**Standard Method of Test for**

# Determination of Asphalt Tack Coat Roadway Placement Rate

**SCDOT Designation: SC-T-86 (9/08)**

## 1. SCOPE

1.1. This method covers the determination of liquid asphalt tack rate with and without using specific properties such as temperature correction and residual asphalt for emulsified asphalt products only

## 2. REFERENCED DOCUMENT

2.1. Table of Temperature-Volume Corrections for Emulsified Asphalts

## 3. SUMMARY OF TEST METHOD

3.1. The road is measured and the tack truck meter is checked before and after coverage. The rate of coverage is determined using the temperature-volume correction for emulsion used.

## 4. SIGNIFICANCE AND USE

4.1. The purpose of this procedure is to ensure that the proper amount of asphalt tack is applied to the roadway according to SCDOT specifications. The asphalt tack is used to bonding layers of asphalt mixture together, and to prevent slippage.

## 5. APPARATUS

5.1. Calculator

## 6. TEST SPECIMEN

6.1. None

## 7. PROCEDURE

7.1. The roadway must be measured first to determine the proper area for calculating tack rate. This measurement can be taken in many different ways such as pavement markings, surveys, or using any other measuring device such a tape measure. Both the longitudinal and transverse area of the roadway covered with the tack will be measured in order to achieve a total roadway area in square yards or square meters.

7.1.1. The quantity of tack used can be measured from the tack distributor by reading the attached flow meter. The meter should be read at the beginning and the end of the tack run. The difference from the beginning and to the end is the total amount of gallons used to spray tack on the calculated area of roadway.

7.1.2. The temperature of the tack has to be measured from the distributor to determine the proper temperature-volume correction needed to adjust the amount of tack being used. This temperature needs to be referenced to the attached table (Temperature –Volume Correction for Emulsified Asphalts). The temperature-volume correction must be applied to achieve a correction for total gallons or liters of tack used to cover the roadway.

## 8. CALCULATIONS

8.1. The tack rate will be calculated using the corrected amount of gallons or liters used to cover the calculated roadway. The corrected amount of tack used will show the proper temperature correction and dilution rate based on residual asphalt (when applicable) from the liquid asphalt tack supplier.

Example 1: CSS-1 Tack (without residual asphalt content)

Area of Roadway: Width: 12 ft. Length: 4765 ft.

Length x Width = Total Area in Square Feet = 12 ft. x 4765 ft. = 57,180 $ft^2$

Total Square Feet = 57,180 $ft^2$ / (9$ft^2$/$yd^2$) = 6553.3 $yd^2$

Total Gallons of Tack Used = Beginning Distributor Reading – Ending Distributor Reading

123 - 478 = 355 gallons measured

Corrected gallons of Tack Used = CSS-1 (tank temp of 150° F)

355 gallons x .97750 (referenced from figure SC-T-86-A) = 347.0 gallons used

Corrected Tack Rate = Total Corrected Amount of Tack Used / Total Area Covered in Square Yards

347.0 g / 6553.3 $yd^2$ = 0.053 g/$yd^2$

Example 2: CRS-2 Tack (with use of residual asphalt content)

Area of Roadway: Width: 10 ft. Length: 3000 ft.

Length x Width = Total Area in Square Feet = 10 ft. x 3000 ft. = 30,000 $ft^2$

Total Square Feet = 30,000 $ft^2$ / (9$ft^2$/$yd^2$) = 3333.3 $yd^2$

Total Gallons of Tack Used = Beginning Distributor Reading – Ending Distributor Reading

120 - 500 = 380 gallons measured

Corrected gallons of Tack Used = CRS-2 (tank temp of 122 degrees F)

380 gallons x .98450 (referenced from figure SC-T-86-A) = 374.1 gallons used

Corrected Tack Rate = Total Corrected Amount of Tack Used / Total Area Covered in Square Yards

374.1 g / 3333.3 $yd^2$ = 0.1122 $g/yd^2$

Calculate the residual tack rate = Calculated tack rate x % residual asphalt CRS-2 (emulsion supplier submitted the tack as 58% residual)

0.1122 $g/yd^2$ X 0.58 = 0.065 $g/yd^2$

## 9. REPORT

9.1. Report the corrected rate of tack placed on the Form 400.04.

## TEMPERATURE-VOLUME CORRECTIONS FOR EMULSIFIED ASPHALTS

M= Multiplier for correcting volumes to the basis of 15.6°C (60°F)

