

H.C. Starck MP35N® Nickel/Cobalt/Chromium/Molybdenum Alloy

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

Material Notes:

MP35N is a nickel-cobalt based alloy of the Multiphase® alloy system that has ultra high strength, toughness, ductility, biocompatibility, and outstanding corrosion resistance. H.C. Starck offers MP35N alloy in flat rolled plate, sheet, and foil products. MP35N is produced by vacuum induction melting and consumable vacuum arc re-melting. Strengthened by work hardening and aging to levels of 260 to 300 ksi (1790 to 2070 MPa), MP35N has good ductility with greater than 40% reduction in area, and good toughness. MP35N can be effectively utilized at cryogenic temperatures without embrittlement and up to 600°F without loss in performance. The high strength and corrosion resistance, high modulus, ease of fabrication, and other mechanical properties make MP35N an ideal candidate for high performance products, where emphasis is placed upon dependability for demanding applications. MP35N products are used in diverse applications: Biomedical uses: Orthodontics and Prosthetics Oil Industry, Chemical and Marine equipment " Valve components, springs, high pressure door dogs Aircraft and Aerospace components " Springs, leading edge strips High Pulse Magnet Research Information provided by H.C. Starck.

Order this product through the following link:

http://www.lookpolymers.com/polymer_HC-Starck-MP35N-NickelCobaltChromiumMolybdenum-Alloy.php

Physical Properties	Metric	English	Comments
Density	8.43 g/cc	0.305 lb/in ³	

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell C	7.0	7.0	Annealed
	44	44	50% Cold Rolled
	47	47	50% Cold Rolled (4 hrs at 1025°F/550°C)
Hardness, Vickers	220	220	Annealed
	420	420	50% Cold Rolled
	480	480	50% Cold Rolled (4 hrs at 1025°F/550°C)
Tensile Strength, Ultimate	758 MPa	110000 psi	Annealed
	1520 MPa	220000 psi	50% Cold Rolled
	1830 MPa	265000 psi	50% Cold Rolled (4 hrs at 1025°F/550°C)
Tensile Strength, Yield	345 MPa	50000 psi	Annealed
	1380 MPa	200000 psi	50% Cold Rolled
	1550 MPa	225000 psi	50% Cold Rolled (4 hrs at 1025°F/550°C)

Mechanical Properties	Metric	English	Comments
Elongation at Break	10 %	10 %	50% Cold Rolled
	60 %	60 %	Annealed
Modulus of Elasticity	201 GPa	29200 ksi	Annealed
	@Temperature 482 Â°C	@Temperature 900 Â°F	
	201 GPa	29200 ksi	Cold Worked
	@Temperature 482 Â°C	@Temperature 900 Â°F	
	216 GPa	31300 ksi	Annealed
	@Temperature 232 Â°C	@Temperature 450 Â°F	
	219 GPa	31800 ksi	Cold Worked
	@Temperature 232 Â°C	@Temperature 450 Â°F	
	233 GPa	33800 ksi	Annealed
	@Temperature 25.6 Â°C	@Temperature 78.1 Â°F	
	235 GPa	34100 ksi	Cold Worked
	@Temperature 25.6 Â°C	@Temperature 78.1 Â°F	
Poissons Ratio	0.38	0.38	Calculated; Annealed
	@Temperature 232 Â°C	@Temperature 450 Â°F	
	0.40	0.40	Calculated; Annealed
	@Temperature 25.6 Â°C	@Temperature 78.1 Â°F	
	0.42	0.42	Calculated; Annealed
	@Temperature 482 Â°C	@Temperature 900 Â°F	
	0.45	0.45	Calculated; Cold Worked
	@Temperature 25.6 Â°C	@Temperature 78.1 Â°F	
	0.46	0.46	Calculated; Cold Worked
	@Temperature 232 Â°C	@Temperature 450 Â°F	
	0.47	0.47	Calculated; Cold Worked
	@Temperature 482 Â°C	@Temperature 900 Â°F	
Shear Modulus	68.0 GPa	9860 ksi	Cold Worked

Mechanical Properties	@Temperature 482 Â°C Metric	@Temperature 900 Â°F English	Comments
	71.0 GPa	10300 ksi	Annealed
	@Temperature 482 Â°C	@Temperature 900 Â°F	
	75.0 GPa	10900 ksi	Cold Worked
	@Temperature 232 Â°C	@Temperature 450 Â°F	
	78.0 GPa	11300 ksi	Annealed
	@Temperature 232 Â°C	@Temperature 450 Â°F	
	81.0 GPa	11700 ksi	Cold Worked
	@Temperature 25.6 Â°C	@Temperature 78.1 Â°F	
	83.0 GPa	12000 ksi	Annealed
	@Temperature 25.6 Â°C	@Temperature 78.1 Â°F	

