

# MATERIAL SAFETY DATA SHEET

## Zircon Rutile Concentrate

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### IDENTIFICATION OF MATERIAL AND SUPPLIER

**Product Names:** Zircon Rutile Concentrate  
**Other Names:** none  
**Uses:** Main uses for zircon are as a raw material for ceramics, steel and glass refractories and zirconium manufacture. Rutile is used predominantly as a raw material for titanium dioxide pigment used in paints and cosmetics. Rutile is also used in titanium metal production for aircraft components, medical applications (artificial joints and limbs), sporting equipment and watches.

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### HAZARDS IDENTIFICATION

Not classified as hazardous according to criteria of Australian Safety and Compensation Council (ASCC).

**Risk Phrases** None  
**Safety Phrases** None

### COMPOSITION/INFORMATION ON INGREDIENTS

#### Ingredients (typical)

Mineral	Cas No	Weight %
Zircon	149040-68-2	46%
Rutile	1317-80-2	38%
Ilmenite	103170-28-1	6%
Others		10%

#### Chemical Analysis (typical)

It is expected that some variation in chemical analysis will occur from time to time due to the varying nature of the mineral orebodies. However, content will be controlled within close limits.

Chemical Name	Weight %
TiO <sub>2</sub>	46%
ZrO <sub>2</sub> + HfO <sub>2</sub>	26%
SiO <sub>2</sub>	16%
Al <sub>2</sub> O <sub>3</sub>	4%
Fe <sub>2</sub> O <sub>3</sub>	4%
MgO	0.4%
Cr <sub>2</sub> O <sub>3</sub>	0.3%
P <sub>2</sub> O <sub>5</sub>	0.1%
MnO	0.08%
U	0.001%
T	0.002%

### FIRST AID MEASURES

**Swallowed:** First aid is unlikely to be required, but if necessary wash mouth out with water ensuring the mouthwash is not swallowed. Give one or two glasses of water to drink. Seek medical attention if a large quantity has been swallowed.  
**Inhaled:** Blow nose to remove particulates from nose. Move to area with fresh air. Seek medical attention if adverse reaction develops.  
**Skin:** Remove contaminated clothing gently to avoid creating dust. Wash skin. If skin becomes irritated, seek medical attention. Launder affected clothing before re-use.  
**Eye:** Hold eyelid open and flush with clean water. Continue until grit is removed. Seek medical attention if irritation or soreness persists.

### HEALTH EFFECTS

#### Acute

**Swallowed:** Non toxic. No known detrimental effect from accident ingestion as may occur during normal handling. Ingestion of large amounts may cause irritation to the gastro-intestinal system due to abrasiveness.  
**Inhaled:** Mainly regarded as nuisance dust but may be irritating if inhaled at high concentrations. May cause coughing and/or sneezing.  
**Skin:** Low hazard.  
**Eye:** Can cause irritation due to abrasiveness.

#### Chronic

**Radiation:** In common with many minerals, zircon and rutile contain naturally occurring radioactive elements of the uranium and thorium series. The uranium and thorium levels of Matilda Minerals' zircon rutile concentrate is very low, compared with products produced from most mineral sands deposits elsewhere in Australia. Assays of concentrate have given levels for uranium of 160 - 217 ppm, and for thorium of 135 - 195 ppm. The main radiological hazard is internal exposure to alpha particles given off in small amounts in inhaled dust.  
**Silica:** Crystalline silica is a known cause of lung fibrosis (silicosis). It has also been classified as a human carcinogen. Zircon sands contain a small amount of free quartz and precautions should be taken to avoid inhaling the dust.

### FIRST AID FACILITIES

Eye Wash Station

### ADVICE TO DOCTOR

Treat symptomatically

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### FIRE FIGHTING MEASURES

Non flammable, non combustible.

### ACCIDENTAL RELEASE MEASURES

Emergency Procedures: Not relevant

Containment and Clean-up:

Wear safety equipment for normal handling. Avoid generating dust. Vacuum up if possible, otherwise sweep up and recycle. If the spilled product is not suitable for re-use, dispose of to an approved landfill site and cover with clean fill.

### HANDLING AND STORAGE

Handling: Dust generation should be minimised when handling. Wash thoroughly after handling.

Storage: Storage areas should be ventilated.

### EXPOSURE CONTROLS/PERSONAL PROTECTION

National Exposure Standards: Dust TWA-10mg/m<sup>3</sup> (inhalable general nuisance dust)

Biological Limit Values: No information

Engineering Controls: Ventilation requirements will depend on handling methods and the amounts in use, but should be sufficient to maintain dust levels below exposure limits.

Personal Protective Equipment: Safety glasses or goggles. If there is a risk of inhaling dust, wear an approved respirator.

### PHSICAL AND CHEMICAL PROPERTIES

Appearance: Greyish free running sand  
 Odour: Odourless  
 pH: 7.1  
 Vapour Pressure: Not applicable  
 Boiling Point/Range: Not applicable  
 Melting Point: Zircon 2200°C/Rutile 1825°C  
 Solubility: Insoluble  
 Specific Gravity: 2.8-3.0  
 Flash Point: Not applicable  
 Flammability Limits: Not applicable

### STABILITY AND REACTIVITY

Reactivity	Inert
Chemical Stability:	Stable
Incompatible Materials	None in normal or expected use
Decomposition Products	Decomposition will not occur

### TOXICOLOGICAL INFORMATION

Not available.

### ECOLOGICAL INFORMATION

Very low risk of environmental damage. Insoluble in water and unlikely to contaminate waterways or food chains.

### DISPOSAL CONSIDERATIONS

If not re-useable, dispose of to approved landfill site. Disposal must be in accordance with Commonwealth, State and local government regulations.

### TRANSPORT INFORMATION

Transport may be regulated in some countries although the product is generally not regarded as a transport hazard. Trucks however should be covered when transporting dry bulk product to prevent dust creation.

### REGULATORY INFORMATION

Poisons Schedule: None allocated

### END OF MSDS