

NOT MEASUREMENT  
SENSITIVE

TT-T-2935  
May 5, 2000

## FEDERAL SPECIFICATION

### THINNER, PURGING

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 covers the requirements for a low vapor pressure thinner for purging and cleaning high solids epoxy and polyurethane coatings from application equipment.

#### 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

- |             |   |  |
|-------------|---|--|
| FED-STD-141 | - | Paint, Varnish, Lacquer and Related Materials; Methods of Inspection, Sampling and Testing                             |
| FED-STD-313 | - | Material Safety Data, Transportation Data and Disposal Data for Hazardous Materials Furnished to Government Activities |

Beneficial comments, recommendations, additions, deletions, clarifications, etc. and any data that may improve this document should be sent to: Commander, Naval Air Warfare Center Aircraft Division, Code 414100 B120-3, Highway 547, Lakehurst, NJ 08733-5100.

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(Activities outside the Federal Government may obtain copies of federal specifications, standards and commercial item descriptions as specified in the General Information section of the Index of Federal Specifications, Standards and Commercial Item Descriptions. The index is for sale on a subscription basis from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.)

(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, L'Enfant Plaza, SW, Washington, DC 20407.)

(Federal Government activities may obtain copies of federal standardization documents and the Index of Federal Specifications, Standards, and Commercial Item Descriptions from established distribution points in their agencies.)

## MILITARY

### STANDARDS

- MIL-STD-129 - Military Marking
- MIL-STD-290 - Packaging of Petroleum and Related Products

(Copies of military specifications and standards required by contractors in connection with specific procurement functions are obtained from Customer Service, Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

## CODE OF FEDERAL REGULATIONS

### OCCUPATIONAL SAFETY AND HEALTH STANDARDS

- 29 CFR 1910.1200 - Toxic and Hazardous Substances - Hazard Communication

### DEPARTMENT OF TRANSPORTATION

- 49 CFR 171-178 - Research and Special Programs Administration (Hazardous Materials Regulations)

(The code of Federal Regulations (CFR) and the Federal Register (FR) are for sale on a subscription basis from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. When indicated, reprints of certain regulations may be obtained from the federal agency responsible for issuing them.)

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 NATIONAL STANDARDS INSTITUTE (ANSI)

- ANSI-Z129.1 - Chemicals, Hazardous Industrial, Precautionary Labeling of (DoD Adopted)

(Private sector and civil agencies may purchase copies of this voluntary standard from the American National Standards Institute, Inc., 1430 Broadway, New York, NY 10018.)

#### AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

- ASTM-D93 - Flash Point by Pensky-Martens Closed Cup Tester, Standard Test Method for (DoD Adopted)
- ASTM-D891 - Specific Gravity, Apparent, of Liquid Industrial Chemicals, Standard Test Methods for (DoD Adopted)
- ASTM-D1296 - Odor of Volatile Solvents and Diluents, Standard Test Method for (DoD Adopted)
- ASTM-D1353 - Nonvolatile Matter in Volatile Solvents for Use in Paint, Varnish, Lacquer, and Related Products, Standard Test Method for (DoD Adopted)
- ASTM-D1613 - Acidity in Volatile Solvents and Chemical Intermediates Used in Paint, Varnish, Lacquer, and Related Products, Standard Test Method for (DoD Adopted)
- ASTM-D2804 - Purity of Methyl Ethyl Ketone by Gas Chromatography, Standard Test Method for (DoD Adopted)
- ASTM-D2917 - Methyl Isoamyl Ketone, Standard Specification for
- ASTM-D3951 - Commercial Packaging, Standard Practice for (DoD Adopted)
- ASTM-D4017 - Water in Paints and Paint Materials by Karl Fischer Method, Standard Test Method for (DoD Adopted)
- ASTM-D4835 - Propylene Glycol Monomethyl Ether Acetate, Standard Specification for

(Private sector and civil agencies may purchase copies of this voluntary standard from the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.)

(DoD activities may obtain copies of those adopted voluntary standards listed in the DoD Index of specifications and Standards free of charge from the Standardization Document Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia PA, 19111-5094.)

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## 3. REQUIREMENTS

3.1 First article. When specified (see 6.2), samples shall be subjected to first article inspection in accordance with 4.3.

3.2 Composition. The components of the purging thinner shall conform to the requirements shown in table I and shall be urethane grade. In addition, the composition of the purging thinner shall conform to the percentages by volume shown in table I.

TABLE I. Purging thinner composition.

MATERIALS	REQUIREMENT	PERCENT BY VOLUME
Methyl isoamyl ketone (urethane grade)	ASTM-D2917	40 ±2
Propylene glycol mono-methyl ether acetate (urethane grade)	ASTM-D4835	20 ±2
Ethyl 3-ethoxy propionate 1/ (urethane grade)	Assay purity 99.0 percent minimum, inhibited with 50-150 ppm Butylated hydroxytoluene	40 ±2

1/ Eastman Chemical Products “Ektapro EEP” or equivalent.

3.3 Properties of purging thinner. The properties of the purging thinner shall be in accordance with table II, when tested in accordance with the test methods in 4.5.

TABLE II. Purging thinner properties.

