

**(2355) BITUMINOUS LONGITUDINAL JOINT STABILIZATION FOG SEAL
TREATMENT
REVISED 10/14/2009**

DESCRIPTION

This work consists of treating the longitudinal construction joint with a light application of cationic joint sealer composed of petroleum oils and resins emulsified with water to seal the surface. This treatment is recommended for use on newly constructed Hot Mix Asphalt (HMA) longitudinal joints and may be applied after permanent pavement markings are placed.

S-1.1

MATERIALS

A. Joint Stabilization Material Physical Requirements

The Joint Stabilization material for fog sealing will be limited to a polymerized emulsion composed of a petroleum resin oil base and SBR copolymer uniformly emulsified with water. Each bidder must submit with his bid a certified statement from the joint sealer manufacturer showing that the joint stabilization material conforms to the following required physical and chemical requirements:

	Test Method	Requirements	
Tests on Emulsion:	ASTM	Max.	
Residue by Evaporation, % W ¹	D-6934(Mod.)	39	44
Miscibility Test ²	D-6999 (Mod.)	No Coagulation	
Particle Charge Test	D-244	Positive	
Sieve Test		0.5 ⁵	
Tests on Residue from Evaporation			
Flash Point, COC, °C	D-92	200	-
Kinematic Viscosity @ 60°C, cSt	D-445	100	200
Asphaltenes, %w	D-2006-70	-	1.00
Maltene Dist. Ratio	D-2006-70	0.2	0.8
$\frac{PC + A1^4}{S + A2}$			
PC/S Ratio ⁴	D-2006-70	0.5	-
Saturated Hydrocarbons,S ⁴	D-2006-70	21	28
Infrared Spectrum ATR – Reference spectrum			
Polymer:			
Monomer Ratio, Butadiene/Styrene		76/24	

1 ASTM D-6934 Evaporation Test for percent of residue is made by heating 100 gram sample to 149 C (300 F) until foaming ceases, then cool immediately and calculate results.

2 Test procedure identical with ASTM D-6999 except that .02 Normal Calcium Chloride solution shall be used in place of distilled water.

3 Test procedure identical with ASTM D-244 except that distilled water shall be used in place of two percent sodium oleate solution.

4 Chemical composition by ASTM Method D-2006-70:

PC = Polar Compounds, A1 = First Acidaffins

A2 = Second Acidaffins, S = Saturated Hydrocarbons

5 Requirement may be waived if the material has been successfully applied in the field.

S-1.2

CONSTRUCTION REQUIREMENTS

A Restrictions

The joint stabilization fog seal shall not be applied when the road surface or weather conditions are unsuitable as determined by the Engineer.

B Equipment

- 1) Apply the stabilization material with a distributor meeting the requirements of 2321.3C1.
- 2) Motorized brooms shall have a positive means of controlling vertical pressure and be capable of cleaning the road surface prior to applying joint stabilization fog seal material.

C Road Surface Preparations

At the time of applying the joint stabilization fog seal material the road surface shall be clean and dry. If necessary, sweep the pavement with a motorized broom. All objectionable foreign matter on the road surface shall be removed and disposed of by the Contractor as the Engineer approves.

Cover manholes, valve covers, sensors, etc. to prevent adherence of the joint stabilization material. Suitable covering includes plywood disks, sand, wax paper, roofing felt or other approved methods. Remove the protective coverings prior to opening the road to traffic.

D Application of Joint Stabilization Material

Unless otherwise indicated in the plans or provisions, the joint stabilization fog seal shall be applied within the application rates of 0.45 – 1.36 [**0.10 – 0.30**] liter/square meter [**gallons/sy**]. Limit the initial application to a test strip of approximately 100 feet in length to evaluate the application rate for uniform coverage and run-off. Make adjustments as necessary and continue to make additional adjustments, as needed, during the project. The Engineer shall approve the time and rate of application.

Apply the joint stabilization fog seal at a width of 24” evenly distributed over the longitudinal joint. Do not allow traffic on the joint stabilization material until it has cured.

The temperature of the joint stabilization material at the time of application shall be approved by the Engineer, within the limits specified by the manufacturer.

S-1.3

Quality Control

The Contractor is responsible for quality control (QC) sampling and testing.

A Joint Stabilization Material

Verify the application rate of the joint stabilization material by dividing the volume of material used by the area of joint stabilization fog seal for that day. Provide material certification and quality control test results for each batch of joint stabilization material used on the Project. Include the supplier name, plant location, joint stabilization grade, and batch number on all reports.

S-1.4

Quality Assurance

Mn/DOT is responsible for quality assurance (QA) sampling and testing. Samples cannot be from split samples and must be taken randomly by Mn/DOT.

A Joint Stabilization Material

Sample the first shipment. Also, provide one sample for each day of application.

The joint stabilization samples will be subjected to Infrared Spectrum ATR tests and compared to the reference to assure uniform material is attained.

S-1.5

METHOD OF MEASUREMENT

Measure the joint stabilization material for fog seal by volume at 15 °C [**60 °F**].

S-1.6

BASIS OF PAYMENT

Payment for the accepted quantity of joint stabilization fog seal at the Contract price of measure will be compensation in full for all costs of furnishing and applying the material as specified.

Item No.
2355.6xx

Item
Joint Stabilization Fog Seal

Unit
liter [**gallon**]