">4.27.1</a> , <a href="#">4.27.3</a> , <a href="#">4.28.19</a> , <a href="#">5.14</a> , <a href="#">5.14.1</a> , <a href="#">5.14.2</a> , <a href="#">5.14.3</a> , and <a href="#">5.14.4</a> Figure <a href="#">5</a>	Δ

Currently in preview, click buy full version

## ***Standards Update Service***

***ANSI Z21.50-2014 • CSA 2.22-2014  
February 2014***

**Title:** *Vented gas fireplaces*

To register for e-mail notification about any updates to this publication

- go to [shop.csa.ca](http://shop.csa.ca)
- click on **CSA Update Service**

The **List ID** that you will need to register for updates to this publication is **242278**

If you require assistance, please e-mail [techsupport@csagroup.org](mailto:techsupport@csagroup.org) or call 416-747-2233.

Visit CSA Group's policy on privacy at [csagroup.org/legal](http://csagroup.org/legal) to find out how we protect your personal information.

# ANSI Z21.50-2014 • CSA 2.22-2014

## Vented gas fireplaces



*American National Standards Institute, Inc.*

# IGAC

*Interprovincial Gas Advisory Council*



## CSA Group

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

*Approved on February 20, 2014 by ANSI  
Approved on February 18, 2014 by IGAC  
Effective in Canada January 1, 2015  
Published in February 2014 by CSA Group  
A not-for-profit private sector organization  
5060 Spectrum Way, Suite 100, Mississauga, Ontario, Canada L4W 5N6*

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

ISBN 978-1-77139-587-8

© 2014 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

Interprovincial Gas Advisory Council	4
Z21/83 Technical Committee on Performance and Installation of Gas Burning Appliances and Related Accessories	6
Canadian Technical Committee on Gas Appliances and Related Accessories	9
Z21/CSA Joint Technical Subcommittee on Standards for Vented Gas-Fired Warm Air Heaters	21
Preface	14
<b>1 Scope</b>	<b>17</b>
<b>2 Reference publications</b>	<b>18</b>
<b>3 Definitions</b>	<b>21</b>
<b>4 Construction</b>	<b>31</b>
4.1 General construction and assembly	31
4.2 Thickness of materials	34
4.3 Evaluation of combustion/venting side sealing materials	37
4.4 Glass fronts	38
4.5 Combustion air and ventilation	39
4.6 Accessibility	40
4.7 Main burners	40
4.8 Primary air adjustment means	41
4.9 Orifice spuds and orifice fittings	42
4.10 Automatic gas ignition systems	43
4.11 Ignition of pilot	45
4.12 Appliance main gas valves	45
4.13 Gas supply lines	46
4.14 Bleeds and vents	48
4.15 Thermostats	49
4.16 Automatic valves	49
4.17 Gas appliance pressure regulators	50
4.18 Pilot gas burners	51
4.19 Fan and limit controls	51
4.20 Vent-air intake pipes	51
4.21 Venting (other than direct vent types)	53
4.22 Flue collars and flue outlets (other than direct vent types)	53
4.23 Draft hoods	54
4.24 Automatic vent damper devices	54
4.25 Manually operated vent dampers	56
4.26 Electrical equipment and wiring	57
4.27 Instructions	57
4.28 Marking	66

