

SAFETY DATA SHEET BE-6™ Bactericide

according to Regulation (EC) No. 453/2010

Revision Date: 18-Apr-2018
Preparation Date 18-Apr-2018

Revision Number: 2
Internal ID Code HB000124

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

1.1. Product Identifier

Product Name BE-6™ Bactericide
Internal ID Code HB000124

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

Recommended Use Microbiocide

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
+44 1224 776888

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

Global Incident Response Access Code: 334305

Contract Number: 14012

Emergency telephone - Article 45 - (EC)1272/2008	
Turkey	Ulusal Zehir Danisma Merkezi (UZEM) :114 Acil Saglik Hizmetleri : 112
Europe	112
Bulgaria	Bulgarian poison centre: +359 2 915-44-09 or +359 2 915-43-46
Croatia	Centar za kontrolu otrovanja (CKO): (+385 1) 23-48-342 (Poison Control Center (PCC) - Institute for Medical Research and Occupational Health)
Cyprus	00357 22 88 7171
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
Portugal	CIAV - Centro de Informação Antivenenos (Portuguese Poison Centre): + 351 213 303 271
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

SAFETY DATA SHEET
BE-6™ Bactericide
 according to Regulation (EC) No. 453/2010

Revision Date: 18-Apr-2018
 Preparation Date 18-Apr-2018

Revision Number: 2
 Internal ID Code HB000124

2.1. Classification of the substance or mixture
Regulation (EC) No 1272/2008

Acute Oral Toxicity	Category 4 - (H302)
Acute toxicity - Dermal	Category 4 - (H312)
Skin Corrosion/Irritation	Category 1 - (H314)
Serious Eye Damage/Irritation	Category 1 - (H318)
Specific Target Organ Toxicity - (Single Exposure)	Category 3 - (H335)
Acute Aquatic Toxicity	Category 1 - (H400)
Chronic Aquatic Toxicity	Category 2 - (H411)
Flammable solids.	Category 1 - H228

2.2. Label Elements

Hazard Pictograms



Signal Word:

Danger

Hazard Statements:

- H228 - Flammable solid
- H302 - Harmful if swallowed
- H312 - Harmful in contact with skin
- H314 - Causes severe skin burns and eye damage
- H318 - Causes serious eye damage
- H335 - May cause respiratory irritation
- H400 - Very toxic to aquatic life
- H411 - Toxic to aquatic life with long lasting effects

Precautionary Statements:

- P280 - Wear protective gloves/eye protection/face protection
- P301+ P330 + P331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting
- P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].
- P304 + P340 - IF INHALED: Remove person to fresh air and keep 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

Contains

Substances

2-Bromo-2-nitro-1,3-propanediol

CAS Number

52-51-7

2.3. Other Hazards

None known

SECTION 3: Composition/information on ingredients

3.1. Substances

Substance

Substances	EINECS	CAS Number	PERCENT	EU - CLP Substance	REACH Reg. No
------------	--------	------------	---------	--------------------	---------------

SAFETY DATA SHEET
BE-6™ Bactericide
according to Regulation (EC) No. 453/2010

Revision Date: 18-Apr-2018
Preparation Date 18-Apr-2018

Revision Number: 2
Internal ID Code HB000124

			(w/w)	Classification	
2-Bromo-2-nitro-1,3-propane diol	200-143-0	52-51-7	60 - 100%	Acute Tox. 4 (H302) Acute Tox. 4 (H312) Skin Corr. 1 (H314) Eye Corr. 1 (H318) STOT SE 3 (H335) Aquatic Acute 1 (H400) Aquatic Chronic 2 (H411) Flam. Sol. 2 (H228)	No data available

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, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

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 30 minutes and remove contaminated clothing, shoes and leather goods immediately. Get medical attention immediately.

Ingestion Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention.

4.2. Most important symptoms and effects, both acute and delayed

Causes severe eye irritation which may damage tissue. Causes severe skin irritation with tissue destruction. May cause respiratory irritation. Harmful if swallowed. Harmful in contact with skin.

