

TT-I-1795A  
March 30, 1973  
 SUPERSEDING  
 Fed. Spec. TT-I-1795  
 October 3, 1972

## FEDERAL SPECIFICATION

### INK, MARKING, STENCIL, OPAQUE (POROUS AND NON-POROUS SURFACES)

This specification was approved by the Commissioner, Federal Supply Service, General Services Administration, for the use of all Federal agencies.

#### 1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification covers three types of opaque stencil ink for marking porous and non-porous surfaces (see 6.1).

1.2 Classification. The opaque stencil inks shall be of the following types, as specified (see 6.2 and 6.4).

- Type I - For use on non-porous surfaces (non-pressurized containers).
- Type II - For use on porous surfaces (non-pressurized containers).
- Type III - For use on porous and non-porous surfaces (pressurized containers).

#### 2. APPLICABLE DOCUMENTS

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

##### Federal Specifications:

- H-B-621 - Brush, Stencil.
- TT-E-485 - Enamel, Semi-Gloss, Rust-Inhibiting.
- TT-P-25 - Primer Coating, Exterior (Undercoat for Wood, Ready-Mixed, White and Tints).
- TT-R-251 - Remover; Paint (Organic Solvent Type).
- TT-T-291 - Thinner, Paint, Volatile Spirits, Petroleum Spirits.
- UU-S-625 - Stencilboard.
- PPP-B-636 - Boxes, Shipping, Fiberboard.

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- PPP-C-96 - Cans, Metal: 28 Gage and Lighter.
- PPP-F-320 - Fiberboard; Corrugated and Solid, Sheet Stock (Container Grade) and Cut Shapes.
- PPP-P-704 - Pails: Metal (Shipping, Steel, 1-Through 12 Gallon).

Federal Standards:

- FED-STD-123 - Marking for Domestic Shipment (Civil Agencies).
- FED-STD-141 - Paint, Varnish, Lacquer, and Related Materials; Methods of Inspection, Sampling, and Testing.
- FED-STD-595 - Colors.

(Activities outside the Federal Government may obtain copies of Federal Specifications, Standards, and Handbooks as outlined under General Information in the Index of Federal Specifications and Standards and at the prices indicated in the Index. The Index, which includes cumulative monthly supplements as issued, is for sale on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

(Single copies of this specification and other Federal specifications required by activities outside the Federal Government for bidding purposes are available without charge from Business Service Centers at the General Services Administration Regional Offices in Boston, New York, Washington, D.C., Atlanta, Chicago, Kansas City, Mo., Fort Worth, Denver, San Francisco, Los Angeles, and Seattle, Washington.

Federal Government activities may obtain copies of Federal Specifications, Standards, and Handbooks and the Index of Federal Specifications and Standards from established distribution points in their agencies.)

Military Standard:

- MIL-STD-129 - Marking for Shipment and Storage.

(Copies of Military Specifications and Standards required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

LAWS AND REGULATIONS:

Department of Health, Education and Welfare

- 21 CFR 191 - Federal Hazardous Substances Labeling Act.

(The Code of Federal Regulations (CFR) and the Federal Register (FR) are for sale on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. When indicated, reprints of certain regulations may be obtained from the Federal agency responsible for issuance thereof.)

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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 date of invitation for bids or request for proposal shall apply:

National Motor Freight Traffic Association, Inc., Agent

National Motor Freight Classification

(Application for copies should be addressed to the American Trucking Associations, Inc., Tariff Order Section, 1616 P Street, N.W., Washington, D.C. 20036.)

Uniform Classification Committee, Agent

Uniform Freight Classification

(Application for copies should be addressed to the Uniform Classification Committee, Room 1106, 222 South Riverside Plaza, Chicago, Illinois 60606.)

3. REQUIREMENTS

3.1 Pigment. The type I, II, and III stencil marking inks shall be made from any pigmentation which will insure compliance with the requirements of this specification.

