MATERIAL SAFETY DATA SHEETS (MSDSs) OF WELL CONTROL FLUIDS AND FLUID ADDITIVES USED DURING ALISO CANYON WELL SS-25 CONTROL ATTEMPTS

TABLE OF CONTENTS

AMBER CHEMICAL INC.

SAFETY DATA SHEET

Transport Symbol	NFPA	GHS	Personal Protective Equipment
Not Regulated			

Section 1: Identification

Product Name:	**Amber Guard 215**
ACI SDS Number:	ACISDS0014
Molecular Formula:	CHO (CH2) 3CHO
Chemical Family:	Dialdehydes
Synonyms:	Glutaraldehyde
Company Name:	Amber Chemical Inc.
Address:	5201 Boylan Street Bakersfield, CA 93308
Phone:	(661) 325-2072
Emergency Contact:	CHEMTREC (Available 24 hours for chemical emergency, spill, leak, fire, exposure, or accident)
Emergency Number:	1-800-424-9300
Product Use:	User is responsible for ensuring that the product is suitable for their purpose.
Date Revised:	May 2015

Section 2: Hazard(s) Identification

Glutaraldehyde
CAS # 111-30-8

GHS Classification:

Health	Environmental	Physical
Acute Toxicity (Oral/Inhalation)- Category 3 **Skin Corrosion/Irritation**- Category 1B **Skin Sensitizer**- Category 1 **Eye Damage**- Category 1 **Respiratory Sensitizer**- Category 1	**Acute Aquatic Toxicity**- Category 1 **Chronic Aquatic Toxicity**- Category 2	**Metal Corrosion**- Category 1

GHS Signal Word: Danger

GHS Label(s):

Hazard Statements:
H290: May be corrosive to metals.
H301: Toxic if swallowed.
H314: Causes severe skin burns and eye damage.
H317: May cause an allergic skin reaction.
H331: Toxic if inhaled.
H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H400: Very toxic to aquatic life.
H411: Toxic to aquatic life with long lasting effects.

Precautionary Statements:
Prevention
P260: Do not breathe dust or mist.
P261: Avoid breathing mist.
P264: Wash with plenty of water and soap thoroughly after handling.
P271: Use only outdoors or in a well-ventilated area.
P272: Contaminated work clothing should not be allowed out of the workplace.
P273: Avoid release to the environment.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P284: In case of inadequate ventilation wear respiratory protection.
P234: Keep only in original container.

Response
P301+P330+P331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P304+P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P303+P361+P353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse SKIN with water/shower.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P391: Collect spillage. Hazardous to the aquatic environment.
P310: Immediately call a POISON CENTER or doctor/physician.
P362+P364: Take off contaminated clothing and wash before reuse.
P390: Absorb spillage to prevent material damage.

Storage
P403+P233: Store in a well-ventilated place. Keep container tightly closed.
P405: Store locked up.
P406: Store in corrosive resistant container with a resistant inner liner.

Disposal
P501: Dispose of contents/container to hazardous or special waste collection point.

Hazards not otherwise classified: The product does not fulfill the criteria for PBT (Persistent/ Bioaccumulative/ Toxic) and vPvB (very persistent/ very bioaccumulative).

Emergency Overview
Causes asthmatic signs and symptoms in hyper-reactive individuals
Wear NIOSH-certified chemical goggles
Wear chemical resistant protective gloves

Wear protective clothing
Eye wash fountains and safety showers must be easily accessible

Section 3: Composition/Information on Ingredients

Chemical	CAS#	NIOSH RTECS#	OSHA IMIS#	Guide#	Content (W/W)
Water	7732-18-5				85.0%
Glutaral	111-30-8	MA2450000	1361	153	15.0%

Section 4: First Aid Measures

Eye Contact: In case of contact with the eyes, check the victim for contact lenses and remove if present. Rinse immediately for at least 30 minutes with plenty of water. Immediate medical attention required. IMMEDIATELY transport the victim after flushing eyes to a hospital even if no symptoms (such as redness or irritation) develop.

Skin Contact: Wash affected areas thoroughly with soap and water. Remove contaminated clothing. Immediate medical attention required.

Inhalation: Remove the affected individual into fresh air and keep the person calm. Assist in breathing if necessary. Immediate medical attention required. Some symptoms may include: wheezing, coughing, shortness of breath, or burning in the mouth, throat, or chest.

Swallowed: Never induce vomiting or give anything by mouth if the victim is unconscious or having convulsions. Immediately rinse mouth and then drink 1 or 2 glasses of water. Do not induce vomiting, seek medical attention. Make sure the victim's airway is open and have the victim lay on his/her side with their head lower than their body.

Note to Physician (Treatment): Treat according to symptoms (decontamination, vital functions), no known specific antidote, administer corticosteroid dose aerosol to prevent pulmonary odema.

Refer to Section 11 for other Health Effects

Section 5: Fire Fighting Measures

Flash Point: No Data Available

Auto-ignition: > 225°C (DIN 51794)

Suitable Extinguishing Media: Water, carbon dioxide, dry extinguishing media, foam

Hazards During Fire-Fighting: Toxic gases/vapors

Protective Equipment for Fire-Fighting: Firefighters should be equipped with self-contained breathing apparatus and turn-out gear.

Section 6: Accidental Release Measures

Personal Precautions: Use personal protective clothing. Refer to Section 8.

Environmental Precautions: Do not discharge into drains/surface waters/groundwater.

Cleanup: Spills should be contained, solidified, and placed in suitable containers for disposal.

Small Spills: Pick up with absorbent material (e.g. sand, sawdust, general-purpose binder). Dispose of absorbed material in accordance with regulations. Make sure to clean any contaminated surfaces with a soap and water solution. Do not enter contaminated area until it has been considered safe to do so by person in charge.

Large Spills: Pump off product.

Further Information: Pack in tightly closed containers for disposal.

Section 7: Handling and Storage

Handling: Keep away from sources of ignition- no smoking! Handle in accordance with good industrial hygiene and safety practice. Never eat, drink or smoke in work area. Keep container tightly sealed.

Storage: Store protected against freezing.

Storage Incompatibility: General- Segregate from acids, alkalies or combustible materials. Segregate from oxidizing agents. Segregate from incompatible substances.

Refer to Section 8 for Ventilation Requirements

Section 8: Exposure Controls/Personal Protection

Exposure Limits

	CAL/OSHA PEL	NIOSH REL	ACGIH TLV
Glutaral (CAS# 111-30-8)	0.05 ppm (0.2 mg/m^3 Ceiling)	0.2 ppm (0.8 mg/m^3 Ceiling)	0.05 ppm (0.2 mg/m^3 Ceiling)

NIOSH Immediately Dangerous to Life or Health (IDLH) concentration: Not established

Advice on System Design: Provide local exhaust ventilation to control vapors/mists.

Personal Protective Equipment

Respiratory Protection: Wear a NIOSH-certified (or equivalent) organic vapor/ particulate respirator.

Hand Protection: Chemical resistant protective gloves

Eye Protection: Tightly fitting safety goggles (chemical goggles). Wear face shield if splashing hazards exists.

Body Protection: Body protection must be chosen based on level of activity and exposure.

General Safety and Hygiene Measures: Eye wash fountains and safety showers must be easily accessible. Wear protective clothing as necessary to prevent contact. Avoid inhalation of vapors/mists. Keep away from food, drink and animal feeding stuffs. Avoid contact with skin and eyes. Remove contaminated clothing. Handle in accordance with good industrial hygiene and safety practice.

Section 9: Physical and Chemical Properties

Flash Point	No Data Available
Auto-ignition	> 225°C (DIN 51794)
Form	Liquid

Odor	Characteristic
Color	Yellow
pH Value	Approx. 3.6
Freezing Point	Approx. -5°C (1atm)
Boiling Point	> 100°C (1atm)
Relative Density	1.04 (20C)
Partitioning coefficient n-octanol/ water (log Pow)	-0.36 (23C) (OECD Guideline 107)

Not all physical and chemical properties are displayed on this SDS, as not all information is relevant or available at this time.

Section 10: Stability and Reactivity

Substances to Avoid: Acids, bases and strong oxidizers

Hazardous Reactions: The product is chemically stable.

Decomposition Products: Hazardous decomposition products: carbon monoxide, carbon dioxide

Thermal Decomposition: No data available.

Polymerization: Glutaraldehyde polymerizes on heating and in the presence of water.
Source: National Toxicology Program, 1992

Section 11: Toxicological Information

Test Data
Skin Irritation: Rabbit: Irritant. (Draize test)

Eye Irritation: Rabbit: Severely irritating. (Draize test)

Sensitization: Open epicutaneous test (OET)/guinea pig: sensitizing. The data rely to a diluted watery solution of the substance. Literature data.

Chronic Toxicity
Genetic Toxicity: The substance was mutagenic in various test systems with bacteria and cell cultures; however, these results could not be confirmed in tests with mammals.

Carcinogenicity: In long-term animal studies in which the substance was given in the drinking water in high concentrations, a carcinogenic effect was not observed.

Reproductive Toxicity: Animal studies gave no indication of a fertility impairing effect at doses which were not toxic to the parental animals.

Developmental Toxicity/ Teratogenicity: No indications of a developmental toxic/ teratogenic effect were seen in animal studies.

Acute Toxicity: Ingestion may cause moderate to severe gastrointestinal irritation and ulceration including nausea and vomiting and pain. Inhalation of aerosols may cause respiratory tract irritation and pulmonary inflammation.

Potential Health Effects
Primary Routes of Exposure: Routes of entry for solids and liquids include eye and skin contact, ingestion and inhalation. Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquefied gases.

Irritation *(Information on: Glutaraldehyde):* Eye and skin contact with glutaraldehyde causes severe irritation; burns and permanent injury may result. Prolonged or repeated skin contact with glutaraldehyde may result in dermatitis.

Sensitization: May cause sensitization by inhalation and skin contact.

Repeated Dose Toxicity *(Information on: Glutaraldehyde):* Overexposures have been known to produce liver damage in animal studies. Fetotoxicity and embryotoxicity in the presence of material toxicity has been shown to occur in rabbits at a high dose of 45 mg/kg.

Medical Conditions Aggravated by Overexposure: Contact may aggravate pulmonary disorders.

Symptoms *(Information on Glutaraldehyde)***:** Irritation, eyes, skin, respiratory system; dermatitis, sensitization skin; cough, asthma; nausea, vomiting

Glutaraldehyde (CAS # 111-30-8) Toxicity Information

Species	Concentration	LD_{50} Range
Rat	>5%	0.88-3.25 ml/kg
Rat	<5%	3.34-12.30 ml/kg
Rabbits	46% & 50%	1.59-2.71 ml/kg
Rabbits	25%	8.80-16.00 ml/kg
Rabbits	<15%	Not Lethal

Glutaraldehyde (CAS # 111-30-8) Carcinogenicity Information

National Toxicology Program (NTP) carcinogenic classification: Not listed

International Agency for Research on Cancer (IARC) carcinogenic classification: Not listed

U.S. Environmental Protection Agency (EPA) carcinogenic classification: Not listed

EPA Inhalation Reference Concentration (RfC): Not established

Agency for Toxic Substances and Disease Registry (ATSDR) Inhalation Minimal Risk Level (MRL): Not established

IARC Monographs: Not Listed

Carcinogen Classifications: TLV-A4 (Not Known to be a Human Carcinogen)

Section 12: Ecological Information

Potential Environmental Effects

*Aquatic Toxicity***:** Acutely toxic for aquatic organisms. Depending on local conditions and existing concentrations, disturbances in the biodegradation process of activated sludge are possible.

Environmental Fate and Transport

Biodegradation

Test Method	OECD 301 A (new version) (aerobic), activated sludge, domestic
Method of Analysis	DOC reduction
Degree of Elimination	90-100% (28d)
Evaluation	Readily biodegradable (according to OECD criteria).

Bioaccumulation

Because of the n-octanol/ water distribution coefficient (log Pow) accumulation in organisms is not to be expected.

Environmental Toxicity

Acute and Prolonged Toxicity to Fish
See user defined text. Static
Sunfish, bluegill/ LC50 (96 h): 13mg/l
The details of the toxic effect related to the nominal concentration.

Acute Toxicity to Aquatic Invertebrates
Directive 84/449/EEC, C.2 Static
Daphnia magna/ EC50 (48 h): 29.73 mg/l
The details of the toxic effect relate to the nominal concentration.

Toxicity to Aquatic Plants
OECD Guideline 201 Static
Green algae/EC50 (72 h): 1.20 mg/l
The statement of the toxic effect relates to the analytically determined concentration.

Toxicity to Microorganisms
Bacteria (17 h): 13.3 mg/l

EPA Study on Glutaraldehyde
Soil Contamination: Not likely based on its adsorptions coefficients and its partition into the water phase. Glutaraldehyde degrades rapidly in freshwater and soils causing any impacts to be short-lived.

Surface and Groundwater: Not likely to contaminate due to its biodegradability.

Section 13: Disposal Considerations

Waste Disposal of Substance: It is the waste generator's responsibility to determine if a particular waste is hazardous under RCRA. Disposal can occur only in properly permitted facilities. Refer to regional, state, provincial and local health, safety and pollution laws for any additional requirements, as these may be different from Federal laws and regulations. If in doubt, contact appropriate agencies. Chemical additions, processing or otherwise altering this material may make waste management information presented in the SDS incomplete, inaccurate or otherwise inappropriate. ACI has provided the foregoing for information only; the person generating the waste is responsible for determining the waste classification and disposal method.

Container Disposal: Dispose of in a licensed facility. Recommend crushing, puncturing or other means to prevent unauthorized use of used containers.

To minimize exposure refer to Section 8.

Section 14: Transport Information

Land Transport
US D.O.T. Not classified as a dangerous good under transport regulations.

Sea Transport
IMDG Not classified as a dangerous good under transport regulations.

Air Transport
IATA/ ICAO Not classified as a dangerous good under transport regulations.

Note: There are specific regulations in regards to transporting chemicals by water. Shipper is responsible for ensuring that they meet all of the requirements and follow the regulations for the chemical they are transporting.

Section 15: Regulatory Information

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

Federal Regulations
Registration Status: TSCA, US: Released/Listed

OSHA Hazard Category: Chronic target organ effects reported. Acute target organ effects reported. Skin and/or eye irritant. Sensitizer. Toxic- oral. Highly Toxic- Inhalation. Corrosive to skin and/or eyes

SARA Hazard Categories (EPCRA 311/312): Acute, Chronic

Glutaral (CAS# 111-30-8) is listed as a Hazardous Substance on the following State's Hazardous Substances Lists.

- California
- Massachusetts
- New Jersey
- Pennsylvania
- Rhode Island

40 CFR Part 63 National Emission Standards for Hazardous Air Pollutants for Source Categories Table 1 to Subpart F of Part 63—Synthetic Organic Chemical Manufacturing Industry Chemicals
Chemical Name: Glutaraldehyde
CAS Number: 111308
Group: IV

40 CFR 712.30 Section 8(a) of TSCA requires manufacturers of this chemical substance to report preliminary assessment information concerned with production, exposure, and use to EPA as cited in the preamble in 51 FR 41329. Effective date 9/30/91; Reporting date: 11/27/91.

40 CFR 716.120 Pursuant to section 8(d) of TSCA, EPA promulgated a model Health and Safety Data Reporting Rule. The section 8(d) model rule requires manufacturers, importers, and processors of listed chemical substances and mixtures to submit to EPA copies and lists of unpublished health and safety studies. Pentanedial is included on this list.

Section 16: Other Information

Date Revised: May 2015

Glutaraldehyde NFPA Ratings (estimated)

Health	3
Flammability	1
Instability	0

This information is intended solely for the use of individuals trained in the NFPA and HMIS hazard rating systems.

Sources of key data used to compile the Safety Data Sheet: regulations, databases, literature, and own test data.

Disclaimer: All statements, technical information and recommendations contained herein are, to the best of our knowledge, reliable and accurate. The information in this data sheet has been assembled by the manufacturer based on its own studies and on the work of others. However, no warranty is expressed or implied regarding the accuracy of this data or the results to be obtained from the use thereof, nor will any liability be assumed for damages resultant form the use of the material described. Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, vendor assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material even if reasonable safety procedures are followed. The manufacturer shall not be liable (regardless of fault) to the vendee, the vendee's employees, or anyone for any direct, special or consequential damages arising out of, or in connection with, the accuracy, completeness, adequacy or furnishing of such information. It is offered solely for your consideration, investigation and verification. As a result, the customer shall be solely responsible for deciding whether said information is suitable and beneficial. Furthermore, vendee assumes the risk in his use of the material. We assume no legal responsibility whatsoever for any damage resulting from reliance upon this information since it is being furnished upon the condition that the person receiving it shall make his or her own determination of the suitability of the material described herein for a particular application or storage situation. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release, and is not to be considered a warranty or quality specification. The user should take the necessary steps to instruct employees, and to develop work practice procedures to ensure and maintain a safe work environment. 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. Personal Protection rating to be supplied by user depending on use conditions. Since the use of this product is within the exclusive control of the user, it is the user’s responsibility to determine the conditions of safe use. Such conditions must comply with all governmental regulations. This information is not intended as a license to operate under, or a recommendation to practice or infringe upon any patent of this company or others covering any process, compositions of matter or use. Neither this data sheet nor any statement contained herein grants or extends any license, express or implied, in connection with patents issued or pending which may be the property of the manufacturer or others.

Safety Data Sheet – Barite

Section 1: Product and Company Identification

Product Identifier: Barite
Product Names: Barite, Baryte, Bar

Product uses: various industrial uses

Manufacturer:
Industrial Mineral Company
7268 Frasinetti Road
Sacramento, California 95828

Emergency Telephone Number: 916-383-2811
Telephone Number for Information: 916-383-2811

Section 2: Hazards Identification

Carcinogen

Irritant (skin and eye)
Skin Sensitizer
Reparatory Track Irritant

OSHA/HCS status: This naturally occurring clay is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200)
Classification of the substance of mixture: OSHA –Carcinogenicity (inhalation) - Category 1A and Specific organ toxicity (Repeated Exposure) (Respiratory tract through inhalation) – Category 1
Exposure limits for Crystalline Silica: The current American Conference of Government Industrial Hygienist Threshold limit value for crystalline silica is: 0.1 mg/m^3
Signal Word: Danger
Hazard Statement Cancer Hazard. Contains quartz (crystalline silica) which may cause cancer. Risk of cancer depends upon duration and level of exposure to the dust. Not an acute hazard. Prolonged inhalation of dust may cause lung injury. Inhalation of high concentrations of dust may cause mechanical irritation and discomfort of the respiratory tract. Repeated exposure may have chronic effects. Can cause skin, respiratory, and eye irritation.
Precautionary Statement: Wear protective gloves, eye, and respiratory protection. Avoid breathing dust.

Section 3: Composition Information

Natural Occurring mineral, exact chemical composition varies.

Chemical Name	Common Name	CAS Number	%
Quartz (Silica)	SiO_2	14808-60-7	10-12
Barite	$BaSO_4$	13462-86-7	80-84
Mica/Illite	$(K,Na,Ca)(Al,Mg,Fe)_2(Si,Al)_4O_{10}(OH,F)_2$	12001-26-2	<6
Calcite	$CaCO_3$	13397-26-7	<2

Section 4: First-Aid Measures

Eye Contact: If eye contact occurs, rinse immediately with plenty of water. If irritation persists, seek medical attention
Skin Contact: Wash thoroughly with water. If irritation persists, seek medical attention
Inhalation: Move victim to fresh air in well ventilated area. If coughing or irritation persists, seek medical attention
Ingestion: Consult physician and/or obtain competent medical assistance

Section 5 Fire Fighting Measures

General Fire Hazards: Not flammable
Extinguishing Media: Use appropriate extinguishing media for surrounding fire
Special Fire Fighting Procedure: None

Section 6: Accidental Release Measures

Clean-up Methods: When dust is generated it may over expose cleanup personnel to dust. Using respirators or wetting the material is recommended. When dry sweeping use NIOSH approved respirators when dust levels exceed exposure limits
Personal Precautions and Personal Protective Equipment: Wear appropriate protective equipment and clothing during clean-up. If dusty conditions exist use approved respirators.
Environmental Precautions: Material is a natural mineral product and will not cause adverse effects to the water system other than turbidity from suspended particles.

Section 7: Handling and Storage

Handling Procedures: Wear the appropriate eye protection and avoid dust contact with eyes. Minimize dust generation and accumulation. Wear the appropriate respiratory protection when in poorly ventilated areas. Use good industrial hygiene practices.

Section 8: Exposure Controls/Personal Protection

Airborne Exposure Limits:

Silica component limit
OSHA PEL: TWA 10 mg/m^3 (respirable)
OSHA PEL : TWA 30 mg/m^3 (total dust)
CAL OSHA PEL: TWA 0.1 mg/m^3 (respirable)
CAL OSHA PEL: TWA 0.3 mg/m^3 (total dust)

Engineering Measures: Use local exhaust ventilation to control exposure below applicable limits
Personal Protective Equipment (PPE):
Respiratory: Avoid actions that cause dust exposure to occur. Use local or general ventilation to control exposures below applicable exposure limits. NIOSH or MSHA approved particulate filter respirators should be used. Respirator and/or filter cartridge selection should be based on the ANSI Standard Z88.2.

