

**Canadian Supplement to
AAMA/WDMA/CSA 101/I.S.2/A440,
NAFS — North American Fenestration
Standard/Specification for windows,
doors, and skylights**



Currently in preview, click buy full version

Legal Notice

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. The American Architectural Manufacturers Association (AAMA), the Window & Door Manufacturers Association (WDMA), and the Canadian Standards Association (CSA) do not warrant the accuracy, completeness, or currency of any of the information published in this document. AAMA, WDMA, and CSA make no representations or warranties regarding this document's compliance with any applicable statute, rule, or regulation.

IN NO EVENT SHALL AAMA, WDMA, and CSA, THEIR 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 AAMA, WDMA, AND CSA HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, INJURY, LOSS, COSTS, OR EXPENSES.

In publishing and making this document available, AAMA, WDMA, and CSA are 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 AAMA, WDMA, and CSA accept no responsibility whatsoever arising in any way from any and all use of or reliance on the information contained in this document.

Intellectual property rights and ownership

As between AAMA, WDMA, and CSA and the user of this document (whether it be in printed or electronic form), AAMA, WDMA, and CSA are the owners 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. The unauthorized use, modification, copying, or disclosure of this document may violate laws that protect the intellectual property of AAMA, WDMA, and CSA and may give rise to a right in AAMA, WDMA, and CSA to seek legal redress for such use, modification, copying, or disclosure. AAMA, WDMA, and CSA reserve all intellectual property rights in this document.

Patent rights

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. AAMA, WDMA, and CSA shall not be held responsible for identifying any or all such patent rights. Users of this document are expressly advised that determination of the validity of any such patent rights is entirely their own responsibility.

Use of this document

If you do not agree with any of the terms and conditions contained in this Legal Notice, you may not use this document. Use of this document constitutes your acceptance of the terms and conditions of this Legal Notice.

CSA Standards Update Service

A440S1-09

July 2009

Title: *Canadian Supplement to AAMA/WDMA/CSA 101/I.S.2/A440, NAFS — North American Fenestration Standard/Specification for windows, doors and skylights*

Pagination: **58 pages** (vii preliminary and 51 text), each dated **July 2009**

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

- go to **www.ShopCSA.ca**
- click on **E-mail Services** under **MY ACCOUNT**
- click on **CSA Standards Update Service**

The **List ID** that you will need to register for updates to this publication is **2019692**.

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

Visit CSA's policy on privacy at www.csa.ca/legals/privacy to find out how we protect your personal information.

Currently in preview, click buy full version

CSA Special Publication

A440S1-09
Canadian Supplement to
AAMA/WDMA/CSA 101/I.S.2/A440,
NAFS — North American Fenestration
Standard/Specification for windows,
doors, and skylights



**CANADIAN STANDARDS
ASSOCIATION**

®Registered trade-mark of Canadian Standards Association

Published in July 2009 by Canadian Standards Association
A not-for-profit private sector organization
5060 Spectrum Way, Suite 100, Mississauga, Ontario, Canada L4W 5N6
1-800-463-6727 • 416-747-4044

Visit our Online Store at www.ShopCSA.ca



The Canadian Standards Association (CSA) prints its publications on Rolland Enviro100, which contains 100% recycled post-consumer fibre, is EcoLogo and Processed Chlorine Free certified, and was manufactured using biogas energy.

To purchase CSA Standards and related publications, visit CSA's Online Store at www.ShopCSA.ca or call toll free 1-800-463-6727 or 416-747-4044.

ISBN 978-1-55491-271-1

Technical Editor: Vanessa Mitchell

© Canadian Standards Association — 2009

All rights reserved. No part of this publication may be reproduced in any form whatsoever without the prior permission of the publisher.

Contents

Technical Committee on Performance Standards for Windows *iv*

Preface *vii*

1 Scope 1

2 Reference publications 1

3 Definitions 2

4 Loads and product selection 3

- 4.1 Reference climate loads 3
- 4.2 Calculation of specified loads 3
 - 4.2.1 Calculation of specified DRWP 3
 - 4.2.2 Calculation of specified wind load 7
 - 4.2.3 Importance factor for driving rain and wind 10
 - 4.2.4 Calculation of specified snow load 12
- 4.3 Calculation of design pressure 12
- 4.4 Product selection 12

5 Performance requirements 13

- 5.1 Insect screen serviceability test 13
- 5.2 Operating force requirements 13
- 5.3 Air leakage performance 13
- 5.4 Water penetration resistance test 13

