

SAFETY DATA SHEET



1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name INDUSTRIAL GRADE RUTILE FLOUR
Synonym(s) RUTILE, EXELD 95.5

1.2 Uses and uses advised against

Use(s) Predominantly used as a raw material for welding rod fluxes and ceramics.

1.3 Details of the supplier of the product

Supplier name SIERRA RUTILE LIMITED
Address 110 Wilkinson Road, PO Box 59, Freetown, SIERRA LEONE
Telephone +232 76 801 416
Email srffree@sierra-rutile.com
Website <http://www.sierra-rutile.com>

1.4 Emergency telephone number(s)

Emergency +232 796 252 103

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

NOT CLASSIFIED AS HAZARDOUS ACCORDING TO GLOBALLY HARMONISED SYSTEM OF CLASSIFICATION AND LABELLING OF CHEMICALS (GHS)

2.2 Label elements

No signal word, pictograms, hazard or precautionary statements have been allocated.

2.3 Other hazards

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

| Ingredient | CAS Number | EC Number | Content |
|----------------------------|-------------|-----------|---------|
| RUTILE (TiO ₂) | 1317-80-2 | 215-282-2 | >97% |
| ZIRCON | 14940-68-2 | 239-019-6 | <1.5% |
| LEUCOXENE | 12173-81-8 | | <1% |
| ILMENITE | 103170-28-1 | | <1% |
| KYANITE | 1302-76-7 | 215-106-4 | <0.2% |

4. FIRST AID MEASURES

4.1 Description of first aid measures

| | |
|-----------------------------|--|
| Eye | If in eyes, hold eyelids apart and flush continuously with running water for several minutes, or until particle is removed. Remove contact lenses if present and continue rinsing. |
| Inhalation | If inhaled, move to fresh air and keep comfortable. |
| Skin | If skin or hair contact occurs, brush off loose particles. If on clothing, brush off loose particles. If irritation occurs, seek medical advice. |
| Ingestion | If swallowed, rinse mouth and get medical attention if you feel unwell. |
| First aid facilities | Eye wash facilities should be available. |

4.2 Most important symptoms and effects, both acute and delayed

See Section 11 for more detailed information on health effects and symptoms.

4.3 Immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Use an extinguishing agent suitable for the surrounding fire.

5.2 Special hazards arising from the substance or mixture

Non-flammable. May evolve toxic gases if strongly heated.

5.3 Advice for firefighters

No fire or explosion hazard exists.

5.4 Hazchem code

None allocated.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear Personal Protective Equipment (PPE) as detailed in Section 8. Clear all unprotected personnel from area. Contact emergency services where appropriate.

6.2 Environmental precautions

Prevent product from entering drains and waterways.

6.3 Methods of cleaning up

Contain spillage, then collect and place in suitable containers for reuse or disposal. Avoid generating dust.

6.4 Reference to other sections

See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Carefully read the product label before use. Safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

7.2 Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well ventilated area, removed from incompatible substances and foodstuffs. Ensure containers are adequately labelled, protected from physical damage and sealed when not in use.

7.3 Specific end use(s)

No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Exposure standards

| Ingredient | Reference | TWA | | STEL | |
|---------------------|-----------|-----|-------------------|------|-------------------|
| | | ppm | mg/m ³ | ppm | mg/m ³ |
| Titanium dioxide | SWA (AUS) | -- | 10 | -- | -- |
| Zirconium compounds | SWA (AUS) | -- | 5 | -- | 10 |

Biological limits

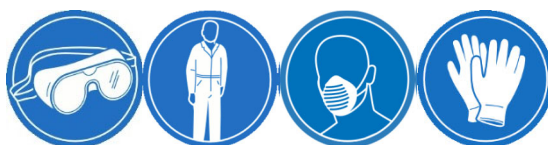
No biological limit values have been entered for this product.

8.2 Exposure controls

Engineering controls Avoid inhalation. Use in well ventilated areas. Mechanical extraction ventilation is recommended where an inhalation risk exists. Maintain dust levels below the recommended exposure standard.

PPE

- Eye / Face** Wear dust-proof goggles.
- Hands** Wear PVC or rubber gloves.
- Body** Wear coveralls when using large quantities or where heavy contamination is likely.
- Respiratory** Wear a Class P1 (Particulate) respirator where an inhalation risk exists. Wear a Powered Air Purifying Respirator (PAPR) with Class P3 (Particulate) filter or a Full-face Class P3 (Particulate) respirator at high dust levels.



9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

| | |
|----------------------------------|-------------------|
| Appearance | DARK BROWN POWDER |
| Odour | ODOURLESS |
| Flammability | NON-FLAMMABLE |
| Flash point | NOT RELEVANT |
| Boiling point | NOT AVAILABLE |
| Melting point | 1825°C |
| Evaporation rate | NOT AVAILABLE |
| pH | NEUTRAL |
| Vapour density | NOT AVAILABLE |
| Specific gravity | 4.0 to 4.3 |
| Solubility (water) | INSOLUBLE |
| Vapour pressure | NOT AVAILABLE |
| Upper explosion limit | NOT RELEVANT |
| Lower explosion limit | NOT RELEVANT |
| Partition coefficient | NOT AVAILABLE |
| Auto-ignition temperature | NOT AVAILABLE |
| Decomposition temperature | NOT AVAILABLE |
| Viscosity | NOT AVAILABLE |
| Explosive properties | NOT AVAILABLE |
| Oxidising properties | NOT AVAILABLE |
| Odour threshold | NOT AVAILABLE |

9.2 Other information

| | |
|---------------------|--------------------------------|
| Bulk density | 2200 to 2400 kg/m ³ |
|---------------------|--------------------------------|

10. STABILITY AND REACTIVITY

10.1 Reactivity

Carefully review all information provided in sections 10.2 to 10.6.

