

# Special Specification 3090

## Frictional Asphaltic Surface Preservation Treatment



### 1. DISCRIPTION

Apply a surface preservation treatment consisting of two or more applications of asphaltic and aggregate material.

### 2. MATERIALS

Furnish materials in accordance with the following.

#### 2.1. Asphalt.

Furnish emulsified asphalt in accordance with Table 1. Provide water in accordance with Article 204.2., "Materials."

**Table 1.**  
**Emulsified Asphalt**

Property	Test Procedure	Min	Max
Viscosity, Saybolt Furol, 77°F, sec.	T 59	20	100
Particle Charge Test	T 59	Positive	-
Sieve, %	T 59	0	0.1
Residue by Distillation, % by wt.	T 59	60	-
Penetration at 77°F, 100 g, 5 sec.	T 49	40	150

Use a quantity of emulsified asphalt in the mixture, expressed as a percentage of total weight, the percentage shown on the plans, or as directed.

#### 2.2. Aggregate.

Furnish aggregate meeting Item 302, "Aggregates for Surface Treatments," of the grade shown in Table 2.

**Table 2.**  
**Aggregates**

Physical Properties <sup>1</sup>			
Property	Test Procedure	Min.	Max.
Water Absorption, %	T 84	-	4
Micro-Deval, %	D7428 <sup>2</sup>	-	20
Gradation			
Sieve	Standard	Master Grading Band Limits Percent Passing	Target Tolerance
No. 8	C 136	100	-
No. 16	C 136	85-100	-
No. 30	C 136	75-100	± 5
No. 60	C 136	10-40	± 5
No. 100	C 136	0-10	± 5
No. 200	C 117	0-5	± 1

1. Perform physical property tests on aggregates that are received before blending into sealer.
2. Micro-Deval on aggregate larger than No. 60 sieve U.S.

#### 2.3. Additives.

Add clay, polymers, water, and other additives as required. Use a minimum of 4% polymer by weight. Furnish water free of industrial wastes and other objectionable matter.

or:

**Other Additives.** Use approved additives as recommended by the Frictional Asphaltic Surface Preservation Treatment manufacturer when necessary to adjust mix time in the field.

### 3. MIX DESIGN

3.1. Furnish a laboratory mix design meeting the requirements shown in accordance with Table 3.

**Table 3.**  
**Laboratory Mix Design**

Test	Test Procedure	Min	Max
Wet-Track Abrasion Loss, 3-day soak, g/m <sup>2</sup>	D 3910 <sup>1</sup>	--	80
Asphalt Content by Ignition Method, %	T 308	30	--
Dynamic Friction Test Number, 20 kph	E 1911 <sup>2</sup>	0.90	--

1. Use the modified method to account for realistic application depth and fine emulsion mixture.
2. Establish base friction value using prepared laboratory compacted slab of approved mix as surface to be tested. The Dynamic Friction Test (DFT) number ratio should indicate that after application of the mastic seal, the surface retains required minimum percentage DFT number of the original pavement surface.

3.2. Furnish a production or field sample meeting the requirements shown in accordance with Table 4.

**Table 4.**  
**Production or Field Sample**

Test	Test Procedure	Min	Max
Solids Content by Evaporation, % by wt.	T 59 <sup>1</sup>	48	--
Asphalt Content by Ignition Method, %	Tex 236 <sup>3</sup>	30	--
Rotational Viscosity, 20 rpm, RV spindle, 25°C, cP	D 2196 <sup>2</sup>	800	4,000
Temperature for storage and application, °F	--	60	130

1. Dry specimens to a state where measurements taken 20 min. apart do not change.
2. Test samples within seven days.
3. Reduce sample size to achieve asphalt quantity. It is very important that this test be performed on a completely dry sample.

### 4. EQUIPMENT

4.1. **Mixing Plant.** Provide a stationary pugmill, weigh-batch, or continuous mixing plant as approved. Equip plants with digital proportioning and metering devices that produce a uniform mixture of asphalt, aggregate and additives in the specified proportions.

