
Standard Specification for Epoxy Resin Adhesives

AASHTO Designation: M 235M/M 235-24

Technically Revised: 2024

Technical Subcommittee: 4c, Markings and Coatings

ASTM Designation: C881/C881M-20a



**American Association of State Highway and Transportation Officials
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1. SCOPE
- 1.1.

This specification covers two-component epoxy resin bonding systems for application to portland cement concrete, which are able to cure under humid conditions and bond to damp surfaces.
- 1.2.

This specification does not cover epoxy-resin-base bonding systems that have been modified by addition of components such as cement, fine aggregate, or fiber reinforcement. Additional testing may be required to meet applicable specifications for these applications.
- 1.3.

This specification does not address the effects of creep on epoxy-resin-base bonding systems while under load or the potential for creep rupture. Additional testing is required for applications where creep and creep rupture are critical.
- 1.4.

The text of this standard refers to notes and footnotes that provide explanatory material. These notes and footnotes (excluding those in tables and figures) shall not be considered as requirements of this standard.
- 1.5.

The values stated in either SI units or inch-pound units are to be regarded separately as standard. Some values have only SI units because the inch-pound equivalents are not used in practice. Within the text, the inch-pound units are shown in brackets. The values stated in each system are not exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in nonconformance with this standard.
- 1.6.

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. For specific hazards statements, see Section 9.

2. REFERENCED DOCUMENTS

- 2.1. *ASTM Standards:*
- C882/C882M, Standard Test Method for Bond Strength of Epoxy-Resin Systems Used with Concrete by Slant Shear
- C884/C884M, Standard Test Method for Thermal Compatibility between Concrete and an Epoxy-Resin Overlay
- D570, Standard Test Method for Water Absorption of Plastics
- D638, Standard Test Method for Tensile Properties of Plastics

- D648, Standard Test Method for Deflection Temperature of Plastics Under Flexural Load in the Edgewise Position
- D695, Standard Test Method for Compressive Properties of Rigid Plastics
- D2556, Test Method for Apparent Viscosity of Adhesives Having Shear-Rate-Dependent Flow Properties Using Rotational Viscometry
- D2566, Test Method for Linear Shrinkage of Cured Thermosetting Casting Resins during Cure (withdrawn 1993; no replacement)

3. TERMINOLOGY

3.1. *Definitions of Terms Specific to This Standard:*

- 3.1.1. *binder, n*—the cementitious part of a grout, mortar, or concrete that binds the aggregate or filler into a cohesive mass.
- 3.1.2. *bonding system, n*—the product resulting from the combination of all the components supplied for use as a bonding material.
- 3.1.3. *component, n*—a constituent that is intended to be combined with one or more other constituents to form a bonding system.
- 3.1.4. *contact strength, n*—bond strength measured by slant shear after a specified contact and cure time.
- 3.1.5. *contact time, n*—specified time between when the epoxy system is applied and when the two segments are bonded together and still achieve a specified bond strength after a specified curing time and temperature.
- 3.1.6. *curing agent, n*—a substance that causes the conversion of a fluid resin system to a solid cured resin by means of a chemical reaction.
- 3.1.7. *epoxy equivalent, n*—the weight of resin containing one molecular weight of epoxy groups.
- 3.1.8. *epoxy resin, n*—a resin that contains or did contain epoxy groups principally responsible for its polymerization.
- 3.1.9. *filler, n*—a finely divided solid, predominantly passing the 75- μm [No. 200] sieve, that is used to improve certain properties of the bonding system or to reduce cost.
- 3.1.10. *formulator, n*—the agency responsible for preparing the separate components and for recommending the proportions to be used in preparing the final bonding system.
- 3.1.11. *lot or batch, n*—that quantity of manufactured material that has been subjected to the same unit chemical or physical processes intended to make the final product substantially uniform.
- 3.1.12. *manufacturer, n*—a producer of a basic constituent part of a component.
- 3.1.13. *reactive diluent, n*—a relatively free flowing liquid used to reduce the viscosity of the liquid resin or resin mixture, and that contains reactive groups that cause it to become an integral part of the cured resin.
- 3.1.14. *working (pot) life, n*—the time after mixing during which a bonding system or mixture containing it retains sufficient workability for proper use.