Eyes: When working around activities where dust can contact the eyes, wear safety glasses or goggles to avoid eye irritation or injury. Wearing contacts without sealing goggles is not recommended.
Skin and Body: Protective Clothing is not essential

Section 9: Physical and Chemical Properties

Appearance: Tan to grey **Physical state**: Powder **pH**: 8 **Melting/Freezing Point**: no data available **Evaporation Rate**: NA **Vapor Pressure (mm HG)**: 0 (approximately) **Relative density**: NA **Solubility in water at 100 C:** 0 (approximately) **Decomposition temperature:** no data available **Viscosity:** NA	**Odor:** none **Odor threshold:** No data Available **Flashpoint:** NA **Boiling Point:** NA **Flammability:** Not Flammable **Vapor Density**: NA **Specific Gravity**: 4.1 **Partition coefficient**: No data available **Auto-ignition temperature**: NA

Section 10: Stability and Reactivity

Reactivity: No dangerous reactions are known under normal conditions of use
Chemical Stability: Stable
Possibility of Hazardous Reactions and Conditions to Avoid: None known
Incompatibility: None Known

Section 11: Toxicological Information

Possible Health Effects:
Target Organs: Skin, Eyes, and Respiratory system
Exposure Routes: Inhalation, skin or eye contact
Symptoms:
Short Term: Shortness of breath and/or coughing associated with dust inhalation.
Long Term Exposure (Chronic): Steady and prolonged exposure to dust concentrations high than LTV without approved respirator could cause silicosis, a chronic disease of the lungs marked by acute fibrosis, may cause cancer based on animal data.
Effects of Silicosis
Bronchitis/chronic obstructive Pulmonary Disorder
Increased susceptibility to Tuberculosis
Scleroderma
Possible Renal
Symptoms of Silicosis
Shortness of breath, fever fatigue, loss of appetite, chest pain, dry non-productive cough, respiratory failure, death.

OSHA, IARC, and NTP Carcinogen Classifications				
Chemicals with recognized Carcinogen Potential	CAS#	OSHA	IARC	NTP

Quartz (Crystalline Silica)	14808-60-7	Yes	Yes – Group 1	Yes

Section 12: Ecological Information

Eco toxicity: None Known
Biochemical oxygen demand (BOD5): None known
Chemical oxygen demand (COD): None known
Products of Biodegradation: None known
Toxicity of the products of biodegradation: None known
Bioaccumulation Potential: None known
Potential to move from soil to groundwater: None Know
Other adverse effects: None known

Section 13: Disposal Considerations

Personal Protection: Refer to section 8 for proper PPE when disposing of waste material
Appropriate disposal containers: No special requirements
Appropriate disposal methods: Disposal of this product should comply with the requirements of environmental protection and waste disposal legislation and any regional or local authority requirements.
Physical and chemical properties that may affect disposal: Dust should be minimized in disposal by either transporting in seal containers or wetting dust before transport
Sewage disposal: do not dispose of into sewage systems, material will settle out of water and clog pipes.
Special precautions for landfills or incineration activities: None

Section 14: Transport Information

Regulatory Information	UN Number	UN Proper Shipping Name	Transport Hazard Class	Packing Group Number	Bulk Transport Guidance	Special Precautions
DOT Classification	Not Regulated	-	-	-	-	-
TDG Classification	Not Regulated	-	-	-	-	-
ADR/RID Class	Not Regulated	-	-	-	-	-
IMDG Class	Not Regulated	-	-	-	-	-
IATA-DGR Class	Not Regulated	-	-	-	-	-

Section 15 Regulatory Information

TSCA – Toxic Substances Control Act – EPA Quartz and other chemicals are listed in the TSCA Chemical Substance Inventory

California Prop. 65 WARNING: This product contains a chemical known to the State of California to cause cancer. (Prop. 65 – California Health and Safety Code Section 2549 Et Seq)
SARA/Title III (Emergency Planning & Community Right-to-Know Act This mixture contains no substances at or above the reporting threshold under section 313, based on available data.

Section 16: Other Information

Definitions
ASTM –American System of Testing and Materials
OSHA – Occupational Safety & Health Administration
IARC – International Agency for Research on Cancer
NTP – National Toxicogmail.com
HCS – Hazardous Communication Standard
CAS – Chemical Abstract Service
ACGIH – American Conference of Governmental Industrial Hygienists
CAL-OSHA – California Occupational Safety & Health Administration
OSHA PEL – OSHA Permissible Exposure Levels
OSHA STEL - spot exposure for a duration of 15 minutes, which cannot be repeated more than 4 times per day with at least 60 minutes between exposure periods.
TLV – Threshold Limit Value
TWA – Time Weighted Average
TLV-TWA –Time weighted average Threshold limit value
TLV-STEL – Shot-term exposure limit Threshold limit value
TLV-C – Ceiling Limit – absolute limit that should not be exceeded at any time

Revisions: Existing MSDS revised to new GHS format. Revision Date 08/31/2015

The information presented herein has been compiled from sources considered to be dependable and is accurate and reliable to the best of our knowledge and belief but is not guaranteed to be so, nothing here in is to be construed as recommending any practice or product in violation of any patent, law, or regulation. It is the user's responsibility to determine the suitability of any material for a specific purpose and to adopt such safety precautions as may be necessary. We make no warranty as to the results to be obtained in using any material and, since conditions of use are not under our control, we must necessarily disclaim all liability with respect to the use of any material we supply.

Safety Data Sheet
FED WATE*

1. Identification

1.1 Product identifier

Product name FED WATE*

Product code PID14411

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

Recommended Use Drilling fluid additive. Weighting agent.

Uses advised against Consumer use

1.3 Details of the supplier of the safety data sheet

Supplier
FEDERAL
Wholesale Drilling Mud
P.O. Box 42842
Houston, TX 77242
Telephone: 1 281-561-1511

E-mail address sdsmi@slb.com

Prepared by
Global Regulatory Compliance - Chemicals (GRC - Chemicals)

1.4 Emergency Telephone Number

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

2. Hazards identification

2.1 Classification of the substance or mixture

GHS - Classification

Health hazards

Carcinogenicity	Category 1A

Environmental hazards Not classified

Physical Hazards Not classified

2.2 Label elements

Signal word
DANGER

Hazard statements
H350 - May cause cancer

Precautionary statements
P201 - Obtain special instructions before use
P202 - Do not handle until all safety precautions have been read and understood
P281 - Use personal protective equipment as required
P308 + P313 - IF exposed or concerned: Get medical advice/ attention
P501 - Dispose of contents/ container to an approved waste disposal plant

Unknown acute toxicity 2.5% of the mixture consists of ingredient(s) of unknown toxicity.

3. Composition/information on Ingredients

3.1 Substances

Not Applicable

3.2 Mixtures

Component	CAS-No	Weight % - range
Barite	7727-43-7	60 - 100
Silica, crystalline, quartz	14808-60-7	1 - 5
Mica	12001-26-2	1 - 5

Comments
The exact percentage (concentration) of composition has been withheld as a trade secret

4. First aid measures

4.1 First-Aid Measures

Inhalation Move to fresh air. If breathing is difficult, (trained personnel should) give oxygen. Obtain medical attention.

Ingestion Drink 1 or 2 glasses of water. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur. Call a physician or Poison Control Centre immediately.

Skin contact Wash skin thoroughly with soap and water. Remove contaminated clothing and launder before reuse. Get medical attention if irritation persists.

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

4.2 Most important symptoms and effects, both acute and delayed

Main symptoms

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

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician	SYMPTOMS MAY BE DELAYED Keep victim under observation

5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media
Water Fog, Alcohol Foam, CO_2, Dry Chemical.

Extinguishing media which shall not be used for safety reasons
Do not use a solid water stream as it may scatter and spread fire.

5.2 Special hazards arising from the substance or mixture

Unusual fire and explosion hazards
None known.

Hazardous combustion products
Silicon oxide.

5.3 Advice for firefighters

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

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Wear suitable protective equipment. Evacuate personnel to safe areas. Prevent further leakage or spillage if safe to do so. Avoid dust formation. Do not breathe dust. Avoid contact with the skin and the eyes.

6.2 Environmental precautions

Do not allow material to contaminate ground water system.

Environmental exposure controls
No information available.

6.3 Methods and materials for containment and cleaning up

Methods for containment
Cover powder spill with plastic sheet or tarp to minimize spreading.

Methods for cleaning up
Avoid generating or breathing dust. Sweep up and shovel into suitable containers for disposal.

6.4 Reference to other sections

See section 13 for more information.

7. Handling and storage

7.1 Precautions for safe handling

Handling
Handle in accordance with good industrial hygiene and safety practice. Avoid breathing dust; if exposed to high dust concentration, leave area immediately. Avoid contact with skin, eyes and clothing.

7.2 Conditions for safe storage, including any incompatibilities

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

Storage precautions Protect from moisture Store in original container. Keep containers tightly closed in a dry, cool and well-ventilated place.

8. Exposure controls/personal protection

8.1 Control parameters

Component Information

Component	ACGIH TLV	OSHA PEL
Barite	10 mg/m³	15 mg/m³ (total); 5 mg/m³ (resp)
Silica, crystalline, quartz	0.025 mg/m³	see Table Z-3
Mica	3 mg/m³ (resp)	20 mppcf (<1% crystalline silica). See Table Z-3.

Silica, crystalline, quartz
OSHA - Final PELs - Table Z-3 Mineral Dusts
(30)/(%SiO2 + 2) mg/m³ TWA, total dust; (250)/(%SiO2 + 5) mppcf TWA, respirable fraction; (10)/(%SiO2 + 2) mg/m³ TWA, respirable fraction
Mica
OSHA - Final PELs - Table Z-3 Mineral Dusts
20 mppcf TWA (<1% Crystalline silica)

8.2 Exposure controls

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

Engineering measures to reduce exposure
Ensure adequate ventilation, especially in confined areas.

Personal protective equipment

Eye protection Use tight-fitting safety goggles, if not available use safety glasses with side-shields.

Hand protection 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.

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

Hygiene measures Wash hands before breaks and immediately after handling the product, Remove and wash contaminated clothing before re-use.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	Solid
Appearance	Opaque
Color	Tan - Gray
Odor	Odorless
Odor threshold	Not applicable

Property	**Values**	**Remarks**
pH	Not applicable	
pH @ dilution		
Melting/freezing point	No information available	
Boiling point/range	No information available	
Flash point	No information available	PMCC
Evaporation rate (BuAc =1)	No information available	
Flammability (solid, gas)	Not Applicable	
Flammability Limits in Air		
Upper flammability limit	No information available	
Lower flammability limit	No information available	
Vapor pressure	No information available	
Vapor density	No information available	
Specific gravity	4.1	
Bulk density	No information available	
Water solubility	Negligible	
Solubility in other solvents	Insoluble	
Autoignition temperature	No information available	
Decomposition temperature	No information available	
Kinematic viscosity	No information available	
Dynamic viscosity	No information available	
Log Pow	No information available	
Explosive properties	No information available	
Oxidizing properties	No information available	

9.2 Other information

Pour point	No information available
Molecular weight	No information available
VOC content(%)	No information available
Density	No information available

10. Stability and reactivity

10.1 Reactivity

No data available.

10.2 Chemical stability

Stable under normal temperature conditions and recommended use.

10.3 Possibility of Hazardous Reactions

Hazardous polymerization
Hazardous polymerization does not occur.

10.4 Conditions to avoid

Protect from moisture. Heat, flames and sparks.

10.5 Incompatible materials

Strong oxidizing agents.

10.6 Hazardous decomposition products

None known.

11. Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Inhalation Inhalation of dust in high concentration may cause irritation of respiratory system. Harmful: danger of serious damage to health by prolonged exposure through inhalation. Repeated or prolonged inhalation of crystalline silica dust can cause delayed lung injury, and other diseases, including silicosis and lung cancer.

Eye contact Dust contact with the eyes can lead to mechanical irritation.

Skin contact Repeated exposure may cause skin dryness or cracking.

Ingestion Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Toxicology data for the components

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Barite	No data available	No data available	No data available
Silica, crystalline, quartz	= 500 mg/kg (Rat)	No data available	No data available
Mica	No data available	No data available	No data available

Component	IARC Group 1 or 2	ACGIH - Carcinogens	OSHA listed carcinogens	NTP
Barite	No data available	No data available	No data available	No data available
Silica, crystalline, quartz	Group 1; Monograph 100C [2012] Group 1; Monograph 68 [1997] Monograph 100C [2012] (listed under Crystalline silica inhaled in the form of quartz or cristobalite from occupational sources); Monograph 68 [1997]	A2 Suspected Human Carcinogen	Present	Known Human Carcinogen
Mica	No data available	No data available	No data available	No data available

Sensitization Not classified.

Mutagenic effects No evidence of mutagenic properties.

Carcinogenicity Contains a known or suspected carcinogen. Crystalline silica dust is listed by IARC in Group 1 as known to cause lung cancer in humans, if inhaled.

Reproductive toxicity No evidence of toxicity to reproduction.

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

Routes of exposure Skin contact. Inhalation. Eye contact.

Routes of entry Inhalation.

Specific target organ toxicity (single exposure)	Not classified
Specific target organ toxicity (repeated exposure)	Not classified.
Aspiration hazard	Not Applicable.

12. Ecological information

12.1 Toxicity

Toxicity to algae
See component information below.

Toxicity to fish
See component information below.

Toxicity to daphnia and other aquatic invertebrates
See component information below.

Component	Toxicity to fish	Toxicity to algae	Toxicity to daphnia and other aquatic invertebrates
Barite	No information available	No information available	No information available
Silica, crystalline, quartz	No information available	No information available	No information available
Mica	No information available	No information available	No information available

12.2 Persistence and degradability

No product level data available.

12.3 Bioaccumulative potential

No product level data available.

12.4 Mobility in soil

No information available.

12.5 Results of PBT and vPvB assessment

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

12.6 Other adverse effects.

None known.

13. Disposal considerations

13.1 Waste treatment methods

Disposal Method	Disposal should be made in accordance with federal, state and local regulations.
Contaminated packaging	Do not re-use empty containers. Dispose of in accordance with local regulations.

14. Transport information

14.1 UN Number

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

14.2 Proper shipping name

The product is not covered by international regulation on the transport of dangerous goods

14.3 Hazard class(es)

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

14.4 Packing group

DOT Packing group	Not regulated
TDG Packing group	Not regulated
ADR/RID/ADN/ADG Packing group	Not regulated
IMDG Packing group	Not regulated
ICAO Packing group	Not regulated

14.5 Environmental hazard

Marine pollutant	No

14.6 Special precautions

Not Applicable

15. Regulatory information

International inventories

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

U.S. Federal and State Regulations

SARA 311/312 Hazard Categories

Delayed (chronic) health hazard.

Component	SARA 302 / TPQs	SARA 313	CERCLA RQ
Barite	N/A	N/A	N/A
Silica, crystalline, quartz	N/A	N/A	N/A
Mica	N/A	N/A	N/A

State Comments
Proposition 65: This product contains chemical(s) considered by the State of California's Safe Drinking Water and Toxic Enforcement Act of 1986 to cause cancer and/or reproductive toxicity. See table under U.S. Federal and State Regulations for the specific chemicals.

16. Other information

Supersedes date 20/Oct/2015

Revision date 12/Jul/2016

Version 5

The following sections have been revised: 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING 3. Composition/information on Ingredients 8. EXPOSURE CONTROLS / PERSONAL PROTECTION 11. Toxicological information Section 16: Other information.

HMIS classification

Health	1*
Flammability	0
Physical hazard	0
PPE	E

N/A - Not Applicable, N/D - Not Determined.

*A mark of M-I L.L.C., a Schlumberger Company

Disclaimer
The information contained herein is considered in good faith as reliable of the date issued and is based upon on measurements, tests or data derived from supplier's own study or furnished by others. In providing this SDS information, Supplier makes no express or implied warranties as to the information or product; merchantability or fitness of purpose; any express or implied warranty; or non-infringement of intellectual property rights; and supplier assumes no responsibility for any direct, special or consequential damages, results obtained, or the activities of others. To the maximum extent permitted by law, supplier's warranty obligations and buyer's sole remedies are as stated in separate agreement between the parties.

SAFETY DATA SHEET

Product Code: AB3A005 (BENTONITE)
Updated: 5/19/16

SECTION 1: IDENTIFICATION

PRODUCT NAME(s): Prime Gel API, Prime Gel Premium, Aquagel, Slikgel, AUSGEL, Quik-Gel Gold, Star Gel

GENERIC NAME: Bentonite

SDS CODE NO. A202PABA005

SYNONYMS: Sodium Bentonite, Montmorillonite, Smectite Clay

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 11)

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 1, Flammability 0, Reactivity 0	**HMIS RATINGS:**	Health 1*, 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 exposer 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 ^{O}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.

PERMISSIBLE EXPOSURE LIMITS: (For air contaminants 8 hour TWA)

Bentonite as Nuisance Dust	**OSHA PEL**	**ACGIH TLV**
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 SDS was updated on 5/19/16. 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

SECTION 1 – PRODUCT INFORMATION

Product: Calcium Carbonate (Limestone)

Product Uses: Mineral filler and pigment

Chemical Formula: Primarily $CaCO_3$

Trade Names: Omyacarb® 100 - LU Omyacarb® 209 - LU Titan® 200 - LU Roofcarb 45 - LU

Producer: Omya California – A Division of Omya Inc.

Address: 7299 Crystal Creek Road, Lucerne Valley, California, USA 92356

Telephone: (760) 248-5200

Emergency: (800) 424-9300 (CHEMTREC)

SECTION 2 – HAZARDOUS INGREDIENTS

Ingredients:	Wt. % (typical):	CAS #:	Exposure Limits (TWA) mg/m³:	
Limestone	> 99	1317-65-3	ACGIH: OSHA PEL:	Inhalable dust, 10 [for PNOS] Respirable dust, 3 [for PNOS] Total dust, 15 Respirable dust, 5
Silica, quartz *(naturally-occurring component of limestone)*	< 1	14808-60-7	ACGIH TLV: OSHA PEL:	Respirable dust, 0.025 Total dust, 30 / % silica +2 Respirable dust, 10 / % silica +2

SECTION 3 – PHYSICAL DATA

Appearance and Odor: White powder; no odor.

Density: 2.7 g/ml

Solubility in Water: 1.3 mg/100 g @ 18°C

SECTION 4 – FIRE AND EXPLOSION HAZARD

Flash Point: Non-flammable.

Special Fire Fighting Procedures: None.

Unusual Fire and Explosion Hazards: None.

SECTION 5 – REACTIVITY DATA

Stability: Stable.

Reactivity in Water: None.

Hazardous Polymerization: Will not occur.

Hazardous Decomposition Products: Thermal decomposition of limestone beginning at 550°C (1022°F) can produce calcium oxide and carbon dioxide. Heating of this product above 244°C (471°F) may cause volatilization and/or thermal decomposition of processing aids, resulting in the gaseous release of trace amounts of organic compounds.

Incompatibility (Material to Avoid): Reacts with acids to liberate carbon dioxide. Ignites on contact with fluorine. Also incompatible with alum and ammonium salts.

SECTION 6 – TOXICOLOGICAL PROPERTIES

EFFECTS AND HAZARDS OF ACUTE EXPOSURE:

Inhalation: Dust may irritate the respiratory tract. Symptoms include sneezing and slight nose irritation.

Eye Contact: Irritation. Symptoms include watering and irritation.

Skin Contact: Repeated or prolonged exposure may have a drying effect on the skin, and may also cause irritation.

Ingestion: Ingestion of very large quantities may result in intestinal obstruction and/or constipation.

EFFECTS AND HAZARDS OF CHRONIC EXPOSURE:

Chronic exposure to limestone dust at concentrations exceeding occupational exposure limits may cause pneumoconiosis (lung disease). This product contains crystalline silica (quartz) as an impurity. Chronic exposure to crystalline silica dust at concentrations exceeding occupational exposure limits may cause silicosis. The NTP's Ninth Report on Carcinogens lists crystalline silica (respirable size) as a known human carcinogen. IARC concluded that there is sufficient evidence in humans for the carcinogenicity of inhaled (respirable) crystalline silica.

SECTION 7 – PREVENTIVE MEASURES

Handling: Administrative and/or engineering control methods such as, but not limited to, process enclosure and exhaust ventilation may be necessary to control exposures to dust and/or gaseous organic compounds released at elevated temperatures. Supply sufficient replacement air to make up for air removed by exhaust systems. If engineering controls and work practices are not effective in controlling exposures, appropriate personal protective equipment including a NIOSH/OSHA approved respirator should be worn. When repeated or prolonged contact with hands is likely, appropriate gloves should be used. Appropriate eye protection should be worn. Selection of all personal protective equipment should be performed by an Industrial Hygienist or other qualified professional.

Hazardous Materials Identification System (American Coatings Association)	**Category**	**Rating**
	Health	1*
	Flammability	0
	Physical Hazard	0

Storage: Store in closed containers in a dry place separate from incompatible materials.

Spills/Leaks: Measures should be taken to minimize and protect against airborne dust during cleanup operations, including use of respiratory protective equipment if necessary.

Disposal: From a waste perspective, this product is not considered hazardous and may be disposed of as solid waste in accordance with applicable federal, state, provincial, and local regulations.

SECTION 8 – FIRST AID MEASURES

Inhalation: Remove to fresh air. Obtain medical advice if required.

Eye Contact: Immediately flush the contaminated eye(s) with lukewarm, gently flowing water for 10 minutes holding the eyelid(s) open. If irritation persists, obtain medical advice immediately.

Skin Contact: Wash with warm water and mild soap. If irritation occurs, obtain medical advice immediately.

Ingestion: Never give anything by mouth if victim is rapidly losing consciousness or is unconscious or convulsing. Rinse mouth thoroughly with water. Do not induce vomiting. Drink 8 to 10 ounces (240 to 300 ml) of water to dilute material in stomach. Obtain medical advice immediately.

SECTION 9 – REGULATORY INFORMATION

TSCA: This product primarily is natural calcium carbonate from limestone ore which is listed on the U.S. EPA TSCA inventory under Limestone, CAS# 1317-65-3. In addition, all other ingredients and/or processing aids also are on the TSCA inventory.

DSL: By virtue of its status as a "substance occurring in nature", ground limestone is considered to be on the Canadian Domestic Substances List. In addition, all other ingredients and/or processing aids also are on the DSL.

CONEG: Being derived from limestone ore, this product may contain incidental trace levels of naturally occurring metals. However, no metals are intentionally added and this product complies with the CONEG requirement of <100 ppm of Cd, Cr^{+6}, Pb, and Hg.

ODCs: This product does not contain, nor is it produced with, any U.S. EPA-defined Class I or Class II ozone-depleting chemicals.

FDA: This product may be used as an indirect food additive in food packaging applications under 21 CFR (FDA) 174.5, 175.300, and 178.3297. It does not qualify as a substance permitted for direct addition to human food or animal feed.

