

ANSI/BHMA A156.22-2017
Revision of BHMA A156.22 - 2012



AMERICAN NATIONAL STANDARD
FOR
DOOR GASKETING and EDGE SEAL SYSTEMS



SPONSOR
BUILDERS HARDWARE MANUFACTURERS ASSOCIATION, INC.

AMERICAN NATIONAL STANDARDS INSTITUTE
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AMERICAN NATIONAL STANDARD**

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FOREWORD (This Foreword is not a part of ANSI/BHMA A156.22)

The general classification of builders hardware includes a wide variety of items which are divided into several categories. To recognize this diversity, a sectional classification system has been established. Door Gasketing Systems is one such sub section and this Standard is a result of the collective efforts of members of the Builders Hardware Manufacturers Association, Inc. who manufacture this product. The total Product Standards effort is, therefore, a collection of sections, each covering a specific category of items.

Performance tests have been established to ensure safety and stability to which the public is entitled. There are no restrictions on design.

This Standard is not intended to obstruct but rather to encourage the development of improved products, methods and materials. The BHMA recognizes that errors will be found, items will become obsolete, and new products, methods and materials will be developed. With this in mind, the Association plans to update, correct and revise these Standards on a regular basis. It shall also be the responsibility of manufacturers to request such appropriate revisions.

The BHMA numbers which indicate functions of gasketing do not identify size or design and are not intended to be used without necessary supplementary information. Individual manufacturer's catalogs are to be consulted.

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1. SCOPE

1.1 This Standard establishes requirements for the performance and installation of gasketing systems including intumescent applied to, or mortised to doors, frames or both. Included are performance tests intended to evaluate resistance to smoke and air infiltration, energy performance, acoustic properties, and the life and durability of gasketing materials.

1.2 Requirements apply to factory or field installed materials.

1.3 Tests described in this Standard are performed under laboratory conditions. In actual usage, results vary because of installation, maintenance and environmental conditions.

2. DEFINITIONS

2.1 **Applied** The gasketing is installed onto a door or frame or both in the field.

2.2 **Astragal(s)** One or more elements applied to the meeting stile(s) to cover or seal the gap between a pair of doors.

2.3 **Automatic Door Bottom** A mechanical device to seal the space between the door and the floor or threshold upon closing, for purposes such as reducing air infiltration or sound transmission. Also called a “drop seal”.

2.4 **Closer** A spring powered device having a controlling means used to close a door.

2.5 **Combination Intumescent Gasket** A product comprised of both intumescent material and other gasketing materials.

2.6 **Edge Seal Systems** Listed products that may be required by the door manufacturer’s installation instructions to provide protection to the perimeter and meeting edge of doors and door frames, to prevent the flow of hot gasses around the assembly in the event of fire. Commonly referred to as Category G listed sealing systems.

2.7 **Gasketing** Material applied to a door or frame for the purpose of reducing or sealing the clearances around a door, to reduce the passage of air, smoke, sound, light, or water.

2.8 **Integral** The gasketing is incorporated in a door or frame or both during the manufacturing process.

2.9 **Intumescent** A range of materials that expand in volume when exposed to heat or flame.

2.10 **Kerf** A cut or channel produced by a tool.

2.11 **Latch Bolt** A lock component having a beveled end which projects from the lock front in an extended position but is forced back into the lock case by end pressure or drawn back by action of the lock mechanism. When the door is closed, the latch bolt projects into a hole provided in the strike, and holds the door in a closed position.

2.12 **Retainer** Part of some gasketing types providing a means of holding the gasketing material. Is allowed to have flanges to facilitate mounting or serve as a housing for other components. May also be called a housing.

2.13 **Strike** A plate fastened to the door frame into which the bolts project.

3. GENERAL

3.1 **Values.** Required values in this Standard are given in U.S. units. SI (metric) equivalents are shown in parentheses and are approximate.

3.2 ANSI Standards referenced in this Standard are available from the American National Standards Institute, 11 West 42nd Street, New York, NY 10036 or www.buildershardware.com. ASTM Standards are available from ASTM, 100 Barr Harbor Dr., W. Conshohocken, PA 19428-2959

3.3 Gasketing applied to fire door assemblies shall be in accordance with the requirements of the Standard ANSI/NFPA 80 for Fire Doors and Windows. The gasketing shall be listed by a nationally recognized testing laboratory and be under an in-plant follow-up inspection service.

3.4 Reference Standards ANSI/BHMA A156.1-2013 for Butts and Hinges, ANSI/BHMA A156.2-2011 for Bored and Preassembled Locks, ANSI/NFPA 80-2016 for Fire Doors, ASTM E283-2004 Standard Test Method for Determining Rate of Air Leakage, and Windows, UL1784-2009 Air Leakage Test of Door Assemblies.

3.5 Gasketing may be grouped into three categories based on where it is applied: Bottom of door, Meeting Stile, and Perimeter (applied to either a door at the stiles and top rail, or to a frame at the jambs and header).

