



SAFETY DATA SHEET

Product Trade Name: BARA-KADE® BENTONITE

Revision Date: 02-Apr-2015

Revision Number: 10

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
Fax: (281) 871-7940
Emergency Telephone: (281) 575-5000

Prepared By: Chemical Stewardship
Telephone: 1-580-251-4335
e-mail: fdunexchem@halliburton.com

1.4. Emergency telephone number

Emergency Telephone Number: (281) 575-5000

2. Hazard(s) 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/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

Contains Substances

	CAS Number
Bentonite	1302-78-9
Crystalline silica, quartz	14808-60-7
Crystalline silica, cristobalite	14464-46-1
Crystalline silica, tridymite	15468-32-3

2.3 Hazards not otherwise classified

None known

3. Composition/information on Ingredients

Substances	CAS Number	PERCENT (w/w)	GHS Classification - US
Bentonite	1302-78-9	60 - 100%	Not classified
Crystalline silica, quartz	14808-60-7	1 - 5%	Carc. 1A (H350) STOT RE 1 (H372)
Crystalline silica, cristobalite	14464-46-1	0.1 - 1%	Carc. 1A (H350) STOT RE 1 (H372)
Crystalline silica, tridymite	15468-32-3	0.1 - 1%	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

Decomposition in fire may produce toxic gases.

5.3 Special protective equipment and precautions for fire-fighters

Special Protective Equipment for Fire-Fighters

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
Bentonite	1302-78-9	Not applicable	TWA: 1 mg/m ³
Crystalline silica, quartz	14808-60-7	10 mg/m ³ %SiO ₂ + 2	TWA: 0.025 mg/m ³
Crystalline silica, cristobalite	14464-46-1	1/2 x 10 mg/m ³ %SiO ₂ + 2	TWA: 0.025 mg/m ³
Crystalline silica, tridymite	15468-32-3	1/2 x 10 mg/m ³ %SiO ₂ + 2	0.05 mg/m ³

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 information 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

May cause mechanical skin irritation.

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.

11.3 Toxicity data

Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Bentonite	1302-78-9	> 5000 mg/kg (Rat) > 2000 mg/kg (Rat)	No data available	> 5.27 mg/L (Rat)
Crystalline silica, quartz	14808-60-7	500 mg/kg (Rat) >15,000 mg/kg (Human)	No data available	No data available
Crystalline silica, cristobalite	14464-46-1	500 mg/kg (Rat)	No data available	No data available
Crystalline silica, tridymite	15468-32-3	500 mg/kg (Rat)	No data available	No data available

Substances	CAS Number	Skin corrosion/irritation
Bentonite	1302-78-9	Non-irritating to the skin (Rabbit)
Crystalline silica, quartz	14808-60-7	Non-irritating to the skin
Crystalline silica, cristobalite	14464-46-1	Non-irritating to the skin
Crystalline silica, tridymite	15468-32-3	Non-irritating to the skin

Substances	CAS Number	Eye damage/irritation
Bentonite	1302-78-9	Non-irritating to the eye (Rabbit)
Crystalline silica, quartz	14808-60-7	Mechanical irritation of the eyes is possible.
Crystalline silica, cristobalite	14464-46-1	Mechanical irritation of the eyes is possible.
Crystalline silica, tridymite	15468-32-3	Mechanical irritation of the eyes is possible.

Substances	CAS Number	Skin Sensitization
Bentonite	1302-78-9	Did not cause sensitization on laboratory animals (mouse)
Crystalline silica, quartz	14808-60-7	Not regarded as a sensitizer.
Crystalline silica, cristobalite	14464-46-1	Not regarded as a sensitizer.
Crystalline silica, tridymite	15468-32-3	Not regarded as a sensitizer.

Substances	CAS Number	Respiratory Sensitization
Bentonite	1302-78-9	No information available
Crystalline silica, quartz	14808-60-7	No information available

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Crystalline silica, cristobalite	14464-46-1	No information available
Crystalline silica, tridymite	15468-32-3	No information available

Substances	CAS Number	Mutagenic Effects
Bentonite	1302-78-9	In vitro tests did not show mutagenic effects
Crystalline silica, quartz	14808-60-7	Not regarded as mutagenic.
Crystalline silica, cristobalite	14464-46-1	Not regarded as mutagenic.
Crystalline silica, tridymite	15468-32-3	Not regarded as mutagenic.

Substances	CAS Number	Carcinogenic Effects
Bentonite	1302-78-9	Did not show carcinogenic effects in animal experiments (similar substances)
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. Based on available scientific evidence, this substance is a threshold carcinogen with a mode of action involving indirect genotoxicity secondary to lung injury.
Crystalline silica, cristobalite	14464-46-1	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. Based on available scientific evidence, this substance is a threshold carcinogen with a mode of action involving indirect genotoxicity secondary to lung injury.
Crystalline silica, tridymite	15468-32-3	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. Based on available scientific evidence, this substance is a threshold carcinogen with a mode of action involving indirect genotoxicity secondary to lung injury.

Substances	CAS Number	Reproductive toxicity
Bentonite	1302-78-9	Did not show teratogenic effects in animal experiments.
Crystalline silica, quartz	14808-60-7	No information available
Crystalline silica, cristobalite	14464-46-1	No information available
Crystalline silica, tridymite	15468-32-3	No information available

Substances	CAS Number	STOT - single exposure
Bentonite	1302-78-9	None under normal use conditions
Crystalline silica, quartz	14808-60-7	No significant toxicity observed in animal studies at concentration requiring classification.
Crystalline silica, cristobalite	14464-46-1	No significant toxicity observed in animal studies at concentration requiring classification.
Crystalline silica, tridymite	15468-32-3	No significant toxicity observed in animal studies at concentration requiring classification.

Substances	CAS Number	STOT - repeated exposure
Bentonite	1302-78-9	None under normal use conditions
Crystalline silica, quartz	14808-60-7	Causes damage to organs through prolonged or repeated exposure if inhaled: (Lungs)
Crystalline silica, cristobalite	14464-46-1	Causes damage to organs through prolonged or repeated exposure if inhaled: (Lungs)
Crystalline silica, tridymite	15468-32-3	Causes damage to organs through prolonged or repeated exposure if inhaled: (Lungs)

Substances	CAS Number	Aspiration hazard
Bentonite	1302-78-9	Not applicable
Crystalline silica, quartz	14808-60-7	Not applicable
Crystalline silica, cristobalite	14464-46-1	Not applicable
Crystalline silica, tridymite	15468-32-3	Not applicable

12. Ecological Information

12.1. Toxicity

Ecotoxicity Effects

Product Ecotoxicity Data

No data available

Substance Ecotoxicity Data

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Bentonite	1302-78-9	EC50(72h): > 100 mg/L (freshwater algae)	TLM96 10,000 ppm (Oncorhynchus mykiss) LC50 (96h) 16,000 - 19,000 mg/L (Oncorhynchus mykiss) LC50 (24h) 2800 – 3200 mg/L (black bass, warmouth bass, blue gill and sunfish)	No information available	EC50 (96h) 81.6 mg/L (Metacarcinus magister) EC50 (96h) 24.8 mg/L (Pandalus danae) EC50 (48h) > 100 mg/L (Daphnia magna)
Crystalline silica, quartz	14808-60-7	No information available	LL50 (96h) 10,000 mg/L (Danio rerio) (similar substance)	No information available	LL50 (24h) > 10,000 mg/L (Daphnia magna) (similar substance)
Crystalline silica, cristobalite	14464-46-1	No information available	LL0 (96h) 10,000 mg/L (Danio rerio) (similar substance)	No information available	LL50 (24h) > 10,000 mg/L (Daphnia magna) (similar substance)
Crystalline silica, tridymite	15468-32-3	No information available	LL0 (96h) 10,000 mg/L (Danio rerio) (similar substance)	No information available	LL50 (24h) > 10,000 mg/L (Daphnia magna) (similar substance)

12.2. Persistence and degradability

Substances	CAS Number	Persistence and Degradability
Bentonite	1302-78-9	The methods for determining biodegradability are not applicable to inorganic substances.
Crystalline silica, quartz	14808-60-7	The methods for determining biodegradability are not applicable to inorganic substances.
Crystalline silica, cristobalite	14464-46-1	The methods for determining biodegradability are not applicable to inorganic substances.
Crystalline silica, tridymite	15468-32-3	The methods for determining biodegradability are not applicable to inorganic substances.

12.3. Bioaccumulative potential

Substances	CAS Number	Log Pow
Bentonite	1302-78-9	No information available
Crystalline silica, quartz	14808-60-7	No information available
Crystalline silica, cristobalite	14464-46-1	No information available
Crystalline silica, tridymite	15468-32-3	No information available

12.4. Mobility in soil

12.5 Other adverse effects

No information available

13. Disposal Considerations

13.1. Waste treatment methods

Disposal Method 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

US DOT Bulk
DOT (Bulk) 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.

EPA SARA Title III Extremely Hazardous Substances Not applicable

EPA SARA (311,312) Hazard Class Chronic Health Hazard

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.

16. Other information

Preparation Information

Prepared By Chemical Stewardship
Telephone: 1-580-251-4335
e-mail: fdunexchem@halliburton.com

Revision Date: 02-Apr-2015

Reason for Revision Update to Format SECTION: 2

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

bw – body weight
CAS – Chemical Abstracts Service
EC50 – Effective Concentration 50%
ErC50 – Effective Concentration growth rate 50%
LC50 – Lethal Concentration 50%
LD50 – Lethal Dose 50%
LL50 – Lethal Loading 50%
mg/kg – milligram/kilogram
mg/L – milligram/liter
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
h - hour
mg/m³ - milligram/cubic meter
mm - millimeter
mmHg - millimeter mercury
w/w - weight/weight
d - day

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: BARA-KADE DWD

Revision Date: 19-Feb-2014

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

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

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

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

Product Emergency Telephone

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

Fire, Police & Ambulance - Emergency Telephone

Australia: 000
Papua New Guinea: 000
New Zealand: 111

Identification of Substances or Preparation

Product Trade Name: BARA-KADE DWD
Synonyms: None
Chemical Family: Mineral
UN Number: None
Dangerous Goods Class: None
Subsidiary Risk: None
Hazchem Code: None Allocated
Poisons Schedule: None Allocated
Application: Additive

Prepared By Chemical Compliance
Telephone: 1-580-251-4335
e-mail: fdunexchem@halliburton.com

2. HAZARDS IDENTIFICATION

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

Hazard Overview

CAUTION! - ACUTE HEALTH HAZARD

May cause eye and respiratory irritation.

DANGER! - CHRONIC HEALTH HAZARD

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

This product contains quartz, cristobalite, and/or tridymite which may become airborne without a visible cloud. Avoid breathing dust. Avoid creating dusty conditions. Use only with adequate ventilation to keep exposures below recommended exposure limits. Wear a NIOSH certified, European Standard EN 149, or equivalent respirator when using this product. Review the Material Safety Data Sheet (MSDS) for this product, which has been provided to your employer.

Classification

T - Toxic.

Risk Phrases

R49 May cause cancer by inhalation.

R48/20 Harmful: danger of serious damage to health by prolonged exposure through inhalation.

Safety Phrases

S22 Do not breathe dust.

HSNO Classification

6.7A Known or presumed human carcinogens

6.9A Toxic to human target organs or systems

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substances	CAS Number	PERCENT (w/w)	Australia NOHSC	New Zealand WES	ACGIH TLV-TWA
Zeolite	1318-02-1	10 - 30%	Not applicable	Not applicable	Not applicable
Bentonite	1302-78-9	10 - 30%	Not applicable	Not applicable	TWA: 1 mg/m ³
Crystalline silica, quartz	14808-60-7	1 - 5%	TWA: 0.1 mg/m ³	TWA: 0.2 mg/m ³	TWA: 0.025 mg/m ³
Crystalline silica, cristobalite	14464-46-1	0 - 1%	TWA: 0.1 mg/m ³	TWA: 0.1 mg/m ³	TWA: 0.025 mg/m ³
Crystalline silica, tridymite	15468-32-3	0 - 1%	TWA: 0.1 mg/m ³	TWA: 0.1 mg/m ³	0.05 mg/m ³

Non-Hazardous Substance to Total of 100%

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

Under normal conditions, first aid procedures are not required.

Notes to Physician

Treat symptomatically.

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media

All standard fire fighting media

Extinguishing media which must not be used for safety reasons

None known.

Special Exposure Hazards Not applicable.

Special Protective Equipment for Fire-Fighters Not applicable.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures Use appropriate protective equipment. Avoid creating and breathing dust.

Environmental Precautionary Measures None known.

Procedure for Cleaning / Absorption 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

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.

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

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

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

Physical State:	Solid
Color:	Various
Odor:	Odorless
pH:	8-10
Specific Gravity @ 20 C (Water=1):	2.65
Density @ 20 C (kg/l):	Not Determined
Bulk Density @ 20 C (kg/M3):	Not Determined
Boiling Point/Range (C):	Not Determined
Freezing Point/Range (C):	Not Determined
Pour Point/Range (C):	Not Determined
Flash Point/Range (C):	Not Determined
Flash Point Method:	Not Determined
Autoignition Temperature (C):	Not Determined
Flammability Limits in Air - Lower (g/m³):	Not Determined
Flammability Limits in Air - Lower (%):	Not Determined
Flammability Limits in Air - Upper (g/m³):	Not Determined
Flammability Limits in Air - Upper (%):	Not Determined
Vapor Pressure @ 20 C (mmHg):	Not Determined
Vapor Density (Air=1):	Not Determined
Percent Volatiles:	Not Determined
Evaporation Rate (Butyl Acetate=1):	Not Determined
Solubility in Water (g/100ml):	Insoluble
Solubility in Solvents (g/100ml):	Not Determined
VOCs (g/l):	Not Determined
Viscosity, Dynamic @ 20 C (centipoise):	Not Determined
Viscosity, Kinematic @ 20 C (centistokes):	Not Determined
Partition Coefficient/n-Octanol/Water:	Not Determined
Molecular Weight (g/mole):	Not Determined
Decomposition Temperature (C):	Not Determined

10. STABILITY AND REACTIVITY

Stability Data:	Stable
Hazardous Polymerization:	Will Not Occur
Conditions to Avoid	None anticipated
Incompatibility (Materials to Avoid)	Hydrofluoric acid.
Hazardous Decomposition Products	Amorphous silica may transform at elevated temperatures to tridymite (870 C) or cristobalite (1470 C).
Additional Guidelines	Not Applicable

11. TOXICOLOGICAL INFORMATION

Principle Route of Exposure Eye or skin contact, inhalation.

Symptoms related to exposure
 Acute Toxicity

Inhalation

Inhaled crystalline silica in the form of quartz or cristobalite from occupational sources is carcinogenic to humans (IARC, Group 1). There is sufficient evidence in experimental animals for the carcinogenicity of tridymite (IARC, Group 2A).

Breathing silica dust may cause irritation of the nose, throat, and respiratory passages. Breathing silica dust may not cause noticeable injury or illness even though permanent lung damage may be occurring. Inhalation of dust may also have serious chronic health effects (See "Chronic Effects/Carcinogenicity" subsection below).

Eye Contact

May cause eye irritation

Skin Contact

May cause mechanical skin irritation.

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.

Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Zeolite	1318-02-1	5000 mg/kg (Rat) > 31800 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	2.4 mg/L (Rat) 1 h > 4.575 mg/L (Rat) 4 h
Bentonite	1302-78-9	5000 mg/kg (Rat)	No data available	No data available
Crystalline silica, quartz	14808-60-7	500 mg/kg (Rat)	No data available	No data available
Crystalline silica, cristobalite	14464-46-1	No data available	No data available	No data available
Crystalline silica, tridymite	15468-32-3	No data available	No data available	No data available

12. ECOLOGICAL INFORMATION

Ecotoxicological Information

Ecotoxicity Product

Acute Fish Toxicity: TLM96: 10000 ppm (Oncorhynchus mykiss)
 Acute Crustaceans Toxicity: Not determined
 Acute Algae Toxicity: Not determined

Ecotoxicity Substance

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity for Invertebrates

Zeolite	1318-02-1	No information available	LC50: > 680 mg/L (Pimephales promelas)	No information available	EC50: > 2808 mg/L (Daphnia magna)
Bentonite	1302-78-9	No information available	TLM96: 10000 ppm (Oncorhynchus mykiss)	No information available	No information available
Crystalline silica, quartz	14808-60-7	EC50(72h): 89 mg/L (biomass) (Scenedesmus subspicatus) (similar substance)	LC50(96h): 508 mg/L (Danio rerio) (similar substance)	No information available	LC50(48h): 731 mg/L (Daphnia magna) (similar substance) LC50(48h): 33.5 mg/L (Ceriodaphnia dubia) (similar substance)
Crystalline silica, cristobalite	14464-46-1	No information available	No information available	No information available	No information available
Crystalline silica, tridymite	15468-32-3	No information available	No information available	No information available	No information available

12.2 Persistence and degradability

No information available

Substances	Persistence and Degradability
Crystalline silica, quartz	The methods for determining biodegradability are not applicable to inorganic substances.

12.3 Bioaccumulative potential

No information available

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 Bury in a licensed landfill according to federal, state, and local regulations.

Contaminated Packaging Follow all applicable national or local regulations.

14. TRANSPORT INFORMATION

Land Transportation

ADR

Not restricted

Air Transportation

ICAO/IATA

Not restricted

Sea Transportation

IMDG

Not restricted

Other Transportation Information

Labels: None

15. REGULATORY INFORMATION

Chemical Inventories

Australian AICS Inventory New Zealand Inventory of Chemicals

All components listed on inventory or are exempt.
All components listed on inventory or are exempt.

US TSCA Inventory EINECS Inventory

All components listed on inventory or are exempt.
This product, and all its components, complies with EINECS

Classification

T - Toxic.

Risk Phrases

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

Safety Phrases

S22 Do not breathe dust.

16. OTHER INFORMATION

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

Contact

Australian Poisons Information Centre

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

New Zealand National Poisons Centre

0800 764 766

Additional information

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Compliance at 1-580-251-4335.

Disclaimer Statement

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

END OF MSDS



BARA-KADE®

DWD

Description

BARA-KADE® DWD is a solidification agent designed for use with industrial and drilling waste streams.

Applications/Functions

- Drilling fluids and cuttings solidification agent
- Solidification and stabilization of complex waste water
- Engineered for solidification of fresh water streams, emulsions, and hydrocarbon-based streams

Advantages

- Solidification in minutes after application
- Meets landfill slump test (Paint Filter Test, EPA 9095)
- Meets EPA Liquid Release Test (EPA 9096)
- Forms stable agglomerates and will not release liquids after freezing and reheating to 160°F

Properties

Typical

• Moisture	• 10
• Bulk Density (lbs/ft ³ uncompacted)	• 58
• pH	• 9.5 - 11

Availability

BARA-KADE® DWD can be purchased through any Bentonite Performance Minerals LLC assigned Reseller. To locate the BPM Reseller nearest you, contact the Customer Service Department in Houston or your area BPM Regional Sales Manager.

Bentonite Performance Minerals LLC

A Halliburton Company

3000 N. Sam Houston Pkwy E.
Houston, TX 77032-3219
www.bentonite.com

Customer Service (281) 871-7900 **Fax** (281) 871-7940

Technical Service (717) 432-3627 **Alternate** (717) 645-0471

BARA-KADE®

200 Bentonite

Description BARA-KADE® 200 is a high yield Wyoming sodium bentonite that is used in trenching, bored piling, and slurry wall installations. It is also used in soil sealing and other hydraulic barrier applications.

Applications/Functions

- Soil trenching
- Soil sealing
- Tunnel boring
- Other hydraulic barrier applications
- Low solids coring for mineral exploration

Advantages

- Treated high purity sodium based bentonite
- Easy to mix and yields a homogeneous, high viscosity mineral slurry
- Provides a stable slurry without separation for prolonged periods
- Compatible with cement and other construction additives

Screen Analysis	<u>Typical</u>	<u>Specification</u>
Dry screen, percent minus 200 mesh		67.5 min
Wet screen, percent plus 200 mesh		4.0 max

Properties	<u>Typical</u>	<u>Specification</u>
Moisture, percent		12.0 max
Aged Fann® 600 RPM (10.0gr/350ml)		24 min
Filtrate loss		27.0 max
Specific gravity	2.7	
Bulk density (lbs/ft ³ compacted)	73	
Bulk density (lbs/ft ³ uncompacted)	53	

Availability BARA-KADE® 200 can be purchased through any Bentonite Performance Minerals LLC assigned Reseller. To locate the BPM Reseller nearest you, contact the Customer Service Department in Houston or your area BPM Regional Sales Manager.

Bentonite Performance Minerals LLC
A Halliburton Company
3000 N. Sam Houston Pkwy E.
Houston, TX 77032
www.bentonite.com

Customer Service (281) 871-7900 Fax (281) 871-7940

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Rev. 06/2016

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Because the conditions of use of this product are beyond the seller's control, the product is sold without warranty either express or implied and upon condition that purchaser make its own test to determine the suitability for purchaser's application. Purchaser assumes all risk of use and handling of this product. This product will be replaced if defective in manufacture or packaging or if damaged. Except for such replacement, seller is not liable for any damages caused by this product or its use. The statements and recommendations made herein are believed to be accurate. No guarantee of their accuracy is made, however.



1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

TRADE NAME: ClayBreaker

24-HOUR EMERGENCY TELEPHONE: 1-800-535-5053 (Infotrac)

SUPPLIER: DCS Fluids Solutions LP
P.O. Box 1027
Graham, TX 76450
(940) 521-0400

Product Use: Well Stimulation Additive, Clay Stabilizer
CAS #: Mixture

2. COMPOSITION, INFORMATION ON INGREDIENTS

No hazardous ingredients as defined by OSHA 29 CFR 1910.1200

3. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW: Colorless to amber liquid with a strong odor. May be irritating to eyes, skin and respiratory tract. May be harmful if swallowed. Avoid contact with skin, eyes and clothing.

POTENTIAL HEALTH HAZARDS:

- **INHALATION:** May cause irritation of respiratory tract.
- **INGESTION:** May cause irritation of the gastrointestinal tract including nausea, vomiting and diarrhea.
- **SKIN:** May cause skin irritation.
- **EYES:** May cause eye irritation.

CHRONIC EFFECTS: None known

Ingredients found on one of the OSHA designated carcinogen lists are listed below.

No ingredients listed in this section.

4. FIRST AID MEASURES

INHALATION: If breathing is difficult, remove to fresh air and keep at rest in a comfortable position for breathing. Obtain immediate medical attention.

INGESTION: If swallowed, seek immediate medical attention and show this container or label. Do not induce vomiting without medical advice.

SKIN: Wash skin thoroughly with soap and water. Remove contaminated clothing. Get medical attention if any irritation continues.

EYES: Immediately flush eyes with large quantities of water for at least 15 minutes. Hold eyelids apart to ensure complete irrigation of all eye and lid tissue. Get medical attention if irritation develops.

ADVICE TO PHYSICIANS: No specific treatment. Treat according to symptoms present.

5. FIRE FIGHTING MEASURES

FLASH POINT: >200° F (>93.3° C)

FLAMMABLE LIMITS: LEL: N/A
UEL: N/A

EXTINGUISHING AGENTS:

Water, dry chemical, CO₂, water spray or regular foam.
Do not use a solid water stream as it may scatter and spread fire.

SPECIAL FIRE FIGHTING PROCEDURES:

Wear positive-pressure, self-contained breathing apparatus (SCBA) and protective fire fighting clothing (including fire fighting helmet, coat, pants, boots, and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

UNUSUAL FIRE & EXPLOSION HAZARDS:

Always stay away from tanks engulfed in flame. Withdraw immediately in case of rising sound from venting safety devices or any discoloration of tanks due to fire. Move containers from fire area if you can do it without risk. Do not scatter spilled material with high pressure water streams. Use water spray to cool unopened containers. Cool containers with flooding quantities of water until well after fire is out.

6. ACCIDENTAL RELEASE MEASURE

PERSONAL PROTECTION:

Don appropriate personal protective equipment prior to entering spill/leak area.
(See Section 8)

SPILL CLEAN-UP PROCEDURES:

Limit access to area, as necessary. Shut off leak if it can be done safely. Contain spill with dike. Prevent run-off into sewers or waterways. Pump large spills into salvage containers. Soak up residue and small spills with vermiculite, paper, clay or other absorbent material. Remove affected soils. Place in salvage containers. Continue to observe handling precautions.

WASTE DISPOSAL METHOD:

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, in its current state, does not meet the definition of a hazardous waste under 40 CFR 261.

7. HANDLING AND STORAGE

HANDLING PRECAUTIONS:

Always wear recommended personal protection equipment. Do not get in eyes, on skin or clothing. Avoid breathing mist or vapor. Use only with adequate ventilation or wear respiratory protection.

STORAGE PRECAUTIONS:

Keep containers tightly closed and properly labeled. Store at moderate temperatures in dry, well-ventilated area. 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.

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.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

ENGINEERING CONTROLS:

There are no occupational exposure limits established at this time. Since this material may be irritating to skin and mucous membranes, general room ventilation plus local exhaust at points of emission should be used to maintain levels of airborne contaminants as low as feasibly possible.

PERSONAL PROTECTION EQUIPMENT

RESPIRATORY:

Respiratory protection is not required under normal use. Wear a NIOSH/MSHA approved respirator following manufacturer's recommendations where airborne contaminants may occur.

EYE / FACE PROTECTION:

Wear chemical safety goggles or face shield to protect against splashing.

SKIN PROTECTION:

Chemical resistant gloves and splash aprons made of impermeable material should be worn.

9. PHYSICAL AND CHEMICAL PROPERTIES

- **Appearance and Odor:** Colorless to amber liquid with strong odor.
- **Physical State:** Liquid
- **pH:** 6.5 – 9
- **Vapor Pressure:** Not determined
- **Vapor Density:** Not determined
- **Boiling Point:** Not determined
- **Melting Point:** 469.4° F estimated
- **Solubility in Water:** Complete
- **Specific Gravity:** 1.01 – 1.03

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable at normal conditions.

CONDITIONS TO AVOID: Heat, flames and sparks.

MATERIALS TO AVOID: Strong acids.

HAZARDOUS DECOMPOSITION PRODUCTS: None expected.

HAZARDOUS POLYMERIZATION: Does not occur.

11. TOXICOLOGICAL INFORMATION

ACUTE EFFECTS:

Acute LD50: 400 – 4000 mg/kg, Rat, Oral

Acute LC50: > 4000 mg/kg, Rat, Dermal

Not expected to be hazardous by OSHA criteria.

CHRONIC EFFECTS:

None known. Not expected to be hazardous by OSHA criteria.

This product has no known adverse effect on human health.

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL INFORMATION:

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.

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 a hazardous waste. Dispose in accordance with all applicable regulations.

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 not a “Hazardous Chemical” as defined by the 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: Not on inventory.

SARA TITLE III/CERCLA:

To aid our customers in complying with regulatory requirements, SARA Title III Hazard Categories for this product are indicated below. If the word “YES” appears next to any category, this product may be reportable by you under the requirements of 40 CFR Part 370. Please consult those regulations for details.

Immediate (Acute) Health:	YES
Delayed (Chronic) Health:	NO
Fire Hazard:	NO
Reactive Hazard:	NO
Sudden Release of Pressure:	NO

Reportable Quantity: Not reportable

Spills/release resulting in the loss of any ingredient at or above its RQ requires immediate notification to the National Response Center (1-800-424-8802) and to your Local Emergency Planning Committee.

16. OTHER INFORMATION

HMIS RATINGS: HEALTH (1) FLAMMABILITY (0) PHYSICAL HAZARD (0)
Based on the NPCA HMIS III rating system.

CURRENT ISSUE DATE: August 1, 2014
Updated information on LD50 and LC50.

DCS Fluid 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. Neither warranty, either expressed or implied, nor liability of any nature with respect to this product or to the data herein is made or incurred hereunder.

1. Identification

Product identifier CLAY CUTTER™

Other means of identification None.

Recommended use Not available.

Recommended restrictions None known.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer

Company name CETCO, an MTI Company

Address 2870 Forbs Avenue
Hoffman Estates, IL 60192
United States

Telephone General Information 800 527-9948

Website <http://www.cetco.com/>

E-mail safetydata@mineralstech.com

Emergency phone number Emergency 1.866.519.4752/1 760 476 3962

Americas 1.866.519.4752 (US, Canada, Mexico) 1 760 476 3962 Access Code 333562

2. Hazard(s) identification

Physical hazards Not classified.

Health hazards Acute toxicity, oral Category 4

Environmental hazards Not classified.

OSHA defined hazards Not classified.

Label elements



Signal word Warning

Hazard statement Harmful if swallowed.

Precautionary statement

Prevention Wash thoroughly after handling. Do not eat, drink or smoke when using this product.

Response If swallowed: Call a poison center/doctor if you feel unwell. Rinse mouth.

Storage Store away from incompatible materials.

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

Hazard(s) not otherwise classified (HNOC) None known.

Supplemental information 25% of the mixture consists of component(s) of unknown acute dermal toxicity. 25% of the mixture consists of component(s) of unknown acute inhalation toxicity. 25% of the mixture consists of component(s) of unknown acute hazards to the aquatic environment.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
TRADE SECRET*		Proprietary*	25
Other components below reportable levels			75

*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.

Material name: CLAY CUTTER™

4064 Version #: 14 Revision date: 11-May-2018 Issue date: 19-November-2013

SDS US

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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. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Get medical advice/attention if you feel unwell.
Most important symptoms/effects, acute and delayed	Direct contact with eyes may cause temporary irritation.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Keep victim warm. Keep victim under observation. Symptoms may be delayed.
General information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.
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.
Fire fighting equipment/instructions	Move containers from fire area if you can do so without risk.
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. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. 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. 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.
Environmental precautions	Avoid discharge into drains, water courses or onto the ground.
7. Handling and storage	
Precautions for safe handling	Do not taste or swallow. When using, do not eat, drink or smoke. Provide adequate ventilation. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Observe good industrial hygiene practices.
Conditions for safe storage, including any incompatibilities	Store in original tightly closed container. Keep out of the reach of children. Store away from incompatible materials (see Section 10 of the SDS).
8. Exposure controls/personal protection	
Occupational exposure limits	This mixture has no ingredients that have PEL, TLV, or other recommended exposure limit.
Biological limit values	No biological exposure limits noted for the ingredient(s).
Appropriate engineering controls	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.
Individual protection measures, such as personal protective equipment	
Eye/face protection	Face shield is recommended. Wear safety glasses with side shields (or goggles).
Skin protection	
Hand protection	Wear appropriate chemical resistant gloves.
Other	Wear suitable protective clothing.

Respiratory protection	In case of insufficient ventilation, wear suitable respiratory equipment.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	Keep away from food and drink. 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	Liquid.
Form	Liquid.
Color	Colourless to light yellow.
Odor	slight
Odor threshold	Not available.
pH	6.5 - 9
Melting point/freezing point	16 °F (-8.89 °C) estimated
Initial boiling point and boiling range	> 212 °F (> 100 °C) estimated
Flash point	> 201.0 °F (> 93.9 °C)
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	1.01 - 103
Solubility(ies)	
Solubility (water)	100 %
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.

Other information

Density	1.07 g/cm3 estimated
Explosive properties	Not explosive.
Flammability class	Combustible IIIB estimated
Oxidizing properties	Not oxidizing.
Percent volatile	75 % estimated
Specific gravity	1.07 estimated
VOC	CARB

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	Avoid temperatures exceeding the flash point. 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 No adverse effects due to inhalation are expected.
Skin contact No adverse effects due to skin contact are expected.
Eye contact Direct contact with eyes may cause temporary irritation.
Ingestion Harmful if swallowed.

Symptoms related to the physical, chemical and toxicological characteristics Direct contact with eyes may cause temporary irritation.

Information on toxicological effects

Acute toxicity Harmful if swallowed.
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 Not classifiable as to carcinogenicity to humans.

IARC Monographs. Overall Evaluation of Carcinogenicity

Not listed.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1052)

Not regulated.

US. National Toxicology Program (NTP) Report on Carcinogens

Not listed.

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

Specific target organ toxicity - single exposure Not classified.

Specific target organ toxicity - repeated exposure Not classified.

Aspiration hazard 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

Partition coefficient n-octanol / water (log Kow)

TRADE SECRET -2.17

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. Disposal considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.

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.

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 1910.1001-1052)
 Not regulated.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SARA 302 Extremely hazardous substance
 Not listed.

SARA 311/312 Hazardous chemical No (Exempt)

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

California Proposition 65



WARNING: California Safe Drinking Water and Toxic Enforcement Act of 2016 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins. For more information go to www.P65Warnings.ca.gov.

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)	Yes
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

Country(s) or region	Inventory name	On inventory (yes/no)*
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Toxic Chemical Substances (TCS)	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

Issue date	19-November-2013
Revision date	11-May-2018
Version #	14
HMIS® ratings	Health: 2* Flammability: 0 Physical hazard: 0
NFPA ratings	Health: 2 Flammability: 0 Instability: 0
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 manufacturer expressly does not make any representations, warranties, or guarantees as to its accuracy, reliability or completeness nor assumes any liability, for its use. It is the user's responsibility to verify the suitability and completeness of such information for each particular use. 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. CETCO, an MTI Company cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.
Revision information	Hazard(s) identification: Response Hazard(s) identification: Supplemental information Accidental release measures: Personal precautions, protective equipment and emergency procedures Accidental release measures: Methods and materials for containment and cleaning up Handling and storage: Conditions for safe storage, including any incompatibilities Exposure controls/personal protection: Hand protection Physical & Chemical Properties: Multiple Properties Toxicological information: Carcinogenicity Regulatory information: California Proposition 65 Other information, including date of preparation or last revision: References Other information, including date of preparation or last revision: Further information

Material Safety Data Sheet
ClayBreaker

MSDS - CB- (04/02)

Page 1 of 4

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

TRADE NAME: ClayBreaker

24-HOUR EMERGENCY TELEPHONE: 1-800-535-5053

SUPPLIER: DCS Fluid Solutions LP
P.O. Box 1027
Graham, TX 76450
(940) 521-0500

HMIS RATINGS: HEALTH (1) FLAMMABILITY (0) REACTIVITY (0)
Based on the National Paint & Coatings Association HMIS rating system.

SARA/TITLE III HAZARD CATEGORIES: (See Section 11)

Immediate (ACUTE) Health: No Reactive Hazard: No
Delayed (CHRONIC) Health: No Fire Hazard: No
Sudden Release of Pressure: None
Chemical Family: Proprietary Mixture
Chemical Name & Synonyms: Formation Inhibitor
CAS Number: Blend
Tradename & Synonyms: ClayBreaker

2. HAZARDOUS INGREDIENTS

INGREDIENT NAME:	CAS No.:	CONTENTS:	TLV:
No Hazardous Ingredients; as defined in 29 CFR 1910.1200			

3. PHYSICAL DATA

- **Appearance and Odor:** Colorless to Amber Liquid
- **Boiling Point:** 210° to 215° F
- **Specific Gravity:** 1.01 to 1.03
- **Density:** 8.42 to 8.59 #/gal
- **pH:** 6.5 to 8.5
- **Solubility in Water:** 100%

4. FIRE AND EXPLOSION HAZARD DATA:

FLASH POINT: N/A

FLAMMABLE LIMITS: LEL: not est.
UEL: not est.

EXTINGUISHING AGENTS:

Product will not burn. Use appropriate measures to fight surrounding fire. Carbon dioxide (CO2). Dry chemicals. Foam. Water spray, fog or mist.

SPECIAL FIRE FIGHTING PROCEDURES:

Wear positive-pressure, self-contained breathing apparatus (SCBA) and protective fire fighting clothing (including fire fighting helmet, coat, pants, boots, and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

UNUSUAL FIRE & EXPLOSION HAZARDS:

Will not burn. Container may explode from internal pressure if confined to fire. Cool with water and keep unnecessary people away.

HAZARDOUS COMBUSTION PRODUCTS:

None.

5. STABILITY AND REACTIVITY DATA

STABILITY: Stable.

CONDITIONS TO AVOID: None.

HAZARDOUS POLYMERIZATION: Will not occur.

MATERIALS TO AVOID: None currently known.

HAZARDOUS DECOMPOSITION PRODUCTS: May liberate carbon monoxide, carbon dioxide and oxides of nitrogen.

6. HEALTH HAZARD DATA

OSHA EXPOSURE LIMITS:

Permissible Exposure Limits (PEL): Not Established

Threshold Limit Value (TLV): Not Established

ACUTE EFFECTS:

• **INHALATION:** None

• **INGESTION:** May cause nausea, vomiting and diarrhea, if ingested.

• **SKIN:** May produce irritation.

• **EYES:** May cause irritation.

CHRONIC EFFECTS:

OSHA Hazard communication standard 29 CFR 1910.1200 requires that information contained herein be made available to your workers.

As of the date of issuance of this document, NTC, IARC or OSHA has not listed any components of this material at concentrations equal to or greater than 0.1% as a carcinogen.

ANIMAL TOXICITY DATA:

INHALATION: Not determined

INGESTION: LD50, rat: The oral LD50 of ClayBreaker is greater than 500 mg/kg of body weight. The test article is not considered to be a poisonous material as defined in 49 CFR 173.132(a)(1)(i). All test animals survived the 500 mg/kg oral dose. Instances of diarrhea, soiling and wetness of the anogenital area were noted during the observation period. Body weight changes and necropsy results were normal.

SKIN: LD50, rabbit: ClayBreaker is not a dermal irritant as defined in 49 CFR 173.131(a)(1)(ii), 16 CFR 1500.41 and 16 CFR 1500.3(c)(4). Intact skin: erythema was absent to barely perceptible at 24 hours post dose and absent at 72 hours. There was no edema noted at any time period.

Material Safety Data Sheet
ClayBreaker

MSDS - CB- (04/02)

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EYES: Rabbit: ClayBreaker is not an ocular irritant as defined in 16 CFR 1500.42(b) and 1500.3(c)(4). There were no abnormal physical signs noted during the observation period. All test animal eyes appeared normal at each observation period.

7. EMERGENCY FIRST AID PROCEDURES

INHALATION: Move the exposed person to fresh air at once. Perform artificial respiration if breathing has stopped. Get medical attention.

INGESTION: Give at least two large glasses of milk or water. DO NOT induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention.

SKIN: Wash skin thoroughly with soap and water. Remove contaminated clothing. Get medical attention if any discomfort continues.

EYES: Immediately wash eyes with large amounts of water while lifting the eyelids. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

8. PERSONAL PROTECTION AND EXPOSURE CONTROLS

ENGINEERING CONTROLS:

Use appropriate engineering controls such as, exhaust ventilation and process enclosure, to reduce contamination and keep worker exposure below the applicable limits.

VENTILATION:

Supply natural or mechanical ventilation adequate to exhaust airborne product and keep exposures below the applicable limits. General ventilation is usually adequate.

RESPIRATORS:

If exposure can exceed the PEL/TLV, use only NIOSH/MSHA-approved air purifying or supplied air respirator operated in a positive pressure mode.

EYE PROTECTION:

Wear chemical safety goggles where eye exposure is reasonably probable.

SKIN PROTECTION:

Chemical resistant gloves and splash aprons should be worn. Use protective clothing made of impermeable material.

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.

9. HANDLING AND STORAGE

HANDLING PRECAUTIONS:

Ventilate well, avoid breathing vapors. Use approved respirator if air contamination is above accepted level. Wear full protective clothing for prolonged exposure and/or high concentrations. Eye wash and emergency shower must be available at the work place.

STORAGE PRECAUTIONS:

Store at moderate temperatures in dry, well-ventilated area. Keep container closed when not in use. Keep in original container. Since emptied containers retain product residue, follow hazard precautions even when empty.

10. SPILL AND DISPOSAL MEASURES

PERSONAL PROTECTION:

Wear personal protective equipment (see MSDS Section 8).

SPILL CLEAN-UP PROCEDURES:

Absorb in vermiculite, dry sand or earth and place into containers. Rinse area with water. Dike ahead of larger spills for collection and disposal.

WASTE DISPOSAL METHOD:

Comply with all federal, state and local regulations for disposal. Dispose of in a permitted industrial landfill.

11. ADDITIONAL INFORMATION

SARA Title III HAZARD INFORMATION:

To aid our customers in complying with regulatory requirements, SARA Title III hazard categories for this product are indicated in Section 1. If the word "Yes" appears next to any category, this product may be reportable under the requirements of 40 CFR Part 370. Please consult those regulations for details.

ENVIRONMENTAL INFORMATION:

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.

12. TRANSPORTATION INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION (DOT):

NON HAZARDOUS - Not DOT Regulated.

DCS Fluid Solutions, LLC 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. Neither warranty, either expressed or implied, nor liability of any nature with respect to this product or to the data herein is made or incurred hereunder.



Safety Data Sheet Clay-Star USA

SDS Revision Date: 02/22/2017

1. Identification

1.1. Product identifier

Product Identity Clay-Star USA
Alternate Names Salt

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

Intended use Clay Stabilizer
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

No applicable GHS categories.

2.2. Label elements

Using the Toxicity Data listed in section 11 and 12 the product is labeled as follows.

No applicable GHS categories.

[Prevention]:

No GHS prevention statements

[Response]:

No GHS response statements

[Storage]:

No GHS storage statements

[Disposal]:

No GHS disposal statements

3. Composition/information on ingredients

This product contains the following substances that present a hazard within the meaning of the relevant State and Federal Hazardous Substances regulations.

Ingredient/Chemical Designations	Weight %	GHS Classification	Notes



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Proprietary Blend	75 - 100	Not Classified	[1]

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

In all cases of doubt, or when symptoms persist, seek medical attention.
Never give anything by mouth to an unconscious person.

Inhalation

SLIGHT INHALATION: Allow the victim to rest in a well ventilated area. Seek immediate medical attention.

HAZARDOUS INHALATION: Evacuate the victim to a safe area as soon as possible.

Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation.

WARNING: It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek medical attention.

Eyes

Irrigate copiously with clean water for at least 15 minutes, holding the eyelids apart and seek medical attention.

Skin

If the chemical got onto the clothed portion of the body, remove the contaminated clothes as quickly as possible, protecting your own hands and body. Place the victim under a deluge shower. If the chemical touches the victims exposed skin, such as the hands: Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. COLD water may be used. Cover the irritated skin with an emollient. If irritation persists, seek medical attention. Wash contaminated clothing before reusing.

Ingestion

If swallowed obtain immediate medical attention. Keep at rest. Do NOT induce vomiting.

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

Overview

EYES: None

SKIN: Non-Irritant for skin; non-sensitizer for skin

INGESTION: None

INHALATION: None

CHRONIC EFFECTS: None See section 2 for further details.

5. Fire-fighting measures

5.1. Extinguishing media

SMALL: Use dry chemical powder, alcohol foam, CO₂

LARGE FIRE: Use water spray, fog or foam. DO NOT use water jet.

5.2. Special hazards arising from the substance or mixture

Hazardous decomposition: During combustion CO and other not specified organic compounds may possible arise.
Nitrous gases; Hydrogen chloride (HCl)



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5.3. Advice for fire-fighters

Fire & Explosion Hazard: Residue of evaporation could burn.

Special: Use self-contained breathing apparatus.

Cool closed containers exposed to fire by spraying them with water. Do not allow run off water and contaminants from fire fighting to enter drains or water ways.

ERG Guide No. ----

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Remove sources of ignition, do not turn lights or unprotected electrical equipment on or off. In case of a major spill or spillage in a confined space evacuate the area and check that solvent vapor levels are below the Lower Explosive Limit before re-entering.

6.2. Environmental precautions

Do not allow spills to enter drains or waterways.

Use good personal hygiene practices. Wash hands before eating, drinking, smoking or using toilet. Promptly remove soiled clothing and wash thoroughly before reuse.

6.3. Methods and material for containment and cleaning up

Ensure adequate ventilation. Avoid dust formation. Do not inhale dust. Avoid contact with eyes and skin. Do not discharge into the drains/surface waters/groundwater. Prevent spread over a wide area (e.g. by containment or oil barriers). Pick up mechanically. Dispose of absorbed material in accordance with the regulations. Pick for disposal in tightly closed containers.

7. Handling and storage

7.1. Precautions for safe handling

Normally not required.

7.2. Conditions for safe storage, including any incompatibilities

Handle containers carefully to prevent damage and spillage.

Incompatible materials: Oxidizing Agents

Keep container dry. Keep in a cool place. Ground all equipment containing material. Keep container tightly closed. Keep in a cool, well-ventilated place. Combustible materials should be stored away from extreme heat and away from strong oxidizing agents.

7.3. Specific end use(s)

No data available.

8. Exposure controls and personal protection

8.1. Control parameters

Exposure

CAS No.	Ingredient	Source	Value



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Proprietary	Proprietary Blend	OSHA	No Established Limit
		ACGIH	No Established Limit
		NIOSH	No Established Limit
		Supplier	No Established Limit

Carcinogen Data

CAS No.	Ingredient	Source	Value
Proprietary	Proprietary Blend	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;

8.2. Exposure controls

Respiratory	Use in only well ventilated area. Wear appropriate respirator when ventilation is inadequate.
Eyes	Safety glasses or chemical splash goggles.
Skin	Apron, lab coat.
Engineering Controls	Provide adequate ventilation. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction. If these are not sufficient to maintain concentrations of particulates and any vapor below occupational exposure limits suitable respiratory protection must be worn.
Other Work Practices	Use good personal hygiene practices. Wash hands before eating, drinking, smoking or using toilet. Promptly remove soiled clothing and wash thoroughly before reuse.

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

9. Physical and chemical properties

Appearance	Colorless to Pale Yellow Liquid
Odor	Fish (Slight)
Odor threshold	Not Measured
pH	Near Neutral
Melting point / freezing point	Not Measured
Initial boiling point and boiling range	Not Measured
Flash Point	>266F
Evaporation rate (Ether = 1)	Not Measured
Flammability (solid, gas)	Not Applicable
Upper/lower flammability or explosive limits	Lower Explosive Limit: Not Measured Upper Explosive Limit: Not Measured
Vapor pressure (Pa)	Not Measured
Vapor Density	Not Available
Specific Gravity	1.10



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Solubility in Water

Soluble

Partition coefficient n-octanol/water (Log Kow)

Not Measured

Auto-ignition temperature

Not Measured

Decomposition temperature

Not Measured

Viscosity (cSt)

Not Measured

9.2. Other information

No other relevant information.

10. Stability and reactivity

10.1. Reactivity

Hazardous Polymerization will not occur.

10.2. Chemical stability

Stable under normal circumstances.

10.3. Possibility of hazardous reactions

No data available.

10.4. Conditions to avoid

No data available.

10.5. Incompatible materials

Oxidizing Agents

10.6. Hazardous decomposition products

During combustion CO and other not specified organic compounds may possible arise. Nitrous gases; Hydrogen chloride (HCl)

11. Toxicological information

Acute toxicity

Ingredient	Oral LD50, mg/kg	Skin LD50, mg/kg	Inhalation Vapor LC50, mg/L/4hr	Inhalation Dust/Mist LC50, mg/L/4hr	Inhalation Gas LC50, ppm
Proprietary Blend	No data available	No data available	No data available	No data available	No data available

Note: When no route specific LD50 data is available for an acute toxin, the converted acute toxicity point estimate was used in the calculation of the product's ATE (Acute Toxicity Estimate).

Classification	Category	Hazard Description
Acute toxicity (oral)	---	Not Applicable
Acute toxicity (dermal)	---	Not Applicable



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Acute toxicity (inhalation)	---	Not Applicable
Skin corrosion/irritation	---	Not Applicable
Serious eye damage/irritation	---	Not Applicable
Respiratory sensitization	---	Not Applicable
Skin sensitization	---	Not Applicable
Germ cell mutagenicity	---	Not Applicable
Carcinogenicity	---	Not Applicable
Reproductive toxicity	---	Not Applicable
STOT-single exposure	---	Not Applicable
STOT-repeated exposure	---	Not Applicable
Aspiration hazard	---	Not Applicable

12. Ecological information

12.1. Toxicity

No additional information provided for this product. See Section 3 for chemical specific data.

Aquatic Ecotoxicity

Ingredient	96 hr LC50 fish, mg/l	48 hr EC50 crustacea, mg/l	ErC50 algae, mg/l
Proprietary Blend	Not Available	Not Available	Not Available

12.2. Persistence and degradability

There is no data available on the preparation itself.

12.3. Bioaccumulative potential

Not Measured

12.4. Mobility in soil

No data available.

12.5. Results of PBT and vPvB assessment

This product contains no PBT/vPvB chemicals.

12.6. Other adverse effects

No data available.

13. Disposal considerations



Safety Data Sheet Clay-Star USA

SDS Revision Date: 02/22/2017

13.1. Waste treatment methods

Observe all federal, state and local regulations when disposing of this substance.

14. Transport information

	DOT (Domestic Surface Transportation)	IMO / IMDG (Ocean Transportation)	ICAO/IATA
14.1. UN number	Not Applicable	Not Regulated	Not Regulated
14.2. UN proper shipping name	Not Regulated	Not Regulated	Not Regulated
14.3. Transport hazard class(es)	DOT Hazard Class: Not Applicable	IMDG: Not Applicable Sub Class: Not Applicable	Air Class: Not Applicable
14.4. Packing group	Not Applicable	Not Applicable	Not Applicable
14.5. Environmental hazards			
IMDG	Marine Pollutant: No		
14.6. Special precautions for user	No further information		

15. Regulatory information

Regulatory Overview	The regulatory data in Section 15 is not intended to be all-inclusive, only selected regulations are represented.
Toxic Substance Control Act (TSCA)	All components of this material are either listed or exempt from listing on the TSCA Inventory.
WHMIS Classification	Not Regulated
US EPA Tier II Hazards	Fire: No Sudden Release of Pressure: No Reactive: No Immediate (Acute): No Delayed (Chronic): No

EPCRA 311/312 Chemicals and RQs:

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

EPCRA 302 Extremely Hazardous:

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

EPCRA 313 Toxic Chemicals:

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Carcinogens (>0.0%):

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Developmental Toxins (>0.0%):

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Female Repro Toxins (>0.0%):



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SDS Revision Date: 02/22/2017

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Male Repro Toxins (>0.0%):

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

New Jersey RTK Substances (>1%) :

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Pennsylvania RTK Substances (>1%) :

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

16. Other information

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein. We accept no responsibility and disclaim all liability for any harmful effects which may be caused by exposure to our products. Customers/users of this product must comply with all applicable health and safety laws, regulations, and orders.

The full text of the phrases appearing in section 3 is: Not applicable

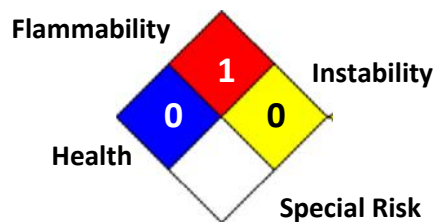
This is the first version in the GHS SDS format. Listings of changes from previous versions in other formats are not applicable.

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	0
FLAMMABILITY	1
PHYSICAL	0
PPE	B



End of Document

MARCH 10, 2014

FlowPac

SECTION I – CHEMICAL PRODUCT/CHEMICAL IDENTIFICATION

Product Name: FlowPac
Manufacturer: DCS Fluid Solutions
 PO Box 1027
 Graham, Texas 76460
 (940) 456-4056
Chemical Family:
Product Use: Oil Field Process Chemical
Emergency Telephone Number:
CHEMTREC: 1-800-424-9300 or International +1-703-527-3887

SECTION II – COMPOSITION/INFORMATION ON INGREDIENTS

Components:	CAS#
Polyanionic Cellulose	9004-34-6

SECTION III – HAZARDS IDENTIFICATION

EYES:	The material is moderately discomforting to the eyes and is capable of causing a mild, temporary redness of the conjunctiva (similar to wind-burn), temporary impairment of vision and/ or other transient eye damage/ ulceration.
SKIN:	The material may be mildly discomforting to the skin. n.
INGESTION:	The material is moderately discomforting to the gastrointestinal tract and may be harmful if swallowed in large quantity..
INHALATION:	The dust may be discomforting to the upper respiratory tract.
SKIN ABSORPTION:	Open cuts and abraded or irritated skin should not be exposed to this material. The material may accentuate any pre-existing skin condition.

