SAFETY DATA SHEET

Section 1. Identification

Product name: SOLUFLAKE™ Medium
Product code: 5225DF

Relevant identified uses of the substance or mixture and uses advised against

Identified uses: Weighting Agent / Lost Circulation Material

Print date: 10/18/2017
Validation date: 10/18/2017
Version: 3

Supplier's details:
Baker Hughes Oilfield Operations LLC
12645 W. Airport Blvd.
Sugar Land, TX 77478

Emergency telephone number (with hours of operation):
CHEMTREC 800-424-9300 (U.S. 24 hour)
(001)713-439-8900
CANUTEC 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

Section 2. Hazards identification

OSHA/HCS status: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture:
COMBUSTIBLE DUSTS
CARCINOGENICITY - Category 1A

GHS label elements

Hazard pictograms:

Signal word: Danger
Hazard statements: May form combustible dust concentrations in air. May cause cancer.

Precautionary statements

Prevention: Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves: > 8 hours (breakthrough time): nitrile or neoprene Gloves. Wear eye or face protection: Recommended: Chemical splash goggles.. Wear protective clothing.

Response: IF exposed or concerned: Get medical attention.

Storage: Store locked up.

Disposal: Dispose of contents and container in accordance with all local, regional, national and international regulations.

Supplemental label elements: Keep container tightly closed. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Prevent dust accumulation.
Section 2. Hazards identification

Hazards not otherwise classified: Handling and/or processing of this material may generate a dust which can cause mechanical irritation of the eyes, skin, nose and throat.

Section 3. Composition/information on ingredients

Substance/mixture: Substance

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>%</th>
<th>CAS number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium carbonate</td>
<td>90 - 100</td>
<td>471-34-1</td>
</tr>
<tr>
<td>Crystalline silica, quartz</td>
<td>0.1 - 1</td>
<td>14808-60-7</td>
</tr>
</tbody>
</table>

Section 4. First aid measures

Description of necessary first aid measures

Eye contact: Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Continue to rinse for at least 10 minutes. Check for and remove any contact lenses. Get medical attention.

Inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway.

Skin contact: Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion: Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact: Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the eyes.

Inhalation: Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs.

Skin contact: No known significant effects or critical hazards.

Ingestion: No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact: irritation, redness

Inhalation: respiratory tract irritation, coughing

Skin contact: No specific data.

Ingestion: No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician: Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments: No specific treatment.
Section 4. First aid measures

Protection of first-aiders: No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

| Suitable extinguishing media | Use an extinguishing agent suitable for the surrounding fire. |
| Unsuitable extinguishing media | Avoid high pressure media which could cause the formation of a potentially explosive dust-air mixture. |

Specific hazards arising from the chemical

| Hazardous thermal decomposition products | carbon dioxide, carbon monoxide, metal oxide/oxides |

Special protective actions for fire-fighters: Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel: No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing dust. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders: If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill: Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. Dispose of via a licensed waste disposal contractor.
Section 6. Accidental release measures

Large spill

Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. Avoid creating dusty conditions and prevent wind dispersal. Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures

Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not ingest. Avoid breathing dust. Avoid the creation of dust when handling and avoid all possible sources of ignition (spark or flame). Prevent dust accumulation. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Electrical equipment and lighting should be protected to appropriate standards to prevent dust coming into contact with hot surfaces, sparks or other ignition sources. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene

Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities

Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>Exposure limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium carbonate</td>
<td>None.</td>
</tr>
<tr>
<td>Crystalline silica, quartz</td>
<td>OSHA PEL Z3 (United States, 2/2013).&lt;br&gt;TWA: 250 MPPCF/ (%SiO2+5) 8 hours. Form: Respirable&lt;br&gt;TWA: 10 MG/M3/ (%SiO2+2) 8 hours. Form: Respirable&lt;br&gt;OSHA PEL 1989 (United States, 3/1989).&lt;br&gt;TWA: 0.1 mg/m³, (as quartz) 8 hours. Form: Respirable dust&lt;br&gt;ACGIH TLV (United States, 4/2014).&lt;br&gt;TWA: 0.025 mg/m³ 8 hours. Form: Respirable fraction</td>
</tr>
</tbody>
</table>

Consult local authorities for acceptable exposure limits.
Section 8. Exposure controls/personal protection

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Appropriate engineering controls: Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Individual protection measures

Hygiene measures: Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing.

