

Material Safety Data Sheet (MSDS / SDS)

Iron Ore Fines - 57% Fe Grade

SECTION 1: Identification

Product Name	Iron Ore Fines, Natural Mineral (Primarily Hematite)
Synonyms	Iron Ore Fines, Hematite Fines, Iron Ore (57% Fe Grade)
CAS No.	1309-37-1 (Iron(III) Oxide/Hematite, primary component)
Recommended Use	Sinter feed and blast furnace charge blending material for steelmaking
Manufacturer / Supplier	Ochnology Solution Pvt. Ltd., B-153, Sector-4 Defence Colony, Dehradun, Uttarakhand, India - 248001
Telephone	+91 9286823642/43
Email	projects@ochnology.com, bd@ochnology.com

SECTION 2: Hazard(s) Identification

GHS Classification: Not classified as hazardous under GHS for acute health or environmental hazards based on available data. May contain crystalline silica; may cause mechanical irritation to eyes and respiratory tract as a nuisance dust.

Signal Word: None (not classified) - general dust-handling precautions apply; crystalline silica caution applies (see below)

Hazard Statements:

- Not classified as a hazardous substance or mixture under GHS/CLP for acute health or environmental hazards based on available data
- May contain trace to moderate crystalline silica (SiO₂ content up to ≈6.0% per product specification) - prolonged inhalation of respirable crystalline silica dust is associated with silicosis and is classified by IARC as Group 1 (carcinogenic to humans)
- May cause mechanical irritation to eyes and respiratory tract as a nuisance dust at high airborne concentrations

Precautionary Statements:

- P264 - Wash hands thoroughly after handling

- P271 – Use only outdoors or in a well-ventilated area
- P280 – Wear protective gloves/eye protection
- P284 – Wear respiratory protection where dust generation is significant (e.g. crushing, dry screening, transfer)
- P305+P351+P338 – IF IN EYES: Rinse cautiously with water for several minutes; remove contact lenses if present and easy to do; continue rinsing

SECTION 3: Composition / Information on Ingredients

Component	CAS No.	Concentration (w/w)
Iron Oxide (Fe ₂ O ₃ , as hematite – natural mineral)	1309-37-1	≈ 57% Fe equivalent
Silica (SiO ₂), Alumina (Al ₂ O ₃) and other gangue minerals (natural, residual)	–	< 12% (combined)

SECTION 4: First-Aid Measures

Eye Contact	Rinse with plenty of water for several minutes to remove dust particles. Remove contact lenses if present. Seek medical attention if irritation persists.
Skin Contact	Wash with soap and water. Generally non-irritating; seek medical attention if irritation develops.
Inhalation	Move to fresh air. If coughing or respiratory discomfort from dust persists, seek medical attention. Repeated significant exposure to respirable dust from this product should be medically evaluated given possible crystalline silica content.
Ingestion	Rinse mouth with water. Not expected to be harmful in small amounts; seek medical attention if a large quantity is ingested or discomfort occurs.

SECTION 5: Fire-Fighting Measures

- Non-flammable, non-combustible natural mineral; does not itself burn or support combustion
- No specific fire or explosion hazard associated with this product
- Suitable extinguishing media: use media appropriate to the surrounding fire

SECTION 6: Accidental Release Measures

- Avoid generating dust during clean-up; use wet suppression or vacuum with HEPA filtration where practical
- Sweep or vacuum into suitable containers for reuse or disposal
- Spilled material can create a slip hazard on hard floors – clean promptly
- Wear appropriate PPE (dust mask, goggles) during clean-up of large spills

SECTION 7: Handling and Storage

- Avoid generating and inhaling dust; use wet suppression or local exhaust ventilation at dust-generating points (crushing, screening, transfer)
- Where this product is dry-processed, crushed or ground by the buyer, follow applicable respirable crystalline silica exposure regulations (e.g. OSHA Respirable Crystalline Silica Standard) given the SiO₂ content of this product
- Store in a covered or designated open stockyard away from contamination
- Manage moisture content carefully – see Section 14 for important sea-transport moisture requirements
- Segregate different grades to avoid mix-up during storage and loading

