AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
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AMS 3215B

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SYNTHETIC RUBBER
Aromatic Fuel Resistant (65-75)

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: The compound shall be suitable for gaskets, diaphragms, bushings, grommets, sleeves, seals and packings.

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 aviation fuels.

(b) Parts must 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	70 ± 5
Tensile Strength, psi	1500 min
Elongation, %	250 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 across-sectional area.

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

Medium	Aromatic Blended Fuel:	62 Octane Gasoline	60%
		Toluol	20%
		Xylol	15%
		Benzol	5%
Time	24 and 168 hours		
Temperature	70° - 85°F		

After either aging period the tensile strength and elongation shall have decreased not more than 50% from the values found for the material as received. The Shore Durometer "A" hardness change shall be within the limits of 0 to -20 points. The volume change shall be within the limits of 0% to +30% at the end of the 24 hour period, and at the end of 168 hours the volume change shall not deviate more than plus or minus 6% of the original volume from the percentage change at the end of 24 hours. The material shall show no shrinkage when tested in 62 octane gasoline with no added aromatics for 24 hours.

(c) Gum Extraction.- Tests, using the aromatic blended fuel specified in the fuel aging test, paragraph 5(b), shall be conducted as follows:

(1) Gum Content.- A 10 gram specimen shall be diced to 1/16 inch cubes and placed in a flask. Add 250 ml. of the aromatic blended fuel and allow to stand for 48 hours at 70° - 80°F. A polished copper strip shall be placed in the flask and shall show no corrosion evidenced by discoloration at the end of 48 hours. Decant the fuel, taking care that no small particles of sample are carried over. Evaporate sample to dryness in accurately tared glass dish. 250 ml. of the fuel shall be evaporated at the same time in a second tared glass dish in order to determine the gum content of the fuel. This amount shall be subtracted from the value obtained for the extracted fuel. A live steam bath (212°F) is employed to evaporate all volatile matter from the dish. The dish shall then be removed from the bath and placed in an electric oven at 212°F for 1/2 hour. The dish is then cooled in a desiccator and weighed. The percentage of gum content shall be calculated on the basis of the original specimen of synthetic stock taken. This shall not exceed 10%.

(2) Fuel Insoluble Residue.- The non-volatile material remaining in the glass dish after evaporation of the fuel shall be washed ten times with 50 ml. portions of the aromatic blended fuel. After each 50 ml. of fuel is added to the gum in the dish, the mixture shall be allowed to stand for not more than five minutes. The fuel washings shall be filtered through a weighed Gooch crucible. The increase in weight of the Gooch crucible plus the weight of the gum remaining in the dish shall be considered the weight of the fuel insoluble residue and shall not exceed 0.50% of the original sample weight. The amount of insoluble gum determined in the blank shall be subtracted from the value obtained for the extracted fuel.

(d) 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 +10 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.

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

Time	70 hours
Temperature	212°F ± 2°
Compression, To	75% of original thickness

(1) The maximum compression set shall be 75% when expressed as a percentage of the original deflection.

(2) The maximum compression set shall be 19% when expressed as a percentage of the original thickness.

(f) Low Temperature Brittleness.- Tests shall be conducted in ϕ 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 ϕ 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%

(c) Extrusions and Molded Parts.- Sections may be as much as plus and minus 0.005 inch outside of drawing limits provided the cross-sectional area is within the limits given by the drawing dimensions.

8. REPORTS: Unless otherwise specified, the vendor shall furnish three copies of a notarized report of the results of tests to determine conformance to this specification. This report shall include the purchase order number, material specification number, vendor's compound number, percentages and specific type of synthetic or synthetics used, part number and quantity.

9. IDENTIFICATION: Unless otherwise agreed between purchaser and vendor, all material shall be identified and marked in accordance with the latest revision of AMS 2810. ϕ

10. PACKAGING: Packaging shall be accomplished in such a manner as to insure that the materials being shipped will not be permanently distorted or compressed, ϕ or be exposed to undue weathering, or harmful materials of any kind.