



The American Society of
Mechanical Engineers

A N A M E R I C A N N A T I O N A L S T A N D A R D

GLAZIERS' CHISELS AND WOOD CHISELS

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FOREWORD

The American National Standards Committee B107, Socket Wrenches and Drives, under sponsorship by The American Society of Mechanical Engineers, was reorganized as an ASME Standards Committee, and its title was changed to Hand Tools and Accessories. In 1996, the B209 Committee, which had published an earlier version of this Standard as ANSI/HTI B209.6-1990, merged with the B107 Committee, and the B107 Committee scope was expanded to include safety considerations.

The purposes of this Standard are to define essential safety considerations specifically applicable to glaziers' chisels and wood chisels, to specify test methods to evaluate performance relating to the defined safety considerations, and to indicate limitations of safe use.

A principal change in this edition of the Standard is the allowance of any material that meets the performance and safety requirements specified.

The format of this Standard is in accordance with *The ASME Codes and Standards Writing Guide 2000*. Requests for interpretations of the technical requirements of this Standard should be expressed in writing to the Secretary, B107 Committee, at the address below.

Suggestions for the improvement of this Standard are welcome. They should be addressed to The American Society of Mechanical Engineers, Secretary, B107 Standards Committee, Three Park Avenue, New York, NY 10016-5990.

The requirements of this Standard become effective at the time of publication. This revision was approved as an American National Standard on September 20, 2002.

ASME STANDARDS COMMITTEE B107

Hand Tools and Accessories

(The following is the roster of the Committee at the time of approval of this Standard.)

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The Committee welcomes proposals for revisions to this Standard. Such 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, including any pertinent documentation.

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The request for interpretation should be clear and unambiguous. It is further recommended that the inquirer submit his/her request in the following format:

Subject:	Cite the applicable paragraph number(s) and the topic of the inquiry.
Edition:	Cite the applicable 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 as a request for an approval of a proprietary design or situation. The inquirer may also include any plans or drawings, which are necessary to explain the question; however, they should not contain proprietary names or information.

Requests that are not in this format may be rewritten in the appropriate format by the Committee prior to being answered, which may inadvertently change the intent of the original request.

ASME procedures provide for reconsideration of any interpretation when or if additional information that might affect an interpretation is available. Further, persons aggrieved by an interpretation may appeal to the cognizant ASME Committee or Subcommittee. ASME does not "approve," "certify," "rate," or "endorse" any item, construction, proprietary device, or activity.

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GLAZIERS' CHISELS AND WOOD CHISELS

1 SCOPE

This Standard provides performance and safety requirements for glaziers' chisels and wood chisels. It is intended to serve as a guide in selecting, testing, and using the hand tools covered. It is not the purpose of this Standard to specify the details of manufacturing.

This Standard is also meant to serve as a guide in developing manuals and posters, and for training personnel to work safely.

This Standard may be used as a guide by state authorities or other regulatory bodies in the formulation of laws or regulations. It is also intended for voluntary use by establishments that use or manufacture the tools covered. The methods employed to ensure compliance with this Standard shall be determined by the proper regulatory or administrative authority.

2 NORMATIVE REFERENCES

The following is a list of publications referenced in this Standard.

Guide to Hand Tools — Selection, Safety Tips, Proper Use and Care

Publisher: Hand Tools Institute (HTI), 25 North Broadway, Tarrytown, NY 10591

ANSI Z87.1-1989, Practice for Occupational and Educational Eye and Face Protection; Supplement ANSI Z87.1a-1991

ANSI Z535.4-1998, Product Safety Signs and Labels

Publisher: American National Standards Institute (ANSI), 25 West 43rd Street, New York, NY, 10036

ASTM E 18-00, Standard Test Methods for Rockwell Hardness and Rockwell Superficial Hardness of Metallic Materials

Publisher: American Society for Testing and Materials (ASTM), 100 Barr Harbor Drive, West Conshohocken, PA 19428

3 DEFINITIONS

See Figs. 1, 2, and 3 as applicable.

