

# American National Standard for Ladders – Portable Metal – Safety Requirements



American National Standards

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Secretariat

**American Ladder Institute**

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**American National Standards Institute, Inc.**



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# American National Standard

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# Foreword

(This Foreword is not a part of American National Standard A14.2-2017.)

This standard on portable ladders is one of many American National Standards prepared under the supervision of the ANSI Accredited Standards Committee on Safety in the Construction, Care, and Use of Ladders, A14. Subcommittees that report to the American National Standards Committee A14 have developed all of the standards. The subcommittees are A14.1, Portable Wood Ladders; A14.2, Portable Metal Ladders; A14.3, Fixed Ladders; A14.4, Job-Made Ladders; and A14.5, Portable Reinforced Plastic Ladders, and A14.9, Ceiling Mounted Disappearing Climbing Systems.

All standards, except A14.7 Mobile Ladders Stands and Mobile Ladder Stand Platforms, derive from the original American National Standards Safety Code for

Construction, Care, and Use of Ladders, which was first approved on July 21, 1923. Revisions were approved on April 11, 1935; April 2, 1948; and November 10, 1952.

The earlier editions contained some treatment of metal and fixed ladders. Requirements for these types were removed from the 1948 revision because rapid development in the metal ladder field warranted special consideration and treatment of metal ladders, and fixed ladders (usually metal) in separate standards.

The Metal Ladder Manufacturers Association is responsible for initiating the standard on portable metal ladders. This group prepared the original draft and submitted it to Standards Committee A14 for consideration in May 1951. Subcommittee A14.2 was then created to review the document and make any changes necessary to conform to the requirements of all the interested groups. After consideration and some revision by the subcommittee, nearly 200 copies of the draft were sent to various organizations and individuals for review and comment. The suggestions received were considered in the preparation of the final draft, which was submitted to the Standards Committee for letter ballot in December 1955, and approved in 1956. Subcommittee A14.2 also developed the 1972 edition.

Responding to a Consumer Product Safety Commission challenge in August 1975, the A14 Committee mounted a three-prong attack to upgrade the portable ladder standards within the consensus framework of developing standards. Three Task Forces — Anthropometry, Testing, and Labeling — were established in October 1975.

Without question the Testing Task Force carried out the most massive technically difficult task, which included a significant amount of human-factors work. Over 100 known ladder experts were solicited to join this task force and provide their technical expertise. The work involved 50 meetings, over 400 test documents and the use of numerous test ladders over a period of nearly two years. The cost of the project has been conservatively estimated at over \$300,000.

At the August 11, 1977, joint meeting of the Testing Task Force and the A14 Advisory Committee, 23 procedures were presented. These procedures, with an accompanying rationale based upon statistical and human factors data, were distributed to the three portable-ladder subcommittees for review and incorporation into the standards.

Recommendations for nomenclature, and for care and use of ladders had been previously balloted. In addition, the Ladder Use Survey Form and Bi-Level Fall Victim Report Form (that have been included in the Appendixes), had also been balloted so the more technical material from the Testing Task Force could receive full attention of the three subcommittees.

Test procedures were developed for three different applications, namely, design verification, quality control, and in-service testing. Design verification tests would generally be conducted on a one-time basis during the original design

development of the product and would usually be destructive tests. The manufacturer on an on-going basis would conduct quality control tests; some of the tests would be destructive and some would be nondestructive. In-service tests would be conducted by the user on a periodic basis and would be nondestructive in nature.

ANSI A14.2-1981 was approved March 4, 1980 with an effective date of March 4, 1982. This 2 year period was to allow the manufacturers the necessary lead time to evaluate their products for conformance to the 1981 edition of the three portable ladder standards, to redesign and test their products where applicable, to design and build the required manufacturing tooling and machinery, and to convert their manufacturing operations to produce the revised products.

During development of product for compliance with the 1981 revision, experience by some of the manufacturers indicated that the inclined load test was not practical when applied to all available length ladders. Also, recommendations were received for clarifications in test procedure descriptions. In the course of resolving these questions, evidence was produced to warrant modifications in the label test requirements and further investigations brought about changes in the label test specifications.

To allow time for investigating these issues, the effective date of the 1981 revision was postponed to June 4, 1982 and then to October 4, 1982. Once the issues were resolved, ANSI A14.2-1982 was approved with the needed changes incorporated and an effective date of October 4, 1982.

