

Attachment L

Drilling Mud Additives Information

Table L-1 Line 3 Replacement Project Proposed Drilling Mud Additives						
Trade Name	Vendor	Primary Application	Dosage Rates (per 1,000 gallons)	Composition	Sulfate (%)	NSF/ANSI 60 Certified (Yes or No) ^a
AMC Gel	DCS Fluid Solutions	Bentonite gellant and viscosifier	200 to 400 lbs	<ul style="list-style-type: none"> • >94% bentonite • <0.5% acrylamide homopolymer • <0.5 sodium carbonate • 1-6% silica crystalline - quartz 	0%	Yes
Clay Breaker	DCS Fluid Solutions	Clay inhibitor and flocculent	5 to 15 lbs	<ul style="list-style-type: none"> • Trade Secret ^b 	0%	Yes, for dry powder
Polymud	DCS Fluid Solutions	Clay inhibitor and viscosifier	3 to 4.5 quarts	<ul style="list-style-type: none"> • 30-40% mineral oil 	0%	No
Sandmaster	DCS Fluid Solutions	Gel strength enhancer / formation stabilizer and viscosifier	5 to 10 lbs	<ul style="list-style-type: none"> • xanthan gum 	0%	No
TorqBreaker	DCS Fluid Solutions	Surfactant, lubricant/torque reducer	0.5 to 1 gallon	<ul style="list-style-type: none"> • <5.0% alkyl dimethyl ammonium chloride • <3% ethanolamine 	0%	No
SealPac	DCS Fluid Solutions	Filtrate reducer and formation stabilizer	5 to 10 lbs	<ul style="list-style-type: none"> • 60-100% polysaccharide 	0%	No
Barakade Bentonite	Drill Mud Direct (Halliburton)	High yield Wyoming bentonite	150 to 200 lbs	<ul style="list-style-type: none"> • 1-5% Crystalline silica, quartz 	0%	Yes
EZ Mud Gold	Drill Mud Direct (Halliburton)	Polymer for shale and clay control	10 to 20 lbs	<ul style="list-style-type: none"> • Contains no hazardous substances 	0%	Yes
Power PAC L	Drill Mud Direct (Halliburton)	Wall cake enhancer, bore wall stabilizer	10 lbs	<ul style="list-style-type: none"> • 60-100% polysaccharide 	0%	Yes
Power Swell	Drill Mud Direct (Halliburton)	Polymer for shale and clay control	50 to 150 lbs	<ul style="list-style-type: none"> • Contains no hazardous substances 	0%	No
Power Thin	Drill Mud Direct (Halliburton)	Clay cutter, mud thinner	4 gallons	<ul style="list-style-type: none"> • Contains no hazardous substances 	0%	Yes
Power XAN	Drill Mud Direct (Halliburton)	Suspension booster, hole cleaning aid	10 lbs	<ul style="list-style-type: none"> • 60-100% xanthan gum 	0%	Yes
Star Plex	Drill Mud Direct (Halliburton)	Rheology enhancer	12 lbs	<ul style="list-style-type: none"> • Magnesium compound (% trade secret) ^b • Sodium compound (% trade secret) ^b • Aluminum compound (% trade secret) ^b 	0%	No
Lubra Star Plus	Drill Mud Direct (Halliburton)	Torque/friction reducer, mud lubricant, cuttings lubricant	10 gallons	<ul style="list-style-type: none"> • Trade Secret ^b 	0%	No
Magma Fiber LCM	Drill Mud Direct (Halliburton)	Fibrous sealing, plugging, seepage loss control	50 to 150 lbs	<ul style="list-style-type: none"> • Mineral fiber 	0%	Yes

Table L-1 Line 3 Replacement Project Proposed Drilling Mud Additives						
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Power Soda Ash/Soda Ash	Drill Mud Direct (Halliburton)	Condition Water / Control pH	4 lbs to raise pH by 1	<ul style="list-style-type: none"> 60-100% Sodium carbonate 	0%	Yes
DrilPlex HDD ^c	M I Swaco	Fluid loss control	6 to 50 lbs	<ul style="list-style-type: none"> 30 - 60% Sodium carbonate 1-5% Calcium hydroxide 	0%	Yes
^a The NSF/ANSI 60 Standard establishes minimum health effects requirements for the chemicals, the chemical contaminants, and the impurities that are directly added to drinking water from drinking water treatment chemicals. For more information, refer to: http://www.nsf.org/newsroom_pdf/NSF-ANSI_60_watermarked.pdf . ^b Enbridge's contractors has provided a letter directly to the MPCA with drilling mud additive chemical composition information and to request that the MPCA classify the data as non-public per Minnesota Statute 7000.1300, subpart 1. ^c This additive was approved by the MPCA for use on the Alberta Clipper Pipeline Project.						



AMC GEL

AMC

Chemwatch: 42071

Version No: 11.1.1.1

Safety Data Sheet according to WHS and ADG requirements

Chemwatch Hazard Alert Code: 3

Issue Date: 07/07/2017

Print Date: 02/02/2018

L.GHS.AUS.EN

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

Product Identifier

Product name	AMC GEL
Other means of identification	Not Available

Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses	Drilling fluid compound; viscosifier.
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Details of the supplier of the safety data sheet

Registered company name	AMC
Address	216 Balcatta Rd Balcatta WA 6021 Australia
Telephone	+61 8 9445 4000
Fax	+61 8 9445 4040
Website	www.amcmud.com
Email	amc@imdexlimited.com

Emergency telephone number

Association / Organisation	Not Available
Emergency telephone numbers	1800 039 008 or +61 3 9573 3112,+800 2436 2255 +613 9573 3112
Other emergency telephone numbers	Not Available

SECTION 2 HAZARDS IDENTIFICATION

Classification of the substance or mixture

HAZARDOUS CHEMICAL. NON-DANGEROUS GOODS. According to the WHS Regulations and the ADG Code.

CHEMWATCH HAZARD RATINGS


	Min	Max
Flammability	0	
Toxicity	1	
Body Contact	0	
Reactivity	0	
Chronic	3	

0 = Minimum
1 = Low
2 = Moderate
3 = High
4 = Extreme

Poisons Schedule	Not Applicable
Classification ^[1]	Carcinogenicity Category 1A, Specific target organ toxicity - repeated exposure Category 1
Legend:	1. Classified by Chemwatch; 2. Classification drawn from HSIS ; 3. Classification drawn from EC Directive 1272/2008 - Annex VI

AMC GEL

Label elements

Hazard pictogram(s)	
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SIGNAL WORD

DANGER

Hazard statement(s)

H350	May cause cancer.
H372	Causes damage to organs through prolonged or repeated exposure.

Precautionary statement(s) Prevention

P201	Obtain special instructions before use.
P260	Do not breathe dust/fume/gas/mist/vapours/spray.

Precautionary statement(s) Response

P308+P313	IF exposed or concerned: Get medical advice/attention.
P314	Get medical advice/attention if you feel unwell.

Precautionary statement(s) Storage

P405	Store locked up.
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Precautionary statement(s) Disposal

P501	Dispose of contents/container in accordance with local regulations.
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SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

Substances

See section below for composition of Mixtures

Mixtures

CAS No	%[weight]	Name
1302-78-9	>94	<u>bentonite</u>
9003-05-8	<0.5	<u>acrylamide homopolymer</u>
497-19-8	<0.5	<u>sodium carbonate</u>
14808-60-7	1-6	<u>silica crystalline - quartz</u>

SECTION 4 FIRST AID MEASURES

Description of first aid measures

Eye Contact	<p>If this product comes in contact with the eyes:</p> <ul style="list-style-type: none"> Wash out immediately with fresh running water. Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids. Seek medical attention without delay; if pain persists or recurs seek medical attention. Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.
Skin Contact	<p>If skin or hair contact occurs:</p> <ul style="list-style-type: none"> Flush skin and hair with running water (and soap if available). Seek medical attention in event of irritation.
Inhalation	<ul style="list-style-type: none"> If fumes or combustion products are inhaled remove from contaminated area. Lay patient down. Keep warm and rested. Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures. Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary. Transport to hospital, or doctor. If dust is inhaled, remove from contaminated area. Encourage patient to blow nose to ensure clear breathing passages.

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	<ul style="list-style-type: none"> ▶ Ask patient to rinse mouth with water but to not drink water. ▶ Seek immediate medical attention.
Ingestion	<ul style="list-style-type: none"> ▶ Immediately give a glass of water. ▶ First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.

Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5 FIREFIGHTING MEASURES

Extinguishing media

- ▶ There is no restriction on the type of extinguisher which may be used.
- ▶ Use extinguishing media suitable for surrounding area.

Special hazards arising from the substrate or mixture

Fire Incompatibility	None known.
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Advice for firefighters

Fire Fighting	<ul style="list-style-type: none"> ▶ Alert Fire Brigade and tell them location and nature of hazard. ▶ Wear breathing apparatus plus protective gloves in the event of a fire.
Fire/Explosion Hazard	<ul style="list-style-type: none"> ▶ Non combustible. ▶ Not considered a significant fire risk, however containers may burn.
HAZCHEM	Not Applicable

SECTION 6 ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

See section 8

Environmental precautions

See section 12

Methods and material for containment and cleaning up

Minor Spills	<ul style="list-style-type: none"> ▶ Clean up waste regularly and abnormal spills immediately. ▶ Avoid breathing dust and contact with skin and eyes.
Major Spills	<ul style="list-style-type: none"> ▶ Clear area of personnel and move upwind. ▶ Alert Fire Brigade and tell them location and nature of hazard.

Personal Protective Equipment advice is contained in Section 8 of the SDS.

SECTION 7 HANDLING AND STORAGE

Precautions for safe handling

Safe handling	<ul style="list-style-type: none"> ▶ Avoid all personal contact, including inhalation. ▶ Wear protective clothing when risk of exposure occurs.
Other information	<ul style="list-style-type: none"> ▶ Store in original containers. ▶ Keep containers securely sealed.

Conditions for safe storage, including any incompatibilities

Suitable container	<ul style="list-style-type: none"> ▶ Polyethylene or polypropylene container. ▶ Check all containers are clearly labelled and free from leaks.
Storage incompatibility	<p>Silicas:</p> <ul style="list-style-type: none"> ▶ react with hydrofluoric acid to produce silicon tetrafluoride gas ▶ react with xenon hexafluoride to produce explosive xenon trioxide ▶ reacts exothermically with oxygen difluoride, and explosively with chlorine trifluoride (these halogenated materials are not commonplace industrial materials) and other fluorine-containing compounds ▶ may react with fluorine, chlorates ▶ are incompatible with strong oxidisers, manganese trioxide, chlorine trioxide, strong alkalis, metal oxides, concentrated orthophosphoric acid, vinyl acetate ▶ may react vigorously when heated with alkali carbonates.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters

OCCUPATIONAL EXPOSURE LIMITS (OEL)

INGREDIENT DATA

Source	Ingredient	Material name	TWA	STEL	Peak	Notes
Australia Exposure Standards	silica crystalline - quartz	Silica - Crystalline	Not Available	Not Available	Not Available	Not Available
Australia Exposure Standards	silica crystalline - quartz	Quartz (respirable dust)	0.1 mg/m3	Not Available	Not Available	Not Available
Australia Exposure Standards	silica crystalline - quartz	Quartz (respirable dust)	0.1 mg/m3	Not Available	Not Available	Not Available


EMERGENCY LIMITS

Ingredient	Material name	TEEL-1	TEEL-2	TEEL-3
bentonite	Montmorillonite	30 mg/m3	330 mg/m3	2,000 mg/m3
sodium carbonate	Sodium carbonate	7.6 mg/m3	83 mg/m3	500 mg/m3
silica crystalline - quartz	Silica, crystalline-quartz; (Silicon dioxide)	0.075 mg/m3	33 mg/m3	200 mg/m3

Ingredient	Original IDLH	Revised IDLH
bentonite	Not Available	Not Available
acrylamide homopolymer	Not Available	Not Available
sodium carbonate	Not Available	Not Available
silica crystalline - quartz	Not Available	Not Available

MATERIAL DATA

Exposure controls

Appropriate engineering controls	Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.
Personal protection	
Eye and face protection	<ul style="list-style-type: none"> ▸ Safety glasses with side shields ▸ Chemical goggles. ▸ Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants.
Skin protection	See Hand protection below
Hands/feet protection	<p>The selection of suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer. Where the chemical is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application. Experience indicates that the following polymers are suitable as glove materials for protection against undissolved, dry solids, where abrasive particles are not present.</p> <ul style="list-style-type: none"> ▸ polychloroprene.
Body protection	See Other protection below
Other protection	<ul style="list-style-type: none"> ▸ Employees working with confirmed human carcinogens should be provided with, and be required to wear, clean, full body protective clothing (smocks, coveralls, or long-sleeved shirt and pants), shoe covers and gloves prior to entering the regulated area. [AS/NZS ISO 6529:2006 or national equivalent] ▸ Employees engaged in handling operations involving carcinogens should be provided with, and required to wear and use half-face filter-type respirators with filters for dusts, mists and fumes, or air purifying canisters or cartridges. ▸ Prior to each exit from an area containing confirmed human carcinogens, employees should be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers must be identified with suitable labels. ▸ Overalls. ▸ P.V.C.
Thermal hazards	Not Available

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Recommended material(s)

GLOVE SELECTION INDEX

Glove selection is based on a modified presentation of the:

"Forsberg Clothing Performance Index".

The effect(s) of the following substance(s) are taken into account in the **computer-generated** selection:

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Material	CPI
NATURAL RUBBER	C
NITRILE	C

* CPI - Chemwatch Performance Index

A: Best Selection

B: Satisfactory; may degrade after 4 hours continuous immersion

C: Poor to Dangerous Choice for other than short term immersion

NOTE: As a series of factors will influence the actual performance of the glove, a final selection must be based on detailed observation. -

* Where the glove is to be used on a short term, casual or infrequent basis, factors such as "feel" or convenience (e.g. disposability), may dictate a choice of gloves which might otherwise be unsuitable following long-term or frequent use. A qualified practitioner should be consulted.

Respiratory protection

Particulate. (AS/NZS 1716 & 1715, EN 143:2000 & 149:001, ANSI Z88 or national equivalent)

If inhalation risk above the TLV exists, wear approved dust respirator.

Use respirators with protection factors appropriate for the exposure level.

- ▶ Up to 5 X TLV, use valveless mask type; up to 10 X TLV, use 1/2 mask dust respirator
- ▶ Up to 50 X TLV, use full face dust respirator or demand type C air supplied respirator
- ▶ Up to 500 X TLV, use powered air-purifying dust respirator or a Type C pressure demand supplied-air respirator
- ▶ Over 500 X TLV wear full-face self-contained breathing apparatus with positive pressure mode or a combination respirator with a Type C positive pressure supplied-air full-face respirator and an auxiliary self-contained breathing apparatus operated in pressure demand or other positive pressure mode
- ▶ Respirators may be necessary when engineering and administrative controls do not adequately prevent exposures.
- ▶ The decision to use respiratory protection should be based on professional judgment that takes into account toxicity information, exposure measurement data, and frequency and likelihood of the worker's exposure - ensure users are not subject to high thermal loads which may result in heat stress or distress due to personal protective equipment (powered, positive flow, full face apparatus may be an option).
- ▶ Published occupational exposure limits, where they exist, will assist in determining the adequacy of the selected respiratory protection. These may be government mandated or vendor recommended.
- ▶ Certified respirators will be useful for protecting workers from inhalation of particulates when properly selected and fit tested as part of a complete respiratory protection program.
- ▶ Use approved positive flow mask if significant quantities of dust becomes airborne.
- ▶ Try to avoid creating dust conditions.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	Bentonite clay (powder) varying in colour from grey to various shades of brown, insoluble in water.		
Physical state	Divided Solid	Relative density (Water = 1)	Not Available
Odour	Not Available	Partition coefficient n-octanol / water	Not Available
Odour threshold	Not Available	Auto-ignition temperature (°C)	Not Applicable
pH (as supplied)	Not Applicable	Decomposition temperature	Not Available
Melting point / freezing point (°C)	Not Available	Viscosity (cSt)	Not Applicable
Initial boiling point and boiling range (°C)	Not Available	Molecular weight (g/mol)	Not Applicable
Flash point (°C)	Not Applicable	Taste	Not Available
Evaporation rate	Not Applicable	Explosive properties	Not Available
Flammability	Not Applicable	Oxidising properties	Not Available
Upper Explosive Limit (%)	Not Applicable	Surface Tension (dyn/cm or mN/m)	Not Applicable
Lower Explosive Limit (%)	Not Applicable	Volatile Component (%vol)	Not Applicable
Vapour pressure (kPa)	Not Applicable	Gas group	Not Available
Solubility in water (g/L)	Immiscible	pH as a solution (1%)	Not Applicable
Vapour density (Air = 1)	Not Applicable	VOC g/L	Not Available

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SECTION 10 STABILITY AND REACTIVITY

Reactivity	See section 7
Chemical stability	<ul style="list-style-type: none"> Unstable in the presence of incompatible materials. Product is considered stable.
Possibility of hazardous reactions	See section 7
Conditions to avoid	See section 7
Incompatible materials	See section 7
Hazardous decomposition products	See section 5

SECTION 11 TOXICOLOGICAL INFORMATION

Information on toxicological effects

Inhaled	Inhalation of dusts, generated by the material during the course of normal handling, may be damaging to the health of the individual. Effects on lungs are significantly enhanced in the presence of respirable particles. Overexposure to respirable dust may produce wheezing, coughing and breathing difficulties leading to or symptomatic of impaired respiratory function.
Ingestion	The material has NOT been classified by EC Directives or other classification systems as "harmful by ingestion". This is because of the lack of corroborating animal or human evidence.
Skin Contact	The material is not thought to produce adverse health effects or skin irritation following contact (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting. Open cuts, abraded or irritated skin should not be exposed to this material
Eye	Although the material is not thought to be an irritant (as classified by EC Directives), direct contact with the eye may cause transient discomfort characterised by tearing or conjunctival redness (as with windburn). Slight abrasive damage may also result.
Chronic	On the basis of epidemiological data, the material is regarded as carcinogenic to humans. There is sufficient data to establish a causal association between human exposure to the material and the development of cancer. Toxic: danger of serious damage to health by prolonged exposure through inhalation. The health hazards associated with bentonite, kaolin, and common clay, which are commercially important clay products, as well as the related phyllosilicate minerals montmorillonite, kaolinite, and illite, have an extensive literature. Fibrous clay minerals, such as sepiolite, attapulgite, and zeolites, have a separate literature. Chronic symptoms produced by crystalline silicas included decreased vital lung capacity and chest infections. Lengthy exposure may cause silicosis a disabling form of pneumoconiosis which may lead to fibrosis, a scarring of the lining of the air sacs in the lung. Overexposure to respirable dust may cause coughing, wheezing, difficulty in breathing and impaired lung function. Chronic symptoms may include decreased vital lung capacity, chest infections Repeated exposures, in an occupational setting, to high levels of fine- divided dusts may produce a condition known as pneumoconiosis which is the lodgement of any inhaled dusts in the lung irrespective of the effect.

AMC GEL	TOXICITY	IRRITATION
	Not Available	Not Available
bentonite	TOXICITY	IRRITATION
	dermal (rat) LD50: >2000 mg/kg ^[1]	Not Available
	Inhalation (rat) LC50: >50 mg/l1 h ^[1]	
	Oral (rat) LD50: >2000 mg/kg ^[1]	
	Oral (rat) LD50: >5000 mg/kg ^[1]	
acrylamide homopolymer	TOXICITY	IRRITATION
	Inhalation (rat) LC50: 5.7125 mg/l/30M ^[2]	Eye: slight
	Oral (rat) LD50: >2000 mg/kg ^[2]	
sodium carbonate	TOXICITY	IRRITATION
	dermal (rat) LD50: >2000 mg/kg ^[2]	Eye (rabbit): 100 mg/24h moderate
	Inhalation (guinea pig) LC50: 0.4 mg/l/2h ^[2]	Eye (rabbit): 100 mg/30s mild
	Oral (rat) LD50: 2800 mg/kg ^[2]	Eye (rabbit): 50 mg SEVERE

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	Skin (rabbit): 500 mg/24h mild	
silica crystalline - quartz	TOXICITY	IRRITATION
	Not Available	Not Available
Legend:	1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2. * Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances	

BENTONITE	<p>Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound.</p> <p>No significant acute toxicological data identified in literature search.</p> <p>for bentonite clays:</p> <p>Bentonite (CAS No. 1302-78-9) consists of a group of clays formed by crystallisation of vitreous volcanic ashes that were deposited in water.</p> <p>The expected acute oral toxicity of bentonite in humans is very low (LD50>15 g/kg).</p>
ACRYLAMIDE HOMOPOLYMER	Sensitisation (guinea pig): 0% (0/20) OECD 406
SILICA CRYSTALLINE - QUARTZ	<p>WARNING: For inhalation exposure <u>ONLY</u>: This substance has been classified by the IARC as Group 1: CARCINOGENIC TO HUMANS</p> <p>The International Agency for Research on Cancer (IARC) has classified occupational exposures to respirable (<5 µm) crystalline silica as being carcinogenic to humans. This classification is based on what IARC considered sufficient evidence from epidemiological studies of humans for the carcinogenicity of inhaled silica in the forms of quartz and cristobalite.</p>

Acute Toxicity	☐	Carcinogenicity	✓
Skin Irritation/Corrosion	☐	Reproductivity	☐
Serious Eye Damage/Irritation	☐	STOT - Single Exposure	☐
Respiratory or Skin sensitisation	☐	STOT - Repeated Exposure	✓
Mutagenicity	☐	Aspiration Hazard	☐

Legend: ✗ – Data available but does not fill the criteria for classification

✓ – Data available to make classification

☐ – Data Not Available to make classification

SECTION 12 ECOLOGICAL INFORMATION

Toxicity

AMC GEL	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	Not Available	Not Available	Not Available	Not Available	Not Available
bentonite	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	LC50	96	Fish	19000mg/L	4
acrylamide homopolymer	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	Not Available	Not Available	Not Available	Not Available	Not Available
sodium carbonate	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	LC50	96	Fish	300mg/L	4
	EC50	48	Crustacea	=176mg/L	1
	EC50	96	Algae or other aquatic plants	242mg/L	4
	NOEC	16	Crustacea	424mg/L	4
silica crystalline - quartz	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	Not Available	Not Available	Not Available	Not Available	Not Available

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Legend: Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. EPIWIN Suite V3.12 (QSAR) - Aquatic Toxicity Data (Estimated) 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data

DO NOT discharge into sewer or waterways.

