

SAFETY DATA SHEET

BE-3S BACTERICIDE

Product Trade Name:

Revision Date: 09-Apr-2018

Revision Number: 3

1. Identification

1.1. Product Identifier

Product Trade Name: BE-3S BACTERICIDE
Synonyms: None
Chemical Family: Blend
Internal ID Code: HB000119

1.2 Recommended use and restrictions on use

Application: Biocide
Uses advised against: No information available

1.3 Manufacturer's Name and Contact Details

Halliburton Energy Services, Inc.
645 - 7th Ave SW Suite 1800
Calgary, AB
T2P 4G8
Canada
Telephone: 1-403-231-9300

Manufacturer/Supplier

Halliburton Energy Services, Inc.
P.O. Box 1431
Duncan, Oklahoma 73536-0431
Telephone: 1-281-871-6107

Prepared By

Chemical Stewardship
Telephone: 1-281-871-6107
e-mail: fdunexchem@halliburton.com

1.4. Emergency telephone number

Emergency Telephone Number: 1-866-519-4752 or 1-760-476-3962
Global Incident Response Access Code: 334305
Contract Number: 14012

2. Hazard Identification

2.1 Classification of the substance or mixture

Acute Oral Toxicity	Category 3 - H301
Acute inhalation toxicity - vapor	Category 2 - H330
Skin Corrosion / Irritation	Category 1 - H314
Serious Eye Damage/Irritation	Category 1 - H318
Skin Sensitization	Category 1 - H317
Specific Target Organ Toxicity - (Single Exposure)	Category 3 - H335
Acute Aquatic Toxicity	Category 1 - H400
Chronic Aquatic Toxicity	Category 3 - H412
Combustible dust	Combustible dust

2.2. Label Elements

Hazard Pictograms



Signal Word: Danger

Hazard Statements

- H301 - Toxic if swallowed
- H314 - Causes severe skin burns and eye damage
- H317 - May cause an allergic skin reaction
- H318 - Causes serious eye damage
- H330 - Fatal if inhaled
- H335 - May cause respiratory irritation
- H400 - Very toxic to aquatic life
- H412 - Harmful to aquatic life with long lasting effects

May form combustible dust concentrations in air.

Precautionary Statements

Prevention

- P260 - Do not breathe 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/eye protection/face protection
- P285 - In case of inadequate ventilation wear respiratory protection

Response

- P301 + P310 - IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
- P330 - Rinse mouth
- P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].
- P363 - Wash contaminated clothing before reuse
- P304 + P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
- P310 - Immediately call a POISON CENTER or doctor/physician
- 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

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

2.3 Other hazards which do not result in classification

None known

3. Composition/information on Ingredients

Substances	CAS Number	PERCENT (w/w)	GHS Classification - Canada	HMIRA Registry Number	Filing Date	Decision Granted Date
2,2-Dibromo-3-nitropropionamide	10222-01-2	80 - 100%	Acute Tox. 3 (H301) Acute Tox. 2 (H330) Skin Corr. 1 (H314)	Not applicable	Not applicable	Not applicable

			Eye Corr. 1 (H318) Skin Sens. 1 (H317) STOT SE 3 (H335) Aquatic Acute 1 (H400)			
2-Monobromo-3-nitropropionamide	1113-55-9	1 - 5%	Acute Tox. 3 (H301) Acute Tox. 2 (H330) Skin Irrit. 2 (H315) Eye Corr. 1 (H318) Skin Sens. 1 (H317) STOT SE 3 (H335) Aquatic Acute 1 (H400) Aquatic Chronic 1 (H410)	Not applicable	Not applicable	Not applicable

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	Immediately flush eyes with large amounts of water for at least 30 minutes. Seek prompt medical attention.
Skin	In case of contact, immediately flush skin with plenty of soap and water for at least 15 minutes. Get medical attention. Get medical attention if irritation persists.
Ingestion	Remove contaminated clothing and launder before reuse. If swallowed, call a physician immediately. Only induce vomiting at the instruction of a physician. Never give anything by mouth to an unconscious person. Rinse mouth with water many times. Get immediate medical attention.