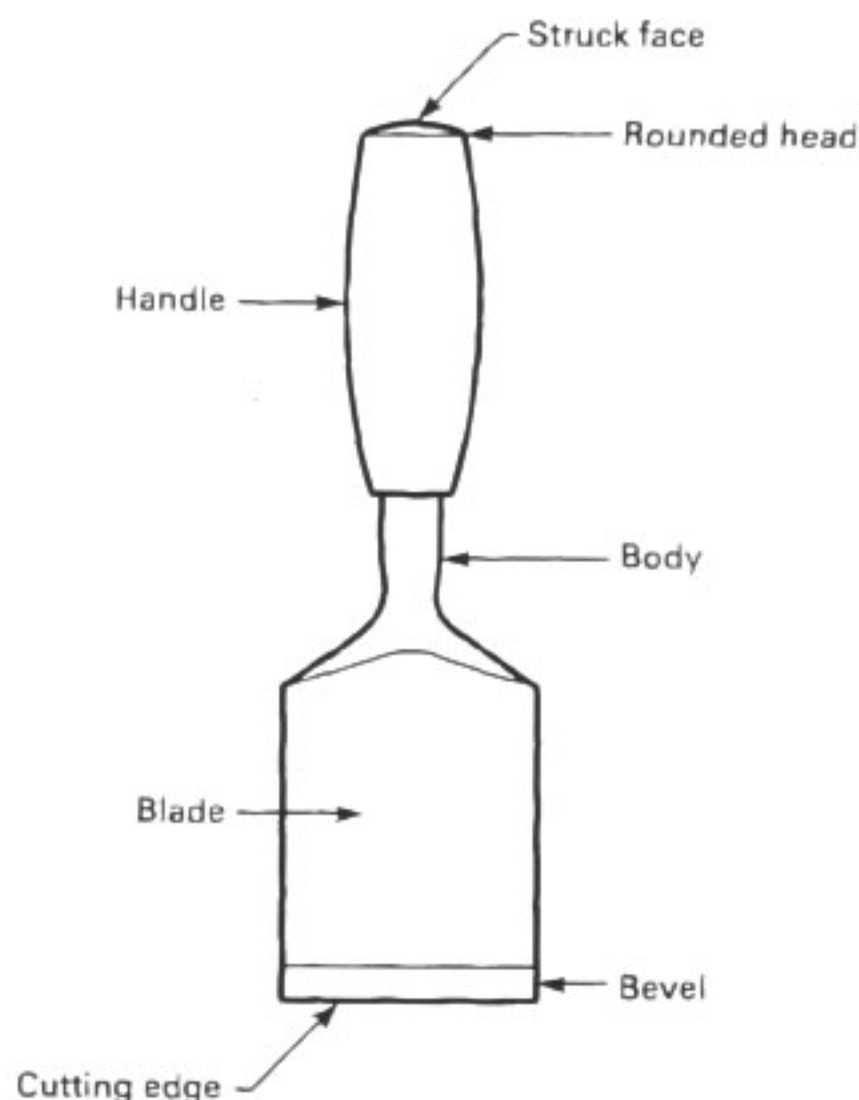


FIG. 1 NOMENCLATURE FOR GLAZIERS' CHISELS

bevel: the angular or curved portion of the chisel adjacent to the cutting edge.

blade: the portion of the chisel opposite the struck face used for cutting.

body: the metal portion of the chisel extending from the blade.

chamfer: the angled flat surface or equivalent radius between the struck face and the body of the chisel encircling the perimeter of the struck face.

cutting edge: the edge formed by the bevel directly opposite the struck face.

equivalent: the word *equivalent* in this Standard shall be interpreted to mean alternative designs or features that will provide an equal degree of safety.

