

Thermodur® 2365 EFS

Technical Datasheet

Chemistry

Comparable Standard: AISI H-10

Typical	C	Mo	Cr	V
Analysis %	0.32	2.8	3.0	0.5

Description

Thermodur® 2365 EFS is an Extra Fine Structure (EFS) hot work tool steel, developed for good high temperature strength and tempering resistance. Supplied in the annealed condition.

Characteristics

Good high temperature strength
Good resistance to thermal fatigue

Applications

Processing of heavy metals
Forging dies
Extrusion rams
Piercing mandrels

Physical Properties

Density: 0.283 lbs/in³ (room temperature)

Coefficient of Thermal Expansion	$\frac{70^{\circ}\text{F} - 200^{\circ}\text{F}}{6.7 \times 10^{-6}/^{\circ}\text{F}}$	$\frac{70^{\circ}\text{F} - 400^{\circ}\text{F}}{7.0 \times 10^{-6}/^{\circ}\text{F}}$	$\frac{70^{\circ}\text{F} - 750^{\circ}\text{F}}{7.4 \times 10^{-6}/^{\circ}\text{F}}$
Thermal Conductivity	$\frac{70^{\circ}\text{F}}{217\text{Btu/in/ft}^2/\text{hr/}^{\circ}\text{F}}$	$\frac{650^{\circ}\text{F}}{221\text{Btu/in/ft}^2/\text{hr/}^{\circ}\text{F}}$	$\frac{1300^{\circ}\text{F}}{203\text{Btu/in/ft}^2/\text{hr/}^{\circ}\text{F}}$

Mechanical Properties

Tensile Properties: (room temperature)

Hardness HRc	Tensile Strength KSI
50	242
47	221
40	182

Heat Treatment

Soft Annealing

Temperature	Cooling	Hardness
1380°F – 1470°F	Furnace 20°F/hour to 1200°F. Then air cool.	230 HB Max.

Hardening (refer to TTT diagram on page 2)

Temperature	Cooling	Hardness
1850°F – 1885°F Hold at temperature for 30 minutes	Vacuum quench at 70°F/min to 300°F, then cool to below 150°F	52 HRc Max quenched

Tempering (See tempering diagram on page 2)

Temperature °F	572	752	932	1022	1112	1202
Hardness HRc	50	50	52	50	47	40

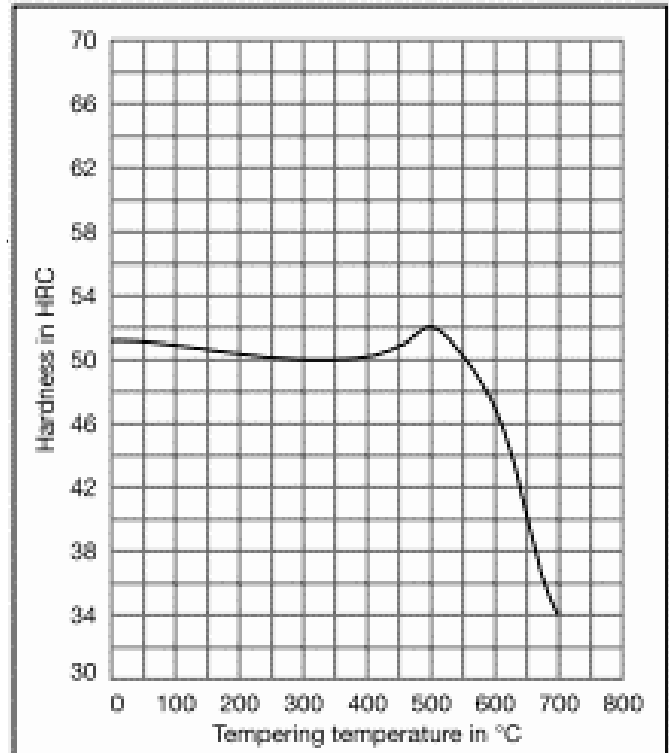
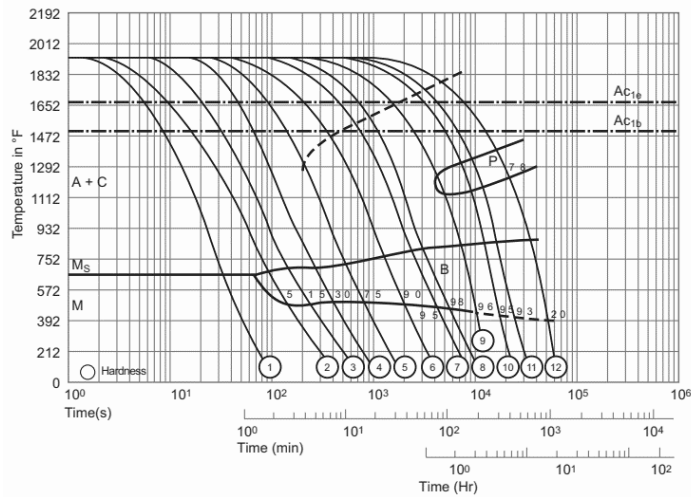
Tempering hardness is approximate and based on two hours at temperature.

Please contact your Swiss Steel heat treat representative for more detailed information.

General Note

All statements regarding the properties or utilization of the materials or products mentioned are for the purpose of description only. Guarantees regarding the existence of certain properties or a certain utilization are only valid if agreed upon in writing.

Time-Temperature-Transformation Diagram



Cooling Curve Number	1	2	3	4	5	6	7	8	9	10	11	12
Hardness (HV 10)	585	685	585	572	526	473	450	446	442	433	438	292
Hardness (HRC approx.)	54.5	59.5	54.5	54	51	47	45.5	45	44.5	44	44	29

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