<b>5</b>	<b>Performance</b>	<b>75</b>
5.1	General	75
5.2	Test gases	78
5.3	Test pressure and burner adjustments	79
5.4	Combustion	80
5.5	Appliance and burner durability test	81
5.6	Burner operating characteristics	82
5.7	Loose burner material	84
5.8	Pilot operating characteristics	84
5.9	Pilot burners and safety shut-off devices	85
5.10	Direct ignition systems	90
5.11	Proved igniter systems	92
5.12	Delayed ignition and integrity tests for direct vent gas fireplaces	95
5.13	Glass fronts	99
5.14	Burn hazard potential	104
5.15	Impact test of glass materials	107
5.16	Water shock test	108
5.17	Main burner temperatures	108
5.18	Non-load-bearing flue gas baffle temperatures	109
5.19	Appliance main gas valves	110
5.20	Gas appliance pressure regulators	110
5.21	Automatic valves	111
5.22	Safety circuit analysis	111
5.23	Manifold and control assembly capacity	111
5.24	Condensate drain system located in blower compartment	112
5.25	Temperatures at discharge air openings	112
5.26	Wall, floor, and ceiling temperatures	115
5.27	Flue gas temperatures	123
5.28	Surface temperatures	124
5.29	Evaluation of clothing ignition potential	127
5.30	Venting	129
5.31	Draft hoods	130
5.32	Draft tests for appliances not equipped with draft hoods	132
5.33	Vent safety shut-off systems	133
5.34	Wind tests (sidewall termination)	134
5.35	Wind test (vertical termination)	137
5.36	Vent and vent-air intake terminal assemblies	139
5.37	Joints in direct vent systems	152
5.38	Allowable vent pipe, heating element and load-bearing flue gas baffle temperatures	154
5.39	Automatic vent damper devices	157
5.40	Marking material adhesion and legibility	160
<b>6</b>	<b>Production and manufacturing tests</b>	<b>161</b>
<b>7</b>	<b>Items unique to the United States</b>	<b>163</b>
7.1	Electrical equipment and wiring	163
7.2	Electrical diagrams	173
7.3	Motors and blowers	174
7.4	Thermostats	175

**8 Items unique to Canada 175**


---

Annex A (normative)	— Provisions for listed gas appliance conversion kits (optional)	194
Annex B (normative)	— Delayed ignition test using a stoichiometric gas-air mixture for natural gas direct vent fireplaces	197
Annex C (normative)	— Sample failure modes and effects analysis for component miswiring*	200
Annex D (normative)	— Glass temperature calculation	201
Annex E (normative)	— Outline of lighting instructions for appliances equipped with continuous pilots	205
Annex F (normative)	— Outline of operating instructions for appliances equipped with intermittent pilot or interrupted pilot systems	208
Annex G (normative)	— Outline of operating instructions for appliances equipped with direct ignition systems	211
Annex H (normative)	— Automatic intermittent pilot ignition systems for field installation	214
Annex I (normative)	— Recommended wire color usage	218
Annex J (informative)	— Pertinent references to ANSI Y14.15	219
Annex K (informative)	— Wire color designations	220
Annex L (informative)	— 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	221
Annex M (informative)	— Table of conversion factors	223

# Interprovincial Gas Advisory Council

<b>J. Renaud</b>	Régie du bâtiment du Québec, Montréal, Quebec, Canada	<i>Chair</i>
<b>J. Marshall</b>	Technical Standards & Safety Authority (TSSA), Toronto, Ontario, Canada	<i>Vice Chair</i>
<b>A. Ali</b>	Government of Nunavut Community & Government Services, Iqaluit, Nunavut, Canada	
<b>R. Brousseau</b>	Régie du Bâtiment du Québec, Montréal, Quebec, Canada	<i>Alternate</i>
<b>M. Davidson</b>	Province of New Brunswick Dept of Public Safety, Fredericton, New Brunswick, Canada	
<b>A. Durnie</b>	Alberta Municipal Affairs, Edmonton, Alberta, Canada	<i>Alternate</i>
<b>D. Eastman</b>	Service NL, Newfoundland & Labrador, St. John's, Newfoundland and Labrador, Canada	
<b>B. Fierheller</b>	Office of the Fire Commissioner Province of MB, Winnipeg, Manitoba, Canada	
<b>P. Fowler</b>	Nova Scotia Department of Labour Advanced Education, Halifax Nova Scotia, Canada	
<b>D.. Hird</b>	SaskPower, Regina, Saskatchewan, Canada	
<b>C. Lashek</b>	Manitoba, Office of the Fire Commissioner, Winnipeg, Manitoba, Canada	<i>Non-voting</i>
<b>W. ...</b>	British Columbia Safety Authority (BCSA), New Westminster, British Columbia, Canada	
<b>S. Manning</b>	Alberta Municipal Affairs Safety Services, Edmonton, Alberta, Canada	

