Bohler-Uddeholm UDDEHOLM ALVAR 14 Hot Work Tool Steel

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

Material Notes:

Alvar 14 is a chromium-nickel-molybdenumvanadium alloyed steel ALVAR 14 is characterized by: Good toughnessGood resistance to high thermal stresses Good stability in hardeningGood through-hardening propertiesApplications: Alvar 14 is ideally suited for hot working tools such as:Support parts for extrusion tooling, e.g. backers, bolstersHot forging toolsDie for tin, lead and zinc alloysTools for hot shearing

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http://www.lookpolymers.com/polymer_Bohler-Uddeholm-UDDEHOLM-ALVAR-14-Hot-Work-Tool-Steel.php

Physical Properties	Metric	English	Comments
Density	7.78 g/cc	0.281 lb/in³	hardness of 40 HRC
	7.67 g/cc @Temperature 399 °C	0.277 lb/in³ @Temperature 750 °F	hardness of 40 HRC
	7.72 g/cc @Temperature 199 °C	0.279 lb/in³ @Temperature 390 °F	hardness of 40 HRC

Mechanical Properties	Metric	English	Comments
Hardness, Brinell	<= 250	<= 250	Soft annealed
	330 - 400	330 - 400	Hardened and tempered (36-43 HRC, 1100-1350 Nmm²)
Modulus of Elasticity	215 GPa	31200 ksi	(hardness of 40 HRC)
	185 GPa @Temperature 399 °C	26800 ksi @Temperature 750 °F	hardness of 40 HRC
	202 GPa @Temperature 199 °C	29300 ksi @Temperature 390 °F	hardness of 40 HRC

Thermal Properties	Metric	English	Comments
CTE, linear	13.1 µm/m-°C @Temperature 20.0 - 199 °C	7.30 µin/in-°F @Temperature 68.0 - 390 °F	hardness of 40 HRC
	13.9 µm/m-°C @Temperature 3.33 - 399 °C	7.70 µin/in-°F @Temperature 38.0 - 750 °F	hardness of 40 HRC
Thermal Conductivity	36.0 W/m-K @Temperature 20.0 °C	250 BTU-in/hr-ft²-°F @Temperature 68.0 °F	hardness of 40 HRC

Thermal Properties	Metric W/m-K	English BTU-in/hr-ft²-°F	Comments hardness of 40 HRC
	@Temperature 199 °C	@Temperature 390 °F	
	36.8 W/m-K @Temperature 399 °C	255 BTU-in/hr-ft²-°F @Temperature 750 °F	hardness of 40 HRC

Component Elements Properties	Metric	English	Comments
Carbon, C	0.55 %	0.55 %	
Chromium, Cr	1.1 %	1.1 %	
Manganese, Mn	0.70 %	0.70 %	
Molybdenum, Mo	0.50 %	0.50 %	
Nickel, Ni	1.7 %	1.7 %	
Silicon, Si	0.30 %	0.30 %	
Vanadium, V	0.10 %	0.10 %	

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