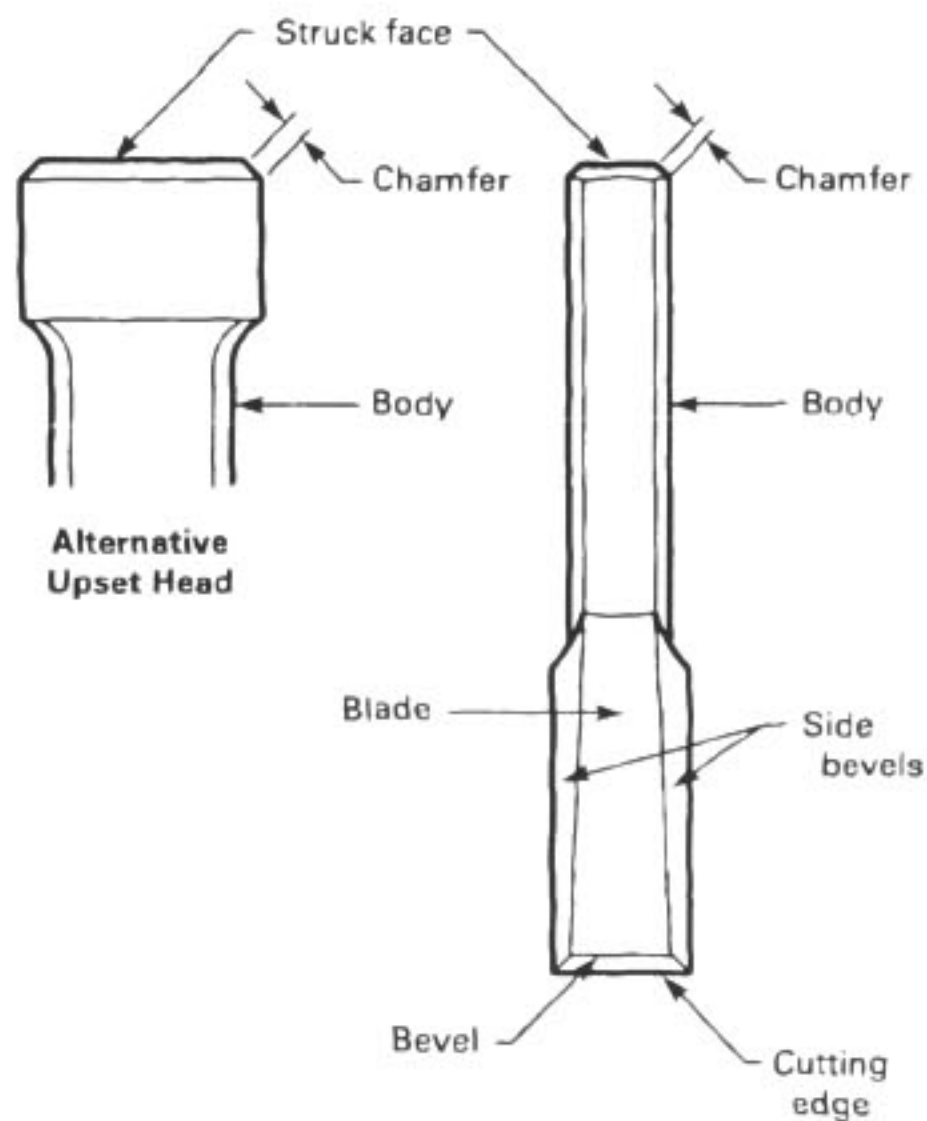


FIG. 2 NOMENCLATURE FOR ALL-STEEL WOOD CHISELS

handle: when provided, the portion attached to the body of the glaziers' chisel and wood chisel by which the tool is held.

hardness: the condition of the chisel resulting from heat treatment.

rounded head: the equivalent design for the struck face and chamfer portion of the chisel.

safety message: the information intended to promote safety that is imprinted on, or attached to, the chisel.

shall and should: mandatory requirements of this Standard are characterized by the word *shall*. If a provision is of an advisory nature, it is indicated by the word *should* or is stated as a recommendation.

side bevel: the slanting surface on side edges that decreases blade thickness.

struck face: the portion of the chisel directly opposite the cutting edge.

upset head: when provided, the portion of the chisel body having an enlarged cross-sectional area at the struck end of the tool including and underlying the struck face.

