

### 1. IDENTIFICATION

<b>Product Name</b>	<b>Chromite Sand/Flour</b>
<b>Other Names</b>	Chrome Ore; Chromite Ore; Dichromium Iron Tetraoxide
<b>Uses</b>	A raw material for the manufacture of various chemicals, alloys and refractories.
<b>Chemical Family</b>	No Data Available
<b>Chemical Formula</b>	Cr.Fe.O
<b>Chemical Name</b>	Chromite Sand/Flour
<b>Product Description</b>	No Data Available

#### Contact Details of the Supplier of this Safety Data Sheet

Organisation	Location	Telephone
Redox Pty Ltd	2 Swettenham Road Minto NSW 2566 Australia	+61-2-97333000
Redox Pty Ltd	11 Mayo Road Wiri Auckland 2104 New Zealand	+64-9-2506222
Redox Inc.	3960 Paramount Boulevard Suite 107 Lakewood CA 90712 USA	+1-424-675-3200
Redox Chemicals Sdn Bhd	Level 2, No. 8, Jalan Sapir 33/7 Seksyen 33, Shah Alam Premier Industrial Park 40400 Shah Alam Sengalor, Malaysia	+60-3-5614-2111

#### Emergency Contact Details

*For emergencies only; DO NOT contact these companies for general product advice.*

Organisation	Location	Telephone
Poisons Information Centre	Westmead NSW	1800-251525 131126
Chemcall	Australia	1800-127406 +64-4-9179888
Chemcall	Malaysia	+64-4-9179888
Chemcall	New Zealand	0800-243622 +64-4-9179888
National Poisons Centre	New Zealand	0800-764766
CHEMTREC	USA & Canada	1-800-424-9300 CN723420 +1-703-527-3887

### 2. HAZARD IDENTIFICATION

**Poisons Schedule (Aust)** Not scheduled

#### Globally Harmonised System

<b>Hazard Classification</b>	NOT hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)		
<b>Hazard Categories</b>	Acute Hazard To The Aquatic Environment - Category 3		
<b>Signal Word</b>	None		
<b>Hazard Statements</b>	<b>H402</b>	Harmful to aquatic life.	
<b>Precautionary Statements</b>	Prevention	<b>P273</b>	Avoid release to the environment.
	Disposal	<b>P501</b>	Dispose of contents/container in accordance with local / regional / national / international regulations.

### National Transport Commission (Australia)

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

<b>Dangerous Goods Classification</b>	NOT Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)		
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### Environmental Protection Authority (New Zealand)

Hazardous Substances and New Organisms Amendment Act 2015

<b>HSNO Classifications</b>	Environmental Hazards	<b>9.1D</b>	Substances that are slightly harmful to the aquatic environment or are otherwise designed for biocidal action
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## 3. COMPOSITION/INFORMATION ON INGREDIENTS

### Ingredients

Chemical Entity	Formula	CAS Number	Proportion
Chromite Sand/Flour	No Data Available	1308-31-2	100.0 %

## 4. FIRST AID MEASURES

### Description of necessary measures according to routes of exposure

<b>Swallowed</b>	Immediately give a glass of water. first aid is generally not required. If in doubt or symptoms develop, seek medical attention.
<b>Eye</b>	Immediately flush eyes with plenty of water for 15 minutes, holding eyelids open. If irritation develops/persists, seek medical attention.
<b>Skin</b>	Remove contaminated clothing. Wash affected area with soap and plenty of water. If irritation persists, seek medical attention.
<b>Inhaled</b>	Remove victim from exposure to fresh air. If not breathing, apply artificial respiration. If breathing is difficult, give oxygen. Seek medical attention if effects persist.
<b>Advice to Doctor</b>	Treat symptomatically based on judgement of doctor and individual reactions of patient.
<b>Medical Conditions Aggravated by Exposure</b>	The IARC has stated "There is sufficient evidence in humans for the carcinogenicity of chromium (VI) compounds as encountered in chromate production, chromate pigment production, and chromium plating industries." However there is no similar evidence for the carcinogenic risk related to the production of ferrochromium. Specific reliable epidemiological studies of populations of workers exposed to chromium in various chemical forms during production of ferrochromium, stainless steels and other chromium-containing alloys have not shown any excess of risk of respiratory cancers related to chromium and other components of ferrochromium. Systemic Effects: Well-defined long term systemic effects have not been described from exposure to chrome ore.

