

Kyanite

Safety Data Sheet

according to Regulation (EC) No. 453/2010
Date of issue: 30/1/2013

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name. : Kyanite

1.2. Relevant identified uses of the substance or mixture and uses advised against

1.2.1. Relevant identified uses

Use of the substance/mixture : Mining Product - Primarily aluminum silicates

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

Kyanite Mining Corporation
30 Willis Mountain Plant Lane
Dilwyn, VA 23936
T 434-983-4322

1.4. Emergency telephone number

No additional information available

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

STOT SE 3 H335

STOT RE 2 H373

Full text of H-phrases: see section 16

Depending on the type of handling and use (e.g. grinding, drying), airborne respirable crystalline silica may be generated. Prolonged and/or massive inhalation of respirable crystalline silica dust may cause lung fibrosis, commonly referred to as silicosis. Principal symptoms of silicosis are cough and breathlessness. Occupational exposure to respirable crystalline silica dust should be monitored and controlled. This product should be handled with care to avoid dust generation.

Classification according to Directive 67/548/EEC or 1999/45/EC

Not classified

Adverse physicochemical, human health and environmental effects

No additional information available

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP) :



Signal word (CLP) : Warning

Hazard statements (CLP) : H335 - May cause respiratory irritation
H373 - May cause damage to lungs through prolonged or repeated exposure

Precautionary statements (CLP) : P260 - Do not breathe dust
P271 - Use only outdoors or in a well-ventilated area
P281 - Use personal protective equipment as required
P304+P340 - IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing
P312 - Call a POISON CENTER/doctor/physician if you feel unwell
P501 - Dispose of contents/container in accordance with local/regional/national/international regulations.

EUH phrases : EUH210 - Safety data sheet available on request

2.3. Other hazards

No additional information available

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SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixture

Name	Product identifier	%	Classification according to Directive 67/548/EEC
Kyanite	(CAS No.) 1302-76-7 (EC no) 215-106-4	85 - 95	Not classified
Quartz	(CAS No.) 14808-60-7 (EC no) 238-878-4	5 - 10	Not classified
Rutile (TiO ₂)	(CAS No.) 1317-80-2 (EC no) 215-282-2	1 - 5	Not classified
Silica, cristobalite	(CAS No.) 14464-46-1 (EC no) 238-455-4	< 0.1	Not classified

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Full text of R-, H- and EUH-phrases: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

- First-aid measures after inhalation : Immediate effects are not expected. If high concentrations of dust are inhaled, remove to fresh air. If breathing problems occur, a certified professional should administer oxygen or artificial respiration as indicated and obtain immediate medical attention.
- First-aid measures after skin contact : None required.
- First-aid measures after eye contact : Dusts and particles may cause physical abrasion. Do not rub eyes. Rinse eyes with lukewarm water for at least 15 minutes. Open and close the eyelids during rinsing to remove all dusts and particles. If irritation persists, seek medical attention.
- First-aid measures after ingestion : None required for small amounts. If substantial quantities are ingested, give 4-8 ounces of water or milk to dilute and seek medical advice.

4.2. Most important symptoms and effects, both acute and delayed

- Symptoms/injuries after inhalation : Inhalation of high dust concentrations may cause coughing and mild irritation. Repeated inhalation of dusts containing crystalline silica over time can cause progressive fibrotic lung disease (silicosis) and increase the risks of developing respiratory cancer. Lung damage may progress even if the worker is removed from exposure. Silicosis can result in death from cardiac failure or the destruction of lung tissue. The extent and severity of lung damage depends on a variety of factors including particle size, percentage of silica, natural resistance, dust concentration, and length of exposure. Aluminum silicates may also cause milder lung effects.
- Symptoms/injuries after skin contact : Irritation is not expected.
- Symptoms/injuries after eye contact : Chemical irritation is not expected. Dusts and particles may scratch the eyes.
- Symptoms/injuries after ingestion : Not considered a likely route of exposure under normal product use conditions. May cause gastrointestinal irritation if swallowed. Product is relatively non-toxic.

4.3. Indication of any immediate medical attention and special treatment needed

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media : Does not burn. Use extinguishing media appropriate for surrounding fire.
- Unsuitable extinguishing media : None.

5.2. Special hazards arising from the substance or mixture

- Fire hazard : Not flammable.
- Explosion hazard : None known.
- Reactivity : None.

5.3. Advice for firefighters

- Protection during firefighting : Firefighters should wear full protective gear.

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SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Avoid inhalation of dust from the spilled material. Do not walk through or scatter spilled material.

