

## **Aim of the experiment :**

Sieve analysis of a given sample.

## **Theory :**

Sieve analysis is important for analyzing materials because particle size distribution can affect a wide range of properties, such as strength of concrete, the solubility of a mixture, surface area properties and even their taste.

For conducting this experiment it is important to know about the mesh number or mesh size. The number of openings across one linear inch of the screen is defined as the mesh number or mesh size. For example a 10-mesh screen will have 10 openings per linear inch. As mesh size increases, the size of particles decreases. Higher numbers indicate finer particles.

## **Apparatus used :**

Sieve/ screen analysis equipment.

## **Procedure :**

Solids of small size are generally specified according to their sieve analysis. Sieve analysis of a sample is carried out by placing the sample on the sieve/screen with the biggest opening of a set of standard sieve/ screens. The remaining screens are arranged below this in order of decreasing size of mesh. The pile of screen with the sample on the top screen is shaken in a definite manner either manually or mechanically for a definite length of time and the material collected on each screen is removed and weighed. This is then reported in a tabular as well as graphical form.

## **Observation :**

Weight of sand = 1kg

Weight of the paper = 3.44

Mesh size : 3

$$449.6 - 3.44 = 446.16$$

Mesh size : 12

$$85.30 - 3.44 = 81.86$$

Mesh size : 18

$$71.55 - 3.44 = 68.11$$

Mesh size : 22  
 $5.20 - 3.44 = 1.76$

Mesh size : 30  
 $55.24 - 3.44 = 51.8$

Mesh size : 72  
 $(144.20 + 71.66) - 3.44 = 212.42$

Fine particles =  $(136 - 3.44) = 132.56$

Total weight remained = 994.67 gm

Therefore,

$$\begin{aligned}\text{Final weight} &= \text{Initial weight} - \text{Total weight} \\ &= 1000 \text{ gm} - 994.67 \text{ gm} \\ &= 5.33 \text{ gm} \\ &= 0.00533 \text{ kg}\end{aligned}$$

**Remarks :**

994.67 gm which is less than the initial weight (i.e. 1 kg) taken because of loss during weighing.

**Engineering uses :**

From research and development to incoming and production control, sieve analyses are used to determine the particle size of varied samples. High accuracy, low investment cost and ease of handling make it a commonly used procedure for determining the particle size.

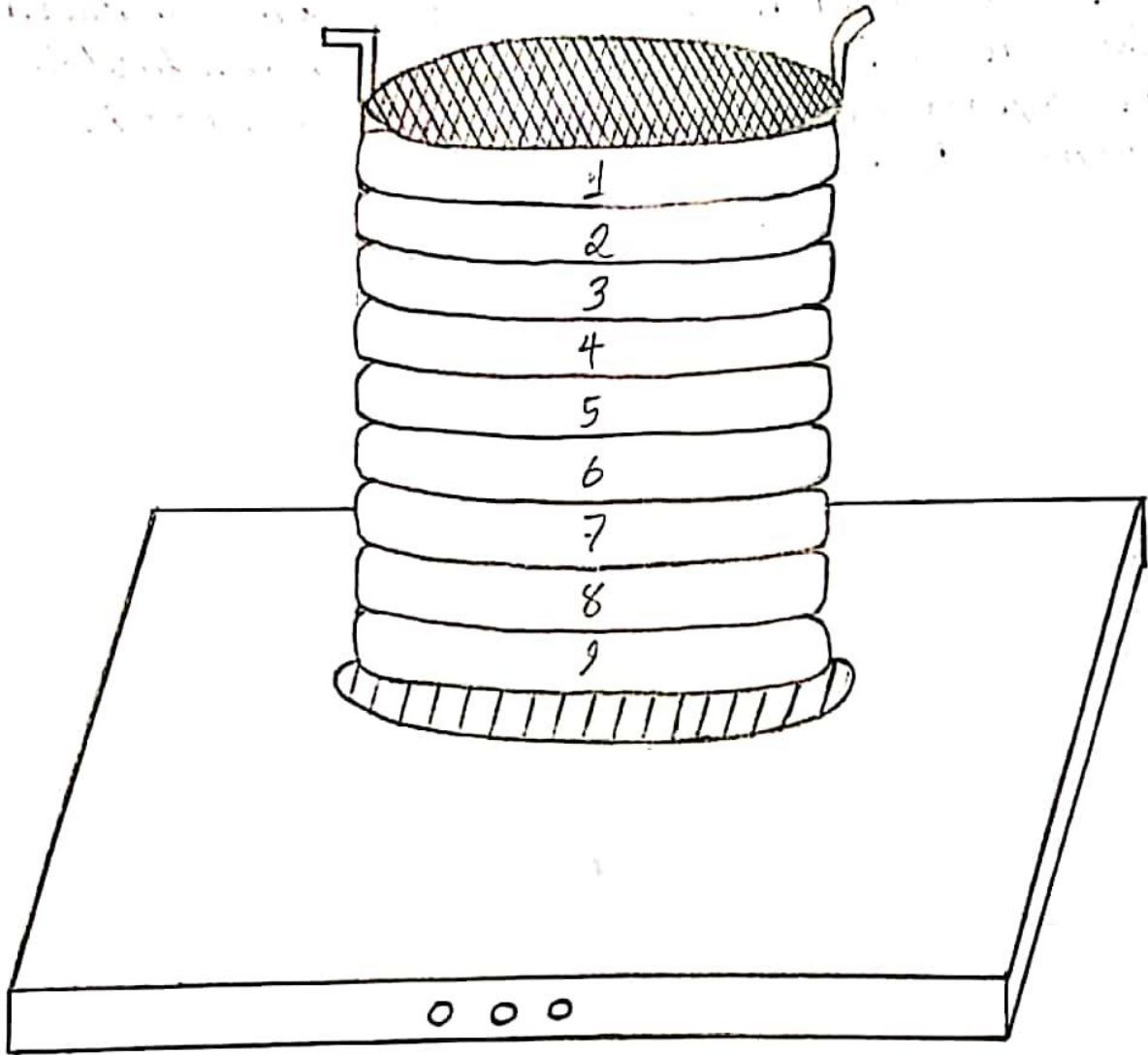


FIG: SCREEN ANALYSIS