

METHOD B3T

TENTATIVE METHOD FOR THE DETERMINATION OF THE FLAKINESS INDEX OF A COARSE AGGREGATE

SCOPE

The Flakiness Index of a coarse aggregate is determined by gauging screened-out fractions with the appropriate slot(s) given in Table I below. Aggregate retained on the 75 mm and passing the 4,75 mm sieve is not included in the test.

Definition

The Flakiness Index of a coarse aggregate is the mass of particles in that aggregate, expressed as a percentage of the total mass of that aggregate, which will pass the slot or slots of specified width for the appropriate size fraction, as given in Table I below. The width of the slots are half those of the sieve openings through which each of the fractions passes.

2 APPARATUS

- 2.1 A gauge (of any suitable form) of metal 1,6 mm thick and having one slot for each size of fraction to be tested. The slots must be rectangular in shape and their dimensions must conform to the relevant values given in Columns 3 and 4 of Table 1. Alternatively, a flakiness machine may be used.
- 2.2 A balance to weigh up to 4 kg, accurate to 1 gram..
- 2.3 Test sieves, 200 mm in diameter, conforming to SABS 197 and with openings as given in Columns 1 and 2 of Table 1. The 4,75 mm sieve must be made of wire mesh.

3 METHOD

3.1 Preparation of test sample

By means of a riffler, obtain a representative test sample of approximate mass as given in Column 5 of Table 1. Separate the sample into the different size fractions using the test sieves given in Columns 1 and 2 of Table I (see 5.1). Material retained on the 75 mm and passing the 4,75 mm sieve is discarded and not used in the test (see 5.2). Weigh the test sample to the nearest 1 gram.

3.2 Separation of flakes

3.2.1 Using the slot gauge

Gauge all the pieces in each fraction by using the slot for that fraction as given in Columns 3 and 4 of Table 1. Record the mass of the total quantity of pieces that passed through the slots, to the nearest 1 gram.

3.2.2 *Using the flakiness machine*

Place the sieved-out fractions in the appropriate compartments formed by placing the spacers on the rods and the collars on the spacers, followed by the base plate of the next compartment.

Close the last compartment with a perspex plate and clamp it down with wing-nuts. Set the machine in operation and tip the drum to an angle adjusted according to the speed of rotation to ensure that the particles slide down without rolling. Separation is complete when no more flakes pass through the slots for a period of 30 seconds. Remove the flakes from the collecting pan and record their mass to the nearest 1 gram

4 **CALCULATIONS**

Calculate the Flakiness Index to the nearest 0,1 as follows:

$$\text{Flakiness Index} = \frac{\text{Total mass of Aggregate pass slots}}{\text{Mass of test sample}} \times 100$$

where :

the mass of the test sample is the total mass of the fractions used in the determination

Report the result to the nearest 0,1 on form B4/3 or a similar form.

5 **NOTES**

- 5.1 It is customary and practical to use the size fractions as screened out for the sieve analysis. When sieving is done by mechanical shakers, care must be taken to ensure that sieving is complete. If necessary, the sample should be divided into two or more portions and sieved separately.
- 5.2 It is sometimes necessary to determine the flakiness of a particular fraction(s), for instance in the case of basecourse aggregate. 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.

REFERENCES

SABS Method 847

TABLE 1

1		2	3	4	5
Size of Fraction to be gauged (sieve sizes) in mm.		Minimum length of slot	Width of slot (subject to a tolerance of 0.10mm)	Approximate mass of test sample passing sieves in Column 1	
Passing	Retained	mm	mm	Kg	
75.0	63.0	150.0	37.5	5	
63.0	53.0	126.0	31.5	5	
53.0	37.5	106.0	26.5	5	
37.5	26.5	75.0	18.75	5	
26.5	19.0	53.0	13.25	4	
19.0	13.2	38.0	9.5	3.5	
13.2	9.5	26.4	6.6	2	
9.5	6.7	19.0	4.75	1	
6.7	4.75	13.4	3.35	0.5	