Weatherford

Material Safety Data Sheet

Frac Sand

1. Product and Company Identification

Material name	**Frac Sand**
Patent Number	Not available
Revision date	June-21-2011
Version No.	2
Product use	Frac Sand
Supplier information	Weatherford Fracturing Technologies 515 Post Oak Blvd Suite 1000 Houston, TX 77027 US

2. Hazards Identification

Emergency overview	WARNING Avoid breathing dust. Harmful if inhaled. Risk of serious damage to the lungs (by inhalation). May cause cancer after repeated inhalation of spray or dust. Product dust may be irritating to eyes, skin and respiratory system. Prolonged exposure may cause chronic effects. Components of the product may be absorbed into the body by inhalation, ingestion and through the skin.
OSHA regulatory status	This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).
Potential health effects	
Routes of exposure	Inhalation.
Eyes	Do not get this material in contact with eyes. Contact with eyes may cause irritation.
Skin	Do not get this material in contact with skin. Contact with skin may cause irritation.
Inhalation	Do not breathe dust/fume/gas/mist/vapors/spray. May cause irritation of respiratory tract. This product contains crystalline silica that may cause silicosis and cancer.
Ingestion	Do not ingest. Harmful if swallowed. May cause stomach distress, nausea or vomiting.
Target organs	Respiratory system.
Potential environmental effects	Ecological injuries are not known or expected under normal use.

3. Composition / Information on Ingredients

Components	CAS #	Percent
Crystalline Silica in the form of Quartz	14808-60-7	90 - 100

4. First Aid Measures

First aid procedures

Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention immediately.
Skin contact	Immediately flush skin with plenty of water. Remove and isolate contaminated clothing and shoes. Get medical attention immediately. For minor skin contact, avoid spreading material on unaffected skin. Wash clothing separately before reuse.
Inhalation	Move to fresh air. Oxygen or artificial respiration if needed. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Call a physician or Poison Control Center immediately.
Ingestion	Get medical attention immediately. Have victim rinse mouth thoroughly with water. Do not induce vomiting without medical advice. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Do not use mouth-to-mouth method if victim ingested the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Never give anything by mouth to a victim who is unconscious or is having convulsions.
Notes to physician	Symptoms may be delayed.
General advice	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire Fighting Measures

Flammable properties	Not a fire hazard. The product is not flammable.
Extinguishing media	
Suitable extinguishing media	Water. Water fog. Dry chemical, CO2, water spray or regular foam.
Protection of firefighters	
Protective equipment and precautions for firefighters	Use water spray to cool unopened containers. Cool containers with flooding quantities of water until well after fire is out. As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. Accidental Release Measures

Personal precautions	Local authorities should be advised if significant spillages cannot be contained. Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire. Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering. Keep unnecessary personnel away. Stay upwind. Keep out of low areas.
Environmental precautions	Prevent further leakage or spillage if safe to do so.
Methods for containment	Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Prevent entry into waterways, sewers, basements or confined areas.

Methods for cleaning up

Large Spills: Dike far ahead of liquid spill for later disposal. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. After removal flush contaminated area thoroughly with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean contaminated surface thoroughly.

Never return spills in original containers for re-use.

7. Handling and Storage

Handling

Do not breathe dust from this material. Use only with adequate ventilation. Keep formation of airborne dusts to a minimum. Effective dusk mask. Wash hands thoroughly after handling. Handle and open container with care. Avoid prolonged exposure.

Storage

Keep locked-up. Keep container tightly closed. Store in cool place. Keep in a well-ventilated place. Keep out of the reach of children. Use care in handling/storage.

8. Exposure Controls / Personal Protection

Exposure limits

ACGIH

Components	CAS #	TWA	STEL	Ceiling
Crystalline Silica in the form of Quartz	14808-60-7	0.025 mg/m3	Not established	Not established

Engineering controls

Ensure adequate ventilation, especially in confined areas. Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower nearby.

Personal protective equipment

Eye / face protection

Wear safety glasses with side shields (or goggles) and a face shield.

Skin protection

Protective gloves.Impervious gloves. Dust impervious protective suit

Respiratory protection

Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Wear respirator with dust filter.

General hygeine considerations

Keep away from food and drink. Handle in accordance with good industrial hygiene and safety practice. Wash hands after handling and before eating.

9. Physical & Chemical Properties

Appearance Crystalline.

Color White

Odor Odorless.

Odor threshold Not available

Physical state Solid.

