

SAFETY DATA SHEET

BE-4 BACTERICIDE

Product Trade Name:

Revision Date: 12-Mar-2015

Revision Number: 13

1. Identification

1.1. Product Identifier

Product Trade Name: BE-4 BACTERICIDE
Synonyms: None
Chemical Family: Amine
Internal ID Code: HM000121

1.2 Recommended use and restrictions on use

Application: Biocide
Uses Advised Against: No information available

1.3 Manufacturer's Name and Contact Details

Manufacturer/Supplier: Halliburton Energy Services Inc.
P.O. Box 1431
Duncan, Oklahoma 73536-0431
Emergency Telephone: (281) 575-5000

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

1.4. Emergency telephone number

Emergency Telephone Number: (281) 575-5000

2. Hazard(s) Identification

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

Acute Oral Toxicity	Category 4 - H302
Acute Inhalation Toxicity - Vapors	Category 2 - H330
Serious Eye Damage / Eye Irritation	Category 2B - H320
Skin Sensitization	Category 1 - H317
Specific Target Organ Toxicity - (Single Exposure)	Category 3 - H335
Specific Target Organ Toxicity - (Repeated Exposure)	Category 1 - H372
Acute Aquatic Toxicity	Category 2 - H401

2.2. Label Elements

Hazard Pictograms



Signal Word	Danger
Hazard Statements	H302 - Harmful if swallowed H317 - May cause an allergic skin reaction H320 - Causes mild eye irritation H330 - Fatal if inhaled H335 - May cause respiratory irritation H372 - Causes damage to organs through prolonged or repeated exposure H401 - Toxic to aquatic life
Precautionary Statements	
Prevention	P260 - Do not breathe dust/fume/gas/mist/vapors/spray P261 - Avoid breathing dust/fume/gas/mist/vapors/spray P264 - Wash face, hands and any exposed skin thoroughly after handling P270 - Do not eat, drink or smoke when using this product 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 P285 - In case of inadequate ventilation wear respiratory protection
Response	P301+ P312 - IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell P302 + P352 - IF ON SKIN: Wash with plenty of soap and water P304 + P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing 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 or doctor/physician P333 + P313 - If skin irritation or rash occurs: Get medical advice/attention P337 + P313 - If eye irritation persists: Get medical advice/attention P363 - Wash contaminated clothing before reuse
Storage	P403 + P233 - Store in a well-ventilated place. Keep container tightly closed P405 - Store locked up
Disposal	P501 - Dispose of contents/container in accordance with local/regional/national/international regulations
Contains Substances	CAS Number
Hexahydro-1,3,5-tris(2-hydroxyethyl)-s-triazine	4719-04-4

2.3 Hazards not otherwise classified

None known

3. Composition/information on Ingredients

Substances	CAS Number	PERCENT (w/w)	GHS Classification - US
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Hexahydro-1,3,5-tris(2-hydroxyethyl)-s-triazine	4719-04-4	60 - 100%	Acute Tox. 4 (H302) Acute Tox. 2 (H330) Eye Irrit. 2B (H320) Skin Sens. 1 (H317) STOT SE 3 (H335) STOT RE 1 (H372) Aquatic Acute 2 (H401)
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The exact percentage (concentration) of the composition has been withheld as proprietary.

4. First-Aid Measures

4.1. Description of first aid measures

Inhalation	If inhaled, move victim to fresh air and seek 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. Give nothing by mouth. Obtain immediate medical attention.

4.2 Most important symptoms/effects, acute and delayed

Harmful if swallowed. May be fatal if inhaled. May cause mild eye irritation. May cause allergic skin reaction. May cause respiratory irritation. May cause damage to internal organs.

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

Notes to Physician Treat symptomatically.

5. Fire-fighting measures

5.1. Extinguishing media

Suitable Extinguishing Media

Water fog, carbon dioxide, foam, dry chemical.

Extinguishing media which must not be used for safety reasons

None known.

5.2 Specific hazards arising from the substance or mixture

Special Exposure Hazards

Decomposition in fire may produce harmful gases.

5.3 Special protective equipment and precautions for fire-fighters

Special Protective Equipment for Fire-Fighters

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

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Use appropriate protective equipment.

See Section 8 for additional information

6.2. Environmental precautions

Prevent from entering sewers, waterways, or low areas.

6.3. Methods and material for containment and cleaning up

Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Scoop up and remove.

7. Handling and storage

7.1. Precautions for Safe Handling

Handling Precautions

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

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

Storage Information

Store away from acids. Store away from oxidizers. Store away from direct sunlight. Keep container closed when not in use.

