HALLIBURTON

MATERIAL SAFETY DATA SHEET

Product Trade Name: **BE-9**

Revision Date: 16-Apr-2014 **Revision Number:** 10

1. Product and Company Identification

Product Identifier

Product Trade Name: BE-9
Synonyms: None
Chemical Family: Solution
Internal ID Code HM006583

Product Use

Application: Biocide

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 D1A Very Toxic Materials
E Corrosive Material

WHMIS Symbol(s)

Summary of hazards of the product

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

3. Composition/information on Ingredients

Substances	CAS Number	PERCENT (w/w)	HMIRA Registry Number	Filing Date
Tributyl tetradecyl phosphonium chloride	81741-28-8	5 - 10%	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 Wash with soap and water. Get medical attention if irritation persists. Remove contaminated clothing and launder before reuse. Remove contaminated shoes and discard.

Ingestion If swallowed, do NOT induce vomiting. Give victim two glasses of water, Call a physician immediately. Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed

May cause eye and skin burns. May be harmful if swallowed. May be harmful if inhaled

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

Decomposition in fire may produce toxic gases. Do not allow runoff to enter waterways. Use water spray to cool fire exposed surfaces.

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

Chlorine. Phosphorus acids. Carbon monoxide and carbon dioxide.

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. Scoop up and remove.

7. Handling and Storage

Precautions for safe handling

Avoid contact with eyes, skin, or clothing. Wash hands after use. Launder contaminated clothing before reuse. Do NOT consume food, drink, or tobacco in contaminated areas.

Conditions for safe storage and Incompatible materials for storage

Store in a cool well ventilated area. Keep container closed when not in use. Store away from direct sunlight. Store in a dry location. Store in a manner to prevent commingling with incompatible materials. Store away from alkalis. Store away from reducing agents.

8. Exposure Controls/Personal Protection

Occupational Exposure Limits

Exposure Limits

Substances	CAS Number	ACGIH TLV-TWA	OSHA PEL-TWA
Tributyl tetradecyl phosphonium chloride	81741-28-8	Not applicable	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 If engineering controls and work practices cannot keep exposure below occupational exposure limits or if exposure is unknown, wear a NIOSH certified, European Standard EN 149, AS/NZS 1715:2009, or equivalent respirator when using this product. Selection of and instruction on using all personal protective equipment, including respirators, should be performed by an Industrial Hygienist or other qualified professional.

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

Hand Protection Impervious rubber gloves. Neoprene gloves. Polyvinylchloride gloves.

Skin Protection Wear impervious protective clothing, including boots, gloves, lab coat, apron, rain jacket, pants or coverall, as appropriate, to prevent skin contact.

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 colorless
Odor: Slight
Odor Threshold: No information available

Property Remarks/ - Method	Values
pH:	6-8
pH Concentration of Solution:	No information available.
Freezing Point/Range	No information available.
Melting Point/Range	No information available
Boiling Point/Range (C):	100 °C
Flash Point/Range (C):	No information available.
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):	0.95-1.00
Solubility in Water (g/100ml):	Miscible
Solubility in other solvents	No information available.
Partition Coefficient/n-Octanol/Water:	< 3
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
Reducing agents. Strong alkalis.

Hazardous Decomposition Products
Chlorine. Phosphorus acids. Carbon monoxide and carbon dioxide.

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 be harmful if inhaled.
Eye Contact	May cause eye burns.
Skin Contact	May cause skin burns. Harmful if absorbed through the skin.
Ingestion	May be harmful if swallowed.

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 Corrosive to eyes Corrosive to 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 This product does not contain any known or suspected reproductive hazards

Teratogenicity/embryotoxicity

Teratogenic Not a teratogen or embroytoxin.

Toxicologically synergistic material Not available

Acute Toxicity

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Tributyl tetradecyl phosphonium chloride	81741-28-8	< 2000 mg/kg (Rat)	No data available	0.9 mg/L (Rat)

12. Ecological Information

Toxicity
Ecotoxicity Effects

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Tributyl tetradecyl phosphonium chloride	81741-28-8	No information available	LC50(96h): 0.46 mg/L (Onchorhynchus mykiss) LC50(96h): 0.06 mg/L (Lepomis macrochirus)	No information available	EC50(48h): 0.025 mg/L (Daphnia magna) TLM96: 1.6 mg/L (Crangon crangon)

Persistence and Degradability
No information available

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. Incineration recommended in approved incinerator according to federal, state, and local regulations.

Contaminated Packaging Follow all applicable national or local regulations.

14. Transport Information

Canadian TDG ul0

UN Number: UN2922
UN Proper Shipping Name: Corrosive Liquid, Toxic, N.O.S. (contains Tributyl Tetradecyl Phosphonium Chloride)
Transport Hazard Class(es): 8
Subsidiary Hazard: (6.1)
Packing Group: II
EMS: EmS F-A, S-B

IATA/ICAO

UN Number:	UN2922
UN Proper Shipping Name:	Corrosive Liquid, Toxic, N.O.S. (contains Tributyl Tetradecyl Phosphonium Chloride)
Transport Hazard Class(es):	8
Subsidiary Hazard:	(6.1)
Packing Group:	II

IMDG/IMO

UN Number:	UN2922
UN Proper Shipping Name:	Corrosive Liquid, Toxic, N.O.S. (contains Tributyl Tetradecyl Phosphonium Chloride)
Transport Hazard Class(es):	8
Subsidiary Hazard:	(6.1)
Packing Group:	II
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

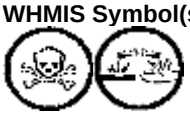
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Canadian Regulations

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

WHMIS Hazard Class D1A 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: 16-Apr-2014

The following sections have been revised since the last issue of this SDS
Section 15. Regulatory Information
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

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