

**80 STL**

Version 1.1

Revision Date: 08/16/17

Date of first issue: 06/26/2017

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**SECTION 1. IDENTIFICATION**

**Product name** : **80 STL**

Synonyms : Staurolite

**Manufacturer or supplier's details**

Company name of supplier : Barton International

Address : 6 Warren St.  
Glens Falls, NY 12801 United States of America

Telephone : 518.798.5462

Emergency telephone : 800.741.7756

**Recommended use of the chemical and restrictions on use**

Recommended use : Waterjet Cutting

Restrictions on use : For industrial use only.  
Do not use or resell Barton materials in medical applications involving implantation in the human body or contact with internal body fluids or tissues unless agreed to by Seller in a written agreement covering such use. For further information, please contact your Barton representative.

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**SECTION 2. HAZARDS IDENTIFICATION**

**GHS classification in accordance with 29 CFR 1910.1200**

Not a hazardous substance or mixture.

**GHS label elements  
OSHA HCS 2012**

**WARNING**



**Hazard statements** • May cause respiratory irritation – H335

**Precautionary statements**

**Prevention** • Obtain special instructions before use. - P201  
Do not handle until all safety precautions have been read and understood.  
- P202  
Wear protective gloves/protective clothing/eye protection/face protection. - P280

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**Response** • IF exposed or concerned: Get medical advice/attention. - P308+P313

**Storage/Disposal** • Dispose of content and/or container in accordance with local, regional, national, and/or international regulations. - P501

**Other hazards**

**OSHA HCS 2012** • Under United States Regulations (29 CFR 1910.1200 - Hazard Communication Standard), this product is considered hazardous.

**SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**

Substance / Mixture : Mixture

**Hazardous ingredients**

Chemical name	CAS-No.	Concentration (% w/w)
Staurolite	12182-56-8	> 95%
Zircon	14940-68-2	>= 1 - < 5
Rutile (TiO <sub>2</sub> )	1317-80-2	>= 1 - < 5
Quartz	14808-60-7	>= 0.1 - < 1
Respirable Quartz (<10 microns)	14808-60-7	< 0.1

**SECTION 4. FIRST AID MEASURES**

- General advice : In the case of accident or if you feel unwell, seek medical advice immediately.  
When symptoms persist or in all cases of doubt seek medical advice.
- If inhaled : If inhaled, remove to fresh air.  
Get medical attention.
- In case of skin contact : Wash with water and soap as a precaution.  
Get medical attention if symptoms occur.
- In case of eye contact : Flush eyes with water as a precaution.  
Get medical attention if irritation develops and persists.
- If swallowed : If swallowed, DO NOT induce vomiting.  
Get medical attention if symptoms occur.  
Rinse mouth thoroughly with water.
- Most important symptoms and effects, both acute and delayed : irritant effects
- Protection of first-aiders : First Aid responders should pay attention to self-protection, and use the recommended personal protective equipment when the potential for exposure exists.
- Notes to physician : Treat symptomatically and supportively.

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**SECTION 5. FIRE-FIGHTING MEASURES**

- Suitable extinguishing media : Water spray  
Alcohol-resistant foam  
Carbon dioxide (CO<sub>2</sub>)  
Dry chemical
- Unsuitable extinguishing media : None known.
- Specific hazards during fire fighting : Exposure to combustion products may be a hazard to health.
- Hazardous combustion products : Silicon oxides  
Metal oxides
- Specific extinguishing methods : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.  
Use water spray to cool unopened containers.  
Remove undamaged containers from fire area if it is safe to do so. Evacuate area.

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Special protective equipment : In the event of fire, wear self-contained breathing apparatus.

For fire fighters : Use Personal Protective Equipment

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**SECTION 6. ACCIDENTAL RELEASE MEASURES**

Personal precautions, protective equipment and emergency procedures : Use personal protective equipment. Follow safe handling advice and personal protective equipment recommendations.

Environmental precautions : Discharge into the environment must be avoided. Prevent further leakage or spillage if safe to do so. Retain and dispose of contaminated wash water. Local authorities should be advised if significant spillages cannot be contained.

Methods and materials for containment and cleaning up : Sweep up or vacuum up spillage and collect in suitable container for disposal. Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which regulations are applicable. Sections 13 and 15 of this SDS provide information regarding certain local or national requirements.