SECTION 10 – PREPARATION INFORMATION

Prepared by Regulatory Affairs Group

The information contained herein has been compiled by Omya from sources it considers reliable, and is accurate to the best of Omya's knowledge. Before using the product identified hereon, the foregoing MSDS and the product label should be read carefully. The information contained herein relates only to the product identified hereon, and does not relate to its use in combination with any other material or in any process. Customers are encouraged to conduct their own tests concerning the use of the product identified hereon as each customer's manner and conditions of use and handling may involve additional considerations. Omya assumes and shall incur no liability for any damages, losses, injuries, costs, or consequential damages that may result from the use or misuse of the product identified hereon, and the recipient assumes all of such liability.

SAFETY DATA SHEET

Issuing Date 10-Dec-2014 **Revision Date** 14-Oct -2015 **Revision Number** 1

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

GHS product identifier

Product Name **Calcium Chloride Solution**

Other means of identification

Synonyms Liquid Calcium Chloride, Food Grade Liquid Calcium Chloride, Road Master™, SuperSet™

Recommended use of the chemical and restrictions on use

Recommended Use For Diverse Applications

Uses advised against No information available

Supplier's details

Supplier Address
TETRA Technologies, Inc.
24955 Interstate 45 North
The Woodlands, TX 77380
TEL: 281-367-1983 (Non-Emergency Number)

Emergency telephone number

Emergency Telephone Number CHEMTREC: 1-800-424-9300 for US/ 703-527-3887 outside US

2. HAZARDS IDENTIFICATION

Classification

Serious Eye Damage/Eye Irritation	Category 2

GHS Label elements, including precautionary statements

Emergency Overview

Signal Word **Warning**

Hazard Statements
• Causes serious eye irritation

Appearance Colorless to amber **Physical State** Liquid. **Odor** Odorless

Precautionary Statements

Prevention

• Wash face, hands and any exposed skin thoroughly after handling.
• Wear eye/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.

Storage

• None

Disposal

• None

Hazard Not Otherwise Classified (HNOC)

Not applicable

Other information

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms Liquid Calcium Chloride, Food Grade Liquid Calcium Chloride, Road Master™, SuperSet™

Chemical Name	CAS-No	Weight %	Trade secret
Calcium Chloride	10043-52-4	28-40	*

**The exact percentage (concentration) of composition has been withheld as a trade secret.*

4. FIRST AID MEASURES

Description of necessary first-aid measures

Eye Contact Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Keep eye wide open while rinsing. If symptoms persist, call a physician.

Skin Contact Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes. If symptoms persist, call a physician.

Inhalation Move to fresh air in case of accidental inhalation of vapors. Remove from exposure, lie down. If symptoms persist, call a physician.

Ingestion Rinse mouth. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Drink plenty of water. Consult a physician.

Most important symptoms/effects, acute and delayed

Most Important Symptoms/Effects Irritation

Indication of immediate medical attention and special treatment needed, if necessary

Notes to Physician Treat symptomatically.

5. FIRE-FIGHTING MEASURES

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

Unsuitable Extinguishing Media No information available.

Specific Hazards Arising from the Chemical
No information available.

Explosion Data
Sensitivity to Mechanical Impact None.
Sensitivity to Static Discharge None.

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

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions Avoid contact with the skin and the eyes. Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Do not touch or walk through spilled material.

Advice for emergency responders Wear personal protective equipment.

Environmental Precautions

Environmental Precautions Prevent product from entering drains. See Section 12 for additional Ecological Information.

Methods and materials for containment and cleaning up

Methods for Containment Prevent further leakage or spillage if safe to do so. Dike far ahead of spill; use dry sand to contain the flow of material

Methods for Cleaning Up Soak up with inert absorbent material. Pick up and transfer to properly labeled containers. After cleaning, flush away traces with water. Prevent product from entering drains.

7. HANDLING AND STORAGE

Precautions for safe handling

Handling Handle in accordance with good industrial hygiene and safety practice. Wear personal protective equipment. Avoid contact with skin, eyes and clothing. Do not breathe vapors or spray mist.

Conditions for safe storage, including any incompatibilities

Storage Keep container tightly closed in a dry and well-ventilated place. Keep in properly labeled containers.

Incompatible Products None known based on information supplied.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters

Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Calcium Chloride 10043-52-4	ACGIH - (TLV-TWA) Guidelne for nuisance particulate (inhalable particulate): 10 mg/m^3	OSHA (PEL-TWA) - Z-3 Mineral Dusts, Inert or Nuisance dusts, (respirable fraction): 5 mg/m^3	-

Appropriate engineering controls

Engineering Measures When there is a potential for exposure, an emergency eyewash and safety shower should be provided within the immediate work area.

Individual protection measures, such as personal protective equipment

Eye/Face Protection Wear safety glasses with non-flexible side shields or chemical goggles A face shield should be worn if a potential for splashing or spraying exists.

Skin and Body Protection Wear appropriate protective non-leather protective gloves and boots. Wear appropriate protective, impervious clothing. Chemical protective gloves and boots such as PVC, Neoprene, or Heavy Nitrile are recommended. Leather products do not offer adequate protection and will dehydrate with resultant shrinkage and possible destruction

Respiratory Protection A respirator is not indicated under normal operating conditions. Use of a NIOSH - approved respirator (N95 or greater) should be based on the presence of nuisance dusts.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical State	Liquid	**Appearance**	Colorless to amber
Odor	Odorless	**Odor Threshold**	No information available

Property	Values	Remarks/ - Method
pH	3.8 - 9.0	None known
Melting Point/Range	Not determined	None known
Boiling Point/Boiling Range	118 °C / 244 °F	for 38% liquid solution
Flash Point	Not applicable.	None known
Evaporation rate	No data available	None known
Flammability (solid, gas)	No data available	None known
Flammability Limits in Air		
upper flammability limit	No data available	
lower flammability limit	No data available	
Vapor Pressure	No data available	None known
Vapor Density	No data available	None known
Specific Gravity	1.376 @ 25 C (77 F) for 38% solution	None known
Water Solubility	Completely soluble	None known
Solubility in other solvents	No data available	None known
Partition coefficient: n-octanol/water	Not determined	None known
Autoignition Temperature	No data available	None known
Decomposition Temperature	No data available	None known
Viscosity	Not applicable	None known

Flammable Properties Not flammable

Explosive Properties No data available

Oxidizing Properties No data available

Other information

VOC Content (%) Not applicable.

10. STABILITY AND REACTIVITY

Reactivity

No data available.

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

None known based on information supplied.

Incompatible materials

None known based on information supplied.

Hazardous decomposition products

None known based on information supplied.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information

Inhalation May cause irritation.
Eye Contact Irritating to eyes.
Skin Contact Slightly toxic by dermal absorption.
Ingestion May cause irritation.

Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation
Calcium Chloride	= 2301 mg/kg (Rat)	= 2630 mg/kg (Rat)	-

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms No information available.

Delayed and immediate effects and also chronic effects from short and long term exposure

Sensitization No information available.
Mutagenic Effects No information available.
Carcinogenicity Contains no ingredients above reportable quantities listed as a carcinogen.

Reproductive Toxicity No information available.
STOT - single exposure No information available.
STOT - repeated exposure No information available.
Aspiration Hazard No information available.

Numerical measures of toxicity - Product
No information available.

12. ECOLOGICAL INFORMATION

Ecotoxicity
The environmental impact of this product has not been fully investigated.

Chemical Name	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Daphnia Magna (Water Flea)
Calcium Chloride 10043-52-4		LC50 96 h: = 10650 mg/L static (Lepomis macrochirus)		LC50 48 h: = 2400 mg/L (Daphnia magna)

Persistence and Degradability No information available.

Bioaccumulation No information available.

Other Adverse Effects
No information available.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Methods This material, as supplied, is not a hazardous waste according to Federal regulations (40 CFR 261). This material could become a hazardous waste if it is mixed with or otherwise comes in contact with a hazardous waste, if chemical additions are made to this material, or if the material is processed or otherwise altered. Consult 40 CFR 261 to determine whether the altered material is a hazardous waste. Consult the appropriate state, regional, or local regulations for additional requirements.

Contaminated Packaging Do not re-use empty containers.

14. TRANSPORT INFORMATION

DOT Not regulated

IATA Not regulated

IMDG Not regulated

15. REGULATORY INFORMATION

International Inventories

Legend
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

U.S. Federal Regulations

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.

SARA 311/312 Hazard Categories

Acute Health Hazard	Yes
Chronic Health Hazard	No
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

Clean Water Act
This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

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.

U.S. State Regulations

California Proposition 65
This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

U.S. EPA Label Information
EPA Pesticide Registration Number Not applicable

16. OTHER INFORMATION

NFPA	**Health Hazard**	1	**Flammability**	0	**Instability** 0	**Physical and Chemical Hazards**	-
HMIS	**Health Hazard**	1	**Flammability**	0	**Physical Hazard** 0	**Personal Protection**	X

Prepared By	TETRA Technologies, Inc. sds@tetratec.com
Issuing Date	10-Dec-2014
Revision Date	14-October-2015
Revision Note	Clarification changes.

General Disclaimer
The information provided on this SDS 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 guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as 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 material or in any process, unless specified in the text.

End of Safety Data Sheet

CF Desco® II Deflocculant

Version 3.0 Revision Date 2016-06-17

SECTION 1: Identification of the substance/mixture and of the company/undertaking

Product information

Product Name : CF Desco® II Deflocculant
Material : 1036678

Use : Drilling Mud Additive

Company : Chevron Phillips Chemical Company LP
Drilling Specialties Company LLC
10001 Six Pines Drive
The Woodlands, TX 77380

Emergency telephone:

Health:
866.442.9628 (North America)
1.832.813.4984 (International)
Transport:
CHEMTREC 800.424.9300 or 703.527.3887(int'l)
Asia: +800 CHEMCALL (+800 2436 2255) China:+86-21-22157316
EUROPE: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
South America SOS-Cotec Inside Brazil: 0800.111.767 Outside Brazil: +55.19.3467.1600

Responsible Department : Product Safety and Toxicology Group
E-mail address : SDS@CPChem.com
Website : www.CPChem.com

SECTION 2: Hazards identification

Classification of the substance or mixture
This product has been classified in accordance with the hazard communication standard 29 CFR 1910.1200; the SDS and labels contain all the information as required by the standard.

Emergency Overview

Danger

Form: Powder **Physical state**: Solid **Color**: Fine reddish-brown with small white specks
Odor: Odorless

OSHA Hazards : Carcinogen, Combustible dust

Classification

: Combustible dust
Carcinogenicity, Category 1A

Labeling

Symbol(s) :

Signal Word : Danger

Hazard Statements : May form combustible dust concentrations in air.
H350: May cause cancer.

Precautionary Statements : **Prevention:**
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response:
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
Storage:
P405 Store locked up.
Disposal:
P501 Dispose of contents/ container to an approved waste disposal plant.

Potential Health Effects

Physical Hazards : Mechanical processing may form combustible dust concentrations in air and thermal processing at elevated temperatures may generate simple hydrocarbons and carbon oxides.

Carcinogenicity:

IARC	Group 1: Carcinogenic to humans	
	Crystalline Silica	14808-60-7
NTP	Known to be human carcinogen	
	Crystalline Silica	14808-60-7
ACGIH	Suspected human carcinogen	
	Crystalline Silica	14808-60-7

SECTION 3: Composition/information on ingredients

Synonyms : Drilling Mud Deflocculant

Molecular formula : Mixture

Component	CAS-No.	Weight %
Methyl ester of sulfonated tannin	Proprietary	40 - 55
Ferrous Sulfate	17375-41-6	5 - 9
Crystalline Silica	14808-60-7	0.1 - 0.4

SECTION 4: First aid measures

General advice : Move out of dangerous area. Show this material safety data sheet to the doctor in attendance.

If inhaled : If unconscious place in recovery position and seek medical advice. If symptoms persist, call a physician.

In case of eye contact : Flush eyes with water as a precaution. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.

If swallowed : Induce vomiting immediately and call a physician. Keep respiratory tract clear. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician. Take victim immediately to hospital.

SECTION 5: Firefighting measures

Flash point : Not applicable

Autoignition temperature : No data available

Unsuitable extinguishing media : High volume water jet.

Specific hazards during fire fighting : Do not allow run-off from fire fighting to enter drains or water courses. Risks of ignition followed by flame propagation or secondary explosions can be caused by the accumulation of dust, e.g. on floors and ledges.

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

Further information : Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

Fire and explosion protection : Avoid dust formation. Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard. Provide appropriate exhaust ventilation at places where dust is formed.

Hazardous decomposition products : Sulfur oxides. Carbon oxides.

SECTION 6: Accidental release measures

Personal precautions	:	Use personal protective equipment. Avoid dust formation. Avoid breathing dust.
Environmental precautions	:	Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.
Methods for cleaning up	:	Pick up and arrange disposal without creating dust. Clean up promptly by sweeping or vacuum. Keep in suitable, closed containers for disposal.
Additional advice	:	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 (i.e., clearing dust surfaces with compressed air).

SECTION 7: Handling and storage

Handling

Advice on safe handling	:	Avoid formation of respirable particles. Do not breathe vapors/dust. Avoid exposure - obtain special instructions before use. Avoid contact with skin and eyes. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Dispose of rinse water in accordance with local and national regulations. Electrostatic charge may accumulate and create a hazardous condition when handling this material. To minimize this hazard, bonding and grounding may be necessary, but may not by themselves be sufficient.
Advice on protection against fire and explosion	:	Avoid dust formation. Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard. Provide appropriate exhaust ventilation at places where dust is formed.

Storage

Requirements for storage areas and containers	:	Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Observe label precautions. Electrical installations / working materials must comply with the technological safety standards.

SECTION 8: Exposure controls/personal protection

Ingredients with workplace control parameters

US

Ingredients	Basis	Value	Control parameters	Note
Ferrous Sulfate	ACGIH	TWA	1 mg/m3	URT irr, skin irr, varies,

	OSHA Z-1-A	TWA	1 mg/m3	
Crystalline Silica	ACGIH	TWA	0.025 mg/m3	lung cancer, pulm fibrosis, A2, Respirable fraction
	OSHA Z-3	TWA	30mg/m3 / %SiO2+2	total dust
	OSHA Z-3	TWA	250mppcf / %SiO2+5	a, b, respirable
	OSHA Z-3	TWA	10mg/m3 / %SiO2+2	e, respirable
	OSHA Z-1-A	TWA	0.1 mg/m3	Respirable fraction
	OSHA Z-3	TWA	0.1 mg/m3	Respirable fraction
	OSHA Z-1-A	TWA	0.1 mg/m3	respirable dust fraction
	ACGIH	TWA	0.025 mg/m3	lung cancer, pulm fibrosis, A2, Respirable fraction
	OSHA Z-1	TWA	0.05 mg/m3	Respirable fraction

a Based on impinger samples counted by light-field techniques.
A2 Suspected human carcinogen
b The percentage of crystalline silica in the formula is the amount determined from airborne samples, except in those instances in which other methods have been shown to be applicable.
e Both concentration and percent quartz for the application of this limit are to be determined from the fraction passing a size-selector with the following characteristics: Aerodynamic diameter (unit density sphere): 2; Percent passing selector: 90 Aerodynamic diameter (unit density sphere): 2,5; Percent passing selector: 75 Aerodynamic diameter (unit density sphere): 3,5; Percent passing selector: 50 Aerodynamic diameter (unit density sphere): 5,0; Percent passing selector: 25 Aerodynamic diameter (unit density sphere): 10; Percent passing selector: 0 The measurements under this note refer to the use of an AEC (now NRC) instrument. The respirable fraction of coal dust is determined with an MRE; the figure corresponding to that of 2.4 mg/m3 in the table for coal dust is 4.5 mg/m3.
lung cancer Lung cancer
pulm fibrosis Pulmonary fibrosis
skin irr Skin irritation
URT irr Upper Respiratory Tract irritation
varies varies

Immediately Dangerous to Life or Health Concentrations (IDLH)

Substance name	CAS-No.	Control parameters	Update
Crystalline Silica	14808-60-7	Immediately Dangerous to Life or Health Concentration Value 50 mg/m³	1995-03-01

Engineering measures

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

Personal protective equipment

Respiratory protection : Wear a supplied-air NIOSH approved respirator unless ventilation or other engineering controls are adequate to maintain minimal oxygen content of 19.5% by volume under normal atmospheric pressure. Wear a NIOSH approved respirator that provides protection when working with this material if exposure to harmful levels of airborne material may occur, such as:. Air-Purifying Respirator for Dusts and Mists / P100. Use a positive pressure, air-supplying respirator if there is potential for uncontrolled release, exposure levels are not known, or other circumstances where air-purifying respirators may not provide adequate protection. If control is not feasible, then use only NIOSH approved respiratory protection with an assigned protection factor (APF) of 1000.

Hand protection : The suitability for a specific workplace should be discussed with the producers of the protective gloves. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the

product is used, such as the danger of cuts, abrasion, and the contact time. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

Eye protection	:	Eye wash bottle with pure water. Safety glasses.
Skin and body protection	:	Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place. Wear as appropriate:. Protective suit. Safety shoes.
Hygiene measures	:	When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday.

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

Appearance

Form	:	Powder
Physical state	:	Solid
Color	:	Fine reddish-brown with small white specks
Odor	:	Odorless
Odor Threshold	:	Not applicable

Safety data

Flash point	:	Not applicable
Lower explosion limit	:	Not applicable
Upper explosion limit	:	Not applicable
Oxidizing properties	:	No
Autoignition temperature	:	No data available
Thermal decomposition	:	No data available
Molecular formula	:	Mixture
Molecular weight	:	No data available
pH	:	Not applicable
Pour point	:	No data available
Boiling point/boiling range	:	Not applicable
Vapor pressure	:	Not applicable
Relative density	:	1.5
Density	:	Not applicable

Water solubility	:	Partly soluble
Partition coefficient: n-octanol/water	:	No data available
Viscosity, kinematic	:	Not applicable
Relative vapor density	:	Not applicable
Evaporation rate	:	Not applicable

SECTION 10: Stability and reactivity

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

Possibility of hazardous reactions

Conditions to avoid	:	Generation of Dusts.
Materials to avoid	:	May react with oxygen and strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.
Thermal decomposition	:	No data available
Hazardous decomposition products	:	Sulfur oxides Carbon oxides
Other data	:	No decomposition if stored and applied as directed.

SECTION 11: Toxicological information

CF Desco® II Deflocculant
Acute oral toxicity : Acute toxicity estimate: 3,544 mg/kg
Method: Calculation method

Acute toxicity estimate: 3,544 mg/kg
Method: Calculation method

Acute dermal toxicity

Methyl ester of sulfonated tannin :
No data available

CF Desco® II Deflocculant
Skin irritation : May irritate skin.

CF Desco® II Deflocculant
Eye irritation : May irritate eyes.

Repeated dose toxicity

Methyl ester of sulfonated tannin	:	Species: Rat, male Sex: male Application Route: oral gavage Dose: 100, 300, 1000 mg/kg Exposure time: 32 d Number of exposures: Daily NOEL: 1,000 mg/kg Method: OECD Guideline 422 No adverse effects expected Species: Rat, female Sex: female Application Route: oral gavage Dose: 100, 300, 1000 mg/kg Exposure time: 39 - 47 d Number of exposures: Daily NOEL: 1,000 mg/kg Method: OECD Guideline 422 No adverse effects expected

Reproductive toxicity

Methyl ester of sulfonated tannin	:	Species: Rat Sex: male Application Route: oral gavage Dose: 100, 300, 1000 mg/kg Exposure time: 32 d Number of exposures: Daily Method: OECD Guideline 422 NOAEL Parent: 1,000 mg/kg NOAEL F1: 1,000 mg/kg Fertility and developmental toxicity tests did not reveal any effect on reproduction. Species: Rat Sex: female Application Route: oral gavage Dose: 100, 300, 1000 mg/kg Exposure time: 39 - 47 d Number of exposures: Daily Method: OECD Guideline 422 NOAEL Parent: 1,000 mg/kg NOAEL F1: 1,000 mg/kg Fertility and developmental toxicity tests did not reveal any effect on reproduction.

CF Desco® II Deflocculant
Aspiration toxicity : No aspiration toxicity classification.

CMR effects

Crystalline Silica	:	Carcinogenicity: Human carcinogen.

CF Desco® II Deflocculant
Further information : No data available.

SECTION 12: Ecological information

Toxicity to fish

Methyl ester of sulfonated tannin	:	LL50: > 1,800 mg/l Exposure time: 96 h Species: Scophthalmus maximus (Flatfish, Flounder) Method: OECD Test Guideline 203
Ferrous Sulfate		LL50: > 6.25 mg/l Exposure time: 96 h Species: Cyprinodon variegatus (sheepshead minnow) Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates

Methyl ester of sulfonated tannin	:	EL50: 73.2 mg/l Exposure time: 48 h Species: Acartia tonsa (Marine Copepod) Method: ISO TC147/SC5/WG2
Ferrous Sulfate		LC50: 190 mg/l Exposure time: 48 h Species: Acartia tonsa (Marine Copepod)

Toxicity to algae

Methyl ester of sulfonated tannin	:	ErC50: > 100 mg/l Exposure time: 72 h Species: Desmodesmus subspicatus (green algae) Method: OECD Test Guideline 201 EbC50: 79 mg/l Exposure time: 72 h Species: Desmodesmus subspicatus (green algae) Method: OECD Test Guideline 201
Ferrous Sulfate		EL50: 45 mg/l Exposure time: 72 h Species: Skeletonema costatum (Marine Algae)

Elimination information (persistence and degradability)

Biodegradability	:	Taking into consideration the properties of several ingredients, the product is estimated not to be readily biodegradable according to OECD classification.

Ecotoxicology Assessment

Acute aquatic toxicity Methyl ester of sulfonated tannin	:	Harmful to aquatic life.
Chronic aquatic toxicity Methyl ester of sulfonated	:	Harmful to aquatic life with long lasting effects.

tannin
Additional ecological information : Harmful to aquatic life with long lasting effects.

SECTION 13: Disposal considerations

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

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

Product : The product should not be allowed to enter drains, water courses or the soil. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste management company.

