

Bohler-Uddeholm UDDEHOLM DIEVAR® Hot Work Tool Steel

Category : Metal , Ferrous Metal , Alloy Steel , Chrome-moly Steel , Tool Steel , Hot Work Steel

Material Notes:

Description: Uddeholm Dievar is a high performance chromium-molybdenum-vanadium alloyed hot work tool steel which offers a very good resistance to heat checking, gross cracking, hot wear and plastic deformation. Dievar is characterized by: Excellent toughness and ductility in all directions Good temper resistance Good high temperature strength Excellent hardenability Good dimensional stability throughout heat treatment and coating operations Applications: Heat checking is one of the most common failure mechanism e.g. in die casting and now days also in forging applications. Uddeholm Dievar's superior ductility yields the highest possible level of heat checking resistance. With Uddeholm Dievar's outstanding toughness and hardenability the resistance to heat checking can further be improved. If gross cracking is not a factor then a higher working hardness can be utilized (+2 HRC). Regardless of the dominant failure mechanism; e.g. heat checking, gross cracking, hot wear or plastic deformation. Uddeholm Dievar offers the potential for significant improvements in die life and then resulting in better tooling economy. Uddeholm Dievar is the material of choice for the high demand die casting-, forging- and extrusion industries.

Order this product through the following link:

http://www.lookpolymers.com/polymer_Bohler-Uddeholm-UDDEHOLM-DIEVAR-Hot-Work-Tool-Steel.php

Physical Properties	Metric	English	Comments
Density	7.78 g/cc	0.281 lb/in ³	hardness of 45 HRC
	7.58 g/cc	0.274 lb/in ³	hardness of 45 HRC
	@Temperature 599 °C	@Temperature 1110 °F	
Density	7.67 g/cc	0.277 lb/in ³	hardness of 45 HRC
	@Temperature 399 °C	@Temperature 750 °F	

Mechanical Properties	Metric	English	Comments
Hardness, Brinell	160	160	Soft annealed
Tensile Strength, Ultimate	1480 MPa	214000 psi	hardness of 44 HRC
	1630 MPa	237000 psi	hardness of 48 HRC
	1900 MPa	275000 psi	hardness of 52 HRC
Tensile Strength, Yield	1210 MPa	175000 psi	hardness of 44 HRC
	@Strain 0.200 %	@Strain 0.200 %	
	1380 MPa	200000 psi	hardness of 48 HRC
	@Strain 0.200 %	@Strain 0.200 %	
Tensile Strength, Yield	1560 MPa	226000 psi	hardness of 52 HRC
	@Strain 0.200 %	@Strain 0.200 %	

Mechanical Properties	Metric	English	Comments
	13 %	13 %	hardness of 44 HRC
	13 %	13 %	hardness of 48 HRC
Reduction of Area	52 %	52 %	hardness of 52 HRC
	55 %	55 %	hardness of 44 HRC
	55 %	55 %	hardness of 48 HRC
Modulus of Elasticity	210 GPa	30500 ksi	(hardness of 45 HRC)
	145 GPa	21000 ksi	hardness of 45 HRC
	@Temperature 599 °C	@Temperature 1110 °F	
	180 GPa	26100 ksi	hardness of 45 HRC
	@Temperature 399 °C	@Temperature 750 °F	

Thermal Properties	Metric	English	Comments
CTE, linear	12.6 $\mu\text{m}/\text{m}\cdot\text{°C}$	7.00 $\mu\text{in}/\text{in}\cdot\text{°F}$	hardness of 45 HRC
	@Temperature 399 °C	@Temperature 750 °F	
	13.1 $\mu\text{m}/\text{m}\cdot\text{°C}$	7.30 $\mu\text{in}/\text{in}\cdot\text{°F}$	hardened to 45 HRC
	@Temperature 599 °C	@Temperature 1110 °F	
Thermal Conductivity	31.0 W/m-K	215 BTU-in/hr-ft ² -°F	hardness of 45 HRC
	@Temperature 399 °C	@Temperature 750 °F	
	32.0 W/m-K	222 BTU-in/hr-ft ² -°F	hardness of 45 HRC
	@Temperature 599 °C	@Temperature 1110 °F	

Component Elements Properties	Metric	English	Comments
Carbon, C	0.35 %	0.35 %	
Chromium, Cr	5.0 %	5.0 %	
Manganese, Mn	0.50 %	0.50 %	
Molybdenum, Mo	2.3 %	2.3 %	
Silicon, Si	0.20 %	0.20 %	
Vanadium, V	0.60 %	0.60 %	

Processing Properties	Metric	English	Comments
Processing Temperature	1024 °C	1875 °F	hardening temperature, then quenched in oil and tempered twice at 1160°F for 2 hrs (hardness = 45 HRC)

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