

Flakiness Index & Elongation Index

INTRODUCTION:

NOTE: The procedure outlined here follows general recommendations of BS 812. The user is responsible for determining and following the appropriate procedures for their particular application.

OPERATING INSTRUCTIONS:

- A. General: Aggregate particles are flakey when they have a thickness (smallest dimension) of less than 0.6 of their nominal size. The Flakiness Index of a sample is found by separating out the flakey particles and expressing their mass as a percentage of the total mass of the sample. The test is not applicable to material passing a 6.30mm sieve or retained on a 63.0mm sieve.
- B. Sample: The sample for this test shall comply with the appropriate minimum mass for sieve analysis, with due allowance for 63.0mm sieve and passing a 6.30mm 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.
- C. Procedure: Carry out a sieve analysis using the sieves shown in Table 9. Inquire for ISO 565 sieves from Gilson.

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

Weigh the individual size-fractions retained on the sieves, other than the 63.0mm 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 (more than the mass given in Table 9), the fraction may be split using standard methods. Under such circumstances, the appropriate correction factor must be applied to determine the mass of flakey particles had the entire size-fraction been gauged.

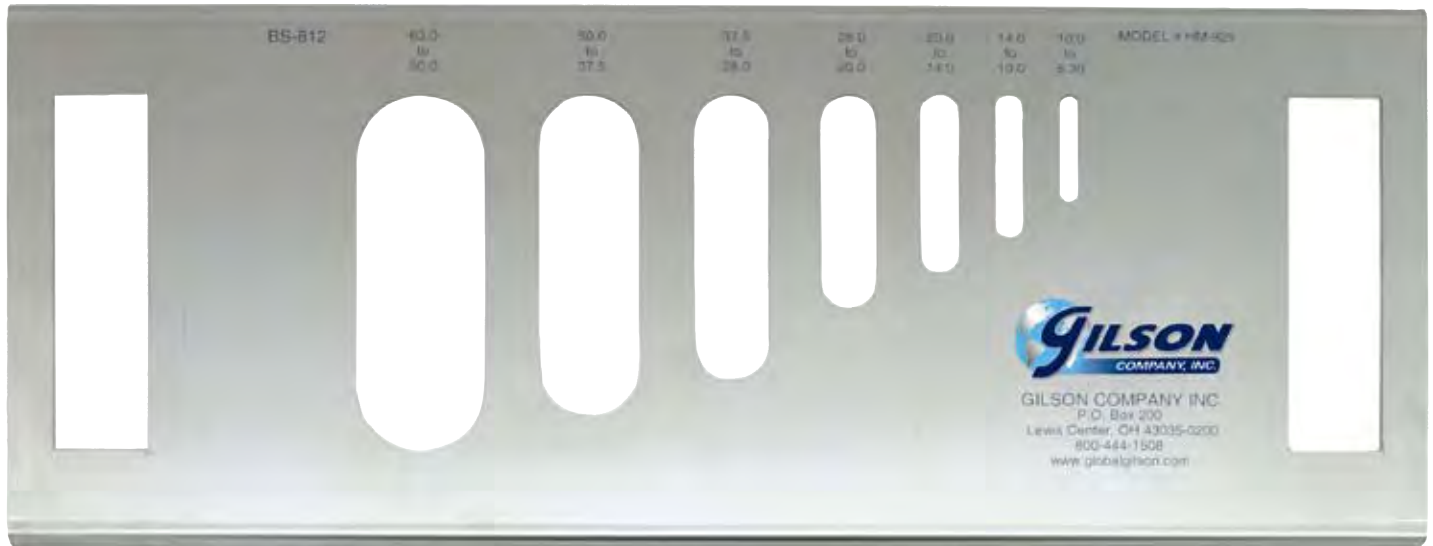
From the sum of the masses of the fractions in the trays (M_1), calculate the individual percentage retained on each of the various sieves. Discard any fraction of which the mass is 5% or less of mass M_1 . Record the mass remaining (M_2).

Gauge each fraction by selecting the thickness gauge appropriate to the size-fraction under test (see Table 9) and gauge each particle separately by hand.

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

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

$$\text{Flakiness Index} = \frac{M_3 \times 100}{M_2} \quad (\text{Continued on back.})$$



Thickness Gauge (Flakiness Index)

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DIMENSIONS OF THICKNESS & LENGTH GAUGES

Aggregate Size-Fraction		Thickness Gauge Width of Slot, mm	Length Gauge Gap between Pins, mm	Minimum Mass for Subdivision, kg
Test Sieve Nominal Aperture Size ¹				
100% Passing	100% Retained			
63.0mm	50.0mm	33.9 ± 0.3	—	50.0
50.0mm	37.5mm	26.3 ± 0.3	78.7 ± 0.3	35.0
37.5mm	28.0mm	19.7 ± 0.3	59.0 ± 0.3	15.0
28.0mm	20.0mm	14.4 ± 0.15	43.2 ± 0.3	5.0
20.0mm	14.0mm	10.2 ± 0.15	30.6 ± 0.3	2.0
14.0mm	10.0mm	7.2 ± 0.1	21.6 ± 0.2	1.0
10.0mm	6.3mm	4.9 ± 0.1	14.7 ± 0.2	0.5

¹ Test sieves shown comply with ISO 565.

TABLE 9

OPERATING INSTRUCTIONS:

- A. General: Aggregate particles are elongated when they have a length (greatest dimension) of more than 1.8 of their nominal size.

The Elongation Index is found by separating out the elongated particles and expressing their mass as a percentage of the total mass of the sample tested. The test is not applicable to material passing a 6.30mm sieve or retained on a 50.0mm sieve.

- B. Sample: The sample for this test shall comply with the appropriate minimum mass for sieve analysis, with due allowance for later rejection of particles retained on a 50.0mm sieve and passing a 6.30mm 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.

- C. Procedure: Carry out a sieve analysis using the sieves shown in Table 9.

Discard all aggregate retained on the 50.0mm sieve and passing the 6.30mm sieve.

Weigh and store the individual size-fractions in separate trays with sizes marked on the trays.

Where the number of particles in any size-fraction is considered to be excessive (more than the mass given in Table 9), the fraction may be split. Under such circumstances, the appropriate correction factor must be applied to determine the mass of elongated particles that would have been obtained had the entire size-fraction been gauged.

From the sum 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 selecting the length gauge appropriate to the size-fraction (see Table 9) and gauge each particle separately by hand. Elongated particles are those whose greatest dimension prevents them from passing through the gauge.

Combine and weigh all elongated particles (M_3).

- D. Calculating & Reporting (Elongation Index): The Elongation Index shall be reported to the nearest whole number. The sieve analysis obtained in this test shall also be reported.

$$\text{Elongation Index} = \frac{M_3 \times 100}{M_2}$$



Length Gauge (Elongation Index)