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## Testing for the Fineness of Cement and it's Significant

Fineness of Cement is measured by sieving cement on standard sieve. The proportion of cement of which the cement particle sizes are greater than the 90 micron is determined.

### Why to test fineness test of Cement?

We know that cement hydrates with the presence of water. When cement is mixed with the water, a thin layer is formed around the particle. This layer grows bigger and makes cement particles to separate. Due to this, hydration process slows down. Therefore, the smaller particle will react much quicker than the larger particle. A particle with dia  $1\mu\text{m}$  will react entirely in one day, whereas the particle with dia  $10\mu\text{m}$  takes about one month. So the particle size distribution is more critical in attaining the final strength of cement in allowable time.

But too much of smaller particles in cement results in quick setting, leaving no time for mixing, handling and placing. So to increase the setting time of cement, cement is grinded in a different range of particle sizes.

The following proportions are usually maintained in Cement: About 10% of the cement of fine particles is smaller than  $2\mu\text{m}$ , 10% of wt of cement is made of particles larger than  $50\mu\text{m}$ , and only a few wt% is particles larger than  $90\mu\text{m}$ .

### Fineness test of Cement

The cement of good quality should have less than 10% of wt of cement particles larger than  $90\mu\text{m}$ . (micron)

To determine the amount of cement particles larger than  $90\mu\text{m}$ . or Fineness test of cement. The following apparatus is used.

100g of cement (test sample), Weighing balance which can weight with an accuracy of 1mg, Standard Sieve of size  $90\mu\text{m}$ , Sieve pan with lid, Sieve Shaking Machine(optional)

**Also Check Out** [Cement Initial and Final Setting Time](#)

### Procedure for finding Fineness test of cement

1. Take a sample of cement and rub the cement with your hands. The test sample should be free of lumps.
2. Now Take 100g of cement and note it as **W1**
3. Pour 100g of cement in  $90\mu\text{m}$  sieve and close it with the lid.

4. Now place the sieve in Sieve shaking machine. You can also shake the sieve with your hands by Agitating the sieve in planetary and linear movements for 15 minutes
5. Next, weight the residue retained on the 90  $\mu\text{m}$  sieve as **W<sub>2</sub>**.
6. Then calculate the percentage of Wt of cement retained on Sieve.
7. Repeat the above experiment with three different samples of cement and average the values for accurate results.



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