



SIGMA-ALDRICH

Material Safety Data Sheet

Date Printed: 08/02/2007
Date Updated: 02/05/2006
Version 1.60

Section 1 - Product and Company Information

Product Name Iron(III) oxide, nanopowder, <50nm
Product Number 544884
Brand Aldrich Chemical

Company Sigma-Aldrich
Street Address 3050 Spruce Street
City, State, Zip, Country SAINT LOUIS, MO 63103 US
Technical Phone: 800-325-5832
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Emergency Phone: 314-776-6555

Section 2 - Composition/Information on Ingredient

<u>Substance Name</u>	<u>CAS #</u>	<u>SARA 313</u>	<u>EC no</u>	<u>Annex I Index Number</u>
FERRIC OXIDE	1309-37-1	No	215-168-2	

Formula Fe₂O₃
Synonyms Anchred standard, Anhydrous iron oxide, Anhydrous oxide of iron, Armenian bole, Bauxite residue, Black oxide of iron, Blended red oxides of iron, Burnt iron, Burnt iron, Calcotone Red, Caput mortuum, Colcothar, Colloidal ferric oxide, C.I. 77491, C.I. Pigment Red 101, C.I. Pigment Red 102, C.I. Pigment Red 101 and 102, Crocus martis adstringens, Deanox, Deanox DNX Pigments, Eisenoxyd, English Red, Ferric oxide, Ferric oxide (colloidal), Ferrugine, Iron oxide (ACGIH), Iron Oxide Red, Iron oxide pigments, Iron Red, Iron sesquioxide, Jeweler's rouge, Levanox Red 130A, Light Red, Manufactured iron oxides, Mars Brown, Mars Red, Natural iron oxides, Natural Red Oxide, Ochre, Prussian Brown, Quick rouge, Raddle, 11554 Red, Red Iron Oxide, Red ochre, Red oxide, Red oxide D3452, Red oxide D6984, Red oxide of iron, Rouge (ACGIH:OSHA), Rubigo, Sienna, Specular iron, Stone Red, Supra, Synthetic iron oxide, Venetian Red, Vitriol Red, Vogel's Iron Red, Yellow ferric oxide, Yellow oxide of iron

Section 3 - Hazards Identification

Emergency Overview

Irritant.
Irritating to eyes, respiratory system and skin.

HMIS Rating

Health: 2 Flammability: 0 Reactivity: 0

NFPA Rating

Health: 2 Flammability: 0 Reactivity: 0

For additional information on toxicity, please refer to Section 11.

Section 4 - First Aid Measures

Oral Exposure

If swallowed, wash out mouth with water provided person is conscious. Call a physician.

Inhalation Exposure

If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

Dermal Exposure

In case of contact, immediately wash skin with soap and copious amounts of water.

Eye Exposure

In case of contact, immediately flush eyes with copious amounts of water for at least 15 minutes.

Section 5 - Fire Fighting Measures

Autoignition Temp: N/A

Extinguishing Media

Suitable

Noncombustible. Use extinguishing media appropriate to surrounding fire conditions.

Firefighting

Protective Equipment

Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

Specific Hazard(s)

Emits toxic fumes under fire conditions.

Section 6 - Accidental Release Measures

Procedure(s) of Personal Precaution(s)

Wear respirator, chemical safety goggles, rubber boots, and heavy rubber gloves.

Methods for Cleaning Up

Sweep up, place in a bag and hold for waste disposal. Avoid raising dust. Ventilate area and wash spill site after material pickup is complete.

Section 7 - Handling and Storage

Handling

User Exposure

Do not breathe dust. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure.

Storage

Suitable

Keep tightly closed.

Section 8 - Exposure Controls / PPE

Engineering Controls

Safety shower and eye bath. Mechanical exhaust required.

Personal Protective Equipment

Respiratory

Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). Where risk assessment shows air-purifying respirators are appropriate use a dust mask type N95 (US) or type P1 (EN 143) respirator.

Hand

Compatible chemical-resistant gloves.

Eye

Chemical safety goggles.

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Safety & Environmental
Health

General Hygiene Measures
Wash thoroughly after handling.

