



AEROSPACE MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
400 COMMONWEALTH DRIVE, WARRENDALE, PA. 15096

AMS 3273C

Superseding AMS 3273B

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CHLOROPRENE RUBBER SHEET, NYLON FABRIC REINFORCED Weather Resistant

1. SCOPE:

1.1 Form: This specification covers nylon-fabric-reinforced chloroprene rubber in the form of sheet.

1.2 Application: Primarily for parts, such as gaskets, seals, diaphragms, and chafing strips, requiring resistance to weather, ozone, moderate heat, low temperature, water, and petroleum-base lubricating oil.

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 Society of Automotive Engineers, Inc., 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 D471 - Change in Properties of Elastomeric Vulcanizates Resulting from Immersion in Liquids

ASTM D573 - Accelerated Aging of Vulcanized Rubber by the Oven Method

ASTM D751 - Testing Coated Fabrics

ASTM D2137 - Low-Temperature Impact Test for Brittleness Determination of Flexible Polymeric Materials or Fabrics Coated Therewith, or Both

2.3 Government Publications: Available from Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120.

2.3.1 Federal Standards:

FED-STD-191 - Textile Test Methods

2.3.2 Military Standards:

MIL-STD-794 - Parts and Equipment, Procedures for Packaging and Packing of

3. TECHNICAL REQUIREMENTS:

SAE Technical Board rules provide that: "All technical reports, including standards, reports, and practices recommended, are advisory only. Their use by anyone engaged in industry or trade is entirely voluntary. There is no agreement to adhere to any SAE standard recommended practice, and no commitment to conform to or be guided by any technical report. In formulating and approving technical reports, the Board and its Committees will not investigate or consider patents which may apply to the subject matter. Prospective users of the report are responsible for protecting themselves against infringement of patents."

3.1 Material and Fabrication: The product shall consist of a single ply of a nylon fabric, having either a plain weave or a 2-up and 1-down twill weave, coated on both faces, unless otherwise specified, with a chloroprene rubber compound, the rubber being cured to produce a product meeting the requirements of 3.2. Thickness of coating shall be substantially uniform and shall be equal in thickness on both faces of sheet coated on both faces. Maximum thickness of the fabric shall be 0.006 in. (0.15 mm) for finished sheet thicknesses of 0.025 in. (0.64 mm) and under and 0.016 in. (0.41 mm) for sheet thickness over 0.025 in. (0.64 mm).

3.1.1 Color: Shall be black.

3.1.2 Surface Cleanliness: Sheet having evenly dusted surfaces will be acceptable. Surfaces shall be cleanable without damage to the sheet and shall be cementable.

3.2 Properties: Sheet shall conform to the following requirements; tests shall be performed on the sheet supplied and in accordance with specified test methods, insofar as practicable:

3.2.1 As Received: Shall be as specified in Table I, determined in accordance with ASTM D751.

3.2.2 Aliphatic Fuel Resistance:
(Immediate Deteriorated Properties)

ASTM D471	
Medium:	ASTM Ref. Fuel A
Temperature:	20° - 30°C (68° - 86°F)
Time	70 hr ± 0.5

3.2.2.1 Volume Change -5 to +20%

3.2.3 Oil Resistance:
(Immediate Deteriorated Properties)

ASTM D471	
Medium	ASTM Oil No. 3
Temperature:	100°C ± 1 (212°F ± 1.8)
Time:	70 hr ± 0.5

3.2.3.1 Volume Change +20 to +65%

3.2.3.2 Surface Tackiness None

3.2.4 Dry Heat Resistance: Shall be as specified in Table II, determined on specimens aged in accordance with ASTM D573 at 100°C ± 1 (212°F ± 1.8) for 70 hr ± 0.5.

3.2.5 Low Temperature Brittleness:

Pass

ASTM D2137,	Method B
Temperature:	-55°C ± 1 (-67°F ± 1.8)

3.2.6 Weather Resistance: Specimens of sheet in the as-received thickness x 4 x 6 in. or 100 x 150 mm, after exposure in accordance with FED-STD-191, Method 5804 for 150 hr ± 0.5, shall withstand, without cracking, bending 180 deg (3.14 rad) around a 0.125 in. (3.18 mm) diameter with axis of bend parallel to either the warp or fill direction of the fabric, determined 24 - 36 hr after removal from the test chamber.

3.2.7 Fungus Resistance: Sheet shall pass the following test with no evidence of fungus growth:

3.2.1.7 A mixed suspension prepared from viable cultures and containing a suitable wetting agent shall be sprayed over the test specimens supported on a nonnutrient agar medium. The test organisms shall be *Aspergillus niger*, *Aspergillus flavus*, *Penicillium luteum*, and *Trichoderma T-1*. A suitable control such as cotton twine shall also be included. At the end of 2 weeks incubation at 28° - 30°C (82.4° - 86°F), no visible traces of growth are permissible. The controls shall show abundant growth.

