

# Formadur 2312

40CrMnMoS8-6<sup>1)</sup>

C 0.40 Si 0.35 Mn 1.50 Cr 1.90 Mo 0.20 S 0.05

## Steel properties

Quenched and tempered plastic mould steel with a hardness in as-delivered condition of 280 to 325 HB. Improved machinability in comparison with Formadur 2311. Polishable.

## Standards

AISI P20+S

## Physical properties

### Coefficient of thermal expansion

at °C	20 – 100	20 – 200	20 – 300
10 <sup>-6</sup> m/(m · K) Annealed	12.5	13.4	13.9
10 <sup>-6</sup> m/(m · K) Quenched and tempered	12.3	13.0	13.7

### Thermal conductivity

at °C	100	150	200	250	300
W/(m · K) Annealed	40.2	40.9	40.3	40.0	39.0
W/(m · K) Quenched and tempered	39.8	40.4	40.4	39.9	39.0

## Applications

Plastic moulds, mould frames for plastic and pressure casting moulds, recipient sleeves, brake dies.

## Heat treatment

**Soft annealing °C**  
710 – 740

**Cooling**  
Furnace

**Hardness HB**  
max. 235

**Stress-relief annealing °C**  
(Annealed)  
approx. 600

**Stress-relief annealing °C**  
(Quenched and tempered)  
approx. 30 – 50 under tempering temperature

**Cooling**  
Furnace

**Hardening °C**  
840 – 870

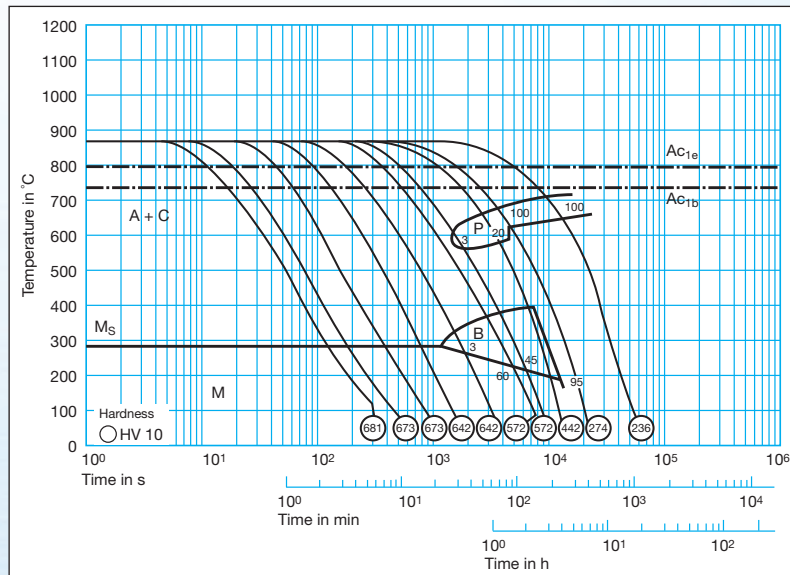
**Quenching**  
Oil or  
saltbath, 180 – 220 °C

**Hardness after quenching HRC**  
51

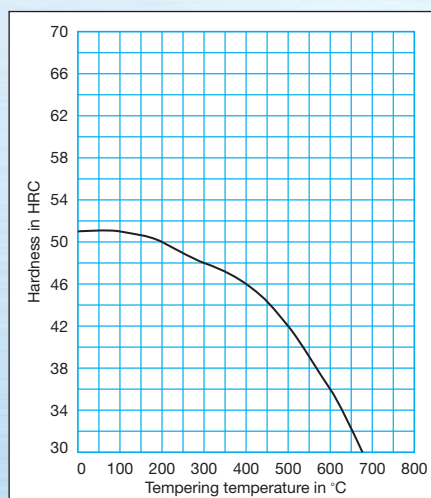
**Tempering °C**  
**HRC**

100	200	300	400	500	600	700
51	50	48	46	42	36	28

## Time-temperature-transformation diagram



## Tempering diagram



<sup>1)</sup> S can be raised between 0.05 and 0.1 % whereas Ni can be left out completely.