

METRIC

O-E-751E  
10 June 2020  
SUPERSEDING  
O-E-751D  
4 May 2015

## FEDERAL SPECIFICATION

### ETHER, PETROLEUM; TECHNICAL GRADE

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 technical grade petroleum ether to be used as a solvent.

#### 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.

Code of Federal Regulations (CFR)

49 CFR 172.101 -Purpose and Use of Hazardous Materials Table.

(Electronic copies of the CFR are available online at <https://gov.ecfr.io/cgi-bin/ECFR>)

Comments, suggestions, or questions on this document should be addressed to DLA Aviation, VEB, 8000 Jefferson Davis Highway, Richmond, VA 23297-5616 or e-mailed to [STDZNMGT@dla.mil](mailto:STDZNMGT@dla.mil). Since contact information can change, you may want to verify the currency of this address information using the ASSIST database at <https://assist.dla.mil>.

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

## ASTM International

ASTM D86	- Standard Test Method for Distillation of Petroleum Products and Liquid Fuels at Atmospheric Pressure.
ASTM D130	- Standard Test Method for Corrosiveness to Copper from Petroleum Products by Copper Strip Test.
ASTM D156	- Standard Test Method for Saybolt Color of Petroleum Products (Saybolt Chromometer Method).
ASTM D287	- Standard Test Method for API Gravity of Crude Petroleum and Petroleum Products (Hydrometer Method).
ASTM D1093	- Standard Test Method for Acidity of Hydrocarbon Liquids and Their Distillation Residues.
ASTM D1319	- Standard Test Method for Hydrocarbon Types in Liquid Petroleum Products by Fluorescent Indicator Adsorption.
ASTM D1353	- Standard Test Method for Nonvolatile Matter in Volatile Solvents for Use in Paint, Varnish, Lacquer, and Related Products.
ASTM D2710	- Standard Test Method for Bromine Index of Petroleum Hydrocarbons by Electrometric Titration.

(Electronic copies of ASTM documents are available from <https://www.astm.org>)

## 3. REQUIREMENTS

3.1 Material. The material shall be as specified in paragraphs 3.2 through 3.11.

3.2 Appearance. The petroleum ether shall be a clear liquid, free from suspended matter and sediment (see 4.3.1).

3.3 Odor. The odor of the material as received and during evaporation shall not be disagreeable or sulfuretted. There shall be no residual odor after evaporation (see 4.3.2).

3.4 Color. The color shall be not darker than Saybolt color 28 (see 4.3.3).

3.5 Nonvolatile matter. The nonvolatile matter shall be not more than 1.0 milligram (mg) per 100 milliliters (ml) of material (see 4.3.4).

3.6 Acidity. The petroleum ether shall be neutral (non-acidic) (see 4.3.5).

3.7 Distillation range. The initial boiling point shall be not less than 35 °C and the dry flask end point shall be not greater than 65 °C (see 4.3.6).

3.8 Specific gravity. Specific gravity shall be not less than 0.6360 (91.0 °API) or more than 0.6476 (87.0 °API) (see 4.3.7).

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3.9 Unsaturation. The bromine index shall be not more than 350 mg per 100 g of material (see 4.3.8).

3.10 Aromatics. Aromatics shall be not greater than 3.0 percent (see 4.3.9).

3.11 Free and corrosive sulfur. There shall be no more than a light orange tarnish (rating of 1a) on a copper strip specimen (see 4.3.10).

#### 4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract (see 6.2 and 6.5), the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract (see 6.2 and 6.5), 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. Unless otherwise specified (see 6.2), the product shall be tested in accordance with the tests specified in paragraph 4.3.1 through 4.3.10.

##### 4.3 Test methods.

4.3.1 Appearance. Pour some of the thoroughly mixed sample into a test tube, stopper, and allow to stand for at least ten minutes at room temperature (20 °C to 30 °C). Examine by transmitted light for clarity, suspended matter, and sediment.