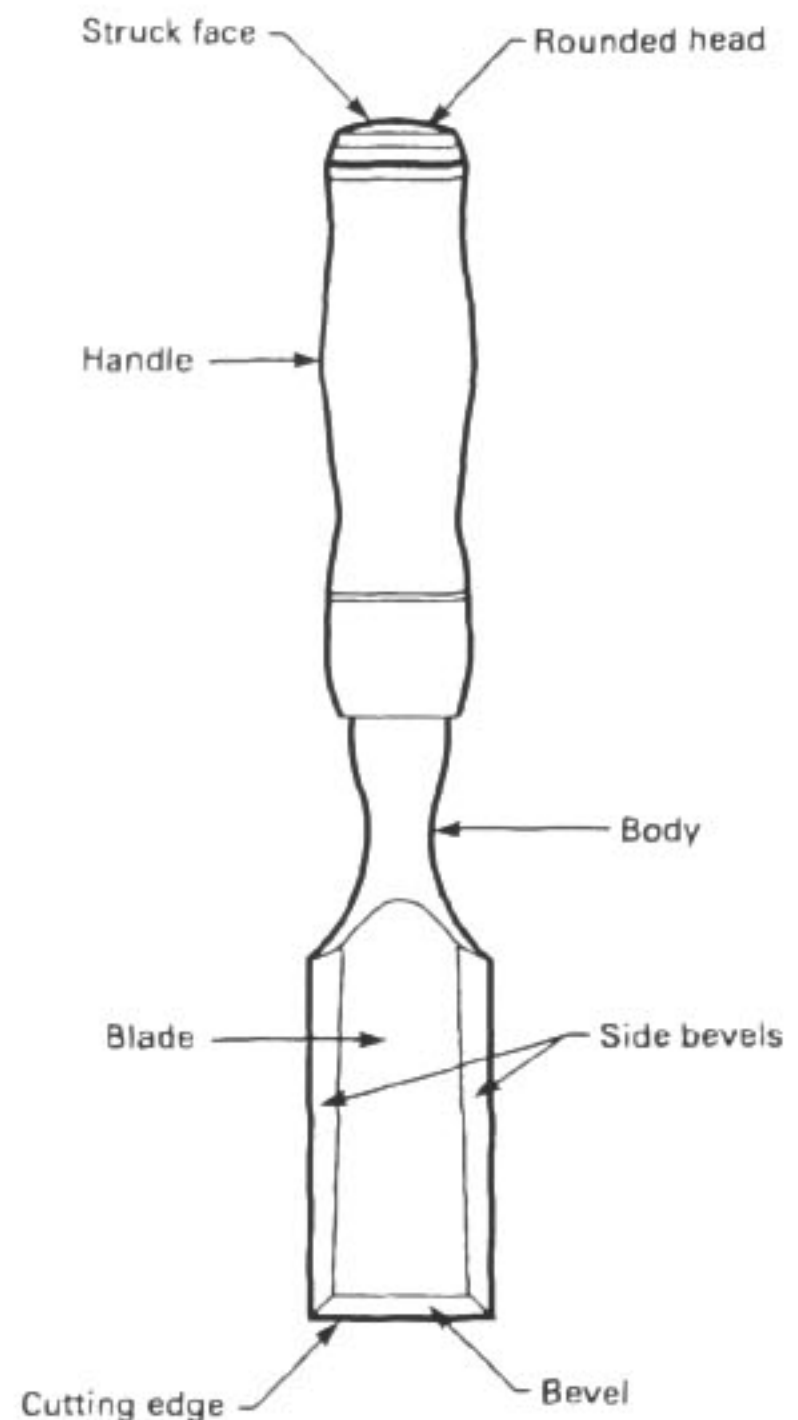


FIG. 3 NOMENCLATURE FOR WOOD CHISELS

4 REQUIREMENTS

4.1 Design

Chisels shall have a cutting edge on one end and a struck face on the opposite end to be struck by a hammer of the appropriate type. An appropriate hammer for a chisel shall have a striking face not less than 0.375 in. (9.53 mm) larger in diameter than the struck face of the chisel.

The names given in this Standard are those generally recognized. The styles covered by this Standard are listed in the following paragraphs and shown in Figs. 1, 2, and 3:

(a) glaziers' chisel: for installing and removing putty around window panes and for general wood chisel work relating to glazing; and

(b) wood chisel: for making rough and finish cuts in wood.

4.1.1 The struck face shall have a convex shape or a flat surface with a chamfer of approximately 45 deg (or an equivalent radius) around the perimeter with the lesser width (see Fig. 2) equal to approximately one-tenth of the body stock size. For example, if the body stock size equals 1 in. (25.4 mm), then the lesser chamfer width should equal approximately 0.1 in. (2.5 mm).