4.2 Most important symptoms/effects, acute and delayed

Causes severe eye irritation which may damage tissue. Causes severe skin irritation with tissue destruction. May cause allergic skin reaction. May cause respiratory irritation. Toxic if swallowed. Fatal if inhaled.

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 in a fire

Decomposition in fire may produce harmful gases. Organic dust in the presence of an ignition source can be explosive in high concentrations. Good housekeeping practices are required to minimize this potential.

5.3 Special protective equipment and precautions for fire-fighters

Special protective equipment for firefighters

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. Avoid creating and breathing dust. Ensure adequate ventilation. Avoid contact with skin, eyes and clothing. Evacuate all persons from the area.

See Section 8 for additional information

6.2. Environmental precautions

Prevent from entering sewers, waterways, or low areas. Consult local authorities.

6.3. Methods and material for containment and cleaning up

Scoop up and remove.

7. Handling and Storage**7.1. Precautions for safe handling****Handling Precautions**

Avoid contact with eyes, skin, or clothing. Avoid creating or inhaling dust. Wear appropriate respirator when opening containers. Ensure adequate ventilation. Wash hands after use. Launder contaminated clothing before reuse. Use appropriate protective equipment.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities**Storage Information**

Keep container closed when not in use. Store in a cool, dry location. Store in a well ventilated area. Store away from oxidizers. Store away from reducing agents. Store away from direct sunlight. Product has a shelf life of 6 months.

8. Exposure Controls/Personal Protection**8.1 Occupational Exposure Limits**

Substances	CAS Number	OSHA PEL-TWA	ACGIH TLV-TWA
2,2 Dibromo-3-nitrilopropionamide	10222-01-2	Not applicable	Not applicable
2-Monobromo-3-nitrilopropionamide	1113-55-9	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

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.

Hand Protection

Organic vapor respirator with a dust/mist filter. (A2P2/P3)

Chemical-resistant protective gloves (EN 374) Suitable materials for longer, direct contact (recommended: protection index 6, corresponding to > 480 minutes permeation time as per EN 374); Nitrile gloves. (>= 0.35 mm thickness)

This information is based on literature references and on information provided by glove manufacturers, or is derived by analogy with similar substances. Please note that in practice the working life of chemical-resistant protective gloves may be considerably shorter than the permeation time determined in accordance with EN 374 as a result of the many influencing factors (e.g. temperature). If signs of wear and tear are noticed then the gloves should be replaced. Manufacturer's directions

Skin Protection	for use should be observed because of great diversity of types.
Eye Protection	Rubber apron. Long-sleeve shirt, long pants, and shoes plus socks.
Other Precautions	Dust proof goggles. Eyewash fountains and safety showers must be easily accessible. Rubber boots

9. Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Physical State: Powder	Color	White to yellow
Odor: Slight Pungent	Odor	No information available
	Threshold:	

<u>Property</u>	<u>Values</u>
<u>Remarks/ - Method</u>	
pH:	4.7-4.9
Freezing Point / Range	No data available
Melting Point / Range	No data available
Boiling Point / Range	No data available
Flash Point	> 100 °C / > 212 °F Closed cup
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	0.934 (air = 1)
Specific Gravity	2.2
Water Solubility	Partly soluble
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 (%)	No data available
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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.

10.5. Incompatible materials

Strong oxidizers. Reducing agents.

10.6. Hazardous decomposition products

Oxides of nitrogen. Bromine. Hydrogen bromide. Methyl and ethyl bromide. Cyanogen bromide. 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 Fatal if inhaled. Causes severe respiratory irritation.
Eye Contact Causes severe eye irritation which may damage tissue.
Skin Contact Causes severe burns. May cause an allergic skin reaction.
Ingestion Toxic if swallowed. Causes burns of the mouth, throat and stomach.

