

# STAUROLITE CONCENTRATE

## IDENTIFICATION

<b>Product Name:</b>	Staurolite Concentrate
<b>Other Names:</b>	
<b>Recommended Use:</b>	Blast Cleaning Abrasive, Water Jet Cutting Abrasive, Water Filtration Media
<b>Supplier:</b>	Blast-One International
<b>Address:</b>	1-12 Bruce Avenue, Marlestone, South Australia 5033
<b>Telephone Number:</b>	(08) 8292 2000
<b>Fax Number:</b>	(08) 8292 2001
<b>E-mail:</b>	sales.na@blastone.com

## COMPOSITION/INFORMATION ON INGREDIENTS

This product consists of dry, odourless, dark reddish brown sand grains..

CHEMICAL IDENTITY	CAS NUMBER	PROPORTION (WEIGHT %)	COMMON NAME
	12182-56-8	70 - 85%	Staurolite
FeTiO <sub>3</sub> /	13463-67-7	5 - 22%	Ilmenite/Rutile/Leucosene
ZrSiO <sub>4</sub>	14940-68-2	6 - 12%	Zircon
	1302-76-7 ]		Kyanite
	]	0 - 2%	Sillimanite
SiO <sub>2</sub>	14808-60-7	0.1 - 1%	Quartz
H <sub>2</sub> O	7732-18-5	0.1 - 0.3%	Water
U	7440-29-1 ]		Uranium - natural
Th	7440-61-1 ]	Less than 0.05%	Thorium - natural

## HAZARDS IDENTIFICATION

### ACUTE

<b>Ingestion:</b>	Non-toxic by ingestion. Swallowing a large amount may result in irritation to the digestive system due to abrasiveness.
<b>Eye Contact:</b>	Solids and dust of dried product can be irritating due to abrasiveness.
<b>Skin Contact:</b>	Can cause skin irritation due to abrasiveness.

**Inhalation:** As shipped from the manufacturer, the grain size of the product is outside the respirable range (>10µm diameter) and precludes it from being an inhalation hazard. Handling and processing can however fracture grains, and in the dry state this can generate dust. It can be irritating if inhaled at high concentration. May cause symptoms such as coughing or sneezing.

## CHRONIC

**General:** The main exposure route to the constituents in Staurolite Concentrate is dust inhalation.

**Silica:** Crystalline silica is a known cause of lung fibrosis (silicosis). It has also has been classified as a human carcinogen. (International Agency for Research on Cancer). Staurolite Concentrate contains quartz, (up to 1%) and precautions should be taken to avoid inhaling the dust

**Uranium/Thorium** As is common with many minerals, Staurolite Concentrate contains very low levels (below 0.05% by weight) of naturally occurring radioactive elements of the uranium and thorium series. Internal exposure via inhaled dust is the main exposure pathway. Close proximity to large quantities (bulk or stockpiles) of Staurolite Concentrate over long periods (2000 hours per year) may result in direct exposure. Staurolite Concentrate is exempt from NRC regulations for source material per 10 CFR 40 because it is below 0.05 % uranium and thorium.

## FIRST AID MEASURES

This product consists of dry, odourless, dark reddish brown sand grains..

**Ingestion:** Wash mouth out with water ensuring the mouthwash is not swallowed. Seek medical attention as a precaution if discomfort occurs.

**Eye Contact:** Check for and remove any contact lenses. Hold eyelid open and flush with plenty of clean water. Continue for at least 15 minutes or until grit is removed. Seek medical attention if irritation persists. DO NOT RUB EYES!

**Skin Contact:** Gently remove contaminated clothing to avoid generating dust. Wash material from the skin and wash remaining material from the skin with gentle water stream. If irritation persists, seek medical advice. Launder clothing before re-use.

**Inhalation:** Move to fresh air. Blow nose to remove particulates from nasal passages. If any adverse reaction develops, seek medical attention.

## FIRE FIGHTING MEASURES

**Flammability Limits:** Not applicable

**Flashpoint:** Not applicable

**General Hazard:** This product is not flammable or combustible and does not support combustion.

**Extinguishing Media:** Use media suitable for the material that is burning.

**Protective Equipment:** No specific procedures given. Use protective equipment and precautions suitable for surrounding fire.

## ACCIDENTAL RELEASE MEASURES

**Spills and Disposal:** Wear safety equipment as for normal handling. Avoid generating dust. Vacuum up if possible, otherwise sweep up and re-cycle. If the spilled product is not suitable for re-use, damp down, collect and where possible return to manufacturer for reprocessing. Otherwise dispose of to an approved landfill site and cover with clean fill in accordance with Federal, State and Local regulations.

## HANDLING AND STORAGE

Avoid breathing dust. Use gloves and wash hands before eating, drinking or smoking to minimise inhalation or ingestion from hands.

