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Standard Test Methods of Testing Rosin Oils¹

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1. Scope

1.1 These test methods are intended for use in determining whether a rosin oil conforms with the specifications and requirements usually applied to ensure its suitability for a particular use. In general, not all of the tests will be required to determine the fitness of an oil for a specific use. The term “rosin oil” includes the oils obtained by dry destructive distillation of rosin, with or without subsequent redistillation, and also certain compounded oils prepared from a rosin oil base. It has no relationship to the product formerly known as liquid rosin, for which the term “tall oil” has been adopted.

1.2 *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:

D 88 Test Method for Saybolt Viscosity²

D 93 Test Methods for Flash Point by Pensky-Martens Closed Tester³

D 95 Test Method for Water in Petroleum Products and Bituminous Materials By Distillation³

D 803 Methods of Testing Tall Oil⁴

D 1545 Test Method for Viscosity of Transparent Liquids by Bubble Time Method⁴

D 2196 Test Methods for Rheological Properties of Non-Newtonian Materials by Rotational (Brookfield) Viscometer⁵

D 3278 Test Methods for Flash Points of Liquids by Set-flash Closed Cup Apparatus⁵

¹ These methods are under the jurisdiction of ASTM Committee D-1 on Paint and Related Coatings, Materials, and Applications and are the direct responsibility of Subcommittee D01.34 on Naval Stores.

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² Annual Book of ASTM Standards, Vol 04.04.

³ Annual Book of ASTM Standards, Vol 05.01.

⁴ Annual Book of ASTM Standards, Vol 06.03.

⁵ Annual Book of ASTM Standards, Vol 06.01.

3. Significance and Use

3.1 Rosin oil, made by the decarboxylation of rosin, has been a commercial product for many years. Although less widely used at the present time, it is still a significant item of commerce and standard methods are required to ensure that products meet established specifications.

4. Appearance

4.1 Examine a sample of the oil in a clear glass tube by transmitted light, to ascertain whether any separated water, crystals, or insoluble foreign matter are present.

5. Specific Gravity

5.1 Determine the specific gravity of the oil at 15.5°C (60°F) by means of any suitable apparatus that has been calibrated at 15.5°C (60°F). Report the specific gravity to the third decimal as:

Specific gravity, 15.5/15.5°C (60/60°F) (1)

Such observed specific gravity may be converted to the 25/25°C (77/77°F) basis by multiplying the observed reading by the factor 1.002.

NOTE 1—If a pycnometer is used, the weight of water contained by the pycnometer at 25°C shall be determined, in which case the ratio of oil to water will be the specific gravity at 25/25°C. To convert this to the 25/15.5°C (77/60°F) basis, multiply by the factor 0.998.

6. Viscosity

6.1 Determine the viscosity of the oil at 25°C using Test Method D 1545.

6.2 Determine the viscosity of the oil at 100°F (37.8°C), 130°F (54.4°C), or 210°F (98.9°C), using a Saybolt Universal Viscometer in accordance with Test Method D 88. Report the viscosity in Saybolt Universal seconds.

6.3 Determine the viscosity of the oil in centipoise at 25°C using Test Method D 2196.

7. Flash Point

7.1 Determine the flash point of the oil either in accordance with Test Methods D 3278 or in accordance with Test Method D 93. Report the method used.



8. Acid Number

8.1 Weigh 4.95 to 5.05 g, to the nearest 0.01 g, of the sample into a 300-mL Erlenmeyer flask. Add 100 mL of a solvent containing equal parts of acetone and either 95 % ethyl alcohol (Formula No. 3A or No. 30 denatured) or methyl alcohol. Place on a steam bath and dissolve the oil in the solvent, connecting in air-tube condenser to the neck of the flask and heating for not more than 15 min, if necessary. Cool, and potentiometrically titrate with either aqueous or alcoholic 0.2 *N* standard alkali solution. Calculate the acid number, in milligrams of KOH per gram of sample, as follows:

$$\text{Acid number} = (V \times N \times 56.1)/W \quad (2)$$

where:

N = normality of the standard alkali solution,

V = millilitres of alkali solution, and

W = weight of sample.

9. Moisture

9.1 Determine the moisture in rosin oil on a 200-mL sample in accordance with Test Method D 95, using xylene as the solvent.

10. Precision and Bias

10.1 Where the test method listed in this standard references another ASTM standard method, that method should be studied to determine the precision and bias. Other methods listed are well established and determination of precision and bias is not practical.

11. Keywords

11.1 rosin oil

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