

## 1 Identification

### Product identifier

**Product name:** Iron powder

**Stock number:** 00170

**CAS Number:**

7439-89-6

**EC number:**

231-096-4

**Relevant identified uses of the substance or mixture and uses advised against.**

**Identified use:** SU24 Scientific research and development

### Details of the supplier of the safety data sheet

#### Manufacturer/Supplier:

Alfa Aesar

Thermo Fisher Scientific Chemicals, Inc.

30 Bond Street

Ward Hill, MA 01835-8099

Tel: 800-343-0660

Fax: 800-322-4757

Email: tech@alfa.com

www.alfa.com

**Information Department:** Health, Safety and Environmental Department

#### Emergency telephone number:

During normal business hours (Monday-Friday, 8am-7pm EST), call (800) 343-0660. After normal business hours, call Carechem 24 at (866) 928-0789.

## 2 Hazard(s) identification

### Classification of the substance or mixture in accordance with 29 CFR 1910 (OSHA HCS)



GHS02 Flame

Flam. Sol. 1 H228 Flammable solid.



GHS07

Eye Irrit. 2A H319 Causes serious eye irritation.

STOT SE 3 H335 May cause respiratory irritation.

**Hazards not otherwise classified** No information known.

### Label elements

**GHS label elements** The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)

### Hazard pictograms



GHS02 GHS07

### Signal word

**Danger**

### Hazard statements

H228 Flammable solid.

H319 Causes serious eye irritation.

H335 May cause respiratory irritation.

### Precautionary statements

P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.

P261 Avoid breathing dust/fume/gas/mist/vapors/spray

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 and easy to do. Continue rinsing.

P405 Store locked up.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

### WHMIS classification

B4 - Flammable solid

D2B - Toxic material causing other toxic effects



### Classification system

#### HMIS ratings (scale 0-4)

#### (Hazardous Materials Identification System)

HEALTH 1 Health (acute effects) = 1

FIRE 3 Flammability = 3

REACTIVITY 1 Physical Hazard = 1

### Other hazards

#### Results of PBT and vPvB assessment

PBT: Not applicable.

vPvB: Not applicable.

## 3 Composition/information on ingredients

### Chemical characterization: Substances

#### CAS# Description:

7439-89-6 Iron

**Concentration:** ≤100%

**Identification number(s):**

**EC number:** 231-096-4

**Product name:** *Iron powder*

(Contd. of page 1)

**4 First-aid measures**

**Description of first aid measures**  
**After inhalation**  
Supply fresh air. If required, provide artificial respiration. Keep patient warm.  
Seek immediate medical advice.  
**After skin contact**  
Immediately wash with water and soap and rinse thoroughly.  
Seek immediate medical advice.  
**After eye contact** Rinse opened eye for several minutes under running water. Then consult a doctor.  
**After swallowing** Seek medical treatment.  
**Information for doctor**  
**Most important symptoms and effects, both acute and delayed** Causes serious eye irritation.  
**Indication of any immediate medical attention and special treatment needed** No further relevant information available.

**5 Fire-fighting measures**

**Extinguishing media**  
**Suitable extinguishing agents** Special powder for metal fires. Do not use water.  
**For safety reasons unsuitable extinguishing agents** Water  
**Special hazards arising from the substance or mixture**  
If this product is involved in a fire, the following can be released:  
Iron oxides  
**Advice for firefighters**  
**Protective equipment:**  
Wear self-contained respirator.  
Wear fully protective impervious suit.

**6 Accidental release measures**

**Personal precautions, protective equipment and emergency procedures**  
Wear protective equipment. Keep unprotected persons away.  
Ensure adequate ventilation  
Keep away from ignition sources  
**Environmental precautions:** Do not allow product to reach sewage system or any water course.  
**Methods and material for containment and cleaning up:** Ensure adequate ventilation.  
**Prevention of secondary hazards:** Keep away from ignition sources.  
**Reference to other sections**  
See Section 7 for information on safe handling  
See Section 8 for information on personal protection equipment.  
See Section 13 for disposal information.  
**Protective Action Criteria for Chemicals**  
**PAC-1:** 3.2 mg/m<sup>3</sup>  
**PAC-2:** 35 mg/m<sup>3</sup>  
**PAC-3:** 150 mg/m<sup>3</sup>

**7 Handling and storage**

**Handling**  
**Precautions for safe handling**  
Keep container tightly sealed.  
Store in cool, dry place in tightly closed containers.  
Ensure good ventilation at the workplace.  
**Information about protection against explosions and fires:** Protect against electrostatic charges.  
**Conditions for safe storage, including any incompatibilities**  
**Storage**  
**Requirements to be met by storerooms and receptacles:** Store in a cool location.  
**Information about storage in one common storage facility:**  
Do not store together with acids.  
Store away from oxidizing agents.  
**Further information about storage conditions:**  
Keep container tightly sealed.  
Store in cool, dry conditions in well sealed containers.  
**Specific end use(s)** No further relevant information available.

