



# Standard Practice for Estimating Degree of Particle Coating of Bituminous-Aggregate Mixtures<sup>1</sup>

This standard is issued under the fixed designation D 2489; 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 practice provides an estimate of the degree of particle coating in a bituminous-aggregate mixture on the basis of the percentage of coarse particles classified as being completely coated.

1.2 The values stated in SI units are regarded as being standard.

1.3 *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:

D 8 Terminology Relating to Materials for Roads and Pavements<sup>2</sup>

D 979 Practice for Sampling Bituminous Paving Mixtures<sup>2</sup>

D 995 Specification for Mixing Plants for Hot-Mixed, Hot-Laid Bituminous Paving Mixtures<sup>2</sup>

D 3515 Specification for Hot-Mixed, Hot-Laid Bituminous Paving Mixtures<sup>2</sup>

D 3665 Practice for Random Sampling of Construction Materials<sup>2</sup>

D 4215 Specification for Cold-Mixed, Cold-Laid Bituminous Paving Mixtures<sup>2</sup>

E 11 Specification for Wire Cloth and Sieves for Testing Purposes<sup>3</sup>

## 3. Terminology

3.1 For definitions of terms, see Terminology D 8.

3.2 For descriptions of mixing plant terms, see Mixing Plants, Specification D 995.

## 4. Significance and Use

4.1 The procedure in this practice for estimating the percentage of coated particles after varying mixing times is used

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<sup>2</sup> *Annual Book of ASTM Standards*, Vol 04.03.

<sup>3</sup> *Annual Book of ASTM Standards*, Vol 14.02.

to establish the least mixing time required to produce satisfactory coating for a given set of conditions.

4.2 This procedure is used with hot-mixed, hot-laid bituminous paving mixtures such as specified in Specification D 3515 or with cold-mixed, cold-laid bituminous paving mixtures such as specified in Specification D 4215.

4.3 It should be noted that even when a paving mixture complies with the “percent of coated particles” that may be specified, this does not necessarily ensure that the asphalt cement is uniformly distributed throughout the paving mixture.

## 5. Apparatus

5.1 *Sieves*, 9.5 mm (3/8 in.) and 4.75 mm (No. 4). The sieves shall conform to Specification E 11.

5.2 *Stopwatch*, for checking actual mixing time of batch plants.

5.3 *Thermometer*, range at least from 10°C (50°F) to 204°C (400°F).

5.4 *Sample Shovel*.

5.5 *Sample Trays*.

## 6. Sampling

6.1 *Batch Plant*—Permit the plant to operate at an established mixing time per batch (timed by a stopwatch).

6.2 *Continuous Mix Plant*—Establish a mixing time by use of the following formula:

$$\text{mixing time} = \text{pug mill contents, kg (lb)/pug mill output, kg/s (lb/s)} \quad (1)$$

6.3 *Drum Mix Plant*—Operate the plant at a steady state condition for a period of time long enough to complete the sampling.

6.4 Samples should be taken at the site of the bituminous mixing plant immediately after discharge from the plant from three truck loads selected at random in accordance with Practice D 3665 and sampled in accordance with Practice D 979. Approximately 2.5 to 4.0 kg (5 to 8 lb) is required to perform the procedure.

6.5 If sampling truck loads is impractical, sample from the roadway before compaction starts at three locations selected at random in accordance with Practice D 3665 and sampled in accordance with Practice D 979.

## 7. Procedure

7.1 Sieve each sample immediately while it is still hot on a

\*A Summary of Changes section appears at the end of this standard.