

Latrobe LSSâ„¢ H11 Hot Work Tool Steel (ASTM H11)

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

Material Notes:

TLS H11 hot work tool steel is a 5% chromium hot work steel that is characterized by excellent impact toughness. It contains less vanadium than the widely-used H13 hot work tool steel. This provides for the higher toughness, with some reduction in wear resistance and temper resistance. TLS H11 hot work tool steel is a deep-hardening, air-hardening steel that exhibits minimal size change during heat treatment. It has good resistance to thermal fatigue cracking (heat checking) and excellent resistance to gross cracking and thermal shock when water cooled in service. TLS H11 hot work tool steel is recommended for hot tooling applications where maximum resistance to cracking is required. Such applications include hot punches, die casting dies, forging dies, hot shear blades, hot gripper dies, and extrusion tooling. Information Provided by Timken Latrobe Steel. 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-H11-Hot-Work-Tool-Steel-ASTM-H11.php

Physical Properties	Metric	English	Comments
Specific Gravity	7.80 g/cc	7.80 g/cc	
Density	7.81 g/cc	0.282 lb/inÂ³	

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell C	52.5	52.5	Air Cooled from 982Â°C, 45 minutes
	56	56	Air Cooled from 1010Â°C, 45 minutes
	57	57	Air Cooled from 1038Â°C, 45 minutes
Modulus of Elasticity	207 GPa	30000 ksi	
	159 GPa	23000 ksi	
	@Temperature 538 Â°C	@Temperature 1000 Â°F	
	190 GPa	27500 ksi	
	@Temperature 204 Â°C	@Temperature 400 Â°F	
Machinability	75 - 80 %	75 - 80 %	1% Carbon Steel
Charpy Impact	13.6 J	10.0 ft-lb	V-Notch; Air Cooled from 1010Â°C; 535Â°C Temper Temperature
	27.1 J	20.0 ft-lb	V-Notch; Air Cooled from 1010Â°C; 650Â°C Temper Temperature
	33.9 J	25.0 ft-lb	V-Notch; Air Cooled from 1010Â°C; 370 Temper Temperature

Thermal Properties	Metric	English	Comments
CTE, linear	11.82 $\mu\text{m/m-}^{\circ}\text{C}$	6.567 $\mu\text{in/in-}^{\circ}\text{F}$	
	@Temperature 21.0 - 204 $^{\circ}\text{C}$	@Temperature 69.8 - 399 $^{\circ}\text{F}$	
	13.1 $\mu\text{m/m-}^{\circ}\text{C}$	7.28 $\mu\text{in/in-}^{\circ}\text{F}$	
	@Temperature 21.0 - 538 $^{\circ}\text{C}$	@Temperature 69.8 - 1000 $^{\circ}\text{F}$	
Thermal Conductivity	17.58 W/m-K	122.0 BTU-in/hr-ft $^{\circ}\text{F}$	
	@Temperature 27.0 $^{\circ}\text{C}$	@Temperature 80.6 $^{\circ}\text{F}$	
	23.84 W/m-K	165.4 BTU-in/hr-ft $^{\circ}\text{F}$	
	@Temperature 204 $^{\circ}\text{C}$	@Temperature 399 $^{\circ}\text{F}$	
	26.78 W/m-K	185.9 BTU-in/hr-ft $^{\circ}\text{F}$	
	@Temperature 1200 $^{\circ}\text{C}$	@Temperature 2190 $^{\circ}\text{F}$	

Component Elements Properties	Metric	English	Comments
Carbon, C	0.40 %	0.40 %	
Chromium, Cr	5.0 %	5.0 %	
Iron, Fe	91.5 %	91.5 %	
Manganese, Mn	0.30 %	0.30 %	
Molybdenum, Mo	1.3 %	1.3 %	
Silicon, Si	1.0 %	1.0 %	
Vanadium, V	0.50 %	0.50 %	

Chemical Properties	Metric	English	Comments
Critical Temperature	732 $^{\circ}\text{C}$	1350 $^{\circ}\text{F}$	Ar3
	793 $^{\circ}\text{C}$	1460 $^{\circ}\text{F}$	Ar1
	830 $^{\circ}\text{C}$	1530 $^{\circ}\text{F}$	Ac1
	852 $^{\circ}\text{C}$	1570 $^{\circ}\text{F}$	Ac3

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