

SAND

Sand is an important building material used in the preparation of mortar, concrete, etc.

4.1 Sources of Sand: Sand particles consist of small grains of silica

(SiO₂). It is formed by the decomposition of sand stones due to

various effects of weather. The following are the natural sources of sand.

a. Pit Sand: This sand is found as deposits in soil and it is obtained by forming pits to a depth of about 1m to 2m from ground level.

Pit sand consists of sharp angular grains, which are free from salts for making mortar, clean pit sand free from organic and clay should only be used.

b. River Sand: This sand is obtained from beds of rivers. River sand



consists of fine rounded grains. Colour of river sand is almost white. As the river sand is usually available in clean condition, it is widely used for all purposes.

c. Sea Sand: This sand is obtained from sea shores. Sea sand consists of rounded grains in light brown colour. Sea sand consists of salts which attract the moisture from the atmosphere and causes dampness, efflorescence and disintegration of work.

Due to all such reasons, sea sand is not recommendable for engineering works. However be used as a local material after

being thoroughly washed to remove the salts.

Characteristics of sand:

1. It should be chemically inert
2. It should be clean and coarse. It should be free from organic matter.

3. It should contain sharp, angular and durable grains.

4. It should not contain salts, which attract the moisture from atmosphere.

5. It should be well graded (i.e.) should contain particles of various sizes in suitable proportions.

Grading of Sand:

According to the size of grains, sand is classified as fine, coarse and gravelly

Sand passing through a screen with clear opening of

1.5875mm is known as fine sand. It is generally used for masonry works.

Sand passing through a screen with clear openings of

7.62mm is known as gravelly sand. It is generally used for



plastering. Sand passing through a screen with clear opening of

3.175mm is known as coarse sand. It is generally used for

masonry work..

The presence of moisture in sand increases the volume of

sand. This is due to fact that moisture causes film of water around

the sand particles which result in the increase of volume of sand.

For a moisture content of 5 to 8 percent, the increase in volume

may be about 5 to 8 percent, depending upon the grading of sand.

The finer the material, the more will be the increase in volume

for a given moisture content. This phenomenon is known as

bulking of sand.

When moisture content is increased by adding more



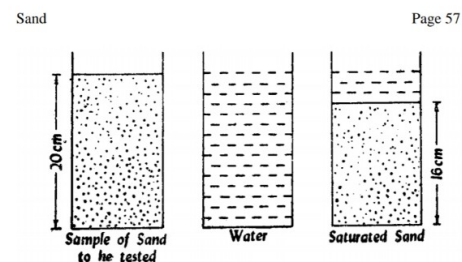
water, sand particles pack near each other and the amount of

bulking of sand is decreased. Thus the dry sand and the sand

completely flooded with water have practically the same volume.

For finding the bulking of sand, a test is carried out with

following procedure as in the fig



I. A container is taken and it is filled two third with the sample of

sand to be tested.

II. The height is measured, say 20cm.

III. Sand is taken out of container

IV. The container is filled with water

V. Sand is then slowly dropped in the container and it is thoroughly

stirred by means of a rod.

VI. The height of sand is measured say 16cm, then bulking of sand =

$$20 - 16 = 4$$

$$= \frac{4}{16} = 0.25 \text{ or } 25\%$$

$$16 \text{ } 16$$

