MAKINO
Promise of Performance

C276

Ni-based Alloy Powder for Additive Manufacturing
53/20 µm, Gas Atomized
Designed for LMD

Chemical composition similar to UNS N10276, HASTELLOY® C-276

DESCRIPTION

C276 is a gas atomized powder engineered for Additive Manufacturing (AM). It is a high-performance Ni-Cr-Mo-based superalloy widely recognized for its exceptional corrosion resistance in extreme environments, including oxidizing and reducing conditions.

The outstanding heat and corrosion-resistance properties of C276 enable its use across various industries, particularly in harsh chemical processing and marine applications. This material is ideally suited for components requiring superior resistance to pitting, crevice corrosion, and stress corrosion cracking. With its excellent weldability and mechanical integrity, C276 is a versatile choice for demanding industrial applications.

KEY PROPERTIES

- Excellent corrosion resistance
- Excellent weldability
- Retains mechanical properties at high temperatures

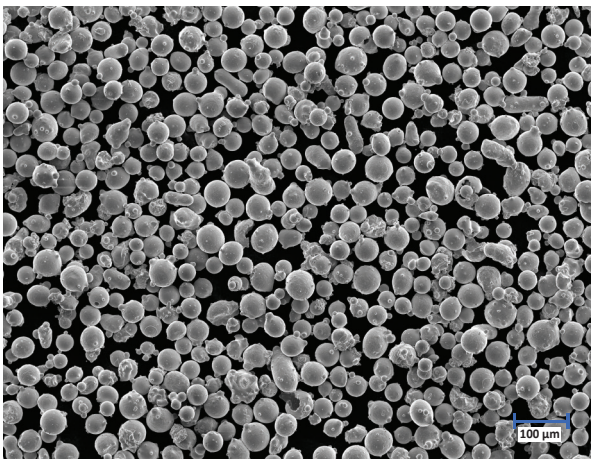
APPLICATIONS

- Marine and offshore applications
- Desalination plants
- Heat exchangers, evaporators

POWDER CHEMICAL COMPOSITION

Element	Min. (wt%)	Max. (wt%)
Ni	-	Bal.
Cr	14.0	17.0
Mo	15.0	17.0
Fe	2.0	4.0
W	3.0	5.0
V	0.20	0.80
Si	0.10	0.80
Mn	0.90	1.50
C	-	0.10

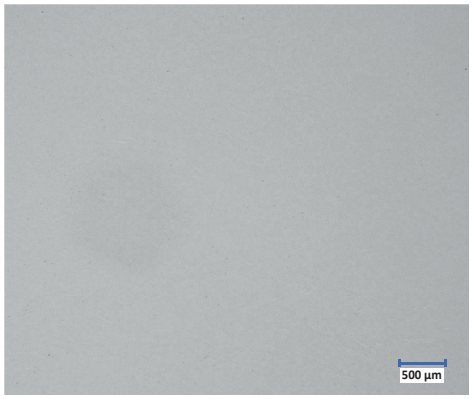
SEM IMAGE



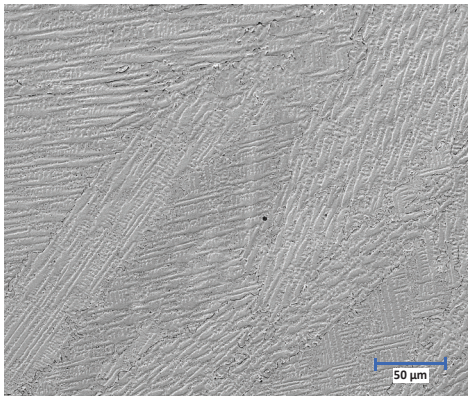
POWDER PROPERTIES (ISO 4490, ISO 3923-1)

Particle Size Range (µm)	Hall Flow (s/50g)	Apparent Density (g/cm³)
20 – 53	15.2	4.59

MICROGRAPHS



Polished Surface



Microstructure

PHYSICAL PROPERTIES (ISO 3369)

Average Defect Percentage (%)	Density (g/cm³)
< 0.10	> 8.89

MELTING POINT

Celsius (°C)	Fahrenheit (°F)
1325 - 1370	2415 - 2500

HARDNESS (ISO 6507-1)

$HV_{0.5}$
270 ± 7

MECHANICAL PROPERTIES (ISO 6892-1)

Condition	Orientation	Ultimate Tensile Strength (MPa)	0.2% Yield Strength (MPa)	Elongation at Break (%)
As-Built	Horizontal	825 ± 15	490 ± 7	24 ± 1
	Vertical	756 ± 12	392 ± 8	39 ± 3
Heat-Treated*	Horizontal	815 ± 8	417 ± 14	38 ± 3
	Vertical	723 ± 14	364 ± 6	53 ± 2

*Solutionized to 1177°C and held for 30 minutes in vacuum furnace, followed by Argon gas quenched at 5 bar pressure to below 70°C, removed from vacuum furnace and air cooled

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 expressed or implied warranties of suitability for the specified applications 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

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