Flowzan® Biopolymer

Version 1.7
Revision Date 2011-12-05

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

Product information

Trade name: Flowzan® Biopolymer
Material: 1016765, 1016826, 1017888, 1017889, 1016827

Use: Drilling Fluid Additive

Company: Drilling Specialties Company
10001 Six Pines Drive
The Woodlands, TX 77380

Local: Chevron Phillips Chemicals International N.V.
Brusselsesteenweg 355
B-3090 Overijse
Belgium

MSDS Requests: (800) 852-5530
Technical Information: (832) 813-4862
Responsible Party: Product Safety Group
Email: msds@cpchem.com

Emergency telephone:

Health:
866.442.9628 (North America)
1.832.813.4984 (International)

Transport:
North America: CHEMTREC 800.424.9300 or 703.527.3887
Asia: +800 CHEMCALL (+800 2436 2255) China: 0532.8388.9090
EUROPE: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
Chemcare Asia: Tel: +65 6848 9048 - Mob: +65 8382 9188 - Fax: +65 6848
South America SOS-Cotec Inside Brazil: 0800.111.767 Outside Brazil: +55.19.3467.1600

Responsible Department: Product Safety and Toxicology Group
E-mail address: msds@cpchem.com
Website: www.cchem.com

2. HAZARDS IDENTIFICATION

Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)
Not a dangerous substance according to Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

**Classification (67/548/EEC, 1999/45/EC)**

Not a hazardous substance or mixture according to EC-directives 67/548/EEC or 1999/45/EC. Label elements

**Labeling (REGULATION (EC) No 1272/2008)**

Not a dangerous substance according to Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Synonyms</th>
<th>None Established</th>
</tr>
</thead>
<tbody>
<tr>
<td>Molecular formula</td>
<td>Mixture</td>
</tr>
</tbody>
</table>

Contains no hazardous ingredients according to GHS.

Remarks: Contains no hazardous ingredients according to GHS.

### 4. FIRST AID MEASURES

**General advice**: Do not leave the victim unattended.

**If inhaled**: Keep respiratory tract clear. If symptoms persist, call a physician.

**In case of skin contact**: Wash off with soap and water.

**In case of eye contact**: Remove contact lenses. Protect unharmed eye. If eye irritation persists, consult a specialist.

**If swallowed**: Keep respiratory tract clear. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician.

### 5. FIRE-FIGHTING MEASURES

**Flash point**: Not applicable

**Autoignition temperature**: No data available

**Special protective equipment for fire-fighters**: Wear self contained breathing apparatus for fire fighting if necessary.

**Further information**: Standard procedure for chemical fires. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

**Fire and explosion protection**: Provide appropriate exhaust ventilation at places where dust is formed.
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Hazardous decomposition products : No data available.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions : Avoid dust formation.
Environmental precautions : If the product contaminates rivers and lakes or drains inform respective authorities.
Methods for cleaning up : Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Handling
Advice on safe handling : For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area.
Advice on protection against fire and explosion : Provide appropriate exhaust ventilation at places where dust is formed.

Storage
Requirements for storage areas and containers : Electrical installations / working materials must comply with the technological safety standards.
Advice on common storage : No materials to be especially mentioned.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

<table>
<thead>
<tr>
<th>LT</th>
<th>Komponentai</th>
<th>Pagrindas, bazė</th>
<th>Vertė</th>
<th>Kontrolės parametrai</th>
<th>Pastaba</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saturated monocarboxylic acid, calcium salt</td>
<td>LT</td>
<td>OEL</td>
<td>IPRD</td>
<td>5 mg/m3</td>
<td>5, 6,</td>
</tr>
</tbody>
</table>

5 Cia [taiukų] stearatas [7047-84-9], aluminio distearatas [900-92-5], aluminio tristearatas [637-12-7], amonio stearatas [1002-89-7], putulio stearatas [123-95-5], etilenglikolo monostearatas [106-11-6], etilenglikolo monostearatas [111-60-49], glicerilo monostearatas [31566-31-1], kalcio stearatas [1592-23-0], kalio stearatas [593-29-3], litlo stearatas [4485-12-5], magnio stearatas [557-04-0], natrio stearatas [822-16-2], cinko stearatas [557-05-1].
6 RD netaikomas tokiems metalų stearatams, kuriuose yra toksiškų metalų, pvz., švino.

