

# AEROSPACE MATERIAL SPECIFICATION

Submitted for recognition as an American National Standard



AMS-3779

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Superseding AMS-3779

TAPE, ADHESIVE, PRESSURE-SENSITIVE  
Thermal Radiation Resistant

## 1. SCOPE:

- 1.1 Form: This specification and its supplementary detail specifications cover thermal radiation resistant materials in the form of tape with pressure-sensitive adhesive.
- 1.2 Application: Primarily for protecting materials and personnel from damage or injury from thermal radiation.
- 1.3 Classification: These products are classified by material and construction as shown in the applicable detail specifications.
- 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.

- ## 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.

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2.1.1 Aerospace Material Specifications:

AMS-3824 - Cloth, Glass, Finished for Resin Laminates  
AMS-4001 - Aluminum Sheet and Plate, 0.12Cu (1100-0), Annealed

2.2 ASTM Publications: Available from ASTM, 1916 Race Street, Philadelphia, PA 19103-1187.

ASTM D 1931 - Fully Cured Silicone Rubber-Coated Glass Fabric and Tapes for Electrical Insulation  
ASTM D 3330 - Peel Adhesion of Pressure-Sensitive Tape at 180-deg Angle  
ASTM D 3330M - Peel Adhesion of Pressure-Sensitive Tape at 180-deg Angle (Metric)  
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 3759 - Tensile Strength and Elongation of Pressure-Sensitive Tapes  
ASTM D 3759M - Tensile Strength and Elongation of Pressure-Sensitive Tapes (Metric)  
ASTM D 3951 - Commercial Packaging

2.3 U.S. Government Publications: Available from Standardization Documents Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.

2.3.1 Federal Specifications:

PPP-T-680 - Tape, Pressure-Sensitive Adhesive, Packaging and Packing of

3. TECHNICAL REQUIREMENTS:

3.1 Detail Specifications: The requirements for a specific tape shall consist of all requirements specified herein in addition to requirements specified in the applicable detail specification. In case of conflict between requirements of this basic specification and an applicable detail specification, requirements of the detail specification shall govern.

3.2 Material and Construction: Tape shall consist of a backing of the type specified in the applicable detail specification, coated on the entire area of one side with a pressure-sensitive adhesive.

3.3 Properties: Tape shall conform to the requirements specified in the applicable detail specification, determined in accordance with methods specified in 4.5.

3.3.1 Shelf Life: Tape shall meet all requirements of this specification and the applicable detail specification at any time up to twelve months from date of receipt by purchaser when stored indoors in the original unopened containers at 25°C (77°F) or lower.

3.4 Quality: Tape, as received by purchaser, shall be uniform in quality and condition and free from foreign materials and from imperfections detrimental to usage of the tape, and shall meet the requirements of ASTM D 3715.

3.4.1 There shall be no evidence of separation of the adhesive from the backing upon unwinding from the roll.

3.5 Sizes and Tolerances:

3.5.1 Width: Shall be as specified below, or other commercially available widths, as ordered (See 8.4.1):

1.00 inch $\pm$ 0.03	(24.0 mm $\pm$ 0.5)
2.00 inch $\pm$ 0.03	(48.0 mm $\pm$ 0.5)
3.00 inch $\pm$ 0.03	(72.0 mm $\pm$ 0.5)

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection: The vendor of tape shall supply all samples for vendor's tests and shall be responsible for performing all required tests (See 8.2). Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the tape conforms to the requirements of this specification and the applicable detail specification.

4.2 Classification of Tests:

4.2.1 Acceptance Tests: Tests for the following requirements are acceptance tests and shall be performed on each lot:

Requirement	Paragraph Reference
Thickness	See Detail Specification
Tensile Strength	See Detail Specification
Elongation	See Detail Specification
Weight	See Detail Specification
Initial Adhesion	See Detail Specification
Quality	3.4

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 tape 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:

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4.3.1 For Acceptance Tests: Sufficient tape shall be taken in accordance with ASTM D 3715 and 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 For Visual Inspection: The lot-size, sampling, and inspection procedures shall be as specified in ASTM D 3715. The sample unit shall be one roll of tape.

