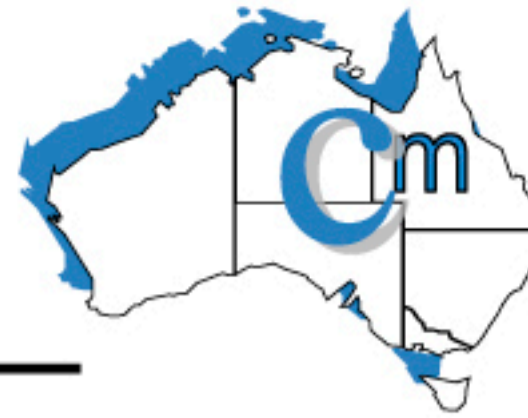


Currumbin Minerals Pty Ltd



ABN 78 009 729 015

Registered Office: 20 Wheeler Crescent, Currumbin Queensland 4223
Postal Address: P.O. BOX 31, CURRUMBIN, QLD, 4223 PH: 61 7 5534 7255 FAX: 61 7 5534 7591

SMS ZIRCON MONAZITE CONCENTRATE

1) IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product identifier:

Product name: ZIRCON MONAZITE CONCENTRATE

Synonyms: MINERAL SANDS CONCENTRATE • MINERAL SEPARATION PLANT MAGNETIC ZIRCON
• MONAZITE 50 • MONAZITE CONCENTRATE • ZIRCON CONCENTRATE

Uses: RAW MATERIAL FOR PRODUCTION OF RARE EARTH COMPOUNDS

Details of the supplier of the product:

Supplier Name: Currumbin Minerals

Address: 20 Wheeler Crescent Currumbin Waters Qld 4223

Telephone: +61 7 5534 7255

Emergency telephone number:

Emergency 0439 155 514

Email: brett.hoyle@curmin.com

2) HAZARDS IDENTIFICATION

Emergency overview:

Light brown to yellow coloured granular solid. May be harmful if swallowed.

Classification of the substance or mixture:

GHS classifications Acute Toxicity: Oral: Category 5

GHS Label elements:

Signal word: WARNING

Pictograms:

None allocated.

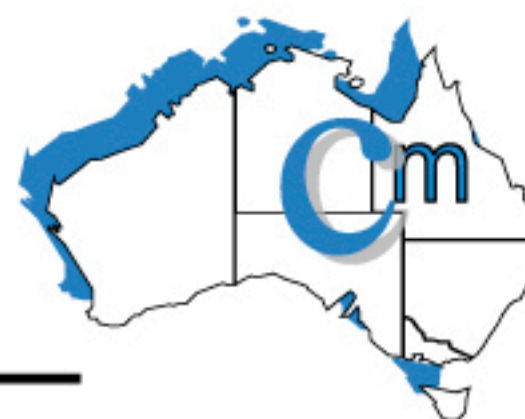
Hazard statements:

H303 May be harmful if swallowed.

Prevention statements:

None allocated.

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Response statements:

P312 Call a POISON CENTER or doctor/physician if you feel unwell.

Storage statements:

None allocated.

Disposal statements:

None allocated.

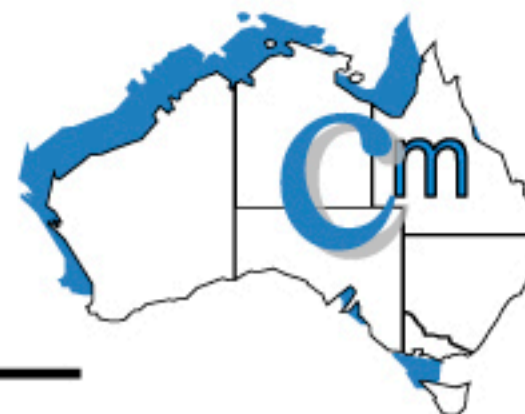
Other hazards:

No information provided.

