

SECTION-1: Identification of the substance / mixture and the company / undertaking

Catalogue Number	CS-EP-00223
Product Name	Ferric Oxide Red
CAS No.	1309-37-1
Category	Fine Chemicals
Synonyms	iron(III) oxide
Brand	Clearsynth Labs Ltd.
Identified uses	Laboratory Chemicals
Uses advised against	Not available
Company	Clearsynth Labs Ltd. Mumbai, India
Emergency Phone #	+91-22-245045900
REACH No.	Not available

SECTION 2: Hazards identification

Disclaimer: This is sample MSDS. Please email sales@clearsynth.com for more details.

2.1 Classification of the substance or mixture-Regulation (EC) No 1272/2008:

Skin irritation (Category 2)

Serious eye damage/eye irritation (Category 2)

2.2 Label Elements

Signal Word: Warning



Hazard Statement(s)

Code	Statement
H319	Causes serious eye irritation.
H411	Toxic to aquatic life with long lasting effects.
H370	Not available

H372	Not available
H315	Causes skin irritation.
H318	Causes serious eye damage.
H335	Not available

Precautionary Statement(s)

Code	Statement
P264+P265	Not available
P273	Not available
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present
P337+P317	If eye irritation persists: Get medical help.
P391	Not available
P501	Dispose of contents/container in accordance with local/regional/national/international regulation
P260	Not available
P264	Wash hands thoroughly after handling.
P270	Not available
P308+P316	Not available
P319	Get medical help if you feel unwell.
P321	Specific treatment (see ... on this label).
P405	Store locked up.
P261	Avoid breathing dust/fume/gas/mist/vapours/spray.
P271	Use only outdoors or in a well-ventilated area.
P302+P352	IF ON SKIN: Wash with plenty of water and soap.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P354+P338	Not available
P317	Not available
P332+P317	If skin irritation occurs: Get medical help.
P362+P364	Take off contaminated clothing and wash it before reuse.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.

SECTION 3: Composition / information on ingredients

3.1 Substance

Component : Ferric Oxide Red

CAS Number : 1309-37-1

Molecular Formula : Fe₂O₃

Molecular Weight : 159.69

Parent Chemical : -

Synonyms : iron(III) oxide

Concentration : Not available

SECTION 4: First aid measures

SECTION 4: First-aid measures

4.1 Description of first aid measures

- General advice: Remove contaminated clothing and shoes. Seek medical attention if symptoms persist or develop.
- Inhalation: Move person to fresh air. If breathing is difficult, seek medical attention.
- Skin contact: Wash with soap and water. Get medical attention if irritation occurs.
- Eye contact: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing. Seek medical attention if irritation persists.
- Ingestion: Rinse mouth. Do not induce vomiting. Seek medical attention if feeling unwell.

4.2 Most important symptoms and effects, both acute and delayed

- Not available.

4.3 Indication of any immediate medical attention and special treatment needed

- Treat symptomatically. No data available.

SECTION 5: Firefighting measures

SECTION 5: Fire-fighting measures

5.1 Extinguishing media

- Suitable extinguishing media: Use extinguishing media appropriate for surrounding fire.
- Unsuitable extinguishing media: Not available.

5.2 Special hazards arising from the substance or mixture

- Not available.

5.3 Advice for firefighters

- Wear self-contained breathing apparatus (SCBA) and full protective gear.
- Cool containers with water spray if exposed to fire.
- Fire residues and contaminated extinguishing water must be disposed of in accordance with local regulations.

SECTION 6: Accidental release measures

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

- Avoid generating and breathing dust.
- Use appropriate personal protective equipment.
- Ensure adequate ventilation.

6.2 Environmental precautions

- Avoid release to the environment. Prevent entry into drains, sewers, or waterways.

6.3 Methods and material for containment and cleaning up

- Sweep up or vacuum using equipment suitable for dust collection.
- Place in a suitable, closed container for disposal.
- Clean spill area to remove residual dust.

6.4 Reference to other sections

- See Section 8 for personal protective equipment and Section 13 for disposal considerations.

SECTION-7: Handling and storage

SECTION 7: Handling and storage

7.1 Precautions for safe handling

- Avoid formation of dust.
- Avoid breathing dust and contact with eyes.
- Use with adequate ventilation.
- Wash hands thoroughly after handling.

7.2 Conditions for safe storage, including any incompatibilities

- Store in tightly closed container in a cool, dry, well-ventilated place.
- Protect from moisture.
- Incompatibilities: Not available.

7.3 Specific end use(s)

- Not available.

SECTION 8: Exposure controls / personal protection

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

- Occupational exposure limits: Not available.