SECTION IV – FIRST AID MEASURES

Eyes:	Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
Skin (Dermal):	Get medical aid. Flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.
Ingestion:	Do NOT induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.
Inhalation:	Remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid. Do NOT use mouth-to-mouth resuscitation.

SECTION V – FIRE FIGHTING MEASURES

Flash Point:	N/A
Extinguish Media:	Water spray or fog. Foam. Dry chemical powder. BCF (where regulations permit). Carbon dioxide. Use agent most appropriate to extinguish fire.
Fire & Explosion Hazard:	Avoid generating dust, particularly clouds of dust in a confined or unventilated space, as dust may form

an explosive mixture with air and any source of ignition, e.g., flame or spark, will cause fire or explosion.

Special:

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

SECTION VI – RELEASE MEASURES

Spill or Leak Procedures:

Eliminate all ignition sources. Ventilate area.

Small Spills: Vacuum or sweep up material and place into a suitable disposal container. Clean up spills immediately, observing precautions in the Protective Equipment section.

Large Spills: Containment: For large spills, dike far ahead of spill for later disposal. Do not release into sewers or waterways. Avoid generating dusty. Follow applicable OSHA regulations (29 CFR 1910.120).

SECTION VII – HANDLING AND STORAGE

Handling:

Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.

Storage:

Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

SECTION VIII – PERSONAL PROTECTION / EXPOSURE CONTROL

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.

SECTION IX – PHYSICAL AND CHEMICAL PROPERTIESDocket No. CP19-56
Tab 1 - Attachment 4
Page 46 of 347

Appearance / Odor:	White to light grey powder
Physical State:	Solid
Vapor Density (Air=1):	N/A
Solubility in H₂O:	N/A
Specific Gravity (H₂O=1):	1.45 @ 4°C
Wt/gallon:	N/A
pH:	N/A

SECTION X – STABILITY AND REACTIVITY

Chemical Stability:	Stable
Incompatibilities:	Oxidizing agents
Hazardous Decomposition:	Thermal oxidative decomposition can produce carbon monoxide, irritating and toxic fumes and gases, carbon dioxide.

SECTION XI – TOXICOLOGICAL INFORMATION

Acute Dermal Toxicity: N/A
Acute Oral Toxicity: LD50: > 50 mg/kg (rat)
Acute Inhalation Toxicity: N/A

SECTION XII – ECOLOGICAL INFORMATION

No data available.

SECTION XIII – DISPOSAL CONSIDERATIONS

Dispose under conditions that meet Federal, Local and State regulations.

SECTION XIV – TRANSPORTATION INFORMATION

Product is NON-REGULATED

DOT Shipping Name:	N/A
Hazard Class:	N/A
UN Number:	N/A
Packing Group:	N/A

SECTION XV – REGULATORY INFORMATION

SECTION 311/312:	None
SECTION 302 EHS:	None
SECTION 313:	None
CERCLA RQ VALUE:	None

SECTION XVI – OTHER INFORMATION

TSCA Status:	This product has been classed in accordance with the hazard criteria of the Controlled Products Regulations.
NFPA Health:	1
NFPA Flammability:	1
NFPA Reactivity:	0
Disclaimer:	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. DCS 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. DCS Fluid Solutions. will not be liable for claims relating to any use of this product.

MATERIAL SAFETY DATA SHEET

MARCH 10, 2014

SandMaster

SECTION I – CHEMICAL PRODUCT/CHEMICAL IDENTIFICATION

Product Name: SandMaster
Manufacturer: DCS Fluid Solutions
PO Box 1027
Graham, Texas 76460
(940) 456-4056
Chemical Family: Xanthan Gum
Product Use: Oil Field Process Chemical

Emergency Telephone Number:

CHEMTREC: 1-800-424-9300 or International +1-703-527-3887

SECTION II – COMPOSITION/INFORMATION ON INGREDIENTS

Components:	%	CAS#
Xanthan Gum	98-100	11138-66-2

SECTION III – HAZARDS IDENTIFICATION

☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

This material can form dust that may cause skin or mucous membrane irritation. Symptoms may include redness, burning, and swelling. Although they may cause respiratory tract irritation, nuisance dusts do not form scar tissue or affect the structure of air spaces in the lungs. Their effects on the tissues are potentially reversible.

Potential Health Effects

Primary Entry Routes: Inhalation, Skin contact, Eye contact.

Target Organs: none

Acute Effects

Inhalation: This material is a dust or may produce dust. Breathing small amounts of this material is not likely to be harmful.

Eye: Dust can cause eye irritation. Symptoms include stinging, tearing, redness, and swelling of eyes.

Skin: Unlikely to cause skin irritation or injury.

Ingestion: Swallowing this material is not likely to be harmful.

Carcinogenicity: IARC, NTP, and OSHA do not list Xanthan Gum as a carcinogen.

Medical Conditions Aggravated by Long-Term Exposure: None known.

Chronic Effects: None known.

SECTION IV – FIRST AID MEASURES

Inhalation: If symptoms develop, move individual away from exposure and into fresh air. If symptoms persist, seek medical attention. If breathing is difficult, administer oxygen. Keep person warm and quiet; seek immediate medical attention.

Eye Contact: If symptoms develop, immediately move individual away from exposure and into fresh air. Flush eyes gently with water for at least 15 minutes while holding eyelids apart; seek immediate medical attention.

Skin Contact: First aid is not normally required. However, it is recommended that exposed areas be cleaned by washing with soap and water.

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

After first aid, get appropriate in-plant, paramedic, or community medical support.

SECTION V – FIRE FIGHTING MEASURES

Flash Point: N/A

Flash Point Method: N/A

Autoignition Temperature: N/A

LEL: N/A

UEL: N/A

Flammability Classification:

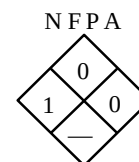
Extinguishing Media: regular foam, water fog, carbon dioxide, sand.

Unusual Fire or Explosion Hazards: Organic dusts can form explosive mixtures in air.

Hazardous Combustion Products: May form: carbon dioxide and carbon monoxide.

Fire-Fighting Instructions: Do not release runoff from fire control methods to sewers or waterways.

Fire-Fighting Equipment: Because fire may produce toxic thermal decomposition products, wear a self-contained breathing apparatus (SCBA) with a full face piece operated in pressure-demand or positive-pressure mode.



SECTION VI – RELEASE MEASURES

Spill /Leak Procedures:

Small Spills: Sweep up material for disposal or recovery.

Large Spills

Containment: For large spills, dike far ahead of spill for later disposal. Shovel material into containers. Do not release into sewers or waterways.

Cleanup: Thoroughly sweep area of spill to clean up any residual material.

Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120).

SECTION VII – HANDLING AND STORAGE

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

Storage Requirements: Store in a cool, dry place at 75 °C or lower.

SECTION VIII – PERSONAL PROTECTION / EXPOSURE CONTROL

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.

SECTION IX – 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
pH: no data

Water Solubility: soluble
Other Solubilities:
Boiling Point: no data
Freezing/Melting Point: no data
Viscosity: no data
Refractive Index:
Surface Tension:
% Volatile:
Evaporation Rate:

SECTION X – 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.

SECTION XI – 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.

SECTION XII – ECOLOGICAL INFORMATION

Ecotoxicity: no data available

Environmental Fate: no data available

Environmental Degradation: no data available

Soil Absorption/Mobility: no data available

SECTION XIII – DISPOSAL CONSIDERATIONS

Disposal: Contact your supplier or a licensed contractor for detailed recommendations. Follow applicable Federal, state, and local regulations.

SECTION XIV – TRANSPORTATION INFORMATION

DOT Transportation Data (49 CFR 172.101): Not Regulated.

Shipping Name:
Shipping Symbols:
Hazard Class:
ID No.:
Packing Group:
Label:
Special Provisions (172.102):

Packaging Authorizations
a) Exceptions:
b) Non-bulk Packaging:
c) Bulk Packaging:

Quantity Limitations
a) Passenger, Aircraft, or Railcar:
b) Cargo Aircraft Only:

Vessel Stowage Requirements
a) Vessel Stowage:
b) Other:

SECTION XV – REGULATORY INFORMATION

US Federal Regulations

TSCA (Toxic Substances Control Act) Status

TSCA (UNITED STATES) The intentional ingredients of this product are listed.

CERCLA RQ - 40 CFR 302.4(a): None listed

CERCLA RQ - 40 CFR 302.4(b)

Materials without a "listed" RQ may be reportable as an "unlisted hazardous substance". See 40 CFR 302.5 (b).

SARA 302 Components - 40 CFR 355 Appendix A: None

Section 311/312 Hazard Class - 40 CFR 370.2

Immediate() Delayed() Fire() Reactive() Sudden Release of Pressure()

SARA 313 Components - 40 CFR 372.65: None

International Regulations - Inventory Status: Not determined

State and Local Regulations - California Proposition 65: None

SECTION XVI – OTHER INFORMATION

Disclaimer:

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.

DCS Fluid Solutions makes no warranty of any kind, express or implied, concerning the accuracy or completeness of the information and data herein. The implied warranties of merchantability and fitness for a particular purpose are specifically excluded. DCS Fluid Solutions will not be liable for claims relating to any use of this product.

Drilling Detergent

SECTION 1. IDENTIFICATION

Product Identifier Drilling Detergent
Other Means of Identification Drilling Detergent
Manufacturer/Supplier Identifier Bri-Chem Supply Corp, 9351 Grant Street, Ste 380, Thornton, CO, 80229, 720-236-1012, www.brichemsupplycorp.com
Supplier Identifier Bri-Chem Supply Corp, 9351 Grant Street, Ste 380, Thornton, CO, 80229, 720-236-1012, www.brichemsupplycorp.com
Emergency Phone No. ChemTrec, (800) 424-9300, 24/7
SDS No. 0780

SECTION 2. HAZARD IDENTIFICATION

Classification

Carcinogenicity - Category 1A

Label Elements



Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required.

Specific Treatment (See Section 4 on the SDS)

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.

Continue rinsing. If eye irritation persists: Get medical advice/attention.

IF ON SKIN: Wash with plenty of soap and water. Wash contaminated clothing before reuse.

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

IF SWALLOWED: Rinse mouth. DO NOT induce vomiting. Drink plenty of water.

Store in a well-ventilated place. Keep container tightly closed. Store in a cool, dry place away from strong oxidizing agents. Keep locked up and out of the reach of children.

Dispose of contents/container to an approved waste disposal plant.

Unknown Acute Toxicity. 0.08% of the mixture consists of ingredient(s) of unknown toxicity.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No.	%	Other Identifiers
SODIUM DODECYLBENZENESULFONATE	25155-30-0	1-5	
Tetrapotassium pyrophosphate	7320-34-5	1-5	
COCONUT DIETHANOLAMIDE	68603-42-9	1-5	

SECTION 4. FIRST-AID MEASURES

First-aid Measures

Product Identifier: Drilling Detergent

SDS No.: 0780

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Inhalation

Move to fresh air. If breathing has stopped, trained personnel should begin rescue breathing. If breathing is difficult, trained personnel should administer emergency oxygen if advised to do so by Poison Centre or doctor. Call a Poison Centre or doctor if you feel unwell.

Skin Contact

Take off contaminated clothing, shoes and leather goods (e.g. watchbands, belts). Wash gently and thoroughly with lukewarm, gently flowing water and mild soap for 5 minutes. Call a Poison Centre or doctor if you feel unwell.

Eye Contact

Immediately rinse the contaminated eye(s) with lukewarm, gently flowing water for 15-20 minutes, while holding the eyelid(s) open. If a contact lens is present, DO NOT delay flushing or attempt to remove the lens. If eye irritation persists, get medical advice or attention.

Ingestion

Dilute with 2 - 3 glasses of water or milk, if conscious. Never give anything by mouth if person is rapidly losing consciousness, or is unconscious or convulsing. Do not induce vomiting. Call a Poison Centre or doctor if you feel unwell.

First-aid Comments

Persons seeking medical attention should carry a copy of the MSDS with them.

Most Important Symptoms and Effects, Acute and Delayed

If on skin:

May cause mild irritation. Repeated or prolonged exposure can irritate the skin.

If in eyes:

May cause moderate to severe irritation.

If swallowed:

Can irritate the mouth, throat and stomach. Symptoms may include nausea, vomiting, stomach cramps and diarrhea.

SECTION 5. FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media

Carbon dioxide, dry chemical powder, appropriate foam, water spray or fog.

Specific Hazards Arising from the Product

Can ignite if strongly heated.

Toxic fumes may be formed.

Special Protective Equipment and Precautions for Fire-fighters

Fight fire from a safe distance or a protected location. Dike and recover contaminated water for appropriate disposal.

Chemical protective clothing (e.g. chemical splash suit) and positive pressure SCBA may be necessary.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment, and Emergency Procedures

Use the personal protective equipment recommended in Section 8 of this safety data sheet.

Environmental Precautions

It is good practice to prevent releases into the environment. Do not allow into any sewer, on the ground or into any waterway.

Methods and Materials for Containment and Cleaning Up

Stop or reduce leak if safe to do so. Do not use absorbents. Contain spill using noncombustible material such as vermiculite, earth or sand. Place used absorbent into suitable, covered, labelled containers for disposal.

SECTION 7. HANDLING AND STORAGE

Precautions for Safe Handling

Only use where there is adequate ventilation. Avoid generating vapours or mists. Prevent uncontrolled release of

Product Identifier: Drilling Detergent

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product. Wear personal protective equipment to avoid direct contact with this chemical. Avoid repeated or prolonged skin contact with product or with contaminated equipment/surfaces.

It is good practice to: avoid breathing product; avoid skin and eye contact and wash hands after handling. Launder clothes before re-wearing. Inform laundry personnel of product hazard(s).

Conditions for Safe Storage

Store in an area that is: dry, well-ventilated, out of direct sunlight and away from heat and ignition sources.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ACGIH® = American Conference of Governmental Industrial Hygienists. TLV® = Threshold Limit Value. NA oSHA = US Occupational Safety and Health Administration. PEL = Permissible Exposure Limits. NA. (Non-hazardous component)

ACGIH® = American Conference of Governmental Industrial Hygienists. TLV® = Threshold Limit Value. NA oSHA = US Occupational Safety and Health Administration. PEL = Permissible Exposure Limits. NA. (Alkanolamide)

ACGIH® = American Conference of Governmental Industrial Hygienists. TLV® = Threshold Limit Value. 5 mg/m³ oSHA = US Occupational Safety and Health Administration. PEL = Permissible Exposure Limits. NA. (Sodium Salt)

ACGIH® = American Conference of Governmental Industrial Hygienists. TLV® = Threshold Limit Value. 400 ppm oSHA = US Occupational Safety and Health Administration. PEL = Permissible Exposure Limits. 400 ppm. (Isopropyl alcohol)

Appropriate Engineering Controls

Use local exhaust ventilation and enclosure, if necessary, to control amount in the air.

Individual Protection Measures

Eye/Face Protection

Wear chemical safety goggles.

Skin Protection

Avoid repeated or prolonged skin contact. Wear chemical protective clothing e.g. gloves, aprons, boots.

Suitable materials are: neoprene rubber, nitrile rubber.

Respiratory Protection

Wear a NIOSH approved powered air-purifying respirator with an appropriate cartridge.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Basic Physical and Chemical Properties

Appearance	Pink.
Odour	Citrus
Odour Threshold	Not available
pH	8.0 - 10.0
Melting Point/Freezing Point	Not available (melting)
Initial Boiling Point/Range	212 °F (100 °C)
Flash Point	Not applicable
Evaporation Rate	< 1
Flammability (solid, gas)	Not available
Upper/Lower Flammability or Explosive Limit	Not applicable (upper)
Vapour Pressure	Not applicable
Relative Density (water = 1)	1.01 - 1.02 at 68 °F
Solubility	Soluble in water

Partition Coefficient, n-Octanol/Water (Log Kow)	Not available
Auto-ignition Temperature	Not available
Decomposition Temperature	Not available
Viscosity	> 145 centipoises (dynamic)
Other Information	
Physical State	Liquid

SECTION 10. STABILITY AND REACTIVITY

Reactivity

None known.

Chemical Stability

Normally stable.

Possibility of Hazardous Reactions

Increased temperature.

Conditions to Avoid

High temperatures.

Incompatible Materials

Oxidizing Agents.

Hazardous Decomposition Products

Oxides of Carbon.

SECTION 11. TOXICOLOGICAL INFORMATION

Acute Toxicity

=500 mg/kg (rat)=438(Rat)

=12400 uL/kg (rat)

Skin Corrosion/Irritation

May cause mild irritation. Repeated or prolonged exposure can irritate the skin.

Serious Eye Damage/Irritation

May cause moderate to severe irritation.

STOT (Specific Target Organ Toxicity) - Single Exposure

Inhalation

Not expected to be an inhalation hazard. Prolonged inhalation of vapours or mists, however, may cause irritation.

Ingestion

Can irritate the mouth, throat and stomach. Symptoms may include nausea, vomiting, stomach cramps and diarrhea.

Carcinogenicity

(Alkanolamide) In a National Toxicology Program (NTP) 2 year carcinogenicity study of this alkanolamide, male and female rats and mice were dermally exposed at 0 - 200 mg/kg and 0 - 100 mg/kg, respectively. There was no clear evidence of carcinogenicity in rats. There was clear evidence of carcinogenicity in mice. Mutagenicity tests demonstrated mixed results.

(Sodium Salt) Bisulfites have demonstrated mixed results (positive and negative) in mutagenicity assays. (IARC).

No information was located for: Skin Corrosion/Irritation, Serious Eye Damage/Irritation, STOT (Specific Target Organ Toxicity) - Single Exposure, STOT (Specific Target Organ Toxicity) - Repeated Exposure, Respiratory and/or Skin Sensitization, Development of Offspring, Sexual Function and Fertility, Germ Cell Mutagenicity, Interactive Effects

SECTION 12. ECOLOGICAL INFORMATION

(Sodium Salt) IC50 96H 100 - 200 mg/l (rainbow trout) LC50 48H 200 mg/l (golden orfe). (Isopropyl alcohol) IC50 96H 94,900 mg/l (fathead minnow 29D old) LC50 96H 61,200 mg/l (fathead minnow 31D old) EC50 5M 35,390 mg/l (photobacterium phosphoreum).

Persistence and Degradability

No information was located.

Bioaccumulative Potential

No information was located.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal Methods

Contact local environmental authorities for approved disposal or recycling methods in your jurisdiction.

SECTION 14. TRANSPORT INFORMATION

Not regulated under Canadian TDG regulations. Not regulated under US DOT Regulations.

Special Precautions Not applicable

Transport in Bulk According to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

SECTION 15. REGULATORY INFORMATION

Safety, Health and Environmental Regulations

USA

Additional USA Regulatory Lists

SARA Title III - Section 311/312: Immediate (acute) health hazard.

SARA Title III - Section 313. (Isopropyl alcohol) 1.0%.

SECTION 16. OTHER INFORMATION

SDS Prepared By Bri-Chem Supply Corp

Date of Preparation August 12, 2015

Disclaimer This Health and Safety information is correct to the best of our knowledge and belief at the date of its publication, but we cannot accept liability for any loss, injury or damage which may result from its use. We shall ensure, so far as is reasonably practicable, that any revision of this Data Sheet is sent to all customers to whom we have directly supplied this substance, but must point out that it is the responsibility of any intermediate supplier to ensure that such revision is passed to the ultimate user. The information given in the Data Sheet is designed only as guidance for safe handling, storage, and the use of the substance. It is not a specification nor does it guarantee any specific properties. All chemicals should be handled only by competent personnel, within a controlled environment. Should further information be required, this can be obtained through the sales office whose address is at the top of this data sheet.

Product Identifier: Drilling Detergent

SDS No.: 0780

Date of Preparation: August 12, 2015

Page 05 of 05



Safety Data Sheet

Foam-Star Ultra

SDS Revision Date: 02/22/2017

1. Identification

1.1. Product identifier

Product Identity

Foam-Star Ultra

Alternate Names

Premium Drilling Foam

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

Intended use

Drilling Foam

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

Combustible dust

2.2. Label elements

Hazard Pictograms



Signal Word

Warning

Hazard Statements

Harmful if swallowed
May be harmful in contact with skin
Causes skin irritation
Causes serious eye irritation
Toxic to aquatic life with long lasting effects

Precautionary Statements

[Prevention]: Wash face, hands and any exposed skin thoroughly after handling. Do not eat, drink or smoke when using this product. Wear protective gloves/protective clothing/eye protection/face protection. Avoid release to the environment.



Safety Data Sheet

Foam-Star Ultra

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[Response]: Specific Treatment (See Section 4 on the SDS).

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse. If irritation persists, call a physician.

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Induce vomiting, but only if victim is fully conscious.

[Storage]: Keep away from heat, sparks and open flame. Keep containers tightly closed in a dry, cool and well-ventilated place. Keep out of reach of children.

[Disposal]: Dispose of contents/container to an approved waste disposal plant.

Contains Substances

CAS Number

2-butoxyethanol

111-76-2

Diethylene Glycol

111-46-6

2.3 Hazards not otherwise classified

Unknown Acute Toxicity

0% of the mixture consists of ingredient(s) of unknown toxicity

3. Composition/information on ingredients

Substances	CAS Number	PERCENT (w/w)	GHS Classification - US
2-butoxyethanol	111-76-2	10-30%	Liquid
Diethylene Glycol	111-46-6	3-7%	Liquid

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

Inhalation

If mists/vapors are formed or irritation occurs, leave area and do not return until mists/vapors have dissipated. If irritation persists, see a physician. If breathing is difficult, give oxygen. If breathing has stopped, give artificial respiration. Get medical attention immediately.

Eyes

Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Call a physician immediately.

Skin

Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Wash contaminated clothing before reuse. If skin irritation persists, see a physician.



Safety Data Sheet

Foam-Star Ultra

SDS Revision Date: 02/22/2017

Ingestion Induce vomiting, but only if victim is fully conscious. Call a physician immediately.

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

May cause irritation and/or burning to eyes and skin. May cause headache, dizziness, blurred vision, nausea and vomiting. May cause respiratory 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

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

5.2. Special hazards arising from the substance or mixture

No Information available.

5.3. Advice for fire-fighters

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

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Ensure adequate ventilation, especially in confined areas.
See Section 8 for additional information

6.2. Environmental precautions

See Section 12 for additional ecological information.

6.3. Methods and material for containment and cleaning up

Prevent further leakage or spillage if safe to do so.

Methods for cleaning up

Small Spill

Use a non-combustible material like vermiculite or sand to soak up the product and place into a container for later disposal.

Large Spill

Dike the spill area and recover as much as possible in drums or salvage tanks. Use a non-combustible material like vermiculite or sand to soak up the remaining product and place into a container for later disposal.

7. Handling and storage

7.1. Precautions for safe handling

Use personal protective equipment as required. Avoid contact with skin, eyes or clothing. Wash thoroughly after handling.



Safety Data Sheet

Foam-Star Ultra

SDS Revision Date: 02/22/2017

7.2. Conditions for safe storage, including any incompatibilities

Storage Conditions

Keep away from heat, sparks, flame and other sources of ignition (i.e., pilot lights, electric motors and static electricity). Keep containers tightly closed in a dry, cool and well-ventilated place. Keep out of the reach of children.

Incompatible materials

None known based on information supplied.

7.3. Specific end use(s)

None known.

8. Exposure controls and personal protection

8.1. Control parameters

Exposure

Substances	ACGIH TLV	OSHA PEL-TWA	ACGIH TLV-TWA
2-butoxyethanol 111-76-2	TWA: 20 ppm	TWA: 50 ppm TWA: 240 mg/m ³ (vacated) TWA: 25 pm (vacated) TWA: 120 mg/m ³ (vacated) S* S*	IDLH: 700 ppm TWA: 5 ppm TWA: 24 mg/m ³
Formaldehyde 50-00-0	Ceiling: 0.3 ppm	TWA: 0.75 ppm (vacated) TWA: 3 ppm unless specified in 1910.1048 (vacated) STEL: 10 ppm 30 min unless specified in 1910.1048 (vacated) Ceiling: 5 ppm unless specified in 1910.1048 STEL: 2 ppm see 29 CFR 1910.1048	IDLH: 20 ppm Ceiling: 0.1 ppm 15 min TWA: 0.016 ppm

NIOSH IDLH Immediately Dangerous to Life or Health

8.2. Exposure controls

Respiratory

If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators or air purifying respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

Eyes

Tight sealing safety goggles.

Skin

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Engineering Controls

Use in a well ventilated area.

Other Work Practices

Handle in accordance with good industrial hygiene and safety practice. Wash face, hands and any exposed skin thoroughly after handling. Keep away from food, drink and animal feeding stuffs. Wear suitable gloves and eye/face protection.



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Foam-Star Ultra

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

9. Physical and chemical properties

Appearance	Colorless to Light Yellow liquid
Odor	Lemon
Odor threshold	No information available
pH	7.5 - 8.5 (10%)
Melting point / freezing point	No information available
Initial boiling point and boiling range	210 ° F
Flash Point	> 202 ° F Pensky-Martens Closed Cup (PMCC)
Evaporation rate (Ether = 1)	No data available
Flammability (solid, gas)	No data available
Upper/lower flammability or explosive limits	No data available
Vapor pressure (Pa)	No data available
Vapor Density	No data available
Specific Gravity	1.042
Solubility in Water	Partially soluble
Partition coefficient n-octanol/water (Log Kow)	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Viscosity (cSt)	No data available
Density (lbs/gal)	No data available
9.2. Other information	
VOC Content (%)	24.05
Bulk Density	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

None under normal processing.

10.4. Conditions to avoid

No special precautions beyond standard safe industrial practices.

10.5. Incompatible materials

None known based on information supplied.

10.6. Hazardous decomposition products



Safety Data Sheet

Foam-Star Ultra

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Oxides of carbon and nitrogen

11. Toxicological information

11.1 Information on likely routes of exposure

Principle Route of Exposure Eye or skin contact.

11.2 Symptoms related to the physical, chemical and toxicological characteristics

Acute Toxicity

Inhalation	None known.
Eye Contact	Severely irritating to eyes.
Skin Contact	May be harmful in contact with skin.
Ingestion	Harmful if swallowed.

Chronic toxicity

May cause adverse effects on the bone marrow and blood-forming system. May cause adverse liver effects.

Target organ effects

Blood, Central nervous system, EYES, hematopoietic system, Kidney, Liver, Respiratory system, Skin.

Carcinogenicity

Chemical Name	ACGIH	IARC	NTP	OSHA
2-butoxyethanol 111-76-2	A3	Group 3	-	-

ACGIH (American Conference of Governmental Industrial Hygienists)

A3 - Animal Carcinogen

IARC (International Agency for Research on Cancer)

Not classifiable as a human carcinogen

11.3 Toxicity data

Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
2-butoxyethanol	111-76-2	= 470 mg/kg (Rat)	= 99 mg/kg (Rabbit)	= 450 ppm (Rat) 4 h



Safety Data Sheet

Foam-Star Ultra

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12. Ecological information

12.1. Toxicity

Ecotoxicity Effects

Product Ecotoxicity Data

No data available

Substance Ecotoxicity Data

0% of the mixture consists of component(s) of unknown hazards to the aquatic environment

Chemical Name	Algae/aquatic plants	Fish	Crustacea
Sodium Alpha Olefin Sulfonate 68439-57-6	-	1.0 - 10.0: 96 h Brachydanio rerio mg/L LC50 static 12.2: 96 h Brachydanio rerio mg/L LC50 semi-static	-
2-butoxyethanol 111-76-2	-	1490: 96 h Lepomis macrochirus mg/L LC50 static 2950: 96 h Lepomis macrochirus mg/L LC50	1000: 48 h Daphnia magna mg/L EC50 1698 - 1940: 24 h Daphnia magna mg/L EC50
Diethylene Glycol 111-46-6	-	75200: 96 h Pimephales promelas mg/L LC50 flow-through	84000: 48 h Daphnia magna mg/L EC50
Sodium Chloride 7647-14-5	-	5560 - 6080: 96 h Lepomis macrochirus mg/L LC50 flow-through 12946: 96 h Lepomis macrochirus mg/L LC50 static 6020 - 7070: 96 h Pimephales promelas mg/L LC50 static 7050: 96 h Pimephales promelas mg/L LC50 semi-static 6420 - 6700: 96 h Pimephales promelas mg/L LC50 static 4747 - 7824: 96 h Oncorhynchus mykiss mg/L LC50 flow-through	1000: 48 h Daphnia magna mg/L EC50 340.7 - 469.2: 48 h Daphnia magna mg/L EC50 Static
Formaldehyde 50-00-0	-	22.6 - 25.7: 96 h Pimephales promelas mg/L LC50 flow-through 23.2 - 29.7: 96 h Pimephales promelas mg/L LC50 static 1510: 96 h Lepomis macrochirus µg/L LC50 static 41: 96 h Brachydanio rerio mg/L LC50 static 0.032 - 0.226: 96 h Oncorhynchus mykiss mL/L LC50 flow-through 100 - 136: 96 h Oncorhynchus mykiss mg/L LC50 static	2: 48 h Daphnia magna mg/L LC50 11.3 - 18: 48 h Daphnia magna mg/L EC50 Static

12.2. Persistence and degradability

No information available

12.3. Bioaccumulative potential

Chemical Name	Partition coefficient
2-butoxyethanol 111-76-2	0.81
Diethylene Glycol 111-46-6	-1.98



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12.4. Mobility in soil

No information available

12.5. Results of PBT and vPvB assessment

No information available

13. Disposal considerations

13.1. Waste treatment methods

Disposal of wastes

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

Contaminated packaging

Do not reuse container.

US EPA Waste Number

U122

Chemical Name	RCRA	RCRA - Basis for Listing	RCRA - D Series	RCRA - U Series
Formaldehyde 50-00-0	U122	Included in waste streams: K009, K010, K038, K040, K156, K157		U122

This product contains one or more substances that are listed with the State of California as a hazardous waste.

14. Transport information

The shipping classification information in this section (Section 14) is meant as a guide to the overall classification of the product. However, transportation classifications may be subject to change with changes in package size. Consult shipper requirements under 49 CFR, IATA and IMDG to assure regulatory compliance.

15. Regulatory information

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

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.



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EPA CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material.

California Proposition 65

This product contains chemicals known to the state of California to cause cancer, or birth defects or other reproductive harm.

Chemical Name	California Proposition 65
Formaldehyde - 50-00-0	Carcinogen

U.S. State Right-to-Know Regulations			
Chemical Name	New Jersey	Massachusetts	Pennsylvania
2-butoxyethanol 111-76-2	X	X	X
Diethylene Glycol 111-46-6	-	-	X
Sodium Sulfate 7757-82-6	-	X	X
Formaldehyde 50-00-0	X	X	X

Canadian Regulations

Canadian DSL Inventory

All components listed on inventory or are exempt.

16. Other information

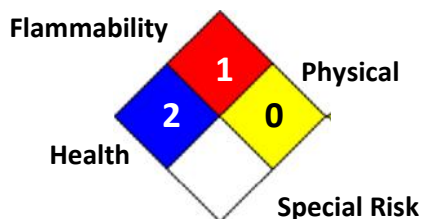
This is the first version in the GHS SDS format. Listings of changes from previous versions in other formats are not applicable.

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 2
 FLAMMABILITY 1
 PHYSICAL 0
 PPE C



End of Document



Safety Data Sheet

Lubra-Star Plus

SDS Revision Date: 02/21/2017

1. Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product Identity	Lubra-Star Plus
Alternate Names	Chemical family: Blend

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

Intended use	See Technical Data Sheet.
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 identification of the product

2.1. Classification of the substance or mixture

No applicable GHS categories.

2.2. Label elements

Using the Toxicity Data listed in section 11 and 12 the product is labeled as follows.

No applicable GHS categories.

[Prevention]:

No GHS prevention statements

[Response]:

No GHS response statements

[Storage]:

No GHS storage statements

[Disposal]:

No GHS disposal statements



Safety Data Sheet

Lubra-Star Plus

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3. Composition/information on ingredients

This product contains the following substances that present a hazard within the meaning of the relevant State and Federal Hazardous Substances regulations.

Ingredient/Chemical Designations	Weight %	GHS Classification	Notes
Fatty acid CAS Number: 0061790-12-3	Proprietary	Not Classified	[1]
Proprietary CAS Number: 0090622-46-1	Proprietary	Asp. Tox. 1;H304	[1]

[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	In all cases of doubt, or when symptoms persist, seek medical attention. Never give anything by mouth to an unconscious person.
Inhalation	Remove to fresh air, keep patient warm and at rest. If breathing is irregular or stopped, give artificial respiration. If unconscious place in the recovery position and obtain immediate medical attention. Give nothing by mouth.
Eyes	Irrigate copiously with clean water for at least 15 minutes, holding the eyelids apart and seek medical attention.
Skin	Remove contaminated clothing. Wash skin thoroughly with soap and water or use a recognized skin cleanser.
Ingestion	Get Medical attention immediately. If swallowed, do not induce vomiting. If person is fully conscious, give water to drink. Never give anything by mouth to an unconscious person. If vomiting occurs, keep head lower than hips to help prevent aspiration.

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

Overview	Inhalation: Liquid, no dust is generated in normal use. Skin: May be irritating to the skin with prolonged contact. Eye: May cause irritation to the eyes and could cause prolonged impairment of vision. Ingestion: Not anticipated route of exposure. If ingested may be irritating to mouth, throat and stomach. Exposure to solvent vapor concentrations from the component solvents in excess of the stated occupational exposure limits may result in adverse health effects such as mucous membrane and respiratory system irritation and adverse effects on the kidneys, liver and central nervous system. Symptoms include headache, nausea, dizziness, fatigue, muscular weakness, drowsiness and in extreme cases, loss of consciousness. Repeated or prolonged contact with the preparation may cause removal of natural fat from the skin resulting in dryness, irritation and possible non-allergic contact dermatitis. Solvents may also be absorbed through the skin. Splashes of liquid in the eyes may cause irritation and soreness with possible reversible damage. See section 2 for further details.



Safety Data Sheet

Lubra-Star Plus

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5. Fire-fighting measures

5.1. Extinguishing media

Dry chemical, foam, carbon dioxide and water fog.

5.2. Special hazards arising from the substance or mixture

Hazardous decomposition: High temperatures and fires may produce such toxic substances as carbon monoxide and carbon dioxide.

5.3. Advice for fire-fighters

Cool closed containers exposed to fire by spraying them with water. Do not allow run off water and contaminants from fire fighting to enter drains or water ways.

ERG Guide No. ----

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Remove sources of ignition, do not turn lights or unprotected electrical equipment on or off. In case of a major spill or spillage in a confined space evacuate the area and check that solvent vapor levels are below the Lower Explosive Limit before re-entering.

6.2. Environmental precautions

Do not allow spills to enter drains or waterways.

Use good personal hygiene practices. Wash hands before eating, drinking, smoking or using toilet. Promptly remove soiled clothing and wash thoroughly before reuse.

6.3. Methods and material for containment and cleaning up

Collect and place in suitable container for reuse or disposal.

7. Handling and storage

7.1. Precautions for safe handling

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

7.2. Conditions for safe storage, including any incompatibilities

Keep from freezing, store in a cool dry place.

Handle containers carefully to prevent damage and spillage or accumulation of dust.

Incompatible materials: Strong oxidizing agents and acids.

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

7.3. Specific end use(s)

No data available.

8. Exposure controls and personal protection



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Lubra-Star Plus

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8.1. Control parameters

Exposure

CAS No.	Ingredient	Source	Value
0061790-12-3	Fatty acid	OSHA	No Established Limit
		ACGIH	No Established Limit
		NIOSH	No Established Limit
		Supplier	No Established Limit
0090622-46-1	Proprietary	OSHA	No Established Limit
		ACGIH	No Established Limit
		NIOSH	No Established Limit
		Supplier	No Established Limit

Carcinogen Data

CAS No.	Ingredient	Source	Value
0061790-12-3	Fatty acid	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;
0090622-46-1	Proprietary	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;

8.2. Exposure controls

Respiratory

If workers are exposed to concentrations above the exposure limit they must use the appropriate, certified respirators.

Eyes

Wear safety glasses or goggles with side shields. Maintain eye wash station in work area.

Skin

Overalls which cover the body, arms and legs should be worn. Skin should not be exposed. All parts of the body should be washed after contact.

Engineering Controls

Provide adequate ventilation. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction. If these are not sufficient to maintain concentrations of particulates and any vapor below occupational exposure limits suitable respiratory protection must be worn.

Other Work Practices

Use good personal hygiene practices. Wash hands before eating, drinking, smoking or using toilet. Promptly remove soiled clothing and wash thoroughly before reuse.

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

9. Physical and chemical properties

Appearance

Brown/Black Liquid

Odor

None

Odor threshold

Not Measured



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Lubra-Star Plus

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pH	6.7
Melting point / freezing point	Not Measured
Initial boiling point and boiling range	> 212F
Flash Point	> 600F
Evaporation rate (Ether = 1)	Not Applicable
Flammability (solid, gas)	Not Applicable
Upper/lower flammability or explosive limits	Lower Explosive Limit: Not Measured Upper Explosive Limit: Not Measured
Vapor pressure (Pa)	Not Measured
Vapor Density	Not Applicable
Specific Gravity	0.9005-0.9305 g/cm3
Solubility in Water	Appreciable
Partition coefficient n-octanol/water (Log Kow)	Not Measured
Auto-ignition temperature	Not Measured
Decomposition temperature	Not Measured
Viscosity (cSt)	Not Measured

9.2. Other information

No other relevant information.

10. Stability and reactivity

10.1. Reactivity

Hazardous Polymerization will not occur.

10.2. Chemical stability

Stable under normal circumstances.

10.3. Possibility of hazardous reactions

No data available.

10.4. Conditions to avoid

Excessive heat and open flame.

10.5. Incompatible materials

Strong oxidizing agents and acids.

10.6. Hazardous decomposition products

High temperatures and fires may produce such toxic substances as carbon monoxide and carbon dioxide.

11. Toxicological information

Acute toxicity

Exposure to solvent vapor concentrations from the component solvents in excess of the stated occupational exposure limits may result in adverse health effects such as mucous membrane and respiratory system irritation and adverse



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effects on the kidneys, liver and central nervous system. Symptoms include headache, nausea, dizziness, fatigue, muscular weakness, drowsiness and in extreme cases, loss of consciousness.

Repeated or prolonged contact with the preparation may cause removal of natural fat from the skin resulting in dryness, irritation and possible non-allergic contact dermatitis. Solvents may also be absorbed through the skin. Splashes of liquid in the eyes may cause irritation and soreness with possible reversible damage.

Ingredient	Oral LD50, mg/kg	Skin LD50, mg/kg	Inhalation Vapor LD50, mg/L/4hr	Inhalation Dust/Mist LD50, mg/L/4hr	Inhalation Gas LD50, ppm
Fatty acid - (61790-12-3)	3,200.00, Rat - Category: 5	No data available	No data available	No data available	No data available
Proprietary (90622-46-1)	No data available	No data available	No data available	No data available	No data available

Note: When no route specific LD50 data is available for an acute toxin, the converted acute toxicity point estimate was used in the calculation of the product's ATE (Acute Toxicity Estimate).

Classification	Category	Hazard Description
Acute toxicity (oral)	---	Not Applicable
Acute toxicity (dermal)	---	Not Applicable
Acute toxicity (inhalation)	---	Not Applicable
Skin corrosion/irritation	---	Not Applicable
Serious eye damage/irritation	---	Not Applicable
Respiratory sensitization	---	Not Applicable
Skin sensitization	---	Not Applicable
Germ cell mutagenicity	---	Not Applicable
Carcinogenicity	---	Not Applicable
Reproductive toxicity	---	Not Applicable
STOT-single exposure	---	Not Applicable
STOT-repeated exposure	---	Not Applicable
Aspiration hazard	---	Not Applicable

12. Ecological information

12.1. Toxicity

No additional information provided for this product. See Section 3 for chemical specific data.

Aquatic Ecotoxicity

Ingredient	96 hr LC50 fish, mg/l	48 hr EC50 crustacea, mg/l	ErC50 algae, mg/l
Fatty acid - (61790-12-3)	Not Available	Not Available	Not Available



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Proprietary (90622-46-1)

Not Available

Not Available

Not Available

12.2. Persistence and degradability

There is no data available on the preparation itself.

12.3. Bioaccumulative potential

Not Measured

12.4. Mobility in soil

No data available.

12.5. Results of PBT and vPvB assessment

This product contains no PBT/vPvB chemicals.

12.6. Other adverse effects

No data available.

13. Disposal considerations

13.1. Waste treatment methods

Observe all federal, state and local regulations when disposing of this substance.

14. Transport information

	DOT (Domestic Surface Transportation)	IMO / IMDG (Ocean Transportation)	ICAO/IATA
14.1. UN number	Not Applicable	Not Regulated	Not Regulated
14.2. UN proper shipping name	Not Regulated	Not Regulated	Not Regulated
14.3. Transport hazard class(es)	DOT Hazard Class: Not Applicable DOT Label: ---	IMDG: Not Applicable Sub Class: Not Applicable	Air Class: Not Applicable
14.4. Packing group	Not Applicable	Not Applicable	Not Applicable
14.5. Environmental hazards			
IMDG	Marine Pollutant: No		
14.6. Special precautions for user	No further information		

15. Regulatory information



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Regulatory Overview The regulatory data in Section 15 is not intended to be all-inclusive, only selected regulations are represented.

Toxic Substance Control Act (TSCA) All components of this material are either listed or exempt from listing on the TSCA Inventory.

WHMIS Classification Not Regulated

US EPA Tier II Hazards

Fire: No

Sudden Release of Pressure: No

Reactive: No

Immediate (Acute): No

Delayed (Chronic): No

EPCRA 311/312 Chemicals and RQs:

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

EPCRA 302 Extremely Hazardous :

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

EPCRA 313 Toxic Chemicals:

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Carcinogens (>0.0%):

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Developmental Toxins (>0.0%):

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Female Repro Toxins (>0.0%):

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Male Repro Toxins (>0.0%):

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

N.J. RTK Substances (>1%) :

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Penn RTK Substances (>1%):

Edible oil

16. Other information

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein. We accept no responsibility and disclaim all liability for any harmful effects which may be caused by exposure to our products. Customers/users of this product must comply with all applicable health and safety laws, regulations, and orders.

The full text of the phrases appearing in section 3 is:

H304 May be fatal if swallowed and enters airways.

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



Safety Data Sheet Lubra-Star Plus

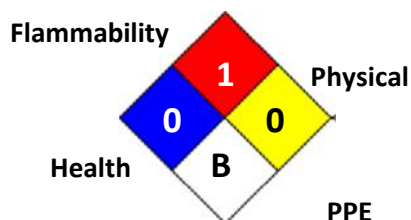
SDS Revision Date: 02/21/2017

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 or 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	0
FLAMMABILITY	1
PHYSICAL	0
PPE	B



End of Document

SAFETY DATA SHEET

according to Regulation (EC) No. 453/2010

MAGMA FIBER COARSE ®

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

1.1 Product Identifier

Product Name MAGMA FIBER COARSE®

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

Recommended Use	Viscosifier
Sector of Use	SU2 - Mining, (including offshore industries)
Product Category	PC20 - Products such as pH-regulators, flocculants, precipitants, neutralization agents, other unspecific
Process Categories	PROC 26 - Handling of solid inorganic substances at ambient temperature

1.3 Details of the supplier of the safety data sheet

Lost Circulation Specialists, Inc.
14011 Park Dr. Suite 103
Tomball, TX 77377-2127

1.4 Emergency Telephone Number

+1-281-252-4243

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

REGULATION (EC) No 1272/2008

Not classified

Classification according to EU Directives 67/548/EEC or 1999/45/EC

2.2 Label Elements

Not Classified

Hazard Pictograms

Signal Word

None

Hazard Statements

Not Classified

Precautionary Statements – EU (§28, 1272/2008)

Not Classified

Contains

Substances

Contains no hazardous substances

CAS Number

Mixture

2.3 Other Hazards

None known

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substances	EINECS	CAS Number	Percent (w/w)	EEC Classification	EU – CLP Substance Classification	REACH No.
Contains no hazardous substances	Not applicable	Mixture	60 – 100%	Not applicable	Not applicable	No data available

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 and effects, both acute and delayed

No significant hazards expected. 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

5. FIREFIGHTING 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 Special hazards arising from the substance or mixture

Special Exposure Hazards

Not applicable.

5.3 Advice to firefighters

Special Protective Equipment for Fire-Fighters

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

See section 8 for additional information

6.2 Environmental precautions

None known.

6.3 Methods and material for containment and cleaning up

Scoop up and remove

6.4 Reference to other sections

See section 8 and 13 for additional information.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Avoid contact with eyes, skin, or clothing.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice

7.2 Conditions for safe storage, including any incompatibilities

Store in a dry location

7.3 Specific End Use(s)

Exposure Scenario

No information available

Other Guidelines

No information available

8. Exposure Controls/Personal Protection

8.1 Control Parameters

Exposure Limits

Substances	CAS Number	EU	UK OEL	Netherlands	France OEL
Contains no hazardous substances	Mixture	Not applicable	Not applicable	Not applicable	Not applicable

Substances	CAS Number	Germany MAK/TRK	Spain	Portugal	Finland
Contains no hazardous substances	Mixture	Not applicable	Not applicable	Not applicable	Not applicable

Substances	CAS Number	Austria	Ireland	Switzerland	Norway
Contains no hazardous substances	Mixture	Not applicable	Not applicable	Not applicable	Not applicable

Substances	CAS Number	Italy	Poland	Hungary	Czech Republic
Contains no hazardous substances	Mixture	Not applicable	Not applicable	Not applicable	Not applicable

Substances	CAS Number	Denmark
Contains no hazardous substances	Mixture	Not applicable

Derived No Effect Level (DNEL)
Worker

No information available.

General Population

Predicted No Effect Concentration (PNEC)

No information available

8.2 Exposure Controls

Engineering Controls

Use in a well ventilated area.

Personal protective equipment

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	Not known
Environmental Exposure Controls	No information available.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Physical State:	fibers	Color:	White to gray
Odor:	odorless	Odor Threshold:	No information available

<u>Property</u>	<u>Values</u>
Remarks/ - Method	
pH:	No data available
Freezing Point/Range	No data available
Melting Point/Range	No data available
Boiling Point/Range	No data available
Flash Point	No data available
Evaporation Rate	No data available
Vapor Pressure	No data available
Vapor Density	No data available
Specific Gravity	2.6
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 applicable

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 Toxicological Effects

Acute Toxicity

Inhalation

May cause respiratory irritation.

Eye Contact

May cause mechanical irritation to eye.

Skin Contact

May cause mechanical 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. EXOLOGICAL INFORMATION

12.1 Toxicity

Ecotoxicity Effects

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

The methods for determining biodegradability are not applicable to inorganic substances.

12.3 Bioaccumulative potential

No information available

12.4 Mobility in soil

No information available

12.5 Results of PBT and vPvB assessment

No information available.

12.6 Other adverse effects

Endocrine Disruptor Information

This product does not contain any known or suspected endocrine disruptors

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Disposal Method Bury in a licensed landfill according to federal, state, and local regulations.

Contaminated Packaging Follow all applicable national or local regulations.

14. TRANSPORT INFORMATION

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

RID

UN Number:	Not restricted
UN Proper Shipping Name:	Not restricted
Transport Hazard Class(es):	Not applicable
Packing Group:	Not applicable
Environmental Hazards:	Not applicable

ADR

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

Special Precautions for User

None

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

Not
applicable

15. REGULATORY INFORMATION

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

International Inventories

All of the components in the product are on the following Inventory lists:

EINECS Inventory This product, and all its components, complies with EINECS

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

Canadian DSL Inventory All components listed on inventory or are exempt.

Legend

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

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

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

Germany, Water Endangering Classes (WGK) WGK 0: Generally not water endangering

15.2 Chemical Safety Assessment

No information available

16. Other Information

Full text of R-phrases referred to under Sections 2 and 3

None

Key literature references and sources for data

www.ChemADVISOR.com/

Revision Date: 03-Feb-2015

Revision Note

Not applicable

This safety data sheet complies with the requirements of Regulation (EC) No. 453/2010

Disclaimer Statement

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Not Classified

Precautionary Statements – EU (§28, 1272/2008)

Not Classified

Contains

Substances

Contains no hazardous substances

CAS Number

Mixture

2.3 Other Hazards

None known

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substances	EINECS	CAS Number	Percent (w/w)	EEC Classification	EU – CLP Substance Classification	REACH No.
Contains no hazardous substances	Not applicable	Mixture	60 – 100%	Not applicable	Not applicable	No data available

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 and effects, both acute and delayed

No significant hazards expected. 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

5. FIREFIGHTING 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 Special hazards arising from the substance or mixture

Special Exposure Hazards

Not applicable.

5.3 Advice to firefighters

Special Protective Equipment for Fire-Fighters

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

See section 8 for additional information

6.2 Environmental precautions

None known.

6.3 Methods and material for containment and cleaning up

Scoop up and remove

6.4 Reference to other sections

See section 8 and 13 for additional information.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Avoid contact with eyes, skin, or clothing.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice

7.2 Conditions for safe storage, including any incompatibilities

Store in a dry location

7.3 Specific End Use(s)

Exposure Scenario

No information available

Other Guidelines

No information available

8. Exposure Controls/Personal Protection

8.1 Control Parameters

Exposure Limits

Substances	CAS Number	EU	UK OEL	Netherlands	France OEL
Contains no hazardous substances	Mixture	Not applicable	Not applicable	Not applicable	Not applicable

Substances	CAS Number	Germany MAK/TRK	Spain	Portugal	Finland
Contains no hazardous substances	Mixture	Not applicable	Not applicable	Not applicable	Not applicable

Substances	CAS Number	Austria	Ireland	Switzerland	Norway
Contains no hazardous substances	Mixture	Not applicable	Not applicable	Not applicable	Not applicable

Substances	CAS Number	Italy	Poland	Hungary	Czech Republic
Contains no hazardous substances	Mixture	Not applicable	Not applicable	Not applicable	Not applicable

Substances	CAS Number	Denmark
Contains no hazardous substances	Mixture	Not applicable

Derived No Effect Level (DNEL)
Worker

No information available.

General Population

Predicted No Effect Concentration (PNEC)

No information available

8.2 Exposure Controls

Engineering Controls

Use in a well ventilated area.

Personal protective equipment

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	Not known
Environmental Exposure Controls	No information available.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Physical State:	fibers	Color:	White to gray
Odor:	odorless	Odor Threshold:	No information available

<u>Property</u>	<u>Values</u>
<u>Remarks/ - Method</u>	
pH:	No data available
Freezing Point/Range	No data available
Melting Point/Range	No data available
Boiling Point/Range	No data available
Flash Point	No data available
Evaporation Rate	No data available
Vapor Pressure	No data available
Vapor Density	No data available
Specific Gravity	2.6
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 applicable

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 Toxicological Effects

Acute Toxicity

Inhalation

May cause respiratory irritation.

Eye Contact

May cause mechanical irritation to eye.

Skin Contact

May cause mechanical 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. EXOLOGICAL INFORMATION

12.1 Toxicity

Ecotoxicity Effects

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

The methods for determining biodegradability are not applicable to inorganic substances.

12.3 Bioaccumulative potential

No information available

12.4 Mobility in soil

No information available

12.5 Results of PBT and vPvB assessment

No information available.

12.6 Other adverse effects

Endocrine Disruptor Information

This product does not contain any known or suspected endocrine disruptors

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Disposal Method Bury in a licensed landfill according to federal, state, and local regulations.

Contaminated Packaging Follow all applicable national or local regulations.

14. TRANSPORT INFORMATION

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

RID

UN Number:	Not restricted
UN Proper Shipping Name:	Not restricted
Transport Hazard Class(es):	Not applicable
Packing Group:	Not applicable
Environmental Hazards:	Not applicable

ADR

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

Special Precautions for User

None

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

Not
applicable

15. REGULATORY INFORMATION

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

International Inventories

All of the components in the product are on the following Inventory lists:

EINECS Inventory This product, and all its components, complies with EINECS

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

Canadian DSL Inventory All components listed on inventory or are exempt.

