HALLIBURTON

# SAFETY DATA SHEET

**Product Trade Name:** **BARITE**

**Revision Date:** 02-Apr-2015 **Revision Number:** 40

## 1. Identification

### 1.1. Product Identifier

**Product Trade Name:** BARITE
**Synonyms:** None
**Chemical Family:** Mineral
**Internal ID Code** HM000105

### 1.2 Recommended use and restrictions on use

**Application:** Weight Additive
**Uses Advised Against** No information available

### 1.3 Manufacturer's Name and Contact Details

**Manufacturer/Supplier**
Baroid Fluid Services
Product Service Line of Halliburton
P.O. Box 1675
Houston, TX 77251
Telephone: (281) 871-4000
Emergency Telephone: (281) 575-5000

**Prepared By**
Chemical Stewardship
Telephone: 1-580-251-4335
e-mail: fdunexchem@halliburton.com

### 1.4. Emergency telephone number

**Emergency Telephone Number** (281) 575-5000

## 2. Hazard(s) Identification

### 2.1 Classification in accordance with paragraph (d) of §1910.1200

| | |
|---|---|
| Carcinogenicity | Category 1A - H350 |
| Specific Target Organ Toxicity - (Repeated Exposure) | Category 1 - H372 |

### 2.2. Label Elements

**Hazard Pictograms**

**Signal Word** Danger

**Hazard Statements**
H350 - May cause cancer
H372 - Causes damage to organs through prolonged or repeated exposure

**Precautionary Statements**

**Prevention**
P201 - Obtain special instructions before use
P202 - Do not handle until all safety precautions have been read and understood
P260 - Do not breathe dust/fume/gas/mist/vapors/spray
P264 - Wash face, hands and any exposed skin thoroughly after handling
P270 - Do not eat, drink or smoke when using this product
P280 - Wear protective gloves/protective clothing/eye protection/face protection

**Response**
P308 + P313 - IF exposed or concerned: Get medical attention/advice
P314 - Get medical attention/advice if you feel unwell
P308 + P313 - IF exposed or concerned: Get medical advice/attention

**Storage**
P405 - Store locked up

**Disposal**
P501 - Dispose of contents/container in accordance with local/regional/national/international regulations

**Contains**

| **Substances** | **CAS Number** |
|---|---|
| Barium sulfate | 7727-43-7 |
| Crystalline silica, quartz | 14808-60-7 |

### 2.3 Hazards not otherwise classified

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT)
This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

## 3. Composition/information on Ingredients

| Substances | CAS Number | PERCENT (w/w) | GHS Classification - US |
|---|---|---|---|
| Barium sulfate | 7727-43-7 | 60 - 100% | Not classified |
| Crystalline silica, quartz | 14808-60-7 | 1 - 5% | Carc. 1A (H350)<br>STOT RE 1 (H372) |

The exact percentage (concentration) of the composition has been withheld as proprietary.

## 4. First-Aid Measures

### 4.1. Description of first aid measures

| | |
|---|---|
| **Inhalation** | If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult. |
| **Eyes** | In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists. |
| **Skin** | Wash with soap and water. Get medical attention if irritation persists. |
| **Ingestion** | Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention. |

### 4.2 Most important symptoms/effects, acute and delayed

Breathing crystalline silica can cause lung disease, including silicosis and lung cancer. Crystalline silica has also been associated with scleroderma and kidney disease. Carcinogen. May cause damage to internal organs.

### 4.3. Indication of any immediate medical attention and special treatment needed

**Notes to Physician** Treat symptomatically.

## 5. Fire-fighting measures

### 5.1. Extinguishing media

**Suitable Extinguishing Media**

All standard fire fighting media

**Extinguishing media which must not be used for safety reasons**

None known.

### 5.2 Specific hazards arising from the substance or mixture

**Special Exposure Hazards**

None anticipated

### 5.3 Special protective equipment and precautions for fire-fighters

**Special Protective Equipment for Fire-Fighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

## 6. Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

Use appropriate protective equipment. Avoid creating and breathing dust.
See Section 8 for additional information

### 6.2. Environmental precautions

Prevent from entering sewers, waterways, or low areas.

