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400 COMMONWEALTH DRIVE WARRENDALE PA 15096

AEROSPACE MATERIAL SPECIFICATION

AMS 3635C
Superseding AMS 3635B

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PLASTIC SHEET AND STRIP, MODIFIED VINYL, FOAMED
Closed Cell

1. SCOPE:

1.1 Form: This specification covers a closed-cell, modified vinyl plastic foam in the form of sheet and strip up to 1-1/2 in. (37.5 mm) in nominal thickness.

1.2 Application: Primarily for parts, such as head rest pads and arm rests, wherever an impact-resistant, slow-recovery, energy-absorbing product is of prime importance.

2. APPLICABLE DOCUMENTS: The following publications form a part of this specification to the extent specified herein. The latest issue of Aerospace Material Specifications 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 D573 - Rubber Deterioration in an Air Oven
ASTM D1056 - Flexible Cellular Materials - Sponge or Expanded Rubber

2.3 U.S. Government Publications: Available from Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

2.3.1 Federal Aviation Administration Regulations:

FAR Part 25 - Airworthiness Standards: Transport Category Airplanes

3. TECHNICAL REQUIREMENTS:

3.1 Material: Shall be a closed-cell, modified vinyl plastic foam; it may have a skin on one face at the option of the vendor, unless otherwise agreed upon by purchaser and vendor. Edges of sheets and strips may show exposed cell structure.

3.1.1 Color: Shall be natural (light beige).

3.1.2 Odor: The product shall have no unpleasant odor after being exposed to still air for 48 hours.

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

3.2.1 As Received:

3.2.1.1	Density, max	8.5 lb per cu ft (135 kg/m^3)	ASTM D297
3.2.1.2	Compression-Deflection (Force to Compress to 75% of Original Thickness)	5 psi ± 1 (0.345 MPa ± 0.007)	ASTM D1056 Temperature: 20° - 30°C (68° - 86°F)
3.2.1.3	Return Rate, Time to Return to 95% of Original Thickness, max	170 sec	4.5.1
3.2.1.4	Flammability, Time to Cease Burning, max	5 sec	FAR 25.853(b) and Appendix F
3.2.1.5	Rebound, max	5 in. (125 mm)	4.5.2
3.2.2	Dry Heat Resistance:		ASTM D573
3.2.2.1	Compression-Deflection (Force to Compress to 75% of Original Thickness), max	10 psi (0.070 MPa)	Temperature: 70°C ± 2 (158°F ± 4) Time: 168 hr ± 1

3.2.2.2	Return Rate, Time to Return to 95% of Original Thickness, max	190 sec	4.5.1
3.2.2.3	Rebound, max	5 in. (125 mm)	4.5.2
3.2.2.4	Volume change, max		4.5.3
	After 24 hr ± 0.25	3.0%	
	After 168 hr ± 1.0	6.0%	

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

3.2.4 Corrosion: The product shall not have a corrosive effect on other materials ø when exposed to conditions normally encountered in service. Discoloration of metal shall not be considered objectionable. Method of test and acceptance standards shall be as agreed upon by purchaser and vendor.

3.3 Quality: The product, as received by purchaser, shall be uniform in quality ø and condition, smooth, as free from foreign materials as commercially practicable, and free from imperfections detrimental to usage of the product.

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

3.4.1 Sheet and Strip:

3.4.1.1 Thickness: Shall be as specified in Table I.

TABLE I

Nominal Thickness Inches	Tolerance, Inch plus	minus
Up to 1/8 , incl	1/16	1/32
Over 1/8 to 5/16, incl	1/16	1/16
Over 5/16 to 1 , incl	3/32	3/32
Over 1 to 1-1/2 , incl	1/8	1/8

TABLE I (SI)

Nominal Thickness Millimetres	Tolerance, Millimetres plus	minus
Up to 3.0, incl	1.5	0.8
Over 3.0 to 8.0, incl	1.5	1.5
Over 8.0 to 25.0, incl	2.2	2.2
Over 25.0 to 37.5, incl	3.0	3.0

3.4.1.2 Width: Shall be as specified in Table II.

TABLE II

Nominal Width Inches	Tolerance, Inch plus and minus
Up to 6, incl	1/16
Over 6 to 18, incl	1/8
Over 18	1/4

TABLE II (SI)

Nominal Width Millimetres	Tolerance, Millimetres plus and minus
Up to 150, incl	1.5
Over 150 to 450, incl	3.0
Over 450	6.0

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection: The vendor of the product shall supply all Ø 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 4.6. 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
Density	3.2.1.1
Compression-Deflection, as received	3.2.1.2
Flammability	3.2.1.4
Compression-Deflection, after heat aging	3.2.2.1

4.2.2 Preproduction Tests: Tests to determine conformance to all technical Ø requirements of this specification are classified as preproduction tests and shall be performed prior to or on the initial shipment of the product to a purchaser, when a change in material or processing, or both, 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: 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.

4.3.1.1 A lot shall be all product from the same batch of compound processed in one continuous run and presented for vendor's inspection at one time.

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

4.3.2 For Preproduction Tests: As agreed upon by purchaser and vendor.

4.4 Approval:

4.4.1 Sample material shall be approved by purchaser before material for production use is supplied, unless such approval be waived by purchaser. Results of tests on production material 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 material which are essentially the same as those used on the approved sample material. If necessary to make any change 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 or processing, or both, and, when requested, sample material. Production material made by the revised procedure shall not be shipped prior to receipt of reapproval.

4.5 Test Methods:

4.5.1 Return Rate: Immediately after determining the force for compression-deflection, remove the force and commence measuring thickness recovery.

4.5.2 Rebound: Drop a steel ball, nominally 5/8 in. (16 mm) in diameter, from a height of 50 in. (1250 mm) onto a 1-in. (25-mm) thick specimen of any convenient size at 25°C ± 1 (77°F ± 2) and measure the height to which the ball rebounds. For convenience in measurement, a glass tube 7/8 - 1 in. (22 - 25 mm) in diameter may be used to confine the ball during the test.