
Artificial Stones:

These are also known as cast stones or reconstructed stones. Since it is difficult to obtain durable natural stones at a moderate cost in many localities, many processes have been invented for the manufacture of artificial stone. Artificial stone cannot be used extensively in ordinary buildings due to its heavy cost, but it can be moulded into most intricate forms easily and so it is most economical when it is substituted for the carvings and ornamentations in natural stone. For practical use it is formed into mortar or is used as concrete.

Manufacture of Artificial Stone

The procedure of making/manufacturing artificial stone is as follows

- The natural stone is crushed into size less than 6 mm and the stone dust is removed.
- A mixture of $1\frac{1}{2}$ parts of stones of size 3 mm to 6 mm, $1\frac{1}{2}$ parts of stones of size less than 3 mm and 1 part of cement by volume is prepared.
- To impart colour to the stone, necessary colouring pigments are added to the dry mix. its proportion should not exceed 15% of cement by weight.
- Water is then added to the dry mix to obtain a mixture of workable consistency.
- The wet plastic mixture is then pressed into moulds (may be of steel or wood, made with utmost care) cured with water and then dried/seasoned in air for suitable length of time.
- The polishing is done, if required.

- In order to produce colour of light shade, white cement may be used in place of ordinary cement.
- It is usual in the manufacture of cast stone that the facing or the skin of cast stone is 25 to 38mm in thickness and consists of the above mentioned mix, while the remaining thickness of the stone slab consists of cheaper material (such as lean mix of gravel and cement or lean cement concrete).

Varieties of Artificial Stones

The different varieties of artificial stones are:

1- Cement concrete blocks:

- These are made from a mixture of cement, fine aggregate, coarse aggregate and water. They may be cast-in-situ as in the construction of piers or cast-in-moulds for steps, window sills, etc.
- Artificial paving slabs and stones composed of cement concrete and sometimes treated with sodium silicate solution also come under this class.

2- Ransome's patent stone:

- It is made by mixing dry sand with silica of soda and a small portion of powdered stone or chalk.
- The mixture while is plastic state, Is poured Into moulds and the castings on withdrawal are immersed in a solution of chloride of calcium, which cements the particles of sand.
- It can be dressed and carved like natural stone.
- The stone has a compressive strength of 3.2 kN/m² and weighs 19.2 kN/m³.
- Its cost is greater than that of natural stone.

3. Artificial marble:

- It is made by fusing and moulding constituent mixture, which is composed of 80 parts of plaster in powder; 20 parts of pulverized marble, 20 parts of sulphate of potash with a 5 per cent solution of glue mingled together with water.
- It is used for external work .it is mostly used in France.

4. Terrazo:

- It is made by mixing marble chips with white cement and some pigment.
- It is either pre-cast or laid in situ.
- It is used for bathrooms, residential buildings, temples, etc.

5. Mosaic tiles:

- The pre-cast concrete tiles with marble chips at top surface are known as mosaic tiles. They are
- Available in different shades and are widely used.

6. Reconstructed stone:

- This Stone is made from the debris of limestone quarries by crushing them into grit, mixing it with lime made from dolomite, heating in a closed retort up to 980°C to drive off CO_2 slaking the powdery residue of CaO and MgO . mixing with water, and consolidating under great pressure into blocks.
- It is then dried and CO_2 is admitted until the carbonization of hydrate of lime blocks is complete.

7. Bituminous stone:

- Diorite and other granite stones are often impregnated with prepared or refined tar to form bituminous stones.
- Such stones are used for durability, noise, wear and dust resistant stone surfaces.

Advantages of Artificial Srones

Artificial stones claim the following advantages over the natural stones:

- 1- More durable than the natural stone.
- 2- Can be easily cast and seasoned at the site of work with great promptness and hence avoids the expenses of dressing and transportation.
- 3- Can be easily cast into any desired shape and can be easily and economically moulded to the required ornamental shape.
- 4- Artificial stone can be made in a single piece and hence the trouble of getting large blocks of stones for lintels, beams, etc.. can be avoided.
- 5- It is comparatively easy to carve artificial stone; it can be worked before becoming hard.
- 6- The artificial stones which are carefully cast. are free from defects that are likely to be present in natural stones.
- 7- In the artificial stones cavities may be kept (to convey pipes, electric wires, etc.)
- 8- Their strength can he regulated by suitably proportionating the ingredients and by using steel reinforcements.
- 9- Equally good in resisting deterioration and disintegration caused by various atmospheric agencies, (e.g. rain, frost, etc.).