Legend

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

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

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

Germany, Water Endangering Classes (WGK) WGK 0: Generally not water endangering

15.2 Chemical Safety Assessment

No information available

16. Other Information

Full text of R-phrases referred to under Sections 2 and 3

None

Key literature references and sources for data

www.ChemADVISOR.com/

Revision Date: 03-March-2017

Revision Note

Not applicable

This safety data sheet complies with the requirements of Regulation (EC) No. 453/2010

Disclaimer Statement

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Safety Data Sheet

Magma Fiber

SDS Revision Date: 01/01/2017

1. Identification

1.1. Product identifier

Product Identity

Magma Fiber

Alternate Names

Mineral Fiber

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

Intended use

Viscosifier

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

Not Classified

2.2. Label elements

Not Classified. Contains no hazardous substances.

[Prevention]: Not classified.

[Response]: Not classified.

[Storage]: Not classified.

[Disposal]: Not classified.

3. Composition/information on ingredients

Substances	CAS Number	PERCENT (w/w)	GHS Classification - US
Contains no hazardous substances	NA	60 - 100%	Not classified

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.



Safety Data Sheet

Magma Fiber

SDS Revision Date: 01/01/2017

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 and effects, both acute and delayed

No significant hazards expected. May cause mild eye, skin, and respiratory irritation.

5. Fire-fighting measures

5.1. Extinguishing media

All standard fire fighting media.

5.2. Special hazards arising from the substance or mixture

Special Exposure hazards

Not applicable.

5.3. Advice for fire-fighters

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 contact with skin, eyes and clothing. Avoid creating and breathing dust. 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.



Safety Data Sheet

Magma Fiber

SDS Revision Date: 01/01/2017

7. Handling and storage

7.1. Precautions for safe handling

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

Store in dry location.

7.3. Specific end use(s)

Exposure Scenario No information available.

Other Guidelines No information available.

8. Exposure controls and personal protection

8.1. Control parameters

Exposure

Substances	CAS Number	OSHA PEL-TWA	ACGIH TLV-TWA
Contains no hazardous substances	NA	Not applicable	Not applicable

8.2. Exposure controls

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

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

Eyes

Wear safety glasses or goggles to protect against exposure.

Skin

Normal work gloves and coveralls.

Engineering Controls

Use in a well ventilated area.

Other Work Practices

Not known.

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

9. Physical and chemical properties

Appearance

Fibers. White to gray

Odor

Odorless

Odor threshold

No information available

pH

No data available



Safety Data Sheet

Magma Fiber

SDS Revision Date: 01/01/2017

Melting point / freezing point	No data available
Initial boiling point and boiling range	No data available
Flash Point	No data available
Evaporation rate (Ether = 1)	No data available
Flammability (solid, gas)	No data available
Upper/lower flammability or explosive limits	No data available
Vapor pressure (Pa)	No data available
Vapor Density	No data available
Specific Gravity	2.6
Solubility in Water	Insoluble in water
Partition coefficient n-octanol/water (Log Kow)	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Viscosity (cSt)	No data available
Density (lbs/gal)	No data available
9.2. Other information	
VOC Content (%)	No data available
Bulk Density	12-26 lbs/ft3

10. Stability and reactivity

10.1. Reactivity

Not applicable

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 toxicological effects

Acute oral toxicity: No data available

Acute dermal toxicity: No data available



Safety Data Sheet

Magma Fiber

SDS Revision Date: 01/01/2017

Acute inhalation toxicity:	No data available
Skin corrosion/irritation:	May cause mechanical irritation to skin.
Serious eye damage/eye irritation:	May cause mechanical irritation to eye.
Respiratory/skin sensitization:	No data available to indicate product or components present at greater than 1% are chronic health hazards.
Mutagenicity:	No data available to indicate product or components present at greater than 1% are chronic health hazards.
Carcinogenicity:	No data available to indicate product or components present at greater than 1% are chronic health hazards.
Reproductive toxicity:	No data available to indicate product or components present at greater than 1% are chronic health hazards.
STOT - single exposure:	No known effects.
STOT - repeated exposure:	No known effects.

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

12. Ecological information

12.1. Toxicity

Ecotoxicity Effects

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Contains no hazardous substances	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	NA	No information available

12.3. Bioaccumulative potential

Substances	CAS Number	Log Pow
Contains no hazardous substances	NA	No information available

12.4. Mobility in soil

No information available

12.5. Results of PBT and vPvB assessment

No information available



Safety Data Sheet

Magma Fiber

SDS Revision Date: 01/01/2017

12.6. Other adverse effects

No information available

13. Disposal considerations

13.1. Waste treatment methods

Disposal Method

Bury in a licensed landfill according to federal, state, and local regulations.

Contaminated Packaging

Follow all applicable national or local regulations.

14. Transport information

	DOT (Domestic Surface Transportation)	IMO / IMDG (Ocean Transportation)	ICAO/IATA
14.1. UN number	Not restricted	Not restricted	Not restricted
14.2. UN proper shipping name	Not restricted	Not restricted	Not restricted
14.3. Transport hazard class(es)	DOT Hazard Class: Not applicable	IMDG: Not applicable Sub Class: Not applicable	Air Class: Not applicable
14.4. Packing group	Not applicable	Not applicable	Not applicable
14.5. Environmental hazards			
IMDG	Not applicable		
14.6. Special precautions for user	None		

15. Regulatory information

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



Safety Data Sheet

Magma Fiber

SDS Revision Date: **01/01/2017**

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.

Canadian Regulations

Canadian DSL Inventory

All components listed on inventory or are exempt.

16. Other information

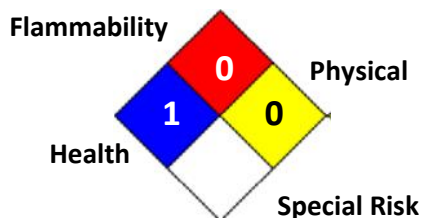
This is the first version in the GHS SDS format. Listings of changes from previous versions in other formats are not applicable.

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	B



End of Document



MATERIAL SAFETY DATA SHEET

MSDS NO. 10618

Trade Name: MAX GEL*

Revision Date: 08/23/2004

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Trade Name: MAX GEL*
Chemical Family: Mixture
Product Use: Oil well drilling fluid additive.
Emergency Telephone (24 hr.): 281-561-1600

Supplied by: M-I HDD MINING & WATERWELL
A Business Unit of M-I L.L.C.
P.O. Box 42842
Houston, TX 77242
www.drilling-fluids.com

Telephone Number: 281-561-1511
Contact Person: Catherine Miller, Product Safety Specialist

Revision Number: 3

HMIS Rating

Health: 1*

Flammability: 0

Physical Hazard: 0

PPE: E

HMIS Key: 4=Severe, 3=Serious, 2=Moderate, 1=Slight, 0=Minimal Hazard. *Chronic effects - See Section 11. See Section 8 for Personal Protective Equipment recommendations.

2. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	CAS No.	Wt. %	Comments:
Bentonite	1302-78-9	80 - 95	No comments.
Silica, crystalline, quartz	14808-60-7	2 - 15	No comments.
Gypsum (Calcium sulfate) (CAS 7778-18-9 also applies.)	13397-24-5	0 - 1	No comments.
Silica, crystalline, Tridymite	15468-32-3	0 - 1	No comments.

3. HAZARDS IDENTIFICATION

Emergency Overview: Caution! May cause eye, skin, and respiratory tract irritation. Long term inhalation of particulates may cause lung damage. Cancer hazard. Contains crystalline silica which may cause cancer.

Canadian Classification:

UN PIN No: Not regulated

WHMIS Class: D2A

Physical State: Powder

Odor: Odorless

Color: Tan to grey

Potential Health Effects:

Acute Effects

MATERIAL SAFETY DATA SHEET

MSDS NO. 10618

Trade Name: **MAX GEL***

Revision Date: 08/23/2004

Page 2/6

Eye Contact: May cause mechanical irritation
Skin Contact: May cause mechanical irritation. Long term contact can cause skin dryness.
Inhalation: May cause mechanical irritation.
Ingestion: May cause gastric distress, nausea and vomiting if ingested.

Carcinogenicity & Chronic Effects: See Section 11 - Toxicological Information.
Routes of Exposure: Eyes. Dermal (skin) contact. Inhalation.
Target Organs/Medical Conditions Aggravated by Overexposure: Eyes. Skin. Respiratory System.

4. FIRST AID MEASURES

Eye Contact: 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.

Skin Contact: Wash skin thoroughly with soap and water. Remove contaminated clothing and laundry before reuse. Get medical attention if any discomfort continues.

Inhalation: Move person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion: Dilute with 2 - 3 glasses of water or milk, if conscious. Never give anything by mouth to an unconscious person. If signs of irritation or toxicity occur seek medical attention.

General Notes: Persons seeking medical attention should carry a copy of this MSDS with them.

5. FIRE FIGHTING MEASURES

Flammable Properties

Flash Point: F (C): NA
Flammable Limits in Air - Lower (%): NA
Flammable Limits in Air - Upper (%): NA
Autoignition Temperature: F(C) NA
Flammability Class: NA
Other Flammable Properties: ND
Extinguishing Media: This material is not combustible. Use extinguishing media appropriate for surrounding fire.

Protection Of Fire-Fighters:

Special Fire-Fighting Procedures: Do not enter fire area without proper personal protective equipment, including NIOSH/MSHA approved self-contained breathing apparatus. Evacuate area and fight fire from a safe distance. Water spray may be used to keep fire-exposed containers cool. Keep water run off out of sewers and waterways.

Hazardous Combustion Products: Not determined.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Use personal protective equipment identified in Section 8.

Spill Procedures: Evacuate surrounding area, if necessary. Wet product may create a slipping hazard. Contain spilled material. Avoid the generation of dust. Sweep, vacuum, or shovel and place into closable container for disposal.

Environmental Precautions: Waste must be disposed of in accordance with federal, state and local laws. Do not allow to enter sewer or surface and subsurface waters.

MATERIAL SAFETY DATA SHEET

MSDS NO. 10618

Trade Name: **MAX GEL ***

Revision Date: 08/23/2004

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7. HANDLING AND STORAGE

Handling: Put on appropriate personal protective equipment. Avoid contact with skin and eyes. Avoid generating or breathing dust. Product is slippery if wet. Use only in a well ventilated area. Wash thoroughly after handling.

Storage: Store in dry, well-ventilated area. Keep container closed. Store away from incompatibles. Follow safe warehousing practices regarding palletizing, banding, shrink-wrapping and/or stacking.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits (TLV & PEL - 8H TWA):

Ingredient	CAS No.	Wt. %	ACGIH TLV	OSHA PEL	Other	Notes
Bentonite	1302-78-9	80 - 95	NA	NA	NA	(1)
Silica, crystalline, quartz	14808-60-7	2 - 15	0.05 mg/m ³	see Table Z-3	NIOSH: 0.05 mg/m ³ TWA (10H day/40H wk)	(R)
Gypsum (Calcium sulfate) (CAS 7778-18-9 also applies.)	13397-24-5	0 - 1	10 mg/m ³	15 mg/m ³ (total); 5 mg/m ³ (respirable)	NA	None
Silica, crystalline, Tridymite	15468-32-3	0 - 1	0.05 mg/m ³	see Table Z-3	NA	(R)

Notes

(1) Control as an ACGIH particulate not otherwise specified (PNOS): 10 mg/m³ (Inhalable); 3 mg/m³ (Respirable) and an OSHA particulate not otherwise regulated (PNOR): 15 mg/m³ (Total); 5 mg/m³ (Respirable).

(R) Respirable fraction (ACGIH);

Table Z-3: PEL for Mineral Dusts containing crystalline silica are 10 mg/m³ / (%SiO₂+2) for quartz and 1/2 the calculated quartz value for cristobalite and tridymite.

Engineering Controls: Use appropriate engineering controls such as, exhaust ventilation and process enclosure, to ensure air contamination and keep workers exposure below the applicable limits.

Personal Protection Equipment

Eye/Face Protection: Dust resistant safety goggles.

Skin Protection: Wear appropriate clothing to prevent repeated or prolonged skin contact. Chemical resistant gloves recommended for prolonged or repeated contact. Use protective gloves made of: Nitrile. Neoprene.

Respiratory Protection: Use at least a NIOSH-approved N95 half-mask disposable or reuseable particulate respirator (dusk mask).
In work environments containing oil mist/aerosol, use at least NIOSH-approved P95 half-mask disposable or reuseable particulate respirator.
For exposure exceeding 10 x PEL use a NIOSH-approved N100 Particulate Respirator.

Refer to Exposure Limits table (Section 8) for component specific respiratory protection recommendations.

General Hygiene Considerations: Work clothes should be washed separately at the end of each work day. Disposable clothing should be discarded, if contaminated with product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Color: Tan to grey

MATERIAL SAFETY DATA SHEET

MSDS NO. 10618

Trade Name: **MAX GEL***

Revision Date: 08/23/2004

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Odor: Odorless
Physical State: Powder
pH: ND
Specific Gravity (H₂O = 1): 2.3 - 2.6
Solubility (Water): Insoluble
Melting/Freezing Point: ND
Boiling Point: ND
Vapor Pressure: NA
Vapor Density (Air=1): NA
Evaporation Rate: NA
Odor Threshold(s): ND

10. STABILITY AND REACTIVITY

Chemical Stability: Stable
Conditions to Avoid: ND
Materials to Avoid: ND
Hazardous Decomposition Products: For thermal decomposition products, see Section 5.
Hazardous Polymerization: Will not occur

11. TOXICOLOGICAL INFORMATION

Component Toxicological Data: Any adverse component toxicological effects are listed below. If no effects are listed, no such data were found.

Ingredient	Component Toxicological Summary
Silica, crystalline, quartz	Crystalline silica is the most widely occurring of all minerals. The most common form of silica is sand. The International Agency for Research on Cancer (IARC) has designated crystalline silica in the form of quartz or cristobalite a Group 1 (carcinogenic to humans). This designation was based on an increased risk of lung cancer among crystalline silica exposed workers. IARC did note that carcinogenicity of crystalline silica in humans was not detected in all industrial circumstances studied. Further, carcinogenicity of crystalline silica may be dependent on inherent characteristics of the crystalline silica or external factors affecting its biological activity or distribution of polymorphs. (IARC Vol. 68, 1997, p. 41). The National Toxicology Program (NTP) classifies crystalline silica as "reasonably anticipated to cause cancer in humans" (6th Annual Report on Carcinogens, 1991). Long term inhalation of crystalline silica can also result in the lung disease, silicosis. Symptoms of this disease include coughing and shortness of breath. (NJ HSFS, January 1996)

Product Toxicological Information:

Long term inhalation of particulate can cause irritation, inflammation and/or permanent injury to the lungs. Illnesses such as pneumoconiosis ("dusty lung"), pulmonary fibrosis, chronic bronchitis, emphysema and bronchial asthma may develop.

12. ECOLOGICAL INFORMATION

Product Ecotoxicity Data: Contact M-I Environmental Affairs Department for available product ecotoxicity data.

Biodegradation: ND
Bioaccumulation: ND
Octanol/Water Partition Coefficient: ND

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Trade Name: **MAX GEL ***

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13. DISPOSAL CONSIDERATIONS

Waste Classification: ND

Waste Management: Under U.S. Environmental Protection Agency (EPA) Resource Conservation and Recovery Act (RCRA), it is the responsibility of the user to determine at the time of disposal, whether the product meets RCRA criteria for the hazardous waste. This is because product uses, transformations, mixtures, processes, etc., may render the resulting materials hazardous. Empty containers retain residues. All labeled precautions must be observed.

Disposal Method: Recover and reclaim or recycle, if practical. Should this product become a waste, dispose of in a permitted industrial landfill. Ensure that the containers are empty by the RCRA criteria prior to disposal in a permitted industrial landfill.

14. TRANSPORT INFORMATION

U.S. DOT Shipping Description: Not regulated for transportation by DOT, TDG, IMDG, ICAO/IATA.

Canada TDG Shipping Description: Not regulated.
UN PIN No: Not regulated

IMDG Shipping Description: Not regulated.

ICAO/IATA Shipping Description: Not regulated.

15. REGULATORY INFORMATION

U.S. Federal and State Regulations

SARA 311/312 Hazard Categories:Delayed (chronic) health hazard.

SARA 302/304, 313; CERCLA RQ, California Proposition 65: Note: If no components are listed below, this product is not subject to the referenced SARA and CERCLA regulations and is not known to contain a Proposition 65 listed chemical at a level that is expected to pose a significant risk under anticipated use conditions.

Ingredient	SARA 302 / TPQs	SARA 313	CERCLA RQ	CA 65 Cancer	CA 65 Dev. Tox.	CA 65 Repro. F	CA 65 Repro. M
Silica, crystalline, quartz	---	---	---	X	---	---	---
Silica, crystalline, Tridymite	---	---	---	X	---	---	---

International Chemical Inventories

Australia AICS - Components are listed or exempt from listing.
Canada DSL - Components are listed or exempt from listing.
China Inventory - Components are listed or exempt from listing.
European Union EINECS - Components are listed or exempt from listing.
Japan METI ENCS - Components are listed or exempt from listing.
Korea TCCL ECL - Components are listed or exempt from listing.
Philippine PICCS - Components are listed or exempt from listing.
U.S. TSCA - Components are listed or exempt from listing.
U.S. TSCA - No components are subject to TSCA 12(b) export notification requirements.

Canadian Classification:

Controlled Products Regulations Statement: This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

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WHMIS Class:

D2A

16. OTHER INFORMATION

The following sections have been revised: 1, 5, 9, 10, 12, 14, 15, 16

NA - Not Applicable, ND - Not Determined.

*A mark of M-I L.L.C.

Disclaimer:

MSDS furnished independent of product sale. While every effort has been made to accurately describe this product, some of the data are obtained from sources beyond our direct supervision. We can not make any assertions as to its reliability or completeness; therefore, 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. Additional information will be furnished upon request to assist the user; however, no warranty, either expressed or implied, nor liability of any nature with respect to this product or to the data herein is made or incurred hereunder.



MATERIAL SAFETY DATA SHEET

MSDS NO. 10038

Trade Name: M-I-X* II

Revision Date: 01/30/2008

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Trade Name: M-I-X* II
Chemical Family: Cellulose
Product Use: Oil well drilling fluid additive. Lost circulation material.
Emergency Telephone (24 hr.): 281-561-1600

Supplied by: M-I L.L.C.
P.O. Box 42842
Houston, TX 77242
www.miswaco.com
Telephone Number: 281-561-1511
Prepared by: Product Safety Group

Revision Number: 7

HMIS Rating

Health: 1*

Flammability: 1

Physical Hazard: 0

PPE: E

HMIS Key: 4=Severe, 3=Serious, 2=Moderate, 1=Slight, 0=Minimal Hazard. *Chronic effects - See Section 11. See Section 8 for Personal Protective Equipment recommendations.

2. HAZARDS IDENTIFICATION

Emergency Overview: Caution! May cause eye, skin and respiratory tract irritation. Long term inhalation of particulates may cause lung damage. Cancer hazard. Contains crystalline silica which may cause cancer.

Canadian Classification:

UN PIN No: Not regulated.

WHMIS Class: D2A

Physical State: Powder, dust.

Odor: Mild (or faint)

Color: Tan

Potential Health Effects:

Acute Effects

Eye Contact: May cause mechanical irritation
Skin Contact: May cause mechanical irritation. Long term contact can cause skin dryness.
Inhalation: May cause mechanical irritation.
Ingestion: May cause gastric distress, nausea and vomiting if ingested.

Carcinogenicity & Chronic Effects:

See Section 11 - Toxicological Information.

Routes of Exposure:

Eyes. Dermal (skin) contact. Inhalation.

Target Organs/Medical Conditions Aggravated by Overexposure:

Respiratory System. Skin. Eyes.

MATERIAL SAFETY DATA SHEET

MSDS NO. 10038

Trade Name: M-I-X* II
Revision Date: 01/30/2008

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3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	CAS No.	Wt. %	Comments:
Cellulose	9004-34-6	99 - 100	No comments.
Silica, crystalline, quartz	14808-60-7	0.5 - 1.5	No comments.

4. FIRST AID MEASURES

Eye Contact: 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.

Skin Contact: Wash skin thoroughly with soap and water. Remove contaminated clothing and launder before reuse. Get medical attention if any discomfort continues.

Inhalation: Move person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion: Dilute with 2 - 3 glasses of water or milk, if conscious. Never give anything by mouth to an unconscious person. If signs of irritation or toxicity occur seek medical attention.

General notes: Persons seeking medical attention should carry a copy of this MSDS with them.

5. FIRE FIGHTING MEASURES

Flammable Properties

Flash Point: F (C): NA

Flammable Limits in Air - Lower (%): ND

Flammable Limits in Air - Upper (%): ND

Autoignition Temperature: F (C): ND

Flammability Class: NA

Other Flammable Properties: Particulate may accumulate static electricity. Dusts at sufficient concentrations can form explosive mixtures with air. Palleted bags of some fine cellulosic materials have been reported to smolder under certain conditions. See Section 7 Handling and Storage.

Extinguishing Media: Use extinguishing media appropriate for surrounding fire.

Protection Of Fire-Fighters:

Special Fire-Fighting Procedures: Do not enter fire area without proper personal protective equipment, including NIOSH/MSHA approved self-contained breathing apparatus. Evacuate area and fight fire from a safe distance. Water spray may be used to keep fire-exposed containers cool. Keep water run off out of sewers and waterways.

Hazardous Combustion Products: Oxides of: Carbon.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Use personal protective equipment identified in Section 8.

Spill Procedures: Evacuate surrounding area, if necessary. Wet product may create a slipping hazard. Contain spilled material. Avoid the generation of dust. Sweep, vacuum, or shovel and place into closable container for disposal.

Environmental Precautions: Do not allow to enter sewer or surface and subsurface waters. Waste must be disposed of in accordance with federal, state and local laws.

7. HANDLING AND STORAGE

Handling: Put on appropriate personal protective equipment. Avoid contact with skin and eyes. Avoid generating or breathing dust. Product is slippery if wet. Use only in a well ventilated area. Wash thoroughly after handling.

MATERIAL SAFETY DATA SHEET

MSDS NO. 10038

Trade Name: M-I-X* II
Revision Date: 01/30/2008

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Storage:

Store in dry, well-ventilated area. Keep container closed. Store away from incompatibles. Follow safe warehousing practices regarding palletizing, banding, shrink-wrapping and/or stacking. Palletized bags of some fine cellulosic materials have been reported to smolder. To minimize the risk of smoldering: 1. Minimize fines in the product. 2. Minimize moisture. 3. If shrink wrapped: a. Minimize dust on bags as being stacked prior to shrink wrapping. b. Allow to sit for at least 24 hours before loading. Observe for smoldering. c. Practice care if heat gun is used to seal shrink wrap. Avoid generation of sparks.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits (TLV & PEL - 8H TWA):

Ingredient	CAS No.	Wt. %	ACGIH TLV	OSHA PEL	Other	Notes
Cellulose	9004-34-6	99 - 100	10 mg/m ³	15 mg/m ³ (Total); 5 mg/m ³ (Respirable)	NA	None
Silica, crystalline, quartz	14808-60-7	0.5 - 1.5	0.025 mg/m ³	see Table Z-3	NIOSH: 0.05 mg/m ³ TWA (10H day/40H wk)	(R)

Notes

(R) Respirable fraction (ACGIH);

Table Z-3: PEL for Mineral Dusts containing crystalline silica are 10 mg/m³ / (%SiO₂+2) for quartz and 1/2 the calculated quartz value for cristobalite and tridymite.

Engineering Controls: Use appropriate engineering controls such as, exhaust ventilation and process enclosure, to ensure air contamination and keep workers exposure below the applicable limits.

Personal Protection Equipment

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazards present and the risk of exposure to those hazards. The PPE recommendations below are based on our assessment of the chemical hazards associated with this product. The risk of exposure and need for respiratory protection will vary from workplace to workplace and should be assessed by the user.

Eye/Face Protection:

Dust resistant safety goggles.

Skin Protection:

Wear appropriate clothing to prevent repeated or prolonged skin contact. Chemical resistant gloves recommended for prolonged or repeated contact. Use protective gloves made of: Neoprene. Nitrile.

Respiratory Protection:

All respiratory protection equipment should be used within a comprehensive respiratory protection program that meets the requirements of 29 CFR 1910.134 (U.S. OSHA Respiratory Protection Standard) or local equivalent.

If exposed to airborne particles of this product use at least a NIOSH-approved N95 half-mask disposable or re-useable particulate respirator. In work environments containing oil mist/aerosol use at least a NIOSH-approved P95 half-mask disposable or re-useable particulate respirator.

General Hygiene Considerations: Work clothes should be washed separately at the end of each work day. Disposable clothing should be discarded, if contaminated with product.

MATERIAL SAFETY DATA SHEET

MSDS NO. 10038

Trade Name: M-I-X* II
 Revision Date: 01/30/2008

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9. PHYSICAL AND CHEMICAL PROPERTIES

Color: Tan
 Odor: Mild (or faint)
 Physical State: Powder, dust.
 pH: ND
 Specific Gravity (H₂O = 1): 1.4 - 1.65 at 68 F (20 C)
 Solubility (Water): Insoluble
 Flash Point: F (C): NA
 Melting/Freezing Point: ND
 Boiling Point: ND
 Vapor Pressure: NA
 Vapor Density (Air=1): NA
 Evaporation Rate: NA
 Odor Threshold(s): ND

10. STABILITY AND REACTIVITY

Chemical Stability: Stable
 Conditions to Avoid: Keep away from heat, sparks and flame. See Section 7 also.
 Materials to Avoid: Oxidizers.
 Hazardous Decomposition Products: For thermal decomposition products, see Section 5.
 Hazardous Polymerization: Will not occur

11. TOXICOLOGICAL INFORMATION

Component Toxicological Data: Any adverse component toxicological effects are listed below. If no effects are listed, no such data were found.

Ingredient	CAS No.	Acute Data
Cellulose	9004-34-6	Oral LD50: >5000 mg/kg (rat); Dermal LD50: >2000 mg/kg (rabbit); Inhalation LC50: >5800 mg/m ³ /4H (rat)

Ingredient	Component Toxicological Summary
Cellulose	Long term inhalation exposure to this particulate may cause a benign pneumoconiosis (irritation caused by dust inhalation which may lead to fibrosis (formation of fibrous tissue)). (NIOSH, HazardText)
Silica, crystalline, quartz	Crystalline silica is the most widely occurring of all minerals. The most common form of silica is sand. The International Agency for Research on Cancer (IARC) has designated crystalline silica in the form of quartz or cristobalite a Group 1 (carcinogenic to humans). This designation was based on an increased risk of lung cancer among crystalline silica exposed workers. IARC did note that carcinogenicity of crystalline silica in humans was not detected in all industrial circumstances studied. Further, carcinogenicity of crystalline silica may be dependent on inherent characteristics of the crystalline silica or external factors affecting its biological activity or distribution of polymorphs. (IARC Vol. 68, 1997, p. 41). The National Toxicology Program (NTP) classifies crystalline silica as "reasonably anticipated to cause cancer in humans" (6th Annual Report on Carcinogens, 1991). Long term inhalation of crystalline silica can also result in the lung disease, silicosis. Symptoms of this disease include coughing and shortness of breath. (NJ HSFS, January 1996)

Product Toxicological Information:

Long term inhalation of particulate can cause irritation, inflammation and/or permanent injury to the lungs. Illnesses such as pneumoconiosis ("dusty lung"), pulmonary fibrosis, chronic bronchitis, emphysema and bronchial asthma may develop.

MATERIAL SAFETY DATA SHEET

MSDS NO. 10038

Trade Name: M-I-X* II
Revision Date: 01/30/2008

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12. ECOLOGICAL INFORMATION

Component Ecotoxicity Data: No data available.

Product Ecotoxicity Data: Contact M-I Environmental Affairs Department for available product ecotoxicity data.

Biodegradation: ND
Bioaccumulation: ND
Octanol/Water Partition Coefficient: ND

13. DISPOSAL CONSIDERATIONS

Waste Classification: ND

Waste Management: Under U.S. Environmental Protection Agency (EPA) Resource Conservation and Recovery Act (RCRA), it is the responsibility of the user to determine at the time of disposal, whether the product meets RCRA criteria for the hazardous waste. This is because product uses, transformations, mixtures, processes, etc., may render the resulting materials hazardous. Empty containers retain residues. All labeled precautions must be observed.

Disposal Method: Recover and reclaim or recycle, if practical. Should this product become a waste, dispose of in a permitted industrial landfill. Ensure that the containers are empty by the RCRA criteria prior to disposal in a permitted industrial landfill.

14. TRANSPORT INFORMATION

U.S. DOT Shipping Description: Not regulated for transportation by DOT, TDG, IMDG, ICAO/IATA.

Canada TDG Shipping Description: Not regulated.
UN PIN No: Not regulated.

IMDG Shipping Description: Not regulated.

ICAO/IATA Shipping Description: Not regulated.

15. REGULATORY INFORMATION

U.S. Federal and State Regulations

SARA 311/312 Hazard Categories: Delayed (chronic) health hazard.

SARA 302/304, 313; CERCLA RQ, California Proposition 65: Note: If no components are listed below, this product is not subject to the referenced SARA and CERCLA regulations and is not known to contain a Proposition 65 listed chemical at a level that is expected to pose a significant risk under anticipated use conditions.

Ingredient	SARA 302 / TPQS	SARA 313	CERCLA RQ	CA 65 Cancer	CA 65 Dev. Tox.	CA 65 Repro. F	CA 65 Repro. M
Silica, crystalline, quartz	---	---	---	X	---	---	---

International Chemical Inventories

MATERIAL SAFETY DATA SHEET

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Trade Name: M-I-X* II
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Australia AICS - Components are listed or exempt from listing.
Canada DSL - Components are listed or exempt from listing.
China Inventory - Components are listed or exempt from listing.
European Union EINECS/ELINCS - Components are listed or exempt from listing.
Japan METI ENCS - Components are listed or exempt from listing.
Korea TCCL ECL - Components are listed or exempt from listing.
Philippine PICCS - Components are listed or exempt from listing.
U.S. TSCA - Components are listed or exempt from listing.
U.S. TSCA - No components are subject to TSCA 12(b) export notification requirements.

Canadian Classification:

Controlled Products Regulations Statement: This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

WHMIS Class: D2A

16. OTHER INFORMATION

The following sections have been revised: 1, 3, 16

NA - Not Applicable, ND - Not Determined.

*A mark of M-I L.L.C.

Disclaimer:

MSDS furnished independent of product sale. While every effort has been made to accurately describe this product, some of the data are obtained from sources beyond our direct supervision. We can not make any assertions as to its reliability or completeness; therefore, 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. Additional information will be furnished upon request to assist the user; however, no warranty, either expressed or implied, nor liability of any nature with respect to this product or to the data herein is made or incurred hereunder.

HALLIBURTON

SAFETY DATA SHEET

Product Trade Name: POLYSELECT PAC™-L

Revision Date: 27-Oct-2015

Revision Number: 2

1. Identification

1.1. Product Identifier

Product Trade Name: POLYSELECT 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

Fax: (281) 871-7940

Emergency Telephone: 1-866-519-4752 (US, Canada, Mexico) or 1-760-476-3962

BENTONITE Performance Minerals LLC
645 - 7th Ave SW Suite 2200
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

2. Hazard(s) 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.

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

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 Fire-Fighters

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>Values</u>
<u>Remarks/ - Method</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

9.2. Other information

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	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.

Product Ecotoxicity Data

No data available

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 Method	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

US DOT Bulk

DOT (Bulk)	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 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 One or more components listed.

PA Right-to-Know Law Does not apply.

NFPA Ratings: Health 1, Flammability 1, Reactivity 0
HMIS Ratings: Health 1, Flammability 1, Physical Hazard 0, PPE: B

Canadian Regulations

Canadian DSL Inventory 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: 27-Oct-2015

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

bw – body weight
CAS – Chemical Abstracts Service
EC50 – Effective Concentration 50%
ErC50 – Effective Concentration growth rate 50%
LC50 – Lethal Concentration 50%
LD50 – Lethal Dose 50%
LL50 – Lethal Loading 50%
mg/kg – milligram/kilogram
mg/L – milligram/liter
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
h - hour
mg/m³ - milligram/cubic meter
mm - millimeter
mmHg - millimeter mercury
w/w - weight/weight
d - day

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

HALLIBURTON

SAFETY DATA SHEET

Product Trade Name: POLYSELECT PAC™-R

Revision Date: 27-Oct-2015

Revision Number: 2

1. Identification

1.1. Product Identifier

Product Trade Name: POLYSELECT PAC™-R
Synonyms: None
Chemical Family: Polysaccharide
Internal ID Code HM008155

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

Fax: (281) 871-7940

Emergency Telephone: 1-866-519-4752 (US, Canada, Mexico) or 1-760-476-3962

BENTONITE Performance Minerals LLC
645 - 7th Ave SW Suite 2200
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

2. Hazard(s) 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	Under normal conditions, first aid procedures are not required.

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.

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

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 Fire-Fighters

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. Avoid dust accumulations. Ensure adequate ventilation. 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 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:	Solid Powder	Color:	White to off white
Odor:	Odorless	Odor Threshold:	No information available

<u>Property</u>	<u>Values</u>
<u>Remarks/ - Method</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

9.2. Other information

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 mechanical irritation to eye.
Skin Contact	Prolonged or repeated contact may cause slight 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	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.

Product Ecotoxicity Data

No data available

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

Disperses rapidly in air

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 Method	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

US DOT Bulk

DOT (Bulk)	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 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 0, Flammability 0, Reactivity 0
HMIS Ratings: Health 0, Flammability 0, Physical Hazard 0, PPE: B

Canadian Regulations

Canadian DSL Inventory 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: 27-Oct-2015

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

bw – body weight
CAS – Chemical Abstracts Service
EC50 – Effective Concentration 50%
ErC50 – Effective Concentration growth rate 50%
LC50 – Lethal Concentration 50%
LD50 – Lethal Dose 50%
LL50 – Lethal Loading 50%
mg/kg – milligram/kilogram
mg/L – milligram/liter
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
h - hour
mg/m³ - milligram/cubic meter
mm - millimeter
mmHg - millimeter mercury
w/w - weight/weight
d - day

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

POLYSELECT PAC™-R
Fluid Loss Additive

BENTONITE Performance Minerals LLC 3000 N Sam Houston Parkway East Houston, TX 77032 Telephone: (281) 871-7900 Fax: (281) 871-7940 Emergency Telephone: 1-866-519-4752 (US, Canada, Mexico) or 1-760-476-3962 1-866-519-4752 or 1-760-476-3962 ENGLISH	BENTONITE Performance Minerals LLC 3000 N Sam Houston Parkway East Houston, TX 77032 Teléfono: (281) 871-7900 Fax: (281) 871-7940 Teléfono para emergencias: 1-866-519-4752 (Estados Unidos, Canadá, México) o 1-760-476-3962 1-866-519-4752 o 1-760-476-3962 SPANISH	BENTONITE Performance Minerals LLC 645 - 7th Ave SW Suite 2200 Calgary, AB T2P 4G8 Canada 1-866-519-4752 or 1-760-476-3962 FRENCH												
Signal Word Warning May form combustible dust concentrations in air. Precautionary Statements Prevention None Response None Storage None Disposal None <table><tr><th>Chemical Name</th><th>CAS Number</th></tr><tr><td>Polisacarido</td><td>Proprietary</td></tr></table>	Chemical Name	CAS Number	Polisacarido	Proprietary	Palabra de advertencia Atención Puede formar concentraciones de polvo combustible en el aire. Consejos de prudencia Prevención None Respuesta Ninguna. Almacenamiento None Eliminación None <table><tr><th>Chemical Name</th><th>CAS Number</th></tr><tr><td>Polisacarido</td><td>-</td></tr></table>	Chemical Name	CAS Number	Polisacarido	-	Mention d'avertissement Attention Peut former des concentrations de poussières combustibles dans l'air. Mentions de mise en garde Prévention Aucun Réponse Aucun Stockage Aucun Elimination Aucun <table><tr><th>Chemical Name</th><th>CAS Number</th></tr><tr><td>Polisacarido</td><td>-</td></tr></table>	Chemical Name	CAS Number	Polisacarido	-
Chemical Name	CAS Number													
Polisacarido	Proprietary													
Chemical Name	CAS Number													
Polisacarido	-													
Chemical Name	CAS Number													
Polisacarido	-													

DOT IATA/ICAO and IMO Transportation Classification:

Not restricted

Not restricted , Not applicable , Not applicable

Environmental Hazards:Not applicable
DOT (Bulk)Not applicable

Net/Gross Package Weight:	Material Number:	Lot Number:

HALLIBURTON

SAFETY DATA SHEET

Product Trade Name: POLYSELECT SODA ASH

Revision Date: 27-Oct-2015

Revision Number: 2

1. Identification

1.1. Product Identifier

Product Trade Name: POLYSELECT SODA ASH
Synonyms: None
Chemical Family: Carbonate
Internal ID Code HM008157

1.2 Recommended use and restrictions on use

Application: Buffer
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

Fax: (281) 871-7940

Emergency Telephone: 1-866-519-4752 (US, Canada, Mexico) or 1-760-476-3962

BENTONITE Performance Minerals LLC
645 - 7th Ave SW Suite 2200
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

2. Hazard(s) Identification

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

Serious Eye Damage / Eye 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 protective gloves/protective clothing/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 Immediately flush eyes with large amounts of water for at least 15 minutes. Get immediate medical attention.

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

Decomposition in fire may produce harmful gases.

5.3 Special protective equipment and precautions for fire-fighters

Special Protective Equipment for Fire-Fighters

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

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

Dust proof goggles.

Other Precautions

Eyewash fountains and safety showers must be easily accessible.

9. Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Physical State: Powder

Color: White

Odor: Odorless

Odor No information available

Threshold:

Property

Values

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 respiratory irritation.
Eye Contact	Causes severe eye irritation.
Skin Contact	Prolonged or repeated contact may cause skin irritation.
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	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

Ecotoxicity Effects

Product is not classified as hazardous to the environment.

Product Ecotoxicity Data

No data available

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 Method

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

US DOT Bulk

DOT (Bulk) Not applicable

Canadian TDG

POLYSELECT SODA ASH

Revision Date: 27-Oct-2015

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 2, Flammability 0, Reactivity 0
HMS Ratings:	Health 2, Flammability 0, Physical Hazard 0 , PPE: B

Canadian Regulations

Canadian DSL Inventory	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: 27-Oct-2015

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

bw – body weight
CAS – Chemical Abstracts Service
EC50 – Effective Concentration 50%
ErC50 – Effective Concentration growth rate 50%
LC50 – Lethal Concentration 50%
LD50 – Lethal Dose 50%
LL50 – Lethal Loading 50%
mg/kg – milligram/kilogram
mg/L – milligram/liter
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
h - hour
mg/m³ - milligram/cubic meter
mm - millimeter
mmHg - millimeter mercury
w/w - weight/weight
d - day

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

HALLIBURTON

MATERIAL SAFETY DATA SHEET

Product Trade Name: POLYSELECT XAN

Revision Date: 25-Aug-2015

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

Statement of Hazardous Nature Non-Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

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

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

Product Emergency Telephone

Australia: 08-64244950
Papua New Guinea: 05 1 281 575 5000
NewZealand: 06-7559274

Fire, Police & Ambulance - Emergency Telephone

Australia: 000
Papua New Guinea: 000
New Zealand: 111

Identification of Substances or Preparation

Product Trade Name: POLYSELECT XAN
Synonyms: None
Chemical Family: Polysaccharide
Dangerous Goods Class: None
Subsidiary Risk: None
Hazchem Code: None Allocated
Poisons Schedule: None Allocated
Application: Viscosifier

Prepared By Chemical Stewardship
Telephone: 1-580-251-4335
e-mail: fdunexchem@halliburton.com

2. HAZARDS IDENTIFICATION

Statement of Hazardous Nature Non-Hazardous according to the criteria of the 3rd Revised Edition of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), Non-Dangerous Goods according to the criteria of ADG.

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

Classification None

Risk Phrases None

Safety Phrases None

HSNO Classification Non-hazardous

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substances	CAS Number	PERCENT (w/w)	Australia NOHSC	New Zealand WES	ACGIH TLV-TWA
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	60 - 100%	Not applicable	Not applicable	Not applicable

Non-Hazardous Substance to Total of 100% Non-Hazardous Substance to Total of 100%

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 Under normal conditions, first aid procedures are not required.

Notes to Physician Not Applicable

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media

Water fog, carbon dioxide, foam, dry chemical.

Extinguishing media which must not be used for safety reasons

None known.

Special Exposure Hazards Decomposition in fire may produce 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.

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

6. ACCIDENTAL RELEASE MEASURES

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

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	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.
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

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:	Powder
Color:	White to off white
Odor:	Slight
pH:	7 (1%)
Specific Gravity @ 20 C (Water=1):	1.6
Density @ 20 C (kg/l):	Not Determined
Bulk Density @ 20 C (kg/M3):	Not Determined
Boiling Point/Range (C):	Not Determined
Freezing Point/Range (°C):	Not Determined
Pour Point/Range (C):	Not Determined
Flash Point/Range (°C):	Not Determined
Flash Point Method:	Not Determined
Autoignition Temperature (°C):	204
Flammability Limits in Air - Lower (g/m³):	Not Determined
Flammability Limits in Air - Lower (%):	Not Determined
Flammability Limits in Air - Upper (g/m³):	Not Determined
Flammability Limits in Air - Upper (%):	Not Determined
Vapor Pressure @ 20 C (mmHg):	Not Determined
Vapor Density (Air=1):	Not Determined
Percent Volatiles:	Not Determined
Evaporation Rate (Butyl Acetate=1):	Not Determined
Solubility in Water (g/100ml):	Soluble
Solubility in Solvents (g/100ml):	Not Determined
VOCs (g/l):	Not Determined
Viscosity, Dynamic @ 20 C (centipoise):	Not Determined
Viscosity, Kinematic @ 20 C (centistokes):	Not Determined
Partition Coefficient/n-Octanol/Water:	Not Determined

Molecular Weight (g/mole): 1,000,000
 Decomposition Temperature (C): 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 Carbon monoxide and carbon dioxide.

Additional Guidelines Not Applicable

11. TOXICOLOGICAL INFORMATION

Principle Route of Exposure Eye or skin contact, inhalation.

Symptoms related to exposure

Acute Toxicity

Inhalation May impede respiration.
Eye Contact May cause mild eye irritation.
Skin Contact None known.
Ingestion None known.

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

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

Ecotoxicological Information

Ecotoxicity Product

Acute Fish Toxicity: TLM96: 320-560 ppm (Oncorhynchus mykiss)
Acute Crustaceans Toxicity: TLM96: > 75000 ppm (Mysidopsis bahia)
Acute Algae Toxicity: Not determined

Ecotoxicity Substance

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	Log Pow
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	No information available

12.4. Mobility in soil

12.5. Results of PBT and vPvB assessment

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT). This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

Substances	PBT and vPvB assessment
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	Not applicable

12.6. Other adverse effects

No information available

13. DISPOSAL CONSIDERATIONS

Disposal Method Bury in a licensed landfill according to federal, state, and local regulations.

Contaminated Packaging Follow all applicable national or local regulations.

14. TRANSPORT INFORMATION

Australia Dangerous Goods

UN Number: Not restricted
 UN Proper Shipping Name: Not restricted
 Transport Hazard Class(es): Not applicable
 Packing Group: 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

Special Precautions for User: None

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

15. REGULATORY INFORMATION

Chemical Inventories Chemical Inventories

Australian AICS Inventory	All components listed on inventory or are exempt.
New Zealand Inventory of Chemicals	All components listed on inventory or are exempt.
US TSCA Inventory	All components listed on inventory or are exempt.
EINECS Inventory	This product, and all its components, complies with EINECS
Classification	Not Classified
Risk Phrases	None
Safety Phrases	None

16. OTHER INFORMATION

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

Contact

Australian Poisons Information Centre

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

New Zealand National Poisons Centre

0800 764 766

Additional information

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship 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



MATERIAL SAFETY DATA SHEET

MSDS No. 12165

Trade Name: POLYSWELL

Revision Date: 04/06/2010

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Trade Name: POLYSWELL

Chemical Family: Acrylamide polymer or copolymer

Product Use: Drilling fluid additive.

Supplied by: M-I HDD MINING & WATERWELL
A Business Unit of M-I L.L.C.
P.O. Box 42842
Houston, TX 77242
www.drilling-fluids.com

Telephone Number: 281-561-1511

Emergency Telephone (24 hr.): 281-561-1600

Prepared by: Product Safety Group

Revision No. 5

HMIS Rating

Health: 1 **Flammability:** 1 **Physical Hazard:** 0 **PPE:** E

4=Severe, 3=Serious, 2=Moderate, 1=Slight, 0=Minimal Hazard. *Chronic effects - See Section 11. See Section 8 for Personal Protective Equipment recommendations.

2. HAZARDS IDENTIFICATION

Emergency Overview: Caution! May cause mechanical irritation of eyes, skin and respiratory tract. Long term inhalation of particulates may cause lung damage.

Canadian Classification:

UN PIN No: Not regulated.

WHMIS Class: Not a controlled product.

Physical State: Powder, dust. **Color:** White **Odor:** Odorless

Potential Health Effects:

Acute Effects

Eye Contact: May cause mechanical irritation

Skin Contact: May cause mechanical irritation.

Inhalation: May cause mechanical irritation.

Ingestion: May cause gastric distress, nausea and vomiting if ingested.

Acute Effects Note: This product may release ammonia or amines when heated or exposed to high pH. Ammonia is a severe eye, skin and respiratory irritant. Ammonia has a very strong odor and can be detected at levels as low as 5 ppm. Many amines are also eye, skin and respiratory irritants.

Carcinogenicity & Chronic Effects: See Section 11 - Toxicological Information.

Routes of Exposure: Eyes. Dermal (skin) contact. Inhalation.

MATERIAL SAFETY DATA SHEET

MSDS No. 12165

Trade Name: POLYSWELL
Revision Date: 04/06/2010

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Target Organs/Medical Conditions Aggravated by Overexposure: Eyes. Skin. Respiratory System.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	CAS No.	Wt. %	Comments:
Anionic acrylamide copolymer		90-100	No comments.

4. FIRST AID MEASURES

Eye Contact: Promptly wash eyes with lots of water while lifting eye lids. Look for and remove contact lenses. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

Skin Contact: Wash skin thoroughly with soap and water. Remove contaminated clothing and launder before reuse. Get medical attention if any discomfort continues.

Inhalation: Move person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion: Dilute with 2 - 3 glasses of water or milk, if conscious. Never give anything by mouth to an unconscious person. If signs of irritation or toxicity occur seek medical attention.

General notes: Persons seeking medical attention should carry a copy of this MSDS with them.

5. FIRE FIGHTING MEASURES

Flammable Properties

Flash Point: F (C): NA

Flammable Limits in Air - Lower (%): ND

Flammable Limits in Air - Upper (%): ND

Autoignition Temperature: F (C): ND

Flammability Class: NA

Other Flammable Properties: Particulate may accumulate static electricity. Dusts at sufficient concentrations can form explosive mixtures with air.

Extinguishing Media: Use extinguishing media appropriate for surrounding fire.

Protection Of Fire-Fighters:

Special Fire-Fighting Procedures: Do not enter fire area without proper personal protective equipment, including NIOSH/MSHA approved self-contained breathing apparatus. Evacuate area and fight fire from a safe distance. Water spray may be used to keep fire-exposed containers cool. Keep water run off out of sewers and waterways.

Hazardous Combustion Products: Oxides of: Carbon. Ammonia or amines.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Use personal protective equipment identified in Section 8.

MATERIAL SAFETY DATA SHEET

MSDS No. 12165

Trade Name: POLYSWELL
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Spill Procedures: Evacuate the spill area with the exception of the spill response team. Wet product may create a slipping hazard. Contain spilled material. Do not allow spilled material to enter sewers, storm drains or surface waters. Avoid the generation of dust. Sweep, vacuum, or shovel and place into closable container for disposal.

Environmental Precautions: Waste must be disposed of in accordance with federal, state and local laws.

7. HANDLING AND STORAGE

Handling: Put on appropriate personal protective equipment. Avoid contact with skin and eyes. Avoid generating or breathing dust. Product is slippery if wet. Use only with adequate ventilation. Wash thoroughly after handling.

Storage: Store in dry, well-ventilated area. Keep container closed. Store away from incompatibles. Follow safe warehousing practices regarding palletizing, banding, shrink-wrapping and/or stacking.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits (TLV & PEL - 8H TWA):

Ingredient	CAS No.	Wt. %	ACGIH TLV	OSHA PEL	Other	Notes
Anionic acrylamide copolymer		90-100	NA	NA	NA	(1) (6)

Notes

(1) Control as an ACGIH particulate not otherwise specified (PNOS): 10 mg/m³ (Inhalable); 3 mg/m³ (Respirable) and an OSHA particulate not otherwise regulated (PNOR): 15 mg/m³ (Total); 5 mg/m³ (Respirable).

(6) Ammonia or amines may be released when this component is heated or exposed to high pH. The recommended exposure limits for ammonia are ACGIH TLV 25 ppm and OSHA PEL 50 ppm. No general recommended exposure limit is available for amines. A NIOSH/MSHA approved respirator with ammonia/methylamine cartridges should be used to protect against ammonia or amine inhalation exposure.

Engineering Controls: Use appropriate engineering controls such as, exhaust ventilation and process enclosure, to ensure air contamination and keep workers exposure below the applicable limits.

Personal Protection Equipment

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazards present and the risk of exposure to those hazards. The PPE recommendations below are based on our assessment of the chemical hazards associated with this product. The risk of exposure and need for respiratory protection will vary from workplace to workplace and should be assessed by the user.

Eye/Face Protection: Dust resistant safety goggles.

Skin Protection: Not normally necessary. If needed to minimize irritation: Wear appropriate clothing to prevent repeated or prolonged skin contact. Wear chemical resistant gloves such as: Nitrile. Neoprene.

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Respiratory Protection:

All respiratory protection equipment should be used within a comprehensive respiratory protection program that meets the requirements of 29 CFR 1910.134 (U.S. OSHA Respiratory Protection Standard) or local equivalent.

If exposed to airborne mist/aerosol of this product, use at least a NIOSH-approved N95 half-mask disposable or re-usable particulate respirator. In work environments containing oil mist/aerosol, use at least a NIOSH-approved P95 half-mask disposable or reuseable particulate respirator.

This product contains nitrogen compounds which may, in some circumstances, form ammonia or amine compounds. If exposed to ammonia or amine compounds from this product use a NIOSH/MSHA-approved respirator with an Ammonia/Methylamine cartridge.

General Hygiene Considerations: Work clothes should be washed separately at the end of each work day. Disposable clothing should be discarded, if contaminated with product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Color:	White
Odor:	Odorless
Physical State:	Powder, dust.
pH:	ND
Specific Gravity (H2O = 1):	0.8 - 1.0 at 68F (20C)
Solubility (Water):	Swells on contact with water.
Flash Point: F (C):	NA
Melting/Freezing Point:	ND
Boiling Point:	ND
Vapor Pressure:	NA
Vapor Density (Air=1):	NA
Evaporation Rate:	NA
Odor Threshold(s):	ND

10. STABILITY AND REACTIVITY

Chemical Stability:	Stable
Conditions to Avoid:	Keep away from heat, sparks and flame. Avoid contact with water and moist air - product is hygroscopic.
Materials to Avoid:	Oxidizers.
Hazardous Decomposition Products:	For thermal decomposition products, see Section 5.
Hazardous Polymerization	Will not occur

11. TOXICOLOGICAL INFORMATION

Component Toxicological Data: Any adverse component toxicological effects are listed below. If no effects are listed, no such data were found.

Ingredient	CAS No.	Acute Data
Anionic acrylamide copolymer		Oral LD50: >5000 mg/kg (rat); Dermal LD50: >2000 mg/kg (rabbit)

MATERIAL SAFETY DATA SHEET

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Product Toxicological Information:

Long term inhalation of particulate can cause irritation, inflammation and/or permanent injury to the lungs. Illnesses such as pneumoconiosis ("dusty lung"), pulmonary fibrosis, chronic bronchitis, emphysema and bronchial asthma may develop.

