ASTM C881

Adhesives

Epoxy Resin Systems for Civil Engineering Applications

ASTM C881

“Standard Specification for Epoxy-Resin Based Bonding Systems for Concrete”

Replace or Repair? A restoration project properly executed and using the correct repair products can add years to the service life of a structure. The cost to properly repair a structure is often significantly less than the cost of replacement or further deterioration. However, a poorly designed repair project using the wrong products can result in a continuing, expensive headache. The American Society for Testing and Materials developed ASTM C881 to assist engineers, architects and contractors select resin systems best suited for a particular application.

This specification defines a classification system for epoxy resins and is routinely referenced in civil engineering projects. Seven Types are listed, based on application and physical properties such as compressive strength, modulus and bond strength. For each Type of epoxy system, the specification describes three Grades according to viscosity and sag resistance.

  Grade 1: Low Viscosity (2,000 cps max.)
  Grade 2: Medium Viscosity (2,000 – 10,000 cps)
  Grade 3: Non-Sag (1/4” sag resistance)

The epoxy systems are further characterized by Class, which indicates the temperature range in which the epoxy can be applied. As an example, Class A products are designed for use below 40 degrees F., Class B products are for use between 40-60 degrees F., and Class C products are for use above 60 degrees F. Epoxy Chemicals, Inc. provides epoxy curing agents used to formulate the Types, Grades and Classes commonly used in civil engineering applications.

Epoxy Chemicals amine curing agents, A-6 Polyamine, FB-31 Polyamine, and FS-290 Polyamine, are used in the formulation of the following ASTM C881 epoxies:

Type I – Bonding hardened concrete to hardened concrete (non-load bearing).
Type II – Bonding fresh concrete to hardened concrete (non-load bearing)
Type III – Bonding skid resistant materials to hardened concrete (low modulus)
Type IV – Bonding hardened concrete to hardened concrete (load bearing)
Type V – Bonding fresh concrete to hardened concrete (load bearing)
Type VI – Bonding and sealing segmental pre-cast elements with internal tendons and span by span erection.
Type VII – Sealing segmental pre-cast elements.