



**CSA
Group**

ANSI Z21.96-2014 • CSA 11.6-2014

Portable water heaters for outdoor use

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 Z21.96-2014 • CSA 11.6-2014
October 2014

Title: *Portable water heaters for outdoor use*

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

- go to shop.csa.ca
- click on **CSA Update Service**

The **List ID** that you will need to register for updates to this publication is **242226**

If you require assistance, please e-mail techsupport@csagroup.org or call 416-747-2233.

Visit CSA Group's policy on privacy at csagroup.org/legal to find out how we protect your personal information.

ANSI Z21.96-2014 • CSA 11.6-2014
Portable water heaters for
outdoor use



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 26, 2014 by ANSI
Approved on March 10, 2014 by IGAC
Effective in Canada September 1, 2015
Published in October 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
or call toll-free 1-800-463-6727 or 416-747-4044.*

ISBN 978-1-77139-636-6

© 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 (IGAC)	3
Canadian Technical Committee on Gas Appliances and Related Accessories	5
Z21/83 Technical Committee on Performance and Installation of Gas Burning Appliances and Related Accessories	7
Z21/CSA Joint Technical Advisory Group on Standards for Gas-Fired Refrigerators and Portable Cooking Equipment	10
Preface	12
1 Scope	14
2 Reference publications	15
3 Definitions	19
4 Construction	26
4.1 General	26
4.2 Materials	28
4.3 Combustion air supply	30
4.4 Water heater openings	30
4.5 Manually operated gas valves	31
4.6 Burners	32
4.7 Main burner orifices and orifice fitting	33
4.8 Gas pressure regulators	33
4.9 Hose and hose fittings	34
4.10 Flow limiting devices	35
4.11 Guards, grilles and screens	35
4.12 Automatic gas ignition systems	35
4.13 Gas connections	37
4.14 Adjustment of minimum input rating	39
4.15 Water temperature limiting means	40
4.16 Automatic valve and safety shutoff devices	40
4.17 Automatic gas shutoff systems	41
4.18 Relief valves	41
4.19 Electrical equipment and wiring	42
4.20 Instructions	42
4.21 Marking	45
4.22 Electrical diagrams	49
5 Performance	50
5.1 General	50
5.2 Test gases	50
5.3 Test pressures and burner adjustments	51
5.4 Combustion	52

5.5	Burner operating characteristics	53
5.6	Piloted and non-piloted ignition systems	54
5.7	Direct ignition systems	57
5.8	Temperature control	59
5.9	Stability	59
5.10	Temperature limiting devices	60
5.11	Gas valves and carrying handles	61
5.12	Evaluation of clothing ignition potential	61
5.13	Surface temperatures	62
5.14	Permanently attached marking tags	65
5.15	Wall, floor and ceiling temperatures	65
5.16	Wind test	66
5.17	Safety circuit analysis	67
5.18	Hydrostatic test	67
5.19	Rain test	68
5.20	Marking material adhesion and legibility	70

6 Manufacturing and production tests 71

Annex A (Normative)	— Items unique to the United States	73
Annex B (Normative)	— Items unique to Canada	84
Annex C (Informative)	— Pertinent references to ANSI Y14.15	88
Annex D (Informative)	— Wire color designations	89
Annex E (Informative)	— Recommended wire color usage	90
Annex F (Informative)	— Preferred graphic symbols of commonly used items, extracted from standards ANSI/IEEE 315, Graphic symbols for electrical and electronics diagrams, and abbreviations for these items	91
Annex G (Informative)	— Table of conversion factors	93

Interprovincial Gas Advisory Council (IGAC)

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

J. Melling	SaskPower, Saskatoon, Saskatchewan, Canada	<i>Alternate</i>
B.W. Reid	Department of Environment, Energy and Forestry, Charlottetown, Prince Edward Island, Canada	
G. Tremblett	Service NL, Newfoundland & Labrador, St. John's, Newfoundland and Labrador, Canada	<i>Alternate</i>
C. Valliere	Alberta Municipal Affairs Safety Services, Edmonton, Alberta, Canada	<i>Alternate</i>
M. Wani	Government of Nunavut Dept of Community & Government Svcs, Nunavut, Northwest Territories, Canada	
D. Young	Yukon Government, Whitehorse, Yukon, Canada	
B. Zinn	British Columbia Safety Authority (BCSA), Coquitlam, British Columbia, Canada	<i>Alternate</i>

