INCH-POUND
MIL-M-81594A(AS)
26 June 1989
SUPERSEDING
MIL-M-81594(AS)
30 September 1968

MILITARY SPECIFICATION

MARKING FOILS, FOR HOT STAMP PRINTING OF ELECTRICAL INSULATING MATERIALS

This specification is approved for use within the Naval Air Systems Command, Department of The Navy, and is available for use by all departments and Agencies of the Department of Defense.

1. SCOPE.

1.1 Scope. This specification establishes the requirements for marking foils that are used in the hot stamp printing process to permanently mark the surface of electrical insulating materials (see 6.1).

1.2 Classification.

1.2.1 Classes. The marking foil shall be of the following classes, as specified (see 6.2).

Class 1 - For marking polychloroprene, polyolefin and polyvinylchloride insulations.

Class 2 - For marking polyvinylidene fluoride, polytetrafluoroethylene, fluorinated ethylene propylene, and ethylene tetrafluoroethylene insulations.

Class 3 - For marking polyamide insulations.

Class 4 - For marking polyimide insulations.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Systems Engineering and Standardization Department (Code 53), Naval Air Engineering Center, Lakehurst, NJ 08733-5100, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A FSC 3611

1.2.2 Colors. The foils shall be furnished in the following colors.

White - 0
Black - 9

1.2.3 Widths. The marking foil shall be furnished in 1/2, 1, 1-1/2, 2 and 3 inch widths, as specified by the acquiring activity(see 6.2).

1.2.4 Lengths. Marking foil shall be supplied in lengths of 100, 200, 300 and 600 feet, as specified by the acquiring activity (see 6.2).

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications and standards. The following specifications and standards form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents shall be those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS)and supplement thereto, cited in the solicitation (see6.2).

SPECIFICATIONS

FEDERAL

A-A-132	-	Erasers
PPP-B-636	-	Box, Shipping, Fiberboard.
PPP-B-640	-	Boxes. fiberboard, Corrugated, Triple-Wall

MILITARY

MIL-W-5086/1	-	Wire, Electric, Polyvinyl Chloride, Nylon Jacket, Tin Coated Copper, 600 Volt, 105 Degrees C.
MIL-I-7444	-	Insulation Sleeving, Electrical, Flexible.
MIL-B-22191	-	Barrier Material, Transparent, Flexible, Heat Sealable.
MIL-W-22759/44	-	Wire, Electrical, Fluoropolymer-Insulated, Cross-linked, Modified ETFE, Lightweight, Silver Coated Copper, 200 Degrees C, 600 Volt
MIL-I-23053	-	Insulation Sleeving, Electrical, Heat Shrinkable, General Specification For
MIL-I-23053/5	-	Insulation Sleeving, Electrical, Heat Shrinkable, Polyolefin, Flexible, Crosslinked
MIL-I-23053/12	-	Insulation Sleeving, Electrical, Heat Shrinkable, Polytetrafluoroethylene.
MIL-I-81381/7	-	Wire, Electric, Fluorocarbon/Polyimide Insulated Light Weight, Silver Coated Copper Conductor, 600 Volts, Nominal 5.8 Mil Wall
MIL-M-81531	-	Marking of Electrical Insulating Materials.

STANDARDS

MILITARY

MIL-STD-104	-	Limits for Electrical Insulation Color.
MIL-STD-129	-	Marking for Shipment and Storage.
MIL-STD-202	-	Test Methods for Electronic and Electrical Component Parts

(Unless otherwise indicated, copies of federal and military specifications and standards are available from the Naval Publications and Forms Center, (ATTN: NPODS), 5801 Tabor Avenue, Philadelphia, Pennsylvania 19120-5099.)

2.2 Non-government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DOD adopted are those listed in the issue of the DODISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DODISS are the issues of the documents cited in the solicitation.

AMERICAN SOCIETY FOR TESTING AND MATERIALS.

ASTM D 257	-	D-C Resistance or Conductance of Insulating Materials
ASTM D 638	-	Plastics, Tensile Properties of
ASTM G 21	-	Polymeric Materials, Synthetic, Recommended Practice for Determining Resistance of to Fungi.

