

Section 933
METHOD FOR DETERMINING AGGREGATE FLAKINESS INDEX

933.01 Objectives

The Flakiness Index of an aggregate is determined using a gauge with slots of appropriate dimensions. Individual size fractions are separated and each particle that passes through the appropriate slot is considered a flaky particle.

933.02 Definition

The Flakiness Index of an aggregate is the mass of particles in that aggregate which will pass the appropriate slot or slots for the individual size fraction expressed as a percentage of the total mass of that aggregate. The width of the slots is determined by multiplying the mean of upper and lower sieve size for the slot by 0.6.

933.03 Equipment

Gauge: metal 1/16" thick, with slots that comply with the tolerances given in columns 3 and 4 of Table 1, labeled to indicate individual size fraction appropriate to that slot

Scale or Balance of sufficient capacity and accurate to 0.1 percent of sample mass, or 0.1 gram conforming to the requirements of AASHTO M 231

Sieves conforming to the requirements of AASHTO M 92

Other apparatus as required by AASHTO T 27/T 11

933.04 Procedure**933.04.01 Preparation of test sample**

Sample Size conforming to AASHTO T 27 Sieve Analysis of Fine and Coarse Aggregate.

Perform AASHTO T 11, Materials Finer than #200 Sieve in Mineral Aggregate by Washing in conjunction with AASHTO T 27. Separate aggregates into specified individual size fractions, Table 1. Material coarser than the 2 1/2" sieve and finer than the 1/4" sieve is discarded.

Note 1: If an individual size fraction mass exceeds the masses given in Table 1, the fraction may be reduced according to AASHTO T 248. The correction calculation, 933.04.04, is applied to proportionally determine the mass of flaky particles that would have been obtained had the whole of the original size fraction been gauged.

Determine and sum the masses of the individual size fractions, designate as M_1 .

933.04.02 Using the slot gauge

Select the slot appropriate to the individual size fraction under test (see Table 1). Gauge each particle by hand. A particle is considered flaky if it passes through the appropriate slot.

Combine and determine the mass of all particles passing through the slots and designate as M_2 .

Note 2: It is sometimes necessary to determine the flakiness of a particular fraction(s). In such cases the material larger and smaller than the fractions concerned is screened out and discarded. The test is then carried out as described above.

933.04.03 Calculation

Calculate the Flakiness Index as follows:

$$FI = (M_2/M_1) \times 100$$

Where: FI = Flakiness Index
 M_1 = Total mass of all fractions
 M_2 = Total mass of particles passing the slots

933.04.04 Correction Calculation as per Note 1.

$$m_i = m_f \times f_r / m_r$$

Where: m_i = Corrected mass of flaky particles in fraction(i).
 f_r = Mass of flaky particles in reduced fraction
 m_r = Mass of reduced fraction
 m_f = Mass of fraction

All m_i are then added to the mass of particles passing through the slots from all uncorrected fractions in obtaining M_1 .

933.05 Reporting

Flakiness Index to the nearest whole number
Sieve analysis percent passing according to AASHTO T 27

933.06 TABLE 1.

Dimensions of Thickness and Length Gauges				
Aggregate Size-fraction		Minimum Length of Slot	Width of slot	Sample may be reduced if larger than: lbs. (kgs)
Test Sieve Size				
100% Passing	100% Retained			
2 ½"	2"	3 ¾"	1 ⅓" ± ⅛"	100 (45)
2"	1 ½"	3 ½"	1 ± ⅛"	75 (35)
1 ½"	1"	3"	¾ ± ⅛"	25 (10)
1"	¾"	2 ¼"	½" ± ⅛"	10 (5)
¾"	½"	2"	⅜" ± ⅓₂"	5 (2)
½"	⅜"	1 ½"	¼" ± ⅓₂"	2 (1)
⅜"	¼"	1"	⅓₁₆" ± ⅓₂"	1 (0.5)