### 6.3. Methods and material for containment and cleaning up

Collect using dustless method and hold for appropriate disposal. Consider possible toxic or fire hazards associated with contaminating substances and use appropriate methods for collection, storage and disposal.

## 7. Handling and storage

### 7.1. Precautions for Safe Handling

**Handling Precautions**

This product contains quartz, cristobalite, and/or tridymite which may become airborne without a visible cloud. Avoid breathing dust. Avoid creating dusty conditions. Use only with adequate ventilation to keep exposure below recommended exposure limits. Wear a NIOSH certified, European Standard En 149, or equivalent respirator when using this product. Material is slippery when wet.

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

### 7.2. Conditions for safe storage, including any incompatibilities

**Storage Information**
Store in a well ventilated area. Keep container closed when not in use. Store locked up. Store in a cool, dry location. Use good housekeeping in storage and work areas to prevent accumulation of dust. Close container when not in use. Do not reuse empty container.

## 8. Exposure Controls/Personal Protection

### 8.1 Occupational Exposure Limits

| Substances | CAS Number | OSHA PEL-TWA | ACGIH TLV-TWA |
|---|---|---|---|
| Barium sulfate | 7727-43-7 | 15 mg/M3 | TWA: 10 mg/m³ |
| Crystalline silica, quartz | 14808-60-7 | 10 mg/m³<br>%SiO2 + 2 | TWA: 0.025 mg/m³ |

### 8.2 Appropriate engineering controls

**Engineering Controls** Use approved industrial ventilation and local exhaust as required to maintain exposures below applicable exposure limits.

### 8.3 Individual protection measures, such as personal protective equipment

**Personal Protective Equipment** If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

**Respiratory Protection** Wear a NIOSH certified, European Standard EN 149 (FFP2/FFP3), AS/NZS 1715, or equivalent respirator when using this product.

**Hand Protection** Normal work gloves.

**Skin Protection** Wear clothing appropriate for the work environment. Dusty clothing should be laundered before reuse. Use precautionary measures to avoid creating dust when removing or laundering clothing.

**Eye Protection** Wear safety glasses or goggles to protect against exposure.

**Other Precautions** None known.

## 9. Physical and Chemical Properties

### 9.1. Information on basic physical and chemical properties

**Physical State:** Solid
**Color:** Pink to tan to gray
**Odor:** Odorless
**Odor Threshold:** No information available

| Property | Values | Remarks/ - Method |
|---|---|---|
| **pH:** | No data available | |
| **Freezing Point/Range** | No information available. | |
| **Melting Point/Range** | No data available | |
| **Boiling Point/Range** | No data available | |
| **Flash Point** | No data available | |
| **Flammability (solid, gas)** | No data available | |
| **upper flammability limit** | No data available | |
| **lower flammability limit** | No data available | |
| **Evaporation rate** | No data available | |
| **Vapor Pressure** | No data available | |
| **Vapor Density** | No data available | |
| **Specific Gravity** | 4.23 | |
| **Water Solubility** | Insoluble in water | |
| **Solubility in other solvents** | No data available | |

| | |
|---|---|
| **Partition coefficient: n-octanol/water** | No data available |
| **Autoignition Temperature** | No data available |
| **Decomposition Temperature** | No data available |
| **Viscosity** | No data available |
| **Explosive Properties** | No information available |
| **Oxidizing Properties** | No information available |

**9.2. Other information**

| | |
|---|---|
| **Molecular Weight** | 233.4 |
| **VOC Content (%)** | No data available |

## 10. Stability and Reactivity

**10.1. Reactivity**
Not expected to be reactive.

**10.2. Chemical Stability**
Stable

**10.3. Possibility of Hazardous Reactions**
Will Not Occur

**10.4. Conditions to Avoid**
None anticipated

**10.5. Incompatible Materials**
None known.

**10.6. Hazardous Decomposition Products**
Amorphous silica may transform at elevated temperatures to tridymite (870 C) or cristobalite (1470 C).