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.)

(Nongovernment standards and other publications are normally available from the organizations that prepare or distribute the documents. These documents also may be available in or through libraries or other informational services.)

2.3 Order of precedence. In the event of a conflict between the text of this document and the references cited herein, the text of this specification shall take precedence. Nothing in this specification, however, shall supersede applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS.

3.1 Materials. Materials used in the preparation of the marking foils shall be those which make the finished product suitable for the intended use. Each master roll of foil produced shall meet the requirements of this specification.

3.1.1 Formulation. Foils conforming to this specification shall not contain known carcinogens or toxic chemicals in any form releasable during normal storage, use or waste disposal according to the manufacturer.

3.2 Marking foil characteristics.

3.2.1 Color. Unless otherwise specified by the acquiring activity, a black marking foil shall be supplied for light colored insulating materials and a white marking foil for dark colored insulating materials. Marking foil colors shall conform to MIL-STD-104.

3.2.2 Dimensions and tolerances.

3.2.2.1 Width. Marking foil widths shall be 0.5, 1.0, 1.5, 2.0 and 3.0 inch. Tolerances shall be +5.0,-2.0 percent.

3.2.2.2 Length. The marking foils shall be supplied on rolls of 100, 200, 300 or 600 feet as specified in 1.2.4. The length tolerance shall be minus 0 percent.

3.2.3 Tensile strength. When tested as specified in 4.6.3, all classes of foil material shall have a minimum tensile strength of 5 pounds per inch width.

3.3 Marking Characteristics.

3.3.1 Type size. Markings shall be made in accordance with the foil manufacturer's instructions. Unless otherwise specified by the manufacturer, the markings shall be made using the size of type specified in Table I. Indentations produced through the printing process shall be in accordance with the MIL-M-81531 requirements for indentation.

3.3.2 Drying Qualities. The marking foil shall not smudge or rub off upon cooling after hot stamping and shall be capable of withstanding being handled without smudging or rubbing off.

3.3.3 Legibility. When examined visually at a reading distance of 14 inches, each character of the marking shall be uniform, clear and easily identified as an accurate duplication of the printing type.

3.4 Properties of the marking.

3.4.1 Electrical properties.

3.4.1 Electrical non-conduction. The markings obtained with all foils shall be electrically non-conductive when determined in accordance with 4.6.4.

3.4.1.1 Optional electrical test. When specified by the acquisition activity, electrical integrity may be determined on a sample of the foil before marking. Testing shall be in accordance with 4.6.4.2 and the resistivity requirement shall be 10^{12} minimum.

3.4.2 Abrasion resistance. After rubbing with an eraser as specified in 4.6.5, the marking shall conform to the legibility requirements in 3.3.3.

3.4.3 Fungus resistance. The marking foils shall not support fungus growth when tested as specified in 4.6.6.

3.4.4 Low temperature flexibility. After the low temperature flexibility test of 4.6.7, the marking shall meet the legibility (3.3.3) and abrasion resistance (3.4.2) requirements.

Table I. Printing Type. 1/

OD of item to be marked 2/	Height of type face (± .001)	Radius of curvature of type face (± .001)	Reading Direction
		LOOSE TYPE	
.035 to .040	.065	.019	Vertical
.039 to .052	.065	.024	Vertical
.050 to .060	.065	.028	Vertical
.052 to .070	.050	.028	Horizontal
.068 to .096	1/16	.038	Horizontal
.096 to .165	5/64	.055	Horizontal
.166 to .350	7/64	.125	Horizontal
.351 to .624	7/64	Flat face	Horizontal
.625 to 1.0	1/8	Flat face	Horizontal
Over 1.0	3/16	Flat face	Horizontal
		ENGRAVED TYPE WHEELS	
.035 to .100	.068	.019	Vertical
.040 to .125	.068	.026	Vertical
.050 to .085	.042	.028	Horizontal
.068 to .096	.050	.038	Horizontal
.096 to .166	.082	.055	Horizontal
.166 to .350	.098	.125	Horizontal

1/ All dimensions in inches.
2/ Flexible sleeving is marked in the flattened position using flat face horizontal type. Use the largest size the sleeving will accomodate.

