



## SINOXX 4122 Steel

### Designation by Standards

Brand Name	Ravne	Mat. No.	DIN	EN	AISI/SAE
SINOXX 4122	PK335	1.4122	X39CrMo17-1 †	X39CrMo17-1	-

### Chemical Composition (in weight %)

C	Si	Mn	Cr	Mo	Ni	V	W	Others
0.39	max. 1.00	max. 1.00	16.50	1.05	max. 1.00	-	-	-

### Description

Stainless steel with very good wear, corrosion resistance and industrial polishability.

### Applications

PK335 is used for pump shafts, fitting and compressor parts, as well as steam and water control valves and boat shafts for use in fresh water.

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

Modulus of elasticity [ $10^3 \times \text{N/mm}^2$ ]: 223

Density [ $\text{g/cm}^3$ ]: 7.71

Thermal conductivity [ $\text{W/m.K}$ ]: 15

Electric resistivity [ $\text{Ohm mm}^2/\text{m}$ ]: 0.80

Specific heat capacity [ $\text{J/g.K}$ ]: 0.43

### 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	20-800°C
10.7	11.7	11.7	11.7	11.8	11.9	12.4	12.9

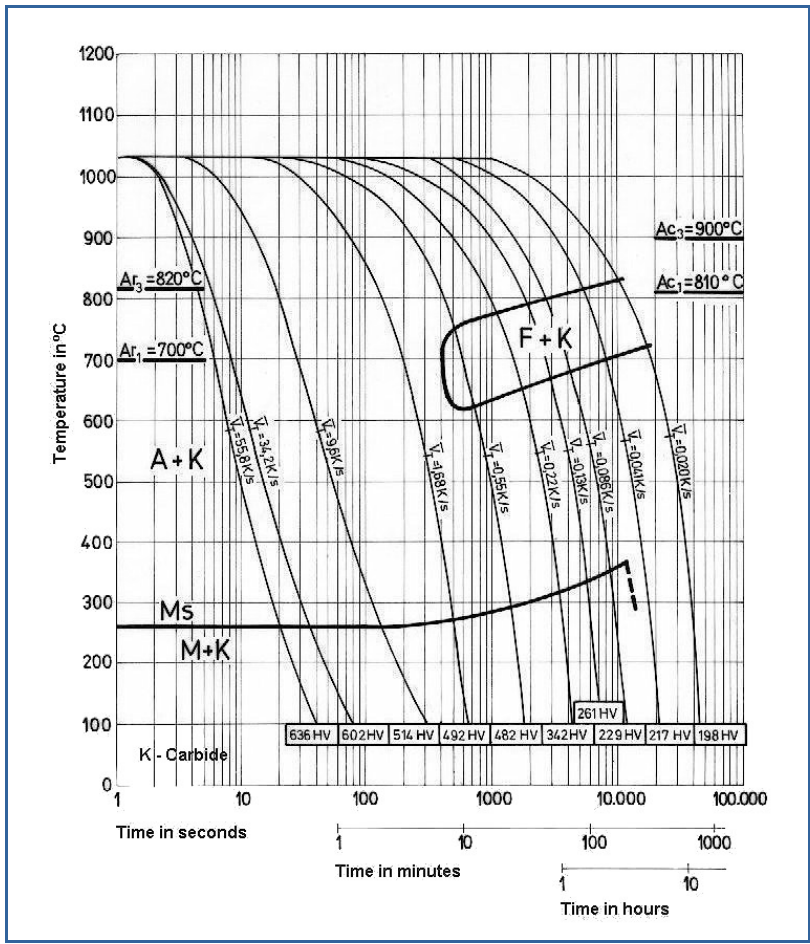
### Modulus of Elasticity [ $10^3 \text{ N/mm}^2$ ]