## EXPOSURE CONTROLS/PERSONAL PROTECTION

### Exposure Standards:

COMPONENT	CAS #	% BY WT.	OSHA PEL [MG/M3]	OSHA CEILING [MG/M3]	ACGIH TLV [MG/M3]	ACGIH STEL [MG/M3]	LISTED CARCINOGEN (YES/NO)		
							NTP	IARC	OSHA
Zircon (ZrO <sub>2</sub> -SiO <sub>2</sub> )	14940-93-8	6-12	5 (as Zr)	N/A	5 (as Zr)	10 (as Zr)	No	No	No
Quartz (SiO <sub>2</sub> )	14808-60-7	0.1-1	See Footnote 3		0.025 as respirable dust			Yes; Group I	
Ilmenite, Rutile, Leucosene as Titanium Dioxide (TiO <sub>2</sub> )	13463-67-7	5-22	5 (resp.) 10 (total)		10			Not Classified; Group 3	
Kyanite, Staurolite, Sillimanite (See Footnote 2)	12182-56-8 1302-76-7	70-85	5 (respirable) 15 total		10		No	No	No
U (natural)	7440-61-1	<0.05	0.05 (insoluble) as U		0.2 as U	0.6 (insoluble) as U			Inadequate
Th (natural)	7440-29-1	<0.05	Not Estab.		-	-			Inadequate

### Notes:

1. Exposure limits listed for each ingredient is for exposure to dust that may be generated during product transfer and handling.
2. OSHA standards for Kyanite, Staurolite, and Sillimanite are particulate not otherwise regulated (PNOR) ("Nuisance Dust").
3. OSHA Table Z-3 establishes the following limits for quartz:

OSHA TABLE Z-3	MMPCF(A)	MG/M3
Quartz (respirable)	250(b) %SiO <sub>2</sub> +5	10 mg/m <sup>3</sup> %SiO <sub>2</sub> +2
Quartz (total)	-	30 mg/m <sup>3</sup> %SiO <sub>2</sub> +2

### Notes to Table Z-3:

- (a) mmpcf = millions of particles per cubic foot of air, based on impinger samples counted by light-field techniques.
- (b) Percent quartz is the amount determined from airborne samples. Both concentration and percent quartz determined from fraction passing size-selector impactor having characteristics set forth in 29 C.F.R. 1910.1000 Table Z-3 footnote (e).

### Uranium

### Thorium

### Exposure <sup>2</sup>

Uranium and thorium are naturally occurring radioactive materials (NORM). Occupational exposure to NORM should be as low as reasonably achievable, (ALARA principle), and should not exceed a total of 100 milli-seiverts (100 millirems) per year over five consecutive years. (ICRP).

<sup>2</sup> Recommendation of the International Commission on Radiological Protection, ICRP Publication 60, Annals of the ICRP Vol 21, No 1 – 3 1991

- Engineering Controls:** Ventilation requirements will depend on handling methods and the amount in use, but should be sufficient to maintain dust levels below exposure limits. Points of dust generation such as conveyor and hopper discharges should be equipped with an effective extraction system. If using Staurolite Concentrate for sand blasting, use in a blasting chamber with mechanical extraction ventilation that meets OSHA 29 CFR part 1910.94. Where sand blasting occurs outside of a chamber, minimise dust contamination of surroundings and maintain dust levels below the recommended exposure standards.
- Personal Protection:** Wear safety glasses with side shields or dust-proof goggles to protect against abrasive effects. Use NIOSH/MSHA approved respiratory when dust concentrations are above exposure limit value. A respiratory protection program that meets OSHA 29 CFR part 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant the use of a respirator. When sand blasting, use a type CE abrasive blast supplied air respirator covering head, neck and shoulders as per 29 CFR 1910.94 (a) (5).

## PHYSICAL AND CHEMICAL PROPERTIES

- Appearance:** Dry, dark reddish brown sand grains
- Odour:** Odourless
- pH:** 6 to 8
- Vapour Pressure:** Not volatile
- Boiling Point:** Not applicable.
- Melting Point:** 1380 – 1540C
- Evaporation Rate:** Not volatile
- Solubility in Water:** Insoluble
- Specific Gravity:** 3.7-3.8
- Bulk Density:** 1900 kg/m<sup>3</sup>
- Particle Size (AFS No):** 70 - 90

## STABILITY AND REACTIVITY

- Reactivity:** Inert
- Chemical Stability:** Stable
- Conditions to Avoid:** None known.
- Incompatible Materials:** None in normal or expected use
- Decomposition:** Decomposition will not occur

## TOXICOLOGICAL INFORMATION

No toxicological information available.

## EXOLOGICAL INFORMATION

The material is unlikely to cause any environmental damage. It is insoluble in water and is unlikely to contaminate waterways or food chains.

## DISPOSAL CONSIDERATIONS

Disposal must be in accordance with Federal, State and Local regulations. If approved, may be transferred to an approved landfill site.

Note: Many states are developing new regulations for the disposal of waste containing Naturally Occurring Radioactive Materials (NORM) above background levels. Consult and comply with current regulations.

## TRANSPORT INFORMATION

Activity is <2,000 pCi/gram; not regulated by U.S. DOT or IMO.

## OTHER INFORMATION

This MSDS has been prepared by Blast-One International from information supplied by GMA Garnet Pty Ltd and complies with the Safety Work Australian Code of Practice on the Preparation of Safety Data Sheets for Hazardous Chemicals December 2011 and follows the Global Harmonized System of Classification and Labelling of Chemicals (the GHS).

As per Worksafe Guidance Note NOHSC 3017, each user should review the information in the specific context of the intended application.

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