May be harmful to fauna if not disposed of according to Section 13 and legislative requirements. [AMC]

Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
acrylamide homopolymer	LOW	LOW
sodium carbonate	LOW	LOW

Bioaccumulative potential

Ingredient	Bioaccumulation
acrylamide homopolymer	LOW (LogKOW = -0.8074)
sodium carbonate	LOW (LogKOW = -0.4605)

Mobility in soil

Ingredient	Mobility
acrylamide homopolymer	LOW (KOC = 10.46)
sodium carbonate	HIGH (KOC = 1)

SECTION 13 DISPOSAL CONSIDERATIONS

Waste treatment methods

Product / Packaging disposal	Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. <ul style="list-style-type: none">▶ DO NOT allow wash water from cleaning or process equipment to enter drains.▶ It may be necessary to collect all wash water for treatment before disposal.▶ Recycle wherever possible or consult manufacturer for recycling options.▶ Consult State Land Waste Management Authority for disposal.
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SECTION 14 TRANSPORT INFORMATION

Labels Required

Marine Pollutant	NO
HAZCHEM	Not Applicable

Land transport (ADG): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Air transport (ICAO-IATA / DGR): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Sea transport (IMDG-Code / GGVSee): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Transport in bulk according to Annex II of MARPOL and the IBC code

Not Applicable

SECTION 15 REGULATORY INFORMATION

Safety, health and environmental regulations / legislation specific for the substance or mixture

BENTONITE(1302-78-9) IS FOUND ON THE FOLLOWING REGULATORY LISTS

Australia Inventory of Chemical Substances (AICS)

ACRYLAMIDE HOMOPOLYMER(9003-05-8) IS FOUND ON THE FOLLOWING REGULATORY LISTS

Australia Inventory of Chemical Substances (AICS)

SODIUM CARBONATE(497-19-8) IS FOUND ON THE FOLLOWING REGULATORY LISTS

AMC GEL

Australia Hazardous Substances Information System - Consolidated Lists

Australia Inventory of Chemical Substances (AICS)

SILICA CRYSTALLINE - QUARTZ(14808-60-7) IS FOUND ON THE FOLLOWING REGULATORY LISTS

Australia Exposure Standards

Australia Hazardous Substances Information System - Consolidated Lists

Australia Inventory of Chemical Substances (AICS)

International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs

National Inventory	Status
Australia - AICS	Y
Canada - DSL	Y
Canada - NDSL	N (bentonite; silica crystalline - quartz; acrylamide homopolymer; sodium carbonate)
China - IECSC	N (acrylamide homopolymer)
Europe - EINEC / ELINCS / NLP	N (acrylamide homopolymer)
Japan - ENCS	N (bentonite)
Korea - KECI	Y
New Zealand - NZIoC	Y
Philippines - PICCS	Y
USA - TSCA	Y
Legend:	Y = All ingredients are on the inventory N = Not determined or one or more ingredients are not on the inventory and are not exempt from listing(see specific ingredients in brackets)

SECTION 16 OTHER INFORMATION

Other information

Ingredients with multiple cas numbers

Name	CAS No
bentonite	1302-78-9, 11004-12-9, 10043-07-9, 115628-71-2, 12198-92-4, 12199-69-8, 135945-01-6, 37320-72-2, 52623-66-2, 850872-77-4, 67479-91-8, 89382-86-5, 90989-60-9, 85049-30-5, 97862-66-3, 84776-12-5, 70131-50-9, 90989-59-6
sodium carbonate	497-19-8, 7542-12-3, 1314087-39-2, 1332-57-6
silica crystalline - quartz	14808-60-7, 122304-48-7, 122304-49-8, 12425-26-2, 1317-79-9, 70594-95-5, 87347-84-0, 308075-07-2

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings.

Definitions and abbreviations

PC—TWA: Permissible Concentration-Time Weighted Average
PC—STEL: Permissible Concentration-Short Term Exposure Limit
IARC: International Agency for Research on Cancer
ACGIH: American Conference of Governmental Industrial Hygienists
STEL: Short Term Exposure Limit
TEEL: Temporary Emergency Exposure Limit.
IDLH: Immediately Dangerous to Life or Health Concentrations
OSF: Odour Safety Factor
NOAEL :No Observed Adverse Effect Level
LOAEL: Lowest Observed Adverse Effect Level
TLV: Threshold Limit Value
LOD: Limit Of Detection
OTV: Odour Threshold Value
BCF: BioConcentration Factors
BEI: Biological Exposure Index

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1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT IDENTIFIER: Clay Breaker
PRODUCT NAME: Quaternary Ammonium Compound
RECOMMENDED USE: Clay stabilizer in industrial applications
SUPPLIER: DCS Fluid Solutions, LP
P.O. Box 1027
Graham, TX 76450
(940) 521-0400
www.dcsmud.com
24-HOUR EMERGENCY TELEPHONE: 940-521-0400

2. HAZARDS IDENTIFICATION

CLASSIFICATION: Acute toxicity 4, Oral
SIGNAL WORD: Warning
HAZARD STATEMENTS: Harmful if swallowed.
SYMBOLS:



PRECAUTIONARY STATEMENTS: Do not eat, drink or smoke when using this product.
Wash thoroughly after handling.
Avoid contact with eye, skin and clothing.
Wear protective gloves, splash apron, safety glasses or chemical safety goggles.
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
IF ON SKIN (or hair): Remove immediately all contaminated clothing. Rinse skin with water. Wash contaminated clothing before reuse.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If you feel unwell, or irritation of eye/skin persists, call a POISON CENTER or physician.
Store locked up in closed containers at moderate temperatures.
Dispose of contents and container in accordance with local, state, and federal regulations.

3. COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL NAME:
Trade secret

CAS No.:
Trade secret

WEIGHT %:
25



Water

7732-18-5

75

4. FIRST-AID MEASURES

General: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible). If breathing has stopped, trained personnel should begin rescue breathing or, if the heart has stopped, immediately, start cardiopulmonary resuscitation (CPR) or automated external defibrillator.

Inhalation: When symptoms occur: go into open air and ventilate suspected area. Obtain medical attention if breathing difficulty persists.

Skin Contact: Remove contaminated clothing. Drench affected area with water for at least 15 minutes. Obtain medical attention if irritation develops or persists.

Eye Contact: Rinse cautiously with water for several minutes. Remove contact lenses if present, and easy to do. Continue rinsing. Obtain medical attention if irritation persists.

Ingestion: Rinse mouth. Do NOT induce vomiting. Get immediate medical attention.

Note to physician: No specific treatment. Treat according to symptoms present.

5. FIREFIGHTING MEASURES

Extinguishing Media:

Suitable Extinguishing Media: Use appropriate extinguishing media for the surrounding fire. The product is not flammable.

Unsuitable Extinguishing Media: Not applicable.

Specific Hazards:

No unusual fire or explosion hazards noted.

Special Protective Equipment and Precautions for Fire-Fighters:

Fire-fighters should wear full fire-fighting gear including self-contained breathing apparatus.

Keep containers cool using water spray or fog.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions:

Avoid contact with skin, eyes and clothing. Provide adequate ventilation. Use personal protective equipment (PPE) specified in Section 8.

Environmental Precautions:

Prevent spilled material from entering sewers, storm drains and public waters.

Methods for Containment:



Stop spill/release if it can be done safely. Contain spills with dikes of sand, earth or other absorbents to prevent migration and entry into the environment and waterways. Local authorities should be advised if significant spillages cannot be contained.

Methods for Cleanup:

Clean up spills immediately. Keep area well ventilated. Flush area with water. Do NOT wash into sewer. Recover as much of the solution as possible by vacuum. Absorb remaining solution with inert, non-combustible material. Place in suitable salvage containers. Dispose of waste in accordance with local, state and federal regulations in a chemical waste landfill.

7. HANDLING AND STORAGE

Handling Precautions:

Always wear recommended personal protection equipment. Do not get in eyes, on skin or clothing. Do not swallow. Use with adequate ventilation. Eating, drinking and smoking in work areas is prohibited.

Hygienic Work Practices:

Use good personal hygiene practices. Wash hands and skin thoroughly after handling. Promptly remove contaminated clothing and wash before reuse. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.

Storage Precautions:

Keep containers tightly closed and properly labeled. Store in cool, dry, well-ventilated area away from heat, sources of ignition and direct sunlight. Keep container closed when not in use. Keep in original container. Store containers in upright position. Since emptied containers retain product residue, follow hazard precautions even when empty.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Limits:

No Occupational Exposure Limits (OELs) have been established for this product or its chemical components.

Appropriate Engineering Controls:

Ensure adequate ventilation.

Emergency eye wash and safety showers should be available in the immediate vicinity of any potential exposure.

Personal Protective Equipment:

Eye Protection – Wear chemical safety glasses or safety goggles.

Skin Protection – Wear chemical resistant gloves and splash apron.

Respiratory Protection – Ensure adequate ventilation.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Colorless to amber liquid
Odor:	Very faint
Odor Threshold:	Not available
pH:	6.5 to 9.0



Melting Point/Freezing Point:	Not available / 16° F
Boiling Point:	>212° F
Flash Point:	>201° F
Evaporation Rate:	Not available
Flammability:	Not available
Upper Flammability Limit:	Not available
Lower Flammability Limit:	Not available
Vapor Pressure:	Not available
Vapor Density:	Not available
Relative Density:	1.01 - 1.03 Specific Gravity
Solubility:	Complete in water
Partition Coefficient:	Not available
Auto-Ignition Temperature:	Not available
Decomposition Temperature:	Not available
Viscosity:	Not available

10. STABILITY AND REACTIVITY

Reactivity: Hazardous reactions will not occur under normal conditions.

Chemical Stability: Stable under normal conditions.

Possibility of Hazardous Reactions: Hazardous polymerization will not occur.

Conditions to Avoid: Avoid temperatures exceeding flash point and contact with incompatible material.

Incompatible Materials: Strong oxidizing agents. Strong bases.

Hazardous Decomposition Products: Irritants. Toxic gas. Hydrogen chloride. May include oxides of carbon & nitrogen.

11. TOXICOLOGICAL INFORMATION

Routes of Exposure:

Inhalation: Prolonged inhalation may be harmful.

Ingestion: Harmful if swallowed. May cause nausea, vomiting, diarrhea or more severe symptoms.

Skin Contact: Not a dermal irritant.

Eye Contact: Not an ocular irritant.

Acute Toxicity: Harmful if swallowed

LD50 and LC50: Acute LD50: 1000 – 4000 mg/kg, Rat, Oral

Respiratory or Skin Sensitization: No data available

Carcinogenicity: Not considered a carcinogen by IARC, ACGIH, NTP, or OSHA.

Reproductive Toxicity: Not expected to be hazardous by OSHA criteria.

Germ Cell Mutagenicity: No data available

Specific Target Organ Toxicity – Single Exposure: No data available

Specific Target Organ Toxicity – Repeated Exposure: No data available

Aspiration Hazard: Not classified

12. ECOLOGICAL INFORMATION

Ecotoxicity: Not classified

Persistence and Degradability:



Safety Data Sheet
ClayBreaker

SDS – CB - (Revision Date 5/15/15)

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ClayBreaker has a biodegradation percentage of 85.2% and is considered to have ready biodegradability. Test of ready biodegradability are stringent tests that provide limited opportunity for acclimation and biodegradation to occur. A positive result in a test of ready biodegradability is an indication that the test substance will undergo rapid and ultimate biodegradation in the environment. OECD Guideline 301B has set the standard for ready biodegradability at 60%.

ClayBreaker exceeds this standard for environmental friendliness.

Bioaccumulative Potential: Not established

Mobility in Soil: No data available

Other Adverse Effects: No adverse environmental effects are expected from this product.

13. DISPOSAL CONSIDERATIONS

Follow approved local beneficial reuse guidelines for uncontaminated spent drilling fluids. If contaminated, dispose of in a licensed industrial landfill according to local, state and federal regulations. If released to the environment for other than its intended purpose, this product does not meet, in its present state, the definition of a hazardous waste under 40 CFR 261. Under RCRA it is the responsibility of the user of the product to determine at the time of disposal whether the product meets RCRA criteria for hazardous waste. Waste management should be in full compliance with federal, state and local laws.

Empty containers retain product residue which may exhibit hazards of material. Do not use for other purposes. Return containers to reclamation centers for proper cleaning and reuse.

14. TRANSPORTATION INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION (DOT):

Not regulated as dangerous goods.

CANADIAN TRANSPORTATION OF DANGEROUS GOODS (TDG):

Not regulated as dangerous goods.

IMDG:

Not regulated as dangerous goods.

IATA:

Not regulated as dangerous goods.

15. REGULATORY INFORMATION

OSHA: This product is listed as a hazardous material under the criteria of Federal OSHA Hazard Communication Standard, 29 CFR 1910.1200. We request that you make all information in the Material Safety Data Sheet available to your employees.

TSCA: All components are on the TSCA Inventory List.

CERCLA: No reportable quantity.

SARA TITLE III:

Extremely Hazardous Substance (EHS):

No

Section 312 (Tier II) Ratings:

Immediate (acute) health hazard

Section 313:

Not applicable



RCRA: No

Canada WHMIS: Not on inventory

16. OTHER INFORMATION

CURRENT ISSUE DATE: May 15, 2015

Updated to comply with new GHS standard and SDS requirements of OSHA Hazard Communication Standard 29 CFR 1910.1200.

DCS Fluids Solutions, LP believes the information contained in this material safety data sheet is accurate based on the information supplied by reputable suppliers of our raw materials. We cannot make any assertions as to its reliability or completeness; therefore, the user may rely on it only at user's risk. We have made no effort to censor or conceal deleterious aspects of this product. Since we cannot anticipate or control the conditions under which this information and product may be used, we make no guarantee that the precautions we have suggested will be adequate for all individuals and/or situations. It is the obligation of each user of this product to comply with the requirements of all applicable laws regarding use and disposal of this product. No warranty, either expressed or implied, or liability of any nature with respect to this product or to the data herein is made or incurred hereunder.



SAFETY DATA SHEET

1. Identification

Product Identifier
Recommended use
Recommended restrictions
Manufacturer/Importer/Supplier/Distributor
information
Manufacturer

POLYMUD Liquid

Not available

None known

Company name

DCS Fluid Solutions

Address

PO Box 1027, Graham,

TX 76450

Phone

940-521-0500

Website

www.dcsmud.com

Email

don@dcsmud.com / randy@dcsmud.com

Emergency phone number

940-768-8071

2. Hazard(s) Identification

Physical hazards

Not classified

Health hazards

Not classified

Environmental hazards

Not classified

OSHA defined hazards

Not classified

Label elements

Hazard symbol



Signal word

Warning

Hazard statement

Causes skin irritation.

Precautionary statement

Wash hands thoroughly after handling.

Wear protective gloves/ protective clothing/ eye protection/
face protection. Wash with plenty of soap and water.

If skin irritation occurs: Get medical advice/ attention.

Take off contaminated clothing. Dispose of contents/container
as special waste in compliance with local and national
regulations.

Prevention

Wear protective gloves/ protective clothing/ eye protection/
face protection.

Response

Wash hands after handling.

Storage

Store away from incompatible materials.

Disposal

Dispose of waste and residues in accordance with local
authority requirements.

Material name: POLYMUD

Date prepared: April 5, 2016

Date revised: September 18, 2017

Version number: 02

Hazard(s) not otherwise classified (HNOC)
Supplemental information

Combustible
None

3. Composition/Information of Ingredients

Mixtures

Chemical Name	Common name and synonyms	CAS Number	%
Mineral Oil		8042-47-5	30-<40
Other components below reportable levels			60-<70

*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. First Aid Measures

Inhalation

Move to fresh air. Call a physician if symptoms develop or persist.

Skin contact

Wash off with soap and water. Get medical attention if irritation develops and persists.

Eye contact

Rinse with water. Get medical attention if irritation develops and persists.

Ingestion

Rinse mouth. Do not induce vomiting without advice from poison control center. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.

Most important symptoms, effects, acute and delayed

Direct contact with eyes may cause temporary irritation.

Indication of immediate medical attention and special treatment needed

Treat symptomatically.

General information

Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire Fighting Measures

Suitable extinguishing media

Water. Water spray. Foam. Dry chemicals. Carbon dioxide (CO₂).

Unsuitable extinguishing media

None known

Specific hazards arising from the chemical

During fire, gases hazardous to health may be formed.

Special protective equipment and precautions for firefighters

Not available

Firefighting equipment/instructions

Cool containers exposed to heat with water spray and remove container, if no risk is involved.

Specific methods

Use standard firefighting procedures and consider the hazards of other involved materials.

General fire hazards

Combustible. No unusual fire or explosion hazards noted.

6. Accidental Release Measures

Personal precautions, protective equipment, and emergency procedures

Keep unnecessary personnel away. For personal protection, see section 8 of the SDS.

Material name: POLYMUD

Date prepared: April 5, 2016

Date revised: September 18, 2017

Version number: 02

Methods and materials for containment and cleaning up

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

Avoid discharge into drains, water courses or onto the ground.

Environmental precautions

7. Handling and Storage

Precautions for safe handling

Avoid prolonged or repeated contact with skin. Avoid prolonged exposure. Use only in well-ventilated areas.

Conditions for safe storage, including any incompatibilities

Keep away from heat and sources of ignition. Store in original tightly closed container. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure Controls/Personal Protection

Occupational exposure limits

US OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value	Form
Mineral Oil (CAS 8042-47-5)	PEL	5 mg/m ³	Mist.

US ACGIH Threshold Limit Values

Components	Type	Value	Form
Mineral Oil (CAS 8042-47-5)	TWA	5 mg/m ³	Inhalable fraction

US NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value	Form
Mineral Oil (CAS 8042-47-5)	STEL	10 mg/m ³	Mist.
	TWA	5 mg/m ³	Mist.

Biological limit values

Appropriate engineering controls

No biological exposure limits noted for the ingredient(s). Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Material name: POLYMUD

Date prepared: April 5, 2016

Date revised: September 18, 2017

Version number: 02

Individual protection measures, such as personal protective equipment

Eye/face protection

Skin protection

Hand protection

Other

Respiratory protection

Thermal hazards

General hygiene considerations

Wear safety glasses with side shields (or goggles).

Wear appropriate chemical resistant gloves. Suitable gloves can be recommended by the glove supplier.

Wear suitable protective clothing.

In case of insufficient ventilation, wear suitable respiratory equipment.

Wear appropriate thermal protective clothing, when necessary.

Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and Chemical Properties

Appearance

Physical state

Form

Color

Liquid emulsion

Liquid

Liquid

Light Grey to White

Odor

None

Odor threshold

Not available

pH

4 – 9 @ 5 g/l

Melting point/freezing point

Not available

Initial boiling point and boiling range

680 °F (360 °C) estimated

Flash point

275.0 °F (135.0 °C) estimated

Evaporation rate

Not available

Flammability (solid, gas)

Not applicable

Upper/lower flammability or explosive limits

Flammability limit-lower (%)

Not available

Flammability limit-upper (%)

Not available

Explosive limit-lower (%)

Not available

Explosive limit-upper (%)

Not available

Vapor pressure

0.00001 hPa estimated

Vapor density

Not available

Relative density

Not available

Solubility(ies)

Solubility (water)

Not available

Partition coefficient (n-octanol/water)

Not available

Auto-ignition temperature

500 °F (260 °C) estimated

Decomposition temperature

Not available

Viscosity

Not available

Other Information

Density

0.87 g/cm³ estimated

Flammability class

Combustible IIIB estimated

Percent volatile

34% estimated

Specific gravity

0.87 estimated

Material name: POLYMUD

Date prepared: April 5, 2016

Date revised: September 18, 2017

Version number: 02

10. Stability and Reactivity

Reactivity

Chemical stability

Possibility of hazardous reactions

Conditions to avoid

Incompatible materials

Hazardous decomposition products

The product is stable and non-reactive under normal conditions of use, storage and transport.

Material is stable under normal conditions.

No dangerous reaction known under conditions of normal use.

Contact with incompatible materials.

Strong oxidizing agents.

Carbon oxides. Nitrogen oxides (NO_x).

11. Toxicological Information

Information on likely routes of exposure

Inhalation

Skin contact

Eye contact

Ingestion

Symptoms related to the physical, chemical and toxicological characteristics

Information on toxicological effects

Acute toxicity

Skin corrosion/irritation

Serious eye damage/eye irritation

Respiratory or skin sensitization

Respiratory sensitization

Skin sensitization

Germ cell mutagenicity

Carcinogenicity

IARC Monographs. Overall Evaluation of Carcinogenicity

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Reproductive toxicity

Specific target organ toxicity - single exposure

Specific target organ toxicity - repeated exposure

Aspiration hazard

Chronic effects

Prolonged inhalation may be harmful.

No adverse effects due to skin contact are expected.

Direct contact with eyes may cause temporary irritation.

Expected to be a low ingestion hazard.

Direct contact with eyes may cause temporary irritation.

Not available

Prolonged skin contact may cause temporary irritation.

Direct contact with eyes may cause temporary irritation.

Not a respiratory sensitizer.

This product is not expected to cause skin sensitization.

No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

MINERAL OIL (CAS 8042-47-5) 3 Not classifiable as to carcinogenicity to humans.

Not listed

This product is not expected to cause reproductive or developmental effects.

Not classified

Not classified

Not an aspiration hazard.

Prolonged inhalation may be harmful.

12. Ecological Information

Ecotoxicity

The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Persistence and degradability

Bioaccumulative potential

No data is available on the degradability of this product.

No data available.

Material name: POLYMUD

Date prepared: April 5, 2016

Date revised: September 18, 2017

Version number: 02

Mobility in soil
Other adverse effects

No data available.
No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposable Considerations

Disposal instructions

Collect and reclaim or dispose in sealed containers at licensed waste disposal site.

Local disposal regulations

Dispose in accordance with all applicable regulations.

Hazardous waste code

The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues/unused products

Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging

Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport Information

DOT

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

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

Not established.

15. Regulatory Information

US Federal regulations

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200. All components are on the U.S. EPA TSCA Inventory List.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Not listed.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Material name: POLYMUD

Date prepared: April 5, 2016

Date revised: September 18, 2017

Version number: 02

Hazard Categories	Immediate Hazard: No Delayed Hazard: No Fire Hazard: No Pressure Hazard: No Reactivity Hazard: No Not listed No Not regulated
SARA 302 Extremely hazardous substance	Not listed
SARA 311/312 Hazardous chemical	No
SARA 313 (TRI reporting)	Not regulated
Other federal regulations	
Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List	Not regulated
Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)	Not regulated
Safe Drinking Water Act (SDWA)	Not regulated
US state regulations	
US California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100)	Not listed
US Massachusetts RTK – Substance List	MINERAL OIL (CAS 8042-47-5)
US New Jersey Worker and Community Right-to-Know Act	Not listed
US Pennsylvania Worker and Community Right-to-Know Law	MINERAL OIL (CAS 8042-47-5)
US Rhode Island RTK	Not regulated.
US California Proposition 65	California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	No
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

Material name: POLYMUD

Date prepared: April 5, 2016

Date revised: September 18, 2017

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A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other Information, Including Date of Preparation or Last Revision

Date Prepared: April 5, 2016

Revision Date: April 5, 2016

Version Number: 01

Disclaimer: The information provided in this 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 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. All information and recommendations concerning this product is based on tests and data believed to be reliable, however, it is the user's responsibility to determine the safety, toxicity and suitability for the user's own use of the product described herein. Since the actual use by others is beyond our control, no guarantee expressed or implied is made. Nor is the information herein to be construed as absolutely complete since additional information may be necessary or desirable when particular conditions exist or because of applicable laws or government regulations.

