SIQUAL 8159 Steel

Designation by Standards

Brand Name	Ravne	Mat. No.	DIN	EN	AISI/SAE
SIQUAL 8159	VCV150	1.8159	50CrV4 †	51CrV4	6145/6150

Chemical Composition (in weight %)

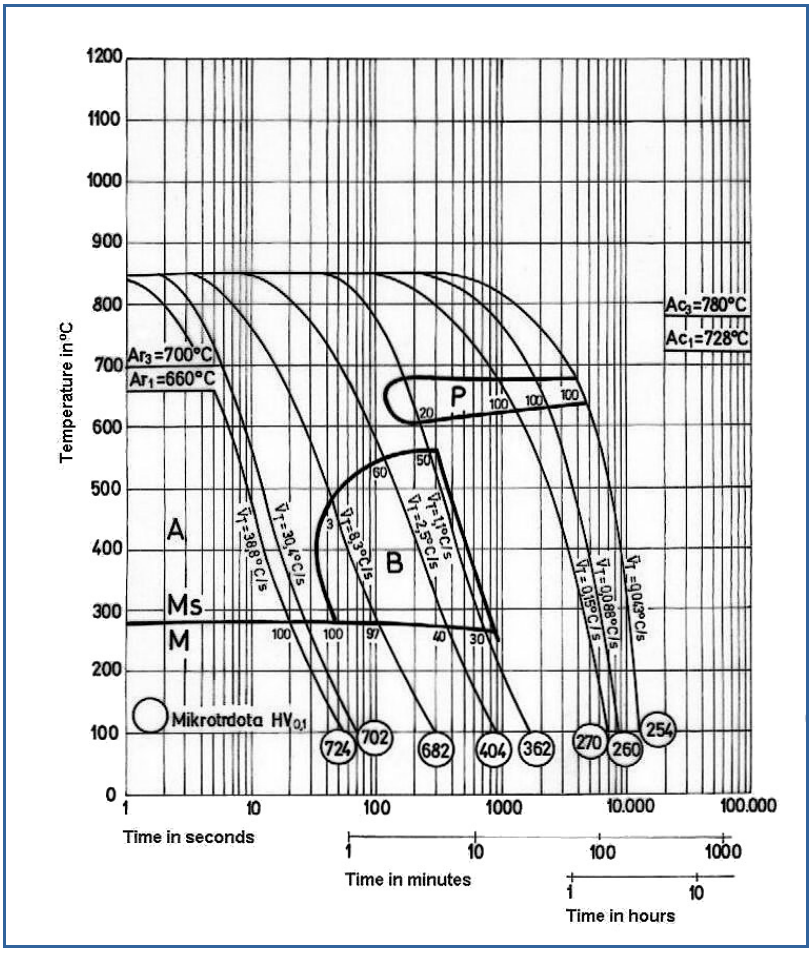
C	Si	Mn	Cr	Mo	Ni	V	W	Others
0.51	max. 0.40	0.90	1.05	-	-	0.18	-	-

Description
SIQUAL 8159 is a heat treatable, low alloy steel containing manganese, chromium and vanadium. It is known for its toughness and capability of developing high strength in the heat treated condition while retaining good fatigue strength.

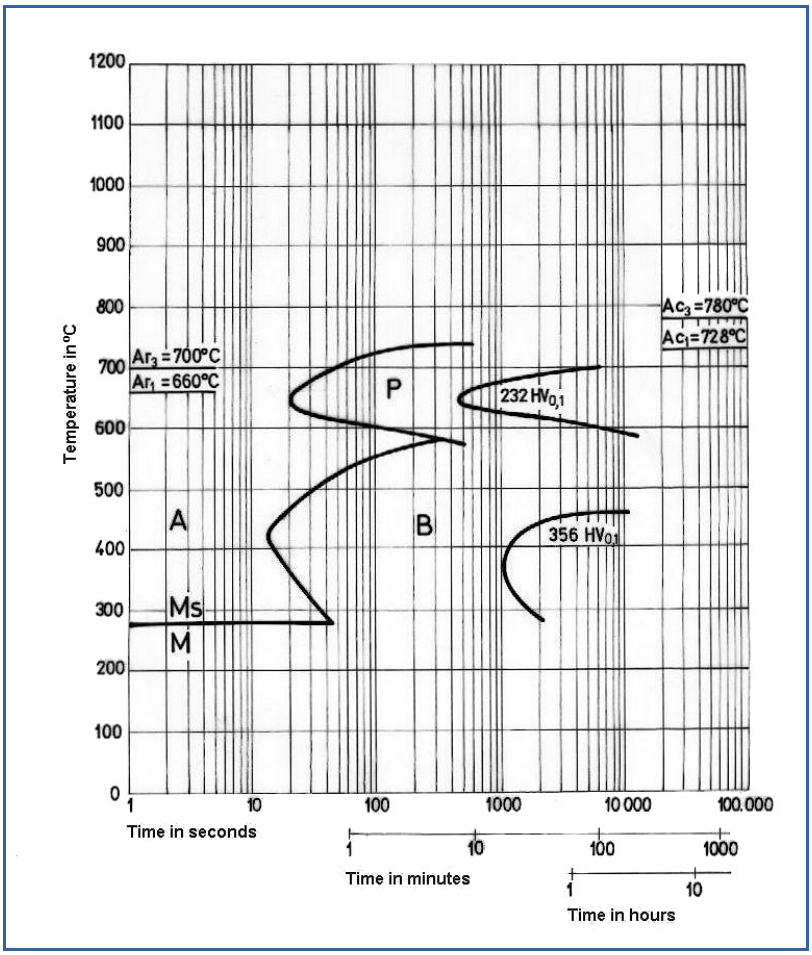
Applications
Permanently stressed machine, engine and vehicle parts when high strength and toughness are required.Most severely stressed springs for trucks, torsion springs.

