

Item No. 867S
Epoxy Adhesive

867S.1 Description

This item shall govern the various types of epoxy materials suitable for the construction and maintenance of streets and roads indicated on the Drawings or considered in the Item.

This specification is applicable for projects or work involving either inch-pound or SI units. Within the text, the inch-pound units are given preference followed by SI units shown within parentheses.

All of these materials shall consist of a resin component and a hardener component, which must be mixed immediately prior to use to produce the finished epoxy. Unless otherwise indicated on the Drawings, these materials should not be used if the substrate temperature is below 50°F (10°C). The specific materials covered by this item are as follows:

- A. Traffic marker adhesives
- B. Concrete adhesives
- C. Binder for epoxy grout or concrete
- D. Epoxy for crack injection
- E. Epoxy coating for concrete
- F. Surface sealing of cracks

867S.2 Submittals

The submittal requirements of this specification item include:

- A. List of specific application(s) [i.e. items A through F in Section 867S.1] and applicable epoxy system and adhesive types [Section 867S.5].
- B. Manufacturer's recommendations for surface preparation, cleaning, placement temperatures and installation instructions.
- C. Adhesive components and mixing recommendations.

867S.3 Epoxy Materials Requirements

A. General

Epoxy materials described herein shall be in accordance with TxDOT Departmental Material Specification DMS-6100. Additional information regarding epoxy characteristics and copies of specification DMS-6100 are available from the TxDOT Materials and Tests Division, 125 East 11th Street, Austin, Texas 78701-2483.

B. Packaging, Labeling and Storage

The components shall be packaged in suitable, well-sealed containers clearly labeled as to the type material and the ratio of the components to be mixed by volume. Any special instructions regarding mixing shall be included. The label shall show resin or hardener component, the brand name, name of manufacturer, lot or batch number, date of packaging and the quantity contained therein. Caution warnings regarding contact of the epoxy with skin and eyes, shelf life and vapor warning must be included on the labels.

The epoxy components must be stored at temperatures between 60°F and 100°F (16°C and 38° C). Any material which shows evidence of crystallization, lumps, skinning, extreme thickening or settling of pigments which cannot be readily redispersed with normal agitation shall not be used.

C. Mixing

Prior to use, each component shall be stirred to re-disperse any settling or separation of the fillers and liquid portions. The components shall then be placed immediately in the proper reservoir when used in automatic mixing and dispensing equipment. For application by other means, the components must be properly proportioned and mixed until a uniform color and appearance are obtained. Unless otherwise indicated by the manufacturer or approved by the Engineer, or designated representative no addition of solvents is allowed.

867S.4 Application and Surface Preparation

Requirements on application and preparation of the surface upon which the epoxy is to be placed shall be in accordance with manufacturer's recommendation and applicable specification items.

867S.5 Epoxy System

The various types of materials and their intended use are described below.

A. Traffic Marker Adhesive System

This system consists of five basic types of epoxy adhesive for bonding ceramic, plastic or metal traffic markers to roadway, bridge, or other concrete surfaces.

1. Types I and I-M

Rapid Setting Marker Adhesive for use when a very fast set is required or if markers must be placed when pavement temperature is below 50°F (10°C).

2. Types II, II-M and II-MA

Medium Setting Marker Adhesive

3. Types III and III-M

Standard Setting Marker Adhesive

4. Types IV and IV-M

Slow Setting Marker Adhesive for use where setting time is not a consideration.

Those adhesives designated as Types I through IV are intended for hand mixing and application. On projects where the adhesive is to be handled by automatic metering, mixing and application equipment, Types I-M through IV-M, which are designed specifically for machine application, shall be used. Type II- MA adhesive is designed for placement of all-weather markers. For all types of marker adhesives, the resin component shall be pigmented white and the hardener component black.

The type of adhesive to be used for placing ceramic or plastic markers on a specific project shall be designated by the Contractor and approved by the Engineer or designated representative, based upon the setting time required under the prevailing weather and traffic conditions.

B. Concrete Adhesives System

This system consists of three types of epoxy adhesive with different viscosities designed to bond fresh Portland Cement concrete to existing Portland Cement concrete, hardened concrete to hardened concrete and steel to fresh or hardened concrete.

1. Type V

Standard (medium viscosity) for applying to horizontal and vertical surfaces. This material is suitable for surface sealing of fine cracks in concrete and setting of dowels in accordance with Specification Item 410, "Concrete Structures".

