

## 2. Selection of Material for Engg. Application →

The quality, performance, life etc of an engineering product, all are effected by the engineering material being used for manufacturing that product.

→ Hence it become necessary to select the suitable engineering material for a successful engineering product.

Following factor should be considered -

1. Mechanical strength
2. Stability
3. Ductility
4. Availability
5. Design
6. Corrosion Resistance
7. Cost
8. Fabricability.
9. Operational need.

### ① Mechanical Strength.

→ Mechanical strength is the ability of material to withstand with load or force. Material selected for engineering appl<sup>n</sup> should have appropriate mechanical strength to be capable to withstand with loads or forces developed in structure of engineering product during operation.

### ② Stability →

It can be define as the ability of engineering product, manufactured by using that material, to withstand with following operating cond<sup>n</sup> - Temp., Radiation and atmospheric cond<sup>n</sup>.

### Ductility →

- \* This property makes the material suitable for fabrication by mechanical process.
- \* Basically it is the ability of material that how much the material can be stretched plastically without break down or failure.
- \* It is not necessary the material being used for all product should have high ductility. But it should have suitable ductility.

### ① Availability →

- \* Material selected for engineering product should be easily available in desired form.
- \* So that the product can be produced economically to make its price competitive in market.
- \* Material may be available in different form but the availability of material in suitable form is necessary for producing desired product.

### ④ Fabricability →

- \* It is the ability of material, which indicate that how easy it can be fabricated in desired form and shape.
- \* Fabricability of material make it suitable for producing desired product.

### ⑦ Design →

- \* The selection of material for any engineering product is also governed by the design of product.
- \* It can help to decide strength, ductility for desired product.
- \* Hence engineering product should be designed with consideration of properties of engg. material.

## Corrosion Resistance →

When the Engineering material is used in an industrial atmospheric environment, then it will be corroded.

- \* Hence for the satisfactory operation, performance and life of engineering product, it become necessary that material being selected for that product should have sufficient corrosion resistance.

## 6) Cost →

- \* To make the engineering product commercially successful, its price should be reasonable and competitive in market.
- \* The price value of engineering material's product is governed by many factor such as material cost, labour cost etc.
- \* These factor should be <sup>as</sup> minimum as possible.
- \* The material cost should be low.