## 5. FIRE FIGHTING MEASURES

<b>General Measures</b>	Clear fire area of all non-emergency personnel. Stay upwind. Keep out of low areas. Eliminate ignition sources. Move fire exposed containers from fire area if it can be done without risk.
<b>Flammability Conditions</b>	Product is a non-flammable solid.
<b>Extinguishing Media</b>	In case of fire, use appropriate extinguishing media most suitable for surrounding fire conditions.
<b>Fire and Explosion Hazard</b>	Non-combustible solid. Material does not burn nor will it support combustion.
<b>Hazardous Products of Combustion</b>	Non-combustible solid. Avoid generating dust. Incompatible materials are unknown. Fumes may be produced during chemical or melting operations. In these fumes, chromium may be present in oxidised forms such as hexavalent chromium compounds or in other unidentified forms. Some of these hexavalent chromium compounds are generally suspected of being respiratory carcinogens. Note that chromite (Cr <sub>3</sub> ) contained in chrome ore may in normal use be converted to hexavalent chromium (Cr <sub>6</sub> ). Hexavalent chromium compounds are considered carcinogens.
<b>Special Fire Fighting Instructions</b>	Do NOT allow fire fighting water to reach waterways, drains or sewers. Store fire fighting water for treatment.
<b>Personal Protective Equipment</b>	Fire fighters should wear a positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots and gloves). Clear fire area of all non-emergency personnel. Stay upwind. Keep out of low areas. Eliminate ignition sources. Move fire exposed containers from fire area if it can be done without risk. Do NOT allow fire fighting water to reach waterways, drains or sewers. Store fire fighting water for treatment.
<b>Flash Point</b>	No Data Available
<b>Lower Explosion Limit</b>	No Data Available
<b>Upper Explosion Limit</b>	No Data Available
<b>Auto Ignition Temperature</b>	No Data Available
<b>Hazchem Code</b>	No Data Available

## 6. ACCIDENTAL RELEASE MEASURES

<b>General Response Procedure</b>	Avoid accidents, clean up immediately. May be slippery when spilt. Eliminate all sources of ignition. Increase ventilation. Avoid generating dust. Stop leak if safe to do so. Isolate the danger area. Use clean, non-sparking tools and equipment.
<b>Clean Up Procedures</b>	Contain and sweep/shovel up spills with dust binding material or use an industrial vacuum cleaner. Transfer to a suitable, labelled container and dispose of promptly.
<b>Containment</b>	Stop leak if safe to do so. Isolate the danger area.
<b>Environmental Precautionary Measures</b>	Do NOT let product reach drains or waterways. If product does enter a waterway, advise the Environmental Protection Authority or your local Waste Management.
<b>Evacuation Criteria</b>	Evacuate all unnecessary personnel.
<b>Personal Precautionary Measures</b>	Personnel involved in the clean up should wear full protective clothing as listed in section 8.

## 7. HANDLING AND STORAGE

<b>Handling</b>	Ensure an eye bath and safety shower are available and ready for use. Observe good personal hygiene practices and recommended procedures. Wash thoroughly after handling. Chrome ore is a heavy, dense material. It is important that chrome ore must be free of all moisture prior to usage in high temperature applications. Any moisture in the material should be regarded as an explosion hazard. Avoid contact with eyes, skin and clothing. Do not inhale product dust/fumes.
<b>Storage</b>	Store in a cool, dry, well-ventilated area. Keep containers tightly closed when not in use. Inspect regularly for deficiencies such as damage or leaks. Protect against physical damage. Store away from incompatible materials as listed in section 10. Due to its lack of reactivity under normal conditions as well as during exposure to heat, chrome ore does not need any special regulatory measures or precautions. This product is not classified dangerous for transport according to The Australian Code for the Transport of Dangerous Goods By Road and Rail.
<b>Container</b>	Store in original packaging as approved by manufacturer.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

