

# 1.2312 | PLASTIC MOULD STEEL



## Main characteristics and applications

Pre-hardened Sulphur alloyed plastic mold steel with excellent machinability, also in hardened and tempered condition, thanks to the Manganese-sulfide. The main application is for core-parts and underbodies of plastic moulds also in large sizes; steel not to be used for polishing and texturing.

It is also used for plates, mould frames, die boxes. It is suitable for nitriding (around 800 HV).

## Comparable standards

UNI	W.Nr	DIN	AFNOR	AISI/SAE	BS
-	1.2312	X40CrMn-MoS8-6	(40CMD8S)	P20	-

## Chemical composition (typical; in weight %)

C	Mn	Si	Cr	Ni	Mo	P	S
0.38	1.5	0.30	2	1	0.2	0.025	0.08

## Heat treatment

TREATMENT	TEMPERATURE	HOLDING TIME (HT)	COOLING	COMMENTS
<b>Annealing</b>	Heat to 700 - 720 °C	Min. H.T. for 2 minute /mm	Air or furnace	In order to obtain hardness lower than 250 HB ( 24 HRC) to improve machinability
<b>Stress relieving</b>	Heat to 560 - 600°C (max 30 °C below tempering temperature)	Min. H.T. for 2 minute /mm	Air or furnace	To be carried out after machining, is recommended to eliminate the residual stresses induced by mechanical working
<b>Hardening</b>	Heat to 860 - 880 °C	Min. H.T. for 1 minute /mm	Polymer	-
<b>Tempering</b>	Heat to 550 - 620 °C	Min. H.T. for 3 minute /mm	Air or furnace	To be carried out after hardening. 2nd Tempering must be performed to max 30°C below tempering temperature

## Critical points

Ac1	Ac3	Ms
740 °C	820 °C	310 °C

## Production technology

EAF – LF – VD - Forging – Heat treatment QT

## US specification

In according to standard EN10228-3 Class 3 and standard SEP 1921 Class D/d

## Delivery condition

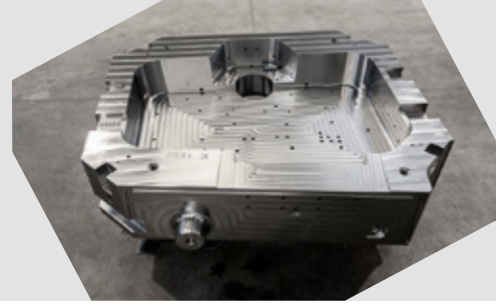
W1.2312 is delivered in quenched and tempered condition, with hardness range 270 - 310 HB (28 - 33 HRC).

## Physical properties (reference values)

	20°C	100°C	250°C	500°C
<b>Thermal expansion coefficient (10-6/K)</b>	12.1	12.4	12.9	13.9
<b>Thermal conductivity (W/mk)</b>	38.9	39	40.1	35.7
<b>Young modulus (Kn/mm2)</b>	212	205	200	175

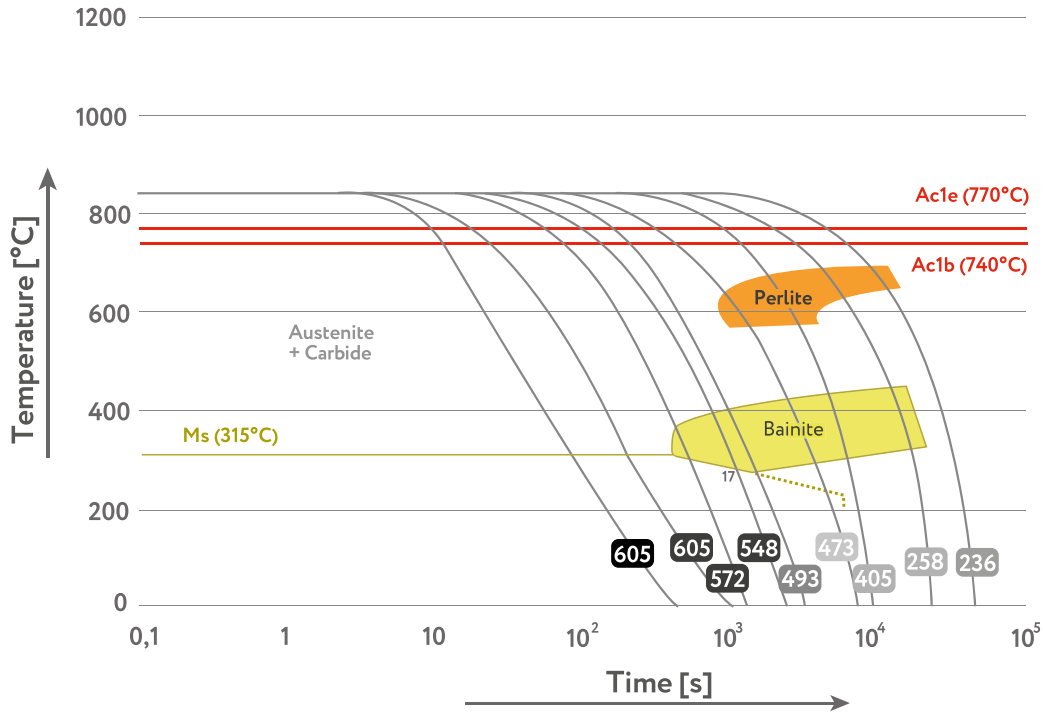
# 1.2312

PLASTIC MOULD STEEL



## C.C.T. curve

Austenitisation: 840°C, 15 min.



## Tempering curve

50 mm dmr / 850°C → oil