Contaminated packaging : Empty remaining contents. Dispose of as unused product. Do not re-use empty containers.

SECTION 14: Transport information

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

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

US DOT (UNITED STATES DEPARTMENT OF TRANSPORTATION)
NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS)
NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION)
NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

ADR (AGREEMENT ON DANGEROUS GOODS BY ROAD (EUROPE))
NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

RID (REGULATIONS CONCERNING THE INTERNATIONAL TRANSPORT OF DANGEROUS GOODS (EUROPE))
NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

ADN (EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY INLAND WATERWAYS)
NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

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

SECTION 15: Regulatory information

National legislation

SARA 311/312 Hazards : Fire Hazard
Chronic Health Hazard

EPCRA - EMERGENCY PLANNING COMMUNITY RIGHT - TO – KNOW

SARA 302 Reportable Quantity : This material does not contain any components with a SARA 302 RQ.

SARA 302 Threshold Planning Quantity : No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 304 Reportable Quantity : This material does not contain any components with a section 304 EHS RQ.

SARA 313 Ingredients : 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.

Clean Air Act

Ozone-Depletion Potential : This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 12 (40 CFR 61):
: Acrylic Acid - 79-10-7

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

The following chemical(s) are listed under the U.S. Clean Air Act Section 111 SOCMI Intermediate or Final VOC's (40 CFR 60.489):
: Acrylic Acid - 79-10-7

US State Regulations

Pennsylvania Right To Know
: Ferrous Sulfate - 17375-41-6
Acrylic Acid - 79-10-7

New Jersey Right To Know
: Ferrous Sulfate - 17375-41-6
Crystalline Silica - 14808-60-7

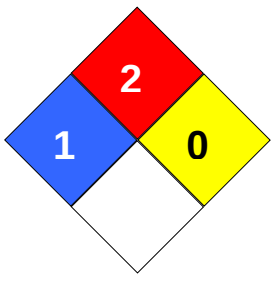
California Prop. 65 Ingredients : WARNING! This product contains a chemical known in the State of California to cause cancer.

Notification status

Europe REACH	:	A substance or substances in this product is not registered or notified to be registered. Importation or manufacture of this product is still permitted provided that it does not exceed the REACH minimum threshold quantity of the non-regulated substances.
United States of America TSCA	:	On the inventory, or in compliance with the inventory
Canada DSL	:	All components of this product are on the Canadian DSL
Australia AICS	:	Not in compliance with the inventory
New Zealand NZIoC	:	Not in compliance with the inventory
Japan ENCS	:	Not in compliance with the inventory
Korea KECI	:	Not in compliance with the inventory
Philippines PICCS	:	Not in compliance with the inventory
China IECSC	:	Not in compliance with the inventory

SECTION 16: Other information

NFPA Classification : Health Hazard: 1
Fire Hazard: 2
Reactivity Hazard: 0



Further information

Legacy SDS Number : 704530

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

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

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.

Key or legend to abbreviations and acronyms used in the safety data sheet			
ACGIH	American Conference of Government Industrial Hygienists	LD50	Lethal Dose 50%
AICS	Australia, Inventory of Chemical Substances	LOAEL	Lowest Observed Adverse Effect Level
DSL	Canada, Domestic Substances List	NFPA	National Fire Protection Agency
NDSL	Canada, Non-Domestic Substances List	NIOSH	National Institute for Occupational Safety & Health
CNS	Central Nervous System	NTP	National Toxicology Program
CAS	Chemical Abstract Service	NZIoC	New Zealand Inventory of Chemicals
EC50	Effective Concentration	NOAEL	No Observable Adverse Effect Level
EC50	Effective Concentration 50%	NOEC	No Observed Effect Concentration
EGEST	EOSCA Generic Exposure Scenario Tool	OSHA	Occupational Safety & Health Administration
EOSCA	European Oilfield Specialty Chemicals Association	PEL	Permissible Exposure Limit
EINECS	European Inventory of Existing Chemical Substances	PICCS	Philippines Inventory of Commercial Chemical Substances
MAK	Germany Maximum Concentration Values	PRNT	Presumed Not Toxic
GHS	Globally Harmonized System	RCRA	Resource Conservation Recovery Act
>=	Greater Than or Equal To	STEL	Short-term Exposure Limit
IC50	Inhibition Concentration 50%	SARA	Superfund Amendments and Reauthorization Act.
IARC	International Agency for Research on Cancer	TLV	Threshold Limit Value
IECSC	Inventory of Existing Chemical Substances in China	TWA	Time Weighted Average
ENCS	Japan, Inventory of Existing and New Chemical Substances	TSCA	Toxic Substance Control Act
KECI	Korea, Existing Chemical Inventory	UVCB	Unknown or Variable Composition, Complex Reaction Products, and Biological Materials
<=	Less Than or Equal To	WHMIS	Workplace Hazardous Materials Information System
LC50	Lethal Concentration 50%		

CANADIAN
Material Safety Data Sheet

DIASEAL M® LOST CIRCULATION MATERIAL

July 31, 1996

DRILLING SPECIALTIES COMPANY
Bartlesville, Oklahoma 74004

PHONE NUMBERS
Emergency: (918) 661-8118
Technical Services: (800) 221-1956
For Additional MSDSs: (918) 661-7354

A. Product Identification

Synonyms: LCM; Lost Circulation Material
Chemical Name: Mixture
Chemical Family: Mixture
Chemical Formula: Mixture
CAS Reg. No.: Mixture
Product No.: Not Established

Canadian Inventory Listing Status: DSL

All ingredients are listed in the Domestic Substances List (DSL) Impurities are exempt in accordance with Section 3 of the Canadian of Environmental Protection Act (CEPA).

B. Hazardous Components

Ingredients	CAS Number	% By Wt.	OSHA PEL	ACGIH TLV
Calcium hydroxide	1305-62-0	8	5 mg/m3	5 mg/m3
Diatomaceous earth	61790-53-2	80	6 mg/m3	10 mg/m3
may include, Crystalline silica (Quartz)	14808-60-7	< 1	0.1 mg/m3*	0.1 mg/m3*

* Respirable Dust

C. Personal Protection Information

Ventilation: Use adequate ventilation to control below recommended exposure levels.

Respiratory Protection: For concentrations exceeding the recommended exposure level, use NIOSH/MSHA approved respirator for protection against dusts and mists having an exposure limit measured as a time-weighted average not less than 0.05 mg/m3.

Eye Protection: Use chemical goggles.

Skin Protection: Use protective gloves for prolonged exposures.

NOTE: Personal protection information shown in Section C is based upon general information as to normal uses and conditions. Where special or unusual uses or conditions exist, it is suggested that the expert assistance of an industrial hygienist or other qualified professional be sought.

D. Handling and Storage Precautions

Do not get in eyes, on skin or on clothing. Do not breathe dust. Wash thoroughly after handling. Immediately remove and launder contaminated clothing before reuse. Wear protective equipment and/or garments described in Section C if exposure conditions warrant. Use only with adequate ventilation.

Store in closed container.

E. Reactivity Data

Stability:	Stable
Conditions to Avoid:	Not Applicable
Incompatibility (Materials to Avoid):	Fluorine, Oxygen difluoride, Chlorine Trifluoride, Hydrofluoric Acid
Hazardous Polymerization:	Will Not Occur
Conditions to Avoid:	Not Applicable
Hazardous Decomposition Products:	Not Established

F. Health Hazard Data

Recommended Exposure Limits:

See Section B.

Acute Effects of Overexposure:

Eye: May cause severe irritation with prolonged contact.

Skin: May cause severe irritation with repeated or prolonged contact.

Inhalation: May cause irritation to the mucous membranes of the nose, throat and upper respiratory tract.

Ingestion: May cause irritation to the gastrointestinal tract.

Subchronic and Chronic Effects of Overexposure:

Inhalation of high dust concentrations of silicon dioxide over an extended number of years may produce fibrotic lung disease.

Chronic inhalation of dust containing crystalline silica may cause silicosis, a progressive pulmonary fibrosis which may be associated with significantly impaired pulmonary function, cardiopulmonary impairment and death. Symptoms may progress after dust exposure ceases. Silicosis typically results from silica dust exposure over many years.

Crystalline silica, a common component of sand, has been classified as probably carcinogenic for humans (2A) by the International Agency for Research on Cancer (IARC).

Other Health Effects:

No known applicable information.

Health Hazard Categories:

CLASS D: POISONOUS AND INFECTIOUS MATERIAL CATEGORIES

1. Materials Causing Immediate and Serious Toxic Effects

   A. Very Toxic _____
   B. Toxic _____

2. Materials Causing Other Toxic Effects

   A. Very Toxic

      1. Chronic Toxic Effects _____
      2. Teratogen/Embryo Toxin _____
      3. Carcinogen __X__ (Crystalline silica)
      4. Reproductive Toxin _____
      5. Respiratory Tract Sensitizer _____
      6. Mutagen _____

   B. Toxic

      1. Chronic Toxic Effects _____
      2. Skin or Eye Irritant __X__ (Calcium hydroxide)
      3. Skin Sensitizer _____
      4. Mutagen _____

   Specify: Eye irritant. Skin Irritant. Suspect Human Carcinogen. Known Animal Carcinogen. Lung Toxin.

   Other _____

First Aid and Emergency Procedures:

Eye: Immediately flush eyes with running water for at least fifteen minutes. If irritation or adverse symptoms develop, seek medical attention.

Skin: Immediately wash skin with soap and water for at least fifteen minutes. If irritation or adverse symptoms develop, seek medical attention.

Inhalation: Immediately remove from exposure. If breathing is difficult, give oxygen. If breathing ceases, administer artificial respiration followed by oxygen. Seek immediate medical attention.

Ingestion: Give two glasses of water and induce vomiting, only if subject is conscious. Seek medical attention.

Note to Physician: Irrigation of the eye with a 0.01 to 0.05M (0.3 to 1.5%) EDTA solution at pH 4.6 to 7 may aid in loosening and dissolving any adherent calcium hydroxide particles. For

effective irrigation this procedure may require administration of a local anesthetic.

G. Physical Data

Appearance:	Light off-white coarse powder
Odor:	Mild (slight earthy)
Boiling Point:	Not Applicable
Vapor Pressure:	Not Applicable
Vapor Density (Air = 1):	Not Applicable
Solubility in Water:	Negligible
Specific Gravity (H2O = 1):	> 2
Percent Volatile by Volume:	Not Applicable
Evaporation Rate (Butyl Acetate=1):	Not Applicable
Viscosity:	Not Applicable

H. Fire and Explosion Data

Flash Point (Method Used):	Not Applicable
Flammable Limits (% by Volume in Air):	LEL - Not Applicable UEL - Not Applicable
Fire Extinguishing Media:	Water, foam, dry chemical, carbon dioxide (CO2). Use media appropriate for surrounding fire.
Special Fire Fighting Procedures:	Evacuate area of all unnecessary personnel. Use NIOSH/MSHA approved self-contained breathing apparatus (SCBA) and other protective equipment and/or garments described in Section C if conditions warrant. Use water fog or spray to cool exposed containers and equipment.
Fire and Explosion Hazards:	Not Applicable.

I. Spill, Leak and Disposal Procedures

Precautions Required if Material is Released or Spilled:

Evacuate area of all unnecessary personnel. Wear protective equipment and/or garments described in Section C if exposure conditions warrant. Control dust levels. Vacuum spill. If sweeping is necessary, wet down spill or use sweeping compound.

Waste Disposal (Insure Conformity with all Applicable Disposal Regulations):

Place in an approved waste disposal facility.

J. DOT Transportation

Shipping Name:	Not Applicable
Hazard Class:	Not Applicable
ID Number:	Not Applicable
Packing Group:	Not Applicable
Marking:	Not Applicable
Label:	Not Applicable
Placard:	Not Applicable
Hazardous Substance/RQ:	Not Applicable
Shipping Description:	Not Applicable
Packaging References:	Not Applicable

K. RCRA Classification - Unadulterated Product as a Waste

Prior to disposal, consult your environmental contact to determine if TCLP (Toxicity Characteristic Leaching Procedure, EPA Test Method 1311) is required. Reference 40 CFR Part 261.

L. Protection Required for Work on Contaminated Equipment

Contact immediate supervisor for specific instructions before work is initiated. Wear protective equipment and/or garments described in Section C if conditions warrant.

M. Hazard Classification

Class D-Poisonous and Infectious Material
Division 2-Materials Causing Other Toxic Effects

N. Additional Comments

ENVIRONMENTAL TOXICITY:

Environmental effects testing has been conducted using Diaseal M® in a generic mud. The tests were conducted following the Environmental Protection Agency's (EPA), Region II drilling mud bioassay procedures.

The 96-hour LC50 for freshwater trout is >13,000 ppm. The 96-hour LC50 for saltwater stickleback is >5,600 ppm. The results of these tests classify Diaseal M® as a non-toxic drilling mud additive.

SARA 313

As of the preparation date, this product did not contain a chemical or chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

NFPA 704 Hazard Codes - - - - - - - - Signals

Health : 2	Least - 0
Flammability: 0	Slight - 1
Reactivity : 0	Moderate - 2
Special Haz.: -	High - 3
	Extreme - 4

REFERENCES

ACGIH	American Conference of Government Industrial Hygienists
ASTM	American Society of Testing and Materials
CFR	Code of Federal Regulations, U.S.

DOT	Department of Transportation, U.S.
EPA	Environmental Protection Agency, U.S.
IARC	International Agency for Research on Cancer
MSHA	Mine Safety and Health Administration, U.S.
NFPA	National Fire Protection Association
NIOSH	National Institute of Occupational Safety and Health, U.S.
NTP	National Toxicology Program, U.S.
OSHA	Occupational Safety and Health Administration, U.S.
RCRA	Resource Conservation and Recovery Act, U.S.
SARA	Superfund Amendments and Reauthorization Act, U.S.
TSCA	Toxic Substances Control Act, U.S.

Drispac® (Regular and Superlo®) Polymer

Version 2.0 Revision Date 2015-07-30

SECTION 1: Identification of the substance/mixture and of the company/undertaking

Product information

Product Name : Drispac® (Regular and Superlo®) Polymer
Material : 1116045, 1016803, 1016806

Use : Drilling Mud Additive

Company : Chevron Phillips Chemical Company LP
Drilling Specialties Company LLC
10001 Six Pines Drive
The Woodlands, TX 77380

Emergency telephone:

Health:
866.442.9628 (North America)
1.832.813.4984 (International)
Transport:
North America: CHEMTREC 800.424.9300 or 703.527.3887
Asia: +800 CHEMCALL (+800 2436 2255) China:+86-21-22157316
EUROPE: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
South America SOS-Cotec Inside Brazil: 0800.111.767 Outside Brazil: +55.19.3467.1600

Responsible Department : Product Safety and Toxicology Group
E-mail address : SDS@CPChem.com
Website : www.CPChem.com

SECTION 2: Hazards identification

Classification of the substance or mixture

This product has been classified in accordance with the hazard communication standard 29 CFR 1910.1200; the SDS and labels contain all the information as required by the standard.

Emergency Overview

Form: Powder **Physical state**: Solid **Color**: White to off-white **Odor**: Slight

OSHA Hazards : Combustible dust

Classification

: Combustible dust

Labeling

Signal Word	:	Warning
Hazard Statements	:	May form combustible dust concentrations in air.

Potential Health Effects

Physical Hazards : Mechanical processing may form combustible dust concentrations in air and thermal processing at elevated temperatures may generate simple hydrocarbons and carbon oxides.

Carcinogenicity:

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

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

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

SECTION 3: Composition/information on ingredients

Synonyms : Viscosifier, Water loss control agent

Component	CAS-No.	Weight %
Sodium Carboxymethylcellulose	9004-32-4	100

SECTION 4: First aid measures

General advice : No hazards which require special first aid measures.

If inhaled : If unconscious place in recovery position and seek medical advice. If symptoms persist, call a physician.

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

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

SECTION 5: Firefighting measures

Flash point	:	Not applicable
Autoignition temperature	:	Not applicable
Specific hazards during fire fighting	:	Risks of ignition followed by flame propagation or secondary explosions can be caused by the accumulation of dust, e.g. on floors and ledges.
Special protective equipment for fire-fighters	:	Wear self-contained breathing apparatus for firefighting if necessary.
Further information	:	Standard procedure for chemical fires. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Fire and explosion protection	:	Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard. Provide appropriate exhaust ventilation at places where dust is formed.
Hazardous decomposition products	:	No data available.

SECTION 6: Accidental release measures

Personal precautions	:	Avoid dust formation.
Environmental precautions	:	If the product contaminates rivers and lakes or drains inform respective authorities.
Methods for cleaning up	:	Pick up and arrange disposal without creating dust. Clean up promptly by sweeping or vacuum. Keep in suitable, closed containers for disposal.
Additional advice	:	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 (i.e., clearing dust surfaces with compressed air).

SECTION 7: Handling and storage

Handling

Advice on safe handling	:	For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Electrostatic charge may accumulate and create a hazardous condition when handling this material. To minimize this hazard, bonding and grounding may be necessary, but may not by themselves be sufficient.
Advice on protection against fire and explosion	:	Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard. Provide appropriate exhaust

ventilation at places where dust is formed.

Storage

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

SECTION 8: Exposure controls/personal protection

Engineering measures

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

Personal protective equipment

Respiratory protection	:	Wear a supplied-air NIOSH approved respirator unless ventilation or other engineering controls are adequate to maintain minimal oxygen content of 19.5% by volume under normal atmospheric pressure. Use a positive pressure, air-supplying respirator if there is potential for uncontrolled release, exposure levels are not known, or other circumstances where air-purifying respirators may not provide adequate protection.
Hand protection	:	The suitability for a specific workplace should be discussed with the producers of the protective gloves. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.
Eye protection	:	Eye wash bottle with pure water. Safety glasses.
Skin and body protection	:	Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place. Wear as appropriate:. Protective suit. Safety shoes.
Hygiene measures	:	General industrial hygiene practice.

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

Appearance

Form	:	Powder
Physical state	:	Solid

Color	:	White to off-white
Odor	:	Slight
Odor Threshold	:	No data available

Safety data

Flash point	:	Not applicable
Lower explosion limit	:	Not applicable
Upper explosion limit	:	Not applicable
Oxidizing properties	:	no
Autoignition temperature	:	Not applicable
Thermal decomposition	:	No data available
Molecular weight	:	No data available
pH	:	Not applicable
Pour point	:	No data available
Melting point/range		No data available
Boiling point/boiling range	:	No data available
Vapor pressure	:	Not applicable
Relative density	:	Not applicable
Density	:	1.5 g/cm3
Water solubility	:	Completely Soluble
Partition coefficient: n-octanol/water	:	No data available
Solubility in other solvents	:	No data available
Viscosity, kinematic	:	No data available
Relative vapor density	:	Not applicable
Evaporation rate	:	No data available

SECTION 10: Stability and reactivity

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

Possibility of hazardous reactions

Conditions to avoid	:	Generation of Dusts.
Thermal decomposition	:	No data available
Hazardous decomposition products	:	No data available
Other data	:	No decomposition if stored and applied as directed.

SECTION 11: Toxicological information

Acute oral toxicity

Sodium Carboxymethylcellulose	:	LD50: 27,000 mg/kg Species: Rat

Acute inhalation toxicity

Sodium Carboxymethylcellulose	:	LC50: > 5800 mg/m3Exposure time: 4 h Species: Rat

Acute dermal toxicity

Sodium Carboxymethylcellulose	:	LD50: > 2,000 mg/kg Species: Rabbit

Drispac® (Regular and Superlo®) Polymer
Aspiration toxicity : No aspiration toxicity classification.

Drispac® (Regular and Superlo®) Polymer
Further information : No data available.

SECTION 12: Ecological information

Biodegradability

Sodium Carboxymethylcellulose	:	This material is expected to be readily biodegradable.

Additional ecological information

Sodium Carboxymethylcellulose	:	This material is not expected to be harmful to aquatic organisms.

SECTION 13: Disposal considerations

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

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

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

SECTION 14: Transport information

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

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

US DOT (UNITED STATES DEPARTMENT OF TRANSPORTATION)
NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS)
NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION)
NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

ADR (AGREEMENT ON DANGEROUS GOODS BY ROAD (EUROPE))
NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

RID (REGULATIONS CONCERNING THE INTERNATIONAL TRANSPORT OF DANGEROUS GOODS (EUROPE))
NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

ADN (EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY INLAND WATERWAYS)
NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

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

SECTION 15: Regulatory information

National legislation

SARA 311/312 Hazards	:	Fire Hazard
CERCLA Reportable Quantity	:	This material does not contain any components with a CERCLA RQ.
SARA 302 Reportable Quantity	:	This material does not contain any components with a SARA 302 RQ.
SARA 302 Threshold Planning Quantity	:	No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
SARA 304 Reportable Quantity	:	This material does not contain any components with a section 304 EHS RQ.
SARA 313 Ingredients	:	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.

Clean Air Act

Ozone-Depletion Potential	:	This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 12 (40 CFR 61).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCMI Intermediate or Final VOC's (40 CFR 60.489).

US State Regulations

Pennsylvania Right To Know

: No components are subject to the Pennsylvania Right to Know Act.

New Jersey Right To Know
: No components are subject to the New Jersey Right to Know Act.

