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Material Safety Data Sheet QSI-Nano[®] Iron / Iron Oxide Powder

1. Product and Company Identification

PRODUCT NAME: QSI-Nano[®] Iron / Iron Oxide Powder
SYNONYMS: Fe / FeO

MANUFACTURER: QuantumSphere, Inc.
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Santa Ana, CA 92705

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2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Iron	7439-89-6	0 – 100%	Yes
Iron-Oxide	1345-25-1	0 – 100%	Yes

CHEMICAL NAME: Iron / Iron Oxide
CHEMICAL FAMILY: Metal / Metal Oxide
CHEMICAL FORMULA: Fe / FeO

3. Hazards Identification

Emergency Overview

Flammable solid. Harmful if swallowed. Avoid breathing vapor or dust. Use adequate ventilation. Avoid contact with eyes, skin, or clothes. Wash thoroughly after handling. Keep closed.

Potential Acute Health Effects

Inhalation: Inhalation of this powder is considered to be the primary route of exposure. It may cause irritation of the respiratory tract and mucous membranes. Inhalation of this powder may cause metal fume fever.

Ingestion: Absorption of iron compounds from the gastrointestinal tract does not normally cause any expected effects.

Skin: May cause irritation, moderately toxic by subcutaneous route.

Eye: May cause irritation.

Potential Chronic Health Effects

Inhalation: Chronic inhalation of iron dust particles for a period of a few months may cause pulmonary pneumonitis.

Ingestion: No chronic health effects recorded.

Skin: May cause dermatitis.

Eye: Irritant dust may cause conjunctivitis damage.

Safety Data

HMIS Ratings:

Health=1, Flammability=3, Reactivity=1

Lab Protective Equip:

Safety Goggles; Lab coat; Protective Neoprene Gloves; handle in Inert Environment under Argon

4. First Aid Measures

Ingestion: If conscious, give water and induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person.

Inhalation: Breathing difficulty, caused by inhalation of dust or fume requires removal to fresh air. If breathing has stopped, perform artificial respiration and seek medical assistance immediately.

Skin Contact: Skin cuts and abrasions can be treated by standard first aid. Skin contamination with dust or powder can be removed with soap and water. If irritation persists, obtain medical assistance.

Eye Contact: Dust or powder should be flushed from the eyes with running water for 15 minutes. If irritation persists, obtain medical assistance.

5. Fire Fighting Measures

Flash Point: Very flammable as a dry powder

Pyrophoric/Autoignition: May ignite upon contact with air

Explosion: Can burn or ignite

Fire Extinguishing Media: Use sand, do not use water to extinguish fire

6. Accidental Release Measures

Spill Response: Because it is a non-renewable resource, this material should be reclaimed when possible.

Disposal Considerations: Because it is a non-renewable resource, this material should be reclaimed when possible. When reclaiming is not feasible and disposal is the only alternative, then it should be done in accordance with all applicable Federal, State, and local regulations.

7. Handling and Storage

Handling:

Avoid contact with skin and eyes. Avoid breathing dust. Use only with adequate ventilation. Always use Neoprene gloves, safety glasses, and a positive flow air mask when opening/emptying containers or

processing this material. Do not eat or drink in work area. Wash with soap and water after exposure to any dust. Keep away from incompatibles such as acetylene, ammonia, and strong oxidizers.

Storage:

This material should be stored in a container tightly closed. Keep container in a cool, well-ventilated area. Do not store adjacent to acids or bases.

8. Exposure Controls, Personal Protection

Engineering Controls:

Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust or fume, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Respiratory Protection Equipment:

Respirators may be necessary when engineering and administrative controls do not adequately prevent exposures. Currently, there are no specific exposure limits for airborne exposures to engineered nanoparticles although occupational exposure limits exist for larger particles of similar chemical composition. The decision to use respiratory protection should be based on professional judgment that takes into account toxicity information, exposure measurement data, and frequency and likelihood of the worker's exposure. Preliminary evidence shows that for respiration filtration media there is no deviation from the classical single-fiber theory for particulates as small as 2.5 nm in diameter. While this evidence needs confirmation, NIOSH certified respirators will be useful for protecting workers from nanoparticle inhalation when properly selected and fit tested as part of a complete respiratory protection program. Use NIOSH approved positive flow mask if dust becomes airborne. Try to avoid creating dust conditions.

Protective Gloves:

Use protective Neoprene gloves, to prevent irritation.

Eye and Face Protection:

Wear safety glasses or face shield and a positive flow air mask in operations that disperse fine particles into the air.

Other Protective Equipment:

To prevent repeated or prolonged skin contact, wear impervious clothing and boots. An eyewash fountain should be readily available in areas of use of handling.

Ventilation:

Use local exhaust ventilation directed towards the source of dust to keep airborne levels below recommended exposure limits.

9. Physical and Chemical Properties

Appearance:	Black powder with a particle range of 3 – 20 nanometers
Odor:	Odorless
Solubility:	Insoluble in water
Specific Gravity @ 25 °C	7.86 g/cm ³
Boiling Point:	2750 °C
Melting Point:	1535 °C
% Volatile by weight	Essentially Zero
% Volatile by volume	Essentially Zero
Vapor Density (Air=1):	Not Applicable
Vapor Pressure:	Not Applicable
Evaporation Rate:	Zero

10. Stability and Reactivity

Chemical Stability: Stable

Hazardous Decomposition Products: None under proper use conditions

Hazardous Polymerization: Will not occur

Incompatibilities: Acetylene, ammonia, and strong oxidizers

Conditions to Avoid: Dust generation, excess heat, and incompatible materials

11. Toxicological Information

Primary Routes of Entry: Inhalation, Skin Contact, Eye, Ingestion

Human Effects and Symptoms of Exposure: Skin: May cause dermatitis; Eye: Will cause irritation

Medical Conditions Aggravated by Exposure: Individuals who may have had allergic reactions to metals or sensitivity, may encounter skin rash or dermatitis if skin comes in contact with product. Persons with impaired pulmonary functions may incur further impairment if inhaled.

Carcinogenic References: None

12. Ecological Information

Environmental: When used and/or disposed of as indicated, no adverse environmental effects are foreseen. If this material is dissolved, the soluble form can be highly detrimental should it escape into the environment.

Environmental Toxicity: No data available

Degradability: Not biodegradable

Mobility: Non-volatile/Insoluble in water

13. Disposal Considerations

Disposal should be made in accordance with Federal, State, and local regulations. Because it is a non-renewable resource, waste material is usually a candidate for recycling.

This material is NOT classified as a hazardous material by RCRA. Use only licensed transporters and permitted disposal facilities and conform to all laws.

14. Transport Information

	US DOT	Canada TDG
Shipping Name	Metal Powder, Flammable, NOS	-
Hazard Class	4.1	-
UN Number	UN3089	UN3089
Packing Group	III	III

15. Regulatory Information

SARA Title III:

No hazardous substances

European/International Regulations:

This product is on the European Inventory of Existing Commercial Chemical Substances

TSCA Status:

These products are pure iron metal/iron oxide powder

RCRA Status:

Not Applicable

OSHA Status:

Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200)

16. Other Information

Label Precautions: Avoid contact with eyes, skin and clothing. Wash thoroughly after handling. Avoid breathing dust or vapors. Keep container closed. Use only with adequate ventilation.

Label First Aid: If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. In all cases, seek medical attention.

Product Use: Laboratory Reagent.

Disclaimer:

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