| °C | °F | M | °C | °F | M | °C | °F | M |
|---|---|---|---|---|---|---|---|---|
| 10.0 | 50 | 1 .00250 | 35.0 | 95 | .99125 | 57.8 | 136 | .98100 |
| 10.6 | 51 | 1.00225 | 35.6 | 96 | .99100 | 58.3 | 137 | .98075 |
| 11.1 | 52 | 1.00200 | 36.1 | 97 | .99075 | 58.9 | 138 | .98050 |
| 11.7 | 53 | 1.00175 | 36.7 | 98 | .99050 | 59.4 | 139 | .98025 |
| 12.2 | 54 | 1.00150 | 37.2 | 99 | .99025 | 60 0 | 140 | .98000 |
| 12.8 | 55 | 1.00125 | 37.8 | 100 | .99000 | 60.6 | 141 | .97975 |
| 13.3 | 56 | 1.00100 | 38.3 | 101 | .98975 | 61.1 | 142 | .97950 |
| 13.9 | 57 | 1.00075 | 38.9 | 102 | .98950 | 61.7 | 143 | .97925 |
| 14.4 | 58 | 1.00050 | 39.4 | 103 | .98925 | 62.2 | 144 | .97900 |
| 15.0 | 59 | 1.00025 | 40.0 | 104 | .98900 | 62.8 | 145 | .97875 |
| 15.6 | 60 | 1.00000 | 40 6 | 105 | .98875 | 63.3 | 146 | .97850 |
| 16.1 | 61 | .99975 | 41.1 | 106 | .98850 | 63.9 | 147 | .97825 |
| 16.7 | 62 | .99950 | 41.7 | 107 | .98825 | 64.4 | 148 | .97800 |
| 17.2 | 63 | .99925 | 42.2 | 108 | .98800 | 65.0 | 149 | .97775 |
| 17 8 | 64 | .99900 | 42.8 | 109 | .98775 | 65.6 | 150 | .97750 |
| 18.3 | 65 | .99875 | 43.3 | 110 | .98750 | 66.1 | 151 | .97725 |
| 18.9 | 66 | .99850 | 43.9 | 111 | .98725 | 66.7 | 152 | .97700 |
| 19.4 | 67 | .99825 | 44.4 | 112 | .98700 | 67.2 | 153 | .97675 |
| 20 0 | 68 | .99800 | 45.0 | 113 | .98675 | 67.8 | 154 | .97650 |
| 20 6 | 69 | .99775 | 45.6 | 114 | .98650 | 68.3 | 155 | .97625 |
| 21.1 | 70 | .99750 | 46.1 | 115 | .98625 | 68.9 | 156 | .97600 |
| 21.7 | 71 | .99725 | 46.7 | 116 | .98600 | 69.4 | 157 | .97575 |
| 22 2 | 72 | .99700 | 47.2 | 117 | .98575 | 70.0 | 158 | .97550 |
| 22.8 | 73 | .99675 | 47.8 | 118 | .98550 | 70.6 | 159 | .97525 |
| 23.3 | 74 | .99650 | 48.3 | 119 | .98525 | 71.1 | 160 | .97500 |
| 23 9 | 75 | .99625 | 48.9 | 120 | .98500 | 71.7 | 161 | .97475 |
| 24.4 | 76 | .99600 | 49.4 | 121 | .98475 | 72.2 | 162 | .97450 |
| 25.0 | 77 | .99575 | 50.0 | 122 | .98450 | 72.8 | 163 | .97425 |
| 25.6 | 78 | .99550 | 50.6 | 123 | .98425 | 73.3 | 164 | .97400 |
| 26.1 | 79 | .99525 | 51.1 | 124 | .98400 | 73.9 | 165 | .97375 |
| 26.7 | 80 | .99500 | 51.7 | 125 | .98375 | 74.4 | 166 | .97350 |
| 27.2 | 81 | .99475 | 52.2 | 126 | .98350 | 75.0 | 167 | .97325 |
| 27.8 | 82 | .99450 | 52.8 | 127 | .98325 | 75.6 | 168 | .97300 |
| 28.3 | 83 | .99425 | 53.3 | 128 | .98300 | 76.1 | 169 | .97275 |
| 28.9 | 84 | .99400 | 53.9 | 129 | .98275 | 76.7 | 170 | .97250 |
| 29.4 | 85 | .99375 | 54.4 | 130 | .98250 | 77.2 | 171 | .97225 |
| 30.0 | 86 | .99350 | 55.0 | 131 | .98225 | 77.8 | 172 | .97200 |
| 30.6 | 87 | .99325 | 55.6 | 132 | .98200 | 78.3 | 173 | .97175 |
| 31.1 | 88 | .99300 | 56.1 | 133 | .98175 | 78.9 | 174 | .97150 |
| 31.7 | 89 | .99275 | 56.7 | 134 | .98150 | 79.4 | 175 | .97125 |
| 32.2 | 90 | .99250 | 57.2 | 135 | .98125 | | | |
| 32.8 | 91 | .99225 | | | | | | |
| 33.3 | 92 | .99200 | | | | | | |
| 33.9 | 93 | .99175 | | | | | | |