



## SIMOLD 2311 Steel

### Designation by Standards

Brand Name	Ravne	Mat. No.	DIN	EN	AISI/SAE
SIMOLD 2311	UTOPNEX	1.2311	40CrMnMo7	-	Approx. P20

### Chemical Composition (in weight %)

C	Si	Mn	Cr	Mo	Ni	V	W	Others
0.40	0.30	1.45	1.95	0.20	-	-	-	-

### Description

Prehardened plastic mould steel with good machinability, better than steel grade Mat. No. 1.2312, suitable for texturing.

### Applications

Plastic moulds, mould frames for plastic moulds, large injection moulds, pressure casting dies, recipient sleeves.

### Physical properties (average values) at ambient temperature

Modulus of elasticity [ $10^3 \times \text{N/mm}^2$ ]: 210

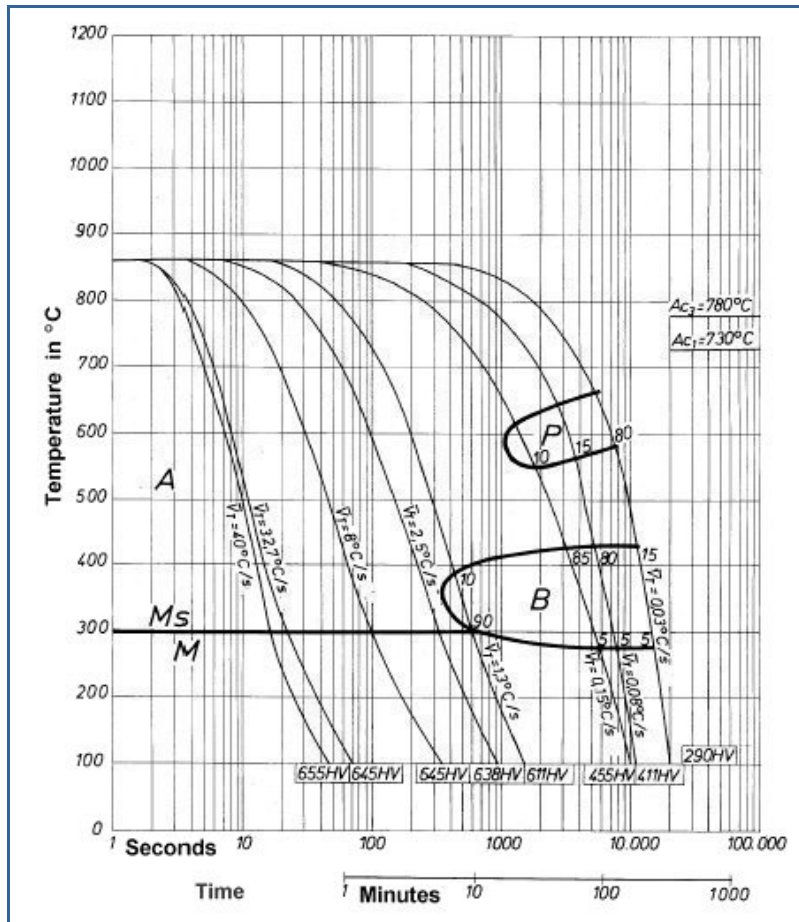
Density [ $\text{g/cm}^3$ ]: 7.83

Thermal conductivity [ $\text{W/m.K}$ ]: 34.0 (100°C), 34.0 (150°C), 33.6 (200°C), 32.9 (250°C), 31.9 (300°C), in quenched and tempered condition.

### Coefficient of Linear Thermal Expansion $10^{-6} \text{ }^\circ\text{C}^{-1}$

20-100°C	20-200°C	20-300°C	20-400°C	20-500°C	20-600°C	20-700°C
11.7	13.1	13.5	14.0	14.4	14.6	14.7

## Continuous Cooling Transformation (CCT) Diagram



### Soft Annealing

Heat to  $710\text{--}740^{\circ}\text{C}$ , cool slowly in furnace. This will produce a maximum Brinell hardness of 230.

### Stress Relieving

Stress relieving to remove machining stresses should be carried out by heating to approx.  $650^{\circ}\text{C}$ , holding for 1-2 hours at heat, followed by air cooling. This operation is performed to reduce distortion during heat treatment.

### Hardening

Harden from a temperature of  $830\text{--}880^{\circ}\text{C}$  followed by oil or air quenching or warm bath quenching  $180\text{--}220^{\circ}\text{C}$ . Hardness after quenching is 51 HRC.

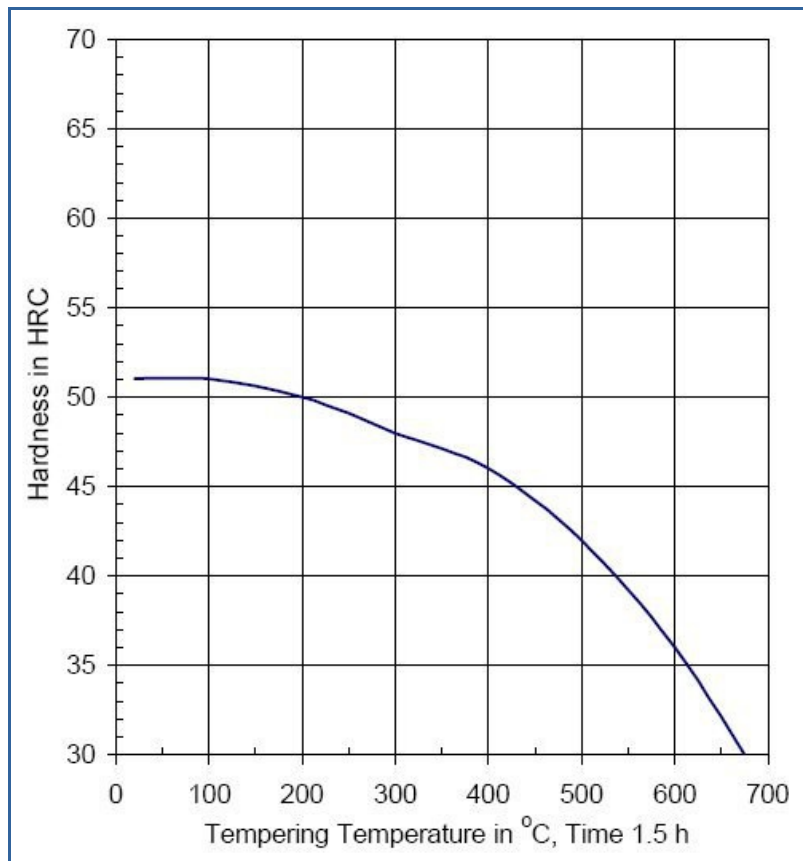
### Tempering

Tempering temperature: See the data below.

### Tempering Temperature ( $^{\circ}\text{C}$ ) vs. Hardness (HRC)

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

## Tempering Diagram



### Forging

Hot forming temperature: 1050-850°C.

### Machinability

Machinability is relatively good at about 80% that of the W group water hardening steels

### Corrosion Resistance

This is a steel alloy and it will corrode or rust unless protected.

### Welding

This alloy is weldable by conventional methods. Contact the alloy supplier for details and weld procedures.

### Cold working

This steel may be readily cold worked by conventional tooling with the alloy in the annealed condition.

Forms manufactured: Please see the [Dimensional Sales Program](#).

### Disclaimer

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