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 in a fire

Decomposition in fire may produce harmful gases.

5.3. Advice for firefighters

Special protective equipment for firefighters

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.

SAFETY DATA SHEET
BE-6™ Bactericide
according to Regulation (EC) No. 453/2010

Revision Date: 18-Apr-2018
Preparation Date 18-Apr-2018

Revision Number: 2
Internal ID Code HB000124

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

Scoop up and remove. Flush area with water.

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. 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

Store away from oxidizers. Store in a cool, dry location. Store in a well ventilated area. Store locked up. Use good housekeeping in storage and work areas to prevent accumulation of dust. Close container when not in use. Store at temperatures below 104 F (40 C) and 140 F (60 C) for short periods. Product has a shelf life of 48 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-Bromo-2-nitro-1,3-propane diol	52-51-7	Not applicable	Not applicable	Not applicable	Not applicable

Substances	CAS Number	Germany	Spain	Portugal	Finland
2-Bromo-2-nitro-1,3-propane diol	52-51-7	Not applicable	Not applicable	Not applicable	Not applicable

Substances	CAS Number	Austria	Ireland	Switzerland	Norway
2-Bromo-2-nitro-1,3-propane diol	52-51-7	Not applicable	Not applicable	Not applicable	Not applicable

Substances	CAS Number	Italy	Poland	Hungary	Czech Republic
2-Bromo-2-nitro-1,3-propane diol	52-51-7	Not applicable	Not applicable	Not applicable	Not applicable

Substances	CAS Number	Denmark	Romania	Croatia	Cyprus
2-Bromo-2-nitro-1,3-propanediol	52-51-7	Not applicable	Not applicable	Not applicable	Not applicable

**Derived No Effect Level (DNEL)
Worker**

No information available

General Population

SAFETY DATA SHEET
BE-6™ Bactericide
according to Regulation (EC) No. 453/2010

Revision Date: 18-Apr-2018
Preparation Date 18-Apr-2018

Revision Number: 2
Internal ID Code HB000124

Predicted No Effect Concentration (PNEC) No information available.

8.2. Exposure controls

Engineering Controls

Use in a well ventilated area.

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. (>= 0.4 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. Rubber boots

Eye Protection

Dust proof goggles.

Other Precautions

Eyewash fountains and safety showers must be easily accessible.

Environmental Exposure Controls No information available

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical State: Solid Powder
Odor: Characteristic

Color: White
Odor Threshold: No information available

Property

Values

Remarks/ - Method

pH:

5 - 7

Freezing Point / Range

130 °C

Melting Point / Range

No data available

Boiling Point / Range

> 130 °C / > 266 °F

Flash Point

> 93 °C / 199 °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

0.0005 @ 20 C (mmHg)

Vapor Density

> 1 (air = 1)

Specific Gravity

1.1

Water Solubility

Soluble in water

Solubility in other solvents

No data available

Partition coefficient: n-octanol/water

0.18

Autoignition Temperature

No data available

Decomposition Temperature

No data available

SAFETY DATA SHEET
BE-6™ Bactericide
 according to Regulation (EC) No. 453/2010

Revision Date: 18-Apr-2018
 Preparation Date 18-Apr-2018

Revision Number: 2
 Internal ID Code HB000124

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. Contact with alkalis. Contact with metals. Amines.

10.6. Hazardous decomposition products

Oxides of nitrogen. Bromine. Hydrogen bromide. Carbon monoxide and carbon dioxide. Formaldehyde.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute Toxicity

Inhalation

Causes severe respiratory irritation.

Eye Contact

Causes severe eye irritation which may damage tissue.

Skin Contact

Harmful in contact with skin. Causes severe burns.

Ingestion

Harmful if swallowed. Irritation 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.

Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
2-Bromo-2-nitro-1,3-propane diol	52-51-7	305 mg/kg (Rat) 307 mg/kg (Rat)	1600 mg/kg (Rat)	> 0.588 mg/L (Rat) 4h > 5 mg/L (Rat) 4h

Substances	CAS Number	Skin corrosion/irritation
2-Bromo-2-nitro-1,3-propane diol	52-51-7	Causes severe skin irritation with tissue destruction. (Rabbit)

Substances	CAS Number	Serious eye damage/irritation
2-Bromo-2-nitro-1,3-propane diol	52-51-7	Causes severe eye irritation which may damage tissue. (Rabbit)

Substances	CAS Number	Skin Sensitization
2-Bromo-2-nitro-1,3-propane diol	52-51-7	Patch test on human volunteers did not demonstrate sensitization properties Did not cause sensitization on laboratory animals (guinea pig)

Substances	CAS Number	Respiratory Sensitization
2-Bromo-2-nitro-1,3-propane diol	52-51-7	No information available

SAFETY DATA SHEET
BE-6™ Bactericide
 according to Regulation (EC) No. 453/2010

Revision Date: 18-Apr-2018
 Preparation Date 18-Apr-2018

Revision Number: 2
 Internal ID Code HB000124

Substances	CAS Number	Mutagenic Effects
2-Bromo-2-nitro-1,3-propane diol	52-51-7	Some in vitro tests have shown mutagenic effects. In vivo tests did not show mutagenic effects.
Substances	CAS Number	Carcinogenic Effects
2-Bromo-2-nitro-1,3-propane diol	52-51-7	Did not show carcinogenic effects in animal experiments
Substances	CAS Number	Reproductive toxicity
2-Bromo-2-nitro-1,3-propane diol	52-51-7	Animal testing did not show any effects on fertility. Did not show teratogenic effects in animal experiments.
Substances	CAS Number	STOT - single exposure
2-Bromo-2-nitro-1,3-propane diol	52-51-7	May cause respiratory irritation.
Substances	CAS Number	STOT - repeated exposure
2-Bromo-2-nitro-1,3-propane diol	52-51-7	No significant toxicity observed in animal studies at concentration requiring classification.
Substances	CAS Number	Aspiration hazard
2-Bromo-2-nitro-1,3-propane diol	52-51-7	Not applicable

SECTION 12: Ecological information

12.1. Toxicity

Ecotoxicity effects

Very toxic to aquatic life. Toxic to aquatic life with long lasting effects.

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
2-Bromo-2-nitro-1,3-propanediol	52-51-7	EC50 (72h) 0.25 mg/L (Skeletonema costatum) EC50 (72h) 0.37 mg/L (Pseudokirchnerella subcapitata) EC50 (72h) 0.89 mg/L (Chlorella vulgaris)	LC50 (96h) 58 mg/l (Pimephales promelas) LC50 (96h) 35.7 mg/L (Lepomis macrochirus) LC50 (96h) 41.2 mg/L (Oncorhynchus mykiss) LC50 (96h) 57.6 mg/L (Cyprinodon variegatus) NOEC (49d) 21.5 mg/L (Oncorhynchus mykiss) LC50 (49d) 39.1 mg/L (Oncorhynchus mykiss)	EC20 (150m) 2 mg/L (Activated Sludge, Respiration Inhibition) EC50 (150m) 43 mg/L (Activated sludge)	EC50 (48h) 1.4 mg/L (Daphnia magna) EC50 (48h) 3.5 mg/L (Acartia tonsa) NOEC (21d) 0.27 mg/L (Daphnia magna) EC50 (21d) 0.27-0.88 mg/L (Daphnia magna)

12.2. Persistence and degradability

Substances	CAS Number	Persistence and Degradability
2-Bromo-2-nitro-1,3-propanediol	52-51-7	Readily biodegradable (70% @ 28d)