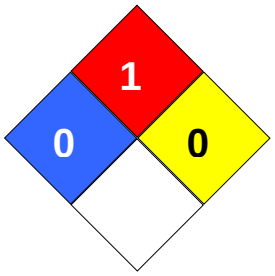
California Prop. 65 Ingredients : This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

Notification status

Europe REACH	:	On the inventory, or in compliance with the inventory
United States of America TSCA	:	On the inventory, or in compliance with the inventory
Canada DSL	:	On the inventory, or in compliance with the inventory
Australia AICS	:	On the inventory, or in compliance with the inventory
New Zealand NZIoC	:	On the inventory, or in compliance with the inventory
Japan ENCS	:	On the inventory, or in compliance with the inventory
Korea KECI	:	On the inventory, or in compliance with the inventory
Philippines PICCS	:	On the inventory, or in compliance with the inventory
China IECSC	:	On the inventory, or in compliance with the inventory

SECTION 16: Other information

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



Further information

Legacy SDS Number : 25950

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

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EC50	Effective Concentration 50%	NOEC	No Observed Effect Concentration
EGEST	EOSCA Generic Exposure Scenario Tool	OSHA	Occupational Safety & Health Administration
EOSCA	European Oilfield Specialty Chemicals Association	PEL	Permissible Exposure Limit
EINECS	European Inventory of Existing Chemical Substances	PICCS	Philippines Inventory of Commercial Chemical Substances
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GHS	Globally Harmonized System	RCRA	Resource Conservation Recovery Act
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IC50	Inhibition Concentration 50%	SARA	Superfund Amendments and Reauthorization Act.
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IECSC	Inventory of Existing Chemical Substances in China	TWA	Time Weighted Average
ENCS	Japan, Inventory of Existing and New Chemical Substances	TSCA	Toxic Substance Control Act
KECI	Korea, Existing Chemical Inventory	UVCB	Unknown or Variable Composition, Complex Reaction Products, and Biological Materials
<=	Less Than or Equal To	WHMIS	Workplace Hazardous Materials Information System
LC50	Lethal Concentration 50%		

MI SWACO
A Schlumberger Company

MATERIAL SAFETY DATA SHEET

MSDS No. 10048 **Trade Name:** NUT PLUG* **Revision Date:** 04/30/2012

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Trade Name: NUT PLUG*

Chemical Family: Cellulose
Product Use: Drilling fluid additive. Lost circulation material.

Supplied by: M-I L.L.C.
P.O. Box 42842
Houston, TX 77242
www.miswaco.slb.com
Telephone Number: 281-561-1511
Emergency Telephone (24 hr.): 281-561-1600
Prepared by: Product Safety Group

Revision No. 8

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. Cancer hazard. Contains crystalline silica which may cause cancer.

Canadian Classification:
UN PIN No: Not regulated. **WHMIS Class:** D2A

Physical State: Solid **Color:** Tan **Odor:** Mild (or faint)

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 Respiratory System. Skin. Eyes.
Aggravated by Overexposure:

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.

Composition Comments: Component LD50 and LC50 values are provided in Section 11, if available.

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
Explosion Data - Sensitivity to Mechanical Impact: NA
Explosion Data - Sensitivity to Static Discharge: If applicable, information is provided in Section 5 Special Fire-Fighting Procedures, Other Flammable Properties and Section 6 Spill Procedures.
Flammability Class: NA
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.

Conditions of Flammability: Products are classified as flammable/combustible based on flash point as defined in the Health Canada Controlled Products Regulations, U.S. Occupational Health and Safety Administration Hazard Communication Standard and transportation regulations. See Sections 1, 2, 5, 14 and 15 for flammable/combustible classification information. Flammable/combustible materials may ignite and burn if exposed to a flame or other sources of ignition.
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.

6. ACCIDENTAL RELEASE MEASURES

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

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 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.
Palleted 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	50 mg/m^3 IDLH (NIOSH)	(R)

Notes
(R) Respirable fraction.
Table Z-3: PEL for Mineral Dusts containing crystalline silica are 10 mg/m^3 / (%SiO2+2) for quartz and 1/2 the calculated quartz value for cristobalite and tridymite. 29 CFR 1910.1000.

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

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.

9. PHYSICAL AND CHEMICAL PROPERTIES

Color:	Tan
Odor:	Mild (or faint)
Physical State:	Solid
pH:	ND
Specific Gravity (H2O = 1):	1.4 - 1.65 at 68 F (20 C)
Bulk Density:	577-641
Solubility (Water):	Insoluble.
Melting/Freezing Point:	ND
Boiling Point:	ND
Vapor Pressure:	ND
Vapor Density (Air=1):	ND
Evaporation Rate:	ND
Octanol/Water Partition Coefficient:	ND
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.
Conditions of Reactivity:	See Conditions and Materials to Avoid, if applicable.
Hazardous Decomposition Products:	For thermal decomposition products, see Section 5.
Hazardous Polymerization	Will not occur

11. TOXICOLOGICAL INFORMATION

Acute Exposure Effects, Irritation and Sensitization: See Section 2.
Chronic, Carcinogenicity, Reproductive Toxicity, Teratogenicity, Embryotoxicity, Mutagenicity Effects: See Component Toxicological Summary and Product Toxicological Information, if available.
Synergistic Products/Effects: ND

Component Toxicological Data: Any adverse component toxicological effects and acute toxicity values (LD50s, LC50s) are listed below. If no effects or acute values are listed for components, no such data were identified.

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/m³/4H (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.

12. ECOLOGICAL INFORMATION

Component Ecotoxicity Data: No data available.

Product Ecotoxicity Data: Contact M-I Environmental Affairs Department for available product ecotoxicity data.
Biodegration: ND
Bioaccumulation: 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 Catagories: 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	—	—	—

State Comments: Proposition 65: This product contains chemical(s) considered by the State of California's Safe Drinking Water and Toxic Enforcement Act of 1986 to cause cancer and/or reproductive toxicity. See table under U.S. Federal and State Regulations for the specific chemicals.

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: D2A

16. OTHER INFORMATION

The following sections have been revised: 1, 2, 4, 8, 15, 16. Format changes.

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 guartantee 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.

Safety Data Sheet – PolyTeK+

Section 1: Product and Company Identification

Product Identifier: PolyTeK+
Product Names: PolyTeK+

Product uses: Drilling fluids

Manufacturer:
Industrial Mineral Company
7268 Frasinetti Road
Sacramento, California 95828

Emergency Telephone Number: 1-800-498-1496
Telephone Number for Information: 916-383-2811

Section 2: Hazards Identification

Carcinogen

Irritant (skin and eye)
Skin Sensitizer
Reparatory Track Irritant

OSHA/HCS status: This naturally occurring clay is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200)
Classification of the substance of mixture: OSHA –Carcinogenicity (inhalation) - Category 1A and Specific organ toxicity (Repeated Exposure) (Respiratory tract through inhalation) – Category 1
Exposure limits for Crystalline Silica: The current American Conference of Government Industrial Hygienist Threshold limit value for crystalline silica is: 0.1 mg/m^3
Signal Word: Danger
Hazard Statement Cancer Hazard. Contains quartz (crystalline silica) which may cause cancer. Risk of cancer depends upon duration and level of exposure to the dust. Not an acute hazard. Prolonged inhalation of dust may cause lung injury. Inhalation of high concentrations of dust may cause mechanical irritation and discomfort of the respiratory tract. Repeated exposure may have chronic effects. Can cause skin, respiratory, and eye irritation
Precautionary Statement: Wear protective gloves, eye, and respiratory protection. Avoid breathing dust.

Section 3: Composition Information

Proprietary Mixture Material without recognized hazard withheld

Chemical Name	Common Name	CAS Number	%
Crystalline Silica	SiO_2	14808-60-7	=<9%
Mica/Illite	$(K,Na,Ca)(Al,Mg,Fe)_2(Si,Al)_4O_{10}(OH,F)_2$	12001-26-2	<2%
Rutile	TiO_2	1317-80-2	<0.5%

Acetic Acid	$C_2H_4O_2$	64-19-7	<0.02%
Ethylene Oxide	C_2H_4O	75-21-8	<0.002%

Section 4: First-Aid Measures

Eye Contact: If eye contact occurs, remove contact lenses, rinse immediately with plenty of water, also under eyelids for at least 15 minutes. If irritation persists, seek medical attention
Skin Contact: Avoid prolonged or repeated contact with skin. Wash thoroughly with soap and water. If irritation persists, seek medical attention
Inhalation: Move victim to fresh air in well ventilated area. If coughing or irritation persists, seek medical attention
Ingestion: Rinse mouth with water. If large quantities ingested Consult physician and/or obtain competent medical assistance immediately.

Section 5 Fire Fighting Measures

Suitable Extinguishing Media: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide
Unsuitable extinguishing media: high volume water jet
Special hazards arising from the substance or mixture: Thermal decomposition may produce: hydrogen chloride gas, nitrogen oxides (NOx), carbon oxides (COx), potassium oxides (KOx), phosphorous oxides (POx). Hydrogen cyanide (hydrocyanic acid) may be produced in the event of combustion in an oxygen deficient atmosphere.
Special Fire Fighting Procedure: In event of fire wear self-contained breathing apparatus, aqueous solutions or powders that become wet render surfaces extremely slippery.
Fire and explosion protection: Provide appropriate exhaust ventilation at places where dust is formed

Section 6: Accidental Release Measures

Clean-up Methods: When dust is generated it may over expose cleanup personnel to dust, minimize dust creation while cleaning. Use NIOSH/MSHA approved respirator if there is a risk of exposure to dust at levels exceeding the exposure limits. Clean promptly by sweeping or vacuum. Remove residues by flushing with large quantities of water. Eliminate all sources of ignition or flammables that may come into contact with a spill.
Personal Precautions and Personal Protective Equipment: Wear appropriate protective equipment and clothing during clean-up (Section 8). If dusty conditions exist use approved respirators. Aqueous solutions or powders that become wet render surfaces extremely slippery. Ventilate area of spill.
Environmental Precautions: Do not flush into surface water.

Section 7: Handling and Storage

Precautions for safe handling: When wet material can render surfaces extremely slippery. Keep formation of dust to a minimum. Keep away from heat, sparks, or open flame.

Conditions for safe storage including any incompatibilities: keep in a dry place. Incompatible with: oxidizing agents, strong acids, brominetrifluoride, potassium permanganate, sulfuric acid and nitric acid.
Handling Procedures: Wear the appropriate eye protection and avoid dust contact with eyes. Minimize dust generation and accumulation. Wear the appropriate respiratory protection when in poorly ventilated areas. Use good industrial hygiene practices. Smoking, eating and drinking should be prohibited in the application area. Wash thoroughly after handling. Contaminated clothing and PPE should be removed before entering eating areas. Keep out of the reach of children.

Section 8: Exposure Controls/Personal Protection

Airborne Exposure Limits:

Silica component limit
OSHA PEL: TWA 10 mg/m^3 (respirable)
OSHA PEL : TWA 30 mg/m^3 (total dust)
CAL OSHA PEL: TWA 0.1 mg/m^3 (respirable)
CAL OSHA PEL: TWA 0.3 mg/m^3 (total dust)

Mica component limit
OSHA PEL: TWA 3 mg/m^3 (respirable)
OSHA PEL: TWA 20 mppcf

Rutile component limit (Same as Titanium dioxide)
OSHA PEL: TWA 15 mg/m^3
CAL OSHA PEL: TWA 5 mg/m^3 (respirable)
CAL OSHA PEL: TWA 15 mg/m^3 (total dust)

Acetic Acid Component Limit
CAL OSHA PEL: 25 mg/m^3 (respirable)
CAL OSHA STEL: 37 mg/m^3 (respirable)
CAL OSHAL CEL: 40 ppm (respirable)

Ethylene Oxide Component Limit
CAL OSHA PEL: 2 mg/m^3 (respirable)
CAL OSHA STEL: 5 ppm (respirable)

Engineering Measures: Use local exhaust ventilation to control exposure below applicable limits

Personal Protective Equipment (PPE):

Respiratory: Avoid actions that cause dust exposure to occur. Use local or general ventilation to control exposures below applicable exposure limits. NIOSH or MSHA approved particulate filter respirators should be used if exposure levels are in excess of NIOSH or OSHA guide lines.

Eyes: Safety glasses with side shields or goggles in dusty situations.
Skin and Body: Work clothes protecting arms, legs, and body
Hand protection: PVC or other plastic material gloves
Hygiene measures: Wash hands before breaks and at the end of work day, keep away from food and beverages.
Environmental Exposure controls: Do not allow uncontrolled discharge of produce into the environment. Do not flush into surface water.

Section 9: Physical and Chemical Properties

Appearance: Tan **Physical state**: Powder **pH**: 8 **Melting/Freezing Point**: no data available **Evaporation Rate**: NA **Vapor Pressure (mm HG)**: 0 (approximately) **Relative density**: NA **Solubility in water at 100 C:** no data available **Decomposition temperature:** no data available **Viscosity:** NA	**Odor:** none **Odor threshold:** No data Available **Flashpoint:** NA **Boiling Point:** NA **Flammability:** Not Flammable **Vapor Density**: NA **Specific Gravity**: 0.95 **Partition coefficient**: No data available **Auto-ignition temperature**: NA **Explosive Limits:** Potential to create explosive atmospheres

Section 10: Stability and Reactivity

Reactivity: No dangerous reactions are known under normal conditions of use
Chemical Stability: Stable under normal conditions
Possibility of Hazardous Reactions and Conditions to Avoid: Oxidizing agents may cause exothermic reactions
Conditions to avoid: extreme humidity, excess heat, heat, flames, sparks,
Incompatibility: Oxidizing Agents, strong acids, brominetriflouride, potassium permanganate, sulfuric acid, nitric acid,
Hazardous decomposition products: Thermal decomposition may produce: hydrogen chloride gas, nitrogen oxides (NOx), carbon oxides (Cox), Hydrogen cyanide (hydrocyanic acid), phosphorous oxides (POx), potassium oxides (KOx), sulfur oxides (SOx), low molecular weight hydrocarbons,

Section 11: Toxicological Information

Possible Health Effects:
Target Organs: Skin, Eyes, and Respiratory system
Exposure Routes: Inhalation, skin, ingestion, or eye contact

Symptoms:
Short Term: Shortness of breath and/or coughing associated with dust inhalation. Nausea, vomiting and diarrhea associated with ingestion. Redness and burning may be associated with skin contact. Redness stinging, tearing and swelling may be associated with eye contact.
Long Term Exposure (Chronic): Steady and prolonged exposure to dust concentrations high than LTV without approved respirator could cause silicosis, a chronic disease of the lungs marked by acute fibrosis, may cause cancer based on animal data.
Effects of Silicosis
Bronchitis/chronic obstructive Pulmonary Disorder
Increased susceptibility to Tuberculosis
Scleroderma
Possible Renal
Symptoms of Silicosis
Shortness of breath, fever fatigue, loss of appetite, chest pain, dry non-productive cough, respiratory failure, death.
Acute oral toxicity: No data available
Acute inhalation toxicity: No Data available
Acute dermal toxicity: No data available
Aspiration toxicity: No data available

Section 12: Ecological Information

Eco toxicity: None Known
Biochemical oxygen demand (BOD5): None known
Chemical oxygen demand (COD): None known
Products of Biodegradation: None known
Toxicity of the products of biodegradation: None known
Bioaccumulation Potential: None known
Potential to move from soil to groundwater: None Know
Other adverse effects: None known

Section 13: Disposal Considerations

Personal Protection: Refer to section 8 for proper PPE when disposing of waste material
Appropriate disposal containers: No special requirements
Appropriate disposal methods: Disposal of this product should comply with the requirements of environmental protection and waste disposal legislation and any regional or local authority requirements.
Physical and chemical properties that may affect disposal: Dust should be minimized in disposal by either transporting in seal containers or wetting dust before transport
Sewage disposal: do not dispose of into sewage systems, material will settle out of water and clog pipes.
Special precautions for landfills or incineration activities: None

Section 14: Transport Information

Regulatory Information	UN Number	UN Proper Shipping Name	Transport Hazard Class	Packing Group Number	Bulk Transport Guidance	Special Precautions
DOT Classification	Not Regulated	-	-	-	-	-
TDG Classification	Not Regulated	-	-	-	-	-
ADR/RID Class	Not Regulated	-	-	-	-	-
IMDG Class	Not Regulated	-	-	-	-	-
IATA-DGR Class	Not Regulated	-	-	-	-	-

Section 15 Regulatory Information

TSCA – Toxic Substances Control Act – EPA Quartz and other chemicals are listed in the TSCA Chemical Substance Inventory

California Proposition 65 Information: WARNING! This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.
Silica <9%
Acetic Acid <0.02%
Ethylene oxide <0.002%

SARA/Title III (Emergency Planning & Community Right-to-Know Act This mixture contains no substances at or above the reporting threshold under section 313, based on available data.

Section 16: Other Information

NPDES Approved for Offshore Drilling Use

Definitions
ASTM –American System of Testing and Materials
OSHA – Occupational Safety & Health Administration
IARC – International Agency for Research on Cancer
NTP – National Toxicogmail.com
HCS – Hazardous Communication Standard
CAS – Chemical Abstract Service
ACGIH – American Conference of Governmental Industrial Hygienists
CAL-OSHA – California Occupational Safety & Health Administration

OSHA PEL – OSHA Permissible Exposure Levels
OSHA STEL - spot exposure for a duration of 15 minutes, which cannot be repeated more than 4 times per day with at least 60 minutes between exposure periods.
TLV – Threshold Limit Value
TWA – Time Weighted Average
TLV-TWA –Time weighted average Threshold limit value
TLV-STEL – Shot-term exposure limit Threshold limit value
TLV-C – Ceiling Limit – absolute limit that should not be exceeded at any time

Revisions: Existing MSDS revised to new GHS format. Revision Date 08/31/2015

The information presented herein has been compiled from sources considered to be dependable and is accurate and reliable to the best of our knowledge and belief but is not guaranteed to be so, nothing here in is to be construed as recommending any practice or product in violation of any patent, law, or regulation. It is the user's responsibility to determine the suitability of any material for a specific purpose and to adopt such safety precautions as may be necessary. We make no warranty as to the results to be obtained in using any material and, since conditions of use are not under our control, we must necessarily disclaim all liability with respect to the use of any material we supply.

AMBER CHEMICAL INC.

SAFETY DATA SHEET

Transport Symbol	NFPA Rating (estimated)	GHS	Personal Protective Equipment
Not Regulated		Not Classified	

Section 1: Identification

Product Name:	**Potassium Chloride Solution, All Grades**
ACI SDS Number:	ACISDS0099
Company Name:	Amber Chemical Inc.
Address:	5201 Boylan Street Bakersfield, CA 93308
Phone:	(661) 325-2072
Emergency Contact:	CHEMTREC (Available 24 hours for chemical emergency, spill, leak, fire, exposure, or accident)
Emergency Number:	1-800-424-9300
Product Use:	User is responsible for ensuring that the product is suitable for their purpose.
Date Revised:	October 2015

Section 2: Hazard(s) Identification

Emergency Overview: The product is odorless and is a colorless to slightly yellow solution. May cause slight eye irritation with corneal injury. Repeated exposure may cause skin irritation and a more severe response if the skin is scratched or cut. The oral LD_{50} for rats is expected to be > 2000 mg/kg.

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

Hazards Not Otherwise Regulated: Product may cause eye irritation if exposed.

Section 3: Composition/Information on Ingredients

Substance	CAS #	Weight%
Potassium Chloride	7447-40-7	18-24 %
Water	7732-18-5	76-82 %

This document is prepared pursuant to the OSHA Hazard Communication Standard (29 CFR 1910 .1200). In addition, other substances not “Hazardous” per this OSHA Standard may be listed. Where proprietary ingredient shows, the identity may be made available as provided in this standard.

Section 4: First Aid Measures

Inhalation: Remove to fresh air. Consult a physician if symptoms develop. Symptoms may include: wheezing, coughing, shortness of breath, or burning in the mouth, throat, or chest.

Skin Contact: Wash off in flowing water or shower. Remove contaminated clothing. If symptoms develop, call a physician.

Eye Contact: Ensure that victim is not wearing contact lenses. If wearing contact lenses remove carefully. Irrigate with flowing water immediately and continuously for 20-30 minutes. Immediately transport victim to hospital even if symptoms do not develop.

Ingestion: Do not induce vomiting unless directed to do so by medical personnel. Do not give liquids to an unconscious or convulsing person. If conscious and not convulsing give 1-2 glasses of water and call poison control or physician immediately. Ensure the victim's airway is open and lay the victim on his/her side with the head lower than the body.

Note to Physician: No specific antidote. Supportive care. Treatment based on judgment of the physician in response to reactions of the patient.

Refer to Section 11 for other Health Effects

Section 5: Fire Fighting Measures

Flash Point: Not applicable

Method Used: Not applicable

Upper/Lower Flammable Limits: Not applicable

Extinguishing Media: Not applicable

Fire and Explosion Hazards: None. Not known to be flammable.

Firefighting Equipment: Wear positive pressure, self-contained breathing apparatus.

Section 6: Accidental Release Measures

Action to Take for Spills: Use absorbent material to absorb spills, then sweep up and collect in container for disposal. Water may be used to complete cleaning. Do not reenter contaminated area without the approval of the Safety Officer or other responsible person.

Refer to Section 8 for Personal Protection Equipment.

Section 7: Handling and Storage

Handling: Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling. Incompatible with strong oxidizing agents, strong acids. Contain all spills and leaks to prevent discharge into the environment. Never eat, drink or smoke in work area.

Storage: Product should be stored in tightly closed original containers. Protect from moisture. Hygroscopic.

Refer to Section 8 for Ventilation Requirements.

Section 8: Exposure Controls/Personal Protection

These precautions are suggested for conditions with a high potential for exposure. If handling procedures are such that there is only a low potential for exposure, less protection may be needed. Emergency conditions may require additional precautions.

Exposure Guideline(s): Potassium Chloride: Amber Chemical's Industrial Hygiene Guideline is 10 mg/m^3

Engineering Controls: Provide general and/or local exhaust ventilation to control airborne levels below the exposer guidelines.

Personal Protection Equipment

Respiratory Protection: Atmospheric levels should be maintained below the exposure guideline. Dust mask required.

Eye Protection: Use chemical goggles.

Skin Protection: Wear suitable gloves.

Notes: When prolonged or frequently repeated contact could occur, use protective clothing impervious to this material. Selection of specific items such as face-shield, gloves, boots, apron, or full-body suit will depend on operation. If hands are cut or scratched, use gloves impervious to the material even for brief exposures.

