



Designation: D 2073 – 92 (Reapproved 1998)^{e1}

Standard Test Methods for Total, Primary, Secondary, and Tertiary Amine Values of Fatty Amines, Amidoamines, and Diamines by Referee Potentiometric Method¹

This standard is issued under the fixed designation D 2073; 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 methods were prepared jointly by ASTM and the American Oil Chemists' Society.

^{e1} NOTE—Former Footnote 6 was deleted editorially in May 1998.

1. Scope

1.1 These referee test methods cover the potentiometric determination of the total, primary, secondary, and tertiary amine values of fatty amines and diamines, and the total amine value of fatty amidoamines. Test methods for primary, secondary, and tertiary amine values are not applicable to fatty amidoamines.

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.* Specific hazard statements are given in Note 1 and Note 2 and Note 6.1.

2. Referenced Documents

2.1 ASTM Standards:

D 1193 Specification for Reagent Water²

D 2080 Test Method for Average Molecular Weight of Fatty Quaternary Ammonium Chlorides³

E 70 Test Method for pH of Aqueous Solutions with the Glass Electrode⁴

3. Terminology

3.1 Definitions:

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

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

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

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

4. Apparatus

4.1 *Air Condenser*, minimum length 650 mm.

4.2 *Erlenmeyer Flask*, wide-mouth, alkali-resistant, borosilicate-glass, 250-mL capacity.

4.3 *Glass Electrode pH Meter*, conforming to the requirements of Test Method E 70 or similar potentiometric titrator.

4.4 *Hot Plate*, with variable heat control.

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

4.6 *Microburet*, graduated to 0.02 mL and having a capacity of 10 mL.

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.⁵ 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 *Acetic Acid, Glacial* (CH₃COOH). (**Warning**—See Note 1).

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 D01.32 on Drying Oils.

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

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

⁴ *Annual Book of ASTM Standards*, Vol 15.05.

⁵ *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.