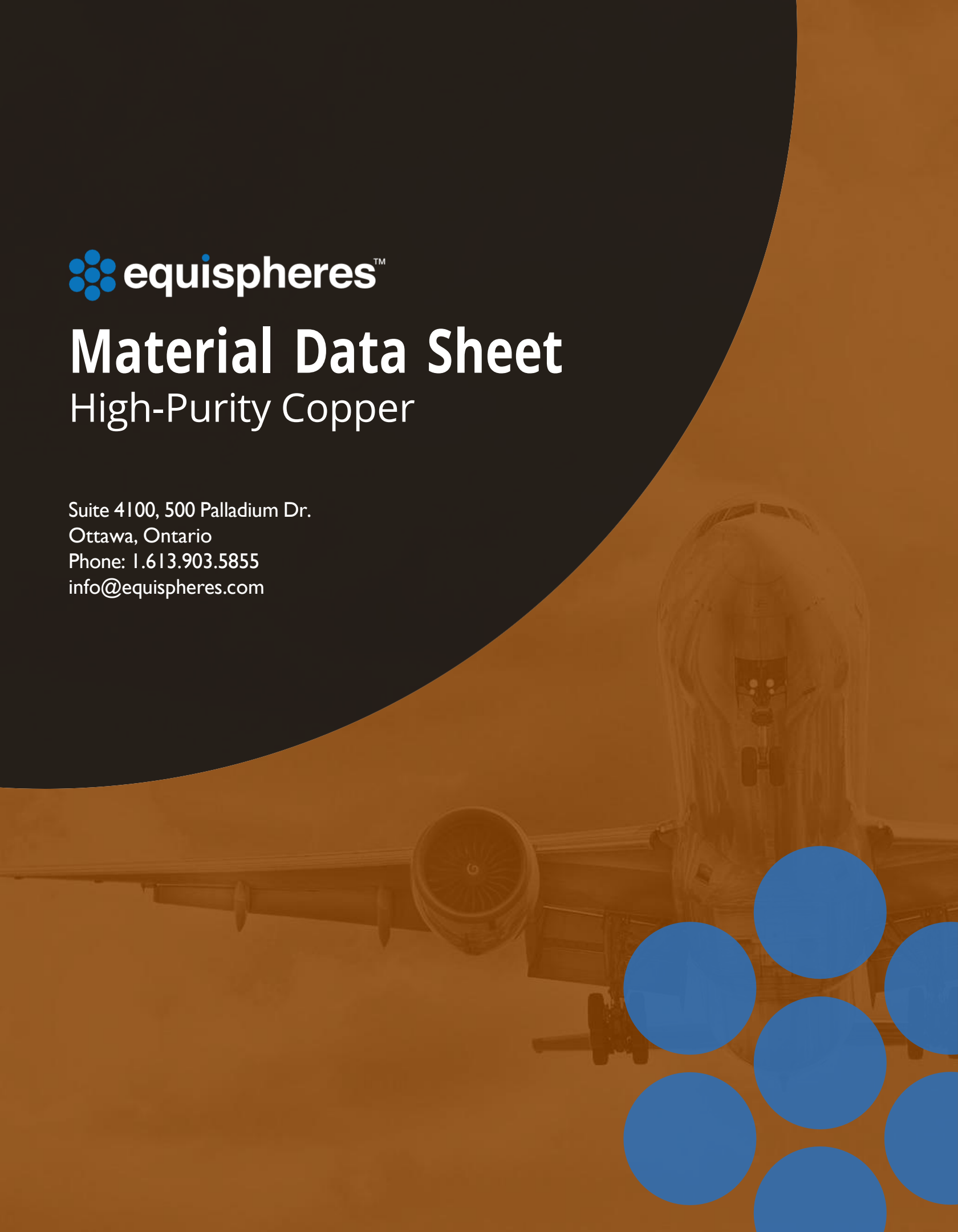




Material Data Sheet

High-Purity Copper

Suite 4100, 500 Palladium Dr.
Ottawa, Ontario
Phone: 1.613.903.5855
info@equispheres.com



General Powder Information

Alloy Overview

Equispheres High-Purity Copper powder is engineered for serial Additive Manufacturing (AM), offering low oxygen content that helps preserve the high thermal and electrical conductivity copper is known for. This makes it well suited to applications where conductivity and material integrity are critical, including induction coils, heat exchangers, busbars, and other electrical components. These properties make High-Purity Copper powder an ideal choice for critical, high-thermal-load components in the aerospace, defence, and automotive/motorsport industries.

Advanced Powder Technology

Equispheres produces highly spherical powders using patented technology that enables precise control over particle characteristics. Uniform size and consistent microstructure — as well as low oxygen, high flowability and thinner oxide layer — support rapid build rates and wider processing windows for the serial production of 3D-printed metal parts with superior mechanical properties.

This data sheet provides reference data for parts printed with Equispheres High-Purity Copper powder on various classes of AM equipment.

To determine the best parameters for your application, contact Equispheres.

