Technical Data Sheet

CuO Nanoparticles

Description

Copper (II) Oxide nanoparticles are black, monoclinic nanocrystalline powders with strong catalytic, optical, and antimicrobial properties. At the nanoscale, CuO demonstrates enhanced surface reactivity, narrow bandgap semiconducting behavior, and excellent catalytic activity, making it suitable for applications in catalysis, energy storage, sensors, coatings, and biomedical uses.

Properties

- Appearance: Black fine powder
- Average Particle Size: 20-80 nm
- Purity: >99%
- Density: 6.3 g/cm³
- Morphology: Spherical
- Crystal Structure: Monoclinic
- Band Gap Energy: 1.2–1.9 eV
- Packaging: 1kg / 5kg / 25kg

Applications

- Catalysis: Photocatalysis, heterogeneous catalysis, CO oxidation, hydrogen production
- Energy & Electronics: Lithium-ion battery anodes, supercapacitors, gas sensors, solar cells
- Coatings & Polymers: Antimicrobial additive, UV absorber, black pigment
- Biomedical: Antibacterial, antifungal, and antiviral agents (research use)
- Environmental: Wastewater treatment, pollutant degradation

Features

- Narrow bandgap p-type semiconductor for energy and electronics
- High catalytic and photocatalytic activity
- Strong antimicrobial and antifungal effectiveness
- Excellent thermal and chemical stability
- Cost-effective catalyst material compared to noble metals
- Functional additive for polymers, 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.