Ferrous Alloys: Alloy which contains iron as major constituent

Example : Stainless Steel & Nichrome

Properties:

1. It possess high yield point and high strength
2. Good formability, ductility & weldability

Important ferrous alloys

Nichrome

Nickel -60%

Chromium -12%

Iron -26%

Manganese -2%

Properties

1. It shows good resistance to oxidation and heat
2. It possesses high melting point
3. Good electrical resistance

Uses

1. Making coils
2. Heating elements in stoves
3. Making parts of boilers, steam-lines, stills & gas turbine

Stainless steel

Mixture of Chromium, Manganese, Nickel & iron

Properties

1. It shows good resistance to oxidation and heat
2. It possesses high melting point
3. Good corrosion resistant

Uses

1. Architecture and Construction.
2. Automotive and Transportation.
3. Medical.
4. Energy and Heavy Industries.
5. Food and Catering.
6. Utensils
7. In industies

Non-Ferrous Alloys: Alloy which do not contain iron as major constituent

Important non-ferrous alloys

Copper alloys

a) brass
b) bronze

Copper alloys (brass)

Brass: homogeneous solid solution of copper and zinc

Composition

Cu – 60-90 %

Zn – 40-10 &

Properties

- Greater strength
- Durability
- Machinability
- Lower melting point than Cu & Zn
- Good corrosion resistance
- Good water resistance

Important brasses and their properties and uses

Types of brasses	Composition	Properties	Uses
Commercial brass(or) Guilding metal (or) French gold	Cu – 90 % Zn – 10 %	i) Golden in colour ii)Stronger than Cu iii)Harder than Cu	Forgings, Rivets, Hardwares, Jewellery,

BRONZE (Copper alloy)

Copper alloys containing copper and tin

Properties

- Lower melting point than Cu & Zn
- Better heat conducting property
- Better electrical conductivity
- Non-oxidizing
- Corrosion resistance
- Wear resistance

Important bronze and their properties and uses

Types of bronzes	Composition	Properties	Uses
Bronze	Cu - 80-95 % Sn – 20-5 %	Tough Strong Corrosion resistance	For applications where low friction is required such as locks, gears, bearings, doorknobs, ammunition casings and valves; for plumbing and electrical applications