

MATERIAL SAFETY DATA SHEET

Product Trade Name: **BARFIX**

Revision Date: 04-Jan-2011

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Trade Name: BARFIX
Synonyms: None
Chemical Family: Mineral
Application: Mud additive

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 Compliance
Telephone: 1-580-251-4335
e-mail: fdunexchem@halliburton.com

2. COMPOSITION/INFORMATION ON INGREDIENTS

| Substances | CAS Number | PERCENT | ACGIH TLV-TWA | OSHA PEL-TWA |
|----------------------------|------------|---------|-------------------------|---|
| Cement kiln dust | 68475-76-3 | 100 | Not applicable | Not applicable |
| Limestone | 1317-65-3 | 70 | 10 mg/m ³ | 15 mg/m ³ |
| Calcium oxide | 1305-78-8 | 24 | 2 mg/m ³ | 5 mg/m ³ |
| Magnesium oxide | 1309-48-4 | 1 | 10 mg/m ³ | 15 mg/m ³ |
| Crystalline silica, quartz | 14808-60-7 | 5 | 0.025 mg/m ³ | 10 mg/m ³ %SiO ₂ + 2 |

More restrictive exposure limits may be enforced by some states, agencies, or other authorities.

3. HAZARDS IDENTIFICATION

Hazard Overview

CAUTION! - ACUTE HEALTH HAZARD

May cause eye, skin, and respiratory irritation.

DANGER! - CHRONIC HEALTH HAZARD

Breathing crystalline silica can cause lung disease, including silicosis and lung cancer. Crystalline silica has also been associated with scleroderma and kidney disease.

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 exposures below recommended exposure limits. Wear a NIOSH certified, European Standard EN 149, or equivalent respirator when using this product. Review the Material Safety Data Sheet (MSDS) for this product, which has been provided to your employer. Exposure to wet material or dry material on moist areas of the body can cause serious caustic chemical burns.

4. FIRST AID MEASURES

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| Inhalation | If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult. |
| Skin | Wash with soap and water. Get medical attention if irritation persists. |
| Eyes | Immediately flush eyes with large amounts of water for at least 15 minutes. Get immediate medical attention. |
| Ingestion | Under normal conditions, first aid procedures are not required. |
| Notes to Physician | Not Applicable |

5. FIRE FIGHTING MEASURES

| | |
|---|---|
| Flash Point/Range (F): | Not Determined |
| Flash Point/Range (C): | Not Determined |
| Flash Point Method: | Not Determined |
| Autoignition Temperature (F): | Not Determined |
| Autoignition Temperature (C): | Not Determined |
| Flammability Limits in Air - Lower (%): | Not Determined |
| Flammability Limits in Air - Upper (%): | Not Determined |
| Fire Extinguishing Media | All standard firefighting media. |
| Special Exposure Hazards | Not applicable. |
| Special Protective Equipment for Fire-Fighters | Not applicable. |
| NFPA Ratings: | Health 1, Flammability 0, Reactivity 0 |
| HMIS Ratings: | Health 1*, Flammability 0, Reactivity 0 |

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures Use appropriate protective equipment. Avoid creating and breathing dust.

Environmental Precautionary Measures None known.

Procedure for Cleaning / Absorption 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

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|-----------------------------|--|
| Handling Precautions | Avoid contact with eyes, skin, or clothing. 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. Ground and bond containers when transferring from one container to another. |
| Storage Information | Store away from acids. 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. Product has a shelf life of 60 months. |

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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|-------------------------------|--|
| Engineering Controls | Use approved industrial ventilation and local exhaust as required to maintain exposures below applicable exposure limits listed in Section 2. |
| Respiratory Protection | Wear a NIOSH certified, European Standard EN 149, or equivalent respirator when using this product. |
| Hand Protection | Neoprene 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 | Dust proof goggles. |
| Other Precautions | Rubber boots |