**8 Exposure controls/personal protection**

**Additional information about design of technical systems:**  
Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

**Control parameters**

**Components with limit values that require monitoring at the workplace:**

**7439-89-6 Iron (100.0%)**

EV (Canada)	Long-term value: 1* 5** mg/m <sup>3</sup> as iron;*salts, water-soluble;**welding fume
TLV (Canada)	Long-term value: 5 mg/m <sup>3</sup>

**Additional information:** No data

**Exposure controls**  
**Personal protective equipment**  
**General protective and hygienic measures**  
The usual precautionary measures for handling chemicals should be followed.  
Keep away from foodstuffs, beverages and feed.  
Remove all soiled and contaminated clothing immediately.  
Wash hands before breaks and at the end of work.  
Avoid contact with the eyes.  
Avoid contact with the eyes and skin.  
Maintain an ergonomically appropriate working environment.  
**Breathing equipment:** Use suitable respirator when high concentrations are present.  
**Recommended filter device for short term use:**  
Use a respirator with type N95 (USA) or PE (EN 143) cartridges as a backup to engineering controls. Risk assessment should be performed to determine if air-purifying respirators are appropriate. Only use equipment tested and approved under appropriate government standards.

(Contd. on page 3)  
USA

**Product name: Iron powder**

(Contd. of page 2)

**Protection of hands:**

Impervious gloves

Check protective gloves prior to each use for their proper condition.

The selection of suitable gloves not only depends on the material, but also on quality. Quality will vary from manufacturer to manufacturer.

**Material of gloves** Nitrile rubber, NBR

**Penetration time of glove material (in minutes)** 480

**Glove thickness:** 0.11 mm

**Eye protection:** Safety glasses with side shields / NIOSH (US) or EN 166(EU)

**Body protection:** Protective work clothing.

**9 Physical and chemical properties**

**Information on basic physical and chemical properties**

**General Information**

**Appearance:**

**Form:** Powder  
**Odor:** Not determined  
**Odor threshold:** Not determined.

**pH-value:** Not applicable.

**Change in condition**

**Melting point/Melting range:** 1538 °C (2800 °F)  
**Boiling point/Boiling range:** 2740 °C (4964 °F)  
**Sublimation temperature / start:** Not determined  
**Flammability (solid, gaseous):** Highly flammable.  
**Ignition temperature:** Not determined  
**Decomposition temperature:** Not determined  
**Auto igniting:** Not determined.

**Danger of explosion:** Not determined.

**Explosion limits:**

**Lower:** Not determined  
**Upper:** Not determined  
**Vapor pressure:** Not applicable.  
**Density at 20 °C (68 °F):** 7.87 g/cm<sup>3</sup> (65.675 lbs/gal)

**Bulk density at 20 °C (68 °F):** 2900 kg/m<sup>3</sup>  
**Relative density:** Not determined.  
**Vapor density:** Not applicable.  
**Evaporation rate:** Not applicable.

**Solubility in / Miscibility with Water:** Not determined  
**Partition coefficient (n-octanol/water):** Not determined.

**Viscosity:**  
**dynamic:** Not applicable.  
**kinematic:** Not applicable.  
**Other information** No further relevant information available.

**10 Stability and reactivity**

**Reactivity** No information known.

**Chemical stability** Stable under recommended storage conditions.

**Thermal decomposition / conditions to be avoided:** Decomposition will not occur if used and stored according to specifications.

**Possibility of hazardous reactions** Reacts with strong oxidizing agents

**Conditions to avoid** No further relevant information available.

**Incompatible materials:**

Acids

Oxidizing agents

**Hazardous decomposition products:** Iron oxides

**11 Toxicological information**

**Information on toxicological effects**

**Acute toxicity:** The Registry of Toxic Effects of Chemical Substances (RTECS) contains acute toxicity data for this substance.

**LD/LC50 values that are relevant for classification:**

Oral LD50 30000 mg/kg (rat)

**Skin irritation or corrosion:** May cause irritation

**Eye irritation or corrosion:** May cause irritation

**Sensitization:** No sensitizing effects known.

**Germ cell mutagenicity:** No effects known.

**Carcinogenicity:**

The Registry of Toxic Effects of Chemical Substances (RTECS) contains tumorigenic and/or carcinogenic and/or neoplastic data for this substance.

No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.

**Reproductive toxicity:** No effects known.

**Specific target organ system toxicity - repeated exposure:** No effects known.

**Specific target organ system toxicity - single exposure:** May cause respiratory irritation.

**Aspiration hazard:** No effects known.

**Subacute to chronic toxicity:** The Registry of Toxic Effects of Chemical Substances (RTECS) contains multiple dose toxicity data for this substance.