10.2 Chemical stability

Stable under recommended conditions of storage.

10.3 Possibility of hazardous reactions

Polymerisation is not expected to occur.

10.4 Conditions to avoid

Avoid contact with incompatible substances.

10.5 Incompatible materials

Incompatible with acids (e.g. nitric acid).

10.6 Hazardous decomposition products

May evolve toxic gases if heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

| | |
|---------------------------------|--|
| Acute toxicity | Non-toxic. There are no known hazards resulting from accidental ingestion of small amounts of rutile flour as may occur during normal handling. Ingestion of larger amounts may cause irritation to the gastro-intestinal system, mainly as a result of abrasion. |
| Skin | Not classified as a skin irritant. Contact may result in mechanical irritation. |
| Eye | Not classified as an eye irritant. Contact may result in mechanical irritation. |
| Sensitisation | This product is not known to be a skin or respiratory sensitiser. |
| Mutagenicity | No evidence of mutagenic effects. |
| Carcinogenicity | Not classifiable as a human carcinogen. |
| Reproductive | No evidence of reproductive effects. |
| STOT – single exposure | No known effects from this product. |
| STOT – repeated exposure | Rutile flour contains low levels of naturally occurring radioactive elements of the uranium and thorium series. It has typical specific activities of 0.05 to 0.65 Bq/g (thorium-232) and 0.2 to 0.75 Bq/g (uranium-238). Low level gamma radiation from bulk or bagged stockpiles of rutile flour can increase gamma levels slightly above normal background. |
| Aspiration | This product does not present an aspiration hazard. |

12. ECOLOGICAL INFORMATION

12.1 Toxicity

This product is not anticipated to cause adverse effects to animal or plant life if released to the environment in small quantities.

12.2 Persistence and degradability

Not applicable.

12.3 Bioaccumulative potential

This product is not expected to bioaccumulate.

12.4 Mobility in soil

This product has low mobility in soil.

12.5 Other adverse effects

No information provided.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste disposal Ensure product is covered with moist soil to prevent dust generation and dispose at an approved landfill. Contact the manufacturer if additional information is required.

Legislation Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE, IMDG OR IATA

| | LAND TRANSPORT (ADG) | SEA TRANSPORT (IMDG / IMO) | AIR TRANSPORT (IATA / ICAO) |
|-----------------------------|-------------------------|-------------------------------|--------------------------------|
| 14.1 UN Number | None Allocated | None Allocated | None Allocated |
| 14.2 Proper Shipping Name | None Allocated | None Allocated | None Allocated |
| 14.3 Transport hazard class | None Allocated | None Allocated | None Allocated |
| 14.4 Packing Group | None Allocated | None Allocated | None Allocated |

14.5 Environmental hazards No information provided

14.6 Special precautions for user

Hazchem code None Allocated

15. REGULATORY INFORMATION

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

Poison schedule A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

Classifications Safework Australia criteria are based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals.
The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].

Hazard codes None allocated.

Risk phrases None allocated.

Safety phrases None allocated.

Inventory listing(s) **AUSTRALIA: AICS (Australian Inventory of Chemical Substances)**
All components are listed on AICS, or are exempt.

16. OTHER INFORMATION

Additional information RESPIRATORS: In general, the use of respirators should be limited and engineering controls employed to avoid exposure. If respiratory equipment must be worn ensure correct respirator selection and training is undertaken. Some respirators may be uncomfortable when used for long periods. The use of air powered or air supplied respirators should be considered where prolonged or repeated use is necessary.

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:
The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

HEALTH EFFECTS FROM EXPOSURE:
The effects from exposure to this product will depend on several factors including frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a report that would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

PRODUCT NAME INDUSTRIAL GRADE RUTILE FLOUR

Abbreviations

| | |
|-------------------|--|
| ACGIH | American Conference of Governmental Industrial Hygienists |
| CAS # | Chemical Abstract Service number - used to uniquely identify chemical compounds |
| CNS | Central Nervous System |
| EC No. | EC No - European Community Number |
| GHS | Globally Harmonized System |
| IARC | International Agency for Research on Cancer |
| LC50 | Lethal Concentration, 50% / Median Lethal Concentration |
| LD50 | Lethal Dose, 50% / Median Lethal Dose |
| mg/m ³ | Milligrams per Cubic Metre |
| OEL | Occupational Exposure Limit |
| PEL | Permissible Exposure Limit |
| pH | Relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline) |
| ppm | Parts Per Million |
| REACH | Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals |
| STEL | Short-Term Exposure Limit |
| STOT-RE | Specific target organ toxicity (repeated exposure) |
| STOT-SE | Specific target organ toxicity (single exposure) |
| SUSMP | Standard for the Uniform Scheduling of Medicines and Poisons |
| SWA | Safe Work Australia |
| TLV | Threshold Limit Value |
| TWA | Time Weighted Average |

Revision history

| Revision | Description |
|----------|----------------------|
| 1.0 | Initial SDS creation |
| | |

Report status

This document represents the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer, importer or supplier.

While all due care has been taken to include accurate and up-to-date information in this SDS, Sierra Rutile Limited does not provide any warranty as to accuracy or completeness and accepts no liability for any loss, injury or damage (including consequential loss) that may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.

Prepared by

Victor Bruinsma
Principal Metallurgist
Sierra Rutile Limited
Phone: +232 79 850 173
[Email: vic.bruinsma@sierra-rutile.com](mailto:vic.bruinsma@sierra-rutile.com)

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