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P-D-680
March 27, 1963

SUPERSEDING
Int. Fed. Spec. P-S-00661c(GSA-FSS)
June 18, 1962 and
Fed. Spec. P-S-661b
April 6, 1953

FEDERAL SPECIFICATION

DRY CLEANING SOLVENT

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 two types of petroleum distillates employed for dry cleaning of textile materials, and referred to industrially as "Stoddard Solvent" and as "140° F. Solvent".

1.2 Classification.

1.2.1 *Types.* Dry-cleaning solvent shall be of the following types, as specified:

Type I.—100°F. Solvent (Stoddard Solvent).

Type II.—140°F. Solvent.

2. APPLICABLE SPECIFICATIONS, STANDARDS, AND OTHER PUBLICATIONS

2.1 Specifications and Standards. The following specifications and standards, of the issues in effect on date of invitation for bids, form a part of this specification:

Federal Standards:

Fed. Std. No. 102—Preservation, Packaging, and Packing Levels.
Fed. Std. No. 123—Marking for Domestic Shipment (Civilian Agencies).
Fed. Test Method Std. No. 791—Lubricants, Liquid Fuels, and Related Products; Methods of Testing.

(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, Standards, and Handbooks 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 25, D. C.

(Single copies of this specification and other product specifications required by activities outside the Federal Government for bidding purposes are available without charge at the General Services Administration Regional Offices in Boston, New York, Washington, D. C., Atlanta, Chicago, Kansas City, Mo., Dallas, Denver, San Francisco, and Auburn, Wash.

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

Military Standards:

MIL-STD-105—Sampling Procedures and Tables for Inspection by Attributes.
MIL-STD-129—Marking for Shipment and Storage.
MIL-STD-290—Packaging, Packing and Marking of Petroleum and Related Products.

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

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2.2 **Other publications.** The following publications form a part of this specification. Unless otherwise indicated, the issues in effect on date of invitation for bids shall apply:

American Society for Testing and Materials Publication:

Part 7—Petroleum Products and Lubricants.

(Copies may be obtained from the American Society for Testing and Materials, 1916 Race Street, Philadelphia 3, Pennsylvania.)

Uniform Classification Committee Publication:

Uniform Freight Classification Rules.

(Application for copies should be addressed to Uniform Classification Committee, 202 Union Station, Chicago 6, Illinois.)

3. REQUIREMENTS

3.1 **Material.** The material shall be a petroleum distillate.

3.2 **Physical and chemical properties.** The physical and chemical properties of the solvents shall conform to the requirements specified in table I.

3.3 **Workmanship.** The dry cleaning solvent shall be clear, free from suspended matter and undissolved water as determined by visual inspection.

4. SAMPLING, INSPECTION, AND TEST PROCEDURES

4.1 The supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified, the supplier may utilize his own or any other inspection facilities and services acceptable to the Government. Inspection records of the examinations and tests shall be kept complete and available to the Government as specified in the contract or order. 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.

TABLE I. *Physical and chemical properties*

	Type I	Type II	Test Para.
Appearance	Clear, free from suspended matter, and undissolved water		4.4.2
Color, Saybolt, not greater than	21	21	
Odor	Sweet	Sweet	4.4.3
Corrosion of copper strip 212° F. for 3 hours	Slight tarnish[1]		
Distillation range:			
Initial boiling pt., min.	300° F.	350° F.	
50% distilled by vol., min.	350° F.	375° F.	
End point, max.	410° F.	415° F.	
Distillation residue, max.	1.5%	1.5%	4.4.4
Acidity-reaction of residue to methyl orange	Neutral	Neutral	4.4.5
Doctor test	Negative	Negative	4.4.1
Flash Point, Tag Closed Cup, min.	100° F.	138° F.	4.4.1
Sulfuric acid absorption, max.	5%	5%	4.4.1

[1] Shall correspond to classification number 1 of ASTM designation D 130.

4.2 **Sampling.**

4.2.1 *Lot.* For purposes of sampling, a lot shall consist of solvents from one batch or tank offered for delivery at one time. If material cannot be identified by batch or tank, a lot shall consist of not more than 10,000 gallons offered for delivery at one time.

4.2.2 *Sampling for inspection of containers.* A random sample of filled containers shall be taken by the Government inspector in accordance with Military Standard MIL-

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STD-105 at inspection level I and acceptable quality level = 2.5 percent defective to verify compliance with this specification in regard to fill, closure, marking, and other requirements not involving tests.

4.2.3 *Sampling for tests.* From each inspection lot (see 4.2.1), the inspector shall take two containers at random. From each of the two containers 1-quart specimens shall be taken and placed in separate, clean, dry, metal, or glass containers, and then sealed, marked, and forwarded to the testing laboratory designated by the procuring activity.

4.3 **Inspection of containers.** 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 be weighed to determine the amount of contents. Any container in the sample having one or more defects, or under required fill, shall be rejected and if the number of defective containers in any sample exceeds the acceptance number for the appropriate sampling plan of MIL-STD-105, the lot represented by the sample shall be rejected.