3.2 Vehicle.

3.2.1 Type I. The vehicle shall be such as to produce a stencil ink conforming to the requirements of this specification. The solids shall be 20 percent minimum by weight of the vehicle except black (Color 37038) shall have a minimum of 12 percent solids.

3.2.2 Types II and III. The vehicle shall be such as to produce a stencil ink conforming to the requirements of this specification. The solids shall be 15 percent minimum by weight of the vehicle except black (Color 37038) shall have a minimum of 12 percent solids.

3.3 Propellent. The propellent for the type III stencil ink shall be dichlorodifluoromethane.

3.4 Dry opacity (hiding power) (type I and II). The dried films of the type I and II stencil inks, applied at a wet-film thickness of 0.002 inch shall show the minimum contrast ratios indicated for the respective colors listed in table I when tested as specified in 4.3.2.

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TABLE I. Color and contrast ratios

<u>Color 1/</u>	<u>Minimum contrast ratios</u>
White (No. 37875)	0.90
Black (No. 37038)	1.00
Gray (No. 36231)	1.00
Red (No. 31136)	0.80
Yellow (No. 33538)	0.90
Green (No. 34108)	1.00
Blue (Dark) (No. 35044)	1.00
Blue (Light) (No. 35109)	0.95
Orange (No. 32246)	0.95
Maroon (No. 30111)	1.00

1/ The numbers in parentheses following color names are those covered in FED-STD-595 (see 6.3).

3.4.1 Dry opacity (type III). The dried films of the type III black stencil ink shall have a contrast ratio of 1.0 when tested as specified in 4.3.2.

3.4.2 Color (types I, and III). The colors of types I and II stencil inks shall be as listed in table I. The color of the type III stencil ink shall be black No. 37038 of FED-STD-595 (see 6.2).

3.5 Gloss. The type I, II and III stencil ink shall dry on an impervious or absorbent surface with a maximum gloss reading of 30 when tested as specified in 4.3.2.

3.6 Container (type III). The container for the type III stencil ink shall be a commercial type metal pressure container generally known as an aerosol container of such constructions as to assure acceptance of the finished package by common carriers operating in interstate commerce. The capacity of the container shall be sufficient to contain the specified net contents of the product with outage in accordance with generally recognized safe commercial practice. Each container shall be labeled as stated in section 5.

3.6.1 Dispensing valve. The valve shall have a spray head which can be removed without releasing pressure from the aerosol. The removable spray head shall contain an orifice of such dimensions as to produce spraying properties as required in 3.9. The lower end of the dip tube shall not elongate and touch the bottom of the can and shall have a maximum clearance of one-quarter inch from the bottom rim of the can after storage for one week in the product (which allows for swelling of the tube.)

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3.6.2 Agitator. Each dispenser of the pigmented material shall contain one spherical agitator either 3/8, 5/8, or 3/4 inch in diameter or the equivalent volume in smaller spheres, or one or more rivets of irregularly shaped materials.

3.6.3 Cover cap. The valve shall be protected from accidental functioning and damage by a press fitting metal or plastic cover cap which shall be removable and replaceable.

3.6.3.1 The color of the cover cap shall be black.

3.6.4 The contents shall not react with nor be reacted upon by the interior surface of the dispenser or any of the dispenser components.

3.7 Condition in container. When received at destination, a freshly opened, full container of the type I and II stencil ink shall show no hard settling. Any settling shall mix readily to a smooth, homogeneous state. The ink shall show no curdling, livering, or caking, and shall be free from lumps and skins. The type III stencil ink shall be readily dispersible by shaking according to instructions on the container.

3.8 Storage stability. The type I and II stencil ink after 21 days standing in a closed 3/4 filled can, shall show no skimming, livering, curdling or color separation, and shall show no more settling than is easily and readily broken up and redispersed by stirring with a paddle by hand, when tested as specified in 4.3.2. The type III ink, after storage for 12 months, shall meet the performance requirements for type III ink when tested as specified in 4.3.2.

