HALLIBURTON

MATERIAL SAFETY DATA SHEET

Product Trade Name: **CL-31 CROSSLINKER**

Revision Date: 23-Sep-2013 **Revision Number:** 16

1. PRODUCT AND COMPANY IDENTIFICATION

Product Identifier

Product Trade Name: CL-31 CROSSLINKER
Synonyms: None
Chemical Family: Blend
Internal ID Code HM000350

Product Use

Application: Crosslinker

Manufacturer's Name and Contact Details

Name and Address Halliburton Energy Services
645 - 7th Ave SW Suite 2200
Calgary, AB
T2P 4G8
Canada

Emergency Telephone Number (281) 575-5000

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

2. HAZARD(S) IDENTIFICATION

WHIMIS Classification

WHMIS Hazard Class D2A Very Toxic Materials
E Corrosive Material

WHMIS Symbol(s)

Summary of hazards of the product

Hazard Overview May cause eye, skin, and respiratory burns. May be harmful if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substances	CAS Number	PERCENT (w/w)	HMIRA Registry Number	Filing Date
Potassium metaborate	13709-94-9	30 - 60%	Not applicable	Not applicable
Potassium hydroxide	1310-58-3	1 - 5%	Not applicable	Not applicable

4. FIRST AID MEASURES

Description of first aid measures

Inhalation If inhaled, remove to fresh air. If not breathing give artificial respiration, preferably mouth-to-mouth. If breathing is difficult give oxygen. Get medical attention.

Eyes In case of contact, or suspected contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention immediately after flushing.

Skin In case of contact, immediately flush skin with plenty of soap and water for at least 15 minutes. Get medical attention. Remove contaminated clothing and launder before reuse.

Ingestion Do not induce vomiting. Slowly dilute with 1-2 glasses of water or milk and seek medical attention. Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed

May cause eye, skin, and respiratory burns.

Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically

5. FIRE FIGHTING MEASURES

Extinguishing media

Suitable Extinguishing Media

Water fog, carbon dioxide, foam, dry chemical.

Extinguishing media which must not be used for safety reasons

None known.

Special hazards arising from the substance or mixture

Special Exposure Hazards

Product should not burn, but precautions should be taken during a fire to avoid corrosive hazard.

Advice for firefighters

Special Protective Equipment for Fire-Fighters

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

Hazardous combustion products

Boric acid. Potassium hydroxide.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions and emergency producedures

Protective Equipment

Use appropriate protective equipment.

Environmental Precautionary Measures

Prevent from entering sewers, waterways, or low areas.

Procedure for Cleaning / Absorption

Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Neutralize to pH of 6-8. Scoop up and remove.

7. HANDLING AND STORAGE

Precautions for safe handling

Avoid contact with eyes, skin, or clothing. Avoid breathing vapors. Wash hands after use. Launder contaminated clothing before reuse.

Conditions for safe storage and Incompatible materials for storage

Store away from acids. Store away from oxidizers. Store in a well ventilated area. Product has a shelf life of 24 months.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

Exposure Limits

Substances	CAS Number	ACGIH TLV-TWA	OSHA PEL-TWA
Potassium metaborate	13709-94-9	2 mg/m^3	Not applicable
Potassium hydroxide	1310-58-3	2 mg/m^3	Not applicable

Appropriate engineering controls

Engineering Controls Use in a well ventilated area. Local exhaust ventilation should be used in areas without good cross ventilation.

Personal Protective Equipment (PPE)

Respiratory Protection Dust/mist respirator. (N95, P2/P3)
Hand Protection Impervious rubber gloves.
Skin Protection Rubber apron.
Eye Protection Chemical goggles; also wear a face shield if splashing hazard exists.
Other Precautions Eyewash fountains and safety showers must be easily accessible.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical State: Liquid **Color:** Clear
Odor: Characteristic **Odor Threshold:** No information available