Material name: POLYMUD

Date prepared: April 5, 2016

Date revised: September 18, 2017

Version number: 02



SAFETY DATA SHEET

1. Identification

Product Identifier	Sandmaster
Recommended use	Drilling fluid additive
Recommended restrictions	None known
Manufacturer/Importer/Supplier/Distributor information	
Manufacturer	
Company name	DCS Fluid Solutions
Address	PO Box 1027, Graham, TX 76450
Phone	940-521-0500
Website	www.dcsmud.com
Email	don@dcsmud.com / randy@dcsmud.com
Emergency phone number	940-768-8071

2. Hazard(s) Identification

Physical hazards	Not classified
Health hazards	Not classified
Environmental hazards	Not classified
OSHA defined hazards	Not classified
Label elements	
Hazard symbol	None
Signal word	None
Hazard statement	The substance does not meet the criteria for classification.
Precautionary statement	
Prevention	Observe good industrial hygiene practices.
Response	Wash hands after handling.
Storage	Store away from incompatible materials.
Disposal	Dispose of waste and residues in accordance with local authority requirements.
Hazard(s) not otherwise classified (HNOC)	None known
Supplemental information	None

3. Composition/Information of Ingredients

Mixtures

Chemical Name	Common name and synonyms	CAS Number	%
The manufacturer lists no ingredients as hazardous according to OSHA 29 CFR 1910.1200.	Xanthan Gum	11138-66-2	

Material name: Xanthan Gum
Date prepared: April 5, 2016
Date revised: May 22, 2018
Version number: 03

*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. First Aid Measures

Inhalation

Move to fresh air. Seek medical attention if symptoms develop or persist.

Skin contact

Wash off with soap and water. Get medical attention if irritation develops and persists.

Eye contact

Flush with fresh water for 15 minutes. Get medical attention if irritation develops and persists.

Ingestion

First aid is not normally required. If symptoms develop seek medical attention.

Most important symptoms, effects, acute and delayed

Direct contact with eyes may cause temporary irritation.

Indication of immediate medical attention and special treatment needed

Treat symptomatically.

General information

Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire Fighting Measures

Suitable extinguishing media

Water. Water spray. Foam. Dry chemicals. Carbon dioxide (CO₂).

Unsuitable extinguishing media

None known

Specific hazards arising from the chemical

During fire, gases hazardous to health may be formed.

Special protective equipment and precautions for firefighters

Organic dusts can form explosive mixtures in air. Do not release runoff from fire control methods to sewers or waterways.

Firefighting equipment/instructions

Because fire may produce toxic thermal decomposition products, wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in pressure-demand or positive-pressure mode

Specific methods

Use standard firefighting procedures and consider the hazards of other involved materials.

General fire hazards

Combustible. No unusual fire or explosion hazards noted.

6. Accidental Release Measures

Personal precautions, protective equipment, and emergency procedures

Keep unnecessary personnel away. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Following product recovery, flush area with water.

Small Spills: Sweep up material for disposal or recovery.

Clean surface thoroughly to remove residual contamination.

Material name: Xanthan Gum

Date prepared: April 5, 2016

Date revised: May 22, 2018

Version number: 03

Environmental precautions

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.
Avoid discharge into drains, water courses or onto the ground.

7. Handling and Storage

Precautions for safe handling

Use good personal hygiene practices. All hazard precautions given in the data sheet must be observed.

Conditions for safe storage, including any incompatibilities

Store in a cool dry space-Temp. <75 C. Store in original tightly closed container. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure Controls/Personal Protection

Engineering Controls:

Ventilation: Provide general or local exhaust ventilation systems to maintain airborne concentrations below OSHA PELs (Sec. 2). Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by controlling it at its source.

Administrative Controls:

Respiratory Protection: Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear a MSHA/NIOSH-approved respirator. Select respirator based on its suitability to provide adequate worker protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen. For emergency or non-routine operations (cleaning spills, reactor vessels, or storage tanks), wear an SCBA.

Warning! Air-purifying respirators do not protect workers in oxygen-deficient atmospheres. If respirators are used, OSHA requires a written respiratory protection program that includes at least: medical certification, training, fit-testing, periodic environmental monitoring, maintenance, inspection, cleaning, and convenient, sanitary storage areas.

Protective Clothing/Equipment: Wear chemically protective gloves, boots, aprons, and gauntlets to prevent prolonged or repeated skin contact. Wear protective eyeglasses or chemical safety goggles, per OSHA eye- and face-protection regulations (29 CFR 1910.133). Contact lenses are not eye protective devices. Appropriate eye protection must be worn instead of, or in conjunction with contact lenses.

Safety Stations: Make emergency eyewash stations, safety/quick-drench showers, and washing facilities available in work area.

Contaminated Equipment: Separate contaminated work clothes from street clothes. Launder before reuse. Remove this material from your shoes and clean personal protective equipment.

Comments: Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.

9. Physical and Chemical Properties

Physical State: solid

Appearance and Odor: beige powder/bland odor

Odor Threshold:

Vapor Pressure:

Vapor Density

(Air=1): Formula

Weight: Density:

Specific Gravity (H₂O=1, at 4 °C): 1.5 @ 77 °F

Water Solubility:

soluble **Other**

Solubilities: Boiling

Point: no data

Freezing/Melting Point: no data

Viscosity: no

data Refractive

Index: Surface

Material name: Xanthan Gum

Date prepared: April 5, 2016

Date revised: May 22, 2018

Version number: 03

10. Stability and Reactivity

Stability: Xanthan Gum is stable at room temperature in closed containers under normal storage and handling conditions.

Polymerization: Hazardous polymerization cannot occur.

Chemical Incompatibilities: Strong oxidizing agents.

Conditions to Avoid: Protect from moisture.

Hazardous Decomposition Products: Thermal oxidative decomposition of Xanthan Gum can produce carbon dioxide and carbon monoxide.

11. Toxicological Information

Toxicity Data:*

Acute Oral Effects:

Rat, oral, LD50: mg/kg

Chronic Effects: no data available

Carcinogenicity: : no data available

Mutagenicity: : no data available

Teratogenicity: : no data available

* See NIOSH, *RTECS*, for additional toxicity data.

12. Ecological Information

Ecotoxicity: no data available

Environmental Fate: no data available

Environmental Degradation: no data available
Soil Absorption/Mobility: no data available

14. Transport Information

US DOT (49 CFR 172.101): PSN: Hazard Class: UN Number: Packing	IATA PSN: Hazard Class: UN Number: Packing
TDG PSN: Hazard Class: UN Number: Packing	IMDG/IMO PSN: Hazard Class: UN Number: Packing

Material name: Xanthan Gum
Date prepared: April 5, 2016
Date revised: May 22, 2018
Version number: 03

15. Regulatory Information

US FEDERAL

TSCA

CAS# 11138-66-2 is listed on the TSCA inventory.

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under

TSCA. CERCLA Hazardous Substances and

corresponding RQs None of the chemicals in this material have an RQ.

SARA Section 302 Extremely Hazardous

Substances None of the chemicals in this product

have a TPQ. **SARA 311/312 Hazards:** No SARA

Hazards

Section 313 No chemicals are reportable under Section 313.

Clean Air Act:

This material does not contain any hazardous air pollutants. This material does not contain any Class 1

Ozone depleters. This material does not contain any Class

2 Ozone depleters. **Clean Water Act:**

None of the chemicals in this product are listed as Hazardous Substances under the CWA. State and Local Regulations - California Proposition 65: None

16. Other Information, Including Date of Preparation or Last Revision

Date Prepared: April 5, 2016

Revision Date: May 22, 2018

Version Number: 03

Disclaimer: The information provided in this 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 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. All information and recommendations concerning this product is based on tests and data believed to be reliable, however, it is the user's responsibility to determine the safety, toxicity and suitability for the user's own use of the product described herein. Since the actual use by others is beyond our control, no guarantee expressed or implied is made. Nor is the information herein to be construed as absolutely complete since additional information may be necessary or desirable when particular conditions exist or because of applicable laws or government regulations.

Material name: Xanthan Gum

Date prepared: April 5, 2016

Date revised: May 22, 2018

Version number: 03



Safety Data Sheet

Issue Date: 01-May-2018

Version 1

1. IDENTIFICATION

Product Identifier

Product Name TorqBreaker

Other means of identification

Product Code ABD

Recommended use of the chemical and restrictions on use

Recommended Use Surfactant additive.

Details of the supplier of the safety data sheet

Supplier Address

DCS Fluid Solutions
516 2nd Street
Graham, TX 76450

Emergency Telephone Number

Company Phone Number 1-940-521-0500
Emergency Telephone (24 hr) INFOTRAC 1-352-323-3500 (International)
1-800-535-5053 (North America)

2. HAZARDS IDENTIFICATION

Appearance Red liquid

Physical State Liquid

Odor Bland

Classification

Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 1

Signal Word

Danger

Hazard Statements

Causes skin irritation
Causes serious eye damage



Precautionary Statements - Prevention

Wash face, hands and any exposed skin thoroughly after handling
Wear protective gloves/protective clothing/eye protection/face protection

Precautionary Statements - Response

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing immediately call a poison center or doctor/physician

IF ON SKIN: Wash With plenty of soap and water

Take off contaminated clothing and wash it before reuse.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No	Weight-%
Alkyl dimethyl ammonium chloride	68424-85-1	<5.0
Ethanolamine	141-43-5	<3.0

4. FIRST-AID MEASURES**First Aid Measures**

General Advice	If exposed or concerned: Get medical advice/attention.
Eye Contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If eye irritation persists: Get medical advice/attention.
Skin Contact	Take off contaminated clothing. Wash with plenty of water. If irritation persists, seek medical attention.
Inhalation	None under normal use conditions.
Ingestion	Give large quantities of water. Do not induce vomiting. Get medical attention.

Most important symptoms and effects

Symptoms	Prolonged or repeated skin contact may cause irritation. Eye contact may be slightly irritating.
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Indication of any immediate medical attention and special treatment needed

Notes to Physician	Treat symptomatically.
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5. FIRE-FIGHTING MEASURES**Suitable Extinguishing Media**

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable Extinguishing Media Not determined.

Specific Hazards Arising from the Chemical

None known.

Protective equipment and precautions for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES**Personal precautions, protective equipment and emergency procedures**

Personal Precautions	Use personal protective equipment as required.
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Methods and material for containment and cleaning up

Methods for Containment	Prevent further leakage or spillage if safe to do so.
--------------------------------	---

Methods for Clean-Up

Flood area with water and then mop up. Dispose of in accordance with federal, state and local regulations.

7. HANDLING AND STORAGE**Precautions for safe handling****Advice on Safe Handling**

Handle in accordance with good industrial hygiene and safety practice. Do not destroy or deface the label. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.

Conditions for safe storage, including any incompatibilities**Storage Conditions**

Keep containers tightly closed in a dry, cool and well-ventilated place. Store containers upright. Store locked up.

Incompatible Materials

None known based on information supplied.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Exposure Guidelines**

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Ethanolamine 141-43-5	STEL: 6 ppm TWA: 3 ppm	TWA: 3 ppm TWA: 6 mg/m ³ (vacated) TWA: 3 ppm (vacated) TWA: 8 mg/m ³ (vacated) STEL: 6 ppm (vacated) STEL: 15 mg/m ³	IDLH: 30 ppm TWA: 3 ppm TWA: 8 mg/m ³ STEL: 6 ppm STEL: 15 mg/m ³

Appropriate engineering controls**Engineering Controls**

None under normal use conditions.

Individual protection measures, such as personal protective equipment**Eye/Face Protection**

Avoid contact with eyes.

Skin and Body Protection

No protective equipment is needed under normal use conditions.

Respiratory Protection

No protective equipment is needed under normal use conditions.

General Hygiene Considerations

Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES**Information on basic physical and chemical properties**

Physical State
Appearance
Color

Liquid
Red liquid
Red

Odor
Odor Threshold

Bland
Not determined

Property**Values****Remarks • Method**

pH
Melting Point/Freezing Point
Boiling Point/Boiling Range
Flash Point
Evaporation Rate
Flammability (Solid, Gas)

9.5
Not available
Not determined
None (will not burn)
Not determined
n/a-liquid

Upper Flammability Limits	Not determined	
Lower Flammability Limit	Not determined	
Vapor Pressure	Not available	
Vapor Density	Not determined	
Specific Gravity	1.024	(1=Water)
Water Solubility	Completely soluble	
Solubility in other solvents	Not determined	
Partition Coefficient	Not determined	
Auto-ignition Temperature	Not determined	
Decomposition Temperature	Not determined	
Kinematic Viscosity	Not determined	
Dynamic Viscosity	Not determined	
Explosive Properties	Not determined	
Oxidizing Properties	Not determined	

10. STABILITY AND REACTIVITY

Reactivity

Not reactive under normal conditions.

Chemical Stability

Stable under recommended storage conditions.

Possibility of Hazardous Reactions

None under normal processing.

Conditions to Avoid

None known.

Incompatible Materials

None known based on information supplied.

Hazardous Decomposition Products

None known based on information supplied.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information

Eye Contact	Avoid contact with eyes.
Skin Contact	Avoid contact with skin.
Inhalation	Under normal conditions of intended use, this material is not expected to be an inhalation hazard.
Ingestion	Do not taste or swallow.

Component Information

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Alkyl dimethyl benzyl ammonium chloride (C12-16) 68424-85-1	= 426 mg/kg (Rat)	-	-

Information on physical, chemical and toxicological effects

Symptoms	Please see section 4 of this SDS for symptoms.
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12. ECOLOGICAL INFORMATION

Ecotoxicity

An environmental hazard cannot be excluded in the event of unprofessional handling of disposal.

Chemical Name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
Ethanolamine 141-43-5	15:72 h Desmodismus Subspicalus mg/L EC50	227: 96 h Pimephales Promelas mg/L LC50 flow- Through 3684: 96 h Brachydanio rerio mg/L LC50 static 300-1000: 96 h Lepomis macrochirus mg/L LC50 static 114-196: 96 h Oncorhynchus mykiss mg/L LC50 static 200: 96 h Oncorhynchus mykiss mg/L LC50 flow-through	EC50 = 110 mg/L 17 h EC50 = 12200 mg/L 2 h EC50 = 13.7 mg/L 30 min	4.2: 24 h Daphnia magna mg/L EC50

Persistence/Degradability

Not determined.

Bioaccumulation

Not determined.

Mobility

Not determined

Other Adverse Effects

Not determined

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods

Disposal of Wastes

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Contaminated Packaging

Disposal should be in accordance with applicable regional, national and local laws and regulations.

14. TRANSPORT INFORMATION

Note

Please see current shipping paper for most up to date shipping information, including exemptions and special circumstances.

DOT

Not regulated

IATA

Not regulated

IMDG

Marine Pollutant

This material may meet the definition of a marine pollutant

15. REGULATORY INFORMATION

International Inventories

TSCA

Listed

Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDL - Canadian Domestic Substances List/Non-Domestic Substances List

EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances

ENCS - Japan Existing and New Chemical Substances

US Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

US State Regulations

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Ethanolamine 141-43-5	X	X	X

16. OTHER INFORMATION

<u>NFPA</u>	Health Hazards	Flammability	Instability	Special Hazards
	Not determined	Not determined	Not determined	Not determined
<u>HMIS</u>	Health Hazards	Flammability	Physical Hazards	Personal Protection
	3	0	1	C = Goggles, gloves, apron

Issue Date: 01-May-2018
 Revision Date: -
 Revision Note: -

Disclaimer

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End of Safety Data Sheet



SAFETY DATA SHEET

1. Identification

Product Identifier	DCS SealPac HV
Recommended use	Fluid Loss Additive
Recommended restrictions	No information available
Manufacturer/Importer/Supplier/Distributor information	
Manufacturer	
Company name	DCS Fluid Solutions
Address	PO Box 1027 Graham, TX 76450
Phone	940-521-0500
Website	www.dcs mud.com
Email	don@dcsmud.com
Emergency phone number	940-521-0500

2. Hazard(s) Identification

Physical hazards	Not classified
Health hazards	Not classified
Environmental hazards	Not classified
OSHA defined hazards	Not classified
Label elements	
Hazard symbol	None
Signal word	None
Hazard statement	The substance does not meet the criteria for classification.
Precautionary statement	
Prevention	Observe good industrial hygiene practices.
Response	Wash hands after handling.
Storage	Store away from incompatible materials.
Disposal	Dispose of waste and residues in accordance with local authority requirements.
Hazard(s) not otherwise classified (HNOC)	None Known
Supplemental information	None

3. Composition/Information of Ingredients Substances

The manufacturer lists no ingredients as hazardous according to OSHA 29 CFR 1910.1200.

Chemical Name	Common name and synonyms	CAS number	%
Polysaccharide	None	Proprietary	60-100

4. First Aid Measures

Material name: DCS SealPac HV
Date prepared: May 12, 2016
Date revised: 10/10/2017
Version number: 02

Inhalation	Move to fresh air. Call a physician if symptoms develop or persist.
Skin contact	Wash off with soap and water. Get medical attention if irritation develops and persists.
Eye contact	Do not rub eyes. Rinse with water. Get medical attention if irritation develops and persists.
Ingestion	Rinse mouth. Get medical attention if symptoms occur.
Most important symptoms, effects, acute and delayed	Dusts may irritate the respiratory tract, skin and eyes.
Indication of immediate medical attention and special treatment needed	Treat symptomatically.
General information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.
5. Fire Fighting Measures	
Suitable extinguishing media	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO ₂).
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Firefighting equipment/instructions	Use water spray to cool unopened containers.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	No unusual fire or explosion hazards noted.
6. Accidental Release Measures	
Personal precautions, protective equipment, and emergency procedures	Keep unnecessary personnel away. Wear appropriate protective equipment and clothing during clean-up. Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fume at levels exceeding the exposure limits. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up	Avoid the generation of dusts during clean-up. Collect dust using a vacuum cleaner equipped with HEPA filter. Stop the flow of material, if this is without risk. Large Spills: Wet down with water and dike for later disposal. Shovel the material into waste container. Following product recovery, flush area with water. Small Spills: Sweep up or vacuum up spillage and collect in suitable container for disposal. For waste disposal, see section 13 of the SDS.
Environmental precautions	Avoid discharge into drains, water courses or onto the ground.

7. Handling and Storage

Material name: DCS SealPac HV

Date prepared: May 12, 2016

Date revised: 10/10/2017

Version number: 02

Precautions for safe handling

Conditions for safe storage, including any incompatibilities

Minimize dust generation and accumulation. Provide appropriate exhaust ventilation at places where dust is formed. Practice good housekeeping.
Store in original tightly closed container. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure Controls/Personal Protection

Occupational exposure limits

No exposure limits noted for ingredient(s).

Biological limit values

No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls

If material is ground, cut, or used in any operation which may generate dusts, use appropriate local exhaust ventilation to keep exposures below the recommended exposure limits.

Individual protection measures, such as personal protective equipment

Eye/face protection

Wear safety glasses with side shields (or goggles).

Skin protection

Hand protection

Wear appropriate chemical resistant gloves. Suitable gloves can be recommended by the glove supplier.

Other

Wear suitable protective clothing.

Respiratory protection

Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fume at levels exceeding the exposure limits.

Thermal hazards

Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations

Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and Chemical Properties

Appearance

Physical state

Powder

Form

Solid

Color

Powder

White to Light yellow

Odor

Odorless

Odor threshold

Not available

pH

Not available

Melting point/freezing point

Not available

Initial boiling point and boiling range

Not available

Flash point

Not available

Evaporation rate

Not available

Flammability (solid, gas)

Not available

Upper/lower flammability or explosive limits

Flammability limit-lower (%)

Not available

Flammability limit-upper (%)

Not available

Explosive limit-lower (%)

Not available

Explosive limit-upper (%)

Not available

Material name: DCS SealPac HV

Date prepared: May 12, 2016

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Vapor pressure	Not available
Vapor density	Not available
Relative density	Not available
Solubility(ies)	
Solubility (water)	Not available
Partition coefficient (n-octanol/water)	Not available
Auto-ignition temperature	Not available
Decomposition temperature	Not available
Viscosity	Not available
Other Information	
Explosive properties	Not explosive
Molecular formula	Unspecified
Oxidizing properties	Not oxidizing
Percent volatile	0 %
VOC (Weight %)	0 %

10. Stability and Reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Contact with incompatible materials.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological Information

Information on likely routes of exposure	
Inhalation	Dust may irritate respiratory system.
Skin contact	Dust or powder may irritate the skin.
Eye contact	Dust may irritate the eyes.
Ingestion	Expected to be a low ingestion hazard.
Symptoms related to the physical, chemical and toxicological characteristics	Dusts may irritate the respiratory tract, skin and eyes.
Information on toxicological effects	
Acute toxicity	Not available
Skin corrosion/irritation	Prolonged skin contact may cause temporary irritation.
Serious eye damage/eye irritation	Direct contact with eyes may cause temporary irritation.
Respiratory or skin sensitization	
Respiratory sensitization	Not a respiratory sensitizer.
Skin sensitization	This product is not expected to cause skin sensitization.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

Material name: DCS SealPac HV
Date prepared: May 12, 2016
Date revised: 10/10/2017
Version number: 02

IARC Monographs. Overall Evaluation of
Carcinogenicity
OSHA Specifically Regulated Substances
(29 CFR 1910.1001-1050)
US. National Toxicology Program (NTP)
Report on Carcinogens

Not available.

Reproductive toxicity

Not listed

Not available.

Specific target organ toxicity - single exposure

This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - repeated exposure

Not classified

Aspiration hazard

Not classified

Not an aspiration hazard.

12. Ecological Information

Ecotoxicity

The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Persistence and degradability

No data is available on the degradability of this product.

Bioaccumulative potential

No data available.

Mobility in soil

No data available.

Other adverse effects

No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposable Considerations

Disposal instructions

Collect and reclaim or dispose at licensed waste disposal site.

Local disposal regulations

Dispose in accordance with all applicable regulations.

Hazardous waste code

The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues/unused products

Dispose of in accordance with local regulations.

Contaminated packaging

Since emptied containers may retain product residue, follow label warnings even after container is emptied.

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

14. Transport Information

DOT

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

Material name: DCS SealPac HV

Date prepared: May 12, 2016

Date revised: 10/10/2017

Version number: 02

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not applicable.
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15. Regulatory Information

US Federal regulations	All components are on the U.S. EPA TSCA Inventory List. This product is not known to be a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)	Not regulated.
CERCLA Hazardous Substance List (40 CFR 302.4)	Not listed.
SARA 304 Emergency release notification	Not regulated.
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)	Not listed.
Superfund Amendments and Reauthorization Act of 1986 (SARA)	
Hazard Categories	Immediate Hazard: No Delayed Hazard: No Fire Hazard: No Pressure Hazard: No Reactivity Hazard: No
SARA 302 Extremely hazardous substance	Not listed
SARA 311/312 Hazardous chemical	No
SARA 313 (TRI reporting)	Not regulated
Other federal regulations	
Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List	Not regulated
Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)	Not regulated
Safe Drinking Water Act (SDWA)	Not regulated
US state regulations	
US California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100)	Not listed
US Massachusetts RTK – Substance List	Not regulated
US New Jersey Worker and Community Right-to-Know Act	Not listed
US Pennsylvania Worker and Community Right-to-Know Law	Not listed
US Rhode Island RTK	Not regulated
US California Proposition 65	California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

Material name: DCS SealPac HV
Date prepared: May 12, 2016
Date revised: 10/10/2017
Version number: 02

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	No
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other Information, Including Date of Preparation or Last Revision

Date Prepared: May 12, 2016

Revision Date: October 10, 2017

Version Number: 02

Disclaimer: The information provided in this 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 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. All information and recommendations concerning this product is based on tests and data believed to be reliable, however, it is the user's responsibility to determine the safety, toxicity and suitability for the user's own use of the product described herein. Since the actual use by others is beyond our control, no guarantee expressed or implied is made. Nor is the information herein to be construed as absolutely complete since additional information may be necessary or desirable when particular conditions exist or because of applicable laws or government regulations.

