

Version 8.1 Revision Date: 09/01/2021 SDS Number: 1597635-00019 Date of last issue: 04/12/2021
Date of first issue: 04/28/2017

SECTION 1. IDENTIFICATION

Product name : First Choice Blasting Abrasives
Product code : D11710988
SDS-Identcode : 130000030937

Manufacturer or supplier's details

Distributor : Skat Blast Inc.
Address : 7077 State Route 446, Canfield, OH 44406
Telephone : 330-533-9477
Emergency telephone : Medical emergency: 1-866-595-1473 (outside the U.S. 1-302-773-2000) ; Transport emergency: +1-800-424-9300 (outside the U.S. +1-703-527-3887)

Recommended use of the chemical and restrictions on use

Recommended use : Abrasive blasting
Sand blasting
Restrictions on use : For industrial use only.

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Not a hazardous substance or mixture.

GHS label elements

Not a hazardous substance or mixture.

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Components

Chemical name	CAS-No.	Concentration (% w/w)
Staurolite#	12182-56-8	>= 70 - < 90
Leucoxene	12173-81-8	>= 5 - < 10
Zircon	14940-68-2	>= 1 - < 5
Quartz	14808-60-7	>= 1 - < 5
Rutile (TiO ₂)	1317-80-2	>= 1 - < 5

Voluntarily-disclosed non-hazardous substance

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Actual concentration is withheld as a trade secret

SECTION 4. FIRST AID MEASURES

- If inhaled : If inhaled, remove to fresh air.
Get medical attention if symptoms occur.
- 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 : No special precautions are necessary for first aid responders.
- Notes to physician : Treat symptomatically and supportively.
-

SECTION 5. FIRE-FIGHTING MEASURES

- Suitable extinguishing media : Not applicable
Will not burn
- Unsuitable extinguishing media : Not applicable
Will not burn
- Specific hazards during fire fighting : Exposure to combustion products may be a hazard to health.
- Hazardous combustion products : No hazardous combustion products are known
- 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.
- Special protective equipment for fire-fighters : Wear self-contained breathing apparatus for firefighting if necessary.
Use personal protective equipment.
-

SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protection : Follow safe handling advice (see section 7) and personal pro-

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- tive equipment and emergency procedures : tective equipment recommendations (see section 8).
- Environmental precautions : 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.

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 : Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure assessment
- Conditions for safe storage : Keep in properly labeled containers.
 Store in accordance with the particular national regulations.
- Materials to avoid : No special restrictions on storage with other products.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Leucoxene	12173-81-8	TWA	10 mg/m ³ (Titanium dioxide)	ACGIH
Zircon	14940-68-2	TWA	5 mg/m ³ (Zirconium)	OSHA Z-1
		TWA	5 mg/m ³ (Zirconium)	ACGIH
		STEL	10 mg/m ³ (Zirconium)	ACGIH
		TWA	5 mg/m ³ (Zirconium)	NIOSH REL
		ST	10 mg/m ³ (Zirconium)	NIOSH REL
Quartz	14808-60-7	TWA (Res-	0.05 mg/m ³	OSHA Z-1

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		pirable dust)		
		TWA (respirable)	10 mg/m ³ / %SiO ₂ +2	OSHA Z-3
		TWA (respirable)	250 mppcf / %SiO ₂ +5	OSHA Z-3
		TWA (Respirable particulate matter)	0.025 mg/m ³ (Silica)	ACGIH
		PEL (respirable)	0.05 mg/m ³	OSHA CARC
		TWA (Respirable dust)	0.05 mg/m ³ (Silica)	NIOSH REL
Rutile (TiO ₂)	1317-80-2	TWA	10 mg/m ³ (Titanium dioxide)	ACGIH

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

Quartz

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/m³ - total dust, 5 mg/m³ - respirable fraction; and ACGIH TWA for Particles (insoluble or poorly soluble) Not Otherwise Specified of 3 mg/m³ - respirable particles, 10 mg/m³ - 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 : Protective gloves

Remarks : Choose gloves to protect hands against chemicals depending on the concentration specific to place of work. For special

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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. Breakthrough time is not determined for the product. Change gloves often!

