



Designation: **D7196—06 D7196 – 12**

Standard Test Method for Raveling Test of Cold Mixed Bituminous Emulsion Emulsified Asphalt Samples¹

This standard is issued under the fixed designation D7196; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This test method measures the resistance to raveling characteristics of ~~bituminous emulsion emulsified asphalt~~ and field aggregates or Recycled Asphalt Pavement (RAP) mixtures by simulating an abrasion similar to early return to traffic.

1.2 The values stated in SI units are to be regarded as the standard unless otherwise indicated.

1.3 A precision and bias statement for this standard has not been developed at this time. Therefore, this standard should not be used for acceptance or rejection of a material for purchasing purposes.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*²

[D75 Practice for Sampling Aggregates](#)

[D977 Specification for Emulsified Asphalt](#)

[D979 Practice for Sampling Bituminous Paving Mixtures](#)

[D2379 Test Method for Acidity of Formaldehyde Solutions](#)

[D3910 Practices for Design, Testing, and Construction of Slurry Seal](#)

[D4753 Guide for Evaluating, Selecting, and Specifying Balances and Standard Masses for Use in Soil, Rock, and Construction Materials Testing](#)

[D6372 Practice for Design, Testing, and Construction of Micro-Surfacing](#)

[D6925 Test Method for Preparation and Determination of the Relative Density of Hot Mix Asphalt \(HMA\) Specimens by Means of the Superpave Gyrotory Compactor](#)

2.2 *ISSA Document:*

[ISSA Technical Bulletin No. 100 Test Method for Wet Track Abrasion of Slurry Surfaces](#)

3. Summary of Test Method

3.1 An aggregate and/or RAP is mixed together with a preset amount of additives (if shown to be necessary), water (if necessary) and ~~bituminous emulsion emulsified asphalt~~. This may be a field blended mixture (Method A) or a laboratory blended mixture (Method B). The mixture is compacted in a gyratory compactor and cured at the specified conditions for a designated period of time. After the assigned curing time, a rotating rubber hose exerts an abrasion force on the specimen for a preset time period and the abraded loss of material is calculated.

4. Significance and Use

4.1 This test is useful for classifying the curing and formulation of cold mixed ~~bituminous emulsion emulsified asphalt~~ samples through ravel testing of compacted specimens. This performance test should be used to rank the mix conditions and approximate curing time for return to traffic and resistance to weather damage.

¹ This test method is under the jurisdiction of ASTM Committee [D04](#) on Road and Paving Materials and is the direct responsibility of Subcommittee [D04.27](#) on Cold Mix Asphalts.

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² For referenced ASTM standards, visit the ASTM website, [www.astm.org](#), or contact ASTM Customer Service at [service@astm.org](#). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

5. Apparatus

5.1 *Hobart Mixer*—The 1/3 H.P. Fixed Speed Motor, model A 120 will be used to abrade the sample.

5.2 *Raveling Test Adapter Base*—This base must fit the Hobart mixer in 5.1 and be an adequate and level support for clamping the test specimen in place. The test specimen should not move during abrasion. A picture of the base can be seen in Fig. 1.

NOTE 1—A Raveling Test Adapter Base meeting the requirements can be purchased from Precision Machine and Welding, Salina, Kansas, (785) 823-8760.

5.3 *Raveling Test Abrasion Head with Hose*—The abrasion head should be free floating over the sample and have a mass of 600 ± 15 g. This mass shall include the rubber hose. The rubber hose shall be a Parker 290 Ozex General Purpose Hose or equivalent. The hose shall be 19 mm ID by 6.25 mm wall thickness (3/4 in. ID by 1/4 in. wall thickness) and cut to 127 mm (5 in.) in length. The rubber hose shall be easily removed so that it may be rotated or changed prior to testing to insure a clean surface for abrasion.

NOTE 2—An abrasion head similar to that used in the Wet Track Abrasion of Slurry Surfaces (Practices D3910, D6372, and ISSA TB-100) may meet the requirements with the ring weight removed. An abrasion head meeting these requirements can be purchased from Precision Machine and Welding, Salina, Kansas, (785) 823-8760.

5.4 *Oven or Environmental Chamber*—If required for other than ambient laboratory curing conditions, the oven shall be a constant temperature forced draft oven. The shelves in the oven shall be placed at least 150 mm apart and 100 mm away from the top and floor.

5.5 *Balance*—A balance capable of weighing 3000 g or more to within ± 0.1 g and conforming to the requirements of Guide D4753, Class GP2. A minimum platform length and width of 200 mm is required.

5.6 *Gyratory Compactor*—A gyratory compactor meeting the requirements of Test Method D6925.

5.7 *Mechanical Mixer*—A mixer capable of mixing up to 3000 g of the cold bituminous emulsion emulsified asphalt mixture.

5.8 *100-150 mm (4-6 in.) Fine Bristle Paint Brush*—A fine bristled paint brush capable of sweeping loose material from abraded sample without damaging surface.

6. Materials

6.1 *Bituminous Emulsion—Emulsified Asphalt*—The bituminous emulsion emulsified asphalt should meet all applicable specifications for the required project. The emulsion specifications shall be provided by the agency or requirements such as those given in Specification D977 or D2397. The bituminous emulsion emulsified asphalt shall be brought to equilibrium to the specified temperature, if other than laboratory ambient, for a minimum of one hour prior to mixing with the aggregates or RAP.

6.2 *Aggregates/RAP*—The job aggregates and/or RAP for Method B should be sampled and split according to Practice D75.

6.3 *Cold Bituminous Paving Mixture*—The job mixture for Method A should be sampled according to Practice D979.

6.4 *Additives*—Any additional additives that are shown to be necessary must meet the specifications required by the agency and mixed or blended with the materials as recommended by the agency or as recommended by the additive supplier if the agency does not specifically detail the method of mixing or blending.

7. Test Specimens

7.1 *Method A (Field Blended Cold Bituminous Paving Mixture):*

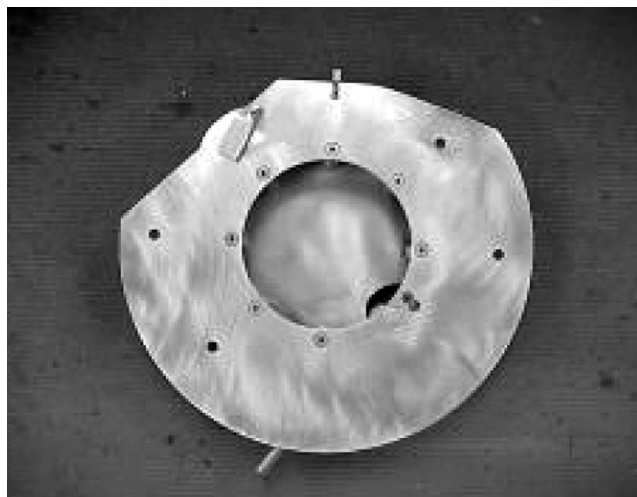


FIG. 1 Raveling Test Adapter Base