



**CSA
Group**

Z11-12

Portable ladders

Currently in preview, click buy full version

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 content, 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, 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 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 format.

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.



Standards Update Service

Z11-12

August 2012

Title: *Portable ladders*

Pagination: **60 pages** (xi preliminary and 51 text), each dated **August 2012**

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 **2421909**.

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.

Currently in preview, click buy full version

Z11-12
Portable ladders



**CSA
Group**

™A trademark of the Canadian Standards Association, operating as "CSA Group"

*Published in August 2012 by CSA Group
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 shop.csa.ca



CSA Group 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 standards and related publications, visit our Online Store at shop.csa.ca or call toll-free 1-800-461-6727 or 416-747-4044.

ISSN 1978-1-55491-954-3

© 2012 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

Technical Committee on Portable Ladders *vii*

Preface *ix*

1 Scope 1

2 Reference publications 2

3 Definitions 2

4 Classifications 4

5 General requirements 4

- 5.1 General 4
- 5.2 Tolerances 4
- 5.3 Corrosion resistance 4
- 5.4 Side rail flare 4
- 5.5 Rungs and steps 4
- 5.6 Hardware 5
- 5.7 Fasteners 5

6 Detailed design requirements 5

- 6.1 Single and extension ladders 5
 - 6.1.1 Single ladder length 5
 - 6.1.2 Extension ladder length 5
 - 6.1.3 Slope 6
 - 6.1.4 Single ladder width 6
 - 6.1.5 Extension ladder width 6
 - 6.1.6 Step and rung spacing 6
 - 6.1.7 Overlap-extension ladders 6
 - 6.1.8 Extension locking device 7
 - 6.1.9 Missing rung 7
 - 6.1.10 Rope and pulley 7
 - 6.1.11 Feet 7
 - 6.1.12 End caps and end closures 7
- 6.2 Step ladders 8
 - 6.2.1 Step ladder length 8
 - 6.2.2 Slope 8
 - 6.2.3 Width and flare 8
 - 6.2.4 Step spacing 8
 - 6.2.5 Step width 8
 - 6.2.6 Bucket shelves 8
 - 6.2.7 Back section 8
 - 6.2.8 Spreaders 9
 - 6.2.9 Feet 9
- 6.3 Trestle and extension trestle ladders 9
 - 6.3.1 Trestle ladder length 9
 - 6.3.2 Extension trestle ladder length 9
 - 6.3.3 Width and flare 9
 - 6.3.4 Base flare 9
 - 6.3.5 Step and rung spacing 9

6.3.6	Overlap	9
6.3.7	Extension locking device	10
6.3.8	Spreaders	10
6.3.9	Feet	10
6.3.10	End caps and end closures	10
6.4	Step stools	10
6.4.1	Step stool length	10
6.4.2	Slope	10
6.4.3	Width and flare	10
6.4.4	Step spacing	10
6.4.5	Step width	10
6.4.6	Back section	11
6.4.7	Top cap	11
6.4.8	Spreaders	11
6.4.9	Feet	11
6.5	Platform ladders and small platform ladders	11
6.5.1	Length	11
6.5.2	Slope	11
6.5.3	Width and flare	11
6.5.4	Step and rung spacing	12
6.5.5	Platform	12
6.5.6	Top rail	12
6.5.7	Spreaders	12
6.5.8	Feet	12
6.6	Combination ladders	12
6.6.1	Combination ladder length	12
6.6.2	Slope	13
6.6.3	Width and flare	13
6.6.4	Steps and rungs	13
6.6.5	Step width	13
6.6.6	Bucket shelves	13
6.6.7	Spreaders	13
6.6.8	Stops	13
6.6.9	Hinges	14
6.6.10	Feet	14
6.6.11	End caps	14
6.6.12	Overlap	14
7	Performance requirements	14
7.1	Single, extension and combination ladders	14
7.1.1	Horizontal bend test	14
7.1.2	Deflection and twist test	14
7.1.3	Hardware load test	14
7.1.4	Rung to rail shear test	14
7.1.5	Rung bending test	15
7.1.6	Rung torque test	15
7.1.7	Side-sway test	15
7.1.8	Side rail cantilever bending test	15
7.2	Step, trestle, extension trestle, platform, step stool, and combination ladders	15
7.2.1	Compression test	15
7.2.2	Side rail bending test	15
7.2.3	Step, platform, stool bending test	15
7.2.4	Step-to-side shear strength test	16
7.2.5	Bucket shelf test	16