This product may contain trace amounts of acrylamide (< 0.1%). Acrylamide (CAS 79-06-1) has been classified by the International Agency for Research on Cancer (IARC) as a Group 2A carcinogen (probably carcinogenic to humans) and a suspect carcinogen by the National Toxicology Program (NTP). (LOLI)

12. ECOLOGICAL INFORMATION

Component Ecotoxicity Data: Component ecotoxicity data are listed below. If no data are listed, none were found in the component review.

Ingredient	CAS No.	Data
Anionic acrylamide copolymer		LC50 96H: ~3600 mg/l (Leucidcus idus); LC50 96H: ~5000 mg/l (Brachydanio rerio)

Product Ecotoxicity Data: Contact M-I Environmental Affairs Department for available product ecotoxicity data.
Biodegradation: ND
Bioaccumulation: ND
Octanol/Water Partition Coefficient: ND

13. DISPOSAL CONSIDERATIONS

Waste Classification: ND

Waste Management: Under U.S. Environmental Protection Agency (EPA) Resource Conservation and Recovery Act (RCRA), it is the responsibility of the user to determine at the time of disposal, whether the product meets RCRA criteria for the hazardous waste. This is because product uses, transformations, mixtures, processes, etc., may render the resulting materials hazardous. Empty containers retain residues. All labeled precautions must be observed.

Disposal Method: Recover and reclaim or recycle, if practical. Should this product become a waste, dispose of in a permitted industrial landfill. Ensure that the containers are empty by the RCRA criteria prior to disposal in a permitted industrial landfill.

14. TRANSPORT INFORMATION

U.S. DOT

Shipping Description:

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

Canada TDG Shipping Description:

Not regulated.

UN PIN No:

Not regulated.

IMDG Shipping Description:

Not regulated.

ICAO/IATA Shipping Description:

Not regulated.

15. REGULATORY INFORMATION

MATERIAL SAFETY DATA SHEET

MSDS No. 12165

Trade Name: POLYSWELL
Revision Date: 04/06/2010

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U.S. Federal and State Regulations

SARA 311/312 Hazard Categories: Not a SARA 311/312 hazard.

SARA 302/304, 313; CERCLA RQ, California Proposition 65: Note: If no components are listed below, this product is not subject to the referenced SARA and CERCLA regulations and is not known to contain a Proposition 65 listed chemical at a level that is expected to pose a significant risk under anticipated use conditions.

International Chemical Inventories

Australia AICS - Components are listed or exempt from listing.
Canada DSL - Components are listed or exempt from listing.
China Inventory - Components are listed or exempt from listing.
European Union EINECS/ELINCS - Components are listed or exempt from listing.
Japan METI ENCS - Components are listed or exempt from listing.
Korea TCCL ECL - Components are listed or exempt from listing.
New Zealand - Components are listed or exempt from listing.
Philippine PICCS - Components are listed or exempt from listing.
U.S. TSCA - Components are listed or exempt from listing.
U.S. TSCA - No components are subject to TSCA 12(b) export notification requirements.

Canadian Classification:

Controlled Products Regulations Statement: This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

WHMIS Class: Not a controlled product.

16. OTHER INFORMATION

The following sections have been revised: 1, 11, 16

NA - Not Applicable, ND - Not Determined.

Disclaimer:

MSDS furnished independent of product sale. While every effort has been made to accurately describe this product, some of the data are obtained from sources beyond our direct supervision. We can not make any assertions as to its reliability or completeness; therefore, 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. Additional information will be furnished upon request to assist the user; however, no warranty, either expressed or implied, nor liability of any nature with respect to this product or to the data herein is made or incurred hereunder.

SAPP STICK

SECTION 1. IDENTIFICATION

Product Identifier SAPP STICK
Product Family Surfactant Compound
Recommended Use Drilling Fluid Additive.
Supplier Identifier Bri-Chem Supply Corp, 9351 Grant Street, Ste 380, Thornton, CO, 80229, 720-236-1012, www.brichemsupplycorp.com
Emergency Phone No. ChemTrec, (800) 424-9300, 24/7

SECTION 2. HAZARD IDENTIFICATION

Classification

Serious eye damage - Category 1; Specific target organ toxicity (single exposure) - Category 3

Label Elements



Signal Word:

Danger

Causes serious eye damage.

May cause respiratory irritation.

Precautionary Statement(s):

Prevention:

Avoid breathing dust/fume/gas/mist/vapours/spray.

Use only outdoors or in a well-ventilated area.

Wear eye protection/face protection.

Response:

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.

Continue rinsing.

IF INHALED: Remove person to fresh air and keep comfortable for breathing.

Storage:

Store locked up.

Store in a well-ventilated place. Keep container tightly closed.

Disposal:

Dispose of contents and container in accordance with local, regional, national and international regulations.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Contains no hazardous ingredients.

Chemical Name	CAS No.	%	Other Identifiers	Other Names
Polyethylene glycol 400	25322-68-3	25-50		
DISODIUM PYROPHOSPHATE	7758-16-9	25-50		

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Poly(oxy-1,2-ethanediyl)-, alpha-(4-nonylphenyl)-omega-hydroxy-, branched	127087-87-0	15-35		
Alkylphenol polyethleneglycolether	69011-37-6	5-10		

SECTION 4. FIRST-AID MEASURES

First-aid Measures

Inhalation

Remove to fresh air. If breathing is difficult, give oxygen. If victim is not breathing, perform mouth-to-mouth resuscitation. If irritation develops or persists, seek medical attention.

Skin Contact

Remove and launder or clean contaminated clothing and shoes. Wash gently and thoroughly with lukewarm, gently flowing water and non-abrasive soap. If irritation develops or persists, seek medical attention.

Eye Contact

Immediately flush the contaminated eye(s) with lukewarm, gently flowing water while holding the eyelid(s) open for 15 minutes. If eye irritation develops or persists, seek medical attention.

Ingestion

DO NOT INDUCE VOMITING unless directed to do so by medical personnel. Never give anything by mouth to an unconscious or convulsing victim. Seek medical attention if symptoms appear.

Immediate Medical Attention and Special Treatment

Medical Conditions Aggravated by Exposure

Exposure to this product may aggravate medical conditions involving the following: skin/epithelium, eyes.

SECTION 5. FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media

Use foam, dry chemicals or carbon dioxide.

Specific Hazards Arising from the Product

Not regulated as flammable or combustible.

Open flames, sparks, static, heat.

Hazardous Combustion Products: Oxides of carbon (CO, CO₂) and nitrogen (NO, NO₂).

Special Protective Equipment and Precautions for Fire-fighters

Evacuate area. Fight fire from a safe distance or a protected location. Use water spray from a safe distance to cool fire-exposed containers. Keep run-off water out of sewers and public waterways.

Firefighters must wear a full-body encapsulating chemical protective suit with positive-pressure self-contained breathing apparatus (SCBA).

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment, and Emergency Procedures

Use the personal protective equipment recommended in Section 8 of this safety data sheet.

Environmental Precautions

It is good practice to prevent releases into the environment. Do not allow into any sewer, on the ground or into any waterway.

Methods and Materials for Containment and Cleaning Up

Wear appropriate personal protective equipment. Evacuate surrounding areas, if necessary. Scoop up spilled materials and place in an appropriate container for disposal.

SECTION 7. HANDLING AND STORAGE

Product Identifier: SAPP STICK - Ver. 1
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 Date of Last Revision:

Precautions for Safe Handling

Use appropriate personal protection equipment. Avoid any contact with eyes, skin and clothing. Avoid breathing vapours or dust. Use only with adequate ventilation.

Handle in accordance with good industrial hygiene and safety practice. It is good practice to: avoid breathing product; avoid skin and eye contact and wash hands after handling.

Conditions for Safe Storage

Store in a dry, cool area. Keep container closed and dry.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Appropriate Engineering Controls

Provide exhaust ventilation or other engineering control to prevent airborne dust concentration and reduce potential exposure.

Individual Protection Measures

Eye/Face Protection

Wear chemical safety goggles. Ensure an eyewash station is available in immediate work area.

Skin Protection

Wear protective clothing as required to prevent contact. Wear chemical resistant boots or overshoes. Rubber gloves are recommended. Ensure emergency shower is available.

Respiratory Protection

Not normally required if product is used as directed.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Basic Physical and Chemical Properties

Appearance	Yellow.
Odour	Soapy
Odour Threshold	Not available
pH	5
Initial Boiling Point/Range	101 °C (214 °F)
Flash Point	101 °C (214 °F)
Evaporation Rate	Not available
Flammability (solid, gas)	Not available
Upper/Lower Flammability or Explosive Limit	Not available (lower)
Vapour Pressure	Not available
Vapour Density (air = 1)	Not available
Relative Density (water = 1)	1.28
Solubility	Soluble in water
Partition Coefficient, n-Octanol/Water (Log Kow)	Not available
Viscosity	Not available (kinematic); Not available (dynamic)
Other Information	
Physical State	Solid

SECTION 10. STABILITY AND REACTIVITY

Reactivity

No further relevant information available.

Chemical Stability

Normally stable.

Possibility of Hazardous Reactions

Hazardous polymerization will not occur.

Conditions to Avoid

No further relevant information available.

Incompatible Materials

Oxidizing materials.

Hazardous Decomposition Products

None known.

SECTION 11. TOXICOLOGICAL INFORMATION

Toxicological information is either not available or not determined.

Likely Routes of Exposure

Skin contact; eye contact.

Skin Corrosion/Irritation

May be slightly irritating to the skin.

Serious Eye Damage/Irritation

May be slightly irritating to the eyes.

STOT (Specific Target Organ Toxicity) - Single Exposure

Inhalation

Not expected to be harmful if inhaled.

Ingestion

Not considered a likely route of exposure, however, may be harmful or cause irritation if swallowed.

SECTION 12. ECOLOGICAL INFORMATION

No ecotoxicity or environmental fate data available.

Ecotoxicity

No further relevant information available.

Persistence and Degradability

No further relevant information available.

Bioaccumulative Potential

No further relevant information available

Mobility in Soil

No further relevant information available.

Other Adverse Effects

No known to be hazardous to water.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal Methods

Dispose of in accordance with federal, state and local government regulations. Disposal regulations may also apply to empty containers, liners and rinsate. Processing, use, dilution or contamination of this product may cause its physical and chemical properties to change.

SECTION 14. TRANSPORT INFORMATION

Not regulated under US DOT Regulations.

Product Identifier: SAPP STICK - Ver. 1
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Date of Last Revision:

Special Precautions Not applicable

Transport in Bulk According to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

SECTION 15. REGULATORY INFORMATION

Safety, Health and Environmental Regulations

Canada

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

USA

Toxic Substances Control Act (TSCA) Section 8(b)

All ingredients are exempt from TSCA Inventory requirements.

Additional USA Regulatory Lists

This product does not contain any components that are subject to the reporting requirements of TSCA Section 12(b) if exported from the United States.

SECTION 16. OTHER INFORMATION

SDS Prepared By Bri-Chem Supply Corp

Date of Preparation November 05, 2015

Disclaimer This Health and Safety information is correct to the best of our knowledge and belief at the date of its publication, but we cannot accept liability for any loss, injury or damage which may result from its use. We shall ensure, so far as is reasonably practicable, that any revision of this Data Sheet is sent to all customers to whom we have directly supplied this substance, but must point out that it is the responsibility of any intermediate supplier to ensure that such revision is passed to the ultimate user. The information given in the Data Sheet is designed only as guidance for safe handling, storage, and the use of the substance. It is not a specification nor does it guarantee any specific properties. All chemicals should be handled only by competent personnel, within a controlled environment. Should further information be required, this can be obtained through the sales office whose address is at the top of this data sheet.

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1. Identification

Product identifier SUPER GEL-X®

Other means of identification None.

Recommended use Not available.

Recommended restrictions Workers (and your customers or users in the case of resale) should be informed of the potential presence of respirable dust and respirable crystalline silica as well as their potential hazards. Appropriate training in the proper use and handling of this material should be provided as required under applicable regulations.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer

Company name CETCO, an MTI Company

Address 2870 Forbs Avenue
Hoffman Estates, IL 60192
United States

Telephone General Information 800 527-9948

Website <http://www.cetco.com/>

E-mail safetydata@amcol.com

Emergency phone number .

Americas 1.866.519.4752 (US, Canada, Mexico) 1 760 476 3962 Access Code 333562

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 Not applicable.

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 Not applicable.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
□e□□□e □□e□der		Proprietary*	< 0.1
Other components below reportable levels			90 - 100

Constituents

Chemical name	CAS number	%
CALCIUM CARBONATE	471-34-1	
SMECTITE GROUP MINERALS □□□□□□□□	13□□□□□□	

Constituents

Chemical name	CAS number	%
QUARTZ	14808-60-7	<= 8
CRISTOBALITE	14464-46-1	<= 2

*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret. Bentonite is a UVCB substance sub-type 4. The purity of the product is 100 % w/w. Bentonite is composed mainly of smectite group minerals but the composition is varied, as expected for a UVCB substance, and other mineral constituents will be present in small and varying amounts. These minor constituents are not relevant for classification and labelling.

Composition comments Occupational Exposure Limits for constituents are listed in Section 8. The purity of the product is 100% w/w. Impurities are not applicable for a UVCB substance.

4. First-aid measures

Inhalation	If dust from the material is inhaled, remove the affected person immediately to fresh air. Call a physician if symptoms develop or persist. No specific first aid measures noted.
Skin contact	No specific first aid measures noted. Get medical attention if irritation develops and persists. Wash skin with soap and water.
Eye contact	No specific first aid measures noted.
Ingestion	No specific first aid measures noted. Rinse mouth thoroughly. Get medical attention if any discomfort occurs.
Most important symptoms/effects, acute and delayed	Dust in the eyes will cause irritation.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically.
General information	No hazards which require special first aid measures. Provide general supportive measures and treat symptomatically.

5. Fire-fighting measures

Suitable extinguishing media	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2). Use any media suitable for the surrounding fires.
Unsuitable extinguishing media	Not applicable, non-combustible.
Specific hazards arising from the chemical	None known. The product itself does not burn.
Special protective equipment and precautions for firefighters	Material can be slippery when wet.
Fire fighting equipment/instructions	In the event of fire, cool tanks with water spray. Material can be slippery when wet.
Specific methods	Cool containers exposed to flames with water until well after the fire is out.
General fire hazards	No unusual fire or explosion hazards noted. This material will not burn.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Material can be slippery when wet. Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fume at levels exceeding the exposure limits. Avoid inhalation of dust from the spilled material. For personal protection, see section 8 of the SDS. No special precautions are necessary beyond normal good hygiene practices. See Section 8 for additional personal protection advice when handling this product.
Methods and materials for containment and cleaning up	If sweeping of a contaminated area is necessary use a dust suppressant agent which does not react with the product. Sweep up or vacuum up spillage and collect in suitable container for disposal. Collect dust using a vacuum cleaner equipped with HEPA filter. Minimize dust generation and accumulation. Avoid the generation of dusts during clean-up. Following product recovery, flush area with water. For waste disposal, see section 13 of the SDS. Collect powder using special dust vacuum cleaner with particle filter or carefully sweep into closed container.
Environmental precautions	Prevent further leakage or spillage if safe to do so. No special environmental precautions required.

7. Handling and storage

Precautions for safe handling	Minimize dust generation and accumulation. Provide appropriate exhaust ventilation at places where dust is formed. Avoid breathing dust. Avoid contact with skin and eyes. In case of insufficient ventilation, wear suitable respiratory equipment. Practice good housekeeping.

Conditions for safe storage, including any incompatibilities No special restrictions on storage with other products. Store in a dry area. Store in original tightly closed container. Keep the container dry. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS). Guard against dust accumulation of this material.

8. Exposure controls/personal protection

Occupational exposure limits

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

Constituents	Type	Value	Form
INERT OR NUISANCE DUSTS	PEL	5 mg/m3	Respirable fraction.
		15 mg/m3	Total dust.

US. OSHA Table Z-3 (29 CFR 1910.1000)

Constituents	Type	Value	Form
INERT OR NUISANCE DUSTS	TWA	5 mg/m3	Respirable fraction.
		15 mg/m3	Total dust.
		50 mppcf	Total dust.
		15 mppcf	Respirable fraction.

US. ACGIH Threshold Limit Values

Components	Type	Value
TRADE SECRET	TWA	2 ppm

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
TRADE SECRET	TWA	6 mg/m3
		2 ppm

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

Exposure guidelines

US - California OELs: Skin designation

TRADE SECRET (CAS Proprietary) Can be absorbed through the skin.

US - Tennessee OELs: Skin designation

TRADE SECRET (CAS Proprietary) Can be absorbed through the skin.

US ACGIH Threshold Limit Values: Skin designation

TRADE SECRET (CAS Proprietary) Can be absorbed through the skin.

US NIOSH Pocket Guide to Chemical Hazards: Skin designation

TRADE SECRET (CAS Proprietary) Can be absorbed through the skin.

Appropriate engineering controls Ventilation should be sufficient to effectively remove and prevent buildup of any dusts or fumes that may be generated during handling or thermal processing. If engineering measures are not sufficient to maintain concentrations of dust particulates below the OEL, suitable respiratory protection must be worn.

Individual protection measures, such as personal protective equipment

Eye/face protection Use tight fitting goggles if dust is generated. Wear dust-resistant safety goggles where there is danger of eye contact.

Skin protection

Hand protection No protection is ordinarily required under normal conditions of use.

Other Normal work clothing (long sleeved shirts and long pants) is recommended.

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 Not applicable.

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. Use good industrial hygiene practices in handling this material.

9. Physical and chemical properties

Appearance Lump, granular or fine powder.

Physical state Solid.

Form	Powder. Various.
Color	Various.
Odor	None.
Odor threshold	Not applicable.
pH	8.5 - 11
Melting point/freezing point	> 842 °F (> 450 °C) / Not applicable.
Initial boiling point and boiling range	Not applicable.
Flash point	Not applicable.
Evaporation rate	Not available.
Flammability (solid, gas)	This product is not flammable.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not applicable.
Flammability limit - upper (%)	Not applicable.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	Not applicable.
Vapor density	Not applicable.
Relative density	2.6 g/cm ³
Solubility(ies)	
Solubility (water)	< 0.9 mg/l
Partition coefficient (n-octanol/water)	Not applicable.
Auto-ignition temperature	Not applicable.
Decomposition temperature	> 932 °F (> 500 °C)
Viscosity	Not applicable.
Viscosity temperature	Not applicable.
Other information	
Bulk density	0.9 - 1.4 g/cm ³
Explosive limit	Not applicable.
Explosive properties	Not explosive
Explosivity	Not applicable.
Flame extension	Not applicable.
Flammability	Not applicable.
Flammability (flash back)	Not applicable.
Flammability (Heat of combustion)	Not applicable.
Flammability (Train fire)	Not applicable.
Flammability class	Not applicable.
Flash point class	Not flammable
Molecular formula	UVCB Substance
Molecular weight	Not applicable.
Oxidizing properties	None.
Percent volatile	0 %
pH in aqueous solution	8.5 - 11
Specific gravity	Not applicable.
VOC (Weight %)	CARB 0 %

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Stable at normal conditions.
Possibility of hazardous reactions	Will not occur.
Conditions to avoid	Moisture. Avoid temperatures exceeding the decomposition temperature. Contact with incompatible materials. Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air).
Incompatible materials	None known.
Hazardous decomposition products	None.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Inhalation of dusts may cause respiratory irritation.
Skin contact	Not classified.
Eye contact	Dust in the eyes will cause irritation.
Ingestion	Not classified.

Symptoms related to the physical, chemical and toxicological characteristics None known.

Information on toxicological effects

Product	Species	Test Results
Bentonite		
<u>Acute</u>		
Inhalation		
<i>Dust</i>		
LC50	Rat	> 5.27 mg/l, 4 hr OECD 436
Oral		
<i>Dust</i>		
LD50	Rat	> 2000 mg/kg OECD 425
Components	Species	Test Results
TRADE SECRET		
<u>Acute</u>		
Inhalation		
LC50	Rat	10600 mg/l/4h 1200 mg/l, 4 Hours
Oral		
LD50	Mouse	2400 mg/kg
	Rat	33.5 mg/kg

* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation	Not classified.
Serious eye damage/eye irritation	Dust in the eyes will cause irritation. Mild irritant to eyes (according to the modified Kay & Calandra criteria)
Respiratory or skin sensitization	
Respiratory sensitization	Not classified.
Skin sensitization	Not classified.
Germ cell mutagenicity	Not classified.

Carcinogenicity

In June 2003, SCOEL (the EU Scientific Committee on Occupational Exposure Limits), concluded that the main effect in humans of the inhalation of respirable crystalline silica dust is silicosis. "There is sufficient information to conclude that the relative risk of lung cancer is increased in persons with silicosis (and, apparently, not in employees without silicosis exposed to silica dust in quarries and in the ceramic industry). Therefore, preventing the onset of silicosis will also reduce the cancer risk..." (SCOEL SUM Doc 94-final, June 2003) According to the current state of the art, worker protection against silicosis can be consistently assured by respecting the existing regulatory occupational exposure limits. Occupational exposure to respirable dust and respirable crystalline silica should be monitored and controlled. No carcinogenicity data available for this product. Sepiolite was evaluated by IARC as class 3 ("Cannot be classified as to carcinogenicity to humans"). Based on read-across with sepiolite, bentonite was assessed as non-carcinogenic. Therefore classification of bentonite for carcinogenicity is not warranted.

IARC Monographs. Overall Evaluation of Carcinogenicity

TRADE SECRET (CAS Proprietary)

3 Not classifiable as to carcinogenicity to humans.

Reproductive toxicity Not classified.**Specific target organ toxicity - single exposure** Not classified.**Specific target organ toxicity - repeated exposure** Not classified.**Aspiration hazard** Not available.**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.

Product		Species	Test Results
Bentonite			
Aquatic			
Algae	EC50	Freshwater algae	> 100 mg/l, 72 hours
Crustacea	EC50	Coon stripe shrimp (<i>Pandalus danae</i>)	24.8 mg/l, 96 hours
		Daphnia	> 100 mg/l, 48 hours
		Dungeness or edible crab (<i>Cancer magister</i>)	81.6 mg/l, 96 hours
Fish	LC50	Freshwater fish	16000 mg/l, 96 hours
		Marine water fish	2800 - 3200 mg/l, 24 hours
Components		Species	Test Results
TRADE SECRET			
Aquatic			
Crustacea	EC50	Daphnia	47 mg/L, 48 Hours
Fish	LC50	Fish	222 mg/L, 96 Hours

* Estimates for product may be based on additional component data not shown.

Persistence and degradability Not relevant for inorganic substances**Bioaccumulative potential** Will not bio-accumulate.**Partition coefficient n-octanol / water (log Kow)**

TRADE SECRET

0.35

Mobility in soil Bentonite is almost insoluble and thus presents a low mobility in most soils.**Mobility in general** The product has poor water-solubility.**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. Disposal considerations****Disposal instructions** Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose in accordance with all applicable regulations.**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

Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied. Store containers and offer for recycling of material when in accordance with the local regulations.

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 applicable.

15. Regulatory information

US federal regulations

CERCLA Hazardous Substance List (40 CFR 302.4)

TRADE SECRET (CAS Proprietary) 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

TRADE SECRET (CAS Proprietary)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

Food and Drug Administration (FDA) Total food additive
Direct food additive
GRAS food additive

US state regulations

US - New Jersey RTK - Substances: Listed substance

TRADE SECRET (CAS Proprietary)

US - Pennsylvania RTK - Hazardous Substances: Listed substance

TRADE SECRET (CAS Proprietary)

US. California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100)

Not listed.

US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))

TRADE SECRET (CAS Proprietary)

US. Massachusetts RTK - Substance List

TRADE SECRET (CAS Proprietary)

US. New Jersey Worker and Community Right-to-Know Act

TRADE SECRET (CAS Proprietary)

US. Pennsylvania Worker and Community Right-to-Know Law

TRADE SECRET (CAS Proprietary)

US. Rhode Island RTK

TRADE SECRET (CAS Proprietary)

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)	No
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

Issue date	10-October-2013
Revision date	24-July-2015
Version #	20
Further information	This safety datasheet only contains information relating to safety and does not replace any product information or product specification. UVCB = a substance of Unknown or Variable composition, Complex reaction products or Biological materials SWERF = Size Weighted Respirable Fraction methodology is a scientific method developed to quantify the content of respirable particles within a bulk product. All details about the SWERF method are available at www.crystallinesilica.eu. HMIS® is a registered trade and service mark of the NPCA.
HMIS® ratings	Health: 1 Flammability: 0 Physical hazard: 0
NFPA ratings	Health: 1 Flammability: 0 Instability: 0
List of abbreviations	SWERF = Size-Weighted Relevant Fine Fraction methodology is a scientific method developed to quantify the content of respirable particles within a bulk product. All details about the SWERF method are available at www.crystallinesilica.eu. UVCB = a substance of Unknown or Variable composition, Complex reaction products or Biological materials
References	For any information on literature references or toxicity/ecotoxicity studies, please contact the supplier.

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 manufacturer expressly does not make any representations, warranties, or guarantees as to its accuracy, reliability or completeness nor assumes any liability, for its use. It is the user's responsibility to verify the suitability and completeness of such information for each particular use. 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. The information in the sheet was written based on the best knowledge and experience currently available.

Revision Information

This document has undergone significant changes and should be reviewed in its entirety.



WYO-BEN, INC.

SAFETY DATA SHEET

SECTION 1 — CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Trade Name: **SODA ASH**
Chemical Family: Mineral
Application: Drilling Fluid Additive
Manufacturer/Supplier: Wyo-Ben, Inc.
1345 Discovery Drive
Billings, MT 59102 USA
Telephone: 800.548.7055
Facsimile: 406.656.0748
Emergency Phone Number: CHEMTREC® 800.424.9300

SECTION 2 — HAZARD IDENTIFICATION COMPOSITION

Hazard Classification: Eye Damage/Irritation (Category 2A)
Signal Word: Warning
Hazard statements: Causes serious eye irritation
Hazard Symbol: Exclamation Mark

Precautionary Statements

Prevention: Wash skin thoroughly after handling.
Wear eye protection / face protection.

Response: If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Hazards Not Otherwise Classified: No other hazards not otherwise classified have been identified.

SECTION 3 — COMPOSITION/INFORMATION ON INGREDIENTS

Substances	CAS Number	Percent
Sodium carbonate	497-19-8	100

SECTION 4 — FIRST AID MEASURES

General information: No special measures required.

Inhalation:	If inhaled, remove to a dust free area. Get medical attention if respiratory irritation develops or if breathing becomes difficult.
Skin:	Brush off loose particles from skin. Immediately rinse with water. Seek medical attention if irritation develops and persists.
Eyes:	Remove contact lenses if worn. Flush eyes with plenty of water and seek medical attention if irritation persists.
Ingestion:	Rinse out mouth and then drink plenty of water. Do not induce vomiting; Immediately seek medical attention.

Most important symptoms and effects, both acute and delayed:

Severe eye irritation. Nose, throat and lung irritation (sore throat, nose bleeds). Cough at high concentrations. Nausea, abdominal pain, vomiting and diarrhea when ingested.

Indication of any immediate medical attention and special treatment needed

No further relevant information available.

SECTION 5 — FIRE FIGHTING MEASURES

Fire Extinguishing Media:	All standard firefighting media. Use firefighting measures that suit the environment and circumstances.
Unsuitable Fire Extinguishing Media :	None
Special Exposure Hazards:	Formation of toxic gases is possible during heating or in case of fire. Fumes of sodium oxide and carbon oxides.
Special Protective Equipment for Firefighters:	Wear self-contained breathing apparatus (SCBA). Wear fully protective suit.

SECTION 6 — ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures:	Avoid dust formation. Use respiratory protective device against the effects of fumes, dust and aerosols. Ensure adequate ventilation. Wear protective equipment. Keep unprotected persons away.
Environmental Precautionary Measures:	Do not allow to enter sewers, surface or ground water. Damp down dust with water spray.
Procedure for Cleaning/Absorption:	Collect using appropriate dustless, mechanical method. Dispose of in accordance with all local, state and federal regulations. Use appropriate containers for disposal.

SECTION 7 — HANDLING AND STORAGE

Handling Precautions:	Ensure adequate ventilation. Prevent formation of dust. Any deposit of dust that cannot be avoided must be regularly removed. Avoid contact with skin and eyes.
Storage Information:	Protect from humidity and water. Store away from foodstuffs.
Incompatibilities:	Do not store with acids. Will generate carbon dioxide (CO ₂) when exposed to acids.
Additional Information:	Use good industrial hygiene in storage and work areas to prevent accumulation of dust. Close container when not in use. Do not reuse empty container.

SECTION 8 — EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:	No further data; see item 7.
Control parameters	
Components with limit values that require monitoring at the workplace:	The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
Personal Protective Equipment:	Standard industrial hygiene measures for handling chemicals should be followed. Keep away from foodstuffs, beverages and feed.
Respiratory Protection:	Do not inhale dust, mist or smoke. Respiratory protection not required under normal conditions of use. Use suitable NIOSH approved respiratory protective device in case of insufficient ventilation. For spills, respiratory protection is advisable.
Hand Protection:	Chemically resistant protective work gloves. The glove material has to be impermeable and resistant to the product.
Skin Protection:	Avoid close or long term contact with the skin. Wash hands before breaks and at the end of work. 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.
Body Protection:	Not required under normal conditions of use. Protection may be required for spills.
Eye Protection:	Avoid contact with eyes. Wear safety glasses with side shields, goggles or full face mask to protect against exposure.
Other Precautions:	No further relevant information available.

SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Granular Solid
Color:	White
Odor:	Odorless
Odor Threshold:	Not determined
pH:	11.3 – 11.6 (1% aqueous solution)
Specific Gravity @ 20 C (Water=1):	2.45 – 2.55
Density @ 20 C (lbs/gallon / g/cm ³):	21.113 / 2.53
Bulk Density @ 20 C (lbs/ft ³):	60 - 70
Melting Point (°F/°C):	1564 / 851.1
Boiling Point/Range (°F/°C)	Not determined
Freezing Point/Range ((°F/°C):	Not applicable
Vapor Pressure @ 20 C (mmHg):	Not applicable
Vapor Density (Air=1):	Not applicable
Percent Volatiles:	Not applicable
Evaporation Rate (Butyl Acetate=1):	Not applicable
Solubility in Water:	Soluble

Solubility in Solvents (g/100ml):	Not applicable
VOCs (lbs/gallon):	Not applicable
Viscosity, Dynamic @ 20 C (centipoise):	Not applicable
Viscosity, Kinematic @ 20 C (centistokes):	Not applicable
Partition Coefficient/n-Octanol/Water:	Not applicable
Flash Point/Range (F/C):	Not applicable – non-combustible
Flash Point Method:	Not applicable – non-combustible
Autoignition Temperature (F/C):	Not applicable – non-combustible
Flammability Limits in Air – Upper/Lower (%):	Not applicable – non-combustible

SECTION 10 — STABILITY AND REACTIVITY

Reactivity:	Decomposes by reaction with strong acids.
Chemical Stability:	Stable under recommend storage conditions.
Hazardous Polymerization:	Will Not Occur
Hazardous Reactions:	Strong exothermic reaction with acids. Reacts with halogenated compounds.
Conditions to Avoid:	Avoid contact with acids
Hazardous Decomposition Products:	With strong acids: Carbon dioxide. Thermal decomposition may produce oxides of sodium and carbon.

SECTION 11 — TOXICOLOGICAL INFORMATION

Probable Route of Exposure:	Inhalation, Eye or skin contact
Primary Irritant Effect:	
Skin Contact:	Slight irritant effect on skin and mucous membranes.
Eye Contact:	Serious irritation effect.
Sensitization:	No sensitizing effects known.
Acute toxicity:	
Oral:	LD50/Rat/ 2,800 mg/kg
Dermal:	LD50/Rabbit/>2,000 mg/kg
Acute effects:	Severely irritating to eyes
Skin Corrosion/Irritation:	Rabbit/Not classified as irritating to skin (OECD 404) Unpublished.
Serious Eye Damage/Irritation:	Rabbit/Irritating to eyes by standard test method. Unpublished.
Respiratory or Skin Sensitization:	No data available.
Mutagenicity:	Not considered to be genotoxic.
Carcinogenicity:	Not listed as a known, probable, potential or suspected carcinogen by IARC, NTP or OSHA.
Reproductive Toxicity:	No data available.

STOT Single Exposure:	This substance is not classified as specific target organ toxicant, single exposure.
STOT Repeated Exposure:	This substance is not classified as specific target organ toxicant, repeated exposure.
Aspiration Toxicity:	No data available.

SECTION 12 — ECOLOGICAL INFORMATION

Acute Toxicity

Fish:	LC50/Lepomis macrochirus (Bluegill Sunfish)/96 hr/ 300 mg/L
Invertebrates:	EC50/Ceriodaphnia dubia (Water Flea)/48 hr/200 – 227 mg/L

Persistence and Degradability

Biodegradability:	Not applicable. Inorganic substance.
Photo-degradation:	Hydrolyzes in water to form carbonic acid/bicarbonate/carbonate

Bio-accumulation

Bioconcentration Factor (BCF):	Not applicable. Inorganic substance.

No relevant information available

Mobility in Soil:	Not significant

Ecotoxicity Assessment

Acute aquatic toxicity:	Not harmful to aquatic life (LC/EC50 > 100 mg/L)
Chronic aquatic toxicity:	Not classified due to data which are conclusive although insufficient for Classification

SECTION 13 — DISPOSAL CONSIDERATIONS

Disposal Method:	Small amounts may be diluted with plenty of water and washed away. Dispose of larger amounts in accordance with Local Authority requirements. The user of this material has the responsibility to dispose of unused material, residues and containers in compliance with all relevant local, state and federal laws and regulations regarding treatment, storage and disposal for hazardous and nonhazardous wastes. Residual materials should be treated as hazardous.
Contaminated Packaging:	Follow all applicable local, state of federal regulations.

SECTION 14 — TRANSPORT INFORMATION

UN-Number	
DOT, ADN, IMDG, IATA:	Not Regulated
UN proper shipping name	
DOT, ADN, IMDG, IATA :	Not Regulated

Transport hazard class(es)

SODA ASH

DOT, ADR, ADN, IMDG, IATA Class:	Not Regulated
Packing group	
DOT, IMDG, IATA:	Not Regulated
Environmental hazards:	
Marine pollutant:	No
Special precautions for user	Not applicable.
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable.
UN "Model Regulation":	-

SECTION 15 — REGULATORY INFORMATION

US Regulations

US TSCA Inventory	Listed.
EPA SARA Title III Extremely Hazardous Substances	Not listed
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
California Proposition 65	Not listed

Canadian Regulations

Canadian DSL Inventory	Not Listed.

SECTION 16 — OTHER INFORMATION

Prepared	03/18/2015
Last Revision	09/1/2015

DISCLAIMER

All information presented herein is believed to be accurate; however, it is the user's responsibility to determine in advance of need that the information is current and suitable for their circumstances. No warranty or guarantee, expressed or implied is made by WYO-BEN, INC. as to this information, or as to the safety, toxicity or effect of the use of this product.

MATERIAL SAFETY DATA SHEET

Sodium Carbonate, Anhydrous



MSDS Ref. No.: 497-19-8
Date Approved: 01/26/2004
Revision No.: 6

This document has been prepared to meet the requirements of the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200; the Canada's Workplace Hazardous Materials Information System (WHMIS) and, the EC Directive, 2001/58/EC.

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Sodium Carbonate, Anhydrous

ALTERNATE PRODUCT NAME(S): Soda Ash, Sodium Carbonate Anhydrous

GENERAL USE: Glass manufacture, detergent manufacture, sodium chemicals and carbonate chemicals manufacture, pulp and paper, brine treatment, water hardness removal, pH adjustment in water or waste water, flue gas desulfurization, coal treatment, ion exchange resin regeneration.

This chemical is certified to ANSI/NSF Standard 60, Drinking Water Chemicals-Health Effects (as packaged in the original, unopened container). The maximum dosage level for this chemical is 150 mg/L

MANUFACTURER

FMC Wyoming Corporation
Alkali Chemicals Division
1735 Market Street
Philadelphia, PA 19103
(215) 299-6000 (General Information)

EMERGENCY TELEPHONE NUMBERS

(800) 424-9300 (CHEMTREC - U.S.)
(303) 595-9048 (Medical - Call Collect)
(307) 872-2452 (Plant - Green River, WY)

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

- White, odorless, granular solid.
- Product is non-combustible.
- Reacts with acids to release carbon dioxide gas and heat.
- Irritating to the eyes and continuous contact may irritate the skin.
- Not expected to be toxic to the environment, nor to aquatic organisms.

Sodium Carbonate, Anhydrous (497-19-8)

Date: 01/26/2004

POTENTIAL HEALTH EFFECTS: Direct contact with the product causes irritation of the eyes and continuous contact may cause skin irritation (red, dry, cracked skin). Excessive levels of airborne dust may irritate the mucous membranes and upper respiratory tract.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	CAS#	Wt. %	EC No.	EC Class
Sodium carbonate	497-19-8	99.8	207-838-8	Xi, R36

4. FIRST AID MEASURES

EYES: Immediately flush with water for at least 15 minutes, lifting the upper and lower eyelids intermittently. See a medical doctor or ophthalmologist as necessary.

SKIN: Wash with plenty of soap and water. Get medical attention if irritation occurs and persists.

INGESTION: Rinse mouth with water. Dilute by giving 1 or 2 glasses of water. Do not induce vomiting. Never give anything by mouth to an unconscious person. See a medical doctor immediately.

INHALATION: Remove to fresh air. If breathing difficulty or discomfort occurs and persists, obtain medical attention.

NOTES TO MEDICAL DOCTOR: While internal toxicity is low, irritant effects of high concentrations may produce corneal opacities, and vesicular skin reactions in humans with abraded skin only. Treatment is symptomatic and supportive.

5. FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA: Water, water fog, carbon dioxide (CO₂), dry chemical

FIRE / EXPLOSION HAZARDS: Not applicable

FIRE FIGHTING PROCEDURES: Wear full protective clothing and self-contained breathing apparatus.

FLAMMABLE LIMITS: Not applicable

HAZARDOUS COMBUSTION PRODUCTS: Fumes of sodium oxide.

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Date: 01/26/2004

SENSITIVITY TO IMPACT: None

SENSITIVITY TO STATIC DISCHARGE: None

6. ACCIDENTAL RELEASE MEASURES

COMMENTS: PERSONAL PRECAUTIONS: Refer to Section 8 "Exposure Controls / Personal Protection".

CONTAINMENT: Prevent large quantities of this product from contacting vegetation or waterways; large spills could kill vegetation and fish.

CLEAN-UP: This product, if spilled, can be recovered and re-used if contamination does not present a problem. Vacuum or sweep up the material. If the spilled product is unusable due to contamination, consult state or federal environmental agencies for acceptable disposal procedures and locations. See Section 13 "Disposal Considerations".

NOTIFICATION REQUIREMENTS: Federal regulations do not require notification for spills of this product. State and local regulations may contain different requirements; consult local authorities.

7. HANDLING AND STORAGE

HANDLING: Use air conveying / mechanical systems for bulk transfer to storage. For manual handling of bulk transfer use mechanical ventilation to remove airborne dust from rail car, ship or truck. Use approved respiratory protection when ventilation systems are not available. Selection of respirators is based on the dust cloud generation. Keep material out of lakes, streams, ponds and sewer drains.

STORAGE: Store in a cool dry area, away from acids.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS: Where possible, provide general mechanical and/or local exhaust ventilation to prevent release of airborne dust into the work environment.

PERSONAL PROTECTIVE EQUIPMENT

EYES AND FACE: Appropriate eye and face protection equipment (ANSI Z87 approved) should be selected for the particular use intended for this material. Safety glasses with side shields are recommended.

RESPIRATORY: Whenever dust in the worker's breathing zone cannot be controlled with ventilation or other engineering means, workers should wear respirators or dust masks approved by

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NIOSH/MSHA, EU CEN or comparable certification organization to protect them against airborne dust.

PROTECTIVE CLOTHING: Dry product is generally non-irritating to intact skin. However, this product can be irritating where skin has been damaged and can create skin irritation after long exposures when moisture is present. Under such conditions, gloves and long-sleeved clothing are recommended to minimize skin contact.

COMMENTS:

ADDITIONAL EXPOSURE GUIDELINES:

Federal guidelines treat the ingredient(s) in this product as a nuisance dust, as no product-specific guidelines have been issued for exposure. As with all nuisance dusts, worker breathing zone concentrations should be measured by validated sampling and analytical methods. The following limits (OSHA and MSHA) apply to this material:

Particulates Not Otherwise Regulated:

OSHA (PEL / TWA): 15 mg/m³ (total dust); 5 mg/m³ (resp fraction)

MSHA (PEL / TWA): 10 mg/m³ (total dust)

The information noted above provides general guidance for handling this product. Specific work environments and material handling practices will dictate the selection and use of personal protection equipment (PPE).

9. PHYSICAL AND CHEMICAL PROPERTIES

ODOR:	Odorless
APPEARANCE:	White, granular solid.
AUTOIGNITION TEMPERATURE:	Not applicable
BOILING POINT:	Decomposes
COEFFICIENT OF OIL / WATER:	Not applicable
DENSITY / WEIGHT PER VOLUME:	(g/ml) Dense Grades = 0.86 - 1.12; Light Grades = 0.70 - 0.90
EVAPORATION RATE:	Not applicable (Butyl Acetate = 1)
FLASH POINT:	Non-combustible
FREEZING POINT:	851°C (1564°F)
ODOR THRESHOLD:	Not applicable
OXIDIZING PROPERTIES:	Not applicable
PERCENT VOLATILE:	Not applicable

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Date: 01/26/2004

pH:	11.4 (1% solution)
SOLUBILITY IN WATER:	33.2 % maximum
SPECIFIC GRAVITY:	2.509 (water = 1)
VAPOR DENSITY:	Not Applicable
VAPOR PRESSURE:	Not applicable

10. STABILITY AND REACTIVITY

CONDITIONS TO AVOID:	Contact with acids except under controlled conditions.
STABILITY:	Stable
POLYMERIZATION:	Will not occur
INCOMPATIBLE MATERIALS:	Reacts with acids with release of large volumes of carbon dioxide gas and heat.
HAZARDOUS DECOMPOSITION PRODUCTS:	Heated to decomposition, it emits fumes of sodium oxide.

COMMENTS:

Materials to Avoid : Aluminum powder, acids, fluorine, molten lithium

11. TOXICOLOGICAL INFORMATION

EYE EFFECTS: Severe irritant (rabbit) [Toxicology 23:281 (1982)]

SKIN EFFECTS: Non-irritating to intact skin. Minor irritation may occur on abraded skin. [Toxicol. Appl. Pharmacol. 31:481 (1975)]

DERMAL LD₅₀: No data available for the product.

ORAL LD₅₀: 4,090 mg/kg (rat) [RTECS 1986]

INHALATION LC₅₀: 2.3 mg/l (2 h) (rat) [Environ. Res. 31:138 (1983)]

SENSITIZATION: 0.25% sodium carbonate: Non-sensitizing (human) [Toxicol. Appl. Pharmacol. 31:481 (1975)]

TARGET ORGANS: Eyes

ACUTE EFFECTS FROM OVEREXPOSURE: May cause severe irritation of the eyes, including corneal opacities. Dusts and mists may be irritating to the skin, mucous membranes and upper respiratory tract. No significant acute toxicological effects expected.

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Date: 01/26/2004

CHRONIC EFFECTS FROM OVEREXPOSURE: No data available for the product.

CARCINOGENICITY:

NTP:	Not listed
IARC:	Not listed
OSHA:	Not listed
OTHER:	(ACGIH) Not listed

12. ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION: 96-hour LC_{50} = 265 - 565 mg/L (daphnia magna) (low toxicity)
96-hour LC_{50} = 300 - 320 mg/L (bluegill sunfish) (low toxicity)

CHEMICAL FATE INFORMATION: Biodegradability does not apply to inorganic substances. No significant toxicity to aquatic organisms is expected.

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: When this product is discarded or disposed of, as purchased, it is neither a characteristic nor a listed hazardous waste according to US Federal RCRA regulations (40 CFR 261). As a non-hazardous waste the material may be disposed of in a landfill in accordance with government regulations; check local or state regulations for applicable requirements prior to disposal. Any processing, usage, alteration, chemical additions to, or contamination of, the product may alter the disposal requirements. Under Federal regulations, it is the generator's responsibility to determine if a waste is a hazardous waste.

14. TRANSPORT INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION (DOT)

PROPER SHIPPING NAME:	Not regulated
PRIMARY HAZARD CLASS / DIVISION:	Not applicable
UN/NA NUMBER:	None
LABEL(S):	Not applicable

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Date: 01/26/2004

PLACARD(S):

Not applicable

MARKING(S):

Not applicable

ADDITIONAL INFORMATION:

Hazardous Substance/RQ: Not applicable
49 STCC Number: Not applicable

INTERNATIONAL MARITIME DANGEROUS GOODS (IMDG)

ADDITIONAL INFORMATION:

Not regulated

ADR - EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY ROAD

ADDITIONAL INFORMATION:

Not regulated

INTERNATIONAL CIVIL AVIATION ORGANIZATION (ICAO) / INTERNATIONAL AIR TRANSPORT ASSOCIATION (IATA)

ADDITIONAL INFORMATION:

Not regulated

15. REGULATORY INFORMATION

UNITED STATES

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355, APPENDIX A):

Not listed

SECTION 311 HAZARD CATEGORIES (40 CFR 370):

Immediate (Acute) Health Hazard

SECTION 312 THRESHOLD PLANNING QUANTITY (40 CFR 370):

The Threshold Planning Quantity (TPQ) for this product, if treated as a mixture, is 10,000 lbs; however, this product contains the following ingredients with a TPQ of less than 10,000 lbs.:
None

SECTION 313 REPORTABLE INGREDIENTS (40 CFR 372):

Not listed

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CERCLA (COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT)

CERCLA DESIGNATION & REPORTABLE QUANTITIES (RQ) (40 CFR 302.4):
Not listed

TSCA (TOXIC SUBSTANCE CONTROL ACT)

TSCA INVENTORY STATUS (40 CFR 710):
Listed

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA)

RCRA IDENTIFICATION OF HAZARDOUS WASTE (40 CFR 261):

Waste Number: Refer to Section 13 "Disposal Considerations" for RCRA status.

CANADA

WHMIS (WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM):

Product Identification Number: Not applicable
Hazard Classification / Division: Toxic, Class D, Div. 2, Subdiv. B
Ingredient Disclosure List: Listed

E NUMBERS:

E 500

EU EINECS NUMBERS:

011-005-00-2

INTERNATIONAL LISTINGS

Australia (AICS): Listed
Korea: KE-31380
Japan (ENCS): (1)-164
Philippines (PICCS): Listed
China: Listed

COMMENTS:

CLEAN WATER ACT (CWA) - SECTION 307 / 311
Not listed as a hazardous pollutant (40 CFR 116), nor as a toxic pollutant (40 CFR 401.15)

CLEAN AIR ACT (CAA) - SECTION 112
Not regulated under the chemical accident prevention provisions (40 CFR 68)

Sodium Carbonate, Anhydrous (497-19-8)

Date: 01/26/2004

16. OTHER INFORMATION

HAZARD, RISK AND SAFETY PHRASE DESCRIPTIONS:

Sodium carbonate:

EC Symbols: Xi (Irritant)

EC Risk Phrases: R36 (Irritating to eyes.)

EC Safety Phrases: S2 (Keep out of the reach of children.)
S22 (Do not breathe dust.)
S26 (In case of contact with eyes, rinse immediately with plenty of water and seek medical advice)

HMIS

Health	2
Flammability	0
Physical Hazard	0
Personal Protection (PPE)	B

Protection = B (Safety glasses and gloves)

HMIS = Hazardous Materials Identification System

Degree of Hazard Code:

4 = Severe
3 = Serious
2 = Moderate
1 = Slight
0 = Minimal

NFPA

Health	2
Flammability	0
Reactivity	0
Special	None

No special requirements

NFPA = National Fire Protection Association

Degree of Hazard Code:

4 = Extreme
3 = High
2 = Moderate
1 = Slight
0 = Insignificant

REVISION SUMMARY:

Sodium Carbonate, Anhydrous (497-19-8)

Date: 01/26/2004

Changes in information are as follows:

New Format, as well as text changes and/or updates to one or more Sections of this MSDS.

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WYO-BEN, INC.

SAFETY DATA SHEET

SECTION 1 — CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Trade Name: **SOLIDIBOND 1.1**
Chemical Family: Mineral / Organic Mixture
Application: General
Manufacturer/Supplier: Wyo-Ben, Inc.
1345 Discovery Drive
Billings, MT 59102 USA
Telephone: 800.548.7055
Facsimile: 406.656.0748
Emergency Phone Number: CHEMTREC® 1.800.424.9300

SECTION 2 — HAZARD IDENTIFICATION

Hazard Classification: Carcinogenicity (Category 1A)
Specific Target Organ Toxicity (Repeated Exposure) (Category 1)
Signal Word: Danger
Hazard Statements: May cause cancer.
Causes damage to organs through prolonged or repeated exposure.
Hazard Symbol: Health Hazard

Precautionary Statements

Prevention: Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breath dust. Wash face, hands and any exposed skin thoroughly after handling. Do not eat, drink or smoke when using this product.
Response: If exposed or concerned: Get medical advice/attention.
Get medical attention/advice if you feel unwell.
Storage: Store locked up.
Disposal: Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazards Not Otherwise Classified: May cause eye and respiratory irritation.

SECTION 3 — COMPOSITION/INFORMATION ON INGREDIENTS

Substances	CAS Number	Percent
Crystalline Silica, quartz	14808-60-7	≤6%

SECTION 4 — FIRST AID MEASURES

Inhalation:	If inhaled, remove to a dust free area. Get medical attention if respiratory irritation develops or if breathing becomes difficult. Inhalation may aggravate existing respiratory illness.
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. Seek medical attention if irritation persists.
Ingestion:	Do Not induce vomiting. First aid measures not normally required.
Notes to Physician:	Treat symptomatically

SECTION 5 — FIRE FIGHTING MEASURES

Suitable Extinguishing Media:	Product is non-combustible. All standard firefighting media may be used.
Unsuitable Extinguishing Media:	None
Special Exposure Hazards:	None known. Product is not combustible.
Special Protective Equipment and	None for product. Wear self-contained breathing apparatus (SCBA) and full protective gear.
Precautions for Firefighters:	Caution: slippery when wet.
NFPA Ratings:	Health 1, Flammability 0, Reactivity 0

SECTION 6 — ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures:	Use appropriate protective equipment. Avoid creating and breathing dust.
Environmental Precautionary Measures:	Keep from entering sewers or water ways.
Procedure for Cleaning/Absorption:	Avoid generating dust. Collect using appropriate dustless method. Dispose in licensed landfill according to local, state and federal regulations.

SECTION 7 — HANDLING AND STORAGE

Handling Precautions:	This product contains quartz which may become airborne. Avoid breathing dust. Avoid creating dusty conditions. Promptly clean up spills to avoid breathing airborne dust. Use only with adequate ventilation to keep exposure below recommended exposure limits. Wear a NIOSH/MSHA European Standard En 149, or equivalent certified for silica bearing dust, respirator when using this product. Material is slippery when wet.
Storage Information:	Use good housekeeping in storage and work areas to prevent accumulation of dust. Close container when not in use. Do not reuse empty container.

SECTION 8 — EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

Substances	CAS Number	ACGIH TLV-TWA	OSHA PEL-TWA*
Crystalline Silica, quartz	14808-60-7	0.025 mg/m ³	$\frac{10 \text{ mg/m}^3}{\% \text{SiO}_2 + 2}$

* More restrictive exposure limits may be enforced by some states, agencies, or other authorities.

