



Standard Specification for Vapor-Degreasing Grade and General Solvent Grade 1,1,1-Trichloroethane¹

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This standard has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 This specification covers vapor-degreasing grade and general solvent grade 1,1,1-trichloroethane. High purity grades of 1,1,1-trichloroethane are available but should not be evaluated by this specification.

1.2 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

NOTE 1—Practices D 3844 and D 4276, STP 403A² and MNL2³ provide additional important information on vapor degreasing and solvent properties.

2. Referenced Documents

2.1 ASTM Standards:

- D 1078 Test Method for Distillation Range of Volatile Organic Liquids⁴
- D 2108 Test Method for Color of Halogenated Organic Solvents and Their Admixtures (Platinum-Cobalt Scale)⁵
- D 2109 Test Methods for Nonvolatile Matter in Halogenated Organic Solvents and Their Admixtures⁵
- D 2111 Test Methods for Specific Gravity of Halogenated Organic Solvents and Their Admixtures⁵
- D 2942 Test Method for Total Acid Acceptance of Halogenated Organic Solvents (Nonreflux Methods)⁵
- D 2943 Method of Aluminum Scratch Test for 1,1,1-Trichloroethane⁵
- D 2988 Test Method for Water-Soluble Halide Ion in Halo-

- generated Organic Solvents and Their Admixtures⁵
- D 2989 Test Method for Acidity-Alkalinity of Halogenated Organic Solvents and Their Admixtures⁵
- D 3401 Test Methods for Water in Halogenated Organic Solvents and Their Admixtures⁵
- D 3741 Test Method for Appearance of Admixtures Containing Halogenated Organic Solvents⁵
- D 3844 Practice for Labeling Halogenated Hydrocarbon Solvent Containers⁵
- D 4276 Practice for Confined Area Entry⁵
- D 6806 Practice for Analysis of Halogenated Organic Solvents and Their Admixtures by Gas Chromatography⁵

2.2 Other Documents:

- 29 CFR 1910.1200 Department of Labor, OSHA Regulations, Hazard Communication⁶
- 40 CFR 82 Environmental Protection Agency, Protection of Stratospheric Ozone⁶
- 49 CFR 100 to 199 Department of Transportation Hazardous Materials Regulations⁶

3. Properties

3.1 Vapor degreasing grade and general solvent grade 1,1,1-trichloroethane shall conform to the requirements prescribed in Table 1.

4. Packaging

4.1 Package and label industrial or commercial quantities in accordance with DOT regulations in 49 CFR 100 to 199, in accordance with state and local regulations, in accordance with OSHA regulations found in 29 CFR 1910.1200, and in accordance with EPA regulations found in 40 CFR 82 Subpart E.

5. Keywords

5.1 1,1,1-trichloroethane; methyl chloroform; vapor-degreasing solvent

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² *Cold Cleaning with Halogenated Solvents, STP 403A, ASTM.*

³ *Manual on Vapor Degreasing, MNL2, third edition, ASTM.*

⁴ *Annual Book of ASTM Standards, Vol 06.04.*

⁵ *Annual Book of ASTM Standards, Vol 15.05.*

⁶ The Code of Federal Regulations may be obtained from the Superintendent of Documents, US Government Printing Office, Washington, DC 20402.

TABLE 1 Properties

| Property | Specification | Test Method |
|---|--------------------------------------|-------------|
| Specific gravity, 25/25°C | 1.300 to 1.327 | D 2111 |
| Distillation range (760 mm Hg) | | D 1078 |
| Initial boiling point, °C, min | 70.0 | |
| Dry point, °C, max | 88.0 | |
| Acidity (as HCl), weight, %, max | 0.0010 | D 2989 |
| Alkalinity (as NaOH), weight, %, max | 0.020 | D 2989 |
| Water, weight, %, max | 0.0100 | D 3401 |
| Appearance | clear and free from suspended matter | D 3741 |
| Color, Pt-Co, max | 20 | D 2108 |
| Halide (as Cl ⁻), weight, %, max | 0.0005 | D 2988 |
| Nonvolatile residue, weight, %, max | 0.0050 | D 2109 |
| Acid acceptance (as NaOH), weight, %, min | 0.160 | D 2942 |
| Aluminum scratch | Passes test | D 2943 |
| 1,1,1-trichloroethane content, weight, %, min | 90 | D 6806 |

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