3) COMPOSITION/ INFORMATION ON INGREDIENTS

Substances / Mixtures:

Ingredient	
PHOSPHORUS PENTOXIDE	14 to 21%
CERIUM OXIDE	14 to 20%
QUARTZ (CRYSTALLINE SILICA)	9 to 12%
ALUMINIUM OXIDE	1 to 10%
LANTHANUM OXIDE	7 to 10%
TITANIUM DIOXIDE	1 to 9%
IRON OXIDE (FE ₂ O ₃)	2 to 5%
URANIUM	0.1 to 0.2%
MONAZITE	40 to 62%
ZIRCONIUM DIOXIDE	8 to 40%
THORIUM	0.3 to 5%



4) FIRST AID MEASURES

Description of first aid measures

Eye: If in eyes, rinse cautiously with water for several minutes, or until particle is removed. Remove contact lenses if present and easy to do - 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.

Most important symptoms and effects, both acute and delayed See section 11 for more detailed information on health effects and symptoms.

Specific advice for doctors:

Treat symptomatically.

5) FIRE FIGHTING MEASURES

Extinguishing media:

Use an extinguishing agent suitable for the surrounding fire.

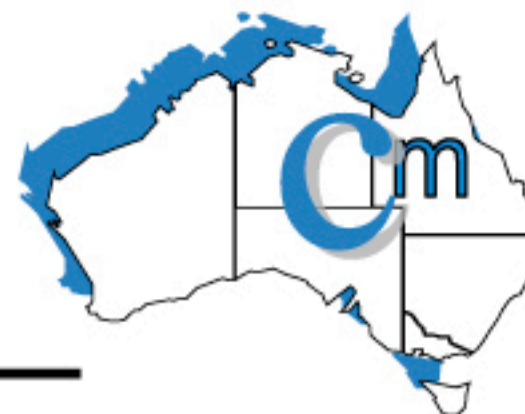
Special hazards arising from the substance or mixture:

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

Precautions and protective measures for firefighting:

No fire or explosion hazard exists.

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6) ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:

Wear Personal Protective Equipment (PPE) as detailed in section 8 of the SDS. Contact emergency services where appropriate.

Environmental precautions:

Prevent product from entering drains and waterways.

Methods of cleaning and suggested disposal materials:

Collect and place in sealable containers for reuse or disposal as radioactive waste.

Reference to other sections:

See Sections 8 and 13 for exposure controls and disposal.

7) HANDLING AND STORAGE

Precautions for safe handling:

Before use carefully read the product label. Use of 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.

Conditions for safe storage:

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Store in a well-ventilated area, removed from incompatible substances and foodstuffs. Ensure containers are adequately labelled, protected from physical damage and sealed when not in use. When stockpiled, ensure leachate and runoff cannot enter drains or waterways.

8) EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure standards:

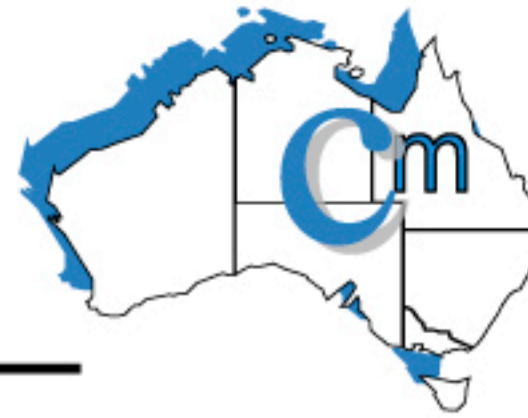
Radiation (combined alpha and gamma) exposure should be as low as reasonably achievable, (ALARA), but should not exceed a total of 100 milli-sieverts over 5 consecutive years for members of the workforce / occupationally exposed.

