



**CSA  
Group**

**ANSI LC 1-2014 • CSA 6.26-2014**

# **Fuel gas piping systems using corrugated stainless steel tubing**

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.



## ***Standards Update Service***

***ANSI LC 1-2014 • CSA 6.26-2014***  
***March 2014***

**Title:** *Fuel gas piping systems using corrugated stainless steel tubing*

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 **242285**

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.

## 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 Groups standards development by volunteering their time and skills to Committee work and supporting CSA Groups objectives through sustaining memberships. The more than 7000 committee volunteers and the 2000 sustaining memberships together form CSA Groups total membership from which its Directors are chosen. Sustaining memberships represent a major source of income for CSA Groups 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.

For further information on CSA Group services, write to  
CSA Group  
5060 Spectrum Way, Suite 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 standards rests with the  
American National Standards Institute, Inc.  
25 West 43rd Street, Fourth floor  
New York, NY 10036

**ANSI LC 1-2014 • CSA 6.26-2014**  
**Fuel gas piping systems using**  
**corrugated stainless steel tubing**



*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 September 17, 2013 by ANSI*

*Approved on March 20, 2014 by IGAC*

*Effective in Canada March 1, 2015*

*Published in March 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 978-1-77139-447-5

© 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

CSA Technical Committee on Gas Appliances and Related Accessories	3
Z21/83 Technical Committee on Performance and Installation of Gas Burning Appliances and Related Accessories	5
Interprovincial Gas Advisory Council	8
Joint Technical Advisory Group on Standards for Gas Piping Systems for Corrugated Stainless Steel Tubing	10
Preface	12
<b>1 Scope</b>	<b>15</b>
<b>2 Reference publications</b>	<b>16</b>
<b>3 Definitions</b>	<b>18</b>
<b>4 Construction</b>	<b>19</b>
4.1 Materials	19
4.2 General	20
4.3 Gas pressure regulators	21
4.4 Manually operated gas valves	21
4.5 Quick-disconnect devices and gas convenience outlets	21
4.6 Striker plates	21
4.7 Instructions	22
4.8 Marking	23
4.9 Installer training	24
<b>5 Performance</b>	<b>25</b>
5.1 General	25
5.2 Leakage	25
5.3 Pressure capacity	25
5.4 Flexibility of tubing	26
5.5 Axial strength	28
5.6 Crushing strength	29
5.7 Impact strength	29
5.8 Torsion strength of threaded fittings	29
5.9 Exposure to elevated temperatures (fire hazard resistance)	30
5.10 Flow capacity and equivalent hydraulic diameter (EHD)	30
5.11 Pressure drop from bends	40
5.12 Effectiveness of striker plates	41
5.13 Mechanical tube fittings - resistance to loosening	43
5.14 Resistance to outdoor environment	44
5.15 Electrical properties	47
5.16 Arc resistant jacket or covering system (optional)	48
5.16.1 General	48

5.16.2 Resistance of jacket material to extreme environment(s) 49

5.16.3 Electrical tests 49

**6 Manufacturing and production tests 52**

**7 Items unique to Canada 52**

---

Annex A — Minimum design and installation manual requirements 53

Annex B — Guidelines for the direct (electrical) bonding of CSST piping systems 56

Annex C — Table of conversion factors 58

# CSA Technical Committee on Gas Appliances and Related Accessories

<b>Z.J. Fraczkowski</b>	Technical Standards & Safety Authority (TSSA), Toronto, Ontario, Canada <i>Category: Government and/or Regulatory Authority</i>	<i>Chair</i>
<b>D. Baxter</b>	Enbridge Gas Distribution, Thorold, 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>Associate</i>
<b>P.A. Baker</b>	Maxitrol Company, Hamilton, Ontario, Canada <i>Category: Producer Interest</i>	
<b>J. Boros</b>	Rheem Manufacturing Company, Montgomery, Alabama, USA <i>Category: Producer Interest</i>	
<b>T. Brennan</b>	Natural Resources Canada, Ottawa, Ontario, Canada	<i>Associate</i>
<b>C. Côté</b>	Gaz Métro Inc., Montréal, Québec, Canada <i>Category: User Interest</i>	
<b>C. Gibbs</b>	Guelph, Ontario, Canada <i>Category: General Interest</i>	
<b>A. Gould</b>	Reliance Comfort Ltd. Patnership dba Reliance Home Comfort, Cambridge, Ontario, Canada <i>Category: User Interest</i>	
<b>E. Grzelek</b>	Mississauga, Ontario, Canada <i>Category: General Interest</i>	
<b>D.N. Hird</b>	SaskPower, Regina, Saskatchewan, Canada <i>Category: Government and/or Regulatory Authority</i>	

