

AEROSPACE MATERIAL SPECIFICATION

Submitted for recognition as an American National Standard



AMS 3252H

Issued NOV 1944
Revised AUG 1995

Superseding AMS 3252G

SYNTHETIC RUBBER AND CORK COMPOSITION, GENERAL PURPOSE, FIRM

This specification has been declared "NONCURRENT" by the Aerospace Materials Division, SAE, as of August 1, 1995. It is recommended, therefore, that this specification not be specified for new designs.

This cover sheet should be attached to the "G" revision of the subject specification.

"NONCURRENT" refers to those materials which have previously been widely used and which may be required on some existing designs in the future. The Aerospace Materials Division, however, does not recommend these as standard materials for future use in new designs. Each of these "NONCURRENT" specifications is available from SAE upon request.

PREPARED UNDER THE JURISDICTION OF AMS COMMITTEE "CE"

SAE Technical Standards Board Rules provide that: "This report is published by SAE to advance the state of technical and engineering sciences. The use of this report is entirely voluntary, and its applicability and suitability for any particular use, including any patent infringement arising therefrom, is the sole responsibility of the user."

SAE reviews each technical report at least every five years at which time it may be reaffirmed, revised, or cancelled. SAE invites your written comments and suggestions.

SYNTHETIC RUBBER AND CORK COMPOSITION
General Purpose
Firm

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, and tank strap pads, where cushioning and vibration damping are of prime importance.

1.3 Safety - Hazardous Materials: While the materials, methods, applications, and processes described or referenced in this specification may involve the use of hazardous materials, this specification does not address the hazards which may be involved in such use. It is the sole responsibility of the user to ensure familiarity with the safe and proper use of any hazardous materials and to take necessary precautionary measures to ensure the health and safety of all personnel involved.

2. APPLICABLE DOCUMENTS: The following publications form a part of this specification to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order.

2.1 SAE Publications: Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

2.1.1 Aerospace Material Specifications:

AMS 2810 - Identification and Packaging, Elastomeric Products

SAE Technical Board Rules provide that: "This report is published by SAE to advance the state of technical and engineering sciences. The use of this report is entirely voluntary, and its applicability and suitability for any particular use, including any patent infringement arising therefrom, is the sole responsibility of the user."

SAE reviews each technical report at least every five years at which time it may be reaffirmed, revised, or cancelled. SAE invites your written comments and suggestions.

2.2 ASTM Publications: Available from ASTM, 1916 Race Street, Philadelphia, PA 19103-1187.

- ASTM D 297 - Rubber Products - Chemical Analysis
- ASTM D 395 - Rubber Property - Compression Set
- ASTM D 412 - Rubber Properties in Tension
- ASTM D 471 - Rubber Property - Effect of Liquids
- ASTM D 573 - Rubber - Deterioration in An Air Oven
- ASTM D 2137 - Rubber Property - Brittleness Point of Flexible Polymers and Coated Fabrics
- ASTM F 36 - Compressibility and Recovery of Gasket Materials
- ASTM F 104 - 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 | 35% ± 5 | ASTM F 36 |
| 3.2.1.2 | Elongation, minimum | 75% | ASTM D 412, Die B or C |
| 3.2.1.3 | Density | 0.91 to 1.10 g/cm ³ | ASTM D 297 |
| 3.2.2 | <u>Aliphatic Fuel Resistance:</u> ∅ (Immediate Deteriorated Properties) | | ASTM D 471 Medium: ASTM Ref. Fuel A |
| 3.2.2.1 | Compressibility Change (See 8.2) | -10 to +20% | Temperature: 20 - 30 °C (68 - 86 °F) |
| 3.2.2.2 | Volume Change | -5 to +25% | Time: 22 hours ± 0.5 |
| 3.2.2.3 | Weight Change | | |
| 3.2.2.3.1 | Upon removal from fuel | 0 to +25% | |
| 3.2.2.3.2 | After 22 hours ± 0.5 air drying at 20 - 30 °C (68 - 86 °F), maximum (based on unimmersed weight) | -8% | |

| | | | | |
|---------|---|-------------|-----------------------|---|
| 3.2.3 | <u>Petroleum Lubricating Oil Resistance:</u> (Immediate Deteriorated Properties) | | ASTM D 471 Medium: | ASTM Oil No. 1 |
| 3.2.3.1 | Compressibility Change (See 8.2) | -5% to +15% | Temperature: | 100 °C ± 3 (212 °F ± 5) |
| 3.2.3.2 | Volume Change | -10 to +10% | Time: | 22 hours ± 0.5 |
| 3.2.3.3 | Decomposition | None | | |
| 3.2.3.4 | Surface Tackiness | None | | |
| 3.2.4 | <u>Water Absorption:</u> Ø (Immediate Deteriorated Properties) | | ASTM D 471 Medium: | Distilled Water |
| 3.2.4.1 | Compressibility Change (See 8.2) | 0 to +15% | Temperature: | 100 °C ± 3 (212 °F ± 5) |
| 3.2.4.2 | Volume Change | 0 to +10% | Time: | 1 hour ± 0.2 |
| 3.2.4.3 | Weight Change | 0 to +15% | | |
| 3.2.5 | <u>Dry Heat Resistance:</u> | | ASTM D 573 | |
| 3.2.5.1 | Compressibility Change (See 8.2) | -15% to +5% | Temperature: | 100 °C ± 3 (212 °F ± 5) |
| 3.2.5.2 | Flexibility | Pass | Time: | 70 hours ± 0.5 |
| 3.2.6 | <u>Compression Set:</u> | | ASTM F 104 | |
| 3.2.6.1 | Percent of Original Deflection, maximum | 80 | ASTM D 395, Method B | Temperature: 70 °C ± 3 (158 °F ± 5) |
| 3.2.7 | <u>Low-Temperature Brittleness:</u> | Pass | Time: | 22 hours ± 0.5 |
| | | | ASTM D 2137, Method B | Temperature: -35 °C ± 2 (-31 °F ± 4) |
| | | | | Specimen to be 0.060 - 0.125 inch (1.52 - 3.18 mm) thick |
| 3.2.8 | <u>Weathering:</u> When specified, the product shall have weather resistance acceptable to purchaser, determined by a procedure agreed upon by purchaser and vendor. | | | |
| 3.2.9 | <u>Corrosion:</u> 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 | <u>Quality:</u> The product, as received by purchaser, shall be uniform in quality and condition, smooth, as free from foreign material 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 Millimeters | Tolerance, Millimeters plus and minus |
|----------------------------------|--|
| Up to 3.18, incl | 0.41 |
| Over 3.18 to 12.70, incl | 0.79 |
| Over 12.70 | 1.19 |

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection: The vendor of the product shall supply all samples for vendor's tests and shall be responsible for performing all required tests. 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 for the following requirements are 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 for all technical requirements are preproduction tests and shall be performed prior to or on the initial shipment of a product to a purchaser, when a change in ingredients and/or processing requires reapproval as in 4.4.2, and when purchaser deems confirmatory testing to be required.