

**Florida Zircon Sand**

Version 3.0

Revision Date 03/28/2011

Ref. 150000001231

This SDS adheres to the standards and regulatory requirements of the United States and may not meet the regulatory requirements in other countries.

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Florida Zircon Sand
Product Grade/Type : Premium Zircon
Standard Zircon
Low Alumina Zircon

Tradename/Synonym : Supercedes MSDS 3010CR

MSDS Number : 150000001231

Product Use : Metal casting, Foundry mould, Refractory barrier, Ceramic manufacture

Manufacturer : DuPont
1007 Market Street
Wilmington, DE 19898

Product Information : 1-302-774-1000
Medical Emergency : 1-800-441-3637 (outside the U.S. 1-302-774-1139)
Transport Emergency : CHEMTREC: 1-800-424-9300 (outside the U.S. 1-703-527-3887)

Other information : professional use

SECTION 2. HAZARDS IDENTIFICATION**Emergency Overview**

The product, as shipped, poses a minimal inhalation health hazard because the bulk of the particles are in the non-inhalable size range. However, if during handling or use the particles are broken down to a size that can be inhaled, the dusts may be harmful to the respiratory system. Product dust may be irritating to eyes, skin and respiratory system.

Potential Health Effects

Repeated exposure



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Quartz : DuPont has classified this material as a known human carcinogen. May cause cancer after repeated inhalation of spray or dust. Adverse effects from repeated inhalation may include: Fibrosis with altered lung function or difficulty breathing

Carcinogenicity Material	IARC	NTP	OSHA
Quartz	1	X	

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS-No.	Concentration
Zircon	14940-68-2	96 - 100 %
Kyanite	1302-76-7	0 - 2 %
Quartz (non-inhalable)	14808-60-7	0.04 - 0.16 %
Quartz	14808-60-7	0.01 - 0.04 %

SECTION 4. FIRST AID MEASURES

Skin contact	: Wash off with soap and water.
Eye contact	: Rinse with plenty of water.
Inhalation	: Remove person to fresh air. If signs/symptoms continue, get medical attention.
Ingestion	: No specific intervention is indicated. Consult a physician if necessary.



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SECTION 5. FIRE-FIGHTING MEASURES

Flammable Properties

Flash point : does not flash

Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Firefighting Instructions : The product itself does not burn.

SECTION 6. ACCIDENTAL RELEASE MEASURES

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Safeguards (Personnel) : Avoid breathing dust.

Spill Cleanup : Pick up and arrange disposal without creating dust. After cleaning, flush away traces with water.

Accidental Release Measures : Do not flush into surface water or sanitary sewer system.

SECTION 7. HANDLING AND STORAGE

Handling (Personnel) : Avoid formation of additional inhalable particles. If handling inhalable particulates, use of gloves and washing before eating, drinking, applying cosmetics or smoking is advisable to minimize dust inhalation or ingestion of residue from hands.

Avoid breathing dust. Wash hands before breaks and at the end of workday.

Handling (Physical Aspects) : This is a fully oxidized mineral product. As such it cannot support combustion or participate in a dust explosion.

Storage : Keep container tightly closed in a dry and well-ventilated place.



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SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering controls : Use sufficient ventilation to keep employee exposure below recommended limits.

Personal protective equipment

Respiratory protection : A certified air-purifying respirator with a type 100 (high efficiency) particulate cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Use a certified positive pressure air-supplied respirator in circumstances where air-purifying respirators may not provide adequate protection.

Eye protection : Wear safety glasses with side shields.

Skin and body protection : Where there is potential for skin contact have available and wear as appropriate impervious gloves, apron, pants, and jacket.

Protective measures : 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.

Exposure Guidelines

Exposure Limit Values

Zircon

PEL: (OSHA) 5 mg/m3 8 hr. TWA as Zr

TLV (ACGIH) 5 mg/m3 TWA as Zr

TLV (ACGIH) 10 mg/m3 STEL as Zr

Quartz

PEL: (OSHA) 2.4millions of particles per cubic foot of air TWA Respirable.
 Remarks The exposure limit is calculated from the equation, $250/(\%SiO_2+5)$, using a value of 100% SiO₂. Lower percentages of SiO₂ will yield higher exposure limits.

PEL: (OSHA) 0.1 mg/m3 TWA Respirable.



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		Remarks		The exposure limit is calculated from the equation, $10/(\%SiO_2+2)$, using a value of 100% SiO ₂ . Lower percentages of SiO ₂ will yield higher exposure limits.
PEL:	(OSHA)	0.3 mg/m ³ Remarks	TWA	Total dust. The exposure limit is calculated from the equation, $30/(\%SiO_2+2)$, using a value of 100% SiO ₂ . Lower values of % SiO ₂ will give higher exposure limits.
TLV	(ACGIH)	0.025 mg/m ³	TWA	Respirable fraction.
AEL *	(DUPONT)	0.02 mg/m ³	8 hr. TWA	Respirable dust.
AEL *	(DUPONT)	0.01 mg/m ³	12 hr. TWA	

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Form	: Solid form, crystalline
Color	: white
Odor	: odourless
Melting point/range	: > 2,100 °C (> 3,812 °F)
Specific Gravity	: 4.7
Water solubility	: insoluble

SECTION 10. STABILITY AND REACTIVITY

Stability	: Stable
Incompatibility	: None.

