# SAFETY DATA SHEET

**Revision date:** 28-Jul-2022

**Revision Number** 3

## 1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

**Product identifier**

**Product Name** PIG IRON

**Product Code(s)** 000000051885

**Other means of identification**

**CAS No.** 7439-89-6

**Recommended use of the chemical and restrictions on use**

**Recommended use** Furnace addition in iron making.

**Uses advised against** No information available.

**Supplier**
Ixom Operations Pty Ltd
ABN: 51 600 546 512
Level 8, 1 Nicholson Street
Melbourne 3000
Australia

Telephone Number: +61 3 9906 3000

**Emergency telephone number**

Emergency telephone number **1 800 033 111 (ALL HOURS)**

Please ensure you refer to the limitations of this Safety Data Sheet as set out in the "Other Information" section at the end of this Data Sheet.

## 2. HAZARDS IDENTIFICATION

**GHS Classification**

Not classified as dangerous goods in accordance with the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG)

Not classified as a hazardous chemical in accordance with the criteria of Safe Work Australia - Globally Harmonized System (GHS)

**Label elements**

**Hazard statements**

**Other hazards which do not result in classification**
**General Hazards**

**Poisons Schedule (SUSMP)** None allocated

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

**Substance**

| Chemical name | CAS No. | Weight-% |
|---|---|---|
| Iron | 7439-89-6 | >93 |
| Carbon | 7440-44-0 | <6 |
| Silicon | 7440-21-3 | <=2 |
| Manganese | 7439-96-5 | 0.2-1 |
| Impurities | - | to 100 |

## 4. FIRST AID MEASURES

**Description of first aid measures**

**General advice** For advice, contact a Poisons Information Centre (e.g. phone Australia 13 11 26; New Zealand 0800 764 766) or a doctor.

**Inhalation** Remove to fresh air. Call a physician if symptoms occur.

**Eye contact** In case of eye contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if symptoms occur.

**Skin contact** Wash with plenty of water. Get medical attention if symptoms occur.

**Ingestion** Rinse mouth thoroughly with water. Drink 1 or 2 glasses of water. Do NOT induce vomiting. Get medical attention if symptoms occur.

**Most important symptoms and effects, both acute and delayed**

**Symptoms** Coughing and/ or wheezing.

**Indication of any immediate medical attention and special treatment needed**

**Note to physicians** Treat symptomatically.

## 5. FIRE FIGHTING MEASURES

**Suitable Extinguishing Media**

**Suitable Extinguishing Media** Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

**Unsuitable extinguishing media** Water.

**Specific hazards arising from the chemical**

**Specific hazards arising from the chemical** Non-combustible.

**Special protective actions for fire-fighters**

**Special protective equipment for fire-fighters** Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

## 6. ACCIDENTAL RELEASE MEASURES

**Personal precautions, protective equipment and emergency procedures**

**Personal precautions** Avoid contact with skin and eyes. Avoid breathing dust or spray mist. Use personal protective equipment as required. Wash thoroughly after handling.

**For emergency responders** Use personal protection recommended in Section 8.

**Environmental precautions**

**Environmental precautions** See Section 12 for additional Ecological Information.

**Methods and material for containment and cleaning up**

**Methods for containment** Prevent further leakage or spillage if safe to do so.

**Methods for cleaning up** Use appropriate personal protective equipment (PPE). Carefully shovel or sweep up spilled material and place in suitable container. Avoid generating dust.

## 7. HANDLING AND STORAGE

**Precautions for safe handling**

**Advice on safe handling** Avoid contact with skin and eyes. Avoid breathing dust or spray mist. Avoid generation of dust. Use personal protection equipment. Wash thoroughly after handling.

**Conditions for safe storage, including any incompatibilities**

**Storage Conditions** Keep in a dry, cool and well-ventilated place. Protect from moisture. Keep container closed when not in use.

**Incompatible materials** Acids. Chlorine trifluoride.

**Poisons Schedule (SUSMP)** None allocated

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Control parameters**

**Exposure Limits** No value assigned for this specific material by Safe Work Australia. However, Workplace Exposure Standard(s) for constituent(s):

Silicon: 8hr TWA = 10 mg/m $^3$
Manganese, dust & compounds (as Mn): 8hr TWA = 1 mg/m$^3$
Manganese, fume (as Mn): 8hr TWA = 1 mg/m$^3$, 15 min STEL = 3 mg/m$^3$

As published by Safe Work Australia Workplace Exposure Standards for Airborne Contaminants.

TWA - The time-weighted average airborne concentration of a particular substance when calculated over an eight-hour working day, for a five-day working week.

STEL (Short Term Exposure Limit) - the airborne concentration of a particular substance calculated as a time-weighted average over 15 minutes, which should not be exceeded at any time during a normal eight hour work day. According to current knowledge this concentration should neither impair the health of, nor cause undue discomfort to, nearly all workers.

