



Designation: C542 – 05

## Standard Specification for Lock-Strip Gaskets<sup>1</sup>

This standard is issued under the fixed designation C542; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

*This standard has been approved for use by agencies of the Department of Defense.*

### 1. Scope

1.1 This specification defines the required properties of lock-strip gaskets where resistance to sunlight, weathering, flame, oxidation, permanent deformation under load, and diminution of gripping pressure are prime essentials.

NOTE 1—The requirement of flame propagation may be waived by the architect or professional engineer when doing so does not conflict with local codes or ordinances.

1.2 This specification applies only to the “locking” compression type of gasket, sometimes referred to as the “zipper” type.

NOTE 2—Structural integrity and weather-tightness of the wall requires the sound design and installation of the entire system of which the gasket is only one component.

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

1.4 *Test Method C1166, as referenced in this specification, should be used to measure and describe the properties of materials, products, or assemblies in response to heat and flame under controlled laboratory conditions and should not be used to describe or appraise the fire hazard or fire risk of materials, products, or assemblies under actual fire conditions. However, results of this test may be used as elements of a fire risk assessment which takes into account all of the factors which are pertinent to an assessment of the fire hazard of a particular end use.*

1.5 The following precautionary caveat pertains only to the test method portion, Section 7, of this specification: *This standard does not purport to address 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.*

1.6 The committee with jurisdiction over this standard is not aware of any comparable standards published by other organizations.

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee C24 on Building Seals and Sealants and is the direct responsibility of Subcommittee C24.73 on Compression Seal and Lock Strip Gaskets.

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### 2. Referenced Documents

2.1 *ASTM Standards:*<sup>2</sup>

C1166 Test Method for Flame Propagation of Dense and Cellular Elastomeric Gaskets and Accessories

D15 Method of Compound and Sample Preparation for Physical Testing of Rubber Products<sup>3</sup>

D395 Test Methods for Rubber Property—Compression Set

D412 Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension

D573 Test Method for Rubber—Deterioration in an Air Oven

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

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

D2240 Test Method for Rubber Property—Durometer Hardness

2.2 *Other Standard:*

Rubber Handbook, Specifications for Rubber Products<sup>4</sup>

### 3. Materials and Manufacture

3.1 All materials and workmanship shall be in accordance with good commercial practice.

3.2 Gaskets shall be manufactured from an ozone-resistant compound and shall not be dependent for ozone resistance on surface protection which can be removed by abrasion, detergents, or other means.

3.3 Gaskets shall be free of porosity, surface defects, and dimensional irregularities, particularly in the sealing area.

3.4 Unless otherwise specified, the material shall be black.

3.5 Lubricants used in installation, shall be as recommended by the gasket manufacturer.

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

<sup>3</sup> Withdrawn. The last approved version of this historical standard is referenced on [www.astm.org](http://www.astm.org).

<sup>4</sup> Available from Rubber Manufacturers Association, 444 Madison Ave., New York, NY.

#### 4. Physical Properties

4.1 The physical properties of the gasket shall conform to the requirements specified in **Table 1**.

#### 5. Dimensions and Permissible Variations

5.1 Minimum thickness of material between the locking strip cavity and the panel or rail channel shall be 2.5 mm (0.10 in.).

5.2 All cross-sectioned dimensions shall have an RMA Class 2 tolerance, as specified in **Table 2** unless otherwise agreed by the purchaser and seller.

#### 6. Sampling

6.1 When proof of conformance with this specification is required, the samples shall be taken from the finished product whenever possible.

6.2 When the thickness or shape of the finished product makes sampling, as specified in Section 6, impossible, the manufacturer shall, upon request of the purchaser at the time of ordering, furnish a sufficient number of test slabs or blocks prepared in accordance with Methods **D15** for the proper performance of the required tests. The slabs or blocks shall be prepared from the compound of the same source production lot used in the gasket.

#### 7. Test Methods

7.1 *Tensile Strength and Elongation*—Test in accordance with Test Methods **D412**. Determine percentage change in tensile strength and elongation after oven aging for 70 h at 100 ± 1°C (212 ± 2°F).

7.2 *Tear Resistance*—Test in accordance with Test Method **D624** using Die C.

7.3 *Hardness*—Test in accordance with Test Method **D2240**, using a Type A durometer. If size or shape of the specimen precludes testing of the finished surface, make measurements on a squarely cut end or on a flat sliced or buffed surface. Determine change in hardness after oven aging for 70 h at 100 ± 1°C (212 ± 2°F).

