

## Latrobe LSS™ H21 Hot Work Tool Steel (ASTM H21)

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

### Material Notes:

TLS H21 hot work tool steel is a low-carbon, tungsten hot work steel that exhibits excellent resistance to softening at elevated temperature. This grade is intended for elevated-temperature service in which tool operate at dull-red heat. For best results, TLS H21 hot work steel should not be water cooled in service unless the tool design includes a continuous flow of internal water cooling. Spray cooling and thermal shock should be avoided. Tools should be thoroughly preheated before entering service. TLS H21 hot work tool steel is recommended for difficult hot work tooling applications such as brass extrusion tooling, brass die casting dies, hot punches, and forging die inserts. 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-H21-Hot-Work-Tool-Steel-ASTM-H21.php](http://www.lookpolymers.com/polymer_Latrobe-LSS-H21-Hot-Work-Tool-Steel-ASTM-H21.php)

Physical Properties	Metric	English	Comments
Specific Gravity	8.19 g/cc	8.19 g/cc	
Density	8.19 g/cc	0.296 lb/in <sup>3</sup>	

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell C	50	50	Oil Quenched from 1093°C, 10 minutes
	52	52	Oil Quenched from 1177°C, 10 minutes
	53	53	Oil Quenched from 1204°C, 10 minutes
Modulus of Elasticity	207 GPa	30000 ksi	
Machinability	55 - 60 %	55 - 60 %	1% Carbon Steel
Charpy Impact	2.71 J	2.00 ft-lb	V-Notch; Oil Quenched from 1177°C; 560°C Temper Temperature
	12.2 J	9.00 ft-lb	V-Notch; Oil Quenched from 1177°C; 650°C Temper Temperature
	12.2 J	9.00 ft-lb	V-Notch; Oil Quenched from 1177°C; 370°C Temper Temperature

Thermal Properties	Metric	English	Comments
CTE, linear	10.96 µm/m-°C	6.089 µin/in-°F	
	@Temperature 21.0 - 204 °C	@Temperature 69.8 - 399 °F	
	13.12 µm/m-°C	7.289 µin/in-°F	
	@Temperature 21.0 -	@Temperature 69.8 -	

Thermal Properties	649 °C Metric	1200 °F English	Comments
Thermal Conductivity	25.14 W/m-K @Temperature 27.0 °C	174.5 BTU-in/hr-ft <sup>2</sup> -°F @Temperature 80.6 °F	
	28.91 W/m-K @Temperature 649 °C	200.6 BTU-in/hr-ft <sup>2</sup> -°F @Temperature 1200 °F	
	29.75 W/m-K @Temperature 204 °C	206.5 BTU-in/hr-ft <sup>2</sup> -°F @Temperature 399 °F	

Component Elements Properties	Metric	English	Comments
Carbon, C	0.33 %	0.33 %	
Chromium, Cr	3.3 %	3.3 %	
Iron, Fe	86.07 %	86.07 %	
Manganese, Mn	0.25 %	0.25 %	
Silicon, Si	0.45 %	0.45 %	
Tungsten, W	9.15 %	9.15 %	
Vanadium, V	0.45 %	0.45 %	

Chemical Properties	Metric	English	Comments
Critical Temperature	777 °C	1430 °F	Ar3
	838 °C	1540 °F	Ar1
	854 °C	1570 °F	Ac1
	924 °C	1700 °F	Ac3

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