



SIQUAL 8509 Steel

Designation by Standards

Brand Name	Ravne	Mat. No.	DIN	EN	AISI/SAE
SIQUAL 8509	PO733	1.8509	41CrAlMo7 †	41CrAlMo7-10	-

Chemical Composition (in weight %)

C	Si	Mn	Cr	Mo	Ni	V	W	Others
0.41	max. 0.40	0.65	1.65	0.33	-	-	-	Al=1.00

Description

Al-alloyed nitriding steel grade for large-sections.

Applications

Structural parts with high surface hardness - piston rods, extruders, cylinders, shafts, straightening tools, measuring tools, etc.

Physical properties (average values) at ambient temperature

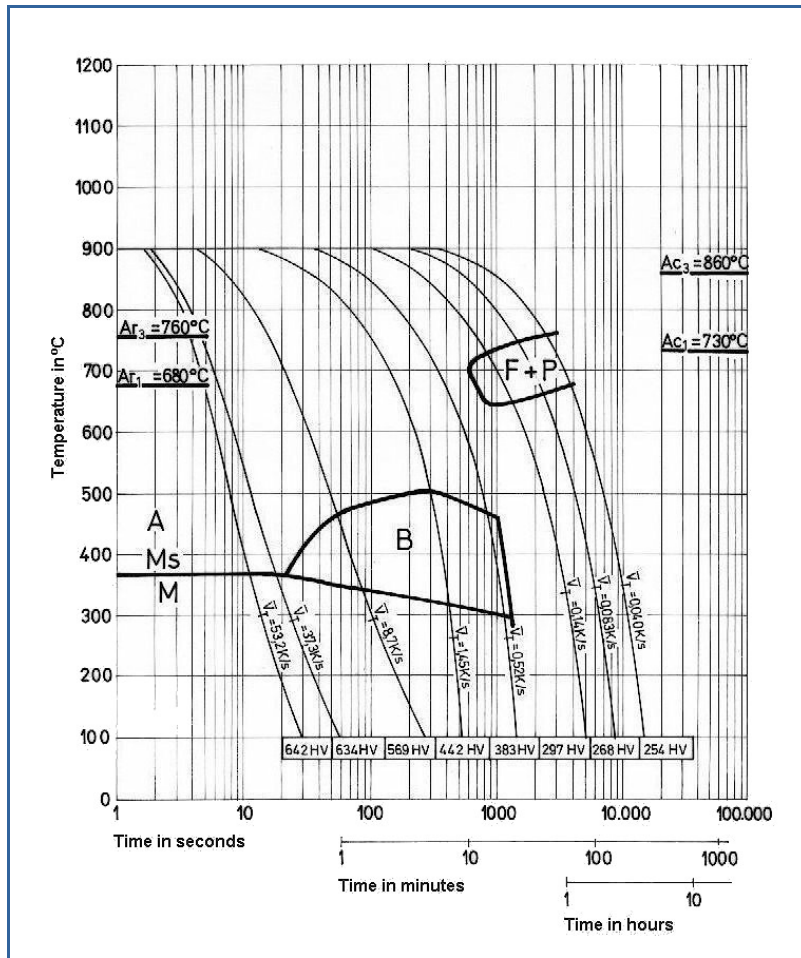
Modulus of elasticity [$10^3 \times \text{N/mm}^2$]: 210

