# MATERIAL SAFETY DATA SHEET

**Product Trade Name:** KCL POLYMER WATER GLYCOL BASED MUD SYSTEM  
**Revision Date:** 12-Sep-2013

## 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

**Statement of Hazardous Nature**  
Hazardous according to the criteria of NOHSC, Non-Dangerous Goods according to the criteria of ADG.

**Manufacturer/Supplier**  
Halliburton Australia Pty. Ltd.  
15 Marriott Road  
Jandakot  
WA 6164  
Australia

- **ACN Number:** 009 000 775  
- **Telephone Number:** 61 (08) 9455 8300  
- **Fax Number:** 61 (08) 9455 5300

**Product Emergency Telephone**  
Australia: 08-64244950  
Papua New Guinea: 05 1 281 575 5000  
New Zealand: 06-7559274

**Fire, Police & Ambulance - Emergency Telephone**  
Australia: 000  
Papua New Guinea: 000  
New Zealand: 111

## Identification of Substances or Preparation

<table>
<thead>
<tr>
<th><strong>Product Trade Name:</strong></th>
<th>KCL POLYMER WATER GLYCOL BASED MUD SYSTEM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Synonyms:</strong></td>
<td>None</td>
</tr>
<tr>
<td><strong>Chemical Family:</strong></td>
<td>Blend</td>
</tr>
<tr>
<td><strong>UN Number:</strong></td>
<td>None</td>
</tr>
<tr>
<td><strong>Dangerous Goods Class:</strong></td>
<td>None</td>
</tr>
<tr>
<td><strong>Subsidiary Risk:</strong></td>
<td>None</td>
</tr>
<tr>
<td><strong>Hazchem Code:</strong></td>
<td>None Allocated</td>
</tr>
<tr>
<td><strong>Poisons Schedule:</strong></td>
<td>None Allocated</td>
</tr>
<tr>
<td><strong>Application:</strong></td>
<td>Water-Based Drilling Fluid</td>
</tr>
<tr>
<td><strong>Prepared By:</strong></td>
<td>Chemical Compliance</td>
</tr>
<tr>
<td><strong>Telephone:</strong></td>
<td>1-580-251-4335</td>
</tr>
<tr>
<td><strong>e-mail:</strong></td>
<td><a href="mailto:fdunexchem@halliburton.com">fdunexchem@halliburton.com</a></td>
</tr>
</tbody>
</table>

## 2. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Substances</th>
<th>CAS Number</th>
<th>PERCENT (w/w)</th>
<th>Australia NOHSC</th>
<th>New Zealand WES</th>
<th>ACGIH TLV-TWA</th>
</tr>
</thead>
</table>

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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.

Risk Phrases

R36  Irritating to eyes.
R49  May cause cancer by inhalation.
R48/20  Harmful: danger of serious damage to health by prolonged exposure through inhalation.

HSNO Classification

6.1D  Acutely Toxic Substances
6.3B  Mildly irritating to the skin
6.4A  Irritating to the eye
6.7A  Known or presumed human carcinogens
6.9A  Toxic to human target organs or systems
9.3C  Harmful to terrestrial vertebrates

4. FIRST AID MEASURES

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. Remove contaminated clothing and launder before reuse.

Eyes

In case of contact, or suspected contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention immediately after flushing.

Ingestion

Do not induce vomiting. Slowly dilute with 1-2 glasses of water or milk and seek medical attention. Never give anything by mouth to an unconscious person.

Notes to Physician

Not Applicable

5. FIRE FIGHTING MEASURES

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Suitable Extinguishing Media
Water fog, carbon dioxide, foam, dry chemical.

Extinguishing media which must not be used for safety reasons
None known.

Special Exposure Hazards
Decomposition in fire may produce toxic gases.

Special Protective Equipment for Fire-Fighters
Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures
Use appropriate protective equipment.