In the 1990 revision, several issues, which had arisen since the 1982 revision, were addressed. Most significantly, requirements were developed to cover the multipurpose articulated ladder. In addition the Labeling/Marking section improved the graphics as well as presented new labels.

Considerable effort went into preparing the 2000 revision to assure consistency between the A14.2 standard for portable metal ladders and the new revisions of A14.1 (portable wood ladders) and A14.5 (portable reinforced plastic ladders) standards.

In the 2007 revision, as a result of efforts by an Articulated Ladder Task Force, additional dynamic testing was added to the testing requirements for articulated ladders. Additionally, requirements for ladders with a 375 pound duty rating, designated as "Special Duty Type IAA" were incorporated within the ANSI A14.2 and A14.5 standards. Requirements for Special Duty Type IAA ladders were previously developed and issued in the ANSI A14.10-2000 standard. The A14.10 subcommittee was originally formed in order to quickly respond to a petition to ANSI by cable TV and electric companies for a higher duty rating ladder. After incorporation of the Special Duty Type IAA requirements into the A14.2 and A14.5 standards, the A14.10 standard was withdrawn.

In this current revision, as a result of efforts by a Telescoping Ladder Task Force, specifications and testing requirements for telescoping ladders are being added to the standard. As a result of further efforts by the Articulated Ladder Task Force, additional specifications and testing requirements are being added to the standard for articulated extendable ladders. A generic test surface was adopted for the test requiring a specific floor surface or top support for the ladder. The Labeling/Marking Task Force has provided revised non-mandatory labeling illustrations in Appendix A and B that incorporate the ANSI Z535.4 guidelines with the long standing labeling practices of ANSI ASC A14. The format of the standard has modified to place all tables and figures at the end.

Each revision of the standard was processed and approved for submittal to ANSI by American National Standards Committee on Safety in the Construction, Care, and Use of Ladders, A14. Committee approval of the standard does not necessarily imply that all committee members voted for its approval.

Suggestions for improvement of this standard are welcome. They should be sent to the American Ladder Institute, 330 N. Wabash Ave., Suite 2000, Chicago, IL 60611.

At the time it approved this standard, the A14 Committee had the following members:

<b>Organization Represented</b>	<b>Name of Representative</b>
American Insurance Association .....	George Earhart
American Ladder Institute .....	Ron Schwartz Marc McConnell (Alt)
American Society of Safety Engineers .....	Michael Lorenzo Tim Fisher (Alt)
Associated General Contractors of America .....	Charles E. Erd Tim Fischer (Alt)
Canadian Standards Association .....	Dave Shanahan
Cosco Home and Office Products .....	Eric Kruse Larry Voris (Alt)
Cotterman Company .....	Don Gibson Pete Catlos (Alt)
Ellis Fall Safety Solutions, LLC Div. of DSC .....	J. Nigel Ellis Cody Snyder (Alt)
Grainger Industrial Supply .....	Richard Martin John Foston (Alt)
International Brotherhood of Electrical Workers .....	Christian Duva
International Union of Painters and Allied Trades .....	Greg Renne Dan Penski (Alt)
International Union of Bricklayers & Allied Craftworkers .....	Gerald Scarano Mike Kassman (Alt)
Little Giant Ladder Systems .....	Ben Cook
Louisville Ladder, Inc. ....	Tom Schmitt
National Association of Home Builders .....	Jerry Passman Robert Matuga (Alt)
National Frame Builders Association .....	Stan Virkler
NIOSH .....	Peter Simeonov, Ph. D Hongwei Hsiao, Ph. D (Alt)
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Scaffold Access Industry Association .....	Alan D. Kline
State University of New York .....	George H. Kyanka
Steel Plate Fabricators Association .....	Ken Wade
Switalski Engineering, inc. ....	William Switalski
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Dr. George H. Kyanka  
Dr. Irving Ojalvo

\*non-voting advisory member

Subcommittee A14-2 on portable ladders, which revised this standard, consists of the following members:

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Ben Cook  
Ryan Crawford  
Jack Krafchick

