

# SAFETY DATA SHEET



## Zircore™ Foundry Sand

Version 7.0      Revision Date: 19.10.2023      SDS Number: 1331708-00047      Date of last issue: 12.04.2023  
Date of first issue: 27.02.2017

### SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Zircore™ Foundry Sand

SDS-Identcode : 130000028667

#### Manufacturer or supplier's details

Company name of supplier : The Chemours Company México S. DE R.L. DE C.V.

Address : Lago Zurich, no. 219 int. 205 Ampliación Granada, C.P. 11529 Miguel Hidalgo  
Mexico City RFC: DPM000525554

Telephone : 55 5125 4907 in D.F. and metropolitan area - 800 737 5623 inside the Republic.

Emergency telephone : (ANIQ - SETIQ) 55 5559 1588 in CDMX and metropolitan area; 800 002 1400 inside the Republic.

E-mail address : Infolatam@chemours.com

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

Recommended use : Metal casting  
Foundry mould  
Refractory barrier

Restrictions on use : Abrasive blasting, For industrial use only.

### SECTION 2. HAZARDS IDENTIFICATION

#### GHS Classification

Not a hazardous substance or mixture.

#### GHS label elements

No hazard pictogram, no signal word, no hazard statement(s), no precautionary statement(s) required

#### Other hazards

None known.

### SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

#### Components

Chemical name	CAS-No.	Concentration (% w/w)
Zircon	14940-68-2	>= 50 -< 70
Kyanite	1302-76-7	>= 10 -< 20
Sillimanite	12141-45-6	>= 10 -< 20
Rutile (TiO <sub>2</sub> )	1317-80-2	>= 5 -< 10

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Quartz	14808-60-7	>= 1 -< 5
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### SECTION 4. FIRST AID MEASURES

- |   |   |
|---|---|
| If inhaled  | : If inhaled, remove to fresh air.<br>Get medical attention if symptoms occur.  |
| In case of skin contact                                     | : Wash with water and soap as a precaution.<br>Get medical attention if symptoms occur.                                   |
| In case of eye contact                                      | : Flush eyes with water as a precaution.<br>Get medical attention if irritation develops and persists.                    |
| If swallowed  | : If swallowed, DO NOT induce vomiting.<br>Get medical attention if symptoms occur.<br>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<br>Will not burn   |
| Unsuitable extinguishing media                 | : Not applicable<br>Will not burn   |
| Specific hazards during fire fighting          | : Exposure to combustion products may be a hazard to health.  |
| Hazardous combustion products                  | : Metal oxides<br>Silicon oxides  |
| Specific extinguishing methods                 | : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.<br>Use water spray to cool unopened containers.<br>Remove undamaged containers from fire area if it is safe to do so.<br>Evacuate area. |
| Special protective equipment for fire-fighters | : Wear self-contained breathing apparatus for firefighting if necessary.<br>Use personal protective equipment.  |

### SECTION 6. ACCIDENTAL RELEASE MEASURES

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- Personal precautions, protective equipment and emergency procedures : Follow safe handling advice (see section 7) and personal protective 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
- 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.
- 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
Zircon	14940-68-2	VLE-PPT	5 mg/m <sup>3</sup> (Zirconium)	NOM-010-STPS-2014
		VLE-CT	10 mg/m <sup>3</sup> (Zirconium)	NOM-010-STPS-2014
		TWA	5 mg/m <sup>3</sup> (Zirconium)	ACGIH

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		STEL	10 mg/m <sup>3</sup> (Zirconium)	ACGIH
Kyanite	1302-76-7	VLE-PPT (Respirable fraction)	1 mg/m <sup>3</sup> (Aluminum)	NOM-010-STPS-2014
		TWA (Respirable particulate matter)	1 mg/m <sup>3</sup> (Aluminum)	ACGIH
Sillimanite	12141-45-6	VLE-PPT (Respirable fraction)	1 mg/m <sup>3</sup> (Aluminum)	NOM-010-STPS-2014
		TWA (Respirable particulate matter)	1 mg/m <sup>3</sup> (Aluminum)	ACGIH
Rutile (TiO <sub>2</sub> )	1317-80-2	TWA (Respirable particulate matter)	2.5 mg/m <sup>3</sup> (Titanium dioxide)	ACGIH
Quartz	14808-60-7	VLE-PPT (Respirable fraction)	0.025 mg/m <sup>3</sup>	NOM-010-STPS-2014
		TWA (Respirable particulate matter)	0.025 mg/m <sup>3</sup> (Silica)	ACGIH

**This substance(s) is not bioavailable and therefore does not contribute to a dust inhalation hazard.**

Quartz

**Engineering measures** : Ensure adequate ventilation, especially in confined areas.  
Minimize workplace exposure concentrations.

