Tex-243-F, Tack Coat Adhesion

Contents:

Section 1

Important Notice

This test procedure and related specification requirements are under development. Do not use this test procedure to enforce contract requirements until data is collected to establish values for specifications. Contract requirements relating to this test procedure will be enforced for lettings subsequent to the time this note is removed. (Removed by a revision to the test procedure.)

Section 2

Overview

Effective dates: March 2005–February 2009.

Use this test method to evaluate the adhesive properties of tack coat for roadway use at the project site.

Units of Measurement

The values given in parentheses (if provided) are not standard and may not be exact mathematical conversions. Use each system of units separately. Combining values from the two systems may result in nonconformance with the standard.

Section 3

Apparatus

Use the following apparatus:

- tack coat pull-off device (as shown in 'Tack Coat Pull-off Device')
- torque wrench, 75-lb-in. capacity
- handheld non-contact infrared thermometer, capable of measuring from 40°F (4°C) to 350°F (177°C) with an accuracy of ±2°F (±1°C), with a LCD display capable of displaying the maximum temperature, adjustable emissivity in increments of 0.01 or a fixed emissivity equal to or greater than 0.95 and a minimum 6:1 distance to spot ratio.

Section 4
Materials

The following materials are required:

- 3M double-coated tape or equivalent
- utility cutting knife
- Armstrong (S-1831) moisture barrier sheeting or equivalent.

Section 5

Procedure

Follow these steps to prepare the testing apparatus for use and to perform the tack coat adhesion test.

Preparing Tack Coat Pull Off Device for Use	
Preparing Apparatus	
Step	**Action**
1	Cut a circular piece of the double-coated tape approximately 5 in. (127 mm) in diameter.
2	♦ Attach the double-coated tape from Step 1 to the contact plate of the testing apparatus. ♦ Remove any excess double-coated tape with a utility cutting knife.
3	Cut a circular piece of the moisture barrier sheeting approximately 5 in. (127 mm) in diameter.
4	♦ Attach the smooth and slick textured side of the moisture barrier sheeting from Step 3 to the double-coated tape. ♦ Remove any excess moisture barrier sheeting.
5	Fasten the contact plate with the double-coated tape and moisture barrier sheeting to the bottom of the testing device with the use of wing nuts.
Performing Field Test	
6	Select a test section of pavement coated with tack coat. NOTE: Select an area of approximately 2 $ft.^2$ (0.2 m^2) in size.
7	Record the following information: ♦ tack coat type ♦ application rate ♦ rate uniformity of application, such as uniform, streaking, or puddling ♦ ambient and pavement temperatures.
8	Allow tack coat to cure for approximately 30 min.
9	Position the testing device onto the test section selected in Step 6.
10	Lower the contact plate prepared according to Steps 1 - 5 using a torque wrench until it touches the pavement surface.
11	Place 40 lb. (18 kg) load on top of the testing device and hold in place for approximately 10 min.
12	Remove the load from the testing device after approximately 10 min.
13	Connect the torque wrench to the testing device.
14	Apply torque until the contact plate completely separates from the pavement surface.
15	Record the maximum torque required to completely separate the contact plate from the pavement surface.
16	Calculate the adhesive strength of the tack coat tested using the equation in 'Calculations.'

*Figure **Error! No text of specified style in document.**-1. Tack Coat Pull-off Device.*

Section 6

Calculations

Calculate the adhesive strength of the applied tack coat material using the following equation:

$$Strength = (C_1 \times T) - C_2$$

Where:

- Strength = adhesive strength of applied tack coat material, psi (kPa)
- T = maximum torque required to separate contact plate from pavement surface, lb.-in. (N-m).
- C_1, C_2 = regression factors, refer to the manufacturer's user guide for these factors.