

## Latrobe MP35N<sup>®</sup> Alloy

Category : Metal , Nonferrous Metal , Cobalt Alloy , Nickel Alloy

### Material Notes:

MP35N is a nickel-cobalt base alloy of the Multiphase alloy system that has a unique combination of properties - ultra high strength, toughness, ductility, and outstanding corrosion resistance. The alloy is work-strengthened and aged to obtain strength levels of 260 to 300 ksi. MP35N alloy resists corrosion in hydrogen sulfide, salt water and other chloride solutions, as well as the mineral acids. It has exceptional resistance to crevice and stress corrosion cracking in sea water and other hostile environments. 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-MP35N-Alloy.php](http://www.lookpolymers.com/polymer_Latrobe-MP35N-Alloy.php)

Physical Properties	Metric	English	Comments
Density	8.55 g/cc	0.309 lb/in <sup>3</sup>	

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell B	90	90	Annealed
Tensile Strength, Ultimate	896 MPa	130000 psi	Annealed
Tensile Strength, Yield	379 MPa @Strain 0.200 %	55000 psi @Strain 0.200 %	Annealed
Elongation at Break	65 %	65 %	Annealed; in 4D
Reduction of Area	75 %	75 %	
Modulus of Elasticity	232.8 GPa	33760 ksi	Annealed
	234.8 GPa	34050 ksi	Cold Worked and Aged
	201.0 GPa @Temperature 482 Â°C	29150 ksi @Temperature 900 Â°F	Annealed
	201.3 GPa @Temperature 482 Â°C	29190 ksi @Temperature 900 Â°F	Cold Worked and Aged
Shear Modulus	67.8 GPa @Temperature 482 Â°C	9830 ksi @Temperature 900 Â°F	Cold Worked and Aged
	70.60 GPa @Temperature 482 Â°C	10240 ksi @Temperature 900 Â°F	Annealed
	80.94 GPa @Temperature 25.6	11740 ksi	Cold Worked and Aged

Mechanical Properties	Metric	English	Comments
	83.36 GPa	12090 ksi	
	@Temperature 25.6 Å°C	@Temperature 78.0 Å°F	Annealed

Thermal Properties	Metric	English	Comments
CTE, linear	11.2 Åµm/m-Å°C	6.22 Åµin/in-Å°F	
	@Temperature -100 - 121 Å°C	@Temperature -148 - 250 Å°F	
	13.7 Åµm/m-Å°C	7.61 Åµin/in-Å°F	
	@Temperature 21.0 - 204 Å°C	@Temperature 69.8 - 399 Å°F	
	15.7 Åµm/m-Å°C	8.72 Åµin/in-Å°F	
	@Temperature 21.0 - 538 Å°C	@Temperature 69.8 - 1000 Å°F	
Thermal Conductivity	6.50 W/m-K	45.1 BTU-in/hr-ftÅ²-Å°F	
	@Temperature -184 Å°C	@Temperature -299 Å°F	
	15.0 W/m-K	104 BTU-in/hr-ftÅ²-Å°F	
	@Temperature 204 Å°C	@Temperature 399 Å°F	
Melting Point	1315 - 1440 Å°C	2399 - 2620 Å°F	
Solidus	1315 Å°C	2399 Å°F	
Liquidus	1440 Å°C	2620 Å°F	

Component Elements Properties	Metric	English	Comments
Chromium, Cr	20 %	20 %	
Cobalt, Co	35 %	35 %	
Molybdenum, Mo	10 %	10 %	
Nickel, Ni	35 %	35 %	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.0000986 ohm-cm	0.0000986 ohm-cm	
	@Temperature -184 Å°C	@Temperature -299 Å°F	
	0.0001011 ohm-cm	0.0001011 ohm-cm	

Electrical Properties	Metric	English	Comments
	@Temperature -73.0 Â°C	@Temperature -99.4 Â°F	
	0.0001033 ohm-cm	0.0001033 ohm-cm	
	@Temperature 20.0 Â°C	@Temperature 68.0 Â°F	
	0.0001051 ohm-cm	0.0001051 ohm-cm	
	@Temperature 93.0 Â°C	@Temperature 199 Â°F	
	0.0001078 ohm-cm	0.0001078 ohm-cm	
	@Temperature 204 Â°C	@Temperature 399 Â°F	
	0.0001104 ohm-cm	0.0001104 ohm-cm	
	@Temperature 316 Â°C	@Temperature 601 Â°F	
	0.0001179 ohm-cm	0.0001179 ohm-cm	
	@Temperature 649 Â°C	@Temperature 1200 Â°F	
Magnetic Permeability	1.00085	1.00085	At 392K
	1.00142	1.00142	At 78K
Magnetic Susceptibility	8.03	8.03	At 392K
	13.47	13.47	At 78K

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