<b>D.R. Jamieson</b>	GHP Group Inc, Oakville, Ontario, Canada <i>Category: Producer Interest</i>	
<b>J.M. Jones</b>	J.M. Jones Consulting Services, Leamington, Ontario, Canada	<i>Associate</i>
<b>C.E. 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>Associate</i>
<b>J.R. Marshall</b>	Technical Standards & Safety Authority (TSSA), Toronto, Ontario, Canada	<i>Associate</i>
<b>J. Melling</b>	SaskPower, Saskatoon, Saskatchewan, Canada	<i>Associate</i>
<b>J. Overall</b>	Union Gas Limited, Toronto, Ontario, Canada	<i>Associate</i>
<b>T.W. Poulin</b>	A.O. Smith Enterprises Ltd, Fergus, Ontario, Canada <i>Category: Producer Interest</i>	
<b>G.B. 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>Associate</i>
<b>B.J. Swiecicki</b>	National Propane Gas Association, Frankfort, Illinois, USA	<i>Associate</i>
<b>M. Thomas</b>	Natural Resources Canada CANMET Energy, Ottawa, Ontario, Canada	<i>Associate</i>
<b>C.L. Rake</b>	CSA Group, Cleveland, Ohio, USA	<i>Program Manager</i>
<b>M. Khan</b>	CSA Group, Mississauga, Ontario, Canada	<i>Project Manager</i>

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

<b>B.J. Swiecicki</b>	National Propane Gas Association, Washington, District of Columbia, USA <i>Category: Gas Supplier/Utility Interest</i>	<i>Chair</i>
<b>M.W. Wilber</b>	Crane Engineering, Plymouth, Minnesota, USA <i>Category: General Interest</i>	<i>Vice-Chair</i>
<b>C.W. Adams</b>	A.O. Smith Corporation, Milwaukee, Wisconsin, USA <i>Category: Producer Interest</i>	
<b>S.R. Caudle</b>	Southern California Gas Company, Los Angeles, California, USA <i>Category: Gas Supplier/Utility Interest</i>	<i>Alternate</i>
<b>M. Deegan</b>	Clearwater Gas System, Clearwater, Florida, USA <i>Category: Government Agency Interest</i>	
<b>L. DeLaura</b>	Sempra Energy Utility, Los Angeles, California, USA <i>Category: Gas Supplier/Utility Interest</i>	
<b>M. Diesch</b>	Lennox International Inc, Carrollton, Texas, USA <i>Category: Producer Interest</i>	
<b>J.M. Emmel</b>	Virginia Tech, Blacksburg, Virginia, USA <i>Category: Consumer/User Interest</i>	
<b>Z.J. Fraczkowski</b>	Technical Standards & Safety Authority (TSSA), Toronto, Ontario, Canada	<i>Associate</i>

<b>R.R. Frazier</b>	ATMOS Energy, Arlington, Texas, USA <i>Category: Gas Supplier/Utility Interest</i>	
<b>T.F. Hardin</b>	Underwriters Laboratories Inc., Research Triangle Pk, North Carolina, USA <i>Category: Research &amp; Testing Interest</i>	<i>Alternate</i>
<b>D.M. Jakobs</b>	Rheem Manufacturing Company Air Conditioning Division, Fort Smith, Arkansas, USA <i>Category: Producer Interest</i>	
<b>R.A. Jordan</b>	Consumer Product Safety Commission, Rockville, Maryland, USA <i>Category: Government Agency Interest</i>	<i>Associate</i>
<b>F. Myers</b>	PVI Industries LLC, Fort Worth, Texas, USA <i>Category: Producer Interest</i>	
<b>G.J. Potter</b>	Cambridge Engineering, Chesterfield, Missouri, USA <i>Category: Producer Interest</i>	
<b>J.A. Ranfone</b>	American Gas Association Inc., Washington, District of Columbia, USA <i>Category: Gas Supplier/Utility Interest</i>	
<b>N.W. Rolph</b>	Lochinvar LLC, Lebanon, Tennessee, USA <i>Category: Producer Interest</i>	<i>Alternate</i>
<b>G.A. Ruzicka</b>	Lowe's Companies, Inc, Mooresville, North Carolina, USA <i>Category: General Interest</i>	
<b>I. Sargunam</b>	Bloomington, Indiana, USA <i>Category: Individual Member Interest</i>	
<b>C. Souhrada</b>	North American Association of Food Equipment Manufacturers, Chicago, Illinois, USA <i>Category: Producer Interest</i>	