<b>R. McRae</b>	Government of the NWT Public Works & Services, Yellowknife, Northwest Territories, Canada	
<b>J. Melling</b>	SaskPower, Saskatoon, Saskatchewan, Canada	<i>Alternate</i>
<b>B. Reid</b>	Department of Environment, Energy and Forestry, Charlottetown, Prince Edward Island, Canada	
<b>G. Tremblett</b>	Service NL, Newfoundland & Labrador, St. John's, Newfoundland and Labrador, Canada	<i>Alternate</i>
<b>C. Valliere</b>	Alberta Municipal Affairs Safety Services, Edmonton, Alberta, Canada	<i>Alternate</i>
<b>M. Wani</b>	Government of Nunavut, Iqaluit, Nunavut, Canada	<i>Alternate</i>
<b>D. Young</b>	Yukon Government, Whitehorse, Yukon Territory, Canada	
<b>B. Zinn</b>	British Columbia Safety Authority (B.C. SA), Coquitlam, British Columbia, Canada	<i>Alternate</i>

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

<b>B. Swiecicki</b>	National Propane Gas Association, Frankfort, Illinois, USA <i>Category: Gas Supplier</i>	<i>Chair</i>
<b>M. Wilber</b>	Crane Engineering, Plymouth, Minnesota, USA <i>Category: General Interest</i>	<i>Vice Chair</i>
<b>C. Adams</b>	A.O. Smith Corporation, Milwaukee, Wisconsin, USA <i>Category: Manufacturer</i>	
<b>S. Caudle</b>	Southern California Gas Company, Los Angeles, California, USA <i>Gas Supplier</i>	<i>Alternate</i>
<b>M. Deegan</b>	Clearwater Gas System, Clearwater, Florida, USA <i>Category: Government and/or Regulatory Authority</i>	
<b>L. DeLaura</b>	Southern California Gas Company, Los Angeles, California, USA <i>Category: Gas Supplier</i>	
<b>M. Diesch</b>	Lennox International Inc, Carrollton, Texas, USA <i>Category: Manufacturer</i>	
<b>J. Emmel</b>	Virginia Tech, Blacksburg, Virginia, USA <i>Category: Consumer/User</i>	
<b>Z. Fraczkowski</b>	Technical Standards & Safety Authority (TSSA), Toronto, Ontario, Canada	<i>Non-voting</i>

<b>R. Frazier</b>	ATMOS Energy, Arlington, Texas, USA <i>Category: Gas Supplier</i>	
<b>T. Hardin</b>	UL, LLC, Research Triangle Pk, North Carolina, USA <i>Category: Research/Testing</i>	<i>Alternate</i>
<b>D. Jakobs</b>	Rheem Manufacturing Company Air Conditioning Division, Fort Smith, Arkansas, USA <i>Category: Manufacturer</i>	
<b>R. Jordan</b>	Consumer Product Safety Commission, Rockville, Maryland, USA	<i>Non-voting</i>
<b>F. Myers</b>	PVI Industries LLC, Fort Worth, Texas, USA <i>Category: Manufacturer</i>	
<b>G. Potter</b>	Heater Technologies, LLC, Marthasville, Missouri, USA <i>Category: Manufacturer</i>	
<b>J. Ranfone</b>	American Gas Association Inc., Washington, District of Columbia, USA <i>Category: Gas Supplier</i>	
<b>N. Rolph</b>	Lochinvar LLC, Lebanon, Tennessee, USA <i>Category: Manufacturer</i>	<i>Alternate</i>
<b>G. Ruzicka</b>	Lowe's Companies, Inc, Mooresville, North Carolina, USA <i>Category: General Interest</i>	
<b>I. Sargunam</b>	Bloomington, Indiana, USA <i>Category: General Interest</i>	
<b>C. Souhrada</b>	North American Association of Food Equipment Manufacturers, Chicago, Illinois, USA <i>Category: Manufacturer</i>	
<b>F. Stanonik</b>	Air-Conditioning, Heating, and Refrigeration Institute, Arlington, Virginia, USA	<i>Non-voting</i>