Property Remarks/ - Method	Values
pH:	> 13.5
pH Concentration of Solution:	No information available.
Freezing Point/Range	No information available.
Melting Point/Range	No information available
Boiling Point/Range (C):	No information available.
Flash Point/Range (C):	No information available. °C
Flash Point Method:	TCC
Autoignition Temperature (C):	No information available.
Flammability Limits in Air - Lower (%):	No information available.
Flammability Limits in Air - Upper (%):	No information available.
Evaporation Rate (Butyl Acetate=1):	No information available.
Vapor Pressure @ 20 C (mmHg):	No information available.
Vapor Density (Air=1):	No information available.
Specific Gravity @ 20 C (Water=1):	1.31
Solubility in Water (g/100ml):	Soluble
Solubility in other solvents	No information available.
Partition Coefficient/n-Octanol/Water:	No information available.
Decomposition Temperature (C):	No information available.
Viscosity	No information available
Explosive Properties	No information available
Oxidizing Properties	No information available

Other Information

Molecular Weight (g/mole): No information available.
VOC Content (%) No information available

10. STABILITY AND REACTIVITY

Conditions of Reactivity

Conditions to Avoid None anticipated
Hazardous Polymerization: Will Not Occur

Chemical Stability
Stable

Sensitivity to Static Discharge
Not available

Sensitivity to Mechanical Impact
Not available

Incompatible materials
Strong oxidizers. Strong acids.

Hazardous Decomposition Products
Boric acid. Potassium hydroxide.

11. TOXICOLOGICAL INFORMATION

Routes of entry
Eye or skin contact, inhalation.

Information on Toxicological Effects

Acute effects from exposure

Inhalation	Causes severe respiratory irritation.
Eye Contact	Causes severe eye irritation May cause eye burns.
Skin Contact	Causes severe skin irritation. May cause skin burns.
Ingestion	Irritation of the mouth, throat, and stomach. May cause abdominal pain, vomiting, nausea, and diarrhea.

Chronic effects from exposure
Chronic Effects/Carcinogenicity May cause reproductive effects based on animal studies.

Irritancy of product
Irritation Corrosive to eyes
Corrosive to skin

Sensitization of product
Sensitization Not confirmed to cause skin or respiratory sensitization.

Mutagenicity
Mutagenic Effects Contains no ingredient listed as a mutagen

Carcinogenicity
Carcinogenic Effects 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, or OSHA.

Reproductive Toxicity
Reproductive Toxicity Product is or contains a chemical which is a known or suspected reproductive hazard

Teratogenicity/embryotoxicity
Teratogenic Possible risk of harm to the unborn child

Toxicologically synergistic material Not available

Acute Toxicity

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Potassium metaborate	13709-94-9	No data available	No data available	No data available
Potassium hydroxide	1310-58-3	214 mg/kg (Rat) 273 mg/kg (Rat)	No data available	No data available

12. ECOLOGICAL INFORMATION

Toxicity
Ecotoxicity Effects

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Daphnia Magna (Water Flea)
Potassium metaborate	13709-94-9	No information available	No information available	No information available	No information available
Potassium hydroxide	1310-58-3	No information available	LC50: 80 mg/L (Gambusia affinis)	No information available	TLM96: 251,200 ppm (Mysidopsis bahia)

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

Bioaccumlation potential
No information available

Mobility in soil
No information available

Results of PBT and vPvB assessment
No information available.

Other adverse effects
Endocrine Disruptor Information
This product does not contain any known or suspected endocrine disruptors

13. DISPOSAL CONSIDERATIONS

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

Contaminated Packaging Follow all applicable national or local regulations.

14. TRANSPORT INFORMATION

Canadian TDG
UN Number: UN1814,
UN Proper Shipping Name: Potassium Hydroxide Solution
Transport Hazard Class(es): , 8
Packing Group: , III
EMS: EmS F-A, S-B

IATA/ICAO
UN Number: UN1814,
UN Proper Shipping Name: Potassium Hydroxide Solution
Transport Hazard Class(es): , 8
Packing Group: , III

IMDG/IMO
UN Number: UN1814,
UN Proper Shipping Name: Potassium Hydroxide Solution
Transport Hazard Class(es): , 8
Packing Group: , III
EMS: EmS F-A, S-B

Special Precautions for User None

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

15. REGULATORY INFORMATION

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

Canadian Regulations

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

WHMIS Hazard Class D2A Very Toxic Materials
E Corrosive Material

WHMIS Symbol(s)

US Regulations

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

16. OTHER INFORMATION

Preparation Information

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

Revision Date: 23-Sep-2013

Not applicable

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

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

Key or legend to abbreviations and acronyms
WHMIS: Workplace Hazardous Materials Information System

Key literature references and sources for data
www.ChemADVISOR.com/

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*****END OF MSDS*****