

Safety Data Sheet
Nokeng Fluorspar Mine (RF) (Pty) Ltd

Section 1: Identification

Waste stream Name: Nokeng Ash
Synonyms: None
CAS Number: None
EC Number: None
Waste stream Use: None known
Company Identification:
Emergency Telephone Number:

Section 2: Hazard(s) Identification

Classification per SANS 10234 (GHS), CLP and (EC) No 1272/2008:

Physical Hazard: Not Classified

Health Hazard: From the ECHA C&L Inventory (GHS)

Carcinogenic Category 1A

Specific Target Organ Toxicity, Repeated Exposure, Category 1

Aquatic Chronic, Category 4

Pictogram:



Signal Word:

Danger

Hazard Statement:

H350	May cause cancer due to inhalation
H372	Causes damage to organs through prolonged or repeated exposure
H413	May cause long lasting harmful effects to aquatic life

Precautionary Statement:

P260	Do not breath dust
P264	Wash hands thoroughly after handling
P270	Do not eat drink or smoke when using the waste stream
P271	Use only outdoors or in a well-ventilated area
P280	Wear protective gloves/protective clothing/eye protection/face protection
P305+P351+P338	If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present, and easy to do. Continue rinsing.
P332+P313	If skin irritation occurs: Get medical advice/attention
P337+P313	If eye irritation persists: Get medical advice/attention

Section 3: Composition and Information on Ingredients

Element	Cas No	XRF (%)	XRD (%)
Iron (Fe)	7439-89-6	6.66	N/A
Silicon (Si)	7440-21-3	19.86	6.21
Aluminum (Al)	7429-90-5	10.42	5.36
Potassium (K)	7440-09-7	0.60	N/A
Phosphorus (P)	7723-14-0	0.53	N/A
Manganese (Mn)	7439-96-5	0.07	N/A
Calcium (Ca)	7440-70-2	8.44	0.04
Magnesium (Mg)	7439-95-4	1.77	N/A
Titanium (Ti)	7440-32-6	0.79	N/A
Barium (Ba)	7440-39-3	0.17	N/A
Strontium (Sr)	7440-24-6	0.19	N/A
Sulfur (S)	7704-34-9	3.83	N/A
Oxide		46.49	11.88
Other Parameters			
Moisture (H ₂ O)	18.88	% g/g	
Total Organic Matter	39.70	% g/g	
Volatiles	6.54	% g/g	
Ash	63.287	%	

XRD Breakdown	Cas Number	Concentration (%)
Amorphous Fraction	N/A	76.5
Quartz	14808-60-7	9.3
Mullite	1302-93-8	14.1
Calcite	13397-26-7	0.1

Section 4: First Aid Measures

Eye Contact: Do not rub eyes. Thoroughly wash out the opened eye/s with plenty of water for at least 15 min. Remove contact lenses if it's easy to do so and continue rinsing the eyes. Consult a doctor if necessary.

Inhalation: Move into fresh air and consult a doctor if necessary. Inhalation of dust over a long period may cause Silicosis. If not breathing give artificial respiration or oxygen by a qualified person.

Skin contact: Wash off with plenty of soap and water, consult a doctor if necessary. Remove any contaminated clothing.

Ingestion: Rinse out the mouth and drink plenty of water. Consult a doctor if necessary. Never induce vomiting.

Most important symptoms and effects, both acute and delayed:

Over Exposure to the waste stream may cause the following symptoms; coughing, sore throat, redness and watering of the eyes, due to the dust. The waste stream causes damage to organs for prolonged and/or repeated exposure.

Indication of any immediate medical attention and special treatment needed:

No relevant information has been identified.

If unsure consult a doctor and take this SDS with you.

Section 5: Fire Fighting Measures

Suitable extinguishing media:

Use extinguishing media appropriate to surroundings.

Unsuitable extinguishing media:

None known

Special Hazards arising from the substance or mixture:

None known

Advice to firefighters and protective equipment:

Wear a self-contained breathing apparatus with full protective clothing to prevent contact with skin and eyes. Do not create a dust cloud.

Section 6 – Accidental Release Measures

Personal Precaution:

Wear personal protective clothing with a respiratory mask, to prevent dust inhalation. Ensure adequate ventilation. Wash with soap and water after handling the waste stream. For further information see Section 8.

Emergency Procedure:

Immediately isolate the spill and prevent further leakage or spillage. Keep unauthorized personnel or bystanders away from the spill.

Environmental Precaution:

Prevent entry of the spilled waste stream into waterways, sewers or confined areas. Inform the relevant authorities if the waste stream caused environmental pollution.

Methods for Clean up:

Avoid creating a dust cloud. If the waste stream is in dust form it should rather be vacuumed using a spark proof vacuuming system, than sweeping it up using a broom.