Ingredient	Reference	TWA		STEL	
		PPM	Mg/m3	ppm	Mg/m3
Aluminium Oxide (a)	SWA (Aus)	----	10	---	----
Iron Oxide Fume (FE2O3) as (FE)	SWA (Aus)	----	5	----	----
Phosphorus Pentoxide	NHFPC China SWA (AUS)	----	1(Peak)	----	----
Respirable Crystalline Silica	OSHA PEL (US)	----	0.05	----	----
Titanium Dioxide	SWA (Aus)	----	10	----	----
Uranium	SWA (Aus)	----	0.2	----	0.6
Zirconium and compounds as Zr	NHFPC (China)	----	5	----	10
Zirconium Compounds	SWA (AUS)	----	5	----	10

Biological limits:

Ingredient	Determinant	Sampling Time	BEI
URANIUM	Uranium in urine	End of shift	200 µg/L

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Engineering controls:

Avoid inhalation:

Use in well ventilated areas. Where an inhalation risk exists, mechanical extraction ventilation is recommended. Maintain dust levels below the recommended exposure standard. **RADIOACTIVE COMPOUNDS - ALPHA EMITTERS:** Alpha radiation is emitted by radioactive materials as they decay. Alpha radiation does not penetrate below the outer layer of skin. Restrict all potential routes of internal exposure by inhalation, ingestion and contact with open wounds.

RADIOACTIVE COMPOUNDS - GAMMA EMITTERS:

Gamma radiation is emitted by radioactive materials as they decay. Gamma radiation penetrates the body and a distance in air. Based on the measured emission level of a gamma radiation source, warning signs may be required for identification. Reduction to gamma radiation exposure is achieved by increasing distance from the source, a reduction of the time in contact with the source and by the use of a shield made from lead, concrete or thick steel between a person and the source.

Personal protective equipment:

Eye / Face: Wear safety glasses and if there is a potential for dust, wear dust-proof goggles.

Hands: Wear industrial grade gloves when handling material. Where heavy contamination is likely, wear PVC or rubber gloves.

Body: Where heavy contamination is likely, wear coveralls.

Respiratory:

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. Remember that some respirators may be extremely 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.

9) PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties:

Appearance: LIGHT BROWN TO YELLOW COLOURED GRANULAR SOLID

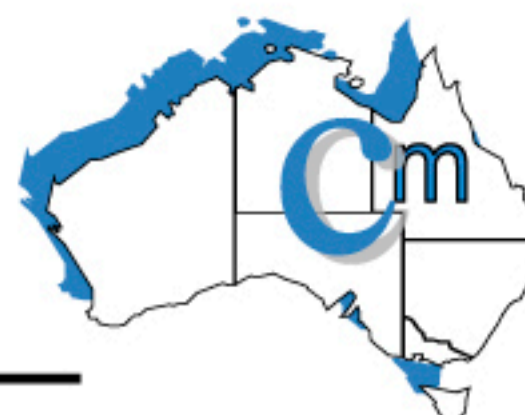
Odour: ODOURLESS

Flammability: NON-FLAMMABLE

Flash point: NOT RELEVANT

Boiling point: NOT AVAILABLE

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Melting point: 1900°C to 2300°C
Evaporation rate: NOT VOLATILE
pH: 5 to 7.5
Vapour density: NOT AVAILABLE
Specific gravity: 4.8 to 5.2
Solubility (water): INSOLUBLE
Vapour pressure: NOT VOLATILE
Upper explosion limit: NOT RELEVANT
Lower explosion limit: NOT RELEVANT
Partition coefficient: NOT AVAILABLE
Autoignition temperature: NOT AVAILABLE
Decomposition temperature: NOT AVAILABLE
Viscosity: NOT AVAILABLE
Explosive properties: NOT AVAILABLE
Oxidising properties: NOT AVAILABLE
Odour threshold: NOT AVAILABLE

10) STABILITY AND REACTIVITY

Chemical stability:

Stable under recommended conditions of storage.

Possibility of hazardous reactions:

Polymerization is not expected to occur.

Conditions to avoid:

No information provided.

Incompatible materials:

None in normal or expected use.

Hazardous decomposition products:

May evolve toxic gases when heated to decomposition.

11) TOXICOLOGICAL INFORMATION

Acute toxicity: May be harmful if swallowed.

