



Standard Test Methods for Fatty Acids Content of Naval Stores, Including Rosin, Tall Oil, and Related Products¹

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1. Scope

1.1 These test methods cover the determination of the fatty acids of naval stores, including rosin, tall oil, and related products.

1.2 These test methods may not be applicable to adducts or derivatives of rosin or other naval stores products.

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 465 Test Methods for Acid Number of Naval Stores Products Including Tall Oil and Other Related Products²

D 803 Test Methods for Testing Tall Oil²

D 890 Test Method for Water in Liquid Naval Stores²

D 1065 Test Methods for Unsaponifiable Matter in Naval Stores, Including Rosin, Tall Oil, and Related Products²

D 1240 Test Methods for Rosin Acids Content of Naval Stores Including Rosin, Tall Oil, and Related Products²

E 177 Practice for the Use of the Terms Precision and Bias in ASTM Test Methods³

E 691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method³

3. Summary of Test Methods

3.1 The rosin acids content is determined using either the modified potentiometric Wolfe Method or the modified indicator Wolfe Method described in Test Methods D 1240. Rosin acids are calculated as abietic acid.

3.2 The acid number is determined by either the potentiometric or the indicator method in accordance with Test Methods D 465.

3.3 The unsaponifiable matter is determined in accordance with the methods described in Test Methods D 1065.

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 06.03.

³ *Annual Book of ASTM Standards*, Vol 14.02.

3.4 The fatty acids are calculated by two methods.

3.4.1 For materials with a fatty acid content less than 5 %, fatty acid content is calculated from the rosin acids content and the acid number.

3.4.2 For materials with a fatty acid content greater than 5 %, fatty acid content is calculated from the rosin acids and unsaponifiables content.

3.5 The same method for end point detection, either potentiometric or indicator, should be used for acid number, unsaponifiables, and rosin acids content determination, in order to avoid slight variables that might occur.

3.6 Since the fatty acids remaining in tall oil rosin, tall oil, and other naval stores products consist of oleic acid with varying amounts of other saturated and unsaturated acids, it has become customary to calculate and report the fatty acid content as oleic acid.

4. Significance and Use

4.1 These test methods are designed to broaden the scope of the previous edition of these test methods by the inclusion of tall oil as a test material. Test Methods D 803 currently includes methods for the determination of the rosin acid and fatty acid content of crude tall oil. Test Methods D 803 references Test Method D 1585.

4.2 Rosin and tall oil are composed primarily of rosin acids and fatty acids, and the measurement of these components is important in establishing the composition of these materials.

5. Purity of Reagents

5.1 Reagent grade chemicals shall be used in all tests. Unless otherwise indicated, it is intended that all reagents shall conform to the specifications of the Committee on Analytical Reagents of the American Chemical Society, where such specifications are available.⁴ Other grades may be used, provided it is first ascertained that the reagent is of sufficiently high purity to permit its use without lessening the accuracy of the determination.

5.2 Unless otherwise indicated, references to water shall be

⁴ *Reagent Chemicals, American Chemical Society Specifications*, American Chemical Society, Washington, DC. For suggestions on the testing of reagents not listed by the American Chemical Society, see *Analar Standards for Laboratory Chemicals*, BDH Ltd., Poole, Dorset, U.K., and the *United States Pharmacopeia and National Formulary*, U.S. Pharmaceutical Convention, Inc. (USPC), Rockville, MD.