

## SAFETY DATA SHEET

### BE-3S BACTERICIDE

Product Trade Name:

Revision Date: 22-Oct-2021

Revision Number: 8

#### 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: Consumer use

##### 1.3 Manufacturer's Name and Contact Details

###### Manufacturer/Supplier

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

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

###### Prepared By

Chemical Stewardship  
e-mail: fdunexchem@halliburton.com

##### 1.4. Emergency telephone number:

Emergency Telephone Number: 1-866-519-4752 or 1-760-476-3962 (accessible 24 hours a day / 7 days a week)  
Global Incident Response Access Code: 334305  
Contract Number: 14012

#### 2. Hazards Identification

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

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 Hazards not otherwise classified**

None known

**3. Composition/information on Ingredients**

Substances	CAS Number	PERCENT (w/w)	GHS Classification - US
2,2 Dibromo-3-nitropropionamide	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) Aquatic Chronic 2 (H411)
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)

The exact percentage (concentration) of the composition has been withheld as proprietary.

## 4. First Aid Measures

### 4.1. Description of first aid measures

<b>Inhalation</b>	If inhaled, move victim to fresh air and seek medical attention.
<b>Eyes</b>	Immediately flush eyes with large amounts of water for at least 30 minutes. Seek prompt medical attention.
<b>Skin</b>	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.
<b>Ingestion</b>	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

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

### 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. 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. (>= 8 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**  
**Eye Protection**  
**Other Precautions**

Rubber apron. Long-sleeve shirt, long pants, and shoes plus socks.  
 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

<b>Physical State:</b> Powder	<b>Color</b>	White to yellow
<b>Odor:</b> Slight Pungent	<b>Odor</b>	No information available
	<b>Threshold:</b>	

<u>Property</u>	<u>Values</u>
Remarks/ - Method	
<b>pH:</b>	4.7-4.9
<b>Freezing Point / Range</b>	No data available
<b>Melting Point / Range</b>	No data available
<b>Pour Point / Range</b>	No data available
<b>Boiling Point / Range</b>	No data available
<b>Flash Point</b>	> 100 °C / > 212 °F (Closed cup)
<b>Flammability (solid, gas)</b>	No data available
Upper flammability limit	No data available
Lower flammability limit	No data available
<b>Evaporation rate</b>	No data available
<b>Vapor Pressure</b>	No data available
<b>Vapor Density</b>	0.934 (air = 1)
<b>Specific Gravity</b>	2.2
<b>Water Solubility</b>	Partly soluble
<b>Solubility in other solvents</b>	No data available
<b>Partition coefficient: n-octanol/water</b>	No data available
<b>Autoignition Temperature</b>	No data available
<b>Decomposition Temperature</b>	No data available
<b>Viscosity</b>	No data available
<b>Explosive Properties</b>	No information available
<b>Oxidizing Properties</b>	No information available

### 9.2. Other information

<b>VOC Content (%)</b>	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-nitropropionamide	10222-01-2	206.5 mg/kg (rat)	> 2000 mg/kg (rabbit)	0.32 mg/L (rat, mist, 4hr)
2-Monobromo-3-nitropropionamide	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-nitropropionamide	10222-01-2	Causes skin irritation. (Rabbit) Causes skin irritation.
2-Monobromo-3-nitropropionamide	1113-55-9	Skin, rabbit: Causes moderate skin irritation. (similar substances)

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

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

Substances	CAS Number	Respiratory Sensitization
2,2-Dibromo-3-nitropropionamide	10222-01-2	No information available

2-Monobromo-3-nitrilopropionamide	1113-55-9	No information available
<b>Substances</b>	<b>CAS Number</b>	<b>Mutagenic Effects</b>
2,2-Dibromo-3-nitrilopropionamide	10222-01-2	In vitro tests did not show mutagenic effects.
2-Monobromo-3-nitrilopropionamide	1113-55-9	Not regarded as mutagenic. (similar substances)
<b>Substances</b>	<b>CAS Number</b>	<b>Carcinogenic Effects</b>
2,2-Dibromo-3-nitrilopropionamide	10222-01-2	No information available
2-Monobromo-3-nitrilopropionamide	1113-55-9	No information available
<b>Substances</b>	<b>CAS Number</b>	<b>Reproductive toxicity</b>
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.
<b>Substances</b>	<b>CAS Number</b>	<b>STOT - single exposure</b>
2,2-Dibromo-3-nitrilopropionamide	10222-01-2	May cause respiratory irritation. No information available
2-Monobromo-3-nitrilopropionamide	1113-55-9	May cause respiratory irritation. (similar substances)
<b>Substances</b>	<b>CAS Number</b>	<b>STOT - repeated exposure</b>
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)
<b>Substances</b>	<b>CAS Number</b>	<b>Aspiration hazard</b>
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.