4. TEST EQUIPMENT

4.1 Test Door

Provide a structure to support a standard 18 gauge steel door and a standard 16 gauge steel door frame. The door(s) shall be 36 in x 84 in x 1 3/4 in (914 x 2134 x 44 mm) nominal with an 1/8 in (3.175 mm) per 2 in (50.8 mm) bevel both edges. For testing astragals on pairs of doors, the inactive leaf shall be held in position, with a gap between the meeting edges of the pair measuring 1/8 in +/- 1/16in (3.175 mm +/- 1.587 mm). Air leakage rates for perimeter and meeting edge seals are permitted to be tested separately, and added together to represent the assembly. Where required by the application and approved by the test lab, doors of other materials may be substituted provided the setup results in equivalent conditions and meets manufacturer's installation specifications. Adjust the frame before installing the door so that it is level, plumb and square within 1/32 in (0.8 mm). The door shall be hung with three 4 1/2 x 4 1/2 in (114 x 114 mm) Grade 2 full mortise hinges meeting the requirements of ANSI/BHMA A156.1 for Butts and Hinges. Install a function F81 or F82 Grade 1 bored lockset located at 40 in (1016mm) plus or minus 2in. (50.8mm) from the finished floor. The lockset shall meet the requirements of ANSI/BHMA A156.2 for Bored and Preassembled Locks. The strike plate shall be in accordance with ANSI/BHMA A115 and mounted in the door frame so that when the door is closed and the latch bolt is engaged in the strike plate, a 1/16 in (1.6 mm) space is maintained between the door face and the stop on the frame. Check the alignment of the door in the frame and adjust as necessary by shimming the hinges so that the resulting gaps between the door and frame are parallel within 1/32 in (0.8 mm) and that the spacing is as follows, and as illustrated in Figure 1. Take the measurements from the high side of the bevel. See figure below.

Location	Inches (mm)
Hinge Edge	.062 ± .032 (1.6 ± 0.8)
Top & Lock Edge	.125 ± .032 (3.2 ± 0.8)
Face to Stop	.062 ± .032 (1.6 ± 0.8)

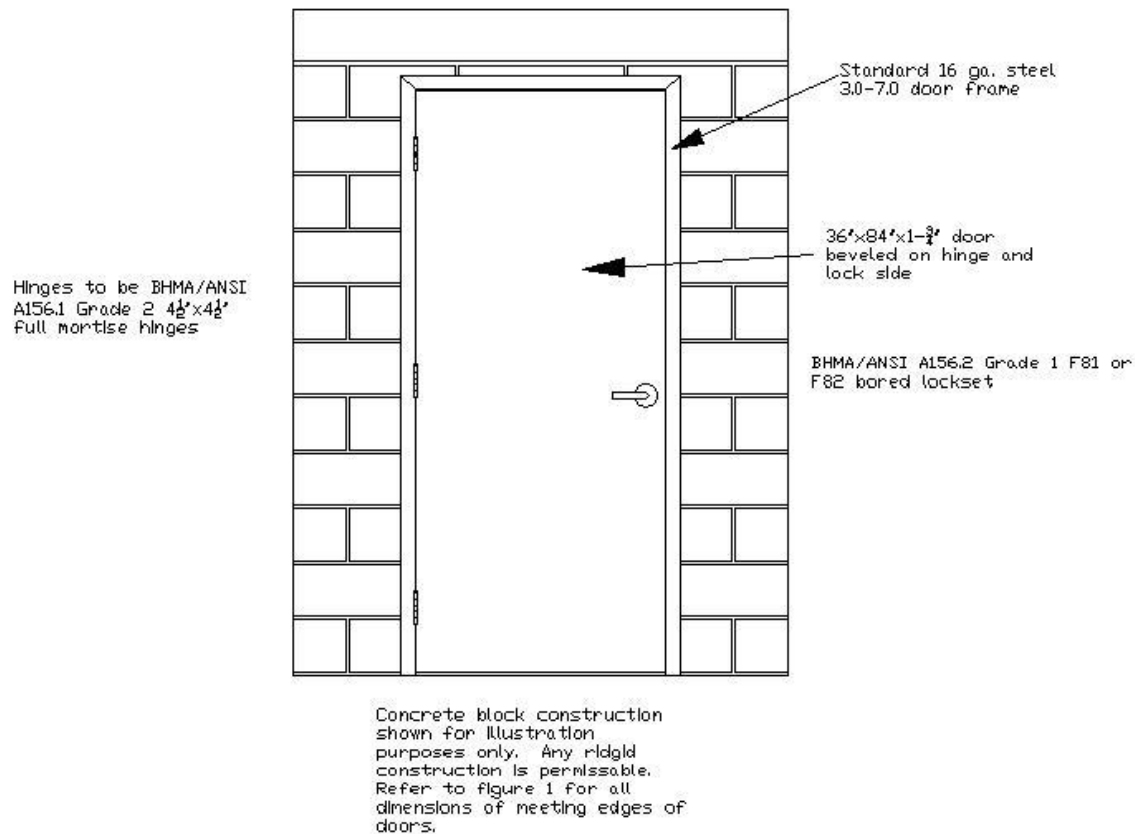


FIGURE 1

4.2 Oven

Provide an air-circulating oven capable of being heated to 500 degrees F (260C), allow free circulation of air, and large enough to contain the applicable fixtures described in the standard. The oven shall be capable of raising the temperature in 10°F (5.5°C) increments and maintaining that temperature for at least 10 minutes without varying by more than 1°F (0.5°C).