<b>General</b>	The following exposure standard has been established by The Australian Safety and Compensation Council (ASCC); Chromium (III) Compounds (as Cr): TWA = 0.5mg/m <sup>3</sup> NOTE: The exposure value at the TWA is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week. These 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 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.
<b>Exposure Limits</b>	No Data Available
<b>Biological Limits</b>	No information available on biological limit values for this product.
<b>Engineering Measures</b>	During normal use (eg. chemical or melting operations), dust and fumes are generated. A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area.
<b>Personal Protection Equipment</b>	RESPIRATOR: Wear a P2 particulate respirator when handling this product (AS1715/1716). EYES: Safety glasses with side shields (AS1336/1337). HANDS: Neoprene gloves (AS2161). CLOTHING: Long-sleeved protective coveralls and safety footwear (AS3765/2210).
<b>Work Hygienic Practices</b>	No Data Available

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Physical State</b>	Solid
<b>Appearance</b>	Crystalline Sand or Fine Dust
<b>Odour</b>	Odourless
<b>Colour</b>	Black or brown
<b>pH</b>	No Data Available
<b>Vapour Pressure</b>	No Data Available
<b>Relative Vapour Density</b>	No Data Available
<b>Boiling Point</b>	2672 °C
<b>Melting Point</b>	2000
<b>Freezing Point</b>	2000 °C
<b>Solubility</b>	Insoluble 25°C
<b>Specific Gravity</b>	4.1 - 5.1
<b>Flash Point</b>	No Data Available
<b>Auto Ignition Temp</b>	No Data Available
<b>Evaporation Rate</b>	No Data Available
<b>Bulk Density</b>	No Data Available
<b>Corrosion Rate</b>	No Data Available
<b>Decomposition Temperature</b>	No Data Available
<b>Density</b>	No Data Available
<b>Specific Heat</b>	No Data Available
<b>Molecular Weight</b>	No Data Available
<b>Net Propellant Weight</b>	No Data Available
<b>Octanol Water Coefficient</b>	No Data Available
<b>Particle Size</b>	No Data Available
<b>Partition Coefficient</b>	No Data Available
<b>Saturated Vapour Concentration</b>	No Data Available
<b>Vapour Temperature</b>	No Data Available
<b>Viscosity</b>	No Data Available
<b>Volatile Percent</b>	Not Volatile

<b>VOC Volume</b>	<1 %
<b>Additional Characteristics</b>	No Data Available
<b>Potential for Dust Explosion</b>	Dust suspended in air could cause dust explosions.
<b>Fast or Intensely Burning Characteristics</b>	No Data Available
<b>Flame Propagation or Burning Rate of Solid Materials</b>	No Data Available
<b>Non-Flammables That Could Contribute Unusual Hazards to a Fire</b>	No Data Available
<b>Properties That May Initiate or Contribute to Fire Intensity</b>	No Data Available
<b>Reactions That Release Gases or Vapours</b>	No Data Available
<b>Release of Invisible Flammable Vapours and Gases</b>	No Data Available

