



AEROSPACE MATERIAL SPECIFICATION

AMS3307™**REV. E**

Issued 1969-05
Reaffirmed 2003-11
Revised 2021-03

Superseding AMS3307D

(R) Elastomer: Rubber, Silicone (VMQ)
Non-Oil-Resistant
Low Compression Set
65 - 75 Shore A Hardness

RATIONALE

Five-Year Review and update to the latest AMS3XXX series template.

1. SCOPE

1.1 Form

This specification covers a silicone (VMQ) elastomer that can be used to manufacture product in the form of sheet, strip, tubing, extrusions, and molded shapes. For molded rings, compression seals, O-ring cord, and molded-in-place gaskets for aeronautical and aerospace applications, use the AMS7XXX specification.

1.2 Application

This material type has resistance to weathering and ozone, and is compounded especially for low compression set, but usage is not limited to such applications. This material type has a typical service temperature range of -67 to +392 °F (-55 to +200 °C). The service temperature range of the material is a general temperature range, but the presence of particular fluids and specific design requirements may modify this range. Each application should be considered separately. It is the responsibility of the user to determine that this specification is appropriate for the environments (temperature range, fluids exposure, etc.) in which it is sought to be used. These products are not intended for use with petroleum-base fluids or lubricants. Certain design applications may cause these products to be susceptible to cutting, tearing, and abrasion.

1.3 Order of Precedence

This specification is in addition to and in no way limiting, superseding, or abrogating any contractual obligation as required by the applicable procurement document. In the event of conflict in requirements, the order of precedence shall be:

1. Procurement document or contractual agreement and all statutory and regulatory requirements (excluding this document).
2. Applicable purchaser's drawing and/or design data.

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Documents

Document Sharing Hub

3. Specifications referenced on the drawing.
4. This document.
5. All specifications referenced in this document.

1.4 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 the 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 form 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.

2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), 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.

- ASTM D297 Rubber Products - Chemical Analysis
- ASTM D395 Standard Test Methods for Rubber Property - Compression Set
- ASTM D412 Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers - Tension
- ASTM D573 Standard Test Methods for Rubber - Deterioration in an Air Oven
- ASTM D624 Standard Test Methods for Rubber Property - Tear Resistance
- ASTM D1329 Standard Test Methods for Evaluating Rubber Property - Retraction at Low Temperature (TR Test)
- ASTM D2240 Standard Test Methods for Rubber Property - Durometer Hardness

2.3 ASQ Publications

Available from American Society for Quality, 600 North Plankinton Avenue, Milwaukee, WI 53203, Tel: 800-248-1946 (United States or Canada), 001-800-514-1564 (Mexico), or +1-414-272-8575 (all other locations), www.asq.org.

- ANSI/ASQ Z1.4 Sampling Procedures and Tables for Inspection by Attributes

3. TECHNICAL REQUIREMENTS

3.1 Material

Shall be prepared from ingredients as shall be necessary to achieve the requirements detailed in this standard and shall be a compound, based on a silicone (VMQ) rubber, suitably cured to produce product meeting the requirements of 3.2. Reprocessed vulcanized material is not acceptable.

3.2 Properties

The product shall conform to the requirements shown in Table 1.

Table 1 - Physical property requirements

Paragraph	Property	Test Sample	Requirements	Test Method
3.2.1	As Received			
3.2.1.1	Hardness, Durometer Type "A"	Button or plied platens	70 ± 5	ASTM D2240
3.2.1.2	Tensile strength, minimum	ASTM platen	800 psi (5.52 MPa)	ASTM D412, Die B or C
3.2.1.3	Elongation, minimum	ASTM platen	125%	ASTM D412, Die B or C
3.2.1.4	Tear Resistance, minimum	ASTM platen	50 ppi (8.76 kN/m)	ASTM D624, Die B
3.2.1.5	Specific gravity/relative density	ASTM platen	Preproduction value ± 0.03	ASTM D297, Hydrostatic Method
3.2.1.6	Compression set, percent of original deflection, max.	ASTM platen, plied discs	20%	ASTM D395, Method B Temperature: 347 °F ± 5 °F (175 °C ± 3 °C) Time: 22 hours ± 0.5 hour
3.2.1.7	Temperature retraction test [TR-10] point, maximum	ASTM platen	-49 °F (-45 °C)	ASTM D1329, Elongate specimens 75%
3.2.2	Dry heat resistance ASTM D573			
3.2.2.1	Hardness change, Durometer Type "A"	BUTTON or plied platens	±10	ASTM D573 Temperature: 437 °F ± 5 °F (225 °C ± 3 °C) Time: 22 hours ± 0.5 hour
3.2.2.2	Tensile strength change, maximum	ASTM platen	-15%	
3.2.2.3	Elongation change, maximum	ASTM platen	-30%	
3.2.2.4	Bend (flat)	ASTM platen	No cracking or checking	

3.3 Quality

Product, as received by purchaser, shall conform to dimensional requirements, be uniform in quality and condition, as free from foreign materials as commercially practical, and free from imperfections (such as voids, etc.) that are detrimental to usage of the product.

3.4 Tolerances

Shall conform to all applicable requirements of AMS2279 unless otherwise specified in drawing, PO, design data, or contract.