4.2. **Distributor.** Provide applicable equipment in accordance with Article 316.3., "Equipment." Furnish the necessary facilities and equipment for determining the temperature of the mixture, regulating the application rate, and securing uniformity at the junction of two distributor loads. Furnish a distributor capable of keeping the Frictional Asphaltic Surface Preservation Treatment in uniform suspension and adequately mixing the asphalt, aggregate and additives.

4.3. **Asphalt Storage and Handling Equipment.** When using storage tanks, furnish a thermometer in each tank to continuously indicate the asphalt temperature. Keep equipment clean and free of leaks. Keep asphalt material free of contamination. Furnish storage tanks capable of keeping the Frictional Asphaltic Surface Preservation Treatment in uniform suspension and adequately mixing the asphalt, aggregate and additives.

### 5. CONSTRUCTION

5.1. **Adverse Weather Conditions.** Do not place mixture when, in the Engineer's opinion, general weather conditions are unsuitable. Meet the requirements for air and surface temperature shown below.

5.1.1. **Standard Temperature Limitations.** Apply mixture when air temperature is above 50°F and rising. Do not apply mixture when air temperature is 60°F and falling. In all cases, do not apply mixture when surface temperature is below 60°F.

- 5.1.2. **Cool Weather Night Air Temperature.** The Engineer reserves the right to review the **National Oceanic and Atmospheric Administration (NOAA)** weather forecast and determine if the nightly air temperature is suitable for mixture placement.
- 5.1.3. **Cold Weather Application.** When mixture application is allowed outside of the above temperature restrictions, the Engineer will approve the mixture and the air and surface temperatures for application. Apply mixture at air and surface temperatures as directed.
- 5.2. **Surface Preparation.** Remove existing raised pavement markers. Repair any damage incurred by removal as directed. Remove dirt, dust, or other harmful material before applying. When shown on the plans, remove vegetation and blade pavement edges.
- 5.3. **Application.** Apply the mixture when the air temperature is at or above 60°F, or above 50°F and rising. Measure the air temperature in the shade away from artificial heat. The Engineer will determine when weather conditions are suitable for application.
- Distribute material at the following rates or as directed:
- first application: 1.0 to 1.5 lbs. per square yard;
  - second application: 1.0 to 1.5 lbs. per square yard; and
  - total application after the second application: 2.5 lbs. per square yard minimum.
- 5.4. **Edges.** Adjust the shot width so operations do not encroach on traffic or interfere with the traffic control plan, as directed. Use paper or other approved material at the beginning and end of each shot to construct a straight traverse joint. Unless otherwise approved, match longitudinal joints with the lane lines. The Engineer may require a string line if necessary to keep the edge straight. Use enough pressure to flare the nozzles fully.
- 5.5. **Workmanship.** Immediately take corrective action if treatment material is exhibiting evidence of poor workmanship, delayed opening to traffic, or surface irregularities, including streaks, uncoated, and blotchy areas. The Engineer may allow placement to continue for no more than one day of production while taking appropriate action. Suspend application if the problem still exists after one day until the problem is corrected to the satisfaction of the Engineer.
- 5.6. **Opening to Traffic.** Open the treated surface to traffic when directed. Furnish and uniformly distribute clean, fine sand on the surface to blot the excess when an excessive quantity of mixture is applied. Maintain ingress and egress as directed by applying sand to freshly treated areas.

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## 6. MEASUREMENT

Frictional Asphaltic Surface Preservation Treatment will be measured by the ton or by the square yard of the composite Frictional Asphaltic Surface Preservation Treatment mixture, which includes asphalt emulsion, aggregate, and additives. At the completion of the project, any unused Frictional Asphaltic Surface Preservation Treatment will be weighed back and deducted from the accepted Frictional Asphaltic Surface Preservation Treatment quantity delivered.

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## 7. PAYMENT

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit bid price per ton or square yard for "Frictional Asphaltic Surface Preservation Treatment." This price is full compensation for preparing the existing surface (including removing existing raised pavement markers); furnishing, hauling, preparing, and placing materials; and equipment, labor, tools, and incidentals.