



SAFETY DATA SHEET

*Prepared under the approved code of practice under section 274 of the Work Health and Safety Act
(August 2011)*

Date of Issue: 23 April 2014

1. IDENTIFICATION

Product: Spodumene Concentrate SC5.0

Trade Name: Spodumene Concentrate SC5.0

Other name(s): Lithium Aluminium Silicate

Preparation of the product Ore mining, refining and concentration (includes desliming).

Use of the product An inorganic material used in manufacturing of ceramics, glass, glazes, foundry, steel, aluminium and lithium products.

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2. HAZARDS IDENTIFICATION

Material is not deemed hazardous

GHS Classification: None allocated.

UN No: None allocated.

ADG Class: None allocated.

Hazchem Code: None allocated.

Poisons schedule: None allocated.

IMSBC Code: Schedule "C" – Sand & Fine particles.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Description of Material: Dry product.
Mixture of naturally occurring silicates and quartz.

Major Constituents:

Chemical Name	CAS Number	EINECS/ELINCS Number	Weight %	EU Classification
Spodumene	1302-37-0	Not Assigned	~63%	None
Silica (Quartz)	14808-60-7	238-878-4	~31%	Not Determined
Feldspar	68476-25-5	270-666-7	~5%	None

4. FIRST AID MEASURES

No special measures required.

Eye Contact Flush eyes immediately for at least 15 minutes and seek medical attention if irritation or other symptoms persist.

Inhalation If shortness of breath, or other breathing difficulties, remove to fresh air. Seek medical attention if symptoms persist.

Skin Contact Wash off with soap and water to remove irritation. Seek medical attention if redness, swelling, irritation or burning persists.

Ingestion Rinse mouth. Do not induce vomiting. Seek medical attention if symptoms persist.

Notes to Physician Treat symptomatically.

5. FIRE AND IGNITION INFORMATION

Flammability Not flammable.

Melting Point Incipient fusion at 1375°C.

Fire/Explosion Hazard Material is not combustible and will not burn in a fire.

If not shipped in bulk and transported in a container, the container may burn. The product is sometimes stored on pallets, which may burn.

Specific Hazards: Material resists ignition and does not promote flame spread.

Extinguishing Surrounding Fire Use appropriate extinguishing media for surrounding fire. While extinguishing a fire, care should be taken not to allow excessive contamination of surface, ground or sewerage waters with product.

6. ACCIDENTAL RELEASE MEASURES

Evacuation No need to evacuate personnel from area as a result of product release.

Clean-up Method Retrieved mechanically or with an industrial vacuum cleaner (without causing the generation of dust). Can be washed into a collection point for retrieving.

Personal Precautions Avoid dust formation and wear appropriate Personal Protection Equipment (PPE) for respiratory protection. Refer to section 8 Personal Protection.

Avoid contact with skin and eyes, appreciable contact can cause irritation. Wear appropriate PPE.

Environmental Precautions No special environmental considerations, however, avoid excessive contamination of surface and ground waters.

Other information No deleterious fumes or vapours are released.

7. HANDLING AND STORAGE

Handling Avoid dust formation.

Provide appropriate ventilation and dust extraction within the storage facility to protect from dust generation and equipment exhaust fumes.

Appropriate PPE for respiratory protection should be worn (refer to section 8 Personal Protection).

If product is not bulk and stored in containers the product may be stored in heavy duty paper or plastic bags on wooden pallets, which should be safely stacked if more than one high.

Bags should be handled with appropriate lifting equipment to avoid rupture.

Storage

Do not store together with volatile chemicals as they may be absorbed into the product.

Store in dry conditions as material is produced and consumed as a dried product.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure to Dust

Generation

Material has been deslimed, however, dust can still be generated by inappropriate handling or failures of appropriate dust extraction systems. Ensure appropriate systems and procedures are in place to maintain the working environment is below the time-weighted average (TWA) value.

Exposure limits

Silica (Quartz) CAS # 14808-60-7

NOHSC TLV-TWA: 0.1mg/M³
(respirable dust)

Nuisance Dust CAS # Not listed

NOHSC TLV-TWA: 10.0mg/M³
(inspirable dust)

NOHSC TLV-TWA: 3.0mg/M³
(respirable dust)

Refer to section 11 Toxicological Information.

Engineering Controls

Handling

Avoid dust generation by utilising appropriate mechanical, or industrial vacuum systems when handling this product.

Store in a dry and well ventilated area to minimise the generation of dust.

Load points, conveyor belts, transfer points and dump points should have adequate ventilation and dust extraction systems to remove any dust generated through the process.

Spillage can be vacuumed up or washed into a collection point for retrieval.

Personal Protection Measures

Respiratory Protection	Avoid dust formation and wear appropriate PPE for respiratory protection. Wear a Class P1 (particulate) respirator. At appreciable dust levels, wear a full-face Class P3 (particulates) respirator, or a powered air-purifying respirator (PAPR) with a Class P3 (particulate) filter.
Eye protection	Avoid contact with eyes to minimise irritation and wear dust proof goggles.
Skin Protection	Avoid contact with skin as product can cause irritation. At appreciable dust levels, wear coveralls.
Other protective equipment	Rubber or PVC gloves to minimise appreciable contact with hands.