3.4.5 Heat resistance. After testing as specified in 4.6.8, the marking shall meet the legibility (3.3.3) and abrasion resistance (3.4.2) requirements.

3.4.6 Solvent resistance. The marking shall meet the requirements for abrasion resistance and legibility after testing as specified in 4.6.9.

3.4.7 Storage life. When tested in accordance with 4.6.10, the foils shall meet the requirements of this specification.

3.4.8 Workmanship. When examined visually, the marking foil shall be evenly coated and free from foreign matter, holes, tears, cuts, creases, wrinkles and any other defect that would render the foil unsuitable for its intended use.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsiblity for inspection. Unless otherwise specified in the contract or purchase order, 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, the contractor may use his own or any other facilities suitable for the performance of 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.

4.1.1 Responsibility for compliance. All items shall meet all requirements of sections 3 and 5. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of assuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling inspection, as part of manufacturing operations, is an acceptable practice to ascertain conformance to requirements, however this does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to acceptance of defective material.

4.1.1.1 Source inspection. Materials procured by the Government under this specification shall be source inspected so there is assurance that the foils meet the quality conformance inspection prior to leaving the manufacturer's plant. Note that the material shall be packaged as specified in section 5 of this specification.

4.2 Classification of inspections. The inspection requirements specified herein are quality conformance inspections and are further classified as follows.

a. Production inspection (see 4.3).

b. Lot by lot inspection (see (4.4).

4.3 Production inspection. Each master roll of foil material produced shall be tested by the manufacturer to the requirements in Table II.

4.3.1 Prior approval. When a contractor has previously delivered an acceptable product meeting the requirements of the production inspection, the production inspection (see 4.3) may be waived at the discretion of the acquisition activity for a period of time not to exceed two (2) years.

4.3.2 Identification of product.

4.3.2.1 Master roll. Each master roll of foil material of one class and color shall be identified using a sequentially assigned master roll number along with the date of manufacture.

4.3.2.2 Individual lot. Individual rolls of the same width, forming part of one order or contract shall be assigned a sequential lot number which can be cross referenced to the master roll.

Table II. Production Inspection Tests.

Characteristic	Requirement	Test Method
Tensile Strength	3.2.3	4.6.3
Elecrical non-conduction	3.4.1	4.6.4
Abrasion Resistance	3.4.2	4.6.5
Fungus Resistance	3.4.3	4.6.6
Low Temperature Flexibility	3.4.4	4.6.7
Heat Resistance	3.4.5	4.6.8
Solvent Resistance	3.4.6	4.6.9
Storage life	3.4.7	4.6.10

4.3.3 Production control records. Each manufacturer shall retain a portion of the sample of the master roll used to perform the tests specified in Table II, along with the test reports generated by that sample. These shall be maintained for a period of two (2) years from date of manufacture of the master roll. The records shall indicate the master roll number, the date of manufacture and the identification of individual lots produced from the master roll.

4.4 Individual lot inspection.

4.4.1 Individual lot formation. An individual lot shall consist of all the marking foil of one width, class and color produced from an inspected master roll (see 4.3) and presented for inspection at one time.

4.4.2 Lot identification. Each individual lot shall be identified by combining the master roll identification and the individual lot identification from 4.3.1.

4.4.3 Lot inspection. Unless otherwise specified in the contract or purchase order (see 6.2.1), the inspections of 4.4.3.1, 4.4.3.2 and 4.4.3.3 shall be performed.

4.4.3.1 Sample for marking. One roll from each lot shall be selected and examined to the abrasion resistance (3.4.2) requirement.

4.4.3.2 End item inspection. Unless otherwise specified in the contract or purchase document, the inspection provisions of 6.6 shall apply. A random sample of rolls shall be selected from each lot. The selected samples shall be examined for conformance to color (3.3.1), width (3.3.3.3), length (3.3.3.3) and workmanship (3.4.7).