<b>T. Stroud</b>	Hearth Patio & Barbecue Association, Seattle, Washington, USA <i>Category: General Interest</i>	
<b>C. Suchovsky</b>	Burner Technology Unlimited, Inc, Walton Hills, Ohio, USA <i>Category: General Interest</i>	
<b>D.W. Switzer</b>	Consumer Product Safety Commission, Rockville, Maryland, USA	<i>Non-voting</i>
<b>H. Virgil</b>	Brownsburg, Indiana, USA <i>Category: Consumer/User</i>	
<b>A. Wagner-Sherwin</b>	St. Louis Community College, St. Louis, Missouri, USA <i>Category: Consumer/User</i>	
<b>M. Williams</b>	Association of Home Appliance Manufacturers (AHAM), Washington, District of Columbia, USA <i>Category: Manufacturer</i>	
<b>R. Wozniak</b>	UL, LLC, Melville, New York, USA <i>Category: Research/Testing</i>	
<b>S. Corcoran</b>	CSA Group, Cleveland, Ohio, USA	<i>Project Manager</i>

# Canadian Technical Committee on Gas Appliances and Related Accessories

<b>Z. Fraczkowski</b>	Technical Standards & Safety Authority (TSSA), Toronto, Ontario, Canada <i>Category: Government and/or Regulatory Authority</i>	<i>Chair</i>
<b>A. Gould</b>	Reliance Comfort Ltd. Partnership dba Reliance Home Comfort, Cambridge, Ontario, Canada <i>Category: User Interest</i>	<i>Vice Chair</i>
<b>A. Abdel-Rehim</b>	A.O. Smith Enterprises Ltd, Fergus, Ontario, Canada	<i>Non-voting</i>
<b>P. Baker</b>	Maxitrol Company, Hamilton, Ontario, Canada <i>Category: Producer Interest</i>	
<b>D. Baxter</b>	Enbridge Gas Distribution, Thorold, Ontario, Canada <i>Category: User Interest</i>	
<b>J. Boros</b>	Rheem Sales Co Inc AKA Rheem Manufacturing Co, Montgomery, Alabama, USA <i>Category: Producer Interest</i>	
<b>T. Brennan</b>	Natural Resources Canada, Ottawa, Ontario, Canada	<i>Non-voting</i>
<b>C. Côté</b>	Gaz Métro Inc., Montréal, Quebec, Canada <i>Category: User Interest</i>	
<b>C. Gibbs</b>	Guelph, Ontario, Canada <i>Category: General Interest</i>	
<b>E. Grzesik</b>	Mississauga, Ontario, Canada <i>Category: General Interest</i>	
<b>D. Hird</b>	SaskPower, Regina, Saskatchewan, Canada <i>Category: Government and/or Regulatory Authority</i>	

<b>D. Jamieson</b>	GHP Group Inc, Oakville, Ontario, Canada <i>Category: Producer Interest</i>	
<b>C. Jorgenson</b>	British Columbia Safety Authority (BCSA), New Westminster, British Columbia, Canada <i>Category: Government and/or Regulatory Authority</i>	
<b>S. Katz</b>	S. Katz and Associates Inc., North Vancouver, British Columbia, Canada	<i>Non-voting</i>
<b>J. Marshall</b>	Technical Standards & Safety Authority (TSSA), Toronto, Ontario, Canada	<i>Non-voting</i>
<b>J. Melling</b>	SaskPower, Saskatoon, Saskatchewan, Canada	<i>Non-voting</i>
<b>J. Overall</b>	Union Gas Limited, Toronto, Ontario, Canada	<i>Non-voting</i>
<b>T. Poulin</b>	A.O. Smith Enterprises Ltd, Fergus, Ontario, Canada <i>Category: Producer Interest</i>	
<b>G. Prociw</b>	Union Gas Limited, Chatham, Ontario, Canada <i>Category: User Interest</i>	
<b>E. Scott</b>	British Columbia Safety Authority (BCSA), New Westminster, British Columbia, Canada	<i>Non-voting</i>
<b>B. Swiecicki</b>	National Propane Gas Association, Frankfort, Illinois, USA	<i>Non-voting</i>
<b>M. Thomas</b>	Natural Resources Canada CANMET Energy, Ottawa, Ontario	<i>Non-voting</i>
<b>M. Khan</b>	CSA Group, Mississauga, Ontario, Canada	<i>Project Manager</i>

