

Crucible Steel Nu-Die® V (AISI H13) Hot Work Tool Steel

Category : Metal , Ferrous Metal , Carbon Steel , Low Carbon Steel , Tool Steel , Hot Work Steel

Material Notes:

Nu-Die® V (AISI H13) has been the most popular, and perhaps the most versatile hot work tool steel available for many years. It provides a good balance of toughness, heat check resistance and temper resistance, along with moderate wear resistance. It is air hardenable and is used in most applications in the heat treated condition at HRC 44-52. The normal tempering temperatures for Nu-Die V are quite high (>1000°F, 540°C), allowing it to retain its heat treated hardness and strength while in service at elevated temperatures. Nu-Die V may be used for tool temperatures up to about 1000°F (540°C) with brief exposures up to 1100°F (595°C), making it ideal for forging dies, hot extrusion tooling, and die casting dies. Crucible offers two premium versions, Nu-Die XL and Nu-Die ESR, for applications requiring critical polishability, improved heat check resistance and better transverse toughness. Information provided by Crucible Specialty Metals.

Order this product through the following link:

http://www.lookpolymers.com/polymer_Crucible-Steel-Nu-Die-V-AISI-H13-Hot-Work-Tool-Steel.php

Physical Properties	Metric	English	Comments
Density	7.75 g/cc	0.280 lb/in ³	

Mechanical Properties	Metric	English	Comments
Hardness, Brinell	192 - 235	192 - 235	Annealed
Hardness, Rockwell C	40 - 42	40 - 42	Austenitizing Temperature- 1010°C, air cool, Tempering Temperature- 605°C
	51 - 53	51 - 53	Austenitizing Temperature- 1010°C, air cool, Tempering Temperature- 540°C
Modulus of Elasticity	207 GPa	30000 ksi	
Charpy Impact	14.0 J	10.3 ft-lb	Austenitizing Temperature- 1010°C, air cool, Tempering Temperature- 540°C
	24.0 J	17.7 ft-lb	Austenitizing Temperature- 1010°C, air cool, Tempering Temperature- 605°C

Thermal Properties	Metric	English	Comments
CTE, linear	11.0 µm/m-°C	6.11 µin/in-°F	
	@Temperature 20.0 - 95.0 °C	@Temperature 68.0 - 203 °F	
	11.5 µm/m-°C	6.39 µin/in-°F	
	@Temperature 20.0 - 205 °C	@Temperature 68.0 - 401 °F	
	12.6 µm/m-°C	7.00 µin/in-°F	

Thermal Properties	Metric	English	Comments
	@ Temperature 20.0 - 540 °C	@ Temperature 68.0 - 1000 °F	
Thermal Conductivity	26.0 W/m-K	180 BTU-in/hr-ft ² -°F	
	@Temperature 95.0 °C	@Temperature 203 °F	
	27.7 W/m-K	192 BTU-in/hr-ft ² -°F	
	@Temperature 315 °C	@Temperature 599 °F	
Shrinkage	-0.0600 %	-0.0600 %	Tempered 540-620°C
	@Treatment Temp. 540 - 620 °C	@Treatment Temp. 1000 - 1150 °F	

Component Elements Properties	Metric	English	Comments
Carbon, C	0.40 %	0.40 %	
Chromium, Cr	5.2 %	5.2 %	
Iron, Fe	91.15 %	91.15 %	As Remainder
Molybdenum, Mo	1.3 %	1.3 %	
Silicon, Si	1.0 %	1.0 %	
Vanadium, V	0.95 %	0.95 %	

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