3.9 Working and spraying properties. When tested as specified in 4.3.2, the type I and III stencil ink as received shall be capable of being readily applied to clean metals, glass and other non-porous surfaces. When tested as specified in 4.3.2, type II stencil ink as received shall be capable of being readily applied to porous surfaces such as wooden containers, paper containers, sacks, burlap, etc. by means of stencil brush conforming to H-B-621 and using stencils cut from stencil board conforming to UU-S-625. The stencil inks shall be applied by fountain marker, stencil brush, roller coater or by spray as applicable. The type III stencil ink in its pressurized container shall spray satisfactorily at any temperature of contents and test chamber between 60°F. and 90°F. when tested as specified in 4.3.2. The spray pattern shall be such as to deposit a uniform coating on a smooth vertical surface. The ink coating shall dry free of orange peel, sags, specks or other defects characteristic of poor spraying. The ink shall produce uniform, smooth, legible markings free of ragged edges using stencils cut from stencil board conforming to UU-S-625.

3.10 Flexibility. The type I and III stencil inks applied to panels shall show no cracks when prepared and tested as specified in 4.3.2.

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3.11 Miscibility (type I and II). The stencil inks shall be miscible with mineral spirits conforming to TT-T-291, grade I, when tested as specified in 4.3.2.

3.12 Performance.

3.12.1 Stenciling. Stenciling shall present legible characters of uniform boldness and general appearance. The ink shall not smear 15 minutes after application when rubbed lightly when tested as specified in 4.3.2.

3.12.2 Resistance to water. The stenciled lettering shall be legible, retain its characteristic color, not smear with vigorous rubbing, nor crack or peel when tested as specified in 4.3.2.

3.12.3 Resistance to gasoline (type I and III inks). The stenciled lettering shall remain clear and sharp without streaking or blurring and shall show no appreciable color difference after drying 1 hour and after drying 24 hours when coated as specified in 4.3.2.

3.12.4 Resistance to light and water spray. Prepared panels shall show no cracking, checking, or flaking and not more than a slight change of color when tested as specified in 4.3.2.

3.13 Characteristics of nonvolatile vehicle (types I and III ink). The film of the nonvolatile vehicle shall not powder or flake off when tested as specified in 4.3.2.

3.14 Toxicity. The inks shall contain no benzol (benzene) aniline oil, chlorinated compounds (except the propellant for type III ink), or other toxic hydrolyzable chlorine derivatives when tested as specified in 4.3.2.

3.15 Effect on applicators. The type I and II ink shall contain no ingredients which have a deleterious effect upon the brushes, roller coater, and sprayer used in its application when tested as specified in 4.3.2.

3.15.1 Effect on brass. The type I and III ink shall not etch, corrode, stain or discolor polished brass when tested as specified in 4.3.2.

3.16 Workmanship. The stencil inks shall be in a homogeneous state and free from foreign matter and shall conform to the levels of quality established herein.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or order, the supplier may use his own or any other

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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.

4.4.1 Inspection. Sampling for inspection shall be performed in accordance with MIL-STD-105, except where otherwise indicated hereinafter.

4.2 Component and material inspection. In accordance with 4.1 above, components and materials shall be inspected and tested in accordance with all the requirements of referenced specifications, drawings, and standards unless otherwise excluded, amended, modified, or qualified in this specification or applicable purchase documents.

4.2.1 Certificate of compliance. Where certificates of compliance are submitted, the Government reserves the right to check test such items to determine the validity of the certification. Certificates of compliance may be accepted for the following characteristics.

<u>Characteristic</u>	<u>Requirement Paragraph</u>
Capacity of container	3.6
Dip tube clearance	3.6.1
Type of agitator	3.6.2
Reaction of content	3.6.4
Storage stability (type III)	3.8

4.3 Inspection of the end item.

4.3.1 Examination of the end item. The end item shall be examined for the defects indicated in the following applicable subparagraphs and at the inspection levels and acceptable quality levels (AQLs) set forth in 4.3.1.3. The lot shall be expressed in ink-filled unit containers of the same capacity for examination in 4.3.1.1 and 4.3.1.2.

