



AEROSPACE MATERIAL

AMS 3320D

Superseding AMS 3320C

Society of Automotive Engineers, Inc. SPECIFICATION

TWO PENNSYLVANIA PLAZA, NEW YORK, N. Y. 10001

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SILICONE RUBBER SHEET, GLASS FABRIC REINFORCED Heat and Weather Resistant 60 - 80

1. **ACKNOWLEDGMENT:** A vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.
2. **FORM:** Molded sheet or as ordered.
3. **APPLICATION:** Primarily for gaskets or seals requiring a resilient, nonporous sheet material suitable for operating at temperatures from -55 to +205 C (-67 to +401 F). The material is resistant to deterioration by weathering and petroleum base engine oil and remains flexible over the temperature range noted. This material is not normally suitable for use in contact with gasoline or aromatic fuels and low aniline point petroleum base fluids due to excessive swelling.
4. **MATERIAL AND FABRICATION:** Sheet shall consist of a single ply of woven glass fabric (Types 162, 164, 184, 1564, or 1584) impregnated and bonded between two layers of silicone rubber of essentially equal thickness, molded to an overall thickness of 0.062 to 0.125 in., as ordered.
5. **TECHNICAL REQUIREMENTS:**
 - 5.1 **General:**
 - 5.1.1 **Condition:** Unless otherwise specified, a suitably cured product shall be furnished.
 - 5.1.2 **Weathering:** When specified, the product shall have weather resistance acceptable to the purchaser as determined by a procedure agreed upon by purchaser and vendor.
 - 5.1.3 **Corrosion:** The product shall not have a corrosive effect on other materials when exposed to conditions normally encountered in service. Discoloration of metal shall not be considered objectionable.
 - 5.2 **Properties:** The product shall conform to the following requirements; tests shall be performed on the product supplied and in accordance with the issue of specified ASTM methods listed in the latest issue of AMS 2350, insofar as practicable.
 - 5.2.1 **As Received:**

Ø 5.2.1.1	Hardness, Durometer "A" or equiv.	70 ± 10	ASTM D2240 See Note 1
5.2.1.2	Breaking Strength, lb per in., min	300	ASTM D751, Cut Strip Method
5.2.1.3	Edge Leakage at 10 psi	None	See Note 2

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5.2.2 <u>Lubricating Oil Resistance:</u> (Immediate Deteriorated Properties)		ASTM D471
		Medium: ASTM Oil No. 1
		Temperature: 175 C + 3 (347 F ± 5.4)
		Time: 70 hr
5.2.1.1	Hardness Change, Durometer "A" or equiv.	-15 to +5
5.2.2.2	Volume Change, %	0 to +10
5.2.2.3	Decomposition	None
5.2.2.4	Surface Tackiness	None
5.2.3 <u>Dry Heat Resistance:</u>		
5.2.3.1 Gasket Test		See Note 3
		Temperature: 225 C + 3 (437 F ± 5.4)
		Time: 2 hr
5.2.3.1.1	Decomposition or Softening	None
5.2.3.1.2	Surface Tackiness	None
5.2.3.2	Hardness Change, Durometer "A"	-5 to +10
		ASTM D573
		Temperature: 225 C + 3 (437 F ± 5.4)
		Time: 24 hr
5.2.3.3	Bend	No cracking
		Bend 180 deg around a diameter equal to thickness of material
5.2.4 <u>Compression Set:</u>		ASTM D395, Method B
		Temperature: 175 C + 3 (347 F ± 5.4)
5.2.4.1	Percent of original deflection, max	72
5.2.4.2	Percent of original thickness, max	18
Ø 5.2.5 <u>Low Temperature</u>		ASTM D2137 (See Note 4)
		Temperature: -55 C + 1 (-67 F ± 1.8)
5.2.5.1	Brittleness	No cracks
5.2.5.2	Delamination	None

Note 1. Hardness requirement applies to sheet specimens stacked to 1/4 in. thick.

Note 2. A circular gasket specimen shall be prepared, having ID not less than 2 in. and 1-in. wide faces. The gasket shall be clamped between suitable flanges, using #10(0.190)-32UNF bolts spaced approximately 1 in. on centers for clamping; nuts shall be tightened to 40 lb-in. torque. Air at an edge pressure of 10 psi shall be applied to the ID of the gasket for not less than 1 min. at room temperature with the assembly immersed in, or coated with, soap solution. There shall be no leakage through the fabric layer.

Note 3. A gasket specimen at least 1 sq in. in surface area shall be clamped finger tight between aluminum plates and conditioned at the temperature and time specified. Examination shall be immediately upon removal from the oven and cooling to room temperature.

Note 4. The striking arm and specimen clamp shall have a clearance as follows:

Specimen Thickness, in.	Required Clearance, in.
0.062	0.225 ± 0.010
0.125	0.360 ± 0.010

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

7. **TOLERANCES:** Unless otherwise specified, the following tolerances apply to molded sheet:

Nominal Thickness Inch	Tolerance, Inch plus and minus
0.062 to 0.125, incl	0.015

8. **REPORTS:**

8.1 Unless otherwise specified, the vendor of the product shall furnish with each shipment three copies of a report showing the results of tests made on the product to determine conformance to the requirements of this specification. This report shall include the purchase order number, material specification number and its revision letter, vendor's material designation, form or part number, and quantity.

8.2 Unless otherwise specified, the vendor of finished or semi-finished parts shall furnish, with each shipment, three copies of a report showing the purchase order number, material specification number and its revision letter, contractor or other direct supplier of material, supplier's material designation, 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 statement that the material conforms, or shall include copies of laboratory reports showing the results of tests to determine conformance.

9. **IDENTIFICATION:** Unless otherwise specified, all material shall be identified and marked in accordance with the latest issue of AMS 2810 except cure date is not required.

10. **PACKAGING:**

10.1 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 from exposure to weather or any normal hazard.

10.2 Each package shall be permanently and legibly marked in accordance with the latest issue of AMS 2810 except cure date is not required.

11. **APPROVAL:**

11.1 Sample material shall be approved by purchaser before material for production use is supplied, unless such approval be waived. Results of tests on production material shall be essentially equivalent to those on the approved sample.