



SAMPLING FRESHLY MIXED CONCRETE

SCOPE

This procedure provides instruction for obtaining samples of fresh concrete for new construction or repair. Sources covered include grade, ready mix truck, mobile mixer, pump or conveyor placement systems, and concrete slab as placed.

SIGNIFICANCE

Testing fresh concrete in the field begins with obtaining and preparing the sample to be tested. Standardized procedures for obtaining a representative sample from various types of mixing and/or agitating equipment have been established. Specific time limits regarding when tests for temperature, slump, and air content must be started and for when the molding of test specimens must begin are also established.

Technicians must refrain from obtaining the sample too quickly. Doing so would be a violation of the specifications under which the concrete is being supplied and it may result in a nonrepresentative sample of concrete. Every precaution must be taken to obtain a sample that is truly representative of the entire batch and then to protect that sample from the effects of evaporation, contamination, and physical damage.

PROCEDURE

A. Apparatus

1. Wheelbarrow or other nonabsorbent container
2. Cover for wheelbarrow or container (plastic, canvas, or burlap)
3. Shovel
4. 5-gal. (19 L) bucket for water

B. Testing Procedure

For acceptance testing, obtain representative samples from the last practical point before incorporation, but before consolidation.

1. Sampling from Grade

Sample after the concrete in the transport vehicle has been discharged onto the grade. To ensure a representative sample, obtain concrete from at least five different locations in the pile and combine into one test sample. Avoid contamination with subgrade material or prolonged contact with absorptive subgrade.

2. Sampling from Ready Mix Truck

Sample the concrete after a minimum of $1/2 \text{ yd.}^3$ ($1/2 \text{ m}^3$) of concrete has been discharged. Do not obtain samples until after all of the water has been added to the mixer. Do not obtain samples from the very first or last portions of the batch discharge. Sample by repeatedly passing a receptacle through the entire discharge stream or by completely diverting the discharge into a sample container. Regulate the rate of discharge of the batch by the rate of revolution of the drum and not by the size of the gate opening.

3. Sampling from Mobile Mixer

Discharge the concrete into a container or power buggy sufficiently large enough to accommodate the entire batch. Secure a representative sample after the batch has been deposited by obtaining one shovel full, more or less, from each of at least three different positions in the container or power buggy.

4. Sampling from Pump or Conveyor Placement Systems

Sample after a minimum of $1/2 \text{ yd.}^3$ ($1/2 \text{ m}^3$) of concrete has been discharged. Do not obtain samples until after all of the pump slurry has been eliminated. Sample by repeatedly passing a receptacle through the entire discharge system or by completely diverting the discharge into a sample container. Do not lower the pump arm from the placement position to ground level for ease of sampling, as it may modify the air content of the concrete being sampled. Do not obtain samples from the very first or last portions of the batch discharge.

5. Sampling from Concrete Slab as Placed

Mark the approximate location of concrete placed on grade and sampled for air content. After the paver has passed the marked location, remove the sample from the slab, approximately in line with a vibrator and within an $18 \text{ in.} \times 18 \text{ in.}$ ($500 \text{ mm} \times 500 \text{ mm}$) square area to a depth approximately two-thirds of the pavement thickness. The sample should be obtained a minimum of 12 in. (300 mm) from the edge of slab to prevent extra handwork in maintaining the pavement edge.

Transport samples to the place where fresh concrete tests are to be performed and specimens are to be molded. Protect the sample from direct sunlight, wind, rain, and sources of contamination.

Complete test for temperature and start tests for slump and air content within five minutes of obtaining the sample. Complete tests as quickly as possible. Start molding specimens for strength tests within 15 minutes of obtaining the sample.