4.3.1.1 Examination of end-item for defects. Examination of the end item shall be made for defects listed in table II. The sample unit for this examination shall be one ink-filled container as applicable.

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TABLE II. Examination for end-item defects

<u>Examine</u>	<u>Defect</u>
Container	<p>Not size, shape, type, or class of container specified, as applicable.</p> <p>Inner or outer seal not as required.</p> <p>Color not as specified.</p> <p>Interior and exterior coating, as applicable, not as specified.</p> <p>Any evidence of seepage or leakage from any part of the container including closure and seams and sprayer.</p> <p>Closure not as specified.</p> <p>Not equipped with a spout or sprayer, as applicable.</p> <p>Type III container not pressurized.</p> <p>Dented or distorted unit container.</p> <p>Pressurized container does not function.</p>
Workmanship of ink (types I and II)	<p>Not homogeneous.</p> <p>Presence of foreign matter.</p> <p>Contains lumps, skins, curdling, livering, or caking.</p>

4.3.1.2 Examination of preparation for delivery requirements. An examination shall be made to determine that the packaging, packing, and marking complies with the section 5 requirements. Defects shall be scored in accordance with the list below. The sample unit shall be one shipping container fully prepared for delivery with the exception that it need not be closed. Defects of closure listed below shall be examined on shipping containers fully prepared for delivery. The lot size shall be the number of shipping containers in the end item inspection lot.



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TABLE III. Examination for defects in preparation for delivery

<u>Examine</u>	<u>Defect</u>
Marking (exterior and interior)	Omitted, incorrect; illegible; of improper size, location, sequence or method of application.
Materials	Any component missing or damaged.
Workmanship	Inadequate application of components, such as: pail, fiberboard container, or partitions not as specified; incomplete closure of container flaps, inadequate stapling, loose strapping or improper taping. Bulged or distorted container.
Content	Quantity of ink per can, pail or pressurized container is less than the indicated capacity of the package. <u>1/</u> Number of cans or pressurized containers per interior package or shipping container is more or less than that indicated. <u>1/</u>

1/ For this defect, one container in the sample shall be examined.

4.3.1.3 Inspection levels and acceptable quality levels (AQLs) for examination. The inspection levels for determining the sample size, and the acceptable quality levels (AQLs) expressed in defects per one hundred units shall be as follows:

<u>Examine</u>	<u>Inspection level</u>	<u>AQLs</u>
4.3.1.1	I	2.5
4.3.1.2	S-1	2.5

4.3.2 Testing of the end item. The methods of testing specified in FED-STD-141, where applicable, and as shown in table IV shall be followed for each lot. The sample unit for testing shall be 1 quart of ink. The lot size shall be expressed in quarts. The sample size shall be as specified hereinafter for the respective lot sizes. All test reports shall contain the individual values utilized in expressing the final result. The lot shall be unacceptable if one or more sample units fail to meet any test requirement specified.

<u>Lot size (quarts)</u>	<u>Sample size</u>
800 or less	2
801 up to and including 22,000	3
22,001 or more	5

