Glass

Glass is a hard, transparent and brittle substance It is manufactured by fusion process. In this process sand is fused with lime, soda and some other admixtures and then cooled rapidly. Glass is used in construction purpose and architectural purpose in engineering.

Raw materials

The main raw materials used for glass manufacturing are:

- Silica sand
- Limestone
- Dolomite
- Soda ash
- Cobalt and selenium

Engineering Properties of Glass

- Transparency
- Strength
- Workability
- Transmittance
- U value
- Recycle property

1. Transparency of Glass

Transparency is the main property of glass which allows the vision of outside world through it. The transparency of glass can be from both sides or from one side only. In one side transparency, glass behaves like mirror from the other side.

2. Strength of Glass

Strength of glass depends on modulus of rupture value of glass. In general glass is a brittle material but by adding admixtures we can make it as more strong.

3. Workability of Glass

A glass can be molded into any shape or it can be blown during melting. So, workability of glass is superior property of glass.

4. Transmittance

The visible fraction of light that passing through glass is the property of visible transmittance.

5. U value of Glass

U value represents the amount of heat transferred through glass. If a glass is said to be insulated unit then it should have lower u value.

6. Recycle Property of Glass

Any glass can be 100% recyclable. 0

Types of Glass and their Uses in Construction Works

- 1. Common Flat Glass
- 2. Float glass
- 3. Shatter proof glass
- 4. Laminated glass
- 5. Toughened glass
- 6. Glass blocks
- 7. Glass wool

- 8. Fiberglass
- 9. Insulated glazed units

1. Common Flat Glass

Common flat glass is the most widely used glass in construction with a depth of 2-12mm which are mainly used in windows and doors. Such glass is light translucid and can keep off rain, wind or sound and at the same time keep warm. Though such glass has certain mechanical intensity but it has low ultraviolet radiation transmittance

2. Float Glass

Float glass is made of sodium silicate and calcium silicate so, it is also called as soda lime glass. These types are available from 2mm to 20mm thickness ranges. They have a weight range of 6 to 36 kg/m^2 . These are used as shop fronts, public places etc



3. Shatter proof Glass

Shatterproof glass is used for windows, skylights, floors etc. Some type of plastic polyvinyl butyric is added in its making process. So, it cannot form sharp edged pieces when it breaks.

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4. Laminated Glass

Laminated glass is the combination of layers of normal glass. So, it has more weight than normal glass. It has more thickness and is UV proof and soundproof. These are used for aquariums, bridges etc.



5. Toughened Glass

Toughened glass is strong glass which has low visibility. It is available in all thicknesses. The properties of this kind of glass include: high intensity, good impact resistance and thermal stability. This type of glass is used for fire resistant ,doors, mobile screen protectors etc.

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6. Glass Blocks

Glass block or glass bricks are manufactured from two different halves and they are pressed and annealed together while melting process of glass. These are used as architectural purpose in the construction of walls, skylights etc. They provide aesthetic appearance when light is passed through it.



7. Glass Wool

Glass wool is made of fibers of glass and acts as good insulating filler. It is fire resistant glass.



8. Fiberglass

Fiberglass (also called glass-reinforced-plastic) is a composite material made up of glass fibers embedded in a plastic resin. Fiberglass has the properties of being lightweight and corrosion resistant. Fiberglass is also a good insulator, allowing it to be used to insulate buildings. Most fiber glasses are not alkali resistant.



9. Insulated Glazed Units

Insulated glazed glass units contains a glass is separated into two or three layers by air or vacuum. They act as good insulators. These are also called as double glazed units.

