



Designation: D 5394 – 97

Standard Specification for Reclaimed 1,1,1-Trichloroethane¹

This standard is issued under the fixed designation D 5394; 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:

- D 2106 Test Method for the Determination of Amine Acid Acceptance (Alkalinity) of Halogenated Organic Solvents²
- D 2108 Test Method for Color of Halogenated Organic Solvents and Their Admixtures (Platinum-Cobalt Scale)²
- D 2109 Test Methods for Nonvolatile Matter in Halogenated Organic Solvents and Their Admixtures²
- D 2942 Test Method for Total Acid Acceptance of Halogenated Organic Solvents (Nonreflux Method)²
- D 2943 Test Method for Aluminum Scratch of 1,1,1-Trichloroethane²
- D 2988 Test Method for Water-Soluble Halide Ion in Halogenated Organic Solvents and Their Admixtures²
- D 2989 Test Method for Acidity-Alkalinity of Halogenated Organic Solvents and Their Admixtures²
- D 3401 Test Methods for Water in Halogenated Organic Solvents and Their Admixtures²
- D 3741 Test Method for Appearance of Admixtures Containing Halogenated Organic Solvents²
- D 3742 Test Method for 1,1,1-Trichloroethane Content²
- D 3844 Practice for Labeling Halogenated Hydrocarbon Solvent Containers²

2.2 Other Documents:

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.

Current edition approved May 10, 1997. Published May 1998. Originally published as D 5394 – 93.

² *Annual Book of ASTM Standards*, Vol 15.05.

TABLE 1 Properties, Type I

Property	Specification	Test Method
Appearance	Free of turbidity and suspended matter	D 3741
1,1,1-trichloroethane, weight %, min	92	D 3742
Nonvolatile residue, weight %, max	0.0040	D 2109
Color, Pt-Co, max	25	D 2108
Water, weight %, max	0.015	D 3401
Acid acceptance as NaOH, weight %, min	0.20	D 2942
Aluminum scratch test	Passes ^A	D 2943
Acidity as HCl, weight %, max	0.001	D 2989
Alkalinity as NaOH, weight %, max	0.020	D 2106
Halide as Cl, weight %, max	0.0005	D 2988

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

STP-310A Handbook of Vapor Degreasing³

STP-403A Cold Cleaning with Halogenated Solvents⁴

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,

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

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



TABLE 2 Properties, Type II

Property	Specification	Test Method
Appearance	Free of turbidity and suspended matter	D 3741
1,1,1-trichloroethane, weight %, min	90	D 3742
Nonvolatile residue (NVR), weight %, max	0.010	D 2109
Color, Pt-Co, max	30	D 2108
Water, weight %, max	0.015	D 3401
Acid acceptance as NaOH, weight %, min	0.20	D 2942
Aluminum scratch test	Passes ^A	D 2943
Acidity as HCl, weight %, max	0.001	D 2989
Alkalinity as NaOH, weight %, max	0.020	D 2106
Halide as Cl, weight %, max	0.0005	D 2988

^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	D 3741
1,1,1-trichloroethane, weight %, min	88	D 3742
Nonvolatile residue, weight %, max	0.020	D 2109
Color, Pt-Co, max	50	D 2108
Water, weight %, max	0.020	D 3401
Acid acceptance as NaOH, weight %, min	0.20	D 2942
Aluminum scratch test	Passes ^B	D 2943
Acidity as HCl, weight %, max	0.002	D 2989
Alkalinity as NaOH, weight %, max	0.020	D 2106

^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.

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 chloroform; reclaimed

ASTM International takes no position respecting the validity of any patent rights asserted in connection with any item mentioned in this standard. Users of this standard are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, are entirely their own responsibility.

This standard is subject to revision at any time by the responsible technical committee and must be reviewed every five years and if not revised, either reapproved or withdrawn. Your comments are invited either for revision of this standard or for additional standards and should be addressed to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee, which you may attend. If you feel that your comments have not received a fair hearing you should make your views known to the ASTM Committee on Standards, at the address shown below.

This standard is copyrighted by ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959, United States. Individual reprints (single or multiple copies) of this standard may be obtained by contacting ASTM at the above address or at 610-832-9585 (phone), 610-832-9555 (fax), or service@astm.org (e-mail); or through the ASTM website (www.astm.org).