Physical properties (average values) at ambient temperature
Modulus of elasticity [10^3 x N/mm^2]: 210
Density [g/cm^3]: 7.84

Continuous Cooling Transformation (CCT) Diagram



Time-Temperature Transformation (TTT) Diagram



Soft Annealing
Heat to 640-720^{o}C, cool slowly. This will produce a maximum Brinell hardness of 248.

Normalizing
Temperature: 840-880^{o}C.

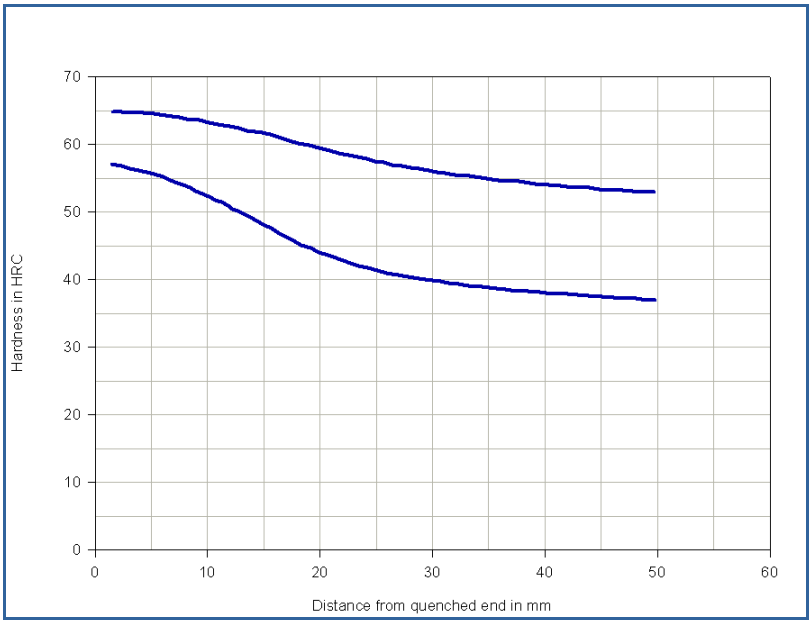
Hardening
Harden from a temperature of 820-860^{o}C followed by oil quenching.

Tempering
Tempering temperature: 540-680^{o}C.

Mechanical Properties in Hardening and Tempering Condition

Diameter (mm)	0.2 % proof stress (N/mm^2)	Tensile strength (N/mm^2)	Elongation (%)	Reduction of area (%)	Notch impact energy (ISO-V) (J)
<16	900	1100-1300	9	40	30
17-40	800	1000-1200	10	45	30
41-100	700	900-1100	12	50	30
101-160	650	850-1000	13	50	30
161-250	600	800-950	13	50	30

Hardenability Diagram



Forging
Hot forming temperature: 1050-850^{o}C.

Machinability
Machining is best done with this alloy in the annealed or normalized and tempered condition. It can be machined by all conventional methods.

Corrosion Resistance
This is a low alloy steel and not a corrosion resistant alloy. Protective coating should be used.

Welding
The alloy can be fusion or resistance welded. Preheat and post heat weld procedures should be followed when welding this alloy by established methods.

Cold working
The VCV150 alloy may be cold worked, in the annealed condition, by conventional methods and tooling. It has good ductility.

Forms manufactured: Please see the Dimensional Sales Program.

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