3.2.8 Corrosion: Sheet 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: Sheet shall be uniform in quality and condition, as free from foreign material as commercially practicable, and free from imperfections detrimental to fabrication, appearance, or performance of parts.

3.4 Sizes and Tolerances: Sheet shall be supplied in nominal thickness of 0.008, 0.010, 0.013, 0.017, 0.020, 0.025, 0.030, or 0.050 in. (0.20, 0.26, 0.33, 0.43, 0.51, 0.64, 0.76, or 1.27 mm) and in widths as ordered. Tolerances shall be as follows:

3.4.1 Thickness: Shall be as specified in Table III.

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TABLE III

Nominal Thickness Inch	Tolerance, Inch	
	plus	minus
0.008	0.002	0.001
0.010, 0.013, 0.017	0.002	0.002
0.020, 0.025, 0.030	0.003	0.003
0.050	0.005	0.005

TABLE III (SI)

Nominal Thickness Millimetres	Tolerance, Millimetre	
	plus	minus
0.20	0.05	0.03
0.26, 0.33, 0.43	0.05	0.05
0.51, 0.64, 0.76	0.08	0.08
1.27	0.13	0.13

3.4.2 Width: +1.0 in. (+25 mm).

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection: The vendor of sheet shall supply all samples 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 perform such confirmatory testing as he deems necessary to ensure that the sheet conforms to the requirements of this specification.

4.2 Classification of Tests:

4.2.1 Acceptance Tests: Tests to determine conformance to properties as received (3.2.1), oil resistance (3.2.3), and dry heat resistance (3.2.4) requirements are classified as acceptance tests.

4.2.2 Qualification Tests: Tests to determine conformance to all technical requirements of this specification are classified as qualification tests.

4.2.2.1 For direct U.S. Military procurement, substantiating test data and, when requested, qualification test material shall be submitted to the cognizant qualification agency as directed by the procuring activity, the contracting officer, or the request for procurement.

∅ 4.3 Sampling: Sufficient material shall be taken from each lot to perform all required tests in triplicate.

4.3.1 A lot shall be all sheet produced in one continuous coating operation from the same roll of fabric and the same batch of compound and presented for vendor's inspection at one time.

4.4 Approval:

- 4.4.1 Sample sheet shall be approved by purchaser before sheet for production use is supplied, unless such approval be waived. Results of tests on production sheet shall be essentially equivalent to those on the approved sample.
- 4.4.2 Vendor shall use ingredients, manufacturing procedures, processes, and methods of inspection on production sheet which are essentially the same as those used on the approved sample sheet. If any change is necessary in ingredients, in type of equipment for processing, or in manufacturing procedures, vendor shall submit for reapproval a statement of the proposed changes in material and processing and, when requested, sample sheet. Production sheet made by the revised procedure shall not be shipped prior to receipt of reapproval.
- 4.5 Reports:
- 4.5.1 The vendor of sheet shall furnish with each shipment three copies of a report showing the results of tests to determine conformance to the acceptance test requirements and stating that the sheet conforms to the other technical requirements of this specification. This report shall include the purchase order number, material specification number and its revision letter, vendor's material designation thickness, and quantity.
- 4.5.2 The vendor of finished or semi-finished parts shall furnish with each shipment three copies of a report showing the purchase order number, material specification number and its revision letter, contractor or other direct supplier of sheet, supplier's material designation, part number, and quantity. When sheet for making parts is produced or purchased by the parts vendor, that vendor shall inspect each lot of sheet to determine conformance to the requirements of this specification, and shall include in the report a statement that the sheet conforms, or shall include copies of laboratory reports showing the results of tests to determine conformance.
- 4.6 Resampling and Retesting: If any specimen used in the above tests fails to meet the specified requirements, disposition of the sheet may be based on the results of testing three additional specimens for each original nonconforming specimen. Failure of any retest specimen to meet the specified requirements shall be cause for rejection of the sheet represented and no additional testing shall be permitted. Results of all tests shall be reported.
5. PREPARATION FOR DELIVERY:
- 5.1 Identification and Packaging: Sheet shall be identified and packaged in accordance with AMS 2810.
- 5.2 For direct U. S. Military procurement, packaging shall be in accordance with MIL-STD-794, Level A or Level C, as specified in the request for procurement. Commercial packaging as specified in AMS 2810 will be acceptable if it meets the requirements of Level C.
6. ACKNOWLEDGMENT: A vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.
7. REJECTIONS: Sheet not conforming to this specification or to authorized modifications will be subject to rejection.
8. NOTES:
- 8.1 Marginal Indicia: The phi (ϕ) symbol is used to indicate technical changes from the previous issue of this specification.
- 8.2 For direct U. S. Military procurement, purchase documents should specify the following:
- Title, number, and date of this specification
Thickness of sheet desired
Quantity of sheet desired
Applicable level of packaging (See 5.2).