

NOT MEASUREMENT SENSITIVE

TT-N-97D
12 June 2007
SUPERSEDING
TT-N-97C
6 January 1976

FEDERAL SPECIFICATION

NAPHTHA; AROMATIC

Reactivated after 12 June 2007 and may be used for new and existing designs and acquisitions.

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 aromatic petroleum naphtha for use in the manufacture of paints and in the formulation of other industrial products.

1.2 Classification. The naphtha shall be of the following types according to the boiling range and of the following grades according to the aromaticity (solvent power).

1.2.1 Type. The type of naphtha shall be as specified (see 6.2(b)).

Type I - 88 °C to 140 °C (190 °F to 284 °F) boiling range

Type II - 129 °C to 191 °C (264 °F to 376 °F) boiling range

Type III- 171 °C to 218 °C (340 °F to 424 °F) boiling range

1.2.2 Grade. The grade of the type I naphtha shall be as specified (see 6.2(c)).

Grade A - High aromaticity

Grade B - Low aromaticity

Beneficial comments, recommendations, additions, deletions, clarifications, etc. and any data that may improve this document should be sent to: STDZNMGT@dla.mil or Defense Supply Center Richmond, ATTN: DSCR-VEB, 8000 Jefferson Davis Highway, Richmond, VA 23297-5616.

TT-N-97D

2. APPLICABLE DOCUMENTS

2.1 Government publications. The issues of the following documents, 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-123 | - Marking for Shipment (Civil Agencies). |
| FED-STD-141 | - Paint, Varnish, Lacquer and Related Materials: Methods of Inspection, Sampling and Testing. |

(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 General Services Administration, Federal Supply Service, Specification Section, East 470 L'Enfant Plaza SW, Suite 8100, Washington, DC 20407.)

(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, East 470 L'Enfant Plaza SW, Suite 8100, 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-1916 | - DoD Preferred Methods for Acceptance of Product. |
|--------------|--|

(Copies of military specifications and standards required by contractors in connection with specific procurement functions are obtained from the Standardization Document Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094. Electronic copies of specifications and standards may be obtained from <http://assist.daps.dla.mil>.)

Code of Federal Regulations (CFR)

- | | |
|----------------|------------------------------------|
| 49 CFR 171-178 | - Hazardous Materials Regulations. |
|----------------|------------------------------------|

(The CFR and the Federal Register is for sale on a subscription basis from the Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954. When indicated, reprints of certain regulations may be obtained from the federal agency responsible for issuing them. Electronic copies may be obtained from <http://www.access.gpo.gov/>.)

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 the date of invitation for bids or request for proposal shall apply.

ASTM International

ASTM D 56	- Standard Test Method for Flash Point by Tag Closed Cup Tester.
ASTM D 130	- Standard Test Method for Corrosiveness to Copper from Petroleum Products by Copper Strip Test.
ASTM D 156	- Standard Test Method for Saybolt Color of Petroleum Products, (Saybolt Chromometer Method).
ASTM D 235	- Standard Specification for Mineral Spirits (Petroleum Spirits) (Hydrocarbon Dry Cleaning Solvent).
ASTM D 611	- Standard Test Methods for Aniline Point and Mixed Aniline Point of Petroleum Products and Hydrocarbon Solvents.
ASTM D 847	- Standard Test Method for Acidity of Benzene, Toluene, Xylenes, Solvent Naphthas, and Similar Industrial Aromatic Hydrocarbons.
ASTM D 891	- Standard Test Methods for Specific Gravity, Apparent, of Liquid Industrial Chemicals.
ASTM D 1078	- Standard Test Method for Distillation Range of Volatile Organic Liquids.
ASTM D 1093	- Standard Test Method for Acidity of Hydrocarbon Liquids and Their Distillation Residues.
ASTM D 1296	- Standard Test Method for Odor of Volatile Solvents and Diluents.
ASTM D 1353	- Standard Test Method for Nonvolatile Matter in Volatile Solvents for Use In Paint, Varnish, Lacquer, and Related Products.
ASTM D 1476	- Standard Test Method for Heptane Miscibility of Lacquer Solvents.

(Private sector and civil agencies may purchase copies of these voluntary standards from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959. Electronic copies may be obtained from <http://www.astm.org/>.)

3. REQUIREMENTS

3.1 Precautionary marking. Each unit container shall bear a label printed in bold type and securely affixed to the unit container (see 5.3.3).