**Additional toxicological information:** To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

**12 Ecological information**

**Toxicity**

**Aquatic toxicity:** No further relevant information available.

**Persistence and degradability** No further relevant information available.

**Bioaccumulative potential** No further relevant information available.

**Mobility in soil** No further relevant information available.

**Additional ecological information:**

**General notes:** Avoid transfer into the environment.




(Contd. on page 4)  
USA

Product name: **Iron powder**

**Results of PBT and vPvB assessment**  
PBT: Not applicable.  
vPvB: Not applicable.  
Other adverse effects No further relevant information available.



**13 Disposal considerations**  
Waste treatment methods  
Recommendation Consult state, local or national regulations to ensure proper disposal.  
Uncleaned packagings:  
Recommendation: Disposal must be made according to official regulations.

**14 Transport information**

UN-Number DOT, IMDG, IATA	UN3089
UN proper shipping name DOT ADR IMDG, IATA	Metal powders, flammable, n.o.s. (Iron) 3089 Metal powders, flammable, n.o.s. METAL POWDER, FLAMMABLE, N.O.S. (Iron)
Transport hazard class(es) DOT	
	
Class Label ADR	4.1 Flammable solids, self-reactive substances and solid desensitised explosives 4.1
	
Class	4.1 (F3) Flammable solids, self-reactive substances and solid desensitised explosives
Label IMDG, IATA	4.1
	
Class Label	4.1 Flammable solids, self-reactive substances and solid desensitised explosives 4.1
Packing group DOT, ADR, IMDG, IATA	II
Environmental hazards:	Not applicable.
Special precautions for user	Warning: Flammable solids, self-reactive substances and solid desensitised explosives F-G, S-G Heavy metals and their salts (including their organometallic compounds), powdered metals B H1 Keep as dry as reasonably practicable SG17 Stow "separated from" class 5.1 SG25 Stow "separated from" goods of classes 2.1 and 3. SG26 In addition: from goods of classes 2.1 and 3 when stowed on deck of a containership a minimum distance of two container spaces athwartship shall be maintained, when stowed on ro-ro ships a distance of 6 m athwartship shall be maintained.
EMS Number: Segregation groups	
Stowage Category Handling Code Segregation Code	
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable.
Transport/Additional information:	
DOT Quantity limitations	On passenger aircraft/rail: 15 kg On cargo aircraft only: 50 kg
Marine Pollutant (DOT):	No
IMDG Limited quantities (LQ) Excepted quantities (EQ)	1 kg Code: E2 Maximum net quantity per inner packaging: 30 g Maximum net quantity per outer packaging: 500 g
UN "Model Regulation":	UN 3089 METAL POWDERS, FLAMMABLE, N.O.S., 4.1, II

**15 Regulatory information**

Safety, health and environmental regulations/legislation specific for the substance or mixture  
GHS label elements The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)  
Hazard pictograms

	
GHS02	GHS07
Signal word	Danger
Hazard statements	
H228	Flammable solid.
H319	Causes serious eye irritation.

**Product name: Iron powder**

(Contd. of page 4)

H335 May cause respiratory irritation.

**Precautionary statements**

P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.  
P261 Avoid breathing dust/fume/gas/mist/vapors/spray  
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 and easy to do. Continue rinsing.  
P405 Store locked up.  
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

**National regulations**

All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory.

All components of this product are listed on the Canadian Domestic Substances List (DSL).

**SARA Section 313 (specific toxic chemical listings)** Substance is not listed.

**California Proposition 65**

**Prop 65 - Chemicals known to cause cancer** Substance is not listed.

**Prop 65 - Developmental toxicity** Substance is not listed.

**Prop 65 - Developmental toxicity, female** Substance is not listed.

**Prop 65 - Developmental toxicity, male** Substance is not listed.

**Information about limitation of use:** For use only by technically qualified individuals.

**Other regulations, limitations and prohibitive regulations**

**Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006.** Substance is not listed.

**The conditions of restrictions according to Article 67 and Annex XVII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturing, placing on the market and use must be observed.**

Substance is not listed.

**Annex XIV of the REACH Regulations (requiring Authorisation for use)** Substance is not listed.

**Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

**16 Other information**

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

**Department issuing SDS:** Global Marketing Department

**Date of preparation/Revision:** Print date, revision date and version number are in the header of each page.

**Abbreviations and acronyms:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

EINECS: European Inventory of Existing Commercial Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

HMIS: Hazardous Materials Identification System (USA)

WHMIS: Workplace Hazardous Materials Information System (Canada)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

SVHC: Substances of Very High Concern

vPvB: very Persistent and very Bioaccumulative

ACGIH: American Conference of Governmental Industrial Hygienists (USA)

OSHA: Occupational Safety and Health Administration (USA)

NTP: National Toxicology Program (USA)

IARC: International Agency for Research on Cancer

EPA: Environmental Protection Agency (USA)

Flam. Sol. 1: Flammable solids – Category 1

Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A

STOT SE 3: Specific target organ toxicity (single exposure) – Category 3