Material name: DCS SealPac HV

Date prepared: May 12, 2016

Date revised: 10/10/2017

Version number: 02



SAFETY DATA SHEET

Product Trade Name: BARA-KADE® BENTONITE

Revision Date: 14-Aug-2017

Revision Number: 11

1. Identification

1.1. Product Identifier

Product Trade Name: BARA-KADE® BENTONITE
Synonyms None
Chemical Family: Mineral
Internal ID Code HM005230

1.2 Recommended use and restrictions on use

Application: Additive
Uses advised against No information available

1.3 Manufacturer's Name and Contact Details

Manufacturer/Supplier

BENTONITE Performance Minerals LLC
3000 N Sam Houston Parkway East
Houston, TX 77032
Telephone: (281) 871-7900

Halliburton Energy Services, Inc.
645 - 7th Ave SW Suite 1800
Calgary, AB
T2P 4G8
Canada

Prepared By Chemical Stewardship
Telephone: 1-281-871-6107
e-mail: fdunexchem@halliburton.com

1.4. Emergency telephone number:

Emergency Telephone Number 1-866-519-4752 or 1-760-476-3962
Global Incident Response Access Code: 334305
Contract Number: 14012

2. Hazards Identification

2.1 Classification in accordance with paragraph (d) of §1910.1200

Carcinogenicity	Category 1A - H350
Specific Target Organ Toxicity - (Repeated Exposure)	Category 1 - H372

2.2. Label Elements

Hazard Pictograms



Signal Word: Danger

Hazard Statements
 H350 - May cause cancer by inhalation
 H372 - Causes damage to organs through prolonged or repeated exposure if inhaled

Precautionary Statements

Prevention
 P201 - Obtain special instructions before use
 P202 - Do not handle until all safety precautions have been read and understood
 P260 - Do not breathe dust/fume/gas/mist/vapors/spray
 P264 - Wash face, hands and any exposed skin thoroughly after handling
 P270 - Do not eat, drink or smoke when using this product
 P280 - Wear protective gloves/protective clothing/eye protection/face protection

Response
 P308 + P313 - IF exposed or concerned: Get medical advice/attention
 P314 - Get medical attention/advice if you feel unwell

Storage
 P405 - Store locked up

Disposal
 P501 - Dispose of contents/container in accordance with local/regional/national/international regulations

2.3 Hazards not otherwise classified

This product contains Wyoming bentonite or other sorptive clays. Crystalline silica forms found in this particular clay are limited to quartz. Extreme temperatures that can generate cristobalite or tridymite are not expected to occur under realistic conditions. In addition, all quartz found in sorptive clays are considered "occluded", i.e., strongly coated with an amorphous silica surface. Occluded quartz has been experimentally-determined to be relatively non-toxic compared to unoccluded quartz. A lack of health effects found in several studies examining occupational exposure to sorptive clays also suggest that chronic inhalation of sorptive clays is not expected to result in silicosis or cancer. In light of these findings OSHA has recently exempted Wyoming bentonite and other sorptive clays from the crystalline silica PEL in §1910.1053(a)(1)(iii).

3. Composition/information on Ingredients

Substances	CAS Number	PERCENT (w/w)	GHS Classification - US
Crystalline silica, quartz	14808-60-7	1 - 5%	Carc. 1A (H350) STOT RE 1 (H372)

The exact percentage (concentration) of the composition has been withheld as proprietary.

4. First Aid Measures

4.1. Description of first aid measures

Inhalation If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

Eyes In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

Skin Wash with soap and water. Get medical attention if irritation persists.

Ingestion Under normal conditions, first aid procedures are not required.

4.2 Most important symptoms/effects, acute and delayed

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

4.3. Indication of any immediate medical attention and special treatment needed

Notes to Physician

Treat symptomatically.

5. Fire-fighting measures

5.1. Extinguishing media

Suitable Extinguishing Media

All standard fire fighting media

Extinguishing media which must not be used for safety reasons

None known.

5.2 Specific hazards arising from the substance or mixture

Special exposure hazards in a fire

Decomposition in fire may produce harmful gases.

5.3 Special protective equipment and precautions for fire-fighters

Special protective equipment for firefighters

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Use appropriate protective equipment. Avoid creating and breathing dust.

See Section 8 for additional information

6.2. Environmental precautions

Prevent from entering sewers, waterways, or low areas.

6.3. Methods and material for containment and cleaning up

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

7.1. Precautions for safe handling

Handling Precautions

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.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

Storage Information

Use good housekeeping in storage and work areas to prevent accumulation of dust. Close container when not in use. Do not reuse empty container.

8. Exposure Controls/Personal Protection

8.1 Occupational Exposure Limits

Substances	CAS Number	OSHA PEL-TWA	ACGIH TLV-TWA
Crystalline silica, quartz	14808-60-7	TWA: 50 µg/m ³	TWA: 0.025 mg/m ³

Exposures to crystalline silica that result from bentonite or other sorptive clays are exempt from the PEL in §1910.1053. The PEL in §1910.1000 Table Z-3 (i.e., the formula that is approximately equivalent to 100 µg/m³) applies to occupational exposures to respirable crystalline silica from sorptive clays.

8.2 Appropriate engineering controls

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

8.3 Individual protection measures, such as personal protective equipment

Personal Protective Equipment If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

Respiratory Protection Not normally needed. But if significant exposures are possible then the following respirator is recommended:

Dust/mist respirator. (N95, P2/P3)

Hand Protection Normal work 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 Wear safety glasses or goggles to protect against exposure.

Other Precautions None known.

9. Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Physical State: Solid **Color** Various
Odor: Odorless **Odor** No information available
Threshold:

Property Remarks/ - Method	Values
pH:	8-10
Freezing Point / Range	No data available
Melting Point / Range	No data available
Boiling Point / Range	No data available
Flash Point	No data available
Flammability (solid, gas)	No data available
Upper flammability limit	No data available
Lower flammability limit	No data available
Evaporation rate	No data available
Vapor Pressure	No data available
Vapor Density	No data available
Specific Gravity	2.65
Water Solubility	Insoluble in water
Solubility in other solvents	No data available
Partition coefficient: n-octanol/water	No data available
Autoignition Temperature	No data available
Decomposition Temperature	No data available
Viscosity	No data available
Explosive Properties	No information available
Oxidizing Properties	No information available

9.2. Other information

VOC Content (%) No data available

10. Stability and Reactivity

10.1. Reactivity

Not expected to be reactive.

10.2. Chemical stability

Stable

10.3. Possibility of hazardous reactions

Will Not Occur

10.4. Conditions to avoid

None anticipated

10.5. Incompatible materials

Hydrofluoric acid.

10.6. Hazardous decomposition products

Amorphous silica may transform at elevated temperatures to tridymite (870 C) or cristobalite (1470 C).

11. Toxicological Information

11.1 Information on likely routes of exposure

Principle Route of Exposure Eye or skin contact, inhalation.

11.2 Symptoms related to the physical, chemical and toxicological characteristics

Acute Toxicity

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).

Eye Contact

May cause mechanical irritation to eye.

Skin Contact

None known.

Ingestion

None known.

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.

This product contains Wyoming bentonite or other sorptive clays. Crystalline silica forms found in this particular clay are limited to quartz. Extreme temperatures that can generate cristobalite or tridymite are not expected to occur under realistic conditions. In addition, all quartz found in sorptive clays are considered "occluded", i.e., strongly coated with an amorphous silica surface (Wendlandt et al., 2007; Hochella and Muryama, 2010; SMI, 2014). Occluded quartz has been experimentally-determined to be relatively non-toxic compared to unoccluded quartz (Geh et al., 2006; Creutzenberg et al., 2008). A lack of health effects found in several studies examining occupational exposure to sorptive clays also suggest that chronic inhalation of sorptive clays is not expected to result in silicosis or cancer (Waxweiler et al., 1988; ACGIH, 1991; USEPA, 1996; IARC, 2005). In light of these findings OSHA has recently exempted Wyoming bentonite and other sorptive clays from the crystalline silica PEL in §1910.1053(a)(1)(iii).

11.3 Toxicity data

Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Crystalline silica, quartz	14808-60-7	> 15000 mg/kg (human)	No data available	No data available

Substances	CAS Number	Skin corrosion/irritation
Crystalline silica, quartz	14808-60-7	Non-irritating to the skin

Substances	CAS Number	Serious eye damage/irritation
Crystalline silica, quartz	14808-60-7	Non-irritating to the eye

Substances	CAS Number	Skin Sensitization
Crystalline silica, quartz	14808-60-7	No information available.

Substances	CAS Number	Respiratory Sensitization
Crystalline silica, quartz	14808-60-7	No information available

Substances	CAS Number	Mutagenic Effects
Crystalline silica, quartz	14808-60-7	Not regarded as mutagenic.

Substances	CAS Number	Carcinogenic Effects
Crystalline silica, quartz	14808-60-7	Contains crystalline silica which may cause silicosis, a delayed and progressive lung disease. The IARC and NTP have determined there is sufficient evidence in humans of the carcinogenicity of crystalline silica with repeated respiratory exposure.

Substances	CAS Number	Reproductive toxicity
Crystalline silica, quartz	14808-60-7	No information available

Substances	CAS Number	STOT - single exposure
Crystalline silica, quartz	14808-60-7	No significant toxicity observed in animal studies at concentration requiring classification.

Substances	CAS Number	STOT - repeated exposure
Crystalline silica, quartz	14808-60-7	Causes damage to organs through prolonged or repeated exposure if inhaled: (Lungs)

Substances	CAS Number	Aspiration hazard
Crystalline silica, quartz	14808-60-7	Not applicable

12. Ecological Information

12.1. Toxicity

Substance Ecotoxicity Data

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Crystalline silica, quartz	14808-60-7	EC50 (72 h) =440 mg/L (Selenastrum capricornutum)(similar substance)	LL0 (96 h) =10000 mg/L (Danio rerio)(similar substance)	No information available	LL50 (24 h) >10000 mg/L (Daphnia magna)(similar substance)

12.2. Persistence and degradability

Substances	CAS Number	Persistence and Degradability
Crystalline silica, quartz	14808-60-7	The methods for determining biodegradability are not applicable to inorganic substances.

12.3. Bioaccumulative potential

Substances	CAS Number	Log Pow
Crystalline silica, quartz	14808-60-7	No information available

12.4. Mobility in soil

Substances	CAS Number	Mobility
Crystalline silica, quartz	14808-60-7	No information available

12.5 Other adverse effects

No information available

13. Disposal Considerations

13.1. Waste treatment methods

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

14. Transport Information

US DOT

UN Number Not restricted
UN proper shipping name: Not restricted
Transport Hazard Class(es): Not applicable
Packing Group: Not applicable
Environmental Hazards: Not applicable

Canadian TDG

UN Number Not restricted
UN proper shipping name: Not restricted
Transport Hazard Class(es): Not applicable
Packing Group: Not applicable
Environmental Hazards: Not applicable

IMDG/IMO

UN Number Not restricted
UN proper shipping name: Not restricted

Transport Hazard Class(es): Not applicable
 Packing Group: Not applicable
 Environmental Hazards: Not applicable

IATA/ICAO

UN Number: Not restricted
 UN proper shipping name: Not restricted
 Transport Hazard Class(es): Not applicable
 Packing Group: Not applicable
 Environmental Hazards: Not applicable

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Not applicable
 Special Precautions for User: None

15. Regulatory Information**US Regulations**

US TSCA Inventory: All components listed on inventory or are exempt.

TSCA Significant New Use Rules - S5A2

Substances	CAS Number	TSCA Significant New Use Rules - S5A2
Crystalline silica, quartz	14808-60-7	Not applicable

EPA SARA Title III Extremely Hazardous Substances

Substances	CAS Number	EPA SARA Title III Extremely Hazardous Substances
Crystalline silica, quartz	14808-60-7	Not applicable

EPA SARA (311,312) Hazard Class

Chronic Health Hazard

EPA SARA (313) Chemicals

Substances	CAS Number	Toxic Release Inventory (TRI) - Group I	Toxic Release Inventory (TRI) - Group II
Crystalline silica, quartz	14808-60-7	Not applicable	Not applicable

EPA CERCLA/Superfund Reportable Spill Quantity

Substances	CAS Number	CERCLA RQ
Crystalline silica, quartz	14808-60-7	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

Substances	CAS Number	California Proposition 65
Crystalline silica, quartz	14808-60-7	carcinogen

U.S. State Right-to-Know Regulations

Substances	CAS Number	MA Right-to-Know Law	NJ Right-to-Know Law	PA Right-to-Know Law
Crystalline silica, quartz	14808-60-7	Carcinogen Extraordinarily hazardous	1660	Present

NFPA Ratings: Health 0, Flammability 0, Reactivity 0
 HMIS Ratings: Health 0*, Flammability 0, Physical Hazard 0, PPE: E

Canadian Regulations

Canadian Domestic Substances List (DSL) All components listed on inventory or are exempt.

16. Other information

Preparation Information

Prepared By Chemical Stewardship
Telephone: 1-281-871-6107
e-mail: fdunexchem@halliburton.com

Revision Date: 14-Aug-2017

Reason for Revision SDS sections updated:
1
2
8
11

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 Stewardship at 1-580-251-4335.

Key or legend to abbreviations and acronyms used in the safety data sheet

bw – body weight
CAS – Chemical Abstracts Service
d - day
EC50 – Effective Concentration 50%
ErC50 – Effective Concentration growth rate 50%
h - hour
LC50 – Lethal Concentration 50%
LD50 – Lethal Dose 50%
LL50 – Lethal Loading 50%
mg/kg – milligram/kilogram
mg/L – milligram/liter
mg/m³ - milligram/cubic meter
mm - millimeter
mmHg - millimeter mercury
NIOSH – National Institute for Occupational Safety and Health
NTP – National Toxicology Program
OEL – Occupational Exposure Limit
PEL – Permissible Exposure Limit
ppm – parts per million
STEL – Short Term Exposure Limit
TWA – Time-Weighted Average
UN – United Nations
w/w - weight/weight

Key literature references and sources for data

www.ChemADVISOR.com/

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 Safety Data Sheet

MATERIAL SAFETY DATA SHEET

Product Trade Name: EZ-MUD® GOLD

Revision Date: 16-Jan-2014

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Trade Name: EZ-MUD® GOLD
Synonyms: None
Chemical Family: Anionic Polymer
Application: 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 (w/w)	ACGIH TLV-TWA	OSHA PEL-TWA
Contains no hazardous substances	Mixture	60 - 100%	Not applicable	Not applicable

3. HAZARDS IDENTIFICATION

Hazard Overview May cause eye and skin irritation. Airborne dust may be explosive.

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.

Eyes In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

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

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 - Lower (oz./ft ³):	
Flammability Limits in Air - Upper (%):	Not Determined
Flammability Limits in Air - Upper (oz./ft ³):	

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

Special Exposure Hazards Decomposition in fire may produce toxic gases. Organic dust in the presence of an ignition source can be explosive in high concentrations. Good housekeeping practices are required to minimize this potential.

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

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. Slippery when wet.

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

Procedure for Cleaning / Absorption Scoop up and remove.

7. HANDLING AND STORAGE

Handling Precautions Avoid contact with eyes, skin, or clothing. Avoid creating or inhaling dust. Slippery when wet.

Storage Information Store away from oxidizers. Store in a cool, dry location. Product has a shelf life of 36 months.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls Use in a well ventilated area.

Personal Protective Equipment If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

Respiratory Protection Not normally needed. But if significant exposures are possible then the following respirator is recommended:
Dust/mist respirator. (N95, P2/P3)

Hand Protection Normal work gloves.

Skin Protection	Normal work coveralls.
Eye Protection	Wear safety glasses or goggles to protect against exposure.
Other Precautions	None known.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Granules
Color:	Off white
Odor:	Odorless
pH:	7.75 (1%)
Specific Gravity @ 20 C (Water=1):	0.8-1.0
Density @ 20 C (lbs./gallon):	6.66-8.33
Bulk Density @ 20 C (lbs/ft3):	52
Boiling Point/Range (F):	Not Determined
Boiling Point/Range (C):	Not Determined
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):	Soluble
Solubility in Solvents (g/100ml):	Not Determined
VOCs (lbs./gallon):	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

10. STABILITY AND REACTIVITY

Stability Data:	Stable
Hazardous Polymerization:	Will Not Occur
Conditions to Avoid	None anticipated
Incompatibility (Materials to Avoid)	Strong oxidizers.
Hazardous Decomposition Products	Ammonia. Oxides of nitrogen. Carbon monoxide and carbon dioxide.
Additional Guidelines	Not Applicable

11. TOXICOLOGICAL INFORMATION

Principle Route of Exposure	Eye or skin contact, inhalation.
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Symptoms related to exposure

Acute Toxicity	
Inhalation	None known.
Eye Contact	May cause mild eye irritation.
Skin Contact	May cause mild skin irritation.

Ingestion

None known

Chronic Effects/Carcinogenicity

No data available to indicate product or components present at greater than 1% are chronic health hazards.

Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Contains no hazardous substances	Mixture	No data available	No data available	No data available

12. ECOLOGICAL INFORMATION**Ecotoxicological Information****Ecotoxicity Product**

Acute Fish Toxicity: TLM96: >1000 mg/l (Pimephales promelas)
Acute Crustaceans Toxicity: Not determined
Acute Algae Toxicity: EC50: > 500 mg/l (Selenastrum capricornutum)

Ecotoxicity Substance

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Daphnia Magna (Water Flea)
Contains no hazardous substances	Mixture	No information available	No information available	No information available	No information available

12.2 Persistence and degradability

Not readily biodegradable

12.3 Bioaccumulative potential

Does not bioaccumulate

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****Disposal Method**

Disposal should be made in accordance with federal, state, and local regulations.

Contaminated Packaging

Follow all applicable national or local regulations.

14. TRANSPORT INFORMATION**Land Transportation****DOT**

Not restricted

Canadian TDG

Not restricted

ADR
Not restricted

Air Transportation

ICAO/IATA
Not restricted

Sea Transportation

IMDG
Not restricted

Other Transportation Information

Labels: None

15. REGULATORY INFORMATION

US Regulations

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	None
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 or are exempt.
WHMIS Hazard Class	Un-Controlled

16. OTHER INFORMATION

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

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*****

SAFETY DATA SHEET

POLYSELECT POWER PAC™-L

Product Trade Name:

Revision Date: 21-Sep-2017

Revision Number: 3

1. Identification

1.1. Product Identifier

Product Trade Name: POLYSELECT POWER PAC™-L
Synonyms: None
Chemical Family: Carbohydrate
Internal ID Code: HM008156

1.2 Recommended use and restrictions on use

Application: Fluid Loss Additive
Uses advised against: Consumer use

1.3 Manufacturer's Name and Contact Details

Manufacturer/Supplier

BENTONITE Performance Minerals LLC
 3000 N Sam Houston Parkway East
 Houston, TX 77032
 Telephone: (281) 871-7900

BENTONITE Performance Minerals LLC
 645 - 7th Ave SW Suite 1800
 Calgary, AB
 T2P 4G8
 Canada

Prepared By: Chemical Stewardship
 Telephone: 1-281-871-6107
 e-mail: fdunexchem@halliburton.com

1.4. Emergency telephone number:

Emergency Telephone Number: 1-866-519-4752 or 1-760-476-3962
 Global Incident Response Access Code: 334305
 Contract Number: 14012

2. Hazards Identification

2.1 Classification in accordance with paragraph (d) of §1910.1200

Combustible dust	Combustible dust
------------------	------------------

2.2. Label Elements

Hazard Pictograms

Signal Word: Warning

Hazard Statements

May form combustible dust concentrations in air.

Precautionary Statements

Prevention	None
Response	None
Storage	None
Disposal	None

2.3 Hazards not otherwise classified

None known

3. Composition/information on Ingredients

Substances	CAS Number	PERCENT (w/w)	GHS Classification - US
Polysaccharide	Proprietary	60 - 100%	Combustible Dust

The specific chemical identity of the composition has been withheld as proprietary. The exact percentage (concentration) of the composition has been withheld as proprietary.

4. First Aid Measures**4.1. Description of first aid measures**

Inhalation	If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.
Eyes	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.
Skin	Wash with soap and water. Get medical attention if irritation persists.
Ingestion	Rinse mouth with water many times. Get medical attention if symptoms occur

4.2 Most important symptoms/effects, acute and delayed

May cause mild eye, skin, and respiratory irritation.

4.3. Indication of any immediate medical attention and special treatment needed

Notes to Physician	Treat symptomatically.
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5. Fire-fighting measures**5.1. Extinguishing media****Suitable Extinguishing Media**

Water fog, carbon dioxide, foam, dry chemical.

Extinguishing media which must not be used for safety reasons

None known.

5.2 Specific hazards arising from the substance or mixture**Special exposure hazards in a fire**

Decomposition in fire may produce harmful gases. Organic dust in the presence of an ignition source can be explosive in high concentrations. Good housekeeping practices are required to minimize this potential.

5.3 Special protective equipment and precautions for fire-fighters**Special protective equipment for firefighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Use appropriate protective equipment. Avoid creating and breathing dust. Ensure adequate ventilation. Avoid contact with skin, eyes and clothing.

See Section 8 for additional information

6.2. Environmental precautions

Prevent from entering sewers, waterways, or low areas.

6.3. Methods and material for containment and cleaning up

Scoop up and remove.

7. Handling and storage**7.1. Precautions for safe handling****Handling Precautions**

Avoid creating or inhaling dust. Avoid dust accumulations. Ensure adequate ventilation. Slippery when wet. Avoid contact with eyes, skin, or clothing. Wash hands after use. Launder contaminated clothing before reuse. Use appropriate protective equipment.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities**Storage Information**

Store away from oxidizers. Store in a dry location. Product has a shelf life of 36 months.

8. Exposure Controls/Personal Protection**8.1 Occupational Exposure Limits**

Substances	CAS Number	OSHA PEL-TWA	ACGIH TLV-TWA
Polysaccharide	Proprietary	Not applicable	Not applicable

8.2 Appropriate engineering controls**Engineering Controls**

A well ventilated area to control dust levels. Local exhaust ventilation should be used in areas without good cross ventilation.

