SAE Aerospace
An SAE International Group

AEROSPACE MATERIAL SPECIFICATION

SAE AMS 3807B

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Superseding AMS 3807A

Tape, Aluminum Foil, Sound and Vibration Damping Pressure Sensitive Adhesive

1. SCOPE:

1.1 Form:

This specification covers aluminum foil tape with a pressure sensitive adhesive.

1.2 Application:

This product has been used typically for alleviation of sound and vibration in areas where excessive noise may prevail, but usage is not limited to such applications.

1.3 Classification:

Tape covered by this specification is classified as follows:

Type 1: Dead soft aluminum, intended primarily for application where low-to-medium temperatures and moderate sound and vibration damping are required.

Type 2: Fiberglass-laminated aluminum, intended primarily for application where higher temperatures and maximum sound and vibration damping are required.

1.3.1 Unless a specific type is ordered, either type may be supplied.

1.4 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.

TO PLACE A DOCUMENT ORDER: **Tel: 877-606-7323 (inside USA and Canada)**
Tel: 724-776-4970 (outside USA)
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SAE WEB ADDRESS: **http://www.sae.org**

2. APPLICABLE DOCUMENTS:

The issue of the following documents in effect on the date of the purchase order form a part of this specification to the extent specified herein. The supplier may work to a subsequent revision of a document unless a specific document issue is specified. When the referenced document has been cancelled and no superseding document has been specified, the last published issue of that document shall apply.

2.1 SAE Publications:

Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

AMS 4011	Aluminum, Foil and Light Gage Sheet, 99.45Al (1145-0), Annealed
AMS 4041	Aluminum Alloy, Sheet and Plate, Alclad, 4.4Cu - 1.5Mg - 0.60Mn, (Alclad 2024 and 1-1/2% Alclad 2024, -T3 Flat Sheet, 1-1/2% Alclad 2024-T351 Plate)

2.2 ASTM Publications:

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

ASTM D 1000	Pressure-Sensitive Adhesive-Coated Tapes Used for Electrical and Electronic Applications
ASTM D 3611	Accelerated Aging of Pressure-Sensitive Tapes
ASTM D 3652	Thickness of Pressure-Sensitive and Gummed Tapes
ASTM D 3652M	Thickness of Pressure-Sensitive and Gummed Tapes (Metric)
ASTM D 3715	Quality Assurance of Pressure-Sensitive Tapes
ASTM D 3951	Commercial Packaging
ASTM E 756	Measuring Vibration-Damping Properties of Materials

3. TECHNICAL REQUIREMENTS:

3.1 Material:

Tape shall consist of an aluminum foil backing coated on one side with a pressure-sensitive adhesive.

3.1.1 Backing (Type 1): Shall be smooth and scratch-free AMS 4011 aluminum foil.

3.1.2 Backing (Type 2): Shall be the same as Type 1 except that the aluminum foil shall be laminated on the inside (adhesive side) with a smooth, uniform layer of fiberglass acceptable to purchaser.

3.1.3 Adhesive: Shall be pressure-sensitive, homogeneous, and coated in a smooth and evenly distributed layer on one side of the backing. The adhesive shall cause the tape to adhere immediately and firmly to clean, dry surfaces without wrinkling, curling, breaking, or lifting. A liner over the adhesive shall be available as an option.

3.1.4 Color: Types 1 and 2 shall be a natural aluminum color with either a shiny or matte finish.

3.2 Properties:

Tape shall conform to requirements shown in Table 1 and the following, determined in accordance with specified test methods on samples from rolls of tape conditioned for not less than 24 hours at 23 °C ± 2 (73 °F ± 4) and 50% ± 5 relative humidity.

TABLE 1 - Properties

	Tests	Requirements	Test Methods
3.2.1	Thickness		ASTM D 3652 or ASTM D 3652M
3.2.1.1	Type 1	0.008 to 0.020 inch (0.20 to 0.51 mm)	
3.2.1.2	Type 2	0.005 to 0.010 inch (0.13 to 0.25 mm)	
3.2.2	Tensile Breaking Strength, Dry, minimum		ASTM D 1000
3.2.2.1	Type I and Type 2	100 pounds force per inch (17,513 N/m) of width	
3.2.3	Elongation, Dry, minimum		ASTM D 1000
3.2.3.1	Type 1	10%	
3.2.3.2	Type 2	6%	
3.2.4	Adhesion to Steel		ASTM D 1000
3.2.4.1	Initial, minimum		
3.2.4.1.1	Type 1	60 ounces force per inch (0.66 N/mm) of width	
3.2.4.1.2	Type 2	40 ounces force per inch (0.44 N/mm) of width	
3.2.4.2	After Aging, minimum		4.5.1
3.2.4.2.1	Type 1	55 ounces force per inch (0.60 N/mm) of width	
3.2.4.2.2	Type 2	35 ounces force per inch (0.38 N/mm) of width	

3.2.5 Corrosion Resistance: Test panels shall show no evidence of pitting or corrosion, determined in accordance with 4.5.2.