These Workplace Exposure Standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These workplace exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.

**Appropriate engineering controls**

**Engineering controls** Apply technical measures to comply with the occupational exposure limits.

If in the handling and application of this material, safe exposure levels could be exceeded, the use of engineering controls such as local exhaust ventilation must be considered and the results documented. If achieving safe exposure levels does not require engineering controls, then a detailed and documented risk assessment using the relevant Personal Protective Equipment (PPE) (refer to PPE section below) as a basis must be carried out to determine the minimum PPE requirements.

**Individual protection measures, such as personal protective equipment**

The selection of PPE is dependent on a detailed risk assessment. The risk assessment should consider the work situation, the physical form of the chemical, the handling methods, and environmental factors.

OVERALLS, SAFETY SHOES, SAFETY GLASSES, GLOVES, DUST MASK.

**Eye/face protection** Glasses.

**Skin and body protection** Protective shoes or boots. Overalls.

**Hand protection** Impervious gloves.

**Respiratory protection** If determined by a risk assessment an inhalation risk exists, wear a dust mask/respirator meeting the requirements of AS/NZS 1715 and AS/NZS 1716.

**Environmental exposure controls** No information available.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Information on basic physical and chemical properties**

| | |
|---|---|
| **Physical state** | Solid |
| **Appearance** | No information available. |
| **Color** | Metallic Grey |
| **Odor** | Odourless |
| **Odor threshold** | No information available. |

| **Property** | **Values** | **Remarks • Method** |
|---|---|---|
| **pH** | Not applicable | None known |
| **pH (as aqueous solution)** | No data available | None known |
| **Melting point / freezing point** | 1150-1538°C | None known |
| **Boiling point / boiling range** | 2861°C | None known |

| | | |
|---|---|---|
| **Flash point** | Not applicable | None known |
| **Evaporation rate** | No data available | None known |
| **Flammability (solid, gas)** | No data available | None known |
| **Flammability Limit in Air** | | None known |
| **Upper flammability or explosive limits** | Not applicable | |
| **Lower flammability or explosive limits** | Not applicable | |
| **Vapor pressure** | No data available | None known |
| **Vapor density** | Not applicable | None known |
| **Relative density** | 7.4-7.8 @20°C | None known |
| **Water solubility** | Insoluble in water | None known |
| **Solubility(ies)** | No data available | None known |
| **Partition coefficient** | No data available | None known |
| **Autoignition temperature** | Not applicable | None known |
| **Decomposition temperature** | ca. 400-500°C | None known |
| **Kinematic viscosity** | Not applicable | None known |
| **Dynamic viscosity** | No data available | None known |

**Other information**

## 10. STABILITY AND REACTIVITY

**Reactivity**

**Reactivity** Reacts with acids.

**Chemical stability**

**Stability** Stable under normal conditions.

**Explosion data**

**Sensitivity to mechanical impact** None.

**Sensitivity to static discharge** None.

**Possibility of hazardous reactions**

**Possibility of hazardous reactions** None under normal processing.

**Hazardous polymerization** Hazardous polymerization does not occur.

**Conditions to avoid**

**Conditions to avoid** Moisture. Dust formation.

**Incompatible materials**

**Incompatible materials** Acids. Chlorine trifluoride.

**Hazardous decomposition products**

**Hazardous decomposition products** Metal oxides.

## 11. TOXICOLOGICAL INFORMATION

**Acute toxicity**

**Information on likely routes of exposure**

**Product Information** No adverse health effects expected if the chemical is handled in accordance with this Safety Data Sheet and the chemical label. Symptoms or effects that may arise if the chemical is mishandled and overexposure occurs are:

**Inhalation** May cause irritation.

**Eye contact** Dust contact with the eyes can lead to mechanical irritation.

**Skin contact** May cause irritation.

**Ingestion** May cause gastrointestinal discomfort if consumed in large amounts.

**Symptoms** Coughing and/ or wheezing.

**Numerical measures of toxicity - Product Information**
Refer to component information below.

**Component Information**

| Chemical name | Oral LD50 | Dermal LD50 | Inhalation LC50 |
|---|---|---|---|
| Iron | = 30 g/kg ( Rat ) | - | - |
| Carbon | > 10000 mg/kg ( Rat ) | - | - |
| Silicon | = 3160 mg/kg ( Rat ) | - | - |
| Manganese | = 9 g/kg ( Rat ) | - | - |

