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

Product Code: L071
Product Name: L071 Temporary Clay Stabilizer
Use of the Substance/Preparation: For industrial use only. Additive in oilfield applications.
Company Identification: Schlumberger Technology Corporation
110 Schlumberger Drive
Sugar Land, Texas 77478, USA
Telephone: 1-281-285-7873
Emergency Telephone Number: USA: +1-281-595-3518 (24hr)

2. HAZARDS IDENTIFICATION

Main physical hazards: None known.
Main health hazards: May be mildly irritating to eyes. May be mildly irritating to skin.
Precautions: No special precautions required.
HMIS classification: Health: 1 Flammability: 0 Physical hazard: 0
Form: Liquid
Color: Clear colorless
Odor: Amine-like

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No</th>
<th>Weight % - Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cholinium chloride</td>
<td>67-48-1</td>
<td>70-75</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

Eye contact: Immediately flush eyes with water for 5 minutes while holding eyelids open. Seek medical attention if irritation occurs.
Skin contact: Wash off with soap and water. Rinse with water.
Ingestion: Do not induce vomiting without medical advice. Seek medical attention. Never give anything by mouth to an unconscious person.
Inhalation: Move to fresh air. Consult a physician if necessary.
5. FIRE-FIGHTING MEASURES

Flash point: Does not flash.
Autoignition temperature: Not applicable.
Flammability limits in air:
  Lower: Not applicable
  Upper: Not applicable
Oxidizing properties: None known.

Suitable extinguishing media:
Use extinguishing media appropriate for surrounding material.

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

Special exposure hazards arising from the substance or preparation itself, its combustion products, or released gases:
When heated strongly or burned, oxides of carbon, nitrogen oxides, ammonia and harmful organic chemical fumes are released. Chlorine, chlorine oxides, hydrogen chloride.

Special protective equipment for firefighters:
Use self-contained breathing apparatus in closed areas. Wear protective fire fighting clothing and avoid breathing vapors.

NFPA Rating:
  Health: 2
  Flammability: 1
  Instability: 0
  Special: None

6. ACCIDENTAL RELEASE MEASURES

Main physical hazards: None known.
Personal precautions: Wear suitable protective equipment.
Methods for cleaning up: Dam up. Put into suitable containers for disposal.
Environmental precautions: None known.

7. HANDLING AND STORAGE

Handling:
  Precautions: No special precautions required.
  Safe handling advice: Avoid contact with eyes.
Technical measures/
  storage conditions:
  No special storage conditions required.
Packaging requirements: High density polyethylene (HDPE) drum or can.
8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering measures to reduce exposure: No special technical protective measures required.

Hygiene measures: Exercise reasonable care and cleanliness.

Respiratory protection: None normally needed.

Eye protection: It is good practice to wear goggles when handling any chemical.

Hand protection: Impervious gloves. Rubber gloves. PVC disposable gloves.

Skin and body protection: No special precautions required.

### Occupational Exposure Limits

<table>
<thead>
<tr>
<th>Component</th>
<th>ACGIH - TLVs</th>
<th>OSHA - PELs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TWA / C</td>
<td>STEL</td>
</tr>
<tr>
<td>Cholinium chloride</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Particles Not Otherwise Regulated/Specified [PNOR or PNOS] (insoluble or poorly soluble):**

- OSHA PEL’s for Inert or Nuisance Dust are covered by PNOR limits: respirable fraction: 5 mg/m³, total dust 15 mg/m³.
- ACGIH PNOS Recommendations: airborne concentrations should be kept below 3 mg/m³, respirable particulate, and 10 mg/m³, inhalable particles.

9. PHYSICAL AND CHEMICAL PROPERTIES

**Chemical characterization:** Aqueous solution of organic compounds.

**Form:** Liquid

**Color:** Clear colorless

**Odor:** Amine-like

**Odor threshold:** Not applicable

**pH:** 6.5 - 8.5

**Boiling point/range:** No data available.

**Flash point:** Does not flash.

**Flammability limits in air:**
- Lower: Not applicable
- Upper: Not applicable

**Bulk density:** Not applicable.

**Melting point/range:** < 0 °C / 32 °F

**Decomposition temperature:** No data available.

**Solubility:**
- Water solubility: Soluble
- Fat solubility: No information available

**Partition coefficient (n-octanol/water):** Not applicable

**Relative density:** 1.1

**Vapor pressure:** No data available.

**Vapor density:** No data available.

**Viscosity:** No data available.

**Evaporation rate:** No data available.

**% Volatile (VOC):** None.
10. STABILITY AND REACTIVITY

Stability:
Stable under recommended storage conditions.

Conditions to avoid:
None known.

Incompatibility with other substances:

Hazardous decomposition products:
When heated strongly or burned, oxides of carbon, nitrogen oxides, ammonia and harmful organic chemical fumes are released. Chlorine, chlorine oxides, hydrogen chloride.

Hazardous polymerization:
Hazardous polymerization does not occur.

11. TOXICOLOGICAL INFORMATION

PRODUCT TOXICOLOGICAL INFORMATION

Acute Health Hazard

Eye contact: May be mildly irritating.
Skin contact: May be mildly irritating.
Ingestion: May be mildly irritating.
Inhalation: This is an unlikely route of exposure.
Sensitization - lung: Not known to cause allergic reaction.
Sensitization - skin: Not known to cause allergic reaction.