- 7.2.6 Stability test 16
- 7.2.7 Torsional stability test 16
- 7.2.8 Front rail and rear rail cantilever bending test 16
- 7.2.9 Step ladder racking test 16

8 Test procedure 16

- 8.1 General 16
- 8.2 Single, extension, and combination ladders 17
 - 8.2.1 Horizontal bend test 17
 - 8.2.2 Deflection and twist test 17
 - 8.2.3 Hardware load test 18
 - 8.2.4 Rung-to-rail shear test 18
 - 8.2.5 Rung bending test 18
 - 8.2.6 Rung torque test 18
 - 8.2.7 Sideway test 19
 - 8.2.8 Side rail cantilever bending tests 19
- 8.3 Step, trestle, extension trestle, platform, step stool, and combination ladders 19
 - 8.3.1 Compression test 19
 - 8.3.2 Side rail bending test 20
 - 8.3.3 Steps, platforms, stool caps 20
 - 8.3.4 Step-to-side rail shear strength test 20
 - 8.3.5 Bucket shelf test 20
 - 8.3.6 Stability test 20
 - 8.3.7 Torsional stability test 21
 - 8.3.8 Front rail and rear rail cantilever bending test 21
 - 8.3.9 Step ladder racking test 22

9 Marking 22

10 Selection, care, and use of portable ladders 26

- 10.1 General 26
- 10.2 Ladder selection 26
 - 10.2.1 General 26
 - 10.2.2 Product information 27
 - 10.2.3 Self-supporting vs. non-self-supporting ladders 27
 - 10.2.4 Two-person ladders 27
- 10.3 Care 27
 - 10.3.1 Inspection 27
 - 10.3.2 Damaged ladders 28
 - 10.3.3 Proper handling 28
 - 10.3.4 Transporting 28
 - 10.3.5 Storage 29
 - 10.3.6 Maintenance 29
- 10.4 Ladder use 29
 - 10.4.1 General 29
 - 10.4.2 Climbing and working locations 29
 - 10.4.3 Angle of inclination 30
 - 10.4.4 Footing support 30
 - 10.4.5 Top support 30
 - 10.4.6 Side loading 30
 - 10.4.7 Climbing ladders 30
 - 10.4.8 Electrical hazards 30
 - 10.4.9 Improper use 31
 - 10.4.10 Access to or from upper levels 31

- 10.4.11 Fastening together 31
- 10.4.12 Doorways 31
- 10.4.13 Set-up 31
- 10.4.14 Relocation of a ladder 32
- 10.4.15 Back section of a self-supporting ladder 32
- 10.4.16 Use of individual sections of ladders 32

Tables

- 1** — Maximum allowable average deflections for horizontal bending test 32
- 2** — Horizontal bend test 33
- 3** — Table of deflections and angles of twist 33
- 4** — Maximum allowable deflection for side-sway test 34
- 5** — Stability tests 34
- 6** — Maximum allowable step ladder racking deflection, mm (in) 35
- 7** — Deflection and twist test and side-sway test 35
- 8** — Hardware test 35
- 9** — Compression test, side rail bending test, step-to-side rail shear strength test and rung-to-rail shear test 36
- 10** — Rung, step, platform, and stool caps bending tests 36
- 11** — Side rail cantilever bending test for extension and straight ladders 36
- 12** — Cantilever bending tests for step, trestle, extension trestle, platform, step stool, and combination ladders 37
- 13** — Summary of significant accident causes 38
- 14** — Ladder size, working length, and height 40
- 15** — Recommended highest standing level for stepladders 40

Figures

- 1** — Horizontal bend test 41
- 2** — Deflection and twist test 41
- 3** — Rung bending and rung to rail shear test 42
- 4** — Rung torque test 43
- 5** — Side-sway test 44
- 6** — Static side rail cantilever bending test 45
- 7** — Compression test, side rail bending test, step bending test, and step to side rail shear strength test 46
- 8** — Front, side, and rear stability tests (step ladder) 47
- 9** — Step ladder torsional stability test 48
- 10** — Step ladder rail static cantilever test 49
- 11** — Step ladder racking test 50
- 12** — Angle of inclination 51

