



ANSI Z21.74-2017
American National Standard
(reaffirmed 2022)

Portable refrigerators



Legal Notice for Standards

Canadian Standards Association (operating as “CSA Group”) develops 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 treaty 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 form.

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.



Revision History

ANSI Z21.74-2017, Portable refrigerators

| Revision from third edition | Revision symbol (in margin) |
|---|-----------------------------|
| Clauses 1.1 , 1.2 , 1.4 , 4.1.2 , 4.3 , 4.4 , 4.5 , 4.6 , 4.8.1 , 4.16.6 , 4.16.7 , 4.16.8 , 4.16.9 , 4.16.10 , 4.16.11 , 4.16.12 , 4.17.1 , 4.17.2 , 4.17.3 , 4.17.4 , 4.17.5 , 4.17.6 , 4.17.7 , 4.17.8 , 4.17.9 , 4.17.10 , 4.17.11 , 4.24.1 , 4.24.2 , 4.24.4 , 4.25.2 , 4.25.6 , 4.25.7 , 5.2 , 5.7 , 5.10 , 5.16 , and 5.17 Tables 4 and 5 | Δ |

Currently in preview, click buy full version

Standards Update Service

ANSI Z21.74-2017 December 2017

Title: *Portable refrigerators*

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

- go to www.csagroup.org/store/
- click on **Product Updates**

The **List ID** that you will need to register for updates to this publication is **Z21.74**

If you require assistance, please e-mail techsupport@csagroup.org or call 410-747-2233.

Visit CSA Group's policy on privacy at www.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.

More than 10 000 members indicate their support for CSA Group’s standards development by volunteering their time and skills to Committee work.

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 fourteen 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
178 Rexdale Boulevard, Toronto, Ontario, M9W 1R7
Canada

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 the standards process.

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

American National Standard

ANSI Z21.74-2017

Portable refrigerators



**A trademark of the Canadian Standards Association and CSA America Standards Inc., operating as "CSA Group"*



American National Standards Institute, Inc.

*Approved on December 14, 2017 by ANSI
Published in December 2017 by CSA Group
A not-for-profit private sector organization
178 Rexdale Boulevard, Toronto, Ontario, Canada M9W 1R3*

*To purchase standards and related publications, visit our Online Store at
www.csagroup.org/store/ or call toll-free 1-800-463-6727 or 416-747-4044.*

ISBN 978-1-4883-0696-9

*© 2017 Canadian Standards Association
All rights reserved. No part of this publication may be reproduced in any form whatsoever
without the prior permission of the publisher.*

Contents

Z21/83 Technical Committee on Performance and Installation of Gas Burning Appliances and Related Accessories 3

Z21/CSA Joint Technical Subcommittee on Standards for Gas-Fired Refrigerators and Portable Camping Equipment 7

Preface 9

1 Scope 11

2 Reference publications 12

3 Definitions 15

4 Construction 19

4.1 General construction 19

4.2 Materials 20

4.3 Integral LP cylinder retention 23

4.4 Remote propane gas supply cylinder systems 23

4.5 Propane gas cylinder connection devices 24

4.6 Enclosures for self-contained propane gas supply systems 28

4.7 Gas supply lines 29

4.8 Gas supply 31

4.9 Cleanability of non-frozen food storage compartment 31

4.10 Lids or doors 31

4.11 Thermal insulation 32

4.12 Sealed absorption system 33

4.13 Burners 33

4.14 Orifices and orifice holders 34

4.15 Ignition systems 34

4.16 Manually operated gas valves 35

4.17 Gas appliance pressure regulators 36

4.18 Gas filters 38

4.19 Temperature control devices 38

4.20 Flues 39

4.21 Carrying handles 40

4.22 Electrical equipment and wiring 40

4.23 Refrigerated volume 47

4.24 Instructions 48

4.25 Marking 51

5 Performance 55

5.1 General 55

5.2 Test gas 56

5.3 Test pressures and burner adjustments 57

5.4 Combustion 58

5.5 Burner and pilot operating characteristics 59

- 5.6 Ignition systems 60
- 5.7 Manually operated gas valves 61
- 5.8 Automatic valve and safety shutoff valves 61
- 5.9 Thermostats 61
- 5.10 Gas appliance pressure regulators 61
- 5.11 Wall, floor, and ceiling temperatures 62
- 5.12 Evaluation of burn hazard potential of exterior surfaces 63
- 5.13 Initial refrigerating performance 66
- 5.14 Performance under tilted conditions 68
- 5.15 Wind tests 68
- 5.16 Appliance structure 69
- 5.17 Marking material adhesion and legibility 69

