



Safety Data Sheet (SDS)

Aluminium Silicate

Non-chemically modified ores are not regulated under the EU REACH Regulation (EC) No 1907/2006. This substance does not meet the classification and labelling requirements under the EU CLP Regulation 1272/2008, nor under the UN GHS of Classification and Labelling. A SDS is therefore not mandatory. This SDS is issued for responsible care purposes.

1. Identification of the substance /mixture and of the company/undertaking

| | | |
|---|---|---|
| Substance/Preparation Identification | : | Product name: Aluminium Silicate Other names: Pyrophyllite; Wonderstone, $\text{Al}_2\text{Si}_4\text{O}_{10}(\text{OH})_2$ Registration number: Not applicable. |
| Use of the Substance/Preparation | : | Ceramics, chemical, refractory and electrical components |
| Use advised against | : | No known uses advised against. |
| Company/Undertaking identification 1 | : | Non EU Manufacturer's Address Wonderstone Limited Farm Gestoptefontein 349 IO South Africa Tel Number: +27 018 571 0076 E-mail Address: josjoubert@wonderstone.co.za Mine Manager: Mr. Jos Joubert Working Hours: Monday – Friday 06:00 to 15:30 (GMT +2 hours) |
| <u>In case of emergency:</u> Responsible Person (Marketing Agent for Wonderstone Ltd.) | : | Vincent Harford Sales Manager . Wonderstone Ltd. Tel: +27 11 770-6800 E-mail: vincentharford@assore.com |

2. Hazards identification

| | | |
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| Classification of preparation | : | Not classified as hazardous for supply This product does not meet the classification and labelling criteria given in the Regulation (EC) No 1272/2008 (CLP) based on presently available information. |
| Labelling/Pictograms: | : | Not applicable as the substance is not classified. |
| Other Hazards | : | Dust generation may cause eye, skin and respiratory tract irritation. Refer to Section 8 . Not a known carcinogen, mutagen or teratogen |

3. Composition/information on hazardous ingredients

Major Component(s)/Substance(s)

| Chemical name | CAS number | Nominal % in the ore (Grey) | Nominal % in the ore (Black) | EU CLP Regulation 1272/2008 | UN GHS |
|--------------------------------|------------|-----------------------------|------------------------------|-----------------------------|----------------|
| Al ₂ O ₃ | 1344-28-1 | 29.2 | 32.5 | Not classified | Not classified |
| SiO ₂ (bound) | 7631-86-9 | 59.0 | 58.2 | Not classified | Not classified |
| Fe ₂ O ₃ | 1317-60-8 | 2.97 | 0.79 | Not classified | Not classified |
| TiO ₂ | | 1.43 | 1.84 | Not classified | Not classified |
| K ₂ O | | 1.17 | 0.89 | Not classified | Not classified |
| Na ₂ O | | 0.26 | 0.22 | Not classified | Not classified |
| MnO | | <0.1 | <0.1 | Not classified | Not classified |
| MgO | | <0.5 | <0.5 | Not classified | Not classified |
| CaO | | <0.1 | <0.1 | Not classified | Not classified |
| P ₂ O ₅ | | <0.14 | 0.2 | Not classified | Not classified |
| C | | 0.06 | 0.8 | Not classified | Not classified |
| S | | <0.01 | 0.01 | Not classified | Not classified |
| CO ₂ | | <0.01 | <0.1 | Not classified | Not classified |

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|--------------------------|--|----|-----|----------------|----------------|
| Li ₂ O in ppm | | 17 | 150 | Not classified | Not classified |
|--------------------------|--|----|-----|----------------|----------------|

*Several other trace elements exist, but none considered hazardous to human health or the environment.

** Independent studies indicate variable amounts of rutile, diaspora, mica and kaolinite (Anglo Vaal Mineralogical Laboratory 2001)

** Analysis performed in 2011 confirms that Pyrophyllite mined by Wonderstone has a free silica content of 0.908% (Dr Ansie Bruwer, Pr No. 1522574)