4.4.3.3 Packaging inspection. Unless otherwise specified in the contract or purchase document, the inspection provisions of 6.7 shall apply.

4.5 Preparation for tests. Each roll of marking foil and the insulating material to be marked shall be conditioned for 4 hours at 25° ± 2°C (75° ± 4°F) and a Relative Humidity (RH) of 50 ± 5 percent prior to testing. Unless otherwise specified, all testing shall be conducted at room temperature 21° to 27°C (70° to 80°F).

4.5.1 Marking process. The markings, to be tested as specified herein, shall be applied to the insulating material specified in Table III and IV using the hot stamping procedures specified by the foil manufacturer. A number of six inch lengths of sleeving or 12 inch lengths of wire shall be marked in at least two positions with an 8 character marking. Heat shrinkable sleeving shall be marked before shrinking. Both markings shall be evaluated in the specific test.

4.5.2 Shrinkable sleeving. Shrinkable sleeving shall be shrunk using the unrestricted method specified in MIL-I-23053.

4.6 Test methods.

4.6.1 Visual. A visual examination shall be made to determine that the color conforms to the requirement of 3.2.1. At the same time the foil shall be inspected for the workmanship requirement (see 3.4.8).

4.6.2 Dimensions. Length and width shall be measured using a ruler or standard of sufficient accuracy to insure conformance to 3.2.2.

4.6.3 Tensile strength. Tensile strength shall be determined in accordance with ASTM D 638. Full width specimens shall be pulled at a speed of 2 inches per minute. Conformance to 3.2.3 shall be noted.

4.6.4. Electrical properties.

4.6.4.1 Electrical non-conduction. The marked insulation shall be placed on a flat, solid, non-conductive surface. The probes of an ohmeter capable of reading 0 to 10 ohms shall be placed on a single marked character. The meter shall be read. Any reading other than infinity (∞) shall constitute failure.

4.6.4.2 Resistivity. When specified, resistivity measurements shall be in accordance with ASTM D 257.

4.6.5 Abrasion Resistance. The marked insulating material shall be placed on a flat, solid surface and rubbed with a flat surface of a pencil eraser conforming to A-A-132, item 3, with a hardness of 60 ± 10. If necessary, insulation sleeving may be supported by insertion of a close fitting mandrel. One rub shall be made by pressing the eraser along the entire length of the marking. The eraser should be wide enough to completely cover the characters being rubbed. An applied force of 3 to 5 pounds shall be applied to the eraser when rubbing the marking. All markings shall be subjected to 10 rubs. Each eraser rub shall by made at the rate of 2 to 3 seconds. The markings shall then be examined for conformance to 3.4.2.

4.6.6 Fungus resistance. Fungus resistance shall be determined in accordance with ASTM G 21 for conformance to 3.4.3.

4.6.7 Low temperature flexibility.

4.6.7.1 Marked wire. One end of a twelve inch length of marked wire shall be secured to a rotatable mandrel, the other end to the weight specified in Table III. The mandrel and the wire shall be conditioned for 4 hours at the temperature specified in Table III. At the end of this period, and while still at the low temperature, the wire shall be wrapped around the mandrel for the number of turns specified in Table III assuring that at least one marking is included in the wrap. After the wrap, the marked wire shall be conditioned to room temperature, and that portion of the marking which was wrapped shall be examined for legibility (3.3.3) and then be tested for abrasion resistance (3.4.2).

4.6.7.2 Marked sleeving. A six inch marked piece of sleeving shall be conditioned in a cold chamber for 4 hours at the temperature specified in Table III. A steel mandrel of the size specified in Table III shall be conditioned along with the specimen. After completion of the conditioning period and while still in the cold chamber, the marked portion of the sleeving shall be bent through not less than 360 degrees in 10 ± 2 seconds. After bending, the specimen shall be conditioned to room temperature, then examined for conformance to legibility (3.3.3) and abrasion resistance (3.4.2).

Table III Low Temperature flexibility.