6.1.1. For non-emergency personnel

No additional information available

6.1.2. For emergency responders

No additional information available

6.2. Environmental precautions

Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

For containment : Stop the flow of material, if this is without risk.

Methods for cleaning up : Use wet clean-up methods (wiping, mopping, etc.) or a vacuum to remove small amounts. The vacuum must be equipped with a filtration system sufficient to remove and prevent the recirculation of crystalline silica (a vacuum equipped with a high-efficiency particulate air filter (HEPA) filter is recommended). For large spills, use a fine water spray or mist to control dust creation and carefully scoop or shovel into a clean, dry container for later reuse or disposal. Completely remove all dusts to prevent recirculation of crystalline silica into the workplace. DO NOT USE DRY SWEEPING OR COMPRESSED AIR TO CLEAN SPILLS. Clean-up personnel must wear appropriate protective equipment including respiratory protection (See Section 8).

6.4. Reference to other sections

No additional information available

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Plant processes should be designed to control airborne dusts at or below acceptable exposure guidelines. DO NOT use compressed air or dry sweeping to remove dust from work area. Dusts should be removed using vacuum or wet clean-up methods (wet towels, use of mists, etc.).

Under dusty conditions, employees should wear coveralls or other suitable work clothing. Contaminated clothing must be vacuumed before removal and respiratory protection should be the last article of clothing removed. DO NOT REMOVE dusts from clothing by blowing or shaking. Practice good housekeeping. Wash thoroughly after handling. Launder contaminated clothing before re-wearing. Do not take contaminated clothing home.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Store in a dry area in closed containers. Storage and work areas should be periodically cleaned to minimize dust accumulation.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Kyanite (1302-76-7)		
Latvia	OEL TWA (mg/m ³)	2 mg/m ³

Silica, cristobalite (14464-46-1)		
Austria	MAK (mg/m ³)	0.15 mg/m ³ (yearly average till 12/31/2013)
Belgium	Limit value (mg/m ³)	0.05 mg/m ³
Bulgaria	OEL TWA (mg/m ³)	0.07 mg/m ³
France	VME (mg/m ³)	0.05 mg/m ³ (restrictive limit)
Italy - Portugal - USA ACGIH	ACGIH TWA (mg/m ³)	0.025 mg/m ³
USA IDLH	US IDLH (mg/m ³)	25 mg/m ³
USA NIOSH	NIOSH REL (TWA) (mg/m ³)	0.05 mg/m ³
Spain	VLA-ED (mg/m ³)	0.05 mg/m ³ (reclassified IARC group 2A to group 1)
Switzerland	VME (mg/m ³)	0.15 mg/m ³
The Netherlands	MAC TGG 8H (mg/m ³)	0.075 mg/m ³
Czech Republic	Expoziční limity (PEL) (mg/m ³)	0.1 mg/m ³
Denmark	Grænseværdie (langvarig) (mg/m ³)	0.05 mg/m ³
Finland	HTP-arvo (8h) (mg/m ³)	0.05 mg/m ³
Hungary	AK-érték	0.15 mg/m ³

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Silica, cristobalite (14464-46-1)		
Ireland	OEL (8 hours ref) (mg/m ³)	0.1 mg/m ³
Lithuania	IPRV (mg/m ³)	0.05 mg/m ³
Norway	Gjennomsnittsverdier (AN) (mg/m ³)	0.05 mg/m ³ (Dust containing .alpha.-Quartz, Cristobalite and/or Tridymite is evaluated by summation formula)
Norway	Gjennomsnittsverdier (Korttidsverdi) (mg/m ³)	0.15 mg/m ³ (Dust containing .alpha.-Quartz, Cristobalite and/or Tridymite is evaluated by summation formula)
Poland	NDS (mg/m ³)	1.0 mg/m ³ (2% to 50% free crystalline silica)
Romania	OEL TWA (mg/m ³)	0.05 mg/m ³
Slovakia	NPHV (priemerná) (mg/m ³)	0.1 mg/m ³
Sweden	nivågränsvärde (NVG) (mg/m ³)	0.05 mg/m ³
Canada (Quebec)	VEMP (mg/m ³)	0.05 mg/m ³
Portugal	OEL TWA (mg/m ³)	0.025 mg/m ³
Portugal	OEL chemical category (PT)	A2 - Suspected Human Carcinogen

