



Designation: **D 4081 – 9500**

Standard Specification for Drycleaning-Grade Perchloroethylene¹

This standard is issued under the fixed designation D 4081; 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.

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

1. Scope

1.1 This specification covers drycleaning-grade perchloroethylene suitable for use in the drycleaning industry.

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—Practice D 3844 provides additional important information on proper labeling.

2. Referenced Documents

2.1 *ASTM Standards:*

D 1078 Test Method for Distillation Range of Volatile Organic Liquids²

¹ 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 D26.06 on Drycleaning.

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D 2109 Test Methods for Nonvolatile Matter in Halogenated Organic Solvents and Their Admixtures³

D 2111 Test Methods for Specific Gravity of Halogenated Organic Solvents and Their Admixtures³

D 2942 Test Method for Total Acid Acceptance of Halogenated Organic Solvents (Nonreflux Method)³

D 3316 Test Method for Stability of Perchloroethylene with Copper³

D 3401 Test Methods for Water in Halogenated Organic Solvents and Their Admixtures³

D 3741 Test Method for Appearance of Admixtures Containing Halogenated Organic Solvents³

D 3844 Practice for Labeling Halogenated Hydrocarbon Solvent Containers³

D 4376 Specification for Vapor-Degreasing Grade Perchloroethylene³

D 4494 Test Method for Detecting Residual Odor in Drycleaning Grade Perchloroethylene³

2.2 ~~Other Documents:~~

~~49 CFR 100 to 199 Department Code of Transportation Hazardous Materials Regulations Federal Regulations:~~⁴

² *Annual Book of ASTM Standards*, Vol 06.04.

³ *Annual Book of ASTM Standards*, Vol 15.05.

⁴ The *Code of Federal Regulations* may be obtained from the Superintendent of Documents, US Government Printing Office, Washington, DC 20402.

~~PPP-C-2020 Federal Specification, Chemicals, Liquid, Dry, and Paste: Packaging Of⁵
 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 shall be packaged and labeled in accordance with DOT regulations as found in 49 CFR 100 to 199, and in accordance with state and local regulations.~~

~~4.2 Department of Defense procurements shall be packaged regulations, and labeled in accordance with the applicable paragraphs of Federal Specification PPP-C-2020. 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

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 corrosion and the presence of certain halogenated impurities in the solvent. ~~Testing to evaluate this relationship is in progress, but is not complete.~~ A guideline of ~~1000~~ 500 ppm (max) 1,1,1 trichloroethane as a contaminant in perchloroethylene is ~~recommended, pending the development of more complete data.~~ recommended.

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TABLE 1 Physical Properties

Property	Specification	Test Method
Appearance	clear and free from suspended matter and undissolved water	D 3741
Water, weight, %, max	0.0050	D 3401
Residual odor	no foreign odor	D 4494
Specific gravity, 25/25°C	1.615 to 1.625	D 2111
Nonvolatile residue, weight, %, max	0.0050	D 2109
Distillation range (760 mm Hg)		D 1078
Initial boiling point, °C, min	120.0	
Dry point, °C, max	122.0	
Acid Acceptance (as NaOH), weight %, max	0.03	D 2942
Copper corrosion, weight loss, mg, max		D 3316
Flask	10	
Soxhlet	20	
Condenser	20	
Acidity as HCl, max, mL, NaOH	15	

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