



Designation: D6166 – 12 (Reapproved 2022)

Standard Test Method for Color of Pine Chemicals and Related Products (Instrumental Determination of Gardner Color)¹

This standard is issued under the fixed designation D6166; 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 covers the quantitative determination of the color of clear, yellow/brown, liquid materials using color measuring instruments. The results may be invalid if other materials are used. The test uses the Gardner color scale described in Test Method **D1544**. This test method applies to pine chemical products including tall oil, tall oil fatty acids, rosin, and related products.

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.*

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:*²

D1544 Test Method for Color of Transparent Liquids (Gardner Color Scale)

E177 Practice for Use of the Terms Precision and Bias in ASTM Test Methods

E308 Practice for Computing the Colors of Objects by Using the CIE System

E691 Practice for Conducting an Interlaboratory Study to

¹ This test method is under the jurisdiction of Committee **D01** on Paint and Related Coatings, Materials, and Applications and is the direct responsibility of Subcommittee **D01.34** on Pine Chemicals and Hydrocarbon Resins.

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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.

Determine the Precision of a Test Method

3. Summary of Test Method

3.1 The color of a liquid sample is measured using an instrument capable of measuring transmitted color and reporting in Gardner colors or in a color system that can be converted to Gardner colors.

4. Significance and Use

4.1 This test method provides a more precise way of measuring Gardner color than described in Test Method **D1544**. It is applicable to pine chemical products having colors from Gardner 1 to Gardner 18. The Gardner scale is not applicable to materials with colors lighter than 1 or darker than 18.

5. Apparatus

5.1 An instrument capable of measuring transmitted color and reporting the results in the Gardner color scale described in Test Method **D1544**. If such an instrument is not available, one may be used which is capable of measuring transmitted color and reporting in tristimulus values or chromaticity coordinates using standard illuminant C and the 2° observer, described in Practice **E308**.

5.2 *Glass Cuvets*, 10-mm path length, unless a different path length is specified by the manufacturer, or

5.3 *Glass Tubes*, clear. Standard Gardner tubes, as described in Test Method **D1544**, or other glass tubes designed for a specific instrument may be used. Gardner tubes may provide less accuracy than glass cuvetts and should be used only when a decrease in accuracy is acceptable. Glass cuvetts should be used for referee situations.

6. Calibration and Standardization

6.1 Calibrate the instrument following the manufacturer's recommendations.

6.1.1 Test sample preparation for rosin and rosin derivatives.

6.1.1.1 As most rosins and rosin derivatives are solids it is necessary to introduce a molten sample into the tube or cuvet.