SAMPLING METHOD MB9

SAMPLING OF FRESHLY MIXED CONCRETE

1. **SCOPE**

This method involves the sampling of freshly mixed concrete at the point of use. This concrete is then used to carry out further tests or to prepare various specimens for testing.

2. **APPARATUS**

2.1 **Scoop**

Scoops must be made of a material which will not be affected by the cement, and to make it easier to determine what volume of concrete is being taken, the capacity of the scoop should be know. Since samples have to be taken from a moving stream of concrete, the scoop should be box-shaped, have a handle long enough to make it sage and comfortable to hold with both hands, and have sides high enough to prevent excessive spilling of the concrete. When samples have to be taken from poured concrete, the scoop should be in the form of a shovel with high sides and a high back, so that it will easily penetrate the concrete.

2.2 **Containers**

Containers must be large enough to contain the required increments of concrete. They must be strong enough and made of a material which is not affected by concrete.

3 **SAMPLE SIZE**

The minimum volumes of the samples required for the various tests are given in the table below. (The volumes apply to uncompacted concrete and are intended to give a surplus of approximately 15 per cent.) Base the size of the total sample to be taken on the tests to be carried out and calculated the number, N, of single samples (i.e. scoops) to be taken at each point, from this volume and that of the scoop(s) to be used.

VOLUMES OF THE SAMPLES

Test	**Volume of the uncompacted concrete, in cubic decimeters (minimum)**
Analysis	26
Slump	25
Compaction factor	12
Vibratory consistency	8
Air content	10
Mass per volumes unit	15
Comprehensive strength: For three cubes with a nominal size of	
(a) 100 mm	5
(b) 150 mm	16
Bending strength : For three beams with a nominal size of	
(a) 100 x 100 x 500 mm	22
(b) 150 x 150 x 750 mm	76
Static elastic modulus: For three cylinders with a nominal diameter of 150 mm and a nominal height of 300 mm	24
Moisture movement: For three prisms with a nominal size of	
75 x 75 x 300 mm	8

4.1 **Sampling from poured concrete**

If the samples are to be taken from concrete in open trucks, heaps or open-pan type mixers (such as those used in laboratories), the applicable procedure must be selected from the following:

(a) In the case of a production batch of concrete which, s a result of vibration or because of its consistency, has an almost smooth upper surface, the sample must be taken as follows:

Divide the batch into three approximately equal parts. Remove the upper 200 mm of material at each of three equally spaced places in each part, take N single samples (see paragraph 3) and place them in suitable containers.

(b) In the case of a batch f concrete in a heap the sample must be taken as follows:
Take N single samples (see paragraph 3) at each of six places equally spaced around the circumference of the heap at a height of approximately 0,25 H (where H is the height of the heap), and another N single samples at each of three places spaced as above at a height of approximately 0,75 H. When taking a sample, the scoop must be pushed right into the concrete. Under no circumstances may a sample be taken by scraping concrete from the surface of the heap. Place the single samples in suitable containers.

(c) In the case of a batch of concrete in a stationary pan-type mixer not provided with a discharge gate, the sample must be taken as follows:
Take N single samples (see paragraph 3) at each of six plaes equally spaced around the circumference of the pan and approximately 50 mm from the side and another N single samples at each of three places near the centre of the pan. Each sample must, if possible, include concrete from the full depth of the pan at that point. Place the single samples in suitable containers.

4.2 Sampling during the casting of concrete

If the samples are to be taken during the casting of concrete (e.g. during discharge from a mixer chute, conveyor belt or pipe), the following procedure must be used:

(a) Make sure that access to the concrete is such that the sampler is able to work without excessive physical exertion.

(b) Wherever the single samples are taken from, ensure that neither the first 10 per cent nor the last 10 per cent of the contents of the mixer are taken as a sample.

(c) Take each single sample as close as possible to the discharge point and do not allow the concrete to drop from a height of more than 500 mm before taking a single sample.

(d) Take the N single samples (see paragraph 3) at equally spaced intervals (preferably at least 9) during the discharge period and ensure that each sample is taken in one movement across the full width and thickness of the flow of concrete and immediately transferred to a suitable container.

4.3 **Preparation of the compound sample**

After the single samples have been taken, the containers must be removed to a suitably protected and convenient place without delay, the contents of the containers must be emptied onto a suitably hard and non-absorbent surface and the compound sample thoroughly mixed by hand.

5 **REPORTING**

Prepared test portions must be properly labeled and be dispatched under cover of a sample form giving the following information:

Road and contract number.
Description and source of material.
Location of material from which the sample was taken.
Date of sampling.
Group number.
Name of the sampler.

Reference

SABS Method 861.