

# Technical Data Sheet

## Cu Nanoparticles



### Description

Copper nanoparticles are reddish-brown metallic nanocrystalline powders with high electrical and thermal conductivity, catalytic activity, and antimicrobial properties. At the nanoscale, copper exhibits enhanced reactivity, surface plasmon resonance, and excellent performance as a conductive additive, catalyst, and antimicrobial agent. These nanoparticles are widely used in electronics, energy storage, catalysis, coatings, and biomedical applications.

### Properties

- Appearance: Reddish-brown metallic powder
- Average Particle Size: 20-80 nm
- Purity: >99%
- Density: 8.9 g/cm<sup>3</sup>
- Morphology: Spherical
- Crystal Structure: Face-Centered Cubic (FCC)
- Electrical Conductivity: High
- Packaging: 1kg / 5kg / 25kg



### Applications

- Electronics & Conductive Materials: Printed electronics, conductive inks, pastes, coatings
- Catalysis: Hydrogenation, CO<sub>2</sub> reduction, pollutant degradation
- Energy Storage: Lithium-ion battery anodes, supercapacitors, fuel cells
- Biomedical: Antibacterial and antifungal coatings, drug delivery (research use)
- Polymers & Coatings: Antimicrobial additive, conductive filler, UV absorber
- Optical & Sensor Devices: Plasmonic sensors, imaging, photothermal agents

### Features

- Excellent electrical and thermal conductivity
- High catalytic activity due to nanoscale surface area
- Strong antimicrobial and antifungal properties
- Plasmonic optical properties for sensing and imaging
- Cost-effective alternative to precious metal nanoparticles (e.g., Ag, Au)
- Functional additive for conductive inks, coatings, and composites

### Notes

- The product should be stored in the original container securely under cool and dry conditions away from direct sunlight, heat and contamination.
- Shelf life at proper storage is about 24 months from the production date, but it is recommended to consume the product within 12 months.

