

Latrobe LSS,ç H13 Tool Steel (ASTM H13)

Category : Metal , Ferrous Metal , Alloy Steel , Tool Steel

Material Notes:

TLS H13 tool steel is a versatile chromium-molybdenum hot work steel that is widely used in hot work and cold work tooling applications. The hot hardness (hot strength) of H13 resists thermal fatigue cracking which occurs as a result of cyclic heating and cooling cycles in hot work tooling applications. Because of its excellent combination of high toughness and resistance to thermal fatigue cracking (also known as heat checking) H13 is used for more hot work tooling applications than any other tool steel. Because of its high toughness and very good stability in heat treatment, H13 is also used in a variety of cold work tooling applications. In these applications, H13 provides better hardenability (through hardening in large section thicknesses) and better wear resistance than common alloy steels such as 4140. Typical applications include inserts, cores, and cavities for die casting dies, die casting shot sleeves, hot forging dies, extrusion dies, and plastic mold cavities and components that require high toughness. Timken sold Latrobe in December 2006. They are now Latrobe Specialty Steels Co.

Order this product through the following link:

http://www.lookpolymers.com/polymer_Latrobe-LSS-H13-Tool-Steel-ASTM-H13.php

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

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell C	50	50	Air Cooled from 982 ^o C, 30 minutes
	52.5	52.5	Air Cooled from 1010 ^o C, 30 minutes
	54	54	Air Cooled from 1032 ^o C, 30 minutes
Modulus of Elasticity	207 GPa	30000 ksi	
	159 GPa	23000 ksi	
	@Temperature 538 ^o C	@Temperature 1000 ^o F	
Machinability	186 GPa	27000 ksi	
	@Temperature 204 ^o C	@Temperature 400 ^o F	
Charpy Impact	65 - 70 %	65 - 70 %	1% Carbon Steel
	8.13 J	6.00 ft-lb	V-Notch; Air Cooled from 1010 ^o C; 535 ^o C Temper Temperature
	19.0 J	14.0 ft-lb	V-Notch; Air Cooled from 1010 ^o C; 635 ^o C Temper Temperature
	35.3 J	26.0 ft-lb	V-Notch; Air Cooled from 1010 ^o C; 260 ^o C Temper Temperature

Mechanical Properties	Metric	English	Comments
CTE, linear	11.3 $\mu\text{m}/\text{m}\cdot\text{Å}^\circ\text{C}$	6.28 $\mu\text{in}/\text{in}\cdot\text{Å}^\circ\text{F}$	
	@Temperature 21.0 - 204 $\text{Å}^\circ\text{C}$	@Temperature 69.8 - 399 $\text{Å}^\circ\text{F}$	
	13.5 $\mu\text{m}/\text{m}\cdot\text{Å}^\circ\text{C}$	7.50 $\mu\text{in}/\text{in}\cdot\text{Å}^\circ\text{F}$	
	@Temperature 21.0 - 538 $\text{Å}^\circ\text{C}$	@Temperature 69.8 - 1000 $\text{Å}^\circ\text{F}$	
Thermal Conductivity	17.6 W/m-K	122 BTU-in/hr-ft $\text{Å}^2\cdot\text{Å}^\circ\text{F}$	
	@Temperature 27.0 $\text{Å}^\circ\text{C}$	@Temperature 80.6 $\text{Å}^\circ\text{F}$	
	23.4 W/m-K	162 BTU-in/hr-ft $\text{Å}^2\cdot\text{Å}^\circ\text{F}$	
	@Temperature 204 $\text{Å}^\circ\text{C}$	@Temperature 399 $\text{Å}^\circ\text{F}$	
	26.8 W/m-K	186 BTU-in/hr-ft $\text{Å}^2\cdot\text{Å}^\circ\text{F}$	
	@Temperature 649 $\text{Å}^\circ\text{C}$	@Temperature 1200 $\text{Å}^\circ\text{F}$	

Component Elements Properties	Metric	English	Comments
Carbon, C	0.40 %	0.40 %	
Chromium, Cr	5.25 %	5.25 %	
Iron, Fe	90.6 %	90.6 %	
Manganese, Mn	0.40 %	0.40 %	
Molybdenum, Mo	1.35 %	1.35 %	
Silicon, Si	1.0 %	1.0 %	
Vanadium, V	1.0 %	1.0 %	

Chemical Properties	Metric	English	Comments
Critical Temperature	802 $\text{Å}^\circ\text{C}$	1480 $\text{Å}^\circ\text{F}$	Ar1
	826 $\text{Å}^\circ\text{C}$	1520 $\text{Å}^\circ\text{F}$	Ar3
	840 $\text{Å}^\circ\text{C}$	1540 $\text{Å}^\circ\text{F}$	Ac1
	890 $\text{Å}^\circ\text{C}$	1630 $\text{Å}^\circ\text{F}$	Ac3

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