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
2,2-Dibromo-3-nitrilopropionamide	10222-01-2	235 mg/kg 206.5 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	0.32 mg/L (rat, mist, 4hr)
2-Monobromo-3-nitrilopropionamide	1113-55-9	206.5 mg/kg (Rat) (similar substance)	>2000 mg/kg (Rabbit) (similar substance)	0.32 mg/L (Rat) 4h (similar substance)

Substances	CAS Number	Skin corrosion/irritation
2,2-Dibromo-3-nitrilopropionamide	10222-01-2	Skin, rabbit: Causes moderate skin irritation.
2-Monobromo-3-nitrilopropionamide	1113-55-9	Skin, rabbit: Causes moderate skin irritation. (similar substances)

Substances	CAS Number	Serious eye damage/irritation
2,2-Dibromo-3-nitrilopropionamide	10222-01-2	Eye, rabbit: Causes moderate eye irritation
2-Monobromo-3-nitrilopropionamide	1113-55-9	Eye, rabbit: Causes severe eye irritation (similar substances)

Substances	CAS Number	Skin Sensitization
2,2-Dibromo-3-nitrilopropionamide	10222-01-2	Skin sensitizer in guinea pig.
2-Monobromo-3-nitrilopropionamide	1113-55-9	Skin sensitizer in guinea pig. (similar substances)

Substances	CAS Number	Respiratory Sensitization
2,2-Dibromo-3-nitrilopropionamide	10222-01-2	No information available
2-Monobromo-3-nitrilopropionamide	1113-55-9	No information available

Substances	CAS Number	Mutagenic Effects
2,2-Dibromo-3-nitrilopropionamide	10222-01-2	Not regarded as mutagenic.
2-Monobromo-3-nitrilopropionamide	1113-55-9	Not regarded as mutagenic. (similar substances)

Substances	CAS Number	Carcinogenic Effects
2,2-Dibromo-3-nitrilopropionamide	10222-01-2	No information available

Dibromo-3-nitrilopropionamide		
2-Monobromo-3-nitrilopropionamide	1113-55-9	No information available

Substances	CAS Number	Reproductive toxicity
2,2-Dibromo-3-nitrilopropionamide	10222-01-2	No data of sufficient quality are available.
2-Monobromo-3-nitrilopropionamide	1113-55-9	No data of sufficient quality are available.

Substances	CAS Number	STOT - single exposure
2,2-Dibromo-3-nitrilopropionamide	10222-01-2	May cause respiratory irritation.
2-Monobromo-3-nitrilopropionamide	1113-55-9	May cause respiratory irritation. (similar substances)

Substances	CAS Number	STOT - repeated exposure
2,2-Dibromo-3-nitrilopropionamide	10222-01-2	No significant toxicity observed in animal studies at concentration requiring classification.
2-Monobromo-3-nitrilopropionamide	1113-55-9	No significant toxicity observed in animal studies at concentration requiring classification. (similar substances)

Substances	CAS Number	Aspiration hazard
2,2-Dibromo-3-nitrilopropionamide	10222-01-2	Not applicable
2-Monobromo-3-nitrilopropionamide	1113-55-9	Not applicable

12. Ecological Information

12.1. Toxicity

Ecotoxicity effects

Very toxic to aquatic life. Harmful to aquatic life with long lasting 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
2,2-Dibromo-3-nitrilopropionamide	10222-01-2	EC50 (96 h) 0.3 mg/L (Selenastrum capricornutum)	LC50 (96 h) 1 mg/L (Rainbow trout) MATC (NA)=0.47 mg/L (Rainbow trout)	No information available	LC50 (48 h) 0.9 mg/L (Daphnia magna) EC50 (48 h) 0.72 mg/L (Mysidopsis Bahia)
2-Monobromo-3-nitrilopropionamide	1113-55-9	EC50 (96h) 0.3 mg/L (Selenastrum capricornutum)	LC50 1 mg/L (Rainbow trout)(similar substance) MATC 0.47 - 0.98 mg/L (Rainbow trout)(similar substance)	No information available	EC50 0.9 mg/L (Daphnia magna)(similar substance) EC50 0.72 mg/L (Mysidopsis bahia)(similar substance) EC50 < 0.07 mg/L (Crassostrea virginica)(similar substance) NOEL < 0.02 mg/L (Daphnia magna)(similar substance)

12.2. Persistence and degradability

Substances	CAS Number	Persistence and Degradability
2,2-Dibromo-3-nitrilopropionamide	10222-01-2	No information available

2-Monobromo-3-nitrilopropionamide	1113-55-9	No information available
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12.3. Bioaccumulative potential