4.3.1.2 For Property Testing: The lot size and sampling shall be as specified in ASTM D 3715 for end item testing.

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

4.3.2 For Preproduction Tests: Shall be in accordance with ASTM D 3715.

#### 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.

4.4.2 Vendor 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 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 tape. Production tape made by the revised procedure shall not be shipped prior to receipt of reapproval.

#### 4.5 Test Methods: Shall be as follows:

Color	Visual
Thickness	ASTM D 3652 or ASTM D 3652M
Tensile Strength	ASTM D 3759 or ASTM D 3759M
Elongation	ASTM D 3759 or ASTM D 3759M
Weight	4.5.1
Adhesion to Steel	4.5.2
Thermal Radiation Resistance	4.5.3

4.5.1 Weight: Determine the weight of a 1 x 12 inch (25 x 305 mm) test sample by using a suitable weighing apparatus.

4.5.2 Adhesion: Prepare test specimens in accordance with ASTM D 3330 or ASTM D 3330M, Procedure A.

- 4.5.2.1 Initial: Test specimens in accordance with ASTM D 3330 or ASTM D 3330M, Procedure A.
- 4.5.2.2 High Temperature: Expose specimens in a suitable oven for 30 minutes  $\pm 5$  at  $260^{\circ}\text{C} \pm 5$  ( $500^{\circ}\text{F} \pm 9$ ). Remove specimens and condition at standard conditions (ASTM D 3330 or ASTM D 3330M) for not less than 2 hours before testing for adhesion in accordance with ASTM D 3330 or ASTM D 3330M, Procedure A.
- 4.5.2.3 Low Temperature: Expose specimens in a suitable cold box for not less than 2 hours at  $-55^{\circ}\text{C} \pm 1$  ( $-67^{\circ}\text{F} \pm 2$ ). Remove specimens and condition at standard conditions (ASTM D 3330 or ASTM D 3330M) for not less than 2 hours before testing for adhesion in accordance with ASTM D 3330 or ASTM D 3330M, Procedure A.
- 4.5.3 Thermal Radiation: Cut a hole approximately 0.50 inch (12.7 mm) in the center of a 6 x 6 inch (152 x 152 mm) cloth sample conforming to ASTM D 1931. Clean the cloth with isopropyl alcohol and wipe dry. Apply a 1 x 6 inch (25 x 152 mm) specimen of the tape under test to the cleaned surface covering the hole. Roll tape specimen back and forth in the lengthwise direction with a rubber-covered roller as described in ASTM D 3330 or ASTM D 3330M. Expose the test specimen to a thermal radiation source providing a flux density of 6.0 - 6.5 cal/cm<sup>2</sup> per second at the taped hole for a total of 10 seconds. Examine for conformance to requirements of applicable detail specification.
- 4.6 Reports: The vendor of tape shall furnish with each shipment a report showing the results of tests to determine conformance to the acceptance test requirements and stating that the tape conforms to the other technical requirements. This report shall include the purchase order number, lot number, AMS-3779A and the applicable detail specification number and their revision letter if any, vendor's material designation, and quantity.
- 4.7 Resampling and Retesting: If any specimen used in the above tests fails to meet the specified requirements, disposition of the tape 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 tape represented and no additional testing shall be permitted. Results of all tests shall be reported.
5. PREPARATION FOR DELIVERY:
- 5.1 Rolls: The tape shall be evenly and uniformly wound, adhesive side in, on suitable cores with inside diameter of 3.00 inches + 0.06, -0 (75.0 mm + 1.5, -0). The cores shall have sufficient rigidity to prevent distortion of the roll under normal conditions of transportation, storage, and use. The length of tape on each roll shall be not less than 36 yards (33 m).
- 5.2 Packaging and Identification:
- 5.2.1 Packaging and marking for commercial shipments shall be in accordance with ASTM D 3951.