PROPERTY	REQUIREMENT
Vapor pressure at 20 °C	3.2 ±0.5 mm Hg
Flash point	115 ±2 °F (46 ±1 °C)
Specific gravity at 20/20 °C	0.899 ±0.002
Water content, maximum	0.1 percent by weight
Alcohol content, maximum	0.6 percent by weight
Nonvolatile residue, maximum	0.02 gram per 100 mL
Acidity (free acid as acetic acid), maximum	0.02 weight percent
Appearance	Free from suspended matter when examined by transmitted light

TABLE II. Purging thinner properties Continued.

PROPERTY	REQUIREMENT
Odor	Characteristic odor of the materials used in formulating the blend. There shall be no odor after drying.
Spot test	No oily spot or stain on filter paper

3.4 Toxicity. The purging thinner supplied under this specification shall have no adverse effect on the health of personnel when used for its intended purpose. A Material Safety Data Sheet (MSDS) shall be prepared and submitted in accordance with FED-STD-313; additionally, it shall conform to 29 CFR 1910.1200 (see 6.3).

#### 4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract, 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 ensure supplies and services conform to prescribed requirements.

4.2 Classification of inspections. The examinations and tests specified herein are classified as follows:

- a. First article inspection (see 4.3).
- b. Quality conformance inspection (see 4.4).

4.3 First article inspection. When specified (see 6.2), first article testing shall consist of all requirements and tests specified in section 3, and shall be accomplished on the first production lot of a contract or purchase order. In addition, the manufacturer shall certify that the thinner has been blended in accordance with table I. Failure of any examination or test shall result in first article disapproval.

4.4 Quality conformance inspection. Quality conformance inspection shall be performed on each lot of thinner offered for inspection and shall consist of thinner properties testing (see 4.4.2) and packaging inspection (see 4.4.3). When specified, the manufacturer shall perform the quality conformance inspection and shall furnish with each lot a certified test report showing the thinner conforms to the specification requirements.

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4.4.1 Lot formation. A lot shall consist of all the thinner manufactured at one time from one batch, forming part of one contract or order, and submitted for acceptance at one time.

4.4.2 Thinner properties. Two filled containers shall be selected at random from each inspection lot and tested to the requirements of section 3 and tables I and II. Failure of either container to pass any of the tests specified shall be cause to reject the lot offered for inspection.

4.4.3 Packaging. The contracting officer shall specify the packaging inspection (see 6.2).

4.5 Test methods. The thinner shall be tested in accordance with the test methods and paragraphs shown in table III.

Table III. Test methods.

PROPERTY	TEST METHOD
Vapor pressure at 20 °C	(see 4.5.1)
Flash point	ASTM-D93
Specific gravity at 20/20 °C	ASTM-D891
Water content, maximum	ASTM-D4017
Alcohol content, maximum	(see 4.5.2)
Nonvolatile residue, maximum	ASTM-D1353
Acidity (free acid as acetic acid), maximum	ASTM-D1613
Appearance	FED-STD-141, Method 4261
Odor	ASTM-D1296
Spot test	FED-STD-141, Method 4491

4.5.1 Vapor pressure. Vapor pressure shall be calculated as the sum of the partial pressures of each component, where each partial pressure shall be calculated as the product of the mole fraction of the component and the pure component vapor pressure at 20 °C.

4.5.2 Alcohol content. The alcohols present and their concentration shall be determined in accordance with ASTM D-2804. Alcohol content shall be determined by summing the percentages of all alcohols typically present in the individual components, including diacetone alcohol, methyl amyl carbinol, methyl isoamyl carbinol, 1-methoxy-2-propanol (also known as propylene glycol monomethyl ether), in addition to the alcohols referenced in ASTM-D2804.

## 5. PACKAGING

5.1 Packaging. Packaging shall be Level A or Commercial, as specified in 6.2.

5.1.1 Level A. Unless otherwise specified in the contract or order, the purging thinner shall be packaged in one pint, one quart, one gallon, 5 gallon or 55 gallon containers. Packaging and packing shall conform to MIL-STD-290.

5.1.2 Commercial. The purging thinner shall be packaged in accordance with ASTM-D3951.

5.2 Marking. In addition to any special marking required by the contract or order, shipping containers and palletized unit loads, when applicable, shall be marked in accordance with MIL-STD-129 and MIL-STD-290. Individual containers shall bear printed labels with the following:

Federal Specification TT-T-2935  
Thinner, Purging  
Manufacturer's name and product number  
Date of manufacture by month and year  
Lot number  
Net contents  
Flash point  
Vapor Pressure

All unit and intermediate packs shall be labeled in accordance with all applicable laws, statutes, regulations and ordinances, including federal, state, and municipal requirements. All unit containers (including those that serve as shipping containers) shall be marked in accordance with 49 CFR 171-178 and with applicable precautionary information detailed in ANSI Z129.1.

## 6. NOTES

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

6.1 Intended use. The low vapor pressure (< 5 mm Hg) purging thinner supplied to this specification is intended for purging and cleaning high solids epoxy and polyurethane coatings from application equipment. In addition, the thinner may be used for hand-wipe cleaning of most aircraft metals and other aircraft surfaces prior to painting and sealing.

