BRODER
Metals Group Limited

BRODER METALS GROUP MP35N™ - AMS

MP35N™ is a trademarked grade produced by Latrobe Specialty Steel, a subsidiary of Carpenter Technology in the USA, and the trademark is owned by SPS Technologies Inc.

MP35N™ is a nickel-cobalt alloy which provides a unique combination of properties including ultra-high strength, toughness, ductility, and outstanding corrosion resistance. We can supply the high strength option in one of two conditions:

- AMS 5844 – solution treated and cold drawn bars: useful for where the ageing treatment will make the material too tough to machine economically. Material in this condition is supplied with an ageing capability test result for ageing to be carried out after machining of the component.

- AMS 5845 – solution heat treated, cold drawn and aged bars: fully aged material so the machinist does not have to carry out their own ageing operation.

We also stock MP35N in the NACE condition, with reduced strength but higher hardness values and maximum corrosion resistance.

The high strength variant of MP35N™ is used in a wide range of applications, in aerospace particularly for fasteners and airframe components. Elsewhere MP35N is used in motor sports, medical etc. for fasteners, springs, non-magnetic electrical components, instrument parts, valve components, high pressure door fittings, actuators, seals, shafts and other components.

Melting: MP35N™ is produced by vacuum induction melting followed by VAC-ARC remelting to provide exceptional control of chemistry and ingot solidification.

MP35N™ has a face centered cubic structure matrix of cobalt and nickel, in which chromium and molybdenum are soluble at elevated temperatures. The FCC structure persists upon cooling to room temperature and below.

The combination of the amount of cold work and ageing temperature achieves the final properties desired. For AMS 5844/5 (fully strength/heavily cold worked) material, the alloy is typically aged at 1050ºF for 4 hours.

This material has generally excellent corrosion resistance properties, including stress corrosion cracking (SCC) resistance for harsh environments as well as resists attack from mineral acids (nitric, hydrochloric and sulphur). The material also has exceptional resistance to crevice and stress corrosion cracking in hostile environments.

ASTM Grain size is 4 or finer.

We can supply round bar from stock and material can also be supplied as cold drawn tubing on a lead-time.

LRQA CERTIFIED AS 9120

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Chemistry

Ni	Co	Cr	Mo	C	Mn	Si	P	S	Fe	Ti	B
33 - 37%	Bal.	19 - 21%	9 - 10.5%	0.025% max	0.15% max	0.15% max	0.015% max	0.01% max	1% max	1% max	0.15% max

Heat Treatment

Treatment	Temperature	Time	Cooling
Solution Treat	1900 - 1925 deg F	4 – 8 hours	Air
Age	AMS 5844 / AMS 5845		
	1000 - 1200 deg F	4 hours	Air

Note: Exposure to temperatures above the recommended ageing levels may result in a significant (and non-reversible) loss of strength caused by the reversion of the cold worked metallurgical structure to a much softer annealed structure.

Mechanicals

Spec (ageing time / temp)	Guaranteed minimum properties				
Acc to AMS 5844 / 5845	UTS (ksi)	YS (0.2%) ksi	Elong % (4D)	RA %	HRC (min)
Full Strength	260	230	8	35	4 4
Reduced strength (210 min yield)	220	210	10	45	N/ A
Reduced strength (190 min yield)	200	190	10	45	N/ A

The above are only guaranteed up to 2” dia.

Mechanical Tests are conducted at room temperature in accordance with ASTM E8; hardness in accordance with ASTM E18; Macroetch in accordance with ASTM A604; Grain Size in accordance with ASTM E112.

Shear strength: bar sizes up to 1” (25.4 mm) diameter can be guaranteed to a minimum shear strength of 150 ksi. Bar sizes of a diameter larger than 1” are considered capable of meeting the 150 ksi minimum shear strength value, but this is not guaranteed.

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