

INCH-POUND

L-T-80C  
13 November 2013  
SUPERSEDING  
L-T-80B  
01 October 1971

## FEDERAL SPECIFICATION

### TAPE, PRESSURE-SENSITIVE ADHESIVE (ALUMINUM-BACKED)

The General Services Administration has authorized the use of this federal specification, by all federal agencies.

#### 1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification establishes the requirements for an aluminum foil backed pressure-sensitive adhesive tape designed for use in sealing applications where the properties of good weather resistance, reflectivity, and moisture vapor transmission resistance are required.

1.2 Classification. This specification covers the following types of pressure-sensitive tapes (see 6.2).

1.2.1 Type I. Aluminum foil backed pressure-sensitive adhesive tape – No release liner.

1.2.2 Type II. Aluminum foil backed pressure-sensitive adhesive tape – With release liner.

Beneficial comments, recommendations, additions, deletions, clarifications, etc. and any data that may improve this document should be sent to: Director, U.S. Army Research Laboratory, Weapons and Materials Research Directorate, Specifications and Standards Office, Attn: RDRL-WMM-D, Aberdeen Proving Ground, MD 21005-5069 or emailed to [richard.j.squillacioti.civ@mail.mil](mailto:richard.j.squillacioti.civ@mail.mil).

Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at <https://assist.dla.mil/>.

AMSC N/A

FSC 8030

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

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## 2. APPLICABLE DOCUMENTS

2.1 Government publications. The following documents, of the issues in effect on the date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein:

## FEDERAL STANDARDS

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

(Single copies of this specification, and other federal specifications and commercial item descriptions required by activities outside the Federal Government for bidding purposes are available without charge from the General Services Administration, Federal Supply Service, Specification Section, Suite 8100, 470 L'Enfant Plaza, SW, Washington, DC, 20407.)

(Federal Government activities may obtain copies of federal standardization documents online at <http://quicksearch.dla.mil> or <https://assist.dla.mil> or from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless a specific issue is identified, the issue in effect on the date of invitation for bids or request for proposal shall apply.

## ASTM INTERNATIONAL

ASTM B209	-	Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
ASTM D3330/ D3330M	-	Standard Test Method for Peel Adhesion of Pressure-Sensitive Tape.
ASTM D3611	-	Standard Practice for Accelerated Aging of Pressure-Sensitive Tapes
ASTM D3652/D3652M	-	Standard Test Method for Thickness of Pressure-Sensitive Tapes
ASTM D3715/D3715M	-	Standard Practice for Quality Assurance of Pressure-Sensitive Tapes
ASTM D3759/D3759M	-	Standard Test Method for Breaking Strength and Elongation of Pressure-Sensitive Tape
ASTM D3811/D3811M	-	Standard Test Method for Unwind Force of Pressure-Sensitive Tapes
ASTM D3833/D3833M	-	Standard Test Method for Water Vapor Transmission of Pressure-Sensitive Tapes
ASTM D6551/D6551M	-	Standard Practice for Accelerated Weathering of Pressure-Sensitive Tapes by Xenon-Arc Exposure Apparatus

Copies of these documents are available from [www.astm.org](http://www.astm.org) or ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959.

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2.3 Order of precedence. Unless otherwise noted herein or in the contract, in the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

### 3. REQUIREMENTS

3.1 Material. All material used shall be as specified herein, on the drawings, or in the contract or purchase order (see 6.2). Materials not specified shall be selected by the contractor and shall be subject to all provisions of this specification.

3.1.1 Backing. The tape's backing shall be a smooth, scratch-free aluminum foil.

3.1.2 Adhesive. The adhesive shall be pressure-sensitive and require no solvent, heat, or other preparation prior to or after application to clean, dry surfaces. The adhesive shall be homogeneous, water resistant, and applied in a smooth uniform layer to one side of the backing throughout the length of the tape.

3.1.2.1 Type I. There shall be no release liner covering the adhesive.

3.1.2.2 Type II. The adhesive shall be covered by a release liner.

3.2 Physical Properties. The tape shall comply with the requirements of Table I when tested as specified in 4.4.

TABLE I. Physical Properties.

PROPERTY	REQUIREMENT		TEST METHOD PARAGRAPH
	MINIMUM	MAXIMUM	
Thickness, inches (backing only)	0.0025	0.0035	4.5.3
Tensile strength (lbs/inch width)	26	-----	4.5.4
Adhesion, oz/inch			
Initial	40	-----	4.5.5
After accelerated aging	35	-----	4.5.5
Adhesive transfer, per cent			
Initial	-----	5	4.5.5
After accelerated aging	-----	10	4.5.5
Unwind, lbs/inch width			
Initial	-----	3 <sup>1/</sup>	4.5.6
After accelerated aging	-----	4	4.5.6
Water vapor transmission rate, grams/100 sq inches/24 hrs	-----	0.07	4.5.7
Resistance to weathering	(see 3.2.1)	-----	4.5.8
Corrosivity	-----	(see 3.2.2)	4.5.8

<sup>1/</sup> There shall be no visual evidence of stringiness of the adhesive on separation from the roll, either before or after accelerated aging.