Engineering Controls:	Use approved industrial ventilation and local exhaust as required to maintain exposures below applicable exposure limits.
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. If significant exposures exceeding occupational exposure limit are possible use NIOSH/MSHA respirator approved for silica bearing dust.
Hand Protection:	Standard 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.

SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Granular Solid
Color:	Light tan to gray
Odor:	Odorless
pH:	8 – 10 (5% aqueous suspension)
Specific Gravity @ 20 C (Water=1):	1.70 – 1.80
Density @ 20 C (lbs/gallon):	Not determined
Bulk Density @ 20 C (lbs/ft ³):	Not determined
Boiling Point/Range (F/C):	Not applicable
Freezing Point/Range (F/C):	Not applicable
Vapor Pressure @ 20 C (mmHg):	Not applicable
Vapor Density (Air=1):	Not applicable
Percent Volatiles:	Not applicable
Evaporation Rate (Butyl Acetate=1):	Not applicable
Solubility in Water (g/100ml):	Insoluble
Solubility in Solvents (g/100ml):	Not applicable
VOCs (lbs/gallon):	Not applicable
Viscosity, Dynamic @ 20 C (centipoise):	Not determined
Viscosity, Kinematic @ 20 C (centistokes):	Not determined
Partition Coefficient/n-Octanol/Water:	Not applicable
Molecular Weight (g/mole):	Not applicable
Flash Point/Range (F/C):	Not determined
Flash Point Method:	Not applicable
Autoignition Temperature (F/C):	Not determined

Flammability Limits in Air – Lower (%): Not determined

Flammability Limits in Air – Upper (%): Not determined

SECTION 10 — STABILITY AND REACTIVITY

Reactivity: Nonreactive

Chemical Stability: Stable under recommended storage conditions

Possibility of Hazardous Reactions: None known.

Conditions to Avoid: High temperature

Anticipated Incompatibility (Materials to Avoid): None known

Hazardous Decomposition Products: None known

Additional Guidelines: Not applicable

SECTION 11 — TOXICOLOGICAL INFORMATION

Principle Route of Exposure: Eye or skin contact, inhalation.

Symptoms Related to the Physical, Chemical and Toxicological Characteristics

Inhalation: Inhaled crystalline silica in the form of quartz from occupational sources is carcinogenic to humans (IARC, Group 1).

Skin Contact: May cause skin irritation due to drying.

Eye Contact: May cause mechanical eye irritation.

Ingestion: None known

Aggravated Medical Conditions: Individuals with respiratory disease, including but not limited to asthma and bronchitis, or subject to eye irritation, should not be exposed to respirable quartz-bearing dust.

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, 1997) concludes that there is sufficient evidence in humans for carcinogenicity of inhaled crystalline silica from occupational sources (IARC Group 1), that carcinogenicity was not detected in all industrial circumstances studied and that carcinogenicity may depend on characteristics of the crystalline silica or on external factors affecting its biological activity. See IARC Monograph 68, Silica, Some Silicates and Organic Fibres (June 1997). The National Toxicology Program (NTP) classifies respirable crystalline silica as “Known to be a human carcinogen” (NTP 9th Report on Carcinogens, 2000). The American Conference of Governmental Industrial Hygienists (ACGIH) classifies crystalline silica, quartz, as a suspected human carcinogen (A2).

Other Information: See “Adverse Effects of Crystalline Silica Exposure” published by the American Thoracic Society Medical Section of the American Lung Association, American Journal of Respiratory and Critical Care Medicine, Volume 155, pages 761-768 (1997).

Toxicity Tests

Oral Toxicity:	Not determined
Dermal Toxicity:	Not determined
Inhalation Toxicity:	Not determined
Primary Irritation Effect:	Not classified
Carcinogenicity:	Refer to IARC Monograph 68, Silica, Some Silicates and Organic Fibres (June 1997).
Genotoxicity:	Not classified
Reproductive/Developmental Toxicity:	Not classified

SECTION 12 — ECOLOGICAL INFORMATION

Mobility (Water/Soil/Air):	Not determined
Persistence/Degradability:	Not determined
Bio-accumulation:	Not determined
Ecotoxicological Information	
Acute Fish Toxicity:	Not determined
Acute Crustaceans Toxicity:	Not determined
Acute Algae Toxicity:	Not determined
Chemical Fate Information:	Not determined
Other Information:	Not applicable

SECTION 13 — DISPOSAL CONSIDERATIONS

Disposal Method:	If product should become a waste dispose in a licensed landfill according to federal, state and local regulations.
Contaminated Packaging:	Follow all applicable national or local regulations.

SECTION 14 — TRANSPORT INFORMATION

Land Transportation

- DOT – Not regulated as dangerous goods
- Canadian TDG – Not regulated as dangerous goods
- ADR – Not regulated as dangerous goods

Air Transportation

- ICAO/IATA – Not regulated as dangerous goods

Sea Transportation

- IMDG – Not regulated as dangerous goods

Other Transportation Information

Labels: None

SECTION 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	Chronic Health Hazard
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	This product contains crystalline silica (respirable) which is a substance known to the State of California to cause cancer.

Canadian Regulations

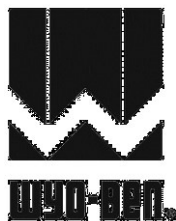
Canadian DSL Inventory	All components listed on inventory or are exempt.
WHMIS Hazard Class	This product contains crystalline silica (respirable) and is classified as a Class D, Division 2, Subdivision A substance.

SECTION 16 — OTHER INFORMATION

Prepared 05/31/2017
Last Revision None

DISCLAIMER

All information presented herein is believed to be accurate; however, it is the user’s responsibility to determine in advance of need that the information is current and suitable for their circumstances. No warranty or guarantee, expressed or implied is made by WYO-BEN, INC. as to this information, or as to the safety, toxicity or effect of the use of this product.



WYO-BEN, INC.

SAFETY DATA SHEET

SECTION 1 — CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Trade Name: **SOLIDIBOND 2.2**
Chemical Family: Organic
Application: Solidification
Manufacturer/Supplier: Wyo-Ben, Inc.
1345 Discovery Drive
Billings, MT 59102 USA
Telephone: 800.548.7055
Facsimile: 406.656.0748
Emergency Phone Number: CHEMTREC® 1.800.424.9300

SECTION 2 — HAZARD IDENTIFICATION

Hazard Classification: Respiratory Sensitizer (Category 1)
Skin Sensitizer (Category 1)
Carcinogenicity (Category 1A)
Specific Target Organ Toxicity (Single Exposure) (Category 3)
Specific Target Organ Toxicity (Repeated Exposure) (Category 1)
Signal Word: Danger
Hazard Statements: May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May cause an allergic skin reaction.
May cause cancer.
Causes damage to organs through prolonged or repeated exposure.
May form combustible dust concentrations in air.
Hazard Symbol: Health Hazard, Exclamation Mark

Precautionary Statements

Prevention: Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear respiratory protection. Contaminated work clothing must not be allowed out of the workplace. Wear protective gloves/protective clothing/eye protection/face protection. Use only outdoors or in a well-ventilated area. Do not breathe dust/fume/gas/mist/vapors/spray. Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product.

Response: If exposed or concerned: Get medical advice/attention. If on skin: Wash with plenty of water. Wash contaminated clothing before reuse. If skin irritation or rash occurs: Get medical advice/attention. If inhaled: Remove person to fresh air and keep comfortable for breathing. If experiencing respiratory symptoms: Call a poison center/doctor.

Storage: Store locked up. Store in a well-ventilated place. Keep container tightly closed.

Disposal: Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazards Not Otherwise

Classified: No additional information available

SECTION 3 — COMPOSITION/INFORMATION ON INGREDIENTS

Substances	CAS Number	Percent
Wood Dust	None assigned	≤23%
Non-hazardous Ingredients	Various	≥77%

SECTION 4 — FIRST AID MEASURES

Inhalation:	If inhaled, remove to fresh air and keep at rest in a position comfortable for breathing. If experiencing respiratory symptoms: Call a poison center or a doctor. May cause respiratory irritation. May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Eyes:	In case of contact, immediately flush eyes with plenty of water. Remove contact lenses, if worn. If irritation persists, get medical attention. Dust may cause eye irritation. Symptoms may include discomfort or pain, excess blinking and tear production, with possible redness and swelling.
Skin:	In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Call a physician if irritation develops and persists. Dust may cause skin irritation. Symptoms may include redness, drying, defatting and cracking of the skin. May cause sensitization by skin contact.
Ingestion:	If swallowed do Not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical advice/attention if you feel unwell. May be harmful if swallowed. May cause stomach distress, nausea or vomiting.

SECTION 5 — FIRE FIGHTING MEASURES

Suitable Extinguishing Media:	Water, carbon dioxide, sand
Unsuitable Extinguishing Media:	Do not use a heavy water stream. Use of heavy stream of water may spread fire.
Special Exposure Hazards:	Combustible dust. Products of combustion may include, and are not limited to oxides of carbon.
Special Protective Equipment	Wear full firefighting turn-out gear (full Bunker gear) and respiratory protection (SCBA). Avoid generating dust. Cool closed containers exposed to fire with water. Dust may form flammable mixture with air.
Precautions for Firefighters:	Keep upwind of fire. Wood dust is a strong to severe explosion hazard if a dust “cloud” contacts an ignition source. Wood heated with limited oxygen will produce carbon monoxide and carbon dioxide and hydrocarbons which can explode if oxygen is introduced..

SECTION 6 — ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures:	Use personal protection recommended in Section 8. Isolate the hazard area and deny entry to unnecessary and unprotected personnel. Dust deposits should not be allowed to accumulate on surfaces, as these may form an explosive mixture if they are released into the atmosphere in sufficient concentration. Avoid dispersal of dust in the air (ie, clearing dust surfaces with compressed air). Eliminate sources of ignition.
Containment:	Contain spill, then place in a suitable container. Minimize dust generation. Do not flush to sewer or allow to enter waterways. Use appropriate Personal Protective Equipment (PPE).
Procedure for Cleaning/Absorption:	Vacuum or sweep material and place in a disposal container. Avoid generating dust. Collect using appropriate dustless method. Provide ventilation. Use only non-sparking tools. Dispose in licensed landfill according to local, state and federal regulations.

SECTION 7 — HANDLING AND STORAGE

Handling Precautions:	Keep away from sources of ignition - No smoking. Proper grounding procedures to avoid static electricity should be followed. Avoid contact with skin and eyes. Do not breathe dust/fume/gas/mist/vapors/spray. Do not swallow. Minimize generation of dust. Prevent accumulation of dust. Good housekeeping is important to prevent accumulation of dust. The use of compressed air for cleaning clothing, equipment, etc, is not recommended. Handle an open container with care. When using do not eat, drink or smoke. Use only outdoors or in a well-ventilated area. Wash hands before eating, drinking, or smoking. Launder contaminated clothing before reuse.
Storage Information:	Store in a cool, dry location. Store away from sources of ignition. Keep out of the reach of children. Keep container tightly closed and in a well-ventilated place.

SECTION 8 — EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

Substances	CAS Number	ACGIH TLV-TWA	OSHA PEL-TWA*
Wood Dust	None	Not applicable	Not applicable

* More restrictive exposure limits may be enforced by some states, agencies, or other authorities.

Engineering Controls:	Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapor, etc.) below recommended exposure limits. It is recommended that all dust control equipment such as local exhaust ventilation and material transport systems involved in handling of this product contain explosion relief vents or an explosion suppression system or an oxygen-deficient environment. Ensure that dust-handling systems (such as exhaust ducts, dust collectors, vessels, and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e., there is not leakage from the 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:	In case of insufficient ventilation, wear suitable respiratory equipment. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Hand Protection:	Wear chemically resistant protective gloves.
Skin Protection:	Wear suitable protective 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:	Do not eat, smoke or drink where material is handled, processed or stored. Wash hands carefully before eating or smoking. Handle according to established industrial hygiene and safety practices.

SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Granular Solid
Color:	Various
Odor:	Wood odor
pH:	Not applicable
Specific Gravity @ 20 C (Water=1):	Not determined
Density @ 20 C (lbs/gallon):	Not determined
Bulk Density @ 20 C (lbs/ft ³):	Not determined
Boiling Point/Range (F/C):	Not applicable
Freezing Point/Range (F/C):	Not applicable
Vapor Pressure @ 20 C (mmHg):	Not applicable
Vapor Density (Air=1):	Not applicable
Percent Volatiles:	Not applicable
Evaporation Rate (Butyl Acetate=1):	Not applicable
Solubility in Water (g/100ml):	Insoluble
Solubility in Solvents (g/100ml):	Not applicable
VOCs (lbs/gallon):	Not applicable
Viscosity, Dynamic @ 20 C (centipoise):	Not applicable
Viscosity, Kinematic @ 20 C (centistokes):	Not applicable
Partition Coefficient/n-Octanol/Water:	Not applicable
Molecular Weight (g/mole):	Not applicable
Flash Point/Range (F/C):	Not determined
Flash Point Method:	Not applicable
Autoignition Temperature (F/C):	Variable with exposure to temperatures as low as 212°F (100°C)
Flammability Limits in Air – Lower (%):	Not determined
Flammability Limits in Air – Upper (%):	Not determined
Explosive Limits in Air:	40g/m ³ (LEL for wood dust)

SECTION 10 — STABILITY AND REACTIVITY

Reactivity:	No dangerous reaction known under conditions of normal use.
Chemical Stability:	Stable under normal storage conditions. Combustible dust.
Possibility of Hazardous Reactions:	No dangerous reaction known under conditions of normal use.
Conditions to Avoid:	Heat. Incompatible materials. Sources of ignition.
Anticipated Incompatibility (Materials to Avoid):	Oxidizing agents. Drying oils.
Hazardous Decomposition Products:	Thermal-oxidative degradation of wood produces irritating and toxic fumes and gases, including carbon monoxide, aldehydes and organic acids.
Additional Guidelines:	Not applicable

SECTION 11 — TOXICOLOGICAL INFORMATION

Principle Route of Exposure:	Eye or skin contact, inhalation.

Symptoms Related to the Physical, Chemical and Toxicological Characteristics

Inhalation:	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Skin Contact:	May cause an allergic skin reaction.
Eye Contact:	May cause mechanical eye irritation.
Ingestion:	None known
Aggravated Medical Conditions:	Individuals with respiratory disease, including but not limited to asthma and bronchitis, or subject to eye irritation, should not be exposed to wood dust.
Chronic Effects/Carcinogenicity:	The International Agency for Research on Cancer (IARC, 1995) concludes that there is sufficient evidence in humans for the carcinogenicity of wood dust (IARC Group 1). IARC states that studies consistently indicate that occupational exposure to wood dust is causally related to adenocarcinoma of the nasal cavities and paranasal sinuses and that concentration of wood dust and the duration of exposure may also contribute to differences in the risks of workers exposed to different types of wood. The National Toxicology Program (2002) lists wood dust as known to be a human carcinogen.

Toxicity Tests

Acute Toxicity:	Not classified
Oral Toxicity:	No data available
Dermal Toxicity:	No data available
Inhalation Toxicity:	No data available
Primary Irritation Effect	Not classified
Skin corrosion/irritation:	Based on available data, the classification criteria are not met.
Serious eye damage/irritation:	Based on available data, the classification criteria are not met.
Respiratory or skin sensitization:	May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause an allergic skin reaction.

Carcinogenicity:	May cause cancer
Germ cell mutagenicity:	Based on available data, the classification criteria are not met.
Reproductive/Developmental Toxicity:	Not classified
Specific target organ toxicity (single exposure):	May cause respiratory irritation.
Specific target organ toxicity (repeated exposure):	Causes damage to organs through prolonged or repeated exposure.
Aspiration hazard:	Based on available data, the classification criteria are not met.
Symptoms/injuries after inhalation:	May cause respiratory irritation. May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Symptoms/injuries after skin contact:	Dust may cause skin irritation. Symptoms may include redness, drying, defatting and cracking of the skin. May cause sensitization by skin contact.
Symptoms/injuries after eye contact:	Dust may cause eye irritation. Symptoms may include discomfort or pain, excess blinking and tear production, with possible redness and swelling.
Symptoms/injuries after ingestion:	May be harmful if swallowed. May cause stomach distress, nausea or vomiting.

SECTION 12 — ECOLOGICAL INFORMATION

Mobility (Water/Soil/Air):	Not determined
Persistence/Degradability:	Not determined
Bio-accumulation:	Not determined
Ecotoxicological Information	
Ecology – general	May cause long-term adverse effects in the aquatic environment
Acute Fish Toxicity:	Not determined
Acute Crustaceans Toxicity:	Not determined
Acute Algae Toxicity:	Not determined
Chemical Fate Information:	Not determined
Other Information:	Not applicable

SECTION 13 — DISPOSAL CONSIDERATIONS

Disposal Method:	If product should become a waste dispose in a licensed landfill according to federal, state and local regulations. The generation of waste should be avoided or minimized wherever possible.
Contaminated Packaging:	Follow all applicable national or local regulations.

SECTION 14 — TRANSPORT INFORMATION

Land Transportation	
DOT – Not regulated as dangerous goods	
Canadian TDG – Not regulated as dangerous goods	
Other Transportation Information	
Labels: None	

SECTION 15 — REGULATORY INFORMATION

US Federal Regulations: No additional information available

US State Regulations: California Proposition 65: This product contains a substance known to the State of California to cause cancer.

SECTION 16 — OTHER INFORMATION

Prepared 05/31/2017

Last Revision None

DISCLAIMER

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WYO-BEN, INC.

SAFETY DATA SHEET

SECTION 1 — CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Trade Name: **THINZ-IT®**
Chemical Family: Water soluble polymer mixture
Application: Drilling Fluid Additive

Manufacturer/Supplier: Wyo-Ben, Inc.
1345 Discovery Drive
Billings, MT 59102 USA
Telephone: 800.548.7055
Facsimile: 406.656.0748

Emergency Phone Number CHEMTREC® 1.800.424.9300

SECTION 2 — HAZARD IDENTIFICATION

This product is not classified according to paragraph (d) of 29 CFR 1910.1200 and does not require a hazard warning label.

Hazard Classification: None
Signal Word: None
Hazard Statements: None
Hazard Symbol: None
Precautionary Statements: None
Other Hazards: Spills produce extremely slippery surfaces.

SECTION 3 — COMPOSITION/INFORMATION ON INGREDIENTS

Substances: Not applicable; this product is not a substance.
Mixtures: Contains no reportable hazardous substances.

SECTION 4 — FIRST AID MEASURES

If inhaled: Move to fresh air. No hazards which require special first aid measures.
If on skin: Wash thoroughly with soap and water. If irritation develops and persists seek medical attention.
If in eyes: Wash affected eyes for at least 15 minutes under running water with eyelids held open. Seek medical attention if irritation persists.
If swallowed: Rinse mouth. Do NOT induce vomiting unless directed to do so by medical personnel. Seek medical attention.

Most Important Symptoms and Effects, Both Acute and Delayed: None under normal use.

Indication of Any Immediate Medical Attention and Special Treatment Needed: None reasonably foreseeable.

Other Information: Spills produce extremely slippery surfaces.

SECTION 5 — FIRE FIGHTING MEASURES

Fire Extinguishing Media:	Use water spray, foam, dry chemical or carbon dioxide
Unsuitable Extinguishing Media:	None
Thermal Decomposition Products:	Oxides of carbon (CO _x) and nitrogen (NO _x).
Special Protective Equipment for Firefighters:	Wear self-contained breathing apparatus (SCBA) for firefighting if necessary.
Special Exposure Hazards:	CAUTION! Spills are extremely slippery.
Other information:	Will not burn until water in product is evaporated.
NFPA Rating:	Health = 0, Flammability = 0, Reactivity = 0

SECTION 6 — ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures:	No special precautions required. Spills produce extremely slippery surfaces. Wear appropriate PPE (see Sec. 8). Keep people away from spills and leaks
Environmental Precautionary Measures:	Do not allow product to contaminate drains or surface water systems.
Procedure for Cleaning/Absorption:	Do not flush with water. Soak up with inert absorbent material. Sweep up absorbent material and place in suitable, closed containers for disposal. After cleaning, flush away traces with water.

SECTION 7 — HANDLING AND STORAGE

Handling General advice:	Spills produce extremely slippery surfaces. Use appropriate PPE.
Storage General advice:	Store in unopened original containers in a cool and dry place. Freezing temperatures with affect physical condition and may damage this material. Keep container closed when not in use.

SECTION 8 — EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters	
Occupational Exposure Limits:	None
Personal protective equipment	
Respiratory protection:	No personal respiratory protective equipment normally required except in case of aerosol formation.
Hand protection:	Chemical resistant protective gloves
Eye protection:	Safety glasses with side-shields.
Skin/Body protection:	Work clothes protecting arms, legs and body. Chemical resistant apron or protective suit if splashing or repeated contact with solution is likely.
General safety and hygiene measures:	Use appropriate exhaust if misting occurs. Natural ventilation is adequate in absence of mists. Handle in accordance with good industrial hygiene and safety practice.
Environmental Exposure Controls:	Do not allow discharge of product into environment. Do not flush into surface water.

SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	liquid
Color:	Clear to slightly yellow
Odor:	slight
pH:	6-9
Relative Density:	1.0 – 1.4
Boiling Point (°F / °C):	212 / 100
Melting Point / Freezing Point (°F / °C):	< 32 / < 0
Vapor Pressure @ 20 C (mmHg):	2.3 kPa @ 20°C
Vapor Density (Air=1):	Equivalent to water (~0.8 g/l)
Percent Volatiles:	Not determined
Evaporation Rate (Butyl Acetate=1):	Not applicable
Solubility:	Completely miscible in water
Partition coefficient:	~0
Flash Point (°F / °C):	Not applicable. Does not flash.
Flash Point Method:	Not applicable
Autoignition Temperature (°F / °C):	Does not autoignite (based on chemical structure).
Flammability (solid/gas):	Not applicable
Flammability/Explosive Limits:	Not expected to be explosive based on the chemical structure.
Decomposition temperature (°F / °C):	>212 / >100
Oxidizing Properties:	Not expected to be oxidizing based on the chemical structure.

SECTION 10 — STABILITY AND REACTIVITY

Reactivity:	None known
Stability Data:	Stable under normal conditions
Hazardous Reactions:	No dangerous reactions known under conditions of normal use.
Conditions to Avoid:	Protect from frost, heat and sunlight
Incompatibility (Materials to Avoid):	None known.
Hazardous Decomposition Products:	Thermal decomposition may produce oxides of carbon (COx) and nitrogen (NOx).

SECTION 11 — TOXICOLOGICAL INFORMATION

Primary Routes of Exposure:	Skin and eye contact.
Acute Toxicity:	No known acute toxicity
Acute Oral Toxicity:	LD50/Rat > 5,000 mg/kg (Estimated)
Acute Dermal Toxicity:	LD50/Rat > 5,000 mg/kg (Estimated)

Acute Inhalation Toxicity:	Testing by the inhalation route is inappropriate because exposure to humans via inhalation is unlikely because the substance has no vapor pressure and there is practically no exposure to inhalable aerosols.
Skin Corrosion / Irritation:	By analogy with similar products, this product is not expected to be irritating.
Serious eye damage/irritation:	By analogy with similar products, this product is not expected to be irritating.
Respiratory / Skin Sensitization:	By analogy with similar products, this product is not expected to be sensitizing.
Mutagenicity:	By analogy with similar products, this product is not expected to be mutagenic.
Carcinogenicity:	By analogy with similar products, this product is not expected to be carcinogenic.
Reproductive toxicity:	By analogy with similar products, this product is not expected to be toxic for reproduction.
STOT – Single Exposure:	No known effects.
STOT – Repeated Exposure:	No known effects.
Aspiration Hazard:	No Hazards resulting from the material as supplied.

SECTION 12 — ECOLOGICAL INFORMATION

Ecotoxicological Information

Acute Fish Toxicity:	LC50/ Fish /96 hours > 100 mg/l (Estimated)
Acute Invertebrate Toxicity:	EC50/ Daphnia /48 hours > 100 mg/l (Estimated)
Acute Algae Toxicity:	IC50/ Algae / 72 hours > 100 mg/l (Estimated)
Chronic Fish Toxicity:	No data available.
Chronic invertebrate Toxicity:	No data available.
Chronic Microorganism Toxicity:	No data available.
Effects on Terrestrial Organisms:	No known effects.
Sediment Toxicology:	No data available.

Persistence/Degradability:	Not readily biodegradable
Hydrolysis:	Does not hydrolyze.
Photolysis:	No data available.
Bioaccumulation:	Does is not expected to bioaccumulate.
Mobility in Soil:	No data available.

Other adverse effects: None known

SECTION 13 — DISPOSAL CONSIDERATIONS

Disposal Method: when in	Dispose in accordance with federal, state and local regulations. Can be landfilled or incinerated compliance with local regulations.
Contaminated Packaging:	Rinse empty containers with water and use rinse water to prepare additional working solutions. Dispose containers in compliance with local, state and federal regulations.

SECTION 14 — TRANSPORT INFORMATION

Land Transportation

DOT – Not classified as dangerous

Air Transportation

IATA – Not classified as dangerous.

Sea Transportation

IMDG – Not classified as dangerous.

SECTION 15 — REGULATORY INFORMATION

US Regulations

TSCA Inventory:	All components are either listed on the inventory or are exempt from listing.
EPA SARA (311, 312)	
Hazard Class:	Not applicable, Non-hazardous
EPA RCRA Hazardous Waste:	Not considered a hazardous waste as defined by 40 CFR 261.
California Proposition 65:	Not listed

SECTION 16 — OTHER INFORMATION

Prepared 3/20/2015

Last Revision 9/20/2015

DISCLAIMER

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WYO-BEN, INC.

SAFETY DATA SHEET

SECTION 1 — CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Trade Name: **WYO-VIS® DP**
Chemical Family: Water soluble polymer
Application: Drilling Fluid Additive

Manufacturer/Supplier: Wyo-Ben, Inc.
1345 Discovery Drive
Billings, MT 59102 USA
Telephone: 800.548.7055
Facsimile: 406.656.0748
Emergency Phone Number: CHEMTREC® 800.424.9300

SECTION 2 — HAZARD IDENTIFICATION

Hazard Classification: Not classified according to 29 CFR 1910.120 (d) and does not require a hazard warning label.
Signal Word: None
Hazard Statement: None
Hazard Symbol: None

Precautionary Statements

Prevention: None
Response: None
Storage: None
Disposal: None

Hazards Not Otherwise

Classified: Aqueous solutions or powders that become wet cause surfaces to become extremely slippery.

SECTION 3 — COMPOSITION/INFORMATION ON INGREDIENTS

Contains no reportable hazardous substances.

SECTION 4 — FIRST AID MEASURES

Inhalation: If difficulties occur after dust has been inhaled, remove to fresh air. No hazards that require special first aid measures.
Skin: Wash thoroughly with soap and plenty of water. If irritation develops and persists seek medical attention.

Eyes: Rinse immediately with plenty of water for at least 15 minutes with eyelids held open. Seek medical attention if irritation persists.

Ingestion: Rinse mouth with water. Do NOT induce vomiting. No hazards which require special first aid measures.

Most important symptoms and effects, both acute and delayed

None

Indication of any immediate medical attention and special treatment needed

None reasonably foreseeable.

Other information

Aqueous solutions or powders that become wet cause surfaces to become extremely slippery.

SECTION 5 — FIRE FIGHTING MEASURES

Suitable Fire Extinguishing Media: Water spray, alcohol-resistant foam, dry chemical or carbon-dioxide.

Unsuitable Extinguishing Media: None

Special Exposure Hazards: CAUTION! extremely slippery when wet.

Thermal Decomposition Products: Oxides of carbon and nitrogen; Hydrogen cyanide may be produced in the event of combustion in an oxygen deficit atmosphere.

Special Protective Equipment for Firefighters: Wear self-contained breathing apparatus (SCBA)

NFPA Rating: Health 0, Flammability 0, Reactivity 0, PPE Code B

SECTION 6 — ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures: Wear appropriate PPE (see Sec. 8).

Environmental Precautionary Measures: Do not allow product to contaminate drains or surface water systems.

Procedure for Cleaning/Absorption: Clean up promptly by sweeping or vacuum. Keep in suitable appliance or suitable container for disposal. After cleaning, flush away traces with water.

Further information: CAUTION! extremely slippery when wet.

SECTION 7 — HANDLING AND STORAGE

Handling

General advice: Handle in accordance with good industrial hygiene and safety practice. Aqueous solutions cause surfaces to become extremely slippery.

Storage

General advice: Store in unopened original containers in a cool and dry place. Keep container closed when not in use. Incompatible with oxidizing agents

SECTION 8 — EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational exposure limits: None

Exposure controls: Use local exhaust if dusting occurs. Natural ventilation is adequate in the absence of dust.

Personal protective equipment

Respiratory protection:	No personal protective equipment normally required. Dust safety masks recommended where working dust concentration is more than 10 mg/m ³ .
Hand protection:	Chemical resistant protective gloves
Eye/face protection:	Safety glasses with side-shields.
Skin and Body protection:	Work clothes protecting arms, legs and body.

General safety and hygiene measures: Handle in accordance with good industrial hygiene and safety practice.

Environmental exposure controls: Do not allow uncontrolled discharge of product into the environment. Do not allow to enter surface waters,.

SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Granular solid
Color:	White
Odor:	odorless
pH:	5-9 (0.5% aqueous solution)
Specific Gravity @ 20 C (Water=1):	No data available
Bulk Density @ 20 C (KG/M ³):	600 - 900
Boiling Point/Range (F/C):	Not applicable
Melting Point/Range (F/C):	<302 / 150
Vapor Pressure @ 20 C (mmHg):	Not applicable
Vapor Density (Air=1):	Not applicable
Percent Volatiles:	Not applicable
Evaporation Rate (Butyl Acetate=1):	Not applicable
Solubility in Water (g/100ml):	Soluble
Solubility in Solvents (g/100ml):	Not determined
Decomposition Temperature:	>150C
Partition Coefficient:	-2
Flash Point/Range (F/C):	Not applicable
Autoignition Temperature (F/C):	Not applicable – does not autoignite (based on the chemical structure).
Explosive properties:	Kst = 0 Non-flammable to ignition sources of less than 2.5kJ

SECTION 10 — STABILITY AND REACTIVITY

Reactivity:	None known
Stability Data:	Stable under normal conditions
Hazardous Reactions:	Oxidizing agents may cause exothermic reactions.
Conditions to Avoid:	None known.
Incompatibility (Materials to Avoid):	Oxidizing agents.
Hazardous Decomposition Products:	Thermal decomposition may produce oxides of carbon (COx) and nitrogen (NOx); Hydrogen cyanide may be produced if oxygen is deficient.

SECTION 11 — TOXICOLOGICAL INFORMATION

Acute Oral Toxicity:	LD50/Rat/> 5000 mg/kg
Acute Dermal Toxicity:	LD50/Rat/> 5000 mg/kg
Acute Inhalation Toxicity:	Product is not expected to be toxic by inhalation.
Skin Corrosion / Irritation:	Non-irritating.
Serious Eye Damage / Irritation:	Not irritating
Respiratory / Skin Sensitization:	Not sensitizing.
Mutagenicity:	Not mutagenic
Carcinogenicity:	Not carcinogenic
Reproductive Toxicity:	Not a reproductive toxin.
STOT – single exposure:	No known effects
STOT – repeated exposure:	No known effects
Aspiration Hazard:	No hazards from the material as supplied.

SECTION 12 — ECOLOGICAL INFORMATION

Toxicity

Acute Fish Toxicity:	LC50/ Oncorhynchus mykiss /96 hours > 100 mg/l (OECD 203)
Acute Daphnia Toxicity:	EC50/Daphnia magna (Water Flea)/48 hours > 100 mg/l (OECD 202)
Acute Algae Toxicity:	IC50/Scenedesmus subspicatus/72 hours > 100 mg/L (OECD 201)
Chronic toxicity to fish:	No data available
Chronic toxicity to invertebrates:	No data available
Toxicity to microorganisms:	No data available
Effects on terrestrial organisms:	No known effects
Sediment toxicity:	No data available

Persistence/Degradability

Degradation:	Not readily biodegradable.
Hydrolysis:	Does not hydrolyze.
Photolysis:	No data available.

Bioaccumulative potential

Non-bioaccumulating	
Partition coefficient (log Pow):	-2
Bioconcentration factor (BCF):	~0

Mobility in soil:	Not determined.

SECTION 13 — DISPOSAL CONSIDERATIONS

Disposal Method:	Landfill or incinerate in accordance with federal, state and local regulations.
Contaminated Packaging:	Rinse empty containers with water and use the rinse water to prepare additional working solutions. Can be landfilled or incinerated, in compliance with local, state and federal regulations.

SECTION 14 — TRANSPORT INFORMATION

Land Transportation

DOT – Not classified

Canadian TDG – Not classified

Air Transportation

ICAO/IATA – Not classified

Sea Transportation

IMDG – Not classified

SECTION 15 — REGULATORY INFORMATION

US Regulations

US TSCA Inventory	All components are either listed on the inventory or are exempt from listing.
EPA SARA Title III Extremely Hazardous Substances	Not applicable, non-hazardous
EPA SARA (311, 312) Hazard Class	Not applicable, Non-hazardous
EPA RCRA Hazardous Waste Classification	Not considered a hazardous waste as defined by 40 CFR 261.
California Proposition 65:	WARNING! This product contains a chemical which is known to the State of California to cause cancer, birth defects or other reproductive harm. Acrylamide.

SECTION 16 — OTHER INFORMATION

Prepared 3/20/2015

Last Revision 8/31/2015

DISCLAIMER

All information presented herein is believed to be accurate; however, it is the user's responsibility to determine in advance of need that the information is current and suitable for their circumstances. No warranty or guarantee, expressed or implied is made by WYO-BEN, INC. as to this information, or as to the safety, toxicity or effect of the use of this product.



WYO-BEN, INC.

SAFETY DATA SHEET

SECTION 1 — CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Trade Name: **WYO-VIS® HP**
Chemical Family: Water soluble polymer
Application: Drilling Fluid Additive

Manufacturer/Supplier: Wyo-Ben, Inc.
1345 Discovery Drive
Billings, MT 59102 USA
Telephone: 800.548.7055
Facsimile: 406.656.0748
Emergency Phone Number: CHEMTREC® 800.424.9300

SECTION 2 — HAZARD IDENTIFICATION

Hazard Classification: Not classified according to 29 CFR 1910.120 (d) and does not require a hazard warning label.
Signal Word: None
Hazard Statement: None
Hazard Symbol: None

Precautionary Statements

Prevention: None
Response: None
Storage: None
Disposal: None

Hazards Not Otherwise

Classified: Aqueous solutions or powders that become wet cause surfaces to become extremely slippery.

SECTION 3 — COMPOSITION/INFORMATION ON INGREDIENTS

Substances	CAS Number	Percent
Distillates (petroleum), hydrotreated light	64742-47-8	20 - 45
Alcohols, C11 -14 – iso-, C13-rich, ethoxylated	78330-21-9	<3

SECTION 4 — FIRST AID MEASURES

Inhalation: Move to fresh air. No hazards that require special first aid measures.

- Skin:** Wash off immediately with soap and plenty of water while removing all contaminated clothing and shoes. If persistent irritation develops seek medical attention.
- Eyes:** Rinse immediately with plenty of water for at least 15 minutes with eyelids held open. Alternatively, rinse immediately with Diphoterine®. Get prompt medical attention.
- Ingestion:** Rinse mouth with water. Do NOT induce vomiting. Call a physician or poison control center immediately.

Most important symptoms and effects, both acute and delayed

None under normal use.

Indication of any immediate medical attention and special treatment needed

None under normal use..

Other information

Spills produce extremely slippery surfaces.

SECTION 5 — FIRE FIGHTING MEASURES

- Suitable Fire Extinguishing Media:** Water spray, foam, dry chemical or carbon-dioxide.
- Unsuitable Extinguishing Media:** None
- Special Exposure Hazards:** CAUTION! Spills produce extremely slippery surfaces.
- Thermal Decomposition Products:** Oxides of carbon and nitrogen; Hydrogen cyanide may be produced in the event of combustion in an oxygen deficit atmosphere.
- Special Protective Equipment for Firefighters:** Wear self-contained breathing apparatus (SCBA) and protective suit.
- NFPA Rating:** Health 0, Flammability 1, Reactivity 0

SECTION 6 — ACCIDENTAL RELEASE MEASURES

- Personal Precautionary Measures:** Wear appropriate PPE (see Sec. 8). Do not touch or walk through spilled material. Spills produce extremely slippery surfaces. Keep people away from spill/leak.
- Environmental Precautionary Measures:** Do not allow product to contaminate drains or surface water systems.
- Procedure for Cleaning/Absorption:** Do not flush with water. For small spills, soak up with inert absorbent material. Sweep up and shovel into suitable containers for disposal. For large spills, clean up promptly by scoop or vacuum. Soak up residues with inert absorbent material. After cleaning, flush away traces with water.

SECTION 7 — HANDLING AND STORAGE

Handling

- General advice:** Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Causes surfaces to become extremely slippery when spilled. Do not eat, drink or smoke when using product.

Storage

- General advice:** Keep away from heat and sources of ignition. Freezing will affect the physical condition and may damage the materials. Incompatible with oxidizing agents.

SECTION 8 — EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational exposure limits

Substances	CAS Number	ACGIH TLV-TWA
Distillates (petroleum), hydrotreated light	64742-47-8	200 mg/m ³ (8-hour)

Exposure controls: Use local exhaust if misting occurs. Natural ventilation is adequate in the absence of mists.

Personal protective equipment

Respiratory protection: No personal protective equipment normally required.

Hand protection: Chemical resistant protective gloves

Eye/face protection: Safety glasses with side-shields.

Skin and Body protection: Coveralls and/or chemical apron and rubber footwear where physical contact can occur.

General safety and hygiene measures: Handle in accordance with good industrial hygiene and safety practice. Wash hands and face before breaks, immediately after handling the product and at the end of the day.

Environmental exposure controls: Do not allow uncontrolled discharge of product into the environment. Do not allow to enter surface waters.

SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Viscous liquid

Color: Milky

Odor: Aliphatic

pH: 5-9 (0.5% aqueous solution)

Specific Gravity @ 20 C (Water=1): No data available

Bulk Density @ 20 C (KG/M³): 1000 - 1100

Boiling Point/Range (F/C): >212 / 100

Melting Point/Range (F/C): <41 / 5

Vapor Pressure @ 20 C (mmHg): 2.3 kPa

Vapor Density (Air=1): No data available

Percent Volatiles: No data available

Evaporation Rate (Butyl Acetate=1): No data available

Solubility in Water (g/100ml): Completely miscible

Decomposition Temperature: >150C

Partition Coefficient: Not applicable

Kinematic Viscosity @ 40 C (mm²/s): >20.5

Flash Point/Range (F/C): Does not flash

Autoignition Temperature (F/C): No data available

Explosive properties: Not expected to be explosive based on chemical structure.

Oxidizing properties: Not expected to be oxidizing based on chemical structure.

SECTION 10 — STABILITY AND REACTIVITY

Reactivity:	Stable under recommended storage conditions.
Chemical Stability Data:	Stable under recommended storage conditions.
Hazardous Reactions:	Oxidizing agents may cause exothermic reactions.
Conditions to Avoid:	Protect from frost heat and sunlight.
Incompatibility (Materials to Avoid):	Oxidizing agents.
Hazardous Decomposition Products:	Thermal decomposition may produce oxides of carbon (COx) and nitrogen (NOx); Hydrogen cyanide may be produced if oxygen is deficient.

SECTION 11 — TOXICOLOGICAL INFORMATION

Acute Oral Toxicity:	LD50/Rat/> 5000 mg/kg
Acute Dermal Toxicity:	LD50/Rat/> 5000 mg/kg
Acute Inhalation Toxicity:	Product is not expected to be toxic by inhalation.
Skin Corrosion / Irritation:	Non-irritating.
Serious Eye Damage / Irritation:	Slightly irritating
Respiratory / Skin Sensitization:	Not sensitizing.
Mutagenicity:	Not mutagenic
Carcinogenicity:	Not carcinogenic
Reproductive Toxicity:	Not a reproductive toxin.
STOT – single exposure:	No known effects
STOT – repeated exposure:	No known effects
Aspiration Hazard:	Due to viscosity, this product does not present an aspiration hazard.

SECTION 12 — ECOLOGICAL INFORMATION

Toxicity

Acute Fish Toxicity:	LC50/Fish/96 hours > 100 mg/l
Acute Invertebrate Toxicity:	EC50/Daphnia magna (Water Flea)/48 hours > 100 mg/l
Acute Algae Toxicity:	IC50/Algae/72 hours > 100 mg/L
Chronic toxicity to fish:	No data available
Chronic toxicity to invertebrates:	No data available
Toxicity to microorganisms:	No data available
Effects on terrestrial organisms:	No data available
Sediment toxicity:	No data available

Distillates (petroleum), hydrotreated light

Acute Fish Toxicity:	LC0/Oncorhynchus mykiss/96 hr >1000 mg/l (OECD 203)
Acute Invertebrate Toxicity:	EC50/Daphnia magna/48 hours > 1000 mg/l (OECD 202)
Acute Algae Toxicity:	IC50/Pseudokirchneriella subcapitata/72 hours > 1000 mg/L (OECD 201)
Chronic toxicity to fish:	NOEC/Oncorhynchus mykiss/28 daysr >1000 mg/l
Chronic toxicity to invertebrates:	NOEC/Daphnia magna/21 days > 1000 mg/l
Toxicity to microorganisms:	EC50/Tetrahymena pyroformis/48 hours > 1000 mg/l
Effects on terrestrial organisms:	No data available

Sediment toxicity:	No data available; Readily biodegradable.
<u>Alcohols, C11-14-iso-, C13-rich, ethoxylated</u>	
Acute Fish Toxicity:	LC0/Fish/96 hr 1-10 mg/l (Estimated)
Acute Invertebrate Toxicity:	EC50/Daphnia/48 hours 1-10 mg/l (Estimated)
Acute Algae Toxicity:	IC50/Algae/72 hours 1-10 mg/l (Estimated)
Chronic toxicity to fish:	Harmful to aquatic organisms. May cause long-term adverse effects in the aquatic environment.
Chronic toxicity to invertebrates:	Harmful to aquatic organisms. May cause long-term adverse effects in the aquatic environment.
Toxicity to microorganisms:	No data available
Effects on terrestrial organisms:	No data available
Sediment toxicity:	No data available; Readily biodegradable.
<u>Persistence/Degradability</u>	
Degradation:	Not readily biodegradable.
Hydrolysis:	Does not hydrolyze.
Photolysis:	No data available.
<u>Distillates (petroleum), hydrotreated light</u>	
Degradation:	Readily biodegradable.
Hydrolysis:	Does not hydrolyze.
Photolysis:	No data available.
<u>Alcohols, C11-14-iso-, C13-rich, ethoxylated</u>	
Degradation:	Readily biodegradable.
Hydrolysis:	Does not hydrolyze.
Photolysis:	No data available.
<u>Bioaccumulative potential</u>	
Not expected to be bioaccumulating	
Partition coefficient (log Pow):	Not applicable
Bioconcentration factor (BCF):	No data available
<u>Distillates (petroleum), hydrotreated light</u>	
Partition coefficient (log Pow):	3 - 6
Bioconcentration factor (BCF):	No data available
<u>Alcohols, C11-14-iso-, C13-rich, ethoxylated</u>	
Partition coefficient (log Pow):	Not applicable
Bioconcentration factor (BCF):	No data available
Mobility in soil:	No data available.
<u>Distillates (petroleum), hydrotreated light</u>	
Koc:	No data available
<u>Alcohols, C11-14-iso-, C13-rich, ethoxylated</u>	
Koc:	No data available
Other adverse effects:	None

SECTION 13 — DISPOSAL CONSIDERATIONS

Disposal Method:	Landfill or incinerate in accordance with federal, state and local regulations.
Contaminated Packaging:	Dispose of in accordance with federal, state and local regulations.

SECTION 14 — TRANSPORT INFORMATION**Land Transportation**

DOT – Not classified

Canadian TDG – Not classified

Air Transportation

ICAO/IATA – Not classified

Sea Transportation

IMDG – Not classified

SECTION 15 — REGULATORY INFORMATION**US Regulations**

US TSCA Inventory	All components are either listed on the inventory or are exempt from listing.
EPA SARA Title III Extremely Hazardous Substances	Not applicable, non-hazardous
EPA SARA (311, 312) Hazard Class	Not applicable, Non-hazardous
EPA RCRA Hazardous Waste Classification	Not considered a hazardous waste as defined by 40 CFR 261.
California Proposition 65:	WARNING! This product contains a chemical which is known to the State of California to cause cancer, birth defects or other reproductive harm. Acrylamide.

SECTION 16 — OTHER INFORMATION

Prepared 3/20/2015

Last Revision 9/20/2015

DISCLAIMER

All information presented herein is believed to be accurate; however, it is the user's responsibility to determine in advance of need that the information is current and suitable for their circumstances. No warranty or guarantee, expressed or implied is made by WYO-BEN, INC. as to this information, or as to the safety, toxicity or effect of the use of this product.



WYO-BEN, INC.

SAFETY DATA SHEET

SECTION 1 — CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Trade Name: **WYO-VIS® LVP**
Chemical Family: Anionic water soluble polymer
Application: Drilling Fluid Additive

Manufacturer/Supplier: Wyo-Ben, Inc.
1345 Discovery Drive
Billings, MT 59102 USA
Telephone: 800.548.7055
Facsimile: 406.656.0748

Emergency Phone Number: CHEMTREC® 800.424.9300

SECTION 2 — HAZARD IDENTIFICATION

Hazard Classification: This product is not classified according to paragraph (d) of 29 CFR 1910.1200 and does not require a hazard warning label.

Signal Word: None

Hazard Statements: None

Hazard Symbol: None

Precautionary Statements: None

Additional Hazards Not Otherwise Classified: Aqueous solutions or powders that become wet render surfaces extremely slippery.

SECTION 3 — COMPOSITION/INFORMATION ON INGREDIENTS

Contains no reportable hazardous substances.

SECTION 4 — FIRST AID MEASURES

If inhaled: Move to fresh air. No hazards that require special first aid measures.

If on skin: Wash thoroughly with soap and water. If irritation develops seek medical attention.

If in eyes: Rinse immediately for at least 15 with plenty of water with eyelids held open. Seek medical attention in case of persistent eye irritation.

If swallowed: Rinse mouth and then drink plenty of water. Do NOT induce vomiting. No hazards which require special first aid measures.

Most Important Symptoms and Effect, Both Acute and Delayed

None

Indication of Any Immediate Medical Attention and Special Treatment Needed

None reasonably foreseeable.

Other Information

Aqueous solutions or powders that become wet render surfaces extremely slippery.

SECTION 5 — FIRE FIGHTING MEASURES

Fire Extinguishing Media:	Water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
Unsuitable Extinguishing Media:	None
Thermal Decomposition Products:	Oxides of carbon and nitrogen; Hydrogen cyanide may be produced in the event of combustion in an oxygen deficit atmosphere.
Special Protective Equipment for Firefighters:	Wear self-contained breathing apparatus (SCBA)
Special Exposure Hazards:	CAUTION! Aqueous solutions or powders that become wet render surfaces extremely slippery.
NFPA Ratings:	Health 0, Flammability 0, Reactivity 0

SECTION 6 — ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures:	Wear appropriate PPE (see Sec. 8). Aqueous solutions or powders that become wet render surfaces extremely slippery. Keep people away from spill/leak.
Environmental Precautionary Measures:	Do not allow product or solutions to enter drains or surface water systems.
Procedure for Cleaning/Absorption:	<u>Do not flush with water.</u> Depending on volume, pick up by sweeping or vacuum. Keep in suitable, closed containers for disposal. After cleaning, flush away traces with large quantities of water.

SECTION 7 — HANDLING AND STORAGE

Handling:	Wear appropriate PPE (see Sec. 8). CAUTION! Aqueous solutions or powders that become wet render surfaces extremely slippery.
Storage:	Keep in a dry, cool and well ventilated place in closed container when not being used.
Incompatible Products:	Oxidizing agents.

SECTION 8 — EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits:	None
Appropriate Engineering Controls:	Use local exhaust if dusting occurs. Natural ventilation is adequate in absence of dusts.
<u>Personal protective equipment</u>	
Respiratory protection:	Dust safety masks are recommended where concentrations of total dust are $>10\text{mg}/\text{m}^3$
Hand protection:	Chemical resistant protective gloves
Eye protection:	Safety glasses with side-shields. Do not wear contact lenses where this product is used.
Skin and Body protection:	Chemical resistant apron or protective suit if splashing or repeated contact with solution is likely.
General safety and hygiene measures:	Handle in accordance with good industrial hygiene and safety practice.

Environmental Exposure Controls

Do not allow uncontrolled discharge of product into environment. Do not allow to enter surface water.

SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Granular solid
Color:	White
Odor:	odorless
pH:	5-9 (0.5% aqueous solution)
Specific Gravity @ 20 C (Water=1):	Not determined
Bulk Density (kg/m ³):	Approximately 600 - 900
Boiling Point/Range (F / C):	Not applicable
Freezing Point/Range (F / C):	Not applicable
Vapor Pressure @ 20 C (mmHg):	Not applicable
Vapor Density (Air=1):	Not applicable
Evaporation Rate (Butyl Acetate=1):	Not applicable
Solubility in Water (g/100ml):	Completely soluble
Flash Point/Range (F/C):	Not applicable
Autoignition Temperature (F/C):	Not applicable – does not autoignite (based upon the chemical structure).
Explosive Properties:	Kst = 0 Non flammable to ignition sources of less than 2.5kJ
Oxidizing Properties:	Not expected to be oxidizing (based upon the chemical structure).

SECTION 10 — STABILITY AND REACTIVITY

Reactivity:	None known.
Stability Data:	Stable under normal conditions
Hazardous Reactions:	Oxidizing agents may cause exothermic reactions.
Conditions to Avoid:	None known.
Incompatibility (Materials to Avoid):	Oxidizing agents
Hazardous Decomposition Products:	No hazardous or thermal decomposition products if stored and handled as indicated. Thermal decomposition may produce oxides of carbon (COx) and nitrogen (NOx) and hydrogen cyanide (hydrocyanic acid) under conditions of depleted oxygen atmosphere.

SECTION 11 — TOXICOLOGICAL INFORMATION

Acute Toxicity

Oral Toxicity: LD50/Rat/> 5000 mg/kg

Dermal Toxicity: LD50/Rat/> 5000 mg/kg

Inhalation Toxicity: Product is not expected to be toxic by inhalation.

Skin corrosion/irritation:	Not irritating.
Serious eye damage /eye irritation:	Not irritating
Respiratory/skin Sensitization:	Not sensitizing
Mutagenicity:	Not mutagenic.
Carcinogenicity:	Not carcinogenic.
Reproductive toxicity:	Not toxic for reproduction.
STOT – single exposure:	No known effects
STOT – repeated exposure:	No known effects
Chronic Toxicity:	No chronic effects.
Aspiration hazard:	No hazards from the material as supplied

SECTION 12 — ECOLOGICAL INFORMATION

Acute Toxicity

Fish:	LC50/Danio rerio/96 hours >100 mg/L (OCED 203)
Invertebrates:	EC50/Daphnia magna/48 hours >100 mg/L (OCED 202)
Algae:	IC50/Scenedesmus subspicatus/72 hours >100 mg/L (OCED 201)

Chronic Toxicity

Fish:	No data available
Invertebrates:	No data available
Toxicity to Microorganisms:	No data available
Effects on terrestrial organisms:	No data available
Sediment Toxicity:	No data available

Persistence and Degradability

Degradation:	Not readily biodegradable
Hydrolysis:	Does not hydrolyze
Photolysis:	No data available

Bioaccumulative Potential

Not bioaccumulating	
Partition coefficient (Log Pow):	-2
Bioconcentration factor (BCF)	~0

Mobility in Soil:	None
Other adverse effects:	None known

SECTION 13 — DISPOSAL CONSIDERATIONS

Disposal Method:	Landfill or incinerate in accordance with federal, state and local regulations.
Contaminated Packaging:	Rinse empty containers with water and use the rinse water to prepare additional working solutions. Container should be punctured to prevent unauthorized reuse and landfilled or

incinerated, in compliance with local, state and federal regulations.

