

m4p Ni-k500M

Ni-base for Laser Powder Bed Fusion

Description, properties and applications

m4p Ni-k500M is a tailor-made metal powder for additive manufacturing, based on the alloy type of **Monel materials** (nickel-copper alloys). In contrast to standard alloys such as Monel 400, m4p Ni-k500M can be **hardened** by the addition of aluminum and titanium and thus offers a unique combination of high **strength**, outstanding **corrosion resistance** and excellent **heat resistance** (up to 650°C / 1,200°F), which extends the range of applications of the alloy to **aircraft and turbine construction**.

The alloy offers remarkable **resistance** to **corrosive media** such as **seawater**, **saline solutions** and **various acids**, making it particularly suitable for applications in the **chemical**, **oil and gas** and **marine industries**. It is considered **immune to chloride-induced stress corrosion** and retains its **non-magnetic properties** down to temperatures of -123°C (-200°F). The good **processability** - in both additive manufacturing and possible downstream joining processes - make m4p Ni-k500M an **industrially suitable high-performance metal powder** for the production of the most complex components.

Powder characteristics

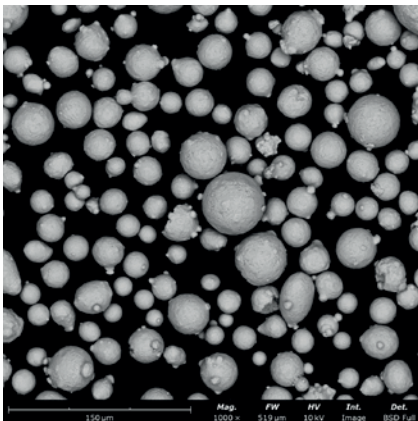


Image: SEM image of an m4p Ni-k500M powder

Chemical analysis [wt%]

Element	Min	Max
C		0.25
Si	<0.50	
Mn	<2.00	
Cu	27.0	33.0
Al	2.30	3.15
Ti	0.35	0.85
Ni	Base	

Other limited elements: Fe, O, N, P, S

Additive manufacturing and material characteristics

(rel. density > 99.9%)

	Tensile strength Rm [N/mm ²]	Yield strength Rp0.2 [N/mm ²]	Elongation at break A ₅ [%]	Young´s modulus [GPa]	Hardness [HRC]
as-built Sample orientation ↕ ↔	>550	>390	>38		
heat-treated (precipitation hardened; conventionally manufactured)	890 - 1130	480 - 860	20 - 35	<180	24 - 35

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