- Eye protection : Wear the following personal protective equipment:
Safety glasses
- Skin and body protection : Skin should be washed after contact.
- Hygiene measures : If exposure to chemical is likely during typical use, provide eye flushing systems and safety showers close to the working place.
When using do not eat, drink or smoke.
Wash contaminated clothing before re-use.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

- Appearance : solid, dry, free flowing granules
- Color : red brown
- Odor : odorless
- Odor Threshold : No data available
- pH : No data available
- Melting point/freezing point : 2,498 °F / 1,370 °C
- Initial boiling point and boiling range : No data available
- Flash point : Not applicable
- 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

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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

SECTION 10. STABILITY AND REACTIVITY

Reactivity : Not classified as a reactivity hazard.

Chemical stability : Stable under normal conditions.

Possibility of hazardous reactions : None known.

Conditions to avoid : None known.

Incompatible materials : None.

Hazardous decomposition products : No hazardous decomposition products are known.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Skin contact
Ingestion
Eye contact

Acute toxicity

Not classified based on available information.

Product:

Acute inhalation toxicity : Remarks: The objective of the study was to compare the lung toxicity of a set of abrasive substitutes for silica dust (garnet, staurolite, coal slag, specular hematite, and treated sand) to

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that of blasting sand. Rats were intratracheally instilled with 2.5 or 10 mg/kg of the various test substances and pulmonary toxicity endpoints were measured at 4 weeks postexposure. The biomarkers included lung inflammation and cytotoxicity endpoints. In addition, the investigators measured alveolar macrophage activation. The results indicated that blasting sand produced evidence of pulmonary toxicity/inflammation and lung fibrosis. Garnet, staurolite, and treated sand exposures induced pulmonary hazard effects and inflammation that were viewed as similar to blasting sand, while coal slag instillation produced greater pulmonary damage and inflammation than blasting sand. In contrast, specular hematite did not significantly increase levels of inflammation and cytotoxicity and did not stimulate macrophage activation. [Hubbs AF et al., Toxicological Sciences volume 61: 135-143, 2001] The results of this study should be viewed as a preliminary, screening-type pulmonary toxicity study which utilized very high, overload doses. Subsequently, the NIOSH researchers followed up on the Hubbs et al., study with another lung toxicity screening study of blasting agents [“Comparative pulmonary toxicity of blasting sand and five substitute abrasive blasting agents” – DW Porter et al., J Toxicol Environ Health A 65:1121-40, 2002]. The additional test substances included steel grit, copper slag, nickel slag, crushed glass and olivine. The authors reported that steel grit produced less lung toxicity than blasting sand or any of the other abrasive blasting substitutes

Components:

Staurolite:

- Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg
- Acute inhalation toxicity : LC50 (Rat): > 5 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
- Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg

Leucoxene:

- Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg
Method: OECD Test Guideline 401
Remarks: Based on data from similar materials

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

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Remarks: Based on data from similar materials

Quartz:

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

Rutile (TiO₂):

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg
Method: OECD Test Guideline 425
Remarks: Based on data from similar materials

Skin corrosion/irritation

Not classified based on available information.

Components:**Leucoxene:**

Species : Rabbit
Result : No skin irritation
Remarks : Based on data from similar materials

Zircon:

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

Rutile (TiO₂):

Species : Rabbit
Method : OECD Test Guideline 404
Result : No skin irritation
Remarks : Information given is based on data obtained from similar substances.

Serious eye damage/eye irritation

Not classified based on available information.

