EXPERIMENT NO: 04

DETERMINATION OF FLAKINESS INDEX

(BS: 812: 1975 (PART 1, 2, 3))



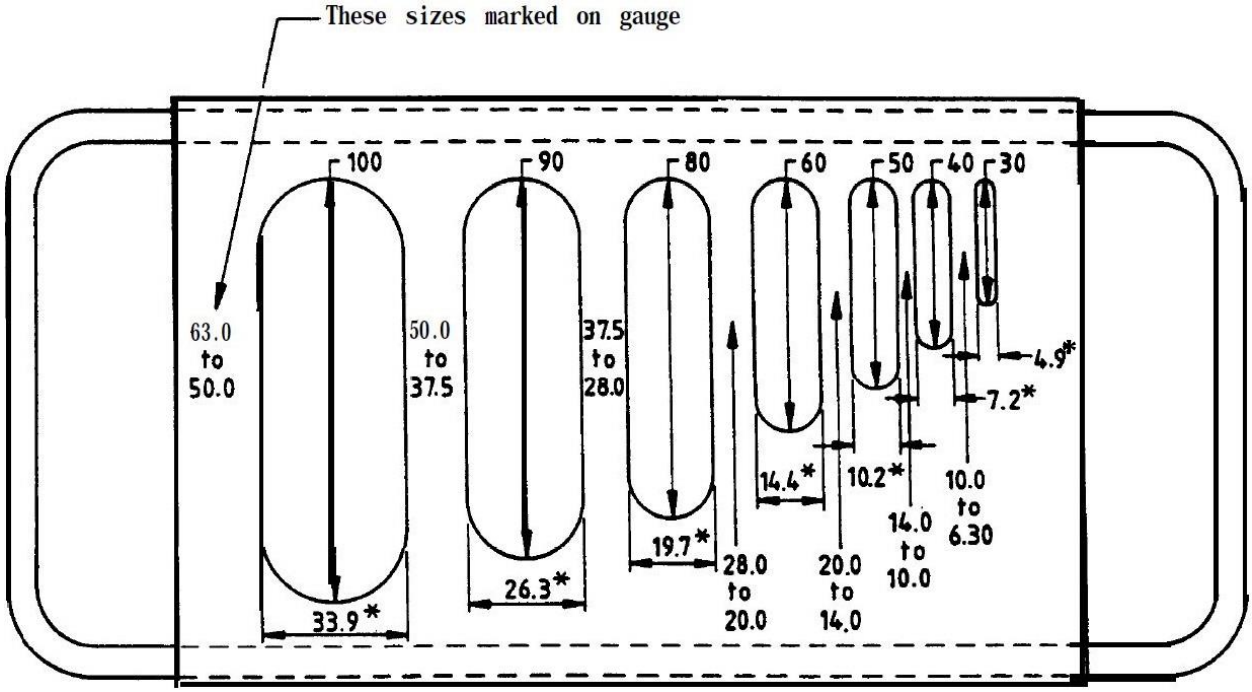
4.1 GENERAL

This method is based on the classification of aggregate particles as flaky when they have a thickness (smallest dimension) of less than 0.6 of their nominal size, this size being taken as the mean of the limiting sieve apertures used for determining the size fraction in which the particle occurs. The flakiness index of an aggregate sample is found by separating the flaky particles and expressing their mass as a percentage of the mass of the sample tested. The test is not applicable to material passing a 6.30 mm BS test sieve or retained on a 63.0 mm BS test sieve.

4.2 APPARATUS

The following apparatus is required.

4.2.1 A metal thickness gauge of the pattern shown in figure 4.1 or special sieves having elongated apertures shown in figure 4.2. The width of the apertures and the thickness of the sheet used in the gauge or sieve shall be as specified in the following figures.



