

AEROSPACE MATERIAL SPECIFICATION

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Superseding AMS 3274F

Acrylonitrile Butadiene (NBR) Rubber Sheet and Molded Shapes Nylon Cloth Reinforced Fuel Resistant

1. SCOPE:

- 1.1 Form: This specification covers nylon-cloth-reinforced acrylonitrile-butadiene (NBR) rubber in the form of sheet and of shapes molded and cured from partly cured sheet.
- 1.2 Application: Primarily for diaphragms in power plant fuel supply and control systems.
- 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 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 471 Rubber Property-Effect of Liquids
 ASTM D 573 Rubber-Deterioration in an Air Oven
 ASTM D 751 Testing Coated Fabrics
 ASTM D 2137 Rubber Property-Brittleness Point of Flexible Polymers and Coated Fabrics

3. TECHNICAL REQUIREMENTS:

3.1 Material and Fabrication: Shall consist of a single ply of a nylon cloth, having either a plain weave or a 2-up and 1-down twill weave, coated on both faces with an acrylonitrile-butadiene (NBR) rubber compound, the rubber being cured to produce a product meeting the requirements of 3.2. Thickness of coating shall be uniform and shall be equal in thickness on both faces of sheet coated on both faces.

3.1.1 Color: Shall be black.

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

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: Shall be as specified in Table I, determined in accordance with ASTM D 751.

3.2.2 Aliphatic Fuel Resistance:
 (After 24 hours \pm 0.5 drying at
 70°C \pm 1 (158°F \pm 2))

ASTM D 471
 Medium: ASTM Ref. Fuel A
 Temperature: 20°- 30°C
 (68° - 86°F)
 Time: 24 hours \pm 0.25

3.2.2.1 Volume Change

Nominal Thickness		
Inch	Millimeters	
0.008	0.20	-20 to +10%
0.010	0.25	-25 to 0%
0.013	0.33	-25 to 0%
0.017	0.43	-25 to 0%
0.020	0.51	-25 to 0%
0.025	0.64	-25 to 0%
0.030	0.76	-25 to 0%
0.050	1.27	-25 to 0%

TABLE I

As-Received Properties

Nominal Thickness Inch Millimeters	Breaking Strength, Grab Method		Bursting Strength		Adhesion	
	Tbf, min	N, min	Diaphragm Bursting Tester psi, min	Diaphragm Bursting Tester kPa, min	Tbf per inch width, min	N/m width, min
0.008	35	156	75	517	7	1226
0.010	60	289	135	931	7	1226
0.013	60	289	135	931	7	1226
0.017	60	289	135	931	7	1226
0.020	60	289	135	931	7	1226
0.025	300	1334	500	3447	7	1226
0.030	60	289	135	931	7	1226
0.050	300	1334	500	3447	7	1226

TABLE II

Dry Heat Resistance Properties

Nominal Thickness Inch Millimeters	Breaking Strength, Grab Method		Bursting Strength		Surface Hardening
	Tbf, min	N, min	Diaphragm Bursting Tester psi, min	Diaphragm Bursting Tester kPa, min	
0.008	35	156	75	517	None for all thick- nesses
0.010	60	289	135	931	
0.013	60	289	135	931	
0.017	60	289	135	931	
0.020	60	289	135	931	
0.025	300	1334	500	3447	
0.030	60	289	135	931	
0.050	300	1334	500	3447	

3.4 Sizes and Tolerances: Sheet shall be supplied in nominal thicknesses of 0.008, 0.010, 0.013, 0.017, 0.020, 0.025, 0.030, or 0.050 inch (0.20, 0.25, 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.

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 Millimeters	Tolerance, Millimeter	
	plus	minus
0.020	0.05	0.03
0.25, 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 inch (± 25 mm).

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection: The vendor of the product shall supply all ϕ 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 properties as-received (3.2.1), aromatic fuel resistance (3.2.3), and dry heat resistance (3.2.4) are acceptance tests and shall be performed on each lot.

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.