

Latrobe CSS-42L,ç VIM-VAR High Performance Carburizing Stainless Steel; Bearing and Gear Steel

Category : Metal , Ferrous Metal , Stainless Steel

Material Notes:

CSS-42L,ç is a case carburizable stainless steel alloy intended to be used at operating temperatures up to 800°F (427°C). The alloy is able to achieve and maintain a high surface hardness when carburized and heat treated that combines high fracture toughness, hot hardness, metal-to-metal wear resistance and corrosion resistance while retaining core ductility and strength. The alloy is particularly suited for use in bearing applications and also in cams, shafts, gears, bolts and like articles exposed to elevated temperature and corrosive atmospheres. This material is covered by U.S. Patent No. 5,424,028. 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-CSS-42L-VIM-VAR-High-Performance-Carburizing-Stainless-Steel-Bearing-and-Gear-Steel.php

Physical Properties	Metric	English	Comments
Density	7.94 g/cc	0.287 lb/in ³	

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell C	68	68	RT
	63	63	
	@Temperature 427 Â°C	@Temperature 800 Â°F	
Tensile Strength, Ultimate	1760 MPa	255200 psi	496Â°C Temper Temperature
	1840 MPa	267000 psi	524Â°C Temper Temperature
Tensile Strength, Yield	1336 MPa	193800 psi	496Â°C Temper Temperature
	1340 MPa	194000 psi	524Â°C Temper Temperature
Elongation at Break	16 %	16 %	524Â°C Temper Temperature
	18.5 %	18.5 %	496Â°C Temper Temperature
Reduction of Area	54.6 %	54.6 %	524Â°C Temper Temperature
	56.2 %	56.2 %	496Â°C Temper Temperature
Modulus of Elasticity	207.9 GPa	30160 ksi	496Â°C Temper Temperature
	211.3 GPa	30650 ksi	524Â°C Temper Temperature
Fracture Toughness	113 MPa-m ^{1/2}	103 ksi-in ^{1/2}	496Â°C Temper Temperature, TL Orientation, Core; ASTM E399
	@Treatment Temp. 496 Â°C	@Treatment Temp. 925 Â°F	

Mechanical Properties	Metric	English	Comments
Thermal Properties	Metric	English	Comments
CTE, linear	10.95 $\mu\text{m/m-}^{\circ}\text{C}$	6.083 $\mu\text{in/in-}^{\circ}\text{F}$	
	@Temperature 20.0 - 100 $^{\circ}\text{C}$	@Temperature 68.0 - 212 $^{\circ}\text{F}$	
	12.48 $\mu\text{m/m-}^{\circ}\text{C}$	6.933 $\mu\text{in/in-}^{\circ}\text{F}$	
	@Temperature 20.0 - 600 $^{\circ}\text{C}$	@Temperature 68.0 - 1110 $^{\circ}\text{F}$	
Specific Heat Capacity	0.452 J/g- $^{\circ}\text{C}$	0.108 BTU/lb- $^{\circ}\text{F}$	
	@Temperature 23.0 $^{\circ}\text{C}$	@Temperature 73.4 $^{\circ}\text{F}$	
	0.644 J/g- $^{\circ}\text{C}$	0.154 BTU/lb- $^{\circ}\text{F}$	
	@Temperature 900 $^{\circ}\text{C}$	@Temperature 1650 $^{\circ}\text{F}$	
Thermal Conductivity	15.3 W/m-K	106 BTU-in/hr-ft 2 - $^{\circ}\text{F}$	
	29.9 W/m-K	208 BTU-in/hr-ft 2 - $^{\circ}\text{F}$	
	@Temperature 900 $^{\circ}\text{C}$	@Temperature 1650 $^{\circ}\text{F}$	

Component Elements Properties	Metric	English	Comments
Carbon, C	0.12 %	0.12 %	
Chromium, Cr	14 %	14 %	
Cobalt, Co	12.5 %	12.5 %	
Iron, Fe	66.01 %	66.01 %	
Molybdenum, Mo	4.75 %	4.75 %	
Nickel, Ni	2.0 %	2.0 %	
Niobium, Nb (Columbium, Cb)	0.020 %	0.020 %	
Vanadium, V	0.60 %	0.60 %	

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