	ACGIH TLV	OSHA PEL
Potassium Chloride	Not Established	Not Established

Section 9: Physical and Chemical Properties

Odor	Odorless
Boiling Point	230°F (110°C)
Vapor Pressure	Approx. 12 mm Hg at 20°C
Vapor Density	Not Applicable
Solubility in Water	Very Soluble
Specific Gravity	1.16 as 21% Solution
Appearance	Colorless or slightly yellow solution
Flash Point	Data Unavailable
Upper/Lower Explosive Limit	Data Unavailable
Melting Point	1418°F
Flammability	Data Unavailable
Auto-ignition Temperature	Data Unavailable
Partition Coefficient (Log Pow)	-0.46 at 20°C
Decomposition Temperature	Not Established
pH	Not Available
Evaporation Rate	Not Available
Odor Threshold	Odorless
Viscosity	Not Available

Note: These physical properties are typical values for this product and not specifications.

Section 10: Stability and Reactivity

Stability: Stable under normal storage conditions.

Incompatibility (Specific Materials to Avoid): Metals will slowly corrode in aqueous potassium chloride solutions. Incompatible with strong oxidizing agents, strong acids.

Conditions to Avoid: Protect from moisture. Hygroscopic.

Hazardous Decomposition Products: None known.

Hazardous Polymerization: Not known to occur

Section 11: Toxicological Information

Routes of Exposure: Eye, Skin, Ingestion, Inhalation

Eye: May cause slight irritation with corneal injury.

Skin: Repeated exposure ma cause skin irritation. May cause more severe response if skin is abraded (scratched or cut). A single prolonged exposure is not likely to result in the material being absorbed through skin in harmful amounts. The dermal LD_{50} has not been determined.

Ingestion: Single dose oral toxicity is low. The oral LD_{50} for rats is expected to be >2000 mg/kg. Small amounts if swallowed incidental to normal handling operations are not likely to cause injury, swallowing larger amounts may cause injury.

Inhalation: Mists may cause injury irritation of the upper respiratory tract (nose and throat).

Mutagenicity: In-vitro mutagenicity studies were positive

Systemic (Other Target Organ) Effects: For potassium chloride, in animals, effects have been reported on the following organs: gastrointestinal tract, heart, and kidney. For potassium fluoride, human signs and symptoms may include gastrointestinal distress. In humans, effects have been reported on the following lung, may cause fluorosis of the teeth and bones.

Cancer Information: Potassium chloride did not cause cancer in laboratory animals.

Teratology (Birth Defects): Potassium chloride did not cause birth defects or any other fetal effects in laboratory animals. Fluorides may cause mottling of teeth in children of mothers exposed excessively before or during pregnancy or during lactation.

Reproductive Effects: No relevant information found.

Carcinogenicity: Potassium Chloride is not listed as a carcinogen on IARC Monographs and National Toxicology Program's Report on Carcinogens.

Section 12: Ecological Information

Biodegradability: Potassium Chloride is an inorganic salt and is not subjected to further degradation processes in the environment.

Soil Mobility: The transport/leaching of Potassium Chloride in soil is affected by various factors (clay minerals, pH, and organic matter).

Bioaccumulation Potential: Not established.

Aquatic Toxicity
Ictalurus punctulus 48h-LC_{50} = 720 mg/l

Daphnia magna: 48h-LC_{50} = 177 mg/l

Nitzschia linearis: 120h-EC50 = 1337 mg/l.

Daphnia magna gave a LOEC of 101 mg/l.

Not hazardous to freshwater organisms.

Plant Toxicity Data: Potassium Chloride is not considered toxic to plant life.

Section 13: Disposal Considerations

Disposal Method: Do not contaminate food, feed, or water by storage or disposal. Wastes are toxic. Improper disposal of excess waste is a violation of federal law. If these wastes cannot be disposed according to label instructions contact your state pesticide or environmental control agency, or the hazardous waste representative at the nearest EPA Regional Office for guidance. Disposal can occur only in properly permitted facilities. Refer to regional, state, provincial and local health, safety and pollution laws for any additional requirements, as these may be different from Federal laws and regulations. If in doubt, contact appropriate agencies. Chemical additions, processing or otherwise altering this material may make waste management information presented in the SDS incomplete, inaccurate or otherwise inappropriate. ACI has provided the foregoing for information only; the person generating the waste is responsible for determining the waste classification and disposal method.

To minimize exposure refer to Section 8.

Section 14: Transport Information

For D.O.T. regulatory information, if required consult transportation regulations.

Potassium Chloride Transportation Information
UN Number: Not Applicable

UN Proper Shipping Name: Not Applicable

Transport Hazard Class(es): Not Applicable

Packing Group Number: Not Applicable

Note: There are specific regulations in regards to transporting chemicals by water. Shipper is responsible for ensuring that they meet all of the requirements and follow the regulations for the chemical they are transporting.

Section 15: Regulatory Information

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

Disclaimer: Regulatory requirements are subject to change and may differ from one location to another; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal, state or provincial, and local laws and regulations.

SARA 313 Information: To the best of our knowledge, this product contains no chemical subject to SARA Title lll Section 313 supplier notification requirements.

Toxic Substances Control Act (TSCA): All ingredients are on the TSCA inventory or are not required to be listed on the TSCA inventory.

Section 302 Extremely Hazardous Substances (EHS)/CERCLA Hazardous Substances: To the best of our knowledge, this product contains no chemical subject to reporting under CERCLA.

California Proposition 65: No components listed.

Section 16: Other Information

Date Revised: October 2015

NFPA Rating (estimated)

Health	1
Flammability	0
Instability	0

This information is intended solely for the use of individuals trained in the NFPA hazard rating systems.

Sources of key data used to compile the Safety Data Sheet: regulations, databases, literature, and own test data.

Disclaimer: All statements, technical information and recommendations contained herein are, to the best of our knowledge, reliable and accurate. The information in this data sheet has been assembled by the manufacturer based on its own studies and on the work of others. However, no warranty is expressed or implied regarding the accuracy of this data or the results to be obtained from the use thereof, nor will any liability be assumed for damages resultant form the use of the material described. Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, vendor assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material even if reasonable safety procedures are followed. The manufacturer shall not be liable (regardless of fault) to the vendee, the vendee's employees, or anyone for any direct, special or consequential damages arising out of, or in connection with, the accuracy, completeness, adequacy or furnishing of such information. It is offered solely for your consideration, investigation and verification. As a result, the customer shall be solely responsible for deciding whether said information is suitable and beneficial. Furthermore, vendee assumes the risk in his use of the material. We assume no legal responsibility whatsoever for any damage resulting from reliance upon this information since it is being furnished upon the condition that the person receiving it shall make his or her own determination of the suitability of the material described herein for a particular application or storage situation. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release, and is not to be considered a warranty or quality specification. The user should take the necessary steps to instruct employees, and to develop work practice procedures to ensure and maintain a safe work environment. 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. Personal Protection rating to be supplied by user depending on use conditions. Since the use of this product is within the exclusive control of the user, it is the user's responsibility to determine the conditions of safe use. Such conditions must comply with all governmental regulations. This information is not intended as a license to operate under, or a recommendation to practice or infringe upon any patent of this company or others covering any process, compositions of matter or use. Neither this data sheet nor any statement contained herein grants or extends any license, express or implied, in connection with patents issued or pending which may be the property of the manufacturer or others.

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

1.1. Product identifier

* Chemical description : Sodium hydroxide , solid .

Type of product : Pure product .

Reach registration number : 01-2119457892-27

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

Identified use(s) : See table on the front page of the annex.

* Use(s) advised against : This product is not recommended for any industrial, professional or consumer use other than identified in table on the front page of the annex.
Not for use in ornamental articles, in tricks and jokes and in games (in accordance with Annex XVII to Regulation (EC) No 1907/2006) (3. Liquid substances or mixtures, which are fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: (a) hazard classes 2.1 to 2.4, 2.6 and 2.7, 2.8 types A and B, 2.9, 2.10, 2.12, 2.13 categories 1 and 2, 2.14 categories 1 and 2, 2.15 types A to F, (b) hazard classes 3.1 to 3.6, 3.7 adverse effects on sexual function and fertility or on development, 3.8 effects other than narcotic effects, 3.9 and 3.10, (c) hazard class 4.1, (d) hazard class 5.1).

1.3. Details of the supplier of the safety data sheet

Company identification : BRENNTAG N.V. - Nijverheidslaan 38 - BE-8540 DEERLIJK
TEL: +32(0)56/77.69.44 - FAX: +32(0)56/77.57.11
E-MAIL: info@brenntag.be - Website: www.brenntag.be

BRENNTAG Nederland B.V. - Donker Duyvisweg 44 - NL-3316 BM DORDRECHT
TEL: +31(0)78/65.44.944 - FAX: +31(0)78/65.44.919
E-MAIL: info@brenntag.nl - Website: www.brenntag.nl

1.4. Emergency telephone number

Emergency phone number : Belgium : Antipoison Center - Brussels
TEL: +32(0)70/245.245

The Netherlands : National Poisoning Information Center - Bilthoven
TEL: +31(0)30/274.88.88 (Only for the purpose of informing medical personnel in cases of acute intoxications)

SECTION 2. Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

* Corrosive to metals - Category 1 - Warning (Met. Corr. 1; H290)
Skin corrosion - Category 1A - Danger (Skin Corr. 1A; H314)
Serious eye damage - Category 1 - Danger (Eye Dam. 1; H318)

2.2. Label elements

Label in accordance with Regulation (EC) No 1272/2008

• Dangerous ingredient(s) : Sodium hydroxide

• Hazard pictogram(s)

• Signal word : Danger

• Hazard statements : H290 - May be corrosive to metals. H314 - Causes severe skin burns and eye damage.

SECTION 2. Hazards identification (continued)

• Precautionary statements

- Prevention : P260 - Do not breathe mist/vapours/spray. P280 - Wear protective gloves/ protective clothing/eye protection/face protection.
- Response : P303+P361+P353 - IF ON SKIN (or hair) : Remove immediately all contaminated clothing. Rinse skin with water/shower. P305+P351+P338 - 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/ doctor/…

2.3. Other hazards

Physical/chemical hazards : Contact with water may cause strong warmth development.

Hazards for the health : Evaporates practically not at 20°C; will be as a powder squirt an annoying concentration in the air.

Hazards for the environment : Product causes a strong rise of the pH-value of water and soil.
This product is no substance or contains no PBT or vPvB (in accordance with Annex XIII).

Hazards for the safety : Risk of explosion by many reactions.

SECTION 3. Composition/information on ingredients

3.1. Substances

Name component(s)		Weight %	CAS nr	EINECS nr	Index nr	Reach nr	CLASSIFICATION
Sodium hydroxide	:	> 98 %	1310-73-2	215-185-5	011-002-00-6	01-2119457892-27	Met. Corr. 1; H290 Skin Corr. 1A; H314

Note: SCL applicable

The full text of the (EU)H-statements is in section 16.

SECTION 4. First aid measures

4.1. Description of first aid measures

General : Never give anything by mouth to an unconscious person.
In case of doubt or persistent symptoms, call a physician.

First Aid Measures

- Inhalation : Remove victim into fresh air.
Allow the affected person to rest in semi-sitting position.
If not breathing, give artificial respiration.
Get immediate medical advice/attention.

* - Skin Contact : Remove contaminated clothing while rinsing.
Do not remove clothing adhering to the skin.
Rinse skin immediately with plenty of water. (at least 20') (shower if necessary).
Immediately call a POISON CENTER or doctor/physician.

* - Eye Contact : Rinse immediately thoroughly and long (at least 15 min.) with plenty of water.
Remove contact lenses after a few minutes rinse.
Immediately call a POISON CENTER or doctor/physician.
Keep rinsing or dripping the eye during transport.

- Ingestion : DO NOT INDUCE VOMITING. Rinse mouth with water.
Take the patient IMMEDIATELY to the hospital.

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

See section 11.

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

SECTION 4. First aid measures (continued)

For specialist advice doctors should contact the NVCI or the Belgian Poison center.

SECTION 5. Firefighting measures

5.1. Extinguishing media

Extinguishing Media

- Suitable : Extinguishing powder , Foam , Carbon dioxide (CO2) , Water spray .
- Insuitable : Heavy water stream .

5.2. Special hazards arising from the substance or mixture

Special Exposure Hazards : Fire may liberate toxic and stinging vapours.

5.3. Advice for firefighters

Special Protective Equipment for Firefighters : Use self-contained breathing apparatus and wear protective clothes when in close proximity to fire.

Special Procedures : Apply water spray or fog to cool nearby equipment. Avoid fire-fighting water to enter environment.

SECTION 6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal Precautions : Evacuate all personnel immediately and ventilate area.
Avoid breathing the product and contact with skin, eyes and clothing. Wear recommended personal protective equipment. (See section 8)

6.2. Environmental precautions

Environmental Precautions : Prevent entry of product in public water, sewers or soil.
Notify authorities if product enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

Methods for Cleaning Up : Collect the spillage in closable, suitable and corrosion resistant disposal containers.
Neutralize dilute aqueous runoff with acid.
Flush residue with plenty of water.

6.4. Reference to other sections

For personal protection, see section 8.
For the removal of the waste product, see section 13.

SECTION 7. Handling and storage

7.1. Precautions for safe handling

Handling : AVOID SPREADING OF DUST ! AVOID EVERY CONTACT !!
Avoid breathing the product and contact with skin, eyes and clothing. Wear recommended personal protective equipment. (See section 8)
When diluting: add the basic solution in water, never the other way around.
When dissolving or diluting the product in water, heat and mist may develop.
When using, do not eat, drink or smoke.
Emergency eye wash fountains and showers should be available in the immediate vicinity of any potential exposure.

7.2. Conditions for safe storage, including any incompatibilities

Storage : Keep only in the original, safely locked container in a cool, well ventilated and dry place.
All dangerous products should be placed on a drip tray or should be barreled.

SECTION 7. Handling and storage (continued)

Keep away from : Oxidizing agents , Acids .

Packaging Material : Stainless steel , Glass , Nickel , Polypropylene , Polyethylene .

Insuitable Packaging Material : Several metals (Aluminium , Lead , Tin , Copper , Zinc), Some synthetics .

7.3. Specific end use(s)

For identified uses, see subsection 1.2 and/or exposure scenarios.

SECTION 8. Exposure controls/personal protection

8.1. Control parameters

* Occupational Exposure Limits : Sodium hydroxide : Limit value (BE) : 2 mg/m³ (2014) (M)
(M) The mention "M" means that the exposition above the limit value causes irritation or that there is a danger for acute poisoning. The work procedure has to be designed somehow or other that the exposition doesn't exceed the limit value. During a control, the sample period should be so short as possible to carry out a reliable measurement. The mesure result is then related to the considered period.

Biological limit values : They will be included when available.

DNELs : • Sodium hydroxide : Worker, long-term - local effects, inhalation : 1,0 mg/m²
• Sodium hydroxide : Consumer, long-term - local effects, inhalation : 1,0 mg/m³

PNECs : • Sodium hydroxide : Not applicable

8.2. Exposure controls

Engineering Measures : Ventilation , Local exhaust .

Personal Protection Equipment

- Respiratory protection : CE-approved gas respirator (Filter type B/P2 OR Filter type P3)
- Skin protection : Corrosion-proof protective clothing.

* - Hand protection : Suitable material for safety gloves (EN 374):
The suitability of the gloves and the breakthrough time for a specific workplace should be discussed with the producers of the protective gloves.
- material : Nitril rubber
- thickness : 0,35 mm
- breakthrough time : > 480'

- Eye/Face protection : Closed safety glasses or face shield.

Environmental exposure controls : See sections 6, 7, 12 and 13.

SECTION 9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical State (20°C) : Solid .

Form/Colour : White .

Odour : Odourless .

Odour threshold : No data available.

* pH value : > 14 (10g/ 100ml)

* Melting/Freezing point : 323 °C

Boiling Point/Range (1013 hPa) : 1388 °C

Flash point : Not applicable.

Evaporation rate : Not applicable.

Explosion limits in air : Not applicable.

Vapour pressure : 0,1 kPa (739 °C)

SECTION 9. Physical and chemical properties (continued)

	Relative vapour density (air=1)	: No data available.
	Relative density of saturated vapour/air mixture (air=1)	: No data available.
	Relative density (water=1)	: 2,13
*	Bulk density	: 1,1-2,13 g/cm³
*	Solubility in water (20°C)	: 42 g/ 100 ml
*	Soluble in	: Methanol , Ethanol .
	Log P Octanol/Water (20°C)	: Not applicable.
	Auto-ignition temperature	: Not applicable.
	Minimum ignition energy	: Not applicable.
	Decomposition temperature	: No data available.
*	Viscosity (20°C)	: 0,997 - 2,228 mPa.s (Dynamic)
	Explosive properties	: No chemical groups associated with explosive properties
	Oxidizing properties	: No chemical groups associated with oxidizing properties

9.2. Other information

Others : Hygroscopic .

SECTION 10. Stability and reactivity

10.1. Reactivity

Reactivity : Reacts violently with: Halogenated hydrocarbons , Nitro compounds , Ammonium salts , Acids , Water .
Corrosive to metals.

10.2. Chemical stability

Stability : Stable at normal circumstances .
Absorbs rapidly carbon dioxide and water from the air.

10.3. Possibility of hazardous reactions

Hazardous reactions : Exothermic reaction with: Water . (=> Stinging vapours).
Contact with metallic substances may release inflammable hydrogen gas. (=> May cause explosion and fire !)
Reacts with Ammonium salts -> Creation of: Ammonia .
Can react with sugar residues to form Carbon monoxide.

10.4. Conditions to avoid

Conditions to avoid : High temperatures , Moisture , Air .

10.5. Incompatible materials

* Materials to avoid : Halogenated hydrocarbons , Nitro compounds , Ammonium salts , Acids , Water , Metals .

10.6. Hazardous decomposition products

Hazardous Decomposition Products : Ammonia , Hydrogen

SECTION 11. Toxicological information

11.1. Information on toxicological effects

Acute toxicity

- Inhalation : Symptoms include: Sore throat , Cough , Shortness of breath , Burning feeling .
- Skin contact : Symptoms include: Redness , Pain , Severe burns , Blisters .
  • Sodium hydroxide : LD50 (Rabbit, dermal) : No data available.

SECTION 11. Toxicological information (continued)

- Ingestion	: Symptoms include: Burning pain in mouth, throat, oesophagus and stomach , Abdominal cramps , Vomiting , Diarrhea .
Skin corrosion/irritation	: Causes severe burns. Skin contact can damage eczema.
Serious eye damage/irritation	: Causes serious eye damage. May cause diminished visual capacity to complete blindness.
Aspiration hazard	: Symptoms of lungoedema mostly reveal after a few hours, intensified by physical effort. The product may affect the upper and lower airways, causing infections and impaired lung function.
Respiratory or skin sensitisation	: Not sensitive .
Carcinogenicity	: Not listed as carcinogenic .
Mutagenicity	: Not listed as mutagenic .
Reproductive toxicity	: Not listed for reproductive toxicity .
Specific target organ toxicity - single exposure	: To human : Listed not for organ toxicity . Stinging to respiratory tract . Stinging to skin . Stinging to mouth, throat and digestive system .
Specific target organ toxicity - repeated exposure	: To human : Listed not for organ toxicity . For animals : No effects known.

SECTION 12. Ecological information

12.1. Toxicity

* Ecotoxicity : • Sodium hydroxide : LC50 (Fish, 96 h) : 35-189 mg/l
• Sodium hydroxide : EC50 (Algae, 72 h) : No data available.
• Sodium hydroxide : EC50 (Daphnia magna, 48 h) : 40,4 mg/l (Ceriodaphnia sp.)

12.2. Persistence and degradability

Persistence and degradability : • Sodium hydroxide : Persistence and degradability : Inorganic .

12.3. Bioaccumulative potential

Bioaccumulation : • Sodium hydroxide : Bioaccumulation : Bioaccumulation not expected .

12.4. Mobility in soil

* Mobility : • Sodium hydroxide : Mobility : Very high potential for mobility in soil.

12.5. Results of PBT and vPvB assessment

Evaluation : • Sodium hydroxide : PBT/vPvB : No

12.6. Other adverse effects

Photochemical ozone creation potential	: No data available
Ozone depletion potential	: None .
Endocrine disrupting potential	: No data available .
Global warming potential	: No data available .

SECTION 13. Disposal considerations

13.1. Waste treatment methods

Waste from residues/Unused products	: The product has to be destroyed according to national or local legislation, by a company specialised in handling hazardous waste products.
European list of waste products	: XXXXXX - European waste product code. This code is assigned on the basis of the most current applications and can not be representative for pollutions which are arisen at the effective use of the product. The producer of the waste has to evaluate its process himself and has to grant the appropriate waste coding. See

SECTION 13. Disposal considerations (continued)

Decision 2001/118/EC.

Removal contaminated packaging : Packing is to be used exclusively for the packing of this product.
After use, empty and close the packing very carefully.
In case of returned packing, the empty packing can be offered back to the supplier.
.

SECTION 14. Transport information

14.1. UN number

UN Number : 1823

14.2. UN proper shipping name

ADR/RID Name : UN 1823 Sodium hydroxide, solid, 8, II, (E)
ADN Name : UN 1823 Sodium hydroxide, solid , 8, II
IMDG Name : UN 1823 Sodium hydroxide, solid , 8, II
IATA Name : UN 1823 Sodium hydroxide, solid , 8, II

14.3. Transport hazard classe(s)

Class : 8

14.4. Packing group

Packaging Group : II

14.5. Environmental hazards

Environmentally hazard : No
Marine pollutant : No

14.6. Special precautions for user

Danger number : 80
Hazard Label(s) : 8

14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code

Type ship : No data available.
Pollution category : No data available.

SECTION 15. Regulatory information

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

Inventories : Australian inventory (AICS): Listed in inventory.
Canadian inventory (DSL): Listed in inventory.
Chinese inventory (IECS): Listed in inventory.
European inventory (EINECS): Listed in inventory.
Korean inventory (KECI): Listed in inventory.
Philippine inventory (PICCS): Listed in inventory.
Inventory of the United States (TSCA): Listed in inventory.

