DMS-8140, Concrete Surface Treatment (Penetrating)

Overview

(Formerly D-9-8140, Concrete Surface Treatment [Penetrating]).


This specification shall govern for the materials, composition, quality, sampling, testing, and prequalification of two types (Type I – silane and Type II – siloxane) of concrete surface treatments (penetrating).

Bidders’ and/or Suppliers’ Requirements

All prospective bidders and/or suppliers are notified that the material proposed for submission shall be on the list of approved materials maintained by the Construction Division, Materials & Pavements Section (CST/M&P) of TxDOT.

Payment

Procurement by the State

Payment for all materials under this specification shall be in accordance with the conditions prescribed in the contract awarded by the State.

Contracts

All materials covered by this specification utilized in the performance of work shown on the plans shall be considered subsidiary to the bid item or paid for in accordance with the bid item in the contract.

Establishment of Quality

Prequalification as an Approved Source

Prospective suppliers, who desire to establish prequalification for materials governed by this specification, will submit a one (1) liter (one [1] quart) sample of the material to be prequalified to the Texas Department of Transportation, Construction Division, Director of Materials & Pavements Section, Cedar Park Campus, Bldg. 51, 9500 Lake Creek Parkway, Austin, TX 78717.

TxDOT will evaluate, at no cost to the supplier, one (1) formulation per supplier for conformance with the requirements of this specification.
If approved for use by TxDOT, the material(s) will be added to the list of approved products maintained by CST/M&P.

Any additional samples necessary to establish quality will be charged to the supplier at a rate of $250.00 per sample. Additional samples, after the first, shall be accompanied by a written request for evaluation and a cashier’s check in the amount of $250.00 made payable to the "TxDOT Fund."

**Formulation Changes**

One submission of a reformulation of an approved product will be permitted per year at no cost to the supplier.

Any change in formulation detected, without requalifying, will be cause to withdraw qualification.

A supplier, who has had qualification withdrawn due to formulation change, shall bear all costs of requalifying at the rate of $250.00 per sample. Furthermore, requalifying will not be allowed in less than six months.

**Sampling and Testing**

Sampling and testing of materials shall be in accordance with CST/M&P *Manual of Testing Procedures*.

The costs of sampling and testing are normally borne by TxDOT; however, the costs of sampling and testing of materials failing to conform to the requirements of this specification shall be borne by the contractor or supplier.

Costs of sampling and testing of failing material shall be assessed at the rate established by the CST/M&P in effect at the time of testing.

**Material Requirements**

This specification covers the general and specific requirements for two types (Type I – silane base and Type II – siloxane base) of concrete surface treatments.

Both types of concrete surface treatment shall meet all requirements except where specific requirements are shown for a particular type.

**General Requirements**

The concrete surface treatments shall be a flowable, penetrating solution capable of being applied by spray or roller.

The applied and cured material shall not form a film or otherwise build up on the surface of the treated concrete.
The performance of the concrete surface treatment shall not be adversely affected when applied to concrete with a surface temperature between 5 and 45 °C (40 and 110 °F).

The penetrating sealer solution shall be tinted with a fugitive dye to enable the solution to be visible on the treated surface to the unaided eye for at least five hours after application; The fugitive dye shall not be conspicuous more than seven days after application when exposed to direct sunlight.

The penetrating solution shall not permanently stain, discolor, or darken the concrete surface.

The concrete surface treatment shall remain stable during storage in unopened containers for a minimum of one year such that, when sampled and tested, the stored material will conform to the requirements of this specification.

The exact composition of the material shall be left to the manufacturer, provided that the finished product meets the requirements as stipulated.

♦ Water Repellency & Depth of Penetration
  • Concrete specimens, treated with the concrete surface treatment at a coverage rate of three (3) square meters per liter (125 square feet per gallon), shall absorb a maximum of 1.0 percent moisture and shall exhibit a minimum depth of penetration of six (6) millimeters (0.25 inches) when tested in accordance with Test Method "Tex-897-B, Determining the Water Repellency and Depth of Penetration of Penetrating Concrete Treatments."

♦ Accelerated Weathering
  • A mortar specimen treated with concrete surface treatment, at a coverage rate of three (3) square meters per liter (125 square feet per gallon), shall absorb a maximum of 2.25 percent moisture after one thousand hours of Weather-Ometer (Atlas, Sunshine Type) exposure in accordance with Test Method "Tex-898-B, Weather-Ometer Durability of Penetrating Concrete Treatments."

♦ Density (Gallon Weight)
  • The density (gallon weight) shall not vary more than plus or minus 0.006 kilograms per liter (0.05 pounds per gallon) from the density (gallon weight) of the prequalification sample, per ASTM D 1475.

♦ Infrared Spectrum
  • The infrared spectrum of the concrete surface treatment shall match the spectrum of the prequalification sample on file with CST/M&P when tested in accordance with Test Method "Tex-888-B, Obtaining the Infrared Spectrum of Organic Materials."

♦ Gas Chromatogram
The gas chromatogram of the concrete surface treatment shall match the chromatogram of the prequalification sample on file with the CST/M&P.

**Specific Requirements**

The nonvolatile content, when determined in accordance with ASTM D 5095 shall not vary by more than 3.0 percent above or 1.0 percent less than the value obtained on the prequalification sample in addition to the following requirements:

♦ Type I silane-based concrete surface treatments shall not contain methyl trimethoxy silane.

♦ The nonvolatile content shall be a minimum of 20 percent when determined in accordance with ASTM D 5095.

♦ Type II siloxane-based concrete surface treatment shall be a minimum of 12 percent when determined in accordance with ASTM D 5095.