**Faulty of Engineering and Technology**

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**Civil Engineering Department**

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**Construction Materials Laboratory**

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**ENCE215**

**Experiment :**

**" Cement Consistency "**

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**Done by :**

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**Introduction :**

Standard Consistency , It is that cement consistency which will allow the Vicat plunger to penetrate to 5-7 mm point from the bottom of Vicat mould is known as standard consistency .

The vicat apparatus consists of a frame having a movable rod with a cap at one end and at the other end any one of the following attachment, which are interchangeable :

1. Needle for determining the initial setting time .

2. Needle for determining the final setting time .

3. Plunger for determining the standard consistency .

**Purpose :**

• Find the normal water cement ratio ( W/C ) .

• Find the initial setting time .

• Find the final setting time .

**Materials and Equipment's :**

| Equipment  | The name of it :  | Equipment  | The name of it : |
| --- | --- | --- | --- |
| Figure 1  | **Vicat mould**  | Figure 2  | **Cement**  |
| Figure 3  | **Dropper filled with water**  | Figure 4  | **Iron plate**  |

" Table 1 "

**Procedure :**

• Weigh approximately 400g of cement and mix it with a weighed quantity of water. The time of gauging should be between 3 to 5 minutes .

• Fill the Vicat mould with paste and level it with a trowel .

• Lower the plunger gently till it touches the cement surface .

• Release the plunger allowing it to sink into the paste .

• Note the reading on the gauge .

• Repeat the above procedure taking fresh samples of cement and different quantities of water until the reading on the gauge is 5 to 7mm .

**Result and Conclusion :**

**Results :**

| Amount of cement (g)  | Amount of water (g)  | The amount of concrete that has been filled : (mm)  |
| --- | --- | --- |
| 400 g  | 28% of the cement amount = 112 g  | 26 mm  |
| 400 g  | 30% of the cement amount = 120 g  | 32 mm  |
| 400 g  | 32% of the cement amount = 128 g  | 8 mm  |
| 400 g  | 33% of the cement amount = 132 g  | 7 mm  |

**Conclusion :**

The time of gauging should not be less than 3 minutes and not more than 5 minutes. Gauging time is the time elapsing from the time of adding water to the dry cement until commencing to fill the mould .

The test should be conducted at room temperature 27oC +/- 2oC

There should be no vibration on the working table.

The plunger should be cleaned during every repetition.