INSTRUCTIONS FOR TESTING								TABLE _____	
CHARACTERISTIC	Specification Reference		Requirements Applicable To		Number Determinations Per Unit	Results Reported As		Inspect Level	AQL
	Requirement	Test Method	Individ Unit	Lot Aver		Pass or Fail	Numerically to Nearest		
Vehicle solids	3.2	4052-FED-STD-141	X		Aver. of 2		0.1 percent		
Dry opacity	3.4 & 3.4.1	4.4.1	X		Aver. of 2		0.1 ratio		
Color	3.4.2	4.4.2	X		1	X			
Storage stability	3.8	4.4.3 <u>1/</u>	X		1	X			
Working properties	3.9	4.4.4	X		1	X			
Gloss	3.5	4.4.5	X		1	X			
Flexibility (type I and III)	3.10	4.4.6	X		1	X			
Miscibility (type I and II)	3.11	4.4.7	X		1	X			
Stenciling (appearance and resistance to smearing)	3.12.1	4.4.8.1 & 4.4.8.1.1	X		1	X			
Resistance to water	3.12.2	4.4.8.1.2	X		1	X			
Resistance to gasoline (type I and III)	3.12.3	4.4.8.1.3	X		1	X			
Resistance to light and water spray	3.12.4	4.4.8.1.4 & 4.4.8.1.5	X		1	X			
Characteristics of nonvolatile vehicle	3.13	4.4.9	X		1	X			
Toxicity	3.14	<u>1/</u>							
Effect on applicators (type I and II)	3.15	4.4.10	X		1	X			
Effect on brass (type I and III)	3.15.1	4.4.10.1	X		1	X			
<u>1/</u> Unless otherwise specified, in the contract or order, a certificate of compliance shall be submitted and will be acceptable for the requirement stated.									

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#### 4.4 Test procedures.

4.4.1 Dry opacity. The dry opacity shall be determined in accordance with method 4121 of FED-STD-141. Apply the ink to a flat hiding power chart, using a Bird film applicator or other doctor blade that applies a wet film of 0.002-inch thickness for type I and II ink, and applying type III ink directly from the can to a wet film thickness of 0.002-inch. Allow to dry and determine the contrast ratio.

4.4.2 Color. Comparison of the color of the sample ink with that of the specified color chip of FED-STD-595 is by visual inspection, conducted in the following manner: Apply a film of the sample ink at complete hiding to a non-popous panel and allow to dry completely. Place beside the standard of specified color chip and compare visually under illumination in accordance with method 4250 of FED-STD-141.

4.4.3 Storage stability (type I and II). The storage stability shall be determined in accordance with method 3021 of FED-STD-141. For test use a three-fourths filled container. Examine after 21 days for skinning, curdling, and color separation. Test with a paddle to determine if any settled pigment is redispersed.

4.4.4 Working and spraying properties. While preparing panels for performance tests specified in 4.4.8.1, observe the quality of the ink in respect to working properties required in 3.9.

4.4.5 Specular gloss. The gloss measurement shall be made according to method 6101 of FED-STD-141.

4.4.6 Flexibility (type I and III). Determine by method 6221 of FED-STD-141. Coat flat panels with a Bird film applicator or other doctor blade that applies a wet film of 0.002 inch for type I ink, and coat with type III ink directly from spray can to a wet film thickness of 0.002-inch. Let air-dry for 48 hours at  $23^{\circ} \pm 1^{\circ}\text{C}$ . ( $73.5^{\circ} \pm 2^{\circ}\text{F}$ .) and relative humidity of  $50 \pm 4$  percent, and then bend over a 1/4-inch rod at  $23^{\circ} \pm 1.1^{\circ}\text{C}$ . ( $73.5^{\circ} \pm 2^{\circ}\text{F}$ .) Examine for cracking with the unaided eye (no magnification).

4.4.7 Miscibility (type I and II). Mix one volume of the ink with one volume of mineral spirits conforming to TT-T-291, grade 1. Examine for evidence of curdling or precipitation.

#### 4.4.8 Performance (types I, II and III).

4.4.8.1 Stenciling (types I and III). Using an ordinary stencil brush for type I ink and the pressurized spray can for type III ink and stencilboard with letters approximately 3/4-inch high, stencil at least five letters, with a circular motion of the brush or sprayer, on each of the following:

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One primed wood panel coated with one coat of paint conforming to TT-P-25, and allowed to dry hard.

One smooth plate glass panel.

Two primed steel panels coated with one coat of enamel conforming to TT-E-485, and allowed to dry hard.

