

TYPICAL ANALYSIS

C	0.260	Si	0.100
Mn	1.450	P	0.015
S	0.002	Cr	1.250
Ni	1.050	Mo	0.600
V	0.120		

All figures are in percent by weight.

CHARACTERISTICS

Thruhard Supreme is a new, pre-hardened mould steel that represents an important development on its precursor - the standard 1.2738 (Carrs P20N).

Specific improvements include:

- Higher hardness at 310 to 355 HB while retaining machinability (33 to 37 HRC).
- Lower segregation reducing the risk of variability in polishing and etching.
- More consistent through-hardness even in the largest sections.
- Significantly higher thermal conductivity giving increased output and better product quality.

TYPICAL APPLICATIONS

Moulds of large dimensions where grain reliability and high gloss polishability are important. Large tools for compression and injection moulds. Tools for bumpers, dashboards, body panels, chairs, waste bins, bottle crates and television cabinets.

POLISHING

This material is guaranteed polishable to 600 grit. Specially selected material with additional testing is available for mirror finish tooling such as lens moulds.

WELDING

The lower Carbon content of this steel makes it ideal for weld repair and modification.



HEAT TREATMENT

Stress relieve where necessary at 560 °C for 1 hour per 50 mm ruling section followed by furnace cooling.

This material has been quenched and tempered at the mill to very high quality standards and further heat treatment is not recommended. In the event that this is necessary, please ask for details.

MACHINING

As with all higher hardness materials, selection of appropriate tools, feeds and speeds is essential. Please ask for details.

THRUHARD SUPREME STANDARD HARDNESS

A standard hardness version at 280 to 325HB is also available (29 to 34 HRC). This will machine at least 10% better than 1.2738 (CARRS P20N) while providing the benefits of consistent through-hardness, low segregation and higher thermal conductivity.

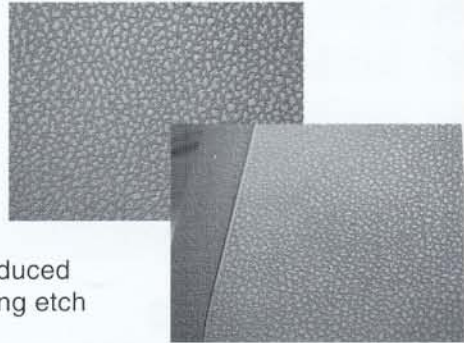
PHYSICAL PROPERTIES

Hardness	HB	310-355		
		20-100 °C	20-250 °C	20-500 °C
Coefficient of thermal expansion	10 ⁻⁶ /K	10.8	12.2	13.9
		20 °C	250 °C	500 °C
Thermal conductivity	W/mK	37.4	41.3	39.8

FURTHER INFORMATION

NEW ETCH GRAINING POSSIBILITIES FROM LOWER SEGREGATION

However good the quality of the steel, the inherent risks of segregation in 1.2738 and similar materials limit etching techniques and require the use of relatively benign etching agents such as ferric chloride (FeCl₃). The low segregation in Thruhard Supreme has enabled a range of enhanced decorative finishes to be realised using nitric acid (HNO₃). These finishes include dual gloss grain effects. In the 50,000 Tonnes of Thruhard Supreme produced to date, there has not been a single complaint concerning etch graining.



UP TO 22% HIGHER PRODUCTIVITY FROM INCREASED THERMAL CONDUCTIVITY

Thruhard Supreme has a typical thermal conductivity of 45 W/mK at 250 °C (moulding temperature) compared with 33.5 W/mK for 1.2738 (CARRS P20N). This has enabled moulders to increase rates of output by up to 22% - a very valuable increase in productivity. In addition to increased output rates, this high thermal conductivity also reduces shrinkage and warping, resulting in more consistent product dimensions.

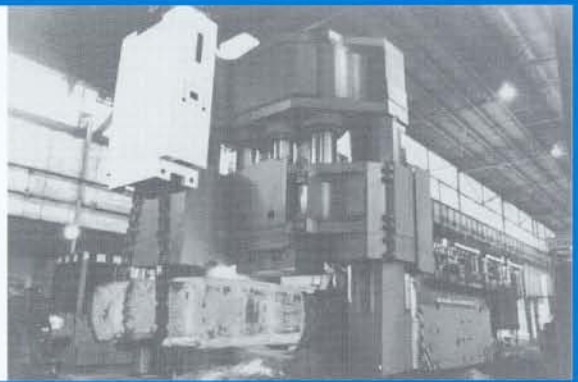
SURFACE TREATMENT

- Thruhard Supreme is ideal for nitriding: Plasma nitriding at 530 °C for 36 hours will result in a surface hardness of 770 HV and gas nitriding at 510 °C for the same time will give 800 HV.
- Flame hardening of the splitting line to 50-52 HRC can be achieved but please note that, because this is a manual process, no guarantee can be given. Pre-heat to 100 °C to avoid stress cracking.
- CrN and similar coatings can be applied to provide very high surface hardness. Please ask for details.

Buderus

E D E L S T A H L

Thruhard Supreme is the latest in a long line of innovative developments in plastic mould steel by Edelstahlwerk Buderus. Based on this technical expertise, Buderus has rightly established itself as a world leader in its field.



STOCK SIZES in mm

Thruhard Supreme is stocked in forged blocks in the following thicknesses and cut to individual customer's requirements. Pieces can be delivered in the pre-machined, part machined or near net shape condition.

180	210	260	280	305	360	410	460	510
Other and larger sizes are available by arrangement								