<b>F.A. Stanonik</b>	Air-Conditioning, Heating, and Refrigeration Institute, Arlington, Virginia, USA <i>Category: Producer Interest</i>	<i>Associate</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>Category: Government Agency Interest</i>	<i>Associate</i>
<b>H. Virgil</b>	Brownsburg, Indiana, USA <i>Category: Consumer/User Interest</i>	
<b>A.B. Wagner-Sherwin</b>	St. Louis Community College, St. Louis, Missouri, USA <i>Category: Consumer/User Interest</i>	
<b>M.B. Williams</b>	Association of Home Appliance Manufacturers (AHAM), Washington, District of Columbia, USA <i>Category: Producer Interest</i>	
<b>T.R. Wiseman</b>	Vulcan-Hart Company A Div. of ITW Food Equipment Group, Baltimore, Maryland, USA <i>Category: Producer Interest</i>	<i>Alternate</i>
<b>R. Wozniak</b>	Underwriters Laboratories Inc., Melville, New York, USA <i>Category: Research &amp; Testing Interest</i>	
<b>C.L. Rake</b>	CSA Group, Cleveland, Ohio, USA	<i>Program Manager</i>
<b>S.M. Corcoran</b>	CSA Group, Cleveland, Ohio, USA	<i>Project Manager</i>

# *Interprovincial Gas Advisory Council*

<b>J. Renaud</b>	Régie du bâtiment du Québec, Montréal, Quebec, Canada	<i>Chairman</i>
<b>J.R. Marshall</b>	Technical Standards & Safety Authority (TSSA), Toronto, Ontario, Canada	<i>Vice-Chairman</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.E. Davidson</b>	Province of New Brunswick Dept of Public Safety, Fredericton, New Brunswick, Canada	
<b>D. Eastman</b>	Service NL, Newfoundland & Labrador, St. John's, Newfoundland and Labrador, Canada	
<b>D.N. Hird</b>	SaskPower, Regina, Saskatchewan, Canada	<i>Alternate</i>
<b>S.C. 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>V.C. Pao</b>	Manitoba, Office of the Fire Commissioner, Winnipeg, Manitoba, Canada	
<b>B.W. Reid</b>	Department of Environment, Energy and Forestry, Charlottetown, Prince Edward Island, Canada	
<b>E. Skehor</b>	British Columbia Safety Authority (BCSA), Courtenay, British Columbia, Canada	

---

<b>D.C. Stewart</b>	Department of Labour and Advanced Education, Halifax, Nova Scotia, Canada	
<b>I.R. Tilgner</b>	Human Resources and Skills Development Canada (HRSDC), Gatineau, Quebec, Canada	
<b>G. Tremblett</b>	Service NL, Newfoundland & Labrador, St. John's, Newfoundland and Labrador, Canada	<i>Alternate</i>
<b>D. Young</b>	Yukon Government, Whitehorse, Yukon Territory, Canada	

# ***Joint Technical Advisory Group on Standards for Gas Piping Systems for Corrugated Stainless Steel Tubing***

<b>R.R. Frazier</b>	ATMOS Energy, Arlington, Texas, USA	<i>Chair</i>
<b>S.R. Caudle</b>	Southern California Gas Company, Los Angeles, California, USA	<i>Vice-Chair</i>
<b>D. Abbate</b>	Air-Conditioning, Heating, and Refrigeration Institute, Arlington, Virginia, USA	<i>Associate</i>
<b>M. Angus</b>	Dormont Manufacturing Co., Export, Pennsylvania, USA	
<b>M. Deegan</b>	Clearwater Gas System, Clearwater, Florida, USA	
<b>D.R. Edler</b>	Ward Manufacturing LLC, Blossburg, Pennsylvania, USA	
<b>Z.J. Fraczkowski</b>	Technical Standards & Safety Authority (TSSA), Toronto, Ontario, Canada	<i>Associate</i>
<b>R. Green</b>	Brass-Craft Manufacturing Co, Novi, Michigan, USA	<i>Alternate</i>
<b>M. Harris</b>	Gastite Division of Titeflex, Springfield, Massachusetts, USA	
<b>P. Kurtz</b>	Ward Manufacturing LLC, Blossburg, Pennsylvania, USA	<i>Alternate</i>
<b>T.D. Mulligan</b>	Brass-Craft Manufacturing Co, Novi, Michigan, USA	
<b>J. Rose</b>	Southern California Gas Company, Los Angeles, California, USA	<i>Alternate</i>

