

## Latrobe LSS, D3 Tool Steel (ASTM D3)

Category : Metal , Ferrous Metal , Alloy Steel , Carbon Steel , High Carbon Steel , Tool Steel , Oil-Hardening Steel

### Material Notes:

TLS D3 tool steel is a high-carbon, high-chromium, oil-hardening tool steel that is characterized by a relatively high attainable hardness and numerous, large, chromium-rich alloy carbides in the microstructure. These carbides provide good resistance to wear from sliding contact with other metals and abrasive materials. TLS D3 exhibits excellent stability in heat treatment, holding size almost as well as the air-hardening, high-carbon, high-chromium die steels such as D2. Typical applications for TLS D3 tool steel include forming rolls, drawing dies, forming, powder compaction tooling, and lamination dies. 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-D3-Tool-Steel-ASTM-D3.php](http://www.lookpolymers.com/polymer_Latrobe-LSS-D3-Tool-Steel-ASTM-D3.php)

Physical Properties	Metric	English	Comments
Specific Gravity	7.87 g/cc	7.87 g/cc	
Density	7.86 g/cc	0.284 lb/in <sup>3</sup>	

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell C	63.5	63.5	Air Cooled from 913 <sup>°</sup> C, 45 minutes
	64	64	Air Cooled from 982 <sup>°</sup> C, 30 minutes
	64.5	64.5	Air Cooled from 927 <sup>°</sup> C, 30 minutes
Modulus of Elasticity	207 GPa	30000 ksi	
Machinability	45 - 50 %	45 - 50 %	1% Carbon Steel
Izod Impact Unnotched	20.3 J	15.0 ft-lb	Oil Quenched from 954 <sup>°</sup> C; As Quenched
	54.2 J	40.0 ft-lb	Oil Quenched from 954 <sup>°</sup> C; 593 <sup>°</sup> C Temper Temperature

Thermal Properties	Metric	English	Comments
CTE, linear	11.84 $\mu\text{m/m-}^{\circ}\text{C}$	6.578 $\mu\text{in/in-}^{\circ}\text{F}$	
	@Temperature 38.0 - 260 <sup>°</sup> C	@Temperature 100 - 500 <sup>°</sup> F	
	13.81 $\mu\text{m/m-}^{\circ}\text{C}$	7.672 $\mu\text{in/in-}^{\circ}\text{F}$	
	@Temperature 38.0 - 538 <sup>°</sup> C	@Temperature 100 - 1000 <sup>°</sup> F	

Component Elements Properties	Metric	English	Comments
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<div>Carbon C</div> Component Elements Properties	<div>2.15 %</div> Metric	<div>2.15 %</div> English	Comments
Chromium, Cr	12.25 %	12.25 %	
Iron, Fe	84.55 %	84.55 %	
Manganese, Mn	0.40 %	0.40 %	
Silicon, Si	0.40 %	0.40 %	
Vanadium, V	0.25 %	0.25 %	

Chemical Properties	Metric	English	Comments
Critical Temperature	743 Â°C	1370 Â°F	Ar3
	766 Â°C	1410 Â°F	Ar1
	782 Â°C	1440 Â°F	Ac1
	832 Â°C	1530 Â°F	Ac3

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