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400 Commonwealth Dr., Warrendale, PA 15096

AEROSPACE MATERIAL SPECIFICATION

Submitted for recognition as an American National Standard

SAE AMS 3251F

Issued 11-1-44
Revised 1-1-86

Superseding AMS 3251E

SYNTHETIC RUBBER AND CORK COMPOSITION
General Purpose
Medium

1. SCOPE:

1.1 Form: This specification covers a synthetic rubber and cork composition in the form of sheet, strip, and molded shapes.

1.2 Application: Primarily for parts such as packings, seals, grommets, line support blocks, tank strap pads, and wherever cushioning and vibration damping are of prime importance.

2. APPLICABLE DOCUMENTS: The following publications form a part of this specification to the extent specified herein. The latest issue of Aerospace Material Specifications shall apply. The applicable issue of other documents shall be as specified in AMS 2350.

2.1 SAE Publications: Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096.

2.1.1 Aerospace Material Specifications:

AMS 2350 - Standards and Test Methods
AMS 2810 - Identification and Packaging, Elastomeric Products

2.2 ASTM Publications: Available from American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

ASTM D297 - Rubber Products - Chemical Analysis
ASTM D395 - Rubber Property - Compression Set
ASTM D412 - Rubber Properties in Tension
ASTM D471 - Rubber Property - Effect of Liquids
ASTM D573 - Rubber - Deterioration in An Air Oven
ASTM D2137 - Rubber Property - Brittleness Point of Flexible Polymers and Coated Fabrics
ASTM F36 - Compressibility and Recovery of Gasket Materials
ASTM F104 - Classification System for Nonmetallic Gasket Materials

3. TECHNICAL REQUIREMENTS:

3.1 Material: Shall be a granulated cork uniformly dispersed in a synthetic rubber compound, suitably cured to produce a product meeting the requirements of 3.2. Joints shall be vulcanized and the joint section shall have essentially the same strength and size as the solid section.

3.2 Properties: The product shall conform to the following requirements; tests shall be performed on the product supplied and in accordance with specified ASTM methods, insofar as practicable:

3.2.1	As Received:		
3.2.1.1	Compressibility	45% ± 5	ASTM F36
3.2.1.2	Elongation, min	100%	ASTM D412, Die B or C
3.2.1.3	Density	0.83 to 1.05 Mg/m^3	ASTM D297
3.2.2 Ø	Aliphatic Fuel Resistance (Immediate Deteriorated Properties)		ASTM D471 Medium: ASTM Ref. Fuel A Temperature: 20° - 30°C (68° - 86°F) Time: 22 hr ± 0.5
3.2.2.1	Compressibility Change (See 8.2)	-10 to +20%	
3.2.2.2	Volume Change	-5 to +25%	
3.2.2.3	Weight Change		
3.2.2.3.1	Upon removal from fuel	0 to +25%	
3.2.2.3.2 Ø	After 22 hr ± 0.5 air drying at 20° - 30°C (68° - 86°F), max (based on unimmersed weight)	-8%	
3.2.3 Ø	Petroleum Lubricating Oil Resistance: (Immediate Deteriorated Properties)		ASTM D471 Medium: ASTM Oil No. 1 Temperature: 100°C ± 3 (212°F ± 5) Time: 22 hr ± 0.5
3.2.3.1	Compressibility Change (See 8.2)	-5% to +20%	
3.2.3.2	Volume Change	-15 to +15%	
3.2.3.3	Decomposition	None	
3.2.3.4	Surface Tackiness	None	

3.2.4 Water Absorption: (Immediate Deteriorated Properties)		ASTM D471 Medium: Distilled Water Temperature: 100°C ± 3 (212°F ± 5) Time: 1 hr ± 0.2
3.2.4.1 Compressibility Change (See 8.2)	0 to +15%	
3.2.4.2 Volume Change	0 to 10%	
3.2.4.3 Weight Change	0 to +15%	
3.2.5 Dry Heat Resistance:		ASTM D573 Temperature: 100°C ± 3 (212°F ± 5) Time: 70 hr ± 0.5
3.2.5.1 Compressibility Change (See 8.2)	-15% to +5%	
3.2.5.2 Flexibility	Pass	ASTM F104
3.2.6 Compression Set:		ASTM D395, Method B Temperature: 70°C ± 3 (158°F ± 5) Time: 22 hr ± 0.5
3.2.6.1 Percent of Original Deflection max	80	
3.2.7 Low-Temperature Brittleness:	Pass	ASTM D2137, Method B Temperature: -35°C ± 2 (-31°F ± 4) Specimen to be 0.060 - 0.125 in. (1.5 - 3 mm) thick

3.2.8 Weathering: When specified, the product shall have weather resistance acceptable to the purchaser, determined by a procedure agreed upon by purchaser and vendor.

