



Test Method for Determining Mix Time for Slurry Surfacing Systems

1. Scope

- 1.1 This test method measures the mixing time of a specific combination of materials for a slurry surfacing system. The Recommended Performance Guidelines for Emulsified Asphalt Slurry Seal and Micro Surfacing, ISSA A105 and A143, provide specific target values for mix time results at 25°C (77°F).

2. Referenced Documents

- 2.1 ISSA Technical Bulletins:
A105 Recommended Performance Guideline for Emulsified Asphalt Slurry Seal
A143 Recommended Performance Guideline for Micro Surfacing
- 2.2 ASTM Standards:
C 136 Sieve Analysis of Fine and Coarse Aggregates

3. Significance

- 3.1 This test verifies raw material compatibility and establishes the proper component proportions needed to ensure sufficient mix time for product application.

4. Summary of Method

- 4.1 Slurry surfacing mixtures may contain emulsified asphalt, mineral aggregate, water, mineral filler and additives. Materials are mixed in specific amounts.
- 4.2 A portion of the mix is cast onto a substrate and observed over time for setting and curing characteristics.
- 4.3 The consistency of the remaining portion is observed throughout the mixing period and the break time of the mixture is recorded.

5. Apparatus

- 5.1 Mixing containers, such as suitably sized, smooth surface, non-absorbent drink cups or bowls.
- 5.2 Mixing utensil, such as a spatula suitably sized for the mixing container.
- 5.3 Sieve, No. 20 (850 µm).
- 5.4 Balance, capable of weighing 500 grams to within 0.1 gram.
- 5.5 Paper, aluminum foil, roofing felt or other suitable material onto which the mix specimen can be cast.
- 5.6 Thermometric device, suitable to accurately record the temperature of the environment at which the mix is prepared.
- 5.7 Suitable timer to read both minutes and seconds.
- 5.8 White paper towels.

6. Materials

- 6.1 Aggregate shall be representative of the material to be used on the project. Care should be taken to prevent segregation.
- 6.2 Emulsified asphalt shall be representative of the material to be used on the project and should be uniformly mixed. Oversized particles of asphalt shall be removed by pouring the sample through the No. 20 (850 µm) sieve.
- 6.3 Water should be potable.
- 6.4. Mineral fillers and other liquid and/or solid additives shall be representative of the materials to be used on the project. If required, the type and concentration of liquid additives should be recorded.

7. Procedure

- 7.1 Initial mixes are prepared with materials at room temperature. Subsequent mixes may be made with materials at temperatures likely to be encountered in the field.

Note: As ambient and material temperatures change, the mix time is impacted. Therefore, note the temperature at which the materials were mixed in order to understand mix time versus temperature change at the time of field application.

- 7.2 Weigh 100 to 400 g of the aggregate, based on dry aggregate weight, into the mixing container.
7.3 Add the desired amount of mineral filler or dry additive, based on dry aggregate weight.
7.4 Mix at 60-70 RPM in a circular motion for 10 seconds or until the distribution of the filler is uniform.
7.5 Add the desired amount of water and liquid additive, if required, based on dry aggregate weight. Mix at 60-70 RPM in a circular motion for 20 seconds or until distribution of the liquid ingredients is uniform.
7.6 Add the desired amount of emulsified asphalt, based on dry aggregate weight, and start the timer. Immediately mix at 60-70 RPM in a circular motion for 30 seconds.
7.7 After 30 seconds, cast about half of the mix onto the paper, aluminum foil, or roofing felt, retaining half of the mix in the container. Spread the mix to a depth of 6.4 -10 mm (1/4 - 3/8 in)
7.8 Continue mixing the portion remaining in the container for a maximum of 5 minutes or until the mix stiffens and "breaks". Record the mix time in seconds.

Note: Also, note the time when the specimen was cast to the nearest minute. Periodically depress the cast mixture with your finger and note the time when it becomes firm. With a paper towel, periodically press lightly on the mixture and note the time required to reach a clear water set.

- 7.9 Observe the consistency of the mix throughout the procedure. If free liquids are present, or if the mix is excessively dry or stiff, adjust the combination of materials in successive trial mixes.

8. Report

- 8.1 The mix time is reported in seconds.