SAE Aerospace
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AEROSPACE MATERIAL SPECIFICATION

SAE AMS3635 REV. E

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Superseding AMS3635D

Plastic Sheet and Strip, Modified Vinyl, Foamed Closed Cell

RATIONALE

This document has been determined to contain basic and stable technology which is not dynamic in nature.

STABILIZED NOTICE

This document has been declared "Stabilized" by SAE AMS P, Polymeric Materials Committee, and will no longer be subjected to periodic reviews for currency. Users are responsible for verifying references and continued suitability of technical requirements. Newer technology may exist.

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1. SCOPE:

1.1 Form:

This specification covers a modified vinyl plastic foam in the form of sheet and strip up to 1-1/2 inches (38.1 mm) in nominal thickness.

1.2 Application:

These products have been used typically for parts, such as head rest pads and arm rests, requiring an impact-resistant, slow-recovery, energy-absorbing product, but usage is not limited to such applications.

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.

AMS 2810 Identification and Packaging, Elastomeric Products

2.2 ASTM Publications:

Available from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

ASTM D 297 Rubber Products - Chemical Analysis
ASTM D 573 Rubber - Deterioration in an Air Oven
ASTM D 1056 Flexible Cellular Materials - Sponge or Expanded Rubber

2.3 U.S. Government Publications:

Available from DODSSP, Subscription Services Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.

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 requirements shown in Table 1, 3.2.7, and 3.2.8; tests shall be performed on the product supplied and in accordance with specified test methods, insofar as practicable:

TABLE 1- Properties

	Property	Requirement	Test Method
3.2.1	Density, maximum	8.5 pounds per cubic foot (136 kg/m^3)	ASTM D 297
3.2.2	Compression-Deflection (Force to Compress to 75% of Original Thickness)	5 psi ± 1 (34.5 kPa ± 7)	ASTM D 1056 20 to 30 °C (68 to 86 °F)
3.2.3	Return Rate, Time to Return to 95% of Original Thickness, maximum	170 seconds	4.5.1
3.2.4	Flammability, Time to Cease Burning, maximum	5 seconds	FAR 25.853 (b) and Appendix F
3.2.5	Rebound, maximum	5 inches (127 mm)	4.5.2
3.2.6	Dry Heat Resistance:		ASTM D 573 70 °C ± 2 (158 °F ± 4) 168 hours ± 1
3.2.6.1	Compression-Deflection (Force to Compress to 75% of Original Thickness), maximum	10 psi (68.9 kPa)	
3.2.6.2	Return Rate, Time to Return to 95% of Original Thickness, maximum	190 seconds	4.5.1
3.2.6.3	Rebound, maximum	5 inches (127 mm)	4.5.2
3.2.6.4	Volume Change, maximum After 24 hours ± 0.25 After 168 hours ± 1.0	 3.0% 6.0%	4.5.3

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

3.2.8 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. 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 and condition, smooth, as free from foreign materials as commercially practicable, and free from imperfections detrimental to usage of the product.

3.4 Tolerances:

The following tolerances shall apply:

3.4.1 Sheet and Strip:

3.4.1.1 Thickness: Shall be as specified in Table 2.

TABLE 2A - Thickness Tolerance, Inch/Pound Units

Nominal Thickness Inches	Tolerance Inch plus	Tolerance Inch 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 2B - Thickness Tolerance, SI Units

Nominal Thickness Millimeters	Tolerance Millimeters plus	Tolerance Millimeters minus
Up to 3.2, incl	1.6	0.8
Over 3.2 to 7.9, incl	1.6	1.6
Over 7.9 to 25.4, incl	2.4	2.4
Over 25.4 to 38.1, incl	3.2	3.2

3.4.1.2 Width: Shall be as specified in Table 3.

TABLE 3A - Width Tolerance, Inch/Pound Units

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 3B - Width Tolerance, SI Units

Nominal Width Millimeters	Tolerance, Millimeters Plus and Minus
Up to 152, incl	1.6
Over 152 to 457, incl	3.2
Over 457	6.4

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. 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 requirements shown in Table 4 are acceptance tests and shall be performed on each lot.

TABLE 4 - Acceptance Tests

Requirement	Paragraph
Density	3.2.1
Compression-Deflection	3.2.2
Flammability	3.2.4
Compression-Deflection, after heat aging	3.2.6.1

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 the 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.

4.3 Sampling and Testing:

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 product shall be approved by purchaser before product for production use is supplied, unless such approval be waived by purchaser. Results of tests on production product 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 product which are essentially the same as those used on the approved sample product. 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 ingredients and/or processing and, when requested, sample product. Production product made by the revised procedure shall not be shipped prior to receipt of reapproval.