Chronic Health Hazard

Carcinogenic effects: Not listed by IARC, USA NTP, or USA OSHA.
Mutagenic effects: None known.
Teratogenic effects: None known.
Reproductive toxicity: None known.
Target organ effects: No information available.

COMPONENT TOXICOLOGICAL INFORMATION

<table>
<thead>
<tr>
<th>Component</th>
<th>Target Organ Effects</th>
<th>LD50 / LC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cholinium chloride</td>
<td>-</td>
<td>= 3400 mg/kg (Oral LD50; Rat)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Component</th>
<th>IARC Group 1 or 2</th>
<th>ACGIH - Carcinogens</th>
<th>OSHA Listed Carcinogens</th>
<th>NTP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cholinium chloride</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

12. ECOLOGICAL INFORMATION

PRODUCT INFORMATION
COMPONENT INFORMATION

Cholinium chloride

Bioaccumulation: No information available
Persistence / degradability: No information available
Freshwater Fish Species Data: 500 mg/L EC50 (Desmodesmus subspicatus) = 72 h
Freshwater Fish Species Data: 10000 mg/L LC50 (Leuciscus idus) = 96 h
Water Flea Data: 500 mg/L EC50 (Daphnia magna Straus) = 48 h
320 mg/L EC50 (Daphnia magna) = 48 h

13. DISPOSAL CONSIDERATIONS

Waste from residues / unused products:
Dispose of in accordance with local regulations.

Contaminated packaging:
Dispose of in accordance with local regulations. If reusable containers are used, send them back to the product supplier, after the required rinsing.

EPA RCRA Hazardous Waste Code:
None

14. TRANSPORT INFORMATION

DOT:

CERCLA RQ: None
Hazard class: Not regulated.
Proper shipping name: Not regulated
Label(s): None required.

IMDG/IMO

Shipping name: Not regulated.
UN number: None

ICAO/IATA

Shipping name: Not regulated.
UN number: None

TDG (Canada):

Shipping name: Not regulated.
PIN: None

Note 1:
For the applicable placard selection refer to the appropriate transport regulations; the selection may vary depending on the cargo size and categories of other hazardous materials in the cargo.
15. REGULATORY INFORMATION

International Chemical Inventories

USA, Toxic Substances Control Act inventory (TSCA):
This product complies with TSCA requirements.

IMPORTS, USA:
No import volume restrictions.

Canada, Domestic Substance List (DSL):
This product complies with DSL requirements.

IMPORTS, Canada:
No import volume restrictions.

U.S.A. Regulations

OSHA Hazard Communication Standard:
(Complies with USA OSHA 29 CFR 1910.1200 and ANSI Z 400.1)

EPA RCRA Hazardous Waste Code:
None

EPA, Sections 311 and 312 - Material Safety Data Sheet Requirements (40 CFR 370):

Immediate (Acute) Health Hazard: None
Delayed (Chronic) Health Hazard: None
Fire Hazard: None
Sudden Release or Pressure Hazard: None
Reactive Hazard: None

EPA, Sections 313 - List of Toxic Chemicals (40 CFR 372):
This product contains the following substance(s), which appear(s) on the List of Toxic Chemicals:

Additional Regulatory Information

Cholinium chloride

EPA, CERCLA Section 102a/103 Hazardous Substances (40 CFR 302.4): None
CERCLA/SARA - Hazardous Substances and their RQs: None
EPA, SARA TITLE III Section 304, Extremely Hazardous Substances (40 CFR 355.40): None
California Proposition 65: None

International Hazard Class

WHMIS Hazard Class:
Non-controlled product.

16. OTHER INFORMATION

Current references:
1. Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices. American Conference of Governmental Industrial Hygienists, Cincinnati OH.
4. NIOSH Registry of Toxic Effects of Chemical Substances (RTECS). National Institute for Occupational safety and Health. Cincinnati, OH.
5. LOJI Database.
Explanation of terms:
ACGIH: American Conference of Governmental Industrial Hygienist
ACGIH-TL: Threshold Limit Value
DSL: Domestic Substance List
HMIRC: Hazardous Materials Information Review Commission
IARC: International Agency for Research on Cancer
NTP: National Toxicology Program
NIOSH: National Institute of Occupational Safety & Health
NIOSH-REL: Recommended Exposure Limit
OSHA: Occupational Safety & Health Administration
OSHA-PEL: Permissible Exposure Limit
TSCA: Toxic Substance Control Act (Inventory)

Occupational Exposure Limits indicators: TWA - Time Weighted Average; STEL - Short Term Limit; C - Ceiling Limit; units: [mg/m³]

ACGIH Notations:
"Skin" refers to the potential significant contribution to the overall exposure by the cutaneous route, including mucous membranes and the eyes, either by contact with vapors or by direct skin contact with the substance.
"A" notation indicates carcinogenicity as follows:
ACGIH classification: A1 - Confirmed Human Carcinogen; A2 - Suspected Human Carcinogen; A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans; A4 - Not Classifiable as a Human Carcinogen; A5 - Not suspected as a Human Carcinogen.
"SEN" refers to the potential for an agent to produce sensitization as confirmed by human and animal data.

Section(s) revised: 2
Prepared by: Global Chemical Regulatory Compliance (GCRC)
Revision date: 16 June 2011

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End of the Material Safety Data Sheet