# ***Z21/CSA Joint Technical Subcommittee on Standards for Vented Gas-Fired Warm Air Heaters***

<b>R. Frazier</b>	ATMOS Energy, Arlington, Texas, USA	<i>Chair</i>
<b>T. Stroud</b>	Hearth Patio & Barbecue Association, Seattle, Washington, USA	<i>Vice Chair</i>
<b>G. Achman</b>	Hearth & Home Technologies, Lakeville, Minnesota, USA	
<b>R. AlMasri</b>	Vermont Castings Group, Paris, Kentucky, USA	
<b>P. Baker</b>	Maxitrol Company, Hamilton, Ontario, Canada	
<b>J. Baldwin</b>	Vermont Castings Group, Paris, Kentucky, USA	<i>Alternate</i>
<b>B. Book</b>	Miles Industries Ltd, North Vancouver, British Columbia, Canada	<i>Alternate</i>
<b>T. Campbell</b>	Ironhaus Inc, Hamilton, Montana, USA	<i>Non-voting</i>
<b>S. Caudle</b>	Southern California Gas Company, Los Angeles, California, USA	
<b>A. Chumbley</b>	Vermont Castings Group, Paris, Kentucky, USA	<i>Alternate</i>
<b>R. Curkeet</b>	Intertek Testing Services NA Inc., Middleton, Wisconsin, USA	
<b>D. Delaquila</b>	Air-Conditioning, Heating, and Refrigeration Institute, Arlington, Virginia, USA	

<b>K. Dorrrough</b>	Rinnai America Corporation, Peachtree City, Georgia, USA	<i>Alternate</i>
<b>B. Dresner</b>	Empire Comfort Systems, Inc., Belleville, Illinois, USA	
<b>G. Edgar</b>	VenTech Consulting Ltd, Lancaster, Ohio, USA	
<b>Z. Fraczkowski</b>	Technical Standards & Safety Authority (TSSA), Toronto, Ontario, Canada	<i>Non-voting</i>
<b>T. James</b>	Woodbridge Fireplace, Brampton, Ontario, Canada	
<b>D. Jamieson</b>	GHP Group, Inc., Oakville, Ontario, Canada	
<b>R. Jensen</b>	White-Rodgers Division, St. Louis, Missouri, USA	
<b>R. Jordan</b>	Consumer Product Safety Commission, Rockville, Maryland, USA	<i>Non-voting</i>
<b>K. Kirchner</b>	Continental Appliance, Inc. dba Procom, Brea, California, USA	<i>Alternate</i>
<b>K. Leason</b>	Continental Appliance, Inc. dba Procom, Brea, California, USA	
<b>C. Lilley</b>	Wolf Steel Ltd., Barrie, Ontario, Canada	
<b>D. Lyons</b>	Hearth & Home Technologies, Lakeville, Minnesota, USA	
<b>R. Mateos Martin</b>	Copreci S. Coop, Marietta, Georgia, USA	
<b>M. Miles</b>	Miles Industries Ltd, North Vancouver, British Columbia, Canada	
<b>M. Mulberry</b>	Sure Heat Manufacturing, Bowling Green, Kentucky, USA	<i>Alternate</i>