4. First aid measures

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| Eye contact | : | Can cause significant eye irritation. If product gets into eyes, check for and remove any contact lenses. Hold eyelids apart and flush immediately with plenty of clean water for at least 10 minutes. Seek medical attention if symptoms persist or are severe. |
| Skin contact | : | If skin contact occurs, remove contaminated clothing and shoes and then flush skin with mild soap and water. Clean contaminated shoes and clothing before re-use. If skin irritation occurs and is persistent, contact a doctor/physician. |
| Inhalation | : | If product is inhaled and breathing is difficult, remove exposed person from contaminated area to fresh air. Keep the person warm and at rest. If the person is not breathing, if their breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. Contact physician urgently |
| Ingestion | : | If swallowed, rinse mouth with water. Remove dentures if any. Move exposed person to fresh air. Keep exposed person warm and at rest. If the exposed person is conscious, give small quantities of water to drink. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if symptoms persist. |
| Protection of First-Aiders | : | If first aiders are required to enter dust exposure area, respiratory and other PPE must be used. |
| Notes to physician | : | No specific treatment. Treat symptomatically. Contact a poison treatment specialist immediately, if large quantities are ingested or inhaled. |

5. Fire-fighting measures

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| Suitable extinguishing media | : | Use an extinguishing media appropriate for fine particles that may arise from the material. |
| Special exposure hazards arising from substance or preparation | : | The product is a non-flammable solid. Any fine suspended particles of dust could have the potential to form explosive mixtures with air. If there is a fire, promptly isolate the scene by removing all persons from the vicinity of the incident. No action shall be taken involving any personal risk or without suitable training. |
| Hazardous thermal decomposition products | : | Inadequate data available |
| Special protective equipment for fire-fighters | : | Appropriate protective equipment and SCBA with a full face-piece operated in positive pressure mode should be worn. |

6. Accidental release measures

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| Personal precautions | : | No action shall be taken involving any personal risk or without suitable training. Do not touch or walk through spilled material. Use suitable protective equipment and prevent the generation of dust where possible. Wear respiratory protection equipment to avoid breathing dust. Remove product from ignition sources as all fine powders can be combustible. See Section 8. |
| Environmental precautions | : | Avoid dispersal of spilled product and limit contact with soil, waterways, drains and sewers as far as practically possible. Ensure contaminated run offs are dealt with appropriately, according to approved environmental management plans. If possible, vacuum dry spillages, alternatively wet spilled material with water to reduce dust generation before and during handling. Avoid dust generating and handling operations where possible. See Section 13. |
| Cleaning up methods | : | <p>Small spill: Vacuum or sweep up spilled product and place in an appropriately designated and labelled container. If disposal is required, this must be undertaken in accordance with local laws and regulations.</p> <p>Large spill: Contain product to limit the potential to enter sewers, water courses, basements or confined areas. Trained personnel can vacuum or sweep up material and place in appropriately designated and labelled containers. If disposal is required, this must be undertaken in accordance with local laws and regulations. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.</p> <p>Uncontaminated product can be re-used after careful cleaning. Any resulting solid waste that cannot be re-used should be</p> |

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disposed of according to the local laws and regulations. Also see Directive 2008/50/EC.

7. Handling and storage of bulk material

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| Handling | : | Wash face, hands and forearms thoroughly after handling product. Avoid dust generating activities where possible and use filters and exhaust ventilation to reduce dust, especially when crushing. In the interests of good industrial hygiene, wear appropriate personal protective equipment as informed by an occupational health risk assessment. Maintain a clean work place to prevent dust accumulation. Recycle all waste where possible. If product becomes contaminated, dispose of according to the local laws and regulations. |
| Storage | : | Store in an area away from incompatible materials and ignition sources. Store separately from water, acids and any oxidizing agents. In powder form, store in 1 ton bulk bags sealed to avoid dust dispersal. Ensure containers are adequately labelled. Use appropriate containment to avoid environmental contamination. |
| Packaging & Transport: | : | Conventional bulk handling techniques should be used when packaging and transporting the product. Product should be covered during transport as far as possible. |