6 Prescriptive requirements 13

- 6.1 Steel 13
 - 6.1.1 Steel door facings 13
 - 6.1.2 Steel door frames 14
 - 6.1.3 Sashes and frames for steel windows, doors, and unit skylights 14
- 6.2 Aluminum 14
- 6.3 Lock blocks 14
- 6.4 Markings 14
 - 6.4.1 Product manufacturer 14
 - 6.4.2 Performance rating 14

Annexes

A (informative) — Information on clauses in AAMA/WDMA/CSA 101/I.S.2/A440S1 15

B (informative) — Information on clauses in AAMA/WDMA/CSA 101/I.S.2/A440 44

Tables

- 1** — Specified DRWP (p_r) for open terrain 5
- 2** — Specified DRWP (p_r) for rough terrain 6
- 3** — Specified wind load (p) for windows, doors, and positive loads on unit skylights — Open terrain 8
- 4** — Specified wind load (p) for windows, doors, and positive loads on unit skylights — Rough terrain 9
- 5** — Specified wind load (p) for negative loads on unit skylights — Open terrain 10
- 6** — Specified wind load (p) for negative loads on unit skylights — Rough terrain 11

Technical Committee on Performance Standards for Windows

G.J. Blad	Loewen Windows, Steinbach, Manitoba	<i>Chair</i>
J. Baker	WESTlab Canada, Penetang, Ontario	<i>Vice-Chair</i>
J.C. Krahn	Marvin Windows & Doors, Warroad, Minnesota, USA	<i>Vice-Chair</i>
E. Alkhoury	Canadian Building Envelope Science and Technology (CAN-BEST), Brampton, Ontario	
T. Bascus	Window City Industries, Vaughan, Ontario	<i>Associate</i>
B. Breen	Golden Windows Limited, Kitchener, Ontario	<i>Associate</i>
K. Brenden	American Architectural Manufacturers Association, Schaumburg, Illinois, USA	<i>Associate</i>
G.C. Casselman	Casselman and Associates, Oshawa, Ontario	
A. Chown	Canadian Manufactured Housing Institute, Ottawa, Ontario	<i>Associate</i>
M. Diallo	CSA International, Toronto, Ontario	<i>Associate</i>
J.D. Dunn	Dunn & Associates Consultants, Toronto, Ontario	
M. Durham	Sika Canada Inc., Kitchener, Ontario	<i>Associate</i>
H. Elmahdy	National Research Council Canada, Ottawa, Ontario	
D. Fe...	Veka Canada, Edmonton, Alberta	<i>Associate</i>
D. Friesen	Dan Friesen Consulting Limited, Winnipeg, Manitoba	

F. Fulton	Fultech Fenestration Consulting, Guelph, Ontario	
M. Glover	Ecotay Inc., Perth, Ontario	
J. Grandoni	Royal Window and Door Profiles, Woodbridge, Ontario	<i>Associate</i>
E. Grzesik	Ontario Ministry of Energy, Toronto, Ontario	
K. Habib	CSA International, Edmonton, Alberta	<i>Associate</i>
M. Hanam	Enermodal Engineering Limited, Kitchener, Ontario	
J.A. Hayden	Pella Corporation, Pella, Iowa, USA	<i>Associate</i>
G. Hildebrand	Trow Associates Inc., Brampton, Ontario	
S. Hopwood	Natural Resources Canada, Ottawa, Ontario	<i>Associate</i>
B. Hubbs	RDH Building Engineering Limited, Vancouver, British Columbia	
G.B. Hughes	Lifestyle Windows Inc., Aurora, Ontario	
A. Jaugelis	Innotech Windows & Doors Inc., Abbotsford, British Columbia	<i>Associate</i>
V. Jones	Intertek, Mississauga, Ontario	<i>Associate</i>
R. Jutras	Parerude-Trempe Inc., Lamontville, Québec	
D. Kerr	Kerr Associates Technology Transfer, Sutton West, Ontario	
A.M.J. Lakshmi	Westech Building Products, Calgary, Alberta	<i>Associate</i>
H. Laur	Laur Coating Developments Ltd., Barrie, Ontario	
P. Lesque	P.H. Tech Inc., Lévis, Québec	
W. Lichtenberger	Truseal Technologies Ltd., Hamilton, Ontario	<i>Associate</i>

