

**AEROSPACE
MATERIAL
SPECIFICATION**

AMS 3779

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Revised

**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.

2. APPLICABLE DOCUMENTS: The following publications form a part of this specification to the extent specified herein. The latest issue of Aerospace Material Specifications (AMS) 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 3824 - Cloth, Glass, Finished for Resin Laminates
AMS 4001 - Aluminum Sheet and Plate (1100-0)

- 2.2 ASTM Publications: Available from American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

ASTM D3330 - Peel Adhesion of Pressure-Sensitive Tape at 180-deg Angle
ASTM D3652 - Thickness of Pressure-Sensitive and Gummed Tapes
ASTM D3715 - Quality Assurance of Pressure-Sensitive Tapes
ASTM D3759 - Tensile Strength and Elongation of Pressure-Sensitive Tapes
ASTM D3951 - Commercial Packaging

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2.3 U.S. Government Publications: Available from Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120.

2.3.1 Federal Specifications:

TT-I-735 - Isopropyl Alcohol
QQ-A-250/1 - Aluminum Alloy 1100, Plate and Sheet
PPP-T-680 - Tape, Pressure-Sensitive Adhesive, Packaging and Packing of

2.3.2 Military Specifications:

MIL-C-27347 - Cloth, Coated, Glass, Aluminum Face, Silicone Rubber Back

3. TECHNICAL REQUIREMENTS:

3.1 Detail Specifications: The requirements for a specific material shall consist of all the requirements specified herein in addition to the requirements specified in the applicable detail specification. In case of conflict between the requirements of this basic specification and an applicable detail specification, the 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 the methods specified in 4.5 herein.

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 (75°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 internal and external imperfections detrimental to usage of the tape, and shall meet the requirements of ASTM D3715.

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 8.3):

1.00 in. $\pm$ 0.03	(24.0 mm $\pm$ 0.5)
2.00 in. $\pm$ 0.03	(48.0 mm $\pm$ 0.5)
3.00 in. $\pm$ 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 8.1). Results of such test 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 tape conforms to the requirements of this specification and the applicable detail 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 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: Test to determine conformance to all technical requirements of this specification and the applicable detail specification are classified as preproduction tests and shall be performed prior to or on the initial shipment of tape 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 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 tape shall be taken in accordance with ASTM D3715 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. A lot may be packaged in smaller quantities and delivered under the basic lot approval provided lot identification is maintained.

4.3.1.1 For Visual Inspection: The lot size, sampling, and inspection procedures shall be as specified in ASTM D3715. The sample unit shall be one roll of tape. The acceptance quality level (AQL) shall be as specified in ASTM D3715.

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4.3.1.2 For Property Testing: The lot size and sampling shall be as specified for end item testing in ASTM D3715. The acceptance quality level (AQL) shall be 4.0%.

4.3.1.3 Alternate Sampling: When a statistical sampling plan and acceptance quality level (AQL) other than that described in ASTM D3715 have 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 4.6.1 shall state that such plan was used.

4.3.2 For Preproduction Tests: Unless otherwise agreed upon by purchaser and vendor, sampling for preproduction testing shall be in accordance with ASTM D3715.

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: Shall be as follows:

Color	Visual
Thickness	ASTM D3652
Tensile Strength	ASTM D3759
Elongation	ASTM D3759
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 in. (25 x 305 mm) test sample by using a suitable weighing apparatus.

4.5.2 Adhesion: Prepare tests specimens in accordance with ASTM D3330, Procedure A.

4.5.2.1 Initial: Test specimens in accordance with ASTM D3330, Procedure A.

- 4.5.2.2 High Temperature: Expose specimens in a suitable oven for 30 min. ± 5 at $260^{\circ}\text{C} \pm 5$ ($500^{\circ}\text{F} \pm 9$). Remove specimens and condition at standard conditions (ASTM D3330) for not less than 2 hr before testing for adhesion in accordance with ASTM D3330, Procedure A.
- 4.5.2.3 Low Temperature: Expose specimens in a suitable cold box for not less than 2 hr at $-55^{\circ}\text{C} \pm 1$ ($-65^{\circ}\text{F} \pm 2$). Remove specimens and condition at standard conditions (ASTM D3330) for not less than 2 hr before testing for adhesion in accordance with ASTM D3330, Procedure A.
- 4.5.3 Thermal Radiation: Cut a hole approximately 0.5 in. (12 mm) in the center of a 6 x 6 in. (150 x 150 mm) cloth sample conforming to MIL-C-27347. Clean the aluminum-faced side of the cloth with TT-I-735 isopropyl alcohol and wipe dry. Apply a 1 x 6 in. (25 x 150 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 D3330. Expose the test specimen to a thermal radiation source providing a flux density of $6.0 - 6.5 \text{ cal/cm}^2$ per sec at the taped hole for a total of 10 seconds. Examine for conformance to requirements of applicable detail specification.
- 4.6 Reports:
- 4.6.1 The vendor of the 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 of this specification. This report shall include the purchase order number, AMS 3779 and the applicable detail specification number, vendor's material designation, lot number, and quantity.
- 4.6.2 The vendor of finished or semi-finished parts shall furnish with each shipment a report showing the purchase order number, AMS 3779 and the applicable detail specification number, contractor or direct supplier of tape, supplier's material designation, part number, and quantity. When tape for making parts is produced or purchased by the parts vendor, that vendor shall inspect each lot of tape to determine conformance to the requirements of this specification and the applicable detail specification and shall include in the report either a statement that the tape conforms or copies of laboratory reports showing results of tests to determine conformance.
- 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.