2. Type VI

Low viscosity for application with spray equipment to horizontal surfaces.

3. Type VII

Paste consistency for overhead application and where a high build-up is required. This material is suitable for surface sealing of cracks in concrete, which are veed out prior to sealing and for grouting of dowel bars where clearance is 1/16 inch (1.5 mm) or less.

Any specific coloring of resin and hardener components shall be as directed by the Engineer or designated representative.

C. Epoxy Binder System (Type VIII)

This system is intended for mixing with selected aggregates to produce an epoxy mortar or concrete for grouting dowel bars or repairing spalls and other defects in existing Portland Cement concrete. Type VIII shall comply with the requirements for Type VI epoxy except that the mixing ratio of resin and hardener shall be as specified by the manufacturer and the requirement for ability to bond fresh Portland Cement concrete to hardened concrete does not apply.

The aggregates used with the epoxy binder to form the epoxy mortar or concrete must be clean and surface dry. Siliceous aggregates are required unless otherwise approved by the Engineer or designated representative.

D. Crack Injection (Type IX)

This system is a low viscosity epoxy material designed for pressure injection into cracks in existing concrete to restore the structural integrity. The system shall be capable of bonding to damp surfaces.

E. Epoxy Coating (Type X)

This is a high-solids epoxy used for waterproofing columns, caps, etc. The material is designated for application by brush or roller, but can also be applied by airless spray by addition of a maximum of 5 percent toluene solvent at the direction of the Engineer or designated representative. This material may also be used to coat the interior concrete block walls and as a coating for concrete picnic tables and benches.

867S.6 Measurement and Payment

The work performed, the materials furnished and all labor, tools, equipment and incidentals necessary to complete the work under this item will not be measured for payment, but shall be included in the unit price bid for the particular bid items indicated on the Drawings or included in the Contract.

End

<u>SPECIFIC</u> CROSS REFERENCE MATERIALS
Specification Item 867S "Epoxy Adhesive"

Texas Department of Transportation: Departmental Materials Specifications

<u>Designation</u>	<u>Description</u>
DMS-6100	Epoxy Materials

City of Austin Standard Specifications

<u>Designation</u>	<u>Description</u>
Item No. 401S	Concrete Structures

<u>RELATED</u> CROSS REFERENCE MATERIALS

City of Austin Standard Specifications

<u>Designation</u>	<u>Description</u>
Item No. 863S	Reflectorized Pavement Markers
Item No. 864S	Abbreviated Pavement Markings
Item No. 865S	Non-Reflectorized Traffic Buttons
Item No. 866S	Jiggle Bar Tile
Item No. 870S	Work Zone Pavement Markings
Item No. 871S	Reflectorized Pavement Markings
Item No. 872S	Prefabricated Pavement Markings
Item No. 873S	Raised Pavement Markers
Item No. 874S	Eliminating Existing Pavement Markings and Markers
Item No. 875S	Pavement Surface Preparation For Markings

City of Austin Standard Details

<u>Designation</u>	<u>Description</u>
863S-1	Pavement Buttons (Reflectorized-Type I & Type II)
865S-1	Traffic Buttons (Non-Reflectorized)

Texas Department of Transportation: Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges

<u>Designation</u>	<u>Description</u>
Item No. 575	Epoxy
Item No. 662	Work Zone Pavement Markings
Item No. 666	Reflectorized Pavement Markings
Item No. 667	Prefabricated Pavement Markings
Item No. 672	Raised Pavement Markers
Item No. 677	Eliminating Existing Pavement Markings and Markers
Item No. 678	Pavement Surface Preparation For Markings

Texas Department of Transportation: Manual of Testing Procedures

<u>Designation</u>	<u>Description</u>
Tex-828-B	Determining Functional Characteristics of Pavement Markings
Tex-829-B	Method For Measuring Pavement Temperature

American Society for Testing and Materials (ASTM)

<u>Designation</u>	<u>Description</u>
D-362	Specification for Industrial Grade Toluene

City of Austin Transportation Criteria Manual

<u>Designation</u>	<u>Description</u>
Section 8	Traffic Control

State of Texas Manual on Uniform Traffic Control Devices for Streets and Highways

<u>Designation</u>	<u>Description</u>
Part III	Markings
Part VI	Traffic Controls for Street and Highway Construction, Maintenance, Utility and Incident Management Operations

Part VI, Article D	Markings
Part VI, Article F	Control of Traffic Through Work Area