METHOD B2

THE DETERMINATION OF THE 10 PER CENT FINES AGGREGATE CRUSHING VALUE

1 SCOPE

The 10 per cent Fines Aggregate Crushing Value (10 % FACT) as defined hereunder is determined by measuring the load required to crush a prepared aggregate sample to give 10 per cent material passing a specified sieve after crushing. The procedure described in SABS Method 842 is followed.

Definition

The 10 per cent Fines Aggregate Crushing Value is the force in kN required to crush a sample of -13,2+9,5mm aggregate so that 10 per cent of the total test sample will pass a 2, 36 mm sieve.

2 APPARATUS

As in SABS Method 842.

3 METHOD

Follow SABS Method 842.

4 CALCULATIONS

Do the calculations as set out in SABS Method 842 and report the force to the nearest 10 kN for forces of 100 kN or more, or to the nearest 5 kN for forces of less than 100 kN, on Form B4/3 (or a similar) form.

REFERENCE

SABS Method 842

S.A. BUREAU OF STANDARDS
STANDARD METHODS
SABS Method 842

FACT value (10 % fines aggregate crushing value) of coarse aggregates

SECTION 1. APPARATUS

1.1 As described in SABS Method 841.

SECTION 2. PREPARATION OF TEST SPECIMENS

2.1 As described in SABS Method 841 except that at least three test specimene (each of mass about 3 kg) are required for each test (wet and dry).

SECTION 3. PROCEDURE

3.1 Dry test

a) Place the crushing cylinder on its base plate, and add a test spesimen in thirds, tamping each layer with 25 light strokes of the tamping rod. Level the surface of the aggregate and insert the plunger (taking care to ensure that it does not jam in the cylinder) until it rests horizontally on this surface.

b) Place the assembly centrally on the bearing platen of the compression testing machine and so apply force (at a uniform rate) that the distance that the plunger is forced down into the cylinder in 10 min is about 20 mm . Note the maximum force applied and then release it.

c) Remove all the material from the cylinder and sieve it on a 2,36 mm sieve until no further significant quantity passes through the sieve in 1 min . Determine, to the nearest 5 g, the mass of the portion that passed through the sieve (i.e. the fines) and express this mass as a percentage of the initial mass of the specimen.

d) Test the other two specimens in the same way but so vary the rate of application of force (and hence the distance that the plunger is forced into the cylinder) in the light of the above result as to obtain, ideally, three forces that give, respectively, a percentage fines value

1) of less than 7,5 %,
2) in the range 7,5-12,5 %,
3) of over 12,5 % .

e) Plot the percentages so obtained against the forces, in kN, required for each, and from the resultant graph obtain the force that would give 10 % fines. Record this force (to the nearest kN in the case of a force of 100 kN or more, and to the nearest 0,5 kN in the case of a smaller force) as the 10 % FACT value of the aggregate.

3.2 Wet test

a) After the 24 h soaking, take a specimen out of the water, allow to drain for about 5 min, and then surface dry it by rolling it in a damp cloth.

b) Proceed as in 3.1(a)-(d) but in the third step of the test (see 3.1(c)), dry the material taken from the cylinder for 24 h at 105-110 EC before sieving it.

NOTE: In general, the rate of crushing must be reduced for material that has been wetted.

c) Then proceed as in 3.1(e).

NOTE: In routine testing and in cases where the behaviour of a test sample can be fairly closely predicted, and provided that the force applied in 3..l(b) has produced a fines value in the range 7,5-12,5%, the procedures described in 3.1(d) and (e) can be replaced by the following procedure.

1) From the force required to give a percentage fines in the range 7,5-12,5 calculate, as follows, a force that wiIl be required to produce 10 % fines:

$$F = \frac{14x}{y+4}$$

where :

F = force required to produce 10 % fines, kN

x = force required to produce a percentage fines in the range 7,5-12,5 as determined, kN

Y = percentage fines obtained with force x

2) Preferebly then carry out a test using the force as calculated in (1) above. If the percentage fines so obtained is not 10 %, apply the formula as in (1) above to the force used in this test, and take the re-adjusted force as the final result.

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Approved by the COUNCIL OF IHE SOUTH AFRICAN RUREAU OF STANDARDS

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