American National Standard

ANSI Z97.1 – 2026

For safety glazing materials used in buildings – safety performance specifications and methods of test



Glazing Industry Secretariat Committee | 344 Maple Ave. West – Unit 272 | Vienna, VA 22180
United States of America

SafetyGlazingZ97.com

Approval of an American National Standard requires verification by ANSI that the requirements for due process, consensus, and other criteria for approval have been met by the standards developer.

Consensus is established when, in the judgment of the ANSI Board of Standards Review, substantial agreement has been reached by directly and materially affected interests. Substantial agreement means much more than a simple majority, but not necessarily unanimity. Consensus requires that all views and objections be considered, and that a concerted effort be made toward their resolution.

The use of American National Standards is completely voluntary; their existence does not in any respect preclude anyone, whether they have approved the standards or not, from manufacturing, marketing, purchasing, or using products, processes, or procedures not conforming to the standards.

The American National Standards Institute does not develop standards and will in no circumstances give an interpretation of any American National Standard. Moreover, no person shall have the right or authority to issue an interpretation of an American National Standard in the name of the American National Standards Institute. Requests for interpretations should be addressed to the secretariat or sponsor whose name appears on the title page of this standard.

CAUTION NOTICE: *This American National Standard may be revised or withdrawn at any time. The procedures of the American National Standards Institute require that action be taken to reaffirm, revise, or withdraw this standard no later than five years from the date of approval. Purchases of American National Standards may receive current information on all standards by calling or writing the American National Standards Institute.*

Published by

Glazing Industry Secretariat Committee
www.SafetyGlazingZ97.com

Distributed by

American National Standards Institute
1899 L Street, NW 11th Floor, Washington, DC 20036
1180 Avenue of the Americas 10th Floor, New York, NY 10036

Copyright 2026 by Accredited Standards Committee (ASC) Z97
All rights reserved.

No part of this publication may be reproduced in any form, in an electronic retrieval system or otherwise, without the prior written permission of the publisher.

FORWARD

(This forward is not part of ANSI Z97.1-2026)

This Standard was developed under procedures accredited as meeting the criteria for American National Standards. The consensus committee that approved the Standard was balanced to ensure that individuals from competent and concerned interests have had an opportunity to participate. It was developed within the approved scope as stated in section 1.1 of the standard.

This Standard is available for public review on a continuing basis. This provides an opportunity for additional public input from industry, academia, regulatory agencies, and the public-at-large. The use of an addenda system will allow revisions made in response to public review or committee actions to be published as required.

This Standard, which is the result of extended and careful consideration of available knowledge and experience on the subject, is intended to provide minimum requirements that are recommended for use, adoption, enforcement by federal, state and local authorities and by model codes. This standard is to be referenced but not incorporated in any statute or any other standard without the prior written permission of the publisher.

This Standard does not recommend where safety glazing should be used or, when it is used, what type of glazing material should be used. For this information one should consult other codes, standards and manufacturer's information.

Neither the standards committee nor the secretariat consider that this standard is perfect and updates will follow. It is recognized that, although safety-glazing materials are widely used and accepted, new developments are to be expected, and revisions of the standards are necessary as the art progresses and further experience is gained.

This standard is a successor standard to the 2020 edition, which was a reaffirmation of the 2015 edition with no substantive content changes. The 2015 standard succeeded those of the 2009e2, 2009e, 2009, 2004, 1984 (reaffirmed in 1994), 1975, 1972 and 1966 editions.

For material to be considered for reference or to continue to be referenced in the ANSI Z97.1 standard, it shall meet the following criteria:

1. The referenced material, including title and date, and the manner in which it is to be utilized shall be specifically identified in the text of ANSI Z97.1.
2. The standard or portions of a standard intended to be enforced shall be written in mandatory language.
3. The scope or application of the reference material shall be clearly described.
4. The referenced material shall not have the effect of requiring proprietary materials.
5. The standard shall not prescribe a proprietary agency for quality control or testing.

For communication with the Committee please refer to the following page.

CORRESPONDENCE WITH ASC Z97 COMMITTEE

General American National Standards are developed and maintained with the intent to represent the consensus of concerned interests. As such, users of this Standard may interact with the Committee by requesting interpretations, proposing revisions, and attending Committee meetings. Correspondence should be addressed to:

Secretary, ASC Z97
c/o Julia Schimmelpenningh
Eastman Chemical Company
730 Worcester St.
Springfield, MA 01151
jcschi@eastman.com

Proposing Revisions: Revisions are made periodically to the Standard to incorporate changes that appear necessary or desirable, as demonstrated by the experience gained from the application of the Standard. Approved revisions will be published periodically.