## 10. STABILITY AND REACTIVITY

<b>Chemical Stability</b>	Product is stable under normal conditions of use, storage and temperature. During chemical processes or once molten, chrome ore produces fumes.
<b>Conditions to Avoid</b>	Avoid excessive heat, direct sunlight, generating dust, moisture, static discharges, open flame and high temperatures.
<b>Materials to Avoid</b>	WARNING : Avoid or control reaction with peroxides. All transition metal peroxides should be considered as potentially explosive. For example transition metal complexes of alkyl hydroperoxides may decompose explosively. The pi-complexes formed between chromium, vanadium and other transitional metals (haloarene-metal complexes) and mono or poly-fluorobenzene show extreme sensitivity to heat and are explosive. Avoid reaction with borohydrides or cyanoborohydrides.
<b>Hazardous Decomposition Products</b>	Fumes may be produced during chemical or melting operations. In these fumes, chromium may be present in oxidised forms such as hexavalent chromium compounds or in other unidentified forms. Some of these hexavalent chromium compounds are generally suspected of being respiratory carcinogens. Note that chromite (Cr <sub>3</sub> ) contained in chrome ore may in normal use be converted to hexavalent chromium (Cr <sub>6</sub> ). Hexavalent chromium compounds are considered carcinogens.
<b>Hazardous Polymerisation</b>	Hazardous Polymerisation will not occur

## 11. TOXICOLOGICAL INFORMATION

<b>General Information</b>	The IARC has stated "There is sufficient evidence in humans for the carcinogenicity of chromium (VI) compounds as encountered in chromate production, chromate pigment production, and chromium plating industries." However there is no similar evidence for the carcinogenic risk related to the production of ferrochromium. Specific reliable epidemiological studies of populations of workers exposed to chromium in various chemical forms during production of ferrochromium, stainless steels and other chromium-containing alloys have not shown any excess of risk of respiratory cancers related to chromium and other components of ferrochromium. Systemic Effects: Well-defined long term systemic effects have not been described from exposure to chrome ore.
<b>Eye/Irritant</b>	Direct contact with the eye may cause transient discomfort characterised by tearing or conjunctival redness (as with windburn). Slight abrasive damage may also result. The material may produce foreign body irritation in certain individuals.
<b>Ingestion</b>	The material may be damaging to the health of the individuals, following ingestion, especially where pre-existing organ (eg liver or kidney) damage is evident. Present definitions of harmful or toxic substances are generally based on doses producing mortality rather than those producing morbidity (diseases, ill health). Gastrointestinal tract discomfort may produce nausea and vomiting.
<b>Inhalation</b>	Inhalation of freshly formed metal oxide particles sized below 1.5 microns and generally between 0.02 to 0.05 microns may result in "metal fume fever". Symptoms may be delayed up to 12 hours and begin with the sudden onset of thirst and a sweet metallic or foul taste in the mouth. Other symptoms include upper respiratory tract irritation accompanied by coughing and a dryness of the mucous membranes, lassitude and a generalised feeling of malaise. Mild to severe headache, nausea, occasional vomiting, fever or chills, exaggerated mental activity, profuse sweating, diarrhoea, excessive urination and prostration may also occur. Tolerance to the fumes develops rapidly, but is quickly lost.

<b>Skin/Irritant</b>	Open cuts, abraded or irritated skin should not be exposed to this material. Entry into the blood stream through for example cuts, abrasions, puncture wounds or lesions, may produce systemic injury with harmful effects. Examine skin prior to the use of this material and ensure that any external damage is suitable protected.
<b>Carcinogen Category</b>	No Data Available

## 12. ECOLOGICAL INFORMATION

<b>Ecotoxicity</b>	Harmful to aquatic organisms in very low concentrations. Fish food organisms are very sensitive to low levels of chromium. Chromium is toxic to fish although less so in warm water.
<b>Persistence/Degradability</b>	No information available on persistence/degradability for this product.
<b>Mobility</b>	No information available on mobility for this product. Insoluble in water.
<b>Environmental Fate</b>	Avoid contaminating waterways, drains and sewers.
<b>Bioaccumulation Potential</b>	No information available on bioaccumulation for this product.
<b>Environmental Impact</b>	No Data Available

