



1.2311

Plastic Mould Steel

TECHNICAL SHEET

1 Comparison Standards

W.Nr	DIN	JIS equivalent	AISI/SAE	AFNOR	BS	UNI
1.2311	40CrMnMo7	-	~P20	40CMD8	~P20	-

2 Chemical Composition

C	Si	Mn	P (max)	S (max)	Cr	Mo	Supply Condition	Supply Hardness (HB)
0.35-0.45	0.20-0.40	1.30-1.60	0.035	0.035	1.80-2.10	0.15-0.25	Q & T	280 - 320

3 Main Characteristics and Applications

Pre-hardened plastic mould steel with a hardening penetration up to 400mm, featuring excellent polishing and texturing capabilities. This steel is ideal for nitriding (approximately 800 HV) and is compatible with chrome and nickel PVD plating.

Applications:

- Mould Base
- Injection Moulding
- Die Casting
- Extrusion Dies
- Pressing Tools

4 Production Route

EAF - LF - VD - Forging - Heat treatment QT

5 Physical Properties (Reference Values)

	20°C	100°C	250°C	500°C
Thermal expansion coefficient (10-6/K)	12.1	12.4	12.9	14.1
Thermal Conductivity (W/mk)	36.1	36.2	36.4	33.5
Young modulus (Kn/mm2)	212	205	200	175

5 Heat Treatment

TREATMENT	TEMPERATURE	HOLDING TIME (HT)	COOLING	COMMENTS
Annealing	Heat to 700 - 720 °C	Min. H.T. for 2 minute /mm	Air or Furnace	To achieve a hardness below 250 HB (24 HRC) and enhance machinability
Stress relieving	Heat to 560 - 600 °C (max 30 °C below tempering temperature)	Min. H.T. for 2 minute /mm	Air or Furnace	It is recommended to eliminate the residual stresses induced by mechanical working after machining
Hardening	Heat to 860 - 880 °C	Min. H.T. for 1 minute /mm	Polymer	-
Tempering	Heat to 550 - 620 °C	Min. H.T. for 3 minute /mm	Air or Furnace	To be performed after hardening, conduct a second tempering at a temperature no more than 30 °C below the initial tempering temperature



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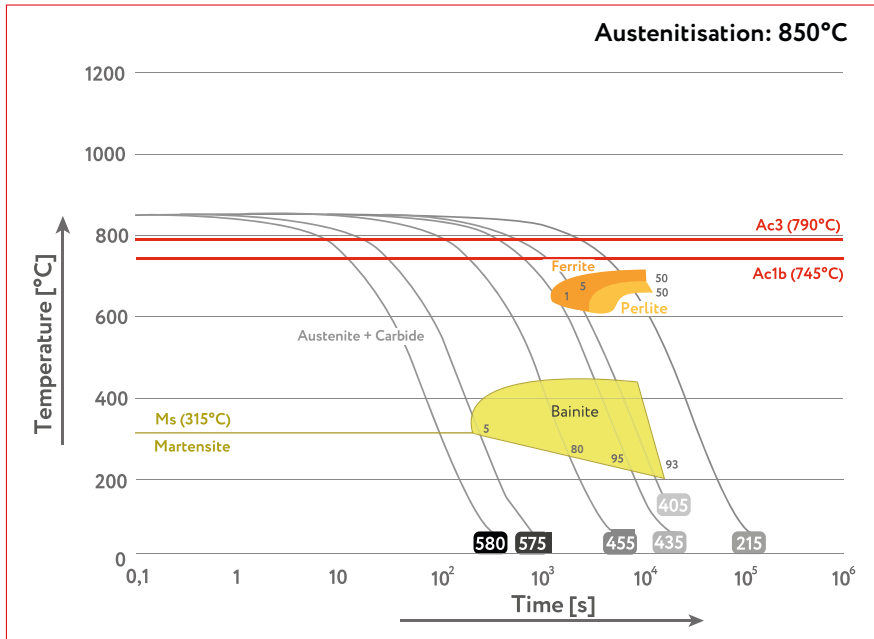


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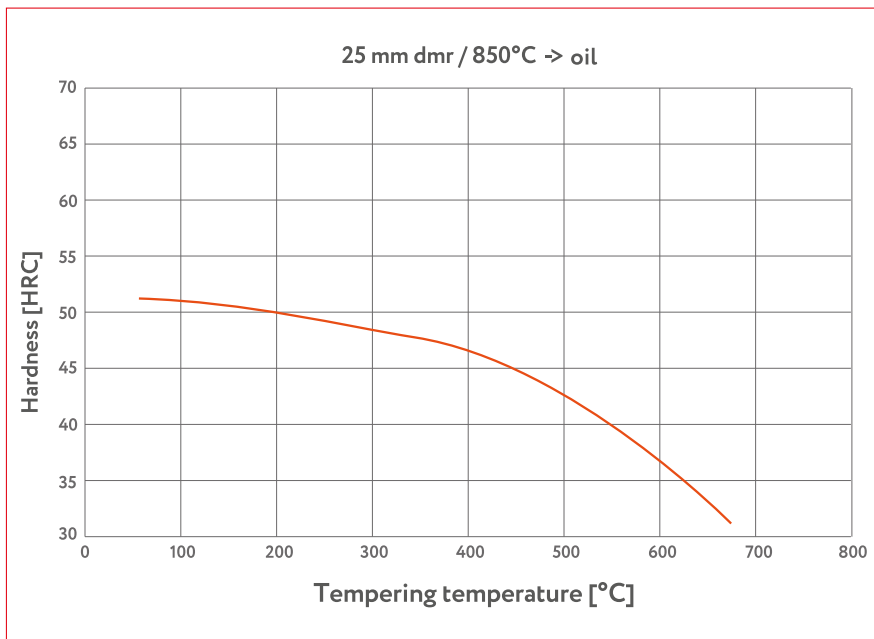
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7 C.C.T. Curve



8 Tempering Curve



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