Environmental Precautionary Measures
Prevent from entering sewers, waterways, or low areas.

Procedure for Cleaning / Absorption
Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Scoop up and remove.

7. HANDLING AND STORAGE

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.

Storage Information
Use good housekeeping in storage and work areas to prevent accumulation of dust. Close container when not in use.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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

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

Hand Protection
Impervious rubber gloves.

Skin Protection
Rubber apron. 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
Eyewash fountains and safety showers must be easily accessible.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid
Color: Off white
Odor: Odorless
pH: Not Determined
Specific Gravity @ 20 C (Water=1): 1.32
Density @ 20 C (kg/l): 1.32
Bulk Density @ 20 C (kg/m³): Not Determined
Boiling Point/Range (°C): Not Determined
Freezing Point/Range (°C): Not Determined
Pour Point/Range (°C): Not Determined
Flash Point/Range (°C): Not Determined
Flash Point Method: Not Determined
Autoignition Temperature (°C): Not Determined
Flammability Limits in Air - Lower (g/m³): Not Determined
Flammability Limits in Air - Lower (%): Not Determined
Flammability Limits in Air - Upper (g/m³): Not Determined
Flammability Limits in Air - Upper (%): 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): Soluble
Solubility in Solvents (g/100ml): Not Determined
VOCs (g/l): Not Determined
Viscosity, Dynamic @ 20 C (centipoise): Not Determined
Viscosity, Kinematic @ 20 C (centistokes): Not Determined
Partition Coefficient/n-Octanol/Water: Not Determined
Molecular Weight (g/mole): Not Determined
 Decomposition Temperature (°C): Not Determined

10. STABILITY AND REACTIVITY

Stability Data: Stable
Hazardous Polymerization: Will Not Occur
Conditions to Avoid None known.
Incompatibility (Materials to Avoid) Hydrofluoric acid.
Hazardous Decomposition Products Chlorine. 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

Principle Route of Exposure Eye or skin contact, inhalation.

Symptoms related to exposure
Acute Toxicity

Inhalation May cause respiratory irritation. 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 eye irritation.
Skin Contact: May cause skin irritation.

Ingestion: Irritation of the mouth, throat, and stomach.

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.

### Toxicology data for the components

<table>
<thead>
<tr>
<th>Substances</th>
<th>CAS Number</th>
<th>LD50 Oral</th>
<th>LD50 Dermal</th>
<th>LC50 Inhalation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polyethylene glycol butyl ether</td>
<td>9004-77-7</td>
<td>&gt; 5000 mg/kg</td>
<td>6540 mg/kg</td>
<td>No data available</td>
</tr>
<tr>
<td>Crystalline silica, quartz</td>
<td>14808-60-7</td>
<td>500 mg/kg (Rat)</td>
<td>No data available</td>
<td>No data available</td>
</tr>
<tr>
<td>Potassium chloride</td>
<td>7447-40-7</td>
<td>2600 mg/kg (Rat)</td>
<td>No data available</td>
<td>No data available</td>
</tr>
<tr>
<td>Limestone</td>
<td>1317-65-3</td>
<td>No data available</td>
<td>No data available</td>
<td>No data available</td>
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</table>

### 12. ECOLOGICAL INFORMATION

#### Ecotoxicological Information

<table>
<thead>
<tr>
<th>Ecotoxicity Product</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Fish Toxicity:</td>
<td>Not determined</td>
</tr>
<tr>
<td>Acute Crustaceans Toxicity:</td>
<td>Not determined</td>
</tr>
<tr>
<td>Acute Algae Toxicity:</td>
<td>Not determined</td>
</tr>
</tbody>
</table>

