



Designation: D 4095 – 97 (Reapproved 2002)

## Standard Practice for Use of the Refractometer for Determining Nonvolatile Matter (Total Solids) in Floor Polishes<sup>1</sup>

This standard is issued under the fixed designation D 4095; 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 practice covers the use of a refractometer for determining the nonvolatile matter (total solids) in floor polishes. This practice is also applicable to resin solutions and wax emulsions used in floor polishes.

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 1218 Test Method for Refractive Index and Refractive Dispersion of Hydrocarbon Liquids<sup>2</sup>

D 2834 Test Method for Nonvolatile Matter (Total Solids) in Water-Emulsion Floor Polishes, Solvent-Based Floor Polishes, and Polymer-Emulsion Floor Polishes<sup>3</sup>

### 3. Summary of Practice

3.1 Solids (nonvolatile matter) and refractive index are used as the basis for preparing curves that allow the use of refractive index as a fast, accurate means for determining solids in floor polishes, resin solutions, and wax emulsions.

### 4. Significance and Use

4.1 Solids (nonvolatile matter) determinations of polishes, resin solutions, and wax emulsions take 2 to 4 h in accordance with Test Method D 2834, not counting preparation time.

4.2 Curves of solids/refractive index provide a means for determining solids in a matter of minutes.

4.3 This practice is particularly useful for quality control and in process control for the production of polishes and polish components.

### 5. Apparatus

5.1 *Refractometer*—An instrument capable of reading to four decimal places.

5.2 *Water Bath*, or other means of controlling the temperature of the refractometer prisms.

### 6. Procedure

6.1 Determine the nonvolatile matter in the polish, resin, or wax emulsion in accordance with Test Method D 2834 using a minimum of three and preferably four replicates. Record the arithmetic average.

6.2 Adjust prism temperature of the refractometer to 25°C through the use of a water bath. Temperatures of 20°C and 30°C are also commonly used for refractive index work. Any convenient temperature may be used as long as that temperature is used consistently.

6.3 Standardize the refractometer using the procedure in Test Method D 1218 or according to the refractometer manufacturer's instructions. In either case standard reference liquids should be used.

6.4 Determine the refractive index of the process water used for preparation of the polish, resin, or wax emulsion according to the procedure in Test Method D 1218.

6.5 Determine the refractive index of the same sample of polish, resin solution, or wax emulsion from 6.1 according to the procedure in Test Method D 1218. (Take multiple readings and record the arithmetic average.)

6.6 Plot a curve of refractive index versus solids on standard (20 by 20/in.) graph paper.

6.6.1 Use zero (0 %) solids and the refractive index of the process water as the origin.

6.6.2 Plot the solids from 6.1 and the refractive index from 6.5 as the second point. Draw a line connecting the origin to the second point. Curves, thus produced for polishes, resin solutions, and wax emulsions are usually straight lines. Verification must be made by careful dilution (by weight) of the sample with the process water; determine the refractive index of the diluted sample that should fall on the curve at the calculated solids.

<sup>1</sup> This practice is under the jurisdiction of ASTM Committee D21 on Polishes and is the direct responsibility of Subcommittee D21.03 on Chemical and Physical Testing.

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<sup>2</sup> *Annual Book of ASTM Standards*, Vol 05.01.

<sup>3</sup> *Annual Book of ASTM Standards*, Vol 15.04.