



## Standard Test Method for Sodium Alkylbenzene Sulfonate in Synthetic Detergents by Ultraviolet Absorption<sup>1</sup>

This standard is issued under the fixed designation D 1768; 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.

### 1. Scope

1.1 This test method covers commercial synthetic detergents and built detergent formulations that do not contain organic additives such as amides. Optical dyes and materials normally found in formulated detergents do not interfere; however, materials other than sulfonates that possess strong ultraviolet absorptions must be absent. The indicated sample size and aliquoting scheme is based on samples containing 30 to 40% of active ingredient.

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.* Material Safety Data Sheets are available for reagents and materials. Review them for hazards prior to usage.

### 2. Referenced Documents

#### 2.1 ASTM Standards:

- D 460 Test Methods for Sampling and Chemical Analysis of Soaps and Soap Products<sup>2</sup>
- D 1568 Test Methods for Sampling and Chemical Analysis of Alkylbenzene Sulfonates<sup>2</sup>
- D 3049 Test Method for Synthetic Anionic Ingredient by Cationic Titration<sup>2</sup>
- D 4251 Test Method for Active Matter in Anionic Surfactants by Potentiometric Titration<sup>2</sup>
- E 275 Practice for Describing and Measuring Performance of Ultraviolet, Visible, and Near Infrared Spectrophotometers<sup>3</sup>

### 3. Summary of Test Method

3.1 This test method involves measurement of the ultraviolet absorbance of the sample at the maximum absorbance point for sodium alkylbenzene sulfonate (224 nm) and at a selected background point of 270 nm in order to determine the amount

of active ingredient present. The percentage of active ingredient is calculated from the above absorbances and data on the pure active ingredient.

### 4. Apparatus

4.1 *Spectrophotometer*,<sup>4</sup> equipped for liquid samples and for measurements in the ultraviolet region. The instrument shall be capable of measuring absorbance with a repeatability of  $\pm 0.5\%$  or better from an average at the 0.4 absorbance level in the spectral region between 220 and 270 nm. The spectral positions shall be accurate to  $\pm 0.5$  nm and repeatable to  $\pm 0.2$  nm.

4.2 *Absorption Cells*,<sup>5</sup> silica, matched pairs of optical path length  $1.000 \pm 0.005$  cm.

### 5. Reagent

5.1 *Ethyl Alcohol (95 %)*—Conforming to either Formula No. 3A or No. 30 of the U.S. Bureau of Internal Revenue.

### 6. Reference Standard

6.1 A previously analyzed sample or solution may be used to check performance of the cell and instrument.<sup>4</sup> Guard such reference samples from contamination and renew periodically (quarterly).

### 7. Calibration and Standardization of Cells<sup>4</sup>

7.1 The cells in a pair, when filled with distilled water, should match within 1 % transmittance at 224 nm. Otherwise, calibrate the cells as directed by the manufacturer and use a correction factor for each cell.

7.2 Before each day of operation, load the quartz cells with distilled water and make certain that the cells match within 1 % transmittance. This practice is necessary to check cleanliness of the cells. Clean cells, if necessary, using dichromate cleaning solution, until the desired transmittance is obtained.

NOTE 1—All glassware must be rinsed with freshly prepared distilled

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee D12 on Soaps and Other Detergents and is the direct responsibility of Subcommittee D12.12 on Analysis of Soaps and Synthetic Detergents.

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<sup>2</sup> *Annual Book of ASTM Standards*, Vol 15.04.

<sup>3</sup> *Annual Book of ASTM Standards*, Vol 03.06.

<sup>4</sup> For information on performance testing of spectrophotometers, refer to Practice E 275.

<sup>5</sup> One-centimetre silica cells manufactured by either the Pyrocell Manufacturing Co., 270 E. 84th St., New York, NY, Catalog No. S22-240, or by Beckman Instruments, Inc., Fullerton, CA, Catalog No. 40736 have been found satisfactory for this purpose.