## 13. DISPOSAL CONSIDERATIONS

<b>General Information</b>	Dispose of in accordance with all local, state and federal regulations. All empty packaging should be disposed of in accordance with Local, State, and Federal Regulations or recycled/reconditioned at an approved facility.
<b>Special Precautions for Land Fill</b>	Contact a specialist disposal company or the local waste regulator for advice. The processing of chrome ore may lead to the production of chromium containing waste products such as flue dust, slurries etc, which are usually recycled. If this is not the case, then they should be disposed of in authorised land- fills, adapted to the level of hazard posed by the waste (eg. USA EPATCLP Test)

## 14. TRANSPORT INFORMATION

### Land Transport (Australia)

ADG Code

<b>Proper Shipping Name</b>	CHROMITE SAND/FLOUR
<b>Class</b>	No Data Available
<b>Subsidiary Risk(s)</b>	No Data Available
	No Data Available
<b>UN Number</b>	No Data Available
<b>Hazchem</b>	No Data Available
<b>Pack Group</b>	No Data Available
<b>Special Provision</b>	No Data Available

### Land Transport (Malaysia)

ADR

<b>Proper Shipping Name</b>	CHROMITE SAND/FLOUR
<b>Class</b>	No Data Available
<b>Subsidiary Risk(s)</b>	No Data Available

	No Data Available
<b>UN Number</b>	No Data Available
<b>Hazchem</b>	No Data Available
<b>Pack Group</b>	No Data Available
<b>Special Provision</b>	No Data Available

#### Land Transport (New Zealand)

NZS5433

<b>Proper Shipping Name</b>	CHROMITE SAND/FLOUR
<b>Class</b>	No Data Available
<b>Subsidiary Risk(s)</b>	No Data Available
	No Data Available
<b>UN Number</b>	No Data Available
<b>Hazchem</b>	No Data Available
<b>Pack Group</b>	No Data Available
<b>Special Provision</b>	No Data Available

#### Land Transport (United States of America)

US DOT

<b>Proper Shipping Name</b>	CHROMITE SAND/FLOUR
<b>Class</b>	No Data Available
<b>Subsidiary Risk(s)</b>	No Data Available
	No Data Available
<b>UN Number</b>	No Data Available
<b>Hazchem</b>	No Data Available
<b>Pack Group</b>	No Data Available
<b>Special Provision</b>	No Data Available

#### Sea Transport

IMDG Code

<b>Proper Shipping Name</b>	CHROMITE SAND/FLOUR
<b>Class</b>	No Data Available
<b>Subsidiary Risk(s)</b>	No Data Available
<b>UN Number</b>	No Data Available
<b>Hazchem</b>	No Data Available
<b>Pack Group</b>	No Data Available
<b>Special Provision</b>	No Data Available
<b>EMS</b>	No Data Available
<b>Marine Pollutant</b>	No

#### Air Transport

IATA DGR

<b>Proper Shipping Name</b>	CHROMITE SAND/FLOUR
<b>Class</b>	No Data Available
<b>Subsidiary Risk(s)</b>	No Data Available
<b>UN Number</b>	No Data Available
<b>Hazchem</b>	No Data Available
<b>Pack Group</b>	No Data Available
<b>Special Provision</b>	No Data Available

## National Transport Commission (Australia)

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

### Dangerous Goods Classification

NOT Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

## 15. REGULATORY INFORMATION

### General Information

No Data Available

### Poisons Schedule (Aust)

Not scheduled

## Environmental Protection Authority (New Zealand)

Hazardous Substances and New Organisms Amendment Act 2015

### Approval Code

HSR002503

## National/Regional Inventories

### Australia (AICS)

Listed

### Canada (DSL)

Not Determined

### Canada (NDSL)

Not Determined

### China (IECSC)

Not Determined

### Europe (EINECS)

Not Determined

### Europe (REACH)

Not Determined

### Japan (ENCS/METI)

Not Determined

### Korea (KECI)

Not Determined

### Malaysia (EHS Register)

Not Determined

### New Zealand (NZIoC)

Listed

### Philippines (PICCS)

Not Determined

### Switzerland (Giftliste 1)

Not Determined

### Switzerland (Inventory of Notified Substances)

Not Determined

### Taiwan (NCSR)

Not Determined

### USA (TSCA)

Not Determined

## 16. OTHER INFORMATION

### Related Product Codes

CHFLOU1000, CHFLOU2000, CHFLOU2200, CHFLOU2300, CHFLOU3000, CHSAND1000, CHSAND1001, CHSAND1002, CHSAND1003, CHSAND1004, CHSAND1005, CHSAND2000, CHSAND3000, CHSAND4000, CHSAND5100, CHSAND6900, CHSAND6901, CHSAND7000

