

## DETERMINATION OF CONSISTENCY OF STANDARD CEMENT PASTE

### **STANDARD**

- IS: 4031 (Part 4) 1988

### **DEFINITION**

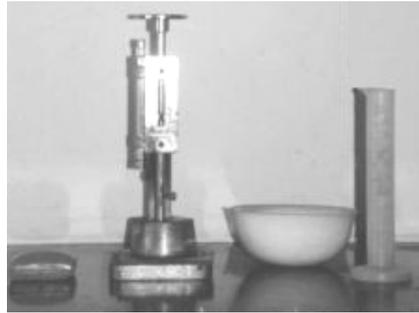
- The standard consistency of a cement paste is defined as that consistency which will permit the vicat plunger to penetrate to a point 5 to 7mm from the bottom of the vicat mould.

### **APPARATUS**

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

### **PROCEDURE**

- Unless otherwise specified this test shall be conducted at a temperature  $27 \pm 2^{\circ}\text{C}$  and the relative humidity of laboratory should be  $65 \pm 5\%$ .
- Prepare a paste of weighed quantity of cement (300gms) with weighed quantity of potable or distilled water, taking care that the time of gauging is not less than 3minutes nor more than 5minutes and the gauging is completed before any sign of setting occurs.
- The gauging is counted from the time of adding water to the dry cement until commencing to fill the mould.
- Fill the vicat mould with this paste resting upon a non-porous plate.
- Smoothen the surface of the paste, making it level with the top of the mould.
- Slightly shake the mould to expel the air.
- In filling the mould operators hands and the blade of the gauging trowel shall only be used.



Testing consistency of cement.

- Immediately place the test block with the non-porous resting plate, under the rod bearing the plunger.
- Lower the plunger gently to touch the surface of the test block and quickly release, allowing it sink into the paste.
- Record the depth of penetration
- Prepare trial pastes with varying percentages of water and test as described above until the plunger is 5mm to 7mm from the bottom of the vicat mould.

#### **CALCULATIONS**

- Standard consistency (%) =  $\frac{\text{Weight of water added}}{\text{Weight of cement}} \times 100$

#### **REPORT**

- Express the amount of water as a percentage by mass of dry cement to the first place of decimal.

#### **PRECAUTION**

- Care shall be taken to maintain the specified temperature, humidity and the time of mixing so as to avoid setting of cement paste.

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**FORM D18**

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

**CONSISTENCY OF CEMENT**

SAMPLE NO:	DATE OF SAMPLING:
SOURCE/LOCATION:	
DELIVERY CHALLAN NO. & DATE:	TESTING DATE:
CEMENT MANUFACTURER:	
GRADE & TYPE OF CEMENT:	TESTED BY:
BATCH NO. (D/M/Y):	

Trial No.	Wt. of Cement (gm)	Water (cc)	Water (%)	Needle Penetration mm	Remarks
					STANDARD
					CONSISTENCY
					At 28 DEGRESS
					TEMPERATURE

ACCEPTANCE CRITERIA:  
 STANDARD CONSISTENCY (P) : %  
 INITIAL SETTING TIME : min. : 30 minutes  
 FINAL SETTING TIME : max. :600 minutes

Remarks : \_\_\_\_\_

Approved /Not Approved:

\_\_\_\_\_  
Contractor's Representative

\_\_\_\_\_  
Materials Engineer  
Consultant

\_\_\_\_\_  
Resident Engineer  
Consultant