9. PHYSICAL AND CHEMICAL PROPERTIES

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| Physical State: | Powder |
| Color: | White , Gray , Tan |
| Odor: | Odorless |
| pH: | 12 |
| Specific Gravity @ 20 C (Water=1): | 2.8 |
| Density @ 20 C (lbs./gallon): | Not Determined |
| Bulk Density @ 20 C (lbs/ft3): | 95 |
| Boiling Point/Range (F): | Not Determined |
| Boiling Point/Range (C): | > 1000 |
| Freezing Point/Range (F): | Not Determined |
| Freezing Point/Range (C): | Not Determined |
| Vapor Pressure @ 20 C (mmHg): | Not Determined |
| Vapor Density (Air=1): | Not Determined |
| Percent Volatiles: | Not Determined |
| Evaporation Rate (Butyl Acetate=1): | Not Determined |
| Solubility in Water (g/100ml): | Partially soluble |
| Solubility in Solvents (g/100ml): | Not Determined |
| VOCs (lbs./gallon): | Not Determined |
| Viscosity, Dynamic @ 20 C (centipoise): | Not Determined |
| Viscosity, Kinematic @ 20 C (centistrokes): | Not Determined |
| Partition Coefficient/n-Octanol/Water: | Not Determined |
| Molecular Weight (g/mole): | Not Determined |

10. STABILITY AND REACTIVITY

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| Stability Data: | Stable |
| Hazardous Polymerization: | Will Not Occur |
| Conditions to Avoid | None anticipated |
| Incompatibility (Materials to Avoid) | Strong acids. Ammonium salts. Prolonged contact with aluminum. Strong oxidizers. |
| Hazardous Decomposition Products | Carbon monoxide and carbon dioxide. Amorphous silica may transform at elevated temperatures to tridymite (870 C) or cristobalite (1470 C). |
| Additional Guidelines | Not Applicable |

11. TOXICOLOGICAL INFORMATION

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| Principle Route of Exposure | Eye or skin contact, inhalation. |
| 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). |
| Skin Contact | May cause skin irritation. May cause alkali burns with confined contact. |
| Eye Contact | May cause eye irritation. Exposure to this material on moist areas of the body can cause serious caustic chemical burns. |
| Ingestion | None known |
| Aggravated Medical Conditions | Individuals with respiratory disease, including but not limited to asthma and bronchitis, or subject to eye irritation, should not be exposed to quartz dust. |
| Chronic Effects/Carcinogenicity | <p>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.</p> <p>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).</p> <p>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.</p> <p>Contains trace amounts of hexavalent chromium (chromate), which can cause allergic contact dermatitis and skin ulcerations. Hexavalent chromium is classified as a known human carcinogen by NTP and IARC.</p> |
| Other Information | For further information consult "Adverse Effects of Crystalline Silica Exposure" published by the American Thoracic Society Medical Section of the American Lung Association, American Journal of Respiratory and Critical Care Medicine, Volume 155, pages 761-768 (1997). |
| Toxicity Tests | |
| Oral Toxicity: | Not determined |
| Dermal Toxicity: | Not determined |

| | |
|---|---|
| Inhalation Toxicity: | Not determined |
| Primary Irritation Effect: | Not determined |
| Carcinogenicity | Refer to <u>IARC Monograph 68, Silica, Some Silicates and Organic Fibres</u> (June 1997). |
| Genotoxicity: | Not determined |
| Reproductive / Developmental Toxicity: | Not determined |

12. ECOLOGICAL INFORMATION

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|----------------------------------|----------------|
| Mobility (Water/Soil/Air) | Not determined |
| Persistence/Degradability | Not determined |
| Bio-accumulation | Not determined |

Ecotoxicological Information

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|------------------------------------|----------------|
| Acute Fish Toxicity: | Not determined |
| Acute Crustaceans Toxicity: | Not determined |
| Acute Algae Toxicity: | Not determined |

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|----------------------------------|----------------|
| Chemical Fate Information | Not determined |
| Other Information | Not applicable |

13. DISPOSAL CONSIDERATIONS

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| Disposal Method | Bury in a licensed landfill according to federal, state, and local regulations. |
| Contaminated Packaging | Follow all applicable national or local regulations. |

14. TRANSPORT INFORMATION

Land Transportation

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| DOT |
| Not restricted |

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| Canadian TDG |
| Not restricted |

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| ADR |
| Not restricted |

Air Transportation

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| ICAO/IATA |
| Not restricted |

Sea Transportation

IMDG
Not restricted

Other Shipping Information

Labels: None

15. REGULATORY INFORMATION

US Regulations

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| 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 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. |
| WHMIS Hazard Class | D2A Very Toxic Materials Crystalline silica E Corrosive Material |

16. OTHER INFORMATION

The following sections have been revised since the last issue of this MSDS
Not applicable

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|-------------------------------|---|
| Additional Information | For additional information on the use of this product, contact your local Halliburton representative. |
| | For questions about the Material Safety Data Sheet for this or other Halliburton products, contact Chemical Compliance at 1-580-251-4335. |

Disclaimer Statement

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*****END OF MSDS*****