[Equispheres.com/Materials-Science](https://equispheres.com/Materials-Science)

Chemical Composition

Element	Equispheres Specification	
	Lower	Upper
Cu	99.95 wt %	--
O	--	< 0.005 wt %

Particle Size Distribution

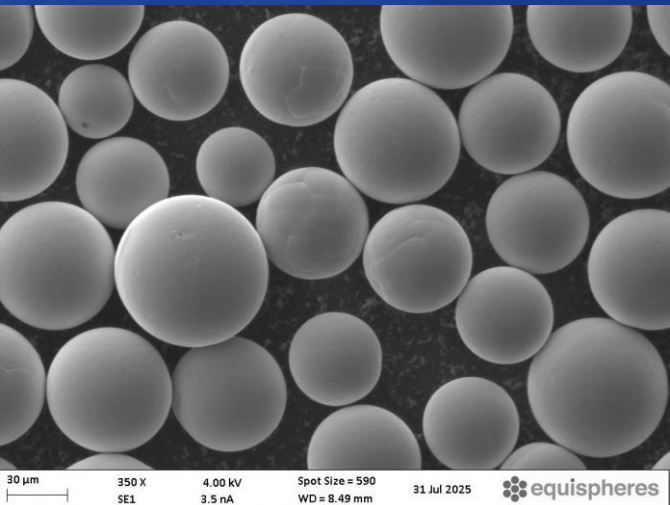
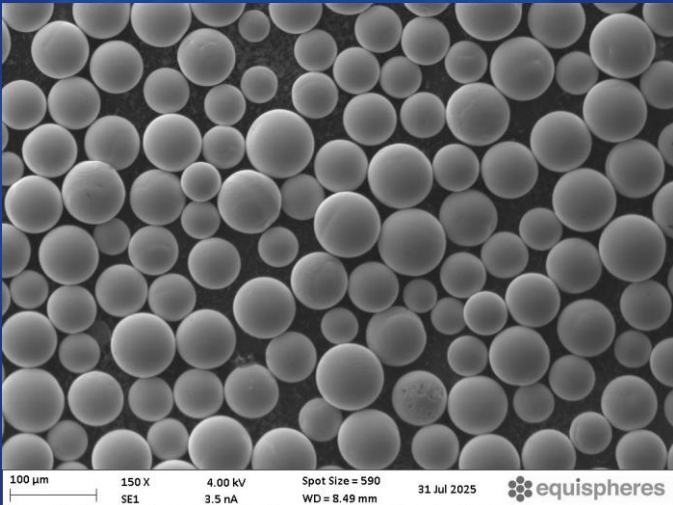
AMS7025 Size class (µm)
32 µm - 71 µm

Flow Rate

Measurement	Equispheres Specifications
Flow Rate, Hall*	≤ 15 s/50g
Flow Rate, Carney†	≤ 11 s/50g

* Per ASTM B213-20

† Per ASTM B964-16



High-Purity Copper
Build Data

Build Data for 600W Machines | 40µm Layers

Features

The 40µm layer thickness provides high geometrical precision and part density, making it well suited to fine-feature components and applications with tight dimensional tolerances.

System Settings

Inert Gas	Argon
Recoater Style	Carbon Brush (typical) HSS Blade, Rubber Lip
Build Temperature	RT

Build Characteristics

Layer Thickness	40µm
Bulk Volume Rate*	3.46 cm³/hr

*Bulk volume rate is per single laser and calculated by multiplying the laser scanning velocity (v), hatch distance (h), and layer thickness (t)



Typical Build Results

Relative Density: >99.8%

Build Data for 1kW Machines | 40µm Layers

Features

At the same 40µm layer thickness, the additional laser power available on 1kW systems increases build speed relative to 600W systems, while maintaining the same high geometrical precision and part density. This makes 1kW systems well suited to applications that require both fine-feature resolution and higher production throughput.

System Settings

Inert Gas	Argon
Recoater Style	Carbon Brush (typical) HSS Blade, Rubber Lip
Build Temperature	RT

Build Characteristics

Layer Thickness	40µm
Bulk Volume Rate*	6.91 cm³/hr

*Bulk volume rate is per single laser and calculated by multiplying the laser scanning velocity (v), hatch distance (h), and layer thickness (t)



Typical Build Results

Relative Density: >99.5%

General Powder Properties

Hall Flow Rate (s/50g)	≤ 15
Apparent Density (g/cm³)	≥ 5.0
Moisture (ppm)	≤ 10
Sphericity (SPHT50)	≥ 0.93

Electrical Conductivity of Printed Coupons

Condition: Annealed (1000°C/1hr) Polished

Testing Method: ASTM E1004

Sample Width [mm]	Electrical Conductivity [%IACS]
1	99.96 ± 0.08
5	99.62 ± 0.08



Notes:

Built for Performance

What the **future** is made of.



Suite 4100, 500 Palladium Dr.

Ottawa, Ontario

Phone: 1.613.903.5855

info@equispheres.com