8.2 Exposure controls

- Engineering controls: Use local exhaust ventilation or general ventilation to minimize dust exposure.
- Personal protective equipment (PPE):
 - Eye/face protection: Safety glasses with side shields or chemical safety goggles.
 - Skin protection: Protective gloves. Protective clothing as appropriate.
 - Respiratory protection: Use a suitable particulate respirator if dust is generated and ventilation is inadequate.
- Hygiene measures: Do not eat, drink, or smoke when using this product. Wash hands after handling.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Test	Result
Appearance	No data available
IR spectrum	No data available
pH	No data available
Solubility	No data available

Property	Value
a) Physical State	No data available
b) Color	No data available
c) Odor	No data available
d) pH	No data available
e) Vapour Pressure	No data available
f) Viscosity	No data available
g) Initial Boiling Point and boiling range	No data available
h) Melting Point / Freezing Point	No data available
i) Auto Ignition Temperature	No data available
j) Flash Point	No data available
k) Explosion Limit, Lower	No data available
l) Explosion Limit, Upper	No data available
m) Decomposition Temperature	No data available
n) Loss on Drying	No data available
o) Relative Density	No data available
p) Solubility (in DMSO)	No data available
q) Oxidizing Properties	No data available

SECTION 10: Stability and reactivity

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10.1 Reactivity

- No data available.

10.2 Chemical stability

- Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

- No data available.

10.4 Conditions to avoid

- Avoid dust generation and dispersion.
- Other conditions to avoid: Not available.

10.5 Incompatible materials

- Not available.

10.6 Hazardous decomposition products

- Not available.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

- Acute toxicity: /HUMAN EXPOSURE STUDIES/ Bronchoalveolar lavage (BAL) was used to sample lung cells and biochemical components in the lung air spaces at various times from 1 to 91 d after intrapulmonary instillation of 2.6 um-diameter iron oxide particles in human subjects. The instillation of particles induced transient acute inflammation during the first day post instillation (PI), characterized by increased numbers of neutrophils and alveolar macrophages as well as increased amounts of protein, lactate dehydrogenase, and interleukin-8 in BAL fluids. This response was subclinical and was resolved within 4 d PI. A similar dose-dependent response was seen in rats 1 d after intratracheal instillation of the same particles. The particles contained small amounts of soluble iron (240 ng/mg) and possessed the capacity to catalyze oxidant generation in vitro. /These/ findings indicate that the acute inflammation after particle exposure may, at least partially, be the result of oxidant generation catalyzed by the presence of residual amounts of ferric ion, ferric hydroxides, or oxyhydroxides associated with the particles... /Iron oxide/ /HUMAN EXPOSURE STUDIES/ Ten human subjects were given 5 mg of iron oxide particles (2.6 um) by instillation with the use of a bronchoscope, followed by bronchoalveolar lavage at various time points, to assess the cellular and biochemical response to the instilled particles. Iron oxide particles were made via the hydrolysis and hot dialysis of ferric chloride, which resulted in spherical Fe₂O₃ particles that contained a soluble iron concentration of 0.036%. A transient acute inflammatory response was observed following instillation based on the appearance of an increased number of neutrophils and alveolar macrophages, and increased amounts of protein, lactate dehydrogenase and interleukin-8 in bronchoalveolar lavage fluid. The residual amount of soluble iron in these particles was shown to catalyze oxidant generation in vitro, which could at least partially explain the observed transient inflammatory response that resolved within 4 days.

- Skin corrosion/irritation: No data available.
- Serious eye damage/eye irritation: No data available.
- Respiratory or skin sensitization: No data available.
- Germ cell mutagenicity: /OTHER TERRESTRIAL SPECIES/ Studies were conducted to determine the effects of a panel of seven nanomaterials (NMs), namely: alpha-alumina, gamma-alumina, precipitated silica; silica fume, calcined silica fume, colloidal antimony pentoxide (Sb(2)O(5)), and superfine amorphous ferric oxide (Fe(2)O(3)), on sediment dwelling invertebrates Chironomus tentans under controlled laboratory conditions. Percentage survival, enzyme activities, growth development, and DNA fragmentation parameters were studied as acute, biochemical, and physiological toxicities of NMs, respectively. Quantitation of catalase and peroxidase enzyme activity demonstrated that toxicant stress of the NMs increased enzyme activity in a concentration dependent fashion across all treatments. The percentage growth length of the test specimens exposed to different NMs was significantly

reduced compared to the negative control while only five concentrations were not in the toxic range, namely; Fe(2)O(3) (5 ug/kg); silica fume (5 ug/kg, 50 ug/kg); Sb(2)O(5) (5 ug/kg) and calcined silica fume (5 ug/kg). Genotoxic stress assessed by use of DNA laddering showed complementary findings to the other ecotoxicological endpoints tested in this study-the percentage survival and growth length inhibition. /Amorphous ferric oxide nanoparticles/

- Carcinogenicity: Classification of carcinogenicity: 1) evidence in humans: inadequate; 2) evidence suggesting lack of carcinogenicity in animals. Overall summary evaluation of carcinogenic risk to humans is Group 3: The agent is not classifiable as to its carcinogenicity to humans. /From table/ A4; Not classifiable as a human carcinogen.

- Reproductive toxicity: No data available.

- STOT-single exposure: No data available.