8. Exposure Controls/Personal Protection

8.1 Occupational Exposure Limits

Substances	CAS Number	OSHA PEL-TWA	ACGIH TLV-TWA
Hexahydro-1,3,5-tris(2-hydroxyethyl)-s-triazine	4719-04-4	Not applicable	Not applicable

8.2 Appropriate engineering controls

Engineering Controls

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

8.3 Individual protection measures, such as personal protective equipment

Personal Protective Equipment

If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

Respiratory Protection

Wear a NIOSH certified, European Standard EN 149, AS/NZS 1715:2009, AS/NZS 1715:2009, or equivalent respirator when product vapor or mist is present.

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

9.1. Information on basic physical and chemical properties

Physical State: Liquid

Color:

Clear light yellow

Odor: Amine

Odor

No information available

Threshold:

Property

Values

Remarks/ - Method

pH:

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Freezing Point/Range

-35 °C / -30 °F

Melting Point/Range

No data available

Boiling Point/Range

No data available

Flash Point

> 100 °C / > 212 °F PMCC

Flammability (solid, gas)	No data available
upper flammability limit	No data available
lower flammability limit	No data available
Evaporation rate	No data available
Vapor Pressure	No data available
Vapor Density	No data available
Specific Gravity	1.16
Water Solubility	Soluble in water
Solubility in other solvents	No data available
Partition coefficient: n-octanol/water	No data available
Autoignition Temperature	No data available
Decomposition Temperature	No data available
Viscosity	No data available
Explosive Properties	No information available
Oxidizing Properties	No information available

9.2. Other information

VOC Content (%) 2

10. Stability and Reactivity

10.1. Reactivity

Not expected to be reactive.

10.2. Chemical Stability

Stable

10.3. Possibility of Hazardous Reactions

Will Not Occur

10.4. Conditions to Avoid

Keep away from heat, sparks and flame. Avoid contact with metals such as aluminum, tin, lead, brass, bronze, copper, and zinc.

10.5. Incompatible Materials

Strong oxidizers. Strong acids.

10.6. Hazardous Decomposition Products

Oxides of nitrogen. Formaldehyde. Acetic acid. Carbon monoxide and carbon dioxide.

11. Toxicological Information

11.1 Information on likely routes of exposure

Principle Route of Exposure Eye or skin contact, inhalation.

11.2 Symptoms related to the physical, chemical and toxicological characteristics**Acute Toxicity****Inhalation**

Causes severe respiratory irritation. Fatal if inhaled.

Eye Contact

Causes severe eye irritation. May cause eye burns.

Skin Contact

Causes severe skin irritation. May cause skin burns. May cause an allergic skin reaction.

Ingestion

Causes burns of the mouth, throat and stomach. May cause abdominal pain, vomiting, nausea, and diarrhea.

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

11.3 Toxicity data

Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Hexahydro-1,3,5-tris(2-hydroxyethyl)-s-triazine	4719-04-4	763 mg/kg (Rat) 1000 mg/kg (Rat)	2000 mg/kg (Rat) > 4000 mg/kg (Rat) > 3500 mg/kg (Rabbit)	0.371 mg/L (Rat) 4h

Substances	CAS Number	Skin corrosion/irritation
Hexahydro-1,3,5-tris(2-hydroxyethyl)-s-triazine	4719-04-4	Not irritating to skin in rabbits.

Substances	CAS Number	Eye damage/irritation
Hexahydro-1,3,5-tris(2-hydroxyethyl)-s-triazine	4719-04-4	Eye, rabbit: Causes mild eye irritation.

Substances	CAS Number	Skin Sensitization
Hexahydro-1,3,5-tris(2-hydroxyethyl)-s-triazine	4719-04-4	Skin sensitizer in guinea pig.

Substances	CAS Number	Respiratory Sensitization
Hexahydro-1,3,5-tris(2-hydroxyethyl)-s-triazine	4719-04-4	No information available

Substances	CAS Number	Mutagenic Effects
Hexahydro-1,3,5-tris(2-hydroxyethyl)-s-triazine	4719-04-4	While some in vitro tests were positive and/or equivocal, in vivo results were negative.

Substances	CAS Number	Carcinogenic Effects
Hexahydro-1,3,5-tris(2-hydroxyethyl)-s-triazine	4719-04-4	No data of sufficient quality are available.

Substances	CAS Number	Reproductive toxicity
Hexahydro-1,3,5-tris(2-hydroxyethyl)-s-triazine	4719-04-4	Did not show teratogenic effects in animal experiments. Animal testing did not show any effects on fertility.

Substances	CAS Number	STOT - single exposure
Hexahydro-1,3,5-tris(2-hydroxyethyl)-s-triazine	4719-04-4	May cause respiratory irritation.