4.3.2 Odor. Note the odor of the material in the container. Dip uniform strips of double acid washed filter paper in the sample. Allow to dry in a well ventilated room at 20 °C to 30 °C for one hour. Note the odor at the start of the drying period and at 15 minute intervals during the drying period. At the end of the drying period, note whether there is any residual odor.

4.3.3 Color. The test for color shall be in accordance with ASTM D156.

4.3.4 Nonvolatile matter. The test for nonvolatile matter shall be in accordance with ASTM D1353.

4.3.5 Acidity. The test for acidity shall be in accordance with ASTM D1093.

4.3.6 Distillation range. The test for distillation range shall be in accordance with ASTM D86.

4.3.7 Specific gravity. The test for specific gravity shall be in accordance with ASTM D287.

4.3.8 Unsaturation. The test for bromine index shall be in accordance with ASTM D2710.

4.3.9 Aromatics. The test for aromatics shall be in accordance with ASTM D1319.

4.3.10 Free and corrosive sulfur. The test for copper corrosion shall be in accordance with ASTM D130 using the pressure vessel method at a temperature of 50 °C for 3 hours.

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## 5. PACKAGING

5.1 Packaging. Preservation, packing, and marking shall be as specified in the acquisition order (see 6.2).

## 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 petroleum ether specified in this document is a grade intended for use as a solvent. This product is not intended for medical purposes. CAUTION: Petroleum ether is highly flammable and when mixed with air may form an explosive mixture.

6.2 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number, revision, and date of this specification.
- b. Responsibility for inspection, if different (see 4.1).
- c. Facilities for inspection, if different (see 4.1).
- d. Quality conformance tests, if different (see 4.2).
- e. Packaging (see 5.1).

6.3 Safety data sheet (SDS). Contracting officers will identify those activities requiring copies of completed SDS 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 SDS 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 SDS.

6.4 Sampling and testing precautions. This specification requires inspection of chemical material that is potentially hazardous to personnel. This specification does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this specification to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

6.5 Submission of alternate inspection provisions. Proposed alternative inspection provisions should be submitted by the contractor to the procuring contracting officer for evaluation and approval by the technical activity responsible for preparation of this specification.

6.6 Standard sample. When practicable, an original unopened container shall be sent to the laboratory for test. When this is not practicable, a representative composite sample shall be taken from each delivery, placed in a clean glass bottle, sealed and sent to the laboratory for test. The sample shall be not less than two quarts or more than two gallons.

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

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6.8 Shelf-life. This specification covers items where the assignment of a Federal shelf-life code is a consideration. Specific shelf-life requirements should be specified in the contract or purchase order, and should include, as a minimum, shelf-life code, shelf-life package markings in accordance with MIL-STD-129 or FED-STD-123, preparation of a materiel quality storage standard for type II (extendible) shelf-life items, and a minimum of 85 percent shelf-life remaining at time of receipt by the Government. These and other requirements, if necessary, are in DoDM 4140.27 Volumes 1 and 2. The shelf-life codes are in the Federal Logistics Information System Total Item Record. Additive information for shelf-life management may be obtained from DoDM 4140.27 Volumes 1 and 2, or the designated shelf-life Points of Contact (POC). The POC should be contacted in the following order: (1) the Inventory Control Points that manage the item and (2) the DoD Service and Agency administrators for the DoD Shelf-Life Program. Appropriate POCs for the DoD Shelf-Life Program can be contacted through the DoD Shelf-Life Management website: <https://www.shelflife.dla.mil/>.

#### 6.9 Subject term (key word) listing.

Solvent

6.10 Changes from previous issue. The margins of this specification are marked with vertical lines to indicate where changes from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the previous issue.

#### MILITARY INTERESTS:

Custodian:  
 Army – EA  
 Air Force - 68  
 DLA – GS

#### CIVIL AGENCY COORDINATING ACTIVITY:

GSA - FAS

Preparing Activity:  
 DLA - GS3

(Project 6810-2020-020)

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 <https://assist.dla.mil/>.