



## Standard Test Method for Iodine Value of Fatty Quaternary Ammonium Chlorides<sup>1</sup>

This standard is issued under the fixed designation D 2078; 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.

*This test method was prepared jointly by the American Society for Testing and Materials and the American Oil Chemists' Society.*

<sup>ε1</sup> NOTE—Keywords and an update statement on precision and bias were added editorially in May 1995.

### 1. Scope

1.1 This test method covers the determination of the iodine value of fatty quaternary ammonium chlorides by the Wijs procedure.

NOTE 1—This test method is essentially equivalent to Test Methods D 1959 and D 2075.

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 hazards statements are given in Section 7.

### 2. Referenced Documents

#### 2.1 ASTM Standards:

D 1959 Test Method for Iodine Value of Drying Oils and Fatty Acids<sup>2</sup>

D 2075 Test Method for Iodine Value of Fatty Amines, Amidoamines, and Diamines<sup>2</sup>

### 3. Terminology

#### 3.1 Definition:

3.1.1 *iodine value*—a measure of the unsaturation of the alkyl group or groups expressed in terms of percent iodine absorbed.

### 4. Significance and Use

4.1 This test method measures the unsaturation as iodine value in fatty quaternary ammonium chlorides by addition of an iodine/chlorine reagent. The amount of reagent absorbed is determined by back titrating the excess reagent and comparing it to a blank determination.

4.2 This determination is an indication of the source of the fatty component or, if the source is known, the number of the

fatty components (for example, 1, 2, 3, or 4), in the quaternary ammonium chloride.

### 5. Apparatus

5.1 For apparatus used in this test method, see Test Method D 2075.

### 6. Reagents

6.1 For reagents used in this test method, see Test Method D 2075.

6.2 *Sodium Lauryl Sulfate*<sup>3</sup>.

### 7. Hazards

7.1 *Chloroform* is a hazardous liquid that can be absorbed through the skin. Its vapor is hazardous through inhalation. It is a narcotic. Use only with adequate ventilation (in a hood). For further information, see supplier's Material Safety Data Sheet.

7.2 *Wijs Solution*, iodine monochloride dissolved in glacial acetic acid, is corrosive and may cause burns to the skin and eyes. Wash clothing before reusing. Do not heat Wijs solution above 30°C as it may liberate chlorine, which is a strong, irritating gas. Wijs solution can be purchased commercially or prepared in a hood. See Test Method D 2075 for instructions.

### 8. Procedure

8.1 Melt the sample, if not already liquid, in a water bath. Mix thoroughly, and weigh into the flask 1.5 g of sample to 0.1 mg by difference. Add 20 mL of chloroform (**Precaution**—See 7.1) and swirl to dissolve the material.

8.2 Pipet 25 mL of Wijs solution (**Precaution**—See 7.2) into the flask, allowing the pipet to drain in the same manner for both specimens and blanks.

8.3 Stopper the flasks immediately and moisten the stopper with the Potassium iodide (KI) solution so as to prevent the loss of iodine or chlorine, but guard against the use of a quantity sufficient enough to run down the inside of the flask. Swirl the flask to obtain a good mixture.

8.4 Prepare and conduct at least two blank determinations

<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 D01.32 on Drying Oils.

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

<sup>3</sup> Sodium lauryl sulfate manufactured by K & K Laboratories, Inc., 121 Express St., Plainview, NY 11803 has been found suitable for this purpose.