Eric Kruse  
Irving Ojalvo  
Dave Plotner

Greg Renne  
Thomas Schmitt  
Mike Van Bree

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# Contents

<b>Section</b>	<b>Page</b>
1. Scope and Purpose .....	1
1.2 Purpose .....	1
2. General .....	2
2.1 Rationale .....	2
2.2 Application .....	2
2.3 Interpretation .....	2
2.4 Mandatory and Advisory Provisions .....	2
2.5 Equivalent .....	2
2.6 Effective Date .....	2
3. Related Standards .....	2
4. Definitions and Nomenclature .....	3
5. General Requirements .....	5
5.1 Flare .....	5
5.2 Side Rails .....	5
5.3 Rung and Step Spacing .....	5
5.4 Rung Connections .....	6
5.5 Rungs, Steps, and Platform .....	6
5.6 Hardware .....	6
5.7 Burrs, Bolts, Rivets, and Welds .....	6
5.8 Angle of Inclination .....	6
5.9 Plastic Parts .....	6
6. Specifications .....	7
6.1 Step Ladders .....	7
6.2 Single and Extension Ladders .....	7
6.3 Trestle (Double Front) and Extension Trestle Ladders .....	9
6.4 Platform Ladders .....	9
6.5 Combination Ladder .....	10
6.6 Step Stools (Ladder Type) .....	11
6.7 Articulated and Articulated Extendable Ladders .....	12
6.8 Telescoping Ladders .....	13

7. Test Requirements . . . . .	13
7.1 General . . . . .	13
7.2 Combination Ladder Tests . . . . .	15
7.3 Single, Extension, Combination, Articulated, Articulated Extendable, and Telescoping Ladder Tests . . . . .	15
7.4 Articulated Ladder Tests . . . . .	23
7.5 Step, Trestle (Double Front), Extension Trestle, Platform, Combination, Articulated, Articulated Extendable Ladder and Step Stool Tests . . . . .	25
7.6 Telescoping Ladder Tests . . . . .	29
7.7 Labeling Tests . . . . .	30
8. Selection, Care, and Use . . . . .	31
8.1 General . . . . .	31
8.2 Selection . . . . .	31
8.3 Rules for Ladder Use . . . . .	33
8.4 Care . . . . .	35
9. Labeling/Marking Requirements . . . . .	36
9.1 Applications of Label/Marking Contents . . . . .	36
9.2 General Requirements . . . . .	36
9.3 Type Size . . . . .	36
9.4 General Requirements for Label Location . . . . .	36
9.5 Product Data Information . . . . .	36
9.6 Specific Labeling/Marking requirements . . . . .	37
10. Revision of American National Standards Referred to in this Document . . . . .	38

**Tables**

Table 1: Single and Extension-Ladder Size . . . . .	39
Table 2: Minimum Required Overlap for Extension Ladders (inches) . . . . .	39
Table 3: Minimum Required Extension Trestle Ladder Overlap . . . . .	39
Table 4: Combination Ladder Size . . . . .	39
Table 5: Horizontal Bending Test Loads (pounds) . . . . .	39
Table 6: Maximum Allowable Average Deflections for Horizontal Bending Test . . . . .	40
Table 7: Deflection Test Loads . . . . .	40
Table 8: Deflections and Angles of Twist . . . . .	41
Table 9: Simulated In-Use Sustained Load Test . . . . .	42
Table 10: Hardware Tests . . . . .	42
Table 11: Step Bending, Rung Bending, Side-Rail Bending, Compression, and Shear Strength Tests . . . . .	42
Table 12: Rung Torque Tests . . . . .	43
Table 13: Maximum Allowable Deflection for Side Sway Test — Midspan Deflection of Lower Side Rail . . . . .	43
Table 14: Static Side-Rail Cantilever Bending Test Load . . . . .	44
Table 15a: Ladder Section Twist Test . . . . .	44
Table 15b: Maximum Allowable Twist for Telescoping Ladders (degrees) . . . . .	44
Table 16: Foot Slip Test . . . . .	45
Table 17: Articulated Ladder Tests . . . . .	45
Table 18: Stability Test Loads (pounds) . . . . .	45
Table 19: Maximum Allowable Racking Deflection (inches) . . . . .	46
Table 20: Static Cantilever Bending Tests . . . . .	46

Table 21: Rail Torsion and Spreader Test.....	46
Table 22: Summary of Significant Accident Causes .....	47
Table 23: Ladder Size, Working Length, and Height (feet).....	48
Table 24: Metal Ladder Label Chart .....	48

