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INTERNATIONAL
400 Commonwealth Drive, Warrendale, PA 15096-0001

AEROSPACE MATERIAL SPECIFICATION

SAE AMS 3244G

Issued JAN 1957
Revised NOV 1998

Submitted for recognition as an American National Standard

Superseding AMS 3244F

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:

These products have been used typically for parts, such as grommets, seals, and line supports, on the firewall of aircraft or wherever flame resistance is of prime importance, but usage is not limited to such applications. Each application should be considered individually.

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.

QUESTIONS REGARDING THIS DOCUMENT: (724) 772-7161 FAX: (724) 776-0243
TO PLACE A DOCUMENT ORDER: (724) 776-4970 FAX: (724) 776-0790
SAE WEB ADDRESS: http://www.sae.org

2.1 SAE Publications:

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

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, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

ASTM D 395 Rubber Property - Compression Set
ASTM D 412 Vulcanized Rubber and Thermo-Plastic Elastomers-Tension
ASTM D 471 Rubber Property - Effect of Liquids
ASTM D 573 Rubber Property - 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 792 Specific Gravity (Relative Density) and Density of Plastics by Displacement
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 requirements shown in Table 1, 3.2.8 and 3.2.9; tests shall be performed on the product supplied and in accordance with specified ASTM methods insofar as practicable:

TABLE 1 - Properties

	Property	Requirement	Test Method
3.2.1	Hardness, Durometer "A" or equivalent	70 ± 5	ASTM D 2240
3.2.2	Tensile Strength, min	1000 psi (6.89 MPa)	ASTM D 412, Die B or C
3.2.3	Elongation, min	200%	ASTM D 412, Die B or C
3.2.4	Tear Resistance, min	70 pounds force per inch (12.3 kN/m)	ASTM D 624, Die B
3.2.5	Specific Gravity	Preproduction Value ± 0.02	ASTM D 792 (Hydrostatic Method)
3.2.2.1	Petroleum Hydraulic Oil Resistance:		ASTM D 471 IRM 903 100 °C ± 1 (212 °F ± 2) 22 hours ± 0.5
3.2.2.1	Tensile Strength Change max	-60%	
3.2.2.2	Elongation Change, max	-60%	
3.2.2.3	Volume Change	+30 to +90%	
3.2.2.4	Decomposition	None	
3.2.2.5	Surface Tackiness	None	
3.2.3	Aromatic Fuel Resistance		ASTM D 471 ASTM Ref. Fuel B 20 to 30 °C (68 to 86 °F) 22 hours ± 0.5
3.2.3.1	Tensile Strength Change, max	-75%	
3.2.3.2	Elongation Change, max	-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 573 125 °C ± 2 (257 °F ± 4) 70 hours ± 0.5
3.2.4.1	Hardness Change, Durometer "A" or equivalent	0 to +20	
3.2.4.2	Tensile Strength, Change Max	-30%	

TABLE 1 - Properties (Continued)

Property	Requirement	Test Method
3.2.4.3 Elongation Change, max	-50%	
3.2.5 Compression Set:		ASTM D 395 Method B 100 °C ± 1 (212 °F ± 2) 70 hours ± 0.5
3.2.5.1 Percent of Original Deflection, max	50	
3.2.6 Low-Temperature Resistance		ASTM D 2137 Method A -35°C ± 1 (-31 °F ± 2)
3.2.6.1 Brittleness	Pass	
3.2.7 Flame Resistance (See 8.2): Flameout time, max	10 seconds	4.5.1

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

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 supplier. 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 MAM 2279.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection:

The manufacturer of the product shall supply all samples 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 shown in Table 2 are acceptance tests and shall be performed on each lot:

TABLE 2 - Acceptance Requirements

Requirement	Paragraph Reference
Hardness, as received	3.2.1
Tensile Strength, as received	3.2.2
Elongation, as received	3.2.3
Specific Gravity	3.2.5
Volume Change in Oil	3.2.2.3
Flame Resistance	3.2.7
Quality	3.3
Tolerances	3.4

4.2.2 Preproduction Tests: 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.

4.3 Sampling and Testing:

Shall be as follows:

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, except as otherwise stated in 4.3.1.4.

4.3.1.1 If specimens cannot be prepared from the product, ASTM test specimens prepared from the same batch and state of cure shall be used. When the product supplied is an extrusion of such shape that suitable test specimens cannot be cut from the product, a separate flat strip test sample from the same production lot shall be supplied upon request. This strip shall be prepared from tubing 1.000 inch ± 0.063 (25.40 mm ± 1.60) in OD by 0.075 inch ± 0.008 (1.90 mm ± 0.20) in wall thickness, mechanically slit and flattened into a strip while being extruded, and cured in the same manner as production product. When the product is a molded shape from which test specimens cannot be cut, a slab 6 inches (152 mm) square by 0.075 inch ± 0.008 (1.90 mm ± 0.20) thick molded from the same batch of compound shall be supplied upon request.

4.3.1.2 A lot shall be all product produced from the same batch of compound processed in one continuous run and presented for manufacturers inspection at one time.

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

4.3.1.4 A statistical sampling plan acceptable to the purchaser may be used in lieu of sampling as in 4.3.1. Sample size for visual and dimensional requirements shall be as shown in Table 3; sample unit shall be one molded part and acceptable based on zero defects.

TABLE 3 - Visual and Dimensional Inspection

Lot Size	Sample Size
2 to 8	Entire Lot
9 to 90	8
91 to 150	12
151 to 280	19
281 to 500	21
501 to 1200	27
1201 to 3200	35
3201 to 10,000	38
10,001 to 35,000	46
35,001 to 150,000	56
150,001 and Over	65

4.3.2 Preproduction Tests: Acceptable to purchaser or as stated in the contract.

4.4 Approval:

4.4.1 Sample product shall be approved by the purchaser before product for production use is supplied, unless such approval is waived by the purchaser. Results of the tests on production product shall be essentially equivalent to those on the approved sample. Production product made by the revised procedure shall not be shipped prior to receipt of reapproval. If necessary to make any change in parameters for the process control factors, manufacturer shall submit for reapproval a statement of the proposed changes in ingredients and/or processing and when requested, sample product.

4.4.2 Manufacturer shall make no significant change to materials, processes or controls from those on which the approval was based, unless the change is approved by the cognizant engineering organization. A significant change is one which, in the judgment of the cognizant engineering organization, could affect the properties or performance of the parts.

4.4.2.1 Control factors for producing products include, but are not limited to, the following:

Compound ingredients and proportions thereof within established limits
Sequence of mixing compound ingredients
Type of mixing equipment
Method and equipment for preparing preforms
Basic molding procedure (compression, transfer, injection)
Curing time and pressure; variations of ± 10% are permissible
Finishing methods
Methods of inspection