eXPeRIMenT nO 1

concrete

naMe OF eXPeRIMenT: deTeRMInaTIOn OF FIneneSS OF ceMenT bY

SIeVInG.

ObJecT: To determine the fineness of cement by sieving.

THeORY:

Strength development of concrete is the result of the chemical reaction of water with cement

particles. The reaction always starts at the surface of the cement particles. Thus larger the

surface area available for reaction, greater is the rate of hydration and strength development.

Rapid development of strength requires greater degree of fineness. and, therefore, rapid

hardening cement requires greater degree of fineness.

However too much fineness is also undesirable because the cost of grinding during its

manufacture the cement t higher fineness is considerably high. Finer cement deteriorates more

quickly when exposed to air and likely to cause more shrinkage, but less prone to bleeding.

Greater fineness also requires greater amount of gypsum for proper retardation of setting.

Fineness of cement is controlled by minimum specific surface area defined as surface area of

cement particles per gram of cement. For Ordinary Portland cement the specific surface area

should not be less than 2250 cm2

/gm.

neceSSITY:

It is a very useful test which indicates if lumps have formed in cement due to poor storage and

chemical reaction with moisture from the air of the ambient environment.

neceSSaRY InSTRUMenTS/ eQUIPMenTS:

1. analytical balance- capable of producing results within 0.0002gm with an accuracy of

±0.0002 gm.

2. Wire cloth test sieve of size 90 micron conforming to IS: 460 (Part-I)-1985.

3. Standard weights.

4. brush- a nylon or pure bristle brush preferably with 25 to 40 mm bristle for cleaning the

sieve.

5. Trowel.

6. Tray of size 300mm x 300 mm

SPecIMen SUPPLIed:

The sample of the cement shall be taken according to the requirements of IS: 3353-1986 and the

relevant standard specification for the type of cement being tested. The representative sample of

the cement selected shall be thoroughly mixed before testing.