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**SECTION 7. HANDLING AND STORAGE**

- Technical measures : See Engineering measures under EXPOSURE CONTROLS/PERSONAL PROTECTION section.
- Local/Total ventilation : Use only with adequate ventilation.
- Advice on safe handling : Do not swallow.  
Avoid contact with eyes.  
Avoid prolonged or repeated contact with skin.  
Handle in accordance with good industrial hygiene and safety practice.  
Take care to prevent spills, waste and minimize release to the environment.
- Conditions for safe storage : Keep in properly labeled containers.  
Store in accordance with the national regulations.
- Materials to avoid : Do not store with the following product types:  
Strong oxidizing agents

**SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION****Ingredients with workplace control parameters**

Ingredients	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Zircon	14940-68-2	TWA	5 mg/m <sup>3</sup> (Zirconium)	OSHA Z-1
		TWA	5 mg/m <sup>3</sup> (Zirconium)	ACGIH
		STEL	10 mg/m <sup>3</sup> (Zirconium)	ACGIH
		TWA	5 mg/m <sup>3</sup> (Zirconium)	NIOSH REL
		ST	10 mg/m <sup>3</sup> (Zirconium)	NIOSH REL
Rutile (TiO <sub>2</sub> )	1317-80-2	TWA	10 mg/m <sup>3</sup> (Titanium dioxide)	ACGIH
Quartz	14808-60-7	TWA (respirable)	10 mg/m <sup>3</sup> / %SiO <sub>2</sub> +2	OSHA Z-3
		TWA (respirable)	250 mppcf / %SiO <sub>2</sub> +5	OSHA Z-3
		TWA (Respirable fraction)	0.025 mg/m <sup>3</sup> (Silica)	ACGIH
		TWA (Respirable dust)	0.05 mg/m <sup>3</sup> (Silica)	NIOSH REL
		TWA (Respirable dust)	0.05 mg/m <sup>3</sup>	OSHA Z-1

**These substance(s) are inextricably bound in the product and therefore do not contribute to a dust inhalation hazard.**

Quartz

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- Engineering measures** : If using this product as an abrasive blast agent in confined areas, airborne dust levels should be controlled by physical enclosure of the abrasive blasting operation. The enclosure should be exhaust ventilated.  
Dust formation may be relevant in the processing of this product. In addition to substance-specific OELs, general limitations of concentrations of particulates in the air at workplaces have to be considered in workplace risk assessment. Relevant limits include: OSHA PEL for Particulates Not Otherwise Regulated of 15 mg/m<sup>3</sup> - total dust, 5 mg/m<sup>3</sup> - respirable fraction; and ACGIH TWA for Particles (insoluble or poorly soluble) Not Otherwise Specified of 3 mg/m<sup>3</sup> - respirable particles, 10 mg/m<sup>3</sup> - inhalable particles.
- Personal protective equipment**
- Respiratory protection : General and local exhaust ventilation is recommended to maintain vapor exposures below recommended limits. Where concentrations are above recommended limits or are unknown, appropriate respiratory protection should be worn. Follow OSHA respirator regulations (29 CFR 1910.134) and use NIOSH/MSHA approved respirators. Protection provided by air purifying respirators against exposure to any hazardous chemical is limited. Use a positive pressure air supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstance where air purifying respirators may not provide adequate protection.
- Hand protection
- Material : Chemical-resistant gloves
- Remarks : Choose gloves to protect hands against chemicals depending on the concentration specific to place of work. Breakthrough time is not determined for the product. Change gloves often! For special applications, we recommend clarifying the resistance to chemicals of the aforementioned protective gloves with the glove manufacturer. Wash hands before breaks and at the end of workday.
- Eye protection : Wear the following personal protective equipment:  
Safety glasses
- Skin and body protection : Select appropriate protective clothing based on chemical resistance data and an assessment of the local exposure potential.  
Skin contact must be avoided by using impervious protective clothing (gloves, aprons, boots, etc).

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Hygiene measures : Ensure that eye flushing systems and safety showers are located close to the working place.  
When using do not eat, drink or smoke. Wash contaminated clothing before re-use.

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**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

Appearance : Solid form, crystalline

Color : red brown

Odor : odorless

Odor Threshold : No data available pH

: No data available

Melting point/freezing point : 1,370 °C

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Initial boiling point and boiling range	:	No data available
Flash point	:	does not flash
Evaporation rate	:	Not applicable
Flammability (solid, gas)	:	Will not burn Not expected to form explosive dust-air mixtures.
Upper explosion limit / Upper flammability limit	:	No data available
Lower explosion limit / Lower flammability limit	:	No data available
Vapor pressure	:	Not applicable
Relative vapor density	:	Not applicable
Relative density	:	3.7
Solubility(ies) Water solubility	:	insoluble
Partition coefficient: n-octanol/water	:	Not applicable
Autoignition temperature	:	No data available
Decomposition temperature	:	The substance or mixture is not classified self-reactive.
Viscosity Viscosity, kinematic	:	Not applicable
Explosive properties	:	Not explosive
Oxidizing properties	:	The substance or mixture is not classified as oxidizing.
Particle size	:	No data available

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**SECTION 10. STABILITY AND REACTIVITY**

Reactivity	:	Not classified as a reactivity hazard.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	Can react with strong oxidizing agents.
Conditions to avoid	:	None known.