3.2 Recovered materials. The offeror/contractor is encouraged to use recovered materials to the maximum extent practicable, in accordance with paragraph 23.403 of the Federal Acquisition Regulation (FAR).

TT-N-97D

3.3 Materials. The naphtha shall consist entirely of hydrocarbons.

3.4 Requirements. The naphtha shall meet the requirements specified in table I and paragraphs 3.4.1 through 3.4.9 when tested as specified in 4.4.

TABLE I. Characteristics and requirements.

Characteristics	Requirements							
	Type I				Type II		Type III	
	Grade A		Grade B		Min.	Max.	Min.	Max.
	Min.	Max.	Min.	Max.				
Specific gravity at 20 °C/20 °C	0.810	0.871	0.770	0.845	0.825	0.875	0.855	0.980
Flash point	--	--	--	--	27 °C (81 °F)	--	50 °C (122 °F)	--
Aniline point	--	--	--	32 °C (90 °F)	--	--	--	--
Mixed aniline point	--	27 °C (81 °F)	--	--	--	28 °C (82 °F)	--	34 °C (93 °F)
Distillation at 760 mm pressure initial boiling point	88 °C (190 °F)	--	88 °C (190 °F)	--	129 °C (264 °F)	--	171 °C (340 °F)	--
50 percent (by volume)	100 °C (212 °F)	116 °C (241 °F)	100 °C (212 °F)	116 °C (241 °F)	143 °C (289 °F)	168 °C (334 °F)	182 °C (360 °F)	200 °C (392 °F)
End point	--	140 °C (284 °F)	--	140 °C (284 °F)	--	191 °C (376 °F)	--	218 °C (424 °F)
Color, Saybolt number	+25	--	+25	--	+21	--	+18	--
Nonvolatile matter (gram/100 ml)	--	0.2	--	0.2	--	0.2	--	0.2

3.4.1 Appearance. When tested as specified in 4.4.3, the naphtha shall be free from turbidity, suspended matter, and sediment.

3.4.2 Odor. When tested as specified in 4.4.3.1, the naphtha shall have an odor characteristic of that of aromatic naphtha and shall have only a faint aromatic residual.

3.4.3 Copper corrosion. When tested as specified in 4.4.3, the naphtha shall produce no more than a slight tarnish in accordance with Classification 1 of ASTM D 130 on the copper strip. The temperature of the naphtha and the time of immersion of the copper strip shall be as specified in table II for the different types of naphtha.

TABLE II. Copper corrosion.

Naphtha	Temperature	Time
Type I (grades A and B)	50 °C (122 °F)	3 hours
Types II and III	100 °C (212 °F)	3 hours

3.4.4 Doctor test. When tested as specified in 4.4.3, the naphtha shall produce no black precipitate and no discoloration and shall not noticeably mask the yellow color of the sulfur film.

3.4.5 Spot test. When tested as specified in 4.4.3.2, the naphtha shall show no evidence of stain or residual oiliness.

3.4.6 Water test. When tested as specified in 4.4.3, the naphtha shall remain clear and produce no turbidity.

3.4.7 Acidity. When tested as specified in 4.4.3, the naphtha shall show no evidence of acidity.

3.4.8 Residue. When tested as specified in 4.4.3, the residue of the naphtha shall contain no mineral acid.

3.4.9 Stability. When tested as specified in 4.4.3.3, the naphtha shall show no change in color, appearance, odor, or acidity as specified in table I for the color requirement, 3.4.1, 3.4.2, and 3.4.7.

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 assure that supplies and services conform to prescribed requirements.

4.2 Quality conformance inspection. Quality conformance inspection shall consist of the examinations of paragraph 4.3 and the tests of 4.4.

4.3 Examination.

4.3.1 Lot. For the purposes of sampling, a lot of the naphtha shall consist of a manufacturer's batch. A batch is defined as the end product of all raw materials mixed, blended, or processed in a single operation.

TT-N-97D

4.3.2 Examination of filled containers. A random sample of filled containers shall be selected in accordance with inspection level I of MIL-STD-1916. Each sample filled container shall be examined for defects of construction of the container and the closure for evidence of leakage and for unsatisfactory markings. Each filled container shall also be gauged to determine the amount of contents. The sample unit shall be one container fully prepared for delivery. The lot shall be the number of containers offered for delivery at one time. An examination shall be made to determine compliance with the requirements. Defects shall be scored as specified in table III. Any major defect shall be cause for rejection of the entire lot.