The Committee welcomes proposals for revisions to this Standard. Proposals should be as specific as possible: citing the paragraph number(s), the proposed wording and a detailed description of the reasons for the proposal. Pertinent documentation should be included.

Interpretations: On written request, the ASC Z97 Committee will render an interpretation of any requirement of the Standard. The request for interpretation should be clear and unambiguous. The following format is recommended:

Subject: Cite the applicable paragraph number(s) and provide a concise description.

Edition: Cite the edition of the Standard for which the interpretation is being requested.

Question: Phrase the question as a request for an interpretation of a specific requirement suitable for general understanding and use, not a request for an approval of a proprietary design or situation.

Requests that are not in the above format may be rewritten by the Committee or its Secretary prior to being answered, which may inadvertently change the intent of the original request. The Committee reserves the right to deem certain requests for interpretations as not within its scope or expertise and refuse to address them.

The committee reserves the right to reconsider any interpretation when or if additional information, which might affect that original interpretation, becomes available to the Committee. Persons aggrieved by an interpretation may appeal to the Committee for reinterpretation. The ASC Z97 does not "approve," "certify," "rate," or "endorse," any item, construction, proprietary device, or activity beyond what is addressed in the Standard.

Attending Committee Meetings: The ASC Z97 holds meetings that are open to the public. Persons wishing to attend any meeting should contact the Secretary of the Committee or www.ANSIZ97.com for meeting information.

DISCLAIMER AND CONDITION OF USE

The Accredited Standards Committee ("ASC") Z97 and its Secretariat, currently the Glazing Industry Secretariat Committee, have developed this recommended safety performance specification and test method for glazing materials through a consensus standards development process.. This process brings together volunteers representing varied viewpoints and interests to achieve consensus on safety related issues. While the ASC Z97 and its Secretariat administer the process in accordance with ANSI accredited procedures which are designed to promote fairness in the development of consensus, neither the ASC Z97 nor its Secretariat independently tests, evaluates, or verifies the accuracy of any information or the soundness of any judgments contained within the document, ANSI Z97.1-2025.

The ASC Z97, together with its members, affiliates, and its Secretariat, expressly disclaim and shall not be liable for any personal injury, property or other damage of any nature, whether special, indirect, consequential, or compensatory, directly or indirectly resulting from the publication, use of, or reliance upon this document, whether based upon breach of contract, breach of warranty, tort (including negligence), strict liability, or otherwise, even if advised of the possibility of such damages. The foregoing negation of damages is a fundamental element of the use of the information and data contained herein, and this information and data would not be developed, compiled, and forwarded by ASC Z97 to ANSI without such limitation.

The ASC Z97, together with its members, affiliates, and its Secretariat, also make no guarantees or warranties, express or implied, including without limitation, any and all warranties concerning the accuracy or completeness of the information in the document, its fitness or appropriateness for a particular purpose or use, its merchantability, and its non-infringement of any third party's intellectual property rights. Together, they make no representations or warranties regarding the information's compliance with any other applicable statute, rule, law, or regulation.

Building codes vary from jurisdiction to jurisdiction, and those using this document must consult the most current version of the applicable building code in effect in the jurisdiction where the glazing material is to be installed for restrictions or limitations upon the use of glazing materials tested to this document, ANSI Z97.1-2026. The ASC Z97, together with its members, affiliates, and its Secretariat, disclaim any duty or obligation, except as may be required by established ANSI-accredited procedures , to update or revise the document based upon provisions of or changes to the building codes.

Neither the standards committee nor the secretariat act as certification authorities for safety glazing materials as tested in compliance to ANSI Z97.1-2026. This standard provides the method of test and specification of performance characteristics to deem a product compliant. Products can be self-certified by the manufacturer or certified as compliant by an independent party as allowed by the authority having jurisdiction.

In developing this safety performance specification and test method and submitting the consensus process documentation to ANSI for review, neither the ASC Z97, its members, nor its Secretariat is undertaking to render professional or other services for or on behalf of any person or entity. Nor are they undertaking to perform any duty owed by any person or entity to someone else. Those using this document should rely upon their own independent judgment or, as appropriate, seek the advice of competent professionals in determining the exercise of reasonable care in any given circumstances. Neither the ASC Z97, its members, nor its Secretariat has any power, nor do they undertake, to police or enforce compliance with the contents of this document. Nor do they list, certify, test, or inspect products, designs, or installations for compliance with this document. Any certification or other statement of compliance with the

requirements of this document shall not be attributable to ASC Z97 and is solely the responsibility of the certifier or maker of this statement.

