



Standard Specification for Preformed Architectural Compression Seals for Buildings and Parking Structures¹

This standard is issued under the fixed designation E 1612; 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.

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 E 1399.

1.2 This specification covers all colors of architectural compression seals.

1.3 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

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:

- D 395 Test Methods for Rubber Property—Compression Set²
- D 412 Test Methods for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers—Tension²
- D 471 Test Method for Rubber Property—Effect of Liquids²
- D 518 Test Method for Rubber Deterioration—Surface Cracking²
- D 573 Test Method for Rubber—Deterioration in an Air Oven²

- D 624 Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers²
- D 746 Test Method for Brittleness Temperature of Plastics and Elastomers by Impact³
- D 792 Test Method for Density and Specific Gravity (Relative Density) of Plastics by Displacement³
- D 865 Test Method for Rubber—Deterioration by Heating in Air (Test Tube Enclosure)²
- D 1052 Test Method for Rubber Deterioration—Cut Growth Using Ross Flexing Apparatus²
- D 1149 Test Method for Rubber Deterioration—Surface Ozone Cracking in a Chamber²
- D 2000 Classification System for Rubber Products in Automotive Applications⁴
- D 2240 Test Method for Rubber Property—Durometer Hardness²
- D 3183 Practice for Rubber—Preparation of Pieces for Test Purposes from Products²
- E 577 Guide for Dimensional Coordination of Rectilinear Building Parts and Systems⁵
- E 631 Terminology of Building Constructions⁵
- E 1399 Test Method for Cyclic Movement and Measuring the Minimum and Maximum Joint Widths of Architectural Joint Systems⁵

3. Terminology

3.1 *Definitions*—Terms defined in Terminology E 631 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 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.

¹ This specification is under the jurisdiction of ASTM Committee E-6 on Performance of Buildings and is the direct responsibility of Subcommittee E06.21 on Serviceability.

Current edition approved June 15, 1994. Published August 1994.

² *Annual Book of ASTM Standards*, Vol 09.01.

³ *Annual Book of ASTM Standards*, Vol 08.01.

⁴ *Annual Book of ASTM Standards*, Vol 09.02.

⁵ *Annual Book of ASTM Standards*, Vol 04.11.

NOTE 2—Joint is defined in Guide E 577.

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 D 2000 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 D 1052.

4.3 Z2 represents a 40 % maximum compression set as per Test Methods D 395, 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 E 1399.

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.

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.

TABLE 1 Requirements for Fully Cured Elastomeric Alloy Injection Molded Plaques

Property	Requirement	Test Method
Tensile strength, min, MPa (psi)	4.3 (625)	D 412
Elongation at break, min, %	300	D 412
Hardness, Type A durometer, points (5 s delay)	61–76	D 2240
Specific gravity at 23°C (73°F)	0.93–1.13	D 792
100 % modulus, min, MPa (psi)	1.7 (250)	D 412
Weight gain, max, % (24 h at 121°C (73°F))	95	D 471

ASTM No. 3 Oil)

TABLE 2 Material Requirements for Architectural Compression Seals

Property	Requirement	Test Method
Tensile strength, min, MPa (psi)	4.3 (625)	D 412
Elongation at break, min, %	300	D 412
Hardness, Type A durometer, points (5 s delay)	68 ± 8	D 2240
Ozone resistance, 1 ppm, 100 h at 40°C (104°F) 7 × magnification	No Cracks	D 1149
Compression set, % max, 22 h at 100°C (212°F)	35	D 395
Compression set, % max, 70 h at 100°C (212°F)	40	D 395
Heat aging, 70 h at 100°C (212°F) change in:		D 865
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)	D 624
Brittleness temperature, min, °C (°F)	–48 (–55)	D 746
Water absorption, max, % loss/gain	4	D 471

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 E 1399.

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, etc.

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).

8.5 This specification is intended to be used only as one element in the selection of an architectural compression seal for a particular application. It is not intended as an independent pass or fail acceptance procedure. Other standards shall be used in conjunction with this specification to evaluate the importance of other service conditions such as durability, structural loading, and compatibility.