## 11. Toxicological Information

**11.1 Information on likely routes of exposure**

**Principle Route of Exposure** Eye or skin contact, inhalation.

**11.2 Symptoms related to the physical, chemical and toxicological characteristics**

**Acute Toxicity**

**Product Information** Under certain conditions of use, some of the product ingredients may cause the following:

**Inhalation** Inhaled crystalline silica in the form of quartz or cristobalite from occupational sources is carcinogenic to humans (IARC, Group 1). There is sufficient evidence in experimental animals for the carcinogenicity of tridymite (IARC, Group 2A).

Breathing silica dust may cause irritation of the nose, throat, and respiratory passages. Breathing silica dust may not cause noticeable injury or illness even though permanent lung damage may be occurring. Inhalation of dust may also have serious chronic health effects (See "Chronic Effects/Carcinogenicity" subsection below).

**Eye Contact** May cause mild eye irritation.

**Skin Contact** None known.

**Ingestion** May produce nervous system effects such as feeling of weakness, unsteady walk, and dilation of blood vessels. May affect the heart and cardiovascular system.

**Chronic Effects/Carcinogenicity** Silicosis: Excessive inhalation of respirable crystalline silica dust may cause a progressive, disabling, and sometimes-fatal lung disease called silicosis. Symptoms include cough, shortness of breath, wheezing, non-specific chest illness, and reduced pulmonary function. This disease is exacerbated by smoking. Individuals with silicosis are predisposed to develop tuberculosis.

Cancer Status: The International Agency for Research on Cancer (IARC) has determined that crystalline silica inhaled in the form of quartz or cristobalite from occupational sources can cause lung cancer in humans (Group 1 - carcinogenic to humans) and has determined that there is sufficient evidence in experimental animals for the carcinogenicity of tridymite (Group 2A - possible carcinogen to humans). Refer to IARC Monograph 68, Silica, Some Silicates and Organic Fibres (June 1997) in conjunction with the use of these minerals. The National Toxicology Program classifies respirable crystalline silica as "Known to be a human carcinogen". Refer to the 9th Report on Carcinogens (2000). The American Conference of Governmental Industrial Hygienists (ACGIH) classifies crystalline silica, quartz, as a suspected human carcinogen (A2).

There is some evidence that breathing respirable crystalline silica or the disease silicosis is associated with an increased incidence of significant disease endpoints such as scleroderma (an immune system disorder manifested by scarring of the lungs, skin, and other internal organs) and kidney disease.

Prolonged inhalation of fine barium sulfate dusts form harmless nodular granules in lung, an affliction called baritosis. Baritosis produces no symptoms of bronchitis or emphysema, and lung functioning is not affected although dyspnea, upon exertion, may occur. The nodulation disappears if exposure is stopped.

## 11.3 Toxicity data

### Toxicology data for the components

| Substances | CAS Number | LD50 Oral | LD50 Dermal | LC50 Inhalation |
|---|---|---|---|---|
| Barium sulfate | 7727-43-7 | > 307,000 mg/kg (Rat)<br>> 2000mg/kg (Rat) (similar substance - barium dichloride) | > 2,000 mg/kg (Rabbit) | No data available |
| Crystalline silica, quartz | 14808-60-7 | 500 mg/kg (Rat)<br>>15,000 mg/kg (Human) | No data available | No data available |

| Substances | CAS Number | Skin corrosion/irritation |
|---|---|---|
| Barium sulfate | 7727-43-7 | Non-irritating to the skin (similar substances) (Rabbit) |
| Crystalline silica, quartz | 14808-60-7 | Non-irritating to the skin |

| Substances | CAS Number | Eye damage/irritation |
|---|---|---|
| Barium sulfate | 7727-43-7 | Non-irritating to the eye (Rabbit) |
| Crystalline silica, quartz | 14808-60-7 | Mechanical irritation of the eyes is possible. |

| Substances | CAS Number | Skin Sensitization |
|---|---|---|
| Barium sulfate | 7727-43-7 | Did not cause sensitization on laboratory animals (mouse) (similar substances) |
| Crystalline silica, quartz | 14808-60-7 | Not regarded as a sensitizer. |

| Substances | CAS Number | Respiratory Sensitization |
|---|---|---|
| Barium sulfate | 7727-43-7 | No information available |
| Crystalline silica, quartz | 14808-60-7 | No information available |