Quartz (14808-60-7)		
Austria	MAK (mg/m ³)	4 mg/m ³ (when it contains >1% or more of the substance, yearly average)
Belgium	Limit value (mg/m ³)	0.1 mg/m ³
Bulgaria	OEL TWA (mg/m ³)	0.07 mg/m ³
France	VME (mg/m ³)	0.1 mg/m ³ (restrictive limit)
Italy - Portugal - USA ACGIH	ACGIH TWA (mg/m ³)	0.025 mg/m ³
USA IDLH	US IDLH (mg/m ³)	50 mg/m ³
USA NIOSH	NIOSH REL (TWA) (mg/m ³)	0.05 mg/m ³
Spain	VLA-ED (mg/m ³)	0.1 mg/m ³ (reclassified IARC group 2A to group 1)
Switzerland	VME (mg/m ³)	0.15 mg/m ³
The Netherlands	MAC TGG 8H (mg/m ³)	0.075 mg/m ³
United Kingdom	WEL TWA (mg/m ³)	0.1 mg/m ³
United Kingdom	WEL STEL (mg/m ³)	0.3 mg/m ³ (calculated)
Denmark	Grænseværdie (langvarig) (mg/m ³)	0.1 mg/m ³
Finland	HTP-arvo (8h) (mg/m ³)	0.2 mg/m ³ (blasting and quarrying)
Hungary	AK-érték	0.15 mg/m ³
Ireland	OEL (8 hours ref) (mg/m ³)	0.1 mg/m ³
Lithuania	IPRV (mg/m ³)	0.1 mg/m ³
Norway	Gjennomsnittsverdier (AN) (mg/m ³)	0.1 mg/m ³ (Dust containing .alpha.-Quartz, Cristobalite and/or Tridymite is evaluated by summation formula)
Norway	Gjennomsnittsverdier (Korttidsverdi) (mg/m ³)	0.3 mg/m ³ (Dust containing .alpha.-Quartz, Cristobalite and/or Tridymite is evaluated by summation formula)
Poland	NDS (mg/m ³)	1.0 mg/m ³ (2% to 50% free crystalline silica)
Romania	OEL TWA (mg/m ³)	0.1 mg/m ³
Slovakia	NPHV (priemerná) (mg/m ³)	0.1 mg/m ³ (in Cristobalite or Tridymite)
Sweden	nivågränsvärde (NVG) (mg/m ³)	0.1 mg/m ³
Canada (Quebec)	VEMP (mg/m ³)	0.1 mg/m ³
Portugal	OEL TWA (mg/m ³)	0.025 mg/m ³
Portugal	OEL chemical category (PT)	A2 - Suspected Human Carcinogen

8.2. Exposure controls

- Appropriate engineering controls : Use local exhaust and general ventilation as necessary to control air contaminants at or below acceptable exposure guidelines. Collection systems must be designed and maintained to prevent the accumulation and recirculation of respirable silica into the workplace. Additional controls to limit exposure to crystalline silica may include but are not limited to: wet processes, installation of dust collection systems, dust control additives, enclosed work processes, and automated processes.
- Hand protection : Protective gloves are recommended.
- Eye protection : Safety glasses with side shields or goggles to prevent dust and particles from entering the eyes.
- Skin and body protection : Use body protection appropriate for task.

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Respiratory protection : If exposure limits are exceeded or irritation is experienced, NIOSH approved respiratory protection should be worn.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Solid mineral
Appearance : Vitreous
Colour : Pearly-gray
Odour : Odourless.
Odour threshold : No data available
pH : No data available
Relative evaporation rate (butylacetate=1) : No data available
Melting point : P.C.E. 36-37
Freezing point : No data available
Boiling point : No data available
Flash point : No data available
Self ignition temperature : No data available
Decomposition temperature : No data available
Flammability (solid, gas) : No data available
Vapour pressure : No data available
Relative vapour density at 20 °C : No data available
Specific gravity : 3.2-3.7
Solubility : No data available
Log Pow : No data available
Log Kow : No data available
Viscosity, kinematic : No data available
Viscosity, dynamic : No data available
Explosive properties : No data available
Oxidising properties : No data available
Explosive limits : No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

None.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Will not occur.

10.4. Conditions to avoid

None.

10.5. Incompatible materials

Strong oxidizing agents.

10.6. Hazardous decomposition products

Quartz may convert to cristobalite at high temperature (> 1470 °C). Kyanite will decompose to form mullite and cristobalite at high temperatures (~ 1450 °C). This conversion is associated with a large irreversible volume change.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Not classified

Quartz (14808-60-7)	
LD50 oral rat	500 mg/kg
ATE (oral)	500 mg/kg

Skin corrosion/irritation : Not classified

Serious eye damage/irritation : Not classified

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Respiratory or skin sensitisation	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: In 1997, IARC (the International Agency for Research on Cancer) concluded that crystalline silica inhaled from occupational sources can cause lung cancer in humans. However it pointed out that not all industrial circumstances, nor all crystalline silica types, were to be incriminated. (IARC Monographs on the evaluation of the carcinogenic risks of chemicals to humans, Silica, silicates dust and organic fibres, 1997, Vol. 68, IARC, Lyon, France.)