### Personal protective equipment

Respiratory protection : If adequate local exhaust ventilation is not available or exposure assessment demonstrates exposures outside the recommended guidelines, use respiratory protection.

Filter type : Particulates type

Hand protection  
Material : Protective gloves

Remarks : Choose gloves to protect hands against chemicals depending on the concentration specific to place of work. 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. Breakthrough time is not determined for the product. Change gloves often!

Eye protection : Wear the following personal protective equipment:  
Safety glasses

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Skin and body protection : Skin should be washed after contact.

### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	solid, dry, free flowing granules
Color	:	light brown
Odor	:	odorless
Odor Threshold	:	No data available
pH	:	No data available
Melting point/freezing point	:	> 1,815 °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
Relative vapor density	:	Not applicable
Relative density	:	3.6 - 4.2
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.

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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.

#### Components:

##### **Zircon:**

Acute oral toxicity : LD50 (Mouse): > 200,000 mg/kg

##### **Kyanite:**

Acute oral toxicity : LD50 (Rat, female): > 2,000 mg/kg  
Method: OECD Test Guideline 423  
Remarks: Based on data from similar materials

Acute inhalation toxicity : LC50 (Rat): > 1 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Remarks: Based on data from similar materials

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

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Remarks: Based on data from similar materials

### Sillimanite:

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

Acute dermal toxicity : LD50 (Rabbit): > 5,000 mg/kg  
Method: OECD Test Guideline 402  
Remarks: Based on data from similar materials

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

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

### Quartz:

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

### Skin corrosion/irritation

Not classified based on available information.

### Components:

#### Zircon:

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

#### Kyanite:

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

#### Sillimanite:

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

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

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.

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### Components:

#### **Zircon:**

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

#### **Kyanite:**

Species	: Rabbit
Result	: No eye irritation
Method	: OPPTS 870.2400
Remarks	: Based on data from similar materials

#### **Sillimanite:**

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

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

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:

#### **Zircon:**

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

#### **Kyanite:**

Test Type	: Local lymph node assay (LLNA)
Routes of exposure	: Skin contact
Species	: Mouse
Method	: OECD Test Guideline 429
Result	: negative
Remarks	: Based on data from similar materials

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

Routes of exposure	: Skin contact
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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:

#### Zircon:

Genotoxicity in vitro	: Test Type: Bacterial reverse mutation assay (AMES) Method: OECD Test Guideline 471 Result: negative Remarks: Based on data from similar materials
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#### Kyanite:

Genotoxicity in vitro	: Test Type: Bacterial reverse mutation assay (AMES) Result: negative Remarks: Based on data from similar materials  Test Type: In vitro mammalian cell gene mutation test Method: OECD Test Guideline 476 Result: negative Remarks: Based on data from similar materials  Test Type: Chromosome aberration test in vitro Method: OECD Test Guideline 476 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: Ingestion Result: negative Remarks: Based on data from similar materials

#### Sillimanite:

Genotoxicity in vitro	: Test Type: Bacterial reverse mutation assay (AMES) Method: OECD Test Guideline 471 Result: negative Remarks: Based on data from similar materials  Test Type: In vitro mammalian cell gene mutation test Method: OECD Test Guideline 476 Result: negative Remarks: Based on data from similar materials  Test Type: Chromosome aberration test in vitro Method: OECD Test Guideline 473 Result: negative Remarks: Based on data from similar materials
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Genotoxicity in vivo : Test Type: Mutagenicity (in vivo mammalian bone-marrow cytogenetic test, chromosomal analysis)  
Species: Rat  
Application Route: Ingestion  
Method: OECD Test Guideline 475  
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.

