

Ni625

Ni-based Superalloy Powder for Additive Manufacturing 90/45 μm , Plasma Rotating Electrode Process Designed for LMD

Chemical composition similar to UNS N06625, INCONEL® 625

DESCRIPTION

Ni625 is a Plasma Rotating Electrode Process (PREP) manufactured powder engineered for Additive Manufacturing (AM). This material is a nickel-based superalloy that has significant resistance to oxidation and hot corrosion at high temperatures. The material is also characterized as having high tensile properties and excellent fatigue and thermal-fatigue properties.

Components made from this superalloy are ideally suited for environments requiring high corrosion and oxidation resistance. It finds extensive use in industries like aerospace for turbine blades and heat exchangers, and in the marine sector for subsea equipment, benefitting from its capacity to withstand harsh chemical and thermal conditions.

KEY PROPERTIES

- High tensile strength
- Excellent fatigue resistance
- Excellent high temperature performance
- Excellent corrosion and oxidation resistance

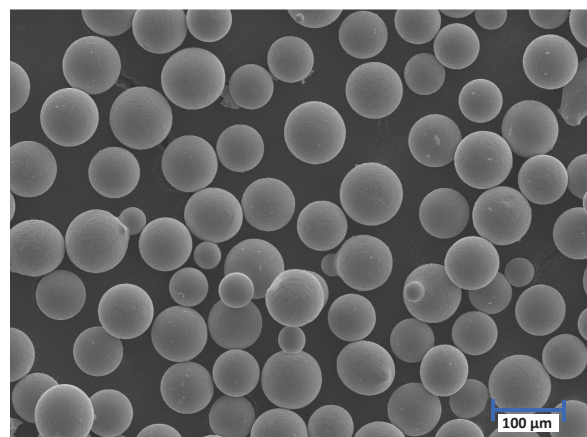
APPLICATIONS

- Power generation turbine blades
- Oil and subsea components
- Aerospace engine parts
- Chemical processing parts
- Heat exchangers

POWDER CHEMICAL COMPOSITION

Element	Min. (wt%)	Max. (wt%)
Ni	Bal.	Bal.
Cr	20.0	23.0
Mo	8.0	10.0
Nb	3.15	4.15
Fe	-	5.0
Co	-	1.0
Si	-	0.5
Mn	-	0.5
Ti	-	0.4
Al	-	0.4

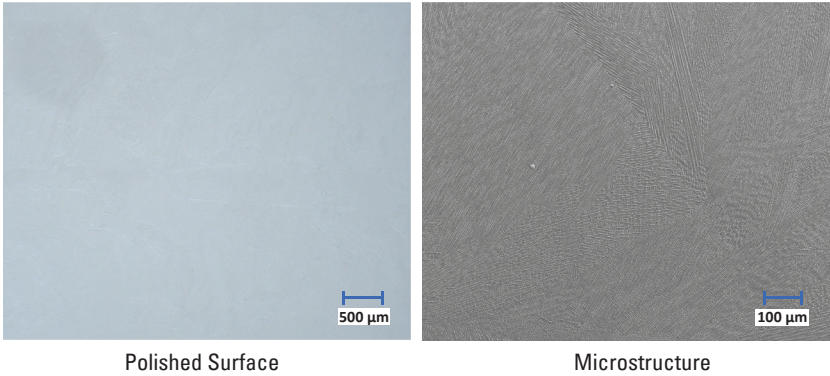
SEM IMAGE



POWDER PROPERTIES (ISO 4490, ISO 3923-1)

Particle Size Distribution (µm)	Hall Flow (s/50g)	Apparent Density (g/cm³)
45 – 90	13.2	4.64

MICROGRAPHS



PHYSICAL PROPERTIES (ISO 3369)

Average Defect Percentage (%)	Density (g/cm³)
< 0.10	> 8.35

MELTING POINT

Celsius (°C)	Fahrenheit (°F)
1290 - 1350	2350 - 2460

HARDNESS (ISO 6507-1)

HV _{0.5}
255

MECHANICAL PROPERTIES (ISO 6892-1)

Condition	Orientation	Ultimate Tensile Strength (MPa)	0.2% Yield Strength (MPa)	Elongation at Break (%)
As-Built	Horizontal	854 ± 4	520 ± 4	38 ± 0
	Vertical	834 ± 4	497 ± 9	40 ± 2

PROCESS INFORMATION:

The properties reported in this Technical Data Sheet are applicable to Makino AM powders tested and distributed by Makino and processed on Makino LMD machine utilizing parameters in accordance with relevant operating guidelines (inclusive of setup conditions and maintenance). The properties are obtained by following recommended protocols. Further information regarding the methods used by Makino can be provided upon inquiry.

DISCLAIMER:

The data and information provided represent, to the best of our knowledge, standard or average values and do not constitute guarantees for upper and lower limit parameters. The recommended applications for the material disclosed are exclusively for illustrative purposes that help the reader to conduct their independent assessments. These suggestions are not intended to be binding, expressed, or implied warranties of suitability for the specified applications, certification, or any other purposes. The information included may be subject to change at any time without prior notification.

CONTACT US:

Our Safety Datasheet (SDS) is available upon request. For more information or support please contact Makino at sales-am@makino.com.sg or visit www.makino.com.sg