### Revision

2



<b>Revision Date</b>	01 Mar 2016
<b>Reason for Issue</b>	SDS updated
<b>Key/Legend</b>	<p>&lt; Less Than &gt; Greater Than  <b>AICS</b> Australian Inventory of Chemical Substances  <b>atm</b> Atmosphere  <b>CAS</b> Chemical Abstracts Service (Registry Number)  <b>cm<sup>2</sup></b> Square Centimetres  <b>CO<sub>2</sub></b> Carbon Dioxide  <b>COD</b> Chemical Oxygen Demand  <b>deg C (°C)</b> Degrees Celcius  <b>EPA (New Zealand)</b> Environmental Protection Authority of New Zealand  <b>deg F (°F)</b> Degrees Farenheit  <b>g</b> Grams  <b>g/cm<sup>3</sup></b> Grams per Cubic Centimetre  <b>g/l</b> Grams per Litre  <b>HSNO</b> Hazardous Substance and New Organism  <b>IDLH</b> Immediately Dangerous to Life and Health  <b>immiscible</b> Liquids are insoluable in each other.  <b>inHg</b> Inch of Mercury  <b>inH<sub>2</sub>O</b> Inch of Water  <b>K</b> Kelvin  <b>kg</b> Kilogram  <b>kg/m<sup>3</sup></b> Kilograms per Cubic Metre  <b>lb</b> Pound  <b>LC50</b> LC stands for lethal concentration. LC50 is the concentration of a material in air which causes the death of 50% (one half) of a group of test animals. The material is inhaled over a set period of time, usually 1 or 4 hours.  <b>LD50</b> LD stands for Lethal Dose. LD50 is the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals.  <b>ltr</b> or <b>L</b> Litre  <b>m<sup>3</sup></b> Cubic Metre  <b>mbar</b> Millibar  <b>mg</b> Milligram  <b>mg/24H</b> Milligrams per 24 Hours  <b>mg/kg</b> Milligrams per Kilogram  <b>mg/m<sup>3</sup></b> Milligrams per Cubic Metre  <b>Misc</b> or <b>Miscible</b> Liquids form one homogeneous liquid phase regardless of the amount of either component present.  <b>mm</b> Millimetre  <b>mmH<sub>2</sub>O</b> Millimetres of Water  <b>mPa.s</b> Millipascals per Second  <b>N/A</b> Not Applicable  <b>NIOSH</b> National Institute for Occupational Safety and Health  <b>NOHSC</b> National Occupational Health and Safety Commission  <b>OECD</b> Organisation for Economic Co-operation and Development  <b>Oz</b> Ounce  <b>PEL</b> Permissible Exposure Limit  <b>Pa</b> Pascal  <b>ppb</b> Parts per Billion  <b>ppm</b> Parts per Million  <b>ppm/2h</b> Parts per Million per 2 Hours  <b>ppm/6h</b> Parts per Million per 6 Hours  <b>psi</b> Pounds per Square Inch  <b>R</b> Rankine  <b>RCP</b> Reciprocal Calculation Procedure  <b>STEL</b> Short Term Exposure Limit  <b>TLV</b> Threshold Limit Value  <b>tne</b> Tonne  <b>TWA</b> Time Weighted Average  <b>ug/24H</b> Micrograms per 24 Hours  <b>UN</b> United Nations  <b>wt</b> Weight</p>