| Substances | CAS Number | Mutagenic Effects |
|---|---|---|
| Barium sulfate | 7727-43-7 | In vitro tests did not show mutagenic effects (similar substances) |
| Crystalline silica, quartz | 14808-60-7 | Not regarded as mutagenic. |

| Substances | CAS Number | Carcinogenic Effects |
|---|---|---|

| | | |
|---|---|---|
| Barium sulfate | 7727-43-7 | Did not show carcinogenic effects in animal experiments (similar substances) |
| Crystalline silica, quartz | 14808-60-7 | Contains crystalline silica which may cause silicosis, a delayed and progressive lung disease. The IARC and NTP have determined there is sufficient evidence in humans of the carcinogenicity of crystalline silica with repeated respiratory exposure. Based on available scientific evidence, this substance is a threshold carcinogen with a mode of action involving indirect genotoxicity secondary to lung injury. |

| Substances | CAS Number | Reproductive toxicity |
|---|---|---|
| Barium sulfate | 7727-43-7 | No information available |
| Crystalline silica, quartz | 14808-60-7 | No information available |

| Substances | CAS Number | STOT - single exposure |
|---|---|---|
| Barium sulfate | 7727-43-7 | No significant toxicity observed in animal studies at concentration requiring classification. (similar substances) |
| Crystalline silica, quartz | 14808-60-7 | No significant toxicity observed in animal studies at concentration requiring classification. |

| Substances | CAS Number | STOT - repeated exposure |
|---|---|---|
| Barium sulfate | 7727-43-7 | No significant toxicity observed in animal studies at concentration requiring classification. (similar substances) |
| Crystalline silica, quartz | 14808-60-7 | Causes damage to organs through prolonged or repeated exposure if inhaled: (Lungs) |

| Substances | CAS Number | Aspiration hazard |
|---|---|---|
| Barium sulfate | 7727-43-7 | Not applicable |
| Crystalline silica, quartz | 14808-60-7 | Not applicable |

## 12. Ecological Information

### 12.1. Toxicity

**Ecotoxicity Effects**

**Product Ecotoxicity Data**

No data available

**Substance Ecotoxicity Data**

| Substances | CAS Number | Toxicity to Algae | Toxicity to Fish | Toxicity to Microorganisms | Toxicity to Invertebrates |
|---|---|---|---|---|---|
| Barium sulfate | 7727-43-7 | ErC50 (72h) > 61.1 mg/L (Pseudokirchnerella subcapitata)<br>EC50 (72h) > 34.31 mg/L (Pseudokirchnerella subcapitata) (elemental Barium) | TLM96: 7500 ppm (Oncorhynchus mykiss)<br>LC50 (96h) > 174 mg/L (Danio rerio)<br>LC50 (96h) > 97.5 mg/L (Danio rerio) (elemental Barium)<br>LC50 (28d) 42700 ug/L (Oncorhynchus mykiss) (elemental Barium) | EC50 (3h) (RR) >1000 mg/L (activated sludge) | TLM96: > 1,000,000 ppm (Mysidopsis bahia)<br>LC50 (48h) 14500 ug/L (Daphnia magna) (elemental Barium)<br>EC16 (3wk) 5800 ug/L (Daphnia magna) (elemental Barium)<br>EC16 (3wk) 4800 ug/L (Daphnia magna) |
| Crystalline silica, quartz | 14808-60-7 | No information available | LL50 (96h) 10,000 mg/L (Danio rerio) (similar substance) | No information available | LL50 (24h) > 10,000 mg/L (Daphnia magna) (similar substance) |

### 12.2. Persistence and degradability

The methods for determining biodegradability are not applicable to inorganic substances.

| Substances | CAS Number | Persistence and Degradability |
|---|---|---|
| Barium sulfate | 7727-43-7 | The methods for determining biodegradability are not applicable to inorganic substances. |
| Crystalline silica, quartz | 14808-60-7 | The methods for determining biodegradability are not applicable to inorganic substances. |

### 12.3. Bioaccumulative potential

Does not bioaccumulate

| Substances | CAS Number | Log Pow |
|---|---|---|
| Barium sulfate | 7727-43-7 | BCF: 1.2 - 74.4 L/kg (Lepomis macrochirus) |
| Crystalline silica, quartz | 14808-60-7 | No information available |

### 12.4. Mobility in soil

No information available

| Substances | Mobility |
|---|---|
| Barium sulfate | No information available |

### 12.5 Other adverse effects

No information available

## 13. Disposal Considerations

### 13.1. Waste treatment methods

**Disposal Method** Bury in a licensed landfill according to federal, state, and local regulations. Substance should NOT be deposited into a sewage facility.

