Designation: D5164 – 05 (Reapproved 2011)

Standard Specification for Propylene Glycol and Dipropylene Glycol[1]

This standard is issued under the fixed designation D5164; 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 covers propylene glycol and dipropylene glycol for use in the preparation of surface coatings.

1.2 The following applies to all specified limits in this standard; for purposes of determining conformance with this standard, an observed value or a calculated value shall be rounded off "to the nearest unit" in the last right-hand digit used in expressing the specification limit, in accordance with the rounding-off method of Practice E29.

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

1.4 For specific hazard information and guidance, see the supplier's Material Safety Data Sheets.

2. Referenced Documents

2.1 *ASTM Standards:*[2]

D1209 Test Method for Color of Clear Liquids (Platinum-Cobalt Scale)

D4052 Test Method for Density, Relative Density, and API Gravity of Liquids by Digital Density Meter

D5386 Test Method for Color of Liquids Using Tristimulus Colorimetry

E29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications

E202 Test Methods for Analysis of Ethylene Glycols and Propylene Glycols

E300 Practice for Sampling Industrial Chemicals

2.2 *U.S. Federal Specification:*

PPP-C-2020 Chemicals, Liquid, Dry, and Paste: Packaging of[3]

3. Properties

3.1 Propylene glycol or dipropylene glycol shall conform to the respective properties shown in Table 1.

4. Sampling

4.1 The material shall be sampled in accordance with Practice E300.

5. Test Methods

5.1 The properties enumerated in this specification shall be determined in accordance with Test Methods E202.

5.2 The apparent specific gravity can also be determined in accordance with Test Method D4052.

6. Packaging and Package Marking

6.1 Package size shall be agreed upon between the purchaser and the supplier.

6.2 Packaging shall conform to applicable carrier rules and regulations or when specified shall conform to Fed. Spec. PPP-C-2020.

7. Keywords

7.1 dipropylene glycol; propylene glycol

[1] This specification is under the jurisdiction of ASTM Committee D01 on Paint and Related Coatings, Materials, and Applications and is the direct responsibility of Subcommittee D01.35 on Solvents, Plasticizers, and Chemical Intermediates.

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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] Available from Standardization Documents Order Desk, DODSSP, Bldg. 4, Section D, 700 Robbins Ave., Philadelphia, PA 19111-5098, http://dodssp.daps.dla.mil.

***A Summary of Changes section appears at the end of this standard**

TABLE 1 Requirements for Propylene Glycol and Dipropylene Glycol

Property	Propylene Glycol	Dipropylene Glycol
Apparent specific gravity		
20/20°C	1.0375 to 1.0390	1.020 to 1.025
or	or	or
25/25°C	1.0351 to 1.0366	1.016 to 1.021
Color, Pt-Co units, max[A]	15	15
Distillation range, 760 mmHg		
Initial Boiling Point, °C min	185	228
Dry point, °C, max	190	236
Water, wt %, max	0.2	0.2
Acidity, as acetic acid, wt %, max	0.005	0.01
Propylene glycol, wt %, max	NA[B]	1.0
Dipropylene glycol, wt %, max	1.0	NA[B]
Tripropylene glycol, wt %, max	NA[B]	1.0
Iron, ppm, max	0.5	1.0

[A] Instrumental Pt-Co color determined by Test Method D5386 have been shown to have no statistically significant difference from Pt-Co color determined by Test Method D1209. However, it is not known whether *n*-butyl alcohol was part of the sample set included in the interlaboratory study.
[B] NA = not applicable.

SUMMARY OF CHANGES

Committee D01.35 has identified the location of selected changes to this standard since the last issue (D5164 – 91 (2000)) that may impact the use of this standard.

(1) Added reference to Practice E29 in Scope section.
(2) Added Practice E29 and Test Methods D1209 and D5386 to list of Referenced Documents.
(3) Changed specs limits for apparent specific gravity in Table 1.
(4) Added new Note A to Table 1.