Recycling: The product and its packaging are not suitable for recycling.

SECTION 14 — TRANSPORT INFORMATION

Land Transportation

DOT – Not classified as dangerous
Canadian TDG – Not classified as dangerous

Air Transportation

ICAO/IATA – Not classified as dangerous.

Sea Transportation

IMDG – Not classified as dangerous.

SECTION 15 — REGULATORY INFORMATION

US Regulations

US TSCA Inventory	All components are either listed on the inventory or are exempt from listing.
EPA SARA Title III Extremely Hazardous Substances	Not applicable, non-hazardous
EPA SARA (311, 312) Hazard Class	Not applicable, Non-hazardous
EPA RCRA Hazardous Waste Classification	Not considered a hazardous waste as defined by 40 CFR 261.
California Proposition 65:	WARNING! This product contains a chemical which is known to the State of California to cause cancer, birth defects or other reproductive harm.

Canadian Regulations

Canadian DSL Inventory:	All components are either listed on the inventory or are exempt from listing. WHMIS
Hazard Class:	Not applicable, Non-hazardous

SECTION 16 — OTHER INFORMATION

Prepared 3/20/2015

Last Revision 8/31/2015

DISCLAIMER

All information presented herein is believed to be accurate; however, it is the user's responsibility to determine in advance of need that the information is current and suitable for their circumstances. No warranty or guarantee, expressed or implied is made by WYO-BEN, INC. as to this information, or as to the safety, toxicity or effect of the use of this product.



SAFETY DATA SHEET

Product Code: AB3A005 (BENTONITE)
Updated: 5/20/13

SECTION 1: IDENTIFICATION

PRODUCT NAME(s): Prime Gel API, Prime Gel Premium, Aquagel, Slikgel, AUSGEL, Quik-Gel Gold, Star Gel, Swell Plug Coarse

GENERIC NAME: Bentonite **MSDS CODE NO.** A202PABA005

SYNONYMS: Calcium Bentonite, Sodium Bentonite, Montmorillonite, Smectite Clay

CHEMICAL NAME: Sodium / Calcium Aluminum Silicate **CASE REGISTRY NO.** 1302-78-9

MANUFACTURING ADDRESS: Western Clay Company
620 East SR 24
Aurora, UT 84620 **CONTACT NUMBERS:** Emergency: 213-664-2121
Western Clay: 800-982-7960

RECOMMENDED USE: Bentonite has a variety of uses. It can be used as a rheology modifier, binding agent, absorbent, filler and other i.e. for applications like: foundry, iron ore agglomeration, drilling, construction - civil engineering, filtration (i.e. oil, wine, beer), pharmaceutical and cosmetics, cat litter, food processing aids and feed additives.

USE RESTRICTIONS: There are no identified uses advised against.

SECTION 2: HAZARD IDENTIFICATION

GHS CLASSIFICATION Signal: Danger
Causes damage to the lungs through prolonged or repeated exposure if inhaled



HEALTH/PHYSICAL HAZARDS: Material dusts containing less than 1% free crystalline silica (quartz) are classified as nuisance particulates. Exposure to these dusts may cause irritation to eyes, ears, throat, and upper respiratory tract. This materials dust may contain more than 1% free silica as Quartz. Chronic (long term) exposure to air born free silica at levels higher than TLV=s may lead to the development of silicosis or other respiratory problems. (See Section VI)

HAZARD LISTING: Nuisance Particles are listed by ACGIH. Free Crystalline Silica as Quartz is listed by OSHA and ACGIH as a Hazardous Material.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

SUBSTANCES:	CAS #	Percent (w/w)
Bentonite	1302-78-9	80-100%
Crystalline silica, quartz	14808-60-7	0-5%
Crystalline silica, cristobalite	14464-46-1	0-1%
Crystalline silica, tridymite	15468-32-3	0-1%
Water	7732-18-5	8-12%
Acrylic Polymer* (Prime Gel API)	9033-79-8	.04-.08%
Acrylic Polymer* (Slikgel, Quik-Gel, Star Gel, AUSGEL)	9033-79-8	.15-.175%
Acrylic Polymer* (Prime Gel Premium API, Swell Plug)	9033-79-8	0%

*Acrylic Polymer has no known OSHA hazards and is not a dangerous substance according to GHS.

SECTION 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:	Under normal conditions, first aid procedures are not required.
NOTES TO PHYSICIAN:	Treat symptomatically.

SECTION 5: FIRE-FIGHTING MEASURES

FLASH POINT RANGE:	Non-flammable Silicate Mineral	FLAMMABLE LIMITS:	LEL: NA UEL:NA
FIRE EXTIGUISHING MEDIA:	All standard firefighting media	SPECIAL EXPOSURE HAZARDS:	Not Applicable
NFPA RATINGS:	Health 0, Flammability 0, Reactivity 0	HMIS RATINGS:	Health 0*, Flammability 0, Reactivity 0, PPE: At
SPECIAL FIRE FIGHTING PROCEDURES:	Not applicable		

SECTION 6: ACCIDENTAL RELEASE MEASURES

MATERIAL SPILL OR RELEASE:	Avoid breathing dust; wear respirator approved for silica veering dust. Vacuum up to avoid generating airborne dust. Avoid using water. Product is slippery when wet.
WASTE DISPOSAL METHOD:	Product should be disposed of in accordance with applicable local, state, and federal regulations. There are no known environmental precautionary measures. Consider possible toxic or fire hazards associated with contaminating substances and use appropriate methods for collection, storage, and disposal.

SECTION 7: HANDLING AND STORAGE

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 exposers limits below permissible limits. Material is slippery when wet.
STORAGE INFORMATION:	Do not reuse empty container. Use good housekeeping in storage and work areas to prevent accumulation of dust. Close container when not in use. Keep from excessive heat.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

VENTILATION REQUIREMENTS:	Use approved industrial ventilation and local exhaust as required to maintain exposures below applicable exposure limits listed in section VI.
RESPIRATOR:	Use respirator approved by NIOSH/MSHA for silica bearing dust.
EYE PROTECTION:	Use safety glasses or goggles to protect against exposure.
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.
OTHER PPE:	None known.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE:	powder	COLOR:	Tan, Light Green, Red
BULKING VALUE:	90 lbs.	DENSITY:	70 lb/ft ³ powder or compact granular
MELTING POINT:	1450 °C	pH:	8-10
SOLUBILITY IN WATER:	Insoluble, Forms Colloidal Suspension	ODOR:	Mild earthy

SECTION 10: STABILITY AND REACTIVITY

STABILITY:	Stable	HAZARDOUS POLYMERIZATION:	None
INCOMPATIBILITY:	None	HAZARDOUS DECOMPOSITION PRODUCTS:	None

SECTION 11: TOXICOLOGICAL INFORMATION

TOXICITY TESTS:	Oral	ND	Genotoxicity	ND
	Dermal	ND	Reproductive	ND
	Inhalation	ND	Primary Irritation Effect	ND
PRINCIPLE ROUTE OF EXPOSURE:	Eye or skin contact, inhalation			
SKIN:	Possible dying resulting in dermatitis			
EYES:	Mechanical irritant			
INGESTION:	Accidentally this material will generally cause no adverse effects. Minor intestinal irritation is possible.			
INHALATION:	(Acute, Short Term) Exposure to excessive concentrations of dust may cause irritation of the Nose, Throat, and Upper Respiratory Tract. (Chronic, Long Term) Chronic exposure to crystalline silica such as quartz where levels exceed TLV=s can cause Silicosis and other respiratory problems. Short term exposure to very high concentrations may lead to increased risk and accelerated onset of silicosis and respiratory damage. Silicosis is a progressive, degenerative, disabling, and sometimes fatal lung disease characterized by coughing, shortness of breath, wheezing, and fibrotic changes in the lungs with scarring and nodular formation.			

	Bentonite as Nuisance Dust	OSHA PEL	ACGIH TLV
PERMISSIBLE EXPOSURE LIMITS: (For air contaminants 8 hour TWA)	Total Dust	15mg/m ³	Not determined
	Respirable Dust	5mg/m ³	Not determined
	Crystalline Quartz (respirable)	0.1mg/m ³	0.1mg/m ³

CARCINOGENICITY:	Bentonite is not listed by NTP, IARC, or OSHA. 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, and experimental evidence that tridymite as a carcinogen in animals. The National Toxicology Program (NTP) classifies respirable crystalline silica as "Known to be a human carcinogen".

SECTION 12: ECOLOGICAL INFORMATION

MOBILITY (water/soil/air):	ND	FISH TOXICITY:	TLM96: 10000 ppm (Oncorhynchus mykiss)
PERSISTENCE/DEGRADABILITY:	ND	CRUSTACEANS TOXICITY:	ND
BIO-ACCUMULATION:	ND	ALGAE TOXICITY:	ND
CHEMICAL FATE INFORMTION:	ND	OTHER INFORMATION:	ND

SECTION 13: DISPOSAL CONSIDERATIONS

DISPOSAL METHOD:	Product should be disposed of in accordance with applicable local, state, and federal regulations. There are no known environmental precautionary measures. Consider possible toxic or fire hazards associated with contaminating substances and use appropriate methods for collection, storage, and disposal.

SECTION 14: TRANSPORTATION INFORMATION

SHIPPING NAME:	Common Ground Clay (NOIBN)	HAZZARD CLASS:	Not Hazardous	CAUTIONARY LABELING:	None required
LAND TRANSPORTATION RESTRICTIONS:		DOT: Not Restricted	CANADIAN TDG: Not Restricted	ADR: Not Restricted	
AIR TRANSPORTATION RESTRICTIONS:			ICAO / IATA: Not Restricted		
SEA TRANSPORTATION RESTRICTIONS:			IMDG: Not Restricted		

SECTION 15: REGULATORY INFORMATION

U.S. 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	Acute Health Hazard, Chronic Health Hazard
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.
WHMIS Hazard Class	D2A Very Toxic Materials Crystalline Silica

SECTION 16: OTHER INFORMATION

ADDITIONAL INFORMATION: This MSDS was updated on 5/20/13. For additional information on the use of this product, or for questions about the Material Safety Data Sheet for this or other Western Clay Company products, please contact:



Western Clay Company

Toll Free 1-800-982-7960 Telephone 435 529-3281 Fax 435 529-3714
620 East SR 24 • PO BOX 127 • AURORA, UT 84620-0127

This information is taken from sources or based upon data believed to be reliable, however, Western Clay Co. makes no warranty as to the absolute correctness or sufficiency of any of the foregoing or that additional or other special protective measures may not be required under unusual or particular conditions which may be associated with normal use of this product. Since the use or misuse of this product is not within the control of Western Clay Co. it is the users' obligation to assure conditions of safe use and disposal of this product. Seller warrants that this product conforms to the specifications stated herein. Buyer assumes all risks associated with the possession, use, mixing, blending, treatment, storage, disposal, transportation, and handling of the product, whether alone or in combination with other substances. SELLER MAKES NO OTHER WARRANTY OF ANY KIND WHATEVER, EXPRESS OR IMPLIED AND ALL OTHER WARRANTIES, INCLUDING WARRANTIES OF QUALITY MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE DISCLAIMED. Seller's liability is limited to the product price.



Safety Data Sheet

Star-Det ECO

SDS Revision Date: 02/21/2017

1. Identification

1.1. Product identifier

Product Identity Star-Det ECO
Alternate Names Drilling Mud Detergent

1.2. Identified uses of the substance or mixture and application method

Intended use 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 in accordance with paragraph (d) of §1910.1200

Skin corrosion/irritation	Category 2 - H315
Serious eye damage/eye irritation	Category 1 - H318
Specific Target Organ Toxicity - (repeated exposure)	Category 1 - H373

2.2. Label Elements

Hazard Pictograms



Signal Word

Hazard Statements

Danger
H315- Causes skin irritation.
H318- Causes serious eye damage.
H373- May cause damage to organs through prolonged or repeated exposure.



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Star-Det ECO

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Precautionary Statements

[Prevention]

P260- Do not breathe dust/fume/gas/mist/vapors/spray
 P264- Wash face, hands and any exposed skin thoroughly after handling.
 P280- Wear protective gloves/ eye protection/ face protection

[Response]

P302+352- IF ON SKIN: Wash with plenty of soap and water.
 P305+351+338- IF IN EYES: Rinse cautiously with water for several minutes.
 Remove contact lenses if present and easy to do - continue rinsing.
 P310- Immediately call a POISON CENTER or doctor / physician.
 P314- Get Medical advice / attention if you feel unwell.
 P321- Specific treatment (see information on this label).
 P332+313- If skin irritation occurs: Get medical advice / attention.
 P362- Take off contaminated clothing and wash before reuse.

[Storage]

No GHS storage statements

[Disposal]

No GHS disposal statements

Contains

Substances

Diethanolamine

CAS Number

111-42-2

2.3 Hazards not otherwise classified

Not known

3. Composition/information on ingredients

Ingredient/Chemical Designations	Weight %	GHS Classification	Notes
Diethanolamine CAS Number: 0000111-42-2	<5%	Acute Tox. 4;H302 STOT RE 2;H373 Skin Irrit. 2;H315 Eye Dam. 1;H318	[1][2]

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.



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Star-Det ECO

SDS Revision Date: 02/21/2017

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 and effects, both 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

Water fog. Alcohol resistant foam. Dry chemical powder.

5.2. Special hazards arising from the substance or mixture

Hazardous decomposition: Oxides of Carbon

Do not breathe mist / vapors / spray.

5.3. Advice for fire-fighters

Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA. In the event of fire and/or explosion do not breathe fumes. Cool containers with flooding quantities of water until well after fire is out. ALWAYS stay away from tanks engulfed in flame. Move containers from fire area if you can do so without risk.

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6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Remove sources of ignition, do not turn lights or unprotected electrical equipment on or off. In case of a major spill or spillage in a confined space evacuate the area and check that solvent vapor levels are below the Lower Explosive Limit before re-entering.

6.2. Environmental precautions

Do not allow spills to enter drains or waterways.



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Star-Det ECO

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Use good personal hygiene practices. Wash hands before eating, drinking, smoking or using toilet. Promptly remove soiled clothing and wash thoroughly before reuse.

6.3. Methods and material for containment and cleaning up

Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Keep people away from and upwind of spill/leak. Keep out of low areas. Ensure adequate ventilation. Ventilate closed spaces before entering them.

Extinguish all flames in the vicinity.

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Clean contaminated surface thoroughly.

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

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

7. Handling and storage

7.1. Precautions for safe handling

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

7.2. Conditions for safe storage, including any incompatibilities

Avoid heat, sparks, open flames and other ignition sources. When using, do not eat, drink or smoke. Do not use in areas without adequate ventilation. Wash thoroughly after handling. Wear personal protective equipment. Avoid release to the environment. Do not empty into drains. Do not breathe mist or vapor. Do not get this material in contact with eyes. Do not taste or swallow. Do not get on skin and clothing.

Keep away from heat and sources of ignition. Store in a closed container away from incompatible materials. Keep away from food and drink. Store in a well-ventilated place. Keep container tightly closed. Store in accordance with local/regional/national/international regulation.

Incompatible materials: Incompatible with strong oxidizing agents and strong acids.

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

7.3. Specific end use(s)

No data available.

8. Exposure controls and personal protection

8.1. Control parameters

Exposure

CAS No.	Ingredient	Source	Value
0000111-42-2	Diethanolamine	OSHA	No Established Limit
		ACGIH	TWA: 1 mg/m3Skin 2B, Revised 2009; 2010,
		NIOSH	TWA 3 ppm (15 mg/m3)
		Supplier	No Established Limit

Carcinogen Data



Safety Data Sheet

Star-Det ECO

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CAS No.	Ingredient	Source	Value
0000111-42-2	Diethanolamine	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: Yes; Group 3: No; Group 4: No;

8.2. Exposure controls

Respiratory	Give adequate ventilation, have respiratory protection available.
Eyes	Wear impervious gloves.
Skin	Overalls which cover the body, arms and legs should be worn. Skin should not be exposed. All parts of the body should be washed after contact. Use goggles or face shield if splashing is likely.
Engineering Controls	Provide adequate ventilation. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction. If these are not sufficient to maintain concentrations of particulates and any vapor below occupational exposure limits suitable respiratory protection must be worn.
Other Work Practices	Use good personal hygiene practices. Wash hands before eating, drinking, smoking or using toilet. Promptly remove soiled clothing and wash thoroughly before reuse.

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

9. Physical and chemical properties

Appearance	Clear Liquid to Amber
Odor	Slight Amine
Odor threshold	Not determined
pH	Neutral
Melting point / freezing point	Not Measured
Initial boiling point and boiling range	Not Measured
Flash Point	>212F
Evaporation rate (Ether = 1)	Not Measured
Flammability (solid, gas)	Not Applicable
Upper/lower flammability or explosive limits	Lower Explosive Limit: Not Measured Upper Explosive Limit: Not Measured
Vapor pressure (Pa)	Not Measured
Vapor Density	Not Measured
Specific Gravity	1.0035
Solubility in Water	Not Measured
Partition coefficient n-octanol/water (Log Kow)	Not Measured
Auto-ignition temperature	Not Measured
Decomposition temperature	Not Measured
Viscosity (cSt)	Not Measured



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9.2. Other information

No other relevant information.

10. Stability and reactivity

10.1. Reactivity

Hazardous Polymerization will not occur.

10.2. Chemical stability

Stable under normal circumstances.

10.3. Possibility of hazardous reactions

No data available.

10.4. Conditions to avoid

No data available.

10.5. Incompatible materials

Incompatible with strong oxidizing agents and strong acids.

10.6. Hazardous decomposition products

Oxides of Carbon

11. Toxicological information

Acute toxicity

Ingredient	Oral LD50, mg/kg	Skin LD50, mg/kg	Inhalation Vapor LC50, mg/L/4hr	Inhalation Dust/Mist LC50, mg/L/4hr	Inhalation Gas LC50, ppm
Diethanolamine - (CAS# 111-42-2)	No data available	No data available	No data available	No data available	No data available

Note: When no route specific LD50 data is available for an acute toxin, the converted acute toxicity point estimate was used in the calculation of the product's ATE (Acute Toxicity Estimate).

Classification	Category	Hazard Description
Acute toxicity (oral)	---	Not Applicable
Acute toxicity (dermal)	---	Not Applicable
Acute toxicity (inhalation)	---	Not Applicable
Skin corrosion/irritation	2	Causes skin irritation.
Serious eye damage/irritation	1	Causes serious eye damage.
Respiratory sensitization	---	Not Applicable
Skin sensitization	---	Not Applicable
Classification	Category	Hazard Description
Germ cell mutagenicity	---	Not Applicable



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Carcinogenicity	---	Not Applicable
Reproductive toxicity	---	Not Applicable
STOT-single exposure	---	Not Applicable
STOT-repeated exposure	2	May cause damage to organs through prolonged or repeated exposure.
Aspiration hazard	---	Not Applicable

12. Ecological information

12.1. Toxicity

No additional information provided for this product. See Section 3 for chemical specific data.

Aquatic Ecotoxicity

Ingredient	96 hr LC50 fish, mg/l	48 hr EC50 crustacean, mg/l	ErC50 algae, mg/l
Diethanolamine - (CAS# 111-42-2)	Not Available	Not Available	Not Available

12.2. Persistence and degradability

There is no data available on the preparation itself.

12.3. Bioaccumulative potential

Not Measured

12.4. Mobility in soil

No data available.

12.5. Results of PBT and vPvB assessment

This product contains no PBT/vPvB chemicals.

12.6. Other adverse effects

No data available.

13. Disposal considerations

13.1. Waste treatment methods

Observe all federal, state and local regulations when disposing of this substance.



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14. Transport information

	DOT (Domestic Surface Transportation)	IMO / IMDG (Ocean Transportation)	ICAO/IATA
14.1. UN number	Not Applicable	Not Regulated	Not Regulated
14.2. UN proper shipping name	Not Regulated	Not Regulated	Not Regulated
14.3. Transport hazard class(es)	DOT Hazard Class: Not Applicable	IMDG: Not Applicable Sub Class: Not Applicable	Air Class: Not Applicable
14.4. Packing group	Not Applicable	Not Applicable	Not Applicable
14.5. Environmental hazards			
IMDG	Marine Pollutant: No		
14.6. Special precautions for user	No further information		

15. Regulatory information

Regulatory Overview	The regulatory data in Section 15 is not intended to be all-inclusive, only selected regulations are represented.
Toxic Substance Control Act (TSCA)	All components of this material are either listed or exempt from listing on the TSCA Inventory.
WHMIS Classification	D2B E
US EPA Tier II Hazards	Fire: No Sudden Release of Pressure: No Reactive: No Immediate (Acute): Yes Delayed (Chronic): Yes
EPCRA 311/312 Chemicals and RQs (lbs):	Diethanolamine (100.00)
EPCRA 302 Extremely Hazardous:	To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.
EPCRA 313 Toxic Chemicals:	Diethanolamine
Proposition 65 - Carcinogens (>0.0%):	Diethanolamine
Proposition 65 - Developmental Toxins (>0.0%):	To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.



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Proposition 65 - Female Repro Toxins (>0.0%):

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Male Repro Toxins (>0.0%):

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

New Jersey RTK Substances (>1%):

Diethanolamine

Pennsylvania RTK Substances (>1%):

Diethanolamine

Canadian Regulations

Canadian DSL Inventory

All components listed on inventory or are exempt.

16. Other information

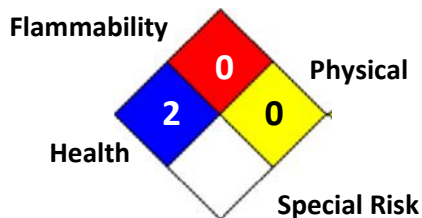
This is the first version in the GHS SDS format. Listings of changes from previous versions in other formats are not applicable.

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	2
FLAMMABILITY	0
PHYSICAL	0
PPE	B



End of Document



Safety Data Sheet

Star-Det Plus

SDS Revision Date: 02/11/2017

1. Identification

1.1. Product identifier

Product Identity Star-Det Plus
Alternate Names Drilling Mud Detergent

1.2. Identified uses of the substance or mixture and application method

Intended use 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 in accordance with paragraph (d) of §1910.1200

Carcinogenicity	Category 2 - H351

2.2. Label Elements

Hazard Pictograms



Signal Word Danger
Hazard Statements H351- Suspected of causing cancer.



Safety Data Sheet

Star-Det Plus

SDS Revision Date: 02/11/2017

Precautionary Statements

[Prevention]

P260- Do not breathe dust/fume/gas/mist/vapors/spray
 P264- Wash face, hands and any exposed skin thoroughly after handling.
 P280- Wear protective gloves/ eye protection/ face protection

[Response]

P302+352- IF ON SKIN: Wash with plenty of soap and water.
 P305+351+338- IF IN EYES: Rinse cautiously with water for several minutes.
 Remove contact lenses if present and easy to do - continue rinsing.
 P310- Immediately call a POISON CENTER or doctor / physician.
 P314- Get Medical advice / attention if you feel unwell.
 P321- Specific treatment (see information on this label).
 P332+313- If skin irritation occurs: Get medical advice / attention.
 P362- Take off contaminated clothing and wash before reuse.

[Storage]

No GHS storage statements

[Disposal]

No GHS disposal statements

Contains

Substances

Sodium Dodecylbenzene Sulfonate
 Tetrapotassium Pyrophosphate
 Cocamide DEA

CAS Number

25155-30-0
 7320-34-5
 68603-42-9

2.3 Hazards not otherwise classified

Unknown Acute Toxicity

0.08% of the mixture consists of ingredient(s) of unknown toxicity.

3. Composition/information on ingredients

Ingredient/Chemical Designations	Weight %	GHS Classification	Notes
Sodium Dodecylbenzene Sulfonate CAS Number: 25155-30-0	1 - 5	Acute Tox. 4;H302 STOT RE 2;H373 Skin Irrit. 2;H315 Eye Dam. 1;H318	[1][2]
Tetrapotassium Pyrophosphate CAS Number: 7320-34-5	1 - 5		
Cocamide DEA CAS Number: 68603-42-9	1 - 5		

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.



Safety Data Sheet

Star-Det Plus

SDS Revision Date: 02/11/2017

4. First aid measures

4.1. Description of first aid measures

Inhalation	If mists/vapors are formed or irritation occurs, leave area and do not return until mists/vapors have dissipated. If irritation persists, see a physician.
Eyes	Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. If irritation persists, call a physician.
Skin	Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Wash contaminated clothing before reuse. If skin irritation persists, call a physician.
Ingestion	Rinse mouth. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Drink plenty of water. If irritation persists, see a physician.

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

May cause irritation of gastrointestinal tract. May cause respiratory irritation. May cause eye irritation. Prolonged or repeated contact may be drying to skin.

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

Water fog. Alcohol resistant foam. Dry chemical powder.

Unsuitable extinguishing media

Caution: Use of water spray when fighting fire may be inefficient.

5.2. Special hazards arising from the substance or mixture

Do not breathe mist / vapors / spray.

5.3. Advice for fire-fighters

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

ERG Guide No. ----

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Ensure adequate ventilation, especially in confined areas.

6.2. Environmental precautions

See Section 12 for additional ecological information.



Safety Data Sheet

Star-Det Plus

SDS Revision Date: 02/11/2017

6.3. Methods and material for containment and cleaning up

Prevent further leakage or spillage if safe to do so. Contain spill. Dilute spilled material with water.

7. Handling and storage

7.1. Precautions for safe handling

Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

Keep containers tightly closed in a dry, cool and well-ventilated place.

Incompatible materials: Incompatible with strong oxidizing agents.

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

7.3. Specific end use(s)

No data available.

8. Exposure controls and personal protection

8.1. Control parameters

Exposure

CAS No.	Ingredient	Source	Value
0000111-42-2	Diethanolamine	OSHA	No Established Limit
		ACGIH	TWA: 2 mg/m3Skin 2B, Revised 2009; 2010,
		NIOSH	TWA 3 ppm (15 mg/m3)
		Supplier	No Established Limit

Carcinogen Data

CAS No.	Ingredient	Source	Value
0000111-42-2	Diethanolamine	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: Yes; Group 3: No; Group 4: No;

Other Information

Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir., 1992).

8.2. Exposure controls

Respiratory

If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators or air purifying respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

Eyes

Wear safety glasses with side shields (or goggles).

Skin

Wear chemical resistant gloves.



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- Engineering Controls** Provide adequate ventilation. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction. If these are not sufficient to maintain concentrations of particulates and any vapor below occupational exposure limits suitable respiratory protection must be worn.
- Other Work Practices** Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Appearance	Pink Viscous Liquid
Odor	Lemon
Odor threshold	No Information available
pH	8.0-10.0
Melting point / freezing point	No Information available
Initial boiling point and boiling range	212 ° F
Flash Point	No Information available
Evaporation rate (Butyl Acetate = 1)	< 1
Flammability (solid, gas)	No Information available
Upper/lower flammability or explosive limits	Lower Explosive Limit: No Information available Upper Explosive Limit: No Information available
Vapor pressure (Pa)	No Information available
Vapor Density	No Information available
Specific Gravity	1.036
Solubility in Water	Complete
Partition coefficient n-octanol/water (Log Kow)	No Information available
Auto-ignition temperature	No Information available
Decomposition temperature	No Information available
Viscosity (cP)	145 cP
VOC Content (%)	0.07
9.2. Other information	No other relevant information.

10. Stability and reactivity

10.1. Reactivity

Hazardous Polymerization will not occur.

10.2. Chemical stability

Stable under normal circumstances.

10.3. Possibility of hazardous reactions



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None under normal processing.

10.4. Conditions to avoid

Elevated temperature.

10.5. Incompatible materials

Incompatible with strong oxidizing agents.

10.6. Hazardous decomposition products

Oxides of Carbon

11. Toxicological information

Acute toxicity

Ingredient	Oral LD50	Skin LD50, mg/kg	Inhalation Vapor LC50, mg/L/4hr	Inhalation Dust/Mist LC50, mg/L/4hr	Inhalation Gas LC50, ppm
Sodium Dodecylbenzene Sulfonate (CAS# 25155-30-0)	= 438 mg/kg (Rat) = 500 mg/kg (Rat)	No data available	No data available	No data available	No data available
Cocamide DEA (CAS# 68603-42-9)	= 12400 µL/kg (Rat)	No data available	No data available	No data available	No data available

Note: When no route specific LD50 data is available for an acute toxin, the converted acute toxicity point estimate was used in the calculation of the product's ATE (Acute Toxicity Estimate).

Classification	Category	Hazard Description
Acute toxicity (oral)	---	No Information available.
Acute toxicity (dermal)	---	No Information available.
Acute toxicity (inhalation)	---	No Information available.
Skin corrosion/irritation	---	No Information available.
Serious eye damage/irritation	---	No Information available.
Respiratory sensitization	---	No Information available.
Skin sensitization	---	No Information available.
Classification	Category	Hazard Description
Germ cell mutagenicity	---	No Information available.
Carcinogenicity [IARC]	Group 2B	Group 2B - Possibly Carcinogenic to Humans
Reproductive toxicity	---	No Information available.
STOT-single exposure	---	No Information available.
STOT-repeated exposure	---	No Information available.
Aspiration hazard	---	No Information available.

Unknown Acute Toxicity

0.08% of the mixture consists of ingredient(s) of unknown toxicity.



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12. Ecological information

12.1. Toxicity

Aquatic Ecotoxicity

2.46% of the mixture consists of component(s) of unknown hazards to the aquatic environment

Ingredient	96 hr LC50 fish, mg/l	48 hr EC50 crustacea, mg/l	ErC50 algae, mg/l
Sodium Dodecylbenzene Sulfonate 25155-30-0	10.8: 96 h Oncorhynchus mykiss mg/L LC50 static	Not Available	Not Available
Tetrapotassium Pyrophosphate 7320-34-5	100: 96 h Oncorhynchus mykiss mg/L LC50	100: 48 h water flea mg/L EC50	
Cocamide DEA 68603-42-9	3.6: 96 h Brachydanio rerio mg/L LC50 semi-static	4.2: 24 h Daphnia magna mg/L EC50	

12.2. Persistence and degradability

There is no data available on the preparation itself.

12.3. Bioaccumulative potential

Not Measured

12.4. Mobility in soil

No data available.

12.5. Results of PBT and vPvB assessment

This product contains no PBT/vPvB chemicals.

12.6. Other adverse effects

No data available.

13. Disposal considerations

13.1. Waste treatment methods

Observe all federal, state and local regulations when disposing of this substance.

Contaminated packaging

Do not reuse container.

US EPA Waste Number

U080 U084



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14. Transport information

	DOT (Domestic Surface Transportation)	IMO / IMDG (Ocean Transportation)	ICAO/IATA
14.1. UN number	Not Applicable	Not Regulated	Not Regulated
14.2. UN proper shipping name	Not Regulated	Not Regulated	Not Regulated
14.3. Transport hazard class(es)	DOT Hazard Class: Not Applicable	IMDG: Not Applicable Sub Class: Not Applicable	Air Class: Not Applicable
14.4. Packing group	Not Applicable	Not Applicable	Not Applicable
14.5. Environmental hazards			
IMDG	Marine Pollutant: No		
14.6. Special precautions for user	No further information		

15. Regulatory information

Regulatory Overview The regulatory data in Section 15 is not intended to be all-inclusive, only selected regulations are represented.

Toxic Substance Control Act (TSCA) All components of this material are either listed or exempt from listing on the TSCA Inventory.

EPCRA 311/312 Chemicals and RQs (lbs):

Sodium Dodecylbenzene Sulfonate (1000 lbs)
 25155-30-0

EPCRA 302 Extremely Hazardous:

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

EPCRA 313 Toxic Chemicals:

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.

Proposition 65 - Carcinogens (>0.0%):

Cocamide DEA
 68603-42-9

Proposition 65 - Developmental Toxins (>0.0%):

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Female Repro Toxins (>0.0%):

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Male Repro Toxins (>0.0%):

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.



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Massachusetts RTK Substances (>1%):

Sodium Dodecylbenzene Sulfonate
25155-30-0

New Jersey RTK Substances (>1%):

Sodium Dodecylbenzene Sulfonate
25155-30-0

Pennsylvania RTK Substances (>1%):

Sodium Dodecylbenzene Sulfonate
25155-30-0

Canadian Regulations

Canadian DSL Inventory

All components listed on inventory or are exempt.

16. Other information

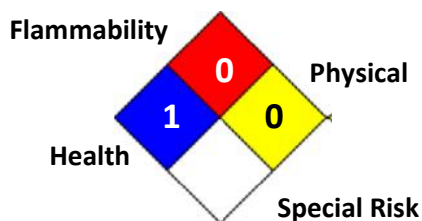
This is the first version in the GHS SDS format. Listings of changes from previous versions in other formats are not applicable.

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



Safety Data Sheet

Star-Drill Dry

SDS Revision Date: 02/22/2017

1. Identification

1.1. Product identifier

Product Identity Star-Drill Dry

Alternate Names None

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

Intended use Additive

Application Method See Technical Data Sheet.

1.3. Details of the supplier of the safety data sheet

Company Name NorthStar Fluids 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

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

Aqueous solutions or powders that become wet render surfaces extremely slippery.



Safety Data Sheet

Star-Drill Dry

SDS Revision Date: 02/22/2017

3. Composition/information on ingredients

Substances	CAS Number	Concentration [%]	GHS Classification - US
Contains no hazardous substances	NA	60 - 100%	Not classified

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

Inhalation Move to fresh air. Consult a physician if necessary.

Eyes Rinse immediately with plenty of water for at least 15 minutes with eyelids held open. Obtain medical attention.

Skin Wash off with soap and water. If symptoms persist, call a physician.

Ingestion Immediately rinse mouth with water. Do NOT induce vomiting. Obtain immediate medical attention.

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

May cause eye and skin irritation.

5. Fire-fighting measures

5.1. Extinguishing media

Water spray, Carbon dioxide (CO₂), Dry chemical

5.2. Special hazards arising from the substance or mixture

No information available.

5.3. Advice for fire-fighters

Full protective clothing and approved self-contained breathing apparatus required for firefighting personnel. In the event of fire, cool tanks with water spray.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Use appropriate protective equipment.
See Section 8 for additional information.

6.2. Environmental precautions OSHA PEL-TWA



Safety Data Sheet

Star-Drill Dry

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None known.

6.3. Methods and material for containment and cleaning up

Danger for slipping. Soak up with inert absorbent material. Take up mechanically and collect into suitable containers for disposal.

7. Handling and storage

7.1. Precautions for safe handling

Ensure adequate ventilation. For personal protection see section 8.

7.2. Conditions for safe storage, including any incompatibilities

Store away from oxidizers. Store in a cool, dry location.

8. Exposure controls and personal protection

8.1. Occupational Exposure Limits

Substance	CAS Number	OSHA PEL-TWA / ACGIH TLV-TWA
Contains no hazardous substances	NA	Not applicable

8.2. Exposure controls

Respiratory

When there is potential for airborne exposures in excess of applicable limits, wear NIOSH/MSHA approved respiratory protection.

Eyes

Tightly fitting safety goggles

Hands

Impervious gloves

Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time.

Skin

Protective clothing

Engineering Controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and immediately after handling the product. Avoid contact with skin, eyes and clothing. Do not breathe vapor. Ensure that eyewash stations and safety showers are close to the workstation location. Ensure adequate ventilation.

Other Work Practices

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.

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



Safety Data Sheet

Star-Drill Dry

SDS Revision Date: 02/22/2017

9. Physical and chemical properties

Appearance	White, granular solid
Odor	None
Odor threshold	No data available
pH	5 – 9 @ 5 g/L
Melting point	>150 °C / >302 °F
Initial boiling point and boiling range	No data available
Flash Point	No data available
Evaporation rate (Ether = 1)	No data available
Flammability (solid, gas)	No data available
Upper/lower flammability or explosive limits	No data available
Vapor pressure (Pa)	No data available
Vapor Density	No data available
Specific Gravity	0.93
Solubility in Water	Soluble
Partition coefficient n-octanol/water (Log Kow)	-2
Auto-ignition temperature	No data available
Decomposition temperature	>150 °C / >302 °F
Viscosity	No data available
Relative Density at 20°C	0.6 – 0.9

10. Stability and reactivity

10.1. Reactivity

No hazardous reactions if stored and handled as prescribed/indicated.

10.2. Chemical stability

The product is stable if stored and handled as prescribed/indicated.

10.3. Possibility of hazardous reactions

None known.

10.4. Conditions to avoid

Protect from frost, heat and sunlight.

10.5. Incompatible materials

Incompatible with oxidizing agents.

10.6. Hazardous decomposition products

Thermal decomposition may produce: nitrogen oxides (NO_x), carbon oxides (CO_x). Hydrogen cyanide (hydrocyanic acid) may be produced in the event of combustion in an oxygen deficient atmosphere.



Safety Data Sheet

Star-Drill Dry

SDS Revision Date: 02/22/2017

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

Eye Contact

May cause mild eye irritation.

Skin Contact

May cause mild skin irritation.

Aspiration

May cause mild respiratory irritation.

Ingestion

May cause mild gastric distress.

Chronic Toxicity/Effects

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	NA	> 2,500 mg/kg (Rat)	> 10,000 mg/kg (Rabbit)	20 mg/L hr (Rat)

Substances	CAS Number	Skin corrosion/irritation
Contains no hazardous substances	NA	No data available

Substances	CAS Number	Eye damage/irritation
Contains no hazardous substances	NA	No data available

Substances	CAS Number	Skin Sensitization
Contains no hazardous substances	NA	No data available

Substances	CAS Number	Respiratory Sensitization
Contains no hazardous substances	NA	No data available

Substances	CAS Number	Mutagenic Effects
Contains no hazardous substances	NA	No data available

Substances	CAS Number	Carcinogenic Effects
Contains no hazardous substances	NA	No data available



Safety Data Sheet

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Substances	CAS Number	Reproductive toxicity
Contains no hazardous substances	NA	No data available

Substances	CAS Number	STOT - single exposure
Contains no hazardous substances	NA	No data available

Substances	CAS Number	STOT - repeated exposure
Contains no hazardous substances	NA	No data available

Substances	CAS Number	Aspiration hazard
Contains no hazardous substances	NA	No data available

12. Ecological information

12.1. Toxicity

Aquatic Ecotoxicity

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Contains no hazardous substances	NA	IC50/Scenedesmus subspicatus/72 hours > 100 mg/L (OECD 201)	LC50/Danio rerio/96 hours > 100 mg/L (OECD 203)	No data available	EC50/Daphnia magna/48 hours > 100 mg/L (OECD 202)

12.2. Persistence and degradability

Substances	CAS Number	Persistence and Degradability
Contains no hazardous substances	NA	Not readily biodegradable. Does not hydrolyze.

12.3. Bioaccumulative potential

Substances	CAS Number	Log Pow
Contains no hazardous substances	NA	-2

12.4. Mobility in soil

Substances	CAS Number	Mobility
Contains no hazardous substances	NA	No data available

12.5. Results of PBT and vPvB assessment

No information available

12.6. Other adverse effects

No information available



Safety Data Sheet

Star-Drill Dry

SDS Revision Date: 02/22/2017

13. Disposal considerations

13.1. Waste treatment methods

Disposal Method

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

Container disposal

Follow all applicable national or local regulations.

14. Transport information

	DOT (Domestic Surface Transportation)	IMO / IMDG (Ocean Transportation)	ICAO/IATA
14.1. UN number	Not restricted	Not restricted	Not restricted
14.2. UN proper shipping name	Not restricted	Not restricted	Not restricted
14.3. Transport hazard class(es)	DOT Hazard Class: Not applicable	IMDG: Not applicable Sub Class: Not applicable	Air Class: Not applicable
14.4. Packing group	Not applicable	Not applicable	Not applicable
14.5. Environmental hazards			
IMDG	Not applicable		
14.6. Special precautions for user	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 Not determined

California Proposition 65 Regulation. All components listed do not apply to the California Proposition 65

MA Right-to-Know Law Does not apply.

NJ Right-to-Know Law Does not apply.

PA Right-to-Know Law Does not apply.



Safety Data Sheet

Star-Drill Dry

SDS Revision Date: 02/22/2017

Canadian Regulations Canadian DSL Inventory

All components listed on inventory or are exempt.

16. Other information

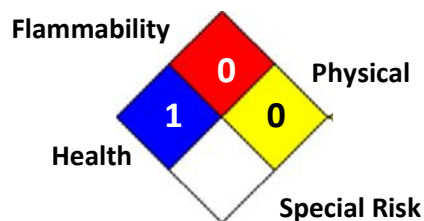
This is the first version in the GHS SDS format. Listings of changes from previous versions in other formats are not applicable.

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 Fluids Solutions makes no warranty of any kind, express or implied, concerning the accuracy or 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	B



End of Document



Safety Data Sheet

Star-Drill Dry

SDS Revision Date: 02/22/2017

1. Identification

1.1. Product identifier

Product Identity

Star-Drill Dry

Alternate Names

Anionic Dry PHPA

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

Intended use

Additive

Application Method

See Technical Data Sheet.

1.3. Details of the supplier of the safety data sheet

Company Name

NorthStar Fluids 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

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

Aqueous solutions or powders that become wet render surfaces extremely slippery.



Safety Data Sheet

Star-Drill Dry

SDS Revision Date: 02/22/2017

3. Composition/information on ingredients

Substances	CAS Number	Concentration [%]	GHS Classification - US
Disodium phosphate	10101-28-2	100	Not classified

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

Inhalation Move to fresh air. Consult a physician if necessary.

Eyes Rinse immediately with plenty of water for at least 15 minutes with eyelids held open. Obtain medical attention.

Skin Wash off with soap and water. If symptoms persist, call a physician.

Ingestion Immediately rinse mouth with water. Do NOT induce vomiting. Obtain immediate medical attention.

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

May cause eye and skin irritation.

5. Fire-fighting measures

5.1. Extinguishing media

Water spray, Carbon dioxide (CO₂), Dry chemical

5.2. Special hazards arising from the substance or mixture

No information available.

5.3. Advice for fire-fighters

Full protective clothing and approved self-contained breathing apparatus required for firefighting personnel. In the event of fire, cool tanks with water spray.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Use appropriate protective equipment.
See Section 8 for additional information.

6.2. Environmental precautions OSHA PEL-TWA



Safety Data Sheet

Star-Drill Dry

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None known.

6.3. Methods and material for containment and cleaning up

Danger for slipping. Soak up with inert absorbent material. Take up mechanically and collect into suitable containers for disposal.

7. Handling and storage

7.1. Precautions for safe handling

Ensure adequate ventilation. For personal protection see section 8.

7.2. Conditions for safe storage, including any incompatibilities

Store away from oxidizers. Store in a cool, dry location.

8. Exposure controls and personal protection

8.1. Occupational Exposure Limits

Substance	CAS Number	OSHA PEL-TWA / ACGIH TLV-TWA
Contains no hazardous substances	□□□□□□□□	Not applicable

8.2. Exposure controls

Respiratory

When there is potential for airborne exposures in excess of applicable limits, wear NIOSH/MSHA approved respiratory protection.

Eyes

Tightly fitting safety goggles

Hands

Impervious gloves

Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time.

Skin

Protective clothing

Engineering Controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and immediately after handling the product. Avoid contact with skin, eyes and clothing. Do not breathe vapor. Ensure that eyewash stations and safety showers are close to the workstation location. Ensure adequate ventilation.

Other Work Practices

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.

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



Safety Data Sheet

Star-Drill Dry

SDS Revision Date: 02/22/2017

9. Physical and chemical properties

Appearance	White, granular solid
Odor	None
Odor threshold	No data available
pH	5 – 9 @ 5 g/L
Melting point	>150 °C / >302 °F
Initial boiling point and boiling range	No data available
Flash Point	No data available
Evaporation rate (Ether = 1)	No data available
Flammability (solid, gas)	No data available
Upper/lower flammability or explosive limits	No data available
Vapor pressure (Pa)	No data available
Vapor Density	No data available
Specific Gravity	0.93
Solubility in Water	Soluble
Partition coefficient n-octanol/water (Log Kow)	-2
Auto-ignition temperature	No data available
Decomposition temperature	>150 °C / >302 °F
Viscosity	No data available
Relative Density at 20°C	0.6 – 0.9

10. Stability and reactivity

10.1. Reactivity

No hazardous reactions if stored and handled as prescribed/indicated.

10.2. Chemical stability

The product is stable if stored and handled as prescribed/indicated.

10.3. Possibility of hazardous reactions

None known.

10.4. Conditions to avoid

Protect from frost, heat and sunlight.

10.5. Incompatible materials

Incompatible with oxidizing agents.

10.6. Hazardous decomposition products

Thermal decomposition may produce: nitrogen oxides (NO_x), carbon oxides (CO_x). Hydrogen cyanide (hydrocyanic acid) may be produced in the event of combustion in an oxygen deficient atmosphere.



Safety Data Sheet

Star-Drill Dry

SDS Revision Date: 02/22/2017

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

Eye Contact
Skin Contact
Aspiration
Ingestion

May cause mild eye irritation.
 May cause mild skin irritation.
 May cause mild respiratory irritation.
 May cause mild gastric distress.

Chronic Toxicity/Effects

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	NA	> 2,500 mg/kg (Rat)	> 10,000 mg/kg (Rabbit)	20 mg/L hr (Rat)

Substances	CAS Number	Skin corrosion/irritation
Contains no hazardous substances	NA	No data available

Substances	CAS Number	Eye damage/irritation
Contains no hazardous substances	NA	No data available

Substances	CAS Number	Skin Sensitization
Contains no hazardous substances	NA	No data available

Substances	CAS Number	Respiratory Sensitization
Contains no hazardous substances	NA	No data available

Substances	CAS Number	Mutagenic Effects
Contains no hazardous substances	NA	No data available

Substances	CAS Number	Carcinogenic Effects
Contains no hazardous substances	NA	No data available



Safety Data Sheet

Star-Drill Dry

SDS Revision Date: 02/22/2017

Substances	CAS Number	Reproductive toxicity
Contains no hazardous substances	NA	No data available

Substances	CAS Number	STOT - single exposure
Contains no hazardous substances	NA	No data available

Substances	CAS Number	STOT - repeated exposure
Contains no hazardous substances	NA	No data available

Substances	CAS Number	Aspiration hazard
Contains no hazardous substances	NA	No data available

12. Ecological information

12.1. Toxicity

Aquatic Ecotoxicity

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Contains no hazardous substances	NA	IC50/Scenedesmus subspicatus/72 hours > 100 mg/L (OECD 201)	LC50/Danio rerio/96 hours > 100 mg/L (OECD 203)	No data available	EC50/Daphnia magna/48 hours > 100 mg/L (OECD 202)

12.2. Persistence and degradability

Substances	CAS Number	Persistence and Degradability
Contains no hazardous substances	NA	Not readily biodegradable. Does not hydrolyze.

12.3. Bioaccumulative potential

Substances	CAS Number	Log Pow
Contains no hazardous substances	NA	-2

12.4. Mobility in soil

Substances	CAS Number	Mobility
Contains no hazardous substances	NA	No data available

12.5. Results of PBT and vPvB assessment

No information available

12.6. Other adverse effects

No information available



Safety Data Sheet

Star-Drill Dry

SDS Revision Date: 02/22/2017

13. Disposal considerations

13.1. Waste treatment methods

Disposal Method

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

Container disposal

Follow all applicable national or local regulations.

14. Transport information

	DOT (Domestic Surface Transportation)	IMO / IMDG (Ocean Transportation)	ICAO/IATA
14.1. UN number	Not restricted	Not restricted	Not restricted
14.2. UN proper shipping name	Not restricted	Not restricted	Not restricted
14.3. Transport hazard class(es)	DOT Hazard Class: Not applicable	IMDG: Not applicable Sub Class: Not applicable	Air Class: Not applicable
14.4. Packing group	Not applicable	Not applicable	Not applicable
14.5. Environmental hazards			
IMDG	Not applicable		
14.6. Special precautions for user	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 Not determined

California Proposition 65 Regulation. All components listed do not apply to the California Proposition 65

MA Right-to-Know Law Does not apply.

NJ Right-to-Know Law Does not apply.

PA Right-to-Know Law Does not apply.



Safety Data Sheet

Star-Drill Dry

SDS Revision Date: 02/22/2017

Canadian Regulations Canadian DSL Inventory

All components listed on inventory or are exempt.

16. Other information

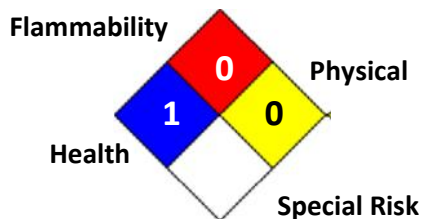
This is the first version in the GHS SDS format. Listings of changes from previous versions in other formats are not applicable.

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 Fluids Solutions makes no warranty of any kind, express or implied, concerning the accuracy or 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	B



End of Document



Safety Data Sheet

Star-Drill Liquid

SDS Revision Date: 02/22/2017

1. Identification

1.1. Product identifier

Product Identity Star-Drill Liquid

Alternate Names None

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

Intended use Additive

Application Method See Technical Data Sheet.

1.3. Details of the supplier of the safety data sheet

Company Name NorthStar Fluids 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

Skin corrosion/irritation

Category 2

2.2. Label elements

Hazard Pictograms



Signal Word

Warning

Hazard Statements

H315 Causes skin irritation.

Precautionary Statements

[Prevention]:

P280 Wear protective gloves.
P264 Wash with plenty of water and soap thoroughly after handling.

[Response]:

P302 + P352 IF ON SKIN (or hair): Wash with plenty of soap and water.
P332 + P313 If skin irritation occurs: Get medical advice/attention.
P362 Take off contaminated clothing.



Safety Data Sheet

Star-Drill Liquid

SDS Revision Date: 02/22/2017

[Storage]: None

[Disposal]:

P501

Dispose of contents/container as special waste in compliance with all regulations

2.3 Hazards not otherwise classified

Caution – Solutions extremely slippery when spilled

Causes skin irritation

May cause eye irritation

May cause gastrointestinal irritation, nausea, vomiting, and diarrhea

Avoid inhalation of mists/vapours.

3. Composition/information on ingredients

Substances	CAS Number	Concentration [%]	GHS Classification - US
Distillates (petroleum), hydrotreated light	64742-47-8	23 - 25%	Danger
Alcohols, C12-16, ethoxylated	68551-12-2	0 - 5%	Danger
Alcohols, C10-16, ethoxylated	68002-97-1	0 - 5%	Danger
Alcohols, C12-14, ethoxylated	68439-50-9	0 - 5%	Danger

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

Inhalation

Move to fresh air. Consult a physician if necessary.

Eyes

Rinse immediately with plenty of water for at least 15 minutes with eyelids held open. Obtain medical attention.

Skin

Take off contaminated clothing and shoes immediately. Wash off with soap and water. If symptoms persist, call a physician. Wash contaminated clothing before re-use.

Ingestion

Immediately rinse mouth with water. Do NOT induce vomiting. Obtain immediate medical attention.

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

May cause eye and skin irritation.

5. Fire-fighting measures

5.1. Extinguishing media

Water spray, Carbon dioxide (CO₂), Dry chemical
Alcohol-resistant foam

5.2. Special hazards arising from the substance or mixture

No information available.



Safety Data Sheet

Star-Drill Liquid

SDS Revision Date: 02/22/2017

5.3. Advice for fire-fighters

Full protective clothing and approved self-contained breathing apparatus required for firefighting personnel. In the event of fire, cool tanks with water spray.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Wear respiratory protection. Where the exposure level is not known, wear approved, positive pressure, self-contained respirator. Where the exposure level is known, wear approved respirator suitable for the level of exposure.

6.2. Environmental precautions

Prevent from entering sewers, waterways, or low areas.

6.3. Methods and material for containment and cleaning up

Danger for slipping. Soak up with inert absorbent material. Take up mechanically and collect into suitable containers for disposal. Flush with water. Use detergent if needed.

7. Handling and storage

7.1. Precautions for safe handling

Ensure adequate ventilation. For personal protection see section 8.

