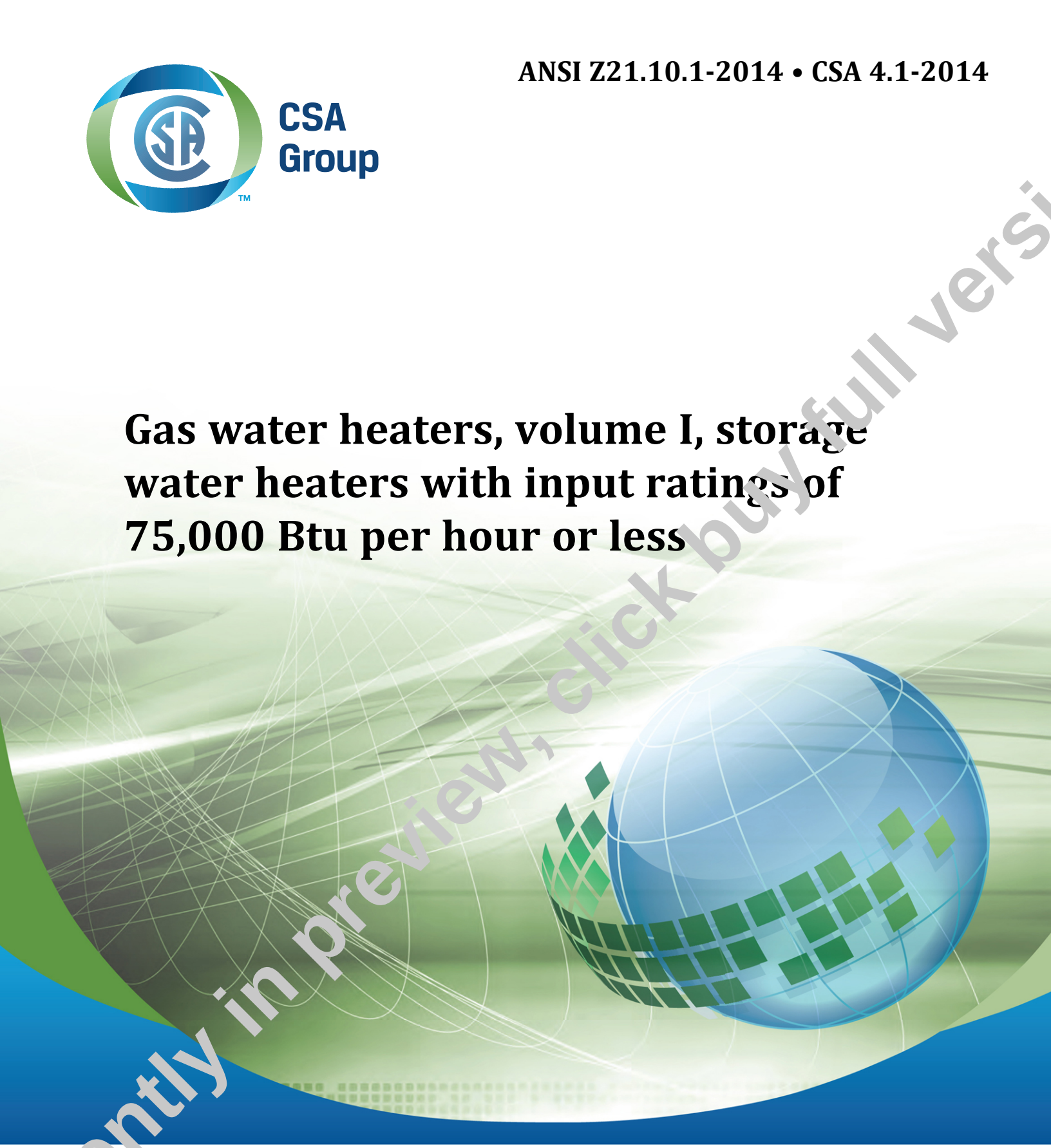
ANSI Z21.10.1-2014 • CSA 4.1-2014

CSA Group

Gas water heaters, volume I, storage water heaters with input ratings of 75,000 Btu per hour or less



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ANSI Z21.10.1-2014 • CSA 4.1-2014, Gas water heaters, volume I, storage water heaters with input ratings of 75,000 Btu per hour or less

Revision from previous edition	Revision symbol (in margin)
Clauses 3, 4.1.24, 4.24, 4.33.2, 4.34.11, 4.34.28, 5.1.17, 5.2, 5.6, 5.32, and 5.39 Tables 2-A, 2-B, and 12	Δ

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Gas water heaters, volume I, storage water heaters with input ratings of 75,000 Btu per hour or less

American National Standards Institute, Inc.

International Gas Advisory Council

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Preface

This is the sixth edition of ANSI Z21.10.1-2014 • CSA 4.1-2014, *Gas water heaters, volume I, storage water heaters with input ratings of 75,000 Btu per hour or less*.

This Standard was prepared by the Z21/CSA Joint Technical Advisory Group on Standards for Gas-Fired Water Heaters 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 had 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 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.*

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7) *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 standards for Gas water heaters, volume I, storage water heaters with input ratings of 75,000 Btu per hour or less

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. 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 draft harmonized standard was based on current coverage from the American National Standard for Gas Water Heaters, Volume I, storage Water Heaters with Input Rating of 75,000 Btu Per Hour or Less, ANSI Z21.10.1-1993 and Addenda Z21.10.1a-1994, Z21.10.1b-1994, Z21.10.1c-1996 and the Canadian Standard for Gas-Fired Automatic Storage Type Water Heaters with Inputs Less than 75,000 Btuh, CAN1-4.1-M85. The draft was subsequently issued for public review and comment during March 1996.