Other Information: See Section 13 for disposal considerations.

Section 7 – Handling and Storage

Precautions for safe handling:

Avoid creating a dust cloud. Do not inhale the dust, use respiratory masks and other personal protective equipment and clothing, such as gloves and safety glasses. Do not smoke, drink or eat while handling the waste stream.

After working with the waste stream ensure you wash your hand before eating, drinking or smoking.

Conditions for safe storage, including any incompatibilities:

Store in a well-ventilated area that is dry. Ensure that the containers are tightly sealed.

Section 8 – Exposure Controls and Personal protection

Components Occupational Exposure limit:**Ferric oxide, Iron (III) oxide (Iron oxide dust and fume (as Fe)) [CAS No. 1309-37-1]**

ACGIH TLV: TWA 5 mg/m³ (Respirable Fraction)

OSHA PEL: TWA 10 mg/m³ (Fume)

TWA 15 mg/m³ (Total Dust)

TWA 5 mg/m³ (Respirable Fraction)

NIOSH REL: TWA 5mg/m³ (Dust and Fume, as Fe)

Particulates not otherwise regulated – Total Dust

OSHA PEL: TWA 10 mg/m³ (total) TWA 5 mg/m³ (respirable)

General Industry - TWA 15 mg/m³

Construction Industry – TWA 15 mg/m³

NIOSH REL: TWA 10 mg/m³ (total) TWA 5 mg/m³ (resp)

ACGIH Guideline: TWA 10 mg/m³ (Inhalable Particles)

Silica, Crystalline (Quartz), [Cas No: 14808-60-7]

NIOSH REL: Ca TWA 0.05 mg/m³

TLV-TWA: 0.025 mg/m³ (Respirable particular matter), Carcinogenic designation A2 (Information from Chemlfo).

Information from the REACH Dossier (ECHA Website):

The Derived No- or Minimal Effect Level (DN(M)EL), is the level above which a human should not be exposed to a substance.

Long term, Inhalation exposure: (DNEL) 3mg/m³

Engineering Controls:

Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

Personal Protection:

Avoid contact with skin, eyes and clothing. Use safety glasses (preferably with side shields), dust coat/overall and gloves when handling the waste stream. Respiration masks should be NIOSH certified, European Standard EN 143 (type P2), or equivalent (OSHA 29 CRF 1910.134). All PPE must be approved under standards such as OSHA 29 CFR 1910.132 or EU directive 89/686/EEC.

Section 9 - Physical and Chemical Properties

Appearance	Moist Coarse heterogeneous stones
Colour	Brown with white and black particles
Odour	Odourless
Odour Threshold	Odourless
pH	9.07
Freezing/Melting Point	< - 8 °C
Boiling Point	Not Applicable
Flash Point	> 1200 °C

Evaporation Rate	Not Evaporating
Flammability	Not Flammable
Upper/Lower explosion limits	* Could be for fine powders; dust explosion has been known to occur in underground mines
Vapour Pressure	Not Determined
Vapour Density	Not Determined
Relative Density	*Not Available
Solubility in Water	Not Soluble
Partition Coefficient: n-octanol/water	*Not Applicable, Inorganic Substance
Auto-ignition temperature	> 1200 °C
Decomposition temperature	> 1200 °C
Oxidising Properties	Not Oxidizing
Pyrophoricity	Not Pyrophoric

***According to the International Council on Mining & Metals (ICMM), certain predictions can be made concerning Ores and Concentrates (O &Cs).**

Section 10 – Stability and Reactivity

Reactivity:

Non-reactive under normal conditions

Stability:

Stable under recommended storage condition.

Possibility of Hazardous Reactions:

None Known

Conditions to Avoid:

Avoid generating dust. Avoid extreme temperatures.

Incompatible Materials:

Strong acids, bases and oxidant waste streams. Avoid aluminium powder, calcium hypochlorite, hydrazine, ethylene oxide, peroxides. No corrosive effect on metal.

Hazardous Decomposition Waste streams:

None known

Section 11 – Toxicological information

No Health Classification have done been done for this waste stream. The acute Toxicity has not been tested, the results are based on the composition of the waste stream.

a) Acute Toxicity

Oral: No Classification

Dermal: No Classification

Inhalation: No Classification

The table below is for SiO₂ (also listed as an ingredient), from ECHA, Dossier.