Information available for the ingredients:

Ingredient	Oral LD50	Dermal LD50	Inhalation LC50
PHOSPHORUS PENTOXIDE	--	--	61 mg/m ³ /1 hour (guinea pig)
CERIUM OXIDE	> 5 g/kg (rat)	> 2000 mg/kg (rat)	> 2.01 mg/L/4 hours (rat)

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ALUMINIUM OXIDE	> 5000 mg/kg (rat)	--	--
LANTHANUM OXIDE	> 9968 mg/kg (rat)	--	--
TITANIUM DIOXIDE	5000 mg/kg (rat)	--	3.43 - 6.82 mg/L air (rat)
URANIUM	750 mg/kg (rat)	--	--

Skin: Not classified as a skin irritant. Contact may result in mechanical irritation.

Eye damage or irritation: Not classified as an eye irritant. Contact may result in mechanical irritation.

Respiration or skin sensitisation: Not classified as causing skin or respiratory sensitisation.

Mutagenicity: Not classified as a mutagen.

Carcinogenicity: This product contains a small amount of respirable crystalline silica and precautions should be taken to avoid inhaling the dust. Crystalline silica is classified as carcinogenic to humans (IARC Group 1). The normal grain size of the product precludes it from being an inhalation hazard.

Reproductive toxic: Not classified as a reproductive toxin.

STOT - single exposure: No known effects from this product.

STOT - repeated exposure: The normal grain size of the product precludes it from being an inhalation hazard. This product contains a small amount of respirable crystalline silica and precautions should be taken to avoid inhaling the dust. Radiation: This product contains low levels of naturally occurring radioactive elements of the uranium and thorium series. Low level gamma radiation from bulk or bagged stockpiles of this product can increase gamma levels slightly above normal background.

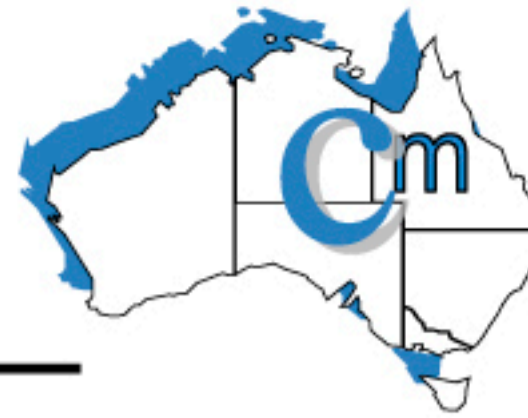
Aspiration hazard: This product does not present an aspiration hazard.

12) ECOLOGICAL INFORMATION

Toxicity: No information provided.

Persistence and degradability: No information provided.

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Mobility in soil: No information provided.

Bio accumulative potential: No information provided.

13)DISPOSAL CONSIDERATIONS

Waste materials and contaminated packaging:

Disposal must be in accordance with Federal, State and Local Council regulations. If approved, may be transferred to an approved landfill site. Many states are developing new regulations for the disposal of waste containing Naturally Occurring Radioactive Materials (NORM) or Technologically Enhanced Naturally Occurring Radioactive Materials (TENORM) above background levels. Consult and comply with current regulations.

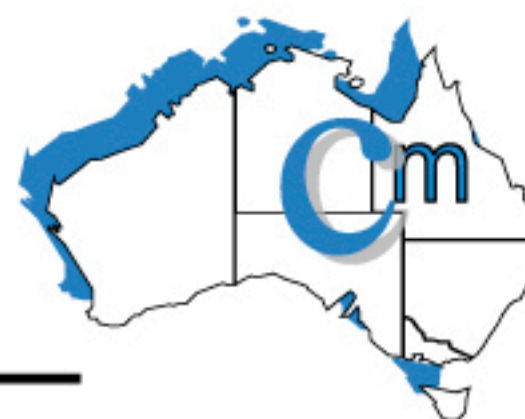
Disposal considerations: Dispose of in accordance with relevant local legislation.