In June 2003, SCOEL (the EU Scientific Committee on Occupational Exposure Limits) concluded that the main effect in humans of the inhalation of respirable crystalline silica dust is silicosis. There is sufficient information to conclude that the relative risk of lung cancer is increased in persons with silicosis (and, apparently, not in employees without silicosis exposed to silica dust in quarries and in the ceramic industry). Therefore preventing the onset of silicosis will also reduce the cancer risk (SCOEL SUM Doc 94-final, June 2003).

So there is a body of evidence supporting the fact that increased cancer risk would be limited to people already suffering from silicosis. Worker protection against silicosis should be assured by respecting the existing regulatory occupational exposure limits and implementing additional risk management measures where required

Reproductive toxicity	: Not classified
Specific target organ toxicity (single exposure)	: The short-term or immediate effects of dust inhalation are expected to be coughing and mild respiratory irritation. Scratching or physical damage to the eyes can cause irritation, pain, redness, tears, blurred vision, and light sensitivity. There may be no symptoms during the early stages of chronic silicosis. As the disease progresses, the symptoms include tiredness, shortness of breath, severe cough, and characteristic x-rays. Shortness of breath upon exertion is one of the most common symptoms and limited chest expansion is the most common physical sign.

Specific target organ toxicity (repeated exposure)	: May cause damage to lungs through prolonged or repeated exposure. Silicosis is a progressive fibrotic pneumoconiosis that greatly decreases the ability of the lungs to provide oxygen (decreased pulmonary capacity). Three types of silicosis have been identified. Acute silicosis can occur several weeks or months following exposure to very high levels of crystalline silica and can result in death in months or within several years. Accelerated silicosis can occur 5-10 years after exposure to higher levels of crystalline silica. Chronic silicosis is the most common type and usually occurs after 10 or more years of exposure to low levels of crystalline silica.
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Similar aluminum silicate minerals such as kaolin have been found to cause lung fibrosis in the absence of crystalline silica. The disease is not as severe as silicosis but can cause respiratory symptoms and changes. Crystalline silica exposure appears to enhance the severity of the disease.

Animal studies indicate that cristobalite has a greater potential to produce fibrosis than quartz. Cristobalite produces a more severe response than quartz and fibrosis elicited is diffuse rather than nodular.

Other: Silica particles less than 10 µm are considered respirable; however, particles retained in the lungs are generally much smaller. A median diameter of particles retained in the lungs has been cited as 0.5-0.7 µm.

Aspiration hazard	: Not classified
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SECTION 12: Ecological information

12.1. Toxicity

This product is an ecologically inert material. It does not contain ozone depleting substances and is not expected to exert an ecotoxic effect or bioconcentrate in the food chain.

12.2. Persistence and degradability

No additional information available

12.3. Bioaccumulative potential

No additional information available

12.4. Mobility in soil

No additional information available

12.5. Results of PBT and vPvB assessment

No additional information available

12.6. Other adverse effects

No additional information available

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SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste disposal recommendations : Dispose of contents/container in accordance with local/regional/national/international regulations.

SECTION 14: Transport information

In accordance with ADR / RID / ADNR / IMDG / ICAO / IATA

14.1. UN number

Not a dangerous good in sense of transport regulations.

14.2. UN proper shipping name

Not applicable

14.3. Transport hazard class(es)

Not applicable

14.4. Packing group

Not applicable

14.5. Environmental hazards

Other information : No supplementary information available.

14.6. Special precautions for user

14.6.1. Overland transport

No additional information available

14.6.2. Transport by sea

No additional information available

14.6.3. Air transport

No additional information available

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

15.1.1. EU-Regulations

No REACH Annex XVII restrictions

Contains no REACH candidate substance

15.1.2. National regulations

No additional information available

15.1.3. International regulations

US Federal: As a naturally occurring mineral, this product is exempt from TSCA inventory requirements.

15.2. Chemical safety assessment

No additional information available

SECTION 16: Other information

Full text of R-, H- and EUH-phrases::

STOT RE 2	Specific target organ toxicity (repeated exposure) Category 2
STOT SE 3	Specific target organ toxicity (single exposure) Category 3
H335	May cause respiratory irritation
H373	May cause damage to organs through prolonged or repeated exposure

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.