The panels shall be prepared at least 48 hours prior to use. Observe whether the sample shows satisfactory stenciling properties, taking into consideration the nature of the surface coated, and whether the film presents a generally satisfactory appearance, including legibility, uniformity, smoothness, and freedom from conspicuously ragged edges. Rub lettering lightly with fingers 15 minutes after stenciling and drying at  $23^{\circ} \pm 1.1^{\circ}\text{C}$ . ( $73.5^{\circ} \pm 2^{\circ}\text{F}$ .) to determine resistance to smearing.

4.4.8.1.1 Stenciling (type II and III). Using a stencil brush (H-B-621), or a stencil brush of the fountain type filled with the test stencil ink for type II ink and the pressurized spray can filled with type III ink, and stencilboard (UU-S-625) with letters approximately  $3/4$  inch high, apply the ink, with a circular motion of the brush or sprayer, to a panel cut from solid fiberboard (PPP-F-320). At least five letters should be stenciled. Rub lettering lightly with fingers 15 minutes after stenciling at  $23^{\circ}\text{C}$ . ( $73.5^{\circ}\text{F}$ .)  $\pm 1.1^{\circ}\text{C}$ . ( $\pm 2^{\circ}\text{F}$ .) to determine resistance to smearing. (Disregard any ink mark that shows on the finger.)

4.4.8.1.2 Resistance to water. One hour after stenciling (see 4.4.8.1 and 4.4.8.1.1) place one of the steel panels or stenciled fiberboard in distilled water at  $70^{\circ}\text{F}$ . for 4 hours. Remove from the water and air-dry 1 hour. Examine for legibility, color retention, cracking, and peeling. Note any tendency to smear when rubbed vigorously with the finger.

4.4.8.1.3 Resistance to gasoline (type I and III). One hour after stenciling (4.4.8.1), immerse one of the steel panels in regular grade automotive gasoline and in distilled water, for five seconds in each liquid, followed by complete evaporation after each wetting. Repeat this cycle five times. Twenty-four hours later, examine for any deleterious effects such as loss of clearness and sharpness; streaking, blurring, and any appreciable color change.

4.4.8.1.4 Resistance to light and water spray (type I and III). Using a Bird film applicator, or other doctor blade that applies a wet film of 0.003-inch thickness, apply type I ink to prepared tin panels (method 2012.1). For testing type III ink, apply by spraying directly from the pressurized container to a wet film thickness of 0.003 inch. Allow the ink coating to air-dry at  $23^{\circ} \pm 1.1^{\circ}\text{C}$ . ( $73.5^{\circ} \pm 2^{\circ}\text{F}$ .) and relative humidity of  $50 \pm 4$  percent for 24 hours. Then expose the coated panels in the apparatus described in either method 6151 or 6152 of FED-STD-141, using light and water spray for 100 hours. Examine the ink coating for checking, cracking, flaking, and change of color.

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4.4.8.1.5 Resistance to light and water spray (type II and III). Using a 3- by 6-inch edge-grain Western Red Cedar panel, a stencil brush (H-B-621), and a stencil board (UU-S-625) with letters about 3/4 inch high, the letters being ABCDE, apply type II ink neatly to the wood so that the inked letters are opaque and legible, but not using so much ink that the letters are blurred or smeared. For testing type III ink, apply a full hiding coat by spraying directly from the pressurized container. Allow the ink coating to air-dry at 23°C. (73.5°F.)  $\pm$  1.1°C. ( $\pm$  2°F.) for 24 hours. Then expose the coated panels in the apparatus described in either method 6151 or 6152 (FED-STD-141) using light and water spray for 100 hours. Examine the inked letters for cracking, flaking, eroding, change of color, and legibility.

4.4.9 Characteristics of nonvolatile vehicle (type I and III). Separate some of the vehicle by supercentrifuge (method 4032 of FED-STD-141), flow it on a clean tin panel (lightly buffed with steel wool) and allow to air-dry in a nearly vertical position at 23°  $\pm$  1.1°C. (73.5°  $\pm$  2°F.) and relative humidity of 50  $\pm$  4 percent for 18 hours, then bake at 105°  $\pm$  2°C. (221°  $\pm$  4°F.) for 4 hours. Cool 1/2 hour at room temperature and apply the knife blade test (method 6304.1 of FED-STD-141). Also scrape and cut across the film with the knife blade in various other ways to determine if there is any flaking or powdering off of the film.