This Standard was processed and approved for submittal to ANSI by the Accredited Standards Committee Z97. Committee approval of the Standard does not necessarily imply that all Committee members voted for its approval. At the time the ASC Z97 approved the 2025 edition of this Standard, the ASC Z97 had the following members:

John Kent, **Chair** | Julia Schimmelpenningh, **Secretary**

Organization Represented	Primary	Alternate
3M Company	Michael Stavreff	Jen Daly
Allegion	Devin Bowman	Ron Madeley
AMS	John Kent	Katrina Stafford
ASC Z97 Individual Member	Edward Conrath	n/a
ASC Z97 Individual Member	Brian Gartner	n/a
ASC Z97 Individual Member	Bernie Herron	n/a
ASC Z97 Individual Member	Matt Kamper	n/a
ASC Z97 Individual Member	Debra Levy	n/a
ASC Z97 Individual Member	Scott Norville	n/a
ASC Z97 Individual Member	Illona Schimdt	n/a
ASC Z97 Individual Member	Scott Swaltek	n/a
ASC Z97 Individual Member	Margaret Webb	n/a
ASC Z97 Individual Member	Richard Wright	n/a
Cardinal Glass Industries	Michelle Phan	Carey Wallace
Chandler's Architect	Jeremy McLain	n/a
Consolidated Glass Corp.	Lindsey Merryman	Shane Merryman
Corning Incorporated	Jeffrey Moore	Greg Coulliard
Eastman Chemical Company	Julia Schimmelpenningh	Ryan Arsenault
FGIA	Amy Roberts	Bill Lingnell
Guardian Industries Corp.	Jon Griggs	Jeffrey Ludrof
Interlayer Solutions Inc.	Geys Gomez	Hector Garcia
Intertek	Thomas Mickley	Travis Hoover
IWFA	Darrell Smith	Lisa Winckler
Kuraray America	Vaughn Schauss	Delayna Bure
Madico, Inc.	Jesse Manship	Jay Larkin
Molimo	Lance Cunningham	Michael Stremmel
National Glass Association	Urmilla Sowell	Sara Neiswanger
Oldcastle BuildingEnvelope®	Jason Fisher	n/a
Pilkington North America, Inc.	Kayla Natividad	Timothy McKittrick
Polyvantis Sanford LLC	David Morrison	Michael Pasierb
Sharp Glass LLC	Kyle Sharp	n/a
Specialty Glass Resources	Richard Paschel	n/a
Trulite Glass and Aluminum Solutions	DJ Weil	Bong Deato
U.S. CPSC	Zachary Goldstein	Brian Barker
Viracon Inc.	Brian Louks	Mike Schettler
Wiss, Janney, Elstner Associates	William Nugent	Robert Hannen

Steering Committee ASC Z97

John Kent, Chair | Julia Schimmelpenningh, Secretary | Urmilla Sowell, Member

Harmonized Standards

ANSI Z97.1-2015 became the referenced test method for 16 CFR Part 1201 by the U.S. Consumer Product Safety Commission (CPSC). The 2015 edition of ANSI Z97.1 was reviewed by the Canadian General Standards Board (CGSB) and subsequently adopted and harmonized as CAN/CGSB 12.1 *Safety Glazing*. When ANSI Z97.1 was reapproved without changes in 2020, the existing harmonization remained in place. The newly published 2025 edition has likewise been harmonized by the CGSB in its 2026 version. Since revision to the test method were not made in ANSI Z97.1-2026, the CPSC continues to reference the 2015 [R20] version in 16 CFR Part 1201.