3.2.6 Compatibility:

3.2.6.1 Type 1 tape shall show no evidence of deterioration of the backing and shall show no adhesive mass transfer on removal of the tape from the test panel, determined in accordance with 4.5.3.

3.2.6.2 Type 2 tape shall show no evidence of delaminaiton of the fiberglass from the aluminum; in addition, tape shall show no evidence of deterioration of the backing and no adhesive mass transfer on removal of the tape from the test panel, determined in accordance with 4.5.3.

3.2.7 Sound and Vibration Damping: Tape shall dampen sound and vibration, determined in accordance with 4.5.4. Standards for acceptance shall be as established by purchaser.

3.2.8 Shelf Life: The tape shall meet the requirements of 3.2.1 through 3.2.5 at any time up to twelve months from date of receipt by purchaser when stored indoors at 30 °C (86 °F) or lower.

3.3 Quality:

Tape, as received by purchaser, shall be uniform in quality and condition, sound, and free from foreign materials and from imperfections detrimental to usage of the tape. Edges shall be straight, true, and unbroken.

3.4 Width:

Shall be 1/2, 3/4, 1, 2, 3, 4, or 6 inches (12.7, 19, 25, 51, 76, 102, or 152 mm) or as ordered. A width tolerance of ±1/32 inch (±0.08 mm) shall be allowed.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection:

The manufacturer of tape shall supply all samples for required tests and shall be responsible for the performance of all required tests. Purchaser reserves the right to sample and to perform any confirmatory tests deemed necessary to ensure that the tape conforms to the specified requirements.

4.2 Classification of Tests:

4.2.1 Acceptance Tests: Thickness (3.2.1), tensile breaking strength (3.2.2), elongation (3.2.3), and adhesion to steel (3.2.4.1 and 3.2.4.2) are acceptance tests and shall be performed on each lot.

4.2.2 Preproduction Tests: All technical requirements are preproduction tests and shall be performed prior to or on the initial shipment of tape by the manufacturer, when a change in ingredients and/or processing requires reapproval as in 4.4.2, and when purchaser deems confirmatory testing to be required.

4.3 Sampling and Testing:

Shall be in accordance with ASTM D 3715 except when 4.3.1 applies.

4.3.1 When a statistical sampling plan has been agreed upon by purchaser and supplier, sampling shall be in accordance with such plan in lieu of sampling as in 4.3 and the report of 4.6 shall state that such plan was used.

4.4 Approval:

4.4.1 Sample tape shall be approved by purchaser before tape for production use is supplied, unless such approval be waived by purchaser. Results of tests on production tape shall be essentially equivalent to those on the approved sample tape.

4.4.2 Manufacturer shall use ingredients, manufacturing procedures, processes, and methods of inspection on production tape which are essentially the same as those used on the approved sample tape. If necessary to make any change in type of equipment for processing, ingredients, or manufacturing procedures, manufacturer shall submit for reapproval a statement of the proposed changes in ingredients and/or processing, and, when requested, sample tape. Production tape made by the revised procedure shall not be shipped prior to receipt of reapproval.

4.5 Test Methods:

4.5.1 Adhesion After Aging: Shall be determined by first aging rolls of tape in accordance with ASTM D 3611 for 288 hours ± 8 and testing for adhesion in accordance with ASTM D 1000.

4.5.2 Corrosion Resistance: Not less than six AMS 4041 aluminum alloy test panels, 3 x 6 inches (76 x 152 mm) by not less than 0.020 inch (0.51 mm) in thickness, shall be cleaned with a suitable solvent. The cleaned panels shall then be taped with parallel strips of 1-inch (25-mm) wide tape 1/4 inch (6 mm) apart and running the full length of each panel. A rubber roller or squeegee shall be used to apply the tape to ensure no air is entrapped and edges are flush with the panels. Panels shall be conditioned in accordance with ASTM D 3611 for 288 hours ± 8. Test panels shall show no evidence of pitting or corrosion when tape is removed.

4.5.3 Compatiblity: There shall be no evidence of adhesive residue on the surface of the panels when tape is removed from the test panels after testing in accordance with 4.5.2.

4.5.4 Sound and Vibration Damping Ability: Tape shall dampen sound and vibration when tested using the Oberst Bar method, damped one side, and calculated using Young's modulus in accordance with ASTM E 756.