Eye/face protection: Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles. Recommended: Chemical splash goggles.

Hand protection: Chemical-resistant gloves: nitrile or neoprene Gloves

Skin protection: Wear long sleeves to prevent repeated or prolonged skin contact.

Respiratory protection: Use a properly fitted, particulate filter respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. Recommended: half-face mask and particulate filter

Section 9. Physical and chemical properties

Appearance

Physical state: Solid. [Powder or flakes.]
Color: White.
Odor: Odorless.
Odor threshold: Not available.

pH: 8.4 to 10.2 [Conc. (% w/w): 5%]

Melting/freezing point: Not available.
Boiling point: Not available.
Initial Boiling Point: Not available.
Flash point: Closed cup: Not applicable.

Burning time: Not available.
Burning rate: Not available.
Evaporation rate: Not available.

Flammability (solid, gas): Not available.

Lower and upper explosive (flammable) limits: Not available.

Vapor pressure: Not available.
Vapor density: Not available.
Relative density: 2.7
Density: Not available.

Solubility in water: Insoluble
Partition coefficient: n-octanol/water: Not available.

Auto-ignition temperature: Not available.
Decomposition temperature: 1000°C (1832°F)
Section 9. Physical and chemical properties

**Viscosity**: Not available.

**VOC**: Not available.

**Pour Point**: Not available.

Section 10. Stability and reactivity

**Reactivity**: No specific test data related to reactivity available for this product or its ingredients.

**Chemical stability**: The product is stable.

**Possibility of hazardous reactions**: Under normal conditions of storage and use, hazardous reactions will not occur.

**Conditions to avoid**: Avoid the creation of dust when handling and avoid all possible sources of ignition (spark or flame). Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Prevent dust accumulation.

**Incompatible materials**: Not available.

**Hazardous decomposition products**: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

**Information on toxicological effects**

**Acute toxicity**

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Dose</th>
<th>Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium carbonate</td>
<td>LD50 Oral</td>
<td>Rat</td>
<td>6450 mg/kg</td>
<td>-</td>
</tr>
</tbody>
</table>

**Irritation/Corrosion**

No applicable toxicity data

**Sensitization**

No applicable toxicity data

**Mutagenicity**

No applicable toxicity data

**Carcinogenicity**

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>OSHA</th>
<th>IARC</th>
<th>NTP</th>
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</thead>
<tbody>
<tr>
<td>Crystalline silica, quartz</td>
<td>-</td>
<td>1</td>
<td>Known to be a human carcinogen.</td>
</tr>
</tbody>
</table>

**Reproductive toxicity**

No applicable toxicity data

**Teratogenicity**

No applicable toxicity data

**Specific target organ toxicity (single exposure)**

Not applicable.

**Specific target organ toxicity (repeated exposure)**
Section 11. Toxicological information

<table>
<thead>
<tr>
<th>Name</th>
<th>Category</th>
<th>Route of exposure</th>
<th>Target organs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crystalline silica, quartz</td>
<td>Category 1</td>
<td>Inhalation</td>
<td>lungs</td>
</tr>
</tbody>
</table>

**Aspiration hazard**
Not available.

**Information on the likely routes of exposure**
Not available.

**Delayed and immediate effects and also chronic effects from short and long term exposure**

**Short term exposure**
- **Potential immediate effects**: Not available.

**Potential delayed effects**: Not available.

**Potential chronic health effects**
- **General**: Repeated or prolonged inhalation of dust may lead to chronic respiratory irritation.
- **Carcinogenicity**: May cause cancer. Risk of cancer depends on duration and level of exposure.
- **Mutagenicity**: No known significant effects or critical hazards.
- **Teratogenicity**: No known significant effects or critical hazards.
- **Developmental effects**: No known significant effects or critical hazards.
- **Fertility effects**: No known significant effects or critical hazards.

