

ASME B107.57-2005
(Revision of ASME B107.57-2001)

Bricklayers' Hammers and Prospecting Picks

AN AMERICAN NATIONAL STANDARD



**The American Society of
Mechanical Engineers**

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Three Park Avenue • New York, NY 10016

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FOREWORD

The development of this Standard was initiated by the Striking and Struck Tools Standards Committee, consisting of technical representatives of manufacturer members of the Hand Tools Institute (HTI). This Standard was previously numbered ANSI/HTI B173.6-1991. The American National Standards Committee B107, Socket Wrenches and Drives, under sponsorship of 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 B173 Committee 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 bricklayers' hammers and prospecting picks, 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 addition of grip testing. The Standard was also restructured for consistency with other B107 standards.

The format of this Standard is in accordance with *A Guide to Writing ASME Codes & Standards*. Requests for interpretations, and suggestions for the improvement of this Standard, should be addressed to The American Society of Mechanical Engineers, Secretary, B107 Main Committee, Three Park Avenue, New York, NY, 10016-5990.

This Foreword is not a part of ASME B107.57, *Bricklayers' Hammers and Prospecting Picks*, and is included for information purposes only.

The requirements of this Standard become effective at the time of publication. This revision was approved as an American National Standard on December 13, 2005.

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.

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BRICKLAYERS' HAMMERS AND PROSPECTING PICKS

1 SCOPE

This Standard provides performance and safety requirements for bricklayers' hammers that are intended specifically for use in setting and cutting (splitting) bricks, masonry tile, chipping mortar from bricks, and also of prospecting picks that are intended specifically for use in pulling samples from the ground. 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.

The 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 formation 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 REFERENCES

The following documents form a part of this Standard to the extent specified herein. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreement based on this Standard are encouraged to investigate the possibility of applying the most recent edition of the listed standards.

ANSI Z87.1-1989, Practice for Occupational and Educational Eye and Face Protection

ANSI Z87.1a-1991, Supplement

ANSI Z535.4-1991, Product Safety Signs and Labels

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

ASTM E 18-94, Standard Test Methods for Rockwell Hardness and Rockwell Superficial Hardness of Metallic Materials

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

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

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

3 DEFINITIONS

For the purpose of this Standard, the following definitions apply (see Figs. 1 and 2, as applicable):

bell (poll): the portion of the hammerhead directly behind the face.

bevel: the underside of the cutting edge (bit) of the bricklayers' hammer.

blade: the tapered portion of the bricklayers' hammerhead directly opposite the face.

chamfer: the angled flat surface or equivalent radius encircling the perimeter of the face of the bricklayers' hammer and prospecting picks and at both ends of the cutting edge of the bricklayers' hammer.

cheeks: see *sides*.

cutting edge (bit): the edge directly opposite the face of the bricklayers' hammerhead at the extreme end of the blade.

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

eye: an opening or aperture in the bricklayers' hammer or prospecting pick located between the blade or pick and the face into which the handle is inserted if the handle is separate.

face: the portion of the bricklayers' hammerhead or prospecting pick head, exclusive of the bell and chamfer, located on the end of the head opposite from the blade or pick end.

handle: the portion that protrudes from the hammerhead or pick head and by which the tool is held.

handle grip: material securely attached to the grip end of some styles of hammer or pick handles.

hardness: the condition of the hammerhead or pick head resulting from heat treatment.

neck: on some bricklayers' hammers of alternative design (see Fig. 1), the portion of the hammerhead between the bell and the hammer eye.

pick: the portion of the prospecting pick directly opposite the face.

safety message: the information imprinted on or affixed to the hammer that is intended to promote safety.

shall and should: mandatory requirements of this Standard are characterized by the word "shall." If a provision

