



Standard Test Methods for Testing Tall Oil¹

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1. Scope

1.1 These test methods cover the test procedures to be applied to whole tall oils or refined tall oils. Previous editions of these test methods have described test procedures that are used to test tall oil fatty acid, rosin, and other tall oil-derived products as well as test crude and refined tall oil. Consequently, these test methods are widely cited in reference books and industry literature for the testing of tall oil-derived products.

1.1.1 In this current revision, procedural details of some of the often-cited test methods have been removed and the test methods consolidated with other existing test methods. In such cases the consolidated methods, applicable to all tall oil-derived products, are referenced.

1.2 The procedures appear in the following order:

	Physical Tests	Sections
Viscosity:		
Brookfield Method (Preferred Method)		7
Bubble Time Method		8
Pour Point		9
Flash Point		10
Color		11
Moisture:		12
Insoluble Matter		13
Ash		14
	Chemical Analysis	
Acid Number		17
Saponification Number		18
Rosin Acids		19
Unsaponifiable Matter		20
Fatty Acids		21

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 and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

- D 92 Test Method for Flash and Fire Points by Cleveland Open Cup²
- D 93 Test Methods for Flash Point by Pensky-Martens Closed Tester²

¹ These test 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 05.01.

- D 97 Test Methods for Pour Point of Petroleum Oils²
- D 269 Test Method for Insoluble Matter in Rosin and Rosin Derivatives³
- D 464 Test Methods for Saponification Number of Naval Store Products Including Tall Oil and Other Related Products³
- D 465 Test Methods for Acid Number of Naval Store Products Including Tall Oil and Other Related Products³
- D 890 Test Method for Water in Liquid Naval Stores³
- D 1065 Test Method for Unsaponifiable Matter in Naval Stores, Including Rosin, Tall Oil, and Related Products³
- D 1240 Test Method for Rosin Acids Content of Naval Stores, Including Rosin, Tall Oil, and Related Products³
- D 1466 Test Method for Sampling Liquid Oils and Fatty Acids Commonly Used in Paints, Varnishes, and Related Materials³
- D 1544 Test Method for Transparent Liquids (Gardner Color Scale)⁴
- D 1545 Test Method for Viscosity of Transparent Liquids by Bubble Time Method³
- D 1585 Test Methods for Fatty Acids Content of Naval Stores Including Rosin, Tall Oil, and Related Products³
- D 2196 Test Methods for Rheological Properties of Non-Newtonian Materials by Rotational (Brookfield) Viscometer⁴
- D 3278 Test Methods for Flash Points of Liquids by Set-flash Closed Cup Apparatus⁴
- E 300 Practice for Sampling Industrial Chemicals⁵

3. Significance and Use

3.1 Tall oil, both crude and refined, is an important by-product of the alkaline (kraft) pulping of pine wood. It consists primarily of fatty acids, resin acids, and neutral materials; the levels of these various components depend on factors such as the species of pine tree, geographic location, climate, etc.

3.1.1 Tall oil is used primarily as a commercial source of fatty acids and rosin, and, therefore, reliable methods for the analysis of these components is necessary.

4. Purity of Reagents

4.1 Reagent grade chemicals shall be used in all tests. Unless otherwise indicated, it is intended that all reagents shall

³ *Annual Book of ASTM Standards*, Vol 06.03.

⁴ *Annual Book of ASTM Standards*, Vol 06.01.

⁵ *Annual Book of ASTM Standards*, Vol 15.05.