Designation: D6166 – 12

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, problems 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.*

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 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 cuvets and should be used only when a decrease in accuracy is acceptable. Glass cuvets 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.

6.1.1.2 If the sample is available in molten form the test sample should be poured into the cuvet or tube and the color measured while the rosin is still molten.

6.1.1.3 If the sample is in solid form it has to be melted in order to be introduced into the tube or cuvet. The sample to be tested shall consist of freshly broken lumps and free of dust and finely divided material. Select a quantity at least twice that necessary required to fill the test tubes or cuvets and melt it in a clean container using an oven, hot plate, heat gun, sand bath or oil bath taking care to avoid overheating. Stir slowly

[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.

Current edition approved Nov. 1, 2012. Published December 2012. Originally approved in 1997. Last previous edition approved in 2008 as D6166 – 08. DOI: 10.1520/D6166-12.

[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.