HALLIBURTON

MATERIAL SAFETY DATA SHEET

Product Trade Name: **BC-200 UC**

Revision Date: 15-Sep-2014 **Revision Number:** 9

SECTION 1. Product and Company Identification

Product Identifier

Product Trade Name: BC-200 UC
Synonyms: None
Chemical Family: Blend
Internal ID Code HM006211

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

SECTION 2. Hazard(s) Identification

WHIMIS Classification

WHMIS Hazard Class D2A Very Toxic Materials
D2B Toxic Materials

WHMIS Symbol(s)

Summary of hazards of the product

Hazard Overview May cause eye and skin irritation. May be harmful if swallowed. Potential reproductive hazard.

SECTION 3: Composition/information on Ingredients

Substances	CAS Number	PERCENT (w/w)	HMIRA Registry Number	Decision Granted Date
Modified alkane	Proprietary	30 - 60%	8931	August 29, 2014
Borate salts	Proprietary	30 - 60%	8931	August 29, 2014
Sodium carbonate	497-19-8	10 - 30%	Not applicable	Not applicable

SECTION 4. First aid measures

Description of first aid measures

Inhalation If inhaled, remove to fresh air. If not breathing give artificial respiration (AR), preferably mouth-to-mouth. If breathing is difficult, oxygen should be given by trained personnel. If the heart has stopped, trained personnel should begin cardiopulmonary resuscitation (CPR) immediately. 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 Get medical attention! If vomiting occurs, keep head lower than hips to prevent aspiration.

Most important symptoms and effects, both acute and delayed

May cause eye and skin irritation. Potential reproductive hazard.

Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically

SECTION 5. Fire Fighting Measures

Extinguishing media

Suitable Extinguishing Media

Carbon dioxide, dry chemical, foam.

Extinguishing media which must not be used for safety reasons

None known.

Special hazards arising from the substance or mixture

Special Exposure Hazards

Decomposition in fire may produce toxic gases. Use water spray to cool fire exposed surfaces. Closed containers may explode in fire. Vapors are heavier than air and may accumulate in low areas. Vapors may travel along the ground to be ignited at distant locations.

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

Hydrogen chloride. Hydrogen cyanide. Oxides of nitrogen. Carbon monoxide and carbon dioxide.

SECTION 6. Accidental release measures

Personal precautions and emergency procedures

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. Scoop up and remove.

SECTION 7. Handling and Storage

Precautions for safe handling

Avoid contact with eyes, skin, or clothing. Avoid breathing vapors. Avoid breathing mist. Wash hands after use. Launder contaminated clothing before reuse. Material is slippery underfoot.

Conditions for safe storage and Incompatible materials for storage

Store away from oxidizers. Store in a cool well ventilated area. Keep container closed when not in use. Store away from direct sunlight.

SECTION 8: Exposure Controls/Personal Protection

Occupational Exposure Limits

Exposure Limits

Substances	CAS Number	ACGIH TLV-TWA	OSHA PEL-TWA
Modified alkane	Proprietary	5 mg/m^3	5 mg/m^3
Borate salts	Proprietary	Not available	Not available
Sodium carbonate	497-19-8	Not available	Not available

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

Hand Protection Nitrile gloves. Viton gloves Neoprene gloves. Polyvinyl alcohol gloves.
Skin Protection Normal work coveralls.
Eye Protection Chemical goggles; also wear a face shield if splashing hazard exists.
Other Precautions Eyewash fountains and safety showers must be easily accessible.

SECTION 9. Physical and Chemical Properties

Information on basic physical and chemical properties

Physical State: Liquid
Odor: Mild hydrocarbon
Color: Tan
Odor Threshold: No information available

Property Remarks/ - Method	Values
pH:	No information available.
pH Concentration of Solution:	No information available.
Freezing Point/Range	-15 °C
Melting Point/Range	No information available
Boiling Point/Range (C):	No information available.
Flash Point/Range (C):	> 110 °C
Flash Point Method:	No information available.
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):	1.2
Solubility in Water (g/100ml):	Slightly 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

SECTION 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.

