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400 COMMONWEALTH DRIVE, WARRENDALE, PA 15096

# AEROSPACE MATERIAL SPECIFICATION

AMS 3270H
Superseding AMS 3270G

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## CHLOROPRENE RUBBER SHEET, COTTON FABRIC REINFORCED
Weather Resistant

1. SCOPE:

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

1.2 Application: Primarily for parts, such as gaskets, seals, and chafing strips, requiring resistance to weather, moderate heat, 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 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 D471 - Rubber Property - Effect of Liquids
ASTM D573 - Rubber Deterioration in an Air Oven
ASTM D751 - Testing Coated Fabrics
ASTM D2137 - Rubber Property - Brittleness Point of Flexible Polymers and Coated Fabrics

3. TECHNICAL REQUIREMENTS:

3.1 Material and Fabrication: The product shall consist of a single ply of woven cotton fabric of the type specified in 3.1.1 for the respective nominal thicknesses, impregnated and coated on both faces with a chloroprene rubber compound, the rubber being cured to produce a product meeting all technical requirements of this specification. Thickness of coating shall be substantially uniform and equal on both faces of the sheet.

3.1.1 Construction: Shall be as specified in Table I.

TABLE I

| | Nominal Thickness, Inch | | | | |
|---|---|---|---|---|---|
| | 0.008 | 0.010 | 0.025 | 0.035 | 0.050 |
| Fabric Type | Balloon Cloth | 6.25 Sheeting | Grade A Airplane Cloth | #10 Duck | #10 Duck |
| Thread Count, per in., min | | | | | |
| Warp | 120 | 60 | 80 | 45 | 45 |
| Filling | 120 | 48 | 80 | 27 | 27 |
| Finished Weight, oz per sq yd | 6.5 - 9.5 | 8.0 - 12.0 | 24.5 - 29.5 | 29.0 - 41.0 | 49.0 - 59.0 |

TABLE I (SI)

| | Nominal Thickness, Millimetres | | | | |
|---|---|---|---|---|---|
| | 0.20 | 0.25 | 0.62 | 0.88 | 1.25 |
| Fabric Type | Balloon Cloth | 6.25 Sheeting | Grade A Airplane Cloth | #10 Duck | #10 Duck |
| Thread Count, per 25.4 mm, min | | | | | |
| Warp | 120 | 60 | 80 | 45 | 45 |
| Filling | 120 | 48 | 80 | 27 | 27 |
| Finished Weight, $g/m^2$ | 220 - 322 | 271 - 407 | 831 - 1000 | 983 - 1390 | 1661 - 2001 |

3.1.2 Color: Shall be black.

3.1.3 Surface Cleanliness: Sheet having evenly dusted surfaces will be acceptable provided that surfaces can be cleaned without damage to the sheet and that such surfaces can be cemented satisfactorily.

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

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

| | | | |
|---|---|---|---|
| 3.2.2 | Non-Aromatic Fuel Resistance: (Immediate Deteriorated Properties) | | ASTM D471<br>Medium: ASTM Ref. Fuel A<br>Temperature: 20° - 30°C (68° - 86°F)<br>Time: 70 hr ± 0.5 |
| 3.2.2.1 | Volume Change | 0 to +20% | |
| 3.2.2.2 | Surface Tackiness | None | |
| 3.2.3 | Oil Resistance: (Immediate Deteriorated Properties) | | ASTM D471<br>Medium: ASTM Oil No. 3<br>Temperature: 100°C ± 1 (212°F ± 2)<br>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: | | ASTM D573<br>Temperature: 100°C ± 1 (212°F ± 2)<br>Time: 70 hr ± 0.5 |
| 3.2.4.1 | Surface Hardening | None | |
| 3.2.4.2 | Bend (flat) | No cracking or checking | |
| 3.2.5 | Low-Temperature Brittleness: | Pass | ASTM D2137, Method A<br>Temperature: -35°C ± 1 (-31°F ± 2) |

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

3.2.7 Corrosion: The 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, as received by purchaser, shall be uniform in quality and Ø condition, clean, smooth, as free from foreign materials as commercially practicable, and free from imperfections detrimental to usage of the sheet.

3.4 Sizes and Tolerances: Sheet shall be supplied in nominal thicknesses of 0.008, 0.010, 0.025, 0.035, and 0.050 in. (0.20, 0.25, 0.62, 0.88, and 1.25 mm) and in widths as ordered. Tolerances shall be as follows:

3.4.1 Thicknesses: Shall be as specified in Table III.

TABLE III

| Nominal Thickness Inch | Tolerance, Inch | |
|---|---|---|
| | plus | minus |
| 0.008 | 0.002 | 0.001 |
| 0.010 | 0.002 | 0.002 |
| 0.025 | 0.003 | 0.003 |
| 0.035 | 0.004 | 0.004 |
| 0.050 | 0.005 | 0.005 |

TABLE III (SI)

| Nominal Thickness Millimetres | Tolerance, Millimetres | |
|---|---|---|
| | plus | minus |
| 0.20 | 0.05 | 0.03 |
| 0.25 | 0.05 | 0.05 |
| 0.62 | 0.08 | 0.08 |
| 0.88 | 0.10 | 0.10 |
| 1.25 | 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 for vendor's tests and shall be responsible for performing all Ø 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 sheet conforms to the requirements of this specification.

4.2 Classification of Tests:

4.2.1 Acceptance Tests: Tests to determine conformance to requirements for Ø properties as received (3.2.1), oil resistance (3.2.3), and dry heat resistance (3.2.4) are classified as acceptance tests and shall be performed on each lot.

4.2.2 Preproduction Tests: Tests to determine conformance to all technical requirements of this specification are classified as preproduction tests and Ø 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 test data and, when Ø 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.

4.3 Sampling: Sufficient sheet shall be taken at random from each lot to Ø perform all required tests; the number of tests for each requirement shall be as specified in the applicable test procedure or, if not specified therein, not less than three.

4.3.1 A lot shall be all sheet produced in one continuous coating operation from Ø the same roll of fabric and the same batch of compound and presented for vendor's inspection at one time. An inspection lot shall not exceed 500 lb (225 kg).

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 by purchaser. 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 propsoed changes in material and/or 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, AMS 3270H, vendor's material designation, size, 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, AMS 3270H, 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 either a statement that the sheet conforms or 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.

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 modifications authorized by purchaser will be subject to rejection.

8. NOTES:

8.1 Marginal Indicia: The phi (Ø) symbol is used to indicate technical changes from the previous issue of this specification.