**Numerical measures of toxicity**

**Acute toxicity estimates**
Not available.

Section 12. Ecological information

**Toxicity**

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium carbonate</td>
<td>Acute LC50 &gt;200 ppm Marine water Acute LC50 56000 ppm Fresh water Chronic LOEL &gt;200 ppm Marine water Chronic NOEC 61 mg/g Fresh water</td>
<td>Crustaceans - Mysidopsis juniae Fish - Gambusia affinis - Adult Echinodermata - Lytechinus variegatus Fish - Oncorhynchus mykiss - Juvenile (Fledgling, Hatchling, Weanling)</td>
<td>96 hours 96 hours 28 days</td>
</tr>
</tbody>
</table>

**Persistence and degradability**
Not available.

**Other adverse effects**
No known significant effects or critical hazards.
Section 13. Disposal considerations

Disposal methods: Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

<table>
<thead>
<tr>
<th>UN number</th>
<th>DOT Classification</th>
<th>TDG Classification</th>
<th>IMDG</th>
<th>IATA</th>
</tr>
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</table>

<table>
<thead>
<tr>
<th>UN proper shipping name</th>
<th>DOT Classification</th>
<th>TDG Classification</th>
<th>IMDG</th>
<th>IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
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<td>-</td>
<td>-</td>
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</table>

<table>
<thead>
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<th>Transport hazard class(es)</th>
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<th>TDG Classification</th>
<th>IMDG</th>
<th>IATA</th>
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<tbody>
<tr>
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<td>-</td>
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</table>

<table>
<thead>
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<th>Packing group</th>
<th>DOT Classification</th>
<th>TDG Classification</th>
<th>IMDG</th>
<th>IATA</th>
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<tbody>
<tr>
<td>-</td>
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<table>
<thead>
<tr>
<th>Environmental hazards</th>
<th>DOT Classification</th>
<th>TDG Classification</th>
<th>IMDG</th>
<th>IATA</th>
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</table>

<table>
<thead>
<tr>
<th>Additional information</th>
<th>DOT Classification</th>
<th>TDG Classification</th>
<th>IMDG</th>
<th>IATA</th>
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<tbody>
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<td>-</td>
<td>-</td>
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<td>-</td>
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</tbody>
</table>

Special precautions for user: Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL and the IBC Code: Not available.

DOT Reportable Quantity: Not applicable.

Marine pollutant: Not available.

North-America NAERG: Not available.

Section 15. Regulatory information

U.S. Federal regulations:

- TSCA 12(b) one-time export: No products were found.
- TSCA 12(b) annual export notification: No products were found.
- United States inventory (TSCA 8b): All components are listed or exempted.
- Clean Water Act (CWA) 307: No products were found.
- Clean Water Act (CWA) 311: No products were found.

United States - Clean Air Act, Section 112(b) Hazardous Air Pollutants (HAPs):

<table>
<thead>
<tr>
<th>List name</th>
<th>Status</th>
<th>Ingredient name</th>
<th>Name on list</th>
<th>Conc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>None of the components are listed.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Section 15. Regulatory information

**SARA 302/304**
No products were found.

**SARA 311/312**
Classification: Fire hazard
Delayed (chronic) health hazard

**SARA 313**
Supplier notification: No products were found.

**Canada**
Canada (CEPA DSL): All components are listed or exempted.

**International regulations**
**National inventory**
Australia: All components are listed or exempted.
China: All components are listed or exempted.
Europe: All components are listed or exempted.
Japan:
- Japan inventory (ENCS): All components are listed or exempted.
- Japan inventory (ISHL): All components are listed or exempted.
Malaysia: All components are listed or exempted.
New Zealand: All components are listed or exempted.
Philippines: All components are listed or exempted.
Republic of Korea: All components are listed or exempted.
Taiwan: All components are listed or exempted.

Section 16. Other information

**Hazardous Material Information System (U.S.A.)**

* | 1
0 | 0
0 | 0

The customer is responsible for determining the PPE code for this material.

**National Fire Protection Association (U.S.A.)**

Flammability

Health 1 0
Instability
Special

History
Date of printing: 10/18/2017

Notice to reader
NOTE: The information on this SDS is based on data which is considered to be accurate. Baker Hughes, however, makes no guarantees or warranty, either expressed or implied of the accuracy or completeness of this information.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

This SDS was prepared and is to be used for this product. If the product is used as a component in another product, this SDS information may not be applicable.