#### Ecotoxicity Substance

<table>
<thead>
<tr>
<th>Substances</th>
<th>CAS Number</th>
<th>Toxicity to Algae</th>
<th>Toxicity to Fish</th>
<th>Toxicity to Microorganisms</th>
<th>Daphnia Magna (Water Flea)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polyethylene glycol butyl ether</td>
<td>9004-77-7</td>
<td>EC50: 391 mg/l (Skeletonema costatum)</td>
<td>EC50: 475 ppm (Abramis alba)</td>
<td>No information available</td>
<td>TLM48: 310 mg/l (Acartia tonsa)</td>
</tr>
<tr>
<td>Crystalline silica, quartz</td>
<td>14808-60-7</td>
<td>No information available</td>
<td>No information available</td>
<td>No information available</td>
<td>No information available</td>
</tr>
<tr>
<td>Potassium chloride</td>
<td>7447-40-7</td>
<td>EC50: 2500 mg/l (Desmodesmus subspicatus)</td>
<td>LC50: 1060 mg/L (Lepomis macrochorus); LC50: 750-1020 mg/L (Pimephales promelas)</td>
<td>No information available</td>
<td>TLM96: 100-330 ppm (Crangon crangon)</td>
</tr>
<tr>
<td>Limestone</td>
<td>1317-65-3</td>
<td>No information available</td>
<td>No information available</td>
<td>No information available</td>
<td>TLM96: &gt;1,000,000 ppm (Mysidopsis bahia)</td>
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</tbody>
</table>
12.2 Persistence and degradability
No information available

12.3 Bioaccumulative potential
No information available

<table>
<thead>
<tr>
<th>Substances</th>
<th>Log Pow</th>
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<tbody>
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<td>Polyethylene glycol butyl ether</td>
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12.4 Mobility in soil
No information available

12.5 Results of PBT and vPvB assessment
No information available.

12.6 Other adverse effects

13. DISPOSAL CONSIDERATIONS

<table>
<thead>
<tr>
<th>Disposal Method</th>
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<tbody>
<tr>
<td>Disposal should be made in accordance with federal, state, and local regulations.</td>
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</table>

<table>
<thead>
<tr>
<th>Contaminated Packaging</th>
</tr>
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<tbody>
<tr>
<td>Follow all applicable national or local regulations.</td>
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</table>

14. TRANSPORT INFORMATION

Land Transportation

<table>
<thead>
<tr>
<th>ADR</th>
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<tbody>
<tr>
<td>Not restricted</td>
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Air Transportation

<table>
<thead>
<tr>
<th>ICAO/IATA</th>
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<tr>
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Sea Transportation

<table>
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<tr>
<th>IMDG</th>
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<td>Not restricted</td>
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Other Transportation Information

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<th>Labels:</th>
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15. REGULATORY INFORMATION

Chemical Inventories

<table>
<thead>
<tr>
<th>Australian AICS Inventory</th>
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</thead>
<tbody>
<tr>
<td>All components listed on inventory or are exempt.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>New Zealand Inventory of Chemicals</th>
</tr>
</thead>
<tbody>
<tr>
<td>All components listed on inventory or are exempt.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>US TSCA Inventory</th>
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</thead>
<tbody>
<tr>
<td>All components listed on inventory or are exempt.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EINECS Inventory</th>
</tr>
</thead>
<tbody>
<tr>
<td>This product, and all its components, complies with EINECS</td>
</tr>
</tbody>
</table>
Classification

T  - Toxic.

Crystalline silica is not classified as a carcinogen in EU Council Directives 67/548/EEC and 88/379/EEC.

Risk Phrases

R36  Irritating to eyes.
R49  May cause cancer by inhalation.
R48/20  Harmful: danger of serious damage to health by prolonged exposure through inhalation.

Safety Phrases

S25  Avoid contact with eyes.

16. OTHER INFORMATION

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

Contact

Australian Poisons Information Centre
24 Hour Service: - 13 11 26
Police or Fire Brigade: - 000 (exchange): - 1100

New Zealand National Poisons Centre
0800 764 766

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 Compliance at 1-580-251-4335.

Disclaimer Statement

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

***END OF MSDS***