

CHLOROPRENE RUBBER

Weather Resistant

75 - 85

1. SCOPE:

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

1.2 Application: Primarily for parts, such as window channels, bumper pads, chafing strips, and seals, requiring resistance to weather, for use from -40° to +100°C (-40° to +212°F).

2. APPLICABLE DOCUMENTS: The following publications form a part of this specification to the extent specified herein. The latest issue of Aerospace Material Specifications (AMS) 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 D624 - Rubber Property - Tear Resistance

ASTM D797 - Rubber Property - Young's Modulus at Normal and Subnormal
Temperatures

ASTM D2137 - Rubber Property - Brittleness Point of Flexible Polymers and
Coated Fabrics

ASTM D2240 - Rubber Property - Durometer Hardness

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AMS 3242E

3. TECHNICAL REQUIREMENTS:

3.1 Material: Shall be a compound based on a chloroprene 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 equiv.	80 + 5	ASTM D2240
3.2.1.2	Tensile Strength, min	1900 psi (13.1 MPa)	ASTM D412, Die B or C
3.2.1.3	Elongation, min	150%	ASTM D412, Die B or C
3.2.1.4	Tensile Stress at 100% Elongation	Preproduction value +20%	ASTM D412, Die B or C Stretch specimen to 125% elongation twice within 5 min. before testing.
3.2.1.5	Tear Resistance lb per in. (kg/m), min	80% of preproduction value	ASTM D624, Die B
3.2.1.6	Specific Gravity	Preproduction value +0.02	ASTM D297
3.2.2	<u>Oil Resistance:</u> (Immediate Deteriorated Properties)		ASTM D471 Medium: ASTM Oil No. 3 Temperature: 100°C + 1 (212°F + 2) Time: 70 hr + 0.5
3.2.2.1	Tensile Strength Change, max	-40%	
3.2.2.2	Elongation Change, max	-35%	
3.2.2.3	Volume Change	+30 to +90%	
3.2.2.4	Decomposition	None	
3.2.2.5	Surface Thickness	None	
3.2.3	<u>Dry Heat Resistance:</u>		ASTM D573 Temperature: 100°C + 1 (212°F + 2) Time: 70 hr + 0.5
3.2.3.1	Hardness Change, Durometer "A" or equiv.	0 to +10	
3.2.3.2	Tensile Strength Change, max	-20%	

3.2.3.3 Elongation Change, max

3.2.3.3.1 For parts other than extrusions -50%

3.2.3.3.2 For extruded parts -60%

3.2.3.4 Bend (flat) No cracking or checking

3.2.4 Compression Set:

ASTM D395 Method B
 Temperature: $100^{\circ}\text{C} \pm 1$
 (212 $^{\circ}\text{F} \pm 2$)
 Time: 70 hr ± 0.5

3.2.4.1 Percent of Original deflection, max

3.2.4.1.1 For parts other than extrusions 72

3.2.4.1.2 For extruded parts 79

3.2.5 Low-Temperature Resistance:

3.2.5.1 Brittleness

Pass

ASTM D2137, Method A
 Temperature: $-35^{\circ}\text{C} \pm 1$
 (-31 $^{\circ}\text{F} \pm 2$)

3.2.5.2 Young's Modulus, max
 (See 8.2)

50,000 psi
 345 MPa

ASTM D797
 Temperature: $-40^{\circ}\text{C} \pm 1$
 (-40 $^{\circ}\text{F} \pm 2$)

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

3.2.7 Corrosion: The product shall not have a corrosive effect on other materials when exposed to conditions normally encountered in service. 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 material as commercially practicable, and free from imperfections detrimental to usage of the product.

3.4 Tolerances: Unless otherwise specified, the following tolerances shall apply:

AMS 3242E

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	0.032
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	0.80
Over 12.50	1.20

3.4.2 Tubing:

3.4.2.1 Diameter:

TABLE II

Nominal OD or ID (not both, Inches)	Tolerance plus and minus	Ovality, % (3.4.2.1.1)
Up to 0.500, incl	0.020 in.	10
Over 0.500 to 1.000, incl	0.030 in.	15
Over 1.000	4%	15

TABLE II (SI)

Nominal OD or ID (not both, Millimeters)	Tolerance plus and minus	Ovality, % (3.4.2.1.1)
Up to 12.50, incl	0.50 mm	10
Over 12.50 to 25.00, incl	0.75 mm	15
Over 25.00	4%	15

- 3.4.2.1.1 Ovality applies to tubing ordered in straight lengths with wall thickness of 0.063 in. (1.60 mm) and over and shall be computed from the difference of the minor and major axis diameter measurements, taken at the same transverse plane on the tube, expressed as a percentage of the nominal diameter.

3.4.2.2 Wall Thickness:

TABLE III

Nominal Wall Thickness Inches	Tolerance plus and minus
Up to 0.063, excl 0.063 and over	0.005 in. 10%

TABLE III (SI)

Nominal Wall Thickness Millimetres	Tolerance plus and minus
Up to 1.60, excl 1.60 and over	0.13 mm 10%

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. 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
Hardness, as received	3.2.1.1
Tensile Strength, as received	3.2.1.2
Elongation, as received	3.2.1.3
Specific Gravity	3.2.1.6
Compression Set	3.2.4

4.2.2 Preproduction Tests: Tests to determine conformance to all technical requirements of this specification are classified as preproduction tests and shall be performed on the first-article shipment of a product to a purchaser, when a change in material 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 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