4.1.2 Chisels and handles shall be free of nonfunctional sharp edges, points, and surface roughness that could inflict personal injury on the user when handling the tool.

4.1.3 Chisels shall pass the applicable tests in para. 5.

4.2 Materials

The materials used in the manufacture of chisels shall be such as to produce chisels conforming to the requirements specified herein.

4.3 Mechanical Properties

4.3.1 Chisels shall be hardened and tempered to 53 HRC to 62 HRC or equivalent for a distance of not less than 0.25 in. (6.4 mm) from the cutting edge.

4.3.2 The hardness of the struck face of the chisel shall not exceed 44 HRC or equivalent.

5 TESTS

Many tests required herein are inherently hazardous, and adequate safeguards for personnel and property shall be employed in conducting such tests.

Separate (new) chisels shall be used for each of these tests. Failure to meet the requirements of any one of the tests indicates that the chisels do not comply with this Standard.

5.1 Hardness Determination Test

Hardness determination with respect to cutting edges and struck faces shall be made on a fixtured tool or on a suitable mounted or unmounted specimen that has been cut from the tool using the wet abrasive or other equivalent method. Any hardness test that utilizes equipment and methods equivalent to Rockwell hardness determination as specified in ASTM E 18 will be acceptable.

5.2 Side Force Test

There shall be no evidence of breaks, cracks, or permanent deformation when a side force as indicated

below is applied perpendicular and then parallel to the blade flats at 0.50 in. (12.7 mm) from the struck face, with the blade rigidly supported 1.5 in. (38 mm) from the cutting edge (see Fig. 4).

Cutting Edge Width, in. (mm)	Side Force, lbf (N)
Under 0.50 (12.7)	10 (44.5)
0.50 (12.7) up to but less than 1.00 (25.4)	20 (89)
1.00 (25.4) up to but less than 1.50 (38.1)	30 (133)
1.50 (38.1) and above	50 (222)

5.3 Impact Test

Chisels shall be mounted vertically with the cutting edge resting on a hardwood test dowel and oriented at 90 deg to the axis of the dowel (rod). The chisel should be retained in a vertical position with a snug-fitting fixture permitting unrestricted vertical movement in response to the impact of the drop weight on the chisel struck face. The dowel shall have a diameter of 1 in. (25.4 mm) and shall be made of hardwood, such as maple, birch, or beech.

The dowel with its end grain perpendicular to the cutting edge (see Fig. 5) shall rest on a solid foundation, such as a steel block, weighing not less than 20 lb (9.1 kg). A 10 lb (4.5 kg) cylindrical steel weight, with a striking face hardness of 45 HRC to 60 HRC, shall be dropped twenty times (through seamless tubing slightly larger than the diameter of the weight) onto the chisel struck face from the height indicated below.