<b>M. Pennington</b>	Lennox Hearth Products, Nashville, Tennessee, USA	
<b>S. Richardson</b>	Ferguson, Andors & Company, South Royalton, Vermont, USA	
<b>M. Romanow</b>	Nu-Air Ventilation Systems Inc., Windsor, Nova Scotia, Canada	
<b>J. Schlachter</b>	Maxitrol Company, Southfield, Michigan, USA	<i>Alternate</i>
<b>K. Shaw</b>	M&G Duravent, Inc, Vacaville, California, USA	
<b>R. Smith</b>	Sourcing Solutions Services LLC, New Smyrna Beach, Florida, USA	
<b>J. Sorenson</b>	Intertek Testing Services NA Inc ETL SEMKO, Cortland, New York, USA	<i>Alternate</i>
<b>C. Suchovsky</b>	Burner Technology Unlimited, Inc, Walton Hills, Ohio, USA	
<b>J. Thomas</b>	Sure Heat Manufacturing, Bowling Green, Kentucky, USA	
<b>W. Thuenemann</b>	Empire Comfort Systems, Inc., Belleville, Illinois, USA	<i>Alternate</i>
<b>J. Vancak</b>	Calcana Industries Ltd., Calgary, Alberta, Canada	
<b>R. Wozniak</b>	UL, LLC, Melville, New York, USA	
<b>J. York</b>	Rinnai America Corporation, Peachtree City, Georgia, USA	
<b>L. McCourt</b>	CSA Group, Cleveland, Ohio, USA	<i>Project Manager</i>

# Preface

This is the seventh edition of ANSI Z21.50 • CSA 2.22, *Vented gas fireplaces*. It supersedes the previous editions published in 2012, 2007, 2003, 2000, 1998, and 1996.

This Standard was prepared by the Z21/CSA Joint Technical Subcommittee on Standards for Vented Gas-Fired Warm Air Heaters, under the jurisdiction of the Z21/83 Technical Committee on Performance and Installation of Gas Burning Appliances and Related Accessories, the Canadian Technical Committee on Gas Appliances and Related Accessories, and the Strategic Steering Committee on Standards for Fuel Burning Equipment, and had been formally approved by the Technical Committees, American National Standards Institute, and the Interprovincial Gas Advisory Council.

**Interpretations:** The Strategic Steering Committee on Standards for Fuel Burning Equipment has provided the following direction for the interpretation of standards under its jurisdiction: “The literal text shall be used in judging compliance of products with the safety requirements of this Standard. When the literal text cannot be applied to the product, such as for new materials or construction, and when a relevant committee interpretation has not already been published, CSA Group’s procedures for interpretation shall be followed to determine the intended safety principle.”

**Notes:**

- 1) *Use of the singular does not exclude the plural (and vice versa) when the sense allows.*
- 2) *This Standard contains SI (Metric) units corresponding to the yard/pound quantities, the purpose being to allow the standard to be used in SI (Metric) units. (IEEE/ASTM SI 10, American National Standard for Metric Practice, or ISO 80000-1:2009, Quantities and units – Part 1: General, is used as a guide in making metric conversion from yard/pound quantities.) If a value for a measurement and a corresponding value in other units are stated, the first stated value is to be regarded as the requirement. The given corresponding value may be approximate. If a value for a measurement and a corresponding value in other units are both specified as a quoted marking requirement, the first stated unit, or both, are to be provided.*
- 3) *Although the intended primary application of this Standard is stated in its Scope, it is important to note that it remains the responsibility of the users of the Standard to judge its suitability for their particular purpose.*
- 4) *This publication was developed by consensus, which is defined by CSA Policy governing standardization – Code of good practice for standardization as “substantial agreement. Consensus implies much more than a simple majority, but not necessarily unanimity.” It is consistent with this definition that a member may be included in the Technical Committee list and yet not be in full agreement with all clauses of this publication.*
- 5) *This Standard is subject to review five years from the date of publication, and suggestions for its improvement will be referred to the appropriate committee. To submit a proposal for change, please send the following information to [inquiries@csagroup.org](mailto:inquiries@csagroup.org) and include “Proposal for change” in the subject line:*
  - a) *Standard designation (number);*
  - b) *relevant clause, table, and/or figure number;*
  - c) *wording of the proposed change; and*
  - d) *rationale for the change.*
- 6) *To submit a request for interpretation of this Standard, please send the following information to [inquiries@csagroup.org](mailto:inquiries@csagroup.org) and include “Request for interpretation” in the subject line:*
  - a) *define the problem, making reference to the specific clause, and, where appropriate, include an illustrative sketch;*
  - b) *provide an explanation of circumstances surrounding the actual field condition; and*
  - c) *where possible, phrase the request in such a way that a specific “yes” or “no” answer will address the issue.*