Canadian Technical Committee on Gas Appliances and Related Accessories

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

D.R. Jamieson	GHP Group Inc, Oakville, Ontario, Canada <i>Category: Producer Interest</i>	
C.E. Jorgenson	British Columbia Safety Authority (BCSA), New Westminster, British Columbia, Canada <i>Category: Government and/or Regulatory Authority</i>	
S. Katz	S. Katz and Associates Inc., North Vancouver, British Columbia, Canada	<i>Associate</i>
J.R. Marshall	Technical Standards & Safety Authority (TSSA), Toronto, Ontario, Canada	<i>Associate</i>
J. Melling	SaskPower, Saskatoon, Saskatchewan, Canada	<i>Associate</i>
J. Overall	Union Gas Limited, Toronto, Ontario, Canada	<i>Associate</i>
T.W. Poulin	A.O. Smith Enterprises Ltd., Fergus, Ontario, Canada <i>Category: Producer Interest</i>	
G.B. Prociw	Union Gas Limited, Chatham, Ontario, Canada <i>Category: User Interest</i>	
E. Scott	British Columbia Safety Authority (BCSA), New Westminster, British Columbia, Canada	<i>Associate</i>
B.J. Swiecicki	National Propane Gas Association, Frankfort, Illinois, USA	<i>Associate</i>
M. Thomas	Natural Resources Canada CANMET Energy, Ottawa, Ontario, Canada	<i>Associate</i>
C.L. Ralston	CSA Group, Cleveland, Ohio, USA	<i>Project Manager</i>
M. Khan	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.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>
C.W. Adams	A.O. Smith Corporation, Milwaukee, Wisconsin, USA <i>Category: Producer Interest</i>	
S.R. Caudle	Southern California Gas Company, Los Angeles, California, USA	<i>Alternate</i>
M. Deegan	Clearwater Gas System, Clearwater, Florida, USA <i>Category: Government and/or Regulatory Authority</i>	
L. De Laura	Sempra Energy Utility, Los Angeles, California, USA <i>Category: Gas Supplier Interest</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>Associate</i>
R.R. Frazier	ATMOS Energy, Arlington, Texas, USA <i>Category: Gas Supplier Interest</i>	

T.F. Hardin	Underwriters Laboratories Inc., Research Triangle Pk, North Carolina, USA	<i>Alternate</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>
F. Myers	PVI Industries LLC, Fort Worth, Texas, USA <i>Category: Producer Interest</i>	
G.J. Potter	Heater Technologies, LLC, Marthasville, Missouri, USA <i>Category: Producer Interest</i>	
J.A. Ranfone	American Gas Association Inc., Washington, District of Columbia, USA <i>Category: Producer Interest</i>	
N.W. Rolph	Lochinvar LLC, Lebanon, Tennessee, USA	<i>Alternate</i>
G.A. Ruzicka	Lowe's Companies, Inc, Mooresville, North Carolina, USA <i>Category: User Interest</i>	
I. Sargunam	Bloomington, Indiana, USA <i>Category: General 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	Burner Technology Unlimited, Inc, Walton Hills, Ohio, USA <i>Category: General Interest</i>	
D.W. Switzer	Consumer Product Safety Commission, Rockville, Maryland, USA	<i>Non-Voting</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>	
R. Wozniak	Underwriters Laboratories Inc., Melville, New York, USA <i>Category: Research/Testing</i>	
C.L. Rake	CSA Group, Cleveland, Ohio, USA	<i>Project Manager</i>
S.M. Corcoran	CSA Group, Cleveland, Ohio, USA	<i>Project Manager</i>

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

R. Young	Superior Energy Systems Ltd., Columbia Station, Ohio, USA	<i>Chair</i>
R. Bruin	Weber-Stephen Products Company, Palatine, Illinois, USA	<i>Alternate</i>
T. Bukowski	Weber-Stephen Products Co., Palatine, Illinois, USA	<i>Alternate</i>
C.V. Childers	Weber-Stephen Products LLC, Palatine, Illinois, USA	
P. Dinsmore	The Coleman Company Inc., Wichita, Kansas, USA	
C. Falco	The Brinkmann Corporation, Dallas, Texas, USA	<i>Alternate</i>
A. Gafford	Char-Broil, LLC, Columbus, Georgia, USA	<i>Alternate</i>
C. Gibbs	Guelph, Ontario, Canada	
C. Hoskins	Norcold, Inc., Sidney, Ohio, USA	<i>Alternate</i>
J.P. Jollay	Char-Broil, LLC, Columbus, Georgia, USA	
R. May	The Brinkmann Corporation, Dallas, Texas, USA	
D. Perkins	Norcold, Inc., Sidney, Ohio, USA	
P. Petersen	Unique Gas Products Ltd., Oakville, Ontario, Canada	