Table of Contents

1 SCOPE, PURPOSE, AND LIMITATIONS 9

1.1 SCOPE 9
1.2 PURPOSE 9
1.3 LIMITATIONS 9

2 REFERENCED STANDARDS 10

3 DEFINITIONS 11

4 SPECIMENS TO BE TESTED 13

4.1 CONDITION OF SPECIMENS 13
4.2 THICKNESS OF SPECIMENS 13
4.3 SIZE CLASSIFICATION OF SPECIMENS 13
4.4 SPECIMENS FOR IMPACT TESTS 14
4.5 SPECIMENS FOR THERMAL TEST 14
4.6 SPECIMENS FOR WEATHERING TESTS 15
4.7 SPECIMENS FOR MODULUS AND HARDNESS TESTS 15

5 TEST SPECIFICATIONS 16

5.1 IMPACT TEST 16
5.2 CENTER PUNCH FRAGMENTATION TEST 30
5.3 THERMAL TEST FOR LAMINATED AND ORGANIC COATED GLAZINGS 31
5.4 WEATHERING TESTS FOR LAMINATED, ORGANIC COATED AND PLASTIC GLAZINGS 31

6 MARKING OF SAFETY GLAZING MATERIAL 37

6.1 MARK INFORMATION 37
6.2 APPLICATION OF MARK 37
6.3 SPECIAL APPLICATION MARKING 38

7 ANNEX 39

8 APPENDIX A 40

A1. GENERAL 40
A2. SAFE PERFORMANCE CRITERIA (SEE SECTION 5.1.2) 40
A3. DEVELOPMENT OF HUMAN ENGINEERING DATA CHART 40
A4. INTERPRETATION OF RESULTS (SEE SECTION 5.1.4) 42

9 APPENDIX B 43

Table of Figures

FIGURE 1: IMPACT TEST STRUCTURE 17
FIGURE 2: IMPACT TEST FRAME - FRONT VIEW 18
FIGURE 2.1: DETAIL OF SECTION A-A PROPERLY CLAMPED TEST SPECIMEN 19
FIGURE 2.2: DETAIL OF SECTION A-A IMPROPERLY CLAMPED TEST SPECIMEN 19
FIGURE 3: IMPACT TEST FRAME – SIDE VIEW 20
FIGURE 4: IMPACT TEST FRAME – BENT GLAZING – FRONT VIEW 21
FIGURE 4.1: DETAIL OF SECTION B-B 22
FIGURE 4.2: DETAIL OF SECTION C-C 22
FIGURE 4.3: DETAIL OF SECTION D-D 23
FIGURE 5: BENT GLASS IMPACT TEST FRAME (EXPLODED VIEW) 23
FIGURE 6: IMPACT TEST FRAME - BENT GLAZING - SIDE VIEW 24
FIGURE 7: IMPACTOR 26
FIGURE 8: CENTER PUNCH FRAGMENTATION 31
FIGURE A1: HUMAN ENGINEERING DATA 41

Table of Tables

TABLE 1: GROUPING OF TESTS FOR SAFETY GLAZING MATERIALS 13
TABLE 2: APPLICABLE INTERPRETATION OF RESULTS FOR SHOT BAG IMPACT 28
TABLE X1 39
TABLE B1: SUMMARY TABLE FOR WEATHERING AND SUBSEQUENT TESTING 43

American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test

1 Scope, Purpose, and Limitations

1.1 Scope

1.1.1 This standard establishes the specifications and methods of test for the safety properties of safety glazing materials (glazing materials designed to promote safety and reduce the likelihood of cutting and piercing injuries when the glazing materials are broken by human contact) as used for all building and architectural purposes.

1.1.2 Conformance of a material to this standard demonstrates minimum acceptable safety characteristics of the material in use.

1.2 Purpose

1.2.1 The purpose of this standard is to prescribe the minimum safety performance characteristics of safety glazing materials. This standard affords a basis for; (1) safety standards for adoption in regulations by federal, state, and local regulatory bodies; and (2) for use by building code officials, architects, designers, specifiers and others as a reference standard. Approval of a material under this standard constitutes acceptance of its safety characteristics and the retention of those characteristics. It is not to be construed as appraisal of its durability or appearance as a glazing material.

1.2.2 A condition of conformance to this standard is the material's uniform production so that it will consistently exhibit these safety characteristics.

1.3 Limitations

1.3.1 Conformance of a material to this standard is not to be construed as an appraisal of its strength, durability or appearance as a glazing material, nor does this standard specify situations in which safety-glazing materials should be used.

1.3.2 This standard does not address the methods used for the installation of safety glazing materials.

1.3.3 Monolithic annealed glass, monolithic heat strengthened glass, monolithic wired glass (not fire rated) and monolithic fire rated wired glass are not considered safety glazing materials under this standard. Monolithic chemically manufactured glass, unless engineered to meet the requirements of this standard, shall also not be considered safety glazing under this standard.