**TABLE 2 Cross-Sectional Tolerances Lock-Strip Gaskets**  
RMA Class 2, Schedule I, Commercial<sup>A</sup>

Dimension, mm (in.)	Tolerance, plus or minus
Over 0 to 2.54 (0 to 0.10) incl.	0.32 (0.013)
Over 2.54 to 4.06 (0.10 to 0.16) incl.	0.40 (0.016)
Over 4.06 to 6.35 (0.16 to 0.25) incl.	0.50 (0.020)
Over 6.35 to 10.16 (0.25 to 0.40) incl.	0.63 (0.025)
Over 10.16 to 16.0 (0.40 to 0.63) incl.	0.80 (0.032)
Over 16.0 to 25.4 (0.63 to 1.00) incl.	1.00 (0.040)
Over 25.4 to 40.64 (1.00 to 1.60) incl.	1.25 (0.050)
Over 40.64 to 63.5 (1.60 to 2.50) incl.	1.60 (0.063)

<sup>A</sup>Rubber Handbook, Specifications for Rubber Products, Table 12.

7.4 *Compression Set*—Test in accordance with Test Methods **D395**, Method B. Hold the sample under test for 22 h at 100 ± 1°C (212 ± 2°F). Buffed specimen, taken from material 1.5 mm (1/16 in.) minimum thickness may be superimposed to a total thickness of 13.0 mm (1/2 in.).

7.5 *Brittleness Temperature*—Test in accordance with Test Method **D746**.

7.6 *Ozone Resistance*—Test in accordance with Test Method **D1149** (Specimen A). Use an ozone concentration of 100 mPa, an exposure time of 40 ± 2°C (104 ± 3.6°F), and a specimen elongation of 20 %.

7.7 *Heat Aging*—Test the effects of heat aging in accordance with Test Method **D573**.

7.8 *Flame Propagation*—Test Method **C1166**.

7.8.1 This test is designed to differentiate the flame propagation characteristics of candidate materials used in lock-strip gaskets. It is a small-scale test which enables the specifier to exercise engineering prudence in the selection of materials. It should not be used to predict the performance of the tested material in an actual fire situation. It should not be used to predict fuel contribution, rate of flame spread, smoke generation, or the nature of the products of combustion. Test conditions are those most conducive to flame propagation and the method simulates the worst possible exposure condition. The specimen is mounted vertically. The igniting flame is hot; the fuel supply is unlimited; and the flame is not removed from the specimen throughout the test.

**TABLE 1 Physical Requirements and Test Methods for Gaskets**

Property	Requirements	Test Method
Tensile strength, min <sup>A</sup>	14 MPa (2000 psi)	<b>D412</b>
Elongation at rupture, min, %	175	<b>D412</b>
Tear resistance, min	214 N/linear cm (120 lbf/linear in.)	<b>D624</b> (Die C)
Hardness, durometer A <sup>A</sup>	75 ± 5	<b>D2240</b>
Compression set, max, %, 22 h at 100°C (212°F)	35	<b>D395</b> (Method B)
Brittleness temperature, min	−40°C (−40°F)	<b>D746</b>
Ozone resistance, 100 mPa ozone	...	...
100 h at 40°C (104°F), 20 % elongation	no cracks @ 7× magnification	<b>D1149</b> (Specimen A)
Heat aging, 70 h at 100°C (212°F)		<b>D573</b>
Change in hardness, max	0 to + 10 Durometer points	
Loss in tensile strength, max, %	15	
Loss in elongation, max, %	40	
Flame propagation <sup>B</sup>	100 mm (4 in.), max.	<b>C1166</b>
Lip pressure <sup>C</sup>		
Extruded section, min	7 N/linear cm (4 lbf/linear in.)	as specified (see <b>7.9</b> )
Corners, min	7 N/linear cm (4 lbf/linear in.)	

<sup>A</sup>If a separate stock is used for the locking strip, it may have a hardness of 80 ± 5 durometer points, and a minimum tensile strength of 12.5 MPa (1800 psi). In all other respects, it must meet these specifications.

<sup>B</sup>This requirement may be waived (see **Note 1**).

<sup>C</sup>In the case of molded corners with integral sealing devices, the requirement for corner lip pressure may be lowered by the architect or professional engineer.