Thermal Properties	Metric	English	Comments
CTE, linear	12.8 Âµm/m-Â°C	7.10 Âµin/in-Â°F	
	@Temperature 21.0 - 93.0 Â°C	@Temperature 69.8 - 199 Â°F	
	13.7 Âµm/m-Â°C	7.60 Âµin/in-Â°F	
	@Temperature 21.0 - 204 Â°C	@Temperature 69.8 - 399 Â°F	
	14.8 Âµm/m-Â°C	8.20 Âµin/in-Â°F	
	@Temperature 21.0 - 316 Â°C	@Temperature 69.8 - 601 Â°F	
	14.9 Âµm/m-Â°C	8.30 Âµin/in-Â°F	
	@Temperature 21.0 - 427 Â°C	@Temperature 69.8 - 801 Â°F	
	15.7 Âµm/m-Â°C	8.70 Âµin/in-Â°F	
	@Temperature 21.0 - 538 Â°C	@Temperature 69.8 - 1000 Â°F	
Thermal Conductivity	6.48 W/m-K	45.0 BTU-in/hr-ftÂ²-Â°F	
	@Temperature -184 Â°C	@Temperature -299 Â°F	
	9.08 W/m-K	63.0 BTU-in/hr-ftÂ²-Â°F	
	@Temperature -73.0 Â°C	@Temperature -99.4 Â°F	

Thermal Properties	Metric	English	Comments
	11.2 W/m-K	78.0 BTU-in/hr-ftÂ²-Â°F	
	@Temperature 21.0 Â°C	@Temperature 69.8 Â°F	
	12.7 W/m-K	88.0 BTU-in/hr-ftÂ²-Â°F	
	@Temperature 93.0 Â°C	@Temperature 199 Â°F	
	15.0 W/m-K	104 BTU-in/hr-ftÂ²-Â°F	
	@Temperature 204 Â°C	@Temperature 399 Â°F	
	17.0 W/m-K	118 BTU-in/hr-ftÂ²-Â°F	
	@Temperature 316 Â°C	@Temperature 601 Â°F	
	19.2 W/m-K	133 BTU-in/hr-ftÂ²-Â°F	
	@Temperature 427 Â°C	@Temperature 801 Â°F	
	21.3 W/m-K	148 BTU-in/hr-ftÂ²-Â°F	
	@Temperature 538 Â°C	@Temperature 1000 Â°F	
	23.3 W/m-K	162 BTU-in/hr-ftÂ²-Â°F	
	@Temperature 649 Â°C	@Temperature 1200 Â°F	
Melting Point	1315 - 1440 Â°C	2399 - 2620 Â°F	
Solidus	1315 Â°C	2399 Â°F	
Liquidus	1440 Â°C	2620 Â°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
	0.0000990 ohm-cm	0.0000990 ohm-cm	
Electrical Resistivity	@Temperature -184 Â°C	@Temperature -299 Â°F	
	0.000101 ohm-cm	0.000101 ohm-cm	

Electrical Properties	@Temperature -73.0 Metric °C	@Temperature -99.4 English °F	Comments
	0.000103 ohm-cm	0.000103 ohm-cm	
	@Temperature 21.0 °C	@Temperature 69.8 °F	
	0.000105 ohm-cm	0.000105 ohm-cm	
	@Temperature 93.0 °C	@Temperature 199 °F	
	0.000108 ohm-cm	0.000108 ohm-cm	
	@Temperature 204 °C	@Temperature 399 °F	
	0.000110 ohm-cm	0.000110 ohm-cm	
	@Temperature 316 °C	@Temperature 601 °F	
	0.000113 ohm-cm	0.000113 ohm-cm	
	@Temperature 427 °C	@Temperature 801 °F	
	0.000115 ohm-cm	0.000115 ohm-cm	
	@Temperature 538 °C	@Temperature 1000 °F	
	0.000118 ohm-cm	0.000118 ohm-cm	
	@Temperature 649 °C	@Temperature 1200 °F	
Magnetic Permeability	1.00085	1.00085	
	@Temperature 119 °C	@Temperature 246 °F	
	1.00092	1.00092	
	@Temperature 25.0 °C	@Temperature 77.0 °F	
	1.00096	1.00096	
	@Temperature -27.0 °C	@Temperature -16.6 °F	
	1.00104	1.00104	
	@Temperature -73.0 °C	@Temperature -99.4 °F	
	1.00117	1.00117	
	@Temperature -140 °C	@Temperature -220 °F	
	1.00142	1.00142	
	@Temperature -195 °C	@Temperature -319 °F	

Electrical Properties	Metric	English	Comments
Magnetic Susceptibility	@Temperature 119 Â°C	@Temperature 246 Â°F	Âµ emu/g
	8.7	8.7	Âµ emu/g
	@Temperature 25.0 Â°C	@Temperature 77.0 Â°F	Âµ emu/g
	9.22	9.22	Âµ emu/g
	@Temperature -27.0 Â°C	@Temperature -16.6 Â°F	Âµ emu/g
	9.81	9.81	Âµ emu/g
	@Temperature -73.0 Â°C	@Temperature -99.4 Â°F	Âµ emu/g
	11.07	11.07	Âµ emu/g
	@Temperature -140 Â°C	@Temperature -220 Â°F	Âµ emu/g
	13.47	13.47	Âµ emu/g
	@Temperature -195 Â°C	@Temperature -319 Â°F	Âµ emu/g

Contact Songhan Plastic Technology Co.,Ltd.

Website : www.lookpolymers.com

Email : sales@lookpolymers.com

Tel : +86 021-51131842

Mobile : +86 13061808058

Skype : lookpolymers

Address : United North Road 215,Fengxian District, Shanghai City,China