

**METRIC**  
**TT-T-306D**  
**December 31, 1992**  
**SUPERSEDING**  
**TT-T-306C**  
**February 1, 1974**

**FEDERAL SPECIFICATION**  
**THINNER, SYNTHETIC RESIN ENAMELS**

This specification has been approved by the Commissioner, General Services Administration, for the use of all Federal agencies.

**1. SCOPE.** This specification covers a solvent and/or thinner for synthetic resin enamels.

**2. APPLICABLE DOCUMENTS**

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

**Federal Standards:**

FED-STD-141 - Paint, Varnish, Lacquer, and Related Materials; Methods of Inspection, Sampling, and Testing.

FED-STD-313 - Preparation and Submission of Material Safety Data Sheets.

(Copies of 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)

**Federal Regulations:**

29 CFR 1910.1200 - Hazard communication

(Application for copies should be addressed to the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.)

**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.

**American Society for Testing and Materials (ASTM) Standards:**

D 130 - Detection of Copper Corrosion from Petroleum Products by the Copper Strip Tarnish Test

D 847 - Acidity of Benzene, Toluene, Xylenes, Solvent Naphthas, and Similar Industrial Aromatic Hydrocarbons.

D 1209 - Color of Clear Liquids (Platinum-Cobalt Scale)

D 1476 - Heptane Miscibility of Lacquer Solvents

D 3271 - Gas Chromatograph for Solvent Analysis

D 3335 - Low Concentrations of Lead, Cadmium, and Cobalt in Paint by Atomic Absorption Spectroscopy.

D 3624 - Low Concentrations of Mercury in Paint by Atomic Absorption Spectroscopy.

D 4367 - Benzene in Hydrocarbon Solvents by Gas Chromatography.

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

**Air Pollution Regulations (SCAQMD)**

Rule 102

(Applications for copies should be addressed to the South Coast Air Quality Management District, 9150 East Flair Drive, El Monte, CA 91131.)

**DISTRIBUTION STATEMENT A: Approved for public release. Distribution is unlimited**

**FSC 8010**

**TT-T-306D****3 REQUIREMENTS**

**3.1 Materials.** The manufacturer is given latitude in the selection of materials and process of manufacture, provided that the thinner supplied meets all the requirements specified herein. Recycled solvent components are acceptable provided quantitative and qualitative requirements of this specification are met.

**3.1.1 Prohibited materials.** When tested as specified in Table II and 4.3.1, the thinner shall not contain mercury compounds. Lead content shall not exceed 0.06 percent of the nonvolatile content. Carcinogens as defined in 29 CFR 1910.1200 shall not be used. The thinner shall contain no benzene, any chlorinated compounds, or other toxic or hydrolyzable chlorine derivatives when tested as in Table II. A manufacturer's certification based on testing of raw materials will be accepted for the absence of lead and mercury.

**3.2 Qualitative requirements.**

**3.2.1 Appearance.** The thinner shall be clear and free from suspended matter when examined by transmitted light when tested as in Table II.

**3.2.2 Spot test.** When tested as in Table II the thinner shall leave no stain or oily spot on filter paper.

**3.2.3 Water.** The thinners shall show no turbidity when tested as in 4.3.2.

**3.3 Quantitative requirements.** The thinner shall consist of the materials as specified in Table I.

**3.3.1 Acidity.** When tested as specified in Table II, not more than 0.28 mg of KOH shall be required to neutralize 1.0 g of thinner.

**3.3.2 Color.** When tested as in Table II the thinner shall be no darker than No. 10 (Platinum Cobalt Scale) Standard.

**3.3.3 Copper corrosion.** The thinner shall produce no marked tarnish or iridescence greater than No. 2 (moderate) when tested as in Table II.

<b>Ingredients</b>	<b>Parts by Weight</b>	
	<b>Min.</b>	<b>Max.</b>
VM&P Naphtha 1/	56	58
Toluene	9	11
n-Butyl Alcohol	21	23
Isobutyl Isobutyrate	10	12

1/ The VM&P Naphtha shall have an aromatic content of not more than 12 percent volume.

2/ This thinner complies with air pollution regulations requiring "non-photochemically reactive" solvent blends, such as defined in Rule 102 of the South Coast Air Quality Management district Regulations in California.