8. Exposure controls/personal protection

| Exposure limit values (OELs) | : | OELs of key components: <table border="1"><thead><tr><th></th><th>OHSAct</th><th>OSHA</th><th>EU/UK</th></tr></thead><tbody><tr><td>Al₂O₃</td><td>5mg/m³</td><td>5mg/m³</td><td>4mg/m³</td></tr><tr><td>SiO₂</td><td>0.1mg/m³</td><td>0.025mg/m³</td><td>0.05mg/m³</td></tr><tr><td>Fe₂O₃</td><td>5mg/m³</td><td>10mg/m³</td><td>5mg/m³</td></tr></tbody></table> | | OHSAct | OSHA | EU/UK | Al ₂ O ₃ | 5mg/m ³ | 5mg/m ³ | 4mg/m ³ | SiO ₂ | 0.1mg/m ³ | 0.025mg/m ³ | 0.05mg/m ³ | Fe ₂ O ₃ | 5mg/m ³ | 10mg/m ³ | 5mg/m ³ |
|---------------------------------------|----------------------|--|-----------------------|--------|------|-------|--------------------------------|--------------------|--------------------|--------------------|------------------|----------------------|------------------------|-----------------------|--------------------------------|--------------------|---------------------|--------------------|
| | OHSAct | OSHA | EU/UK | | | | | | | | | | | | | | | |
| Al ₂ O ₃ | 5mg/m ³ | 5mg/m ³ | 4mg/m ³ | | | | | | | | | | | | | | | |
| SiO ₂ | 0.1mg/m ³ | 0.025mg/m ³ | 0.05mg/m ³ | | | | | | | | | | | | | | | |
| Fe ₂ O ₃ | 5mg/m ³ | 10mg/m ³ | 5mg/m ³ | | | | | | | | | | | | | | | |
| Exposure controls | : | The material is not classified according to SANS 10228 as 'dangerous goods'. The product is also not classified in terms of REACH or UNGHS | | | | | | | | | | | | | | | | |
| Occupational exposure controls | : | Dust: Reduce dust generation and dispersal through limiting manual handling. LEV and wet suppression methods for powder state should be used : Handling: The use of protective hand gloves is recommended. Eye Protection: It is mandatory to use safety eyewear to comply with any approved standard when a risk assessment indicates this is necessary to avoid exposure to product in the eyes. (E.g. EN 166 – Europe, or SANS 1404 – South Africa). | | | | | | | | | | | | | | | | |

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Respiratory Protection: Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. In the interest of good industrial hygiene, ensure containment of gaseous/dusty material, (Gas filter: EN 136).

9. Physical and chemical properties

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| Appearance | Grey aluminium silicate is pale grey in colour with homogenous appearance whilst black aluminium silicate is dark grey to black rock with patches of light colours. |
| Size | Grey aluminium silicate consists of fine grains. Black aluminium silicate consists of coarse grain sizes. |
| Odour | None |
| pH | 7.5 (Estimated value) |
| Density | 2.68 – 2.72 g./c.c. |
| Boiling Point | Decomposes on melting at 1 630°C |
| Flash Point | Not applicable for this material as an inorganic substance |
| Melting Point | Approximately 1630°C |
| Solubility in Water | Insoluble |
| Flammability | No specific fire or explosion hazards |
| Exposure Properties | Not known |
| Oxidising Properties | Not known |
| Vapour Pressure | Not applicable |
| Viscosity | Not applicable |
| Organic Solvents | Insoluble |
| Freezing Point | Not applicable |
| Explosive properties | Not applicable |

10. Stability and reactivity

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| Reactivity | Not reactive under normal storage and handling conditions |
| Chemical Stability | Stable under normal conditions. |
| Possibility of Hazardous reactions | None known. |
| Conditions to Avoid | Avoid generating excessive fine particles and exposure to ignition sources |
| Incompatible material | None known. |

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| Hazardous decomposition products | None known. |
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11. Toxicological information

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| Toxicokinetics, metabolism and distribution | : | Powder is the main form of the product that may exert health effects. Limited bio-availability expected in solid form. Its constituents are naturally bound but can be released individually at different rates and concentrations based on physical form (powder). Dust containing respirable crystalline silica has the potential to cause pneumoconiosis in occupational settings. See Section 16. |
| Acute effects | : | Short term exposure to airborne dust particles may cause irritation to eyes, nose, throat and lungs. |
| Sensitisation | : | Not a known sensitising agent. |
| Chronic health effects | : | Long term exposure to airborne dust particles contribute to the development of bronchitis, reduced breathing capacity and susceptibility to occupational lung disease (pneumoconiosis) |
| Carcinogenicity, Mutagenicity and Reproductive toxicity (CMR) effects: | : | Product is not known to be carcinogenic, mutagenic or reprotoxic. |

12. Ecological information

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| Ecotoxicity | : | Aluminium Silicate is not known to have adverse effects to the environment. |
| Mobility | : | Not enough information is available to determine mobility in soil. |
| Persistence and degradability | : | Not applicable to inorganic substances. |
| Bioaccumulation potential | : | None expected. |

13. Disposal considerations – recycle if possible

Re-use of aluminium silicate is recommended. In cases where re-use is not possible, the material can be disposed of on a general landfill site according to national and local legal requirements as the material is not considered hazardous as per the Hazardous Substances Act (15 of 1973) and the Hazardous Chemical Substances Regulation (1995).