3.2.9 Corrosion: The product shall not have a corrosive effect on other materials when exposed to conditions normally encountered in service, determined by a procedure agreed upon by purchaser and vendor. Discoloration of metal shall not be considered objectionable.

3.3 Quality: The product, as received by purchaser, shall be uniform in quality and condition, clean, smooth, as free from foreign materials as commercially practicable, and free from imperfections detrimental to usage of the product.

3.4 Tolerances: Shall be as follows:

3.4.1 Sheet and Strip:

TABLE I

Nominal Thickness Inches	Tolerance, Inch plus and minus
Up to 0.125, incl	0.016
Over 0.125 to 0.500, incl	0.031
Over 0.500	0.047

TABLE I (SI)

Nominal Thickness Millimetres	Tolerance, Millimetres plus and minus
Up to 3.12, incl	0.40
Over 3.12 to 12.50, incl	0.78
Over 12.50	1.18

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection: The vendor of the product shall supply all Ø samples for vendor's tests and shall be responsible for performing all required tests. Results of such tests shall be reported to the purchaser as required by 4.5. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the product conforms to the requirements of this specification.

4.2 Classification of Tests:

4.2.1 Acceptance Tests: Tests to determine conformance to the following requirements are classified as acceptance tests and shall be performed on each lot:

Requirement	Paragraph
Compressibility, as received	3.2.1.1
Elongation, as received	3.2.1.2
Density, as received	3.2.1.3
Volume Change in Oil	3.2.3.2
Compression Set	3.2.6

4.2.2 Preproduction Tests: Tests to determine conformance to all technical Ø requirements of this specification are classified as preproduction tests and shall be performed prior to or on the initial shipment of a product to a purchaser, when a change in material, processing, or both requires reapproval as in 4.4.2, and when purchaser deems confirmatory testing to be required.

4.2.2.1 For direct U.S. Military procurement, substantiating test data and, when requested, preproduction test material shall be submitted to the cognizant agency as directed by the procuring activity, the contracting officer, or the request for procurement.

4.3 Sampling: Shall be as follows:

4.3.1 For Acceptance Tests: Sufficient product shall be taken at random from Ø each lot to perform all required tests. The number of determinations for each requirement shall be as specified in the applicable test procedure or, if not specified therein, not less than three.

4.3.1.1 A lot shall be all product from the same batch of compound processed in Ø one continuous run and presented for vendor's inspection at one time. An inspection lot shall not exceed 500 lb (225 kg). A lot may be packaged in small quantities under the basic lot approval provided lot identification is maintained.

4.3.1.2 A batch shall be the quantity of compound run through a mill or mixer at Ø one time.

4.3.1.3 When a statistical sampling plan and acceptance quality level (AQL) have Ø been agreed upon by purchaser and vendor, sampling shall be in accordance with such plan in lieu of sampling as in 4.3.1 and the report of 4.5.1 shall state that such plan was used.

4.3.2 For Preproduction Tests: As agreed upon by purchaser and vendor. Ø

4.4 Approval:

4.4.1 Sample material shall be approved by purchaser before material for production use is supplied, unless such approval be waived by purchaser. Results of tests on production material shall be essentially equivalent to those on the approved sample.

4.4.2 Vendor shall use ingredients, manufacturing procedures, processes, and methods of inspection on production material which are essentially the same as those used on the approved sample material. If necessary to make any change in ingredients, in type of equipment for processing, or in manufacturing procedures, vendor shall submit for reapproval a statement of the proposed changes in material, processing, or both and, when requested, sample material. Production material made by the revised procedure shall not be shipped prior to receipt of reapproval.

4.5 Reports:

4.5.1 The vendor of the product shall furnish with each shipment a report showing the results of tests to determine conformance to the acceptance test requirements and stating that the product conforms to the other technical requirements of this specification. This report shall include the purchase order number, AMS 3251F, lot number, vendor's compound number, form and size or part number, and quantity.