

# Industeel

## Superplast® premium



## Superplast® Premium mould steels for high surface finish

### Material properties

40 HRC pre-hardened Superplast grade designed for the plastic mold industry with stringent requirements. High resistance to wear, high toughness, good polishing properties.

Thanks to a special solidification process, extreme low level of segregation are achieved even at mid-thickness.

This grade is particularly indicated for high surface finish such as optical polishing (optics for automotive) or complex texturing (logos on dashboard).

### For which applications

Plastic injection or compression mould cores and cavities with high quality finish, compression dies under high mechanical and thermal stresses.

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

## Properties

### Chemical Analysis (% Weight).

	Hardness	C	Si	Mn	S	Ni	Cr	Mo	Add.
SP 400 Premium	370	0.25	0.10	1.15	0.002	0.75	2.00	0.60	B,V

### Mechanical Properties (typical values).

Superplast® premium is delivered quenched and tempered to 350 – 380 HB (37 – 41 Hrc).

Hardness	Rp 0.2 Yield Strength		Rm Tensile strength		Elongation	Reduction of area	KCV 20°C	Elastic modulus
	MPa	ksi	MPa	ksi				
HB	MPa	ksi	MPa	ksi	%	Z%	J	GPa
370	1000	145	1200	174	14.5	49	20	205

### Physical Properties (typical values).

Grade	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
SP 400	38	10.8	11.2	12.9	460

# Metallurgical properties

## Cleanliness

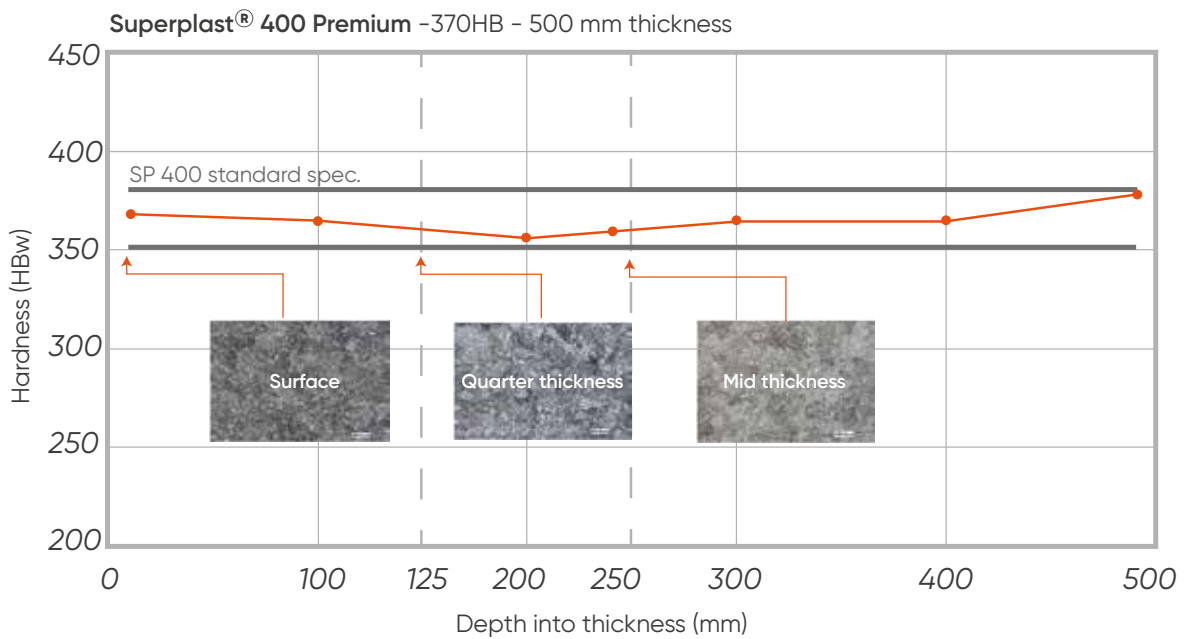
Following cleanliness values are guaranteed according to ASTM E45 A method (worst field)

Type	A	B	C	D
Thin	≤ 1.5	≤ 2.0	≤ 1.0	≤ 1.5
Heavy	≤ 1.0	≤ 1.0	≤ 0.5	≤ 1.0

Real cleanliness is in fact much better, between 0,0 and 0,5 for every category.

## Microstructure

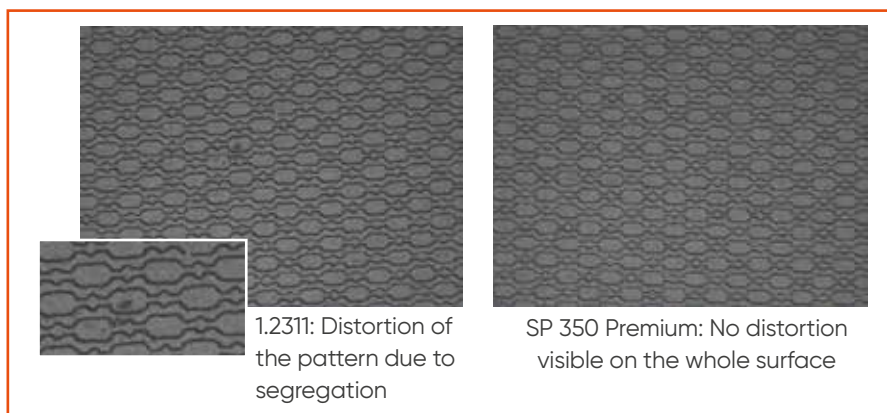
Thanks to a specific solidification process, **Superplast® Premium** steels exhibit a high homogeneity in both hardness and metallurgical structure (bainite + martensite) through the whole block, up to 600 mm thickness. This aims at improved and reproducible performances in polishing, texturing and global surface aspect.



## Reliable texturing abilities

Thanks to the absence of segregation, texturing is not limited to easy patterns anymore.

**Superplast® Premium** is suitable for geometrical and other complex patterns (logos for instance).



## Polishing

**Superplast® 400 Premium** can be polished up to SPI A2 (3–6µm, mirror polishing).

Apparition of orange peel or waves is limited thanks to the absence of segregation.

For most stringent polishing needs we advise a higher hardness with **SP 400 Premium**.

## Plate processing

### Welding

Cores and cavities can be polished and/or textured on welded areas if the welding data provided below are respected.

Please consult the user guide for detailed information.

	Process	Filler material	Preheating	Post heating	PWHT
SP 400 premium	GTAW	SP300 WELD - E	min. 325°C	325°C -2h	550°C - 2h



## Dimensions

### Typical delivery sizes

Thickness	Width
150- 610 mm	1000 – 2000 mm

For other size request please consult

### 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.*