Technical Data Sheet

Fe_2O_3 Nanoparticles

Description

Iron (III) Oxide nanoparticles are red-brown nanocrystalline powders with polymorphic phases, commonly hematite (α-Fe_2O_3) and maghemite (γ-Fe_2O_3). At the nanoscale, Fe_2O_3 exhibits unique magnetic, catalytic, and optical properties, making it highly suitable for catalysis, pigments, energy storage, biomedical applications, and environmental remediation.

Properties

- Appearance: Red-brown fine powder
- Average Particle Size: 20-80 nm
- Purity: >99%
- Density: 5.2 g/cm³
- Morphology: Spherical
- Crystal Structure: Hematite / Maghemite
- Band Gap Energy: 2.0–2.2 eV
- Packaging: 1kg / 5kg / 25kg

Applications

- Pigments & Coatings: Red pigment in paints, ceramics, plastics
- Catalysis: Photocatalysis, heterogeneous catalysis, pollutant degradation
- Energy & Electronics: Lithium-ion battery electrodes, gas sensors, supercapacitors
- Biomedical: Drug delivery, MRI contrast agents, magnetic hyperthermia (research use)
- Environmental: Wastewater treatment, magnetic separation, arsenic/metal adsorption

Features

- Available in hematite (stable) and maghemite (magnetic) forms
- Strong coloration properties (red pigment applications)
- Narrow bandgap semiconductor with photocatalytic activity
- Magnetic properties useful in separation and biomedical uses
- Cost-effective and environmentally friendly nanomaterial
- Enhances functional performance in coatings, polymers, 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.