Form Solid. granules.

pH Not available

Melting point	3110 °F (1710 °C)
Freezing point	Not available
Boiling point	4046 °F (2230 °C)
Flash point	Not available
Evaporation rate	Not available
Flammability	Not available.
Flammability limits in air, upper, % by volume	Not available
Flammability limits in air, lower, % by volume	Not available
Vapor pressure	Not available
Vapor density	Not available
Specific gravity	2.65
Relative density	2.6497 g/cm3 estimated
Solubility (water)	Insoluble
Partition coefficient (n-octanol/water)	Not available
Auto-ignition temperature	Not available
Decomposition temperature	Not available

10. Chemical Stability & Reactivity Information

Chemical stability	Stable at normal conditions.
Incompatible materials	Fluoride. Powerful oxidizers.

11. Toxicological Information

Acute effects Acute LD50: 500 mg/kg estimated, Rat, Oral

Component analysis - LD50

Toxicology Data - Selected LD50s and LC50s

Crystalline Silica in the form of Quartz	14808-60-7	Oral LD50 Rat: 500 mg/kg

Sensitization Not expected to be hazardous by OSHA criteria.

Carcinogenicity Cancer hazard.

ACGIH - Threshold Limit Values - Carcinogens

Crystalline Silica in the form of Quartz	14808-60-7	A2 - Suspected Human Carcinogen

NTP (National Toxicology Program) - Report on Carcinogens - Known Human Carcinogens

Crystalline Silica in the form of Quartz	14808-60-7	Known Human Carcinogen

Neurological effects Not expected to be hazardous by OSHA criteria.

12. Ecological Information

Ecotoxicity This product has no known eco-toxicological effects.

13. Disposal Considerations

Disposal instructions This product, in its present state, when discarded or disposed of, is not a hazardous waste according to Federal regulations (40 CFR 261.4 (b)(4)). Under RCRA, it is the responsibility of the user of the product to determine, at the time of disposal, whether the product meets RCRA criteria for hazardous waste. Dispose in accordance with all applicable regulations.

14. Transport Information

Department of Transportation (DOT) Requirements

Not regulated as dangerous goods.

Canadian Transportation of Dangerous Goods (TDG) Requirements

Not regulated as hazardous goods.

Canadian Transportation of Dangerous Goods (TDG) Requirements

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

15. Regulatory Information

Labelling

Contains Crystalline Silica in the form of Quartz

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

CERCLA/SARA Hazardous Substances - Not applicable.

NTP (National Toxicology Program) - Report on Carcinogens - Known Human Carcinogens

Crystalline Silica in the form of Quartz	14808-60-7	Known Human Carcinogen

Occupational Safety and Health Administration (OSHA)

29 CFR 1910.1200 hazardous chemical Yes

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - Yes
Delayed Hazard - Yes
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

Section 302 extremely hazardous substance No

Section 311 hazardous chemical Yes

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of New and Existing Chemicals (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	No
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

International regulations

Canada - WHMIS - Ingredient Disclosure List

Crystalline Silica in the form of Quartz	14808-60-7	1 %

IARC - Group 1 (Carcinogenic to Humans)

Crystalline Silica in the form of Quartz	14808-60-7	Monograph 68 [1997] (listed under Crystalline silica inhaled in the form of quartz or cristobalite from occupational sources)

State regulations

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

U.S. - California - Proposition 65 - Carcinogens List

Crystalline Silica in the form of Quartz	14808-60-7	carcinogen, initial date 10/1/88 (airborne particles of respirable size)

U.S. - Massachusetts - Right To Know List

Crystalline Silica in the form of Quartz	14808-60-7	Carcinogen; Extraordinarily hazardous

U.S. - Minnesota - Hazardous Substance List

Crystalline Silica in the form of Quartz	14808-60-7	Carcinogen

U.S. - New Jersey - Right to Know Hazardous Substance List

Crystalline Silica in the form of Quartz	14808-60-7	sn 1660

U.S. - Pennsylvania - RTK (Right to Know) List

Crystalline Silica in the form of Quartz	14808-60-7	Present

U.S. - Rhode Island - Hazardous Substance List

Crystalline Silica in the form of Quartz	14808-60-7	Toxic (dust)

U.S. - Texas - Effects Screening Levels - Long Term

Crystalline Silica in the form of Quartz	14808-60-7	0.1 µg/m3 ESL (respirable, under review)

U.S. - Texas - Effects Screening Levels - Short Term

Crystalline Silica in the form of Quartz	14808-60-7	1 µg/m3 ESL (under review)

16. Other Information

HMIS® ratings	Health: 1 Flammability: 0 Physical hazard: 0
NFPA ratings	Health: 1 Flammability: 0 Instability: 0
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Issue date	June-21-2011
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