



Heat Treatments

QUALITY • SERVICE • EXPERTISE



Carburising & Carbonitriding HTL Fact Sheet 11

Carburising is a surface hardening treatment in which carbon is diffused into the surface of a low carbon/low alloy steel. After quenching the result is a part with high hardness on the surface, but with a softer, tough core underneath. Carbonitriding is a very similar process but as well as diffusing carbon into the steel an addition of nitrogen is made at the same time. Carbonitriding is generally used instead of Carburising for steels that have lower hardenability such as plain carbon steels and mild steel.

Heat Treatments Carburises and Carbonitrides by the gaseous method using computer controlled sealed-quench furnaces. Tight control of carbon concentration, diffusion rates, temperature and quench variables are required to process a component with minimum distortion and achieve optimum mechanical properties. The controlled atmosphere sealed-quench furnace is a well proven and respected method of producing high quality carburising.

► Characteristics of Carburising and Carbonitriding

- Wide range of case depths possible. (0.1-2.5mm)
- Combination of wear resistance and ductility.
- Enhanced fatigue properties from high residual compressive stresses.
- Ability to mask off areas that need to be left soft.
- No intergranular oxidation that is common with Fluidised Bed and Pack Carburising processes.



Sealed Quench Furnace

► Commonly Processed Materials

1020, 1040, Carbon Hollow Bar, E110, EN36A, EN39B, Mild Steel

► Maximum Sizes

620 mm width x 950 mm length x 470 mm height

1,000 kg maximum load



Small gears jigged for Carbonitriding

► Turnaround Times

Allow 3 days for general work. Extraordinarily large pieces or deep case depths may take longer. A faster turnaround can be organised for urgent work.