Technical Committee on Portable Ladders

W. Gelhard	Featherlite Industries Ltd., Aurora, Ontario	<i>Chair</i>
L. Desbois	Prochute Sécurité Inc., St-Lambert, Québec	<i>Vice-Chair</i>
D. Bachand	MDB Consulting Services, Surrey, British Columbia	
Y. Bedard	Glam Inc., Québec, Québec	<i>Associate</i>
R. Contois	Infrastructure Health and Safety Association, Mississauga, Ontario	
R. Cushing	The Safety Guy, Oakville, Ontario	
G. Drewes	International Brotherhood of Electrical Workers Local 402, Thunder Bay, Ontario	
C. Duval	Flint Energy Services, Sherwood Park, Alberta	
R. Dworznik	CSA Group, Independence, Ohio, USA	<i>Associate</i>
V. Furukawa	CSA Group, Toronto, Ontario	<i>Associate</i>
J. Gilham	Cogeco, Belleville, Ontario	
F. Hardy	Electrical Safety Authority, Mississauga, Ontario	
J. Horton	Government of Nova Scotia Department of Labour, & Advanced Education, New Glasgow, Nova Scotia	
B. Latimer	Werner Co., Greenville, Pennsylvania, USA	
E. Levy	Dorel Distribution Canada, St Laurent, Québec	<i>Associate</i>
S. Mitry	WorkSafe BC, Vancouver, British Columbia	

É. Nassif	Ministry of Labour, Toronto, Ontario	
J. Naylor	J Naylor & Associates Ltd., Surrey, British Columbia	
J. Norris	Allright Ladder Co. of Canada Ltd., Vancouver, British Columbia	
S. Patton	Little Giant Ladder Systems, Division of Wing Enterprises Inc., Springville, Utah, USA	
T. Perera	CSA Group, Independence, Ohio, USA	<i>Associate</i>
J. Pitman	Truckladders Inc, London, Ontario	
R. Roy	WorkSafeNB / Travail sécuritaire NB, Saint John, New Brunswick	
K. Singh Rajput	Lite Products Inc. Mississauga, Ontario	
G. Turgeon	Featherlite Industries Ltd., Aurora, Ontario	<i>Associate</i>
P. Vi	Infrastructure Health and Safety Association, Toronto, Ontario	
S. Werlmaan	Dorel Distribution Canada, St Laurent, Quebec	
O. Simonetta	CSA Group, Mississauga, Ontario	<i>Project Manager</i>

Preface

This is the fourth edition of CSA Z11, *Portable ladders*. This Standard supersedes the previous editions published in 1981, CSA Z11-1969, Supplement No. 1 to the 1969 edition published in 1976, and the CSA Tentative Standard Z11-T published in 1967.

This Standard covers design, performance, test, and marking requirements for portable ladders.

Changes to this edition include the

- (a) addition of ladder Grades 1AA and 1A.
- (b) deletion of Appendices A and B. These requirements have been updated and are in [Clause 10](#).
- (c) addition of [Clause 10](#).

CSA gratefully acknowledges that the development of this Standard was made possible, in part, by the financial support of the Canadian Association of Administrators of Labour Legislation for Occupational Safety and Health.

This Standard was prepared by the Technical Committee on Portable Ladders, under the jurisdiction of the Strategic Steering Committee on Occupational Health and Safety, and has been formally approved by the Technical Committee.

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 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.*
- (4) *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.
- (5) *This Standard is subject to periodic review, and 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.*

Z11-12

Portable ladders

1 Scope

1.1

This Standard applies to common types of portable ladders and includes design and performance-related requirements and tests.

1.2

Ladders covered by this Standard are intended for use by only one person at a time under normal conditions of usage, with the exception of trestle ladders, which are designed for use by two persons at the same time.

1.3

This Standard does not specify details on the design and construction of portable ladders. The requirements listed in this Standard are intended to specify certain minimum characteristics of strength and stability deemed necessary for the safe use of portable ladders.

1.4

This Standard covers single-section ladders, multiple-section ladders, and combination ladders but does not cover special-purpose ladders or ladder accessories (e.g., ladder levellers, ladder stabilizers or stand-off devices, ladder jacks, or ladder straps or hooks) that may be installed on, or used in conjunction, with ladders.

1.5

The values given in SI units are the units of record for the purposes of this Standard. The values given in parentheses are for information and comparison only.

1.6

In CSA standards, “shall” is used to express a requirement, i.e., a provision that the user is obliged to satisfy in order to comply with the standard; “should” is used to express a recommendation or that which is advised but not required; and “may” is used to express an option or that which is permissible within the limits of the standard.

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 (nonmandatory) to define their application.