M. Scott	Unique Gas Products Ltd., Oakville, Ontario, Canada	<i>Alternate</i>
C. Suchovsky	Burner Technology Unlimited, Inc., Walton Hills, Ohio, USA	
B. Vandrak	Enerco/Mr. Heater Corporation, Cleveland, Ohio, USA	
J.R. Willey	Superior Energy Systems, Derby, Kansas, USA	<i>Alternate</i>
R. Wozniak	Underwriters Laboratories Inc., Melville, New York, USA	<i>Alternate</i>
C. Bielawski	CSA Group, Cleveland, Ohio, USA	<i>Project Manager</i>

Preface

This is the first edition of ANSI Z21.96 • CSA 11.6, *Portable water heaters for outdoor use*. This Standard was prepared by the Z21/CSA Joint Technical Advisory Group on Standards Gas-Fired Refrigerators and Portable Camping Equipment, under the jurisdiction of the Technical Committee on Performance and Installation of Gas Burning Appliances and Related Accessories and the Strategic Steering Committee on Standards for Gas Appliances and Related Accessories and had been formally approved by the Z21/83 and CSA Technical Committees 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’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. (Standard for use of the International System of Units (SI): The Modern Metric System, IEEE/ASTM SI 10 or ISO 80000-1:2009 Quantities and units– Part 1: General are 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 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 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 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.csa.ca.

History of the development of the Standard for Portable water heaters for outdoor use

This Standard combines the applicable sections from the Standard for Portable Type Camp Heaters, ANSI Z21.63/CSA 11.3 and the Standard for Water Heaters, Volume III ANSI Z21.10.3/CSA 4.3. The Standard for Portable Water Heaters for Outdoor Use, ANSI Z21.96/CSA 11.6 addresses construction and performance requirements related to the portable nature of the product including the use of portable gas cylinders and the water heating feature.

At the April 2005 CSA TC/Z21/83 Meeting it was noted that the Z21/CSA Joint Technical Advisory Group (TAG) on Standards for Refrigerators and Camping Equipment supported a request from CSA International to ask the Committees to approve the development of a new harmonized standard. The proposed standard would be based on CSA International Requirement 3.03 U.S. (Technical Information Letter C-33).

During its September 12, 2006 meeting, the Z21/CSA Joint Technical Advisory Group on Standards for Gas-Fired Refrigerators and Portable Camping Equipment agreed to distribute the draft Standard for Portable Water Heaters for Outdoor Use for review and comment during November 2006.

Following reconsideration and modification of this draft standard in the light of comments received, the Z21/CSA Joint Technical Advisory Group on Standards for Gas-Fired Refrigerators and Portable Camping Equipment recommended the draft Standard to the CSA Technical Committee and the Z21/83 Technical Committee during its July 19, 2012 meeting.

By letter ballot the Z21/83 Technical Committee approved the draft Standard for Portable Water Heaters for Outdoor Use November 7, 2013 and the CSA Technical Committee approved the draft Standard for Portable Water Heaters for Outdoor Use January 6, 2014.

This, the first edition of the standard for Portable Water Heaters for Outdoor Use was approved by the American National Standards Institute, Inc., on February 26, 2014 and by the Canadian Interprovincial Gas Advisory Council on March 10, 2014.

ANSI Z21.96-2014 • CSA 11.6-2014

Portable water heaters for outdoor use

1 Scope

1.1

This Standard applies to portable type gas water heaters (herein after referred to as appliance or water heater) for use with propane, butane, or liquefied petroleum gases and mixtures thereof having:

- a) a regulated pressure;
- b) a non-regulated pressure.

1.2

Portable type water heaters and components employing materials or having forms of construction differing from those detailed in these provisions may be examined and tested according to the intent of the provisions, and if found to be satisfactorily equivalent, may be given recognition.

1.3

This Standard applies to portable water heaters constructed entirely of new, unused parts.

1.4

All references to psi throughout this Standard are to be considered gauge pressures unless otherwise specified.

1.5

All accessories recommended by the manufacturer for use with appliances certified to this standard shall be supplied and with the appliance.

1.6

A portable camping water heater is:

- a) for point of use (dishwashing, washing, showering, etc.) supply of either potable or non-potable hot water.
- b) not for permanent connection to inlet or outlet water lines.
- c) only intended for use outdoors and no connections may be provided for venting of flue products via a chimney or vent system.

1.7

The water heater may be:

- a) a tank type,
- b) automatic storage type,
- c) water-tube type,
- d) instantaneous type or
- e) multifunction design such as an instantaneous-tube type (see Clause 3, Definitions).

1.8

Portable water heaters are limited to a maximum input of 30,000 BTU/Hr.