6 Manufacturing and production tests 70

- Annex A (informative) — Pertinent references to ANSI Y14.15 72
- Annex B (informative) — Wire color designations 73
- Annex C (informative) — Recommended wire color usage 74
- Annex D (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 75
- Annex E (informative) — Table of conversion factors 77

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

| | | |
|-------------------------|--|-------------------|
| B.J. Swiecicki | National Propane Gas Association, Frankfort, Illinois, USA <i>Category: Gas Supplier Interest</i> | <i>Chair</i> |
| M.W. Wilber | Crane Engineering, Plymouth, Minnesota, USA <i>Category: General Interest</i> | <i>Vice-Chair</i> |
| J. Brania | Underwriter's Laboratories, Inc., Melville, New York, USA <i>Category: Research/Testing</i> | |
| M. Deegan | Clearwater Gas System, Clearwater, Florida, USA <i>Category: Government and/or Regulatory Authority</i> | |
| M. Diesch | Lennox International Inc., Carrollton, Texas, USA <i>Category: Producer Interest</i> | |
| J.M. Emmel | Virginia Tech, Blacksburg, Virginia, USA <i>Category: Consumer/User Interest</i> | |
| Z.J. Fraczkowski | Technical Standards & Safety Authority (TSSA), Toronto, Ontario, Canada | <i>Non-Voting</i> |
| G. Gress | International Code Council (ICC), Country Club Hills, Illinois, USA <i>Category: Regulatory/Code Authority</i> | |
| G. Guder | Intertek, Plano, Texas, USA | <i>Alternate</i> |
| J.E. Hohman | EDEMPCO, Ewart, Michigan, USA <i>Category: General Interest</i> | |

| | | |
|----------------------|--|-------------------|
| T.F. Hardin | Underwriters Laboratories Inc., Research Triangle Pk, North Carolina, USA | <i>Alternate</i> |
| D. Hubbard | Intertek Commercial & Electrical, Chagrin Falls, Ohio, USA <i>Category: Research Testing</i> | |
| D.M. Jakobs | Rheem Manufacturing Company Air Conditioning Division, Fort Smith, Arkansas, USA <i>Category: Producer Interest</i> | |
| R.A. Jordan | Consumer Product Safety Commission, Rockville, Maryland, USA | <i>Non-voting</i> |
| G. McPherson | McPherson Propane, Inc., Sturgis, South Dakota, USA <i>Category: Consumer/User Interest</i> | |
| M. Murat | Hearth Patio & Barbecue Association of Canada, Port Sydney, Ontario, Canada | <i>Alternate</i> |
| M. Mustafa | A.O. Smith Corporation, McBee, South Carolina, USA | <i>Alternate</i> |
| F. Myers | PVI Industries LLC, Fort Worth, Texas, USA <i>Category: Producer Interest</i> | |
| A. Papageorge | Southern Company Gas, Atlanta, Georgia, USA <i>Category: Gas Supplier Interest</i> | |
| G.J. Potter | Cambridge Engineering, Chesterfield, Missouri, USA <i>Category: Producer Interest</i> | |
| T. Poulin | A.O. Smith Corporation, Milwaukee, Wisconsin, USA <i>Category: Producer Interest</i> | |
| A. Ranfone | American Gas Association Inc., Washington, District of Columbia, USA <i>Category: Gas Supplier Interest</i> | |

