

Crucible Steel HALCOMB® 425 Tool Steel, AISI H19

Category : Metal , Ferrous Metal , Tool Steel

Material Notes:

Halcomb 425 is designed for higher operating temperatures than H13, where wear resistance and heat check resistance are more critical than toughness. While H19 has excellent heat checking resistance, drastic cooling (flooding, dunking) should be avoided due to the risk of thermal shock. Halcomb 425 may be used for tool temperatures up to about 1100F, with brief exposures up to about 1200/1250F. Information provided by Crucible Industries

Order this product through the following link:

http://www.lookpolymers.com/polymer_Crucible-Steel-HALCOMB-425-Tool-Steel-AISI-H19.php

Physical Properties	Metric	English	Comments
Density	7.97 g/cc	0.288 lb/in ³	

Mechanical Properties	Metric	English	Comments
Hardness, Brinell	207 - 241	207 - 241	
Hardness, Rockwell C	39 - 40	39 - 40	oil quenched from 2100°F then tempered
	@Tempering Temp. 677 °C	@Tempering Temp. 1250 °F	
	45 - 46	45 - 46	
	@Tempering Temp. 649 °C	@Tempering Temp. 1200 °F	
	49 - 50	49 - 50	
	@Tempering Temp. 621 °C	@Tempering Temp. 1150 °F	
	51 - 52	51 - 52	
@Tempering Temp. 593 °C	@Tempering Temp. 1100 °F		
Modulus of Elasticity	54 - 55	54 - 55	oil quenched from 2100°F then tempered
	@Tempering Temp. 566 °C	@Tempering Temp. 1050 °F	
Charpy Impact	56 - 67	56 - 67	oil quenched from 2100°F then tempered
	@Tempering Temp. 538 °C	@Tempering Temp. 1000 °F	
Modulus of Elasticity	207 GPa	30000 ksi	
Charpy Impact	8.13 J	6.00 ft-lb	48-50 HRC; V-notch
	@Temperature 21.1 °C	@Temperature 70.0 °F	

Mechanical Properties	Metric	English	Comments
	14.9 J @Temperature 21.1 °C	11.0 ft-lb @Temperature 70.0 °F	38-40 HRC; V-notch
	17.6 J @Temperature 260 °C	13.0 ft-lb @Temperature 500 °F	48-50 HRC; V-notch
	20.3 J @Temperature 538 °C	15.0 ft-lb @Temperature 1000 °F	48-50 HRC; V-notch
	31.2 J @Temperature 260 °C	23.0 ft-lb @Temperature 500 °F	38-40 HRC; V-notch
	40.7 J @Temperature 538 °C	30.0 ft-lb @Temperature 1000 °F	38-40 HRC; V-notch

Thermal Properties	Metric	English	Comments
CTE, linear	11.0 µm/m-°C @Temperature 21.1 - 204 °C	6.10 µin/in-°F @Temperature 70.0 - 400 °F	
	12.1 µm/m-°C @Temperature 21.1 - 427 °C	6.70 µin/in-°F @Temperature 70.0 - 800 °F	
	13.0 µm/m-°C @Temperature 21.1 - 649 °C	7.20 µin/in-°F @Temperature 70.0 - 1200 °F	
Thermal Conductivity	2.23 W/m-K @Temperature 93.3 °C	15.5 BTU-in/hr-ft ² -°F @Temperature 200 °F	
	2.45 W/m-K @Temperature 316 °C	17.0 BTU-in/hr-ft ² -°F @Temperature 600 °F	

Component Elements Properties	Metric	English	Comments
Carbon, C	0.40 %	0.40 %	
Chromium, Cr	4.25 %	4.25 %	
Cobalt, Co	4.2 %	4.2 %	
Iron, Fe	83.65 %	83.65 %	as balance
Manganese, Mn	0.40 %	0.40 %	
Molybdenum, Mo	0.40 %	0.40 %	

Component Elements Properties	Metric	English	Comments
Tungsten, W	4.2 %	4.2 %	
Vanadium, V	2.1 %	2.1 %	

Chemical Properties	Metric	English	Comments
Critical Temperature	838 °C	1540 °F	

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