



钢铁之家

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# 全球钢号百科!

Global Steel Grade Encyclopedia



涵盖的行业或国家与地区类别



国际材料与试验协会

GJB

国家军用标准



动力机械工程师协会

EU

前欧洲标准化

AISI

美国钢铁学会



德国工业标准

AMS

航空航天材料规范



国际标准

JASO

日本汽车标准组织

EN

欧洲标准

JB

中国机械行业标准

UNS

统一编号系统

UNI

意大利标准



美国机械工程师协会

SS

瑞典标准



国家标准



日本工业标准

# 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
$10^{-6} \text{ m}/(\text{m} \cdot \text{K})$ Annealed	12.5	13.4	13.9
$10^{-6} \text{ m}/(\text{m} \cdot \text{K})$ Quenched and tempered	12.3	13.0	13.7

### Thermal conductivity

at °C	100	150	200	250	300
$\text{W}/(\text{m} \cdot \text{K})$ Annealed	40.2	40.9	40.3	40.0	39.0
$\text{W}/(\text{m} \cdot \text{K})$ 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

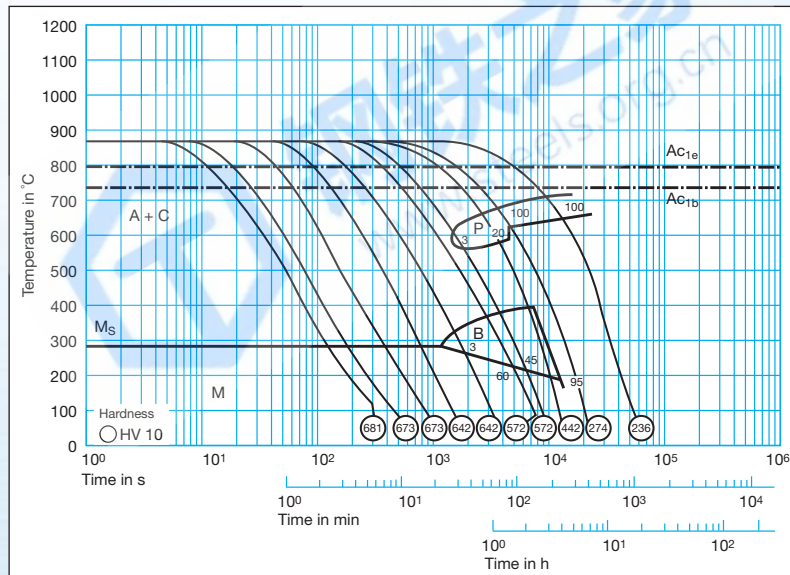
**Quenching**  
Oil or  
saltbath, 180 – 220 °C

**Hardness after quenching HRC**  
51

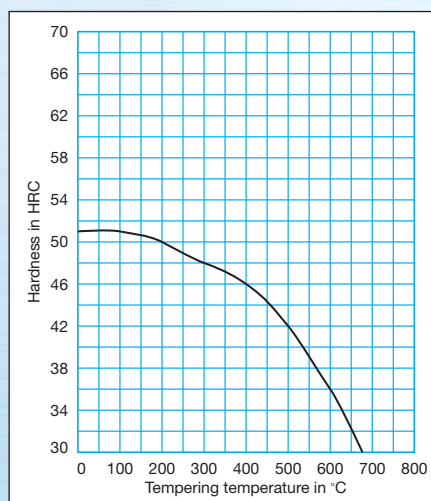
**Tempering °C**  
**HRC**

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.