Dimensions are in mm
(Tolerances are given on essential dimensions as shown)

Figure 4.1 Thickness gauge



Figure 4.2 Sieves having elongated apertures

4.2.2 BS test sieves as shown in Table 4.1 (see also 7.1.3.1 of BS 812 Part 1:1975).

4.2.3 A balance accurate to 0.5% of the mass of the test sample.

4.3 SAMPLE FOR TEST

The sample for this test shall be taken in accordance with clause 5 of this part of this standard. It shall comply with the appropriate minimum mass given in Table 4.1, for sieve analysis with due allowance for later rejection of the particles retained on a 63.0 mm BS test sieve and passing 6.30 mm BS test sieve. The sample shall be taken from the laboratory sample by quartering or by means of a sample divider as described in 5.2.4 of BS 812 Part 1. Before testing it shall be brought to a dry condition in accordance with 5.1.4 of BS 812 Part 1.

Table 4.1 Dimensions of thickness gauges

Aggregate size fraction		Thickness gauge Width of slot of (Average x 0.6)	Minimum mass for subdivision
BS test sieve nominal aperture size			
100% passing	100% retained		
mm	mm	mm	Kg
63.0	50.0	33.9 ±0.3	50
50.0	37.5	26.3 ±0.3	35
37.5	28.0	19.7 ±0.3	15
28.0	20.0	14.4 ±0.15	5
20.0	14.0	10.2 ±0.15	2
14.0	10.0	7.2 ±0.10	1
10.0	6.30	4.9 ±0.1	0.5

4.4 PROCEDURE

Carry out a sieve analysis in accordance with BS 812: section 105.1using the sieve given in Table 4.1.

Discard all aggregate retained on the 63.0 mm BS test sieve and all aggregate passing the 6.30 mm BS test sieve.

Then weigh each of the individual size fractions retained on the sieves, other than the 63 mm BS test sieve and store them in separate trays with their size marked on the trays.

NOTE: Where the mass of any size fraction is considered to be excessive, i.e. more than the appropriate mass given in Table 4.1. Provided that the mass of the sub-divided fraction is not less than half the appropriate mass given in Table4.1. Under such circumstances the rest of the procedure should be suitably modified and the appropriate correction factor applied to determine the mass of flaky particles that would have been obtained had the whole of the original size fraction been gauged.

From the sums of the masses of the fractions in the trays (M_1), calculate the individual percentage retained on each of the various sieves. Discard any fraction of which the mass is, 5% of less of mass M_1. Record the mass remaining (M_2).

Gauge each fraction by one of the following procedures:

(a) Using the gauge: select the thickness gauge appropriate to the size-fraction under test (see Table 4.1) and gauge each particle separately by hand, or

(b) Using the special sieves: select the special sieve appropriate for the size-fraction under test. Place the whole of the size-fraction into the sieve which shall then be shaken until the majority of flaky particles have passed through the slots. Then gauge the particles retained individually by hand.

Combine and weigh all the particles passing the gauges or special sieves (M_3).

4.5CALCULATIONS AND REPORTING

Flakiness index = M_3/M_2 X 100

The flakiness index shall be reported to the nearest whole number. The sieve analysis obtained in this test shall also be reported.

Experiment No: 04
Determination of the Flakiness Index

Name : **Student No**:

Type of material : Brick Chips/ Stone Chips/ Gravels/ Boulder/ Rock
Test Method : Bs 812 (part 1) Clause 7.3 & 7.4

Sieve size (mm)	Gauge size used, (mm)	Wt. of the material retained (gm)	Percent of the material retained	Check if greater than 5% (ok/ not ok)	Flaky Particles (amount passed) gm
63.0	-	x	x		
50.0	33.9				
37.5	26.3				
28.0	19.7				
20.0	14.4				
14.0	10.2				
10.0	7.2				
6.3	4.9				
		M_1 =	**M_2 =**		**M_3 =**

Calculation:

Flakiness index (F.I) = M_3/M_2 X 100% = % (to the nearest whole number)

Signature of the Course Teacher