14)TRANSPORT INFORMATION

CLASSIFIED AS A DANGEROUS GOOD FOR TRANSPORT:

	LAND TRANSPORT (CNDG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
UN Number bulk	2912	2912	2912
Proper Shipping Name	RADIOACTIVE MATERIAL, LOW SPECIFIC ACTIVITY (LSA-I), non-fissile or fissile-excepted	RADIOACTIVE MATERIAL, LOW SPECIFIC ACTIVITY (LSA-I), non-fissile or fissile-excepted	RADIOACTIVE MATERIAL, LOW SPECIFIC ACTIVITY (LSA-I), non-fissile or fissile-excepted
UN Number packaged	2910	2910	2910
	Radioactive material, excepted package-limited quantity of material	Radioactive material, excepted package-limited quantity of material	Radioactive material, excepted package-limited quantity of material
Transport hazard class	7	7	7

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Packing Group	None allocated	None allocated	None allocated
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Environmental hazards:

No information provided

Special precautions for user:

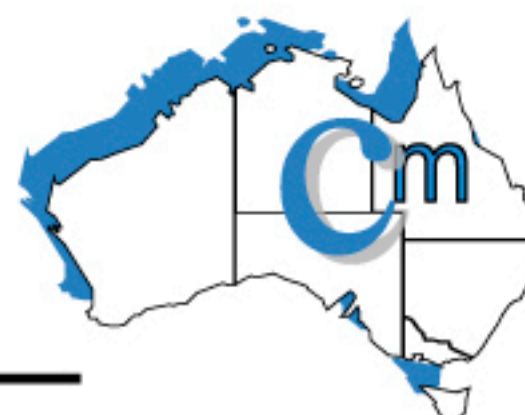
EMS F-I, S-S

15)REGULATORY INFORMATION

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

Regulation	Ingredient(s)	Listed
Catalog of Hazardous Chemicals (2015)	PHOSPHORUS PENTOXIDE	Listed
Inventory of Existing Chemical Substance in China (IECSC)	ALUMINIUM OXIDE CERIUM OXIDE IRON OXIDE (FE2O3) LANTHANUM OXIDE MONAZITE PHOSPHORUS PENTOXIDE QUARTZ (CRYSTALLINE SILICA) THORIUM TITANIUM DIOXIDE URANIUM ZIRCONIUM DIOXIDE	Listed
List of Hazardous Chemicals for Priority Management - Precursors	PHOSPHORUS PENTOXIDE	Not Listed

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List of Toxic Chemicals Restricted to be Imported/Exported - Priority Management	PHOSPHORUS PENTOXIDE	Not Listed
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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. Remember that some respirators may be extremely 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 form of product, 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: It should be noted that the effects from exposure to this product will depend on several factors including: form of product; 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 which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

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

EMS Emergency Schedules (Emergency Procedures for Ships Carrying Dangerous Goods)

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/m³ Milligrams per Cubic Metre

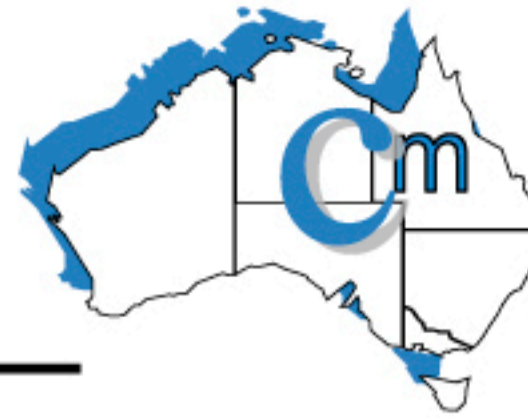
OEL Occupational Exposure Limit

pH Relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).

ppm Parts Per Million

STEL Short-Term Exposure Limit

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STOT-RE Specific target organ toxicity (repeated exposure)

STOT-SE Specific target organ toxicity (single exposure)

TLV Threshold Limit Value

TWA Time Weighted Average

Statement

This document has been compiled on behalf of the manufacturer, supplier of the product and serves as their Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided by the manufacturer, supplier or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue.