



Designation: D2067 – 97 (Reapproved 2013)

## Standard Test Method for Coarse Particles in Printing Ink Dispersions<sup>1</sup>

This standard is issued under the fixed designation D2067; 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 the determination of the weight concentration of coarse particles in printing ink dispersions by sieve retention.

1.2 This test method is applicable to printing inks, flushed pigments, and other pigment dispersions that contain particles larger than 45  $\mu\text{m}$ . With proper choice of solvent, it is applicable both to paste and liquid inks.

NOTE 1—This test method is similar in principle to Test Methods D185. For particles under 25  $\mu\text{m}$ , see Test Method D1316.

1.3 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

1.4 *This standard does not purport to address 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:*<sup>2</sup>

- D185 Test Methods for Coarse Particles in Pigments
- D235 Specification for Mineral Spirits (Petroleum Spirits) (Hydrocarbon Dry Cleaning Solvent)
- D1316 Test Method for Fineness of Grind of Printing Inks By the NPIRI Grindometer
- E11 Specification for Woven Wire Test Sieve Cloth and Test Sieves
- E145 Specification for Gravity-Convection and Forced-Ventilation Ovens
- E691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee D01 on Paint and Related Coatings, Materials, and Applications and is the direct responsibility of Subcommittee D01.56 on Printing Inks.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

### 3. Summary of Test Method

3.1 A 50-g specimen of the test dispersion is diluted, if necessary, with a reducing varnish, mixed with 200 g of mineral spirits or other mutually agreeable solvent, mixed in a paint shaker for 30 min, and passed through a tared 325-mesh wire cloth sieve. The sieve is dried in an oven and reweighed. The residue is reported either as a percentage or in parts per million of the specimen.

3.2 The nature of the coarse particles may be identified through the use of a magnet and visual or microscopic examination.

### 4. Significance and Use

4.1 Coarse particles in printing inks reduce the efficiency of the dispersion process, requiring not only extra milling passes, but also frequent changes in pump filters. In printing processes, they may cause excessive wear to metal plates, piling or localized retention of ink on blankets and plates, and water balance problems. Coarse particles also reduce color strength and the gloss of printed matter.

4.2 This test method is suitable for quality control. The precision may be improved by the use of a specimen size larger than that prescribed.

4.3 Test results are sensitive to the type of washout solvent used. Strong solvents are to be avoided because they may dissolve large particles of resin in the ink vehicle.

### 5. Apparatus

5.1 *Wire-Cloth Sieve*, preferably disposable, 325 mesh (45  $\mu\text{m}$ ), 60.3 mm in diameter; alternatively, a 75-mm No. 325 sieve conforming to Specification E11.

NOTE 2—A disposable sieve is preferred for precision because it weighs only 0.5 g compared to about 70 g for a conventional sieve.

5.2 *Washout Cup Assembly* (for use with the disposable sieve), assembled according to the manufacturer's instructions.

5.3 *Balance*, sensitive to 1.0 mg, preferably 0.1 mg.

5.4 *Paint Shaker*.

5.5 *Oven*, gravity-convection type conforming to Type 1B in Specification E145 and maintained at  $110^\circ \pm 5^\circ\text{C}$ .

5.6 *Mixing Container*, such as a widemouth bottle or jar, with screw cap, capacity 473 mL (1 pt), preferably plastic. If a