TABLE III. Examination of preparation for delivery.

Examine	Defects	Major	Minor
Container	Not as specified.	101	
Content	Not as specified.	102	
Markings	Omitted; incorrect; illegible; improper size, location, sequence or method of application.		201
Material	Component missing or damaged.	103	
Workmanship	Bulging or distortion of containers. Cushioning inadequate or improper. Inadequate closure.	104	

4.4 Testing of the end item.

4.4.1 Sampling for testing. For the purposes of sampling, the lot shall be expressed in units of gallons of naphtha. The sample unit for testing shall be one quart of naphtha randomly selected from containers in the lot. The naphtha shall be placed in separate clean, dry, metal or glass containers, sealed, marked, and forwarded to the testing laboratories. The sample size shall be as specified in table IV.

TABLE IV. Sample size.

Lot size (gallons)	Sample size
800 or less	2
801 up to and including 22,000	3
22,001 and more	5

4.4.2 Standard test conditions. Unless otherwise specified, all test specimens shall be prepared and tested in a room having a temperature of $23\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$ ($73\text{ }^{\circ}\text{F} \pm 2\text{ }^{\circ}\text{F}$) and a relative humidity of $50\text{ percent} \pm 5\text{ percent}$.

4.4.3 Test methods. All tests shall be conducted in accordance with the methods specified in table V to determine compliance with the requirements of 3.4.

TABLE V. Test methods.

Test	ASTM standard	FED-STD-141 test method	Paragraph
Specific gravity @ 20C/20C	D 891		
Flash point	D 56		
Aniline point	D 611		
Mixed aniline point	D 611		
Distillation	D 1078		
Color	D 156		
Nonvolatile matter	D 1353		
Appearance		4261	
Odor	D 1296		4.4.3.1
Copper corrosion	D 130		
Doctor test	D 235		
Spot test			4.4.3.2
Water test	D 1476		
Acidity	D 847		
Residue	D 1093		
Stability			4.4.3.3

4.4.3.1 Odor. The residual odor of the naphtha shall be determined after the filter paper has been allowed to dry at standard conditions (see 4.4.2) for 24 hours.

4.4.3.2 Spot test.

4.4.3.2.1 Apparatus. No. 2 Whatman or equal 12.5 cm in diameter filter paper.

4.4.3.2.2 Procedure. Transfer five drops of the sample by means of a small pipette or burette to the center of a No. 2 Whatman (or equivalent) filter paper, 12.5 centimeters (cm) in diameter support on a 7-cm crystallizing dish and allow the liquid to evaporate at 21 °C to 32 °C (69.8 °F to 89.6 °F), away from direct sunlight and strong drafts. Examine the paper visually for the presence of any stain or residual oiliness after 30 minutes.

4.4.3.3 Stability.

4.4.3.3.1 Apparatus. The apparatus shall consist of a glass container such as an 8-ounce oil bottle, a suitable metal bomb to hold the glass container at the required pressures, and a water or a steam bath.

TT-N-97D

4.4.3.3.2 Procedure. Approximately 200 milliliters of naphtha shall be placed in the glass container and the glass container placed in the metal bomb. A cap of glass or other oxygen-resistant material shall be placed loosely over the mouth of the glass container and the bomb shall be closed. The bomb shall be charged with oxygen to a pressure of 95 pounds per square inch (psi) to 100 psi. The pressure shall be released to the air. The charging and release operation shall be repeated. The bomb shall be charged with oxygen a third time to a pressure of 98 psi to 100 psi and tested for leaks. If no leaks are found, the charged bomb shall be placed in the water or steam bath maintained for 98 °C to 100 °C (208 °F to 212 °F) for a period of 4 hours ± 5 minutes. The bomb shall then be removed from the bath and cooled in cold water. After the bomb has cooled, the pressure shall be released and the glass container shall be removed. The naphtha shall be tested to determine compliance with the requirements of 3.4.9.

5. PACKAGING

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

5.1.1 Civil agencies. The naphtha of one type and grade shall be furnished in 1-quart or 1-gallon quantity, as specified (see 6.2(d)), in metal or plastic containers conforming to 49 CFR 171-178, as applicable.

