EXPERIMENT NO.-06

EXPERIMENT NAME:

DETERMINATION OF FINENESS OF CEMENT BY SIEVING

INTRODUCTION

- Cement is obtained by grinding the various raw materials. The degree to which the cement is drawn to smaller and smaller particles is called fineness of cement.
- The fineness of cement has an important bearing on the rate of hydration and hence on the rate of gain of strength and also on the rate of evolution of heat.
- Since hydration starts at the surface of the cement particles, it is the total surface area of cement that represents the material available for hydration.
- Thus, the rate of hydration depends on the fineness of cement particles, and for a rapid development of strength a high fineness is necessary.
- Different cements are ground to different fineness.
- The disadvantage of fine grinding is that it is susceptible to air set and early deterioration.
- Maximum number of particles in a sample of cement should have a size less than about 100 microns.
- The smallest particle may have a size of about 1.5 microns.

INTRODUCTION (Contd..)

- Increase in fineness of cement is also found to increase the drying shrinkage of concrete.
- In commercial cement it is suggested that there should be about 25-30 per cent of particles of less than 7 micron in size.

Fineness of cement is determined by following two ways:

- By sieving.
- By determination of specific surface (total surface area of all the particles in one gram of cement) by air-permeability apparatus which is expressed as cm^2/gm or m^2/kg. Generally Blaine Air permeability apparatus is used.

- The purpose of this experiment is to check whether the cement to be used is of enough standard for the desired requirements.
- In this experiment a sample of cement is taken and checked on the sieve # 200.
- Then after shaking on this sieve for approximately 15 minutes we weight the sample retained on the sieve.
- If sample weights greater 10% of the given sample then the cement is not fresh and may not fulfill our requirements.

STANDARD REFERENCE
ASTMC430

APPARATUS

- A sample of Cement
- Weighting Machine
- US # 200 Sieve
- Pan

PROCEDURE

- Take 100gm sample of cement and put it in a sieve # 200 and shake for 15 minutes.
- Now weigh the sample retained on the sieve.
- If it comes 10 gm i.e. 10% of the weight of the given sample, then according to the ASTM standards it is fresh cement.

CALCULATIONS

$$Weight\ of\ Cement\ sample\ taken\ (gm) = W_1$$

$$Weight\ retained\ on\ Sieve\ (gm) = W_2$$

$$Fineness\ of\ Cement\ (\%) = \frac{W_1 - W_2}{W_1} \times 100$$

RESULT

- Report the result to the nearest 0.1 %.

EXPERIMENT 06
Data Sheet
Determination of Fineness of Cement by Sieving

Observation No.	01	02
Weight of cement sample taken, (gm)=W1		
Weight retained on sieve, (gm)=W2		
Fineness of cement (%)= (W1-W2) * 100/W1		
AVERAGE=		

Fineness of Cement = **%**

Student No. :
Group :
Date :

Signature of Course Teacher