

# GAS HEAT TREATMENT

CARBURIZING / CARBONITRIDING / GAS SOFTNITRIDING

Gas heat treatment is a heat-treating process under various gas atmosphere and temperature mainly to improve hardness, wear resistance and fatigue or tensile strength properties

## Gas Carburizing

Gas Carburizing is method to increase surface hardness by heating and adding carbon into surface of the material which the core still tough, enhance material strength.

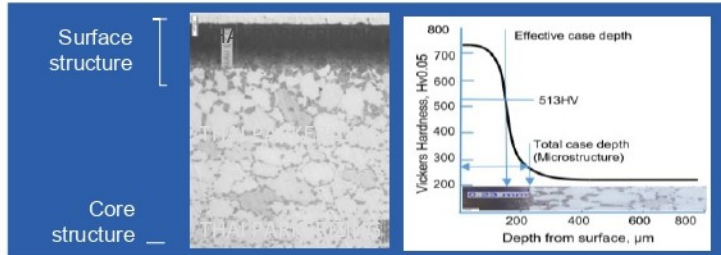
## Gas Carbonitriding

Carbonitriding is similar to carburizing in that carbon and nitrogen are simultaneously for increase harden ability of low carbon steel. This process treatment temperature less than Gas Carburizing effect to low distortion of part.

### Characteristics

- » Increased surface hardness
- » Improved wear resistance
- » Improved fatigue strength

Special requirement: Be able to **Carbon- protection/ botan** process



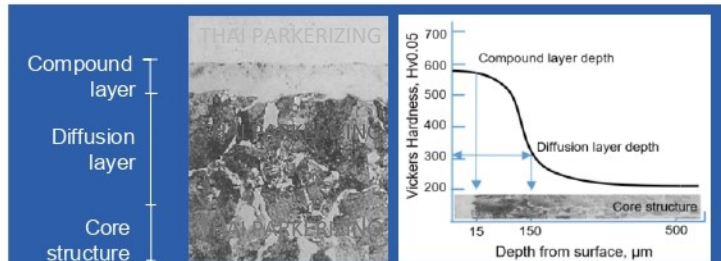
\*\* Microstructure of material SPCC after Carbonitriding

## Gas Soft Nitriding

Gas Soft Nitriding is a kind of case hardening process that do under gaseous mixture to diffuse nitrogen and carbon into ferrous metals at temperature 570-580 °C. The compound layer on the surface improves wear resistance and corrosion resistance.

### Characteristics

- » Increased surface hardness, wear resistance and fatigue strength
- » Low distortion
- » Applicable to parts with blind hole or pinhole
- » Applicable to ferrous metals excluding some high corrosion resistance alloy steels.



\*\* Microstructure of material S35C after Gas Soft Nitriding

## Technical Data

Condition \ Process	Gas Carburizing	Gas Carbonitriding	Quenching and tempering	Gas Soft Nitriding
Temperature	800-950 °C	750-920 °C	800-920 °C	570-580 °C
Surface Hardness **	720-830 Hv	720-870 Hv	400-800 Hv	> 350 Hv
Material	Low carbon & Low alloy steel (SCM415, SCr420)	Low carbon steel (SPCC, S15C)	Medium carbon steel (S45C, SCM440)	Low carbon & Low alloy steel (Except Stainless steel)

\*\* The surface hardness can adjustment by tempering temperature control

## Advantage

- » High capacity for support the high volume with 3 Factory (Bangpoo, Gateway, ESIE1)
- » More Experian in heat treatment business
- » Traceability system and production control by automation system
- » Thai Parker Technical Center have many equipment to analysis any problem

## Part Applications

- » Gear
- » Shaft
- » Engine component
- » Agriculture parts
- » Transmission
- » Precision stamping parts such as washer

