



Designation: D 2967 – 02

## Standard Test Method for Edge Coverage of Powder Coatings<sup>1</sup>

This standard is issued under the fixed designation D 2967; 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 ratio of edge thickness (see 3.1.3) to face thickness (see 3.1.4) of powdered plastic coatings applied to a specific face thickness by dipping preheated square bars into aerated powder and curing the coating using predetermined conditions.

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 374 Test Methods for Thickness of Solid Electrical Insulation<sup>2</sup>

D 1898 Practice for Sampling of Plastics<sup>3</sup>

### 3. Terminology

#### 3.1 Definitions of Terms Specific to This Standard:

3.1.1 *coating powders, n*—finely divided particles of resin, either thermoplastic or thermosetting, generally incorporating pigments, fillers, and additives and remaining finely divided during storage under suitable conditions, which, after fusing and possibly curing, give a continuous film.

3.1.1.1 *Discussion*—The coating powder may contain fillers, colorants, curing agents, etc., consistent with producing the desired coatings. The powder is applied by various methods such as spraying, sprinkling, or dipping. Usually hot parts are used. Heat causes the powder to melt and flow into a dense coating.

3.1.2 *edge coverage, n—of powder coating*, the ratio of the edge thickness to the face thickness of the fused coating expressed in percent.

3.1.3 *edge thickness, n—of powder coating*, the average thickness of the coating on sharp 90° edges of steel bars measured at 45° to the flat surfaces.

3.1.4 *face thickness, n—of powder coating*, the average thickness of the coating on flat surfaces of steel bars measured perpendicular to the surfaces.

3.1.5 *powder coatings, n*—coatings which are protective or decorative, or both, formed by the application of a coating powder to a substrate and fused in a continuous film by the application of heat or radiant energy.

### 4. Significance and Use

4.1 This test method measures the degree to which different coating powder materials cover sharp edges. Edge coverage is influenced by face thickness, thixotropy, melt viscosity, surface tension, cure rate, and temperature of application and curing.

### 5. Apparatus

5.1 *Aerated Bed*—Suitable for providing a uniformly suspended dense phase of free-moving powder. Fig. 1 shows a schematic of an aerated bed used for suspending the coating powder. The equipment consists of an open top chamber which has a porous plate for a false bottom. Air is introduced under the plate at a low pressure so that it filters through the porous plate and uniformly suspends the particles contained in the chamber.

5.2 *Micrometer Caliper*—1 in. (25.4 mm), in accordance with Method C of Test Methods D 374.

5.3 *Oven*, with forced convection capable of maintaining the specified temperature within  $\pm 3^\circ\text{C}$ .

5.4 *Test Bars*, four, measuring 13 by 13 by 100 mm ( $\frac{1}{2}$  by  $\frac{1}{2}$  by 4 in.) in accordance with Fig. 2.

5.4.1 Use bars that are free of rust and dirt, and which have been washed with a clean solvent to remove any traces of oily substances. Bars may be reused if the coating used in a previous test has been completely removed without marring the surfaces or corners of the bars. Appropriate methods of removal include the use of stripping solutions, heat, and careful scraping with a sharp blade, or combinations thereof.

### 6. Sampling

6.1 The powder sample shall be from one lot and be representative of the lot using Method A of Practice D 1898.

<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 D01.51 on Powder Coatings.

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<sup>2</sup> *Annual Book of ASTM Standards*, Vol 10.01.

<sup>3</sup> *Annual Book of ASTM Standards*, Vol 08.01.