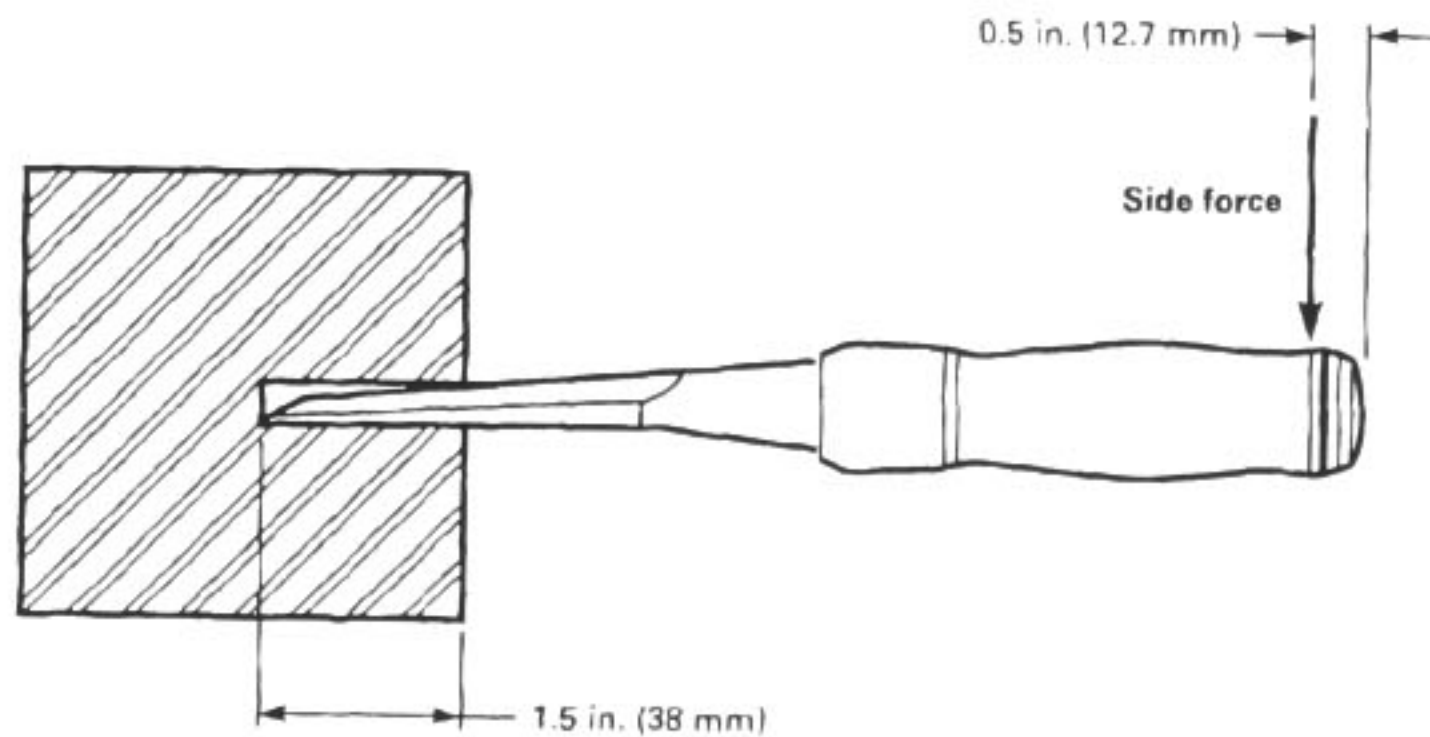
Cutting Edge Width, in. (mm)	Drop Height, in. (mm)
Under 0.50 (12.7)	6 (152)
0.50 (12.7) through 1.00 (25.4)	12 (305)
Over 1.00 (25.4)	16 (406)

The diameter of the striking face of the weight shall not be less than 0.375 in. (9.53 mm) larger than the struck face of the chisel. The test dowel shall be moved after each drop of the weight to make a new impression.

