

### Carbonitriding-

- Cases (surfaces) that contain both carbon and nitrogen are whereas produced by liquid salt baths in cyaniding, they are produced by the use of gas atmospheres in carbonitriding.
- Carbonitriding implies introducing carbon and nitrogen into a solid ferrous alloy by holding above  $A_{C1}$  in an atmosphere that contains suitable gases such as hydrocarbon, carbon monoxide and ammonia.
- The carbonitrided alloy is usually quench-hardened.
- Metals usually hardened by carbonitriding - Plain carbon steels containing about 0.20% carbon

#### Process characteristics

- Case depth is about 0.5 mm
- Hardness after heat treatment Rc 65
- Negligible dimensional changes
- Distortion is less than in carburizing or cyaniding

#### Typical uses -

Gears, Nuts, Bolts

Carbonitriding is a modification of gas carburizing process because anhydrous ammonia gas is added to the furnace atmosphere to cause both carbon & nitrogen to be absorbed by the surface of steel at the carbonitriding temperature.