---

<b>F.A. Stanonik</b>	Air-Conditioning, Heating, and Refrigeration Institute, Arlington, Virginia, USA	
<b>J. Strunk</b>	Gastite Division of Titeflex, Springfield, Massachusetts, USA	<i>Alternate</i>
<b>R.N. Torbin</b>	Omega Flex Inc., Middletown, Connecticut, USA	
<b>A. Weirauch</b>	Omega Flex Inc., Middletown, Connecticut, USA	<i>Alternate</i>
<b>S.M. Corcoran</b>	CSA Group, Cleveland, Ohio, USA	<i>Project Manager</i>

# Preface

This is the third edition of ANSI LC 1-2013 • CSA 6.26-2013, *Fuel gas piping systems using corrugated stainless steel tubing*.

This Standard was prepared by the Z21/CSA Joint Technical Advisory Group on Standards for Fuel Gas Piping Systems Using Corrugated Stainless Steel Tubing under the jurisdiction of the Technical Committee on Gas Appliances and Related Accessories, the Z21/83 Technical Committee on Performance and Installation of Gas Burning Appliances and Related Accessories, and the Strategic Steering Committee on Standards for Fuel Burning Appliances, and has been formally approved by the Technical Committee(s), American National Standards Institute, and the Interprovincial Gas Advisory Council.

**Interpretations:** The Strategic Steering Committee on Standards for Fuel Burning Appliances 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'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) *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.*
- 3) *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.*
- 4) *This Standard is subject to periodic review, and suggestions for their 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.*
- 5) *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 ANSI LC 1-2013 • CSA 6.26-2013

**Note:** *This history is informative and is not part of the standard.*

In 1983, the Gas Research Institute (GRI) initiated its “Residential/Commercial Piping Program.” This research and development effort was aimed at identifying and developing innovative building piping systems and materials as a viable alternative to conventional rigid black iron piping.

One of the most promising concepts which emerged from the GRI project was a piping system using semi-flexible, corrugated stainless steel tubing in conjunction with elevated gas pressures (up to 5 psig). This system offered several advantages over rigid black iron piping systems, including ease and speed of installation, elimination of the need for precise on-site measuring, cutting and threading of piping sections, and elimination of the need for certain fittings such as elbows, tees and couplings. A disadvantage was increased flow resistance imposed by the tubing corrugations and smaller internal diameters. This resulted in the requirement for higher system pressures and an additional gas pressure regulator upstream of equipment requiring lower supply pressures.

In November, 1986, Foster-Miller Inc., a GRI contractor assigned to the piping system project, requested the American Gas Association (A.G.A.) Laboratories to develop construction and performance criteria for use as the basis for a third party certification program for corrugated stainless steel piping systems. This work was undertaken and, on September 8, 1987, the “A.G.A. Requirements For Natural Gas Piping Systems Using Corrugated Stainless Steel Conduit,” No. 1-87 was published.

A.G.A. 1-87 was developed with input from Foster-Miller Inc. who had conducted numerous testing programs and gained considerable experience with these types of piping systems as part of the GRI project. Information was also drawn from existing ANSI standards, such as Z21.24, which cover similar types of products. Safety issues, such as potential damage to the tubing caused by bending, stretching, torquing, crushing or impacting, and accidental puncturing of concealed tubing, were given prime consideration in developing the construction and performance criteria contained in this document. Emphasis also was placed on comprehensive instructions to guide the installer through proper step-by-step installation and check-out procedures.

A.G.A. 1-87 was referenced in the fourth edition of the *National Fuel Gas Code, ANSI Z223.1*, as a recognized document for testing and listing corrugated stainless steel gas piping systems.