9. PHYSICAL AND CHEMICAL PROPERTIES

Description of Material	Mixture of naturally occurring silicate minerals.
Major Constituents	Spodumene [LiAl(Si ₂ O ₆)] ~63% Quartz (SiO ₂) ~31 Feldspar ~5%
Appearance	Dry, fine sand
Size distribution	~100% >90µm ~90% <500µm
Colour	White to Beige.
Smell	Very faint fatty odour.
Specific Gravity	3.1 t/m ³
Bulk Density	1.5 t/m ³
Moisture Content	Dry product - <1% H ₂ O.
Molecular Weight	Not applicable, complex mixture of minerals.
Melting Point	Incipient fusion at 1375°C.
Solubility	Insoluble in water and common dilute solvents. Only soluble in hydrofluoric acid.

10.**STABILITY AND REACTIVITY**

Reactivity	Stable product.
Chemical Stability	Stable product.
Hazardous Reactions	Hazardous polymerisation does not occur.
Mechanical Sensitivity (shock)	Not sensitive to mechanical impact or vibration.
Conditions to avoid	None identified.
Incompatible Materials	None, inert material.
Hazardous Decomposition	None.
Thermal Stability	Stable with a melting temperature 1421°C.

11.**TOXICOLOGICAL INFORMATION**

Toxicity:	Material is inert and non-toxic.
<u>Acute Toxicity</u>	Not determined.
Eye Irritant	Irritant effects.
Skin Irritant	Appreciable contact can cause irritation.
Ingestion	Product has low solubility. Ingestion of small amounts is unlikely to cause severe health risks. Large oral doses may cause gastrointestinal irritation.
Inhalation	Breathing dust may cause respiratory irritation and discomfort. Should be treated as other products containing quartz/silica. See section 8 for TLV-TWA levels for silica and nuisance dust.
Prolonged and repeated exposure to dust may cause silicosis.	
<u>Chronic Toxicity</u>	Not determined.
Potential for Carcinogenicity:	Spodumene is not listed as a carcinogen or potential carcinogen by the National Toxicology Program of the US Public Health Service, nor has it been found to be a carcinogen or potential carcinogen by OSHA or the International Agency for Research for Cancer (IARC).

Product contains low levels of quartz (CAS 14808-60-7). Crystalline silica, if the form of quartz dust has been classified by the IARC as carcinogenic to humans (Group 1).

Note:

Should be treated as other products containing quartz/silica. Where respirable dust levels are controlled, potential for adverse health effects is minimised.

12. ECOLOGICAL INFORMATION

Spodumene is a naturally occurring mineral with no known ecotoxicity. Independent testing for leachates and MARPOL Annex V classification has shown that this material is not a marine pollutant or an environmentally hazardous substance for the purpose of marine transport.

In addition, spodumene is not classified as hazardous to human health and does not contain rubber or plastic materials.

No special environmental considerations, however, avoid excessive contamination of surface, ground and sewerage waters.

13. DISPOSAL CONSIDERATIONS

Disclaimer: Information in this section pertains to the product as produced, stored and shipped in its composition as described in section 3 of this SDS. Contamination and processing may change waste characteristics and disposal requirements.

Should be cleaned up by methods appropriate for dusty materials and disposed of in compliance with all applicable laws (Federal, State and local laws) as they apply to non-hazardous materials.

Recycle product wherever possible, minimising contamination of foreign objects.

Product and containers should be disposed in such a way as to minimise long term and excessive exposure to surface, ground and sewerage waters.

14. TRANSPORT INFORMATION

UN number	None allocated.
DG Class	None Allocated.
Hazchem Code	None allocated.
Dangerous Goods	Not classified for transport as a Dangerous Goods as defined by Australian Dangerous Goods (ADG) Code.

Hazardous Marine Pollutant	Not a marine pollutant or an environmentally hazardous substance for the purpose of marine transport (see section 12 Ecological Information).
Angle of repose	Between 30% and 40%. Moisture and size distribution impact on the variation (Section 6 of the IMSBC Code).
Flow Moisture Point	None allocated. Dry product.
Transportable Moisture Limit	None allocated. Dry product.
Cohesion/Plastic Limit	Classified as a non-cohesive cargo (Section 5 of the IMSBC Code).

15. REGULATORY INFORMATION

See section 2 for Hazards Identification.
See section 12 for Ecological Information.

16. OTHER INFORMATION

Compiled by	Patrick Scallan
Compiled date	25 March 2014
Revision/Re-issue frequency	Every 5 years.
Review	Annually or as and when new information is applicable.
Reference	Safe Work Australia Code of Practice – Preparation of Safety Data Sheets for Hazardous Chemical (dated December 2011). Australian Dangerous Goods Code 7th Edition October 2011.

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