

Bohler-Uddeholm BÖHLER W302 ISOBLOC® H13 hot work tool steel

Category : Metal , Ferrous Metal , Tool Steel , Mold Steel

Material Notes:

Properties: Hot work tool steel featuring excellent hot tensile properties, high hot wear resistance, adequate toughness and heat checking resistance, adequate toughness and heat checking; admits water cooling. BOHLER W302 is also available in the special grades ISODISC and ISOBLOC with improved homogeneity and increased toughness. Application: Heavy duty hot work tools and dies, mainly for light alloy processing: mandrels, dies, and containers for metal tube and rod extrusion, hot extrusion equipment; tools and dies for the manufacture of hollow bodies, screws, rivets, nuts and bolts. Die casting equipment, forming dies, die inserts, hot shear blades, and plastic molding dies.

Order this product through the following link:

http://www.lookpolymers.com/polymer_Bohler-Uddeholm-BHLER-W302-ISOBLOC-H13-hot-work-tool-steel.php

Physical Properties	Metric	English	Comments
Density	7.60 g/cc	0.275 lb/in ³	
	@Temperature 800 °C	@Temperature 1470 °F	
	7.64 g/cc	0.276 lb/in ³	
	@Temperature 500 °C	@Temperature 932 °F	
	7.80 g/cc	0.282 lb/in ³	
	@Temperature 20.0 °C	@Temperature 68.0 °F	

Mechanical Properties	Metric	English	Comments
Tensile Strength, Ultimate	1100 - 1380 MPa	160000 - 200000 psi	varies with heat treatment
	@Temperature 315 °C	@Temperature 599 °F	
	1200 - 1590 MPa	174000 - 231000 psi	varies with heat treatment
	@Temperature 20.0 °C	@Temperature 68.0 °F	
Tensile Strength, Yield	900 - 1170 MPa	131000 - 170000 psi	varies with heat treatment
	@Temperature 315 °C	@Temperature 599 °F	
	1000 - 1380 MPa	145000 - 200000 psi	varies with heat treatment
	@Temperature 20.0 °C	@Temperature 68.0 °F	
Reduction of Area	50 %	50 %	
	@Temperature 20.0 °C	@Temperature 68.0 °F	
	50 %	50 %	
	@Temperature 315 °C	@Temperature 599 °F	
Modulus of Elasticity	165 GPa	23900 ksi	

Mechanical Properties	@Temperature 600 °C Metric	@Temperature 1110 °F English	Comments
	176 GPa	25500 ksi	
	@Temperature 500 °C	@Temperature 932 °F	
	215 GPa	31200 ksi	
	@Temperature 20.0 °C	@Temperature 68.0 °F	

Thermal Properties	Metric	English	Comments
CTE, linear	11.5 µm/m-°C	6.39 µin/in-°F	
	@Temperature 20.0 - 100 °C	@Temperature 68.0 - 212 °F	
	12.0 µm/m-°C	6.67 µin/in-°F	
	@Temperature 20.0 - 200 °C	@Temperature 68.0 - 392 °F	
	12.2 µm/m-°C	6.78 µin/in-°F	
	@Temperature 20.0 - 300 °C	@Temperature 68.0 - 572 °F	
	12.5 µm/m-°C	6.94 µin/in-°F	
	@Temperature 20.0 - 400 °C	@Temperature 68.0 - 752 °F	
	12.9 µm/m-°C	7.17 µin/in-°F	
	@Temperature 20.0 - 500 °C	@Temperature 68.0 - 932 °F	
	13.0 µm/m-°C	7.22 µin/in-°F	
	@Temperature 20.0 - 600 °C	@Temperature 68.0 - 1110 °F	
	13.2 µm/m-°C	7.33 µin/in-°F	
	@Temperature 20.0 - 700 °C	@Temperature 68.0 - 1290 °F	
Specific Heat Capacity	0.460 J/g-°C	0.110 BTU/lb-°F	
	@Temperature 20.0 °C	@Temperature 68.0 °F	
	0.550 J/g-°C	0.131 BTU/lb-°F	
	@Temperature 500 °C	@Temperature 932 °F	
	0.590 J/g-°C	0.141 BTU/lb-°F	
	@Temperature 600 °C	@Temperature 1110 °F	
Thermal Conductivity	24.3 W/m-K	169 BTU-in/hr-ft²-°F	Hardened and Tempered

Thermal Properties	@Temperature 100 °C Metric	@Temperature 212 °F English	Comments
	26.1 W/m-K	181 BTU-in/hr-ft ² -°F	Hardened and Tempered
	@Temperature 200 °C	@Temperature 392 °F	
	27.3 W/m-K	189 BTU-in/hr-ft ² -°F	Hardened and Tempered
	@Temperature 300 °C	@Temperature 572 °F	
	27.3 W/m-K	189 BTU-in/hr-ft ² -°F	Hardened and Tempered
	@Temperature 700 °C	@Temperature 1290 °F	
	27.5 W/m-K	191 BTU-in/hr-ft ² -°F	Hardened and Tempered
	@Temperature 600 °C	@Temperature 1110 °F	
	27.7 W/m-K	192 BTU-in/hr-ft ² -°F	Hardened and Tempered
	@Temperature 500 °C	@Temperature 932 °F	
	27.8 W/m-K	193 BTU-in/hr-ft ² -°F	Hardened and Tempered
	@Temperature 400 °C	@Temperature 752 °F	

Component Elements Properties	Metric	English	Comments
Carbon, C	0.39 %	0.39 %	
Chromium, Cr	5.2 %	5.2 %	
Iron, Fe	90.6 %	90.6 %	As Balance
Manganese, Mn	0.40 %	0.40 %	
Molybdenum, Mo	1.4 %	1.4 %	
Silicon, Si	1.1 %	1.1 %	
Vanadium, V	0.95 %	0.95 %	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.0000520 ohm-cm	0.0000520 ohm-cm	
	@Temperature 20.0 °C	@Temperature 68.0 °F	
	0.0000860 ohm-cm	0.0000860 ohm-cm	
	@Temperature 500 °C	@Temperature 932 °F	
	0.0000960 ohm-cm	0.0000960 ohm-cm	
	@Temperature 600 °C	@Temperature 1110 °F	

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