

CuNi2SiCr

Cu-based Alloy Powder for Additive Manufacturing 90/45 µm, Gas Atomized Designed for LMD

Chemical composition similar to DIN 2.0855, CW111C, UNS.C18000

DESCRIPTION

CuNi2SiCr is a gas-atomized, precipitation-hardened copper alloy powder designed for additive manufacturing (AM). It offers high mechanical strength and hardness while maintaining moderate electrical and thermal conductivity, along with good resistance to thermal gradients and thermal cycling.

The alloy is suitable for applications that require efficient heat extraction under high mechanical loads, such as die and mold, high temperature tooling, and other thermal management systems, where rapid heat dissipation and high structural strength are critical.

KEY PROPERTIES

- High strength
- High hardness
- Good thermal conductivity
- Good thermal stability

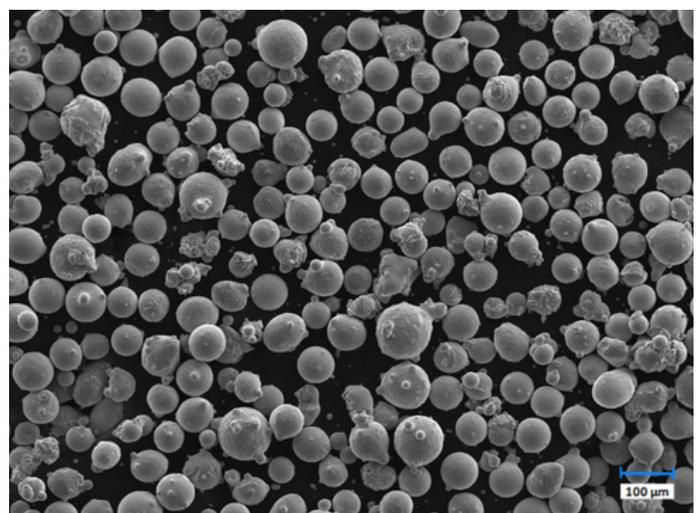
APPLICATIONS

- Contact springs, clips, and fasteners
- High strength electrical connectors and terminals
- Plunger tips and mold cavities
- Heat sink inserts

POWDER CHEMICAL COMPOSITION

Element	Min. (wt%)	Max. (wt%)
Cu	-	Bal.
Ni	2.00	3.00
Si	0.50	0.80
Cr	0.20	0.50
Fe	-	0.50
O	-	0.06

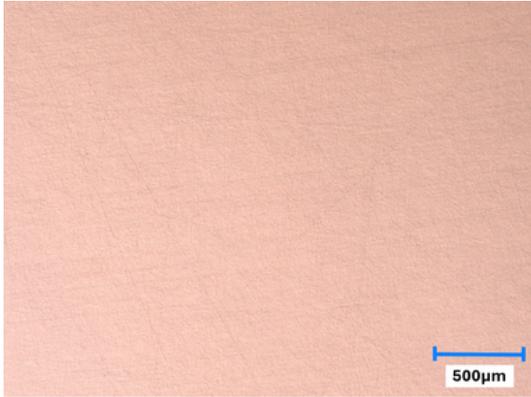
SEM IMAGE



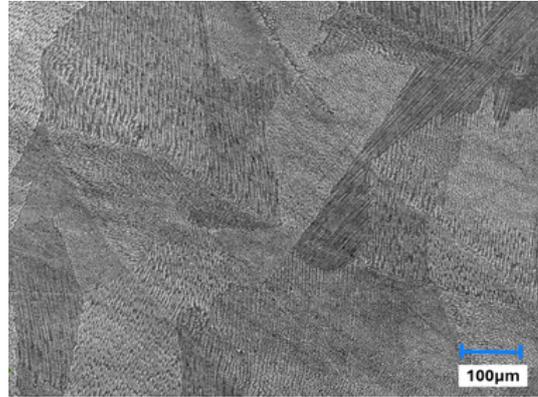
POWDER PROPERTIES (ISO 4490, ISO 3923-1)

Particle Size Distribution (μm)	Hall Flow (s/50g)	Apparent Density (g/cm ³)
45 - 90	14.5	4.70

MICROGRAPHS



Polished Surface



Microstructure

PHYSICAL PROPERTIES (ISO 3369)

Average Defect Percentage (%)

< 0.10

MELTING POINT

Celsius ($^{\circ}\text{C}$) Fahrenheit ($^{\circ}\text{F}$)

1070 - 1100

1990 - 2012

HARDNESS

HV_{0.5}

157

MECHANICAL PROPERTIES (ISO 6507-1, ISO 6508-1)

Orientation	Ultimate Tensile Strength (MPa)	0.2% Yield Stress (MPa)	Elongation at break (%)
Horizontal	416	281	23
Vertical	436	347	27

PROCESS INFORMATION:

The properties reported in this Technical DataSheet 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 specific 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

MA.902312.TDS1

©2026 Makino Asia Pte Ltd | All rights reserved