



WSDOT Test Method T 330

Method for Coatings (Pigmented Sealers) Used on Concrete Structures

Scope

The test method covers preparing film of uniform thickness of coating on test panels, the calculation of color differences from instrumentally measured color coordinates and the infrared identification of vehicle from pigmented sealer.

Apparatus

Penopac paper charts/test panel.

Film Applicator Blade

Plastic centrifuge tube -50 ml capacity

Centrifuge machine

Fourier Transform Infrared Spectrophotometer (FTIR)

Portable Color Spectrophotometer – BYK-Gardner

Procedure

1. Gently stir pigmented sealer until sample is thoroughly mixed, usually 3-5 minutes is sufficient.
2. Prepare a uniform film of a coating material is produced on a test panel by means of a hand-held applicator blade. The thickness of coating applied is controlled by the rate at which the applicator blade is drawn across the test panel, the viscosity of material, the amount of nonvolatile matter in the material, and the clearance of the blade.
 - a. Select an applicator blade that has a clearance that will provide a theoretical wet film thickness of 6 mils.
 - b. Position the applicator blade near the edge of the panel and place a pool of the liquid material in front of it.
 - c. Grasp the sides of the applicator with the fingers and pull it across the panel at a speed of about 10-12 inches/second.
 - d. Air dry the applied coating in a horizontal position in a dust free atmosphere.

3. Perform instrumental measurements using portable spectrophotometer and calculate color differences between working standard and applied coating on test panel.
 - a. Calibrate and verify the portable spectrophotometer in accordance to the manufacturer's user manual.
 - b. Take the spectrophotometer reading on the prepared dry sample overlaying the white matte section of the Penopac paper chart/test panel.
 - c. Report the spherical spectral Delta E (CIE L*a*b*) ΔE^*_{ab} and the gloss reading.
4. Prepare infrared spectra from the coating vehicle.
 - a. Place 30 – 45 mls of thoroughly mixed pigmented sealer in a 50 ml centrifuge tube. Spin in a centrifuge at approximately 2000 RPM's until clear vehicle is visible on the top of the sealer.
 - b. Initialize and verify the FTIR is optimally functioning according to the manufacturer's user manual. Set the configuration so that the X axis reads from 500 to 4000 wavenumbers and the Y axis is reading in percent transmittance.
 - c. Analyze the separated vehicle and compare the test sample results to the library of sample spectral scans. The resulting spectral scan is specific to this class of material – methyl methacrylate-ethyl acrylate copolymer, Washington State gray, Mount Saint Helen's Gray, Mt. Baker Gray or Cascade Green. The sample should be within a minimum match of 80% to the specific material scan in the library file.