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3.2.1 Resistance to weathering. When tested in accordance with 4.4.8, the tape shall show no visual evidence of lifting, curling, buckling, component separation or other degradation that would make it unfit for an external sealing media.

3.2.2 Corrosivity. Following the exposure to weathering (see 4.4.8), the test panels shall show no evidence of pitting or corrosion in the areas covered by the tape specimens.

3.3 Rolls. The tape shall be furnished in evenly and uniformly wound rolls, adhesive side in, on cores made of paper fiber or non-fibrous plastic. The core shall have sufficient rigidity to prevent distortion of the roll under normal conditions of transportation, storage, and use. The inside diameter of the core shall be 3, +1/16, -0 inches.

3.3.1 Length and splices. Unless otherwise specified in the contract or purchase order (see 6.2), the tape shall be furnished in rolls of 60 yards minimum length. Each roll shall consist of a single length of tape or of two or more lengths spliced together in such a manner that the splices will not separate when the roll is being unwound for inspection or during machine or manual application. No roll shall contain more than three splices (four pieces) (see 3.5).

3.3.2 Width. The width of the rolls shall be 1/2, 3/4, 1, 1 1/2, 2 inches, or other commercially available width as specified in the contract or purchase order (see 6.2). A tolerance of plus or minus 1/32 inch shall be allowed in each width.

3.3.3 Marking. On direct shipment to the Government, each roll of tape shall be marked in or on the edge of the core with the manufacturer's name and tape designation (full or coded) and the date of manufacture (full or coded).

3.3.3.1 Containers. Containers of the tape shall be marked in accordance with the requirements of PPP-T-680 and of 3.3.3 of this specification. In the event of conflict, this specification shall govern.

3.4 Suitability (compatibility) for use with explosives. (Applicable only when specifically designated in the applicable contract, order, or specification). When specified in the contract or purchase order (see 6.2), application shall be made to a Government laboratory or other Government approved laboratory designated by the procuring agency for determination of the ability of the tape for use with a particular explosive or explosives.

3.5 Workmanship. Workmanship shall be in accordance with the best commercial practice. The tape shall be clean and free from foreign matter and defects that may impair its serviceability or appearance. The edges of the tape shall be straight, true, and unbroken.

#### 4. QUALITY ASSURANCE PROVISIONS

4.1 Classification of inspections. The inspection requirements specified herein are classified as follows:

- a. Responsibility for inspection (see 4.2).
- b. Quality conformance inspection (see 4.3).

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4.2 Responsibility for inspection. Unless otherwise specified in the contract or purchase order (see 6.2), the contractor is responsible for the performance of all inspection requirements (examinations and tests) as specified herein. Except as otherwise specified in the contract or purchase order (see 6.2), the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in this specification where such inspections are deemed necessary to ensure supplies and services conform to prescribed requirements.

4.2.1 In-process inspection. Unless otherwise specified in the contract or purchase order (see 6.2), equivalent in-process inspection may be substituted for the inspections described below provided that it conforms to the application requirements specified in paragraph 5.3 of ASTM D3715/D3715M.

4.3 Quality conformance inspection.

4.3.1 End Item Inspection. Lot size, sampling and examination for this inspection shall be as specified in paragraph 5.3 of ASTM D3715/D3715M.

4.3.2 Preparation for delivery. Tape shall be prepared for delivery in accordance with the applicable levels of protection of Federal Specification PPP-T-680.

4.4 Testing. Lot size, sampling and examination for this inspection shall be specified in paragraph 5.3 of ASTM D3715/D3715M. The AQL shall be 2.5 percent defective. Each unit of product shall be tested to the applicable requirements of Table I of this federal specification. For each test, the number of replicate specimens specified in the test method shall be taken from each sample unit and tested. When the requirement is a numerical value the values obtained shall be averaged; and the average for that sample unit for that test shall be reported. When the requirement is an attribute, such as freedom from corrosion, the failure of any one of the specimens shall be considered a failure of the sample unit. With the exceptions of 4.5.1 and 4.5.2, all testing of Type II tape shall be performed after the release liner has been removed.

4.5 Test procedures.

4.5.1 Conditioning. The tape shall be conditioned for testing for not less than 24 hours at  $73^{\circ}\text{F} \pm 3.5^{\circ}\text{F}$  and  $50\% \pm 5$  percent relative humidity, and shall be tested under these conditions.

4.5.2 Accelerated aging. The rolls selected for accelerated aging shall be conditioned as described in ASTM D3611 for a period of 12 days (288 hours). Following the completion of accelerated aging, the specimen rolls shall be retained for use in those test procedures requiring aging test specimens.

4.5.3 Thickness (backing). The thickness of the aluminum foil backing shall be determined in accordance with ASTM D3652/D3652M. A suitable solvent shall be used to remove the entire adhesive from the backing prior to testing. This treatment shall be performed in a manner that will leave the backing smooth for testing.

4.5.4 Tensile strength. The machine direction tensile strength of the tape shall be determined in accordance with ASTM D3759/D3759M except that the apparatus need not be capable of measuring elongation.