5.1.2 Military agencies. The packaging shall be in accordance with MIL-STD-290.

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

5.2.1 Civil agencies. Twelve one-quart or six one-gallon containers shall be packed in a box conforming to 49 CFR 171-178, as applicable.

5.2.2 Military agencies. Packing shall be in accordance with MIL-STD-290.

5.3 Marking.

5.3.1 Civil agencies. In addition to 5.3.3 and any special marking required by the procurement document, marking of the unit and shipping container shall be in accordance with FED-STD-123.

5.3.2 Military agencies. Marking shall be in accordance with MIL-STD-290.

5.3.3 Precautionary marking. Each unit container shall bear a label printed in bold type and securely affixed to the unit container as follows (see 3.1):

Caution:

DANGER - HARMFUL OR FATAL IF SWALLOWED

Contains aromatic naphtha.

Avoid frequent or prolonged contact with skin.

Use in a well ventilated area.

If swallowed, do not induce vomiting.

Call physician immediately.

Keep out of the reach of children.

Keep away from heat or open flame.

FLAMMABLE VAPOR HARMFUL

DO NOT USE IN OFFICE WORK OR IN BUILDING MAINTENANCE.

6. NOTES

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

6.1 Intended use. The naphtha is intended for use in the manufacture of paints and the formulation of other industrial products.

6.2 Acquisition requirements. Acquisition documents should specify the following:

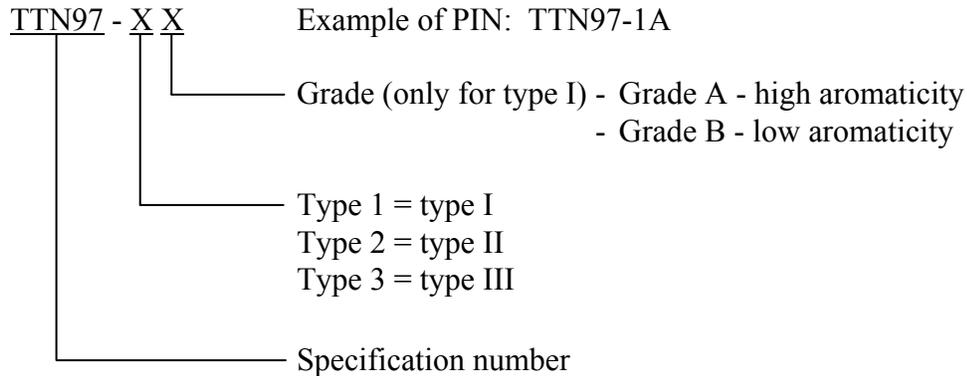
- a. Title, number, revision, and date of this standard.
- b. Type required (see 1.2.1).
- c. Grade required (only for Type I) (see 1.2.2).
- d. Packaging, packing, and marking requirements (see 5.1, 5.2, and 5.3).

6.3 Materials safety data sheet (MSDS). Contracting officers will identify those activities requiring copies of completed MSDS prepared in accordance with FED-STD-313 and meeting the requirements of 29 CFR 1910.1200. The pertinent government mailing addresses for submission of the data are listed in FED-STD-313 and 29 CFR 1910.1200 requires that the MSDS for each hazardous chemical used in an operation must be readily available to personnel using the material. Contracting officers will identify the activities requiring copies of the MSDS.

6.4 Unit quantity. Aromatic petroleum naphtha should be purchased by volume, the unit being a U.S. gallon of 231 cubic inches at 20 °C (68 °F). The volume may be determined by dividing the net weight, in pounds, by the weight per gallon. To obtain the weight per gallon, multiply the specific gravity at 20 °C/20 °C (68 °F/68 °F) by 8.322. One gallon of naphtha at 20 °C weighs 6.53 pounds to 7.36 pounds, depending upon the type and grade.

TT-N-97D

6.5 Part or identification number (PIN). The following PIN procedure is for government purposes and does not constitute a requirement for the contractor.



6.6 Subject term (key word) listing.

hydrocarbon
 paint
 petroleum

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

MILITARY INTERESTS:

Custodians:
 Army - MI
 Navy - AS
 Air Force - 68

Review Activities:

Navy - MC
 Navy - OS

CIVIL AGENCY
 COORDINATING ACTIVITY:

GSA - FSS

Preparing Activity:

DLA - GS3

(Project 6810-2007-003)

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST database at <http://assist.daps.dla.mil>.