

## Latrobe LSS H12 Hot Work Tool Steel (ASTM H12)

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

### Material Notes:

TLS H12 hot work tool steel is a 5% chromium, general-purpose hot work steel that is characterized by excellent impact toughness. It contains less vanadium than the widely-used H13 hot work tool steel, and the tungsten content provides better temper resistance. TLS H12 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 H12 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-H12-Hot-Work-Tool-Steel-ASTM-H12.php](http://www.lookpolymers.com/polymer_Latrobe-LSS-H12-Hot-Work-Tool-Steel-ASTM-H12.php)

Physical Properties	Metric	English	Comments
Specific Gravity	7.68 g/cc	7.68 g/cc	
Density	7.67 g/cc	0.277 lb/in <sup>3</sup>	

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell C	53	53	Air Cooled from 982 <sup>o</sup> C, 45 minutes
	54	54	Air Cooled from 1010 <sup>o</sup> C, 45 minutes
	55	55	Air Cooled from 1038 <sup>o</sup> C, 45 minutes
Modulus of Elasticity	207 GPa	30000 ksi	
	159 GPa	23000 ksi	
	@Temperature 538 <sup>o</sup> C	@Temperature 1000 <sup>o</sup> F	
Machinability	186 GPa	27000 ksi	
	@Temperature 204 <sup>o</sup> C	@Temperature 400 <sup>o</sup> F	
Charpy Impact	75 - 80 %	75 - 80 %	1% Carbon Steel
	23.0 J	17.0 ft-lb	V-Notch; Air Cooled from 1010 <sup>o</sup> C; 649 <sup>o</sup> C Temper Temperature
	31.2 J	23.0 ft-lb	V-Notch; Air Cooled from 1010 <sup>o</sup> C; As Quenched
	33.9 J	25.0 ft-lb	V-Notch; Air Cooled from 1010 <sup>o</sup> C; 172 <sup>o</sup> C Temper Temperature

Thermal Properties	Metric	English	Comments
CTE, linear	11.7 $\mu\text{m}/\text{m}\cdot\text{Å}^\circ\text{C}$	6.50 $\mu\text{in}/\text{in}\cdot\text{Å}^\circ\text{F}$	
	@Temperature 27.0 - 204 $\text{Å}^\circ\text{C}$	@Temperature 80.6 - 399 $\text{Å}^\circ\text{F}$	
	14.0 $\mu\text{m}/\text{m}\cdot\text{Å}^\circ\text{C}$	7.78 $\mu\text{in}/\text{in}\cdot\text{Å}^\circ\text{F}$	
	@Temperature 260 - 649 $\text{Å}^\circ\text{C}$	@Temperature 500 - 1200 $\text{Å}^\circ\text{F}$	
Thermal Conductivity	18.9 W/m-K	131 BTU-in/hr-ft $\text{Å}^2\cdot\text{Å}^\circ\text{F}$	
	@Temperature 27.0 $\text{Å}^\circ\text{C}$	@Temperature 80.6 $\text{Å}^\circ\text{F}$	
	25.6 W/m-K	178 BTU-in/hr-ft $\text{Å}^2\cdot\text{Å}^\circ\text{F}$	
	@Temperature 204 $\text{Å}^\circ\text{C}$	@Temperature 399 $\text{Å}^\circ\text{F}$	
	27.9 W/m-K	194 BTU-in/hr-ft $\text{Å}^2\cdot\text{Å}^\circ\text{F}$	
	@Temperature 760 $\text{Å}^\circ\text{C}$	@Temperature 1400 $\text{Å}^\circ\text{F}$	

Component Elements Properties	Metric	English	Comments
Carbon, C	0.35 %	0.35 %	
Chromium, Cr	5.0 %	5.0 %	
Iron, Fe	90.65 %	90.65 %	
Manganese, Mn	0.30 %	0.30 %	
Molybdenum, Mo	1.4 %	1.4 %	
Silicon, Si	1.0 %	1.0 %	
Tungsten, W	1.3 %	1.3 %	
Vanadium, V	0.30 %	0.30 %	

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