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An American National Standard

## Standard Specification for Reclaimed 1,1,1-Trichloroethane<sup>1</sup>

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 ( $\epsilon$ ) 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:*

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<sup>1</sup> This specification is under the jurisdiction of ASTM Committee D-26 on Halogenated Organic Solvents and Fire Extinguishing Agents and is the direct responsibility of Subcommittee D26.082 on ~~Recovered Solvents Specifications-Vapor Degreasing~~.

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**TABLE 1 Properties, Type I**

Property	Specification	Test Method
Appearance	Free of turbidity and suspended matter	D 3741
<del>1,1,1-trichloroethane, weight %, min</del>	<del>92</del>	<del>D 3742</del>
<u>1,1,1-trichloroethane, weight %, min</u>	<u>92</u>	<u>D 6806</u>
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 <sup>A</sup>	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

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

- D 2106 Test Method for the Determination of Amine Acid Acceptance (Alkalinity) of Halogenated Organic Solvents<sup>2</sup>  
D 2108 Test Method for Color of Halogenated Organic Solvents and Their Admixtures (Platinum-Cobalt Scale)<sup>2</sup>  
D 2109 Test Methods for Nonvolatile Matter in Halogenated Organic Solvents and Their Admixtures<sup>2</sup>  
D 2942 Test Method for Total Acid Acceptance of Halogenated Organic Solvents (Nonreflux Method)<sup>2</sup>  
D 2943 Test Method for Aluminum Scratch of 1,1,1-Trichloroethane<sup>2</sup>  
D 2988 Test Method for Water-Soluble Halide Ion in Halogenated Organic Solvents and Their Admixtures<sup>2</sup>  
D 2989 Test Method for Acidity-Alkalinity of Halogenated Organic Solvents and Their Admixtures<sup>2</sup>  
D 3401 Test Methods for Water in Halogenated Organic Solvents and Their Admixtures<sup>2</sup>  
D 3741 Test Method for Appearance of Admixtures Containing Halogenated Organic Solvents<sup>2</sup>  
~~D 3742 Test Method 3844 Practice for 1,1,1-Trichloroethane Content Labeling Halogenated Hydrocarbon Solvent Containers<sup>2</sup>~~  
~~D 3684406 Practice for Labeling Analysis of Halogenated Hydrocarbon Solvent Containers Organic Solvents and Their Admixtures by Gas Chromatography<sup>2</sup>~~

### 2.2 Other Documents:

- STP-310A Handbook of Vapor Degreasing<sup>3</sup>  
STP-403A Cold Cleaning with Halogenated Solvents<sup>4</sup>

## 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.

<sup>2</sup> Annual Book of ASTM Standards, Vol 15.05.

<sup>3</sup> Symposium on Vapor Degreasing, ASTM STP 310A, ASTM.

<sup>4</sup> 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
<del>1,1,1-trichloroethane, weight %, min</del>	<del>90</del>	<del>D 3742</del>
<u>1,1,1-trichloroethane, weight %, min</u>	<u>90</u>	<u>D 6806</u>
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 <sup>A</sup>	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

<sup>A</sup> 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<sup>A</sup>

Property	Specification	Test Method
Appearance	Free of turbidity and suspended matter	D 3741
1,1,1-trichloroethane, weight %, — min	88	<del>D 3742</del>
1,1,1-trichloroethane, weight %, — min	88	D 6806
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 <sup>B</sup>	D 2943
Acidity as HCl, weight %, max	0.002	D 2989
Alkalinity as NaOH, weight %, max	0.020	D 2106

<sup>A</sup> Type III reclaimed 1,1,1-trichloroethane is not recommended for use in precision cleaning or vapor degreasing applications.

<sup>B</sup> Distill 100 mL solvent, collect 50 mL distillate, and conduct scratch test on distillate and portion remaining in distillation flask.

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 chloroform; reclaimed

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