Components:**Leucoxene:**

Species : Rabbit
Result : No eye irritation
Method : OECD Test Guideline 405
Remarks : Based on data from similar materials

Zircon:

Species : Rabbit
Result : No eye irritation
Remarks : Based on data from similar materials

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Rutile (TiO₂):

Species : Rabbit
 Result : No eye irritation
 Method : OECD Test Guideline 405
 Remarks : Based on data from similar materials

Respiratory or skin sensitization

Skin sensitization

Not classified based on available information.

Respiratory sensitization

Not classified based on available information.

Components:

Leucoxene:

Test Type : Buehler Test
 Routes of exposure : Skin contact
 Species : Guinea pig
 Method : OECD Test Guideline 406
 Result : negative
 Remarks : Based on data from similar materials

Zircon:

Test Type : Maximization Test
 Routes of exposure : Skin contact
 Species : Guinea pig
 Result : negative
 Remarks : Based on data from similar materials

Rutile (TiO₂):

Routes of exposure : Skin contact
 Species : Mouse
 Method : OECD Test Guideline 429
 Result : negative
 Remarks : Based on data from similar materials

Germ cell mutagenicity

Not classified based on available information.

Components:

Leucoxene:

Genotoxicity in vitro : Test Type: Chromosome aberration test in vitro
 Method: OECD Test Guideline 473
 Result: negative
 Remarks: Based on data from similar materials

Genotoxicity in vivo : Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)
 Species: Mouse
 Application Route: Intraperitoneal injection

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Result: negative
 Remarks: Based on data from similar materials

Zircon:

Genotoxicity in vitro : Test Type: Chromosome aberration test in vitro
 Method: OECD Test Guideline 473
 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 (TiO2):

Germ cell mutagenicity - Assessment : Weight of evidence does not support classification as a germ
 cell mutagen.

Carcinogenicity

Not classified based on available information.

Components:

Zircon:

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

Quartz:

Species : Humans
 Application Route : inhalation (dust/mist/fume)
 Result : positive
 Remarks : 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)

Rutile (TiO2):

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

IARC

Group 1: Carcinogenic to humans
 Quartz 14808-60-7
 (Silica dust, crystalline)
 Group 2B: Possibly carcinogenic to humans
 Rutile (TiO2) 1317-80-2

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OSHA OSHA specifically regulated carcinogen
Quartz 14808-60-7
(crystalline silica)

NTP Known to be human carcinogen
Quartz 14808-60-7
(Silica, Crystalline (Respirable Size))

Reproductive toxicity

Not classified based on available information.

Components:**Zircon:**

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

Rutile (TiO₂):

Reproductive toxicity - Assessment : Weight of evidence does not support classification for reproductive toxicity

STOT-single exposure

Not classified based on available information.

STOT-repeated exposure

Not classified based on available information.

Components:**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.

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.

Rutile (TiO₂):

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

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Repeated dose toxicity

Components:

Leucoxene:

Species : Rat
 NOAEL : > 100 mg/kg
 Application Route : Ingestion
 Exposure time : 90 Days
 Remarks : Based on data from similar materials

Zircon:

Species : Rat
 NOAEL : > 100.8 mg/m³
 Application Route : inhalation (dust/mist/fume)
 Exposure time : 30 Days
 Remarks : Based on data from similar materials

Quartz:

Species : Humans
 LOAEL : 0.053 mg/m³
 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.

Rutile (TiO₂):

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

Aspiration toxicity

Not classified based on available information.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

Leucoxene:

Toxicity to fish : LC50 (Cyprinodon variegatus (sheepshead minnow)): > 100 mg/l
 Exposure time: 96 h
 Remarks: Based on data from similar materials

Toxicity to daphnia and other aquatic invertebrates : LC50 (Daphnia magna (Water flea)): > 100 mg/l
 Exposure time: 48 h
 Remarks: Based on data from similar materials

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

Quartz:

Ecotoxicology Assessment

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

Rutile (TiO2):

- Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): > 1,000 mg/l
 Exposure time: 96 h
 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
 Method: OECD Test Guideline 202
 Remarks: Based on data from similar materials
- Toxicity to algae/aquatic plants : ErC50 (algae): > 10,000 mg/l
 Exposure time: 72 h
 Remarks: Based on data from similar materials
- NOEC (algae): 5,600 mg/l
 Exposure time: 72 h
 Remarks: Based on data from similar materials

Persistence and degradability

No data available

Bioaccumulative potential

Components:

Rutile (TiO2):

- Bioaccumulation : Remarks: Bioaccumulation is unlikely.
 Based on data from similar materials

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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.