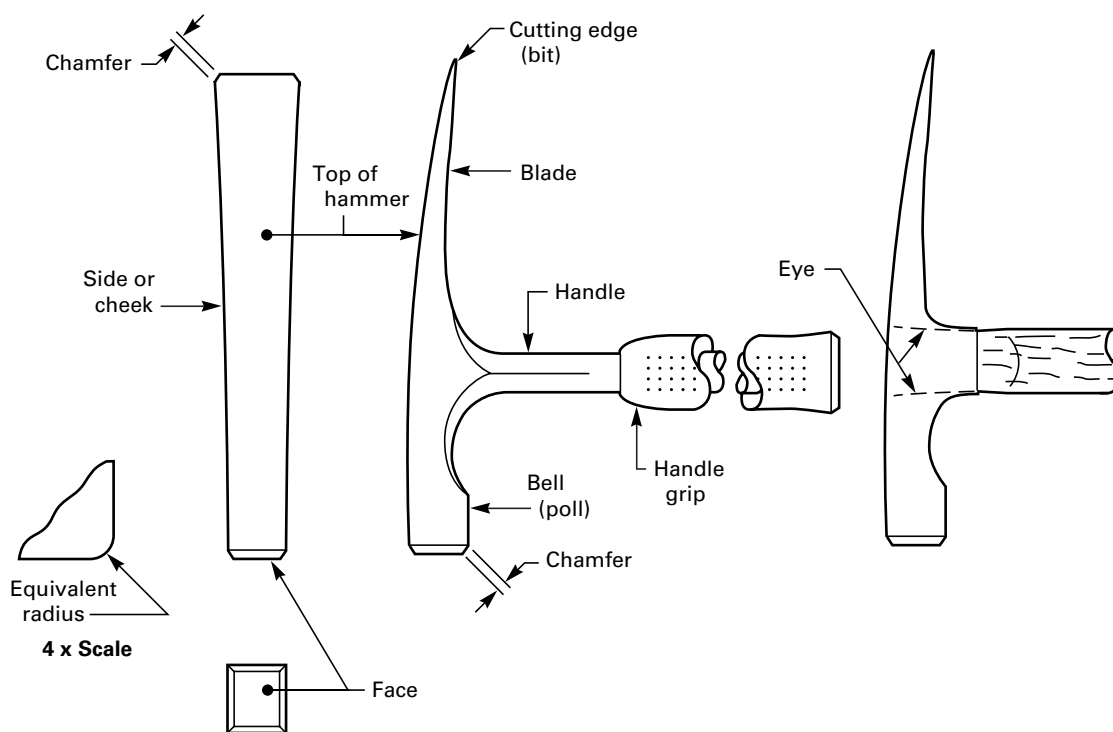


Fig. 1 Bricklayer's Hammer

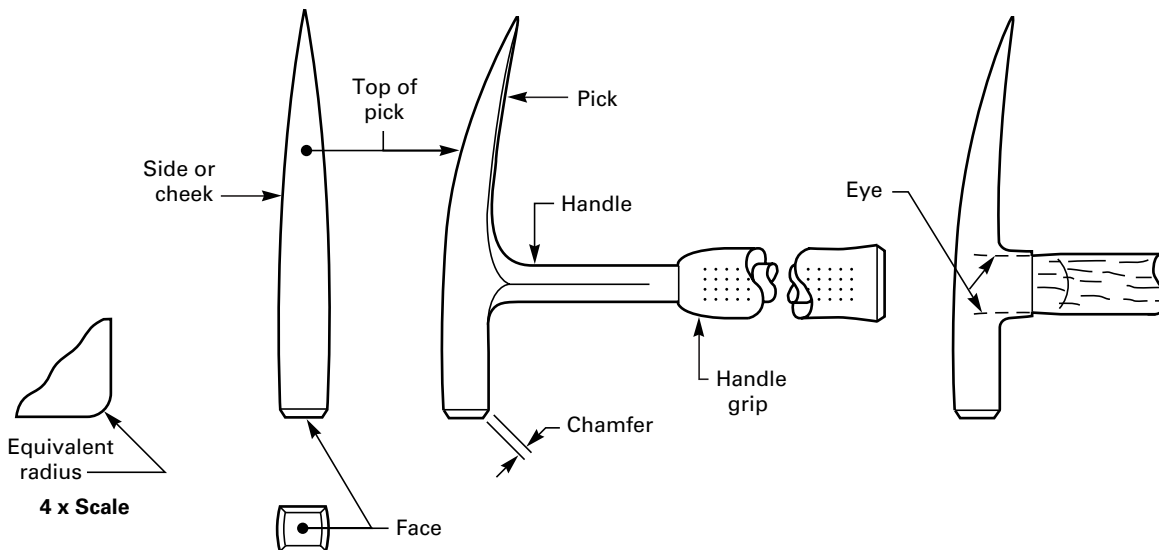


Fig. 2 Prospecting Pick

is of an advisory nature, it is indicated by the word "should" or is stated as a recommendation.

sides: outside surfaces of the hammerhead, on either side of the eye, located between the blade and chamfer or neck on bricklayers' hammers and the pick end and chamfer on prospecting picks; also called *cheeks*.

top of hammer or pick: the portion of the hammer or prospecting pick head opposite the handle entry.