Foil Class	Material Specification	size 1/	Mandrel (OD) inch	Weight Pounds	Test temp	Wire Wrap Turns	Turn /min
1	MIL-I-7444	16	.375	--	-40° ± 3°C (-40° ± 6°F)	--	--
2	MIL-I-23053/12	.240	.375	--	-65° ± 5°C (-85° ± 10°F)	--	--
3	MIL-W-5086/1	16	3	1	-55° ± 5°C (-67° ± 10°F)	1/2	30 Sec
4	MIL-W-81381/7	14	.75	3	-65° ± 5°C (-85° ± 10°F)	2	2

1/ Wire or sleeving size from applicable specification.

4.6.8 Heat resistance.

4.6.8.1 Color stability. A marked twelve inch length of wire or 6 inch length of sleeving shall be placed in an oven for the time and temperature specified in Table IV. The central portion of the wire shall be bent at least 180 degrees over the cylindrical mandrel specified in Table III. In order to maintain the tension across the mandrel each end of the wire shall be loaded with the weight specified in Table IV. Upon completion of the conditioning

period, the test specimens shall be removed from the oven, the wire removed from the mandrel and straightened. The specimens shall be permitted to condition to room temperature then the marking shall be examined for color stability. The colors shall be in accordance with MIL-STD-104.

4.6.8.2 Bend test.

4.6.8.2.1 Marked wire. One end of the wire conditioned in 4.6.8.1 shall be attached to the rotatable mandrel, the other to the weight specified in Table IV. The full length of the wire shall be wrapped around the mandrel with adjoining wraps in contact with one another. The mandrel shall then be rotated in the reverse direction until the full length of the wire which was outside during the first wrap is next to the mandrel. Each 360 degree wrap shall be made within 10 seconds or less. This procedure shall be repeated until two bends in each direction have been formed in the same section of wire. After the bends, the marking shall be examined for legibility (3.3.3), then tested for abrasion resistance (3.4.2).

4.6.8.2.2 Marked sleeving. The marked sleeving shall be bent through 360 degrees in 10 ± 2 seconds over the size mandrel specified in Table III. The marking shall be examined for legibility (3.3.3), then be abrasion tested (3.4.2).

Table IV. High temperature conditions.

Foil Type	Material Specification	Size 1/	Mandrel (OD) inch	Weight Pounds	Test Temperature	Time Hours
1	MIL-I-23053/5 Class 1	.250	.313	--	175° ± 2°C (347° ± 5°F)	168
2	MIL-W-22759/44	16	.750	--	230° ± 5°C (446° ± 10°F)	168
3	MIL-W-5086/1	16	4.5	2	120° ± 2°C (248° ± 5°F)	120
4	MIL-W-81381/7	14	2.75	3	230° ± 5°C (446° ± 10°F)	120

1/ Wire or sleeving size from applicable specification.

4.6.9 Solvent resistance. Three suitable lengths of each insulating material shall be marked and conditioned as specified in 4.5. The specimens shall be tested in accordance with method 215 of MIL-STD-202 using one marked specimen for each solvent. After testing the marking shall be examined for legibility (3.3.3) and abrasion resistance resistance (3.4.2).

4.6.10 Storage life. The manufacturer shall certify that his marking foil meets the requirements of 3.4.7 after storage for one (1) year at 25° ± 5°C (75° ± 10°F) and 50 ± 10 percent Relative Humidity (RH).

5 PACKAGING.

5.1 Preservation and packaging. Preservation and packaging shall be level A (see 6.2).

5.1.1 Level A. The marking foil in the width and length specified shall be supplied on a core that will not distort or change shape during handling and shipment. The marking foil shall be wrapped and heat sealed with clear transparent film conforming to MIL-B-22191. One roll of 600 feet, two rolls of 200 feet lengths, three rolls of 200 foot lengths, and six rolls of 100 foot lengths may be individually wrapped and sealed to form a unit package. The marking specified in 5.3.1 shall be within each unit package and shall be clearly visible after heat sealing.

