SITHERM 2714 Steel

Designation by Standards

Brand Name	Ravne	Mat. No.	DIN	EN	AISI/SAE
SITHERM 2714	UTOPEX2	1.2714	56NiCrMoV7 †	55NiCrMoV7	-

Chemical Composition (in weight %)

C	Si	Mn	Cr	Mo	Ni	V	W	Others
0.55	0.25	0.75	1.10	0.45	1.65	0.10	-	-

Description
Nickel hot work tool steel with good hardenability. Uniform hardness over section also at great dimensions. Resistance under impact loadings. Very good strength and toughness. Good tempering resistance and dimensional stability. Tools can be water or air cooled.

Applications
Forging tools, dies of all sorts, shapes and sizes, hot forging and pressing tools for steel and metal. Moulds, bushings, piercers etc.

Physical properties (average values) at ambient temperature
Modulus of elasticity [10^3 x N/mm^2]: 215
Density [g/cm^3]: 7.84
Thermal conductivity [W/m.K]: 36.0
Electric resistivity [Ohm mm^2/m]: 0.30
Specific heat capacity[J/g.K]: 0.46

Thermal conductivity [W/m.K]

20°C	500°C	600°C
36.0	36.8	36.0

Electric resistivity [Ohm mm^2/m]

20°C	500°C	600°C
0.30	0.70	0.84

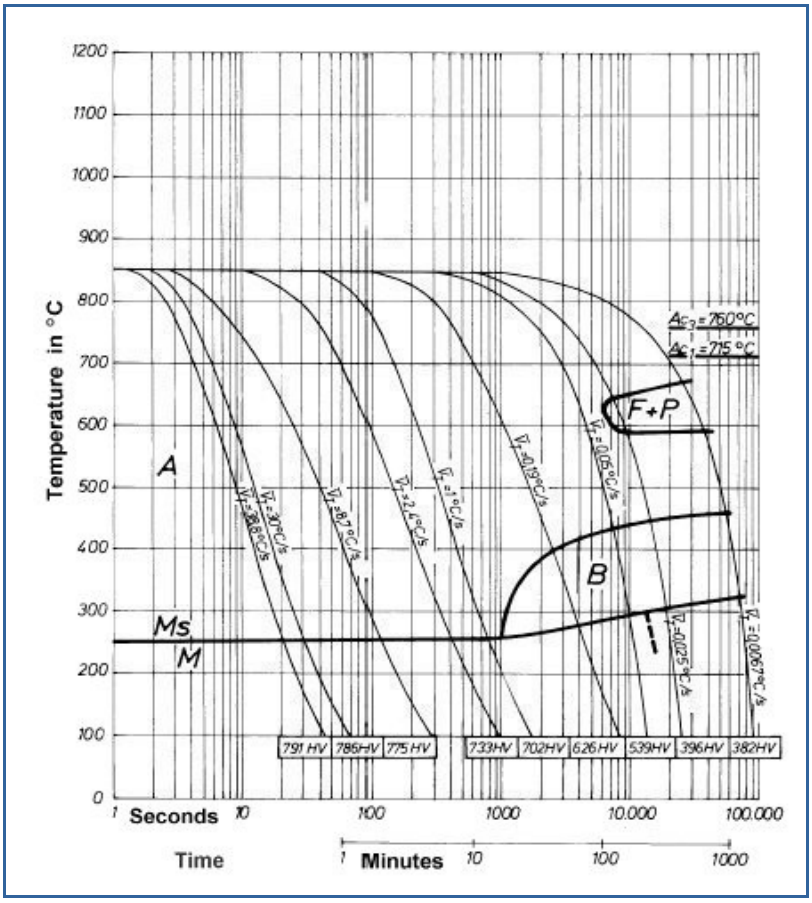
Specific heat capacity[J/g.K]

20°C	500°C	600°C
0.46	0.55	0.59

Coefficient of Linear Thermal Expansion 10^{-6} $^{o}C^{-1}$

20-100^{o}C	20-200^{o}C	20-300^{o}C	20-400^{o}C	20-500^{o}C	20-600^{o}C	20-700^{o}C
11.7	12.1	13.0	13.5	14.0	14.3	14.6

Continuous Cooling Transformation (CCT) Diagram



Soft Annealing

Heat to 650-700^{o}C, cool slowly in furnace. This will produce a maximum Brinell hardness of 248.

Stress Relieving

Stress relieving to remove machining stresses should be carried out by heating to 650^{o}C, holding for one hour at heat, followed by air cooling. This operation is performed to reduce distortion during heat treatment.

Hardening

Oil: Harden from a temperature of 830-870^{o}C followed by oil quenching. Hardness after quenching is 58 HRC.

Air: Harden from a temperature of 830-900^{o}C followed by air quenching. Hardness after quenching is 56 HRC.

Tempering

Tempering temperature: See the data bellow.

Quenching in oil:

Tempering Temperature (^{o}C) vs. Hardness (HRC) vs. Hardness (HRC) vs. Tensile Stregth (N/mm^{2})

100^{o}C	200^{o}C	300^{o}C	400^{o}C	450^{o}C	500^{o}C	550^{o}C	600^{o}C	650^{o}C
57	55	52	49	47	45	42.5	39	35
2140	1980	1790	1620	1530	1440	1345	1230	1110

Quenching in air:

Tempering Temperature (^{o}C) vs. Hardness (HRC) vs. Hardness (HRC) vs. Tensile Stregth (N/mm^2)

100^{o}C	200^{o}C	300^{o}C	400^{o}C	450^{o}C	500^{o}C	550^{o}C	600^{o}C	650^{o}C
55	53	50	47	45	43	40	37	32
1980	1845	1680	1530	1440	1360	1260	1170	1020

