Designation: D802 – 02 (Reapproved 2013)

Standard Test Methods for Sampling and Testing Pine Oils[1]

This standard is issued under the fixed designation D802; 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 These test methods cover procedures for sampling and testing pine oils, and are applicable to both natural pine oils derived from pine stumps either by the steam and solvent process or by destructive distillation, and also to synthetic pine oils obtained by the chemical hydration of terpene hydrocarbons.

1.2 The procedures given in these test methods appear in the following order:

	Section
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Appearance	5
Color	6
Specific Gravity	7
Refractive Index	8
Composition	9
Moisture	10

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 *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.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

D268 Guide for Sampling and Testing Volatile Solvents and Chemical Intermediates for Use in Paint and Related Coatings and Material

D803 Test Methods for Testing Tall Oil

D890 Test Method for Water in Liquid Pine Chemicals

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

D6166 Test Method for Color of Pine Chemicals and Related Products (Instrumental Determination of Gardner Color)

D6387 Test Methods for Composition of Turpentine and Related Terpene Products by Capillary Gas Chromatography

E300 Practice for Sampling Industrial Chemicals

3. Significance and Use

3.1 The testing procedures described in these test methods have been in use for many years and emphasize the physical properties of pine oil rather than its chemical composition. Test Methods D6387 describe a capillary gas chromatography method which is suitable for determining both the major and minor components found in pine oils.

4. Sampling

4.1 Sample the material in accordance with the procedure described in Guide D268 and Practice E300.

5. Appearance

5.1 Examine a portion of the sample after agitation to determine its clarity and freedom from foreign matter and separated water.

6. Color

6.1 Compare the color of the sample in any suitable or designated apparatus with the accepted or specific color standard. Accepted color standards are the Gardner color scale found in Test Method D6166 and the platinum-cobalt scale found in Test Method D1209.

7. Specific Gravity

7.1 Determine the specific gravity at 15.6/15.6°C by any convenient method, reporting the value to the nearest 0.0005. (A pycnometer or specific gravity balance is recommended. A hydrometer should not be used, on account of errors caused by surface tension on the hydrometer stem.) Correct determinations made at any other temperature, using apparatus standardized at 15.6°C by adding to or subtracting from the observed reading 0.00080 for each degree Celsius that the temperature of the liquid is above or below 15.6°C.

[1] These test methods are under the jurisdiction of ASTM Committee D01 on Paint and Related Coatings, Materials, and Applications and are 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.

8. Refractive Index

8.1 Determine the refractive index with an instrument having a resolution of ±0.0001 at 20°C, if possible. If tested at any other temperature, correct the reading obtained to 20°C by adding or subtracting 0.00045 for each degree Celsius that the temperature at which the determination was made is, respectively, above or below 20°C.

9. Composition

9.1 Determine the component concentration of pine oil by using the referenced method (Test Methods D6387) which employs a capillary column technology.

10. Moisture

10.1 The recommended method for measuring the moisture content of pine oil is the use of the Karl Fischer reagent and is described in Test Method D890. This test method is more rapid and more reliable than the alternative method described in 10.2.

10.2 *Alternative Method, Distillation:*

10.2.1 The azeoitropic distillation method described in the procedure section of Test Methods D803 can be used for moisture analysis of pine oil.

NOTE 1—It is important that the flask be scrupulously clean. If it shows any white deposits (such as might be caused from attack by alkalies during previous use), the percentage of water may be erroneously high due to a slight decomposition of the terpene alcohols in the pine oil.

11. Precision and Bias

11.1 Some of the procedures described in these test methods were developed many years ago and were once used widely for the sampling and testing of pine oils. Currently these test methods are less widely used and it is not considered practical to determine the precision and bias of the individual methods at this time.

11.2 Where reference is made to other ASTM test methods, these test methods should be examined to determine their precision and bias.

12. Keywords

12.1 gas chromatography; pine oils; samplings; terpene alcohols