



Designation: D3643 – 10

Standard Test Method for Acid Number of Certain Alkali-Soluble Resins¹

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1. Scope

1.1 This test method covers the measurement of the free acidity present in certain alkali-soluble resins.

1.2 This test method is not suitable for styrene-maleic anhydride resins.

1.3 The resin manufacturer should specify whether or not this test method may be used for his product(s).

1.4 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.5 *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

D362 Specification for Industrial Grade Toluene (Withdrawn 1989)³

D1152 Specification for Methanol (Methyl Alcohol)

D1193 Specification for Reagent Water

3. Terminology

3.1 *Definitions:*

3.1.1 *acid number*—the number of milligrams of potassium hydroxide (KOH) required to neutralize the alkali-reactive groups in 1 g of material under the conditions of test.

3.1.1.1 *Discussion*—If carboxylic anhydrides are present, only one half of these groups will be titrated and indicated by this test method.

¹ This test method is under the jurisdiction of ASTM Committee D21 on Polishes and is the direct responsibility of Subcommittee D21.02 on Raw Materials.

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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.

³ The last approved version of this historical standard is referenced on www.astm.org.

4. Significance and Use

4.1 This test method is used to determine the property of maleic anhydride resins functionality. Maleic acid anhydride resins functionality determines the utility of resin as well as being a significant quality control test.

5. Reagents and Materials

5.1 *Purity of Reagents*—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 *Purity of Water*—Unless otherwise indicated, references to water shall be understood to mean reagent water conforming to Specification D1193.

5.3 *Neutral Solvent Mixture*—Mix equal parts of denatured alcohol and industrial toluene conforming respectively to the requirements described for SDA. 3A (200 proof) and Specification D362. Neutralize the mixture using 0.1 N KOH solution and phenolphthalein indicator solution, until the faint pink color persists for 1 min.

5.4 *Phenolphthalein Indicator Solution* (10 g/L)—Dissolve 1.0 g of phenolphthalein in 100 mL of denatured alcohol (SDA 3A, 200 proof).

5.5 *Potassium Hydroxide, Methyl Alcohol Solution* (1 mL = 5.6 mg KOH)—Dissolve 6.6 g of potassium hydroxide (KOH) in 1 L of methyl alcohol conforming to the requirements described in Specification D1152. Standardize against National Institute of Standards and Technology standard sample of acid potassium phthalate No. 84, using phenolphthalein as the indicator. Do not adjust the concentration of the solution, but calculate the milligrams of KOH per L of solution.

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. Pharmacopeial Convention, Inc. (USPC), Rockville, MD.