

Schmolz + Bickenbach Cryodur® 2312 (Brake Die) Cold Work Die Steel

Category : Metal , Ferrous Metal , Tool Steel , Cold Work Steel

Material Notes:

Description: Cryodur® 2312 is a pre-hardened single melt Extra Fine Structure (EFS) plastic mold steel and Re-sulphurized to improve machinability
 Characteristics: Excellent machinability compared to conventional 4150 press brake tooling material
 Applications: Brake Die
 Hardening (Heat Treatment): 1544°F-1598°F; Cooling: Oil; Hardness:

Order this product through the following link:

http://www.lookpolymers.com/polymer_Schmolz-Bickenbach-Cryodur-2312-Brake-Die-Cold-Work-Die-Steel.php

Physical Properties	Metric	English	Comments
Density	7.83 g/cc	0.283 lb/in ³	

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell C	28	28	
	@Treatment Temp. 700.0 °C	@Treatment Temp. 1292 °F	
	36	36	
	@Treatment Temp. 600.0 °C	@Treatment Temp. 1112 °F	
	42	42	
	@Treatment Temp. 500 °C	@Treatment Temp. 932 °F	
	46	46	
	@Treatment Temp. 400 °C	@Treatment Temp. 752 °F	
Tensile Strength	48	48	
	@Treatment Temp. 300 °C	@Treatment Temp. 572 °F	
	50	50	
	@Treatment Temp. 200 °C	@Treatment Temp. 392 °F	
	51	51	
	@Treatment Temp. 100 °C	@Treatment Temp. 212 °F	
	924 MPa	134000 psi	32 HRC
	848 MPa	123000 psi	
	@Treatment Temp.	@Treatment Temp.	28 HRC

Mechanical Properties	700.0 °C Metric	1292 °F English	Comments
	1140 MPa	165000 psi	
	@Treatment Temp. 600.0 °C	@Treatment Temp. 1112 °F	36 HRC
	1330 MPa	193000 psi	
	@Treatment Temp. 500 °C	@Treatment Temp. 932 °F	42 HRC
	1480 MPa	215000 psi	
	@Treatment Temp. 400 °C	@Treatment Temp. 752 °F	46 HRC
	1570 MPa	228000 psi	
	@Treatment Temp. 300 °C	@Treatment Temp. 572 °F	48 HRC
	1670 MPa	242000 psi	
	@Treatment Temp. 200 °C	@Treatment Temp. 392 °F	50 HRC
	1730 MPa	251000 psi	
	@Treatment Temp. 100 °C	@Treatment Temp. 212 °F	51 HRC

Thermal Properties	Metric	English	Comments
CTE, linear	12.2 µm/m-°C	6.80 µin/in-°F	
	@Temperature 21.1 - 93.3 °C	@Temperature 70.0 - 200 °F	
	13.0 µm/m-°C	7.20 µin/in-°F	
	@Temperature 21.1 - 204 °C	@Temperature 70.0 - 400 °F	
	13.7 µm/m-°C	7.60 µin/in-°F	
	@Temperature 21.1 - 302 °C	@Temperature 70.0 - 575 °F	
Thermal Conductivity	38.9 W/m-K	270 BTU-in/hr-ft ² -°F	
	@Temperature 302 °C	@Temperature 575 °F	
	39.8 W/m-K	276 BTU-in/hr-ft ² -°F	
	@Temperature 100 °C	@Temperature 212 °F	
	40.3 W/m-K	280 BTU-in/hr-ft ² -°F	
	@Temperature 204 °C	@Temperature 400 °F	

Component Elements Properties	Metric	English	Comments
Carbon, C	0.40 %	0.40 %	
Chromium, Cr	1.9 %	1.9 %	
Iron, Fe	95.95 %	95.95 %	
Manganese, Mn	1.5 %	1.5 %	
Molybdenum, Mo	0.20 %	0.20 %	
Sulfur, S	0.050 %	0.050 %	

Processing Properties	Metric	English	Comments
Annealing Temperature	710 - 740.6 °C	1310 - 1365 °F	Soft; Cooling: Furnace; < 235 HB

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