Method – Test Animal	Results	Remarks	Reference
Inhalation - Rat	LC50: > 2.2 mg/L Air/1H	Estimated by calculation or QSAR	CAS number used; 7631-86-9

The following data is available on the ingredients Iron and Silicon oxide from RTECS;

Type of Test	Route of exposure	Species	Dose Data	Toxic Effect
Acute Toxicity Data for Iron; Cas 7439-89-6				
TDL ₀	Oral	Human - Child	77 mg/kg	Behavioural-irritability Gastrointestinal- nausea or vomiting Blood – Normocytic anaemia
LD ₅₀	Oral	Human	200 mg/kg	Vascular – Shock Liver – Hepatitis, Diffuse nutritional and Gross Metabolic acidosis
TCL ₀	Inhalation	Rat	250 mg/m ³ /6H/4W (Intermittent)	Lungs, Thorax or Respiration – Chronic Pulmonary enema

TDL ₀	Subcutaneous	Mouse	41.4 mg/kg/2W (Intermittent)	Rewaste streamive – Spermatogenesis of genetic material, sperm morphology, motility, and count
Acute Toxicity Data for SiO₂; Cas 7631-86-9				
LC	Inhalation	Rat	>200 g/m ³ /1H	Lungs, Thorax or respiration
TDL ₀	Intratracheal	Rat	1 mg/kg	Lungs, Thorax or respiration – Biochemical Metabolism – Effect on Inflammation

Likely routes of exposure: Eye contact, skin contact, Inhalation

Target Organs: Skin, Eyes, respiratory System

- b) Skin Corrosion/irritation:** Skin contact may cause itchiness, but it's not classified.
- c) Serious eye Damage/irritation:** The waste stream can cause irritation symptoms such as reddening and heavy watering, from dust. But it does not need to be classified.
- d) Respiratory and Skin Sensation:** Not Classified
- e) Germ Cell Mutagenicity:** Not Classified
- f) Carcinogenicity:** Category 1A
- g) Reproductive Toxicity:** Not Classified
- h) Specific Target organ Toxicity – Single Exposure:** May cause respiratory irritation, but not classified
- i) Specific Target organ Toxicity – Repeated Exposure:** Category 1
- j) Aspiration hazard -** No Data Available (Not Classified)

Section 12 – Ecological Information

The waste stream has not been tested. The information below is from estimations using the waste stream's composition.

Iron is the predominant ingredient in this waste stream, below is a table showing acute toxicity data for iron (RTECS Database).

Type of Test	Route of exposure	Species	Dose Data
LC ₅₀	Chemical added to tank (Dissolved in Water)	Daphnia	4400 µg/L/48H

Acute Aquatic Toxicity: Not Classified

Chronic Aquatic Toxicity: Category 4

Persistence and Degradability:

Biotic Degradability – Not required because it's an inorganic substance

Bio accumulative potential: No Available Data

Mobility in soil: Not Relevant, due to the form of the waste stream. It's also insoluble in water.

Other Adverse effects: No Data Available

May cause long lasting harmful effects to aquatic life.

Section 13 – Disposal Considerations

Disposal should comply with the waste disposal legislation (GN R. 634, 635 and 636) as well as any other municipal regulations. The preferred methods of disposal are firstly recycling or re-using and lastly landfill. This waste stream should never be disposed of down any drains or sewage lines.

Section 14 – Transport Information

UN Number:	None Known
UN Proper Shipping Name:	None
Transport Hazard Class:	None
Environmental hazard:	Not Applicable
Special Precaution for User:	None Known

Section 15 – Regulatory Information

Not Mullite or Quartz is listed in SANS 10234a of 2008.

The waste stream contains a chemical (SiO_2) known to cause cancer.

WHMIS IDL; Iron Oxide are identified under the Canadian Hazardous Waste streams Act, Minimum concentration is 1 %.

UN Number: Iron Oxide Spent is listed, but not Iron (II) Oxide

Section 16 – Any other Relevant information

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To be noted:

The information contained in this SDS is based upon data considered to be accurate at the time of preparation. UIS Organic Laboratory (Pty) Ltd, has taken reasonable care in the preparation of this SDS, however it assumes no responsibility or liability to the accuracy as well as the suitability of the information, for both the intended purpose of this waste stream or any consequences of its use. Since regulatory standards and guideline recommendations are revised on a continues basis, UIS Organic Laboratory cannot insure that the information contained in this SDS will be current at the time of use.

The information in this SDS relates only to the waste stream as stated and not for use in combination with any other waste stream or process. UIS Organic Laboratory (Pty) Ltd

cannot be held responsible for any physical or chemical changes that the user/generator may make to this waste stream. The user/generator is obligated to determine the conditions for safe use.

Abbreviations:

LDL₀:	Lowest Published Toxic Dose
LD50:	Lethal Dose, 50% kill
TCL₀:	Lowest Published Toxic Concentration
TWA:	Time-Weighted Average
ST:	Short Term
REL:	Recommended Exposure Limits
PEL:	Permissible Exposure Limit
ACGIH:	American Conference of Governmental Industrial Hygienists
NIOSH:	National Institute for Occupational Safety and Health