Exposure Limits

Country	Type	Value
Poland	NDS	5 MG/M3
Poland	NDSch	10 MG/M3
Poland	NDSP	

Exposure Limits, RTECS

Country	Source	Type	Value
USA	ACGIH	TWA	5 MG/M3 (E)
USA	MSHA Standard		
Remarks: Nuisance Particulates.			
New Zealand	OEL		
Remarks: check ACGIH TLV			
USA	NIOSH	TWA	5 MG/M3

Section 9 - Physical/Chemical Properties

Appearance
Physical State
Solid

Molecular Weight: 159.69 AMU

pH N/A
BP/BP Range N/A
MP/MP Range 565 °C
Freezing Point N/A
Vapor Pressure N/A
Vapor Density N/A
Saturated Vapor Conc. N/A
SG/Density 5.12 g/cm3
Bulk Density N/A
Odor Threshold N/A
Volatile% N/A
VOC Content N/A
Water Content N/A
Solvent Content N/A
Evaporation Rate N/A
Viscosity N/A
Partition Coefficient N/A
Decomposition Temp. N/A
Flash Point °F N/A
Flash Point °C N/A

Explosion Limits N/A

Flammability N/A
Autoignition Temp N/A
Refractive Index 3.01

Solubility

Solubility in Water: Insoluble.

Other Solvents: HYDROCHLORIC ACID, SULFURIC AC, SLIGHTLY SOLUBLE IN HNO3.

N/A = not available

Section 10 - Stability and Reactivity

Stability

Stable

Stable,

Materials to Avoid

Strong acids, Peroxides, Chloroformates.

Hazardous Decomposition Products

Hazardous Decomposition Products

Nature of decomposition products not known.

Hazardous Polymerization

Hazardous Polymerization

Will not occur.

Section 11 - Toxicological Information

Route of Exposure

Skin Contact

Causes skin irritation.

Skin Absorption

May be harmful if absorbed through the skin.

Eye Contact

Causes eye irritation.

Inhalation

Material is irritating to mucous membranes and upper respiratory tract. May be harmful if inhaled.

Ingestion

May be harmful if swallowed.

Signs and Symptoms of Exposure

Long term inhalation exposure to iron (oxide fume or dust) can cause siderosis. Siderosis is considered to be a benign pneumoconiosis and does not normally cause significant physiologic impairment. Siderosis can be observed on x-rays with the lungs having a mottled appearance.

RTECS Number: NO7400000

Irritation Data

Skin - Human:

Remarks: Moderate irritation effect

Eyes - Human:

Remarks: Moderate irritation effect

Chronic Exposure - Carcinogen

Result: This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.

Rat - Subcutaneous: 135 MG/KG

Result: Tumorigenic: Equivocal tumorigenic agent by RTECS criteria. Tumorigenic: Tumors at site of application.

IARC Carcinogen List

Rating
Group 3

ACGIH Carcinogen List

Rating
A4

Section 12 - Ecological Information

No data available.

Section 13 - Disposal Considerations

Appropriate Method of Disposal of Substance or Preparation

Contact a licensed professional waste disposal service to dispose of this material.
Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.
Observe all federal, state, and local environmental regulations.

Section 14 - Transport Information

DOT

Proper Shipping Name: None

Non-Hazardous for Transport: This substance is considered to be non-hazardous for transport.

IATA

Non-Hazardous for Air Transport: Non-hazardous for air transport.

Section 15 - Regulatory Information

EU Additional Classification

Symbol of Danger: Xi

Indication of Danger

Irritant.

Risk Statements R: 36/37/38
Irritating to eyes, respiratory system and skin.

Safety Statements S: 26

In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

US Classification and Label Text

Indication of Danger

Irritant.

Risk Statements
Irritating to eyes, respiratory system and skin.

Safety Statements
In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

United States Regulatory Information

SARA Listed: No

TSCA Inventory Item: Yes

Canada Regulatory Information

WHMIS Classification

This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.

DSL: Yes

NDSL: No

Section 16 - Other Information

Disclaimer

For R&D use only. Not for drug, household or other uses.

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Warranty

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2007 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.

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