**Figures**

Figure 1: Horizontal Bending Test.....	4
Figure 2: Deflection Test .....	1
Figure 3: Deflection Test Data Sheet .....	2
Figure 4: Inclined Load Test.....	53
Figure 5: Column and Hardware Load Test and Single Lock Load Test.....	54
Figure 6: Standard Loading Block .....	55
Figure 7: Lock Test.....	55
Figure 8: Lock Tip Load Test.....	56
Figure 9: Cyclic Rung Lock Test Arrangement .....	57
Figure 10: Rung Lock Testing Cycle .....	58
Figure 11: Rung Bending Test and Rung-to-Side-Rail Shear Strength Test .....	58
Figure 12: Rung Torque Test .....	59
Figure 13: Side Sway Test .....	60
Figure 14: Static Side-Rail Cantilever Bending Test .....	61
Figure 15: Side-Rail Cantilever Dynamic Drop Test.....	62
Figure 16a: Ladder Twist Test (Single, Extension, or Articulated Ladders).....	63
Figure 16b: Ladder Twist Test (Telescoping Ladders) (continued).....	64
Figure 17: Foot Slip Test .....	65
Figure 18: Scaffold Bending Strength and Dynamic Joint Lock Tests .....	66
Figure 19: Compression, Step Bending, Side-Rail Bending, and Step-to-Side-Rail Shear Tests .....	67
Figure 20: Methods (Other Than Dead Weight) for Applying Test Loads .....	68
Figure 21: Front, Side, and Rear Stability Tests .....	69
Figure 22: Torsional Stability and Rail Torsion and Spreader Tests .....	70
Figure 23: Racking Test .....	71
Figure 24: Rail Static Cantilever Test.....	72
Figure 25: Dynamic Drop Test.....	73
Figure 26: Stepladder Slip Test.....	73
Figure 27: Cyclic Joint Lock Test – Lock Tab.....	74
Figure 28: Single Joint Lock Test – Lock Tab .....	75

**Appendices**

Appendix A.....	76
Appendix B.....	78
Appendix C.....	90
ANS-ASC A14 Comment / Request for Interpretation Form.....	91

# American National Standard for Ladders – Portable Metal – Safety Requirements

## 1. Scope and Purpose

### 1.1 Scope

This standard prescribes rules governing the safe construction, design, testing, care and use of portable metal ladders of various types and styles. Ladder Types included are:

Duty Rating	Ladder Type	Working Load (pounds)
Special Duty	IAA	375
Extra Heavy-Duty	IA	300
Heavy-Duty	I	250
Medium-Duty	II	225
Light-Duty	III	200

Ladder styles include ladder type step stools, portable extension, step, trestle, sectional, combination, single, platform, articulating, articulating extendable, and telescoping ladders, but excluding ladders in and on mines, the fire services, mobile equipment, hoisting equipment, work platforms, antenna communications towers, transmission towers, utility poles, and chimneys. It does not cover special-purpose ladders that do not meet the general requirements of this standard, nor does it cover ladder accessories, including, but not limited to, ladder levelers, ladder stabilizers or stand-off devices, ladder jacks, or ladder straps or hooks, that may be installed on or used in conjunction with ladders.

**Note:** Ladder type step stools are covered by A14.2. It is recognized that a step stool standard is under development. When the step stool standard (A14.11) becomes effective, A14.2 will no longer cover ladder type step stools.

These requirements are also intended to prescribe rules and criteria for labeling/marketing of the kinds of portable ladders cited in this standard, but exclusive of furniture type step stools and special purpose ladders. These labeling/marketing requirements do not apply to those situations where training, supervision, or documented safety procedures would be in conflict, or serve in lieu of, these labeling/marketing requirements.

### 1.2 Purpose

The purpose of this standard is to provide reasonable safety for life, limb, and property. In order to develop an effective safety program, the standard may serve also as a basis for purchase requirements and for instructions in personnel training, and in the preparation of motivational/ instructional material such as safety practices, manuals, posters, and the like.

This standard is also intended to provide the manufacturer, purchaser, and user of metal ladders with a set of performance and dimensional requirements against which a product may be compared. It is not the purpose of this standard to specify all the details of construction of portable metal ladders. The limitations imposed are for the purpose of providing adequate general requirements and testing methods needed for consistency.