



TECHNICAL BULLETIN

800 Roosevelt Road, Building C-312, Glen Ellyn, IL 60137

1st Revision 1990
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Determination of Slurry System Compatibility

All ingredients of a successful slurry seal formulation must be mutually compatible; i.e., they must:

- (1) combine to form a smooth, stable homogeneous mass,
- (2) be capable of mixing and workable for at least two minutes after addition of the asphalt emulsion.
- (3) after placement the mix should remain stable and homogeneous so that neither aggregate fines nor asphalt stratifies or migrates to the surface or drains to the base of the mix,
- (4) should cure with a firm bond to the base and have internal adhesion and cohesion of the mat adequate to prevent raveling of the aggregate from the mix.

References:

- ISSA TB #106- Measurement of Slurry Seal Consistency
ISSA TB #102- Mixing, Setting and Water Resistance Tests to identify "Quick-Set" Emulsified Asphalts
- ISSA TB #111- Outline Guide of Design Procedure for Slurry Seal Mixes
- ISSA TB #113- Trial Mix Procedure for Slurry Seal Design
ISSA TB #114- Wet Stripping Test for Cured Slurry Seal Mixes
- ISSA TB #144- Test Method for Classification of Aggregate Filler-Bitumen Compatibility by Shultz-Breuer and Ruck Procedures
- ISSA TB #149- Test Method for Slurry Seal Boiling Compatibility

PROCEDURE

1.0 Split Consistency Test

- 1.1 Trial mixes are made in accordance with ISSA TB #113 to estimate optimum water content, filler requirements and mix workability.
- 1.2 Cone consistency tests are made in accordance with ISSA TB #106 to obtain optimum water contents at three levels of emulsion (e.g., 12, 15 & 18% for type II gradations).
- 1.3 Optimum consistency specimens of between 2 and 3 cm outflow are air dried to constant weight or placed in air forced draft ovens for 15 hours at 140°F (60°C) and cooled. These specimens are vertically split across the diameter of the specimen by projecting half the specimen over a sharp table edge and breaking with pressure from the hands. The broken edge of the consistency specimen is examined for evidence of asphalt or aggregate migration. The surface of the consistency specimens is examined for excessively sticky surfaces. Observations are recorded.

2.0 Split Cup Compatibility Test

If suspicious disuniformity appears in the split consistency specimens run a referee test; the split cup compatibility test.

- 2.1 Mix 100 grams of each formulation to be tested and pour into a 6 oz. (177 ml) plastic-lined hot drink cup. Allow the mix to cure for a minimum of 15 hours or until solid.
- 2.2 Separate the cured mix into upper and lower halves and place each half into separate 8 oz. (237 ml) ointment tins and dry thoroughly in a forced draft oven at 250°F (121°C) for 4 hours.
- 2.3 Extract asphalt by reflux method from upper and lower halves and record % AC in each.
- 2.4 Run a split median gradation of the extracted aggregate over a #16 (1.18 mm) sieve and record % retained on the # 16 (1.18 mm) sieve.

3.0 Wet Stripping (Adhesion or Coating) Test

- 3.1 10 grams of cured slurry in 13.5 oz. (400 ml) of boiling water for 3 minutes. See ISSA TB #114, ISSA TB #144 and ISSA TB #149.

4.0 Report

- 4.1 Consistency Test at 2-3 cm-report:
 - (a) surface as satisfactory (pass)
 - (b) surface as tacky (fail)
- 4.2 Split Consistency Test-report:
 - (a) uniform (pass)
 - (b) not uniform (fail)
- 4.3 Referee Split Cup Consistency Test-report:
 - (a) % AC difference
 - (b) % + 16 difference
(Differences greater than 15% fail)
(Differences less than 10% pass)
- 4.4 Wet Stripping Test-report:
 - (a) less than 75% coating (fail)
 - (b) less than 90% coating (marginal)
 - (c) greater than 90% (pass)
- 4.5 Mix and Workability Test-report:
 - (a) more than 2 minutes (pass)
 - (b) less than 2 minutes (fail)*
- 4.6 The slurry seal formulation under test is identified as "compatible" if reports under 4.1 through 4.5 above are all "Passing."

* May not be applicable for certain Quick-Set or Quick-Traffic Systems.