7.2. Conditions for safe storage, including any incompatibilities

Flashpoint determination was performed using a Pensky Martens type closed cup method. The method indicates a flash point greater than 93,3° C (200° F). Although there was no flashpoint detected below 93,3° C (200° F) some flammable vapours were evolved during the test as evidenced by the enlargement of the flame. Therefore caution should be exercised during storage and handling.

Materials for packaging

Unsuitable material: To avoid product degradation and equipment corrosion, do not use iron, copper or aluminium containers or equipment.

8. Exposure controls and personal protection

8.1. Occupational Exposure Limits

Substance	ACGIH TLV-TWA	
Distillates (petroleum), hydrotreated light		TWA value 200 mg/m ³ Non-aerosol (total hydrocarbon vapor); Application restricted to conditions in which there are negligible aerosol exposures. Skin Designation Non-aerosol (total hydrocarbon vapor); The substance can be absorbed through the skin.

8.2. Exposure controls

Respiratory

When there is potential for airborne exposures in excess of applicable limits, wear NIOSH/MSHA approved respiratory protection.



Safety Data Sheet

Star-Drill Liquid

SDS Revision Date: 02/22/2017

Eyes	Tightly fitting safety goggles
Hands	Impervious gloves Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time.
Skin	Protective clothing
Engineering Controls	Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and immediately after handling the product. Avoid contact with skin, eyes and clothing. Do not breathe vapor. Ensure that eyewash stations and safety showers are close to the workstation location. Ensure adequate ventilation.
Other Work Practices	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.

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

9. Physical and chemical properties

Appearance	White, viscous liquid
Odor	Hydrocarbon-like
Odor threshold	No data available
pH	5 - 8 @ 5 g/L
Melting point / freezing point	No data available
Initial boiling point and boiling range	175 °C / 347 °F
Flash Point	> 201 °F (Pensky-Martens)
Evaporation rate (Ether = 1)	< 1
Flammability (solid, gas)	No data available
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	Soluble in water
Partition coefficient n-octanol/water (Log Kow)	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Viscosity	> 20.5 mm ² /s @ 40°C
Density	Approximately 1.1 g/cm ³

9.2. Other information

No data available



Safety Data Sheet

Star-Drill Liquid

SDS Revision Date: 02/22/2017

10. Stability and reactivity

10.1. Reactivity

No hazardous reactions if stored and handled as prescribed/indicated.

10.2. Chemical stability

The product is stable if stored and handled as prescribed/indicated.

10.3. Possibility of hazardous reactions

None known.

10.4. Conditions to avoid

Protect from frost, heat and sunlight.

10.5. Incompatible materials

Incompatible with oxidizing agents.

10.6. Hazardous decomposition products

Thermal decomposition may produce: nitrogen oxides (NO_x), carbon oxides (CO_x). Hydrogen cyanide (hydrocyanic acid) may be produced in the event of combustion in an oxygen deficient atmosphere.

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

Eye Contact	May cause mild eye irritation.
Skin Contact	May cause mild skin irritation.
Aspiration	May cause mild respiratory irritation.
Ingestion	May cause mild gastric distress.

Chronic Toxicity/Effects

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
Hydrotreated light petroleum distillate	64742-47-8	> 5000 mg/kg (Rat) (similar substance)	> 2000 mg/kg (Rabbit) (similar substance)	> 5.28 mg/L (Rat) 4h (similar substance)
Ethoxylated alcohol	Proprietary	1700 mg/kg (Rat) 1650 mg/kg (Dog) 1100 mg/kg (Rat) (similar substance) 2850 mg/kg (Rat)	> 2000 mg/kg (Rabbit) (similar substance)	> saturated concentration (similar substance)

Substances	CAS Number	Skin corrosion/irritation
Hydrotreated light petroleum distillate	64742-47-8	Non-irritating to the skin (similar substances)
Ethoxylated alcohol	Proprietary	Causes moderate skin irritation. (Rabbit) (similar substances)



Safety Data Sheet

Star-Drill Liquid

SDS Revision Date: 02/22/2017

Substances	CAS Number	Eye damage/irritation
Hydrotreated light petroleum distillate	64742-47-8	Non-irritating to the eye (Rabbit)
Ethoxylated alcohol	Proprietary	Causes severe eye irritation which may damage tissue. (Rabbit) (similar substances)

Substances	CAS Number	Skin Sensitization
Hydrotreated light petroleum distillate	64742-47-8	Did not cause sensitization on laboratory animals (guinea pig) (similar substances)
Ethoxylated alcohol	Proprietary	Did not cause sensitization on laboratory animals (guinea pig) (similar substances)

Substances	CAS Number	Respiratory Sensitization
Hydrotreated light petroleum distillate	64742-47-8	No information available
Ethoxylated alcohol	Proprietary	No information available

Substances	CAS Number	Mutagenic Effects
Hydrotreated light petroleum distillate	64742-47-8	In vitro tests did not show mutagenic effects In vivo tests did not show mutagenic effects. (similar substances)
Ethoxylated alcohol	Proprietary	In vitro tests did not show mutagenic effects In vivo tests did not show mutagenic effects. (similar substances)

Substances	CAS Number	Carcinogenic Effects
Hydrotreated light petroleum distillate	64742-47-8	Did not show carcinogenic effects in animal experiments
Ethoxylated alcohol	Proprietary	Did not show carcinogenic or teratogenic effects in animal experiments (similar substances)

Substances	CAS Number	Reproductive toxicity
Hydrotreated light petroleum distillate	64742-47-8	Animal testing did not show any effects on fertility. Did not show teratogenic effects in animal experiments. (similar substances)
Ethoxylated alcohol	Proprietary	Animal testing did not show any effects on fertility. Did not show teratogenic effects in animal experiments. (similar substances)

Substances	CAS Number	STOT - single exposure
Hydrotreated light petroleum distillate	64742-47-8	May cause disorder and damage to the Central Nervous System (CNS) (similar substances)
Ethoxylated alcohol	Proprietary	No significant toxicity observed in animal studies at concentration requiring classification. (similar substances)

Substances	CAS Number	STOT - repeated exposure
Hydrotreated light petroleum distillate	64742-47-8	No significant toxicity observed in animal studies at concentration requiring classification. (similar substances)
Ethoxylated alcohol	Proprietary	No significant toxicity observed in animal studies at concentration requiring classification. (similar substances)

Substances	CAS Number	Aspiration hazard
Hydrotreated light petroleum distillate	64742-47-8	Aspiration into the lungs may cause chemical pneumonitis including coughing, difficulty breathing, wheezing, coughing up blood and pneumonia, which can be fatal.
Ethoxylated alcohol	Proprietary	Not applicable



Safety Data Sheet

Star-Drill Liquid

SDS Revision Date: 02/22/2017

12. Ecological information

12.1. Toxicity

Aquatic Ecotoxicity

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Hydrotreated light petroleum distillate	64742-47-8	EC50 (72h) > 1,000 mg/L (Skelettonema costatum) ErL50 (72h) > 1000 mg/L (Pseudokirchneriella subcapitata) EbL50 (72h) > 1000 mg/L (Pseudokirchneriella subcapitata) NOELR (72h) 1000 mg/L (Pseudokirchneriella subcapitata)	LC50 (96h) > 10,000 mg/L (Scophthalmus maximus) LL50 (96h) > 1000 mg/L (Oncorhynchus mykiss)	No information available	LC50 (48h) > 10,000 mg/L (Acartia tonsa) EC50 (48h) 1100 mg/L (Daphnia pulex) LC50 (48h) 0.12 mg/L (Daphnia magna) EL50 (48h) > 1000 mg/L (Daphnia magna)
Ethoxylated alcohol	Proprietary	EC50 (48h) 2-4 mg/L (Selenastrum capricornutum) (similar substance) ErC50 (72h) 0.282 mg/L (Selenastrum capricornutum) (similar substance) ErC10 0.137 mg/L (Scenedesmus subspicatus) (similar substance)	2.6 mg/L (Brachydanio rerio) (similar substance) LC50 (96h) 1.1 mg/L (Salmo gairdneri) (similar substance) NOEC 0.88 mg/L (reproduction) (Lepomis macrochirus) (similar substance)	No information available	EC50 (48h) 1.2 mg/L (Daphnia magna) (Similar substance) EC50 (48h) 0.6 mg/L (Daphnia magna) (Similar substance) NOEC (21d) 0.77 mg/L (reproduction) (Daphnia magna) (Similar substance)

12.2. Persistence and degradability

Substances	CAS Number	Persistence and Degradability
Hydrotreated light petroleum distillate	64742-47-8	Readily biodegradable (40% @ 28d)
Ethoxylated alcohol	Proprietary	Readily biodegradable (40% @ 28d)

12.3. Bioaccumulative potential

Substances	CAS Number	Log Pow
Hydrotreated light petroleum distillate	64742-47-8	No information available
Ethoxylated alcohol	Proprietary	5.17

12.4. Mobility in soil

Substances	CAS Number	Mobility
Hydrotreated light petroleum distillate	64742-47-8	No information available
Ethoxylated alcohol	Proprietary	Kd = 3.07 L/kg Kd = 3.09 L/kg

12.5. Results of PBT and vPvB assessment

No information available



Safety Data Sheet

Star-Drill Liquid

SDS Revision Date: 02/22/2017

12.6. Other adverse effects

No information available

13. Disposal considerations

13.1. Waste treatment methods

Disposal Method

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

Container disposal

Follow all applicable national or local regulations.

14. Transport information

	DOT (Domestic Surface Transportation)	IMO / IMDG (Ocean Transportation)	ICAO/IATA
14.1. UN number	Not restricted	Not restricted	Not restricted
14.2. UN proper shipping name	Not restricted	Not restricted	Not restricted
14.3. Transport hazard class(es)	DOT Hazard Class: Not applicable	IMDG: Not applicable Sub Class: Not applicable	Air Class: Not applicable
14.4. Packing group	Not applicable	Not applicable	Not applicable
14.5. Environmental hazards			
IMDG	Not applicable		
14.6. Special precautions for user	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 Not determined

California Proposition 65 Regulation. All components listed do not apply to the California Proposition 65

MA Right-to-Know Law Does not apply.

NJ Right-to-Know Law Does not apply.



Safety Data Sheet

Star-Drill Liquid

SDS Revision Date: 02/22/2017

PA Right-to-Know Law

Does not apply.

Canadian Regulations

Canadian DSL Inventory

All components listed on inventory or are exempt.

16. Other information

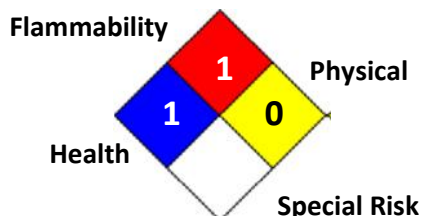
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Emergency Overview:

Risk Classification System:

HEALTH	1
FLAMMABILITY	1
PHYSICAL	0
PPE	C



End of Document



Safety Data Sheet

Star-Drill LV

SDS Revision Date: 02/22/2017

1. Identification

1.1. Product identifier

Product Identity Star-Drill LV

Alternate Names None

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

Intended use Additive

Application Method See Technical Data Sheet.

1.3. Details of the supplier of the safety data sheet

Company Name NorthStar Fluids 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

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

Aqueous solutions or powders that become wet render surfaces extremely slippery.



Safety Data Sheet

Star-Drill LV

SDS Revision Date: 02/22/2017

3. Composition/information on ingredients

Substances	CAS Number	Concentration [%]	GHS Classification - US
Contains no hazardous substances	NA	60 - 100%	Not classified

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

Inhalation Move to fresh air. Consult a physician if necessary.

Eyes Rinse immediately with plenty of water for at least 15 minutes with eyelids held open.
Obtain medical attention.

Skin Wash off with soap and water. If symptoms persist, call a physician.

Ingestion Immediately rinse mouth with water. Do NOT induce vomiting. Obtain immediate medical attention.

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

May cause eye and skin irritation.

5. Fire-fighting measures

5.1. Extinguishing media

Water spray, Carbon dioxide (CO₂), Dry chemical

5.2. Special hazards arising from the substance or mixture

No information available.

5.3. Advice for fire-fighters

Full protective clothing and approved self-contained breathing apparatus required for firefighting personnel.
In the event of fire, cool tanks with water spray.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Use appropriate protective equipment.
See Section 8 for additional information.

6.2. Environmental precautions OSHA PEL-TWA

None known.



Safety Data Sheet

Star-Drill LV

SDS Revision Date: 02/22/2017

6.3. Methods and material for containment and cleaning up

Danger for slipping. Soak up with inert absorbent material. Take up mechanically and collect into suitable containers for disposal.

7. Handling and storage

7.1. Precautions for safe handling

Ensure adequate ventilation. For personal protection see section 8.

7.2. Conditions for safe storage, including any incompatibilities

Store away from oxidizers. Store in a cool, dry location.

8. Exposure controls and personal protection

8.1. Occupational Exposure Limits

Substance	CAS Number	OSHA PEL-TWA / ACGIH TLV-TWA
Contains no hazardous substances	NA	Not applicable

8.2. Exposure controls

Respiratory

When there is potential for airborne exposures in excess of applicable limits, wear NIOSH/MSHA approved respiratory protection.

Eyes

Tightly fitting safety goggles

Hands

Impervious gloves

Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time.

Skin

Protective clothing

Engineering Controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and immediately after handling the product. Avoid contact with skin, eyes and clothing. Do not breathe vapor. Ensure that eyewash stations and safety showers are close to the workstation location. Ensure adequate ventilation.

Other Work Practices

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.

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

9. Physical and chemical properties



Safety Data Sheet

Star-Drill LV

SDS Revision Date: 02/22/2017

Appearance	White, granular solid
Odor	None
Odor threshold	No data available
pH	5 – 9 @ 5 g/L
Melting point	>150 °C / >302 °F
Initial boiling point and boiling range	No data available
Flash Point	No data available
Evaporation rate (Ether = 1)	No data available
Flammability (solid, gas)	No data available
Upper/lower flammability or explosive limits	No data available
Vapor pressure (Pa)	No data available
Vapor Density	No data available
Specific Gravity	0.93
Solubility in Water	Soluble
Partition coefficient n-octanol/water (Log Kow)	-2
Auto-ignition temperature	No data available
Decomposition temperature	>150 °C / >302 °F
Viscosity	No data available
Relative Density at 20°C	0.6 – 0.9

10. Stability and reactivity

10.1. Reactivity

No hazardous reactions if stored and handled as prescribed/indicated.

10.2. Chemical stability

The product is stable if stored and handled as prescribed/indicated.

10.3. Possibility of hazardous reactions

None known.

10.4. Conditions to avoid

Protect from frost, heat and sunlight.

10.5. Incompatible materials

Incompatible with oxidizing agents.

10.6. Hazardous decomposition products

Thermal decomposition may produce: nitrogen oxides (NO_x), carbon oxides (CO_x). Hydrogen cyanide (hydrocyanic acid) may be produced in the event of combustion in an oxygen deficient atmosphere.

11. Toxicological information



Safety Data Sheet

Star-Drill LV

SDS Revision Date: 02/22/2017

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

Eye Contact

May cause mild eye irritation.

Skin Contact

May cause mild skin irritation.

Aspiration

May cause mild respiratory irritation.

Ingestion

May cause mild gastric distress.

Chronic Toxicity/Effects

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	NA	> 2,500 mg/kg (Rat)	> 10,000 mg/kg (Rabbit)	20 mg/L hr (Rat)

Substances	CAS Number	Skin corrosion/irritation
Contains no hazardous substances	NA	No data available

Substances	CAS Number	Eye damage/irritation
Contains no hazardous substances	NA	No data available

Substances	CAS Number	Skin Sensitization
Contains no hazardous substances	NA	No data available

Substances	CAS Number	Respiratory Sensitization
Contains no hazardous substances	NA	No data available

Substances	CAS Number	Mutagenic Effects
Contains no hazardous substances	NA	No data available

Substances	CAS Number	Carcinogenic Effects
Contains no hazardous substances	NA	No data available

Substances	CAS Number	Reproductive toxicity
Contains no hazardous substances	NA	No data available



Safety Data Sheet

Star-Drill LV

SDS Revision Date: 02/22/2017

Substances	CAS Number	STOT - single exposure
Contains no hazardous substances	NA	No data available

Substances	CAS Number	STOT - repeated exposure
Contains no hazardous substances	NA	No data available

Substances	CAS Number	Aspiration hazard
Contains no hazardous substances	NA	No data available

12. Ecological information

12.1. Toxicity

Aquatic Ecotoxicity

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Contains no hazardous substances	NA	IC50/Scenedesmus subspicatus/72 hours > 100 mg/L (OECD 201)	LC50/Danio rerio/96 hours > 100 mg/L (OECD 203)	No data available	EC50/Daphnia magna/48 hours > 100 mg/L (OECD 202)

12.2. Persistence and degradability

Substances	CAS Number	Persistence and Degradability
Contains no hazardous substances	NA	Not readily biodegradable. Does not hydrolyze.

12.3. Bioaccumulative potential

Substances	CAS Number	Log Pow
Contains no hazardous substances	NA	-2

12.4. Mobility in soil

Substances	CAS Number	Mobility
Contains no hazardous substances	NA	No data available

12.5. Results of PBT and vPvB assessment

No information available

12.6. Other adverse effects

No information available

13. Disposal considerations



Safety Data Sheet

Star-Drill LV

SDS Revision Date: 02/22/2017

13.1. Waste treatment methods

Disposal Method

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

Container disposal

Follow all applicable national or local regulations.

14. Transport information

	DOT (Domestic Surface Transportation)	IMO / IMDG (Ocean Transportation)	ICAO/IATA
14.1. UN number	Not restricted	Not restricted	Not restricted
14.2. UN proper shipping name	Not restricted	Not restricted	Not restricted
14.3. Transport hazard class(es)	DOT Hazard Class: Not applicable	IMDG: Not applicable Sub Class: Not applicable	Air Class: Not applicable
14.4. Packing group	Not applicable	Not applicable	Not applicable
14.5. Environmental hazards			
IMDG	Not applicable		
14.6. Special precautions for user	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 Not determined

California Proposition 65 Regulation. All components listed do not apply to the California Proposition 65

MA Right-to-Know Law Does not apply.

NJ Right-to-Know Law Does not apply.

PA Right-to-Know Law Does not apply.

Canadian Regulations

Canadian DSL Inventory

All components listed on inventory or are exempt.



Safety Data Sheet

Star-Drill LV

SDS Revision Date: 02/22/2017

16. Other information

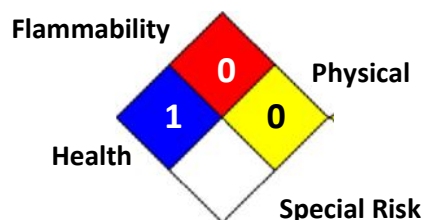
This is the first version in the GHS SDS format. Listings of changes from previous versions in other formats are not applicable.

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 Fluids 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	B



End of Document



Safety Data Sheet

Star-Gel Premium

SDS Revision Date: 02/22/2017

1. Identification

1.1. Product identifier

Product Identity Star-Gel Premium

Alternate Names None

1.2. Identified uses of the substance or mixture and application method

Intended use Hi-Yield Bentonite Clay

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 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

Hazard Statements

Danger

H350- May cause cancer by inhalation

H372- Causes damage to organs through prolonged or repeated exposure if inhaled.



Safety Data Sheet

Star-Gel Premium

SDS Revision Date: 02/22/2017

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/ 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.

Contains

Substances

Bentonite
Crystalline silica, quartz
Crystalline silica, cristobalite
Crystalline silica, tridymite

CAS Number

1302-78-9
14808-60-7
14464-46-1
15468-32-3

2.3 Hazards not otherwise classified

Not known

3. Composition/information on ingredients

Substances	CAS Number	PERCENT (w/w)	GHS Classification - US
Bentonite	1302-78-9	60 - 100%	Not classified
Crystalline silica, quartz	14808-60-7	1 - 5%	Carc. 1A (H350) STOT RE 1
Crystalline silica, cristobalite	14464-46-1	0.1 - 1%	Carc. 1A (H350) STOT RE 1
Crystalline silica, tridymite	15468-32-3	0.1 - 1%	Carc. 1A (H350) STOT RE 1

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.



Safety Data Sheet

Star-Gel Premium

SDS Revision Date: 02/22/2017

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 and effects, both 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

All standard fire fighting media.

5.2. Special hazards arising from the substance or mixture

Decomposition in fire may produce toxic gases.

5.3. Advice for fire-fighters

Full protective equipment. Avoid creating and breathing dust.

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.



Safety Data Sheet

Star-Gel Premium

SDS Revision Date: 02/22/2017

7. Handling and storage

7.1. Precautions for safe handling

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

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 and personal protection

8.1. Control parameters

Substances	CAS Number	OSHA PEL-TWA	ACGIH TLV-TWA
Bentonite	1302-78-9	Not applicable	TWA: 1 mg/m ³
Crystalline silica, quartz	14808-60-7	10 mg/m ³ %SiO ₂ + 2	TWA: 0.025 mg/m ³
Crystalline silica, cristobalite	14464-46-1	1/2 x 10 mg/m ³ %SiO ₂ + 2	TWA: 0.025 mg/m ³
Crystalline silica, tridymite	15468-32-3	1/2 x 10 mg/m ³ %SiO ₂ + 2	0.05 mg/m ³

8.2. Exposure controls

Respiratory

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

Eyes

Wear safety glasses or goggles to protect against exposure.

Skin

Normal work gloves. 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.

Engineering Controls

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

Other Work Practices

None known.

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

9. Physical and chemical properties



Safety Data Sheet

Star-Gel Premium

SDS Revision Date: 02/22/2017

Appearance	Solid, various colors.
Odor	Odorless
Odor threshold	No information available
pH	8-10
Melting point / freezing point	No information available
Initial boiling point and boiling range	No data available
Flash Point	No data available
Evaporation rate (Ether = 1)	No data available
Flammability (solid, gas)	No data available
Upper/lower flammability or explosive limits	No data available
Vapor pressure (Pa)	No data available
Vapor Density	No data available
Specific Gravity	2.65
Solubility in Water	Insoluble
Partition coefficient n-octanol/water (Log Kow)	No data available
Auto-ignition temperature	No data available
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

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).



Safety Data Sheet

Star-Gel Premium

SDS Revision Date: 02/22/2017

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

May cause mechanical skin irritation.

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.



Safety Data Sheet

Star-Gel Premium

SDS Revision Date: 02/22/2017

11.3 Toxicity data

Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Bentonite	1302-78-9	> 5000 mg/kg (Rat) > 2000 mg/kg (Rat)	No data available	> 5.27 mg/L (Rat)
Crystalline silica, quartz	14808-60-7	500 mg/kg (Rat) >15,000 mg/kg (Human)	No data available	No data available
Crystalline silica, cristobalite	14464-46-1	500 mg/kg (Rat)	No data available	No data available
Crystalline silica, tridymite	15468-32-3	500 mg/kg (Rat)	No data available	No data available

Substances	CAS Number	Skin corrosion/irritation
Bentonite	1302-78-9	Non-irritating to the skin (Rabbit)
Crystalline silica, quartz	14808-60-7	Non-irritating to the skin
Crystalline silica, cristobalite	14464-46-1	Non-irritating to the skin
Crystalline silica, tridymite	15468-32-3	Non-irritating to the skin

Substances	CAS Number	Eye damage/irritation
Bentonite	1302-78-9	Non-irritating to the eye (Rabbit)
Crystalline silica, quartz	14808-60-7	Mechanical irritation of the eyes is possible.
Crystalline silica, cristobalite	14464-46-1	Mechanical irritation of the eyes is possible.
Crystalline silica, tridymite	15468-32-3	Mechanical irritation of the eyes is possible.

Substances	CAS Number	Skin Sensitization
Bentonite	1302-78-9	Did not cause sensitization on laboratory animals (mouse)
Crystalline silica, quartz	14808-60-7	Not regarded as a sensitizer.
Crystalline silica, cristobalite	14464-46-1	Not regarded as a sensitizer.
Crystalline silica, tridymite	15468-32-3	Not regarded as a sensitizer.

Substances	CAS Number	Respiratory Sensitization
Bentonite	1302-78-9	No information available
Crystalline silica, quartz	14808-60-7	No information available
Crystalline silica, cristobalite	14464-46-1	No information available
Crystalline silica, tridymite	15468-32-3	No information available

Substances	CAS Number	Mutagenic Effects
Bentonite	1302-78-9	In vitro tests did not show mutagenic effects
Crystalline silica, quartz	14808-60-7	Not regarded as mutagenic.
Crystalline silica, cristobalite	14464-46-1	Not regarded as mutagenic.
Crystalline silica, tridymite	15468-32-3	Not regarded as mutagenic.

Substances	CAS Number	Carcinogenic Effects
Bentonite	1302-78-9	Did not show carcinogenic effects in animal experiments (similar substances)
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. Based on available scientific evidence, this substance is a threshold carcinogen with a mode of action involving indirect genotoxicity secondary to lung injury.



Safety Data Sheet

Star-Gel Premium

SDS Revision Date: 02/22/2017

Substances	CAS Number	Carcinogenic Effects
Crystalline silica, cristobalite	14464-46-1	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. Based on available scientific evidence, this substance is a threshold carcinogen with a mode of action involving indirect genotoxicity secondary to lung injury.
Crystalline silica, tridymite	15468-32-3	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. Based on available scientific evidence, this substance is a threshold carcinogen with a mode of action involving indirect genotoxicity secondary to lung injury.

Substances	CAS Number	Reproductive toxicity
Bentonite	1302-78-9	Did not show teratogenic effects in animal experiments.
Crystalline silica, quartz	14808-60-7	No information available
Crystalline silica, cristobalite	14464-46-1	No information available
Crystalline silica, tridymite	15468-32-3	No information available

Substances	CAS Number	STOT - single exposure
Bentonite	1302-78-9	None under normal use conditions
Crystalline silica, quartz	14808-60-7	No significant toxicity observed in animal studies at concentration requiring classification.
Crystalline silica, cristobalite	14464-46-1	No significant toxicity observed in animal studies at concentration requiring classification.
Crystalline silica, tridymite	15468-32-3	No significant toxicity observed in animal studies at concentration requiring classification.

Substances	CAS Number	STOT - repeated exposure
Bentonite	1302-78-9	None under normal use conditions
Crystalline silica, quartz	14808-60-7	Causes damage to organs through prolonged or repeated exposure if inhaled: (Lungs)
Crystalline silica, cristobalite	14464-46-1	Causes damage to organs through prolonged or repeated exposure if inhaled: (Lungs)
Crystalline silica, tridymite	15468-32-3	Causes damage to organs through prolonged or repeated exposure if inhaled: (Lungs)

Substances	CAS Number	Aspiration hazard
Bentonite	1302-78-9	Not applicable
Crystalline silica, quartz	14808-60-7	Not applicable
Crystalline silica, cristobalite	14464-46-1	Not applicable
Crystalline silica, tridymite	15468-32-3	Not applicable



Safety Data Sheet

Star-Gel Premium

SDS Revision Date: 02/22/2017

12. Ecological information

12.1. Toxicity

Aquatic Ecotoxicity

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Bentonite	1302-78-9	EC50(72h): > 100 mg/L (freshwater algae)	TLM96 10,000 ppm (Oncorhynchus mykiss) LC50 (96h) 16,000 - 19,000 mg/L (Oncorhynchus mykiss) / & K ± mg/L (black bass, warmouth bass, blue gill and sunfish)	No information available	EC50 (96h) 81.6 mg/L (Metacarcinus magister) EC50 (96h) 24.8 mg/L (Pandalus danae) EC50 (48h) > 100 mg/L (Daphnia magna)
Crystalline silica, quartz	14808-60-7	No information available	LL50 (96h) 10,000 mg/L (Danio rerio) (similar substance)	No information available	LL50 (24h) > 10,000 mg/L (Daphnia magna) (similar substance)
Crystalline silica, cristobalite	14464-46-1	No information available	LL0 (96h) 10,000 mg/L (Danio rerio) (similar substance)	No information available	LL50 (24h) > 10,000 mg/L (Daphnia magna) (similar substance)
Crystalline silica, tridymite	15468-32-3	No information available	LL0 (96h) 10,000 mg/L (Danio rerio) (similar substance)	No information available	LL50 (24h) > 10,000 mg/L (Daphnia magna) (similar substance)

12.2. Persistence and degradability

Substances	CAS Number	Persistence and Degradability
Bentonite	1302-78-9	The methods for determining biodegradability are not applicable to inorganic substances.
Crystalline silica, quartz	14808-60-7	The methods for determining biodegradability are not applicable to inorganic substances.
Crystalline silica, cristobalite	14464-46-1	The methods for determining biodegradability are not applicable to inorganic substances.
Crystalline silica, tridymite	15468-32-3	The methods for determining biodegradability are not applicable to inorganic substances.

12.3. Bioaccumulative potential

Substances	CAS Number	Log Pow
Bentonite	1302-78-9	No information available
Crystalline silica, quartz	14808-60-7	No information available
Crystalline silica, cristobalite	14464-46-1	No information available
Crystalline silica, tridymite	15468-32-3	No information available

12.4. Mobility in soil

No information available

12.5. Results of PBT and vPvB assessment

No information available



Safety Data Sheet

Star-Gel Premium

SDS Revision Date: 02/22/2017

13. Disposal considerations

13.1. Waste treatment methods

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

14. Transport information

	DOT (Domestic Surface Transportation)	IMO / IMDG (Ocean Transportation)	ICAO/IATA
14.1. UN number	Not restricted	Not restricted	Not restricted
14.2. UN proper shipping name	Not restricted	Not restricted	Not restricted
14.3. Transport hazard class(es)	DOT Hazard Class: Not applicable	IMDG: Not applicable Sub Class: Not applicable	Air Class: Not applicable
14.4. Packing group	Not applicable	Not applicable	Not applicable
14.5. Environmental hazards			
IMDG	Not applicable		
14.6. Special precautions for user	Not applicable		

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	
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.



Safety Data Sheet

Star-Gel Premium

SDS Revision Date: 02/22/2017

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.

16. Other information

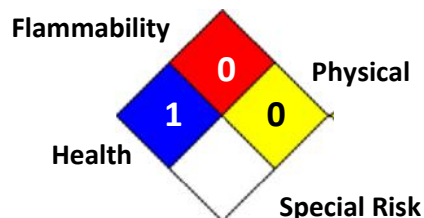
This is the first version in the GHS SDS format. Listings of changes from previous versions in other formats are not applicable.

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



Safety Data Sheet

Star-Gel Xtra

SDS Revision Date: 02/22/2017

1. Identification

1.1. Product identifier

Product Identity Star-Gel Xtra

Alternate Names None

1.2. Identified uses of the substance or mixture and application method

Intended use Hi-Yield Bentonite Clay

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 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

Hazard Statements

Danger

H350- May cause cancer by inhalation

H372- Causes damage to organs through prolonged or repeated exposure if inhaled.



Safety Data Sheet

Star-Gel Xtra

SDS Revision Date: 02/22/2017

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/ 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.

Contains

Substances

Bentonite
 Crystalline silica, quartz
 Crystalline silica, cristobalite
 Crystalline silica, tridymite

CAS Number

1302-78-9
 14808-60-7
 14464-46-1
 15468-32-3

2.3 Hazards not otherwise classified

Not known

3. Composition/information on ingredients

Substances	CAS Number	PERCENT (w/w)	GHS Classification - US
Bentonite	1302-78-9	60 - 100%	Not classified
Crystalline silica, quartz	14808-60-7	1 - 5%	Carc. 1A (H350) STOT RE 1
Crystalline silica, cristobalite	14464-46-1	0.1 - 1%	Carc. 1A (H350) STOT RE 1
Crystalline silica, tridymite	15468-32-3	0.1 - 1%	Carc. 1A (H350) STOT RE 1

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.



Safety Data Sheet

Star-Gel Xtra

SDS Revision Date: 02/22/2017

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 and effects, both 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

All standard fire fighting media.

5.2. Special hazards arising from the substance or mixture

Decomposition in fire may produce toxic gases.

5.3. Advice for fire-fighters

Full protective equipment. Avoid creating and breathing dust.

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.



Safety Data Sheet

Star-Gel Xtra

SDS Revision Date: 02/22/2017

7. Handling and storage

7.1. Precautions for safe handling

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

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 and personal protection

8.1. Control parameters

Substances	CAS Number	OSHA PEL-TWA	ACGIH TLV-TWA
Bentonite	1302-78-9	Not applicable	TWA: 1 mg/m ³
Crystalline silica, quartz	14808-60-7	10 mg/m ³ %SiO ₂ + 2	TWA: 0.025 mg/m ³
Crystalline silica, cristobalite	14464-46-1	1/2 x 10 mg/m ³ %SiO ₂ + 2	TWA: 0.025 mg/m ³
Crystalline silica, tridymite	15468-32-3	1/2 x 10 mg/m ³ %SiO ₂ + 2	0.05 mg/m ³

8.2. Exposure controls

Respiratory

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

Eyes

Wear safety glasses or goggles to protect against exposure.

Skin

Normal work gloves. 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.

Engineering Controls

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

Other Work Practices

None known.

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

9. Physical and chemical properties



Safety Data Sheet

Star-Gel Xtra

SDS Revision Date: 02/22/2017

Appearance	Solid, various colors.
Odor	Odorless
Odor threshold	No information available
pH	8-10
Melting point / freezing point	No information available
Initial boiling point and boiling range	No data available
Flash Point	No data available
Evaporation rate (Ether = 1)	No data available
Flammability (solid, gas)	No data available
Upper/lower flammability or explosive limits	No data available
Vapor pressure (Pa)	No data available
Vapor Density	No data available
Specific Gravity	2.65
Solubility in Water	Insoluble
Partition coefficient n-octanol/water (Log Kow)	No data available
Auto-ignition temperature	No data available
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

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).



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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

May cause mechanical skin irritation.

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.



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Star-Gel Xtra

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11.3 Toxicity data

Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Bentonite	1302-78-9	> 5000 mg/kg (Rat) > 2000 mg/kg (Rat)	No data available	> 5.27 mg/L (Rat)
Crystalline silica, quartz	14808-60-7	500 mg/kg (Rat) >15,000 mg/kg (Human)	No data available	No data available
Crystalline silica, cristobalite	14464-46-1	500 mg/kg (Rat)	No data available	No data available
Crystalline silica, tridymite	15468-32-3	500 mg/kg (Rat)	No data available	No data available

Substances	CAS Number	Skin corrosion/irritation
Bentonite	1302-78-9	Non-irritating to the skin (Rabbit)
Crystalline silica, quartz	14808-60-7	Non-irritating to the skin
Crystalline silica, cristobalite	14464-46-1	Non-irritating to the skin
Crystalline silica, tridymite	15468-32-3	Non-irritating to the skin

Substances	CAS Number	Eye damage/irritation
Bentonite	1302-78-9	Non-irritating to the eye (Rabbit)
Crystalline silica, quartz	14808-60-7	Mechanical irritation of the eyes is possible.
Crystalline silica, cristobalite	14464-46-1	Mechanical irritation of the eyes is possible.
Crystalline silica, tridymite	15468-32-3	Mechanical irritation of the eyes is possible.

Substances	CAS Number	Skin Sensitization
Bentonite	1302-78-9	Did not cause sensitization on laboratory animals (mouse)
Crystalline silica, quartz	14808-60-7	Not regarded as a sensitizer.
Crystalline silica, cristobalite	14464-46-1	Not regarded as a sensitizer.
Crystalline silica, tridymite	15468-32-3	Not regarded as a sensitizer.

Substances	CAS Number	Respiratory Sensitization
Bentonite	1302-78-9	No information available
Crystalline silica, quartz	14808-60-7	No information available
Crystalline silica, cristobalite	14464-46-1	No information available
Crystalline silica, tridymite	15468-32-3	No information available

Substances	CAS Number	Mutagenic Effects
Bentonite	1302-78-9	In vitro tests did not show mutagenic effects
Crystalline silica, quartz	14808-60-7	Not regarded as mutagenic.
Crystalline silica, cristobalite	14464-46-1	Not regarded as mutagenic.
Crystalline silica, tridymite	15468-32-3	Not regarded as mutagenic.

Substances	CAS Number	Carcinogenic Effects
Bentonite	1302-78-9	Did not show carcinogenic effects in animal experiments (similar substances)
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. Based on available scientific evidence, this substance is a threshold carcinogen with a mode of action involving indirect genotoxicity secondary to lung injury.



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Substances	CAS Number	Carcinogenic Effects
Crystalline silica, cristobalite	14464-46-1	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. Based on available scientific evidence, this substance is a threshold carcinogen with a mode of action involving indirect genotoxicity secondary to lung injury.
Crystalline silica, tridymite	15468-32-3	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. Based on available scientific evidence, this substance is a threshold carcinogen with a mode of action involving indirect genotoxicity secondary to lung injury.

Substances	CAS Number	Reproductive toxicity
Bentonite	1302-78-9	Did not show teratogenic effects in animal experiments.
Crystalline silica, quartz	14808-60-7	No information available
Crystalline silica, cristobalite	14464-46-1	No information available
Crystalline silica, tridymite	15468-32-3	No information available

Substances	CAS Number	STOT - single exposure
Bentonite	1302-78-9	None under normal use conditions
Crystalline silica, quartz	14808-60-7	No significant toxicity observed in animal studies at concentration requiring classification.
Crystalline silica, cristobalite	14464-46-1	No significant toxicity observed in animal studies at concentration requiring classification.
Crystalline silica, tridymite	15468-32-3	No significant toxicity observed in animal studies at concentration requiring classification.

Substances	CAS Number	STOT - repeated exposure
Bentonite	1302-78-9	None under normal use conditions
Crystalline silica, quartz	14808-60-7	Causes damage to organs through prolonged or repeated exposure if inhaled: (Lungs)
Crystalline silica, cristobalite	14464-46-1	Causes damage to organs through prolonged or repeated exposure if inhaled: (Lungs)
Crystalline silica, tridymite	15468-32-3	Causes damage to organs through prolonged or repeated exposure if inhaled: (Lungs)

Substances	CAS Number	Aspiration hazard
Bentonite	1302-78-9	Not applicable
Crystalline silica, quartz	14808-60-7	Not applicable
Crystalline silica, cristobalite	14464-46-1	Not applicable
Crystalline silica, tridymite	15468-32-3	Not applicable



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12. Ecological information

12.1. Toxicity

Aquatic Ecotoxicity

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Bentonite	1302-78-9	EC50(72h): > 100 mg/L (freshwater algae)	TLM96 10,000 ppm (Oncorhynchus mykiss) LC50 (96h) 16,000 - 19,000 mg/L (Oncorhynchus mykiss) / & K ± mg/L (black bass, warmouth bass, blue gill and sunfish)	No information available	EC50 (96h) 81.6 mg/L (Metacarcinus magister) EC50 (96h) 24.8 mg/L (Pandalus danae) EC50 (48h) > 100 mg/L (Daphnia magna)
Crystalline silica, quartz	14808-60-7	No information available	LL50 (96h) 10,000 mg/L (Danio rerio) (similar substance)	No information available	LL50 (24h) > 10,000 mg/L (Daphnia magna) (similar substance)
Crystalline silica, cristobalite	14464-46-1	No information available	LL0 (96h) 10,000 mg/L (Danio rerio) (similar substance)	No information available	LL50 (24h) > 10,000 mg/L (Daphnia magna) (similar substance)
Crystalline silica, tridymite	15468-32-3	No information available	LL0 (96h) 10,000 mg/L (Danio rerio) (similar substance)	No information available	LL50 (24h) > 10,000 mg/L (Daphnia magna) (similar substance)

12.2. Persistence and degradability

Substances	CAS Number	Persistence and Degradability
Bentonite	1302-78-9	The methods for determining biodegradability are not applicable to inorganic substances.
Crystalline silica, quartz	14808-60-7	The methods for determining biodegradability are not applicable to inorganic substances.
Crystalline silica, cristobalite	14464-46-1	The methods for determining biodegradability are not applicable to inorganic substances.
Crystalline silica, tridymite	15468-32-3	The methods for determining biodegradability are not applicable to inorganic substances.

12.3. Bioaccumulative potential

Substances	CAS Number	Log Pow
Bentonite	1302-78-9	No information available
Crystalline silica, quartz	14808-60-7	No information available
Crystalline silica, cristobalite	14464-46-1	No information available
Crystalline silica, tridymite	15468-32-3	No information available

12.4. Mobility in soil

No information available

12.5. Results of PBT and vPvB assessment

No information available



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13. Disposal considerations

13.1. Waste treatment methods

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

14. Transport information

	DOT (Domestic Surface Transportation)	IMO / IMDG (Ocean Transportation)	ICAO/IATA
14.1. UN number	Not restricted	Not restricted	Not restricted
14.2. UN proper shipping name	Not restricted	Not restricted	Not restricted
14.3. Transport hazard class(es)	DOT Hazard Class: Not applicable	IMDG: Not applicable Sub Class: Not applicable	Air Class: Not applicable
14.4. Packing group	Not applicable	Not applicable	Not applicable
14.5. Environmental hazards			
IMDG	Not applicable		
14.6. Special precautions for user	Not applicable		

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

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.



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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.

16. Other information

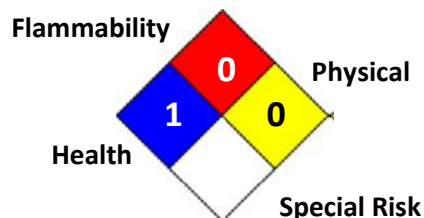
This is the first version in the GHS SDS format. Listings of changes from previous versions in other formats are not applicable.

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



Safety Data Sheet

Star-Plex

SDS Revision Date: 01/01/2017

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



Safety Data Sheet

Star-Plex

SDS Revision Date: 01/01/2017

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.



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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



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Star-Plex

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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 or glasses.
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



Safety Data Sheet

Star-Plex

SDS Revision Date: 01/01/2017

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

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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.



Safety Data Sheet

Star-Plex

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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.



Safety Data Sheet

Star-Plex

SDS Revision Date: 01/01/2017

16. Other information

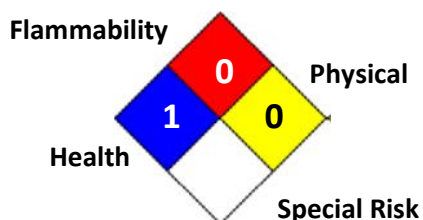
This is the first version in the GHS SDS format. Listings of changes from previous versions in other formats are not applicable.

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



SAFETY DATA SHEET

Docket No. CP19-56
Tab 1 - Attachment 4
Page 296 of 347

1. Identification

Product identifier SUPER GEL-X®

Other means of identification None.

Recommended use Not available.

Recommended restrictions Workers (and your customers or users in the case of resale) should be informed of the potential presence of respirable dust and respirable crystalline silica as well as their potential hazards. Appropriate training in the proper use and handling of this material should be provided as required under applicable regulations.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer

Company name CETCO, an MTI Company

Address 2870 Forbs Avenue
Hoffman Estates, IL 60192
United States

Telephone General Information 800 527-9948

Website <http://www.cetco.com/>

E-mail safetydata@amcol.com

Emergency phone number .

Americas 1.866.519.4752 (US, Canada, Mexico) 1 760 476 3962 Access Code 333562

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 Not applicable.

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 Not applicable.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
TRADE SECRET*		Proprietary*	< 0.1
Other components below reportable levels			90 - 100

Constituents

Chemical name	CAS number	%
CALCIUM CARBONATE	471-34-1	
SMECTITE GROUP MINERALS	1318-93-0	

Constituents

Chemical name	CAS number	%
QUARTZ	14808-60-7	<= 8
CRISTOBALITE	14464-46-1	<= 2

*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret. Bentonite is a UVCB substance sub-type 4. The purity of the product is 100 % w/w. Bentonite is composed mainly of smectite group minerals but the composition is varied, as expected for a UVCB substance, and other mineral constituents will be present in small and varying amounts. These minor constituents are not relevant for classification and labelling.

Composition comments Occupational Exposure Limits for constituents are listed in Section 8. The purity of the product is 100% w/w. Impurities are not applicable for a UVCB substance.

4. First-aid measures

Inhalation	If dust from the material is inhaled, remove the affected person immediately to fresh air. Call a physician if symptoms develop or persist. No specific first aid measures noted.
Skin contact	No specific first aid measures noted. Get medical attention if irritation develops and persists. Wash skin with soap and water.
Eye contact	No specific first aid measures noted.
Ingestion	No specific first aid measures noted. Rinse mouth thoroughly. Get medical attention if any discomfort occurs.
Most important symptoms/effects, acute and delayed	Dust in the eyes will cause irritation.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically.
General information	No hazards which require special first aid measures. Provide general supportive measures and treat symptomatically.

5. Fire-fighting measures

Suitable extinguishing media	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2). Use any media suitable for the surrounding fires.
Unsuitable extinguishing media	Not applicable, non-combustible.
Specific hazards arising from the chemical	None known. The product itself does not burn.
Special protective equipment and precautions for firefighters	Material can be slippery when wet.
Fire fighting equipment/instructions	In the event of fire, cool tanks with water spray. Material can be slippery when wet.
Specific methods	Cool containers exposed to flames with water until well after the fire is out.
General fire hazards	No unusual fire or explosion hazards noted. This material will not burn.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Material can be slippery when wet. Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fume at levels exceeding the exposure limits. Avoid inhalation of dust from the spilled material. For personal protection, see section 8 of the SDS. No special precautions are necessary beyond normal good hygiene practices. See Section 8 for additional personal protection advice when handling this product.
Methods and materials for containment and cleaning up	If sweeping of a contaminated area is necessary use a dust suppressant agent which does not react with the product. Sweep up or vacuum up spillage and collect in suitable container for disposal. Collect dust using a vacuum cleaner equipped with HEPA filter. Minimize dust generation and accumulation. Avoid the generation of dusts during clean-up. Following product recovery, flush area with water. For waste disposal, see section 13 of the SDS. Collect powder using special dust vacuum cleaner with particle filter or carefully sweep into closed container.
Environmental precautions	Prevent further leakage or spillage if safe to do so. No special environmental precautions required.

7. Handling and storage

Precautions for safe handling	Minimize dust generation and accumulation. Provide appropriate exhaust ventilation at places where dust is formed. Avoid breathing dust. Avoid contact with skin and eyes. In case of insufficient ventilation, wear suitable respiratory equipment. Practice good housekeeping.

Conditions for safe storage, including any incompatibilities

No special restrictions on storage with other products. Store in a dry area. Store in original tightly closed container. Keep the container dry. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS). Guard against dust accumulation of this material.

8. Exposure controls/personal protection

Occupational exposure limits

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

Constituents	Type	Value	Form
INERT OR NUISANCE DUSTS	PEL	5 mg/m3	Respirable fraction.
		15 mg/m3	Total dust.

US. OSHA Table Z-3 (29 CFR 1910.1000)

Constituents	Type	Value	Form
INERT OR NUISANCE DUSTS	TWA	5 mg/m3	Respirable fraction.
		15 mg/m3	Total dust.
		50 mppcf	Total dust.
		15 mppcf	Respirable fraction.

US. ACGIH Threshold Limit Values

Components	Type	Value
TRADE SECRET	TWA	2 ppm

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
TRADE SECRET	TWA	6 mg/m3
		2 ppm

Biological limit values

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

Exposure guidelines

US - California OELs: Skin designation

TRADE SECRET (CAS Proprietary) Can be absorbed through the skin.

US - Tennessee OELs: Skin designation

TRADE SECRET (CAS Proprietary) Can be absorbed through the skin.

US ACGIH Threshold Limit Values: Skin designation

TRADE SECRET (CAS Proprietary) Can be absorbed through the skin.

US NIOSH Pocket Guide to Chemical Hazards: Skin designation

TRADE SECRET (CAS Proprietary) Can be absorbed through the skin.

Appropriate engineering controls

Ventilation should be sufficient to effectively remove and prevent buildup of any dusts or fumes that may be generated during handling or thermal processing. If engineering measures are not sufficient to maintain concentrations of dust particulates below the OEL, suitable respiratory protection must be worn.

Individual protection measures, such as personal protective equipment

Eye/face protection Use tight fitting goggles if dust is generated. Wear dust-resistant safety goggles where there is danger of eye contact.

Skin protection

Hand protection No protection is ordinarily required under normal conditions of use.

Other Normal work clothing (long sleeved shirts and long pants) is recommended.

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 Not applicable.

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. Use good industrial hygiene practices in handling this material.

9. Physical and chemical properties

Appearance Lump, granular or fine powder.

Physical state Solid.

Form	Powder. Various.
Color	Various.
Odor	None.
Odor threshold	Not applicable.
pH	8.5 - 11
Melting point/freezing point	> 842 °F (> 450 °C) / Not applicable.
Initial boiling point and boiling range	Not applicable.
Flash point	Not applicable.
Evaporation rate	Not available.
Flammability (solid, gas)	This product is not flammable.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not applicable.
Flammability limit - upper (%)	Not applicable.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	Not applicable.
Vapor density	Not applicable.
Relative density	2.6 g/cm ³
Solubility(ies)	
Solubility (water)	< 0.9 mg/l
Partition coefficient (n-octanol/water)	Not applicable.
Auto-ignition temperature	Not applicable.
Decomposition temperature	> 932 °F (> 500 °C)
Viscosity	Not applicable.
Viscosity temperature	Not applicable.
Other information	
Bulk density	0.9 - 1.4 g/cm ³
Explosive limit	Not applicable.
Explosive properties	Not explosive
Explosivity	Not applicable.
Flame extension	Not applicable.
Flammability	Not applicable.
Flammability (flash back)	Not applicable.
Flammability (Heat of combustion)	Not applicable.
Flammability (Train fire)	Not applicable.
Flammability class	Not applicable.
Flash point class	Not flammable
Molecular formula	UVCB Substance
Molecular weight	Not applicable.
Oxidizing properties	None.
Percent volatile	0 %
pH in aqueous solution	8.5 - 11
Specific gravity	Not applicable.
VOC (Weight %)	CARB 0 %

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Stable at normal conditions.
Possibility of hazardous reactions	Will not occur.
Conditions to avoid	Moisture. Avoid temperatures exceeding the decomposition temperature. Contact with incompatible materials. Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air).
Incompatible materials	None known.
Hazardous decomposition products	None.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Inhalation of dusts may cause respiratory irritation.
Skin contact	Not classified.
Eye contact	Dust in the eyes will cause irritation.
Ingestion	Not classified.

Symptoms related to the physical, chemical and toxicological characteristics None known.

Information on toxicological effects

Product	Species	Test Results
Bentonite		
<u>Acute</u>		
Inhalation		
<i>Dust</i>		
LC50	Rat	> 5.27 mg/l, 4 hr OECD 436
Oral		
<i>Dust</i>		
LD50	Rat	> 2000 mg/kg OECD 425
Components	Species	Test Results
TRADE SECRET		
<u>Acute</u>		
Inhalation		
LC50	Rat	10600 mg/l/4h 1200 mg/l, 4 Hours
Oral		
LD50	Mouse	2400 mg/kg
	Rat	33.5 mg/kg

* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation	Not classified.
Serious eye damage/eye irritation	Dust in the eyes will cause irritation. Mild irritant to eyes (according to the modified Kay & Calandra criteria)
Respiratory or skin sensitization	
Respiratory sensitization	Not classified.
Skin sensitization	Not classified.
Germ cell mutagenicity	Not classified.

Carcinogenicity

In June 2003, SCOEL (the EU Scientific Committee on Occupational Exposure Limits), concluded that the main effect in humans of the inhalation of respirable crystalline silica dust is silicosis. "There is sufficient information to conclude that the relative risk of lung cancer is increased in persons with silicosis (and, apparently, not in employees without silicosis exposed to silica dust in quarries and in the ceramic industry). Therefore, preventing the onset of silicosis will also reduce the cancer risk..." (SCOEL SUM Doc 94-final, June 2003) According to the current state of the art, worker protection against silicosis can be consistently assured by respecting the existing regulatory occupational exposure limits. Occupational exposure to respirable dust and respirable crystalline silica should be monitored and controlled. No carcinogenicity data available for this product. Sepiolite was evaluated by IARC as class 3 ("Cannot be classified as to carcinogenicity to humans"). Based on read-across with sepiolite, bentonite was assessed as non-carcinogenic. Therefore classification of bentonite for carcinogenicity is not warranted.

