AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
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AMS 3222C

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SYNTHETIC RUBBER
Hot Oil Resistant, High Swell (45-55)

1. ACKNOWLEDGMENT: A vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.

2. FORM: Sheet, strip, molded shapes, extrusions, or as ordered.

3. APPLICATION: Primarily for seals in contact with hot lubricating oil where a space-filling seal is required.

4. TECHNICAL REQUIREMENTS:

4.1 General:

4.1.1 Condition: Unless otherwise specified, a suitably 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 effect on other materials when exposed to conditions normally encountered in service. Discoloration of metal shall not be considered objectionable.

4.2 Properties: 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:		
4.2.1.1 Hardness, Durometer "A" or equiv.	50 ± 5	
4.2.1.2 Tensile Strength, psi, min	1500	ASTM D412-49T, Die B or C
4.2.1.3 Elongation, %, min	400	ASTM D412-49T, Die B or C
4.2.2 Lubricating Oil Resistance: (Immediate Deteriorated Properties)		ASTM D471-51T Medium: ASTM Oil No. 1 Temperature: 300 F ± 2 Time: 24 hr
4.2.2.1 Hardness Change, Durometer "A" or equiv.	-5 to +5	

	Property	Value	Test Method
4.2.2.2	Tensile Strength Reduction, %, max (based on area before immersion)	50	
4.2.2.3	Elongation Reduction, %, max	50	
4.2.2.4	Volume Change (Method A), %	+15 to +30	
4.2.2.5	Decomposition	None	
4.2.2.6	Surface Tackiness	None	
4.2.3	Lubricating Oil Resistance: (Immediate Deteriorated Properties)		ASTM D471-51T
4.2.3.1	Hardness Change, Durometer "A" or equiv.	-10 to +10	Medium: ASTM Oil No. 1 Temperature: 300 F ± 2 Time: 70 hr
4.2.3.2	Volume Change (Method A), %	+15 to +40	
4.2.3.3	Decomposition	None	
4.2.3.4	Surface Tackiness	None	
4.2.3.5	Bend (flat)	No cracking or checking	
4.2.4	Dry Heat Resistance:		ASTM D573-48
4.2.4.1	Hardness Change, Durometer "A" or equiv.	0 to +10	Temperature: 212 F ± 2 Time: 70 hr
4.2.4.2	Tensile Strength Reduction, %, max	40	
4.2.4.3	Elongation Reduction, %, max	50	
4.2.4.4	Surface Hardness or Brittleness	None	
4.2.4.5	Bend (flat)	No cracking or checking	
4.2.5	Compression Set:		ASTM D395-49T, Method B
4.2.5.1	Per cent of original deflection, max	85	Temperature: 212 F ± 2 Time: 70 hr Compressed to 70% original thickness
4.2.5.2	Per cent of original thickness, max	26	
4.2.6	Low Temperature Brittleness:	Pass	ASTM D736-46T (See Note) Temperature: -40 F ± 2 Time: 5 hr

Note. To be specified only until satisfactory replacement test and values are established.

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

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

6.1 Sheet and Strip:

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

6.2 Tubing:

6.2.1 Nominal OD or ID (not both), Inch	Tolerance, Inch Plus and Minus	Ovality (Note 1)
1/2 and under	0.020	10%
Over 1/2 to 1, incl	0.030	15%
Over 1	4%	15%

Note 1. Ovality applies to tubing ordered in straight lengths with wall thickness of 1/16 in. and over, and shall be computed from the difference of the minor and major axis diameter measurements, taken at the same location on the tube, expressed as a percentage of the nominal diameter.

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

7. REPORTS:

7.1 Unless otherwise specified, the vendor of the product shall furnish with each shipment three copies of a 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 report showing the purchase order number, material specification 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 statement 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.