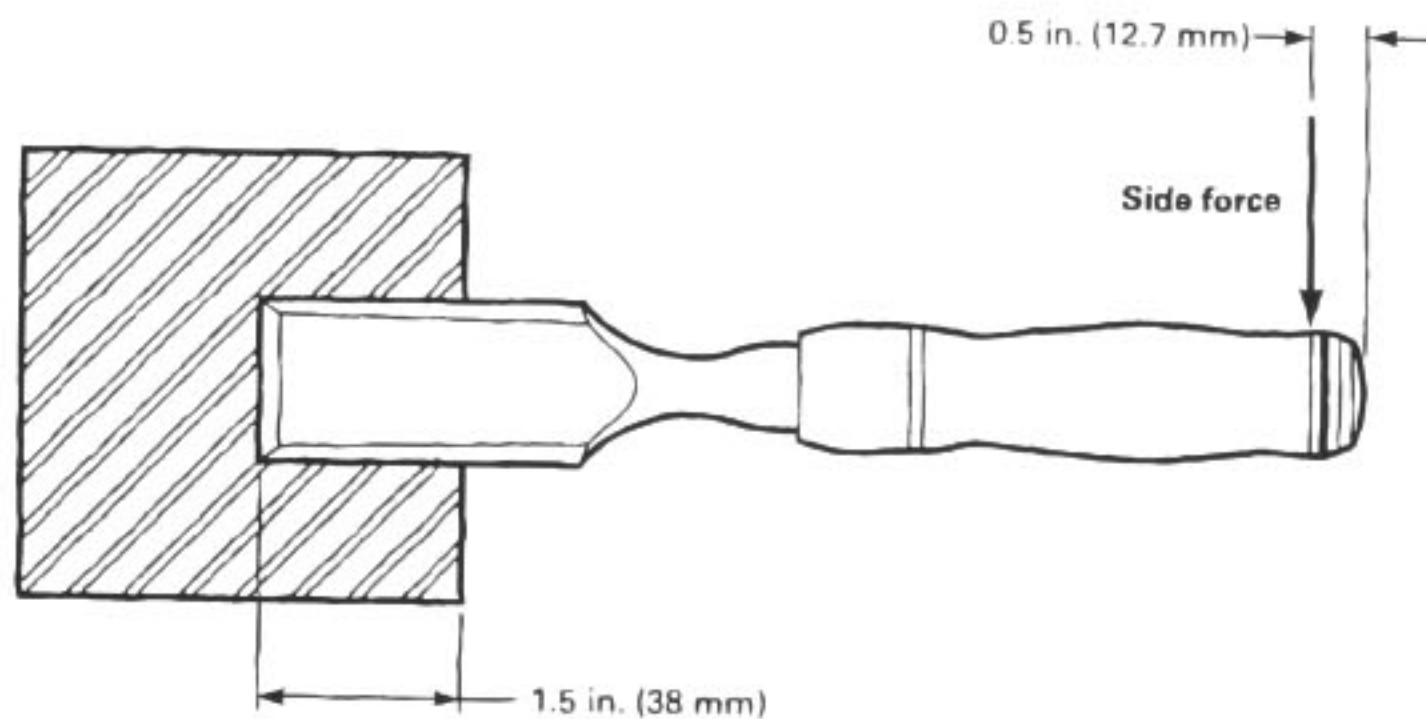
There shall be no chipping or spalling of either the cutting edge or the struck face, or cracking or bending of the chisel.

There shall be no deterioration of the handle. Normal deformation¹ at either end is permitted.

¹ This test is so severe that a degree of permissible deformation, such as denting of the cutting edge and the struck face, can be anticipated. A much less severe test would avoid this, but it would not provide the level of safety assurance desired.



(a) Perpendicular Load



(b) Parallel Load

FIG. 4 SIDE FORCE TEST FOR GLAZIERS' AND WOOD CHISELS**5.4 Tensile Force Test**

For chisels with separate handles, the chisel blade and handle shall not loosen when subjected to a 60 lb (266 N) tensile force applied at room temperature.

6 SAFETY REQUIREMENTS AND LIMITATIONS OF USE

Instructors and employers shall stress proper use and safety in the use of striking tools, and shall emphasize the necessity to wear, and ensure the use of, safety goggles or equivalent eye protection. The publication *Guide to*

Hand Tools — Selection, Safety Tips, Proper Use and Care provides guidelines for the safe use of these tools.

(a) Glaziers' chisels and wood chisels are special-purpose tools designed and intended only for use as listed in para. 4.1.

(b) To avoid possible eye and other bodily injury, glaziers' chisels and wood chisels shall not be used to cut metal or masonry objects.

(c) A hammer blow should always be struck squarely with the hammer face parallel with the struck face of the chisel. Glancing blows, overstrikes, and understrikes should be avoided.



FIG. 5 IMPACT TEST DOWEL PIN GRAIN ORIENTATION

(d) Chisels shall not be used for wedging, nor struck on any surface other than the struck face. The appropriate type and size of hammer to be used with a one-piece wood chisel shall have a striking face with a diameter not less than 0.375 in. (9.53 mm) larger than the struck face of the chisel.

(e) Safety goggles, or equivalent eye protection conforming to ANSI Z87.1, shall be worn by the user

and by all persons in the immediate area in which any chisel is being used, to avoid possible eye injury from flying objects.

(f) Chisels shall be inspected prior to each use and their use discontinued at the first sign of bending of the chisel, or chipping or cracking of the cutting edge or struck face.

(g) Except as indicated in paras. 6(h) and 6(i), no area, section, or portion of the chisel shall be ground, welded, treated by reheating, or otherwise altered from the original condition as furnished by the manufacturer.