<table>
<thead>
<tr>
<th>PT</th>
<th>Componentes</th>
<th>Bases</th>
<th>Valor</th>
<th>Parâmetros de controlo</th>
<th>Nota</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saturated monocarboxylic acid, calcium salt</td>
<td>PT</td>
<td>OEL</td>
<td>VLE-MP</td>
<td>10 mg/m3</td>
<td>(J), A4,</td>
</tr>
</tbody>
</table>

(J) NÃO inclui estearatos de metais tóxicos
A4 Agentes não classificáveis como carcinogénicos no Honem

<table>
<thead>
<tr>
<th>SE</th>
<th>Beståndsdelar</th>
<th>Grundval</th>
<th>Värde</th>
<th>Kontrollparametrar</th>
<th>Anmärkning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saturated monocarboxylic acid, calcium salt</td>
<td>SE AF</td>
<td>NGV</td>
<td>5 mg/m3</td>
<td>50, 51, II.c. Total</td>
<td></td>
</tr>
</tbody>
</table>

50 Här innefattas stearater som salter och estrar, bl.a. Aluminummonostearat [7047-84-9], Aluminiumpisterat [300-92-5],
  Aluminiumtristearat [637-12-7], Ammoniumstearat [1002-89-7], N-butylstearat [123-95-5], Dietylenglykolmonostearat [106-11-6],
  Ethylenglykolenstearat [111-60-49], Glycerolmonostearat [31566-31-1], Kaliumstearat [593-29-3],
  Lithiumstearat [4485-12-5], Magnesiumstearat [557-04-0], Natriumstearat [822-16-2], Zinkstearat [557-05-1].
51 Gränsvärden gäller inte sådana metallstearater, som innehåller tillsatta metaller, t.ex. bly.
II.c Se sidan 57 anmärkning II: Med totaldamm menas de partiklar (aerosoler) som fastnar på ett filter i den provtagare som beskrivs i

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Engineering measures
Adequate ventilation to control airborne concentrations below the exposure guidelines/limits. Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

Personal protective equipment

Respiratory protection : Wear a supplied-air NIOSH approved respirator unless ventilation or other engineering controls are adequate to maintain minimal oxygen content of 19.5% by volume under normal atmospheric pressure.

Hand protection : The suitability for a specific workplace should be discussed with the producers of the protective gloves. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

Eye protection : Safety glasses. Eye wash bottle with pure water.

Skin and body protection : Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place. Wear as appropriate: Lightweight protective clothing. Safety shoes.

Hygiene measures : General industrial hygiene practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance

<table>
<thead>
<tr>
<th>Physical state</th>
<th>Solid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>Cream to light yellow</td>
</tr>
<tr>
<td>Odor</td>
<td>Slight</td>
</tr>
</tbody>
</table>
MATERIAL SAFETY DATA SHEET

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Safety data

Flash point : Not applicable
Lower explosion limit : No data available
Upper explosion limit : No data available

Oxidizing properties : no
Autoignition temperature : No data available
Molecular formula : Mixture
Molecular Weight : Not applicable
pH : 5.5 - 8.5
Pour point : No data available
Boiling point/boiling range : Not applicable
Vapor pressure : Not applicable
Relative density : 1.4 - 1.6
Water solubility : Completely Soluble
Partition coefficient: n-octanol/water : No data available
Viscosity, kinematic : No data available
Relative vapor density : Not applicable
Evaporation rate : No data available

10. STABILITY AND REACTIVITY

Chemical stability : This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

Possibility of hazardous reactions
Conditions to avoid : No data available.
Other data : No decomposition if stored and applied as directed.

11. TOXICOLOGICAL INFORMATION

Flowzan® Biopolymer
Acute oral toxicity : LC50: not known

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Acute inhalation toxicity: LC50: not known

Acute dermal toxicity: LD50: not known

Skin irritation: No skin irritation

Eye irritation: No eye irritation

Aspiration toxicity: No aspiration toxicity classification.

Further information: No data available.

