HALLIBURTON

SAFETY DATA SHEET

according to Regulation (EC) No. 453/2010

BE-3S BACTERICIDE

Revision Date: 16-Sep-2015 **Revision Number:** 27

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product Identifier

Product Name BE-3S BACTERICIDE
Internal ID Code HM000119

1.2. Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Biocide
Sector of use SU2 - Mining, (including offshore industries)
Product category PC20 - Products such as pH-regulators, flocculants, precipitants, neutralization agents, other unspecific
Process categories PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises

1.3. Details of the supplier of the safety data sheet

Halliburton Energy Services
Halliburton House, Howemoss Place
Kirkhill Industrial Estate
Dyce
Aberdeen, AB21 0GN
United Kingdom

www.halliburton.com

For further information, please contact
E-Mail address: fdunexchem@halliburton.com

1.4. Emergency telephone number

+44 8 08 189 0979 / 1-760-476-3961

Emergency telephone - §45 - (EC)1272/2008	
Europe	**112**
Croatia	Centar za kontrolu otrovanja (CKO): (+385 1) 23-48-342 (Poison Control Center (PCC) - Institute for Medical Research and Occupational Health)
Cyprus	+210 7793777
Denmark	Poison Control Hotline (DK): +45 82 12 12 12
France	ORFILA (FR): + 01 45 42 59 59
Germany	Poison Center Berlin (DE): +49 030 30686 790
Italy	Poison Center, Milan (IT): +39 02 6610 1029
Netherlands	National Poisons Information Center (NL): +31 30 274 88 88 (NB: this service is only available to health professionals)
Norway	Poisons Information (NO):+ 47 22 591300
Poland	Poison Control and Information Centre, Warsaw (PL): +48 22 619 66 54; +48 22 619 08 97
Romania	+40 21 318 36 06
Spain	Poison Information Service (ES): +34 91 562 04 20
United Kingdom	NHS Direct (UK): +44 0845 46 47

SECTION 2: Hazards Identification

2.1. Classification of the substance or mixture

REGULATION (EC) No 1272/2008

Acute Oral Toxicity	Category 3 - (H301)
Acute Inhalation Toxicity - Dusts and Mists	Category 2 - (H330)

Skin Corrosion / irritation	Category 2 - (H315)
Serious Eye Damage / Eye Irritation	Category 1 - (H318)
Skin Sensitization	Category 1 - (H317)
Specific Target Organ Toxicity - (Single Exposure)	Category 3 - (H335)
Acute Aquatic Toxicity	Acute 1 - (H400)
Chronic Aquatic Toxicity	Chronic 3 - (H412)

2.2. Label Elements

Hazard Pictograms

Signal Word **Danger**

Hazard Statements
H301 - Toxic if swallowed
H315 - Causes skin irritation
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

Precautionary Statements - EU (§28, 1272/2008)
P280 - Wear protective gloves/eye protection/face protection
P301 + P310 - IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
P302 + P352 - IF ON SKIN: Wash with plenty of soap and water
P304 + P340 - IF INHALED: Remove 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

Contains

Substances	**CAS Number**
2,2 Dibromo-3-nitrilopropionamide	10222-01-2
2-Monobromo-3-nitrilopropionamide	1113-55-9

2.3. Other Hazards

This mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT).
This mixture contains no substance considered to be very persistent nor very bioaccumulating (vPvB).

SECTION 3: Composition/information on Ingredients

3.1. Substances

Substance

Substances	EINECS	CAS Number	PERCENT (w/w)	EU - CLP Substance Classification	REACH No.
2,2 Dibromo-3-nitrilopropionamide	233-539-7	10222-01-2	60 - 100%	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)	No data available
2-Monobromo-3-nitrilopropionamide	Not applicable	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)	No data available

				STOT SE 3 (H335) Aquatic Acute 1 (H400) Aquatic Chronic 1 (H410)	

For the full text of the H-phrases mentioned in this Section, see Section 16

SECTION 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. Remove contaminated clothing and launder before reuse.

Ingestion 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 and effects, both acute and delayed

Causes severe eye irritation which may damage tissue. Causes skin irritation. May cause allergic skin reaction. May cause respiratory irritation. Toxic if swallowed. May be fatal if inhaled.

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

Notes to Physician Treat symptomatically

SECTION 5: Firefighting 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. Special hazards arising from the substance or mixture

Special Exposure Hazards

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. Advice for firefighters

Special Protective Equipment for Fire-Fighters

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

SECTION 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.

6.4. Reference to other sections

See Section 8 and 13 for additional information.