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Incompatible materials : Oxidizing agents

Hazardous decomposition products : No hazardous decomposition products are known.

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**SECTION 11. TOXICOLOGICAL INFORMATION****Information on likely routes of exposure**

Skin contact  
Ingestion  
Eye contact

**Acute toxicity**

Not classified based on available information.

**Ingredients:****Zircon:**

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg  
Remarks: Based on data from similar materials

Acute inhalation toxicity : LC50 (Rat): > 4.3 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Method: OECD Test Guideline 436  
Assessment: The substance or mixture has no acute inhalation toxicity  
Remarks: Based on data from similar materials

**Rutile (TiO<sub>2</sub>):**

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg

Acute inhalation toxicity : LC50 (Rat): > 6.82 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Assessment: The substance or mixture has no acute inhalation toxicity

**Quartz:**

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg

**Skin corrosion/irritation**

Not classified based on available information.

**Ingredients:****Zircon:**

Species: Rabbit  
Method: OECD Test Guideline 404  
Result: No skin irritation  
Remarks: Based on data from similar materials

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**Rutile (TiO<sub>2</sub>):**

Species: Rabbit

Result: No skin irritation

**Serious eye damage/eye irritation**

Not classified based on available information.

**Ingredients:****Zircon:**

Species: Rabbit

Result: No eye irritation

Remarks: Based on data from similar materials

**Rutile (TiO<sub>2</sub>):**

Species: Rabbit

Result: No eye irritation

**Respiratory or skin sensitization****Skin sensitization**

Not classified based on available information.

**Respiratory sensitization**

Not classified based on available information.

**Ingredients:****Zircon:**

Test Type: Maximization Test

Routes of exposure: Skin contact

Species: Guinea pig

Result: negative

Remarks: Based on data from similar materials

**Rutile (TiO<sub>2</sub>):**

Test Type: Local lymph node assay (LLNA)

Species: Mouse

Result: negative

Test Type: Buehler Test

Species: Guinea pig

Result: negative

**Germ cell mutagenicity**

Not classified based on available information.

**Ingredients:****Zircon:**

Genotoxicity in vitro

: Test Type: Chromosome aberration test in vitro  
Method: OECD Test Guideline 473

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Result: negative  
Remarks: Based on data from similar materials

Genotoxicity in vivo : Test Type: Mutagenicity (in vivo mammalian bone-marrow cytogenetic test, chromosomal analysis)  
Species: Rat  
Application Route: inhalation (dust/mist/fume)  
Result: negative  
Remarks: Based on data from similar materials

**Rutile (TiO<sub>2</sub>):**  
Germ cell mutagenicity – : Assessment Weight of evidence does not support classification as a germ cell mutagen.

**Carcinogenicity**

Not classified based on available information.

**Ingredients:****Zircon:**

Species: Rat  
Application Route: Ingestion  
Exposure time: 103 weeks  
Result: negative  
Remarks: Based on data from similar materials

**Rutile (TiO<sub>2</sub>):**

Carcinogenicity Assessment : Weight of evidence does not support classification as a carcinogen

**Quartz:**

Species: Humans  
Application Route: inhalation (dust/mist/fume)  
Result: positive  
Remarks: IARC: (International Agency for Research on Cancer)  
These substance(s) are inextricably bound in the product and therefore do not contribute to a dust inhalation hazard.

Carcinogenicity - Assessment : Positive evidence from human epidemiological studies (inhalation)

**IARC**

Group 1: Carcinogenic to humans

Quartz 14808-60-7

Group 2B: Possibly carcinogenic to humans

Rutile (TiO<sub>2</sub>) 1317-80-2**OSHA**

No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

**NTP**

Known to be human carcinogen

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**Reproductive toxicity**

Not classified based on available information.

**Ingredients:****Zircon:**

Effects on fetal development : Test Type: Embryo-fetal development  
Species: Rat  
Application Route: Ingestion  
Result: negative  
Remarks: Based on data from similar materials

**STOT-single exposure**

Not classified based on available information.

