



Designation: D4081 – 16 (Reapproved 2023)

# Standard Specification for Drycleaning-Grade Perchloroethylene<sup>1</sup>

This standard is issued under the fixed designation D4081; 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 covers drycleaning-grade perchloroethylene suitable for use in the drycleaning industry.

1.2 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.3 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

NOTE 1—Guide D3844 provides additional important information on proper labeling.

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

## 2. Referenced Documents

2.1 *ASTM Standards:*<sup>2</sup>

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

D2111 Test Methods for Specific Gravity and Density of Halogenated Organic Solvents and Their Admixtures

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

<sup>1</sup> 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 D26.06 on Drycleaning.

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<sup>2</sup> 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.

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

D3741 Test Methods for Appearance of Admixtures Containing Halogenated Organic Solvents

D3844 Guide for Labeling Chlorinated Hydrocarbon Solvent Containers (Withdrawn 2013)<sup>3</sup>

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

2.2 *Code of Federal Regulations:*<sup>4</sup>

29 CFR 1910.1200 Department of Labor, OSHA Regulations on Hazard Communications

49 CFR 100 to 199 Department of Transportation Hazardous Materials Regulations

## 3. Properties

3.1 Drycleaning-grade perchloroethylene shall conform to the requirements prescribed in Table 1.

3.2 Maximum acid acceptance specification of 0.03 weight % as NaOH distinguishes drycleaning-grade perchloroethylene from vapor-degreasing-grade perchloroethylene which is formulated specifically for that application.

## 4. Packaging and Package Marking

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

4.1.1 The proper shipping name for perchloroethylene is UN 1897, tetrachloroethylene.

## 5. Keywords

5.1 perchloroethylene; tetrachloroethylene drycleaning solvent

<sup>3</sup> The last approved version of this historical standard is referenced on www.astm.org.

<sup>4</sup> The *Code of Federal Regulations* is available from U.S. Government Publishing Office, 732 N. Capitol St., NW, Washington, DC 20401-0001, http://www.gpo.gov.

**TABLE 1 Properties**

Property	Specification	Test Method
Appearance	clear and free from suspended matter and undissolved water	D3741
Water, weight, %, max	0.0050	D3401
Specific gravity, 25/25°C	1.615 to 1.625	D2111
Nonvolatile residue, weight, %, max	0.0050	D2109
Acid Acceptance (as NaOH), weight, %, max	0.03	D2942
Assay, weight, %, min	99.90	D6806

## APPENDIX

### (Nonmandatory Information)

#### X1. PURITY OF PERCHLOROETHYLENE

X1.1 The analysis of perchloroethylene samples taken from drycleaning machines having significant corrosion problems suggests that there may be a relationship between this corro-

sion and the presence of certain halogenated impurities in the solvent. A guideline of 500 ppm (max) 1,1,1 trichloroethane as a contaminant in perchloroethylene is recommended.

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