8.3 Individual protection measures, such as personal protective equipment**Personal Protective Equipment**

If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

Respiratory Protection

Not normally needed. But if significant exposures are possible then the following respirator is recommended:

Dust/mist respirator. (N95, P2/P3)

Hand Protection

Use gloves which are suitable for the chemicals present in this product as well as other environmental factors in the workplace.

Skin Protection

Wear protective clothing appropriate for the work environment.

Eye Protection

Wear safety glasses or goggles to protect against exposure.

Other Precautions

None known.

9. Physical and Chemical Properties**9.1. Information on basic physical and chemical properties**

Physical State:	Powder	Color	White to off white
Odor:	Odorless	Odor	No information available

Threshold:	
<u>Property</u> <u>Remarks/ - Method</u>	<u>Values</u>
pH:	6.5-9 (1%)
Freezing Point / Range	No data available
Melting Point / Range	No data available
Boiling Point / Range	No data available
Flash Point	221 °C / 430 °F
Flammability (solid, gas)	No data available
Upper flammability limit	No data available
Lower flammability limit	No data available
Evaporation rate	No data available
Vapor Pressure	No data available
Vapor Density	No data available
Specific Gravity	1.6
Water Solubility	Soluble in water
Solubility in other solvents	No data available
Partition coefficient: n-octanol/water	No data available
Autoignition Temperature	400 °C / 752 °F
Decomposition Temperature	No data available
Viscosity	No data available
Explosive Properties	No information available
Oxidizing Properties	No information available
<u>9.2. Other information</u>	
VOC Content (%)	No data available
Bulk Density	40-55 lbs/ft3

10. Stability and Reactivity

10.1. Reactivity

Not expected to be reactive.

10.2. Chemical stability

Stable

10.3. Possibility of hazardous reactions

Will Not Occur

10.4. Conditions to avoid

Keep away from heat, sparks and flame.

10.5. Incompatible materials

Strong oxidizers.

10.6. Hazardous decomposition products

Carbon monoxide and carbon dioxide.

11. Toxicological Information

11.1 Information on likely routes of exposure

Principle Route of Exposure Eye or skin contact, inhalation.

11.2 Symptoms related to the physical, chemical and toxicological characteristics

Acute Toxicity

Inhalation	May cause mild respiratory irritation.
Eye Contact	May cause mild eye irritation.
Skin Contact	May cause mild skin irritation.
Ingestion	None known.

Chronic Effects/Carcinogenicity No data available to indicate product or components present at greater than 0.1% are chronic health hazards.

11.3 Toxicity data

Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Polysaccharide	Proprietary	27000 mg/kg (Rat)	2000 mg/kg (Rabbit)	5800 mg/m ³ (Rat) 4h

Substances	CAS Number	Skin corrosion/irritation
Polysaccharide		Not irritating to skin in rabbits.

Substances	CAS Number	Serious eye damage/irritation
Polysaccharide		Non-irritating to rabbit's eye

Substances	CAS Number	Skin Sensitization
Polysaccharide		Did not cause sensitization on laboratory animals

Substances	CAS Number	Respiratory Sensitization
Polysaccharide		No information available

Substances	CAS Number	Mutagenic Effects
Polysaccharide		In vitro tests did not show mutagenic effects. In vivo tests did not show mutagenic effects. (similar substances)

Substances	CAS Number	Carcinogenic Effects
Polysaccharide		Did not show carcinogenic effects in animal experiments (similar substances)

Substances	CAS Number	Reproductive toxicity
Polysaccharide		Animal testing did not show any effects on fertility. Did not show teratogenic effects in animal experiments.

Substances	CAS Number	STOT - single exposure
Polysaccharide		No information available

Substances	CAS Number	STOT - repeated exposure
Polysaccharide		No significant toxicity observed in animal studies at concentration requiring classification.

Substances	CAS Number	Aspiration hazard
Polysaccharide		Not applicable

12. Ecological Information

12.1. Toxicity

Ecotoxicity effects

Product is not classified as hazardous to the environment.

Substance Ecotoxicity Data

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Polysaccharide	Proprietary	No information available	TLM96: 10000 ppm (Oncorhynchus mykiss) LC50 (96h) 20000 mg/L (Oncorhynchus mykiss)	No information available	EC50 (48h) 1000-3300 mg/L (Crangon crangon)

12.2. Persistence and degradability

Substances	CAS Number	Persistence and Degradability
Polysaccharide	Proprietary	No information available

12.3. Bioaccumulative potential

Substances	CAS Number	Log Pow
Polysaccharide	Proprietary	No information available

12.4. Mobility in soil

Substances	CAS Number	Mobility
Polysaccharide	Proprietary	No information available

12.5 Other adverse effects

No information available

13. Disposal Considerations**13.1. Waste treatment methods**

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

14. Transport Information**US DOT**

UN Number Not restricted
UN proper shipping name: Not restricted
Transport Hazard Class(es): Not applicable
Packing Group: Not applicable
Environmental Hazards: Not applicable

Canadian TDG

UN Number Not restricted
UN proper shipping name: Not restricted
Transport Hazard Class(es): Not applicable
Packing Group: Not applicable
Environmental Hazards: Not applicable

IMDG/IMO

UN Number Not restricted
UN proper shipping name: Not restricted
Transport Hazard Class(es): Not applicable
Packing Group: Not applicable
Environmental Hazards: Not applicable

IATA/ICAO

UN Number Not restricted
UN proper shipping name: Not restricted
Transport Hazard Class(es): Not applicable
Packing Group: Not applicable
Environmental Hazards: Not applicable

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable

Special Precautions for User None

15. Regulatory Information**US Regulations****US TSCA Inventory**

All components listed on inventory or are exempt.

TSCA Significant New Use Rules - S5A2

Substances	CAS Number	TSCA Significant New Use Rules - S5A2
Polysaccharide	Proprietary	Not applicable

EPA SARA Title III Extremely Hazardous Substances

Substances	CAS Number	EPA SARA Title III Extremely Hazardous Substances
Polysaccharide	Proprietary	Not applicable

EPA SARA (311,312) Hazard Class

None

EPA SARA (313) Chemicals

Substances	CAS Number	Toxic Release Inventory (TRI) - Group I	Toxic Release Inventory (TRI) - Group II
Polysaccharide	Proprietary	Not applicable	Not applicable

EPA CERCLA/Superfund Reportable Spill Quantity

Substances	CAS Number	CERCLA RQ
Polysaccharide	Proprietary	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

Substances	CAS Number	California Proposition 65
Polysaccharide	Proprietary	Not applicable

U.S. State Right-to-Know Regulations

Substances	CAS Number	MA Right-to-Know Law	NJ Right-to-Know Law	PA Right-to-Know Law
Polysaccharide	Proprietary	Not applicable	Not applicable	Not applicable

NFPA Ratings:

Health 1, Flammability 1, Reactivity 0

HMIS Ratings:

Health 1, Flammability 1, Physical Hazard 0, PPE: B

Canadian Regulations**Canadian Domestic Substances** All components listed on inventory or are exempt.

List (DSL)

16. Other information**Preparation Information****Prepared By**

Chemical Stewardship
 Telephone: 1-281-871-6107
 e-mail: fdunexchem@halliburton.com

Revision Date:

21-Sep-2017

Reason for Revision

Name change

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 Stewardship at 1-580-251-4335.

Key or legend to abbreviations and acronyms used in the safety data sheet

bw – body weight

CAS – Chemical Abstracts Service

d - day

EC50 – Effective Concentration 50%

ErC50 – Effective Concentration growth rate 50%

h - hour

LC50 – Lethal Concentration 50%

LD50 – Lethal Dose 50%

LL50 – Lethal Loading 50%

mg/kg – milligram/kilogram

mg/L – milligram/liter

mg/m³ - milligram/cubic meter

mm - millimeter

mmHg - millimeter mercury

NIOSH – National Institute for Occupational Safety and Health

NTP – National Toxicology Program

OEL – Occupational Exposure Limit

PEL – Permissible Exposure Limit

ppm – parts per million

STEL – Short Term Exposure Limit

TWA – Time-Weighted Average

UN – United Nations

w/w - weight/weight

Key literature references and sources for data

www.ChemADVISOR.com/

NZ CCID

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 Safety Data Sheet

SAFETY DATA SHEET

POLYSELECT™ POWER SWELL

Product Trade Name:

Revision Date: 30-Aug-2018

Revision Number: 1

1. Identification

1.1. Product Identifier

Product Trade Name: POLYSELECT™ POWER SWELL
Synonyms: None
Chemical Family: Polymer
Internal ID Code: HM008925

1.2 Recommended use and restrictions on use

Application: Lost Circulation Material
Uses advised against: No information available

1.3 Manufacturer's Name and Contact Details

Manufacturer/Supplier

Baroid Fluid Services
Product Service Line of Halliburton Energy Services, Inc.
P.O. Box 1675
Houston, TX 77251
Telephone: (281) 871-4000

Baroid Fluid Services
Product Service Line of Halliburton Energy Services, Inc.
645 - 7th Ave SW Suite 1800
Calgary, AB
T2P 4G8
Canada
Telephone: 1-403-231-9300

Prepared By: Chemical Stewardship
Telephone: 1-281-871-6107
e-mail: fdunexchem@halliburton.com

1.4. Emergency telephone number:

Emergency Telephone Number: 1-866-519-4752 or 1-760-476-3962
Global Incident Response Access Code: 334305
Contract Number: 14012

2. Hazards Identification

2.1 Classification in accordance with paragraph (d) of §1910.1200

As adopted by the competent authority, this product does not require an SDS or hazard warning label.

Not classified

2.2. Label Elements

Hazard Pictograms

Signal Word: Not Classified

Hazard Statements Not Hazardous

Precautionary Statements

Prevention	None
Response	None
Storage	None
Disposal	None

2.3 Hazards not otherwise classified

None known

3. Composition/information on Ingredients

Substances	CAS Number	PERCENT (w/w)	GHS Classification - US
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	60 - 100%	Not classified

The exact percentage (concentration) of the composition has been withheld as proprietary.

4. First Aid Measures

4.1. Description of first aid measures

Inhalation	If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.
Eyes	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.
Skin	Wash with soap and water. Get medical attention if irritation persists.
Ingestion	Under normal conditions, first aid procedures are not required.

4.2 Most important symptoms/effects, acute and delayed

No significant hazards expected.

4.3. Indication of any immediate medical attention and special treatment needed

Notes to Physician	Treat symptomatically.
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5. Fire-fighting measures

5.1. Extinguishing media

Suitable Extinguishing Media

Carbon dioxide, dry chemical, foam.

Extinguishing media which must not be used for safety reasons

None known.

5.2 Specific hazards arising from the substance or mixture

Special exposure hazards in a fire

Decomposition in fire may produce harmful gases. Organic dust in the presence of an ignition source can be explosive in high concentrations. Good housekeeping practices are required to minimize this potential.

5.3 Special protective equipment and precautions for fire-fighters

Special protective equipment for firefighters

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Use appropriate protective equipment. Avoid creating and breathing dust. Slippery when wet. Avoid contact with skin, eyes and clothing. Ensure adequate ventilation.
See Section 8 for additional information

6.2. Environmental precautions

Prevent from entering sewers, waterways, or low areas.

6.3. Methods and material for containment and cleaning up

Scoop up and remove.

7. Handling and storage

7.1. Precautions for safe handling

Handling Precautions

Avoid creating or inhaling dust. Ensure adequate ventilation. Avoid contact with eyes, skin, or clothing. Wash hands after use. Launder contaminated clothing before reuse. Slippery when wet. Use appropriate protective equipment.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

Storage Information

Store away from oxidizers. Store in a dry location. Product has a shelf life of 24 months.

8. Exposure Controls/Personal Protection

8.1 Occupational Exposure Limits

Substances	CAS Number	OSHA PEL-TWA	ACGIH TLV-TWA
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable	Not applicable

8.2 Appropriate engineering controls

Engineering Controls A well ventilated area to control dust levels.

8.3 Individual protection measures, such as personal protective equipment

Personal Protective Equipment If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

Respiratory Protection Not normally needed. But if significant exposures are possible then the following respirator is recommended:

Dust/mist respirator. (N95, P2/P3)

Hand Protection

Normal work gloves.

Skin Protection

Normal work coveralls.

Eye Protection

Wear safety glasses or goggles to protect against exposure.

Other Precautions

None known.

9. Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Physical State:	Solid	Color	White
Odor:	Odorless	Odor Threshold:	No information available

<u>Property</u> Remarks/ - Method	<u>Values</u>
pH:	4-11
Freezing Point / Range	No data available
Melting Point / Range	No data available
Boiling Point / Range	No data available
Flash Point	No data available
Flammability (solid, gas)	No data available
Upper flammability limit	No data available
Lower flammability limit	No data available
Evaporation rate	No data available
Vapor Pressure	No data available
Vapor Density	No data available
Specific Gravity	1.4
Water Solubility	Insoluble in water
Solubility in other solvents	No data available
Partition coefficient: n-octanol/water	No data available
Autoignition Temperature	No data available
Decomposition Temperature	No data available
Viscosity	No data available
Explosive Properties	No information available
Oxidizing Properties	No information available

9.2. Other information

VOC Content (%)	No data available
Bulk Density	40-50 lbs/ft3

10. Stability and Reactivity**10.1. Reactivity**

Not expected to be reactive.

10.2. Chemical stability

Stable

10.3. Possibility of hazardous reactions

Will Not Occur

10.4. Conditions to avoid

None anticipated

10.5. Incompatible materials

Strong oxidizers.

10.6. Hazardous decomposition products

Oxides of nitrogen. Ammonia. Hydrocarbons. Carbon monoxide and carbon dioxide. In the event of oxygen depletion, hydrocyanic acid can be formed.

11. Toxicological Information**11.1 Information on likely routes of exposure**

Principle Route of Exposure	Eye or skin contact, inhalation.
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11.2 Symptoms related to the physical, chemical and toxicological characteristics**Acute Toxicity**

Inhalation	May cause mild respiratory irritation.
Eye Contact	May cause mild eye irritation.
Skin Contact	May cause mild skin irritation.
Ingestion	May cause abdominal pain, vomiting, nausea, and diarrhea.

Chronic Effects/Carcinogenicity No data available to indicate product or components present at greater than 0.1% are chronic health hazards.

11.3 Toxicity data**Toxicology data for the components**

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	No data available	No data available	No data available

12. Ecological Information**12.1. Toxicity****Substance Ecotoxicity Data**

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	No information available	No information available	No information available	No information available

12.2. Persistence and degradability

Substances	CAS Number	Persistence and Degradability
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	No information available

12.3. Bioaccumulative potential

Substances	CAS Number	Bioaccumulation
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	No information available

12.4. Mobility in soil

Substances	CAS Number	Mobility
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	No information available

12.5 Other adverse effects

No information available

13. Disposal Considerations**13.1. Waste treatment methods**

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

14. Transport Information**US DOT**

UN Number Not restricted
UN proper shipping name: Not restricted
Transport Hazard Class(es): Not applicable
Packing Group: Not applicable
Environmental Hazards: Not applicable

Canadian TDG

UN Number Not restricted
UN proper shipping name: Not restricted
Transport Hazard Class(es): Not applicable
Packing Group: Not applicable
Environmental Hazards: Not applicable

IMDG/IMO

UN Number Not restricted
UN proper shipping name: Not restricted
Transport Hazard Class(es): Not applicable
Packing Group: Not applicable
Environmental Hazards: Not applicable

IATA/ICAO

UN Number Not restricted
UN proper shipping name: Not restricted
Transport Hazard Class(es): Not applicable
Packing Group: Not applicable
Environmental Hazards: Not applicable

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable

Special Precautions for User None

15. Regulatory Information**US Regulations**

US TSCA Inventory All components listed on inventory or are exempt.

TSCA Significant New Use Rules - S5A2

Substances	CAS Number	TSCA Significant New Use Rules - S5A2
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable

EPA SARA Title III Extremely Hazardous Substances

Substances	CAS Number	EPA SARA Title III Extremely Hazardous Substances
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable

EPA SARA (311,312) Hazard Class

None

EPA SARA (313) Chemicals

Substances	CAS Number	Toxic Release Inventory (TRI) - Group I	Toxic Release Inventory (TRI) - Group II
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable	Not applicable

EPA CERCLA/Superfund Reportable Spill Quantity

Substances	CAS Number	CERCLA RQ
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	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

Substances	CAS Number	California Proposition 65
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable

U.S. State Right-to-Know Regulations

Substances	CAS Number	MA Right-to-Know Law	NJ Right-to-Know Law	PA Right-to-Know Law
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable	Not applicable	Not applicable

NFPA Ratings:

Health 1, Flammability 1, Reactivity 0

HMIS Ratings:

Health 1, Flammability 1, Reactivity 0

Canadian Regulations

Canadian Domestic Substances List (DSL) All components listed on inventory or are exempt.

16. Other information**Preparation Information****Prepared By**

Chemical Stewardship
 Telephone: 1-281-871-6107
 e-mail: fdunexchem@halliburton.com

Revision Date:

30-Aug-2018

Reason for Revision

Initial Release

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 Stewardship at 1-580-251-4335.

Key or legend to abbreviations and acronyms used in the safety data sheet

bw – body weight

CAS – Chemical Abstracts Service

d - day

EC50 – Effective Concentration 50%

ErC50 – Effective Concentration growth rate 50%

h - hour

LC50 – Lethal Concentration 50%

LD50 – Lethal Dose 50%

LL50 – Lethal Loading 50%

mg/kg – milligram/kilogram

mg/L – milligram/liter

mg/m³ - milligram/cubic meter

mm - millimeter

mmHg - millimeter mercury

NIOSH – National Institute for Occupational Safety and Health

NTP – National Toxicology Program

OEL – Occupational Exposure Limit

PEL – Permissible Exposure Limit

ppm – parts per million

STEL – Short Term Exposure Limit

TWA – Time-Weighted Average

UN – United Nations

w/w - weight/weight

Key literature references and sources for data

www.ChemADVISOR.com/

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 Safety Data Sheet

SAFETY DATA SHEET

POLYSELECT™ POWER THIN

Product Trade Name:

Revision Date: 17-Jan-2019

Revision Number: 2

1. Identification

1.1. Product Identifier

Product Trade Name: POLYSELECT™ POWER THIN
Synonyms: None
Chemical Family: Blend
Internal ID Code: HM008886

1.2 Recommended use and restrictions on use

Application: Additive
Uses advised against: No information available

1.3 Manufacturer's Name and Contact Details

Manufacturer/Supplier

Baroid Fluid Services
Product Service Line of Halliburton Energy Services, Inc.
P.O. Box 1675
Houston, TX 77251
Telephone: (281) 871-4000

Baroid Fluid Services
Product Service Line of Halliburton Energy Services, Inc.
645 - 7th Ave SW Suite 1800
Calgary, AB
T2P 4G8
Canada
Telephone: 1-403-231-9300

Prepared By: Chemical Stewardship
Telephone: 1-281-871-6107
e-mail: fdunexchem@halliburton.com

1.4. Emergency telephone number:

Emergency Telephone Number: 1-866-519-4752 or 1-760-476-3962
Global Incident Response Access Code: 334305
Contract Number: 14012

2. Hazards Identification

2.1 Classification in accordance with paragraph (d) of §1910.1200

As adopted by the competent authority, this product does not require an SDS or hazard warning label.

Not classified

2.2. Label Elements

Hazard Pictograms

Signal Word: Not Classified

Hazard Statements Not Hazardous

Precautionary Statements

Prevention	None
Response	None
Storage	None
Disposal	None

2.3 Hazards not otherwise classified

None known

3. Composition/information on Ingredients

Substances	CAS Number	PERCENT (w/w)	GHS Classification - US
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	60 - 100%	Not classified

The exact percentage (concentration) of the composition has been withheld as proprietary.

4. First Aid Measures

4.1. Description of first aid measures

Inhalation	If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.
Eyes	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.
Skin	Wash with soap and water. Get medical attention if irritation persists.
Ingestion	Rinse mouth with water many times. Get medical attention, if symptoms occur

4.2 Most important symptoms/effects, acute and delayed

No significant hazards expected.

4.3. Indication of any immediate medical attention and special treatment needed

Notes to Physician	Treat symptomatically.
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5. Fire-fighting measures

5.1. Extinguishing media

Suitable Extinguishing Media

Water fog, carbon dioxide, foam, dry chemical.

Extinguishing media which must not be used for safety reasons

None known.

5.2 Specific hazards arising from the substance or mixture

Special exposure hazards in a fire

Decomposition in fire may produce harmful gases. Spills produce extremely slippery surfaces.

5.3 Special protective equipment and precautions for fire-fighters

Special protective equipment for firefighters

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Use appropriate protective equipment. Spills of this product are very slippery. Avoid contact with skin, eyes and clothing. Avoid breathing vapors. Ensure adequate ventilation.
See Section 8 for additional information

6.2. Environmental precautions

None known.

6.3. Methods and material for containment and cleaning up

Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Scoop up and remove.

7. Handling and storage

7.1. Precautions for safe handling

Handling Precautions

Avoid contact with eyes, skin, or clothing. Wash hands after use. Avoid breathing vapors. Ensure adequate ventilation. Use appropriate protective equipment.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

Storage Information

Store away from oxidizers. Store in a cool, dry location. Product has a shelf life of 24 months.

8. Exposure Controls/Personal Protection

8.1 Occupational Exposure Limits

Substances	CAS Number	OSHA PEL-TWA	ACGIH TLV-TWA
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable	Not applicable

8.2 Appropriate engineering controls

Engineering Controls Use in a well ventilated area.

8.3 Individual protection measures, such as personal protective equipment

Personal Protective Equipment

If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

Respiratory Protection

If engineering controls and work practices cannot keep exposure below occupational exposure limits or if exposure is unknown, wear a NIOSH certified, European Standard EN 149, AS/NZS 1715:2009, or equivalent respirator when using this product. Selection of and instruction on using all personal protective equipment, including respirators, should be performed by an Industrial Hygienist or other qualified professional.

Hand Protection

Use gloves which are suitable for the chemicals present in this product as well as other environmental factors in the workplace.

Skin Protection

Wear protective clothing appropriate for the work environment.

Eye Protection

Safety glasses with side-shields. If splashes are likely to occur, wear: Goggles,

Other Precautions Face-shield.
None known.

9. Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Physical State: Liquid

Color

Yellowish

Odor: Slight

Odor

No information available

Threshold:

Property

Values

Remarks/ - Method

pH:

7 - 9

Freezing Point / Range

No data available

Melting Point / Range

No data available

Pour Point / Range

No data available

Boiling Point / Range

No data available

Flash Point

> 100 °C / > 212 °F Cleveland Open Cup (COC)

Flammability (solid, gas)

No data available

Upper flammability limit

No data available

Lower flammability limit

No data available

Evaporation rate

No data available

Vapor Pressure

No data available

Vapor Density

No data available

Specific Gravity

1.16

Water Solubility

Soluble in water

Solubility in other solvents

No data available

Partition coefficient: n-octanol/water

No data available

Autoignition Temperature

No data available

Decomposition Temperature

No data available

Viscosity

No data available

Explosive Properties

No information available

Oxidizing Properties

No information available

9.2. Other information

VOC Content (%)

No data available

10. Stability and Reactivity

10.1. Reactivity

Not expected to be reactive.