IARC Monographs. Overall Evaluation of Carcinogenicity

TRADE SECRET (CAS Proprietary)

3 Not classifiable as to carcinogenicity to humans.

Reproductive toxicity Not classified.**Specific target organ toxicity - single exposure** Not classified.**Specific target organ toxicity - repeated exposure** Not classified.**Aspiration hazard** Not available.**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.

Product		Species	Test Results
Bentonite			
Aquatic			
Algae	EC50	Freshwater algae	> 100 mg/l, 72 hours
Crustacea	EC50	Coon stripe shrimp (<i>Pandalus danae</i>)	24.8 mg/l, 96 hours
		Daphnia	> 100 mg/l, 48 hours
		Dungeness or edible crab (<i>Cancer magister</i>)	81.6 mg/l, 96 hours
Fish	LC50	Freshwater fish	16000 mg/l, 96 hours
		Marine water fish	2800 - 3200 mg/l, 24 hours
Components		Species	Test Results
TRADE SECRET			
Aquatic			
Crustacea	EC50	Daphnia	47 mg/L, 48 Hours
Fish	LC50	Fish	222 mg/L, 96 Hours

* Estimates for product may be based on additional component data not shown.

Persistence and degradability Not relevant for inorganic substances**Bioaccumulative potential** Will not bio-accumulate.**Partition coefficient n-octanol / water (log Kow)**

TRADE SECRET

0.35

Mobility in soil Bentonite is almost insoluble and thus presents a low mobility in most soils.**Mobility in general** The product has poor water-solubility.**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. Disposal considerations****Disposal instructions** Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose in accordance with all applicable regulations.**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

Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied. Store containers and offer for recycling of material when in accordance with the local regulations.

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 applicable.

15. Regulatory information

US federal regulations

CERCLA Hazardous Substance List (40 CFR 302.4)

TRADE SECRET (CAS Proprietary) 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

TRADE SECRET (CAS Proprietary)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

Food and Drug Administration (FDA) Total food additive
 Direct food additive
 GRAS food additive

US state regulations

US - New Jersey RTK - Substances: Listed substance

TRADE SECRET (CAS Proprietary)

US - Pennsylvania RTK - Hazardous Substances: Listed substance

TRADE SECRET (CAS Proprietary)

US. California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100)

Not listed.

US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))

TRADE SECRET (CAS Proprietary)

US. Massachusetts RTK - Substance List

TRADE SECRET (CAS Proprietary)

US. New Jersey Worker and Community Right-to-Know Act

TRADE SECRET (CAS Proprietary)

US. Pennsylvania Worker and Community Right-to-Know Law

TRADE SECRET (CAS Proprietary)

US. Rhode Island RTK

TRADE SECRET (CAS Proprietary)

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)	No
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

Issue date	10-October-2013
Revision date	24-July-2015
Version #	20
Further information	This safety datasheet only contains information relating to safety and does not replace any product information or product specification. UVCB = a substance of Unknown or Variable composition, Complex reaction products or Biological materials SWERF = Size Weighted Respirable Fraction methodology is a scientific method developed to quantify the content of respirable particles within a bulk product. All details about the SWERF method are available at www.crystallinesilica.eu. HMIS® is a registered trade and service mark of the NPCA.
HMIS® ratings	Health: 1 Flammability: 0 Physical hazard: 0
NFPA ratings	Health: 1 Flammability: 0 Instability: 0
List of abbreviations	SWERF = Size-Weighted Relevant Fine Fraction methodology is a scientific method developed to quantify the content of respirable particles within a bulk product. All details about the SWERF method are available at www.crystallinesilica.eu. UVCB = a substance of Unknown or Variable composition, Complex reaction products or Biological materials
References	For any information on literature references or toxicity/ecotoxicity studies, please contact the supplier.

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 manufacturer expressly does not make any representations, warranties, or guarantees as to its accuracy, reliability or completeness nor assumes any liability, for its use. It is the user's responsibility to verify the suitability and completeness of such information for each particular use. 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. The information in the sheet was written based on the best knowledge and experience currently available.

Revision Information

This document has undergone significant changes and should be reviewed in its entirety.



Safety Data Sheet

Swell-Star

SDS Revision Date: 02/22/2017

1. Identification

1.1. Product identifier

Product Identity Swell-Star
Alternate Names Super absorbent polyacrylamide

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

Intended use Loss Circulation Material
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

Not Classified

2.2. Label elements

Signal Word Not Classified

Hazard Statements Not Hazardous

[Prevention]: None

[Response]: None

[Storage]: None

[Disposal]: None

3. Composition/information on ingredients

Substances	CAS Number	PERCENT (w/w)	GHS Classification - US
Contains no hazardous substances	NA	60 - 100%	Not classified

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.



Safety Data Sheet

Swell-Star

SDS Revision Date: 02/22/2017

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 and effects, both acute and delayed

No significant hazards expected.

5. Fire-fighting measures

5.1. Extinguishing media

Carbon Dioxide, dry chemical, foam.

5.2. Special hazards arising from the substance or mixture

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.

5.3. Advice for fire-fighters

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. See Section 8 for additional information.

6.2. Environmental precautions

None known.

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. Wash hands after use. Slippery when wet.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practices.



Safety Data Sheet

Swell-Star

SDS Revision Date: 02/22/2017

7.2. Conditions for safe storage, including any incompatibilities

Storage Information

Store away from oxidizers. Store in a dry location.

8. Exposure controls and personal protection

8.1. Control parameters

Exposure

Substances	CAS Number	OSHA PEL-TWA	ACGIH TLV-TWA
Contains no hazardous substances	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

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

Eyes Wear safety glasses or goggles to protect against exposure.

Skin Normal work coveralls and gloves.

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

9. Physical and chemical properties

Appearance	Solid. White.
Odor	Odorless
Odor threshold	No information available
pH	4-11
Melting point / freezing point	No information available
Initial boiling point and boiling range	No information available
Flash Point	No information available
Evaporation rate (Ether = 1)	No information available
Flammability (solid, gas)	No information available
Upper/lower flammability or explosive limits	No information available
Vapor pressure (Pa)	No information available
Vapor Density	No information available
Specific Gravity	1.4
Solubility in Water	Insoluble in water
Partition coefficient n-octanol/water (Log Kow)	No information available
Auto-ignition temperature	No information available
Decomposition temperature	No information available



Safety Data Sheet

Swell-Star

SDS Revision Date: 02/22/2017

Viscosity (cSt)	No information available
Density (lbs/gal)	No information available
9.2. Other information	
VOC Content (%)	No information available
Bulk Density	40-50 lbs/ft ³

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.

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	None known.
Ingestion	None known.

Chronis Effects/ Carcinogenicity

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

11.3 Toxicity Data

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



Safety Data Sheet

Swell-Star

SDS Revision Date: 02/22/2017

12. Ecological information

12.1. Toxicity

Aquatic Ecotoxicity

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Contains no hazardous substances	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	NA	No information available

12.3. Bioaccumulative potential

Substances	CAS Number	Log Pow
Contains no hazardous substances	NA	No information available

12.4. Mobility in soil

No information available

12.5. Results of PBT and vPvB assessment

No information available

13. Disposal considerations

13.1. Waste treatment methods

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

14. Transport information

	DOT (Domestic Surface Transportation)	IMO / IMDG (Ocean Transportation)	ICAO/IATA
14.1. UN number	Not restricted	Not restricted	Not restricted
14.2. UN proper shipping name	Not restricted	Not restricted	Not restricted
14.3. Transport hazard class(es)	DOT Hazard Class: Not applicable	IMDG: Not applicable Sub Class: Not applicable	Air Class: Not applicable
14.4. Packing group	Not applicable	Not applicable	Not applicable



Safety Data Sheet

Swell-Star

SDS Revision Date: 02/22/2017

14.5. Environmental hazards

IMDG Not applicable

14.6. Special precautions for user

None

15. Regulatory information

US TSCA Inventory EPA ARA Title III Extremely Hazardous Substances

All components listed on inventory or are exempt.
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 MA Right-to-Know Law

The California Proposition 65 regulations apply to this product.
One or more components listed.

NJ Right-to-Know Law PA Right-to-Know Law

One or more components listed
One or more components listed

Canadian Regulations Canadian DSL Inventory

All components listed on inventory or are exempt.



Safety Data Sheet

Swell-Star

SDS Revision Date: 02/22/2017

16. Other information

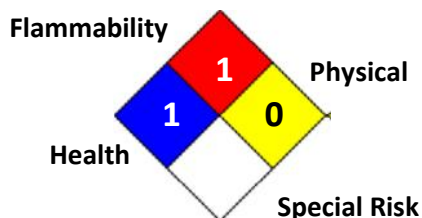
This is the first version in the GHS SDS format. Listings of changes from previous versions in other formats are not applicable.

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	1
PHYSICAL	0
PPE	B



End of Document



Safety Data Sheet

Thin-Star L

SDS Revision Date: 02/22/2017

1. Identification

1.1. Product identifier

Product Identity Thin-Star L

Alternate Names N/A

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

Intended use Liquid Water Based Mud Thinner and Dispersant

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

Not Classified

3. Composition/information on ingredients

3.1 Substances

Not applicable, this product is not a substance.

3.2 Mixtures

Hazardous components

Contains no reportable hazardous substances.

4. First aid measures

4.1. Description of first aid measures

Inhalation No hazards which require special first aid measures. Move to fresh air.

Eyes In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

Skin Wash off with plenty of water. Get medical attention if irritation develops and persists.

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

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

None under normal use.



Safety Data Sheet

Thin-Star L

SDS Revision Date: 02/22/2017

4.3 Indication of any immediate medical attention and special treatment needed

None reasonably foreseeable.

5. Fire-fighting measures

5.1. Extinguishing media

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

5.2. Special hazards arising from the substance or mixture

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

5.3. Advice for fire-fighters

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.
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

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.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

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

8. Exposure controls and personal protection

8.1. Control parameters

Occupational exposure limits: None

8.2. Exposure controls



Safety Data Sheet

Thin-Star L

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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	Not normally necessary.
Eyes	Safety glasses.
Hand	Impervious rubber gloves.
Skin	Normal work coveralls.
Other Work Practices	Handle in accordance with good industrial hygiene and safety practice. See section 2 for further details. - [Prevention]:

9. Physical and chemical properties

Appearance	Clear to slightly yellow liquid.
Odor	Slight.
Odor threshold	No data available
pH	7-9
Melting point / freezing point	No information available
Initial boiling point and boiling range	No data available
Flash Point	> 100 °C / > 212 °F Cleveland Open Cup (COC)
Evaporation rate (Ether = 1)	No data available
Flammability (solid, gas)	No data available
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	No data available
Partition coefficient n-octanol/water (Log Kow)	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Viscosity (cSt)	No data available
Density (lbs/gal)	No data available

9.2. Other information

None



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Thin-Star L

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10. Stability and reactivity

10.1. Reactivity

Not applicable

10.2. Chemical stability

Stable

10.3. Possibility of hazardous reactions

No dangerous reaction known under conditions of normal use.

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 toxicological effects

Information on the product as supplied:

Acute oral toxicity:	No data available
Acute dermal toxicity:	No data available
Acute inhalation toxicity:	May cause mild respiratory irritation.
Skin corrosion/irritation:	Prolonged or repeated contact may cause slight skin irritation.
Serious eye damage/eye irritation:	May cause mild eye irritation.
Respiratory/skin sensitization:	No data available to indicate product or components present at greater than 1% are chronic health hazards.
Mutagenicity:	No data available to indicate product or components present at greater than 1% are chronic health hazards.
Carcinogenicity:	No data available to indicate product or components present at greater than 1% are chronic health hazards.
Reproductive toxicity:	No data available to indicate product or components present at greater than 1% are chronic health hazards.
STOT - single exposure:	No known effects.
STOT - repeated exposure:	No known effects.



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12. Ecological information

12.1. Toxicity

Exotoxicity Effects

Product Ecotoxicity Data

No data available

Substance Ecotoxicity Data

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Contains no hazardous substances	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	NA	No information available

12.3. Bioaccumulative potential

Substances	CAS Number	Log Pow
Contains no hazardous substances	NA	No information available

12.4. Mobility in soil

No information available

12.5. Results of PBT and vPvB assessment

No information available

12.6. Other adverse effects

No information available

13. Disposal considerations

13.1. Waste treatment methods

Waste from residues/unused products:

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

Contaminated Packaging:

Follow all applicable national or local regulations.

Recycling:

In accordance with local and national regulations.



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14. Transport information

	DOT (Domestic Surface Transportation)	IMO / IMDG (Ocean Transportation)	ICAO/IATA
14.1. UN number	Not classified	Not classified	Not classified
14.2. UN proper shipping name	Not classified	Not classified	Not classified
14.3. Transport hazard class(es)	DOT Hazard Class: Not applicable	IMDG: Not applicable Sub Class: Not applicable	Air Class: Not applicable
14.4. Packing group	Not applicable	Not applicable	Not applicable
14.5. Environmental hazards			
IMDG	Not applicable		
14.6. Special precautions for user	Not applicable		

15. Regulatory information

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	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.
Canadian Regulations Canadian DSL Inventory	All components listed on inventory or are exempt.



Safety Data Sheet

Thin-Star L

SDS Revision Date: 02/22/2017

16. Other information

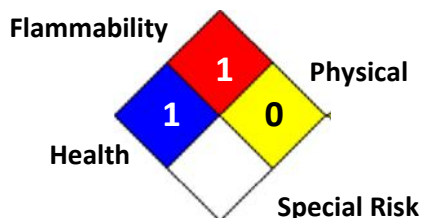
This is the first version in the GHS SDS format. Listings of changes from previous versions in other formats are not applicable.

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	1
PHYSICAL	0
PPE	B



End of Document

1. IDENTIFICATION

Product Identifier

Product Name TORQ BREAKER 114

Other means of identification

SDS # DFT-085

Recommended use of the chemical and restrictions on use

Recommended Use Friction reducer.

Details of the supplier of the safety data sheet

Supplier Address

DRILLING FLUIDS TECHNOLOGY
P. O. BOX 284
BOOKER, TEXAS 79005
OFFICE: 806-658-4600

Emergency Telephone Number

Emergency Telephone (24 hr) INFOTRAC 1-800-535-5053 (North America)
1-352-323-3500 (International)

2. HAZARDS IDENTIFICATION

Appearance Viscous red liquid

Physical State Liquid

Odor Citrus

Classification

This chemical does not meet the hazardous criteria set forth by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200). However, this Safety Data Sheet (SDS) contains valuable information critical to the safe handling and proper use of this product. This SDS should be retained and available for employees and other users of this product.

3. COMPOSITION/INFORMATION ON INGREDIENTS

This product is not hazardous according to OSHA 29 CFR 1910.1200. Components not listed are not hazardous or are below reportable limits.

4. FIRST-AID MEASURES

First Aid Measures

General Advice	Provide this SDS to medical personnel for treatment.
Eye Contact	Flush eyes with large amounts of water. Get medical attention if symptoms develop and persist.
Skin Contact	Flush with soap and water for 15 minutes or until all traces have been removed. Seek medical attention if symptoms develop and persist.
Inhalation	Remove victim to fresh air and, if needed, immediately begin artificial respiration. Give oxygen if breathing is labored. Get emergency medical help. Contact a physician immediately.
Ingestion	Do not induce vomiting, unless directed by medical personnel. Get immediate medical attention.

Most important symptoms and effects

Symptoms	Inhalation of vapors may be narcotic or anesthetic. Ingestion of liquid will cause gastrointestinal distress, irritation, and possible nausea. Liquid or vapors may be irritating to skin and eyes. Signs of inhalation overexposure, in order: Irritation of respiratory tract, nervous system depression, headaches, dizziness, staggering gait, confusion, unconsciousness, and coma.

Indication of any immediate medical attention and special treatment needed

Notes to Physician	MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: Pre-existing skin disorders.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

Alcohol foam, Water fog, Carbon dioxide, or Dry chemical.

Unsuitable Extinguishing Media	Water or foam may cause frothing which can be violent and possibly endanger the life of the firefighter.

Specific Hazards Arising from the Chemical

Product is not flammable or combustible. The liquid vapor may settle into low areas or may travel along the ground or surface to ignition sources where they might ignite or explode.

Protective equipment and precautions for firefighters

Approach fire from upwind side. Avoid breathing smoke, fumes, mist, or vapors on the downwind side. Firefighters wear protective clothing and self-contained breathing apparatus. Fight fire from a safe distance and protected location.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions	ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Use personal protection recommended in Section 8.
Environmental Precautions	Clean up leaks/spills immediately to prevent soil or water contamination.

Methods and material for containment and cleaning up

Methods for Containment	Prevent further leakage or spillage if safe to do so. Use absorbent material to contain spill.
Methods for Clean-Up	Small spills: sweep / pick up with absorbent media. Store as HAZARDOUS waste. Large spills: contain with dikes, pick up with vacuum truck. Pick up remaining liquids with absorbent material. Handle as HAZARDOUS waste. Notify proper local, state, and federal agencies.
Prevention of Secondary Hazards	Spills may present a slipping hazard.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on Safe Handling	Avoid contact with skin, eyes or clothing. Handle in accordance with good industrial hygiene and safety practice. Wash thoroughly with soap and water after handling. Containers of this material may be hazardous when emptied, since emptied containers retain product residues. All hazard precautions given in the data sheet must be observed. Handle empty containers as if they were full.

Conditions for safe storage, including any incompatibilities

Storage Conditions	Keep containers tightly closed in a dry, cool and well-ventilated place.
Incompatible Materials	Strong oxidizing agents, concentrated nitric or sulfuric acids, halogen, and molten sulfur.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

<u>Exposure Guidelines</u>	The following information is given as general guidance No exposure limits noted for ingredient(s)

Appropriate engineering controls

Engineering Controls	VENTILATION: LOCAL EXHAUST – Not Necessary SPECIAL - Not Necessary MECHANICAL –Not necessary OTHER - Not Necessary. Maintain eye wash fountain and quick drench facilities in work area.

Individual protection measures, such as personal protective equipment

Eye/Face Protection	Chemical goggles or full face shield.
Skin and Body Protection	Chemical impervious gloves. Boots, aprons needed for protection against spill / splashes.
Respiratory Protection	Not normally needed under proper conditions of use.
General Hygiene Considerations	Avoid contact with skin, eyes and clothing. After handling this product, wash hands before eating, drinking, or smoking. If contact occurs, remove contaminated clothing. If needed, take first aid action shown on section 4 of this SDS. Launder contaminated clothing before reuse.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical State	Liquid	Odor	Citrus
Appearance	Viscous red liquid	Odor Threshold	Not determined
Color	Red		

<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
pH	10.0	
Melting Point/Freezing Point	Not determined	
Boiling Point/Boiling Range	Not determined	
Flash Point	Will not burn	
Evaporation Rate	Not determined	
Flammability (Solid, Gas)	Not determined	
Upper Flammability Limits	Not determined	
Lower Flammability Limit	Not determined	
Vapor Pressure	Not determined	
Vapor Density	Not determined	
Specific Gravity	1.035	(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.

Hazardous Polymerization	Hazardous polymerization does not occur.

Conditions to Avoid

Heat, sparks, flames.

Incompatible Materials

Strong oxidizing agents, concentrated nitric or sulfuric acids, halogen, and molten sulfur.

Hazardous Decomposition Products

From combustion: smoke, carbon monoxide, carbon dioxide.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information

Eye Contact	May cause temporary irritation on eye contact.

Skin Contact	May cause temporary irritation on skin contact.
Inhalation	May cause irritation if inhaled.
Ingestion	May cause discomfort if swallowed.

Component Information

Information on physical, chemical and toxicological effects

Symptoms	Please see section 4 of this SDS for symptoms.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Carcinogenicity	This product does not contain any carcinogens or potential carcinogens as listed by OSHA, IARC or NTP.

Numerical measures of toxicity

Not determined

12. ECOLOGICAL INFORMATION

Ecotoxicity

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

Component Information

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

<u>Note</u>	Please see current shipping paper for most up to date shipping information, including exemptions and special circumstances.
<u>DOT</u>	Not regulated
<u>IATA</u>	Not regulated
<u>IMDG</u>	Not regulated

15. REGULATORY INFORMATION

International Inventories

TSCA All ingredients are listed or exempt from listing on Chemical Substance Inventory

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

IECSC - China Inventory of Existing Chemical Substances

KECL - Korean Existing and Evaluated Chemical Substances

PICCS - Philippines Inventory of Chemicals and Chemical Substances

US Federal Regulations

SARA 313

Not determined

US State Regulations

U.S. State Right-to-Know Regulations

Not determined

16. OTHER INFORMATION

NFPA

Health Hazards

Flammability

Instability

Special Hazards

0

0

0

Not determined

HMIS

Health Hazards

Flammability

Physical Hazards

Personal Protection

Not determined

Not determined

Not determined

Not determined

Issue Date: 29-Nov-2013

Revision Date: 10-Mar-2014

Revision Note: New format

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.

End of Safety Data Sheet

CHILDREN.

PERCENT VOS 6.0

Ingredients: 111-42-2, diethanolamine; 27323-47-1, dodecylbenzenesulfonic acid, triethanolamine salt; 68603-42-9, 143-07-7, 61791-08-0, 61790-12-3, cocamide DEA, lauric acid, polyethyleneglycol cocamide, tall oil fatty acid; 7732-18-5, water, 7758-29-4, sodium tripolyphosphate.

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Safety Data Sheet

Trol-Star LV

SDS Revision Date: 02/21/2017

1. Identification

1.1. Product identifier

Product Identity

Trol-Star LV

Alternate Names

None

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

Intended use

Fluid Loss 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

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



Safety Data Sheet

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SDS Revision Date: 02/21/2017

Contains Substances

Modified starch

CAS Number

Proprietary

2.3 Hazards not otherwise classified

None known

3. Composition/information on ingredients

Substances	CAS Number	PERCENT (w/w)	GHS Classification - US
Modified starch	Proprietary	100%	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

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 and effects, both 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

Water fog, carbon dioxide, foam, dry chemical.

5.2. Special hazards arising from the substance or mixture

Special Exposure Hazards

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

5.3. Advice for fire-fighters

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



Safety Data Sheet

Trol-Star LV

SDS Revision Date: 02/21/2017

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

None known.

6.3. Methods and material for containment and cleaning up

Scoop up and remove.

7. Handling and storage

7.1. Precautions for safe handling

Avoid creating or inhaling dust. Avoid dust accumulations. Slippery when wet. Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

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

7.3. Specific end use(s)

None known.

8. Exposure controls and personal protection

8.1. Control parameters

Exposure

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

8.2. Exposure controls

Respiratory

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

Eyes

Wear safety glasses or goggles to protect against exposure.

Skin

Normal work coveralls and gloves.

Engineering Controls

Use in a well ventilated area.

Other Work Practices

None known.

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

9. Physical and chemical properties



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Trol-Star LV

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Appearance	Powder, Off white
Odor	Starch
Odor threshold	No information available
pH	8-11 (2%)
Melting point / freezing point	No information available
Initial boiling point and boiling range	No data available
Flash Point	No data available
Evaporation rate (Ether = 1)	No data available
Flammability (solid, gas)	No data available
Upper/lower flammability or explosive limits	No data available
Vapor pressure (Pa)	No data available
Vapor Density	No data available
Specific Gravity	1.5
Solubility in Water	Soluble in water
Partition coefficient n-octanol/water (Log Kow)	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Viscosity (cSt)	No data available
Density (lbs/gal)	No data available
9.2. Other information	
VOC Content (%)	No data available
Bulk Density	30-40 lbs/ft ³

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



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Principle Route of Exposure Eye or skin contact inhalation.

11.2 Symptoms related to the physical, chemical and toxicological characteristics

Acute Toxicity

Inhalation	None known.
Eye Contact	None known.
Skin Contact	None known.
Ingestion	None known.

Chronis 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
Modified starch	Proprietary	>2000 mg/kg (Rat) 27,000 mg/kg (Rat) (similar substance)	>2000 mg/kg (Rat) (similar substance)	>5 mg/L (Rat) 4h >5.8 mg/L (Rat) 4h (similar substance)

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

Substances	CAS Number	Eye damage/irritation
Modified starch		No data of sufficient quality are available.

Substances	CAS Number	Skin Sensitization
Modified starch		Patch test on human volunteers did not demonstrate sensitization properties (similar substances)

Substances	CAS Number	Respiratory Sensitization
Modified starch		No information available

Substances	CAS Number	Mutagenic Effects
Modified starch		In vitro tests did not show mutagenic effects (similar substances)

Substances	CAS Number	Carcinogenic Effects
Modified starch		Not regarded as carcinogenic.

Substances	CAS Number	Reproductive toxicity
Modified starch		Animal testing did not show any effects on fertility. Did not show teratogenic effects in animal experiments. (similar substances)

Substances	CAS Number	STOT - single exposure
Modified starch		No significant toxicity observed in animal studies at concentration requiring classification.

Substances	CAS Number	Aspiration hazard



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Modified starch		Not applicable

12. Ecological information

12.1. Toxicity

Ecotoxicity Effects

Product Ecotoxicity Data

No data available

Substance Ecotoxicity Data

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Modified starch	Proprietary	No information available	No information available	No information available	No information available

12.2. Persistence and degradability

Substances	CAS Number	Persistence and Degradability
Modified starch	Proprietary	(>80% @ 7d)

12.3. Bioaccumulative potential

Substances	CAS Number	Log Pow
Modified starch	Proprietary	No information available



Safety Data Sheet

Trol-Star LV

SDS Revision Date: 02/21/2017

12.4. Mobility in soil

Substances	Mobility
Modified starch	No information available

12.5. Results of PBT and vPvB assessment

No information available

13. Disposal considerations

13.1. Waste treatment methods

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

14. Transport information

	DOT (Domestic Surface Transportation)	IMO / IMDG (Ocean Transportation)	ICAO/IATA
14.1. UN number	Not restricted	Not restricted	Not restricted
14.2. UN proper shipping name	Not restricted	Note restricted	Not restricted
14.3. Transport hazard class(es)	DOT Hazard Class: Not applicable	IMDG: Not applicable Sub Class: Not applicable	Air Class: Not applicable
14.4. Packing group	Not applicable	Not applicable	Not applicable
14.5. Environmental hazards			
IMDG	Not applicable		
14.6. Special precautions for user	None		

15. Regulatory information

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).



Safety Data Sheet

Trol-Star LV

SDS Revision Date: 02/21/2017

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	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.
Canadian Regulations Canadian DSL Inventory	All components listed on inventory or are exempt.

16. Other information

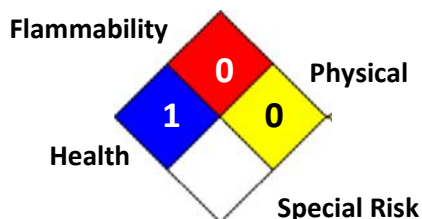
This is the first version in the GHS SDS format. Listings of changes from previous versions in other formats are not applicable.

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

Ultra Pac Plus LV/Regular

SECTION 1. IDENTIFICATION

Product Identifier Ultra Pac Plus LV/Regular
Other Means of Identification Polyanionic Cellulose
Other Identification PAC
Product Family Fluid Loss Control Additive
Recommended Use Drilling Mud Additive.
Supplier Bri-Chem Supply Corp, 5151 Bannock Street Unit 5, Denver, CO, 80216, 303-722-1681, www.brichemsupplycorp.com
Emergency Phone No. ChemTrec, (800) 424-9300, 24/7

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification
Aquatic hazard (Acute) - Category 3
GHS Label Elements
Hazard Statement(s):
Harmful to aquatic life.
Precautionary Statement(s):
Avoid release to the environment.
Disposal:
Dispose of contents/container in accordance with local, regional, national and international regulations.
Eye: May cause eye irritation.
Skin: May cause skin irritation.
Ingestion: May cause irritation of the digestive tract.
Inhalation: May cause respiratory tract irritation. May be harmful if inhaled.
Chronic:
Carcinogenicity: IARC, NTP, ACGIH, OSHA and CA Prop 65 do not list Polyanionic Cellulose (PAC) as a carcinogen.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No.	%	Other Identifiers
Cellulose, carboxymethyl ether, sodium salt	9004-32-4		

SECTION 4. FIRST-AID MEASURES

First-aid Measures

Inhalation

Get medical aid immediately. Remove from exposure and move to fresh air immediately. If breathing is difficult, give oxygen. Do not use mouth-to-mouth resuscitation if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

Skin Contact

Get medical aid immediately. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.

Eye Contact

Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately.

Ingestion

If swallowed, get medical aid immediately. Only induce vomiting if directed to do so by medical personnel. Never give anything by mouth to an unconscious person.

First-aid Comments

If exposed or concerned, see a doctor for medical advice.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

In case of fire, use water, dry chemical, chemical foam, or alcohol-resistant foam.

Specific Hazards Arising from the Chemical

Material will not burn unless preheated.

Special Protective Equipment and Precautions for Fire-fighters

Vapors are heavier than air and may travel to a source of ignition and flash back. Vapors can spread along the ground and collect in low or confined areas.

do not release runoff from fire control methods to sewers or waterways. Because fire may produce toxic thermal decomposition products, wear a self-contained breathing apparatus (SCBA) with a full face-piece operated in pressure-demand or positive-pressure mode.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment, and Emergency Procedures

Use the Personal Protective Equipment as listed in Section 8.

Environmental Precautions

It is good practice to prevent releases into the environment.

Methods and Materials for Containment and Cleaning Up

Use appropriate safety equipment. Stop or reduce leak if safe to do so. Avoid generating dust. Shovel, sweep, or use industrial vacuum cleaner to pick up. Place in container for proper disposal. Reduce airborne dust and prevent scattering by moistening with water.

SECTION 7. HANDLING AND STORAGE

Precautions for Safe Handling

Only use where there is adequate ventilation. Avoid generating dusts. Avoid contact with skin, eyes, and clothing. Wear personal protective equipment if contact is unavoidable. Discard contaminated clothing and shoes or thoroughly clean before re-use.

It is good practice to: avoid breathing product, avoid skin and eye contact and wash hands after handling.

Conditions for Safe Storage

Store in an area that is cool, dry, and well-ventilated. Keep container closed when not in use. Use good housekeeping in storage and use areas to prevent accumulating of dust in work areas.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Respirable dust 5 mg/m³ total dust 15 mg/m³.

Appropriate Engineering Controls

Use process enclosures, local exhaust ventilation or other engineering controls to keep dust concentrations low and to reduce potential exposure.

Individual Protection Measures

Eye/Face Protection

Wear chemical safety goggles and face shield when contact is possible.

Skin Protection

Wear impervious protective clothing and boots as required to prevent contact.

Respiratory Protection

Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulation (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 operation (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.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Basic Physical and Chemical Properties

Appearance	Beige powder.
Odour	Odourless
pH	6.5 - 8.5
Melting Point/Freezing Point	274 °C (525 °F) (melting); Not available (freezing)
Initial Boiling Point/Range	Not available
Evaporation Rate	Not available
Vapour Density (air = 1)	1.5
Relative Density (water = 1)	1.6
Solubility	Soluble in water
Decomposition Temperature	Not available
Viscosity	Not available (kinematic)
Other Information	
Physical State	Solid
Molecular Formula	Not available
Molecular Weight	Not available

SECTION 10. STABILITY AND REACTIVITY

Chemical Stability

Polyanionic Cellulose (PAC) is stable at room temperature in closed container under normal storage and handling conditions.

Possibility of Hazardous Reactions

Hazardous polymerization will not occur.

Conditions to Avoid

Ignition sources, electrical sparks, exposure to flame, heat.

Incompatible Materials

Strong oxidizing agents.

Hazardous Decomposition Products

Carbon monoxide, carbon dioxide.

SECTION 11. TOXICOLOGICAL INFORMATION

Skin Corrosion/Irritation

Not irritating.

Contact with skin is not expected to cause prolonged or significant irritation.

Serious Eye Damage/Irritation

Product Identifier: Ultra Pac Plus LV/Regular

Date of Preparation: October 29, 2015

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May cause slight irritation as a "foreign object". Tearing, blinking, and mild temporary pain may occur as particles are rinsed from the eye by tears.

Not expected to cause prolonged or significant eye irritation. Material is dusty and may scratch the surface of the eye.

STOT (Specific Target Organ Toxicity) - Single Exposure

Inhalation

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

Dust may produce mechanical irritation to the mucous membranes of the eyes, nose, throat, and upper respiratory tract.

Skin Absorption

Not expected to be harmful to internal organs if absorbed through the skin.

Ingestion

Not harmful.

Not expected to be harmful if swallowed.

No information was located for: STOT (Specific Target Organ Toxicity) - Repeated Exposure, Carcinogenicity, Development of Offspring, Sexual Function and Fertility, Germ Cell Mutagenicity, Interactive Effects

SECTION 12. ECOLOGICAL INFORMATION

No ecotoxicity or environmental fate data available.

Toxicity

Toxicity to fish LC50-Oncorhynchus mykiss (rainbow trout) - 100 - 1,000 mg/l - 96 H. Toxicity to daphnia and other aquatic invertebrates EC50 - Daphnia (water flea) - 87.26 mg/l - 48 h.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal Methods

Contact local environmental authorities for approved disposal or recycling methods in your jurisdiction.

SECTION 14. TRANSPORT INFORMATION

Not regulated under US DOT Regulations.

Special Precautions for User Not applicable

Transport in Bulk According to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

SECTION 15. REGULATORY INFORMATION

Safety, Health and Environmental Regulations

Canada

WHMIS Classification

Not a WHMIS controlled product.

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

Custom Regulatory 1

SARA 302 Components:

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components:

This material does not contain any chemical components with known CAS numbers that exceed the threshold (DE Minimis) reporting levels established by SARA Title III, Section 313.

Custom Regulatory 2

Massachusetts Right to Know Components:

Product Identifier: Ultra Pac Plus LV/Regular

Date of Preparation: October 29, 2015

No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know Components:
Carboxymethylcellulose sodium salt.

New Jersey Right To Know components:
Carboxymethylcellulose sodium salt.

California Prop. 65 Components:

This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive harm.

SECTION 16. OTHER INFORMATION

SDS Prepared By	Bri-Chem Supply Corp
Date of Preparation	October 29, 2015
Disclaimer	This Health and Safety information is correct to the best of our knowledge and belief at the date of its publication, but we cannot accept liability for any loss, injury or damage which may result from its use. We shall ensure, so far as is reasonably practicable, that any revision of this Data Sheet is sent to all customers to whom we have directly supplied this substance, but must point out that it is the responsibility of any intermediate supplier to ensure that such revision is passed to the ultimate user. The information given in the Data Sheet is designed only as guidance for safe handling, storage, and the use of the substance. It is not a specification nor does it guarantee any specific properties. All chemicals should be handled only by competent personnel, within a controlled environment. Should further information be required, this can be obtained through the sales office whose address is at the top of this data sheet.



OFFICIAL LISTING

NSF International Certifies that the products appearing on this Listing conform to the requirements of
NSF/ANSI Standard 60 - Drinking Water Treatment Chemicals - Health Effects

This is the Official Listing recorded on October 31, 2017.

CETCO
Colloid Environmental Technologies Co.
2870 Forbs Avenue
Hoffman Estates, IL 60192
800-527-9948
847-851-1824



Facility: # 1 USA

Chemical/ Trade Designation	Function	Max Use
Bentonite [1]		
HYDRAUL-EZ®	Drilling Fluid	NA
	Well Drilling Aid	
SUPER GEL-X®	Drilling Fluid	NA
	Well Drilling Aid	
VELOCITY-PRO	Drilling Fluid	NA
	Well Drilling Aid	
XTRA GEL™	Drilling Fluid	NA
	Well Drilling Aid	
Miscellaneous Water Supply Products		
C/S GRANULAR™ [1]	Well Sealant	NA
CETCO®/VOLCLAY® CHIPS [1]	Well Sealant	NA
CETCO®/VOLCLAY® CRUMBLES [1] [2]	Well Sealant	NA
CETCO®/VOLCLAY® CRUMBLES #8 [1] [2]	Well Sealant	NA
CETCO®/VOLCLAY® GRANULAR [1] [2]	Well Sealant	NA
GROUT		
CETCO®/VOLCLAY® GROUT [1] [2] [3]	Well Sealant	NA
CETCO®/VOLCLAY® TABLETS [1]	Well Sealant	NA
CETCO®/VOLCLAY®/PUREGOLD® CHIPS [1] [4]	Well Sealant	NA
CETCO®/VOLCLAY®/PUREGOLD® COARSE CHIPS [1] [4]	Well Sealant	NA
CETCO®/VOLCLAY®/PUREGOLD® MEDIUM CHIPS [1] [4]	Well Sealant	NA
GEO THERMAL GROUT™ [1] [3]	Well Sealant	NA
HIGH TC GEO THERMAL GROUT™ [1] [3]	Well Sealant	NA
PUREGOLD® GEL [1]	Well Sealant	NA
PUREGOLD® GROUT [1] [3]	Well Sealant	NA

[1] These products are designed to be flushed out prior to using the system for drinking water following the manufacturer's use instructions. The well is to be properly flushed and drained until the turbidity of the water is <1 NTU.

[2] This product can be shipped with either the Cetco® or Volclay® prefix.

[3] This product has been evaluated to the requirements of NSF/ANSI Standard 60, Annex C,

Note: Additions shall not be made to this document without prior evaluation and acceptance by NSF International.

MATERIAL SAFETY DATA SHEET

I. PRODUCT IDENTIFICATION

PRODUCTS NAME(s) : Western Extra-High Yield, Slick Gel		PRODUCT CODE: AB3A005
GENERIC NAME: Bentonite	MSDS CODE NO. A202PAB3A005	
CHEMICAL NAME: Sodium /Calcium Aluminum Silicate	CASE REGISTRY NO. 1302-78-9*	
MANUFACTURING : WESTERN CLAY CO.	TELEPHONE NUMBERS:	
ADDRESS: 508 East Center	EMERGENCY: 213-664-2121	
Aurora, Utah 84620	CHEMTREC: 800-424-9300	
	BUSINESS: 800-982-7960	

II. HAZARD IDENTIFICATION

HEALTH/PHYSICAL HAZARDS: Material dusts containing less than 1% free crystalline silica (quartz) Are classified as nuisance particulates. Exposure to these dusts may cause irritation to eyes, ears, throat, and upper respiratory tract. This materials dust may contain more than 1% free silica as Quartz. Chronic (long term) exposure to air born free silica at levels higher than TLV=s may lead to the development of silicosis or other respiratory problems. (See Section VI)

HAZARD LISTING: Nuisance Particles are listed by ACGIH. Free Crystalline Silica as Quartz is listed by OSHA and ACGIH as a Hazardous Material.

III. PHYSICAL DATA

Melting Point: (1450 Deg C)	Bulking Value 90 lbs
Solubility in Water : Insoluble, Forms Colloidal Suspension	pH : 8-10
Appearance : Tan, Light Green Pebbles or Granules	Density : 70lb / cu. Ft Powder or Compact Granular

IV. FIRE AND EXPLOSION DATA

Flash Point : N.A.	Flammable Limits : LEL: NA UEL: NA
Special Fire Fighting Procedures : NA	
Unusual Fire and Explosion Hazards : None, Product Will Not Support Combustion.	
Extinguishing Media : None For Product, Any Media can Be Used For Packaging	

V. REACTIVITY

Stability : Stable

Hazardous Polymerization : None

Incompatibility : None

Hazardous Decomposition Products : None

NA = Not Applicable

ND = Not Determined

Date Prepared : February 27, 2006

VI. HEALTH HAZARD INFORMATION

ROUTES OF EXPOSURE AND EFFECTS

Skin : Possible drying resulting in dermatitis.

Eyes : Mechanical Irritant.

Inhalation : (Acute, Short Term) Exposure to excessive concentrations of dust may cause irritation of the Nose, Throat, And Upper Respiratory Tract. (Chronic, Long Term) Chronic exposure to crystalline silica such as quartz were levels exceed TLV=s can cause Silicosis and other respiratory problems. Short term exposure to very high concentrations may lead to increased risk and accelerated onset of silicosis and respiratory damage. Silicosis is a progressive, degenerative, disabling, and sometimes fatal lung disease characterized by coughing, shortness of breath, wheezing, and fibrotic changes in the lungs with scarring and nodular formation.

Ingestion : Accidentally this material will generally cause no adverse effects. Minor intestinal irritation is possible.

Permissible Exposure Limits :
(For air contaminants)

OSHA PEL
(8hr. TWA)

ACGIH TLV

Bentonite as nuisance dust

Total dust 15mg/cubic meter

ND

Respirable dust 5mg/cubic meter

ND

Crystalline Quartz (respirable) 0.1mg/cubic meter 0.1mg/cubic meter

Where crystobalite or tridymite are present use 2 of the PEL or TLV value for crystalline quartz.

Carcinogenicity : Bentonite is not listed by NTP, IARC or OSHA. IARC, 1987, concludes that there is limited evidence suggesting the carcinogenicity in humans of inhaled crystalline silica (IARC Class 2A).

Acute Oral LD : ND

Acute Dermal LD :

Aquatic Toxicology LC : ND

Emergency and First Aid Procedures

Skin : Wash with soap and water until clean

Eyes : Flush with water until irritation ceases. Do not rub eyes.

Inhalation : Move to area free from dust. If symptoms of irritation persist contact physician. Inhalants may aggravate existing respiratory illness.

VII. HANDLING AND USE PRECAUTIONS

Steps to be taken if material is released or spilled : Avoid breathing dust; wear respirator approved for silica bearing dust. Vacuum up to avoid generating airborne dust. Avoid using water. Product is slippery when wet.

Waste Disposal Methods : Product should be disposed of in accordance with applicable local, state, and federal regulations.

Handling and Storage Precautions : Use NIOSH/MSHA respirators approved for silica bearing dust when free silica containing airborne bentonite dust levels exceed PEL/TLV=s. Clean up spills promptly to avoid making dust.

Storage area floors may become slippery when wet.

VIII. INDUSTRIAL HYGIENE CONTROL MEASURES

Ventilation Requirements : Mechanical, general room ventilation. Use local ventilation to maintain PEL=s/TLV=s.

Respirator : Use respirator approved by NIOSH/MSHA for silica bearing dust.

Eye Protection : Use safety glasses or goggles to minimize material from getting into eyes.

Gloves : Generally not necessary.

Other Protective Clothing or Equipment : None

IX. SPECIAL PRECAUTIONS

Avoid prolonged inhalation of airborne dust.

DEPARTMENT OF TRANSPORTATION INFORMATION

Shipping Name : Common Ground Clay (NOIBN)

Hazard Class : Not Hazardous

Cautionary Labeling : None required

This information is taken from sources or based upon data believed to be reliable, however, Western Clay Co. makes no warranty as to the absolute correctness or sufficiency of any of the foregoing or that additional or other special protective measures may not be required under unusual or particular conditions which may be associated with normal use of this product. Since the use or misuse of this product is not within the control of Western Clay Co. it is the users obligation to assure conditions of safe use and disposal of this product. Seller warrants that this product conforms to the specifications stated herein. Buyer assumes all risks associated with the possession, use, mixing, blending, treatment, storage, disposal, transportation, and handling of the product, wether alone or in combination with other substances. SELLER MAKES NO OTHER WARRANTY OF ANY KIND WHATEVER, EXPRESS OR IMPLIED, AND ALL OTHER WARRANTIES, INCLUDING WARRANTIES OF QUALITY MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE DISCLAIMED. Seller=s liability is limited to the product price.

Xanthan GUM

SECTION 1. IDENTIFICATION

Product Identifier Xanthan GUM
Other Means of Identification Xanthan Gum, dispersible grade
Product Family Viscosifier
Recommended Use Drilling Mud Additive.
Supplier Identifier Bri-Chem Supply Corp, 9351 Grant Street, Ste 380, Thornton, CO, 80229, 720-236-1012, www.brichemsupplycorp.com
Emergency Phone No. ChemTrec, (800) 424-9300, 24/7

SECTION 2. HAZARD IDENTIFICATION

Classification
Not classified under any hazard class.
Label Elements
Not applicable
Other Hazards
Extremely slippery when wet!

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No.	%	Other Identifiers
Xanthan gum	11138-66-2	98.0 - 100 %	

SECTION 4. FIRST-AID MEASURES

First-aid Measures

Inhalation

Remove to fresh air. If symptoms persist, call a physician. If not breathing, give artificial respiration.

Skin Contact

Wash gently and thoroughly with lukewarm, gently flowing water and non-abrasive soap for 5 minutes.

Eye Contact

Immediately flush the contaminated eye(s) with lukewarm, gently flowing water while holding the eyelid(s) open for several minutes. If eye irritation persists, seek medical attention.

Ingestion

No adverse health effects are expected to develop if only small amounts (less than a mouthful) are swallowed.

First-aid Comments

Remove material from eyes, skin, and clothing. In case of doubt or when symptoms persist, seek medical attention.
Wash heavily-contaminated clothing before re-use.

SECTION 5. FIRE-FIGHTING MEASURES

Product Identifier: Xanthan GUM

Date of Preparation:

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Extinguishing Media

Suitable Extinguishing Media

Water, dry chemical, carbon dioxide.

Specific Hazards Arising from the Product

Product will burn when in contact with a flame. Treat as a Class "A" fire.

Can contain sufficient fines to cause a combustible dust explosion. Do not breathe smoke, gases, or vapours generated.

Special Protective Equipment and Precautions for Fire-fighters

A full-body encapsulating chemical protective suit with positive pressure SCBA may be necessary.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment, and Emergency Procedures

Wet material on walking surfaces will be EXTREMELY slippery. Avoid dust generation. Use the Personal Protective Equipment recommended in Section 8.

Environmental Precautions

It is good practice to prevent releases into the environment.

Methods and Materials for Containment and Cleaning Up

Use vacuum equipment designated for combustible dust. Take precautionary measures against static discharge. The use of water wash down is not recommended unless the spilled material is already wet.

SECTION 7. HANDLING AND STORAGE

Precautions for Safe Handling

Prevent dust accumulation on ALL surfaces including ceiling rafters and other hidden surfaces.

DO NOT breathe dust. In case of insufficient ventilation, wear suitable respiratory equipment.

Avoid conditions that generate airborne dust in handling, transfer and clean up.

Product may form combustible dust-air mixtures.

Avoid emptying packages in or near flammable vapours.

Keep away from heat, flame, sparks, and other ignition sources.

Static charges may cause flash fire.

Remove material from eyes, skin, and clothing.

Conditions for Safe Storage

Store in a dry place away from strong oxidizing agents.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

(Xanthan Gum)

OSHA = US Occupational Safety and Health administration. PEL = Permissible Exposure Limits.

Total dust 15 mg/m³ (8 hr TWA)

Respirable 5 mg/m³ (8 Hr TWA).

Appropriate Engineering Controls

Ventilation: Provide natural or mechanical ventilation to control exposure levels below airborne exposure limits in this section. The use of local mechanical exhaust ventilation is preferred at sources of air contamination such as open process equipment.

Individual Protection Measures

Eye/Face Protection

This product does not cause significant eye irritation or eye toxicity requiring special protection.

Where there is significant potential for eye contact, wear chemical goggles and have eye flushing equipment available.

Skin Protection

Minimize skin contamination by following good industrial practice. Protective gloves are recommended.

Respiratory Protection

Avoid breathing dust. Use NIOSH/MSHA-approved respiratory protection equipment when airborne exposures

exceed established guidelines.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Basic Physical and Chemical Properties

Appearance	White - tan powder.
Odour	Odourless
Relative Density (water = 1)	1.5 at 25 °C (77 °F)
Other Information	
Physical State	Solid

SECTION 10. STABILITY AND REACTIVITY

Chemical Stability

Stable under recommended storage conditions.

Possibility of Hazardous Reactions

Hazardous polymerization will not occur.

Conditions to Avoid

Avoid dust formation.

Incompatible Materials

Avoid strong oxidizing agents.

Hazardous Decomposition Products

Carbon monoxide and carbon dioxide.

SECTION 11. TOXICOLOGICAL INFORMATION

The dry powder may cause foreign body irritation in some individuals.

Prolonged contact with the dry powder may cause drying or chapping of the skin.

Excessive inhalation of dust may be annoying and can mechanically impede respiration.

Due to hygroscopic properties, a paste or gel can be formed in the airway.

Acute Toxicity

Glyoxal:

Inhalation Rat: 1300-2400 mg/m³ (4hr)

Rat: >500 mg/kg

Rat(Acute): >640-8979 mg/kg

Rat: >2000 mg/kg

Rabbit: 12700 mg/kg

Guinea Pig: >5000 mg/kg

Skin Corrosion/Irritation

May cause mild irritation. Prolonged contact with the dry powder may cause drying or chapping.

Non-irritating to the skin(rabbit). No skin allergy observed in guinea pig following repeated skin exposure.

Serious Eye Damage/Irritation

Dry powder may cause foreign body irritation in some individuals.

Non-irritating to the eye (rabbit).

STOT (Specific Target Organ Toxicity) - Single Exposure

Inhalation

Hygroscopic properties of the gum can form a paste or gel in the airway. Inhalation of the dust may cause respiratory tract irritation. Excessive inhalation of the dust may cause coughing and sneezing.

Ingestion

Non-toxic if swallowed (less than a mouthful) based on available information.

STOT (Specific Target Organ Toxicity) - Repeated Exposure

Xanthan Gum: No adverse effects observed in long-term feeding studies with rats (up to 1000 mg/kg per day).

Product Identifier: Xanthan GUM

Date of Preparation:

Respiratory and/or Skin Sensitization

Glyoxal: May cause sensitization of susceptible persons.

Reproductive Toxicity

Sexual Function and Fertility

No adverse effects were observed in 3-generation reproduction study with rats (up to 500 mg/kg per day).

SECTION 12. ECOLOGICAL INFORMATION

Contains no substances known to be hazardous to the environment or not degradable in waste water treatment plants.

Ecotoxicity

Xanthan Gum:

LC50 96 hr.

Rainbow trout: 490 mg/L

Mysid shrimp: >50,000 mg/L suspended particulate phase using 5.7 kg/m³ xanthan gum in a standard drilling fluid.

EC50 48 hr:

Daphnia magna: 980 mg/l

Persistence and Degradability

This product is biodegradable.

Bioaccumulative Potential

This product is inherently biodegradable.

Mobility in Soil

This is inert material.

Other Adverse Effects

Xanthan Gum:

BOD: ~ 200 mg O₂/gram

COD: ~ 1600 mg O₂/gram

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal Methods

Dispose of in accordance with Federal, Provincial, or Municipal guidelines or laws.

Liquids may be sewerage in accordance with local, provincial, and national regulations if care is taken to avoid pluggage or blockage of sewer systems recognizing that these materials are intended to increase viscosity and form gels.

Dry or wet solid material can be landfilled in accordance with local, provincial, and national regulations.

As a carbohydrate, this material is readily biodegradable, when in low concentrations, in a biological wastewater treatment plant.

SECTION 14. TRANSPORT INFORMATION

Not regulated under Canadian TDG regulations.

Special Precautions Not applicable

Transport in Bulk According to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

SECTION 15. REGULATORY INFORMATION

Safety, Health and Environmental Regulations

Canada

WHMIS 1988 Classification

Not a WHMIS controlled product.

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

Product Identifier: Xanthan GUM

Date of Preparation:

SECTION 16. OTHER INFORMATION

SDS Prepared By	Sodium Solutions Inc.
Phone No.	780-482-1312
Disclaimer	This Health and Safety information is correct to the best of our knowledge and belief at the date of its publication, but we cannot accept liability for any loss, injury or damage which may result from its use. We shall ensure, so far as is reasonably practicable, that any revision of this Data Sheet is sent to all customers to whom we have directly supplied this substance, but must point out that it is the responsibility of any intermediate supplier to ensure that such revision is passed to the ultimate user. The information given in the Data Sheet is designed only as guidance for safe handling, storage, and the use of the substance. It is not a specification nor does it guarantee any specific properties. All chemicals should be handled only by competent personnel, within a controlled environment. Should further information be required, this can be obtained through the sales office whose address is at the top of this data sheet.

Product Identifier: Xanthan GUM

Date of Preparation:

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