Cryodur® 2379

Technical Datasheet

Chemistry
Comparable Standard: AISI D-2

Typical	C	Si	Mn	Cr	Mo	V
Analysis %	1.55	0.30	0.35	12.0	0.75	0.90

Description
Cryodur® 2379 is a high carbon, high chromium tool steel developed for high wear applications.
Supplied in the annealed condition.

Characteristics
Excellent abrasive wear resistance
High comprehensive strength
Good stability during heat treatment
Good through hardening properties

Applications

Forming rolls	Cold extrusion dies
Threading rolls	Coining dies
Fine blanking dies	Trim dies

Physical Properties
Density: 0.278 lbs/in³ (room temperature)

Coefficient of Thermal Expansion	70°F - 200°F 5.8 x 10^{-6} /°F	70°F - 400°F 6.3 x 10^{-6} /°F	70°F - 750°F 6.8 x 10^{-6} /°F
Thermal Conductivity	68°F 116Btu/in/ft²/hr/°F	650°F 142Btu/in/ft²/hr/°F	1300°F 168Btu/in/ft²/hr/°F

Mechanical Properties
Compressive Strength

Hardness (HRc)	Approximate Compressive Strength (KSI)
55	275
60	310
62	320

Polishing
Cryodur° 2379 is not intended for tools which require high surface finish. A Swiss Steel representative should be consulted for additional information

Heat Treatment
Soft Annealing

Temperature	Cooling	Hardness
1525°F – 1580°F	Furnace 20°F/hr to 1200°F, then air cool	250 HB Max.

Stress Relieving

Temperature	Cooling
1200°F-1290°F	Hold time 2 hours, slowly cool to 930°F, then air cool

Hardening (Refer to TTT diagram on page 2)

Temperature	Cooling	Hardness
1840°F - 1905°F Hold at temperature for 30 minutes	Furnace quench to 350°F, air cool to 120°F. Immediately temper	65 HRc Max quenched

Tempering (Double Temper Recommended)

Temperature °F	212	392	572	752	932	1022	1112
1885°F Hardness HRc	63	61	58	58	58	56	50

Tempering hardness is approximate and based on two hours at temperature.
In order to achieve faster quench rates, generous radii should be left on during rough machining.
Please contact your Swiss Steel heat treat representative for more detailed information.

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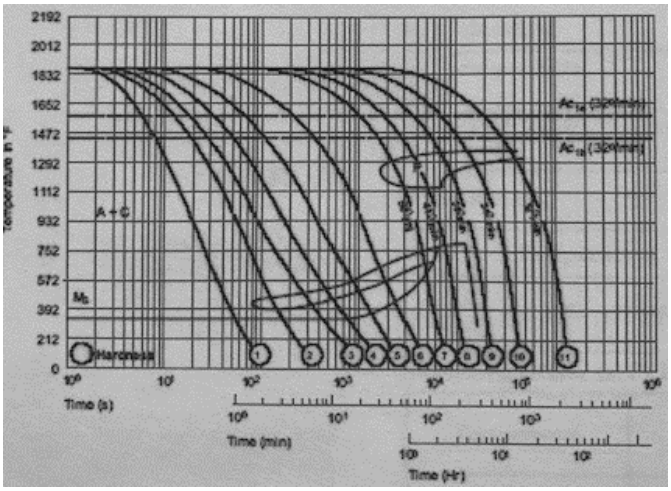
Welding

Use air hardening tool steel filler.

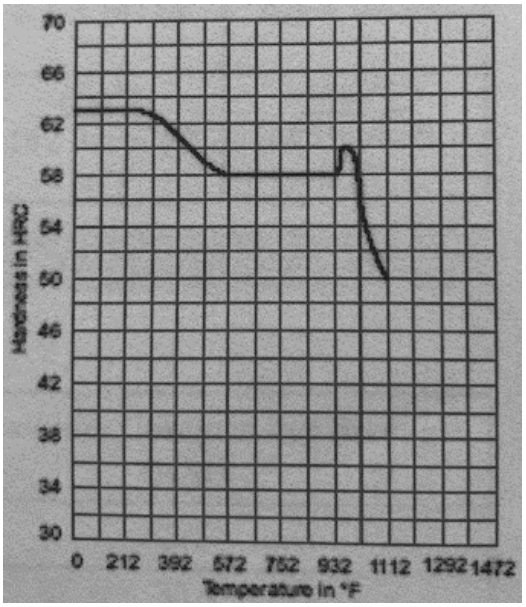
Condition	Preheat	Maintained Temperature during welding	Cool down to:	Post Process
Annealed	700°F - 900°F	700°F	150°F	Reanneal or temper
Hardened	25°F - 50°F below last tempering temperature	350°F	150°F	Temper 25°-50°F below last tempering temperature

Time-Temperature-Transformation Diagram



Cooling Curve Number	1	2	3	4	5	6	7	8	9	10	11
Hardness (HV 10)	891	891	891	891	857	780	623	435	257	249	230
Hardness (HRc approx.)	67	67	67	67	65.5	63.5	56.5	44	24	22	20

Tempering Diagram



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.

Swiss Steel International

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NORTH AMERICAN DISTRIBUTION

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