



Designation: D4877 – 19

Standard Test Method for Polyurethane Raw Materials: Determination of APHA Color in Isocyanates¹

This standard is issued under the fixed designation D4877; 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 test method measures the color of clear liquids. It is applicable only to materials whose color-producing bodies have light-absorption characteristics similar to those of the platinum cobalt color standards used.² (See Test Method D1209 and Note 1.) Suitable isocyanates include toluene diisocyanate, and pure or modified monomeric methylene di(phenylisocyanate).

1.2 The values stated in SI units are to be regarded as 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—This standard and ISO 6271-1 address the same subject matter, but differ in technical content.

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:³

D883 Terminology Relating to Plastics

D1193 Specification for Reagent Water

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

¹ This test method is under the jurisdiction of ASTM Committee D20 on Plastics and is the direct responsibility of Subcommittee D20.22 on Cellular Materials - Plastics and Elastomers.

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² See Standard Methods for the Examination of Water, Sewage, and Industrial Wastes, AM. Public Health Assn., 1015 15th St. NW Washington, DC 20005.

³ 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.

D4890 Test Methods for Polyurethane Raw Materials: Determination of Gardner and APHA Color of Polyols

D5386 Test Method for Color of Liquids Using Tristimulus Colorimetry

E456 Terminology Relating to Quality and Statistics

E2935 Practice for Conducting Equivalence Testing in Laboratory Applications

2.2 ISO Standards:

ISO 6271-1 Clear liquids—Estimation of colour by the platinum-cobalt scale—Part 1: Visual method⁴

3. Terminology

3.1 Terms used in this standard are defined in accordance with Terminology D883, unless otherwise specified. For terms relating to precision and bias and associated issues, the terms used in this standard are defined in accordance with Terminology E456.

4. Summary of Test Method

4.1 The color of the material to be tested is compared to a series of platinum cobalt color standards, designated by mg of Pt/mL of standard solution. The results are reported as the color standard, which best matches the sample (Note 2).

NOTE 2—Test methods for measuring the platinum-cobalt color of liquids instrumentally are available—for example, Test Method D5386.

5. Significance and Use

5.1 This test method can be used for research or for quality control to characterize isocyanates used in polyurethane products.

5.2 For toluene diisocyanate, results from this test method can relate to reactivity or performance in polyurethane systems.

6. Apparatus

6.1 *Nessler Tubes*, matched, 100-mL tall-form.

7. Reagents and Materials

7.1 *Purity of Reagents*—Reagent grade chemicals shall be used in all tests. Unless otherwise indicated, it is intended that

⁴ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.

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