AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
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AMS 3227C

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SYNTHETIC RUBBER
Hot Oil and Coolant Resistant, Low Swell (55-65)

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 hose, packings, bushings, grommets, and seals requiring resistance to hot oil and coolant.

4. TECHNICAL REQUIREMENTS:

4.1 General:

4.1.1 Condition: Unless otherwise specified, a suitably cured product shall be supplied.

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.

4.2.1 As Received:			
4.2.1.1 Hardness, Durometer "A" or equiv.	60 ± 5		
4.2.1.2 Tensile Strength, psi, min	1500	ASTM D412-49T Die B or C	
4.2.1.3 Elongation, %, min	300	ASTM D412-49T Die B or C	
4.2.2 Processing Oil Resistance: (Immediate Deteriorated Properties)		ASTM D471-52T Medium: Temperature: Time:	 ASTM Oil No. 3 300 F ± 2 70 hr
4.2.2.1 Hardness Change, Durometer "A" or equiv.	-20 to +5		
4.2.2.2 Elongation Reduction, %, max	75		
4.2.2.3 Volume Change (Method A), %	0 to +45		
4.2.2.4 Decomposition	None		
4.2.2.5 Surface Tackiness	None		

4.2.3	Lubricating Oil Resistance: (Immediate Deteriorated Properties)		ASTM D471-52T Medium: ASTM Oil No. 1 Temperature: 300 F ± 2 Time: 70 hr
4.2.3.1	Hardness Change, Durometer "A" or equiv.	-10 to +10	
4.2.3.2	Tensile Strength Reduction, %, max (based on area before immersion)	50	
4.2.3.3	Elongation Reduction, %, max	50	
4.2.3.4	Volume Change (Method A), %	0 to +10	
4.2.3.5	Decomposition	None	
4.2.3.6	Surface Tackiness	None	
4.2.4	Coolant (Ethylene Glycol) Resistance: (Immediate Deteriorated Properties)		ASTM D471-52T Medium: Ethylene Glycol 97% Water 3% Temperature: 300 F ± 2 Time: 70 hr
4.2.4.1	Hardness Change, Durometer "A" or equiv.	-15 to +15	
4.2.4.2	Tensile Strength Reduction, %, max (based on area before immersion)	25	
4.2.4.3	Elongation Reduction, %, max	60	
4.2.4.4	Volume Change (Method A), %	0 to +25	
4.2.4.5	Decomposition	None	
4.2.4.6	Surface Tackiness	None	
4.2.5	Dry Heat Resistance:		ASTM D573-48 Temperature: 212 F ± 2 Time: 70 hr
4.2.5.1	Hardness Change, Durometer "A" or equiv.	0 to +10	
4.2.5.2	Tensile Strength Reduction, %, max	25	
4.2.5.3	Elongation Reduction, %, max	40	
4.2.5.4	Bend (flat)	No cracking or checking	
4.2.6	Compression Set:		ASTM D395-52T Method B Temperature: 250 F ± 2 Time: 70 hr Compressed to 0.350 in. thick
4.2.6.1	Per cent of Original Deflection, max	50	
4.2.6.2	Per cent of Original Thickness, max	15	

4.2.7 Low Temperature Brittleness: Pass ASTM D736-46T (See note)
Temperature: -40 F ± 2
Time: 5 hr

Note. To be used 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 Ø

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.