

TT-I-735a

July 11, 1943

SUPERSEDING

Fed. Spec. TT-I-725

Nov. 2, 1939

(See 6.4)

FEDERAL SPECIFICATION

ISOPROPYL ALCOHOL

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 the requirements for isopropyl alcohol.

1.2 **Classification.**

1.2.1 **Grades.** Isopropyl alcohol shall be furnished in the following grades, as specified (see 6.1).

Grade A.—Water content 0.1 percent maximum.

Grade B.—Water content 0.4 percent maximum.

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 Specification:

TT-P-143—Paint, Varnish, Lacquer, and Related Materials; General Specifications for Packaging, Packing, and Marking.

Federal Standards:

Fed. Std. No. 102—Preservation, Packaging, and Packing Levels.

Fed. Test Method Std. No. 141—Paint, Varnish, Lacquer, and Related Materials; Methods of Inspection, Sampling, and Testing.

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, Washington.

(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 Standard:

MIL-STD-105—Sampling Procedures and Tables for Inspection by Attributes.

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

2.2 Other publications. The following document forms a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids shall apply:

American Society for Testing and Materials:

ASTM Standards, Part 8.

(Copies may be obtained from the American Society for Testing and Materials, 1916 Race Street, Philadelphia 8, Pennsylvania.)

3. REQUIREMENTS

3.1 Quantitative requirements. The isopropyl alcohol shall conform to the requirements specified in table I.

3.2 Qualitative requirements.

3.2.1 Appearance. The isopropyl alcohol shall be clear and free from sediment and suspended matter when examined by transmitted light.

3.2.2 Odor. The isopropyl alcohol shall have the characteristic odor of isopropyl alcohol and leave no residual odor after drying on filter paper for 2 hours.

3.2.3 Hydrocarbons. The isopropyl alcohol shall be miscible without turbidity when diluted to ten volumes with distilled water at 20°C.

3.2.4 Corrosion. The isopropyl alcohol shall not cause pitting nor black stain on a copper strip when tested as specified in section 4. However, a slight brown stain shall not be cause for rejection.

3.3 Workmanship. The isopropyl alcohol shall conform to the best commercial practice covering this class of material.

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. The Government reserves the right to perform any of the inspections set forth in the specifications where such inspections are deemed necessary to assure that supplies and services conform to prescribed requirements.

4.1.1 For military agencies. Supplier responsibilities shall be as specified in method 1031.1 of Fed. Test Method Std. No. 141.

TABLE I.—Quantitative requirements

Characteristics	GRADE A		GRADE B		Test reference paragraph
	Min.	Max.	Min.	Max.	
Acidity (percent as acetic acid)	--	0.002	--	0.002	4.4.1
Distillation range:					
Initial boiling point °C.	81.8	--	81.8	--	4.4.1
Dry Point °C.	--	83.0	--	83.0	--
Nonvolatile Matter (gram per 100 ml.) ...	--	0.002	--	0.002	4.4.4
Specific gravity at 20°/20°C.	0.7862	0.7876	0.7862	0.7878	4.4.1
Water content (percent)	--	0.10	--	0.40	4.4.2
Color (platinum cobalt scale)	--	10	--	10	4.4.5

4.2 Sampling. Sampling shall be performed in accordance with method 1021 of Fed. Test Method Std. No. 141.

4.3 Inspection. Inspection shall be performed in accordance with method 1011 of Fed. Test Method Std. No. 141.

4.3.1 *For military agencies.* A random sample of filled containers shall be selected in accordance with MIL-STD-105 at Inspection Level I and Acceptance Quality Level of 2.5 percent defective to verify all requirements of this specification in regard to fill, closure, packaging, packing, marking, workmanship, and other requirements not involving tests.

4.3.1.1 *Resubmitted inspection lots.* Paragraph 12.2 of MIL-STD-105 shall apply except that a resubmitted inspection lot shall be inspected using tightened inspection. For visual examination, where the original acceptance number was zero, a sample size represented by the next higher sample size code letter shall be chosen.

4.4 Tests. Tests shall be made in accordance with the applicable methods of Fed. Test Method Std. No. 141 and as specified herein.

4.4.1 The following tests shall be conducted in accordance with Fed. Test Method Std. No. 141.

TABLE II.

Tests	Method No.
Acidity	5252
Distillation range	4301
Specific gravity (any convenient method enumerated)	4183
Appearance	4261
Odor	4401
Corrosion	5101

4.4.2 *Water content.* Water content of the isopropyl alcohol shall be determined in accordance with Method 3253 of Federal Test Method Standard No. 791.

4.4.3 *Hydrocarbons.* Place 25 milliliters of

the isopropyl alcohol in a clean 250-ml. graduated cylinder, dilute to the 250-ml. mark with distilled water and mix thoroughly. Allow the air bubbles to rise to the surface. Place 250 milliliters of distilled water in a second clean 250-ml. graduate. Place the graduates side by side on a dark background in such a manner that the light source (natural or artificial) will pass transversely through the columns of liquid. Compare the appearance of the sample solution with that of the distilled water by viewing the liquids from directly above and through the lengths of their columns. The sample solution shall be as free from turbidity as the water.

4.4.4 *Nonvolatile matter.* One hundred milliliters of the isopropyl alcohol shall be placed in a tared evaporating dish and evaporated almost to dryness over a steam bath. The dish and residue shall be dried in an oven at $105^{\circ} \pm 2^{\circ}\text{C}$. ($221^{\circ} \pm 4^{\circ}\text{F}$. to constant weight, cooled in a desiccator and weighed. The difference in weight shall be reported as grams of nonvolatile matter per 100 milliliters of the sample.

4.4.5 *Color.* The color of the isopropyl alcohol shall be determined in accordance with method D 1209-54 of the American Society for Testing and Materials Standards.

5. PREPARATION FOR DELIVERY

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

5.1 *Packaging, packing and marking.* Packaging, packing and marking shall be in accordance with TT-P-143 as specified for the applicable level.

5.1.1 *Special marking.* Each container shall have affixed to it a white label with the following information printed in red letters thereon:

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Warning:**Flammable**

Keep away from heat and open flame.
 Keep container closed.
 Avoid prolonged breathing of vapors.
 Use with adequate ventilation.

6. NOTES

6.1 Intended use. Grade A isopropyl alcohol as covered by this specification is intended for use as an intermediate in the manufacture of chemicals. Grade B isopropyl alcohol, is intended for use in organic coatings, anti-icing fluid and ordnance material.

6.2 Ordering data. Purchasers should exercise any desired options offered herein, and procurement documents should specify the following:

- (a) Title, number, and date of this specification.
- (b) Grade required (1.2.1).
- (c) Levels of packaging, packing, and marking (5.1).
- (d) Size of container required.

6.3 Basis of purchase. The material should be purchased by volume, the unit being a U. S. Gallon, 281 cubic inches at 15°C. (60°F.).

6.4 Supersession data. This specification includes the requirements of Military Specification MIL-F-5556 dated 6 January 1956

and Military Specification MIL-I-10428A (Cml C) dated 22 December 1958.

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

Rail:

Isopropyl alcohol solvent
 Carload minimum weight 30,000 pounds.

Motor:

Isopropyl alcohol solvent
 Truckload minimum weight 30,000 pounds, subject to Rule 115, National Motor Freight Classification.

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MILITARY INTEREST:

Army—MU
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