

**S-1 (2357) BITUMINOUS TACK COAT**

**(2013 version) ◀DO NOT REMOVE THIS. IT NEEDS TO STAY IN FOR THE CONTRACTORS.**

*Use with SP2005-140 (PLANT MIXED ASPHALT PAVEMENT) and SP2005-140.1 (PLANT MIXED ASPHALT PAVEMENT). Also use with SP2005-136 (BITUMINOUS SEAL COAT) and SP2005-138 (SEAL COAT – MICRO-SUREACING).*

REVISED 12/28/12

SP2005-138.1

The provisions of MnDOT 2357 are hereby deleted and replaced with the following:

**2357.1 DESCRIPTION**

This work consists of applying bituminous material (emulsion or cutback asphalt) on a bituminous or concrete pavement prior to paving a new lift of Plant Mixed Asphalt.

**2357.2 MATERIALS**

**A Bituminous Material .....3151**

The bituminous material for tack coat will be limited to one of the following kinds of emulsified asphalt. Use of medium cure cutback asphalt (MC-250) is allowed during the early and late construction season when it is anticipated the air temperature may drop below 32 degrees Fahrenheit.

Allowable grades are as follows:

Emulsified Asphalt

AASHTO 208 Dilution of the emulsion to 7 parts emulsion to 3 parts water is only allowed by the supplier. **No field dilution is allowed.** The storage tank for diluted emulsion must have a recirculation system or agitator that will prevent settlement or separation of the material.

Table 2357-1-- Residual Asphalt Content		
Emulsion	Minimum Residual Asphalt Content	
	Undiluted	Diluted (7:3)
CSS-1 or CSS-1h	57%	40%

Cutback Asphalt

Medium Cure Liquid Asphalt ..... MC-250

Only Certified Sources are allowed for use. MnDOT’s Certified Source List is located at the following link: <http://www.dot.state.mn.us/products/index.html>.

**2357.3 CONSTRUCTION REQUIREMENTS**

**A Restrictions**

Conduct tack coat operations in a manner that offers the least inconvenience to traffic. Maintain movement in at least one direction at all times without pickup or tracking of the bituminous material.

Do not apply the tack coat when the road surface or weather conditions are unsuitable as determined by the Engineer. Limit the daily application of tack coat to approximately the area on which construction of the subsequent bituminous course can reasonably be expected to be completed that day.

**B Equipment**

Apply the bituminous material with a distributor meeting the requirements of 2360.3.B.2.d.

**C Road Surface Preparations**

Apply the bituminous tack coat material to a dry and clean roadway surface. All necessary repairs or reconditioning must have been completed as provided for in the Contract and approved by the Engineer.

Remove all foreign matter on the road surface before applying tack coat and dispose of as approved by the Engineer.

Before placing an abutting bituminous course, provide a uniform coating of liquid asphalt or emulsified asphalt to the contact surfaces of all fixed structures and at the edge of the in-place mixture in all courses at transverse joints and in the final wearing course at longitudinal joints.

**D Application of Bituminous Tack Coat Material**

Unless otherwise indicated in the Plans or provisions, apply the bituminous tack coat material within the application rates shown below in Table 2357-2 as based on pavement type or condition and type of bituminous material. **Dilution of asphalt emulsion in the field is not allowed.**

All tack must break, turn from brown to black, before paving the subsequent lift or course. Do not allow vehicles to drive on tack that has not broken.

Apply a uniform tack coat to the existing asphalt or concrete surface and to the surface of each course or lift constructed, except for the final course or lift. Tack each lift when placing multiple lifts in the same day. Uniform application will not have streaks (corn rows), bare spots, puddles, or other irregular patterns. The Engineer will compare the freshly sprayed emulsion to a brown sheet of construction paper or a black sheet of construction paper for broken tack to determine conformance with tack application uniformity.

Using a distance of 1,000 feet [300 meter] perform a yield check at the beginning of each project to verify the application rate is correct. The Engineer may require additional yield checks be performed if the application rate is questioned.

The Engineer may also require the Contractor to verify application is within 10% of the intended application rate by ASTM D 2995 test method A.

Table 2357-2 Tack Coat Application Rates			
Surface Type	Application Rates -- gallons/square yard [liters/square meter]		
	Undiluted Emulsion	Diluted Emulsion (7:3) <sup>1</sup>	MC Cutback <sup>2</sup>
New Asphalt	0.05 to 0.07 [0.23 to 0.32]	0.08 to 0.10 [0.36 to 0.45]	0.05 to 0.07 [0.23 to 0.32]
Old Asphalt <sup>3</sup> and PCC	0.08 to 0.10 [0.41 to 0.50]	0.13 – 0.15 [0.59 to 0.68]	0.09 to 0.11 [0.41 to 0.50]
Milled Asphalt and Milled PCC	0.07 to 0.11 [0.41 to 0.50]	0.10 – 0.13 [0.45 to 0.59]	0.09 to 0.11 [0.41 to 0.50]

- 1- As provided by the asphalt emulsion supplier
- 2- Use when approved by the Engineer
- 3- Older than 1 year

**E Bituminous Temperature**

The application temperature of the bituminous material will be:

- CSS-1, CSS-1H..... 70 to 160° F (21 to 71°C)
- MC-250..... 165 to 220° F (74 to 104°C)

**F Bituminous Sampling**

Sample asphalt emulsion from either the spigot or a nozzle on the distributor according to the schedule of materials control.

**G Pedestrian Crossings**

Spread sand on newly tacked surfaces at regularly utilized and open for public use pedestrian crossings.

**H Acceptance of Tack Material**

Assess a monetary deduction of 5% of the mix price for failures related to 3151 or workmanship/application, as determined by the Engineer. The basis of measurement for deficiencies related to material and workmanship/application is full width of the lane by station.

**Use 2357.4 for ALL MnDOT projects:**

**2357.4 METHOD OF MEASUREMENT**

**A Bituminous Material**

Bituminous material used for tack coat will be measured by volume at 15°C (60° F).

**Use the following 2357.5 when no pay item on plan.**

**2357.5 BASIS OF PAYMENT**

All costs of furnishing and applying bituminous tack coat material will be incidental with no direct compensation being made therefore.

**OR**

**Use the following 2357.5 when needed for pay item:**

**2357.5 BASIS OF PAYMENT**

**Payment for the accepted quantity of asphalt emulsion and cutback shall be at the Contract price per unit of measure for undiluted asphalt emulsion and neat cutback.** Furnishing and applying sand on newly tacked surfaces at pedestrian crossings shall be at no expense to the Department with no direct compensation being made therefore. Should the Contract fail to include a Contract Item covering payment for the bituminous material used for tack coat, all costs of furnishing and applying bituminous tack coat material will be included in the compensation provided for the bituminous mixture, with no measurement made of the bituminous material used and with no direct compensation being made therefore.

Payment for the tack coat will be made on the basis of the following schedule:

<b>Item No.</b>	<b>Item</b>	<b>Unit</b>
2357.502	Bituminous Material for Tack Coat.....	Liter ( <b>gallon</b> )