F. Lohmann	National Research Council Canada, Ottawa, Ontario	
J. Marois	Royal Window & Door Profiles, Lachenaie, Québec	
D. McDonald	Dashwood Industries Ltd., Centralia, Ontario	<i>Associate</i>
R. Perry	Window and Door Manufacturers Association, Des Plaines, Illinois, USA	<i>Associate</i>
E. Pivniceru	REHAU Industries Inc., Burlington, Ontario	<i>Associate</i>
D.T. Prohaska	D.T. Prohaska Engineering, Richmond Hill, Ontario	
S. Schreiber	Masonite International, Dickson, Tennessee, USA	<i>Associate</i>
J. Singh	Allan Windows Inc., Concord, Ontario	<i>Associate</i>
J.P. Spadaro	Flynn Canada Ltd., Vaughan, Ontario	
L. Szczepanski	Alumicor Ltd., Toronto, Ontario	<i>Associate</i>
P. Wake	Omniglass Ltd., Toronto, Ontario	<i>Associate</i>
S. Walker	All Weather Windows Ltd., Mississauga, Ontario	<i>Associate</i>
V.A. Mitchell	Canadian Standards Association, Mississauga, Ontario	<i>Project Manager</i>

Preface

This is the second edition of A440S1, *Canadian Supplement to AAMA/WDMA/CSA 101/I.S.2/A440*, NAFS — North American Fenestration Standard/Specification for windows, doors, and skylights. It supersedes the first edition, published in 2007 under the title *Canadian Supplement to AAMA/WDMA/CSA 101/I.S.2/A440-05*, Standard/Specification for windows, doors, and skylights. This Supplement provides additional requirements to AAMA/WDMA/CSA 101/I.S.2/A440 and also incorporates information from CAN/CSA Special Publication A440.1.

This Supplement was developed co-operatively by AAMA, WDMA, and CSA. The requirements set forth in this Supplement are additional requirements to AAMA/WDMA/CSA 101/I.S.2/A440 and are applicable to Canada only. Canadian requirements were deemed necessary to establish loads and procedures and to ensure accepted minimum levels of performance.

Additional information on the requirements in this Supplement is provided in [Annex A](#). In addition, [Annex B](#) provides explanatory information on the tests and requirements in AAMA/WDMA/CSA 101/I.S.2/A440.

This Supplement is considered suitable for use for conformity assessment within the stated scope of the Supplement.

This Supplement was prepared by the Technical Committee on Performance Standards for Windows, under the jurisdiction of the Strategic Steering Committee on Building Products and Systems, and has been formally approved by the Technical Committee.

July 2009

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) CSA Standards are subject to periodic review, and suggestions for their improvement will be referred to the appropriate committee.
- (5) All enquiries regarding this Standard, including requests for interpretation, should be addressed to Canadian Standards Association, 5060 Spectrum Way, Suite 100, Mississauga, Ontario, Canada L4W 5N6.
Requests for interpretation should
 - (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) be phrased where possible to permit a specific “yes” or “no” answer.

Committee interpretations are processed in accordance with the CSA Directives and guidelines governing standardization and are published in CSA's periodical Info Update, which is available on the CSA Web site at www.csa.ca.

A440S1-09

Canadian Supplement to AAMA/WDMA/CSA 101/I.S.2/A440, NAFS — North American Fenestration Standard/ Specification for windows, doors, and skylights

1 Scope

1.1

This Supplement is for use in conjunction with AAMA/WDMA/CSA 101/I.S.2/A440 and contains additional requirements for Canada.

1.2

In CSA publications, “shall” is used to express a requirement, i.e., a provision that the user is obliged to satisfy in order to comply with the publication; “should” is used to express a recommendation or that which is advised but not required; “may” is used to express an option or that which is permissible within the limits of the publication; and “can” is used to express possibility or capability. Notes accompanying clauses do not include requirements or alternative requirements; the purpose of a note accompanying a clause is to separate from the text explanatory or informative material. Notes to tables and figures are considered part of the table or figure and may be written as requirements. Annexes are designated normative (mandatory) or informative (non-mandatory) to define their application.

2 Reference publications

This Supplement refers to the following publications, and where such reference is made, it shall be to the edition listed below, including all amendments published thereto.

CSA (Canadian Standards Association)

AAMA/WDMA/CSA 101/I.S.2/A440-08

NAFS — North American Fenestration Standard/Specification for windows, doors, and skylights

CAN/CSA-A440-00/Special Publication A440.1-00 (R2005)

Windows/User selection guide to CSA Standard CAN/CSA-A440-00, Windows

A440.2/A440.3 (under development)

Fenestration energy performance/User guide to CSA A440.2, Fenestration energy performance

ANSI (American National Standards Institute)

Z97.1-2004

Safety Glazing Materials Used in Buildings — Safety Performance Specifications and Methods of Test