4 REQUIREMENTS

4.1 Design

Bricklayers' hammers shall have a face on one end of the head and a cutting edge on the opposite end for use in setting and cutting (splitting) bricks, masonry tile, concrete tile, and concrete blocks and for chipping mortar from bricks. Prospecting picks shall have a face on one end of the head and a pick on the opposite end of the head for use in pulling samples from the ground.

4.1.1 The faces of the heads shall be flat.

4.1.2 The faces shall have a chamfer of 45 deg (or equivalent radius) all around the perimeter with the width equal to approximately 0.06 in.

4.1.3 The underside of the cutting edge or bit of the bricklayers' hammer shall have a bevel of approximately 30 deg – 45 deg. The two outer corners of the cutting edge shall have a chamfer of approximately 45 deg or equivalent radius.

4.1.4 Handles shall be of any design, including ergonomic, that can withstand the tests specified in paras. 5.2 and 5.3.

4.1.5 The head and handle shall be free of nonfunctional sharp edges, points, and surface roughness that could inflict personal injury on the user while handling the bricklayers' hammer or prospecting pick.

4.2 Materials

The materials used in the manufacture of bricklayers' hammers and prospecting picks shall be such as to produce tools conforming to the requirements specified herein.

4.3 Mechanical Properties

4.3.1 The faces of the hammerheads and pick heads shall be hardened and tempered to a hardness of 45 – 60 HRC or equivalent. The material directly behind the face shall be a toughened supporting core, gradually decreasing in hardness.

4.3.2 The blade of the bricklayer's hammer and the pick end of the prospecting pick shall be hardened to a hardness of 45 – 60 HRC or equivalent for a minimum distance of 0.75 in. from the bit end and the pick end, respectively.

4.3.3 The face, blade, and pick end shall not sink, mushroom, chip, crack, or spall when subjected to the striking test specified in para. 5.2.

4.3.4 Handles shall not loosen or separate from the head, crack, or break when subjected to the tests specified in paras. 5.2 and 5.3.

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) samples shall be used for each of the tests. Failure to meet the requirements of any of the tests indicates the bricklayer's hammer or prospecting pick is not in compliance with this Standard.

5.1 Hardness Determination Test

Hardness determination with respect to faces, blades, and picks shall be made in accordance with ASTM E 18.

5.2 Striking and Tensile Force Test

Prior to tensile force testing, sample tools shall be subjected to the following striking test. The tools shall withstand 20 blows at a head velocity of 45 – 55 ft/sec (approximated by a person of average build, 160 lb – 180 lb). The test shall be conducted at room temperature. This velocity shall be achieved with the hammer held or fixtured at the normal gripping area. The tool¹ shall be struck against the smooth, slightly convex surface of a rigidly supported steel object with a minimum diameter of 3 in. and a minimum length of 2 in., the hardness of which shall be equivalent to a hardness of 92 HRB – 105 HRB or equivalent.

The hammerhead shall not permanently deform, crack, or break. Handles shall not separate from the hammerhead, crack, or break. The striking face shall not mushroom, chip, crack, or spall when subjected to the striking test.²

Following the striking test, assemblies consisting of two or more separate parts (head and handle) shall not loosen or separate when subjected to the static tensile forces specified:

(a) 400 lbf on tools with head weights of less than 20 oz

(b) 1,000 lbf on tools with head weights of 20 oz and greater

5.3 Static Force Test

The hammerhead or pick head shall be locked securely in test fixture with the face down and the handle extended in the horizontal plane. A static force shall be

¹ The tool face is flat. Thus, the struck surface should be convex. Striking flat surface against flat surface should be avoided.

² The striking test is so severe that a degree of permissible deformations or serrations on the striking face of hammers can be anticipated.

