

# AEROSPACE MATERIAL SPECIFICATION

**SAE** AMS3301

REV. H

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Superseding AMS3301G

Silicone, Rubber  
General Purpose  
40 Durometer

## RATIONALE

This is the periodic review and reaffirmation of this specification with only minor, editorial changes. The requirements for low temperature modulus per ASTM D 797 were eliminated per committee agreement since this test specification is obsolete.

### 1. SCOPE

#### 1.1 Form

This specification covers a silicone rubber in the form of sheet, strip, tubing, extrusions, and molded shapes.

#### 1.2 Application

This product has been used typically for parts required to operate or seal from -85 to +401 °F (-65 to +205 °C). Silicone elastomer is resistant to deterioration by weathering and petroleum-base lubricating oil and remains flexible over the temperature range noted, but usage is not limited to such applications. These products are not normally suitable for use in contact with gasoline or aromatic fuels and low-aniline-point petroleum-base fluids due to excessive swelling of the elastomer.

#### 1.3 Safety-Hazardous Materials

While the materials, methods, applications, and processes described or referenced in this specification may involve the use of hazardous materials, this specification does not address the hazards which may be involved in such use. It is the sole responsibility of the user to ensure familiarity with safe and proper use of any hazardous materials and to take necessary precautionary measures to ensure the health and safety of all personnel involved.

### 2. APPLICABLE DOCUMENTS

The issue of the following documents in effect on the date of the purchase order forms a part of this specification to the extent specified herein. The supplier may work to a subsequent revision of a document unless a specific document issue is specified. When the referenced document has been cancelled and no superseding document has been specified, the last published issue of that document shall apply.

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## 2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), [www.sae.org](http://www.sae.org).

AMS2279 Tolerances, Rubber Products

AMS2810 Identification and Packaging, Elastomeric Products

## 2.2 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, [www.astm.org](http://www.astm.org).

ASTM D 297 Rubber Products - Chemical Analysis

ASTM D 395 Rubber Property - Compression Set

ASTM D 412 Rubber Properties in Tension

ASTM D 471 Rubber Property - Effect of Liquids

ASTM D 573 Rubber - Deterioration in an Air Oven

ASTM D 624 Rubber Property - Tear Resistance

ASTM D 2137 Rubber Property - Brittleness Point of Flexible Polymers and Coated Fabrics

ASTM D 2240 Rubber Property - Durometer Hardness

## 3. TECHNICAL REQUIREMENTS

### 3.1 Material

Shall be a compound, based on a silicone rubber, suitably cured to produce a product meeting the requirements of 3.2.

### 3.2 Properties

This product shall conform to the following requirements; tests shall be performed on the product supplied and in accordance with specified ASTM methods, insofar as practicable:

TABLE 1

3.2.1	As Received		
3.2.1.1	Hardness, Durometer "A" or equivalent	40 ± 5	ASTM D 2240
3.2.1.2	Tensile Strength, minimum	700 psi (4.83 MPa)	ASTM D 412, Die B or C
3.2.1.3	Elongation, minimum	250%	ASTM D 412, Die B or C
3.2.1.4	Tensile Stress at 100% Elongation, maximum	200 psi (1.38 MPa)	ASTM D 412, Die B or C Stretch specimen to 125% elongation twice within 5 minutes before testing.
3.2.1.5	Tear Resistance, minimum	55 pounds force per inch (9.63 kN/m)	ASTM D 624, Die B
3.2.1.6	Specific Gravity	Preproduction Value ± 0.03	ASTM D 297
3.2.2	Petroleum Lubricating Oil Resistance (Immediate Deteriorated Properties)		ASTM D 471 Medium: Temperature: Time: ASTM Oil No. 1 302 °F ± 5 (150 °C ± 3) 70 hours ± 0.5
3.2.2.1	Hardness Change, Durometer "A" or equivalent	-15 to +5	
3.2.2.2	Tensile Strength, Change, maximum	-25%	
3.2.2.3	Elongation Change, maximum	-20%	
3.2.2.4	Volume Change, maximum	0 to 15%	
3.2.2.5	Decomposition	None	
3.2.2.6	Surface Tackiness	None	
3.2.3	Dry Heat Resistance		ASTM D 573 Temperature: Time: 437 °F ± 5 (225 °C ± 3) 70 hours ± 0.5
3.2.3.1	Hardness Change, Durometer "A" or equivalent	±10	
3.2.3.2	Tensile Strength Change, maximum	-20%	
3.2.3.3	Elongation Change, maximum	-40%	
3.2.3.4	Bend (flat)	No cracking or checking	
3.2.4	Compression Set		ASTM D 395, Method B Temperature: Time: 302 °F ± 5 (150 °C ± 3) 70 hours ± 0.5
3.2.4.1	Percent of Original Deflection, maximum	25	
3.2.5	Low Temperature Resistance		
3.2.5.1	Brittleness	Pass	ASTM D 2137, Method A Temperature: Time: -85 °F ± 5 (-65 °C ± 3) 3 minutes ± 0.3

### 3.2.6 Weathering

When specified, the product shall have weather resistance acceptable to purchaser, determined by a procedure agreed upon by purchaser and vendor.

### 3.2.7 Corrosion

The product shall not have a corrosive effect on other materials when exposed to conditions normally encountered in service, determined by a procedure agreed upon by purchaser and vendor. Discoloration of metal shall not be considered objectionable.

### 3.3 Quality

The product, as received by purchaser, shall be uniform in quality and condition, smooth, as free from foreign material as commercially practicable, and free from imperfections detrimental to usage of the product.

### 3.4 Tolerances

Shall conform to all applicable requirements of AMS2279.

## 4. QUALITY ASSURANCE PROVISIONS

### 4.1 Responsibility for Inspection

The vendor of the product shall supply all samples for vendor's tests and shall be responsible for the performance of all required tests. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the product conforms to specified requirements.

### 4.2 Classification of Tests

#### 4.2.1 Acceptance Tests

Tests for the following requirements are acceptance tests and shall be performed on each lot:

TABLE 2

Requirement	Paragraph Reference
Hardness, as received	3.2.1.1
Tensile Strength, as received	3.2.1.2
Elongation, as received	3.2.1.3
Specific Gravity	3.2.1.6

#### 4.2.2 Preproduction Tests

Tests for all technical requirements are preproduction tests and shall be performed prior to or on the initial shipment of a product to a purchaser, when a change in ingredients and/or processing requires reapproval as in 4.4.2, and when purchaser deems confirmatory testing to be required.