*Committee interpretations are processed in accordance with the CSA Directives and guidelines governing standardization and are available on the Current Standards Activities page at [standardsactivities.csa.ca](http://standardsactivities.csa.ca).*

## History of the development of the Standard for Vented gas fireplaces

**Note:** *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 second draft harmonized Standard for Vented Gas Fireplaces based on current coverage from the American National Standard for Vented Decorative Gas Appliances, ANSI Z21.50-1989, Addenda ANSI Z21.50a-1990 and Addenda ANSI Z21.50b-1990; and the National Standard of Canada for Vented Decorative Gas Appliances, CAN/CGA-2.22-M86. Following its review, the joint subcommittee modified the draft document and agreed to distribute a second draft for industry review during March 1993. The first draft was not distributed for industry review.

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 Vented Gas Fireplaces dated March 1993, in light of comments received. Changes to the delayed ignition and integrity test, addition of a water shock test and revisions to wind test coverage were redistributed for review and comment. At this time, a third draft of the harmonized standard was developed. The third draft including the revisions was recommended to the Z21 Committee and the CGA Standards Steering Committee for approval.

The proposed third draft of the harmonized Standard for Vented Gas Fireplaces was considered by the Z21 Committee at its April 7, 1994 meeting and by the CGA Standards Steering Committee on April 14, 1994. Comments were received from the Z21 Committee and returned to the joint subcommittee for consideration.

At its May 26-27, 1994 meeting, the joint decorative appliance subcommittee reconsidered draft three and proposed revisions, in light of comments received from the Z21 Committee. As a result, the third draft comprised of the second draft and the proposed revisions were revised to include references to American National Standard for Combination Gas Controls for Gas Appliances, ANSI Z21.78 and revisions to the maximum temperature rise for glass and references to combustion chamber pressure relief device. The third draft, plus all revisions, were recommended again to the Z21 Committee by letter ballot dated August 5, 1994, and the CGA Standards Steering Committee for approval.

Comments were again received from the Z21 Committee revising the conversion kit boxed warning and coverage addressing the moisture test. The joint decorative appliance subcommittee agreed with the revisions recommended by the Z21 Committee.

The proposed third draft of the harmonized Standard for Vented Gas Fireplaces and all revisions were approved by the Z21 Committee by letter ballot dated June 26, 1995 and by the CGA Standards Steering Committee on April 15, 1996.

The first edition of the harmonized Z21/CGA Standard for Vented Gas Fireplaces was approved by the Canadian Interprovincial Gas Advisory Council in May 1996, and by the American National Standards Institute Inc., on September 27, 1996.

The second edition of the Standard for Vented Gas Fireplaces was approved by the Canadian Interprovincial Gas Advisory Council on August 7, 1998, and by the American National Standards Institute, Inc. on November 3, 1998.

The third edition of the Standard for Vented Gas Fireplaces was approved by the Canadian Interprovincial Gas Advisory Council on August 22, 2000, and by the American National Standards Institute, Inc. on November 11, 2000.

The fourth edition of the Standard for Vented Gas Fireplaces was approved by the Canadian Interprovincial Gas Advisory Council on August 28, 2003, and by the American National Standards Institute, Inc. on July 11, 2003.