Substances	CAS Number	Log Pow
2,2 Dibromo-3-nitrilopropionamide	10222-01-2	BCF=13
2-Monobromo-3-nitrilopropionamide	1113-55-9	No information available

12.4. Mobility in soil

Substances	CAS Number	Mobility
2,2 Dibromo-3-nitrilopropionamide	10222-01-2	No information available
2-Monobromo-3-nitrilopropionamide	1113-55-9	No information available

12.5 Other adverse effects

No information available

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

Disposal methods 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 UN2928
UN proper shipping name: Toxic Solid, Corrosive, Organic, N.O.S. (2, 2-Dibromo-3-Nitrilopropionamide)
Transport Hazard Class(es): 6.1 (8)
Packing Group: II
Environmental Hazards: Marine Pollutant

US DOT

UN Number UN2928
UN proper shipping name: Toxic Solid, Corrosive, Organic, N.O.S. (2, 2-Dibromo-3-Nitrilopropionamide)
Transport Hazard Class(es): 6.1 (8)
Packing Group: II
Environmental Hazards: Marine Pollutant
NAERG: NAERG 154

IMDG/IMO

UN Number UN2928
UN proper shipping name: Toxic Solid, Corrosive, Organic, N.O.S. (2, 2-Dibromo-3-Nitrilopropionamide)
Transport Hazard Class(es): 6.1 (8)
Packing Group: II
Environmental Hazards: Marine Pollutant
EMS: EmS F-A, S-A

IATA/ICAO

UN Number UN2928
UN proper shipping name: Toxic Solid, Corrosive, Organic, N.O.S. (2, 2-Dibromo-3-Nitrilopropionamide)
Transport Hazard Class(es): 6.1 (8)
Packing Group: II
Environmental Hazards: Marine Pollutant

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

Canadian Regulations

Canadian Domestic Substances List (DSL) Product contains one or more components not listed on the inventory.

US Regulations

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

TSCA Significant New Use Rules - S5A2

Substances	CAS Number	TSCA Significant New Use Rules - S5A2
2,2-Dibromo-3-nitropropionamide	10222-01-2	Not applicable
2-Monobromo-3-nitropropionamide	1113-55-9	Not applicable

EPA SARA Title III Extremely Hazardous Substances

Substances	CAS Number	EPA SARA Title III Extremely Hazardous Substances
2,2-Dibromo-3-nitropropionamide	10222-01-2	Not applicable
2-Monobromo-3-nitropropionamide	1113-55-9	Not applicable

EPA SARA (311,312) Hazard Class

Combustible dust
 Acute toxicity (any route of exposure)
 Skin Corrosion or Irritation
 Respiratory or Skin Sensitization
 Serious eye damage or eye irritation
 Specific target organ toxicity (single or repeated exposure)

EPA SARA (313) Chemicals

Substances	CAS Number	Toxic Release Inventory (TRI) - Group I	Toxic Release Inventory (TRI) - Group II
2,2-Dibromo-3-nitropropionamide	10222-01-2	Not applicable	Not applicable
2-Monobromo-3-nitropropionamide	1113-55-9	Not applicable	Not applicable

EPA CERCLA/Superfund Reportable Spill Quantity

Substances	CAS Number	CERCLA RQ
2,2-Dibromo-3-nitropropionamide	10222-01-2	Not applicable
2-Monobromo-3-nitropropionamide	1113-55-9	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.

FIFRA Information

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

Signal Word: DANGER
CORROSIVE

Hazard Statements Causes irreversible eye damage.
 May be fatal if swallowed or inhaled.
 Harmful if absorbed through skin.
 Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.
 This pesticide is toxic to fish.

NFPA Ratings: Health 3, Flammability 0, Reactivity 0
HMIS Ratings: Health 3, Flammability 0, Physical Hazard 0

16. Other information

Preparation Information

Prepared By Chemical Stewardship
Telephone: 1-281-871-6107
e-mail: fdunexchem@halliburton.com

Revision Date: 09-Apr-2018

Reason for Revision SDS sections updated:
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 used in the safety data sheet

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/

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 Safety Data Sheet