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Standard Specification for Reclaimed 1,1,1-Trichloroethane[1]

This standard is issued under the fixed designation D5394; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This specification defines Type I (high quality reclaimed 1,1,1-trichloroethane, approximating MIL Specification), Type II (good quality reclaimed solvent), Type III (minimal acceptable reclaimed solvent).

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.* For a specific hazards statement see Section 4.

1.3 1,1,1-trichloroethane also is known commercially as methyl chloroform.

2. Referenced Documents

2.1 *ASTM Standards:*[2]

D2106 Test Methods for Determination of Amine Acid Acceptance (Alkalinity) of Halogenated Organic Solvents

D2108 Test Method for Color of Halogenated Organic Solvents and Their Admixtures (Platinum-Cobalt Scale)

D2109 Test Methods for Nonvolatile Matter in Halogenated Organic Solvents and Their Admixtures

D2942 Test Method for Total Acid Acceptance of Halogenated Organic Solvents (Nonreflux Methods)

D2943 Test Method for Aluminum Scratch of 1,1,1-Trichloroethane to Determine Stability

D2988 Test Methods for Water-Soluble Halide Ion in Halogenated Organic Solvents and Their Admixtures

D2989 Test Method for Acidity-Alkalinity of Halogenated Organic Solvents and Their Admixtures

D3401 Test Methods for Water in Halogenated Organic Solvents and Their Admixtures

D3741 Test Methods for Appearance of Admixtures Containing Halogenated Organic Solvents

D6806 Practice for Analysis of Halogenated Organic Solvents and Their Admixtures by Gas Chromatography

2.2 *Other Documents:*

STP-310A Handbook of Vapor Degreasing[3]

STP-403A Cold Cleaning with Halogenated Solvents[4]

3. Properties

3.1 Reclaimed 1,1,1-trichloroethane, Type I, shall conform to the requirements of Table 1.

3.2 Reclaimed 1,1,1-trichloroethane, Type II, shall conform to the requirements of Table 2. See STP-310A.

3.3 Reclaimed 1,1,1-trichloroethane, Type III, shall conform to the requirements of Table 3. See STP-403A.

3.4 This specification does not address the possibility of product flash points due to the presence of flammable constituents. However, flash point must be determined for proper labeling and shipment. The Tag closed-cup procedure is recommended.

3.5 Specific gravity for these grades typically will be between 1.25 and 1.37.

4. Hazards

4.1 Due to the possible presence of low level foreign contaminants in reclaimed 1,1,1-trichloroethane, the user is cautioned to use due care in determining the effects of these contaminants.

4.2 1,1,1-trichloroethane should not be handled, stored, pumped, metered, etc., in aluminum equipment or with aluminum components. Mixtures with finely divided aluminum or zinc powders should be avoided.

5. Keywords

5.1 1,1,1-trichloroethane; Types I, II, and III; halogenated solvent; methyl chloroformreclaimed

[1] This specification is under the jurisdiction of ASTM Committee D26 on Halogenated Organic Solvents and Fire Extinguishing Agents and is the direct responsibility of Subcommittee D26.02 on Vapor Degreasing.

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[3] *Symposium on Vapor Degreasing, ASTM STP 310A*, ASTM.

[4] *Symposium on Cold Cleaning With Halogenated Solvents, ASTM STP 403A*, ASTM.

TABLE 1 Properties, Type I

Property	Specification	Test Method
Appearance	Free of turbidity and suspended matter	D3741
1,1,1-trichloroethane, weight %, min	92	D6806
Nonvolatile residue, weight %, max	0.0040	D2109
Color, Pt-Co, max	25	D2108
Water, weight %, max	0.015	D3401
Acid acceptance as NaOH, weight %, min	0.20	D2942
Aluminum scratch test	Passes[A]	D2943
Acidity as HCl, weight %, max	0.001	D2989
Alkalinity as NaOH, weight %, max	0.020	D2106
Halide as Cl, weight %, max	0.0005	D2988

[A] Distill 100 mL solvent, collect 50 mL distillate, and conduct scratch test on distillate and portion remaining in distillation flask.

TABLE 2 Properties, Type II

Property	Specification	Test Method
Appearance	Free of turbidity and suspended matter	D3741
1,1,1-trichloroethane, weight %, min	90	D6806
Nonvolatile residue (NVR), weight %, max	0.010	D2109
Color, Pt-Co, max	30	D2108
Water, weight %, max	0.015	D3401
Acid acceptance as NaOH, weight %, min	0.20	D2942
Aluminum scratch test	Passes[A]	D2943
Acidity as HCl, weight %, max	0.001	D2989
Alkalinity as NaOH, weight %, max	0.020	D2106
Halide as Cl, weight %, max	0.0005	D2988

[A] Distill 100 mL solvent, collect 50 mL distillate, and conduct scratch test on distillate and portion remaining in distillation flask.

TABLE 3 Properties, Type III[A]

Property	Specification	Test Method
Appearance	Free of turbidity and suspended matter	D3741
1,1,1-trichloroethane, weight %, min	88	D6806
Nonvolatile residue, weight %, max	0.020	D2109
Color, Pt-Co, max	50	D2108
Water, weight %, max	0.020	D3401
Acid acceptance as NaOH, weight %, min	0.20	D2942
Aluminum scratch test	Passes[B]	D2943
Acidity as HCl, weight %, max	0.002	D2989
Alkalinity as NaOH, weight %, max	0.020	D2106

[A] Type III reclaimed 1,1,1-trichloroethane is not recommended for use in precision cleaning or vapor degreasing applications.
[B] Distill 100 mL solvent, collect 50 mL distillate, and conduct scratch test on distillate and portion remaining in distillation flask.