#### Acute Fish Toxicity

May be toxic to aquatic life.

TLM96: 2.3 mg/l (Oncorhynchus mykiss) TLM96: 3.4 mg/l (Cyprinodon variegatus) TLM96: 2.3 mg/l (Lepomis macrochirus)

#### Acute Crustaceans Toxicity:

TLM: 0.72 ppm (Mysidopsis bahia) LC50: 0.37 ppm (Crassostrea virginica)

#### 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 (Pseudokirchneriella subcapitata)	LC50(96 h)=1 mg/L (Oncorhynchus mykiss)	No information available	EC50(NR)=0.9 mg/L (Daphnia magna) EC50(48 h)=0.72 mg/L (Mysidopsis bahia)

					NOEC(21 d)=0.02 mg/L (Daphnia magna)
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

**12.3. Bioaccumulative potential**

Substances	CAS Number	Bioaccumulation
2,2 Dibromo-3-nitrilopropionamide	10222-01-2	LogKow6.31
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** Follow all applicable community, national or regional regulations regarding waste management methods.

**Contaminated Packaging** Follow all applicable national or local regulations.

**14. Transport Information****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

**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

**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

<b>15. Regulatory Information</b>
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**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	TSCA Section 5(E) Consent Orders
2,2-Dibromo-3-nitrilopropionamide	10222-01-2	Not applicable	Not applicable
2-Monobromo-3-nitrilopropionamide	1113-55-9	Not applicable	Not applicable

**EPA SARA Title III Extremely Hazardous Substances**

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

**EPA CERCLA/Superfund Reportable Spill Quantity**

Substances	CAS Number	CERCLA RQ
2,2-Dibromo-3-nitrilopropionamide	10222-01-2	Not applicable
2-Monobromo-3-nitrilopropionamide	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.

### **California Proposition 65**

Substances	CAS Number	California Proposition 65
2,2-Dibromo-3-nitropropionamide	10222-01-2	Not applicable
2-Monobromo-3-nitropropionamide	1113-55-9	Not applicable

### **U.S. State Right-to-Know Regulations**

Substances	CAS Number	MA Right-to-Know Law	NJ Right-to-Know Law	PA Right-to-Know Law
2,2-Dibromo-3-nitropropionamide	10222-01-2	Not applicable	Present	Not applicable
2-Monobromo-3-nitropropionamide	1113-55-9	Not applicable	Not applicable	Not applicable

### **Canadian Regulations**

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

## **16. Other information**

### **Preparation Information**

**Prepared By** Chemical Stewardship  
e-mail: fdunexchem@halliburton.com

**Revision Date:** 22-Oct-2021

**Reason for Revision** Update to Format

### **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.

**NFPA Ratings:** Health 3, Flammability 0, Reactivity 0  
**HMS Ratings:** Health 3, Flammability 0, Physical Hazard 0

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

bw – body weight  
CAS – Chemical Abstracts Service  
d - day  
EC50 – Effective Concentration 50%

ErC50 – Effective Concentration growth rate 50%  
h - hour  
LC50 – Lethal Concentration 50%  
LD50 – Lethal Dose 50%  
LL50 – Lethal Loading 50%  
mg/kg – milligram/kilogram  
mg/L – milligram/liter  
mg/m<sup>3</sup> - milligram/cubic meter  
mm - millimeter  
mmHg - millimeter mercury  
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  
w/w - weight/weight

**Key literature references and sources for data**

[www.ChemADVISOR.com/](http://www.ChemADVISOR.com/)

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**End of Safety Data Sheet**