4.4 **Test procedures**

4.4.1 *Physical and chemical properties.* These determinations shall be made in accordance with the methods specified in table II.

4.4.2 *Appearance.* Examine the solvent for undissolved water, sediment and suspended matter by the use of transmitted light.

4.4.3 *Odor.* If the odor is questionable the following test shall be performed. Desized and laundered bleached cotton cloth of 3.6 to 4.0 ounces per square yard shall be used for this test. The cloth when lightly steamed shall have no odor except that of clean cotton cloth. The cloth shall be conditioned at 50 to 80 percent R.H. and 65° to 90°F. for 4 hours. A piece of the conditioned cloth approximately 12 inches square shall be placed in 100 milliliters of solvent so as to be completely submerged, and allowed to soak for 5 minutes. The cloth shall then be removed, drained, but not squeezed or extracted and hung at room temperature for 2 hours. The cloth shall then be dried in a stream of fresh air heated to 140° to 160° F. (60° to 71°C.) for 1 hour. The odor of the dried cloth when steamed over boiling water for 4 to 5 seconds, shall not differ from that of an untreated sample similarly steamed.

TABLE II. *Test procedures*

	Applicable method in Fed. Test Method Std. No. 791	Test method paragraph	Requirement paragraph
Appearance	—	4.4.2	Table I
Color	101.6	—	Table I
Odor	—	4.4.3	Table I
Copper Corrosion .	5325.2	—	Table I
Distillation			
Distillation range	1001.9		Table I
Distillation residue		4.4.4	Table I
Acidity	—	4.4.5	Table I
Doctor test	5203.2	—	Table I
Flash point	1101.5	—	Table I
Sulfuric Acid Absorption	(See Note)	—	

Note: Determine according to ASTM D484-52.

4.4.4 *Distillation residue.* Pour the distillation residue from the flask into a small cylinder graduated to 0.1 milliliter. Cool, measure and record the volume as residue.

4.4.5 *Acidity.* Make this test immediately after recording the volume of distillation residue. Transfer the cooled residue to a test tube, add three volumes of distilled water, and shake the tube thoroughly. Allow the mixture to separate and remove the aqueous layer to a clean test tube by means of a pipette. Add 1 drop of 0.1 percent aqueous solution of methyl orange. A pink or red color indicates the presence of mineral acid.

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5. PREPARATION FOR DELIVERY

For civil agency procurement, the definitions and applications of the levels of packaging and packing shall be in accordance with Fed. Std. No. 102.

5.1 Packaging and packing.

5.1.1 *Levels A and B.* The solvent shall be packaged and packed in accordance with MIL-STD-290 as specified for the applicable level (see 6.2).

5.1.2 *Level C.* Commercial unit and bulk containers shall be packed so as to be acceptable by common or other carriers for safe transportation to point of destination specified in shipping instruction at the lowest transportation rate.

5.2 Marking.

5.2.1 *Civil agencies.* In addition to any special marking required by the contract or order, marking for shipment shall be in accordance with Fed. Std. No. 123.

5.2.2 *Military agencies.* In addition to any special marking required by the contract or order, marking for shipment shall be in accordance with MIL-STD-129.

6. NOTES

6.1 Intended use. The product is intended for use as a dry-cleaning solvent.

6.1.1 Type I is intended for use as a comparatively safe dry-cleaning solvent.

6.1.2 Type II is intended for use in dry-cleaning plants where a solvent with a higher flash-point is desirable as an additional safety factor.

6.2 Ordering data. Procurement documents should specify the following:

(a) Title, number and date of this specification.

(b) Type of solvent required (see 1.2).

(c) Size of containers and level of protection required (see 5.1 and 5.2).

6.3 Purchase unit. The solvent shall be purchased by volume, the unit being a U.S. gallon of 231 cubic inches at 60°F. (15.6°C.). The volume may be determined by dividing the net weight, in pounds, by the weight per gallon.

6.4 Transportation description. Transportation descriptions and minimum weights applicable to this commodity are:

Rail:

Chemicals, not otherwise indexed by name.

Carload minimum weight 24,000 pounds, subject to Rule 34, Uniform Freight Classification.

Motor:

Chemicals, not otherwise indexed.

Truckload minimum weight 24,000 pounds, subject to Rule 115, National Motor Freight Classification.

6.5 Certification. Solvent delivered in cans, drums, or tank cars shall either be accompanied by an official gager's certificate showing the net contents of each container and also the temperature of the contents at the time of gaging or shall be subject to gaging by the Government inspector. In the absence of a statement of the temperature at the time of gaging on the official gager's certificate, or in case the barrels show evidence of loss by leakage or other shortages, the delivery shall be subject to

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re-inspection and re-gaging by the Government inspector.

Notice. When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility, nor any obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data, is not to be regarded by implication or otherwise, as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

MILITARY INTERESTS:

Army—MU MR GL

Navy—Sh

Air Force—MAAMA

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5. PROBLEM AREAS

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b. Recommended Wording:

c. Reason/Rationale for Recommendation:

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