



Standard Specification for Rubber Seals Used in Air-Heat Transport of Solar Energy Systems¹

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1. Scope

1.1 This specification covers the general requirements for the rubber seals used in solar energy systems employing air-heat transport. Examples are duct and damper seals. Particular applications may necessitate other requirements that would take precedence over these requirements when specified.

NOTE 1—Rubber seals for the collector are covered in Specifications D 3667 and D 3771.²

1.2 Design requirement pertains only to permissible deflections of the rubber during thermal expansion or contraction of the seal in use and the tolerances in dimensions of molded and extruded seals.

1.3 This specification does not include requirements pertaining to the fabrication or installation of the seals.

1.4 The values stated in SI units are to be regarded as the standard.

1.5 The following safety hazards caveat pertains only to the test methods portion, Section 10, of this specification: *This standard does not purport to address the safety concerns 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:

- C 661 Test Method for Indentation Hardness of Elastomeric-Type Sealants By Means of a Durometer³
- C 717 Terminology of Building Seals and Sealants³
- C 719 Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants Under Cyclic Movement (Hockman Cycle)³
- D 395 Test Methods for Rubber Property—Compression Set⁴

- D 412 Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension⁴
 - D 865 Test Method for Rubber—Deterioration by Heating in Air (Test Tube Enclosure)⁴
 - D 1149 Test Method for Rubber Deterioration—Surface Ozone Cracking in a Chamber⁴
 - D 1229 Test Method for Rubber Property—Compression Set at Low Temperatures⁴
 - D 1349 Practice for Rubber—Standard Temperatures for Testing⁴
 - D 1415 Test Method for Rubber Property—International Hardness⁴
 - D 1566 Terminology Relating to Rubber⁴
 - D 2137 Test Methods for Rubber Property—Brittleness Point of Flexible Polymers and Coated Fabrics⁴
 - D 2240 Test Method for Rubber Property—Durometer Hardness⁴
 - D 3182 Practice for Rubber—Materials, Equipment, and Procedures for Mixing Standard Compounds and Preparing Standard Vulcanized Sheets⁴
 - D 3183 Practice for Rubber—Preparation of Pieces for Test Purposes From Products⁴
 - D 3667 Specification for Rubber Seals Used in Flat-Plate Solar Collectors²
 - D 3771 Specification for Rubber Seals Used in Concentrating Solar Collectors²
 - G 7 Practice for Atmospheric Environment Exposure Testing of Nonmetallic Materials⁵
 - G 151 Practice for Exposing Nonmetallic Materials in Accelerated Test Devices that Use Laboratory Light Sources⁵
 - G 155 Practice for Operating Xenon Arc Light Apparatus for Exposure of Nonmetallic Materials⁵
- ### 2.2 Other Standards:
- RMA Handbook—Rubber Products: Molded, Extruded, Lathe Cut, and Cellular (Third Edition)⁶

3. Terminology

3.1 *Definitions*—Refer to the definitions of terms in Terminology C 717 and Terminology D 1566.

¹ This specification is under the jurisdiction of ASTM Committee D11 on Rubber and is the direct responsibility of Subcommittee D11.36 on Seals.

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² *Annual Book of ASTM Standards*, Vol 09.02.

³ *Annual Book of ASTM Standards*, Vol 04.07.

⁴ *Annual Book of ASTM Standards*, Vol 09.01.

⁵ *Annual Book of ASTM Standards*, Vol 14.04.

⁶ Available from the Rubber Manufacturers Association (RMA), 1901 Pennsylvania Ave. N.W., Washington, DC 20006.