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4.5.5 Adhesion and adhesive transfer. The adhesion and adhesive transfer of the tape, both as received and after the rolls have been subjected to accelerated aging in accordance with 4.5.2, shall be determined in accordance with ASTM D3330/D3330M with the following exceptions and additions:

- a) The rubber covered roller shall be 1.875 inches  $\pm$  0.1 inches in width by 5.0 inches  $\pm$  0.0312 inches in diameter and shall weigh 10.0 pounds  $\pm$  0.1 pounds. It shall be either mechanically or manually operated at a rate of 12 inches per minute. However, when manually operated, care shall be taken that the operator exerts no vertical force which might change the effective weight of the roller.
- b) The roller shall be passed over the specimen five times in each lengthwise direction.
- c) After removal of the tape from the panel, the panel shall be visually examined for percent of adhesive transfer.

4.5.6 Unwind.

4.5.6.1 Type I. Rolls of tape, both as received and after accelerated aging in accordance with 4.5.2 shall be tested for resistance to unwinding in accordance with ASTM D3811/D3811M. During this test, the tape shall be examined for stringiness of adhesive.

4.5.6.2 Type II. Tape with release liner will not be tested for unwind.

4.5.7 Water vapor transmission rate. The water vapor transmission rate of the tape shall be determined in accordance with ASTM D3833/D3833M with the following exceptions:

- a) The cup shall be filled with desiccant to within  $\frac{1}{4}$  inch of the top.
- b) If finger pressure alone is found to be inadequate, a suitable applicator shall be used to insure a smooth, uniform, and wrinkle-free lay down of the tape.

4.5.8 Corrosivity and resistance to weathering. The resistance of the tape to weatherometer aging shall be determined in accordance with ASTM D6551/D6551M with the following exceptions and additions:

- a) The specimen width shall be 1 inch  $\pm$  1/32 inch.
- b) The panels shall be of aluminum alloy Alclad 2024 conforming to ASTM B209.
- c) The roller and its method of application shall be as specified in 4.5.5.
- d) The exposure period shall be 12 days (288 hours).
- e) Immediately before removal, the tape shall be examined for conformance to 3.2.1.
- f) After removal of the tape, the panels shall be examined for conformance to 3.2.2.

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## 5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be level A or C as specified in accordance with the applicable requirements of PPP-T-680 or as specified in the contract or purchase order (see 6.2). When packaging of materiel is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activities within the Military Service or Defense Agency, or within the military service's system commands. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

5.2 Packing. Packing shall be level A, B, or C as specified in accordance with the applicable requirements of PPP-T-680 or as specified in the contract or purchase order (see 6.2).

## 6. NOTES

INFORMATION FOR GUIDANCE ONLY. (This section contains information of a general or explanatory nature that is helpful, but is not mandatory.)

6.1 Intended use.

6.1.1 Type I. This tape is intended for use in sealing applications where the properties of good weather resistance, reflectivity, and water vapor transmission resistance are required. Type I has no release liner covering the adhesive.

6.1.2 Type II. This tape is intended for use in sealing applications where the properties of good weather resistance, reflectivity, and water vapor transmission resistance are required. Type II shall have a release liner covering the adhesive.

6.2 Acquisition requirements. Acquisition documents must specify the following:

- a) Title, number, and date of this specification.
- b) Types (see 1.2)
- c) Materials to be used, if required (see 3.1).
- d) Length of tape required, with tolerance, if other than 60-yard minimum length roll (see 3.3.1).
- e) Width of tape required (see 3.3.2).
- f) Requirement for suitability for use with explosives when required (see 3.4).
- g) If someone other than the contractor is responsible for the performance of all inspection requirements (examinations and tests) (see 4.2).
- h) If the contractor cannot use his own or any other facilities suitable for the performance of the inspection requirements (see 4.2).
- i) If equivalent in-process inspection is to be substituted (see 4.2.1).
- j) If packaging is different (see 5.1).
- k) If packing is different (see 5.2)

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6.3 Storage. The tape should be stored in the original container, preferably in a cool location. It should not be stored in close proximity to steam pipes, radiators, or other sources of heat. Storage conditions of approximately 70° F and 40 to 50 percent relative humidity are considered optimum (see PPP-T-680). Since the adhesive of the tape may lose some of its initial quality with increasing age, purchases should be adjusted where possible to avoid storage for more than six months.

6.4 Test equipment. Test dishes for water-vapor transmission tests and metal test panels may be obtained from the Pressure-Sensitive Tape Council, 1201 Waukegan Road, Glenview, Illinois 60025.

6.5 Subject term (key word) listing.

- Aluminum
- Backing
- Moisture vapor transmission resistance
- Reflectivity
- Release liner
- Sealing
- Weather resistance

6.6 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.



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CONCLUDING MATERIAL

MILITARY INTERESTS:

Custodians

Army – MR

Navy - SH

Air Force – 11

Review Activities

Army – AR, CR, GL, MI

CIVIL AGENCY COORDINATING ACTIVITY:

GSA/FAS

Preparing Activity:

Army – MR

DoD Project 8030-2013-003

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <https://assist.dla.mil>.