



**INDIANA DEPARTMENT OF TRANSPORTATION
DIVISION OF MATERIALS AND TESTS**

**IDENTIFICATION OF PENETRATING
EMULSIFIED ASPHALTS
ITM No. 599-21**

1.0 SCOPE.

- 1.1** This test method, applicable to both anionic and cationic emulsified asphalts, can be used as an identification test of the emulsions ability to penetrate a compacted asphalt mixture or a granular aggregate material.
- 1.2** This ITM may involve hazardous materials, operations, and equipment and may not address all of the safety problems associated with the use of the test method. The user of the ITM is responsible for establishing appropriate safety and health practices and determining the applicability of regulatory limitations prior to use.

2.0 REFERENCES.

2.1 ASTM Standards.

- D6934 Test Method for Residue by Evaporation of Emulsified Asphalt
 D6997 Test Method for Distillation of Emulsified Asphalt
 E1 Standard Specification for ASTM Liquid-in-Glass Thermometers
 E11 Specification for Wire Cloth and Sieves for Testing Purposes

3.0 TERMINOLOGY. Definitions for terms and abbreviations shall be in accordance with the Department's Standard Specifications, Section 101.

4.0 SIGNIFICANCE AND USE. ITM is used to identify or classify an emulsified asphalt as having a penetrating capability as measured by the amount of emulsified asphalt that can pass through a 500-wire sieve in a period of 5 minutes.

5.0 APPARATUS.

- 5.1** Wire Cloth Sieve, 3" round sieve, number 500 mesh (25 um).
- 5.2** Receiver/pan/can, metal container of size to collect emulsified asphalt passing the wire cloth sieve.
- 5.3** Balance, capable of weighing 500 ± 0.1 g.
- 5.4** Water bath, constant temperature, maintained at $50^{\circ} \pm 0.5^{\circ}\text{C}$

- 5.5 Oven, capable of maintaining a temperature of $50^{\circ} \pm 3^{\circ}\text{C}$.
- 5.6 Thermometric Device, thermometer 15C or 15F as prescribed in ASTM E1, or equivalent thermometric device.
- 5.7 Timer, capable of measuring time to ± 5 seconds.

6.0 SAMPLING. Sampling shall be as stated in the referenced ASTM methods.

7.0 PREPARATION OF SAMPLE.

- 7.1 All emulsified asphalts shall be properly stirred to achieve homogeneity before testing.
- 7.2 Warm the emulsified asphalt to $50 \pm 3^{\circ}\text{C}$ in an oven or water bath. After the sample reaches 50°C , stir the sample to achieve homogeneity.

8.0 PROCEDURE.

- 8.1 Warm the diluted emulsified asphalt to $50 \pm 3^{\circ}\text{C}$ in a water bath or oven.
- 8.2 Tare the receiver/pan. Assemble the 3 in. sieve and receiver/pan on the balance. Pour 20 ± 0.1 g diluted emulsified asphalt onto the sieve. Immediately after the emulsified asphalt is poured on the sieve, start the timer. After 5 minute ± 15 seconds, remove the sieve from the assembly. Record the mass in grams of emulsified asphalt retained in the receiver/pan.
- 8.3 Clean the sieve by rinsing with soft water to remove emulsion. Then wash with Acetone, followed by TCE to remove asphalt solids, and another washing with Acetone to remove any excess TCE and RPE chemicals. Air dry the sieve using a pressurized air hose until moisture is gone and allow the sieve to return to room temperature before conducting another test.

9.0 CALCULATION.

- 9.1 Calculate the percent of emulsion passing the #500 sieve in 5 minutes as follows:

$$\text{Mass retained in pan}/20 \times 100 = \% \text{ of emulsified asphalt passing \#500 sieve}$$

10.0 REPORT.

- 10.1 The average of three tests for % of emulsified asphalt passing the #500 sieve.