**STOT-repeated exposure**

Not classified based on available information.

**Ingredients:****Zircon:**

Routes of exposure: inhalation (dust/mist/fume)  
Assessment: No significant health effects observed in animals at concentrations of 0.2 mg/l/6h/d or less.

**Rutile (TiO<sub>2</sub>):**

Assessment: No significant health effects observed in animals at concentrations of 100 mg/kg bw or less.

**Quartz:**

Routes of exposure: inhalation (dust/mist/fume)  
Target Organs: Lungs  
Assessment: Shown to produce significant health effects in animals at concentrations of 0.02 mg/l/6h/d or less.

**Repeated dose toxicity****Ingredients:****Zircon:**

Species: Rat  
NOAEL: > 100.8 mg/m<sup>3</sup>  
Application Route: inhalation (dust/mist/fume)  
Exposure time: 30 Days  
Remarks: Based on data from similar materials

**Rutile (TiO<sub>2</sub>):**

Species: Rat  
NOAEL: 24,000 mg/kg  
LOAEL: > 24,000 mg/kg  
Application Route: Ingestion  
Exposure time: 28 d  
Remarks: No significant adverse effects were reported  
Based on data from similar materials

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**Quartz:**

Species: Humans

LOAEL: 0.053 mg/m<sup>3</sup>

Application Route: inhalation (dust/mist/fume)

Remarks: These substance(s) are inextricably bound in the product and therefore do not contribute to a dust inhalation hazard

**Aspiration toxicity**

Not classified based on available information.

**SECTION 12. ECOLOGICAL INFORMATION****Ecotoxicity****Ingredients:****Zircon:**

Toxicity to fish : LC50 (Danio rerio (zebra fish)): > 100 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 203  
Remarks: Based on data from similar materials

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 100 mg/l  
Exposure time: 48 h  
Remarks: Based on data from similar materials

Toxicity to algae : NOEC (Chlorella vulgaris (Fresh water algae)): > 200 mg/l  
Exposure time: 15 d  
Remarks: Based on data from similar materials

**Rutile (TiO<sub>2</sub>):**

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): > 1,000 mg/l  
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 1,000 mg/l  
Exposure time: 48 h

Toxicity to algae : EC50 (Pseudokirchneriella subcapitata (green algae)): > 100 mg/l  
Exposure time: 72 h  
Remarks: Based on data from similar materials

NOEC (algae): 5,600 mg/l  
Exposure time: 72 h

**Quartz:****Ecotoxicology Assessment**

Acute aquatic toxicity : No toxicity at the limit of solubility.

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Chronic aquatic toxicity : No toxicity at the limit of solubility.

**Persistence and degradability**

No data available

**Bioaccumulative potential**

No data available

**Mobility in soil**

No data available

**Other adverse effects**

No data available

**SECTION 13. DISPOSAL CONSIDERATIONS****Disposal methods**

Waste from residues : Dispose of in accordance with local regulations.

Contaminated packaging : Empty containers should be taken to an approved waste handling site for recycling or disposal.  
If not otherwise specified: Dispose of as unused product.

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**SECTION 14. TRANSPORT INFORMATION****International Regulations****UNRTDG**

Not regulated as a dangerous good

**IATA-DGR**

Not regulated as a dangerous good

**IMDG-Code**

Not regulated as a dangerous good

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

Not applicable for product as supplied.

**Domestic regulation****49 CFR**

Not regulated as a dangerous good

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**SECTION 15. REGULATORY INFORMATION****EPCRA - Emergency Planning and Community Right-to-Know****CERCLA Reportable Quantity**

This material does not contain any components with a CERCLA RQ.

**SARA 304 Extremely Hazardous Substances Reportable Quantity**

This material does not contain any components with a section 304 EHS RQ.

**SARA 302 Extremely Hazardous Substances Threshold Planning Quantity**

This material does not contain any components with a section 302 EHS TPQ.

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**SARA 311/312 Hazards** : No SARA Hazards

**SARA 313** : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

**US State Regulations**

**Pennsylvania Right To Know**

Staurolite	12182-56-8
Ilmenite	12168-52-4
Rutile (TiO2)	1317-80-2

**California Prop. 65**

WARNING! This product contains a chemical known in the State of California to cause cancer.

