

1.1 Characteristics of Good Building Stone

A good building stone should have the following qualities.

1. **Appearance:** For face work it should have fine, compact texture; light-colored stone is preferred as dark colours are likely to fade out in due course of time.
2. **Structure:** A broken stone should not be dull in appearance and should have uniform texture free from cavities, cracks, and patches of loose or soft material. Stratifications should not be visible to naked eye. **Strength:** A stone should be strong and durable to withstand the disintegrating action of weather. Compressive strength of building stones in practice range between 60 to 200 N/mm².
3. **Weight:** It is an indication of the porosity and density. For stability of structures such as dams. Retaining walls, etc. heavier stones are required, whereas for arches, vaults, domes, etc. light stones may be the choice.
4. **Hardness:** This property is important for floors, pavements, aprons of bridges, etc. The hardness is determined by the Mohr's scale
5. **Toughness:** The measure of impact that a stone can withstand is defined as toughness. The stone used should be tough when vibratory or moving loads are anticipated.
6. **Porosity and Absorption:** Porosity depends on the mineral constituents, cooling time and structural formation. A porous stone disintegrates as the absorbed rain water freezes, expands, and causes cracking. Permissible water absorption for some of the stones is given in Table 1

Table 1 24-Hours Water Absorption of Stones by Volume

s.no	Types of Stone	Water absorption(% not greater than)
1.	Sandstone	10
2.	Limestone	10
3.	Granite	1
4.	Trap	6

5.	Shale	10
6.	Gneiss	1
7.	Slate	1
8.	Quartzite	3

7. **Seasoning:** The stone should be well seasoned.
8. **Weathering:** The resistance of stone against the wear and tear due to natural agencies should be high. **Workability:** Stone should be workable so that cutting, dressing and bringing it out in the required shape and size may not be uneconomical.
9. **Fire Resistance:** Stones should be free from calcium carbonate, oxides of iron, and minerals having different coefficients of thermal expansion. Igneous rock show marked disintegration principally because of quartz which disintegrates into small particles at a temperature of about 575°C. Limestone, however, can withstand a little higher temperature; i.e. up to 800°C after which they disintegrate.
10. **Specific Gravity:** The specific gravity of most of the stones lies between 2.3 to 2.5.
11. **Thermal Movement:** Thermal movements alone are usually not trouble-some. However, joints in coping and parapets open-out in letting the rain water causing trouble. Marble slabs show a distinct distortion when subjected to heat. An exposure of one side of marble slab to heat may cause that side to expand and the slab warps. On cooling, the slab does not go back to its original shape.