

Superplast® Premium

Superplast® Premium mould steels for high surface finish

Material properties

35 or 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 thus 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

Typical values (weight%)

	Hardness	C	Si	Mn	S	Ni	Cr	Mo	Add.
SP 350 Premium	345	0.26	0.10	1.50	0.002	0.30	1.60	0.65	B
SP 400 Premium	370	0.25	0.10	1.15	0.002	0.75	2.00	0.60	B,V

MECHANICAL PROPERTIES

Superplast® Premium is delivered **quenched and tempered** with two possible hardness range:

SP 350 Premium 330 - 370 HB (35 - 39 HRC) or SP 400 Premium 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
345	940	136	1095	159	15	50	25	205
370	1000	145	1200	174	14.5	49	20	205

Typical values - thickness 400mm - quenched and tempered

PHYSICAL PROPERTIES

Grade	Thermal conductivity W.m-1.K-1		Thermal expansion Coefficient (10-6.K-1)			Specific heat J/kg.°C
	20°C		20-100°C	20-200°C	20-300°C	
SP 350 Premium	39		11	12.6	13.1	480
SP 400 Premium	38		10.8	11.2	12.9	460

Typical values

METALLURGICAL PROPERTIES

Cleanliness

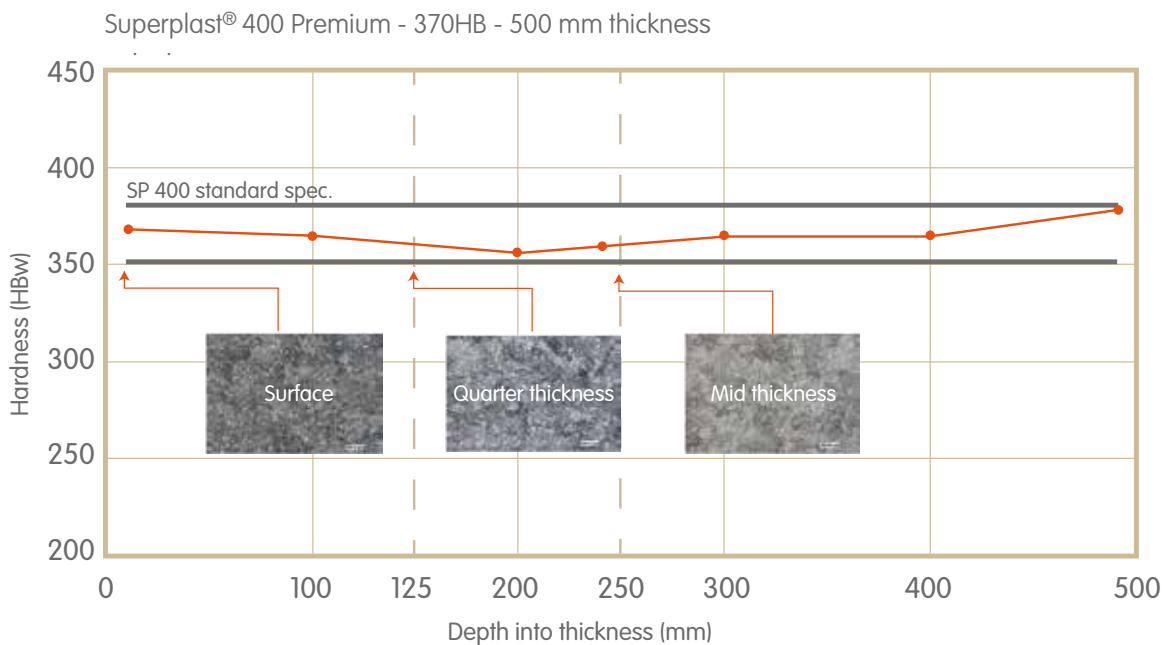
Following cleanliness values are guaranteed according to ASTM E45 A method (worst field)

Type	A	B	C	D
Thin	≤ 1,5	≤ 2,0	≤ 1,0	≤ 1,5
Heavy	≤ 1,0	≤ 1,0	≤ 0,5	≤ 1,0

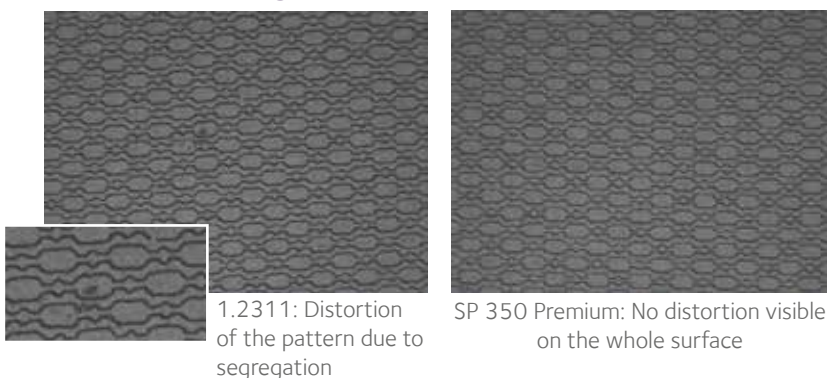
Real cleanliness is in fact much better, between 0,0 and 0,5 for every category.

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

SP 350 Premium and SP 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 350 Premium	GTAW	SP300 WELD - E	min. 150°C	150°C - 2h	550°C-2h
SP 400 Premium	GTAW	SP300 WELD - E	min. 325°C	325°C - 2h	550°C -2h

DELIVERY CONDITIONS

DIMENSIONAL PROGRAM

Thickness	Width
150 mm - 610 mm (5.90' - 23.6")	1000 - 2000 mm (39.4 - 78.74")

For other size request please consult

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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.