Density [g/cm^3]: 7.73

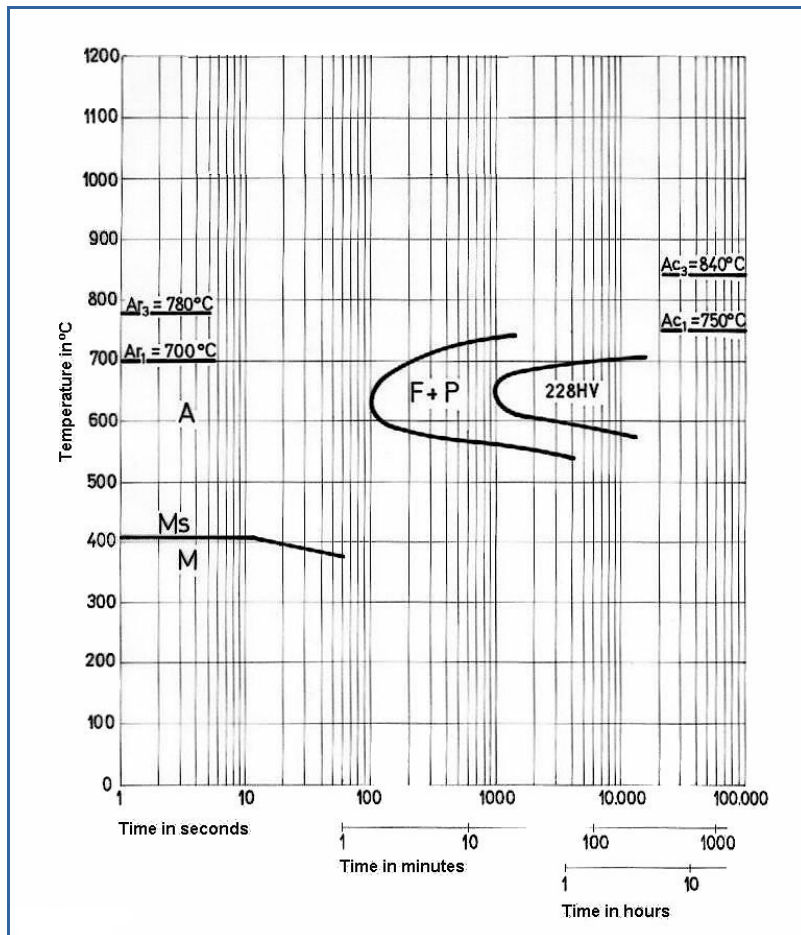
Coefficient of Linear Thermal Expansion $10^{-6} \text{ } ^\circ\text{C}^{-1}$

-191 to +16°C	20-100°C	20-200°C	20-300°C	20-400°C	20-500°C
9.1	11.1	12.1	12.9	13.5	13.9

Continuous Cooling Transformation (CCT) Diagram



Time-Temperature Transformation (TTT) Diagram



Soft Annealing

Heat to 650-700°C, cool slowly. This will produce a maximum Brinell hardness of 248.

Hardening

Harden from a temperature of 870-930°C followed by oil/polymer or water quenching.

Tempering

Tempering temperature: 580-700°C.

Nitriding

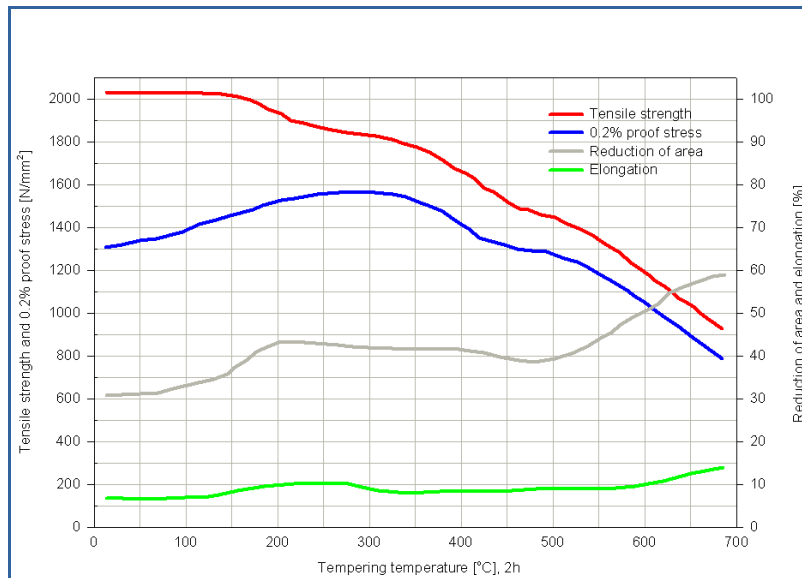
Temperature: 480-570°C.

Surface hardness after nitriding: 950 HV

Mechanical Properties in Quenched and Tempered Condition

Diameter (mm)	0.2 proof stress (N/mm ²)	Tensile strength (N/mm ²)	Elongation (%)	Reduction (%)	Notch impact energy (ISO-V) (J)
16-40	750	950-1150	11	-	25
41-100	720	900-1100	13	-	25
101-160	670	850-1050	14	-	30
161-250	625	800-1000	15	-	30

Diagram Tempering Temperature - Mechanical Properties



Forging

Hot forming temperature: 1050-850°C.

Machinability

No data.

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

Disclaimer

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