5.2 Packing. Packing shall be level A, B or C as specified (see 6.2).

5.2.1 Level A. Shipping containers shall contain marking foil of the same type, size and color and shall enclose the contents in a snug, tight fitting manner. Shipping containers shall conform to Class weather resistant, Compliance symbol V3c or V3s, Style RSC of PPP-B-636 for gross weights up to 70 pounds, or to class 2 of PPP-B-640 for gross weights up to 200 pounds. Containers shall be closed and strapped in accordance with the applicable container specification.

5.2.2 Level B. Shipping containers shall contain marking foil of the same type, size and color and shall enclose the contents in a snug, tight fitting manner. Shipping shall conform to Class Domestic, Style RSC of PPP-B-636 for gross weights up to 70 pounds or to class 1 of PPP-B-640 for gross weights up to 200 pounds. Containers shall be closed and strapped in accordance with the applicable container specification.

5.2.3 Level C. Packages which require overpacking for acceptance by common carrier shall be packed in exterior type shipping containers in a manner which will insure safe delivery and acceptance at the point of delivery at lowest cost. Containers shall comply with the rules and regulations applicable to the selected mode of transportation.

5.3 Marking. All containers shall be marked in accordance with MIL-STD-129 and shall include the information which follows.

5.3.1 Unit package. The following information shall be printed on suitably sized paper and placed within each unit package before heat sealing (see 5.1.1) and shall be clearly visible after the sealing process:

Specification number and Class
Date of manufacture
Lot number
Shelf life expiration date
CAUTION: STORE IN COOL, DRY AREA. AWAY FROM HEAT AND SUNLIGHT

5.3.2 Shipping containers. Shipping containers shall be marked as follows:

Specification number and Class
Manufacturer's designation
STORE IN THIS CARTON UNTIL NEEDED. STORE AWAY FROM HEAT AND SUNLIGHT. USE ON A FIRST IN, FIRST OUT BASIS

6 NOTES.

6.1 Intended use. Each class of the marking foil is intended for use on the particular electrical insulating material specified for that class in 1.2.1. Markings are made by heat type pressing the foil against the surface of the electrical insulating material. Markings should be applied in accordance with the manufacturer's instructions and approved military marking procedures. The markings usually consist of circuit identification codes specified in MIL-W-5088 and MIL-W-8160.

6.1.1 Marking foil color. Marking foil colors should be used on contrasting surfaces. Black on light colored insulation and white on darker insulation.

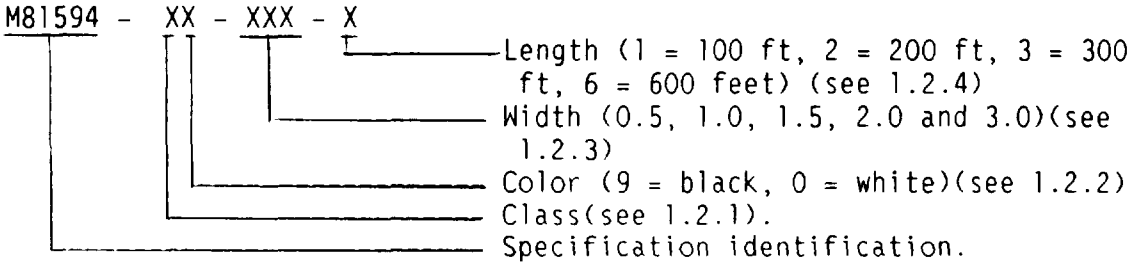
6.1.2 Storage of marking foils. The marking foils should be stored in the shipping cartons. The protective heat sealed overwrap must be kept intact to assure effectiveness of the marking foil up to the expiration date printed on the foil label. The marking foil should be stored away from direct sunlight, sources of heat, chemical fumes, and excessive moisture. Prolonged storage under conditions of high humidity should also be avoided.

6.2 Ordering data.

6.2.1 Acquisition documents. Acquisition documents should specify the following:

a. Title, number and date of this specification.
b. Class.
c. Color.
d. Foil width and length.
e. Total number of rolls desired.
f. Packing instructions (see 5.2).
g. Quality conformance instructions, if other than specified herein.
h. Whether optional electrical test required (see 3.4.1).

