Safety Data Sheet (SDS)

Product Name: Copper-dopped NiO (Cu:NiO) Nanoparticles
Date of Issue: March 4, 2025
Manufacturer: Puissant Materials

Section 1: Identification

- **Product Name:** Cu-doped Nickel Oxide (NiO) Nanoparticles
- **Supplier:** Puissant Materials, [Insert Address], [Phone Number], [Email]
- **Recommended Use:** Nanomaterial for research and industrial applications (e.g., catalysis, energy storage).
- **Emergency Contact:** Per Country Requirements

Section 2: Hazard Identification

- **GHS Classification:**
  - Skin Irritation (Category 2), Eye Irritation (Category 2), Specific Target Organ Toxicity (Single Exposure, Category 3).
- **Hazard Statements:**
  - H315: Causes skin irritation.
  - H319: Causes serious eye irritation.
  - H335: May cause respiratory irritation.
- **Precautionary Statements:**
  - P261: Avoid breathing dust.
  - P280: Wear gloves/protective clothing/eye protection.
  - P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes.
- **Environmental Hazards:** May be toxic to aquatic organisms (Hazardous concentration data pending).

Section 3: Composition/Information on Ingredients

- **Components:**
  - Nickel Oxide (NiO), CAS 1313-99-1, 90–99% (Cu doping: 1–10%).
  - Copper (Cu), CAS 7440-50-8, 1–10%.
- **Note:** Exact dopant concentration is proprietary.

Section 4: First-Aid Measures

- **Inhalation:** Move to fresh air; seek medical attention if symptoms persist.
- **Skin Contact:** Wash with soap and water; remove contaminated clothing.
- **Eye Contact:** Rinse with water for 15 minutes; consult ophthalmologist.
- **Ingestion:** Rinse mouth; do NOT induce vomiting. Seek immediate medical help.

Section 5: Fire-Fighting Measures

- **Extinguishing Media:** Dry chemical, CO_2, or sand.
- **Hazardous Combustion Products:** Nickel oxides, copper oxides (toxic fumes).
- **Protective Equipment:** Full-face respirator and protective suit for firefighters.

Section 6: Accidental Release Measures

- **Personal Precautions:** Use PPE, avoid dust generation.
- **Environmental Precautions:** Contain spillage; prevent entry into waterways.
- **Cleanup:** Collect with HEPA-filter vacuum; store in sealed container.

Section 7: Handling and Storage

- **Handling:** Use in well-ventilated areas; avoid contact with skin/eyes.
- **Storage:** Store in a cool, dry place away from acids/oxidizers.

Section 8: Exposure Controls/Personal Protection

- **Engineering Controls:** Fume hood/local exhaust.
- **PPE:** Nitrile gloves, lab coat, safety goggles, respirator (if airborne).
- **Exposure Limits:**
    - NiO (OSHA PEL): 1 mg/m³ (respirable).
    - Cu (OSHA PEL): 0.1 mg/m³ (fume).

Section 9: Physical and Chemical Properties

- **Appearance:** Black powder.
- **Odor:** Odorless.
- **Melting Point:** ~1955°C (NiO).
- **Solubility:** Insoluble in water.

- **Particle Size:** 20–50 nm.
- **Surface Area:** 30–60 m²/g.

Section 10: Stability and Reactivity

- **Stability:** Stable under normal conditions.
- **Incompatible Materials:** Strong acids, reducing agents.

Section 11: Toxicological Information

- **Acute Effects:** Respiratory/skin/eye irritation.
- **Chronic Effects:** Nickel compounds are IARC Group 2B (possible carcinogens).
- **Nanoparticle-Specific Risks:** Enhanced reactivity; potential for deeper lung penetration.

Section 12: Ecological Information

- **Toxicity:** Toxic to aquatic life; avoid release.
- **Persistence:** Not readily biodegradable.

Section 13: Disposal Considerations

- **Disposal:** Treat as hazardous waste; comply with local regulations.

Section 14: Transport Information

- **Not classified** as dangerous goods under international transport regulations.

Section 15: Regulatory Information

- **Compliance:** TSCA, REACH, OSHA.
- **CA Prop 65:** Nickel compounds listed (cancer risk).

Section 16: Other Information

- **Revision Date:** [Insert Date]

- **Disclaimer:** Data pertains to material as supplied. Nanoparticle hazards may vary with form.

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This SDS provides guidance based on current knowledge. Users must assess risks under their specific conditions.