

## Colorado Procedure 45-20

*Standard Method of Test for*

### Determining Percent of Particles with Two or More Fractured Faces

**1. SCOPE**

1.1 This method describes the procedure for determining the percentage of crushed particles in an aggregate sample.

**Note 1:** If the test is performed in conjunction with a sieve analysis test such as CP 31, save the plus No. 4 portion and reduce, if desired, by splitting to the test size shown in Table 45-1 and proceed as in Subsection 5.2.

**2. REFERENCED DOCUMENTS**

2.1 *Colorado Procedures:*

CP 30 Sampling of Aggregates

CP-L 5120 Determination of the Asphalt Binder Content of Bituminous Mixtures by the Ignition Method

**3. APPARATUS**

3.1 *Balance* - Sufficient capacity and sensitivity to 0.1 gram.

3.2 *Sieve, No. 4* - With square openings conforming to AASHTO M 92.

3.3 *Sample Splitter* - For the selection of a representative specimen.

3.4 *Drying Equipment* - An oven or hot plate capable of drying a sample completely.

**4. SAMPLE AND TEST SPECIMEN SIZE**

4.1 The minimum required weight (mass) of the total sample shall conform to the requirements of the Table as shown in CP 30 or CP-L 5120 if the test is to be determined on the residual aggregate.

4.2 The minimum weight (mass) of the total specimen shall be sufficient to yield a plus No. 4 test specimen conforming to the following table:

**TABLE 45-1**

SIZE OF PLUS NO. 4 TEST SPECIMEN

<u>Nominal Maximum Aggregate Size</u>	<u>Minimum Weight of Specimen, grams</u>
3/8 in. (9.5 mm),	or under 100
1/2 in. (12.5 mm)	200
3/4 in. (19.0 mm),	or over 300

## 5. PROCEDURE

- 5.1 Sieve the total unwashed specimen over the No. 4 sieve and discard the minus No. 4 material. Wash the retained material and dry at  $230^{\circ}\text{F} \pm 9^{\circ}$  ( $110^{\circ}\text{C} \pm 5^{\circ}$ ) if using a Forced Draft Oven. When dry, sieve it over a No. 4 sieve per Note 1.
- 5.2 Weigh the plus No. 4 specimen and then spread onto a work table large enough so the individual particles may be inspected.
- 5.3 Separate the particles with two or more fractured faces from those without. A rounded particle with a small chip broken off shall not be counted as having a fractured face. If the face constitutes at least one-quarter of the maximum cross-sectional area of the rock particle, consider it a fractured face.
- 5.4 Weigh the particles with two or more fractured faces and record as "weight (mass) of fractured aggregate."

## 6. CALCULATIONS

- 6.1 Determine the percentage of particles with two or more fractured faces by dividing the weight (mass) of the fractured aggregate by the total weight (mass) of the plus No. 4 test specimen and calculate:

$$\text{Percent of Particles with two or more fractured faces} = \frac{\text{weight of fractured aggregate}}{\text{total weight of specimen}} \times 100$$

## 7. RECORD

- 7.1 CDOT Form #106 or #107 are to be used to record your information. |