As interest in using these piping systems increased, there was some reluctance by local code authorities to accept systems not covered by a nationally recognized safety standard. Consequently, the A.G.A. Laboratories, in August 1989, applied to the American National Standards Institute (ANSI) for recognition as an approved sponsor under the canvass method for developing ANSI standards. On December 8, 1989, the A.G.A. Laboratories was approved by ANSI as a canvass sponsor. Consequently, A.G.A. 1-87 was retitled as proposed “American National Standard for Fuel Gas Piping Systems Using Corrugated Stainless Steel Tubing, AGA LC 1, and was distributed to all known interested parties for comment in accordance with the ANSI procedures for standards development under the canvass method.

The first edition of the Standard for Fuel Gas Piping Systems Using Corrugated Stainless Steel Tubing was approved by the American National Standards Institute, Inc., on January 25, 1991.

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

States and Canada. The harmonization of these standards was also seen as a step toward harmonization with international standards. Joint subcommittees were established to facilitate the standards harmonization process between the United States and Canada.

The harmonized draft standard was based on coverage from the first edition of ANSI/AGA LC 1-1991, and Addenda, LC 1a-1993, and LC 1b-1994.

The harmonized draft standard was processed under the ANSI Canvass method with a final ballot on its acceptance as a proposed ANSI standard dated December 9, 1994.

The proposed first edition of ANSI/IAS LC 1 • CGA 6.26 standard was approved by the CGA Standards Advisory Committee on November 3, 1997, the Canadian Interprovincial Gas Advisory Council on September 18, 1997, and by the American National Standards Institute on October 28, 1996.

The first edition of the harmonized gas piping systems using corrugated stainless steel tubing standard was approved by the Standards Advisory Committee and the Standards Council of Canada on September 18, 1997, and by the American National Standards Institute, Inc., on October 28, 1996.

The second edition of the harmonized gas piping systems using corrugated stainless steel tubing standard was approved by the Standards Advisory Committee and the Standards Council of Canada on October 27, 2004, and by the American National Standards Institute, Inc., on March 9, 2005.

ANSI/IAS LC 1-1997 • CGA 6.26-M97  
ANSI/IAS LC 1a-1999 • CGA 6.26a-M99  
ANSI/IAS LC 1b-2001 • CGA 6.26b-2001

ANSI LC 1-2005 • CSA 6.26-2005  
ANSI LC 1a-2009 • CSA 6.26a-2009  
ANSI LC 1b-2011 • CSA 6.26b-2011

This, the third edition of the harmonized gas piping systems using corrugated stainless steel tubing standard, was approved by the Interprovincial Gas Advisory Council on DATE and the American National Standards Institute, Inc. on September 17, 2013.

# ***ANSI LC 1-2014 • CSA 6.26-2014***

## ***Fuel gas piping systems using corrugated stainless steel tubing***

### **1 Scope**

#### **1.1**

This Standard applies to natural and propane gas piping systems using corrugated stainless steel tubing (CSST), intended for installation in residential, commercial or industrial buildings, and including the following components as a minimum:

- a) Corrugated stainless steel tubing (CSST);
- b) Fittings for connection to the CSST; and
- c) Striker plates (see Clause 3, Definitions) to protect the installed CSST from puncture threats.

Other components of piping systems covered by this Standard include gas manifolds, gas pressure regulators, manual gas valves, quick disconnect devices and gas convenience outlets (see Clauses 4.3, Gas Pressure regulators; 4.4, Manually operated gas valves and 4.5, Quick-disconnect devices and gas convenience outlets). If such additional components are required to complete the piping system installation, they are either provided as part of the piping system or specified in the manufacturer's installation instructions (see Clause 4.7-m).

#### **1.2**

This Standard also applies to corrugated stainless steel piping systems in which portions of the piping are exposed to the outdoors as required to make connections to outdoor gas meters or to outdoor gas appliances, which are attached to, mounted on or located in close proximity to the building structure.

#### **1.3**

This Standard does not apply to CSST, whether coated or uncoated, intended for direct burial underground. Tubing is installed underground only when encased inside either an approved conduit or as part of an approved engineered system and in accordance with local codes and the manufacturer's instructions.

#### **1.4**

This Standard includes criteria to establish the suitability of concealed mechanical tube fittings for use with concealed gas piping (see Clause 3, Definitions).

#### **1.5**

This Standard also applies to corrugated stainless steel piping systems which are used in conjunction with other approved fuel gas piping materials.

#### **1.6**

This Standard applies to piping systems rated at either 5 psi (34.5 kPa) and intended for exposure to maximum actual operating pressures (see Clause 3, Definitions) not exceeding 6.5 psi (44.8 kPa), or rated