Tempering Diagram

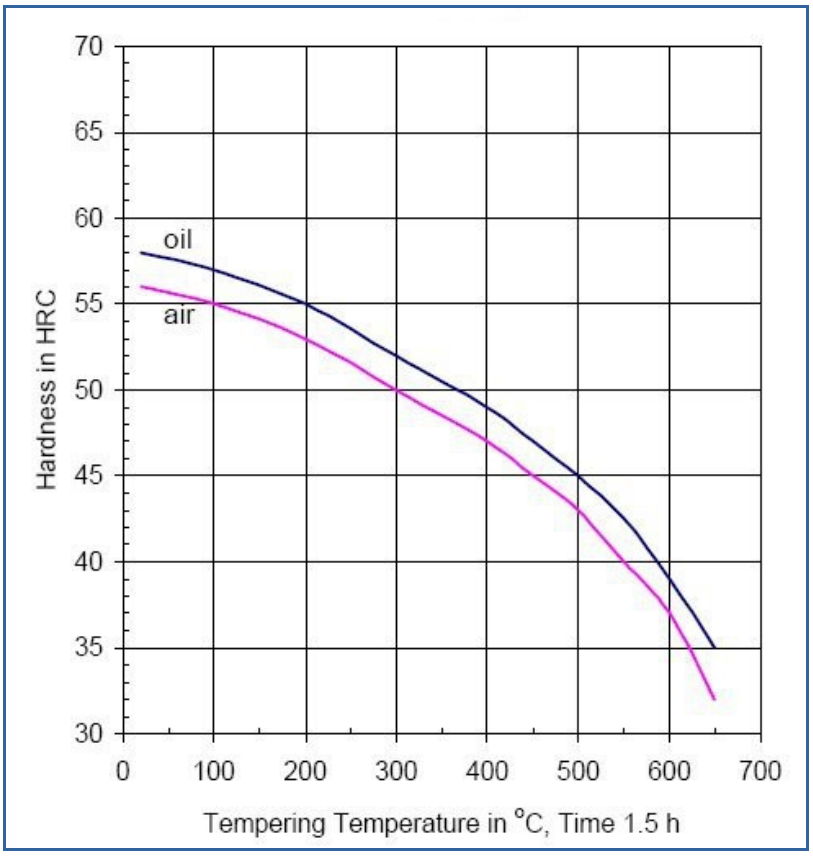
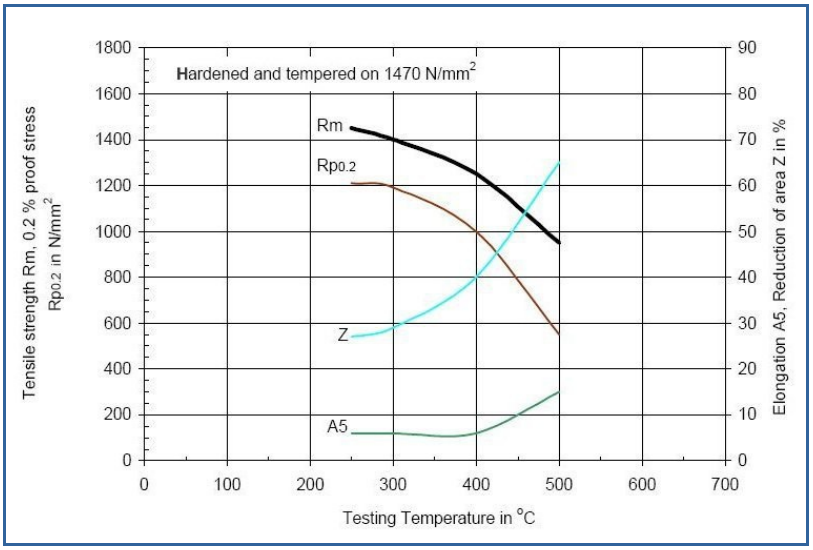


Diagram Tempering Temperature - Mechanical Properties



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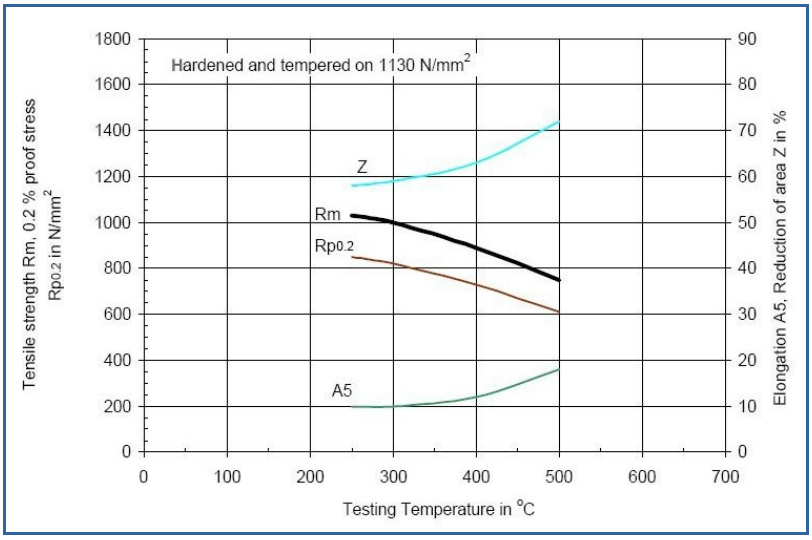

Forging

Hot forming temperature: 1050-850°C.

Machinability

The machinability rating of D3 is roughly 25 % that of free machining carbon steel 1018. Due to its abrasion resistant nature, machining in the hardened condition should be limited to finish grinding.

Forms manufactured: Please see the Dimensional Sales Program.

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