

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 portions 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

Nominal Maximum Aggregate Size	Minimum Weight of Specimen, grams
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 CDOT Form 107 are to be used to record your information.