

Formadur® 2083 Superclean

Technical Datasheet

Chemistry

Comparable Standard:
AISI 420 Modified

Typical	C	Cr
Analysis %	0.42	13

Description

Formadur® 2083 Superclean is an electro slag remelted (ESR) martensitic stainless steel developed for corrosion resistant applications. Supplied in annealed condition.

Characteristics

Good corrosion resistance
Good polishability
High Hardness

Applications

Molds for processing corrosive plastics
Extrusion dies for processing corrosive plastics

Physical Properties

Hardened and tempered to 46 HRc
Density: 0.282 lbs/in³ (room temperature)

Coefficient of Thermal Expansion	70°F - 200°F $6.2 \times 10^{-6} / ^\circ\text{F}$	70°F - 400°F $6.4 \times 10^{-6} / ^\circ\text{F}$	70°F - 550°F $6.4 \times 10^{-6} / ^\circ\text{F}$
Thermal Conductivity	200°F 156Btu/in/ft ² /hr/°F	300°F 160Btu/in/ft ² /hr/°F	400°F 163Btu/in/ft ² /hr/°F

Polishing

For highly cosmetic applications, the tool should be heat treated to the highest hardness possible. Size of the tool will determine the maximum hardness. A-1 polish is achievable when proper procedures are followed. A Swiss Steel representative should be consulted when determining the hardness.

Mechanical Properties

Tensile Properties: (room temperature)

Hardness HRC	Tensile Strength KSI	Yield Strength KSI	Elongation %
45	205	180	12
50	250	210	10
55	290	225	8

Heat Treatment

Soft Annealing

Temperature	Cooling	Hardness
1400°F - 1470°F	Furnace 20°F/hour to 1200°F Then air cool	230 HB Max.

Stress relieving

Temperature	Cooling	Hardness
1200°F	Furnace hold time 2 hrs Slowly cool in furnace to 920°F Then air cool	230 HB Max.

Hardening (refer to TTT Diagram on page 2)

Temperature	Quenching	Hardness
1830°F - 1920°F Hold at temperature for 30 minutes	Quench to 300°F then cool to below 150°F	56 HRc Max quenched

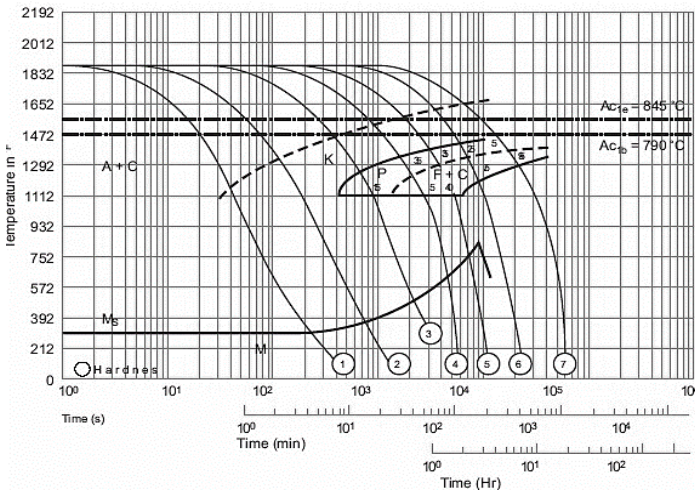
Tempering (refer to Tempering Diagram on page 2)

Temperature °F	392	572	752	932	1112
Hardness HRc	55	52	51	52	40

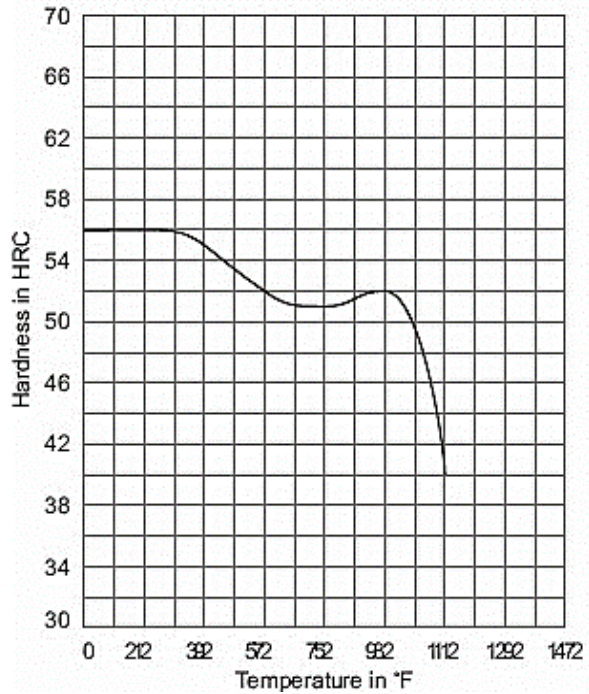
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Time-Temperature-Transformation Diagram



Tempering Diagram



Cooling Curve Number	1	2	3	4	5	6	7
Hardness (HV 10)	672	667	579	456	244	220	199
Hardness (HRC Approx.)	59	58.5	54	46	21	19	17

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.

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NORTH AMERICAN DISTRIBUTION

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