

2311 ISO-BM

Plastic Mould Steel

	C	Si	Mn	P	S	Cr	Mo
■ Typical analysis	0,38	0,30	1,50	0,020	0,003	2,00	0,20
■ Chemical composition as per SEL	0,35–0,45	0,20–0,40	1,30–1,60	≤ 0,035	≤ 0,035	1,80–2,10	0,15–0,25

Figures in % by mass.

■ Standards	
Register of European Steels (SEL)	~ 40 CrMnMo 7
DIN EN ISO 4957	~ 40 CrMnMo 7
AFNOR	~ 40 CMD 8
AISI	~ P 20
BS	~ P 20

■ **Characteristics**

Standard mould steel, economical to machine, easy to polish, hard chrome plateable, grain reliable, for dimensions ≤ 400 mm thick.

Where there is a requirement for

- Higher hardness and better through-hardenability.
- Polishability > 320 grit.
- Sensitive etch designs (e.g. HNO₃, fine or textile graining).
- Higher thermal conductivity.

We recommend grade 2738mod.TS(HH).

■ **Applications**

Small and medium-sized injection moduls, press moulds and mould frames up frames up to 400 mm thick.

■ **Delivered condition**

- Quenched and tempered to 2800–325 HB (△ approx. 950 – 1100 MPa)*.
- Normal hardness: 2738mod.TS.

■ Physical properties (reference values)			
Thermal expansion coefficient (10-6/K)	20–100 °C	20–250 °C	20–500 °C
	18,6	12,8	14,3
Thermal conductivity (W/mK)	20 °C	250 °C	500 °C
	34,0	33,5	33,0
Young's modulus (GPa)	20 °C	250 °C	500 °C
	212	197	175

* Surface hardness in Brinell, converted to DIN EN ISO 18265, Table A.1.

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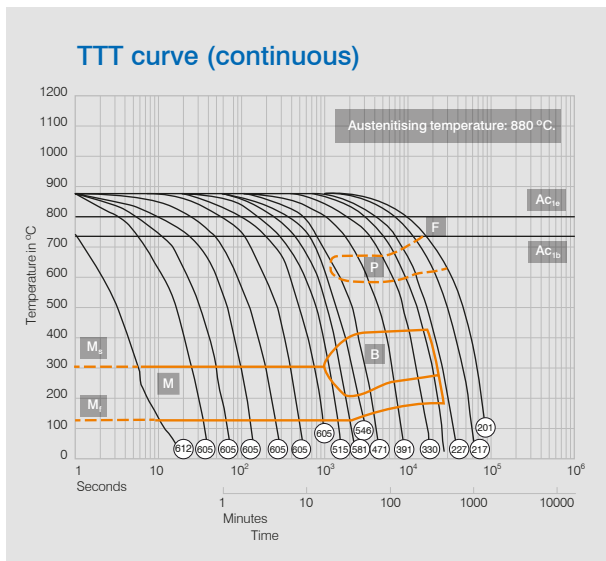
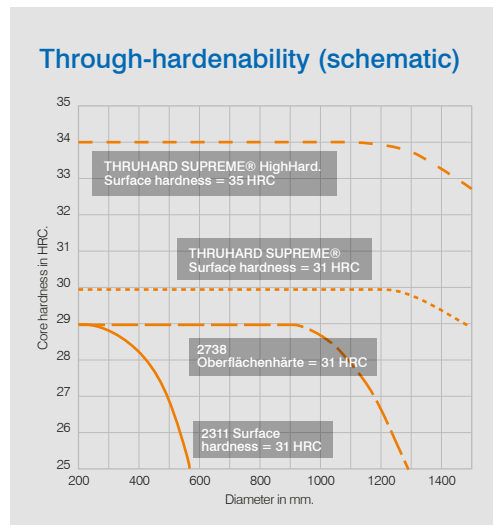
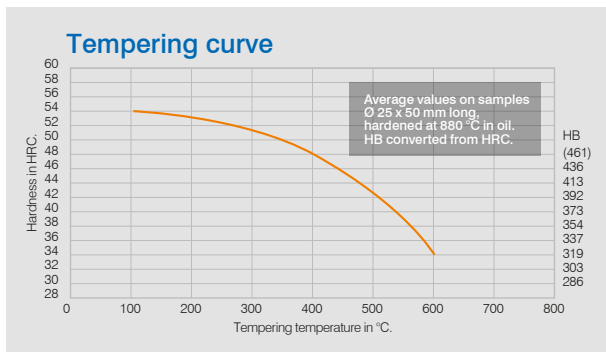
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■ Heat Treatment		
Stress relieving	Temperature:	Approx. 500 °C in the quenched and tempered state.
	Duration:	1 hour per 50 mm wall thickness.
	Cooling:	Furnace.
Soft annealing	Temperature:	720 °C.
	Duration:	1 hour per 25 mm wall thickness.
	Cooling:	Furnace.
Hardening	Temperature:	880 °C..
	Duration:	1 minute per mm wall thickness.
Quenching hardness	Max.54 HRC	in oil, hot bath or vacuum.
Tempering	Temperature:	See tempering curve.
	Duration:	1 hour per 25 mm wall thickness.
	Cooling:	Air.
Working hardness	Max. 280-325 HB	



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