12.3. Bioaccumulative potential

Substances	CAS Number	Log Pow
2-Bromo-2-nitro-1,3-propanediol	52-51-7	0.22

12.4. Mobility in soil

SAFETY DATA SHEET
BE-6™ Bactericide
according to Regulation (EC) No. 453/2010

Revision Date: 18-Apr-2018
Preparation Date 18-Apr-2018

Revision Number: 2
Internal ID Code HB000124

Substances	CAS Number	Mobility
2-Bromo-2-nitro-1,3-propanediol	52-51-7	KOC = > 4

12.5. Results of PBT and vPvB assessment

Substances	PBT and vPvB assessment
2-Bromo-2-nitro-1,3-propanediol	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 methods

Disposal should be made in accordance with federal, state, and local regulations. Incineration recommended in approved incinerator according to federal, state, and local regulations. Substance should NOT be deposited into a sewage facility.

Contaminated Packaging

Follow all applicable national or local regulations.

SECTION 14: Transport information

IMDG/IMO

UN Number UN3241
UN proper shipping name: 2-Bromo-2-Nitropropane-1,3-Diol
Transport Hazard Class(es): 4.1
Packing Group: III
Environmental Hazards: Marine Pollutant

ADN

UN Number UN3241
UN proper shipping name: 2-Bromo-2-Nitropropane-1,3-Diol
Transport Hazard Class(es): 4.1
Packing Group III
Environmental Hazards: Marine Pollutant

ADR/RID

UN Number UN3241
UN proper shipping name: 2-Bromo-2-Nitropropane-1,3-Diol
Transport Hazard Class(es): 4.1
Packing Group III
Environmental Hazards: Marine Pollutant

IATA/ICAO

UN Number UN3241
UN proper shipping name: 2-Bromo-2-Nitropropane-1,3-Diol
Transport Hazard Class(es): 4.1
Packing Group: III
Environmental Hazards: Marine Pollutant

14.1. UN Number

UN3241

14.2. UN proper shipping name:

2-Bromo-2-Nitropropane-1,3-Diol

SAFETY DATA SHEET
BE-6™ Bactericide
according to Regulation (EC) No. 453/2010

Revision Date: 18-Apr-2018
Preparation Date 18-Apr-2018

Revision Number: 2
Internal ID Code HB000124

- 14.3. Transport Hazard Class(es):** 4.1
- 14.4. Packing Group** III
- 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 (European Inventory of Existing Chemical Substances) This product, and all its components, complies with EINECS

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

Canadian Domestic Substances List (DSL) All components listed on inventory or are exempt.

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/NDL - Canadian Domestic Substances List/Non-Domestic Substances List

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

Take note of Directive 92/85/EEC regarding maternity protection or stricter national regulations, where applicable.
Take note of Directive 94/33/EC on the protection of young people at work or stricter national regulations, where applicable.

Substances	CAS Number	Seveso III	TA LUFT
2-Bromo-2-nitro-1,3-propanediol	52-51-7	Not applicable	5.2.4 Class II

15.2. Chemical safety assessment

No information available

SECTION 16: Other information

Full text of H-Statements referred to under sections 2 and 3

H228 - Flammable solid
H302 - Harmful if swallowed
H312 - Harmful in contact with skin
H314 - Causes severe skin burns and eye damage
H318 - Causes serious eye damage
H335 - May cause respiratory irritation
H400 - Very toxic to aquatic life
H411 - Toxic to aquatic life with long lasting effects

Key or legend to abbreviations and acronyms used in the safety data sheet

bw – body weight

CAS – Chemical Abstracts Service

SAFETY DATA SHEET
BE-6™ Bactericide
according to Regulation (EC) No. 453/2010

Revision Date: 18-Apr-2018
Preparation Date 18-Apr-2018

Revision Number: 2
Internal ID Code HB000124

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/

NZ CCID

OSHA

Revision Date: 18-Apr-2018

Revision Note

SDS sections updated:

2

This safety data sheet complies with the requirements of Regulation (EC) No. 2015/830

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