



Designation: D 2074 – 92 (Reapproved 1998)

Standard Test Methods for Total, Primary, Secondary, and Tertiary Amine Values of Fatty Amines by Alternative Indicator Method¹

This standard is issued under the fixed designation D 2074; 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 (ϵ) indicates an editorial change since the last revision or reapproval.

These test methods were prepared jointly by ASTM and the American Oil Chemists' Society.

1. Scope

1.1 These alternative test methods cover the indicator procedure for determining the total, primary, secondary, and tertiary amine values of fatty amines. These procedures are not applicable to fatty amidoamines and fatty diamines.

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 1193 Specification for Reagent Water²

3. Terminology

3.1 Definitions:

3.1.1 *primary amine value*—the number of milligrams of potassium hydroxide (KOH) equivalent to the primary amine basicity in 1 g of sample.

3.1.2 *secondary amine value*—the number of milligrams of potassium hydroxide (KOH) equivalent to the secondary amine basicity in 1 g of sample.

3.1.3 *tertiary amine value*—the number of milligrams of potassium hydroxide (KOH) equivalent to the tertiary amine basicity in 1 g of sample.

3.1.4 *total amine value*—the number of milligrams of potassium hydroxide (KOH) equivalent to the basicity in 1 g of sample.

4. Apparatus

4.1 *Erlenmeyer Flasks*, wide-mouth, alkali-resistant, borosilicate-glass, 250-mL capacity.

4.2 *Magnetic Stirrer*, with an inert plastic-coated stirring bar.

5. Reagents

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.³ 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 II of Specification D 1193.

5.3 *Bromphenol Blue Indicator Solution*—Dissolve 0.2 g of bromphenol blue in 100 mL of methanol, ethanol, or isopropanol.

5.4 *Bromcresol Green Indicator Solution*—Dissolve 0.1 g of bromcresol green sodium salt in 100 mL of water.

5.5 *Chloroform* (CHCl₃).

5.6 *Hydrochloric Acid, Standard Solution* (0.1 N)—Add 17 mL of concentrated hydrochloric acid (HCl, sp gr 1.19) to 1000 mL of isopropyl alcohol in a 2-L volumetric flask. Make up to volume after cooling to room temperature. Standardize with sodium carbonate using bromcresol green as the indicator.

5.7 *Hydrochloric Acid, Standard Solution* (0.2 N)—Add 34 mL of concentrated HCl (sp gr 1.19) to 1000 mL of isopropyl alcohol in a 2-L volumetric flask. Make up to volume after cooling to room temperature. Standardize with sodium carbonate using bromcresol green as the indicator.

5.8 *Isopropyl Alcohol* (99 %).

5.9 *Phenyl Isothiocyanate*.

5.10 *Salicylaldehyde*.

6. Procedure for Total Amine Value

6.1 Melt the sample, if it is not already liquid, in a water bath. Mix thoroughly, and accurately weigh 1 to 4 g to 0.1 mg

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 D 01.32 on Drying Oils.

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² *Annual Book of ASTM Standards*, Vol 11.01.

³ *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.