4.4.10 Effect on applicators (type I and II). After using the ink, clean the brushes, stenciling tools, sprayer, and appliances in the customary manner, and then examine for harmful or damaging effect from the ink.

4.4.10.1 Effect on brass (type I and III). Apply a liberal coat of the ink by brushing (type I), spraying (type III), or any other method, to a 2- by 2-inch brass panel which has been brightly polished and cleaned with solvent. Allow the ink to remain on the panel for 48 hours at 23°  $\pm$  1.1°C. (73.5°  $\pm$  2°F.) and relative humidity of 50  $\pm$  4 percent. Completely remove the ink by immersing the coated panel in paint remover conforming to TT-R-251 for 15 or 20 minutes. Wash off all the residual matter from the surface of the metal using a clean soft cloth and a suitable solvent (toluol for example). Avoid any abrasive action. Examine the metal for etching, corrosion, staining, and discoloration.

## 5. PREPARATION FOR DELIVERY (see 6.2).

5.1 Packaging. Packaging shall be level A, B, or C as specified (see 6.2).

5.1.1 Level A.

5.1.1.1 Type I and II.

5.1.1.1.1 One-pint, 1-quart, and 1-gallon quantities. One-pint, 1-quart, or 1-gallon quantities of ink shall be packaged in a round or oblong metal can conforming to type V, class 4 of PPP-C-96. Each can shall be provided with an

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innerseal and an exterior protective coating in accordance with plan B of PPP-C-96. One-gallon round or oblong cans shall be fitted with wire handles or formed bridge type handles, respectively. The filled 1-pint cans shall be closed and interior packaged in accordance with the applicable requirements specified in the appendix of PPP-C-96.

5.1.1.1.2 Five-gallon quantities. Five-gallon quantities of ink shall be packaged in a 5-gallon capacity metal pail conforming to type I, class 3 of PPP-P-704. Each pail shall have a screw cap for the closure and be provided with a push-pull spout or flexible spout pouring device as specified in PPP-P-704. Each pail shall be closed and the screw cap protected with an outer seal as specified in the appendix of PPP-P-704.

5.1.1.2 Type III. One-pint of type III ink shall be packaged in the pressurized container specified in 3.6. Twelve filled 1-pint pressurized containers shall be packaged in a snug-fitting fiberboard box conforming to style RSC, grade W5c or W6c of PPP-B-636. Each box shall be fitted with a snug-fitting, full-height, half-slotted style interlocking partitions fabricated of the same material as the box. The partition shall provide for an interior arrangement of the pressurized containers of six in length, two in width, and one in depth within the box. Each box shall be closed in accordance with the appendix of PPP-B-636.

5.1.2 Level B (civil agencies). One-pint, 1-quart, and 1-gallon quantities of ink shall be packaged in accordance with the applicable requirements specified in 5.1.1, except exterior protective coating shall be in accordance with plan A of PPP-C-96 (see 6.2).

5.1.3 Level C. Ink shall be packaged to afford adequate protection against physical damage and deterioration during shipment from the supply source to the first receiving activity. The supplier may use his standard practice when it meets these requirements.

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

5.2.1.1 Type I, II, and III.

5.2.1.1.1 One-pint, 1-quart, and 1-gallon quantities. One-pint, 1-quart, or 1-gallon quantities of ink of one description only, packaged as specified in 5.1, shall be packed in accordance with the applicable level A requirements specified in PPP-C-96.

5.2.1.1.2 Five-gallon quantities. Five-gallon quantities of ink, packaged as specified in 5.1, shall not require overpacking.