SECTION 7: Handling and Storage

7.1. Precautions for Safe Handling

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

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.

7.3. Specific End Use(s)

Exposure Scenario No information available

Other Guidelines No information available

SECTION 8: Exposure Controls/Personal Protection

8.1. Control parameters

Exposure Limits

Substances	CAS Number	EU	UK	Netherlands	France
2,2 Dibromo-3-nitrilopropionamide	10222-01-2	Not applicable	Not applicable	Not applicable	Not applicable
2-Monobromo-3-nitrilopropionamide	1113-55-9	Not applicable	Not applicable	Not applicable	Not applicable

Substances	CAS Number	Germany	Spain	Portugal	Finland
2,2 Dibromo-3-nitrilopropionamide	10222-01-2	Not applicable	Not applicable	Not applicable	Not applicable
2-Monobromo-3-nitrilopropionamide	1113-55-9	Not applicable	Not applicable	Not applicable	Not applicable

Substances	CAS Number	Austria	Ireland	Switzerland	Norway
2,2 Dibromo-3-nitrilopropionamide	10222-01-2	Not applicable	Not applicable	Not applicable	Not applicable
2-Monobromo-3-nitrilopropionamide	1113-55-9	Not applicable	Not applicable	Not applicable	Not applicable

Substances	CAS Number	Italy	Poland	Hungary	Czech Republic
2,2 Dibromo-3-nitrilopropionamide	10222-01-2	Not applicable	Not applicable	Not applicable	Not applicable
2-Monobromo-3-nitrilopropionamide	1113-55-9	Not applicable	Not applicable	Not applicable	Not applicable

Substances	CAS Number	Denmark	Romania	Croatia	Cyprus
2,2 Dibromo-3-nitrilopropionamide	10222-01-2	Not applicable	Not applicable	Not applicable	Not applicable
2-Monobromo-3-nitrilopropionamide	1113-55-9	Not applicable	Not applicable	Not applicable	Not applicable

Derived No Effect Level (DNEL) No information available.

Worker

General Population

Predicted No Effect Concentration (PNEC) No information available.

8.2. Exposure controls

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

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. Organic vapor respirator with a dust/mist filter. (A2P2/P3)
Hand Protection	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 for use should be observed because of great diversity of types.
Skin Protection	Rubber apron. Long-sleeve shirt, long pants, and shoes plus socks.
Eye Protection	Dust proof goggles.
Other Precautions	Eyewash fountains and safety showers must be easily accessible. Rubber boots

Environmental Exposure Controls Do not allow material to contaminate ground water system

SECTION 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 Threshold:**	No information available

Property Remarks/ - Method	Values
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

SECTION 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.

SECTION 11: Toxicological Information

11.1. Information on Toxicological Effects

Acute Toxicity

Inhalation Fatal if inhaled. Causes severe respiratory irritation.

Eye Contact Causes severe eye irritation which may damage tissue.

Skin Contact Causes skin irritation. May cause an allergic skin reaction.

Ingestion Toxic if swallowed.

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

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) 4h
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	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.
2-Monobromo-3-nitrilopropi	1113-55-9	No information available.

onamide		

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

SECTION 12: Ecological Information

12.1. Toxicity

Ecotoxicity Effects

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
2,2 Dibromo-3-nitrilopropionamide	10222-01-2	EC50 (96h) 0.3 mg/L (Selenastrum capricornutum)	LC50 2.3 mg/l (Oncorhynchus mykiss) EC50 0.72 mg/L (Mysidopsis bahia) LC50 1 mg/L (Oncorhynchus mykiss) MATC 0.47-0.98 (Oncorhynchus mykiss)	No information available	EC50 0.72 mg/L (Daphnia magna) EC50 < 0.07 mg/L (Crassostrea virginica) NOEL < 0.02 mg/L (Daphnia magna)
2-Monobromo-3-nitrilopropionamide	1113-55-9	EC50 (96h) 0.3 mg/L (Selenastrum capricornutum) (similar substance)	LC50: 2.3 mg/l (Oncorhynchus mykiss) LC50: 1 mg/L (Oncorhynchus mykiss) (similar substance) MATC: 0.47-0.98 mg/L (Oncorhynchus mykiss) (similar substance)	No information available	EC50: 0.9 mg/L (Daphnia magna) (similar substance) EC50: <0.07 mg/L (Crassostrea virginica) (similar substance) EC50: 0.72 mg/L (Mysidopsis bahia) (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	Product is not biodegradable

12.3. Bioaccumulative potential

Substances	CAS Number	Log Pow
2,2 Dibromo-3-nitrilopropionamide	10222-01-2	0.8
2-Monobromo-3-nitrilopropionamide	1113-55-9	0.8

12.4. Mobility in soil

Substances	CAS Number	Mobility
2,2 Dibromo-3-nitrilopropionamide	10222-01-2	KOC = 65 (estimated)
2-Monobromo-3-nitrilopropionamide	1113-55-9	KOC = 65 (similar substances)

12.5. Results of PBT and vPvB assessment

This mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT). This mixture contains no substance considered to be very persistent nor very bioaccumulating (vPvB).

