



## Standard Test Method for Fatty Acid Content of Alkyd Resins and Alkyd Resin Solutions<sup>1</sup>

This standard is issued under the fixed designation D 1398; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

*This standard has been approved for use by agencies of the Department of Defense.*

### 1. Scope

1.1 This test method covers the gravimetric determination of the total fatty acids in alkyd resins and alkyd resin solutions. The test method is not applicable to alkyd resins containing modifying agents such as urea, melamine, phenols, rosin, and styrene.

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 whoever uses this standard to consult and establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

### 2. Referenced Documents

#### 2.1 ASTM Standards:

- D 563 Test Method for Phthalic Anhydride Content of Alkyd Resins and Resin Solutions<sup>2</sup>
- D 1193 Specification for Reagent Water<sup>3</sup>
- D 1615 Test Methods for Glycerol, Ethylene Glycol, and Pentaerythritol in Alkyd Resins<sup>2</sup>
- D 2245 Test Method for Identification of Oils and Oil Acids in Solvent-Reducible Paints<sup>4</sup>

### 3. Significance

3.1 This test method is used to determine total fatty acid content of alkyd resins and this solution, in the absence of interfering compounds, as a means whereby the relative applicability of the alkyd resin to the particular end use may be estimated by buyer and seller.

### 4. Apparatus

- 4.1 *Beakers*, having capacities of 150 and 400 mL.
- 4.2 *Desiccator*,
- 4.3 *Filter Paper*, rapid, low-ash filter paper, to fit the filtering funnel.

- 4.4 *Filtering Funnel*, 75-mm diameter, long-stem.
- 4.5 *Flask*, 250-mL, flat-bottom, with standard taper opening.
- 4.6 *Nitrogen Gas Supply*.
- 4.7 *Separatory Funnels*, three 500-mL capacity glass-stoppered, fitted with standard-taper ground-glass stoppers and stopcocks.
- 4.8 *Steam Bath*.
- 4.9 *Water Bath*.
- 4.10 *Vacuum Drying Oven*, small, laboratory-size, thermostatically controlled to operate at  $60 \pm 2^\circ\text{C}$ . A water-aspirator vacuum source is satisfactory.
- 4.11 *Cotton*, absorbent, USP.

### 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.<sup>5</sup> 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 Type IV of Specification D 1193.

5.3 *Ether*, anhydrous.

5.4 *Hydrochloric Acid* (sp gr 1.19)—Concentrated hydrochloric acid (HCl).

5.5 *Indicator Paper*, universal-type.

5.6 *Sodium Sulfate* ( $\text{Na}_2\text{SO}_4$ ), anhydrous.

### 6. Procedure

6.1 Saponify a portion of resin or resin solution in accordance with Test Method D 563. After filtering the potassium

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee D-1 on Paint and Related Coatings, Materials, and Applications and is the direct responsibility of Subcommittee D01.33 on Polymers and Resins.

Current edition approved April 15, 1993. Published June 1993. Originally published as D 1398 – 56. Last previous edition D 1398 – 84.

<sup>2</sup> *Annual Book of ASTM Standards*, Vol 06.03.

<sup>3</sup> *Annual Book of ASTM Standards*, Vol 11.01.

<sup>4</sup> *Annual Book of ASTM Standards*, Vol 06.01.

<sup>5</sup> *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.