10.2. Chemical stability

Stable

10.3. Possibility of hazardous reactions

Will Not Occur

10.4. Conditions to avoid

None anticipated

10.5. Incompatible materials

Strong oxidizers.

10.6. Hazardous decomposition products

Carbon monoxide and carbon dioxide.

11. Toxicological Information

11.1 Information on likely routes of exposure

Principle Route of Exposure Eye or skin contact, inhalation.

11.2 Symptoms related to the physical, chemical and toxicological characteristics

Acute Toxicity

Inhalation	May cause mild respiratory irritation.
Eye Contact	May cause mild eye irritation.
Skin Contact	May cause mild skin irritation.
Ingestion	May cause abdominal pain, vomiting, nausea, and diarrhea.

Chronic Effects/Carcinogenicity No data available to indicate product or components present at greater than 0.1% are chronic health hazards.

11.3 Toxicity data

Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	No data available	No data available	No data available

12. Ecological Information

12.1. Toxicity

Ecotoxicity effects

Product is not classified as hazardous to the environment.

Substance Ecotoxicity Data

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	No information available	No information available	No information available	No information available

12.2. Persistence and degradability

Substances	CAS Number	Persistence and Degradability
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	No information available

12.3. Bioaccumulative potential

Substances	CAS Number	Bioaccumulation
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	No information available

12.4. Mobility in soil

Substances	CAS Number	Mobility
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	No information available

12.5 Other adverse effects

No information available

13. Disposal Considerations**13.1. Waste treatment methods**

Disposal methods	Disposal should be made in accordance with federal, state, and local regulations.
Contaminated Packaging	Follow all applicable national or local regulations.

14. Transport Information**US DOT**

UN Number	Not restricted
UN proper shipping name:	Not restricted
Transport Hazard Class(es):	Not applicable
Packing Group:	Not applicable
Environmental Hazards:	Not applicable

Canadian TDG

UN Number	Not restricted
UN proper shipping name:	Not restricted
Transport Hazard Class(es):	Not applicable
Packing Group:	Not applicable
Environmental Hazards:	Not applicable

IMDG/IMO

UN Number	Not restricted
UN proper shipping name:	Not restricted
Transport Hazard Class(es):	Not applicable
Packing Group:	Not applicable
Environmental Hazards:	Not applicable

IATA/ICAO

UN Number	Not restricted
UN proper shipping name:	Not restricted
Transport Hazard Class(es):	Not applicable
Packing Group:	Not applicable
Environmental Hazards:	Not applicable

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable**Special Precautions for User** None

15. Regulatory Information

US Regulations

US TSCA Inventory

All components listed on inventory or are exempt.

TSCA Significant New Use Rules - S5A2

Substances	CAS Number	TSCA Significant New Use Rules - S5A2
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable

EPA SARA Title III Extremely Hazardous Substances

Substances	CAS Number	EPA SARA Title III Extremely Hazardous Substances
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable

EPA SARA (311,312) Hazard Class

None

EPA SARA (313) Chemicals

Substances	CAS Number	Toxic Release Inventory (TRI) - Group I	Toxic Release Inventory (TRI) - Group II
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable	Not applicable

EPA CERCLA/Superfund Reportable Spill Quantity

Substances	CAS Number	CERCLA RQ
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	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

Substances	CAS Number	California Proposition 65
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable

U.S. State Right-to-Know Regulations

Substances	CAS Number	MA Right-to-Know Law	NJ Right-to-Know Law	PA Right-to-Know Law
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable	Not applicable	Not applicable

NFPA Ratings:

Health 1, Flammability 1, Reactivity 0

HMIS Ratings:

Health 1, Flammability 0, Physical Hazard 0, PPE: B

Canadian Regulations

Canadian Domestic Substances List (DSL) All components listed on inventory or are exempt.

16. Other information

Preparation Information

Prepared By Chemical Stewardship
Telephone: 1-281-871-6107
e-mail: fdunexchem@halliburton.com

Revision Date: 17-Jan-2019

Reason for Revision SDS sections updated:
9
Change to physical properties

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 Stewardship at 1-580-251-4335.

Key or legend to abbreviations and acronyms used in the safety data sheet

bw – body weight
CAS – Chemical Abstracts Service
d - day
EC50 – Effective Concentration 50%
ErC50 – Effective Concentration growth rate 50%
h - hour
LC50 – Lethal Concentration 50%
LD50 – Lethal Dose 50%
LL50 – Lethal Loading 50%
mg/kg – milligram/kilogram
mg/L – milligram/liter
mg/m³ - milligram/cubic meter
mm - millimeter
mmHg - millimeter mercury
NIOSH – National Institute for Occupational Safety and Health
NTP – National Toxicology Program
OEL – Occupational Exposure Limit
PEL – Permissible Exposure Limit
ppm – parts per million
STEL – Short Term Exposure Limit
TWA – Time-Weighted Average
UN – United Nations
w/w - weight/weight

Key literature references and sources for data

www.ChemADVISOR.com/
NZ CCID

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 Safety Data Sheet

SAFETY DATA SHEET

POLYSELECT POWER XAN

Product Trade Name:

Revision Date: 21-Sep-2017

Revision Number: 3

1. Identification

1.1. Product Identifier

Product Trade Name: POLYSELECT POWER XAN
Synonyms: None
Chemical Family: Polysaccharide
Internal ID Code: HM008134

1.2 Recommended use and restrictions on use

Application: Viscosifier
Uses advised against: No information available

1.3 Manufacturer's Name and Contact Details

Manufacturer/Supplier
 BENTONITE Performance Minerals LLC
 3000 N Sam Houston Parkway East
 Houston, TX 77032
 Telephone: (281) 871-7900

Halliburton Energy Services, Inc.
 645 - 7th Ave SW Suite 1800
 Calgary, AB
 T2P 4G8
 Canada

Prepared By: Chemical Stewardship
 Telephone: 1-281-871-6107
 e-mail: fdunexchem@halliburton.com

1.4. Emergency telephone number:

Emergency Telephone Number: 1-866-519-4752 or 1-760-476-3962
 Global Incident Response Access Code: 334305
 Contract Number: 14012

2. Hazards Identification

2.1 Classification in accordance with paragraph (d) of §1910.1200

Combustible dust

Combustible dust

2.2. Label Elements

Hazard Pictograms

Signal Word: Warning

Hazard Statements

May form combustible dust concentrations in air.

Precautionary Statements

Prevention	None
Response	None
Storage	None
Disposal	None

2.3 Hazards not otherwise classified

None known

3. Composition/information on Ingredients

Substances	CAS Number	PERCENT (w/w)	GHS Classification - US
Xanthan gum	11138-66-2	60 - 100%	Combustible Dust

The exact percentage (concentration) of the composition has been withheld as proprietary.

4. First Aid Measures**4.1. Description of first aid measures**

Inhalation	If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.
Eyes	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.
Skin	Wash with soap and water. Get medical attention if irritation persists.
Ingestion	Under normal conditions, first aid procedures are not required.

4.2 Most important symptoms/effects, acute and delayed

No significant hazards expected.

4.3. Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically.

5. Fire-fighting measures**5.1. Extinguishing media****Suitable Extinguishing Media**

Water fog, carbon dioxide, foam, dry chemical.

Extinguishing media which must not be used for safety reasons

None known.

5.2 Specific hazards arising from the substance or mixture**Special exposure hazards in a fire**

Decomposition in fire may produce harmful gases. Organic dust in the presence of an ignition source can be explosive in high concentrations. Good housekeeping practices are required to minimize this potential.

5.3 Special protective equipment and precautions for fire-fighters**Special protective equipment for firefighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

6. Accidental release measures**6.1. Personal precautions, protective equipment and emergency procedures**

Use appropriate protective equipment. Avoid creating and breathing dust. Avoid contact with skin, eyes and clothing. Ensure adequate ventilation.
See Section 8 for additional information

6.2. Environmental precautions

Prevent from entering sewers, waterways, or low areas.

6.3. Methods and material for containment and cleaning up

Scoop up and remove.

7. Handling and storage

7.1. Precautions for safe handling

Handling Precautions

Slippery when wet. Avoid creating or inhaling dust. Avoid contact with eyes, skin, or clothing. Ensure adequate ventilation. Wash hands after use. Launder contaminated clothing before reuse. Use appropriate protective equipment.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

Storage Information

Store away from oxidizers. Store in a cool, dry location. Product has a shelf life of 24 months.

8. Exposure Controls/Personal Protection

8.1 Occupational Exposure Limits

Substances	CAS Number	OSHA PEL-TWA	ACGIH TLV-TWA
Xanthan gum	11138-66-2	Not applicable	Not applicable

8.2 Appropriate engineering controls

Engineering Controls Use in a well ventilated area.

8.3 Individual protection measures, such as personal protective equipment

Personal Protective Equipment If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

Respiratory Protection Not normally needed. But if significant exposures are possible then the following respirator is recommended:

Dust/mist respirator. (N95, P2/P3)

Hand Protection

Normal work gloves.

Skin Protection

Normal work coveralls.

Eye Protection

Wear safety glasses or goggles to protect against exposure.

Other Precautions

None known.

9. Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Physical State: Powder

Color

White to off white

Odor: Slight

Odor

No information available

Threshold:

Property

Values

Remarks/ - Method

pH:	7 (1%)
Freezing Point / Range	No data available
Melting Point / Range	No data available
Boiling Point / Range	No data available
Flash Point	No data available
Flammability (solid, gas)	No data available
Upper flammability limit	No data available
Lower flammability limit	No data available
Evaporation rate	No data available
Vapor Pressure	No data available
Vapor Density	No data available
Specific Gravity	1.6
Water Solubility	Soluble in water
Solubility in other solvents	No data available
Partition coefficient: n-octanol/water	No data available
Autoignition Temperature	204 °C / 400 °F
Decomposition Temperature	No data available
Viscosity	No data available
Explosive Properties	No information available
Oxidizing Properties	No information available
9.2. Other information	
Molecular Weight	1000000
VOC Content (%)	No data available
Bulk Density	52.4 lbs/ft3

10. Stability and Reactivity

10.1. Reactivity

Not expected to be reactive.

10.2. Chemical stability

Stable

10.3. Possibility of hazardous reactions

Will Not Occur

10.4. Conditions to avoid

None anticipated

10.5. Incompatible materials

Strong oxidizers.

10.6. Hazardous decomposition products

Carbon monoxide and carbon dioxide.

11. Toxicological Information

11.1 Information on likely routes of exposure

Principle Route of Exposure Eye or skin contact, inhalation.

11.2 Symptoms related to the physical, chemical and toxicological characteristics

Acute Toxicity

Inhalation	May cause mild respiratory irritation.
Eye Contact	May cause mild eye irritation.
Skin Contact	May cause mild skin irritation.

Ingestion

May cause abdominal pain, vomiting, nausea, and diarrhea.

Chronic Effects/Carcinogenicity No data available to indicate product or components present at greater than 0.1% are chronic health hazards.

11.3 Toxicity data**Toxicology data for the components**

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Xanthan gum	11138-66-2	> 5000 mg/kg (Rat) > 45000 mg/kg (Rat)	No data available	> 21 mg/L (Rat) 1h > 4.25 mg/L (Rat) 4h

Substances	CAS Number	Skin corrosion/irritation
Xanthan gum	11138-66-2	Not irritating to skin in rabbits.

Substances	CAS Number	Serious eye damage/irritation
Xanthan gum	11138-66-2	Non-irritating to rabbit's eye

Substances	CAS Number	Skin Sensitization
Xanthan gum	11138-66-2	Did not cause sensitization on laboratory animals (guinea pig)

Substances	CAS Number	Respiratory Sensitization
Xanthan gum	11138-66-2	No sensitization responses were observed

Substances	CAS Number	Mutagenic Effects
Xanthan gum	11138-66-2	No information available

Substances	CAS Number	Carcinogenic Effects
Xanthan gum	11138-66-2	Did not show carcinogenic effects in animal experiments

Substances	CAS Number	Reproductive toxicity
Xanthan gum	11138-66-2	Animal testing did not show any effects on fertility.

Substances	CAS Number	STOT - single exposure
Xanthan gum	11138-66-2	No significant toxicity observed in animal studies at concentration requiring classification.

Substances	CAS Number	STOT - repeated exposure
Xanthan gum	11138-66-2	No significant toxicity observed in animal studies at concentration requiring classification.

Substances	CAS Number	Aspiration hazard
Xanthan gum	11138-66-2	Not applicable

12. Ecological Information**12.1. Toxicity****Substance Ecotoxicity Data**

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Xanthan gum	11138-66-2	No information available	TLM96 320-560 ppm (Oncorhynchus mykiss) LC50 (96h) 490 mg/L (Oncorhynchus mykiss)	No information available	TLM96 > 75000 ppm (Mysidopsis bahia) LC50 (48h) 980 mg/L (Daphnia magna)

12.2. Persistence and degradability

Substances	CAS Number	Persistence and Degradability
Xanthan gum	11138-66-2	Biodegradable.

12.3. Bioaccumulative potential

Substances	CAS Number	Log Pow
Xanthan gum	11138-66-2	No information available

12.4. Mobility in soil

Substances	CAS Number	Mobility
Xanthan gum	11138-66-2	No information available

12.5 Other adverse effects

No information available

13. Disposal Considerations**13.1. Waste treatment methods**

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

14. Transport Information**US DOT**

UN Number Not restricted
UN proper shipping name: Not restricted
Transport Hazard Class(es): Not applicable
Packing Group: Not applicable
Environmental Hazards: Not applicable

Canadian TDG

UN Number Not restricted
UN proper shipping name: Not restricted
Transport Hazard Class(es): Not applicable
Packing Group: Not applicable
Environmental Hazards: Not applicable

IMDG/IMO

UN Number Not restricted
UN proper shipping name: Not restricted
Transport Hazard Class(es): Not applicable
Packing Group: Not applicable
Environmental Hazards: Not applicable

IATA/ICAO

UN Number Not restricted
UN proper shipping name: Not restricted
Transport Hazard Class(es): Not applicable
Packing Group: Not applicable
Environmental Hazards: Not applicable

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable

Special Precautions for User None

15. Regulatory Information**US Regulations**

US TSCA Inventory All components listed on inventory or are exempt.

TSCA Significant New Use Rules - S5A2

Substances	CAS Number	TSCA Significant New Use Rules - S5A2
Xanthan gum	11138-66-2	Not applicable

EPA SARA Title III Extremely Hazardous Substances

Substances	CAS Number	EPA SARA Title III Extremely Hazardous Substances
Xanthan gum	11138-66-2	Not applicable

EPA SARA (311,312) Hazard Class

None

EPA SARA (313) Chemicals

Substances	CAS Number	Toxic Release Inventory (TRI) - Group I	Toxic Release Inventory (TRI) - Group II
Xanthan gum	11138-66-2	Not applicable	Not applicable

EPA CERCLA/Superfund Reportable Spill Quantity

Substances	CAS Number	CERCLA RQ
Xanthan gum	11138-66-2	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

Substances	CAS Number	California Proposition 65
Xanthan gum	11138-66-2	Not applicable

U.S. State Right-to-Know Regulations

Substances	CAS Number	MA Right-to-Know Law	NJ Right-to-Know Law	PA Right-to-Know Law
Xanthan gum	11138-66-2	Not applicable	Not applicable	Not applicable

NFPA Ratings:

Health 1, Flammability 1, Reactivity 0

HMIS Ratings:

Health 1, Flammability 1, Physical Hazard 0, PPE: B

Canadian Regulations

Canadian Domestic Substances All components listed on inventory or are exempt.
List (DSL)

16. Other information**Preparation Information****Prepared By**

Chemical Stewardship
Telephone: 1-281-871-6107
e-mail: fdunexchem@halliburton.com

Revision Date:

21-Sep-2017

Reason for Revision

Name change

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 Stewardship at 1-580-251-4335.

Key or legend to abbreviations and acronyms used in the safety data sheet

bw – body weight
CAS – Chemical Abstracts Service
d - day
EC50 – Effective Concentration 50%
ErC50 – Effective Concentration growth rate 50%
h - hour
LC50 – Lethal Concentration 50%
LD50 – Lethal Dose 50%
LL50 – Lethal Loading 50%
mg/kg – milligram/kilogram
mg/L – milligram/liter
mg/m³ - milligram/cubic meter
mm - millimeter
mmHg - millimeter mercury
NIOSH – National Institute for Occupational Safety and Health
NTP – National Toxicology Program
OEL – Occupational Exposure Limit
PEL – Permissible Exposure Limit
ppm – parts per million
STEL – Short Term Exposure Limit
TWA – Time-Weighted Average
UN – United Nations
w/w - weight/weight

Key literature references and sources for data

www.ChemADVISOR.com/
NZ CCID
WHO/FAO

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 Safety Data Sheet

1. Identification

1.1. Product identifier

Product Identity Star-Plex

Alternate Names N/A

1.2. Relevant identified uses of the substance or mixture and application method

Intended use Drilling Fluid Additive

Application Method See Technical Data Sheet.

1.3. Details of the supplier of the safety data sheet

Company Name NorthStar Fluid Solutions
P.O. Box 271036
Louisville, Colorado 80027, USA

Emergency

CHEMTREC (USA) (800) 424-9300

24 hour Emergency Telephone No. International +1-703-527-3887

Customer Service: NorthStar Fluid Solutions (303) 495-3130

2. Hazard(s) identification

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram



Signal word

Warning

Hazard Statement(s)

Precautionary statement(s)

May form combustible dust concentrations in air
P234- Keep only in original container.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS

Combustible dust

3. Composition/information on ingredients

3.1 Substance

Synonyms: Poly Hydroxy Silicate

Substances	CAS Number	PERCENT (w/w)	GHS Classification - US
Magnesium compound	Proprietary	Proprietary	Combustible dust
Sodium compound	Proprietary	Proprietary	Combustible dust
Aluminum compound	Proprietary	Proprietary	Combustible dust

In accordance with paragraph (i) of §1910.1200, the specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret.

[1] Substance classified with a health or environmental hazard.

[2] Substance with a workplace exposure limit.

[3] PBT-substance or vPvB-substance.

*The full texts of the phrases are shown in Section 16.

4. First aid measures

4.1. Description of first aid measures

General	Consult a physician. Show this safety data sheet to the doctor in attendance.
Inhalation	Remove victim to fresh air. Consult medical personnel.
Eyes	Immediately flush with plenty of water for at least 15 minutes. Get medical attention.
Skin	Wash off with soap and plenty of water. Consult a physician.
Ingestion	Flush oral cavity and give one or two glasses of water to drink. If gastrointestinal symptoms develop, consult medical personnel. (Never give anything by mouth to an unconscious person).

4.2. Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labeling (see section 2.2) and/or in section 11.

4.3 Indication of any immediate medical attention and special treatment needed

Product may irritate eyes, skin, mucous membranes and upper respiratory tract with overexposure. Prolonged inhalation (chronic) of dust may result in lung damage.

5. Fire-fighting measures

5.1. Extinguishing media

Suitable for all regular extinguishing materials. Do not use high pressure water jet.

5.2. Special hazards arising from the substance or mixture

Nature of decomposition products not known.

5.3. Advice for fire-fighters

Wear self-contained breathing apparatus for firefighting if necessary.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Avoid creating dust. Use MSHA-NIOSH approved respirator for dusts, mists and fumes whose TLV is greater than 0.05 mg/m³. Avoid breathing vapors, mist, or gas. For personal protection see section 8.

6.2. Environmental precautions

None known.

6.3. Methods and material for containment and cleaning up

Prevent discharges to streams or sewer systems. Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable close containers for disposal.

6.4 Neutralizing Chemicals

Dilute Acid.

7. Handling and storage

7.1. Precautions for safe handling

Further processing of solid materials may result in the formation of combustible dusts. The potential for combustible dust formation should be taken into consideration before additional processing occurs. Provide appropriate exhaust ventilation at places where dust is formed. For precautions see section 2.2.

7.2. Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place.

Air and moisture sensitive. Keep in a dry place. Storage class (TRGS 510): Non Combustible Solids

7.3. Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

8. Exposure controls and personal protection

CAS No.	Ingredient	Source	Value
Proprietary	Magnesium compound	OSHA TLV	15 mg/m ³ TWA
		Table 2 limits for air contaminants	
		ACGIH TLV	10 mg/m ³ TWA
		Remarks	Upper respiratory tract irritation metal fume fever not classifiable as a human carcinogen
Proprietary	Sodium compound	None	none
Proprietary	Aluminum compound	OSHA PEL	15 mg/m ³ TWA Total
		OSHA PEL	5 mg/m ³ TWA Respirable (Al)
		ACGIH TLV	10 mg/m ³ TWA Al

8.2. Exposure controls

Respiratory	Reparatory protection is not required. Where protection from nuisance levels of dusts are desired, use type N95 (US) or type P1 (EN 143) dust masks. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).
Eyes	Use chemical splash goggles and face shield. Eye protection worn must be compatible with respiratory protection system employed.
Skin	Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.
Engineering Controls	Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.
Other Work Practices	Where splash is possible, full chemically resistant protective clothing and boots are required. Ensure that eyewash stations and safety showers are proximal to the work-station location. Do not let product enter drains.

See section 2 for further details. - [Prevention]:

9. Physical and chemical properties

Appearance	Solid, powder. White to Off-White
Odor	Odorless
Odor threshold	No data available
pH	10.9-11.9
Melting point / freezing point	> 500 C
Initial boiling point and boiling range	No data available
Flash Point	Not known
Evaporation rate (Ether = 1)	No data available
Flammability (solid, gas)	Carbon monoxide and carbon dioxide may form on combustion.
Upper/lower flammability or explosive limits	No data available
Vapor pressure (Pa)	No data available
Vapor Density	No data available
Specific Gravity	No data available
Solubility in Water	Insoluble
Partition coefficient n-octanol/water (Log Kow)	No data available
Auto-ignition temperature	Not known
Decomposition temperature	No data available
Viscosity (cSt)	No data available
Density (lbs/gal)	No data available

9.2. Other information

No data available

10. Stability and reactivity

10.1. Reactivity

No data available

10.2. Chemical stability

Stable under recommended storage conditions.

10.3. Possibility of hazardous reactions

No data available.

10.4. Conditions to avoid

Mixture with strong acids produces considerable heat.

10.5. Incompatible materials

Avoid contact with the following: copper, tin, zinc, aluminum, and their alloys.

10.6. Hazardous decomposition products

Will not occur. In the event of fire: see section 5.

11. Toxicological information

11.1 Information on toxicological effects**Acute Toxicity****Inhalation**

No data available

Skin corrosion/irritation

No data available

Serious eye damage/eye irritation

No data available

Respiratory or skin sensitization

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present as levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.



Safety Data Sheet

Star-Plex

SDS Revision Date: 09/01/2015

Reproductive toxicity

No data available

Specific target organ toxicity-single exposure

No data available

Specific target organ toxicity-repeated exposure

No data available

Aspiration hazard

No data available

Additional Information

Ingestion or inhalation of large quantity may cause feverish reaction and leukocytosis-diarrhea. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

12. Ecological information

12.1. Aquatic Toxicity

Please contact our office for the most up to date information.

