AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
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AMS 3211A

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RUBBER OR SYNTHETIC RUBBER COMPOUNDS
Coolant Resistant (55-65)

CANCELLED

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, molded shapes, or as ordered.

3. APPLICATION: The compound shall be suitable for packing and sealing joints which come in contact with hot ethylene glycol-water mixtures.

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 and swelling actions of coolants.

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

(c) If products 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 (on parts)	60 ± 5
Tensile Strength, psi	800 min
Elongation, %	300 min

(b) Coolant Aging.- Tests shall be conducted in accordance with ASTM D471-44T, Immediate Deteriorated Properties. Test conditions shall be as follows:

Medium	Ethylene Glycol 97% Water 3%
Temperature	300°F ± 2°
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 -10 to +10 points. The tensile strength shall have decreased by not more than 25% and the elongation by not more than 50% from the values found for the material as received. The volume change shall be within the limits of 0 to +15%.

(c) Oven Aging.- Tests shall be conducted in accordance with ASTM D573-42 for 70 hours at 212°F ± 2°. 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. The tensile strength shall have decreased by not more than 20% and the elongation by not more than 40% from the values found for the material as received.

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

Time	70 hours
Temperature	250°F ± 2°
Compression, To	70% of original thickness

(1) The maximum compression set shall be 50% when expressed as a percentage of the original deflection.

(2) The maximum compression set shall be 15% when expressed as a percentage of the original thickness.

(e) Low Temperature Brittleness.- Tests shall be conducted in accordance with ASTM D736-43T for 5 hours at -40°F. The compound shall pass the brittleness test.

6. SAMPLING: (a) Sampling procedures shall conform to ASTM D15-41. Vendor shall furnish sufficient material for such specimens from production run materials which he guarantees to be of equal quality to the material supplied, except where purchaser desires specimens from production run parts, in which case the procedure in paragraph (b) shall be followed.

(b) When the form in which the material is furnished is unsuitable for the proper preparation of the required test specimens, the size of the test specimens shall be modified for adaptation to the finished part. This modification of the sampling procedure shall be agreed upon by both vendor and purchaser. If the requirements of the specification cannot be met using the modified test specimens, the modified test requirements shall be agreed upon by both vendor and purchaser.

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 and 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 and minus
Less than 1/16	0.005
1/16 and over	10%