



Cement Bleeding Apparatus

1. General

This apparatus is used in the test to determine the bleeding rate and bleeding capacity of cement paste and mortar by a direct and continuous procedure.

2. Unpacking

The Cement Bleeding Apparatus, Model H-3600 consists of a container for the paste or mortar to be tested, a collecting ring and a measuring burette with funnel.

For shipment, the apparatus is disassembled to avoid breakage during transit. Care should be taken in unpacking to be sure no parts are overlooked.

3. Assembly

Prior to the start of the test, the constricted capillary, stopcock and aspirator should be connected to the top of the burette through a suitable rubber stopper. The burette assembly should be supported by a ring stand or similar equipment in order that it can be conveniently raised and lowered over the collecting ring and held rigidly in place during the test period.

4. Operating Procedure

4.1 Pastes

Immediately after mixing, carefully pour the paste into the sample container and take the completion of the screening as the start time for the test. Take care to make certain that the paste height is level with the edge of the 5" diameter container.

Place the collecting ring approximately in the center of the paste surface, embed it to a depth of approximately 1/4" and cover the surface of the paste with carbon tetrachloride to a depth of 1-1/4". Lower the funnel-burette assembly to within 1/4" of and directly over the collecting ring. Draw carbon tetrachloride up into the burette by means of an aspirator to a "zero" burette marking and close the stopcock. Four minutes after the start time, take the first reading, and take readings thereafter at 2 minute intervals until 30 minutes after the start time, and at 10 minutes intervals until cessation of bleeding.

To compensate for density changes as increasing quantities of water gather in the measuring burette, zero the meniscus every 10 minutes immediately before the appropriate reading for each period.

CAUTION: The bleeding tests should be run in a well-ventilated room. Take care to avoid spilling carbon tetrachloride and breathing the vapors. Keep the exposed portion of the liquid surface around the funnel covered during the test.

4.3 VIBRATION:

Place the bleeding apparatus in a draft-free location and set it on a sponge rubber mat or equivalent that will serve as a vibration damper.

4.4 Notes:

Approximately 500 ml of carbon tetrachloride are required per test. This may be reclaimed by siphoning off the liquid at the end of the test and placing it in a separating funnel. The carbon tetrachloride may be tinted with an oil-soluble dye for ease in reading the level in the burette.

4.5 MORTARS

Immediately following the flow test, remix the mortar remaining in the mixing bowl for 30 seconds. Within a total elapsed time of not more than 2-1/2 minutes after completion of the original mixing of the mortar batch, begin placing the mortar in the sample container. Place the mortar in three layers, tamp each layer 40 times with the tamper and strike off the surface level with the edge of the 5" diameter container by screeding with a steel straight edge. Conduct the remainder of the test for the paste using as a start time the completion of striking-off the surface of the mortar in the container.

5. Calculation

5.1 Calculate the initial rate of bleeding as follows, using values taken during the first 30 minutes of the test when the bleeding should be proceeding at a uniform rate:

Bleeding rate, cu cm per sq cm per sec = $V1/At$

Where,

$V1$ = Volume of bleeding water in cubic centimeters, measured during time interval t

A = Area in square centimeters covered by the collecting ring, and

t = time in seconds during which bleeding occurs at a uniform rate.

5.2 Calculate the bleeding capacity as follows:

Bleeding capacity, cu cm per cu cm = V_2/V_3

Where,

V_2 = total volume of bleeding water, in cubic centimeters, and

V_3 = volume of the cylinder of paste or mortar under the collecting ring, in cubic centimeters.

5.3 Calculate and report bleeding rate and bleeding capacity values to the nearest three significant digits.

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