(h) Dulling of the cutting edge may occur from tool usage. The cutting edge shall be resharpened or redressed to its original contour only by the use of a whetstone or hand file.²

(i) At the first indication of mushrooming, the chisel struck face shall be redressed to its original contour by the use of a hand file.²

(j) Each chisel shall be stamped, labeled, or otherwise marked by the manufacturer with the following safety message or equivalent:



**WARNING
WEAR SAFETY GOGGLES
USER AND BYSTANDER**

This safety message shall be located in a position that will not interfere with the quality or performance of the tool.

The principles set forth in ANSI Z535.4 shall be used as the guide for alternative, equivalent methods of labeling.

² It is understood that industrial users with adequate facilities and properly trained personnel may choose to redress or resharpen these tools by other means without altering the metallurgical characteristics of the tools.

AMERICAN NATIONAL STANDARDS FOR HAND TOOLS

Socket Wrenches, Hand (Inch Series)	B107.1-2002
Socket Wrenches, Extensions, Adaptors, and Universal Joints, Power Drive (Impact) (Inch Series)	B107.2-2002
Socket Wrenches, Power Drive (Non-Impact) (Inch Series)	B107.3-1978(R1991)
Driving and Spindle Ends for Portable Hand, Impact, Air, and Electric Tools (Percussion Tools Excluded)	B107.4M-1995
Socket Wrenches, Hand (Metric Series)	B107.5M-1994
Adjustable Wrenches	B107.8M-1996
Handles and Attachments for Hand Socket Wrenches — Inch and Metric Series	B107.10M-1996
Pliers, Diagonal Cutting, and Nippers, End Cutting	B107.11M-1993
Nut Drivers (Spin Type, Screwdriver Grip) (Inch Series)	B107.12-1997
Pliers — Long Nose, Long Reach	B107.13M-1996
Hand Torque Tools	B107.14M-1994
Flat Tip and Phillips Screwdrivers	B107.15-1993
Shears (Metal Cutting, Hand)	B107.16M-1998
Gages, Wrench Openings, Reference	B107.17M-1997
Pliers (Wire Twister)	B107.18M-1996
Pliers, Retaining Ring	B107.19-1993(R1998)
Pliers (Lineman's, Iron Worker's, Gas, Glass, Fence, and Battery)	B107.20M-1998
Wrench, Crowfoot Attachments	B107.21-1998
Electronic Cutters	B107.22M-1998
Pliers, Multiple Position, Adjustable	B107.23M-1997
Pliers — Performance Test Methods	B107.25M-1996
Pliers, Multiple Position (Electrical Connector)	B107.27-1996
Electronic Torque Instruments	B107.28M-1997
Electronic Tester, Hand Torque Tools	B107.29M-1998
Screwdrivers, Cross Tip Gaging	B107.31M-1997
Socket Wrenches for Spark Plugs	B107.34M-1997
Nut Drivers (Spin Type, Screwdriver Grip) (Metric Series)	B107.35M-1997
Electronic Pliers	B107.38M-1998
Nail Hammers — Safety Requirements	B107.41M-1997
Hatchets: Safety Requirements	B107.42M-1997
Wood-Splitting Wedges: Safety Requirements	B107.43M-1997
Glaziers' Chisels and Wood Chisels	B107.44-2002
Ripping Chisels and Flooring/Electricians' Chisels	B107.45-2002
Stud, Screw, and Pipe Extractors: Safety Requirements	B107.46M-1998
Metal Chisels: Safety Requirements	B107.47M-1998
Metal Punches and Drift Pins: Safety Requirements	B107.48M-1998
Nail Sets: Safety Requirements	B107.49M-1998
Brick Chisels and Brick Sets: Safety Requirements	B107.50M-1998
Star Drills: Safety Requirements	B107.51-2001
Nail-Puller Bars: Safety Requirements	B107.52M-1998
Ball Peen Hammers: Safety Requirements	B107.53M-1998
Heavy Striking Tools: Safety Requirements	B107.54-2001
Axes: Safety Requirements	B107.55M-2002
Body Repair Hammers and Dolly Blocks: Safety Requirements	B107.56-1999
Bricklayers' Hammers and Prospecting Picks: Safety Requirements	B107.57-2001
Riveting, Scaling, and Tinner's Setting Hammers: Safety Requirements	B107.58M-1998
Slugging and Striking Wrenches	B107.59-2002
Wrenches	B107.100-2002

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