

# Industeel

## Superplast<sup>®</sup> 450



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### Material properties

**45 HRC prehardened steel** designed for the plastic mold industry and for any tooling and mechanical applications requiring a high resistance to wear with high toughness and thermal conductivity.

### For which tools

Highly loaded plastic injection mold cores and cavities, highly loaded compression mold cores and cavities. All the tools requiring high wear resistance with an elevated toughness.

### For which applications

All the tooling and also mechanical applications where a machinable prehardened steel with a high mechanical resistance associated with a high toughness is required.

### For which plastics

Thermoplastics, thermosetting plastics, (PE, PP, PS), transparent melts, reinforced plastics.

## Properties

### Chemical Analysis (% Weight).

C	Mn	Ni	Cr	Mo	Additions
0.25 - 0.35	0.90 - 1.20	0.60 - 0.90	1.50 - 3.50	0.60 - 0.80	B, V, Si

### Mechanical Properties (typical values).

Superplast<sup>®</sup> 450 is delivered **quenched and tempered to 410 – 460 HB (43 – 47 Hrc)**.

Hardness	YS		UTS		Elongation	Reduction of area	KCV 20°C	Elastic modulus	
	MPa	ksi	MPa	ksi				GPa	ksi
HB					%	Z%	J		
440	1250	181	1450	210	16	48	≥ 15	205	29733

### Physical Properties (typical values).

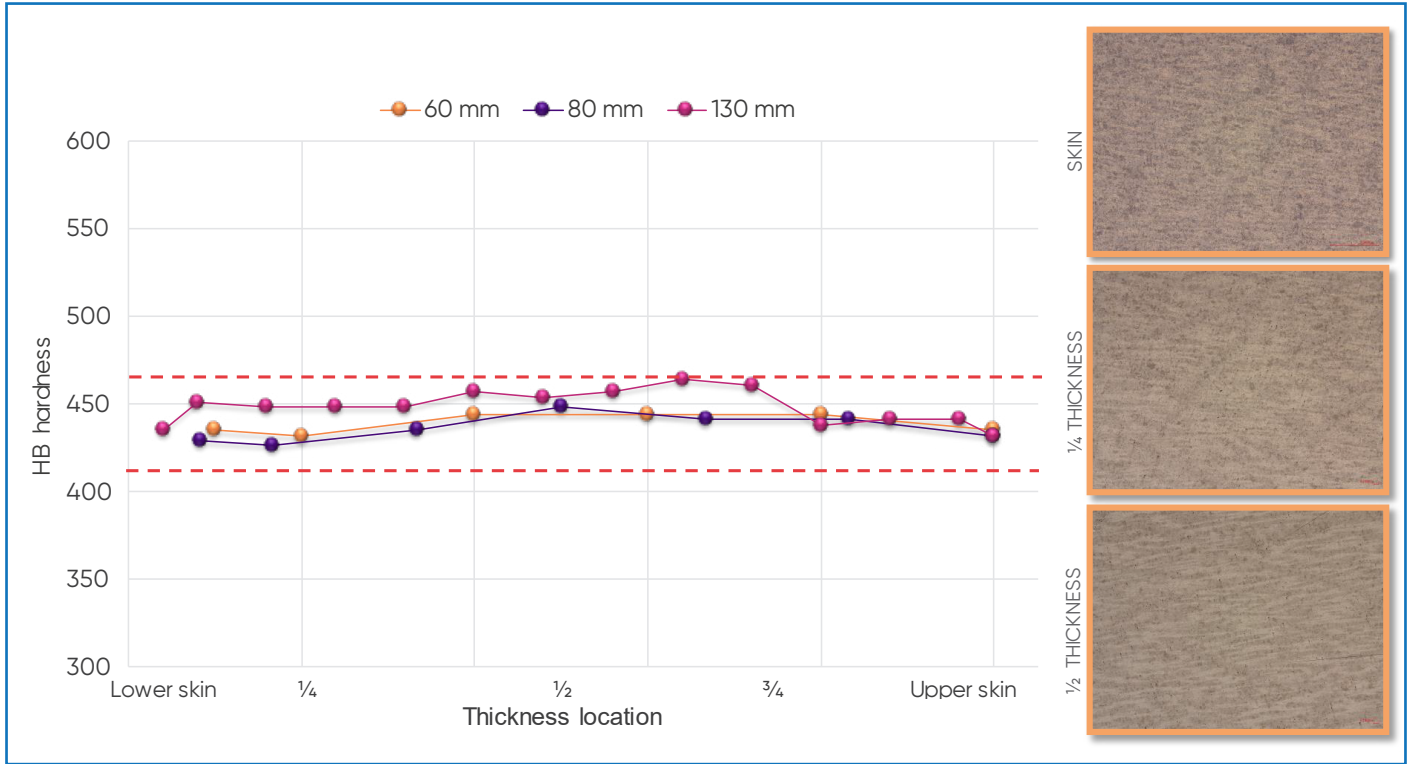
Thermal conductivity W.m <sup>-1</sup> .K <sup>-1</sup>	Thermal expansion Coefficient (10 <sup>-6</sup> .K <sup>-1</sup> )			
	20°C	20/100°C	20/200°C	20/300°C
	38	13.2	13.6	14.1

## Through hardenability

Thanks to an optimal balance of alloying elements (especially Boron metallurgy) and high quality heat treatment, Superplast® 450 exhibits a very consistent hardness through large sections.

## Microstructure

Superplast® 450 steel exhibits a **high homogeneity in both hardness and metallurgical structure** (bainite + tempered martensite) through the whole block. This aims an improved and reproducible performances in polishing, texturing and global surface aspect.



## Dimensions

### Typical delivery sizes

Thickness	Width
20 – 250 mm	1000 – 2400 mm

Other dimensions on request.

## Your contact

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*Technical data and information are to the best of our knowledge at the time of printing. However, they may be subject to some slight variations due to our ongoing research programme on steels. Therefore, we suggest that information be verified at time of enquiry or order. Furthermore, in service, real conditions are specific for each application. The data presented here are only for the purpose of description, and considered as guarantees when written formal approval has been delivered by our company. Further information may be obtained from the address opposite.*