Safety Data Sheet

Section 01 - Identification

Product Identifier
Bentonite

Other Means of Identification
Wyoming gel, bentonite clay, montmorillonite.

Product Use and Restrictions on Use
Oil well drilling fluid additive.

Initial Supplier Identifier
ClearTech Industries Inc.  
1500 Quebec Avenue  
Saskatoon, SK. Canada  
S7K 1V7

Prepared By
ClearTech Industries Inc. Technical Writer  
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Section 02 - Hazard Identification

GHS-Classification

STOT-Repeated Exposure Category 1
Carcinogenicity Category 1A

Physical Hazards
No known physical hazards.

Danger

Hazards Statements
H372 – Causes damage to lungs through prolonged or repeated exposure.  
H350 – May cause cancer.

Pictograms

Precautionary Statements
P405 – Store locked up.  
P201 – Obtain special instructions before use.  
P202 – Do not handle until all safety precautions have been read and understood.  
P280 – Wear protective gloves, protective clothing, eye protection, and face protection.  
P308 + P313 – IF exposed or concerned: Get medical advice/attention.  
P260 – Do not breathe dust.  
P264 – Wash hands thoroughly after handling.
Section 03 - Composition / Information on Ingredients

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS Number</th>
<th>Weight %</th>
<th>Unique Identifiers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bentonite</td>
<td>1302-78-9</td>
<td>94-98%</td>
<td></td>
</tr>
<tr>
<td>Quartz, crystalline</td>
<td>14808-60-7</td>
<td>2-6%</td>
<td></td>
</tr>
</tbody>
</table>

Section 04 - First Aid Measures

Inhalation
This chemical is a carcinogen and a chronic toxicity hazard. Remove victim to fresh air. Give artificial respiration only if breathing has stopped. If breathing is difficult, give oxygen. Seek medical attention if symptoms persist. Inhalation may aggravate existing respiratory illness.

Skin Contact / Absorption
No health effects expected. Wash gently and thoroughly with lukewarm, gently flowing water and non-abrasive soap for 5 minutes.

Eye Contact
DO NOT allow victim to rub eye(s). Let the eye(s) water naturally. Have victim move eye around to attempt to dislodge particle/dust. If it does not dislodge, flush with lukewarm, gently flowing water for 30 minutes or until dust/particle is removed. If irritation persists, immediately obtain medical attention. DO NOT attempt to manually remove anything stuck to the eye(s).

Ingestion
No health effects are expected. If irritation or discomfort occurs, obtain medical advice.

Additional Information
Not Available.

Section 05 - Fire Fighting Measures

Suitable Extinguishing Media
Does not burn. Use appropriate means of extinction for cause of fire with the exception of water as product becomes very slippery in contact with water.

Unsuitable Extinguishing Media
Not Available.

Specific Hazards Arising From the Chemical
None known.

Special Protective Equipment and Precautions for Fire-Fighters
Wear NIOSH-approved self-contained breathing apparatus and protective clothing.

Further Information
Not Available.

Section 06 - Accidental Release Measures

Personal Precautions / Protective Equipment / Emergency Procedures
Wear appropriate personal protective equipment. Ventilate area. Only enter area with PPE. Stop or reduce leak if safe to do so. Flush with water to remove any residue.

Environmental Precautions
Avoid release of product into waterways and/or sewers.

Methods and Materials for Containment and Cleaning Up
Wear an approved respirator. Vacuum if possible to avoid generating airborne dust. Collect uncontaminated material for repackaging. Collect contaminated material in an approved container for disposal. Avoid adding water as product will become slippery when wet.
Section 07 - Handling and Storage

Precautions for Safe Handling  This material is a VERY TOXIC solid. Avoid creating dust. Use proper equipment for lifting and transporting all containers. Use sensible industrial hygiene and housekeeping practices. Wash thoroughly after handling. Avoid all situations that could lead to harmful exposure. Empty packages contain residual hazardous material; handle as if full.

Conditions for Safe Storage  Store in a cool, dry, well-ventilated place. Keep container tightly closed.

Incompatibilities  No incompatible substances known.