SECTION 8: Exposure Controls / Personal Protection

Occupational Exposure Limits

OSHA PEL / ACGIH TLV for iron oxide dust/fume (as Fe₂O₃): 5 mg/m³ (respirable, 8-hr TWA). If respirable crystalline silica is confirmed present, the applicable silica PEL (e.g. OSHA 50 µg/m³ respirable, 8-hr TWA) takes precedence – confirm via batch-specific silica testing for dry-processing use

Engineering Controls

Wet suppression and/or local exhaust ventilation at dust-generating process steps

Eye/Face Protection

Safety glasses or goggles recommended in dusty conditions

Hand Protection

General-purpose work gloves sufficient for routine handling

Respiratory Protection

Dust mask (N95 or equivalent) recommended in dusty conditions; higher-grade respiratory protection (e.g. P100) recommended for dry crushing/grinding operations given possible crystalline silica content

SECTION 9: Physical and Chemical Properties

Property	Unit	Value
Appearance	–	Reddish-brown to grey-brown fine particles
Odour	–	Odourless
Melting Point	°C	≈ 1,560 – 1,600 (hematite)
Density	g/cm ³	≈ 4.9 – 5.3
Solubility in Water	–	Insoluble
Flash Point	–	Not applicable (non-combustible inorganic solid)

SECTION 10: Stability and Reactivity

- Stable under normal conditions of storage, handling and use
- Chemically inert under ambient conditions; does not react under normal storage/handling
- Incompatible materials: strong reducing agents (relevant only at high process temperatures, not a room-temperature hazard)
- Hazardous decomposition products: none under normal conditions

SECTION 11: Toxicological Information

- Low acute oral and dermal toxicity based on published data for iron oxide minerals

- May contain crystalline silica (see Section 2); chronic inhalation of respirable crystalline silica dust is associated with silicosis and is classified by IARC as Group 1 carcinogen – relevant primarily where the buyer dry-crushes, grinds, or otherwise generates respirable dust from this material
- Not classified as carcinogenic (for the iron oxide component itself), mutagenic, or toxic to reproduction based on available information

SECTION 12: Ecological Information

- Not classified as hazardous to aquatic organisms under GHS criteria; iron oxide is chemically inert and insoluble
- May increase turbidity/sedimentation if released to waterways in bulk; not acutely toxic
- No significant bioaccumulation potential

SECTION 13: Disposal Considerations

- Dispose of product in accordance with local, state and national regulations
- Not classified as hazardous waste under standard criteria
- Recoverable material – typically reused/recycled rather than disposed of, given its value as an iron unit source

SECTION 14: Transport Information

UN Number	Not applicable – not classified as Dangerous Goods for chemical hazard purposes
IMSBC Code Classification	Group A – cargo which may liquefy if shipped with moisture content above its Transportable Moisture Limit (TML)
Proper Shipping Name	Iron Ore Fines (bulk solid cargo)
Packing Group	Not applicable (bulk cargo)
Environmental Hazards	None identified under standard transport classification criteria

SECTION 15: Regulatory Information

- Iron oxide is widely listed on major chemical inventories (TSCA, REACH, ECL, etc.) as an existing/registered substance
- **IMPORTANT – Maritime transport:** Iron ore fines are classified under the IMSBC Code as a Group A cargo that can undergo cargo liquefaction (a loss of shear strength causing the cargo to behave like a liquid) if shipped with moisture content above the Transportable Moisture Limit (TML). Cargo liquefaction has caused loss of vessel stability and capsizing in historical incidents involving similar fine ore/mineral cargoes. Moisture content must be verified below the TML (via an accredited testing method) before loading, and shippers must provide the required moisture/TML declaration to the carrier per IMSBC Code requirements
- Buyers/importers and freight-forwarders should ensure full IMSBC Code compliance is arranged for every shipment, particularly for cargo loaded during or shortly after monsoon season when moisture content risk is highest

SECTION 16: Other Information

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This SDS has been compiled based on general industry data and knowledge for Iron Ore Fines products of this type as commercially supplied. It is intended as a general handling and safety guide and does not replace a shipment-specific SDS, moisture/TML testing certificate, or a professional IMSBC Code compliance review, all of which are required for each bulk sea shipment.

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