**3.4 Material Safety Data Sheet (MSDS).** An MSDS shall be submitted in accordance with FED-STD-313.

**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 using facilities approved by the Government. The Government reserves the right to perform any of the inspections set forth herein when deemed necessary to assure that the thinner conform to prescribed requirements.

**4.2. Inspection of preparation for delivery.** Sampling and inspection shall be performed in accordance with method 1031 of FED-STD-141 to conform with section 5 of this specification. Each sample filled in new container selected shall be examined for defects of the container, for evidence of leakage, for unsatisfactory markings and shall be weighed to determine amount of contents. If more than one lot is represented in the shipment, each lot represented shall be treated as a separate shipment for sampling purposes. Two samples from each production lot shall be sampled for testing.

**4.3 Quality conformance inspections.** The thinner shall be tested in accordance with the methods specified in Table II and as otherwise specified herein to determine compliance with the requirements of section 3. Unless otherwise specified, all tests shall be conducted at conditions specified in section 9 of FED-STD-141. Failure of any test requirement shall be cause for rejection of the lot from which the sample was taken.

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Table II Index.				
Characteristics	Requirement Paragraph	ASTM Method	FED-STD-141 Method	Test Paragraph
Prohibited materials				
Lead	3.1.1	D 3335	---	4.3.1.1
Mercury	3.1.1	D 3624	---	---
Toxicity	3.1.1	D 4367	5132	---
Appearance	3.2.1	---	4261	---
Spot test	3.2.2	---	4491	---
Water	3.2.3	D 1476	---	4.3.2
Ingredients	3.3	D 3271	---	4.3.3
Acidity	3.3.1	D 847	---	4.3.4
Color	3.3.2	D 1209	---	---
Copper corrosion	3.3.3	D 130	---	---

**4.3.1 Prohibited materials.**

**4.3.1.1 Lead content.** Determine lead content in accordance with ASTM D 3335 or by the use of an x-ray fluorescence spectrometer capable of determining lead at a minimum range of 0.03 through 1.0% mass of nonvolatile with an accuracy within plus or minus 5.0%. The x-ray method shall be used in case of dispute.

**4.3.2 Water.** Determine the heptane miscibility of the solvent in accordance with ASTM D 1476 using 95 mL of heptane as the specified amount.

**4.3.3 Ingredients.** The supplier shall be required to submit a certificate of compliance to the effect that the thinner contains the ingredients listed in Table I. The Government reserves the right to verify the constituents listed in Table I by test method ASTM D 3271.

**4.3.4 Acidity.** Titrate a 50 mL sample of thinner against 0.1N alcoholic potassium hydroxide (KOH in CH<sub>3</sub>OH), using an indicator solution of phenolphthalein in methyl alcohol. Calculate the number of mg of KOH required to neutralize 1.0g of thinner and evaluate for compliance with 3.2.2.

**5 PREPARATION FOR DELIVERY**

**5.1 Packaging, Packing, and Marking.** The thinner shall be furnished in quantities specified (see 6.2). The packaging, packing, and marking shall be as specified (see 6.2).

**5.2 Additional Marking.** Each individual container of thinner shall be marked as follows: This thinner contains a highly volatile solvent. Avoid prolonged breathing of vapors. Provide adequate ventilation when using. Keep away from open flame.

**6 NOTES**

**6.1 Intended use.** The thinner described is primarily intended for use with alkyd resin enamels. There are many new synthetic resins which are incompatible with this thinner and a compatibility test before use is recommended. This type of thinner is intended for use where there are restrictions for emission of photochemically reactive solvents as defined by Rule 102 into the atmosphere. This thinner has a flash point on the order of 4-10 C (39-50 F).

**6.2 Ordering data.** Purchasers should select the preferred options permitted herein and include the following information in procurement documents.

- (a) Title, number and date of this specification.
- (b) Quantities required (see 5.1).
- (c) Packaging, packing and marking required (see 5.1).
- (d) Instructions and address for submission of MSDS (see 3.4).

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**6.3 Unit of purchase.** The unit of purchase shall be one U.S. Gallon which is equal to 3,785 cm<sup>3</sup> (231 in<sup>3</sup>) at 15.5 C° (60°F). The exact weight in pounds per gallon of any sample may be determined by multiplying the specific gravity at 15.5/15.5 C° (60/60° F).

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**PREPARING ACTIVITY**

GSA-FSS