100°C	200°C	400°C
223	205	190

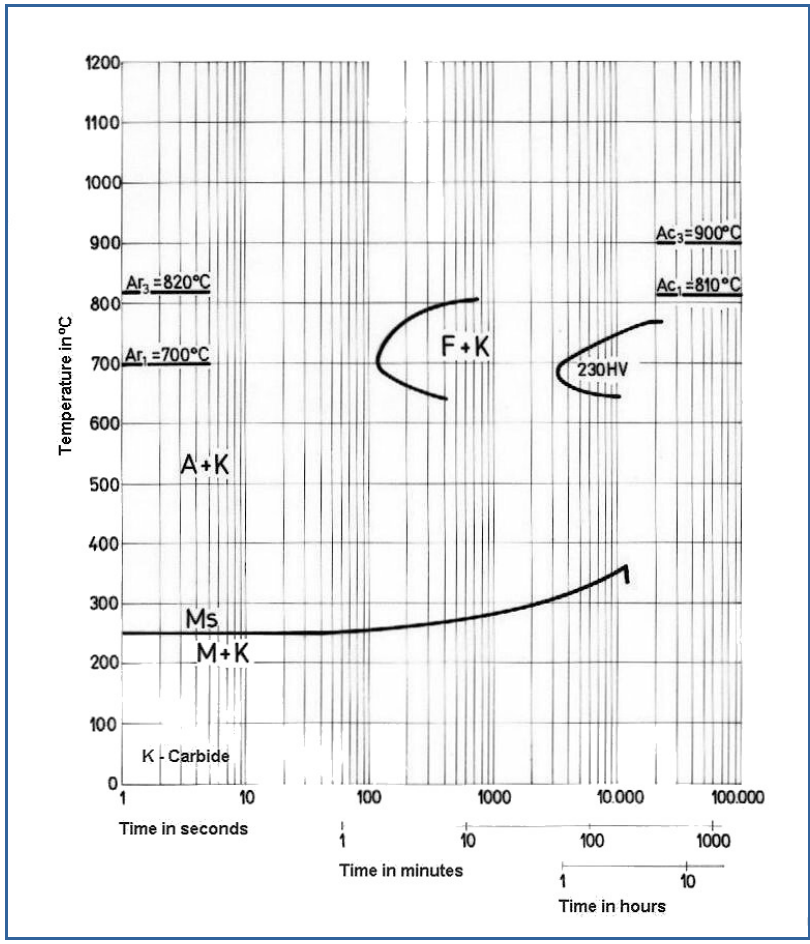
### Thermal conductivity [ $\text{W/m.K}$ ]

20-200°C	20-200°C	20-400°C
10.4	10.8	11.6

Continuous Cooling Transformation (CCT) Diagram



Time-Temperature Transformation (TTT) Diagram



### Soft Annealing

Heat to 750-880°C, cool slowly in furnace or air. Structure is ferrite with spherical carbides. This will produce a maximum Brinell hardness of 250.

### Hardening

Harden from a temperature of 980-1050°C followed by oil quenching. Hardness after quenching is 49 HRC.

### Tempering

Tempering temperature: 150-200°C, 650-750°C

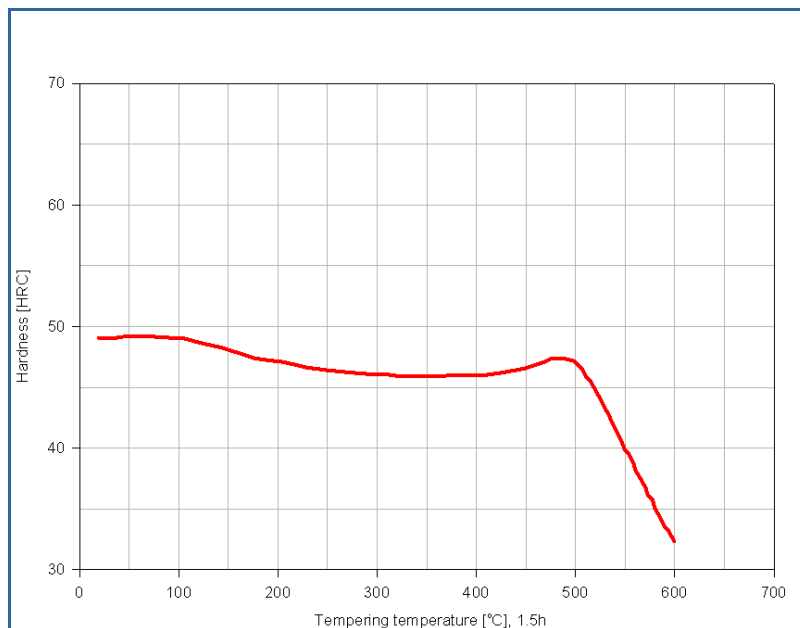
### Mechanical Properties at Room Temperature

Size range mm	Heat treatment condition	0.2 % proof stress (N/mm <sup>2</sup> )	Tensile strength (N/mm <sup>2</sup> )	Elongation (%)	Notch impact energy (ISO-V) (J)
d<=60	Q+T 750	500	750-950	12 (Long)	20 (Long)
61<d<=160	Q+T 750	500	750-950	12 (Long)	14 (Long)

### 0.2 % Proof Stress (N/mm<sup>2</sup>) at Elevated Temperatures

100°C	150°C	200°C	250°C	300°C	350°C	400°C
540	535	530	520	510	490	470

### Tempering Diagram



### Forging

Hot forming temperature: 1100-800°C, slow cooling.

### Machinability

Metal-cutting machining is the same as for special engineering steel grades of corresponding strength.

### Welding

Limited weldability using the manual arc and TIG welding processes, as hardening occurs in the heat-affected zone. Preheat to between 300 and 400°C. Filler metals: 1740, Nicro82.

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

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