5.2.2 Level B.

5.2.2.1 Type I, II, and III.

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5.2.2.1.1 One-pint, 1-quart, and 1-gallon quantities. One-pint, 1-quart, or 1-gallon quantities of ink of one description only, packaged as specified in 5.1, shall be packed in accordance with the applicable level B requirements specified in PPP-C-96.

5.2.2.1.2 Five-gallon quantities. Five-gallon quantities of ink, packaged as specified in 5.1, shall not require overpacking.

5.2.3 Level C. Ink, packaged as specified in 5.1, shall be packed in a manner to insure carrier acceptance and safe delivery at destination at the lowest transportation rate for such supplies. Containers shall be in accordance with Uniform Freight Classification Rules or National Motor Freight Classification Rules, as applicable.

### 5.3 Marking.

5.3.1 Civil agencies. In addition to any special marking required by the contract or order, interior packages and shipping containers shall be marked in accordance with FED-STD-123.

5.3.2 Military requirements. In addition to any special marking required by the contract or order, interior packages and shipping containers shall be marked in accordance with MIL-STD-129.

### 5.3.3 Special marking.

5.3.3.1 Type I and II. Each type I and II interior package and shipping container shall be legibly marked in accordance with the Federal Hazardous Substances Labeling Act or have affixed a warning label to indicate hazardous substances contained herein in accordance with the applicable requirements of MIL-STD-129. In addition, each type I and II interior package and shipping container shall be marked or labeled with the names of proper solvents for use in thinning the ink to stenciling or spraying consistency.

5.3.3.2 Type III. Each type III interior package and shipping container shall be marked or labeled for hazardous substances as specified in 5.3.3.1. In addition, each pressurized container shall include the following:

- a. Color number of FED-STD-595.
- b. Net weight in ounces.
- c. Name of material.
- d. Manufacturer's name and address.
- e. Precautions for use and storage.
- f. Directions for use, including surface preparation.
- g. The formula in general terms.
- h. Best results are obtained when used at temperatures between 60° to 90°F.



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## 6. NOTES

6.1 Intended use. The types I and III stencil inks covered by this specification are a light and weather-resistant, fast-drying, flat-finish stencil inks for marking metals, glass, stone and similar non-porous surfaces. They are intended to be used with stencil brush, hand-lettering brush, roller coater, spray and stencil board. The types II and III stencil inks covered by this specification are weather-resistant, fast-drying, flat-finish stencil inks for marking fiberboard cartons, wood crates and boxes, bales, sacks and burlap and similar porous surfaces not having direct contact with food items.

6.2 Ordering data. Purchasers should exercise any desired options permitted herein and procurement documents should specify the following:

- (a) Title, number, and date of this specification.
- (b) Type and quantity required (see 1.2, section 5 and 6.3).
- (c) Color required (see 3.4.2).
- (d) Selection of applicable levels of packaging and packing (see 5.1 and 5.2).
- (e) When a certificate of compliance for toxicity will not be acceptable (see table IV).
- (f) When level B packaging is required for civil agencies (see 5.1.2).

6.3 The stencil inks covered by this specification should be purchased by volume (231 cubic inches to the gallon). The weight per gallon varies with the color and with the manufacturer. For most of the colored inks one gallon weighs approximately 10 pounds; black ink weighs approximately 7 1/4 pounds per gallon.

6.4 Classification comparison. The type I ink covered by this specification corresponds to the ink formerly covered in TT-I-558C. The type II ink covered by this specification corresponds to the ink formerly covered by TT-I-559B and TT-I-00559C (GSA-FSS). The type III ink was not previously covered by any other Federal or Military Specifications.



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**Custodians:**

Army - GL  
Navy - SA

**Review activities:**

Army - MD, MI, SM

**User activities:**

Army - ME, AV  
Navy - MC

**Preparing activity:**

Army - GL

**Civil Agency Interest:**

GPO  
GSA-FSS  
HEW-FDA  
VA-DMS

Project No. 7510-0256

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