4.3 Freezer

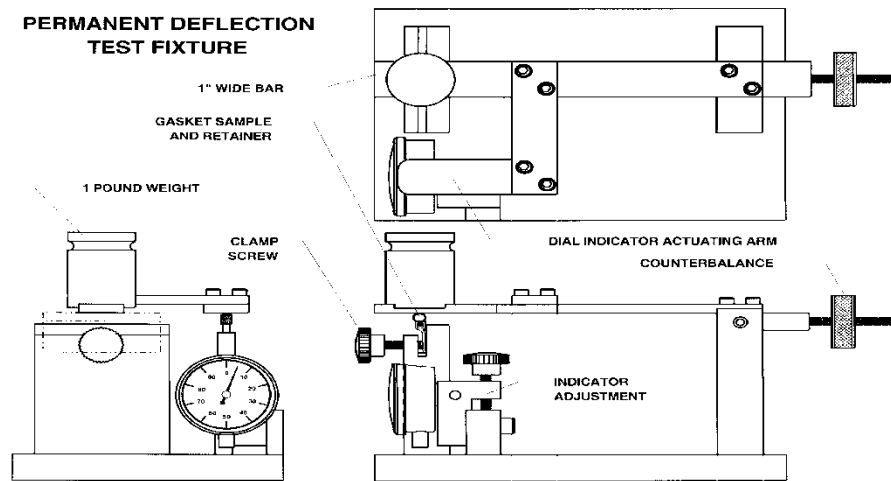
Provide a freezer capable of maintaining a temperature of minus 40 degrees F $\pm$ 5 (-40C $\pm$ 3) and able to hold a minimum of 3 suspended 12 in (305 mm) long sections of gasketing.

4.4 Environmental Test Chamber

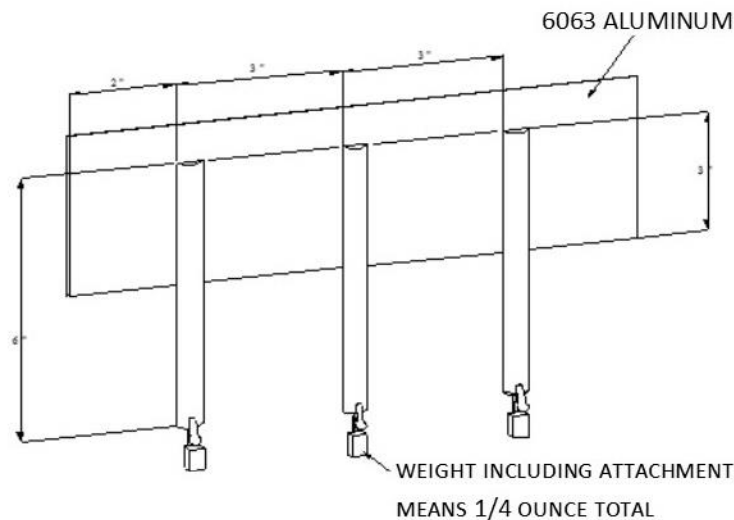
Provide an air-circulating chamber capable of exposing the test samples in a vertical orientation, and providing the cycle described in section 7.2. The chamber shall allow free circulation of air and humidity, and be large enough to contain the applicable fixtures described in the standard. The chamber shall be capable of raising or lowering the temperature and humidity in accordance with the test cycle requirements.

4.5 Deflection Test Fixture

The pivot point must move freely.



4.6 Adhesion Test Fixture



4.7 Tolerances and Measuring Equipment Required values in this Standard are given in Imperial Units. The SI (metric) equivalents are approximate. All values which do not carry specific tolerances or are not marked maximum or minimum shall have the following tolerances: Linear dimensions shall be $\pm 1/16$ in (1.6 mm). Pounds or pound force shall be $\pm 5\%$. Angular measurements shall be ± 4 degrees. Voltage measurements shall be ± 5 percent. Temperature measurements shall be ± 4 degrees F (± 2 degrees C). Relative humidity shall be ± 5 percent.

Measuring equipment shall consist of commercial force meters, load dynamometers, and tension loading devices capable of a combined calibration and reading accuracy within 5% to obtain test data as specified in the applicable performance tests. Linear measuring gauge shall be accurate to reading within ± 0.005 in. (0.13 mm) to obtain test data as specified. Weighing scales shall be accurate to .05 grams. Measuring equipment shall consist of temperature and humidity instruments which document the total cycle in a time vs. temperature/humidity chart.