

Latrobe DuraTech[®] M4 High Carbon Powder Metal High Speed Steel (ASTM M4)

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

Material Notes:

DuraTech M4 high speed steel is an extremely versatile high speed steel which provides a unique combination of high wear resistance with high impact toughness and transverse bend strength. A large volume of vanadium carbides provides the high wear resistance. The high impact toughness and high transverse bend strength are results of the fine grain size, small carbides, and superior cleanliness of the powder metallurgy (PM) microstructure. DuraTech M4 offers improved cutting tool life compared to conventionally-wrought M1, M2, M7, and other lower-alloyed high speed steels. DuraTech M4 also excels in cold work tooling applications, where it provides better toughness and wear resistance than high-carbon, high-chromium die steels such as D2 and D3. 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-DuraTech-M4-High-Carbon-Powder-Metal-High-Speed-Steel-ASTM-M4.php

Physical Properties	Metric	English	Comments
Specific Gravity	7.92 g/cc	7.92 g/cc	
Density	7.92 g/cc	0.286 lb/in ³	

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell C	60	60	Oil Quenched from 1038 [°] C, 45 minutes
	63	63	Oil Quenched from 1093 [°] C, 20 minutes
	63.5	63.5	Oil Quenched from 1204 [°] C, 5 minutes
Modulus of Elasticity	214 GPa	31000 ksi	
Machinability	40 - 45 %	40 - 45 %	1% Carbon Steel

Thermal Properties	Metric	English	Comments
CTE, linear	9.53 $\mu\text{m/m-}^{\circ}\text{C}$	5.29 $\mu\text{in/in-}^{\circ}\text{F}$	
	@Temperature 38.0 - 260 $^{\circ}\text{C}$	@Temperature 100 - 500 $^{\circ}\text{F}$	
	12.24 $\mu\text{m/m-}^{\circ}\text{C}$	6.800 $\mu\text{in/in-}^{\circ}\text{F}$	
	@Temperature 38.0 - 649 $^{\circ}\text{C}$	@Temperature 100 - 1200 $^{\circ}\text{F}$	

Component Elements Properties	Metric	English	Comments

Carbon C Component Elements Properties	1.45 % Metric	1.45 % English	Comments
Chromium, Cr	4.5 %	4.5 %	
Iron, Fe	79 %	79 %	
Manganese, Mn	0.25 %	0.25 %	
Molybdenum, Mo	5.2 %	5.2 %	
Silicon, Si	0.25 %	0.25 %	
Tungsten, W	5.5 %	5.5 %	
Vanadium, V	3.85 %	3.85 %	

Chemical Properties	Metric	English	Comments
Critical Temperature	840 Â°C	1540 Â°F	Ac1

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