



**SNS COLLEGE OF TECHNOLOGY,**  
*(An Autonomous Institution)*  
Coimbatore- 35



**DEPARTMENT OF MECHATRONICS ENGINEERING**  
**19MCT102 – ENGINEERING MATERIALS**

## Compositions

- Grey Cast Iron is made by remelting pig iron. It is an alloy of Carbon and Iron. Small amounts of Silicon, Phosphorus, Manganese and Sulfur are also present in it.
- The reasons behind its popularity are: ability to make complex structures and low cost.

## Properties

- **High Compressive Strength**
- **Tensile Strength**
- **Resistance to Deformation**
- **Low Melting Point**
- **Resistance to Oxidation**

## Grey cast iron

### Uses

- Class 300 Grey Iron: Can be used in producing heavy-duty machine tools, bed, presses, high pressure hydraulic parts, frame, gears, bushings, piston rings, cams, crankshaft, cylinder block, cylinder head, etc.
- Class 200 and class 250 Grey Iron: Can be used in producing gear, cylinder, base, bed, flywheel, cylinder liners, cylinder block, pistons, brake wheel, gear boxes, pressure valve, coupling plate, etc.
- Class 100 and class 150 Grey Iron: Suitable for producing cover body, protective cover, frame, hand wheels, hammer, floor, handle, box, frame, bed, bearing, pulleys, bench, pump body, pipe, valve, etc.





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### Compositions

- Its formed via a slow annealing heat treatment of white cast iron.
- This results in the conversion of carbon, in the form of iron carbide in white iron, to graphite, with the remaining matrix being composed of ferrite or pearlite.
- The graphite is present in the form of spherical or nodular shapes.

### Properties

**Hardness** – material's resistance to abrasion and indentation.

**Toughness** – material's ability to absorb energy.

**Ductility** – material's ability to deform without fracture.

**Elasticity** – material's ability to return to its original dimensions after it has been deformed.

### Malleable iron

#### Uses

- As a result of its good tensile strength and ductility, malleable cast iron is used for electrical fittings and equipment, hand tools, pipe fittings, washers, brackets, farm equipment, mining hardware, and machine parts.

