



400 Commonwealth Drive, Warrendale, PA 15096-0001

# AEROSPACE MATERIAL SPECIFICATION



AMS 3244E

Submitted for recognition as an American National Standard

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Superseding AMS 3244D

## CHLOROPRENE (CR) RUBBER Flame Resistant 65 - 75

### 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

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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	70 $\pm$ 5	ASTM D 2240
3.2.1.2 Tensile Strength, minimum	1000 psi (6.89 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 (12.3 kN/m)	ASTM D 624, Die B
3.2.1.5 Specific Gravity	Preproduction Value $\pm$ 0.02	ASTM D 297
3.2.2 Petroleum Hydraulic Oil Resistance: (Immediate Deteriorated Properties)		ASTM D 471 Medium: ASTM Oil No. 3 Temperature: 100°C $\pm$ 1 (212°F $\pm$ 2) Time: 22 hours $\pm$ 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	+30 to +90%	
3.2.2.4 Decomposition	None	

AMS 3244E	SAE	AMS 3244E
3.2.2.5 Surface Tackiness	None	
3.2.3 <u>Aromatic Fuel Resistance:</u> (Immediate Deteriorated Properties) B		ASTM D 471 Medium: ASTM Ref. Fuel
3.2.3.1 Tensile Strength Change, maximum	-75%	Temperature: 20° - 30°C (68° - 86°F) Time: 22 hours $\pm$ 0.5
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 <u>Dry Heat Resistance:</u>		ASTM D 573 Temperature: 125°C $\pm$ 2 (257°F $\pm$ 4) Time: 70 hours $\pm$ 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 <u>Compression Set:</u>		ASTM D 395, Method B Temperature: 100°C $\pm$ 1 (212°F $\pm$ 2) Time: 70 hours $\pm$ 0.5
3.2.5.1 Percent of Original Deflection, maximum	50	
3.2.6 <u>Low-Temperature Resistance:</u>		ASTM D 2137, Method A Temperature: -35°C $\pm$ 1 (-31°F $\pm$ 2)
3.2.6.1 Brittleness	Pass	
3.2.7 <u>Flame Resistance (See 8.2):</u> Flameout time, maximum	10 seconds	4.5.1
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.		

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AMS 3244E

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.