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SECTION 11. TOXICOLOGICAL INFORMATION

Quartz (non-inhalable)

- Dermal : No adverse effects expected.
- Oral ALD : > 11,000 mg/kg , rat
- Skin irritation : No skin irritation, animals (unspecified species)
- Eye irritation : slight irritation, animals (unspecified species)
- Skin sensitization : Did not cause sensitization on laboratory animals., animals (unspecified species)
- Mutagenicity : Did not cause genetic damage in cultured bacterial cells.
Did not cause genetic damage in animals.
Genetic damage in cultured mammalian cells was observed in some laboratory tests but not in others.
- Reproductive toxicity : No adverse effects expected.

Quartz

- Dermal : No adverse effects expected.
- Oral ALD : > 11,000 mg/kg , rat
- Inhalation : human
Effects of breathing high concentration of respirable particles may include:
Breathing difficulties
Cough
Adverse body weight effects
Lung damage
- Skin irritation : No skin irritation, animals (unspecified species)
- Eye irritation : slight irritation, animals (unspecified species)
- Skin sensitization : Did not cause sensitization on laboratory animals., animals (unspecified species)
- Repeated dose toxicity : Inhalation



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Fluid retention in lungs (pulmonary oedema), lung effects, Inflammation, Chronic lung disease, Fibrosis

- Carcinogenicity : An increased incidence of tumours was observed in laboratory animals.
An increased risk of cancer in humans has been shown in workplace-based studies.
- Mutagenicity : Did not cause genetic damage in cultured bacterial cells.
Did not cause genetic damage in animals.
Genetic damage in cultured mammalian cells was observed in some laboratory tests but not in others.
- Reproductive toxicity : No adverse effects expected.

SECTION 12. ECOLOGICAL INFORMATION

Additional ecological information : not applicable

SECTION 13. DISPOSAL CONSIDERATIONS

Waste Disposal : Dispose of in accordance with local regulations.

SECTION 14. TRANSPORT INFORMATION

Not classified as dangerous in the meaning of transport regulations.

SECTION 15. REGULATORY INFORMATION

EINECS Status : On the inventory, or in compliance with the inventory



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TSCA Status	: On the inventory, or in compliance with the inventory
AICS Status	: On the inventory, or in compliance with the inventory
DSL Status	: On the inventory, or in compliance with the inventory
ENCS (JP) Status	: On the inventory, or in compliance with the inventory
KECI (KR) Status	: On the inventory, or in compliance with the inventory
PICCS (PH) Status	: On the inventory, or in compliance with the inventory
INV (CN) Status	: On the inventory, or in compliance with the inventory
Other regulations	: These products are exempt from Nuclear Regulatory Commission (NRC) regulations for source material per 10 CFR 40, since it falls under the definition of "unimportant quantity source material" containing less than 0.05% uranium or thorium. Some states may apply NRC type radiation protection standards for NORM above background levels, or may have NORM specific regulations that are determined based upon the radium content. It is recommended that you consult with current regulations.
SARA 313 Regulated Chemical(s)	: 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.
California Prop. 65	: WARNING! This product contains a chemical known to the State of California to cause cancer. Quartz , Radionuclides
NJ Right to Know Regulated Chemical(s)	: Substances on the New Jersey Workplace Hazardous Substance List present at a concentration of 1% or more (0.1% for substances identified as carcinogens, mutagens or teratogens): Quartz

SECTION 16. OTHER INFORMATION

		HMIS
Health	:	1
Flammability	:	0
Reactivity/Physical hazard	:	0
PPE	:	Personal Protection rating to be supplied by user depending on use conditions.
Restrictions for use	:	These products are not recommended for use in abrasive blasting applications.

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Do not use DuPont materials in medical applications involving implantation in the human body or contact with internal body fluids or tissues unless the material has been provided from DuPont under a written contract that is consistent with DuPont policy regarding medical applications and expressly acknowledges the contemplated use. For further information, please contact your DuPont representative. You may also request a copy of the DuPont POLICY Regarding Medical Applications H-50103-3 and DuPont CAUTION Regarding Medical Applications H-50102-3.

These products may not be directly added to food or pharmaceuticals and are not recommended for use in medical devices or cosmetics.

Zircon Sands contain trace quantities of naturally occurring radioactive uranium and thorium (less than or equal to 260 ppm uranium plus 180 ppm thorium = 440 ppm total U + Th or 0.044 % w/w, equivalent to 110 pCi/g or less), and radium (less than or equal to 120 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.

For a total dust with aerodynamic diameter of 1 μm , the calculated reference dust level is 2.3 mg/m³. For a total dust with aerodynamic diameter of 5 μm , the calculated reference dust level is 3.4 mg/m³. For a total dust with aerodynamic diameter of 10 μm , the calculated reference dust level is 5.2 mg/m³.

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.



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Please see www2.dupont.com/Titanium_Technologies/en_US/ for the latest version of this MSDS.

Contact person : MSDS Coordinator DuPont Titanium Technologies; Wilmington, DE 19898;
Telephone (800) 441-9485

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