

MIL-T-21595D  
31 March 1982  
SUPERSEDING  
MIL-T-0021595C(AS)  
25 February 1981  
MIL-T-21595B  
15 July 1969

## MILITARY SPECIFICATION

### TAPES, PRESSURE-SENSITIVE ADHESIVE, MASKING, NON-STAINING - FOR AIRCRAFT PAINTING APPLICATIONS

This specification is approved for use by all Departments and Agencies of the Department of Defense.

#### 1. SCOPE

1.1 Scope. This specification covers pressure sensitive adhesive tape designed for masking and color separation application during aircraft painting operations. It is designed for use with all common finishes but is especially designed for use with polyurethane coating systems conforming to MIL-C-83286.

1.2 Classification. Tapes shall be of the following types, as specified (see 6.1).

Type I - Paper, Creped  
Type II - Paper, Flat  
Type III - Plastic

#### 2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications, standards and handbooks. Unless otherwise specified, the following specifications, standards and handbooks of the issue listed in that issue of the Department of Defense Index of Specifications and Standards (DoDISS) specified in the solicitation form a part of this specification to the extent specified herein.

#### SPECIFICATIONS

##### FEDERAL

QQ-A-250/5

Aluminum Alloy Alclad 2024, Plate and Sheet

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Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: ENGINEERING SPECIFICATIONS AND STANDARDS DEPARTMENT (Code 93), NAVAL AIR ENGINEERING CENTER, LAKEHURST, NJ 08733, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

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## SPECIFICATIONS (Continued)

FEDERAL (Continued)

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

MILITARY

MIL-C-83286                    Coating, Urethane, Aliphatic, Isocyanate, for  
Aerospace Applications

(Copies of specifications, standards, drawings and publications required by suppliers in connection with specific procurement functions should be obtained from the acquiring activity or as directed by the contracting officer.)

2.1.2                    Order of precedence. In the event of conflict between the text of this specification and references cited herein, the text of the specification shall take precedence.

2.2                      Other publications. The following documents form a part of this specification to the extent specified herein. The issues of the documents which are indicated as DoD adopted shall be the issue listed in the current DoDISS and the supplement thereto, if applicable.

## AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D-3330	Peel Adhesion of Pressure-Sensitive Tape at 180 Degree Angle, Test for
ASTM D-3611	Accelerated Aging of Pressure-Sensitive Tapes, Practice for
ASTM D-3652	Thickness of Pressure-Sensitive and Gummed Tapes, Test for
ASTM D-3715	Quality Assurance of Pressure-Sensitive Tapes, Practice for
ASTM D-3759	Tensile Strength and Elongation of Pressure-Sensitive Tapes, Test for

(Copies of ASTM publications may be obtained from the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.)

## 3.                    REQUIREMENTS

3.1                      First article inspection. Unless otherwise specified, the contractor shall furnish sample units for first article inspection and approval (see 4.4).

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3.2 Materials. The tape shall consist of a backing coated on one side with a pressure sensitive adhesive requiring no moisture, heat or other special preparation prior to or after application.

3.2.1 Backing. The backing shall be uniform in texture and shall perform satisfactorily as a masking tape. The backing shall have sufficient strength to allow the tape to be unwound from the roll and to be removed from the masked surface after application of finishing materials without breakage or delamination. The finishing materials shall not penetrate the backing.

3.2.1.1 For type III. Surface of backing (not coated with adhesive) shall have a matte finish to prevent paint flaking (flakeoff) during tape removal operation.

3.2.2 Adhesive. The adhesive shall be pressure sensitive, water insoluble, 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 to which the tape is generally applied during masking in finishing operations without wrinkling, curling, breaking or lifting. There shall be no liner over the adhesive.

3.3 Finished tapes.

3.3.1 Rolls. The tape shall be uniformly and smoothly wound in rolls, with adhesive side in, on suitable cores having an inside diameter of 3 (-0 + 1/16) inches. The cores shall have sufficient rigidity to prevent distortion of the roll under normal conditions of use. The tape shall be in one continuous strip, except that any single roll may contain three splices, provided the percentage of spliced rolls in any shipment does not exceed a reasonable proportion based upon standard manufacturing practice. The length of the tape in rolls shall be not less than 60 yards.

3.3.2 Width. Tape widths shall be 1/2, 3/4, 1, 1 1/2, 2, 3-inches wide, as specified (see 6.2). Width tolerance of  $\pm 1/32$  inch applies to all types of tapes.

3.3.3 Color. Tapes shall be opaque and may be any color commercially used by tape manufacturer.

3.3.4 Marking of rolls. Each roll of tape shall be marked in or on the edge of the core with the manufacturer's name and the specification number.

