
Standard Specification for Materials for Slurry Seal

AASHTO Designation: MP xx-17

Technical Section: 2a

Release: Group 3 (Month yyyy)

Working Draft



American Association of State Highway and Transportation Officials
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1. SCOPE

- 1.1. ~~This standard covers requirements for emulsified asphalt, aggregate, mineral filler, water and additive materials used in slurry seals. Slurry seals are mixed and placed on existing pavement surfaces using specially designed paving machines.~~

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2. REFERENCED DOCUMENTS

- 2.1. AASHTO Standards:
- M 17, Mineral Filler for Bituminous Paving Mixtures
 - M 85, Portland Cement
 - M 295, Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
 - M 303, Lime for Asphalt Mixtures
 - M 208 Standard Specification for Cationic Emulsified Asphalt
 - ~~PP XX, Slurry Seal Design~~
 - T 11, Materials Finer Than 75-µm (No. 200) Sieve in Mineral Aggregates by Washing
 - T 27, Sieve Analysis of Fine and Coarse Aggregates
 - T 96, Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
 - T 104, Soundness of Aggregate by Use of Sodium Sulfate or Magnesium Sulfate
 - T 176, Plastic Fines in Graded Aggregates and Soils by Use of the Sand Equivalent Test
 - ~~T 335, Determining the Percentage of Fracture in Coarse Aggregate.~~

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<#>This standard specifies quality requirements for emulsified asphalt, aggregate, mineral filler and water for slurry seal¶

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- 2.2. ~~ANSI Standard:~~

- ~~NSF/ANSI 60-2013, Drinking Water Treatment Chemicals-Health Effects~~

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3. TERMINOLOGY

- 3.1. *CQS-1H*—a cationic, quick-setting emulsified asphalt.

4. SIGNIFICANCE AND USE

- 4.1. This standard may be used to select and evaluate materials for the construction of slurry seal. ~~The design recommendations for Slurry Seal may be found in PP XX.~~

5. EMULSIFIED ASPHALT REQUIREMENTS

- 5.1. Emulsified asphalt for slurry seal shall meet the requirements of CQS-1^h in M 208. Alternate emulsified asphalt classification, may be specified by the Owner Agency utilizing regional climatic and traffic conditions as well as local nomenclature.

6. AGGREGATE REQUIREMENTS

- 6.1. Mineral aggregate shall be 100 percent crushed on two faces for the coarse aggregate material retained on the 2.36 mm (No. 8) sieve. Only manufactured fine aggregate, material passing the 2.36 mm sieve (No. 8) is permitted. T 335 shall be used to determine the percentage of crushed aggregate. The quality requirements for the aggregates shall be in accordance with Table 1. The grading of the aggregate in Table 2 shall be specified by the owner agency.

Table 1—Aggregate Quality Requirements

Test	Test Method	Requirement
Sand Equivalent, min	T 176	45
Los Angeles Abrasion, %, max ^a	T 96	35
Magnesium Sulfate Soundness, max loss, %, 5 cycles	T 104	20
Sodium Sulfate Soundness, max loss, %, 5 Cycles	T 104	15

^a The abrasion test is to be run on the parent aggregate, i.e. limestone, sandstone, etc. from which it was derived.

Table 2—Aggregate Grading Requirements

Sieve Size	Type I ^a Percent Passing	Type II ^a Percent Passing	Type III ^b Percent Passing	Stockpile Tolerance %
9.5 mm (3/8 in)	100	100	100	—
4.75 mm (No. 4)	100	90–100	70–90	± 5
2.36 mm (No. 8)	90–100	65–90	45–70	± 5
1.18 mm (No. 16)	65–90	45–70	28–50	± 5
600 µm (No. 30)	40–65	30–50	19–34	± 5
330 µm (No. 50)	25–42	18–30	12–25	± 4
150 µm (No. 100)	15–30	10–21	7–18	± 3
75 µm (No. 200)	10–20	5–15	8–15	± 2

^a Type I and II aggregates are typically used to fill surface voids, address surface distresses (scratch courses), seal, and provide a durable wearing surface. Type I is finer and is used in residential areas and on airport runways.

^b Type III aggregates are typically used to provide higher friction resistance and an improved wearing surface.

- 6.2. When tested in accordance with T 11 and T 27 the mix design aggregate gradation shall comply with one of the gradations in Table 2 or one designated by the Owner Agency.

- 6.3. The gradation of the aggregate stockpile shall not vary from the mix design gradation by more than the stockpile tolerance, indicated in Table 2, while also remaining within the specification's gradation band. The percentage of aggregate passing any two successive sieves shall not change from one end of the specified range to the other end.

7. MINERAL FILLER

- 7.1. Mineral filler may be used to improve mixture consistency and to adjust mixture breaking and curing properties. Portland cement, hydrated lime, limestone dust, fly ash, or other approved filler meeting the requirements of M 17, M 85, M 295 or M 303 shall be used if required by the mix

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Sodium Sulfate Soundness, max loss, %, 5 Cycles

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T104

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design. Aluminum sulfate shall meet the requirements of ANSI 60. Typical use levels are 0 to 3.0 percent by mass and may be considered part of the aggregate gradation.

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8. WATER

- 8.1. Water shall be free of harmful salts and contaminants. If the quality of the water is in question, it should be submitted to the mix design laboratory for analysis along with the other raw materials to be used in the mix design.

9. ADDITIVES

- 9.1. Additives may be used to accelerate or retard the break or set of the slurry seal material. Appropriate additives such as emulsified chemicals, and their applicable use range, should be approved by the mix design laboratory as part of the mix design process.

10. KEYWORDS

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- 10.1. Slurry seal; mineral aggregate; mineral filler; emulsified asphalt.