NFPA n° : 3-0-1

Relevant EU Rule(s) : Directive 98/24/EC of the Council of 7 April 1998 on the protection of the health and safety of workers from the risks related to chemical agents at work
Decision 2001/118/EC of the Commission of 16 January 2001 amending Decision 2000/532/EC as regards the list of wastes
Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006
Regulation (EU) No 453/2010 of 20 May 2010 amending Regulation (EC) No 1907/

SECTION 15. Regulatory information (continued)

2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (Reach)

National regulations

- Germany : WGK : 1
* - Netherlands : Water damaging : 9
Decontamination exertion : B

15.2. Chemical Safety Assessment

A chemical safety assessment has been carried out for the substance(s) that make up this material or for the material itself.

SECTION 16. Other information

* This safety data sheet has been drawn up in accordance with Regulation (EC) No 1907/2006.
This safety data sheet is exclusively made for industrial/professional use.

* Has changed compared to previous revision.

* Changes : Section 1 ,
Section 2 , Section 3 , Section 8 , Section 9 , Section 10 , Section 11 , Section 12 , Section 14 , Section 16 .

* Sources of used key data : The information contained herein is based on the present state of our knowledge (Producer(s) , Chemical cards , ...)
See also on the webaddress:
http://apps.echa.europa.eu/registered/registered-sub.aspx#search

(EU)H-statement(s) : H290 - May be corrosive to metals.
H314 - Causes severe skin burns and eye damage.

List of abbrevations and acronyms : ADN (Accord européen relatif au transport international des marchandises Dangereuses par voie de Navigation interieur) : European agreement concerning the international carriage of dangerous goods by inland waterways
ADR (Accord européen relatif au transport international des marchandises Dangereuses par Route) : European agreement concerning the international carriage of dangerous goods by road
CO : Carbon monoxide
DNEL (Derived No Effect Level) : an estimated safe exposure level
EC50 : median Effective Concentration
EmS (Emergency Schedule) : the first code refers to the relevant fire schedule and the second code refers to the relevant spillage schedule
IATA (International Air Transport Association) : provisions concerning the international carriage of dangerous goods by air
IMDG (International Maritime Dangerous Goods code)
Candidate list : List of substances of very high concern (SVHC) for authorisation
LC0 : Lethal Concentration to 0% of test organisms
LC50 : median Lethal Concentration
LD50 : median Lethal Dose
Met. Corr. 1 : Corrosive to metals - Category 1
NFPA (National Fire Protection Association) or fire diamant
NOEC (No Observed Effect Concentration)
NOx : Nitrogen oxides
NVCI : National Poisoning Information Center
OECD : Organisation for Economic Cooperation and Development
PBT : persistent, bioaccumulative and toxic
PNEC (Predicted No Effect Concentration) : concentration below which exposure to a substance is not expected to cause adverse effects
RCP (Reciproke Calculation Procedure)
REACH : Registration, Evaluation, Authorisation and restriction of Chemicals
RID (Règlement concernant le transport International ferroviaire des marchandises Dangereuses) : Regulation concerning the International carriage of Dangerous

SECTION 16. Other information (continued)

goods by rail
SCL (Specific Concentration Limits)
Skin Corr. 1B : Skin corrosion - Category 1B
SOx : Sulphur oxides
SZW-list : List of carcinogenic substances and processes as referred to in Article 4.11 of the Working conditions decree
SZW-list : List with mutagenic substances as referred to in Article 4.11 of the Working conditions decree
SZW-list : Non-limitative list of reproduction toxic substances to which the additional registration obligation applies as referred to in Article 4.2a, second paragraph of the Working conditions decree
TWA (Time-Weighted Average) : the average exposure over a specified period
WGK (Wassergefahrdungsklasse) : a German classification of substances that indicate the environmental hazard for surface water
vPvB : very persistent and very bioaccumulative

This information is to our knowledge correct and complete on the date of issue of this safety data sheet. The information only concerns the product and does not give any guarantee for the quality and the completeness of the properties of the product, or in case of mixing or using in any other process. It remains the responsibility of the user to assure himself that the information is suitable and complete concerning the special use he makes of the product.
BRENNTAG denies all responsibility for loss or damage resulting from the use of these data.

End of document

1. IDENTIFICATION

Product Identifier

Product Name Walnut Shell Grit & Flour

Other means of identification

SDS # SPI-002-OSHA

Synonyms Ground Walnut Shell (All grades - Coarse, Medium and Fine)
Shelblast
Glufil (WF-7, WF-5 and WF-2)
Gulfil AW.

Recommended use of the chemical and restrictions on use

Recommended Use For industrial use.

Details of the supplier of the safety data sheet

Supplier Address
ShellPro, Inc.
P.O. Box 2680
Lodi, CA 95241

Emergency Telephone Number

Company Phone Number 1-209-727-0707
Emergency Telephone (24 hr) 1-209-727-0707

2. HAZARDS IDENTIFICATION

Appearance Grit: Light brown granules
Flour: Light brown powder

Physical State Solid

Odor No odor

Classification

Combustible Dust

Signal Word
Warning

Hazard Statements
May form combustible dust concentrations in air

Unknown Acute Toxicity
100% of the mixture consists of ingredient(s) of unknown toxicity

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms Ground Walnut Shell (All grades - Coarse, Medium and Fine)
Shelblast
Glufil (WF-7, WF-5 and WF-2)
Gulfil AW.

Chemical Name	CAS No	Weight-%
Natural Walnut Shell	84012-43-1	100

4. FIRST-AID MEASURES

First Aid Measures

Eye Contact Rinse thoroughly with plenty of water, also under the eyelids.

Skin Contact Wash with soap and water.

Inhalation Remove to fresh air. Seek medical attention if irritation persists.

Ingestion None under normal use conditions.

Most important symptoms and effects

Symptoms May cause mechanical eye irritation. Inhalation of dust may cause mechanical irritation to the respiratory tract.

Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media
Water.

Unsuitable Extinguishing Media Not determined.

Specific Hazards Arising from the Chemical
If improperly handled, stored, and/or exposed to an ignition source, this material may burn. Dust can form an explosive mixture with air.

Hazardous Combustion Products None.

Sensitivity to Static Discharge AVOID GENERATING DUST. Fine dust dispersed in air, in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.

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

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).

Environmental Precautions Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information. See Section 13: DISPOSAL CONSIDERATIONS.

Methods and material for containment and cleaning up

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

Methods for Clean-Up Sweep up and shovel into suitable containers for disposal. Spilled material can be a slipping hazard. Avoid generating dust. Eliminate flames, sparks, excessive temperatures and oxidizing agents. Use only non-sparking tools.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on Safe Handling Handle in accordance with good industrial hygiene and safety practice. Avoid contact with eyes. Use only in well-ventilated areas. Avoid generation of dust. Ensure that dust does not accumulate on surfaces.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep containers tightly closed in a dry, cool and well-ventilated place. Keep in properly labeled containers. Store away from heat, sparks, flame.

Incompatible Materials Oxidizing agents.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies

Appropriate engineering controls

Engineering Controls Provide local ventilation if dust is generated. Explosion-proof general and local exhaust ventilation. Use explosion proof electrical equipment for very high dust levels. Ensure ventilation and dust-handling systems prevent the escape of dust into work areas and there is no leakage from equipment.

Individual protection measures, such as personal protective equipment

Eye/Face Protection Safety glasses. Goggles. Face protection shield.

Skin and Body Protection No special technical protective measures are necessary.

Respiratory Protection Nuisance dust mask 3M type 8710 or equivalent.

General Hygiene Considerations Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical State	Solid		
Appearance	Grit: Light brown granules Flour: Light brown powder	**Odor**	No odor
Color	Light brown	**Odor Threshold**	Not determined

Property	**Values**	**Remarks • Method**
pH	4-5	
Melting Point/Freezing Point	Not applicable	
Boiling Point/Boiling Range	Not applicable	
Flash Point	193 °C / 380 °F	
Evaporation Rate	Not applicable	
Flammability (Solid, Gas)	Not determined	
Upper Flammability Limits	Not determined	
Lower Flammability Limit	Not determined	
Vapor Pressure	Not applicable	
Vapor Density	Not applicable	
Specific Gravity	1.2-1.35	(1=Water)
Water Solubility	Not applicable	
Solubility in other solvents	Not determined	
Partition Coefficient	Not determined	
Auto-ignition Temperature	243 °C / 470 °F	
Decomposition Temperature	Not determined	
Kinematic Viscosity	Not determined	
Dynamic Viscosity	Not determined	
Explosive Properties	Dust can form an explosive mixture with air	
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
Excessive heat. Ignition sources.

Incompatible Materials
Oxidizing agents.

Hazardous Decomposition Products
None known based on information supplied.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information Product does not present an acute toxicity hazard based on known or supplied information

Eye Contact Avoid contact with eyes.

Skin Contact Not normally considered a hazard.

Inhalation Avoid inhalation of dust.

Ingestion Not an expected route of exposure.

Component Information Not available

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 Based on the information provided, this product does not contain any carcinogens or potential carcinogens as listed by OSHA, IARC or NTP.

Numerical measures of toxicity
Not determined

Unknown Acute Toxicity 100% of the mixture consists of ingredient(s) of unknown toxicity.

12. ECOLOGICAL INFORMATION

Ecotoxicity
The product is not expected to be hazardous to the environment.

Component Information Not available

Persistence/Degradability
Not determined.

Bioaccumulation
Not determined.

Mobility
Not determined

Other Adverse Effects
Not determined

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods

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

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

14. TRANSPORT INFORMATION

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

DOT Not regulated

IATA Not regulated

IMDG Not regulated

15. REGULATORY INFORMATION

International Inventories

Chemical Name	TSCA	DSL	NDSL	EINECS	ELINCS	ENCS	IECSC	KECL	PICCS	AICS
Natural Walnut Shell		X		Present			X			X

Legend:

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

DSL/NDSL *- 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*

AICS *- Australian Inventory of Chemical Substances*

US Federal Regulations

SARA 313

Not determined

US State Regulations

U.S. State Right-to-Know Regulations

Not determined

16. OTHER INFORMATION

Additional Product Information Refer to NFPA 654, Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids, for safe handling.

NFPA	**Health Hazards**	**Flammability**	**Instability**	**Special Hazards**
	Not determined	Not determined	Not determined	Not determined
HMIS	**Health Hazards**	**Flammability**	**Physical Hazards**	**Personal Protection**
	Not determined	Not determined	Not determined	Not determined

Issue Date: 01-May-2013
Revision Date: 27-May-2015
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

MI SWACO
A Schlumberger Company

MATERIAL SAFETY DATA SHEET

MSDS No. 12153 **Trade Name:** WATER BASED MUD (GENERIC) **Revision Date:** 03/16/2011

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Trade Name: WATER BASED MUD (GENERIC)

Chemical Family: Mixture
Product Use: Drilling fluid system.

Supplied by: M-I L.L.C.
P.O. Box 42842
Houston, TX 77242
www.miswaco.slb.com
Telephone Number: 281-561-1512
Emergency Telephone (24 hr.): 281-561-1600
Prepared by: Product Safety Group

Revision No. 3

HMIS Rating
Health: 1* **Flammability:** 1 **Physical Hazard:** 0 **PPE:** J

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. Cancer hazard. Contains crystalline silica which may cause cancer.

Canadian Classification:
UN PIN No: Not regulated. **WHMIS Class:** D2A D2B

Physical State: Liquid **Color:** Tan to grey **Odor:** Mud

Potential Health Effects:
Acute Effects

Eye Contact: May be irritating to the eyes.
Skin Contact: May be irritating to the skin. Long term contact can cause skin dryness.
Inhalation: Not expected to be an inhalation hazard. Prolonged inhalation of vapors or mists, however, may cause 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.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	CAS No.	Wt. %	Comments:
Water	7732-18-5	30 - 60	No comments.
Barite	7727-43-7	10 - 30	No comments.
Bentonite	1302-78-9	10 - 30	No comments.
Sodium chloride	7647-14-5	5 - 10	No comments.
Silica, crystalline, quartz	14808-60-7	1 - 5	No comments.
Sodium hydroxide	1310-73-2	0.1 - 1	No comments.
Silica, crystalline, Tridymite	15468-32-3	0.1 - 1	No comments.

Composition Comments: Component LD50 and LC50 values are provided in Section 11, if available.

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): Not flammable
Flammable Limits in Air - Lower (%): NA
Flammable Limits in Air - Upper (%): NA
Autoignition Temperature: F (C): NA
Explosion Data - Sensitivity to Mechanical Impact: NA
Explosion Data - Sensitivity to Static Discharge: If applicable, information is provided in Section 5 Special Fire-Fighting Procedures, Other Flammable Properties and Section 6 Spill Procedures.
Flammability Class: Not flammable
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: None known.

Conditions of Flammability: Products are classified as flammable/combustible based on flash point as defined in the Health Canada Controlled Products Regulations, U.S. Occupational Health and Safety Administration Hazard Communication Standard and transportation regulations. See Sections 1, 2, 5, 14 and 15 for flammable/combustible classification information. Flammable/combustible materials may ignite and burn if exposed to a flame or other sources of ignition.
Other Flammable Properties: ND

6. ACCIDENTAL RELEASE MEASURES

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

Spill Procedures: Evacuate the spill area with the exception of the spill response team. Spilled product is very slippery. Contain spilled material. Do not allow spilled material to enter sewers, storm drains or surface waters. Absorb in vermiculite, dry sand or earth. Place into containers 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 breathing vapors or spray mists. 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
Water	7732-18-5	30 - 60	NA	NA	NA	None
Barite	7727-43-7	10 - 30	10 mg/m^3	15 mg/m^3 (total); 5 mg/m^3 (resp)	NA	None
Bentonite	1302-78-9	10 - 30	NA	NA	NA	(1)
Sodium chloride	7647-14-5	5 - 10	NA	NA	NA	(1)
Silica, crystalline, quartz	14808-60-7	1 - 5	0.025 mg/m^3	see Table Z-3	50 mg/m^3 IDLH (NIOSH)	(R)
Sodium hydroxide	1310-73-2	0.1 - 1	2 mg/m^3 (ceiling)	2 mg/m^3	10 mg/m^3 IDLH (NIOSH)	None
Silica, crystalline, Tridymite	15468-32-3	0.1 - 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/m^3 (Inhalable); 3 mg/m^3 (Respirable) and an OSHA particulate not otherwise regulated (PNOR): 15 mg/m^3 (Total); 5 mg/m^3 (Respirable).
(R) Respirable fraction.
Table Z-3: PEL for Mineral Dusts containing crystalline silica are 10 mg/m^3 / (%SiO2+2) for quartz and 1/2 the calculated quartz value for cristobalite and tridymite. 29 CFR 1910.1000.

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:	Wear chemical 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.

9. PHYSICAL AND CHEMICAL PROPERTIES

Color:	Tan to grey
Odor:	Mud
Physical State:	Liquid
pH:	ND
Specific Gravity (H2O = 1):	ND
Solubility (Water):	Dispersible.
Flash Point: F (C):	Not flammable
Melting/Freezing Point:	ND
Boiling Point:	ND
Vapor Pressure:	ND
Vapor Density (Air=1):	ND
Evaporation Rate:	ND
Octanol/Water Partition Coefficient:	ND
Odor Threshold(s):	ND

10. STABILITY AND REACTIVITY

Chemical Stability:	Stable
Conditions to Avoid:	Keep away from heat, sparks and flame.
Materials to Avoid:	Oxidizers.
Conditions of Reactivity:	See Conditions and Materials to Avoid, if applicable.
Hazardous Decomposition Products:	For thermal decomposition products, see Section 5.

Hazardous Polymerization Will not occur

11. TOXICOLOGICAL INFORMATION

Acute Exposure Effects, Irritation and Sensitization: See Section 2.
Chronic, Carcinogenicity, Reproductive Toxicity, Teratogenicity, Embryotoxicity, Mutagenicity Effects: See Component Toxicological Summary and Product Toxicological Information, if available.
Synergistic Products/Effects: ND

Component Toxicological Data: Any adverse component toxicological effects and acute toxicity values (LD50s, LC50s) are listed below. If no effects or acute values are listed for components, no such data were identified.

Ingredient	CAS No.	Acute Data
Barite	7727-43-7	Oral LD50: 1400 mg/kg (rat)
Sodium chloride	7647-14-5	Oral LD50: 3 g/kg (rat); Dermal LD50: >10 g/kg (rabbit); Inhalation LC50: >42 g/m^3/1H (rat)
Sodium hydroxide	1310-73-2	Oral LDLo: 500 mg/kg (rabbit)

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: No toxicological data is available for this product.

12. ECOLOGICAL INFORMATION

Component Ecotoxicity Data: No data available.

Ingredient	CAS No.	Data
Barite	7727-43-7	EC50 72H, 96H: 0.068 mg/l, 0.007 mg/l (Desmodesmus subspicatus); LC50 96H: 0.18 - 0.25 mg/l (Brachydanio rerio)
Sodium hydroxide	1310-73-2	LC50: 160 mg/l (goldfish) 24H, LC50 48H: 99 mg/l (bluegill sunfish), LC50 96H: 125 mg/l (mosquito fish), LC100 24H : 180 mg/l (carp), Lethal 48H : 100 mg/l (water flea), Lethal 48H: 700 mg/l (midge)

Product Ecotoxicity Data: Contact M-I Environmental Affairs Department for available product ecotoxicity data.
Biodegration: ND
Bioaccumulation: 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.
General Notes: The product is not covered by international regulation on the transport of dangerous goods (IMDG, IATA, ADR/RID). Water-based muds containing mixtures of prducts listed in Chapters 17 and 18 of the IBC Code and the latest MEPC.2/Circular and are permitted to be carried under Annex II of MARPOL and resolution A.673 (16) Offshore Supply Vessel Code.

15. REGULATORY INFORMATION

U.S. Federal and State Regulations

SARA 311/312 Hazard Catagories: Immediate (acute) health hazard. 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	---	---	---
Sodium hydroxide	---	---	1000 lb (454 kg)	---	---	---	---
Silica, crystalline, Tridymite	---	---	---	X	---	---	---

State Comments: Proposition 65: This product contains chemical(s) considered by the State of California's Safe Drinking Water and Toxic Enforcement Act of 1986 to cause cancer and/or reproductive toxicity. See table under U.S. Federal and State Regulations for the specific chemicals.

International Chemical Inventories

Australia AICS - Components are listed or exempt from listing.
Canada DSL - Components are listed or exempt from listing.
China Inventory - Contains a component that is not listed.
European Union EINECS/ELINCS - Contains a component(s) that is not listed.
Japan METI ENCS - Contains a component that is not listed.
Korea TCCL ECL - Contains a component that is not listed.
New Zealand - Contains a component that is not listed.
Philippine PICCS - Contains a component that is not listed.
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 D2B

16. OTHER INFORMATION

The following sections have been revised: 1, 4, 5, 6, 8, 9, 15, 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 guartantee 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.

Safety Data Sheet (SDS)

Weyerhaeuser

Wood and Wood Dust (without chemical treatments or resins/additives), including Untreated Lumber (all species and grades), Logs, Chips, and Sawdust

1. Identification

TRADE NAME(S):	Wood and Wood Dust (without chemical treatments or resins/additives), including Untreated Lumber (all species and grades), Logs, Chips, and Sawdust NOTE: For wood products containing chemical treatments or resins/additives, see specific SDS and label for those products
SYNONYMS and/or GRADES:	None
PRODUCT USES:	Building materials, wood pulp raw material, fuel, landscaping material
CHEMICAL NAME/CLASS:	Wood Products
MANUFACTURER'S NAME:	Weyerhaeuser
ADDRESS:	33663 Weyerhaeuser Way S., Federal Way WA 98001-9620
EMERGENCY PHONE:	(844) 523-4081 (3E Company)
BUSINESS PHONE:	(253) 924-3865
INTERNET ACCESS:	See Section 16
REVISED DATE:	September 11, 2015

2. Hazard(s) Identification

Signal Word: DANGER

NOTE: Wood dust may become hazardous while being transported or handled by downstream users. Products not containing wood dust are not hazardous as shipped but may become hazardous as the result of downstream activities (e.g. cutting, sanding) which creates small particles. Potential hazards are described below.

Classification	Hazard Statement(s)	Pictogram(s)
HEALTH Carcinogen- Category 1A (H350)*	Wood dust may cause nasopharyngeal cancer and/or cancer of the nasal cavities and paranasal sinuses by inhalation	

2. Hazard(s) Identification (cont'd.)

Skin Irritation Category 2 (H315) Specific Target Organ Toxicity- Single Exposure (STOT) Category-3 (H335)	May cause skin irritation May cause respiratory irritation	
Eye Irritation Category 2B (H320)	Causes eye irritation	None
Combustible Dust (OSHA Defined Hazard)	If converted to small particles during further processing, handling, or by other means, may form combustible dust concentrations in air	None

*Hazard codes (GHS)

HMIS Rating (Scale 0-4): **Health =** 2* **Fire =** 1 **Physical Hazard =** 0
NFPA Rating (Scale 0-4): **Health =** 1 **Fire =** 1 **Reactivity =** 0

Precautionary Statement(s)/Codes (GHS):

Prevention Statements:

P210: Keep away from sparks, flame or other heat sources.
P243: Take precautionary measures against static discharge.
P260 and P261: Avoid breathing dust.
P280: Wear appropriate protective equipment for skin exposure. In case of inadequate ventilation wear an approved respirator suitable for conditions of use.
P362 and P363: Take off contaminated clothing and wash before reuse.

Response Statements:

P304 and P340: If inhaled and breathing becomes difficult, remove person to fresh air and keep comfortable for breathing.
P308 and P313: If experiencing respiratory symptoms, following removal to fresh air, call a doctor or other qualified medical professional.
P313: If skin irritation or rash occurs get medical advice/attention.
P362: Wash contaminated clothing before reuse.
P352 and P264: If on skin wash with plenty of soap and water.
P338 and P351: If in eyes, rinse cautiously for several minutes. Remove contact lenses if present and easy to do so.

Disposal:

P501: Dispose of in accordance with Federal, state and local regulations.

Ingredients of Unknown Acute Toxicity (>1%): NAP

3. Composition/Information on Ingredients

Ingredients	CAS#	Wt %
Wood (wood dust, softwood or hardwood, logs, wood chips)	None	84-89

Common names: Untreated lumber, untreated wood, sawdust, sander dust, raw logs, wood chips.
NOTE: Wood products such as logs, bark and wood dust may include additional material such as soil and rock fragments which may contain particles of crystalline silica.