### **Components:**

#### **Kyanite:**

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

#### **Sillimanite:**

Species : Rat  
Application Route : Ingestion  
Exposure time : 103 weeks  
Method : OECD Test Guideline 453  
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 : This substance(s) is not bioavailable and therefore does not contribute to a dust inhalation hazard.

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

### **Reproductive toxicity**

Not classified based on available information.

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### Components:

#### **Kyanite:**

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

Effects on fertility	:	Test Type: One-generation reproduction toxicity study Species: Rat Application Route: Ingestion Result: negative Remarks: Based on data from similar materials
Effects on fetal development	:	Test Type: Embryo-fetal development Species: Rabbit Application Route: Ingestion Result: negative Remarks: Based on data from similar materials

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

Reproductive toxicity - Assessment	:	Weight of evidence does not support classification for reproductive toxicity
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#### **STOT-single exposure**

Not classified based on available information.

#### **STOT-repeated exposure**

Not classified based on available information.

### Components:

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

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

### Components:

#### **Zircon:**

Species	:	Rat
NOAEL	:	> 100 mg/kg
Application Route	:	Ingestion

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Exposure time	: 17 Weeks
Remarks	: Based on data from similar materials

### Kyanite:

Species	: Rat
NOAEL	: 1,760 mg/kg
Application Route	: Ingestion
Exposure time	: 103 Weeks
Remarks	: Based on data from similar materials

### Sillimanite:

Species	: Rat
NOAEL	: 2,500 mg/kg
Application Route	: Ingestion
Exposure time	: 2 y
Method	: OECD Test Guideline 452
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

### Quartz:

Species	: Humans
LOAEL	: 0.053 mg/m <sup>3</sup>
Application Route	: inhalation (dust/mist/fume)
Remarks	: This substance(s) is not bioavailable and therefore does not contribute to a dust inhalation hazard.

### Aspiration toxicity

Not classified based on available information.

## SECTION 12. ECOLOGICAL INFORMATION

### Ecotoxicity

#### Components:

##### Zircon:

Toxicity to daphnia and other aquatic invertebrates	: EL50 (Daphnia magna (Water flea)): > 100 mg/l Exposure time: 48 h Test substance: Water Accommodated Fraction Method: OECD Test Guideline 202 Remarks: Based on data from similar materials
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Toxicity to algae/aquatic plants : EL50 (Raphidocelis subcapitata (freshwater green alga)): > 100 mg/l  
Exposure time: 72 h  
Test substance: Water Accommodated Fraction  
Method: OECD Test Guideline 201  
Remarks: Based on data from similar materials

NOELR (Raphidocelis subcapitata (freshwater green alga)): > 1 mg/l  
Exposure time: 72 h  
Test substance: Water Accommodated Fraction  
Method: OECD Test Guideline 201  
Remarks: Based on data from similar materials

### Kyanite:

Toxicity to fish : LL50 (Danio rerio (zebra fish)): > 100 mg/l  
Exposure time: 96 h  
Test substance: Water Accommodated Fraction  
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  
Test substance: Water Accommodated Fraction  
Remarks: Based on data from similar materials

Toxicity to algae/aquatic plants : EL50 (Desmodesmus subspicatus (green algae)): > 100 mg/l  
Exposure time: 72 h  
Test substance: Water Accommodated Fraction  
Method: OECD Test Guideline 201  
Remarks: Based on data from similar materials

EC10 (Desmodesmus subspicatus (green algae)): > 1 mg/l  
Exposure time: 72 h  
Test substance: Water Accommodated Fraction  
Method: OECD Test Guideline 201  
Remarks: Based on data from similar materials

Toxicity to fish (Chronic toxicity) : NOELR (Oncorhynchus mykiss (rainbow trout)): > 1 mg/l  
Exposure time: 30 d  
Test substance: Water Accommodated Fraction  
Remarks: Based on data from similar materials

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOELR (Daphnia magna (Water flea)): > 1 mg/l  
Exposure time: 21 d  
Test substance: Water Accommodated Fraction  
Method: OECD Test Guideline 211  
Remarks: Based on data from similar materials

Toxicity to microorganisms : EL50 (Pseudomonas putida): > 100 mg/l  
Exposure time: 16 h  
Test substance: Water Accommodated Fraction  
Method: DIN 38 412 Part 8  
Remarks: Based on data from similar materials