Section 08 - Exposure Controls and Personal Protection

**Exposure Limit(s)**

<table>
<thead>
<tr>
<th>Component</th>
<th>Regulation</th>
<th>Type of Listing</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quartz, crystalline silica</td>
<td>ACGIH</td>
<td>TLV-TWA</td>
<td>0.025mg/m³</td>
</tr>
<tr>
<td></td>
<td>OSHA</td>
<td>PEL-TWA</td>
<td>0.1mg/m³</td>
</tr>
</tbody>
</table>

**Engineering Control(s)**

**Ventilation Requirements**  Mechanical ventilation (dilution or local exhaust), process or personnel enclosure and control of process conditions should be provided. Supply sufficient replacement air to make up for air removed by exhaust systems.

**Other**  Keep an eye wash fountain and safety shower available and in close proximity to work area.

**Protective Equipment**

**Eyes/face**  Chemical safety glasses with side shields should be worn while product is being handled.

**Hand Protection**  Impervious gloves are not required other than what is mandated at place of work. Wash contaminated clothing dry thoroughly before reuse.

**Skin and Body Protection**  Body suits, aprons, and/or coveralls of chemical resistant material should be worn. Wash contaminated clothing with soap and water, dry thoroughly before reuse.

**Respiratory Protection**  Always wear an approved dust mask for levels below the TLV. Use NIOSH/MSHA approved respirators for silica bearing dust if airborne concentrations exceed the TLV.

**Thermal Hazards**  Not Available.

Section 09 - Physical and Chemical Properties

**Appearance**

**Physical State**  Solid

**Colour**  Light tan to grey

**Odour**  Odourless

**Odour Threshold**  Not Applicable

**Property**

**pH**  8-10 (5% suspension)

**Melting Point/Freezing Point**  Not Available
<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Boiling Point and Boiling Range</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Flash Point</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>Not Available</td>
</tr>
<tr>
<td>Flammability</td>
<td>Non-flammable</td>
</tr>
<tr>
<td>Upper Flammable Limit</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Lower Flammable Limit</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Vapour Pressure (mm Hg, 20°C)</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Vapour Density (Air=1)</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Relative Density</td>
<td>Not Available</td>
</tr>
<tr>
<td>Solubility(ies)</td>
<td>Insoluble in water</td>
</tr>
<tr>
<td>Partition Coefficient: n-octanol/water</td>
<td>Not Available</td>
</tr>
<tr>
<td>Auto-ignition Temperature</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Decomposition Temperature</td>
<td>Not Available</td>
</tr>
<tr>
<td>Viscosity</td>
<td>Not Available</td>
</tr>
<tr>
<td>Explosive Properties</td>
<td>None</td>
</tr>
<tr>
<td>Specific Gravity (Water=1)</td>
<td>2.45-2.55</td>
</tr>
<tr>
<td>% Volatiles by Volume</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Formula</td>
<td>Not Available</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>Not Available</td>
</tr>
</tbody>
</table>

**Section 10 - Stability and Reactivity**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reactivity</td>
<td>Not Available.</td>
</tr>
<tr>
<td>Stability</td>
<td>Stable.</td>
</tr>
<tr>
<td>Possibility of Hazardous Reactions</td>
<td>No polymerization will occur.</td>
</tr>
<tr>
<td>Conditions to Avoid</td>
<td>Not Available</td>
</tr>
<tr>
<td>Incompatible Materials</td>
<td>No incompatible substance known.</td>
</tr>
<tr>
<td>Hazardous Decomposition Products</td>
<td>None.</td>
</tr>
</tbody>
</table>
Section 11 - Toxicological Information

Acute Toxicity

<table>
<thead>
<tr>
<th>Component</th>
<th>Oral LD$_{50}$</th>
<th>Dermal LD$_{50}$</th>
<th>Inhalation LC$_{50}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quartz, crystalline silica</td>
<td>8333 mg/kg (rat)</td>
<td>Not Available</td>
<td>Not Available</td>
</tr>
</tbody>
</table>

Chronic Toxicity – Carcinogenicity

<table>
<thead>
<tr>
<th>Component</th>
<th>IARC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quartz, crystalline silica</td>
<td>Group 1: Carcinogenic to humans.</td>
</tr>
</tbody>
</table>

Skin Corrosion/Irritation: Possibly drying resulting in dermatitis.

Ingestion: No adverse effects expected.

Inhalation: May cause irritation of the nose, throat and respiratory passages.

Serious Eye Damage/Irritation: Dust may cause eye irritation.