14. Transport information

International transport regulations

Aluminium silicate is not classified an annex III hazardous material under Marpol and therefore not subject to its requirements. Responsible care with respect to discharging cargo and washing ship holds is nevertheless recommended.

| Regulatory information | UN number | Proper shipping name | Classes | PG* | Label | Additional information |
|------------------------|----------------|----------------------|----------------|----------------|----------------|------------------------|
| ADR/RID Class | Not regulated. | Not regulated. | Not regulated. | Not regulated. | Not regulated. | Not regulated. |
| ADNR Class | Not regulated. | Not regulated. | Not regulated. | Not regulated. | Not regulated. | Not regulated. |
| IMDG Class | Not regulated. | Not regulated. | Not regulated. | Not regulated. | Not regulated. | Not regulated. |
| IATA-DGR Class | Not regulated. | Not regulated. | Not regulated. | Not regulated. | Not regulated. | Not regulated. |

15. Regulatory information

Chemical safety assessment:

A chemical safety assessment is not required as the substance is unclassified.

Labelling according to Directive 67/548/EEC and 1999/45/EC:

Not required, however, responsible care symbols/pictograms could be used.



National laws/National measures:

- National Environmental Management Waste Act, 2008.
- Department of Water Affairs and Forestry, Minimum Requirements for Waste Disposal by Landfill, Second Edition, 1998.
- SANS 10228, 2003: The Identification and Classification of Dangerous Goods for Transport.
- South African Occupational Health and Safety, 1993 (Act 85 of 1993) as amended.
- Occupational Health and Safety Act (1993). Hazardous Chemical Substances Regulations, 1995. Occupational Exposure Limits – Recommend Limits (South Africa, 1995).

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- Mine Health and Safety Act, 1996 (Act 29 of 1996) as amended.
- Occupational Health and Safety Act (1993), General Amendment Regulation 930, June 2003.
- Occupational Health and Safety Act (1993), Hazardous Chemical Substances Regulation 1179, August 1995.

16. Other information

Notice to reader

All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist. The safety of the material has only been examined for the uses described in this document.

Wonderstone Ltd. urges each customer or recipient of this SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this SDS and any hazard associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. In the event of the material being re-routed to a jurisdiction other than that indicated on this SDS, regard must be made to the legal requirements prevailing in such other jurisdiction.

The information presented here pertains only to the product as supplied. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific SDSs, we are not and cannot be responsible for SDSs obtained from any source other than ourselves. If you have obtained an SDS from another source or if you are not sure that the SDS you have is current, please contact us for the most current version.

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| Date of issue | : | 04 September 2017 |
| Version | : | 1 |

Glossary:

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| CAS | <i>Chemical Abstracts Service</i> |
| EU | <i>European Union</i> |
| EU CLP | <i>European Union - Classification, Labelling and Packaging</i> |
| EU REACH | <i>European Union - Registration, Evaluation, Authorization and Restriction of Chemicals</i> |
| LEV | <i>Local Exhaust Ventilation</i> |
| MARPOL | <i>Marine Pollution Convention</i> |
| OEL | <i>Occupational Exposure Limit</i> |

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| OHSA | <i>Occupational Safety and Health Administration</i> |
| OHSAct | <i>Occupational Health and Safety Act (1993 - South Africa)</i> |
| PPE | <i>Personal Protective Equipment</i> |
| SANS | <i>South African National Standards</i> |
| SCBA | <i>Self-Contained Breathing Apparatus</i> |
| SDS | <i>Safety Data Sheet</i> |
| UNGHS | <i>United Nations Globally Harmonised System</i> |

Document Control and History

Introduction

This page describes the history of the creation and revisions of this document.

| Document Name | Document Owner |
|------------------------|-------------------------|
| SDS Aluminium Silicate | Assore SHERQ Department |

Next Review

This document is scheduled for review as follows:

| Date | Person/Team Responsible | To be Approved By |
|----------------|--------------------------------|--------------------------|
| September 2022 | SHERQ | Senior Manager: SHERQ |