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

Special precautions for user

Not applicable

SECTION 15. REGULATORY INFORMATION**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.

SARA 311/312 Hazards : No SARA Hazards

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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
Tourmaline	1317-93-7
Leucoxene	12173-81-8
Quartz	14808-60-7
Rutile (TiO2)	1317-80-2

California Prop. 65

WARNING: This product can expose you to chemicals including Quartz, which is/are known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

California List of Hazardous Substances

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

Zircon	14940-68-2
Quartz	14808-60-7

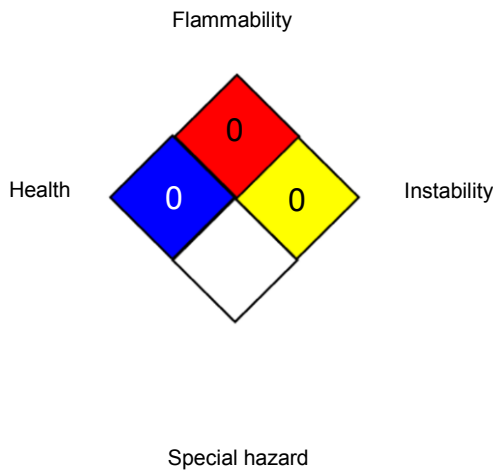
California Regulated Carcinogens

Quartz	14808-60-7
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SECTION 16. OTHER INFORMATION

Further information

NFPA 704:



HMIS® IV:

HEALTH	/	0
FLAMMABILITY		0
PHYSICAL HAZARD		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.

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Before use read Skat Blast safety information.

For further information contact the Skat Blast office or nominated distributors.

Do not use or resell this material 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.

The stated hazards of this material are based on non-inhalable particles that are the bulk fraction of the delivered product. However, if during handling or use the particles are broken down to the inhalable or respirable size range, the dusts may be harmful to the respiratory system. Inhalable quartz is an IARC Category 1 carcinogen and applicable exposure limits should be referenced. This product contains Naturally Occurring Radioactive Materials (NORMs) at levels below U.S. Nuclear Regulatory Commission licensing requirements at 10 CFR 40. Many local jurisdictions are developing new regulations for the disposal of waste containing Naturally Occurring Radioactive Materials (NORM) or Technologically Enhanced Naturally Occurring Radioactive Materials (TENORM) above background levels. Consult and comply with current regulations.

For a total dust with aerodynamic diameter of 1 µm, the calculated reference dust level is 6.9 mg/m³. For a total dust with aerodynamic diameter of 5 µm, the calculated reference dust level is 10.8 mg/m³. For a total dust with aerodynamic diameter of 10 µm, the calculated reference dust level is 15.9 mg/m³.

Full text of other abbreviations

ACGIH	:	USA. ACGIH Threshold Limit Values (TLV)
NIOSH REL	:	USA. NIOSH Recommended Exposure Limits
OSHA CARC	:	OSHA Specifically Regulated Chemicals/Carcinogens
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 workday during a 40-hour workweek
NIOSH REL / ST	:	STEL - 15-minute TWA exposure that should not be exceeded at any time during a workday
OSHA CARC / PEL	:	Permissible exposure limit (PEL)
OSHA Z-1 / TWA	:	8-hour time weighted average
OSHA Z-3 / TWA	:	8-hour time weighted average

AIIC - Australian Inventory of Industrial Chemicals; 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

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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; TECl - Thailand Existing Chemicals 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

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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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.

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