AN AMERICAN NATIONAL STANDARD

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400 Commonwealth Drive, Warrendale, PA 15096-0001

# AEROSPACE MATERIAL SPECIFICATION

SAE AMS 3243E

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Superseding AMS 3243D

## CHLOROPRENE (CR) RUBBER
## Flame Resistant
## 55 - 65

1. SCOPE:

1.1 Form: This specification covers a chloroprene (CR) rubber in the form of sheet, strip, tubing, extrusions, and molded shapes.

1.2 Application: Primarily for parts, such as grommets, seals, and line supports, on the firewall of aircraft or wherever flame resistance is 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 2279 - Tolerances, Rubber Products
MAM 2279 - Tolerances, Metric, Rubber Products
AMS 2810 - Identification and Packaging, Elastomeric Products

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 624 - Rubber Property - Tear Resistance
ASTM D 635 - Rate of Burning and/or Extent and Time of Burning of Self-Supporting Plastics in a Horizontal Position
ASTM D 2137 - Rubber Property - Brittleness Point of Flexible Polymers and Coated Fabrics
ASTM D 2240 - Rubber Property - Durometer Hardness

3. TECHNICAL REQUIREMENTS:

3.1 Material: Shall be a compound, based on a chloroprene (CR) elastomer, suitably cured to produce a product meeting the requirements of 3.2.

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 | Hardness, Durometer "A" or equivalent | 60 ± 5 | ASTM D 2240 |
| 3.2.1.2 | Tensile Strength, minimum | 900 psi (6.2 MPa) | ASTM D 412, Die B or C |
| 3.2.1.3 | Elongation, minimum | 200% | ASTM D 412, Die B or C |
| 3.2.1.4 | Tear Resistance, minimum | 70 pounds force per inch (12.5 kN/m) | ASTM D 624, Die B |
| 3.2.1.5 | Specific Gravity | Preproduction Value ± 0.02 | ASTM D 297 |
| 3.2.2 | Petroleum Hydraulic Oil Resistance: (Immediate Deteriorated Properties) | | ASTM D 471<br>Medium: ASTM Oil No. 3<br>Temperature: 100°C ± 1 (212°F ± 2)<br>Time: 22 hours ± 0.5 |
| 3.2.2.1 | Tensile Strength Change, maximum | -60% | |
| 3.2.2.2 | Elongation Change, maximum | -60% | |
| 3.2.2.3 | Volume Change | +40 to +100% | |

| AMS 3243E | SAE | AMS 3243E |
|---|---|---|
| 3.2.2.4 Decomposition | None | |
| 3.2.2.5 Surface Tackiness | None | |
| 3.2.3 Aromatic Fuel Resistance: (Immediate Deteriorated Properties) | | ASTM D 471<br>Medium: ASTM Ref. Fuel B<br>Temperature: 20° - 30°C (68° - 86°F)<br>Time: 22 hours ± 0.5 |
| 3.2.3.1 Tensile Strength Change, maximum | -75% | |
| 3.2.3.2 Elongation Change, maximum | -50% | |
| 3.2.3.3 Volume Change | 0 to +80% | |
| 3.2.3.4 Decomposition | None | |
| 3.2.3.5 Surface Tackiness | None | |
| 3.2.4 Dry Heat Resistance: | | ASTM D 573<br>Temperature: 125°C ± 2 (257°F ± 4)<br>Time: 70 hours ± 0.5 |
| 3.2.4.1 Hardness Change, Durometer "A" or equivalent | 0 to +20 | |
| 3.2.4.2 Tensile Strength Change, maximum | -30% | |
| 3.2.4.3 Elongation Change, maximum | -50% | |
| 3.2.5 Compression Set: | | ASTM D 395, Method B<br>Temperature: 100°C ± 1 (212°F ± 2)<br>Time: 70 hours ± 0.5 |
| 3.2.5.1 Percent of Original Deflection, maximum | 50 | |
| 3.2.6 Low-Temperature Resistance: | | ASTM D 2137, Method A<br>Temperature: -35°C ± 1 (-31°F ± 2) |
| 3.2.6.1 Brittleness | Pass | |
| 3.2.7 Flame Resistance See (8.2): | | 4.5.1 |
| Flameout time, maximum | 10 seconds | |

3.2.8 Weathering: When specified, the product shall have weather resistance acceptable to 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, smooth, as free from foreign material as commercially practicable, and free from imperfections detrimental to usage of the product.

3.4 Tolerances: Shall conform to all applicable requirements of AMS 2279 or Ø MAM 2279.

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. 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 Reference |
|---|---|
| Hardness, as received | 3.2.1.1 |
| Tensile Strength, as received | 3.2.1.2 |
| Elongation, as received | 3.2.1.3 |
| Specific Gravity | 3.2.1.5 |
| Volume Change in Oil | 3.2.2.3 |
| Flame Resistance | 3.2.7 |

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.

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, contracting officer, or request for procurement.

4.3 Sampling and Testing: Shall be as follows:
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4.3.1 For Acceptance Tests: Sufficient product shall be taken at random from 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.