12.2. Persistence and degradability

No data available

12.3. Bioaccumulative potential

No data available

12.4. Mobility in soil

No data available

12.5. Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/ not conducted

12.6. Other adverse effects

When released into the soil, this material is not expected to biodegrade and may leach into groundwater.

13. Disposal considerations

13.1. Waste treatment methods

Methods Product

Do not allow residue to flow into drainage system. Waste disposal according to regulations of responsible local authority.

Contaminated packaging

Waste disposal according to regulations of responsible local authority.

14. Transport information**DOT (US)**

Not regulated for transportation by DOT, TDG, IMDG, ICAO/IATA

IMDG

Not regulated for transportation by DOT, TDG, IMDG, ICAO/IATA

IATA

Not regulated for transportation by DOT, TDG, IMDG, ICAO/IATA

15. Regulatory information**SARA 302 Components**

None. If no components are listed below, this product is not subject to the referenced SARA and regulations.

SARA 313 Components

None. If no components are listed below, this product is not subject to the referenced SARA and regulations.

SARA 311/312 HAZARDS

Delayed/ Chronic Health Hazard

Massachusetts Right To Know Components

Does not apply.

Pennsylvania Right To Know Components

Does not apply.

New Jersey Right to Know Components

Does not apply.

16. Other information

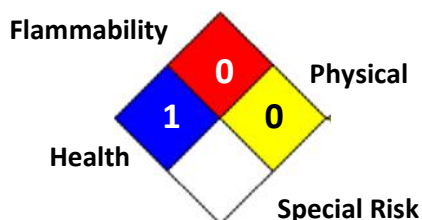
This is the first version in the GHS SDS format. Listings of changes from previous versions in other formats are not applicable.

The information and data herein are believed to be accurate and have been compiled from sources believed to be reliable. It is offered for your consideration, investigation and verification. Buyer assumes all risk of use, storage and handling of the product in compliance with applicable Federal, State and local law and regulations. NorthStar Fluid Solutions makes no warranty of any kind, express or implied, concerning the accuracy of completeness of the information and data herein. The implied warranties of merchantability and fitness for a particular purpose are specifically excluded. NorthStar Fluid Solutions will not be liable for claims relating to any use of this product.

Emergency Overview:

Risk Classification System:

HEALTH	1
FLAMMABILITY	0
PHYSICAL	0
PPE	E



End of Document



MATERIAL SAFETY DATA SHEET

Lubra-Star Plus

Page: 1

Printed: 02/20/2013

Revision: 02/20/2013

Supersedes Revision: 01/08/2013

1. Product and Company Identification

Product Code: 0003
Product Name: Lubra-Star Plus
Trade Name: Water Soluble Lubricant
Company Name: NorthStar Fluid Solutions
PO Box 271036
Louisville, CO 80027
Phone Number: (303)495-3130
Web site address: www.northstarfluids.com
Emergency Contact: ChemTrec 1 (800)424-9300
International 1 (703)527-3887
Information:

2. Hazards Identification

Emergency Overview: Product may be irritating to eyes, skin
Eyes: May cause slight irritation to the eyes. Contact with hot or molten material can cause severe thermal burns.
Skin: May be irritating to the skin. Contact with hot or molten material can cause severe thermal burns.
Ingestion: Not anticipated route or exposure. Not expected to be orally toxic.
Inhalations No adverse effects expected in normal industrial use

Hazard Rating System:

HEALTH	1
FLAMMABILITY	1
PHYSICAL	0
PPE	E

Flammability
Instability
0
Health
Special Hazard

Potential Health Effects (Acute and Chronic): None known. the components of this product are not known to cause target organ effects. not listed as a carcinogen by IARC, NTP or OSHA

3. Composition/Information on Ingredients

CAS #	Hazardous Components (Chemical Name)	Concentration
NA	(Trade Secret)	0.0 -100.0 %

4. First Aid Measures

Emergency and First Aid

Procedures: Remove person to fresh air. Get medical attention for any breathing difficulty.

In Case of Inhalation:

In Case of Skin Contact: Wash exposed are with soap and water. Remove contaminated clothing and wash before reuse. Get medical attention if irritated develops. For hot or molten product, immediately immerse and/or flush are with large amounts of cold water. Cover with clean cotton sheeting or gauze and get prompt medical attention.

In Case of Eye Contact: Remove contact lenses if worn. Flush thoroughly with large amounts of running water for at least 15 minutes. Get medical attention if irritations develops.

In Case of Ingestion: If person is conscious, immediately rinse mouth and give large quanties of water to drink. Get immediate medical attention. Never give anything by mouth to an unconscious person.



MATERIAL SAFETY DATA SHEET

Lubra-Star Plus

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Printed: 02/20/2013

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Supersedes Revision: 01/08/2013

5. Fire Fighting Measures

Flash Pt: > 206.00 F

Explosive Limits: LEL: No data. UEL: No data.

Autoignition Pt: No data.

Suitable Extinguishing Media: Carbon dioxide, dry chemical or regular foam.

Fire Fighting Instructions: Evacuate all unnecessary personal. Wear self contained breathing apparatus and protection for skin. Mixing water with hot molten product may cause violent splattering due to rapid steam generation.

Flammable Properties and Hazards: No data available.

6. Accidental Release Measures

Protective Precautions, Protective Equipment and Emergency Procedures: Wear appropriate protective clothing to prevent skin exposure.

Steps To Be Taken In Case Material Is Released Or Spilled: Stop leak if you can do so without risk. Contain, collect by absorbing on sand, sawdust or other available solids and place in suitable container for reuse or disposal.

7. Handling and Storage

Precautions To Be Taken in Handling: Handle only in well ventilated area. Avoid eye contact. Avoid repeated or prolonged skin contact. Use appropriate protective equipment. Unvented containers may develop pressure. Open with caution. Wash thoroughly after handling. Eyewash stations and safety showers should be easily accessible to area where product is used.

Precautions To Be Taken in Storing: Store in a cool, dry, well-ventilated area away from incompatible substances. Keep containers closed when not in use. Store hot or molten material under an inert gas blanket to avoid oxidative degradation. Keep away from oxidizing agents and alkalis.

8. Exposure Controls/Personal Protection

CAS #	Partial Chemical Name	OSHA TWA	ACGIH TWA	Other Limits
NA	(Trade Secret)	No data.	No data.	No data.
Respiratory Equipment (Specify Type):	None required under normal conditions of use. A system of local and/or general exhaust is recommended if handled in a confined area.			
Eye Protection:	Safety glasses with side shields			
Protective Gloves:	Wear long sleeved clothing and rubber or neoprene gloves. use heat resistant gloves for hot or molten material. As appropriate for work area.			
Other Protective Clothing:	As appropriate for work area.			
Engineering Controls (Ventilation etc.):	Not applicable.			



MATERIAL SAFETY DATA SHEET

Lubra-Star Plus

Page: 3

Printed: 02/20/2013

Revision: 02/20/2013

Supersedes Revision: 01/08/2013

9. Physical and Chemical Properties

Physical States: ☐ Gas ☒ Liquid ☐ Solid

Appearance and Odor: Appearance: Black. Viscous.
Odor: sweet

Melting Point: No data.

Boiling Point: > 375.00 F - 190.60 C

Autoignition Pt: No data.

Flash Pt: > 206.00 F

Explosive Limits: LEL: No data. UEL: No data.

Specific Gravity (Water = 1): ~ .91 - .94

Vapor Pressure (vs. Air or mm Hg): No data.

Vapor Density (vs. Air = 1): NA

Evaporation Rate: PR

Solubility in Water: No data.

pH: NP

Percent Volatile: No data.

10. Stability and Reactivity

Stability: Unstable ☐ Stable ☒

Conditions To Avoid - Instability: Stable under normal conditions of use and storage

Incompatibility - Materials To Avoid: strong oxidizers, alkalis.

Hazardous Decomposition Or Byproducts: oxides of sulfur

Possibility of Hazardous Reactions: Will occur ☐ Will not occur ☒

Conditions To Avoid - Hazardous Reactions: No data available.

11. Toxicological Information

Toxicological Information: No data available.

Chronic Toxicological Effects: No acute toxicity data is available for product or components. Cancer Status: not listed as carcinogen by IARC, NTP or OSHA. There are no known chronic effects from exposure to this product.

12. Ecological Information

General Ecological Information: No information found.

Persistence and Degradability: This product is biodegradable under aerobic and anaerobic condensations



MATERIAL SAFETY DATA SHEET

Lubra-Star Plus

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Printed: 02/20/2013

Revision: 02/20/2013

Supersedes Revision: 01/08/2013

13. Disposal Considerations

Waste Disposal Method: Please be advised that state and local requirements for waste disposal may be more restrictive or otherwise different from federal laws and regulations. Consult state and local regulations regarding the proper disposal of this material.
Any containers or equipment used should be decontaminated immediately after use.

14. Transport Information

LAND TRANSPORT (US DOT):

DOT Proper Shipping Name: Non-Hazardous for Air Transport: Non-hazardous for air transport.

DOT Hazard Class:

UN/NA Number:

15. Regulatory Information

EPA SARA (Superfund Amendments and Reauthorization Act of 1986) Lists

CAS #	Hazardous Components (Chemical Name)	S. 302 (EHS)	S. 304 RQ	S. 313 (TRI)
NA	(Trade Secret)	No	No	No

16. Other Information

Additional Information About No data available.

This Product:

Company Policy or

Disclaimer:

Although the information and recommendations set forth herein (hereinafter "Information") are presented in good faith and believed to be correct as of the date hereof, NorthStar Fluid Solutions, makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the person receiving this MSDS will make own determination as to its suitability for their intended purpose prior to use. Since the product is within the exclusive control of the user, it is the user's obligation to determine the conditions of safe use of this product. Such conditions should comply with all Federal Regulations concerning the Product. NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER NATURE ARE MADE HERUNDER WITH RESPECT TO INFORMATION OR THE PRODUCT TO WHICH INFORMATION REFERS.



Lost Circulation Specialists, Inc.

Lost Circulation Specialists, Inc.			
Effective Date: January 1, 2010			
Section 1			
Product Identification			
Product Name:		Generic Name:	
Magma Fiber		Mineral Fiber	
Primary Components: Vitreous fiber made from blast furnase slug and/or basalt (mixture)			
Section 2			
Ingredients (Not specification values)			
Materials	PEL	TLV	CAS#
Mineral Fiber	15 mg/M3 (total)	10 mg/M3 (total)	None Assigned
	5 mg/M3 (respirable)	5 mg/M3 (respirable)	
Section 3			
Physical Data			
Melting Point (F): 2400		Colour and Odor: White-Gray/Tan Fiber, Low Odor	
Vapour Pressure: N/A		Vap Density (Air=1): N/A	
Specific Gravity: 2.6		Solubility in Water: Not	
Physical State: Solid		% Volatile by Vol: None	
Section 4			
Fire and Explosion Hazard Data			
Flash Point (C): Non-Combustible (ASTME84)		Extinguishing Media: Non-Combustible	
Flammable Limits: N/A		Fire and Explosion Hazard: None	
Section 5			
Reactivity Data			
Stability: Stable			
Conditions to Avoid: None			

Incompatability: Acids (Gives off H2S under certain conditions)
Decomposition: None
Polymerization: Will not occur

Section 6	
Health Hazard Data	
Oral Ingestion	N/A
Eye Contact	Mineral fiber may cause transitory (temporary) mechanical irritation to eyes
Skin Contact	Skin contact may cause transitory skin irritation and possible irritation to eyes and upper respiratory tract
Skin Absorption	N/A
Inhalation	May cause transitory irritation to upper respiratory tract when handling this product, wear a NIOSH approved dust mask or respirator, avoid creating excessive dust IARC Group 3- Not Classifiable as carcinogenicity in humans NTP- Not Classified ACGIH- Not Classified
Over Exposure Effect	Mineral fiber may cause transitory mechanical irritation to eyes, skin or upper respiratory tract

First Aid Procedure	
Eyes	Flush with water and see a physician if irritation continues
Skin	Wash fiber from skin with soap and water
Ingestion	Call a physician

Section 7	
Special Protection	
Ventilation	Local exhaust or mechanical ventilation to keep below TLV
Respiratory	Niosh approved 3M 8710 or equivalent dust respirator is recommended
Clothing	Gloves if dust is irritating, tight fitting goggles in dusty environment, wear long sleeved, loose fitting clothing closed at neck and wrists to minimize skin exposure, wash clothes separately from underwear

Eye Protection	To avoid eye irritation wear safety glasses or goggles
Section 8 Spill or Leak Procedure	
Steps to be taken: Normal clean-up procedures, avoid creating excessive dust	
Disposal method: To landfill in accordance with local, provincial and federal regulations	
Section 9 Special precautions or other comments	
TDG Shipping Name: Non-hazardous	

HOME	MAGMA FIBER	CONTACT US
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SAFETY DATA SHEET

POLYSELECT™ DMD SODA ASH

Product Trade Name:

Revision Date: 23-Mar-2017

Revision Number: 5

1. Identification

1.1. Product Identifier

Product Trade Name: POLYSELECT™ DMD SODA ASH
Synonyms: None
Chemical Family: Carbonate
Internal ID Code: HM008028

1.2 Recommended use and restrictions on use

Application: Buffer
Uses advised against: No information available

1.3 Manufacturer's Name and Contact Details

Manufacturer/Supplier
Halliburton Energy Services Inc.
P.O. Box 1431
Duncan, Oklahoma 73536-0431

Halliburton Energy Services
645 - 7th Ave SW Suite 1800
Calgary, AB
T2P 4G8
Canada

Prepared By: Chemical Stewardship
Telephone: 1-281-871-6107
e-mail: fdunexchem@halliburton.com

1.4. Emergency telephone number

Emergency Telephone Number: 1-866-519-4752 or 1-760-476-3962
Global Incident Response Access Code: 334305
Contract Number: 14012

2. Hazards Identification

2.1 Classification in accordance with paragraph (d) of §1910.1200

Serious Eye Damage/Irritation	Category 2 - H319
-------------------------------	-------------------

2.2. Label Elements

Hazard Pictograms



Signal Word: Warning

Hazard Statements H319 - Causes serious eye irritation

Precautionary Statements

Prevention P264 - Wash face, hands and any exposed skin thoroughly after handling
P280 - Wear eye protection/face protection
Response P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P337 + P313 - If eye irritation persists: Get medical advice/attention
Storage None
Disposal None

2.3 Hazards not otherwise classified

None known

3. Composition/information on Ingredients

Substances	CAS Number	PERCENT (w/w)	GHS Classification - US
Sodium carbonate	497-19-8	60 - 100%	Eye Irrit. 2 (H319)

The exact percentage (concentration) of the composition has been withheld as proprietary.

4. First Aid Measures

4.1. Description of first aid measures

Inhalation If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.
Eyes In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.
Skin Wash with soap and water. Get medical attention if irritation persists.
Ingestion Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention.

4.2 Most important symptoms/effects, acute and delayed

Causes eye irritation

4.3. Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically.

5. Fire-fighting measures

5.1. Extinguishing media

Suitable Extinguishing Media

Water fog, carbon dioxide, foam, dry chemical.

Extinguishing media which must not be used for safety reasons

None known.

5.2 Specific hazards arising from the substance or mixture

Special exposure hazards in a fire

Decomposition in fire may produce harmful gases.

5.3 Special protective equipment and precautions for fire-fighters

Special protective equipment for firefighters

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Use appropriate protective equipment. Avoid creating and breathing dust. Avoid contact with skin, eyes and clothing. Ensure adequate ventilation.

See Section 8 for additional information

6.2. Environmental precautions

Prevent from entering sewers, waterways, or low areas.

6.3. Methods and material for containment and cleaning up

Scoop up and remove.

7. Handling and storage

7.1. Precautions for safe handling

Handling Precautions

Avoid contact with eyes, skin, or clothing. Avoid creating or inhaling dust. Ensure adequate ventilation. Wash hands after use. Launder contaminated clothing before reuse. Use appropriate protective equipment.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

Storage Information

Store away from acids. Store in a cool, dry location. Product has a shelf life of 36 months.

8. Exposure Controls/Personal Protection

8.1 Occupational Exposure Limits

Substances	CAS Number	OSHA PEL-TWA	ACGIH TLV-TWA
Sodium carbonate	497-19-8	Not applicable	Not applicable

8.2 Appropriate engineering controls

Engineering Controls

Use in a well ventilated area. Localized ventilation should be used to control dust levels.

8.3 Individual protection measures, such as personal protective equipment

Personal Protective Equipment

If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

Respiratory Protection

If engineering controls and work practices cannot keep exposure below occupational exposure limits or if exposure is unknown, wear a NIOSH certified, European Standard EN 149, AS/NZS 1715:2009, or equivalent respirator when using this product. Selection of and instruction on using all personal protective

equipment, including respirators, should be performed by an Industrial Hygienist or other qualified professional.

Hand Protection	Normal work gloves.
Skin Protection	Normal work coveralls.
Eye Protection	Dust proof goggles.
Other Precautions	None known.

9. Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Physical State:	Powder	Color	White
Odor:	Odorless	Odor Threshold:	No information available

<u>Property</u>	<u>Values</u>
Remarks/ - Method	
pH:	11.5
Freezing Point / Range	No data available
Melting Point / Range	851 °C
Boiling Point / Range	No data available
Flash Point	No data available
Flammability (solid, gas)	No data available
Upper flammability limit	No data available
Lower flammability limit	No data available
Evaporation rate	No data available
Vapor Pressure	No data available
Vapor Density	No data available
Specific Gravity	2.5
Water Solubility	Partly soluble
Solubility in other solvents	No data available
Partition coefficient: n-octanol/water	No data available
Autoignition Temperature	No data available
Decomposition Temperature	No data available
Viscosity	No data available
Explosive Properties	No information available
Oxidizing Properties	No information available

9.2. Other information

Molecular Weight	105.99 g/mole
VOC Content (%)	No data available

10. Stability and Reactivity

10.1. Reactivity

Not expected to be reactive.

10.2. Chemical stability

Stable

10.3. Possibility of hazardous reactions

Will Not Occur

10.4. Conditions to avoid

None anticipated

10.5. Incompatible materials

Strong acids.

10.6. Hazardous decomposition products

Carbon monoxide and carbon dioxide.

11. Toxicological Information**11.1 Information on likely routes of exposure****Principle Route of Exposure** Eye or skin contact, inhalation.**11.2 Symptoms related to the physical, chemical and toxicological characteristics****Acute Toxicity**

Inhalation	May cause mild respiratory irritation.
Eye Contact	Causes eye irritation.
Skin Contact	None known.
Ingestion	Irritation of the mouth, throat, and stomach.

Chronic Effects/Carcinogenicity No data available to indicate product or components present at greater than 0.1% are chronic health hazards.**11.3 Toxicity data****Toxicology data for the components**

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Sodium carbonate	497-19-8	4090 mg/kg (Rat) 2800 mg/kg (Rat)	2210 mg/kg (Mouse) > 2000 mg/kg (Rabbit)	2.3 mg/L (Rat) 2h

Substances	CAS Number	Skin corrosion/irritation
Sodium carbonate	497-19-8	Non-irritating to the skin

Substances	CAS Number	Serious eye damage/irritation
Sodium carbonate	497-19-8	Irritating to eyes

Substances	CAS Number	Skin Sensitization
Sodium carbonate	497-19-8	Not classified

Substances	CAS Number	Respiratory Sensitization
Sodium carbonate	497-19-8	No information available

Substances	CAS Number	Mutagenic Effects
Sodium carbonate	497-19-8	In vivo tests did not show mutagenic effects.

Substances	CAS Number	Carcinogenic Effects
Sodium carbonate	497-19-8	No information available

Substances	CAS Number	Reproductive toxicity
Sodium carbonate	497-19-8	Did not show teratogenic effects in animal experiments.

Substances	CAS Number	STOT - single exposure
Sodium carbonate	497-19-8	No significant toxicity observed in animal studies at concentration requiring classification.

Substances	CAS Number	STOT - repeated exposure
Sodium carbonate	497-19-8	No significant toxicity observed in animal studies at concentration requiring classification.

Substances	CAS Number	Aspiration hazard
Sodium carbonate	497-19-8	Not applicable

12. Ecological Information

12.1. Toxicity**Substance Ecotoxicity Data**

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Sodium carbonate	497-19-8	EC50 242 mg/L (Nitzschia)	TLM24 385 mg/L (Lepomis macrochirus) LC50 310-1220 mg/L (Pimephales promelas) LC50 (96h) 300 mg/L (Lepomis macrochirus)	No information available	EC50 265 mg/L (Daphnia magna) EC50 (48h) 200 – 227 mg/L (Ceriodaphnia sp.)

12.2. Persistence and degradability

Substances	CAS Number	Persistence and Degradability
Sodium carbonate	497-19-8	The methods for determining biodegradability are not applicable to inorganic substances.

12.3. Bioaccumulative potential

Substances	CAS Number	Log Pow
Sodium carbonate	497-19-8	No information available

12.4. Mobility in soil

Substances	CAS Number	Mobility
Sodium carbonate	497-19-8	No information available

12.5 Other adverse effects

No information available

13. Disposal Considerations**13.1. Waste treatment methods**

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

14. Transport Information**US DOT**

UN Number Not restricted
UN proper shipping name: Not restricted
Transport Hazard Class(es): Not applicable
Packing Group: Not applicable
Environmental Hazards: Not applicable

Canadian TDG

UN Number Not restricted
UN proper shipping name: Not restricted
Transport Hazard Class(es): Not applicable
Packing Group: Not applicable
Environmental Hazards: Not applicable

IMDG/IMO

UN Number Not restricted
UN proper shipping name: Not restricted
Transport Hazard Class(es): Not applicable
Packing Group: Not applicable

Environmental Hazards: Not applicable

IATA/ICAO

UN Number Not restricted
UN proper shipping name: Not restricted
Transport Hazard Class(es): Not applicable
Packing Group: Not applicable
Environmental Hazards: Not applicable

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable

Special Precautions for User None

15. Regulatory Information

US Regulations

US TSCA Inventory All components listed on inventory or are exempt.

TSCA Significant New Use Rules - S5A2

Substances	CAS Number	TSCA Significant New Use Rules - S5A2
Sodium carbonate	497-19-8	Not applicable

EPA SARA Title III Extremely Hazardous Substances

Substances	CAS Number	EPA SARA Title III Extremely Hazardous Substances
Sodium carbonate	497-19-8	Not applicable

EPA SARA (311,312) Hazard Class

Acute Health Hazard

EPA SARA (313) Chemicals

Substances	CAS Number	Toxic Release Inventory (TRI) - Group I	Toxic Release Inventory (TRI) - Group II
Sodium carbonate	497-19-8	Not applicable	Not applicable

EPA CERCLA/Superfund Reportable Spill Quantity

Substances	CAS Number	CERCLA RQ
Sodium carbonate	497-19-8	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 All components listed do not apply to the California Proposition 65 Regulation.

MA Right-to-Know Law Does not apply.

NJ Right-to-Know Law Does not apply.

