AMS6491 - M50

Additional Information

M50 has similarities to the following standard designations and specification	
AMS 6491 VIM-VAR	Snecma - DMD 119.20
AMS 6490 VAR	RHP / AEB - 14-06
G.E B50TF103 & C50TF56	FAG - FL-LA 2372.2 SX, PL 1.801A
Pratt & Whitney - PWA 793, PWA 725 & CPW 378	Barden Corp - SA-2947
Rolls Royce - MSRR 6083	Bell Helicopter - 299-947-087
MRC-SKF - MS-45, MS-171, MS-187	NHBB -PES 1.105
Timken Aerospace - EMS 5.1, EMS 5.4, EMS 5.7, EMS 88	NHBB -PES 1.105
SNFA - CFR 5200	RBC - MP-19
McGill Mfg - 10-42	Winsted - MS115

Chemical Properties

Element	Chemical Composition %
Carbon (C)	0.85
Silicon (Si)	0.20
Manganese (Mn)	0.30
Chromium (Cr)	4.10
Molybdenum (Mo)	4.25
Vanadium (V)	1.00
Iron (Fe)	Balance

Heat Treatment

Annealing	Heat uniformly to 899 °C and soak 8-10 hours. Cool 14-28 °C per hour to 538 °C. Air Cool.
	Typical annealed hardness: 235 HBW
Hardening	Harden in a properly rectified salt bath or controlled atmosphere furnace. Preheat at 815-871 °C
	and equalise. Raise uniformly to 1093-1107 °C. Quench into salt maintained at 566-621 °C or warm
	oil. Complete the quench in still air to at least 66 °C prior to beginning the tempering
	temperature for 2-4 hours
Tempering	Temper between 524-552 °C for most applications. Parts should always be double tempered and, in
	some instances, it may be advantageous to use a third tempering cycle. Hold at tempering temperature
	for 2-4 hours.

Machinability Rating

In the annealed condition M50 has a machinability rating of 65% of a 1% carbon tool steel and 50% of

AISI B1112 screw stock

Physical Properties

Density	7.87 g/cm^3
Coefficient of Thermal Expansion	

Temp Range (°C)	10.06mm / mm / °C (x 10^{-6})
-73 - 21	10.06
21 - 93	11.21
21 - 149	11.50
21 - 204	11.84
21 - 260	12.10
21 - 316	12.29
21 - 371	12.51
21 - 427	12.69
21 - 482	12.96
21 - 538	13.28

Modulus of Elasticity	
Test Temperature (°C)	Modulus (GPa)
21	203.4
93	189.6
204	168.9
316	148.2
427	127.6
538	106.9
649	86.2

Disclaimer

This data is indicative only and as such is not to be relied upon in place of the full specification. In particular, mechanical property requirements vary widely with temper, product and product dimensions. All information is based on our present knowledge and is given in good faith. No liability will be accepted by the Company in respect of any action taken by any third party in reliance thereon.

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