*See section 16 for terms and abbreviations*

**Delayed and immediate effects as well as chronic effects from short and long-term exposure**

**Skin corrosion/irritation** Not classified.

**Serious eye damage/eye irritation** Not classified.

**Respiratory or skin sensitization** Not classified.

**Germ cell mutagenicity** Not classified.

**Carcinogenicity** No information available.

**Reproductive toxicity** No information available.

**STOT - single exposure** No information available.

**STOT - repeated exposure** No information available.

**Aspiration hazard** No information available.

## 12. ECOLOGICAL INFORMATION

**Ecotoxicity**

**Ecotoxicity** Keep out of waterways.

| Chemical name | Algae/aquatic plants | Fish | Toxicity to | Crustacea |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| | | | microorganisms | |
| Iron | - | LC50: =13.6mg/L (96h, Morone saxatilis) | - | - |
| Manganese | - | LC50: >3.6mg/L (96h, Oncorhynchus mykiss) | - | - |

**Persistence and degradability**

**Persistence and degradability** No information available.

**Bioaccumulative potential**

**Bioaccumulation** No information available.

**Mobility**

**Mobility in soil** No information available.

**Other adverse effects**

## 13. DISPOSAL CONSIDERATIONS

**Waste treatment methods**

**Waste from residues/unused products** Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.

## 14. TRANSPORT INFORMATION

**ADG**
Not classified as Dangerous Goods by the criteria of the Australian Dangerous Goods Code (ADG Code) for transport by Road and Rail; NON-DANGEROUS GOODS.

**IATA**
Not classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air; NON-DANGEROUS GOODS.

**IMDG**
Not classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea; NON-DANGEROUS GOODS.

## 15. REGULATORY INFORMATION

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

**National regulations**

**Australia**
Not classified as dangerous goods in accordance with the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG)

Not classified as a hazardous chemical in accordance with the criteria of Safe Work Australia - Globally Harmonized System (GHS)

See section 8 for national exposure control parameters

**Poisons Schedule (SUSMP)** None allocated

**National pollutant inventory**
Subject to reporting requirement

| Chemical name | National pollutant inventory |
|---|---|
| Manganese - 7439-96-5 | 10 tonne/yr Threshold category 1 |

**International Inventories**

**AIIC** This material is listed on the Australian Inventory of Industrial Chemicals.
**NZIoC** This material is listed on the New Zealand Inventory of Chemicals.

**Legend:**
**AIIC - Australian Inventory of Industrial Chemicals**
**NZIoC - New Zealand Inventory of Chemicals**

**International Regulations**

**The Montreal Protocol on Substances that Deplete the Ozone Layer** Not applicable

**The Stockholm Convention on Persistent Organic Pollutants** Not applicable

**The Rotterdam Convention** Not applicable

## 16. OTHER INFORMATION

Supplier Safety Data Sheet 11/ 2018

**Reason(s) For Issue:** Revised Primary SDS

**Issuing Date:** 28-Jul-2022

This Safety Data Sheet has been prepared by Ixom Operations Pty Ltd (Toxicology and SDS Services).

**Revision Note:**
The symbol (*) in the margin of this SDS indicates that this line has been revised.

**Key or legend to abbreviations and acronyms used in the safety data sheet**
Legend Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

| | | | |
|---|---|---|---|
| TWA | TWA (time-weighted average) | STEL | STEL (Short Term Exposure Limit) |
| Ceiling | Maximum limit value | * | Skin designation |
| C | Carcinogen | | |

**Key literature references and sources for data used to compile the SDS**

EPA (Environmental Protection Agency)
Acute Exposure Guideline Level(s) (AEGL(s))
U.S. Environmental Protection Agency Federal Insecticide, Fungicide, and Rodenticide Act
U.S. Environmental Protection Agency High Production Volume Chemicals
Food Research Journal
Hazardous Substance Database
International Uniform Chemical Information Database (IUCLID)
Japan GHS Classification
Australian Industrial Chemicals Introduction Scheme (AICIS)

NIOSH (National Institute for Occupational Safety and Health)
National Library of Medicine's ChemID Plus (NLM CIP)
National Library of Medicine's PubMed database (NLM PUBMED)
National Toxicology Program (NTP)
New Zealand's Chemical Classification and Information Database (CCID)
Organization for Economic Co-operation and Development Environment, Health, and Safety Publications
Organization for Economic Co-operation and Development High Production Volume Chemicals Program
Organization for Economic Co-operation and Development Screening Information Data Set
RTECS (Registry of Toxic Effects of Chemical Substances)
World Health Organization

**Disclaimer**

**This SDS summarises to our best knowledge at the date of issue, the chemical health and safety hazards of the material and general guidance on how to safely handle the material in the workplace. Since Ixom Operations Pty Ltd cannot anticipate or control the conditions under which the product may be used, each user must, prior to usage, assess and control the risks arising from its use of the material.**

**If clarification or further information is needed, the user should contact their Ixom representative or Ixom Operations Pty Ltd at the contact details on page 1.**

**Ixom Operations Pty Ltd's responsibility for the material as sold is subject to the terms and conditions of sale, a copy of which is available upon request.**

**End of Safety Data Sheet**