Respiratory or Skin Sensitization: Not Available.

Germ Cell Mutagenicity: Crystalline silica has been shown to cause mutagenic effects in human cells (in-vitro).

Reproductive Toxicity: Not Available.

STOT-Single Exposure: Not Available.

STOT-Repeated Exposure: Long term inhalation may cause silicosis, a progressive, disabling, and sometimes fatal lung disease. Chronic inhalation exposure to crystalline silica quartz has been observed to cause lymph node effects, kidney effects, and auto-immune disease. Symptoms include cough, shortness of breath, wheezing, non-specific chest illness and reduced pulmonary function.

Aspiration Hazard: Not Available.

Synergistic Materials: Not Available.

Section 12 – Ecological Information

Ecotoxicity

<table>
<thead>
<tr>
<th>Component</th>
<th>Toxicity to Algae</th>
<th>Toxicity to Fish</th>
<th>Toxicity to Daphnia and Other Aquatic Invertebrates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bentonite</td>
<td>Not Available</td>
<td>LC$_{50}$(Oncorhynchus mykiss, 96hr): 19000mg/L</td>
<td>Not Available</td>
</tr>
</tbody>
</table>

Biodegradability: Biodegradation of bentonite appears to be minimal, if it occurs at all.

Bioaccumulation: Not Available.

Mobility: Not Available.

Other Adverse Effects: Not Available.

Section 13 – Disposal Considerations

Waste From Residues/Unused Products: Dispose in accordance with all federal, provincial, and/or local regulations including the Canadian Environmental Protection Act.

Contaminated Packaging: Dispose in accordance with all federal, provincial, and/or local regulations including the Canadian Environmental Protection Act.
Section 14 – Transport Information

<table>
<thead>
<tr>
<th>UN Number</th>
<th>Not Regulated</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN Proper Shipping Name</td>
<td>Not Regulated</td>
</tr>
<tr>
<td>Transport Hazard Class(es)</td>
<td>Not Regulated</td>
</tr>
<tr>
<td>Packaging Group</td>
<td>Not Regulated</td>
</tr>
<tr>
<td>Environmental Hazards</td>
<td>Not listed as a marine pollutant under Canadian TDG Regulations, schedule III.</td>
</tr>
<tr>
<td>Special Precautions</td>
<td>Not Available</td>
</tr>
<tr>
<td>Transport in Bulk</td>
<td>Not Available</td>
</tr>
</tbody>
</table>

TDG
Other
Secure containers (full and/or empty) with suitable hold down devises during shipment and ensure all caps, valves, or closures are secured in the closed position.

TDG PRODUCT CLASSIFICATION: This product has been classified on the preparation date specified at section 14 of this MSDS / SDS, for transportation in accordance with the requirements of part 2 of the Transportation of Dangerous Goods Regulations. If applicable, testing and/or published test data regarding the classification of this product are listed in the references at section 16 of this MSDS / SDS.

Section 15 – Regulatory Information

NOTE: THE PRODUCT LISTED ON THIS SDS HAS BEEN CLASSIFIED IN ACCORDANCE WITH THE HAZARD CRITERIA OF THE CANADIAN CONTROLLED PRODUCTS REGULATIONS. THIS SDS CONTAINS ALL INFORMATION REQUIRED BY THOSE REGULATIONS.

Section 16 – Other Information

Preparation Date
September 8, 2015

Note: The responsibility to provide a safe workplace remains with the user. The user should consider the health hazards and safety information contained herein as a guide and should take those precautions required in an individual operation to instruct employees and develop work practice procedures for a safe work environment. The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by the use of this material. It is the responsibility of the user to comply with all applicable laws and regulations.

Attention: Receiver of the chemical goods / SDS coordinator

As part of our commitment to the Canadian Association of Chemical Distributors (CACD) Responsible Distribution® initiative, ClearTech Industries Inc. and its associated companies require, as a condition of sale, that you forward the attached Safety Data Sheet(s) to all affected employees, customers, and end-users. ClearTech will send any available supplementary handling, health, and safety information to you at your request.

If you have any questions or concerns please call our customer service center.

References:
1) CHEMINFO
2) eChemPortal
3) TOXNET
4) Transportation of Dangerous Goods Canada
5) HSDB
6) ECHA

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