Following reconsideration and modification of the proposed draft standard, in light of comments received, the joint water heater subcommittee, at its July 24-25, 1996 meeting, recommended the proposed draft to the Z21 Committee and the CGA Standards Steering Committee for approval.

The proposed draft of the harmonized standard for gas water heaters, volume I, storage water heaters with input ratings of 75,000 Btu per Hour or Less, as modified by the joint subcommittee at its meeting of July 24-25, 1996, was approved by the Z21/83 Committee by at its April 17, 1997 meeting and by the CGA Standards Steering Committee on May 6, 1997.

The first edition of the harmonized Z21/CSA Standard for Gas Water Heaters, Volume I, Storage Water Heaters With Input Ratings Of 75,000 Btu Per Hour Or Less, was approved by the Canadian Interprovincial Gas Advisory Council in September 10, 1997 and by the American National Standards Institute Inc. on March 3, 1998.

The second edition of the harmonized Z21/CSA Standard for Gas Water Heaters, Volume I, Storage Water Heaters With Input Ratings Of 75,000 Btu Per Hour Or Less, was approved by the Canadian Interprovincial Gas Advisory Council in August 1, 2001 and by the American National Standards Institute Inc. on December 20, 2001.

The third edition of the harmonized Z21/CSA Standard for Gas Water Heaters, Volume I, Storage Water Heaters With Input Ratings Of 75,000 Btu Per Hour Or Less, was approved by the Canadian Interprovincial Gas Advisory Council in May 18, 2004 and by the American National Standards Institute Inc. on July 2, 2004.

The fourth edition of the harmonized Z21/CSA Standard for Gas Water Heaters, Volume I, Storage Water Heaters With Input Ratings Of 75,000 Btu Per Hour Or Less, was approved by the Canadian Interprovincial Gas Advisory Council on January 15, 2009 and by the American National Standards Institute Inc. on June 20, 2008.

The fifth edition of the harmonized Z21/CSA Standard for Gas Water Heaters, Volume I, Storage Water Heaters With Input Ratings Of 75,000 Btu Per Hour Or Less, was approved by the Canadian

Interprovincial Gas Advisory Council on February 25, 2013 and by the American National Standards Institute Inc. on January 10, 2013.

This, the sixth edition of the harmonized Z21/CSA Standard for Gas Water Heaters, Volume I, Storage Water Heaters With Input Ratings Of 75,000 Btu Per Hour Or Less, was approved by the Canadian Interprovincial Gas Advisory Council on November 26, 2014 and by the American National Standards Institute Inc. on August 15, 2014.

The previous editions of the Standard for Gas Water Heaters, Volume I, Storage Water Heaters With Input Ratings Of 75,000 Btu Per Hour Or Less, and addenda thereto, approved by the Interprovincial Gas Advisory Council and American National Standards Institute, Inc. are as follows:

Z21.10.1-1998 • CSA 4.1-M98
Z21.10.1a-2000 • CSA 4.1a-2000
Z21.10.1b-2000 • CSA 4.1b-2000

Z21.10.1-2004 • CSA 4.1-2004
Z21.10.1a-2006 • CSA 4.1a-2006
Z21.10.1b-2006 • CSA 4.1b-2006

Z21.10.1-2001 • CSA 4.1-2001
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Z21.10.1b-2011 • CSA 4.1b-2011

Z21.10.1–2013 • CSA 4.1–2013

Z21.10.1–2014 • CSA 4.1–2014

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

ANSI Z21.10.1–2014 • CSA 4.1–2014:

Note: *This edition of Z21.10.1 • CSA 4.1 incorporates changes to the 2013 edition of Z21.10.1 • CSA 4.1. Changes are denoted by a delta in the margin.*

ANSI Z21.10.1-2014 • CSA 4.1-2014
Gas water heaters, volume I, storage water heaters with input ratings of 75,000 Btu per hour or less

1 Scope

1.1

This Standard applies to newly produced, automatic storage water heaters having input ratings of 75,000 Btu/hr (21 980 W) or less (see Clause 3, Definitions), hereinafter referred to as water heaters or appliances, constructed entirely of new, unused parts and materials:

a) for use with natural gas;
b) for use with manufactured gas;
c) for use with mixed gas;
d) for use with liquefied petroleum gases;
e) for use with LP gas-air mixtures;
f) for recreational vehicle installation for use with liquefied petroleum gases only (see Clause 4.1.26);
g) for manufactured home (mobile home) installation convertible for use with natural gas and liquefied petroleum gases when provision is made for the simple conversion from one gas to the other (see Clause 4.1.25);
h) for recreational vehicle installation convertible for use with natural gas and liquefied petroleum gases when provision is made for the simple conversion from one gas to the other (see Clause 4.1.26); and
i) for use with combination potable water/space heating applications (see Clause 4.1.29 and Clause 3, Definitions).

1.2

This Standard also applies to water heaters incorporating heat pipe heat exchangers (see Clause 4.4, Heat pipe heat exchangers).

1.3

Direct vent water heaters anticipated by this Standard are essentially balanced flue appliances with the air intake and vent outlet in close proximity. Other designs are to be subjected to such additional tests as believed necessary at the discretion of the testing agency.

1.4

Water heaters for installation in recreational vehicles are to be of the direct vent type.

1.5

This Standard also applies to water heaters with draft hoods which are factory-equipped with automatic vent damper devices (see Clause 3, Definitions), hereinafter referred to as vent damper devices.