Cryodur® 2363

Technical Datasheet

Chemistry

Comparable Standard: AISI A-2

Typical	C	Si	Mn	Cr	Mo	V
Analysis %	1.0	0.30	0.50	5.0	0.95	0.20

Description

Cryodur° 2363 is a cold-work steel developed for an excellent combination of wear resistance and toughness.

Supplied in an annealed condition.

Characteristics

Good wear resistance

Good toughness

High compressive strength

Good stability after heat treatment

Applications

Forming Rolls

Cold stamping tools

Inserts for processing abrasive plastics

Coining dies

Guide rails

Trim dies

Physical Properties

Density: 0.279 lbs/in³ (room temperature)

Coefficient of Thermal Expansion		70°F - 400°F 6.5 x 10^{-6} /°F	
Thermal Conductivity	68°F 110Btu/in/ft²/hr/°F	650°F 185Btu/in/ft²/hr/°F	1300°F 202Btu/in/ft²/hr/°F

Mechanical Properties

Compressive Strength

Hardness (HRc)	Approximate Compressive Strength (KSI)
55	260
60	310
62	320

Polishing

Cryodur° 2363 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
1475°F – 1560°F	Furnace 20°F/hr to 1200°F, then air cool	231 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
1700°F - 1780°F Hold at temperature for 30 minutes	Furnace quench to 350°F, air cool to 120°F. Immediately temper	63 HRc Max quenched

Tempering

Temperature °F	212	392	572	752	932	1112
1885°F Hardness HRc	63	62	59	57	59	52

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.

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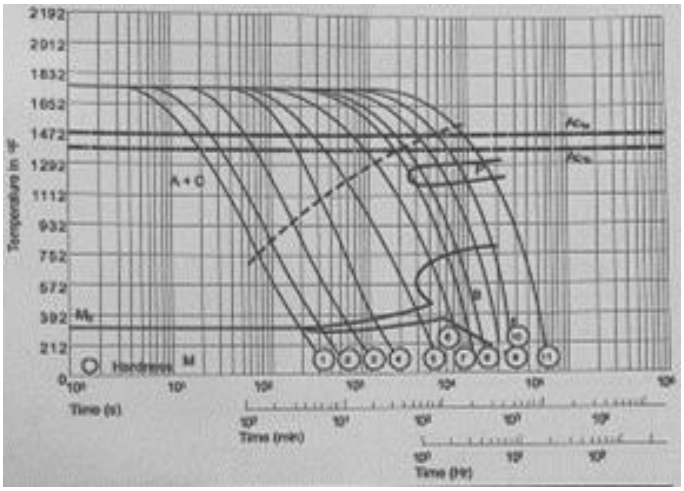
Optimal heat treatment parameters should be followed to achieve maximum potential die life.
Please contact your Swiss Steel heat treatment representative for more detailed information.

Welding
Use air hardening tool steel filler.

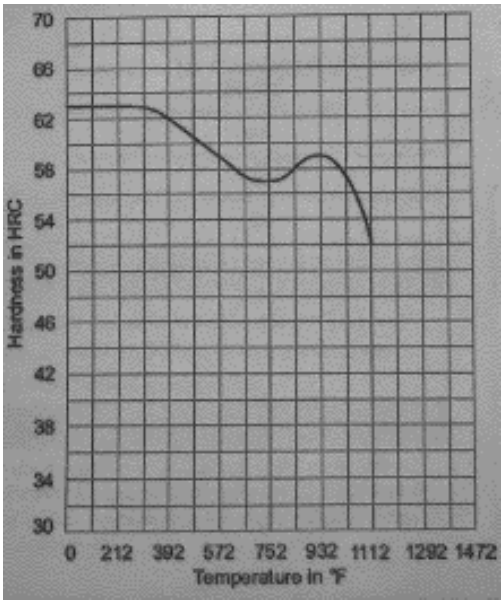
Condition	Preheat	Maintained Temperature during welding	Cool down to:	Post Process
Annealed	700°F - 900°F	700°F	150°F	Reanneal or temper
Hardened	25°F - 50°F below last tempering temperature	300°F	150°F	Temper 25°-50°F below last tempering temperature

Time – Temperature – Transformation Diagram



Cooling Curve Number	1	2	3	4	5	6	7	8	9	10	11
Hardness (HV 10)	882	870	870	870	847	724	606	542	442	376	254
Hardness (HRc approx.)	67	66	66	66	65.5	61	55.5	52	45	38	23

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

HEADQUARTERS +
TECHNICAL SUPPORT

SWISS STEEL USA, INC.
365 Village Dr.
Carol Stream, IL 60188
Phone: 800.323.1233
Fax: 630.879.0498

MANUFACTURING +
CENTRAL STOCKING FACILITY

SWISS STEEL USA, INC.
1609 E. Wilson Street
Batavia, IL 60510

DISTRIBUTION LOCATIONS

WEST COAST

556 Vanguard Way
Brea, CA 92861

MIDWEST

365 Village Dr.
Carol Stream, IL 60188

1455 Miller Pkwy.
Streetsboro, OH 44241

SOUTHEAST

119 Old Airport Rd.
Roebuck, SC 29376

NORTHEAST

370 Franklin Turnpike
Mahwah, NJ 07430

CANADA

SWISS STEEL CANADA, INC.
6350 Vipond Dr.
Mississauga, ONT L5T 1G2

www.swisssteel-international.us
www.swisssteel-international.ca

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