



Designation: D1763 – 00(Reapproved 2005)

## Standard Specification for Epoxy Resins<sup>1</sup>

This standard is issued under the fixed designation D1763; 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.

*This standard has been approved for use by agencies of the Department of Defense.*

### 1. Scope

1.1 This specification covers totally reactive epoxy resins supplied as liquids or solids which can be used for castings, coatings, tooling, potting, adhesives, or reinforced applications. The addition of hardeners in the proper proportions causes these resins to polymerize into infusible products. The properties of these products can be modified by the addition of various fillers, reinforcements, extenders, plasticizers, thixotropic agents, etc. The epoxy resins described also can be used as stabilizers and cross-linking agents; and they can be combined with other reactive products.

1.2 It is not the function of this specification to provide engineering data or to guide the purchaser in the selection of a material for a specific end use. Ordinarily the properties listed in **Table 1** and **Table 2** are sufficient to characterize a material under this specification, and it is recommended that routine inspection be limited to testing for such properties.

1.3 *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.*

1.4 The values stated in SI units are to be regarded as standard.

NOTE 1—ISO 3673–1:1980(E) is similar but not equivalent to this specification. Product classification and characterization are not the same.

### 2. Referenced Documents

#### 2.1 ASTM Standards:<sup>2</sup>

**D445 Test Method for Kinematic Viscosity of Transparent and Opaque Liquids (and Calculation of Dynamic Viscosity)**

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee D20 on Plastics and is the direct responsibility of Subcommittee D20.16 on Thermosetting Materials.

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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.

**D883 Terminology Relating to Plastics**

**D1209 Test Method for Color of Clear Liquids (Platinum-Cobalt Scale)**

**D1544 Test Method for Color of Transparent Liquids (Gardner Color Scale)**

**D1652 Test Method for Epoxy Content of Epoxy Resins**

**D3104 Test Method for Softening Point of Pitches (Mettler Softening Point Method)**

**D3892 Practice for Packaging/Packing of Plastics**

2.2 *ISO Standard:*<sup>3</sup>

**ISO 3673–1:1980(E) Plastics—Epoxy Resins—Part 1**

### 3. Terminology

#### 3.1 Definitions:

3.1.1 *General*—Definitions of terms used in this specification are in accordance with Terminology **D883**.

### 4. Classification

4.1 The resins covered contain no hardeners. Resin types covered are divided into specific groups by their chemical nature:

4.1.1 *Type I*—Bisphenol A and epichlorohydrin.

4.1.2 *Type II*—Reaction product of phenol and formaldehyde (novolac resin) and epichlorohydrin.

4.1.3 *Type III*—Cycloaliphatic and peracid epoxies.

4.1.4 *Type IV*—Glycidyl esters.

4.1.5 *Type V*—Reaction product of epichlorohydrin and *p*-aminophenol.

4.1.6 *Type VI*—Reaction product of epichlorohydrin and glyoxal tetraphenol.

4.2 These types may be further subdivided by grades:

4.2.1 *Grade 1*—Resins containing no diluent.

4.2.2 *Grade 2*—Resins modified with a reactive diluent. Each class of Grade 2 resin can be made from any class of Grade 1 resin.

4.2.3 Each grade may include as many classes as are shown in the tables.

<sup>3</sup> Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036.

\*A Summary of Changes section appears at the end of this standard