

Latrobe Stark,ç ASTM M4 High Speed Steel

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

Material Notes:

STARK (M4) is a super high speed steel with very high carbon and vanadium contents for exceptional abrasion resistance. It is well suited for premium cutting tools of all types, particularly those used for machining abrasive alloys, castings, and heat-treated materials. The high carbon content enables Stark to be hardened in excess of 65 HRC. However, the high hardness and high vanadium carbide content make Stark more difficult to grind after heat treatment compared to Double Six (M2) and other high speed steels. Typical applications for Stark high speed steel include form tools, spade drills, end mills, taps and dies, punches and broach 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-Stark-ASTM-M4-High-Speed-Steel.php

Physical Properties	Metric	English	Comments
Specific Gravity	7.97 g/cc	7.97 g/cc	
Density	7.97 g/cc	0.288 lb/in ³	

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell C	64.5	64.5	Oil Quenched from 1232 ^o C
	65	65	Oil Quenched from 1204 ^o C
	65.5	65.5	Oil Quenched from 1149 ^o C
Modulus of Elasticity	207 GPa	30000 ksi	
Machinability	35 - 40 %	35 - 40 %	1% Carbon Steel
Izod Impact Unnotched	35.3 J	26.0 ft-lb	Oil Quenched at 1204 ^o C; 538 ^o C Temper Temperature
	44.7 J	33.0 ft-lb	Oil Quenched at 1204 ^o C; 482 ^o C Temper Temperature
	46.1 J	34.0 ft-lb	Oil Quenched at 1204 ^o C; 622 ^o C Temper Temperature

Thermal Properties	Metric	English	Comments
CTE, linear	11.21 $\mu\text{m/m-}^{\circ}\text{C}$	6.228 $\mu\text{in/in-}^{\circ}\text{F}$	
	@Temperature 38.0 - 427 $^{\circ}\text{C}$	@Temperature 100 - 801 $^{\circ}\text{F}$	
	12.26 $\mu\text{m/m-}^{\circ}\text{C}$	6.811 $\mu\text{in/in-}^{\circ}\text{F}$	
	@Temperature 38.0 - 816 $^{\circ}\text{C}$	@Temperature 100 - 1500 $^{\circ}\text{F}$	

Component Elements Properties	Metric	English	Comments
Carbon, C	1.32 %	1.32 %	
Chromium, Cr	4.5 %	4.5 %	
Iron, Fe	80.03 %	80.03 %	
Manganese, Mn	0.25 %	0.25 %	
Molybdenum, Mo	4.4 %	4.4 %	
Silicon, Si	0.30 %	0.30 %	
Tungsten, W	5.35 %	5.35 %	
Vanadium, V	3.85 %	3.85 %	

Chemical Properties	Metric	English	Comments
Critical Temperature	841 Â°C	1550 Â°F	Ac1

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