**Contaminated Packaging** Follow all applicable national or local regulations. Contaminated packaging may be disposed of by: rendering packaging incapable of containing any substance, or treating packaging to remove residual contents, or treating packaging to make sure the residual contents are no longer hazardous, or by disposing of packaging into commercial waste collection.

## 14. Transport Information

### US DOT

**UN Number:** Not restricted
**UN Proper Shipping Name:** Not restricted
**Transport Hazard Class(es):** Not applicable
**Packing Group:** Not applicable
**Environmental Hazards:** Not applicable

### US DOT Bulk

**DOT (Bulk)** Not applicable

### Canadian TDG

**UN Number:** Not restricted
**UN Proper Shipping Name:** Not restricted
**Transport Hazard Class(es):** Not applicable
**Packing Group:** Not applicable
**Environmental Hazards:** Not applicable

### IMDG/IMO

**UN Number:** Not restricted
**UN Proper Shipping Name:** Not restricted
**Transport Hazard Class(es):** Not applicable
**Packing Group:** Not applicable
**Environmental Hazards:** Not applicable

### IATA/ICAO

**UN Number:** Not restricted
**UN Proper Shipping Name:** Not restricted
**Transport Hazard Class(es):** Not applicable
**Packing Group:** Not applicable
**Environmental Hazards:** Not applicable

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code:** Not applicable
**Special Precautions for User:** None

## 15. Regulatory Information

### US Regulations

| | |
|---|---|
| **US TSCA Inventory** | All components listed on inventory or are exempt. |
| **EPA SARA Title III Extremely Hazardous Substances** | Not applicable |
| **EPA SARA (311,312) Hazard Class** | Acute Health Hazard<br>Chronic Health Hazard |
| **EPA SARA (313) Chemicals** | This product does not contain a toxic chemical for routine annual "Toxic Chemical Release Reporting" under Section 313 (40 CFR 372). |
| **EPA CERCLA/Superfund Reportable Spill Quantity** | Not applicable. |
| **EPA RCRA Hazardous Waste Classification** | If product becomes a waste, it does NOT meet the criteria of a hazardous waste as defined by the US EPA. |
| **California Proposition 65** | The California Proposition 65 regulations apply to this product. |
| **MA Right-to-Know Law** | One or more components listed. |
| **NJ Right-to-Know Law** | One or more components listed. |
| **PA Right-to-Know Law** | One or more components listed. |

### Canadian Regulations

| | |
|---|---|
| **Canadian DSL Inventory** | All components listed on inventory or are exempt. |

## 16. Other information

**Preparation Information**

| | |
|---|---|
| **Prepared By** | Chemical Stewardship<br>Telephone: 1-580-251-4335<br>e-mail: fdunexchem@halliburton.com |
| **Revision Date:** | 02-Apr-2015 |
| **Reason for Revision** | Update to Format SECTION: 2 |

**Additional information**
For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

**Key or legend to abbreviations and acronyms**
bw – body weight
CAS – Chemical Abstracts Service
EC50 – Effective Concentration 50%
ErC50 – Effective Concentration growth rate 50%
LC50 – Lethal Concentration 50%
LD50 – Lethal Dose 50%
LL50 – Lethal Loading 50%
mg/kg – milligram/kilogram
mg/L – milligram/liter
NIOSH – National Institute for Occupational Safety and Health
NTP – National Toxicology Program
OEL – Occupational Exposure Limit
PEL – Permissible Exposure Limit
ppm – parts per million
STEL – Short Term Exposure Limit
TWA – Time-Weighted Average
UN – United Nations
h - hour
$mg/m^3$ - milligram/cubic meter
mm - millimeter
mmHg - millimeter mercury
w/w - weight/weight
d - day

**Key literature references and sources for data**
www.ChemADVISOR.com/
NZ CCID

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**End of Safety Data Sheet**