The fifth edition of the Standard for Vented Gas Fireplaces was approved by the Canadian Interprovincial Gas Advisory Council on March 15, 2007, and by the American National Standards Institute on February 22, 2007.

The sixth edition of the Standard for Vented Gas Fireplaces was approved by the Canadian Interprovincial Gas Advisory Council on September 28, 2012, and by the American National Standards Institute, Inc. on December 18, 2012.

This, the seventh edition of the Standard for Vented gas fireplaces was distributed for industry review during May 2012, September 2012, and January 2013; and approved by the Z21/83 Technical Committee on Performance and Installation of Gas Burning Appliances and Related Accessories on December 20, 2013; by the Canadian Technical Committee on Gas Appliances and Related Accessories on October 30, 2013; by the American National Standards Institute, Inc on February 20, 2014; and by the Interprovincial Gas Advisory Council on February 18, 2014.

The previous editions of the vented gas fireplace standard, and addenda thereto, approved by the American National Standards Institute, Inc. and the Interprovincial Gas Advisory Council are as follows:

ANSI Z21.50-1996 • CGA 2.22-M96

ANSI Z21.50-1998 • CGA 2.22-M98

ANSI Z21.50-2000 • CSA 2.22-2000

ANSI Z21.50-2003 • CSA 2.22-2003

ANSI Z21.50-2007 • CSA 2.22-2007

ANSI Z21.50-2012 • CSA 2.22-2012

ANSI Z21.50a-1998 • CGA 2.22a-M98

ANSI Z21.50b-1998 • CGA 2.22b-M98

ANSI Z21.50a-1999 • CGA 2.22a-M99

ANSI Z21.50b-2000 • CGA 2.22b-M00

ANSI Z21.50a-2001 • CSA 2.22a-2001

ANSI Z21.50b-2002 • CSA 2.22b-2002

ANSI Z21.50a-2003 • CSA 2.22a-2003

ANSI Z21.50b-2005 • CSA 2.22b-2005

ANSI Z21.50a-2008 • CSA 2.22a-2008

ANSI Z21.50b-2009 • CSA 2.22b-2009

**Note:** This edition of ANSI Z21.50 • CSA 2.22 incorporates changes to the 2012 edition.

# ANSI Z21.50-2014 • CSA 2.22-2014

## Vented gas fireplaces

### 1 Scope

#### 1.1

This Standard applies to newly produced vented gas fireplaces (see Clause 3, Definitions), hereinafter referred to as appliances, 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 for:

- a) use with natural gas;
- b) use with propane;
- c) direct vent gas appliances for manufactured home (USA only) or mobile home OEM installation or aftermarket installation 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 (see Clauses 4.1.21 and 4.1.22);
- d) direct vent gas appliances for manufactured home (USA only) or mobile home aftermarket installation for use with natural gas only or liquefied petroleum (propane) gases only (see Clause 4.1.22); and
- e) direct vent gas appliances for manufactured home (USA only) or mobile home OEM installation for use with liquefied petroleum (propane) gases only (see Clause 4.1.21).

The construction of vented gas fireplaces for use with the above mentioned gases is covered under Clause 4, Construction.

The performance of vented gas fireplaces for use with the above mentioned gases is covered under Clause 5, Performance.

#### 1.2

Annex H, Automatic intermittent pilot ignition systems for field installation, includes provisions for newly produced (optional) automatic intermittent pilot ignition systems (see Clause 3, Definitions), constructed entirely of new, unused parts and materials to be adapted in the field to an appliance equipped with an existing continuous pilot burner and which has been examined and tested for compliance with this Standard when installed on the appliance.

#### 1.3

A value for measurement given in this Standard is followed by an equivalent value in other units, the first stated value is to be regarded as the specification.

#### 1.4

Clause 2, Reference publications, contains a list of standards specifically referenced in this Standard and sources from which they may be obtained. 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 (AHJ) for the location of installation.