4. First Aid Measures

Inhalation: Remove to fresh air if respiratory symptoms are experienced. Seek medical help if persistent irritation, severe coughing, breathing difficulty or other serious symptoms occur.
Eye Contact: Treat dust in eye as a foreign object. Flush with water to remove dust particles. Remove contact lenses if present and easy to do so. Avoid touching or rubbing eyes to avoid further irritation or injury. Seek medical help if irritation persists.
Skin Contact: Wood dust can elicit contact dermatitis. Seek medical help if rash, irritation or dermatitis persists.
Skin Absorption: Not known to be absorbed through the skin.
Ingestion: Not applicable under normal use.
Symptoms or Effects:
Acute Symptoms/Effects – Wood dust may cause mechanical irritation of the respiratory system. Wood dust can cause physical obstructions in the nasal passages, resulting in dryness of nose, dry cough, and sneezing. Wood dust may cause mechanical irritation of the eyes.
Delayed Symptoms/Effects – Unique delayed effects are not anticipated after exposure. See Section 11 for additional information on chronic effects.

5. Fire-fighting Measures

Extinguishing Media and Restrictions: Water, carbon dioxide and sand.
Specific Hazards, Anticipated Combustion Products: Natural decomposition of organic materials such as wood may produce toxic gases and an oxygen deficient atmosphere in enclosed or poorly ventilated areas. Thermal decomposition (i.e. smoldering, burning) products include carbon monoxide, carbon dioxide, aliphatic aldehydes, terpenes, and polycyclic aromatic hydrocarbons.
Autoignition Temperature: Variable [typically 400°-500°F (204°-260°C)]
Special Firefighting Equipment/Procedures: No special equipment anticipated. Beware of potential combustible dust explosion hazard.
Unusual Fire and Explosion Hazards: Depending on moisture content and more importantly, particle diameter and airborne concentration, wood dust may explode in the presence of an ignition source. Wood dust may similarly deflagrate (combustion without detonation like an explosion) if ignited in an open or loosely contained area. An airborne concentration of 40 grams (40,000 mg) of dust per cubic meter of air is often used as the LEL for wood dusts. Reference NFPA Standards 654 and 664 and the NFPA *Fire Protection Handbook* for guidance. Ventilation systems should be kept clean and precautions should be taken to prevent sparks or other ignition sources.

6. Accidental Release Measures

Steps to be taken in case Material Is Released or Spilled: Sweep or vacuum up for recovery and disposal. Avoid creating dusty conditions whenever feasible. Maintain good housekeeping to avoid accumulation of wood dust on exposed surfaces. Use approved filtering facepiece respirator ("dust mask") or higher levels of respiratory protection as indicated and goggles where ventilation is not possible and exposure limits may be exceeded or for additional worker comfort.

7. Handling and Storage

Precautions to be taken in Handling and Storage: Dried wood dust may pose a combustible dust hazard. Keep away from ignition sources. Avoid eye contact. Avoid prolonged or repeated contact with skin. Avoid prolonged or repeated breathing of wood dust. Store in well-ventilated, cool, dry place away from open flame.

8. Exposure Control Measures/Personal Protection

Exposure Limits/Guidelines:

Ingredient(s)	Agency	Exposure Limit(s)	Comments
Wood (wood dust, softwood or hardwood, logs, wood chips)	OSHA	PEL-TWA 15 mg/m³ (see footnote [A] below)	Total Dust (PNOR)
	OSHA	PEL-TWA 5 mg/m³ (see footnote [A] below)	Respirable dust fraction (PNOR)
	ACGIH	TLV-TWA 1 mg/m³	Inhalable fraction

[A] In AFL-CIO v OSHA, 965 F. 2d 962 (11th Cir. 1992), the Court overturned OSHA's 1989 Air Contaminants Rule, including the specific PEL's for wood dust that OSHA had established at that time. The 1989 vacated PEL's were: 5 mg/m³ PEL-TWA and 10 mg/m³ STEL (15 min), all softwood and hardwood except Western Red Cedar. Wood dust is now regulated by OSHA as "Particulates Not Otherwise Regulated" (PNOR), which is also referred to as "nuisance dust". However, some states have regulated wood dust PEL's in their state plans. Additionally, OSHA indicated that it may cite employers under the OSH Act general duty clause in appropriate circumstances.

Ventilation:

LOCAL EXHAUST – Provide local exhaust as needed so that exposure limits are met. Ventilation to control dust should be considered where potential explosive concentrations and ignition sources are present. The design and operation of any exhaust system should consider the possibility of explosive concentrations of wood dust within the system. See "SPECIAL" section below.

MECHANICAL (GENERAL) – Provide general ventilation in processing and storage areas so that exposure limits are met.

SPECIAL – Ensure that exhaust ventilation and material transport systems involved in handling this product contain explosion relief vents or suppression systems designed and operated in accordance with applicable standards if the operating conditions justify their use.

OTHER ENGINEERING CONTROLS – Cutting and machining of product should preferably be done outdoors or with adequate ventilation and containment.

Personal Protective Equipment:

RESPIRATORY PROTECTION – Use filtering face piece respirator ("dust mask") tested and approved under appropriate government standards such as NIOSH (US),CSA (Canada), CEN (EU), or JIS (Japan) where ventilation is not possible and exposure limits may be exceeded or for additional worker comfort or symptom relief. Use respiratory protection in accordance with jurisdictional regulatory requirements similar to the OSHA respiratory protection standard 29CFR 1910.134 following a determination of risk from potential exposures.

EYE PROTECTION – Approved goggles or tight fitting safety glasses are recommended when excessive exposures to dust may occur (e.g. during clean up) and when eye irritation may occur.

PROTECTIVE GLOVES – Cloth, canvas, or leather gloves are recommended to minimize potential mechanical irritation from handling product.

8. Exposure Control Measures/Personal Protection (cont'd.)

OTHER PROTECTIVE CLOTHING OR EQUIPMENT – Outer garments which cover the arms may be desirable in extremely dusty areas.

WORK/HYGIENE PRACTICES – Follow good hygienic and housekeeping practices. Clean up areas where wood dust settles to avoid excessive accumulation of this combustible material. Minimize compressed air blowdown or other practices that generate high airborne-dust concentrations.

9. Physical/Chemical Properties

Appearance: Light to dark colored, granular solid, saw dust, wood chips, logs and untreated lumber (all species and grades). Color and odor are dependent on the wood species and time since any wood dust was generated.

Odor/Odor Threshold(s):	NAV
pH:	NAP
Melting/Freezing Point:	NAP
Boiling Point (@ 760 mm Hg) and Range:	NAP
Flash Point:	NAP
Evaporation Rate:	NAP
Flammability:	NAV
Lower/Upper Explosive Limits:	40,000 mg of dust per cubic meter of air is often used as the LEL for wood dusts.
Vapor Pressure (mm Hg):	NAP
Vapor Density (air = 1; 1 atm):	NAP
Relative Density:	NAP
Solubility:	<0.1
Partition Coefficient (n-octonal/water):	NAP
Autoignition Temperature:	Variable [typically 400°-500°F (204°-260°C)]
Decomposition Temperature:	NAV
Viscosity:	NAP
Other Properties:	NAP

10. Stability and Reactivity

Reactivity: NAP

Hazardous Polymerization: ☐ May occur ☒ Will not occur

Stability: ☐ Unstable ☒ Stable

Conditions to Avoid: Avoid all sources of ignition.

Incompatibility (Materials to Avoid): Avoid contact with oxidizing agents and drying oils.

Hazardous Decomposition or By-Products: Thermal decomposition (i.e. smoldering, burning) can release carbon monoxide, oxides of nitrogen, carbon dioxide, terpenes and polycyclic aromatic hydrocarbons. Natural decomposition of organic materials such as wood may produce toxic gases and an oxygen deficient atmosphere in enclosed or poorly ventilated areas. Spontaneous and rapid hazardous decomposition will not occur.

Sensitivity to Static Discharge: Airborne wood dust may be ignited by a static discharge depending on airborne concentrations, particle size and moisture content.

11. Toxicological Information

Likely Route(s) of Exposure:

- ☐ Ingestion:
- ☒ Skin: Dust
- ☒ Inhalation: Dust
- ☒ Eye: Dust

Signs and Symptoms of Exposure: See section 4

Wood Dust - NTP: According to its Report on Carcinogens, Thirteenth Edition, NTP states, "Wood dust is known to be a human carcinogen based on sufficient evidence of carcinogenicity from studies in humans". An association between wood dust exposure and cancer of the nasal cavity has been observed in many case reports, cohort studies, and case-control studies that specifically addressed nasal cancer. Associations with cancer of the nasal cavities and paranasal sinuses were observed both in studies of people whose occupations are associated with wood dust exposure and in studies that directly estimated wood dust exposure. This classification is based primarily on increased risk in the occurrence of adenocarcinomas of the nasal cavities and paranasal sinuses associated with exposure to wood dust. The evaluation did not find sufficient evidence to associate cancers of the oropharynx, hypopharynx, lung, lymphatic and hematopoietic systems, stomach, colon or rectum with exposure to wood dust. There is inadequate evidence for the carcinogenicity of wood dust from studies in experimental animals according to NTP.

Wood Dust: IARC – Group 1: Carcinogenic to humans; sufficient evidence of carcinogenicity. This classification is primarily based on studies showing an association between occupational exposure to wood dust and adenocarcinoma to the nasal cavities and paranasal sinuses. IARC did not find sufficient evidence of an association between occupational exposure to wood dust and cancers of the oropharynx, hypopharynx, lung, lymphatic and hematopoietic systems, stomach, colon or rectum.

Carcinogenicity Listing(s):

- ☒ NTP: Wood dust, Known Human Carcinogen.
- ☒ IARC Monographs: Wood dust, Group 1 - Carcinogenic to Humans.
- ☐ OSHA Regulated:

Toxicity Data: No specific information available for product or material in purchased form. Individual component information is listed below.

Components:

Wood dust (softwood or hardwood)

Dusts generated from sawing, sanding or machining the product may cause respiratory irritation, nasal dryness and irritation, coughing and sinusitis. NTP and IARC (Group 1) classify wood dust as a human carcinogen. See Section 2 above.

Target Organs: Eyes, skin, and respiratory system.

Note: Weyerhaeuser evaluated the studies referenced in the ACGIH® TLV® Documentation for Wood Dust and others which included potential allergenic references for wood species which may cause skin or respiratory sensitization. There are a limited number of studies of highly variable consistency which reference sensitization from some species of wood. When the total weight of evidence is considered this product is considered to be an eye, skin and repository irritant and not a respiratory or skin sensitizer according to health hazard classification criteria.

12. Ecological Information

Ecotoxicity: NAV for finished product.

Biopersistance and Degradability: Wood in this product or byproduct would be expected to be biodegradable.

Bioaccumulation: Not expected to bioaccumulate.

Soil Mobility: NAV

Other Adverse Effects: NAP

13. Disposal Considerations

Waste Disposal Method: Dry land disposal or incineration is acceptable in most areas. It is, however, the user's responsibility to determine at the time of disposal whether your waste meets any jurisdictional criteria. Note that wood dust may pose a combustible dust hazard.

14. Transport Information

Mode: (air, land, water) Not regulated as a hazardous material by the U.S. Department of Transportation. Not listed as a hazardous material in Canadian Transportation of Dangerous Goods (TDG) regulations. Not regulated as a hazardous material by IMDG or IATA regulations concerning the transport of hazardous materials.

UN Proper Shipping Name:	NAP
UN/NA ID Number:	NAP
Hazard Class:	NAP
Packing Group:	NAP
Environmental Hazards (Marine Pollutant):	NAP
Special Precautions	NAP

15. Regulatory Information

TSCA: NAP
CERCLA: NAP
DSL: NAP
OSHA: Wood products are not hazardous under the criteria of the federal OSHA Hazard Communication Standard 29 CFR 1910.1200. However, wood dust generated by sawing, sanding or machining activities may be considered hazardous.
STATE RIGHT-TO-KNOW:
California Proposition 65 – **Warning**: This product may be shipped in dust form or subsequent drilling, sawing, sanding or machining solid wood may generate wood dust, a substance known to the State of California to cause cancer. **Warning:** Depending on the origin and handling of the material, crystalline silica particles of respirable size may be contained in or on the product and released during transport or processing. Silica, crystalline (airborne particles of respirable size) are known to the State of California to cause cancer.
Pennsylvania – Wood dust and crystalline silica appear on Pennsylvania's Appendix A, Hazardous Substance List.
New Jersey – Wood dust and crystalline silica appear on New Jersey's Environmental Hazardous Substance List.
SARA 313 Information: This material does not contain any chemical ingredient (s) that exceed the de minimis reporting levels established by SARA Title III, section 313 and 40 CFR section 372.
SARA 311/312 Hazard Category: This material has been reviewed according to the EPA "Hazard Categories" promulgated under SARA Title III Sections 311 and 312 and is considered, under applicable definitions, to meet the following categories:

An immediate (acute) health hazard	Yes
A delayed (chronic) health hazard	Yes
A corrosive hazard	No
A fire hazard	No
A reactivity hazard	No
A sudden release hazard	No

15. Regulatory Information (cont'd.)

FDA: Not intended for use as a food additive or indirect food contact item.
WHMIS Classification: Wood and products made from wood are exempt from WHMIS per the Hazardous Products Act. However, wood dust is considered to be a controlled product: D2A (wood dust: IARC Group 1).

16. Other Information

Date Prepared: 11/05/2010
Date Revised: 09/11/2015
Prepared By: Weyerhaeuser Company Environment, Health, and Safety.
Weyerhaeuser SDS available on:
http://www.wy.com/sustainability/environment/product-stewardship/safety-data-sheets/
User's Responsibility: The information contained in this Safety Data Sheet is based on the experience of occupational health and safety professionals and comes from sources believed to be accurate or otherwise technically correct. It is the user's responsibility to determine if the product is suitable for its proposed application(s) and to follow necessary safety precautions. The user has the responsibility to ensure that the most current SDS is used.

Definition of Common Terms:

ACGIH®	=	American Conference of Governmental Industrial Hygienists
C	=	Ceiling Limit
CAS#	=	Chemical Abstracts System Number
DOT	=	U. S. Department of Transportation
DSL	=	Domestic Substance List
EC#	=	Identifying Number Assigned to Chemicals Contained in the European Inventory of Existing Chemical Substances (EINECS)
EC_{50}	=	Effective Concentration That Inhibits the Endpoint to 50% of Control Population
EPA	=	U.S. Environmental Protection Agency
GHS	=	Globally Harmonized System of Classification and Labelling of Chemicals
HMIS	=	(Canada) Hazardous Materials Identification System
HNOC	=	Hazards Not Otherwise Classified
IARC	=	International Agency for Research on Cancer
IATA	=	International Air Transport Association
IMDG	=	International Maritime Dangerous Goods
LC_{50}	=	Concentration in Air Resulting in Death To 50% of Experimental Animals
LCLo	=	Lowest Concentration in Air Resulting in Death
LD_{50}	=	Administered Dose Resulting in Death to 50% of Experimental Animals
LDLo	=	Lowest Dose Resulting in Death
LEL	=	Lower Explosive Limit
LFL	=	Lower Flammable Limit
MSHA	=	Mine Safety and Health Administration
NAP	=	Not Applicable
NAV	=	Not Available
NIOSH	=	National Institute for Occupational Safety and Health
NFPA	=	National Fire Protection Association
NPRI	=	(Canada) National Pollution Release Inventory
NTP	=	National Toxicology Program
OSHA	=	Occupational Safety and Health Administration
PEL	=	Permissible Exposure Limit
PNOR	=	Particulate Not Otherwise Regulated
PNOS	=	Particulate Not Otherwise Specified

16. Other Information (cont'd.)

RCRA	=	Resource Conservation and Recovery Act
STEL	=	Short-Term Exposure Limit (15 minutes)
STP	=	Standard Temperature and Pressure
TCLo	=	Lowest Concentration in Air Resulting in a Toxic Effect
TDG	=	(Canada) Transportation of Dangerous Goods
TDLo	=	Lowest Dose Resulting In a Toxic Effect
TLV	=	Threshold Limit Value
TSCA	=	Toxic Substance Control Act
TWA	=	Time-Weighted Average (8 hours)
UFL	=	Upper Flammable Limit
WHMIS	=	(Canada) Workplace Hazardous Materials Information System

Wood and Wood Dust (without chemical treatments or resins/additives), including Untreated Lumber (all species and grades), Logs, Chips, and Sawdust

Danger

Wood dust may cause nasopharyngeal cancer and/or cancer of the nasal cavities and paranasal sinuses by inhalation. May cause respiratory, skin and eye irritation.

May form combustible dust concentrations in air if small particles become airborne or are formed during processing or handling

Precautions: Avoid breathing dust and wear appropriate protective equipment for respiratory, skin or eye exposures. Prevent dust release and accumulations to minimize hazards. Take off contaminated clothing and wash before reuse. Keep dust away from ignition sources such as heat, sparks, and flame.

First Aid: If on skin wash with plenty of mild soap and water. If in eyes, rinse cautiously for several minutes. Remove contact lenses if present and easy to do so. If experiencing respiratory symptoms, remove to fresh air. Contact a qualified medical professional for serious or persistent skin, eye or respiratory symptoms.

Weyerhaeuser

33663 Weyerhaeuser Way South

Federal Way, WA 98001

1-800-525-5440

Weyerhaeuser

Label for Wood and Wood Dust products. See SDS 9/2015 for additional information.

Safety Data Sheet

Date of Revision: 9/19/2016 **XANTHAN GUM DISPERSIBLE GRADE**

Section 1 - Chemical Product and Company Identification

WEGO CHEMICAL GROUP
239 Great Neck Road - Great Neck, NY 11021 - USA
Tel: +1 (516) 487 3510 - Fax: +1 (516) 487 3794
sales@wegochem.com - wegochem.com

Product/Chemical Name: Xanthan Gum
Chemical Formula:
CAS Number: 11138-66-2
Other Designations:
Derivation:
General Use:
Emergency Telephone: (ChemTel) Contract MIS0000335; 800 255-3924; INTL 813 248-0585

Section 2 - 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.

HMIS	
H	2
F	0
R	0
PPE†	
†Sec. 8	

Potential Health Effects

Primary Entry Routes: Inhalation, Skin contact, Eye contact.
Target Organs: none
Classification of the substance or mixture
GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)
Combustible dust,

GHS Label elements, including precautionary statements
Pictogram

Signal word WARNING

Hazard statement(s)
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.
H341 Suspected of causing genetic defects.
May form combustible dust concentrations in air

Precautionary statement(s)
P261 Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
P264 Wash skin thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.

Hazards not otherwise classified (HNOC) or not covered by GHS: Combustible dust

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, OSHA and CA Prop 65 do not list Xanthan Gum as a carcinogen.
Medical Conditions Aggravated by Long-Term Exposure: None known.

Chronic Effects: None known.

Section 3 - Composition / Information on Ingredients

Ingredient Name	CAS Number	EINECS/ELINCS	% wt *or* % vol
Xanthan Gum	11138-66-2	234-394-2	99.0 - 100
Glyoxal	107-22-2	203-474-9	<1.0

Trace Impurities:

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Xanthan Gum	10 mg/m^3	None listed	None listed
Glyoxal	0.1 mg/m^3	None listed	None listed

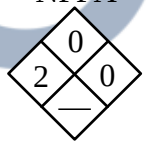
Section 4 - First Aid Measures

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.
Note to Physicians:
Special Precautions/Procedures:

Section 5 - Fire-Fighting Measures

Flash Point: N/A
Flash Point Method: N/A
Autoignition Temperature: N/A
LEL: N/A
UEL: N/A
Flammability Classification:

NFPA



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 facepiece operated in pressure-demand or positive-pressure mode.

Section 6 - Accidental 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 7 - 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 8 - Exposure Controls / Personal Protection

Engineering Controls:

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

Administrative Controls:

Respiratory Protection: Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear a MSHA/NIOSH-approved respirator. Select respirator based on its suitability to provide adequate worker protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen. For emergency or non-routine operations (cleaning spills, reactor vessels, or storage tanks), wear an SCBA. *Warning! Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.* If respirators are used, OSHA requires a written respiratory protection program that includes at least: medical certification, training, fit-testing, periodic environmental monitoring, maintenance, inspection, cleaning, and convenient, sanitary storage areas.

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

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

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

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

Section 9 - Physical and Chemical Properties

Physical State: solid
Appearance and Odor: beige powder/bland odor
Odor Threshold:
Vapor Pressure:
Vapor Density (Air=1):
Formula Weight:
Density:
Specific Gravity (H_2O=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 10 - Stability and Reactivity

Stability: Xanthan Gum is stable at room temperature in closed containers under normal storage and handling conditions.
Polymerization: Hazardous polymerization cannot occur.
Chemical Incompatibilities: Strong oxidizing agents.
Conditions to Avoid: Protect from moisture.
Hazardous Decomposition Products: Thermal oxidative decomposition of Xanthan Gum can produce carbon dioxide and carbon monoxide.

Section 11- Toxicological Information

Toxicity Data:*

Acute Oral Effects:
Rat, oral, LD_{50}: 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 12 - Ecological Information

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

Section 13 - Disposal Considerations

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

Disposal Regulatory Requirements:

Section 14 - Transport Information

Not regulated for transportation

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

Section 15 - Regulatory Information

US FEDERAL

TSCA

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

Health & Safety Reporting List

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

Chemical Test Rules

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

Section 12b

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

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs

None of the chemicals in this material have an RQ.

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

SARA 311/312 Hazards: No SARA Hazards

Section 313 No chemicals are reportable under Section 313.

Clean Air Act:

This material does not contain any hazardous air pollutants.
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

State and Local Regulations - California Proposition 65: None

Section 16 - Other Information

Disclaimer: All information, recommendations and suggestions appearing herein are based upon sources believed to be reliable: However, it is the users responsibility to determine the safety, toxicity and suitability for its own use of this product. WEGO CHEMICAL GROUP DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE USE BY OTHERS OF THIS PRODUCT.