- STOT-repeated exposure: /LABORATORY ANIMALS: Acute Exposure/ ... When mice were treated with iron oxide nanoparticles (250 ug/kg, 500 ug/kg, and 1mg/kg) by a single intratracheal instillation, the level of intracellular reduced glutathione (GSH) was decreased in the cells of bronchoalveolar lavage (BAL) fluid. The arrest of cell cycles in G1 phase was observed, but S-phase was significantly decreased. The concentrations of pro-inflammatory cytokines (IL-1, TNF-alpha, and IL-6) were dose-dependently increased at day 1 after instillation in the BAL fluid and in the blood. During the experimental period of 28 days, pro-inflammatory cytokines (IL-1, TNF-alpha, and IL-6), Th0 cytokine (IL-2), Th1 type cytokine (IL-12), Th2 type cytokines (IL-4 and IL-5), TGF-beta, and IgE were also elevated. Expressions of many genes related with inflammation or tissue damage such as heat shock protein, matrix metalloproteinase, tissue inhibitors of metalloproteinases, and serum amyloid A were significantly induced.

Formation of microgranuloma, which is one of the indicators for chronic inflammatory response, was observed in the alveolar space. In addition, distribution of B cell and CD8+ T cell in blood lymphocytes was increased at day 28.

Based on the result, iron oxide nanoparticles may subchronically induce inflammatory responses via oxidative stress in mice by a single intratracheal instillation. /Iron oxide nanoparticles/

- Aspiration hazard: No data available.

Likely routes of exposure

- /LABORATORY ANIMALS: Acute Exposure/ ... The toxic effects of inhalation exposure to ferric oxide (Fe2O3) ... /were investigated/ in rats. Male Wistar rats were consecutively treated with Fe2O3 at 8.5 mg/kg body weight ... twice daily for 3 days. Content of Fe2O3 ... in tissues, biochemical parameters in serum, and hispathological examinations were analyzed at 12 hr and 36 hr after the 3 day treatment. In the Fe2O3-treated group, iron (Fe) content in liver and lung tissues was significantly increased at 36 hr. ... The levels of serum alanine aminotransferase (ALT), aspartate aminotransferase (AST), alkaline phosphatase (ALP), total protein (TP), creatine kinase (CK), and lactate dehydrogenase (LDH) ... were significantly decreased compared to the unexposed controls. Histopathological examination showed that /ferric oxide/ nanoparticles caused severe damage in liver and lung tissues. Although this damage progressed in both liver and lung throughout the postexposure period, no significant elevation of serum enzyme activities was observed...

Symptoms related to the physical, chemical and toxicological characteristics

- /LABORATORY ANIMALS: Acute Exposure/ ... Fe(2)O(3) nanoparticles with mean diameters of 22 and 280 nm, respectively, were intratracheally instilled to male Sprague Dawley rats at low (0.8 mg/kgbw) and high (20 mg/kgbw) doses. The toxic effects were monitored in the post-instilled 1, 7 and 30 days. ... Fe(2)O(3) nanoparticle exposure could induce oxidative stress in lung. Alveolar macrophage (AM) over-loading of phagocytosed nanoparticle by high dose treatment had occurred, while the non-phagocytosed particles were found entering into alveolar epithelial in day 1 after exposure. Several inflammatory reactions including inflammatory and immune cells increase, clinical pathological changes: follicular hyperplasia, protein effusion, pulmonary capillary vessel hyperaemia and alveolar lipoproteinosis in lung were observed. The sustained burden of particles in AM and epithelium cells has caused lung emphysema and pro-sign of lung fibrosis. At the post-instilled day 30, the typical coagulation parameters,

prothrombin time (PT) and activated partial thromboplastin time (APTT) in blood of low dose 22 nm-Fe(2)O(3) treated rats were significantly longer than the controls. We concluded that both of the two-sized Fe(2)O(3) particle intratracheal exposure could induce lung injury. Comparing with the submicron-sized Fe(2)O(3) particle, the nano-sized Fe(2)O(3) particle may increase microvascular permeability and cell lysis in lung epitheliums and disturb blood coagulation parameters significantly.

SECTION 12: Ecological information

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12.1 Toxicity

- No data available.

12.2 Persistence and degradability

- No data available.

12.3 Bioaccumulative potential

- No data available.

12.4 Mobility in soil

- No data available.

12.5 Results of PBT and vPvB assessment

- Not available.

12.6 Endocrine disrupting properties

- No data available.

12.7 Other adverse effects

- No data available.

SECTION 13: Disposal considerations

SECTION 13: Disposal considerations

13.1 Waste treatment methods

- Dispose of contents/container in accordance with local/regional/national/international regulations.

- Avoid generating dust during disposal.

- Do not discharge to drains.

- Recommended disposal method: Not available.

SECTION 14: Transport information

SECTION 14: Transport information

- UN number: Not available.

- UN proper shipping name: Not available.

- Transport hazard class(es): Not available.

- Packing group: Not available.

- Environmental hazards: Not available.

- Special precautions for user: Not available.

- Transport in bulk according to IMO instruments: Not available.

SECTION 15: Regulatory information

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15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

- Not available.

15.2 Chemical safety assessment

- No data available.

SECTION 16: Other information

SECTION 16: Other information

- Product name: Ferric Oxide Red
- CAS No.: 1309-37-1
- Synonyms: iron(III) oxide
- Supplier: Clearsynth Labs Ltd., Mumbai, India
- Emergency phone: +91-22-245045900

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