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#### Sillimanite:

- |   |  |
|---|--|
| Toxicity to fish                                    | : LL50 (Danio rerio (zebra fish)): > 100 mg/l<br>Exposure time: 96 h<br>Test substance: Water Accommodated Fraction<br>Method: OECD Test Guideline 203<br>Remarks: Based on data from similar materials              |
| Toxicity to daphnia and other aquatic invertebrates | : EL50 (Daphnia magna (Water flea)): > 100 mg/l<br>Exposure time: 48 h<br>Test substance: Water Accommodated Fraction<br>Method: OECD Test Guideline 202<br>Remarks: Based on data from similar materials            |
| Toxicity to algae/aquatic plants                    | : EL50 (Desmodesmus subspicatus (green algae)): > 100 mg/l<br>Exposure time: 72 h<br>Test substance: Water Accommodated Fraction<br>Method: OECD Test Guideline 201<br>Remarks: Based on data from similar materials |
|   | : NOELR (Desmodesmus subspicatus (green algae)): > 1 mg/l<br>Exposure time: 72 h<br>Test substance: Water Accommodated Fraction<br>Method: OECD Test Guideline 201<br>Remarks: Based on data from similar materials  |

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

- |   |  |
|---|--|
| Toxicity to fish                                    | : LC50 (Pimephales promelas (fathead minnow)): > 1,000 mg/l<br>Exposure time: 96 h<br>Remarks: Based on data from similar materials                        |
| Toxicity to daphnia and other aquatic invertebrates | : EC50 (Daphnia magna (Water flea)): > 100 mg/l<br>Exposure time: 48 h<br>Method: OECD Test Guideline 202<br>Remarks: Based on data from similar materials |
| Toxicity to algae/aquatic plants                    | : ErC50 (algae): > 10,000 mg/l<br>Exposure time: 72 h<br>Remarks: Based on data from similar materials   |
|   | : NOEC (algae): 5,600 mg/l<br>Exposure time: 72 h<br>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. |

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### Persistence and degradability

No data available

### Bioaccumulative potential

#### Components:

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

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

### Mobility in soil

No data available

### Other adverse effects

No data available

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## SECTION 13. DISPOSAL CONSIDERATIONS

### Disposal methods

Waste from residues : Do not dispose of waste into sewer.  
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

#### NOM-002-SCT

Not regulated as a dangerous good

### Special precautions for user

Not applicable

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### SECTION 15. REGULATORY INFORMATION

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

Federal Law for the control of chemical precursors, : Not applicable  
essential chemical products and machinery for producing capsules, tablets and pills.

### SECTION 16. OTHER INFORMATION

Revision Date : 19.10.2023

Date format : dd.mm.yyyy

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Do not use or resell Chemours™ 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 Chemours representative.

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.

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.

For a total dust with aerodynamic diameter of 1 µm, the calculated reference dust level is 2.3 mg/m<sup>3</sup>. For a total dust with aerodynamic diameter of 5 µm, the calculated reference dust level is 3.3 mg/m<sup>3</sup>. For a total dust with aerodynamic diameter of 10 µm, the calculated reference dust level is 5.2 mg/m<sup>3</sup>.

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. Respirable quartz is an IARC Category 1 carcinogen and applicable exposure limits should be referenced.

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 li-



# SAFETY DATA SHEET



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mit 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.

### Full text of other abbreviations

ACGIH : USA. ACGIH Threshold Limit Values (TLV)  
NOM-010-STPS-2014 : Mexico. Norm NOM-010-STPS-2014 on Chemicals Polluting the Work Environment - Identification, Assessment and Control - Appendix 1 Occupational Exposure Limits  
ACGIH / TWA : 8-hour, time-weighted average  
ACGIH / STEL : Short-term exposure limit  
NOM-010-STPS-2014 / VLE- : Time weighted average limit value  
PPT  
NOM-010-STPS-2014 / VLE- : Short term exposure limit value  
CT

AIIC - Australian Inventory of Industrial Chemicals; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; 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; 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; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; 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; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; 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; WHMIS - Workplace Hazardous Materials Information System

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 is considered as correct, but not exhaustive, and will be used only as a guide, which is based in the current knowledge of the substance or mixture, and is applicable to proper safety precautions for the product.

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