12. ECOLOGICAL INFORMATION

Elimination information (persistence and degradability)

Biodegradability: Not applicable

Additional ecological information: No data available

13. DISPOSAL CONSIDERATIONS

The information in this MSDS pertains only to the product as shipped. Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by US EPA under RCRA (40 CFR 261) or other State and local regulations. Measurement of certain physical properties and analysis for regulated components may be necessary to make a correct determination. If this material is classified as a hazardous waste, federal law requires disposal at a licensed hazardous waste disposal facility.

Contaminated packaging: Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. TRANSPORT INFORMATION

The shipping descriptions shown here are for bulk shipments only, and may not apply to shipments in non-bulk packages (see regulatory definition).

Consult the appropriate domestic or international mode-specific and quantity-specific Dangerous Goods Regulations for additional shipping description requirements (e.g., technical name or names, etc.) Therefore, the information shown here, may not always agree with the bill of lading shipping description for the material. Flashpoints for the material may vary slightly between the MSDS and the bill of lading.

US DOT (United States Department of Transportation)
NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

IMO / IMDG (International Maritime Dangerous Goods)
NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

IATA (International Air Transport Association)
NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

ADR (Agreement on Dangerous Goods by Road (Europe))
NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

RID (Regulations concerning the International Transport of Dangerous Goods (Europe))
NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

ADN (European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways)
NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

15. REGULATORY INFORMATION

National legislation

Major Accident Hazard Legislation : 96/82/EC Update: 2003 Directive 96/82/EC does not apply

Notification status

<table>
<thead>
<tr>
<th>Country</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Europe REACH</td>
<td>On the inventory, or in compliance with the inventory</td>
</tr>
<tr>
<td>United States of America US.TSCA</td>
<td>On the inventory, or in compliance with the inventory</td>
</tr>
<tr>
<td>Canada DSL</td>
<td>On the inventory, or in compliance with the inventory</td>
</tr>
<tr>
<td>Australia AICS</td>
<td>On the inventory, or in compliance with the inventory</td>
</tr>
<tr>
<td>New Zealand NZIoC</td>
<td>On the inventory, or in compliance with the inventory</td>
</tr>
<tr>
<td>Japan ENCS</td>
<td>On the inventory, or in compliance with the inventory</td>
</tr>
<tr>
<td>Korea KECI</td>
<td>On the inventory, or in compliance with the inventory</td>
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<tr>
<td>Philippines PICCS</td>
<td>On the inventory, or in compliance with the inventory</td>
</tr>
<tr>
<td>China IECSC</td>
<td>On the inventory, or in compliance with the inventory</td>
</tr>
</tbody>
</table>

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16. OTHER INFORMATION

NFPA Classification
- Health Hazard: 0
- Fire Hazard: 1
- Reactivity Hazard: 0

Further information
- Legacy MSDS Number: 463650

Significant changes since the last version are highlighted in the margin. This version replaces all previous versions.

The information in this MSDS pertains only to the product as shipped.

The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

<table>
<thead>
<tr>
<th>Key or legend to abbreviations and acronyms used in the safety data sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACGIH</td>
</tr>
<tr>
<td>AICS</td>
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<td>DSL</td>
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<td>NDSL</td>
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<td>CNS</td>
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<td>CAS</td>
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<td>EC50</td>
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<td>EOSCA</td>
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<td>EINECS</td>
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<td>MAK</td>
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<td>GHS</td>
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<tr>
<td>IC50</td>
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<tr>
<td>IARC</td>
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<td>IECSC</td>
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</tbody>
</table>

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### Substances in China

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENCS</td>
<td>Japan, Inventory of Existing and New Chemical Substances</td>
<td>TSCA</td>
<td>Toxic Substance Control Act</td>
</tr>
<tr>
<td>KECI</td>
<td>Korea, Existing Chemical Inventory</td>
<td>UVCB</td>
<td>Unknown or Variable Composition, Complex Reaction Products, and Biological Materials</td>
</tr>
<tr>
<td>&lt;=</td>
<td>Less Than or Equal To</td>
<td>WHMIS</td>
<td>Workplace Hazardous Materials Information System</td>
</tr>
<tr>
<td>LC50</td>
<td>Lethal Concentration 50%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>