Substances	CAS Number	STOT - repeated exposure
Hexahydro-1,3,5-tris(2-hydroxyethyl)-s-triazine	4719-04-4	Causes damage to organs through prolonged or repeated exposure: (Lungs)

Substances	CAS Number	Aspiration hazard
Hexahydro-1,3,5-tris(2-hydroxyethyl)-s-triazine	4719-04-4	Not applicable

12. Ecological Information

12.1. Toxicity

Ecotoxicity Effects

Product Ecotoxicity Data

No data available

Substance Ecotoxicity Data

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Hexahydro-1,3,5-tris(2-hydroxyethyl)-s-triazine	4719-04-4	EC50 (72h) 6.66 mg/L (Desmodesmus subspicatus)	LC50 (96h) 16.07 mg/L (Brachydanio rerio)	EC50 (0.5h) 550 mg/L (Activated sludge, domestic)	EC50 (48h) 11.9 mg/L (Daphnia magna)

12.2. Persistence and degradability

Substances	CAS Number	Persistence and Degradability
Hexahydro-1,3,5-tris(2-hydroxyethyl)-s-triazine	4719-04-4	Readily biodegradable (90-100% @ 8d)

12.3. Bioaccumulative potential

Substances	CAS Number	Log Pow
Hexahydro-1,3,5-tris(2-hydroxyethyl)-s-triazine	4719-04-4	-2

12.4. Mobility in soil

Substances	CAS Number	Mobility
Hexahydro-1,3,5-tris(2-hydroxyethyl)-s-triazine	4719-04-4	No information available

12.5 Other adverse effects

No information available

13. Disposal Considerations**13.1. Waste treatment methods**

Disposal Method	Disposal should be made in accordance with federal, state, and local regulations.
Contaminated Packaging	Follow all applicable national or local regulations.

14. Transport Information**US DOT**

UN Number:	UN2810
UN Proper Shipping Name:	Toxic Liquid, Organic, N.O.S. (Contains Hexahydro-1,3,5-tris(2-hydroxyethyl)-s-triazine)
Transport Hazard Class(es):	6.1
Packing Group:	II
Environmental Hazards:	Not applicable
NAERG:	NAERG 153

US DOT Bulk

DOT (Bulk)	Not applicable
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Canadian TDG

UN Number:	UN2810
UN Proper Shipping Name:	Toxic Liquid, Organic, N.O.S. (Contains Hexahydro-1,3,5-tris(2-hydroxyethyl)-s-triazine)
Transport Hazard Class(es):	6.1
Packing Group:	II
Environmental Hazards:	Not applicable

IMDG/IMO

UN Number:	UN2810
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UN Proper Shipping Name: Toxic Liquid, Organic, N.O.S. (Contains Hexahydro-1,3,5-tris(2-hydroxyethyl)-s-triazine)
Transport Hazard Class(es): 6.1
Packing Group: II
Environmental Hazards: Not applicable
EMS: EmS F-A, S-A

IATA/ICAO

UN Number: UN2810
UN Proper Shipping Name: Toxic Liquid, Organic, N.O.S. (Contains Hexahydro-1,3,5-tris(2-hydroxyethyl)-s-triazine)
Transport Hazard Class(es): 6.1
Packing Group: II
Environmental Hazards: Not applicable

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

Special Precautions for User: None

15. Regulatory Information

US Regulations

US TSCA Inventory	All components listed on inventory or are exempt.
EPA SARA Title III Extremely Hazardous Substances	Not applicable
EPA SARA (311,312) Hazard Class	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.
Federal Insecticide, Fungicide and Rodenticide Act:	Label in accordance with Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) requirements. EPA Registration Number: 10349-23-40153 EPA Establishment Number: 1706-TX-1
California Proposition 65	All components listed do not apply to the California Proposition 65 Regulation.
MA Right-to-Know Law	Does not apply.
NJ Right-to-Know Law	Does not apply.
PA Right-to-Know Law	Does not apply.

Canadian Regulations

Canadian DSL Inventory

All components listed on inventory or are exempt.

16. Other information**Preparation Information****Prepared By**

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

Revision Date:

12-Mar-2015

Reason for Revision

Update to Format
SECTION:
2

Additional information

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

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

Key or legend to abbreviations and acronyms

bw – body weight
CAS – Chemical Abstracts Service
EC50 – Effective Concentration 50%
ErC50 – Effective Concentration growth rate 50%
LC50 – Lethal Concentration 50%
LD50 – Lethal Dose 50%
LL50 – Lethal Loading 50%
mg/kg – milligram/kilogram
mg/L – milligram/liter
NIOSH – National Institute for Occupational Safety and Health
NTP – National Toxicology Program
OEL – Occupational Exposure Limit
PEL – Permissible Exposure Limit
ppm – parts per million
STEL – Short Term Exposure Limit
TWA – Time-Weighted Average
UN – United Nations
h - hour
mg/m³ - milligram/cubic meter
mm - millimeter
mmHg - millimeter mercury
w/w - weight/weight
d - day

Key literature references and sources for data

www.ChemADVISOR.com/
OSHA
ECHA C&L

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End of Safety Data Sheet