| | | |
|----------------------------|--|-------------------|
| N.W. Rolph | Lochinvar LLC, Lebanon, Tennessee, USA | <i>Alternate</i> |
| I. Sargunam | Bloomington, Indiana, USA <i>Category: General Interest</i> | |
| M. Skierkiewicz | Underwriter's Laboratories, Inc., Melville, New York, USA | <i>Alternate</i> |
| D. Snyder | American Water Heater Company, Johnson City, Tennessee, USA <i>Category: Producer Interest</i> | |
| C. Souhrada | North American Association of Food Equipment Manufacturers, Chicago, Illinois, USA <i>Category: Producer Interest</i> | |
| F.A. Stanonik | Air-Conditioning, Heating, and Refrigeration Institute, Arlington, Virginia, USA | <i>Non-Voting</i> |
| T. Stroud | Hearth Patio & Barbecue Association, Seattle, Washington, USA <i>Category: General Interest</i> | |
| C. Suchovsky | Gas Consultants, Inc, Walton Hills, Ohio, USA <i>Category: General Interest</i> | |
| H. Virgil | Brownsburg, Indiana, USA <i>Category: Consumer/User Interest</i> | |
| A.B. Wagner-Sherwin | St. Louis Community College, St. Louis, Missouri, USA <i>Category: Consumer/User Interest</i> | |
| M.B. Williams | Association of Home Appliance Manufacturers (AHAM), Washington, District of Columbia , , USA <i>Category: Producer Interest</i> | |

L. Willmore

Southern California Gas Company,
Los Angeles, California, USA
Category: Gas Supplier Interest

C. Rake

CSA Group,
Cleveland, Ohio, USA

Project Manager

Z21/CSA Joint Technical Subcommittee on Standards for Gas-Fired Refrigerators and Portable Camping Equipment

| | | |
|-------------------------|--|------------------|
| B. Vandrak | Enerco/Mr. Heater Corporation, Cleveland, Ohio, USA | <i>Chair</i> |
| D. Brand | Thermablaster, Pittsburgh, Pennsylvania, USA | |
| J. Brunner | Copreci de Mexico, Guadalajara, Jalisco, Mexico | |
| T. Bukowski | Weber-Stephen Products Co., Palatine, Illinois, USA | <i>Alternate</i> |
| B. Diel | M.B. Sturgis, Inc., Maryland Heights, Missouri, USA | |
| M. Elrod | Eccotemp Systems, Summerville, South Carolina, USA | |
| Z.J. Fraczkowski | Technical Standards & Safety Authority (TSSA), Toronto, Ontario, Canada | <i>Associate</i> |
| G. Fu | Thermablaster, Pittsburgh, Pennsylvania, USA | <i>Alternate</i> |
| C. Gibbs | Guelph, Ontario, Canada | |
| J.E. Hohman | EDEMPCO, Ewart, Michigan, USA <i>Category: General Interest</i> | |
| D. Hubbard | Intertek Commercial & Electrical, Chagrin Falls, Ohio, USA <i>Category: Research Testing</i> | <i>Alternate</i> |
| P. McConnell | Dometic Corporation, La Grange, Indiana, USA | |

| | | |
|---------------------|---|------------------------|
| P. Petersen | Unique Gas Products Ltd, Oakville, Ontario, Canada | |
| C. Quintana | Norcold, Inc., Sidney, Ohio, USA | |
| M. Scott | Unique Gas Products Ltd, Oakville, Ontario, Canada | <i>Alternate</i> |
| K. Stickley | Norcold, Inc., Sidney, Ohio, USA | <i>Alternate</i> |
| C. Suchovsky | Gas Consultants, Inc, Walton Hills, Ohio, USA | |
| J. Ungvary | Jetboil, inc, Manchester, New Hampshire, USA | |
| M. Walsh | Intertek Testing Services, Cortland, New York, USA | |
| J.R. Willey | Superior Energy Systems, Derby, Kansas, USA | <i>Alternate</i> |
| J. Wooden | J. Wooden Consulting, Huntington Beach, California, USA | |
| W.J. Young | Superior Energy Systems Ltd, Columbia Station, Ohio, USA | |
| C. Bielawski | CSA Group, Cleveland, Ohio, USA | <i>Project Manager</i> |

Preface

This is the fourth edition of ANSI Z21.74 *Standard for Portable refrigerators*. It supersedes the previous editions published in 2014, 1992, and 1983. This Standard was prepared by the Z21/CSA Joint Technical Subcommittee on Standards Gas-Fired Refrigerators and Portable Camping Equipment, under the jurisdiction of the Z21/83 Technical Committee on Performance and Installation of Gas Burning Appliances and Related Accessories and had been formally approved by the Technical Committee and the American National Standards Institute.

Interpretations: The Strategic Steering Committee on Standards for Gas Appliances and Related Accessories 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) 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, 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 shall 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 Standard 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 Standard.*
- 5) *This Standard is subject to review within five years from the date of publication. 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 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 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.csagroup.org.