AERONAUTICAL MATERIAL SPECIFICATION

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S Y N T H E T I C R U B B E R
E. P. Lubricant Resistant (65-75)

1. ACKNOWLEDGMENT: A vendor must mention this specification number in all quotations and when acknowledging purchase orders.

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

3. APPLICATION: The compound shall be suitable for seals in gear box installations where extreme pressure lubricants are used.

4. QUALITY: (a) It shall be uniform in quality, free from foreign materials or imperfections, tough and not easily torn by hand. It shall resist the solvent action of extreme pressure lubricants.

(b) Parts must be smooth and free from flash.

(c) If rings have a vulcanized joint, the joint section must have the same strength and size as the solid section.

5. REQUIREMENTS: (a) Physical Properties: This material shall possess the following physical properties as received:

Shore Durometer "A" Hardness	70 ±5
Tensile Strength, lb per sq in.	1500 min
Elongation, %	150 min

All tensile tests required by this and succeeding paragraphs shall conform to ASTM D412-41, except that tensile strengths after all aging tests shall be based on the original unaged cross sectional area.

(b) Oil Aging: Tests shall be conducted in accordance with ASTM D471-40T, except that physical properties after aging shall be determined immediately after removal from the oil. Test conditions shall be as follows:

Medium	Extreme Pressure Lubricant 90% Petroleum Oil, 10% Sulfurized Fatty Oil containing 10% added sulfur in solution Viscosity 160° ±20 secs. at 130°F Aniline Point 178° ±2°F
Temperature	212° ±2°F
Time	70 hours

After aging, the surface shall neither be tacky nor show signs of decomposition. The Shore Durometer "A" hardness change shall be within the limits of 0 to -10 points. The volume change shall be within the limits of +5 to +25%.

(c) Oven Aging: Tests shall be conducted in accordance with ASTM D573-41 for 70 hours at 212° ±2°F. After aging, the surface shall be neither hard nor brittle, and specimens shall withstand bending 180° flat. The Shore Durometer "A" hardness change shall be within the limits of 0 to +15 points.

(d) Compression Set: Tests shall be conducted in accordance with ASTM D395-40T, Method B, under the following conditions:

Time	70 hours
Temperature	212° ±2°F
Compression, To	70% of original thickness

(1) The maximum compression set shall be 70% when expressed as a percentage of the original deflection.

(2) The maximum compression set shall be 21% when expressed as a percentage of the original thickness.

(e) Cold Aging: The cold resistance of the material shall be determined by the SAE-ASTM Bent Loop Method, which is as follows:

(1) The specimen, a strip 4" X $\frac{1}{4}$" X .075, shall be aged in accordance with the Extreme Pressure Lubricant aging requirements, as described in paragraph 5(b) of this specification. It is then placed in a loop position between jaws 2" wide and $2\frac{1}{2}$" apart. Each end of the specimen shall not extend more than $\frac{1}{4}$" into each jaw clamp. After exposure to cold dry air for the specified time and temperature, the jaws are rapidly brought together until they are 1" apart.

Medium	Dry Air
Time	5 hours
Temperature	-40°F

After this test the specimen shall show no signs of cracking.

(2) A similar test of the material as received shall also be made and the specimen shall show no signs of cracking after the test.

6. SAMPLES: Sampling procedures shall conform to ASTM D15-41. When the form in which the material is furnished is unsuitable for the proper preparation of the test specimens required, the vendor shall furnish sufficient material for such specimens from production run materials which he guarantees to be of equal quality to the material supplied.

7. TOLERANCES: Unless otherwise specified on the drawing or purchase order, the following tolerances apply; all dimensions are in inches:

(a) Sheet and Strip:

Nominal Thickness	Tolerance plus or minus
1/8 and less	1/64
over 1/8 to 1/2, incl.	1/32
over 1/2	3/64

(b) Tubing and Molded Hose:

Nominal Wall Thickness	Tolerance plus or minus
less than 1/16	0.005
1/16 and over	10%