Hazardous Decomposition Products

Hydrogen chloride. Hydrogen cyanide. Oxides of nitrogen. Carbon monoxide and carbon dioxide.

SECTION 11. Toxicological Information

Routes of entry

Eye or skin contact, inhalation.

Information on Toxicological Effects

Acute effects from exposure

Inhalation May cause respiratory irritation. May cause chemical pneumonia. If heated: May cause central nervous system depression including headache, dizziness, drowsiness, incoordination, slowed reaction time, slurred speech, giddiness and unconsciousness.

Eye Contact May cause eye irritation

Skin Contact May cause skin irritation.

Ingestion Irritation of the mouth, throat, and stomach. Aspiration into the lungs may cause chemical pneumonitis including coughing, difficulty breathing, wheezing, coughing up blood and pneumonia, which can be fatal.

Chronic effects from exposure

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

Irritancy of product

Irritation Irritating to eyes and skin

Sensitization of product

Sensitization Not confirmed to cause skin or respiratory sensitization.

Mutagenicity

Mutagenic Effects Not regarded as mutagenic.

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 Experiments have shown reproductive toxicity effects on laboratory animals

Teratogenicity/embryotoxicity
Teratogenic Not a confirmed teratogen or embryotoxin.

Toxicologically synergistic material Not available

Acute Toxicity

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Modified alkane	Proprietary	No data available	No data available	No data available
Borate salts	Proprietary	3493-6080 mg/kg (Rat) (similar substance) 3450 mg/kg (Male Rat) (similar substance)	> 2000 mg/kg (Rabbit) (similar substance)	> 2 mg/L (Rat, 4h) (similar substance) > 2.12 mg/L (Rat, 4h) (similar substance) > 2.04 mg/L (Rat, 4h) (similar substance)
Sodium carbonate	497-19-8	4090 mg/kg (Rat) 2800 mg/kg (Rat)	2210 mg/kg (Mouse) > 2000 mg/kg (Rabbit)	LC50: 2.3 mg/L (Rat) 2h

SECTION 12. Ecological Information

Toxicity
Ecotoxicity Effects

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Modified alkane	Proprietary	No information available	No information available	No information available	No information available
Borate salts	Proprietary	EC50(72h): 1398.64 mg/L (Skeletonema costatum)	LC50(96h): > 320 mg/L (Scophthalmus maximus) LC50(96h): > 1100 mg/L (Oncorhynchus mykiss) LC50(96h): > 1021 mg/L (Lepomis macrochirus) LD50(28d): 65 mg/L (Oncorhynchus mykiss)	No information available	EC50(48h): 7341.67 mg/L (Acartia tonsa) EC50(48h): 133 mg/L (Daphnia magna)
Sodium carbonate	497-19-8	EC50: 242 mg/L (Nitzschia)	TLM24: 385 mg/l (Lepomis macrochirus) LC50: 310-1220 mg/L (Pimephales promelas) LC50(96h): 300 mg/L (Lepomis macrochirus)	No information available	EC50: 265 mg/L (Daphnia magna) EC50(48h): 200 – 227 mg/L (Ceriodaphnia sp.)

Persistence and Degradability
No information available

Bioaccumlation potential
No information available

Substances	Log Pow
Borate salts	0.175
Sodium carbonate	0

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

SECTION 13. Disposal Considerations

Disposal Method Disposal should be made in accordance with federal, state, and local regulations. Incineration recommended in approved incinerator according to federal, state, and local regulations.

Contaminated Packaging Follow all applicable national or local regulations.

SECTION 14. Transport Information

Canadian TDG ul0

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

IATA/ICAO

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

IMDG/IMO

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

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:

SECTION 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
D2B Toxic Materials

WHMIS Symbol(s)

US Regulations

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

SECTION 16. Other Information

Preparation Information

Prepared By

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

Revision Date: 15-Sep-2014

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/

Disclaimer Statement

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

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