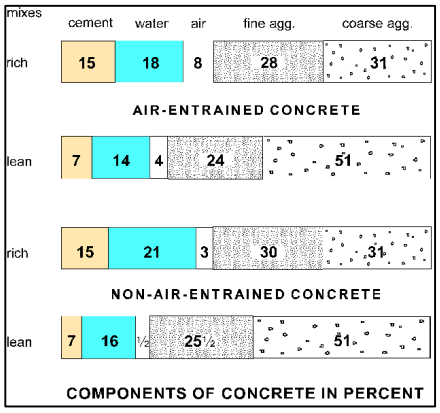
SLUMP OF HYDRAULIC CEMENT CONCRETE
FOP FOR AASHTO T 119



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Significance

02 The slump test is used to determine the consistency of concrete. Consistency is a measure of the relative fluidity or mobility of the mixture. Slump does not measure the water content or workability of the concrete. While it is true that an increase or decrease in the water content will cause a corresponding increase or decrease in the slump of the concrete, many other factors can cause slump to change without any change in water content.

03 Also, water content may increase or decrease without any change in slump. Factors such as a change in aggregate properties, grading, mix proportions, air content, concrete temperature, or 04 the use of special admixtures can influence the slump of the concrete. These can also result in a change in the water requirement for maintaining a given slump. For these reasons, one cannot assume that the water/cement ratio is being maintained simply because the slump is within the specification limits.

Scope

05 This procedure provides instructions for determining the slump of hydraulic cement concrete in accordance with AASHTO T 119. It is not applicable to nonplastic and noncohesive concrete, nor when the nominal maximum size of the coarse aggregate is over 50 mm (2 in.).

Apparatus

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5 Minutes!

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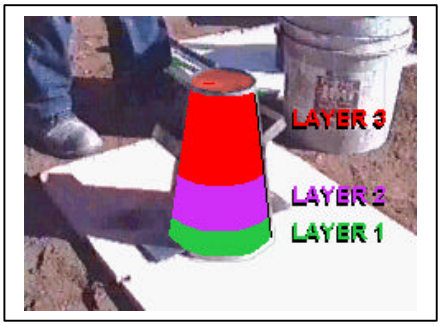

Three layers by volume

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Apparatus

- Slump cone conforming to AASTO T 119: The mold shall be provided with foot pieces and handles. The mold may be constructed either with or without a seam. The interior of the mold shall be relatively smooth and free from projections such as protruding rivets. The mold shall be free from dents. A mold which clamps to a rigid nonabsorbent base plate is acceptable provided the clamping arrangement is such that it can be fully released without movement of the mold.
- Tamping rod: 16 mm (5/8 in.) diameter and approximately 600 mm (24 in.) long, having a hemispherical tip. (Hemispherical means half a sphere; the tip is rounded like half of a ball.)
- Scoop
- Tape measure or ruler with at least 5 mm (1/8 in.) graduations
- Base: Rigid, non-absorbent surface on which to set the slump cone

Procedure

1. Obtain the sample in accordance with FOP for NAQTC TM 2.

   Note: Testing shall begin within five minutes of obtaining the sample.

2. Dampen the inside of the cone and place it on a dampened, rigid, nonabsorbent surface that is level and firm.
3. Stand on both foot pieces in order to hold the mold firmly in place.
4. Fill the cone 1/3 full by volume, to a depth of 67 mm (2 5/8 in.) by depth.
5. Consolidate the layer with 25 strokes of the tamping rod, using the rounded end. Distribute the strokes evenly over the entire cross section of the concrete. For this bottom layer, incline the rod slightly and make approximately half the strokes near the perimeter, and then progress with vertical strokes, spiraling toward the center.

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Consolidating top layer

6. Fill the cone 2/3 full by volume, to a depth of 155 mm (6 1/8 in.) by depth.
7. Consolidate this layer with 25 strokes of the tamping rod, just penetrating into, but not through, the bottom layer. Distribute the strokes evenly.
8. Fill the cone to overflowing.
9. Consolidate this layer with 25 strokes of the tamping rod, just penetrating into, but not through, the second layer. Distribute the strokes evenly. If the concrete falls below the top of the cone, stop, add more concrete, and continue rodding for a total of 25 strokes. Keep an excess of concrete above the top of the mold at all times. Distribute strokes evenly as before.

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Striking off top surface

10. Strike off the top surface of concrete with a screeding and rolling motion of the tamping rod.
11. Clean overflow concrete away from the base of the mold.
12. Remove the mold from the concrete by raising it carefully in a vertical direction. Raise the mold 300 mm (12 in.) in 5 ± 2 seconds by a steady upward lift with no lateral or torsional motion being imparted to the concrete.

    The entire operation from the start of the filling through removal of the mold shall be carried out without interruption and shall be completed within an elapsed time of 2 1/2 minutes.

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Lifting slump cone

Measuring slump

13. Invert the slump cone and set it next to the specimen.
14. Lay the tamping rod across the mold so that it is over the test specimen.
15. Measure the distance between the bottom of the rod and the displaced original center of the top of the specimen to the nearest 5 mm (1/4 in.).

    Note: AASHTO calls for the nearest 6 mm, but 5 mm is more reasonable and practical.

Note: If a decided falling away or shearing off of concrete from one side or portion of the mass occurs, disregard the test and make a new test on another portion of the sample. If two consecutive tests on a sample of concrete show a falling away or shearing off of a portion of the concrete from the mass of the specimen, the concrete probably lacks the plasticity and cohesiveness necessary for the slump test to be applicable.

Report

Results shall be reported on standard forms approved for use by the agency. Record the slump to the nearest 5 mm (1/4 in.).

Tips!

- Start within 5 minutes of obtaining sample.
- Avoid locations subject to vibration.
- Consolidation strokes in middle and top layers do not go through entire sample.
- Fill in thirds by volume, not height.