



Flakiness Gauge for Classification of Aggregate

Introduction

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.

Apparatus

The following apparatus is required.

1. A metal thickness gauge of the pattern shown in Figure 5 or special sieves having elongated apertures. The width of the apertures and the thickness of the sheet used in the gauge or sieve shall be as specified in Figure 1.
2. BS test sieves as shown in Table 9 as appropriate.
3. A balance accurate to 0.5% of mass of the test sample.

C. Sample for test:

The sample for this test shall be taken in accordance with BS 812. It shall comply with the appropriate minimum mass, for sieve analysis with due allowance for 63.0 mm BS test sieve and passing a 6.30 mm BS test sieve. The sample shall be taken from the laboratory sample by quartering or by means of a sample divider. Before testing it shall be brought to a dry condition by standard methods.

D. Procedure:

Carry out a sieve analysis using the sieves given in Table 1.

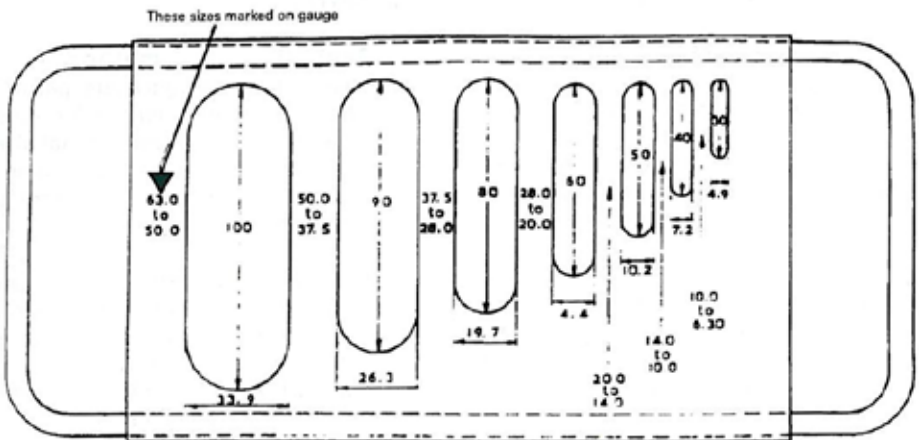


Figure 1— Thickness Gauge (Flakiness Index) indicating sizes of openings.

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. Where the number of particles in any size fraction is considered to be excessive i.e. more than the appropriate mass given in Table 1, the fraction may be subdivided by standard methods. 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% or less of mass M_1 . Record the mass remaining (M_2).

Gauge each fraction by one of these procedures:

1. Using the gauge: Select the thickness gauge appropriate to the size-fraction under test (see Table 1) and gauge each particle separately by hand, or

2. 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. The gauge the particles retained individually by hand. Combine and weigh all the particles passing the gauges or special sieves (M_3).

E. Calculating & Reporting (Flakiness Index): The Flakiness Index shall be reported to the nearest whole number. The sieve analysis obtained in the test shall also be reported.

$$\text{Flakiness} = \frac{M_3}{M_2} \times 100$$

Table 1. Dimensions of Thickness Gauge.

Aggregate Size-fraction		Thickness Gauge Width of Slot	Minimum Mass for Subdivision
BS Test Sieve Nominal Aperature Size			
100% Passing	100% Retained		
63.0mm	50.0mm	33.9 ± 0.3mm	50kg
50.0mm	37.5mm	26.3 ± 0.3mm	35kg
37.5mm	28.0mm	19.7 ± 0.3mm	15kg
28.0mm	20.0mm	14.4 ± 0.15mm	5kg
20.0mm	14.0mm	10.2 ± 0.15mm	2kg
14.0mm	10.0mm	7.2 ± 0.1mm	1kg
10.0mm	6.30mm	4.9 ± 0.1mm	0.5kg

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