

Assab Steels DF-3 Cold Work Steel

Category : Metal , Ferrous Metal , Tool Steel , Cold Work Steel , Oil-Hardening Steel

Material Notes:

DF-3 general purpose oil-hardening tool steel is a versatile manganese-chromium-tungsten steel suitable for a wide variety of cold-work applications. Its main characteristics include: Good machinability Good dimensional stability in hardening A good combination of high surface hardness and toughness after hardening and tempering. These characteristics combine to give a steel suitable for the manufacture of tooling with good tool-life and high production economy. DF-3 can be supplied in various finishes including hot-rolled, pre-machined, fine-machined and precision ground. It is also available in the form of hollow bar. AISI 01

Order this product through the following link:

http://www.lookpolymers.com/polymer_Assab-Steels-DF-3-Cold-Work-Steel.php

Physical Properties	Metric	English	Comments
Density	7.81 g/cc	0.282 lb/in ³	
	7.70 g/cc	0.278 lb/in ³	
	@Temperature 400 °C	@Temperature 752 °F	
Density	7.75 g/cc	0.280 lb/in ³	
	@Temperature 200 °C	@Temperature 392 °F	

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell C	38.5	38.5	790°C Austenitizing temperature, for tempering at 550°C
	42	42	820°C Austenitizing temperature, for tempering at 550°C
	58	58	790°C Austenitizing temperature, for tempering at 250°C
	60	60	820°C Austenitizing temperature, for tempering at 250°C
	62	62	Hardened and tempered.
	63	63	780°C hardening temp
	64	64	At 860°C hardening temp
	64.6	64.6	820°C hardening temp
Modulus of Elasticity	190 GPa	27600 ksi	
	170 GPa	24700 ksi	
	@Temperature 400 °C	@Temperature 752 °F	
Compressive Strength	1250 MPa	181000 psi	HRC 45 R_c>0.2

Mechanical Properties	Metric MPa	English psi	Comments
	2050 MPa	297000 psi	HRC 55 R_c>0.2
	2250 MPa	326000 psi	HRC 62 R_c>0.2
	2450 MPa	355000 psi	HRC 55 R_{cm}>
	3050 MPa	442000 psi	HRC 62 R_{cm}>

Thermal Properties	Metric	English	Comments
CTE, linear	11.4 $\mu\text{m}/\text{m}\cdot^{\circ}\text{C}$	6.33 $\mu\text{in}/\text{in}\cdot^{\circ}\text{F}$	
	@Temperature 20.0 - 400 $^{\circ}\text{C}$	@Temperature 68.0 - 752 $^{\circ}\text{F}$	
	11.7 $\mu\text{m}/\text{m}\cdot^{\circ}\text{C}$	6.50 $\mu\text{in}/\text{in}\cdot^{\circ}\text{F}$	
	@Temperature 20.0 - 200 $^{\circ}\text{C}$	@Temperature 68.0 - 392 $^{\circ}\text{F}$	
Specific Heat Capacity	0.460 J/g- $^{\circ}\text{C}$	0.110 BTU/lb- $^{\circ}\text{F}$	
	@Temperature 20.0 $^{\circ}\text{C}$	@Temperature 68.0 $^{\circ}\text{F}$	
Thermal Conductivity	32.0 W/m-K	222 BTU-in/hr-ft ² - $^{\circ}\text{F}$	
	@Temperature 20.0 $^{\circ}\text{C}$	@Temperature 68.0 $^{\circ}\text{F}$	
	33.0 W/m-K	229 BTU-in/hr-ft ² - $^{\circ}\text{F}$	
	@Temperature 200 $^{\circ}\text{C}$	@Temperature 392 $^{\circ}\text{F}$	
	34.0 W/m-K	236 BTU-in/hr-ft ² - $^{\circ}\text{F}$	
	@Temperature 400 $^{\circ}\text{C}$	@Temperature 752 $^{\circ}\text{F}$	

Component Elements Properties	Metric	English	Comments
Carbon, C	0.90 %	0.90 %	
Chromium, Cr	0.85 %	0.85 %	
Iron, Fe	96.5 %	96.5 %	
Manganese, Mn	1.2 %	1.2 %	
Tungsten, W	0.55 %	0.55 %	

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