AERONAUTICAL MATERIAL SPECIFICATION

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SYNTHETIC RUBBER
Hydraulic Fluid (Petroleum Base) Resistant (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, tubing, extrusions, molded shapes, or as ordered.

3. APPLICATION: Primarily for seals, gaskets, and similar parts which come in contact with petroleum base hydraulic fluids.

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. When the product supplied is an extrusion of such shape that suitable test specimens cannot be cut from the product, a separate flat strip test sample shall be supplied upon request. This strip shall be prepared from a 1 in. ± 1/16 OD by 0.075 in. ± 0.008 thick wall tubing which shall be mechanically split and flattened into a strip while being extruded and then cured in the same manner as production material.

4.2.1 As Received:

4.2.1.1 Hardness, Durometer "A" or equiv	60 ± 5	
4.2.1.2 Tensile Strength, psi, min	1400	ASTM D412-51T, Die B or C
4.2.1.3 Elongation, %, min		ASTM D412-51T, Die B or C
4.2.1.3.1 For parts other than extrusions	250	
4.2.1.3.2 For extruded parts	See Note 1	

4.2.2	Processing Oil Resistance: (Immediate Deteriorated Properties)		ASTM D471-54T Medium: ASTM Oil No. 3 Temperature: 212 F ± 2 Time: 70 hr
4.2.2.1	Hardness Change, Durometer "A" or equiv	-15 to +5	
4.2.2.2	Tensile Strength Change, %, max (based on area before immersion)		
ø 4.2.2.2.1	For parts other than extrusions	-30	
ø 4.2.2.2.2	For extruded parts	See Note 1	
4.2.2.3	Elongation Change, %, max		
ø 4.2.2.3.1	For parts other than extrusions	-30	
ø 4.2.2.3.2	For extruded parts	See Note 1	
4.2.2.4	Volume Change (Method A), %		
ø 4.2.2.4.1	For parts other than extrusions	0 to +25	
ø 4.2.2.4.2	For extruded parts	See Note 1	
4.2.2.5	Decomposition	None	
4.2.2.6	Surface Tackiness	None	
4.2.3	Dry Heat Resistance:		ASTM D573-53 Temperature: 212 F ± 2 Time: 70 hr
4.2.3.1	Hardness Change, Durometer "A" or equiv	0 to +15	
ø 4.2.3.2	Tensile Strength Change, %, max	-10	
ø 4.2.3.3	Elongation Change, %, max	-45	
4.2.3.4	Bend (flat)	No cracking or checking	
4.2.4	Compression Set:		ASTM D395-53T, Method B Temperature: 212 F ± 2 Time: 70 hr Compressed to 70% original thickness
ø 4.2.4.1	Per cent of original deflection, max	70	
ø 4.2.4.2	Per cent of original thickness, max	21	
ø 4.2.5	Low Temperature Resistance:	All Pass	ASTM D746-54T Temperature: -40 F ± 2 No. of Specimens: 5
4.2.5.1	Brittleness		

4.2.5.2 Ø	Young's Modulus, psi, max (See Note 2)	30,000	ASTM D797-46 Temperature: -40 F ± 2

Note 1. Value to be reported.

Note 2. Ø Young's modulus test is not normally required but may be used in case of disagreement on the result of the brittleness test.

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 Inches	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), Inches	Tolerance Plus and Minus	Ovality, % (See Note 3)
1/2 and under	0.020 in.	10
Over 1/2 to 1, incl	0.030 in.	15
Over 1	4%	15

Note 3. 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.