3.4 Performance. Tapes shall conform to the requirements of Table I.

3.5 Workmanship. The adhesive shall be a smooth, uniform coating covering the entire area of one side of the tape. Edges of the tape shall be straight, true and unbroken, to provide sharp, distinct boundaries to the finished (painted) areas.

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TABLE I. Performance requirements.

Test	Applicable to types	Requirements	Test paragraph
Thickness (max)	I II III	0.0080 inch 0.0080 inch 0.0050 inch	4.6
Tensile breaking strength (dry) (min)	I II III	16.0 lb/in width 16.0 lb/in width 8.0 lb/in width	4.6
Elongation (dry) (min)	I II III	6% 5% 10%	4.6
Adhesion to steel initial (min)	I II III	30 oz/in width 35 oz/in width 25 oz/in width	4.6
Adhesion after aging (min)	I II III	25 oz/in width 30 oz/in width 20 oz/in width	4.6.1
Edge seepage (per specimen)	I, II  III	No more than 10 seepage areas greater than 1/64 in. deep. No more than 2 seepage areas greater than 1/16 in. deep. No more than 5 seepage areas greater than 1/64 in. deep. No more than 1 seepage area greater than 1/16 in. deep.	4.6.2

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TABLE I. Performance requirements. (continued)

Test	Applicable to types	Requirements	Test paragraph
Compatibility	I, II, III	No edge seepage, no penetration of finish through backing (bleeding), no tape color bleeding/staining of finish caused by adhesive or backing, color line sharp, no tearing of tape from edges, no delamination	4.6.3
Removability	I, II, III	Tape removal to be a clean, simple operation, no tearing of tape from edges, no delamination	4.6.4
Adhesive Transfer	I, II, III	No adhesive transfer	4.6.5

## 4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or purchase order, 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 the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

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

- a. First article inspection (4.4).
- b. Quality conformance inspection (4.5).

4.3 Inspection conditions. Unless otherwise specified, all inspections shall be performed in accordance with the test conditions specified in the applicable test methods of paragraph 4.6.

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the panel. Turn the panel, vertically, end for end and spray toward the top edges of the specimens as described above. These top edges were the bottom edges originally. Air dry for five minutes and examine the adhesive side of the specimens through the glass to determine compliance with the requirements of Table I for edge seepage.

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## 6. NOTES

6.1 Intended uses. The pressure sensitive non-staining tapes described by this specification are intended for masking and/or color separation applications during aircraft painting operations.

6.1.1 Type I (Creped paper). For use where flat, contoured or riveted surfaces are being painted.

6.1.2 Type II (Flat paper). For use with flat surfaces only.

6.1.3 Type III (Plastic). Intended for use with all aircraft surfaces where the color separation line is critical. Type III is intended for use only to facilitate the painting of a distinct color separation line. It is not to be used for masking areas adjacent to this color separation line.

6.1.4 Usage application. Guides for specific usage application of these tapes are as follows:

Type of Application

Type of Tape	For General Color Separation	For Fine-line Color Separation	For Riveted or Contoured Surfaces	For Masking Large Areas
Type I	X		X	X
Type II				X
Type III	X	X	X	

6.2 Ordering data.

6.2.1 Acquisition requirements. Acquisition documents should specify the following:

a. Title, number and date of this specification

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6.4 Contract data requirements. When this specification is used in a procurement which incorporates a DD Form 1423 and invokes the provisions of 7-104.9(n) of the Defense Acquisition Regulations, the data requirements identified below will be developed as specified by an approved Data Item Description (DD Form 1664) and delivered in accordance with the approved Contract Data Requirements List (DD Form 1423) incorporated into the contract. When the provisions of DAR 7-104.9(n) are not invoked, the data specified below will be delivered by the contractor in accordance with the contract requirements. Deliverable data required by this specification is cited in the following paragraphs:

<u>Paragraph</u>	<u>Data Requirement</u>	<u>Applicable DID</u>
4.4.1	First Article Inspection Reports	DI-T-4902
4.4. and 4.4.1	First Article Inspection Procedure	DI-T-4901

(Copies of data item descriptions required by the contractors in connection with specific procurement functions should be obtained from the acquiring activity or as directed by the contracting officer.)

## Custodians:

Army - MR  
Navy - AS  
Air Force - 99

## Preparing activity:

Navy - AS  
(Project No. 7510-0314)

## Review activities:

Army - EA

## User activities:

Army - AR  
Navy - MC





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**NOTE:** This form may not be used to request copies of documents, nor to request waivers, deviations, or clarification of specification requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

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5. PROBLEM AREAS			
a. Paragraph Number and Wording:			
b. Recommended Wording:			
c. Reason/Rationale for Recommendation:			
6. REMARKS			
7a. NAME OF SUBMITTER (Last, First, MI) - Optional		8. WORK TELEPHONE NUMBER (Include Area Code) - Optional	
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