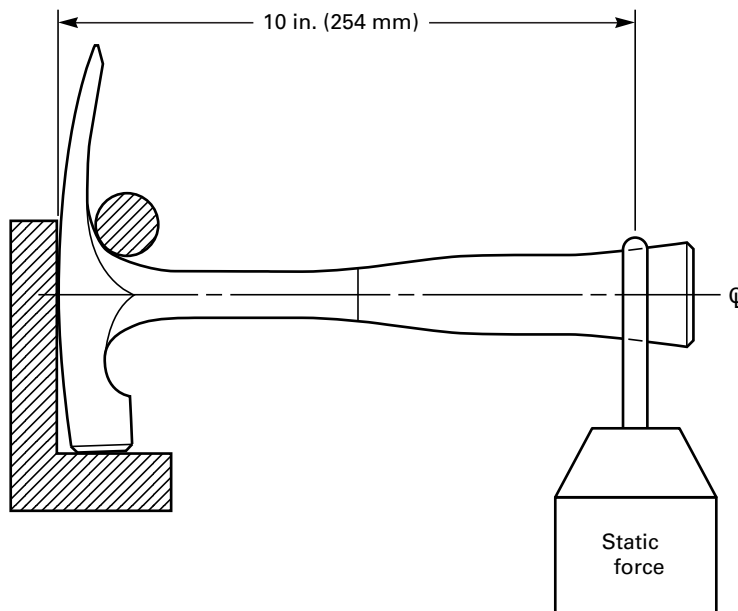


Fig. 3 Typical Static Force Test

applied vertically at a point on the handle measuring 10 in. from the top of the hammer (see Fig. 3). The force shall be as follows:

- (a) 80 lbf on tools with head weights of less than 20 oz
- (b) 100 lbf on tools with head weights of 20 oz and greater

Handles shall not break, loosen, or otherwise fail.

5.4 Grip Test

5.4.1 Solvent Resistance Test. Grips shall be fully immersed in the test fluids specified (new sample grips shall be used for each test fluid) for 15 – 20 min at room temperature, removed, and let stand for 24 – 28 hr. Test fluids are SAE J1703 brake fluid, gasoline, ethylene glycol, and ethyl alcohol. There shall be no significant swelling nor surface attack of the material being tested. Grips shall be tested while attached to the hammer or pick handle.

5.4.2 Twisting. Following the Solvent Resistance Test, hammers and picks shall be secured by hand and the grip twisted at the normal hand grip position in alternating directions. Five alternating twisting motions shall be performed, after which there shall be no grip looseness or separation from the handle.

5.4.3 Specific Test for Mechanically Bonded and Chemically Bonded Grips. Following twisting, grips shall be tested per 5.4.3(a) or 5.4.3(b).

(a) Mechanically bonded grips shall be tensile-force tested using the values in para. 5.2 (for wedged and nonwedged hammers) or 500 lbf (whichever is less) applying the force only to the grip (using a woven wire

cuff or other suitable device). The grip shall not loosen or separate from the handle.

(b) Chemically bonded grips shall be cut longitudinally so that a segment may be pulled. The segment shall separate from the handle such that some of the grip material that was pulled shall remain adhered to the handle.

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) To avoid possible eye or other bodily injury, bricklayers' hammers and prospecting picks shall be used only for the purposes specified in Section 1 and shall not be used to strike hard or hardened objects such as masonry nails, brick chisels or sets, hatchets, axes, splitting wedges, mauls, other hammers, and other steel tools or be struck by any striking tool or other hardened object.

(b) 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 a bricklayers' hammer or prospecting pick or any striking tool is being used to avoid injury from possible flying objects.

(c) Tool heads shall be inspected prior to each use and their use discontinued at the first sign of chipping, mushrooming, or cracking of any portion.

(d) No area, section, or portion of the head of a bricklayer's hammer or prospecting pick shall be ground, welded, treated by reheating, or otherwise altered from the original condition as furnished by the manufacturer except that a dull cutting edge or pick end may be redressed to its original contour using a hand file or whetstone.

(e) Handles shall be inspected prior to each use and damaged handles shall be replaced. Handles shall be free of splinters or cracks and shall be kept tight in the head of the tool. Replacements shall withstand the test requirements specified in paras. 5.2 and 5.3 and shall be equivalent to the original handle in size and quality.

(f) When provided, handle grips that have loosened from the handle shall be tightened or replaced.

(g) Instructors or employers shall stress proper use and safety in the use of bricklayers' hammers and prospecting picks 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 safe use of these tools.

(h) Each bricklayer's hammer or prospecting pick shall be stamped, labeled, or otherwise marked by the manufacturer with the following safety message and symbols 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. It shall also appear on all replacement handles.

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

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