

AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
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AMS 3302

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Revised

SILICONE RUBBER Heat and Weather Resistant (45-55)

1. **ACKNOWLEDGMENT:** A vendor shall mention this specification number in all quotations and when acknowledging purchase orders.
2. **FORM:** Molded shapes, sheet, tubing, or as ordered.
3. **APPLICATION:** Primarily for soft rubber-like parts required to operate or seal at temperatures from -65 to +400 F. Silicone rubber is resistant to deterioration by weathering and engine oil, and remains flexible over the temperature range noted; however, the fuel resistance and tear resistance are low.

4. **TECHNICAL REQUIREMENTS:**

4.1 **General:**

- 4.1.1 **Condition:** Unless otherwise specified, a fully cured product shall be furnished.
- 4.1.2 **Weathering:** When specified, the product shall have weather resistance acceptable to the purchaser as determined by a procedure agreed upon by purchaser and vendor.
- 4.1.3 **Corrosion:** The product shall not have a corrosive or other deleterious effect on other materials when exposed to conditions normally encountered in service. Discoloration of metal shall not be considered objectionable.
- 4.2 **Properties:** Unless otherwise specified, the product shall conform to the following requirements; tests shall be performed on the product supplied and in accordance with listed ASTM Methods, insofar as practicable:

Property	Value	Test Method
4.2.1 As Received:		
Hardness, Durometer "A" or equiv.	50 $\pm$ 5	ASTM D412-41 Die B
Tensile Strength, psi, min	250	
Elongation, %, min	200	

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4.2.2 <u>Lubricating Oil Resistance:</u> (Immediate Deteriorated Properties)		ASTM D471-46T
Hardness Change, Durometer "A" or equiv.	-15 to +5	
Tensile Strength Reduction, %, max (based on area before immersion)	50	Medium: ASTM Oil No. 1
Elongation Reduction, %, max	50	Temperature: 350 F $\pm$ 2
Volume Change (Method A), %	0 to +10	Time: 70 hr
Decomposition	None	
Surface Tackiness	None	
Low Temperature Brittleness	Pass	same as 4.2.6 below
4.2.3 <u>Water Resistance:</u> (Immediate Deteriorated Properties)		ASTM D471-46T
Weight Increase, %, max	3.2	Medium: Distilled Water
		Temperature: 77 F $\pm$ 2
		Time: 168 hr
4.2.4 <u>Dry Heat Resistance:</u>		ASTM D865-47T
Hardness Change, Durometer "A" or equiv.	0 to +10	
Tensile Strength Reduction, %, max	15	Temperature: 450 F $\pm$ 5
Elongation Reduction, %, max	50	Time: 4 hr
Surface Hardening	None	
Bend (flat)	No Cracks	
4.2.5 <u>Compression Set:</u>		
Per cent of Original Deflection, max	90	ASTM D395-46T Method B
		Temperature: 350 F $\pm$ 5
		Time: 24 hr
Per cent of Original Thickness, max	23	Compressed to 75% of original thickness, test specimens stacked to $\frac{1}{2}$ in. thick
4.2.6 <u>Low Temperature Brittleness:</u>		ASTM D736-46T
	Pass	Temperature: -70 F $\pm$ 2
		Time : 5 hr

5. QUALITY: The product shall be uniform in quality and condition, clean, smooth, and free from chalky spots, foreign materials and defects detrimental to fabrication, appearance, or performance of parts.

6. TOLERANCES: Unless otherwise specified, the following tolerances apply:

6.1 Molded Sheet :

Nominal Thickness Inch	Tolerance, Inch Plus and Minus
1/8 and less	1/64
Over 1/8 to 1/2, incl	1/32
Over 1/2	3/64

6.2 Molded Tubing:

Nominal Wall Thickness Inch	Tolerance Plus and Minus
Less than 1/16	0.005 in.
1/16 and over	10%

7. REPORTS:

- 7.1 Unless otherwise specified, the vendor shall furnish with each shipment three copies of a notarized report stating that the product meets the requirements of this specification. This report shall include the purchase order number, material specification number, vendor's compound number, form or part number, and quantity.
- 7.2 Unless otherwise specified, the vendor of finished or semi-finished parts shall furnish with each shipment three copies of a notarized report showing the purchase order number, contractor or other direct supplier of material, part number, and quantity. When material for making parts is produced or purchased by the parts vendor, that vendor shall inspect each lot of material to determine conformance to the requirements of this specification, and shall include in the report a certification that the material conforms, or shall include copies of laboratory reports showing the results of tests to determine conformance.
8. IDENTIFICATION: Unless otherwise specified, all material shall be identified and marked in accordance with the latest issue of AMS 2810.

9. PACKAGING:

- 9.1 Packaging shall be accomplished in such a manner as to ensure that the product, during shipment and storage, will not be permanently distorted, and will be protected against damage due to weathering or any normal hazard.
- 9.2 Each package shall be permanently and legibly marked in accordance with the latest issue of AMS 2810.