Substances	PBT and vPvB assessment
2,2 Dibromo-3-nitrilopropionamide	Not PBT/vPvB
2-Monobromo-3-nitrilopropionamide	Not PBT/vPvB

12.6. Other adverse effects

Endocrine Disruptor Information

This product does not contain any known or suspected endocrine disruptors

SECTION 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.

SECTION 14: Transport Information

IMDG/IMO

UN Number: UN2811
UN Proper Shipping Name: Toxic Solid, Organic, N.O.S. (2, 2-Dibromo-3-Nitrilopropionamide)
Transport Hazard Class(es): 6.1
Packing Group: II
Environmental Hazards: Marine Pollutant

RID

UN Number: UN2811
UN Proper Shipping Name: Toxic Solid, Organic, N.O.S. (2, 2-Dibromo-3-Nitrilopropionamide)
Transport Hazard Class(es): 6.1
Packing Group: II
Environmental Hazards: Marine Pollutant

ADR

UN Number: UN2811
UN Proper Shipping Name: Toxic Solid, Organic, N.O.S. (2, 2-Dibromo-3-Nitrilopropionamide)
Transport Hazard Class(es): 6.1
Packing Group: II
Environmental Hazards: Marine Pollutant

IATA/ICAO

UN Number: UN2811
UN Proper Shipping Name: Toxic Solid, Organic, N.O.S. (2, 2-Dibromo-3-Nitrilopropionamide)
Transport Hazard Class(es): 6.1
Packing Group: II
Environmental Hazards: Marine Pollutant

14.1. UN Number: UN2811

14.2. UN Proper Shipping Name: Toxic Solid, Organic, N.O.S. (2, 2-Dibromo-3-Nitrilopropionamide)

14.3. Transport Hazard Class(es): 6.1

14.4. Packing Group: II

14.5. Environmental Hazards: Marine Pollutant

14.6. Special Precautions for User: None

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

SECTION 15: Regulatory Information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

International Inventories

EINECS Inventory	This product does not comply with EINECS
US TSCA Inventory	Product contains one or more components not listed on the inventory.
Canadian DSL Inventory	Product contains one or more components not listed on the inventory.

Legend
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

Germany, Water Endangering Classes (WGK) WGK 2: Hazard to waters.

15.2. Chemical Safety Assessment
No information available

SECTION 16: Other Information

Full text of H-Statements referred to under sections 2 and 3
H301 - Toxic if swallowed
H315 - Causes skin irritation
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
H410 - Very toxic to aquatic life with long lasting effects
H412 - Harmful to aquatic life with long lasting effects

Key or legend to abbreviations and acronyms
bw – body weight
CAS – Chemical Abstracts Service
CLP – REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on Classification, Labelling and Packaging of substances and mixtures
EC – European Commission
EC10 – Effective Concentration 10%
EC50 – Effective Concentration 50%
EEC – European Economic Community
ErC50 – Effective Concentration growth rate 50%
IBC Code – International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk
LC50 – Lethal Concentration 50%
LD50 – Lethal Dose 50%
LL0 – Lethal Loading 0%
LL50 – Lethal Loading 50%
MARPOL – International Convention for the Prevention of Pollution from Ships
mg/kg – milligram/kilogram
mg/L – milligram/liter
NIOSH – National Institute for Occupational Safety and Health
NOEC – No Observed Effect Concentration
NTP – National Toxicology Program
OEL – Occupational Exposure Limit
PBT – Persistent Bioaccumulative and Toxic
PC – Chemical Product category
PEL – Permissible Exposure Limit
ppm – parts per million
PROC – Process category

REACH – REGULATION (EC) No 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals
STEL – Short Term Exposure Limit
SU – Sector of Use category

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

Revision Date: 16-Sep-2015
Revision Note
SDS sections updated: 1

This safety data sheet complies with the requirements of Regulation (EC) No. 453/2010

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End of Safety Data Sheet