Quartz	14808-60-7
Quartz	14808-60-7

**California List of Hazardous Substances**

Zircon	14940-68-2
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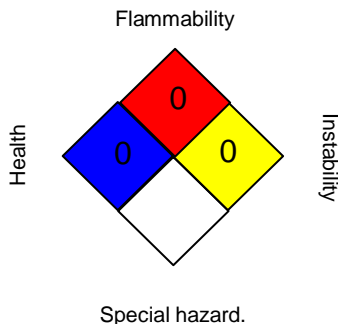
**California Permissible Exposure Limits for Chemical Contaminants**

Zircon	14940-68-2
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**SECTION 16. OTHER INFORMATION**

**Further information**

**NFPA:**



**HMIS® IV:**

<b>HEALTH</b>	/	0
<b>FLAMMABILITY</b>	0	
<b>PHYSICAL HAZARD</b>	0	

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "\*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

**Full text of other abbreviations**

- ACGIH : USA. ACGIH Threshold Limit Values (TLV)
- NIOSH REL : USA. NIOSH Recommended Exposure Limits
- OSHA Z-1 : USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
- OSHA Z-3 : USA. Occupational Exposure Limits (OSHA) - Table Z-3 Mineral Dusts
- ACGIH / TWA : 8-hour, time-weighted average
- ACGIH / STEL : Short-term exposure limit
- NIOSH REL / TWA : Time-weighted average concentration for up to a 10-hour

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NIOSH REL / ST	:	workday during a 40-hour workweek STEL - 15-minute TWA exposure that should not be exceeded at any time during a workday
OSHA Z-1 / TWA	:	8-hour time weighted average
OSHA Z-3 / TWA	:	8-hour time weighted average

AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Before use read Barton safety information.

For further information contact your Barton representative.

All chemical substances in this material are included on or exempted from listing on the TSCA Inventory of Chemical Substances.

80 STL contains trace quantities of naturally occurring radioactive uranium and thorium (less than or equal to 10 ppm uranium plus 70 ppm thorium = 80 ppm total U + Th or 0.008 % w/w, equivalent to 11 pCi/g or less), and radium (less than or equal to 11 pCi/g). Naturally Occurring Radioactive Material, namely uranium, thorium, and their decay products, including radium, is commonly referred to as "NORM".

The main radiological hazard from the product is internal exposure from small amounts of alpha particles given off by inhaled dust. Industrial hygiene practices aimed at control of airborne dust can lessen the potential for exposure. Overexposure by inhalation to inhaled dusts containing radioactive uranium, thorium, and radium may cause lung cancer. Low level gamma radiation in proximity to bulk or bagged stockpiles of these products may present a lesser, external exposure that can be managed by limiting close proximity for long time periods to large volumes of material. With respect to dust exposure, evaluation and calculation based upon dosimetry (ICRP 68) yield the following guidance to ensure that inhalation intake is less than a 100 mrem/yr public dose reference point for radionuclides.



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For a total dust with aerodynamic diameter of 1  $\mu\text{m}$ , the calculated reference dust level is 17.4  $\text{mg}/\text{m}^3$ . For a total dust with aerodynamic diameter of 5  $\mu\text{m}$ , the calculated reference dust level is 27.0  $\text{mg}/\text{m}^3$ . For a total dust with aerodynamic diameter of 10  $\mu\text{m}$ , the calculated reference dust level is 39.8  $\text{mg}/\text{m}^3$ .

The calculations noted above are based upon 8 hr/day TWAs. It should be noted that for these products, the actual particle physical diameter is approximately 1/2 the effective aerodynamic diameter. For these products, as shipped, with essentially no particles as small as calculated above, the highest total dust level can provide a conservative limit. However, if during handling or use the particles are broken down to finer particle sizes, lower levels of total dust would apply. These reference calculations for radionuclides may or may not provide the most conservative recommendation vs. other trace contaminants as compared to specific country dust contaminant limit calculations. It is recommended that the user compare and calculate or measure for specific contaminants vs. reference limits, especially if particles are broken down, to determine the most appropriate standard for protection.

Sources of key data used to compile the Material Safety Data Sheet : Internal technical data, data from raw material SDSs, OECD eChem Portal search results and European Chemicals Agency, <http://echa.europa.eu/>

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Items where changes have been made to the previous version are highlighted in the body of this document by two vertical lines.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and shall not be considered a warranty or quality specification of any type. The information provided relates only to the specific material identified at the top of this SDS and may not be valid when the SDS material is used in combination with any other materials or in any process, unless specified in the text. Material users should review the information and recommendations in the specific context of their intended manner of handling, use, processing and storage, including an assessment of the appropriateness of the SDS material in the user's end product, if applicable.