

Section-5

Ans-2

Characteristics of Stone

We use stone in different constructions. It is necessary to find their suitability under different condition. The following properties need to be examined before their use.

Appearance and colour:

- (i) Stones must look good in appearance and be of uniform colour.
- (ii) Light coloured stones are preferred as they resist weathering action in a better way.
- (iii) Stones with iron oxide should not be used as the presence of iron oxide disfigures the stones and brings about disintegration.

Strength:

- (i) Stones are used as a compression member and should have sufficient compressive strength.
- (ii) The crushing strength of stone should be greater than 100 N/mm^2 .
- (iii) Igneous rocks have a strength of around 100 N/mm^2 .

Weight:

- (i) In general, good building stones should have a high weight to resist higher compressive forces.

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- (ii) Good building stones must have a specific gravity greater than 2.7.
 - (iii) A heavy stone possesses more compactness and less porosity.

Hardness and Toughness:

- (i) Stones must be hard and tough so that they can resist wear and tear.
- (ii) Hardness is assessed by scratching and toughness by hammering.
- (iii) Stones used for road work should be hard to resist wear and tear.

Compactness:

- (i) A good stone has a compact, fine, crystalline structure and must be strong.

Fineness of grain:

- (i) Stones that are fine grained are suitable for moulding purposes. Such stones are easily carved and dressed.

Resistance to fire:

- (i) Stones must retain their shape when subjected to fire.
- (ii) Limestone resists fire up to about 800 degree C.
- (iii) ~~S~~ Sandstone can resist fire in a better way.

Durability :-

- (i) Durable stones are those which are compact, homogeneous, acid resistance and have negligible water absorption.

Tests on stones

1) Durability test :

- (i) The durability test is performed to find out the capacity of stone to resist disintegration and decomposition.
- (ii) Durability value = change in mass = $(M_1 - M_2) \times 100$

2) Compressive strength :-

- (i) Sample of stone is cut into cubes of size 40x40x40 mm.
- (ii) Sizes of cubes are finely dressed and finished.
- (iii) Minimum number of specimen to be tested is three.
- (iv) Load is applied axially on the cube in a crushing test machine.
- (v) Rate of loading is 140 kg/sq.cm per minute.

Types of stones which are used in building work.

1) Granite

It is a deep-seated igneous rock, hard, durable and available in different colours.

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2) Basalt & Trap
Basalt & Trap are also of igneous origin. These are effective solid rocks which have been formed on the earth's surface in the absence of pressure by rapid cooling of the magma which also carries crystals of various minerals.

3) Limestone and Chalk.

4) Sandstone

5) Laterite

6) Gneiss

7) Marble

8) Slate

9) Gravel

10) Quartzite.