6.3 Part number. Part numbering system for cataloging purposes shall be as follows:



Example: A Class II, black, 1.5 inch width, 200 foot roll of marking foil to this specification shall be identified as M81594-29-1.5-2.

6.4 Keyword listing.

Foils
Hot stamp printing
Electrical insulation
Marking
Storage

6.5 Cross reference. The cross reference between this specification and the superseded MIL-M-81594(AS) is as follows:

Class 1 of this specification replaces and is substitutable for Types I, II, III, IV, V, and VII of the superseded MIL-M-81594(AS).

Class 2 of this specification replaces and is substitutable for Types IX, XI and XIII of the superseded MIL-M-81594(AS).

Class 3 of this specification replaces and is substitutable for Type VI of the superseded MIL-M-81594(AS).

Class 4 of this specification replaces and is substitutable for Type XII of the superseded MIL-M-81594(AS).

This specification does not cover the requirements for Types VIII and X of the superseded MIL-M-81594(AS).

6.6 End item inspection (4.4.3.2). A random sample of rolls shall be selected in accordance with Table V and MIL-STD-105. The sample unit shall be one roll. The selected samples shall be examined to the requirements in Table V.

Table V. End Item Inpection and Inspection Levels.

Inspection	Paragraph		Inspection Level	AQL
	Reqmt	Test		
Color	3.3.1	4.4.1	S-2	Zero defects
Foil width	3.3.3.3	4.4.2	S-2	Zero defects
Roll length	3.3.3.3	4.4.3.	S-2	1/
Workmanship	3.4.8	4.4.1	S-2	4.0

1/ If the average length per roll of the selected samples is less than the length per roll specified in the contract or order, the lot represented by the sample shall be rejected.

6.7 Packaging examination (see 4.4.3.3).

6.7.1 Examination for packaging and marking. An examination shall be made to determine that packaging and marking comply with the requirements of Section 5 of this specification. Defects shall be scored in accordance with Table VI. The sample unit for this examination shall be one shipping container fully prepared for delivery, except that it shall not be sealed. Shipping containers fully prepared for delivery shall be examined for closure defects. The lot size for this inspection shall be the number of shipping containers. The samples for this examination shall be selected at random in accordance with MIL-STD-105, Inspection Level S-3 and an AQL of 4.0 Defects Per Hundred Units.

Table VI. Packaging examination.

Examination	Defect
Packaging	
Material	Not material required
Core	distorted
Construction	Not size, type or class specified
Marking	Warning labels or marking missing, omitted, illegible, incorrect, incomplete, or not in accordance with contract requirements.
Shipping container:	
Packing	Not level required by contract or purchase order.
	Any nonconforming component, incomplete closures.
	Bulged or damaged shipping containers.
Count	Less than specified or indicated quantity per shipping container.
Markings	Unit package and packing omitted, illegible, incorrect, incomplete, or not in accordance with contract requirements.

6.8 Changes from previous issue. Asterisks are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

Preparing Activity
Navy (AS)
Project No. 3611-N002

☆U.S. GOVERNMENT PRINTING OFFICE: 1989 - 604-033/13695

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

(See Instructions – Reverse Side)

1. DOCUMENT NUMBER	2. DOCUMENT TITLE
MIL-M-81594A	MARKING FOILS, FOR HOT STAMP PRINTING OF ELECTRICAL MATERIALS INSULATING

3a. NAME OF SUBMITTING ORGANIZATION	4. TYPE OF ORGANIZATION *(Mark one)*
	☐ VENDOR
b. ADDRESS *(Street, City, State, ZIP Code)*	☐ USER
	☐ MANUFACTURER
	☐ OTHER *(Specify)*:

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	b. WORK TELEPHONE NUMBER *(Include Area Code)* – Optional
c. MAILING ADDRESS *(Street, City, State, ZIP Code)* – Optional	8. DATE OF SUBMISSION *(YYMMDD)*

DD FORM 82 MAR 1426 PREVIOUS EDITION IS OBSOLETE.

(TO DETACH THIS FORM, CUT ALONG THIS LINE.)