

DETERMINATION OF INITIAL & FINAL SETTING TIMES

STANDARD

- IS: 4031 (Part 5) 1988.

OBJECTIVE

- To determine the initial and final setting times of cement.

APPARTUS

- Vicat apparatus conforming to IS: 5513-1976.
- Balance of capacity 1kg and sensitivity 1 gram.
- Gauging trowel conforming to IS: 10086-1982.

PROCEDURE

- Unless otherwise specified this test shall be conducted at a temperature of $27 \pm 2^{\circ}\text{C}$ and $65 \pm 5\%$ of relative humidity of the Laboratory.
- Prepare a paste of 300 grams of cement with 0.85 times the water required to give a paste of standard consistency IS: 4031 (Part 4) 1988.
- The time of gauging in any case shall not be less than 3 minutes not more than 5 minutes and the gauging shall be completed before any sign of setting occurs.
- Count the time of gauging from the time of adding water to the dry cement until commencing to fill the mould
- Fill the vicat mould with this paste making it level with the top of the mould.
- Slightly shake the mould to expel the air.
- In filling the mould the operator hands and the blade the gauging trowel shall only be used.

Initial Setting Time

- Immediately place the test block with the non-porous resting plate, under the rod bearing the initial setting needle.
- Lower the needle and quickly release allowing it to penetrate in to the mould.
- In the beginning the needle will completely pierce the mould

- Repeat this procedure until the needle fails to pierce the mould for $5 \pm 0.5\text{mm}$.
- Record the period elapsed between the time of adding water to the cement to the time when needle fails to pierce the mould by $5 \pm 0.5\text{mm}$ as the initial setting time.

Final Setting Time

- Replace the needle of the vicat apparatus by the needle with an annular ring
- Lower the needle and quickly release.
- Repeat the process until the annular ring makes an impression on the mould.
- Record the period elapsed between the time of adding water to the cement to the time when the annular ring fails to make the impression on the mould as the final setting time.

REPORT

- Report the initial setting time and final setting time in minutes.

PRECAUTION

- The time of gauging in any case shall not be less than 3 minutes not more than 5minutes.

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**Punjab State Road Sector Project
PWD B&R Branch, Govt. of Punjab
Punjab Roads & Bridges Development Board**

**DETERMINATION OF INITIAL AND FINAL SETTING TIME
OF HYDRAULIC CEMENT BY VICAT NEEDLE
(IS 4031)**

Cement Brand : _____ Date of Sampling : _____

Source : _____ Date of Testing : _____

Size of Sample : _____ Size of Lot : _____

Determination No.		
Normal Consistency		
Time When Water is Added to Cement		
Time at Initial Setting		
Total Time Taken for Initial Setting		
Time at Final Setting		
Total Time Taken for Final Setting		

Remarks : _____

Approved /Not Approved:

Contractor's Representative

Materials Engineer
Consultant

Resident Engineer
Consultant
