

## Nitriding

Introduction of nitrogen into the surface of certain types of steels (e.g. containing Al & Cr) by heating it and holding it at a suitable temperature in contact with partially dissociated ammonia or other suitable medium.

This process produces a hard case without quenching or any further heat treatment.

### Process characteristics

- Case depth is about 0.381 mm
- Extreme hardness (Vickers 1100)
- Growth of 0.025 - 0.050 mm occurs
- Corrosion resistance of case increases

### Typical use

- Valve seats
- Guide
- Gears
- Gauges
- Bushings

Before being nitrided, the components are heat treated to produce the required properties in the core.

The normal sequence of operations are

- (i) Oil quenching from between 850 - 900°C followed by tempering at between 600 & 700°C.
- (ii) Rough machining followed by a stabilizing anneal at 550°C for five hours to remove internal stresses
- (iii) Finish machining followed by nitriding

