Designation: E1612/E1612M – 94 (Reapproved 2013)ε1

Standard Specification for Preformed Architectural Compression Seals for Buildings and Parking Structures[1]

This standard is issued under the fixed designation E1612/E1612M; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

ε1 NOTE—Units information was editorially corrected in September 2013.

1. Scope

1.1 This specification covers the physical requirements for the fully cured elastomeric alloy and the movement capabilities of preformed architectural compression seals used for sealing expansion joints in buildings and parking structures. The preformed architectural compression seal is a rectangular elastomeric extrusion, having an internal baffle system produced continuously and longitudinally throughout the material. The architectural compression seal functions under compression and is usually chemically bonded in place with an adhesive.

NOTE 1—Movement capability is defined in Test Method E1399/E1399M.

1.2 This specification covers all colors of architectural compression seals.

1.3 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

D395 Test Methods for Rubber Property—Compression Set

D412 Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension

D471 Test Method for Rubber Property—Effect of Liquids

D518 Test Method for Rubber Deterioration—Surface Cracking (Withdrawn 2007)[3]

D624 Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers

D746 Test Method for Brittleness Temperature of Plastics and Elastomers by Impact

D792 Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement

D865 Test Method for Rubber—Deterioration by Heating in Air (Test Tube Enclosure)

D1052 Test Method for Measuring Rubber Deterioration—Cut Growth Using Ross Flexing Apparatus

D1149 Test Methods for Rubber Deterioration—Cracking in an Ozone Controlled Environment

D2000 Classification System for Rubber Products in Automotive Applications

D2240 Test Method for Rubber Property—Durometer Hardness

D3183 Practice for Rubber—Preparation of Pieces for Test Purposes from Products

E577 Guide for Dimensional Coordination of Rectilinear Building Parts and Systems (Withdrawn 2011)[3]

E631 Terminology of Building Constructions

E1399/E1399M Test Method for Cyclic Movement and Measuring the Minimum and Maximum Joint Widths of Architectural Joint Systems

3. Terminology

3.1 *Definitions*—Terms defined in Terminology E631 will prevail for terms not defined in this specification.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *architectural compression seal*—a preformed extrusion, manufactured from a fully cured elastomeric alloy, having an internal baffle system produced continuously and

[1] This specification is under the jurisdiction of ASTM Committee E06 on Performance of Buildings and is the direct responsibility of Subcommittee E06.21 on Serviceability.

Current edition approved Sept. 1, 2013. Published September 2013. Originally approved in 1994. Last previous edition approved in 2009 as E1612 – 94 (2009). DOI: 10.1520/E1612_E1612M-94R13E01.

[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[3] The last approved version of this historical standard is referenced on www.astm.org.

longitudinally throughout the material without flanges or means of securing it mechanically.

3.2.2 *architectural joint system*—any filler or cover, except poured or formed in place sealants, used to span, cover, fill, or seal a joint.

3.2.2.1 *Discussion*—Joint is defined in Guide E577.

4. Materials and Manufacture

4.1 The architectural compression seal shall be a preformed extrusion manufactured from a fully cured elastomeric alloy. This alloy shall be classified under Classification System D2000 as either of the following:

4.1.1 M2CE 706 A16B15C12C20F19Z1Z2, or

4.1.2 M2CE 708 A16B15C12C20F19Z1Z2.

4.2 Z1 represents more than 2 000 000 flex cycles as tested under the Ross Flex Test, Test Method D1052.

4.3 Z2 represents a 40 % maximum compression set as in accordance with Test Methods D395, Method B, 22 h at 125°C [257°F] at 25 % deflection.

5. Physical Requirements

5.1 The fully cured elastomeric alloy supplied in plaque form shall conform to the material requirements prescribed in Table 1.

5.2 The finished architectural joint seal shall conform to the material requirements prescribed in Table 2.

5.3 The movement capabilities shall be established using Test Method E1399/E1399M.

6. Dimensions, Mass, and Permissible Variations

6.1 The size, shape, internal structure, and tolerances shall be as agreed upon by the purchaser and the producer or supplier.

7. Workmanship, Color, and Appearance

7.1 The architectural compression seal shall be free of defects in workmanship. Defects in the extrusion shall consist of the following:

7.1.1 Holes,

7.1.2 Air bubbles, and

7.1.3 Parts not conforming to 6.1.

7.2 The cross section of the seal shall be as agreed upon by the purchaser and the producer or supplier.

7.3 The color of the seal shall be as agreed upon by the purchaser and the producer or supplier.

TABLE 1 Requirements for Fully Cured Elastomeric Alloy Injection Molded Plaques

Property	Requirement	Test Method
Tensile strength, min, MPa [psi]	4.3 [625]	D412
Elongation at break, min, %	300	D412
Hardness, Type A durometer, points (5 s delay)	61–76	D2240
Specific gravity at 23°C [73°F]	0.93–1.13	D792
100 % modulus, min, MPa [psi]	1.7 [250]	D412
Weight gain, max, % (24 h at 121°C [73°F] ASTM No. 3 Oil)	95	D471

TABLE 2 Material Requirements for Architectural Compression Seals

Property	Requirement	Test Method
Tensile strength, min, MPa [psi]	4.3 [625]	D412
Elongation at break, min, %	300	D412
Hardness, Type A durometer, points (5 s delay)	68 ± 8	D2240
Ozone resistance, 1 ppm, 100 h at 40°C [104°F] 7 × magnification	No Cracks	D1149
Compression set, % max, 22 h at 100°C [212°F]	35	D395
Compression set, % max, 70 h at 100°C [212°F]	40	D395
Heat aging, 70 h at 100°C [212°F] change in:		D865
Hardness, Shore A, max, points (5 s delay)	4	
Ultimate tensile strength, max, % loss	15	
Ultimate elongation, max, % loss	15	
Tear resistance, min, N/mm [lb/in.]	21 [120]	D624
Brittleness temperature, min, °C [°F]	−48 [−55]	D746
Water absorption, max, % loss/gain	4	D471

8. Significance and Use

8.1 Architectural compression seals included in this specification shall be those as follows:

8.1.1 Without frames.

8.1.2 Without flanges and nosing material(s).

8.1.3 Used in interior or exterior applications.

8.1.4 Used in any construction of the building.

8.2 This specification will give users, producers, building officials, code authorities, and others a basis for verifying material and performance characteristics of representative specimens under common test conditions. This specification will produce data on the following:

8.2.1 The physical properties of the fully cured elastomeric alloy.

8.2.2 The movement capability in relation to the nominal joint width as defined under Test Method E1399/E1399M.

8.3 This specification compares similar architectural compression seals but is not intended to reflect the system's application. "Similar" refers to the same type of architectural compression seal within the same subsection under 8.1.

8.4 This specification does not provide information on the following:

8.4.1 Durability of the architectural compression seal under actual service conditions, including the effects of cycled temperature on the compression seal.

8.4.2 Loading capability of the system and the effects of a load on the functional parameters established by this specification.

8.4.3 Shear and rotational movements of the specimen.

8.4.4 Any other attributes of the specimen, such as fire resistance, wear resistance, chemical resistance, air infiltration, watertightness, and so forth.

8.4.5 Testing or compatibility of substrates.

8.4.6 Strip seals.

8.4.7 Architectural compression seals used with frames.

8.4.8 Architectural compression seals used with flanges and nosing material(s).