PA Right-to-Know Law Does not apply.

NFPA Ratings: Health 1, Flammability 0, Reactivity 0

HMIS Ratings: Health 1, Flammability 0, Reactivity 0, PPE: B

Canadian Regulations

Canadian Domestic Substances List (DSL) All components listed on inventory or are exempt.

16. Other information

Preparation Information

Prepared By Chemical Stewardship
Telephone: 1-281-871-6107
e-mail: fdunexchem@halliburton.com

Revision Date: 23-Mar-2017

Reason for Revision SDS sections updated:
1

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 Stewardship at 1-580-251-4335.

Key or legend to abbreviations and acronyms used in the safety data sheet

bw – body weight
CAS – Chemical Abstracts Service
d - day
EC50 – Effective Concentration 50%
ErC50 – Effective Concentration growth rate 50%
h - hour
LC50 – Lethal Concentration 50%
LD50 – Lethal Dose 50%
LL50 – Lethal Loading 50%
mg/kg – milligram/kilogram
mg/L – milligram/liter
mg/m³ - milligram/cubic meter
mm - millimeter
mmHg - millimeter mercury
NIOSH – National Institute for Occupational Safety and Health
NTP – National Toxicology Program
OEL – Occupational Exposure Limit
PEL – Permissible Exposure Limit
ppm – parts per million
STEL – Short Term Exposure Limit
TWA – Time-Weighted Average
UN – United Nations
w/w - weight/weight

Key literature references and sources for data

www.ChemADVISOR.com/

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 Safety Data Sheet



Safety Data Sheet DRILPLEX⁺ HDD

1. Identification

1.1 Product identifier

Product name DRILPLEX⁺ HDD
Product code 12013

1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Rheology modifier.
Uses advised against Consumer use

1.3 Details of the supplier of the safety data sheet

Supplier
M-I PRODUCTION TECHNOLOGIES
A Business Unit of M-I L.L.C.
P.O. Box 42842
Houston, TX 77242
www.miswaco.slb.com

Prepared by
Global Chemical Regulatory Compliance (GCRC) , Mike McDowell

1.4 Emergency Telephone Number

Emergency telephone (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 561 1600
Telephone Number - 281-561-1511

2. Hazards identification

2.1 Classification of the substance or mixture

GHS - Classification

Health hazards

Serious eye damage/eye irritation	Category 2
-----------------------------------	------------

Environmental hazards Not classified

Physical Hazards Not classified

2.2 Label elements



Signal word
WARNING

Hazard statements
H319 - Causes serious eye irritation

Precautionary statements

P264 - Wash face, hands and any exposed skin thoroughly after handling
P280 - Wear protective gloves/ protective clothing/ eye protection/ face protection
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P337 + P313 - If eye irritation persists: Get medical advice/attention

Unknown acute toxicity 45.05% of the mixture consists of ingredient(s) of unknown toxicity.

3. Composition/information on Ingredients

3.1 Substances

Not Applicable

3.2 Mixtures

Component	CAS-No	Weight % - range
Sodium carbonate	497-19-8	30 - 60
Calcium hydroxide	1305-62-0	1 - 5

4. First aid measures

4.1 First-Aid Measures

Inhalation	If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.
Ingestion	Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Seek medical attention if irritation occurs.
Skin contact	Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes. Get medical attention immediately if symptoms occur.
Eye contact	Remove contact lenses. Promptly wash eyes with lots of water while lifting eye lids. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

4.2 Most important symptoms and effects, both acute and delayed

General advice The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible.

Main symptoms

Inhalation Please see Section 11. Toxicological Information for further information.

Ingestion Please see Section 11. Toxicological Information for further information.

Skin contact Please see Section 11. Toxicological Information for further information.

Eye contact Please see Section 11. Toxicological Information for further information.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician Treat symptomatically

5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media

Water Fog, Alcohol Foam, CO₂, Dry Chemical.

Extinguishing media which shall not be used for safety reasons

None known.

5.2 Special hazards arising from the substance or mixture

Unusual fire and explosion hazards

None known.

Hazardous combustion products

Fire or high temperatures create: Carbon dioxide (CO₂).

5.3 Advice for firefighters

Special protective equipment for fire-fighters

As in any fire, wear self-contained breathing apparatus and full protective gear.

Special Fire-Fighting Procedures

Containers close to fire should be removed immediately or cooled with water.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. See also section 8.

6.2 Environmental precautions

The product should not be allowed to enter drains, water courses or the soil.

Environmental exposure controls

Avoid release to the environment. Local authorities should be advised if significant spillages cannot be contained.

6.3 Methods and materials for containment and cleaning up

Methods for containment

Prevent further leakage or spillage if safe to do so.

Methods for cleaning up

Sweep up and shovel into suitable containers for disposal. After cleaning, flush away traces with water.

6.4 Reference to other sections

See section 13 for more information.

7. Handling and storage

7.1 Precautions for safe handling

Handling

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Avoid dust formation.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures/precautions Ensure adequate ventilation. Keep airborne concentrations below exposure limits.

Storage precautions Keep containers tightly closed in a dry, cool and well-ventilated place. Avoid contact with:
Acids

8. Exposure controls/personal protection

8.1 Control parameters

Component	ACGIH TLV	OSHA PEL
Sodium carbonate	Not Determined	Not Determined
Calcium hydroxide	5 mg/m ³	5 mg/m ³ (resp); 15 mg/m ³ (total)

8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

Engineering measures to reduce exposure

Ensure adequate ventilation.

Personal protective equipment

Eye protection

It is good practice to wear goggles when handling any chemical. Tightly fitting safety goggles.

Hand protection

Repeated or prolonged contact: Use protective gloves made of: Nitrile, Neoprene.

Respiratory protection

No personal respiratory protective equipment normally required. In case of insufficient ventilation wear suitable respiratory equipment, Half mask with a particle filter P2 (European Norm EN 143 = former DIN 3181).

Skin and body protection

Wear suitable protective clothing, Eye wash and emergency shower must be available at the work place.

Hygiene measures

Wash hands before eating, drinking or smoking, Remove and wash contaminated clothing before re-use.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	Solid
Appearance	Powder Dust
Odor	Odorless
Color	Off-white
Odor threshold	Not applicable

<u>Property</u>	<u>Values</u>	<u>Remarks</u>
pH		
pH @ dilution	10 - 10.8 @1%	
Melting/freezing point		
Boiling point/range	No information available	
Flash point	No information available	
Evaporation rate (BuAc =1)	No information available	
Flammability (solid, gas)	Not Applicable	
Flammability Limits in Air		
Upper flammability limit	No information available	
Lower flammability limit	No information available	
Vapor pressure	No information available	
Vapor density	No information available	
Specific gravity	2.0 - 2.5	@ 20 °C
Bulk density	No information available	
Water solubility	Miscible with water.	
Solubility in other solvents	No information available	
Autoignition temperature	No information available	
Decomposition temperature	No information available	
Kinematic viscosity	No information available	
Dynamic viscosity	No information available	
Log Pow	Not determined	
Explosive properties	Not Applicable	
Oxidizing properties	None known.	

9.2 Other information

Pour point	No information available
Molecular weight	No information available
VOC content(%)	None
Density	No information available

10. Stability and reactivity

10.1 Reactivity

No specific reactivity hazards associated with this product.

10.2 Chemical stability

Stable under normal temperature conditions and recommended use.

10.3 Possibility of Hazardous Reactions

Hazardous polymerization

Hazardous polymerization does not occur.

10.4 Conditions to avoid

Protect from moisture.

10.5 Incompatible materials

Acids. Oxidizing agents. Reacts with active metals such as sodium and potassium, amines, liquid fluorine, and liquid chlorine trifluoride. Maleic anhydride. Nitroparaffins.

10.6 Hazardous decomposition products

Carbon oxides (CO_x). Sodium oxides. Metal fumes.

11. Toxicological information

11.1 Information on toxicological effects

Unknown acute toxicity

Inhalation	Inhalation of dust may cause shortness of breath, tightness of the chest, a sore throat and cough.
Eye contact	Causes serious eye irritation.
Skin contact	Causes skin irritation.
Ingestion	Irritant; may cause pain or discomfort to mouth, throat and stomach.

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Sodium carbonate	= 4090 mg/kg (Rat)	No data available	No data available
Calcium hydroxide	= 7340 mg/kg (Rat)	No data available	No data available

Component	IARC Group 1 or 2	ACGIH - Carcinogens	OSHA listed carcinogens	NTP
Sodium carbonate	N/A	N/A	N/A	N/A
Calcium hydroxide	N/A	N/A	N/A	N/A

Sensitization This product does not contain any components suspected to be sensitizing.

Mutagenic effects This product does not contain any known or suspected mutagens.

Carcinogenicity This product does not contain any known or suspected carcinogens.

Reproductive toxicity No evidence of toxicity to reproduction.

Developmental toxicity Not known to cause birth defects or have a deleterious effect on a developing fetus.

Routes of exposure Eye contact. Skin contact.

Routes of entry No route of entry noted.

Specific target organ toxicity (single exposure) Not classified

Specific target organ toxicity (repeated exposure)	Not classified.
Neurological effects	None known.
Target organ effects	None known.
Aspiration hazard	No hazard from product as supplied.

12. Ecological information

12.1 Toxicity

Toxicity to algae

This product is not considered toxic to algae. See component information below.

Toxicity to fish

This product is not considered toxic to fish. See component information below.

Toxicity to daphnia and other aquatic invertebrates

This product is not considered toxic to invertebrates. See component information below.

Component	Toxicity to fish	Toxicity to algae	Toxicity to daphnia and other aquatic invertebrates
Sodium carbonate 497-19-8 (30 - 60)	300 mg/L LC50 (Lepomis macrochirus) = 96 h 310 - 1220 mg/L LC50 (Pimephales promelas) = 96 h	242 mg/L EC50 (Nitzschia) = 120 h	265 mg/L EC50 (Daphnia magna) = 48 h
Calcium hydroxide 1305-62-0 (1 - 5)	160 mg/L LC50 (Gambusia affinis) = 96 h	No information available	No information available

12.2 Persistence and degradability

Not Applicable - Inorganic chemical.

12.3 Bioaccumulative potential

Not Applicable - Inorganic chemical.

12.4 Mobility in soil

The product is miscible with water. May spread in water systems.

12.5 Results of PBT and vPvB assessment

This preparation contains no substance considered to be persistent, bioaccumulating nor toxic (PBT)
This preparation contains no substance considered to be very persistent nor very bioaccumulating (vPvB)

12.6 Other adverse effects.

None known.

13. Disposal considerations

13.1 Waste treatment methods

Disposal Method Disposal should be made in accordance with federal, state and local regulations.

Contaminated packaging Empty containers should be taken for local recycling, recovery or waste disposal.

14. Transport information

14.1 UN Number

Not regulated

UN/ID No. (ADR/RID/ADN/ADG)	Not regulated
UN No. (IMDG)	Not regulated
UN No. (ICAO)	Not regulated
UN No. (DOT)	Not regulated

14.2 Proper shipping name

Not regulated for transportation by DOT, TDG, IMDG and ICAO/IATA.

14.3 Hazard class(es)

ADR/RID/ADN Hazard class	Not regulated
IMDG Hazard class	Not regulated
ICAO Hazard class/division	Not regulated
DOT Hazard class	Not regulated

14.4 Packing group

ADR/RID/ADN Packing Group	Not regulated
IMDG Packing group	Not regulated
ICAO Packing group	Not regulated
DOT Packing group	Not regulated

Marine pollutant

No

14.6 Special precautions

Not Applicable

15. Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

International inventories

USA (TSCA)	Complies
European Union (EINECS and ELINCS)	Complies
Canada (DSL)	Complies
Philippines (PICCS)	Does not Comply
Japan (ENCS)	Does not Comply
China (IECSC)	Complies
Australia (AICS)	Does not Comply
Korean (KECL)	Complies

New Zealand (NZIoC)

Does not Comply

IMPORTS, Canada

No import volume restrictions.

U.S. Federal and State Regulations

Component	SARA 302 / TPQs	SARA 313	CERCLA RQ
Sodium carbonate	N/A	N/A	N/A
Calcium hydroxide	N/A	N/A	N/A

State Comments

Proposition 65: This product is not known to contain chemicals considered by the State of California's Safe Drinking Water and Toxic Enforcement Act of 1986 as causing cancer and/or reproductive toxicity at levels that are expected to pose a significant risk under anticipated use conditions.

This product has been classified in accordance with the hazard criteria of the CPR and the SDS contains all the information required by the CPR.

WHMIS Hazard Class

D2B

16. Other information

Supersedes date 20/Dec/2013

Revision date 23/Dec/2014

Version 9

Health 2
Flammability 1
Physical hazard 0
PPE E

†A mark of M-I L.L.C.

Disclaimer

The information provided in this 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.

DCS Fluid Solutions
PO Box 1027
Graham, TX 76450



Office 940-521-0500

Fax 940-521-0504

August 23, 2019

Mr. Shaun Kavajecz

Dear Sir,

Per your request

All vendors/manufacturers were questioned regarding sulphate content in their products.

These are the results.

Product name	Contains sulphates?		Amount
	Yes	No	
CETCO SuperGel X	X		3-36 meg/100 grams <200mg/KG
Soda Ash	X		
AMC Gel		X	
ClayBreaker/ ClayCutter		X	
TorqBreaker		X	
FlowPac		X	
SandMaster		X	
SealPac		X	
HDD Lube		X	
Magma Fiber		X	
PolyMud		X	

Advise any questions you may have.

Best Regards

Don White
DCS Fluid Solutions



Mr. Shaun Kavajecz
Director, Environment
Precision Pipeline LLC

Dear Sir,

Per your request. All vendors/manufacturers were questioned regarding sulphate content in their products.

The results are as follows:

DMD Product Name	Product Purpose	Product Dosage Recommendation	Sulfate Content
Power Soda Ash/Soda Ash	Condition Water/Control pH	Add 1lb Soda Ash/250 gallons to raise pH by 1	none*
Barakade Bentonite	Bentonite base for fluid viscosity	Add 15-20lbs per 100 gallons	none*
Star Plex	Rheology Enhancer/Suspension Boost	Add 3lbs per 250 gallons	none*
Power PAC L	Wall Cake Enhancer/Bore Stabilizer	Add 1lb per 100 gallons	none*
Power XAN/No Sag	Hole Cleaning Enhancer/Suspension Boost	Add 1lb per 100 gallons	none*
Lubra Star	Lubricity Enhancer/Torque & Friction Reducer	Add 1gal per 100 gallons	none*
Power Thin	Clay Cutter/Mud Thinner	Add 1gal per 250 gallons	none*
Magma Fiber LCM	Formation Sealing/Hole Plugging Aid	Add 5-15lbs per 100 gallons	none*
Power Swell/Diamond Seal	Formation Sealing/Hole Plugging Aid	Add 5-15lbs per 100 gallons	none*
EZ Mud Gold	Clay/Shale Stabilizer, Clay Swell Inhibitor	Add 1-2lbs per 100 gallons	none*

*product contains no sulfates as part of manufacturing/blending/packaging process

**to be determined, awaiting final determination from blending facility

Please advise if you have any questions.

Regards,

Paul Bonato
Operations Manager

T 720.489.0300
M 720.934.1614
pbonato@muddirect.net

From: [Rick Zavitz](#)
To: [Jared C. Wainwright](#)
Subject: Fwd: [Ext] Drilling Products
Date: Wednesday, March 27, 2019 11:19:33 AM

Jared: Please find attached the sulfate addition rates for the M I Swaco products.

Thank you,

Rick Zavitz
Project Manager / Drilling Fluid Specialist
Directional Crossings Operations,
Michels Corporation
817 Main St
Brownsville, Wi
53006

Begin forwarded message:

From: Sherry Adams <shadams@miswaco.slb.com>
Date: March 27, 2019 at 10:36:33 AM EDT
To: Rick Zavitz <rzavitz@michels.us>
Subject: RE: [Ext] Drilling Products

Here you go, let me know if you need anything else
Thanks Rick

Max Gel = 0-1%
Drilplex = 0%
RingFree = 0%

From: Sherry Adams
Sent: Wednesday, March 27, 2019 9:07 AM
To: 'Rick Zavitz' <rzavitz@michels.us>
Subject: RE: [Ext] Drilling Products

Checking for you now.

From: Rick Zavitz <rzavitz@michels.us>
Sent: Wednesday, March 27, 2019 7:31 AM
To: Sherry Adams <shadams@miswaco.slb.com>
Subject: [Ext] Drilling Products

Sherry: I am doing some submittals for an upcoming project. I have been asked specifically for sulfate content (as a percentage) of the following products;
Max Gel
Drilplex
RingFree.



Bill Colson
Pretec Directional Drilling
General Manager
C: (715) 579-0619
E: bcolson@pretecdd.com

October 20, 2019

Dear Mr. Colson,

Per your request DCS Fluid Solutions has conducted a search of our Safety Data Sheets for the chemical compounds that are banned for use in drilling fluid additives on the Enbridge Line 3 Replacement project. The MPCA banned chemicals searched for are below.

Table 1. Banned additives

Nonylphenol ethoxylates:

CAS no. 9016-45-9 Poly (oxy-1,2-ethanediyl, alpha-(nonylphenyl)-omega-hydroxy-

CAS no. 26027-38-3 Poly (oxy-1,2-ethanediyl, alpha-(4-nonylphenyl)-omega-hydroxy-

CAS no. 37205-87-1 Poly (oxy-1,2-ethanediyl, alpha-(isononylphenyl)-omega-hydroxy-

CAS no. 68412-54-4 Poly (oxy-1,2-ethanediyl, alpha-(nonylphenyl)-omega-hydroxy-, branched

CAS no. 127087-87-0 Poly (oxy-1,2-ethanediyl, alpha-(4-nonylphenyl)-omega-hydroxy-, branched

Nonylphenol:

CAS no. 25154-52-3 Phenol, nonyl- (assumes linear alkyl, not viewed as descriptive of commercial NP) CAS no. 104-40-5 Phenol, 4-nonyl- (assumes linear alkyl, not viewed as descriptive of commercial NP) CAS no. 84852-15-3 Phenol, 4-nonyl-, branched.

None of our proposed additives listed below contained MPCA banned chemicals.

AMC Gel
ClayBreaker
PolyMud
Sandmaster
TorqBreaker
SealPac
Soda Ash
Super GelX

Best Regards

Don White
General Manager
DCS Fluid Solutions
dcsluids@sbcglobal.net



Mr. Shaun Kavajecz
Director, Environment
Precision Pipeline, LLC

October 18, 2019

Shaun:

Per your request we have audited our drilling fluid products to check for banned additives/additive components. Specifically, the list of products below were reviewed:

1. Barakade Bentonite
2. EZ mud Gold
3. Power PAC L
4. Power Swell
5. Power Thin
6. Power XAN
7. Star Plex
8. Lubra Star Plus
9. Magma Fiber LCM
10. Power Soda Ash/Soda Ash

Statement 1 – Drilling Mud Direct, LLC has verified that Products 1 – 10 listed above, do not include any of the additives listed below:

Nonylphenol ethoxylates:

CAS no. 9016-45-9 Poly (oxy-1,2-ethanediyl, alpha-(nonylphenyl)-omega-hydroxy-)

CAS no. 26027-38-3 Poly (oxy-1,2-ethanediyl, alpha-(4-nonylphenyl)-omega-hydroxy-)

CAS no. 37205-87-1 Poly (oxy-1,2-ethanediyl, alpha-(isononylphenyl)-omega-hydroxy-)

CAS no. 68412-54-4 Poly (oxy-1,2-ethanediyl, alpha-(nonylphenyl)-omega-hydroxy-, branched)

CAS no. 127087-87-0 Poly (oxy-1,2-ethanediyl, alpha-(4-nonylphenyl)-omega-hydroxy-, branched)

Nonylphenol:

CAS no. 25154-52-3 Phenol, nonyl- (assumes linear alkyl, not viewed as descriptive of commercial NP)

CAS no. 104-40-5 Phenol, 4-nonyl- (assumes linear alkyl, not viewed as descriptive of commercial NP)

CAS no. 84852-15-3 Phenol, 4-nonyl-, branched.

Should you require any additional information, please do not hesitate to contact us. We are standing by to jump into action if needed.

Kind Regards,

Clint Pitman, General Manager
Drilling Mud Direct, LLC

Max Gel

This letter is to confirm that the product supplied by M-I SWACO, MAX GEL, does not contain any of the additives listed in the table below:

Table 1. Banned additives

Nonylphenol ethoxylates:

CAS no. 9016-45-9 Poly (oxy-1,2-ethanediyl, alpha-(nonylphenyl)-omega-hydroxy

CAS no. 26027-38-3 Poly (oxy-1,2-ethanediyl, alpha-(4-nonylphenyl)-omega-hydroxy

CAS no. 37205-87-1 Poly (oxy-1,2-ethanediyl, alpha-(isononylphenyl)-omega-hydroxy

CAS no. 68412-54-4 Poly (oxy-1,2-ethanediyl, alpha-(nonylphenyl)-omega-hydroxy-, branched

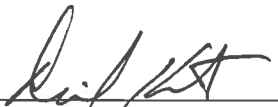
CAS no. 127087-87-0 Poly (oxy-1,2-ethanediyl, alpha-(4-nonylphenyl)-omega-hydroxy-, branched

Nonylphenol:

CAS no. 25154-52-3 Phenol, nonyl- (assumes linear alkyl, not viewed as descriptive of commercial NP)

CAS no. 104-40-5 Phenol, 4-nonyl- (assumes linear alkyl, not viewed as descriptive of commercial NP)

CAS no. 84852-15-3 Phenol, 4-nonyl-, branched.



David Horton

Manager – M-I SWACO, HDD, Mining, & Waterwells

Date: Oct. 16, 2019

DrilPlex HDD

This letter is to confirm that the product supplied by M-I SWACO, DRILPLEX HDD, does not contain any of the additives listed in the table below:

Table 1. Banned additives

Nonylphenol ethoxylates:

CAS no. 9016-45-9 Poly (oxy-1,2-ethanediyl, alpha-(nonylphenyl)-omega-hydroxy

CAS no. 26027-38-3 Poly (oxy-1,2-ethanediyl, alpha-(4-nonylphenyl)-omega-hydroxy

CAS no. 37205-87-1 Poly (oxy-1,2-ethanediyl, alpha-(isononylphenyl)-omega-hydroxy

CAS no. 68412-54-4 Poly (oxy-1,2-ethanediyl, alpha-(nonylphenyl)-omega-hydroxy-, branched

CAS no. 127087-87-0 Poly (oxy-1,2-ethanediyl, alpha-(4-nonylphenyl)-omega-hydroxy-, branched

Nonylphenol:

CAS no. 25154-52-3 Phenol, nonyl- (assumes linear alkyl, not viewed as descriptive of commercial NP)

CAS no. 104-40-5 Phenol, 4-nonyl- (assumes linear alkyl, not viewed as descriptive of commercial NP)

CAS no. 84852-15-3 Phenol, 4-nonyl-, branched.



David Horton

Manager – M-I SWACO, HDD, Mining, & Waterwells

Date: Oct. 16, 2019