

SAFETY DATA SHEET

BOVIBROM®

Preparation Date : 15-Aug-2013

Revision Date: 12-Dec-2016

Revision Number: 3

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product Identifier**Product Name** BOVIBROM®**Other means of identification****CAS-No** 77-48-5**Formula** C5H6Br2N2O2**Recommended use of the chemical and restrictions on use****General function** Beef carcass antimicrobial.**Uses advised against** No information available**Details of the supplier of the safety data sheet****Company** Albemarle Corporation
451 Florida Street
Baton Rouge, LA 70801 Albemarle Corporation
451 Florida Street
Baton Rouge, LA 70801Albemarle Chemical Canada
1600, 421-7th Avenue, SW
Calgary, Alberta
Canada T2P 4K9**For Non-Emergency** 800-535-3030**'Competent Body for SDS'** HSE@Albemarle.com**Emergency telephone number****Emergency Telephone Numbers** In case of emergency, call Albemarle emergency response at +1 225 344 7147

2. HAZARDS IDENTIFICATION

Classification

Acute Toxicity - Oral	Category 4
Skin Corrosion/Irritation	Category 1 Sub-category B
Serious eye damage/eye irritation	Category 1
Acute aquatic toxicity	Category 1
Chronic aquatic toxicity	Category 1
Oxidizing solids	Category 2
Corrosive to metals	Category 1

Label elements**Emergency Overview****Danger**

Hazard Statements

Harmful if swallowed
 Causes severe skin burns and eye damage
 Very toxic to aquatic life with long lasting effects
 May intensify fire; oxidizer
 May be corrosive to metals



Physical state Solid

Color White/Off-white

Odor Halogen

Prevention

Wash face, hands and any exposed skin thoroughly after handling
 Do not eat, drink or smoke when using this product
 Do not breathe dust/fume/gas/mist/vapors/spray
 Wear protective gloves/protective clothing/eye protection/face protection
 Avoid release to the environment
 Keep away from heat/sparks/open flames/hot surfaces. — No smoking
 Keep/Store away from clothing/combustible materials
 Take any precaution to avoid mixing with combustibles - .?

Response

Immediately call a POISON CENTER or doctor/physician
 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
 Immediately call a POISON CENTER or doctor/physician
 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
 Wash contaminated clothing before reuse
 IF INHALED: Remove person to fresh air and keep comfortable for breathing Immediately call a POISON CENTER or doctor/physician
 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell Rinse mouth Do not induce vomiting
 In case of fire: Use CO2, dry chemical, or foam for extinction
 Collect spillage

Storage

Store locked up

Disposal

Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)

Not applicable

Other Information

3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS-No	Weight %
1,3-Dibromo-5,5-dimethyl hydantoin	77-48-5	100

4. FIRST AID MEASURES

First aid measures

Eye contact	If in eyes, hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.
Skin contact	If on skin or clothing, take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.
Inhalation	If inhaled, move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.
Ingestion	If swallowed, call a physician or Poison Control Centre immediately. Have person sip a glass of water if able to swallow. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed

Symptoms No information available.

Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Extinguishing media

Suitable extinguishing media Carbon dioxide, dry chemicals, foam, water spray (mist).

Unsuitable Extinguishing Media No information available.

Specific Hazards Arising from the Chemical

Combustion/explosion hazards High temperatures may liberate toxic or corrosive gases.

Hazardous Combustion Products Oxides of carbon. Bromine.

Explosion Data

Sensitivity to mechanical impact None.

Sensitivity to static discharge None.

Protective Equipment and Precautions for Firefighters

Toxic fumes may be present; use of respirator suggested.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions Avoid contact with skin, eyes and clothing. Avoid dust formation. Ensure adequate ventilation.

Environmental Precautions

Environmental precautions Prevent further leakage or spillage if safe to do so.

Methods and material for containment and cleaning up

Methods for Containment Prevent further leakage or spillage if safe to do so.

Methods for Cleaning up Sweep up and shovel into suitable containers for disposal.

7. HANDLING AND STORAGE

Precautions for safe handling**Handling**

Avoid contact with skin, eyes and clothing. Wear personal protective equipment. Avoid dust formation.

Conditions for safe storage, including any incompatibilities**Storage**

Store in well-ventilated, cool (<120F), dry area, away from heat or flame. Store in containers made of HDPE, LDPE, or PP. Do not store in metal or fiberboard containers. Close container when not in use.

Incompatible Materials

None known based on information supplied.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters**Exposure Guidelines**

Component	CAS-No	ACGIH TLV (TWA)	OSHA PEL (TWA)	NIOSH IDLH
1,3-Dibromo-5,5-dimethyl hydantoin	77-48-5	-	-	-

Component	CAS-No	Alberta	British Columbia	Ontario	Quebec
1,3-Dibromo-5,5-dimethyl hydantoin	77-48-5	-	-	-	-

Appropriate engineering controls**Engineering Controls**

Use only in well-ventilated areas.

Individual protection measures, such as personal protective equipment**Eye/face Protection**

Chemical goggles. Face-shield.

Skin Protection

Protective Clothing / Tyvek or Equivalent Protective Apron.

Hand protection

Any intact rubber glove resistant to chemical permeation.

Respiratory protection

If dusty or irritating conditions exist, use a NIOSH approved Particulate Filtering Facepiece Respirator with an N95 rating or higher.

General Hygiene Considerations Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES
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Information on basic physical and chemical properties

Physical state	Solid
Color	White/Off-white
Odor	Halogen
Odor Threshold	No information available
Molecular Weight	286
pH	6.0 - 6.5 (1% slurry in pH 7 water)
Melting point/freezing point	>190 °C (Decomposes)
Boiling Point/Range	
Flash Point	Not applicable.
Evaporation Rate	No information available
Flammability (solid, gas)	No information available
Flammability Limit in Air	
Upper flammability limit:	No information available
Lower flammability limit:	No information available
Vapor Pressure	No information available
Vapor Density	No data available
Density	

Solubility(ies)	
Water Solubility	~0.1%
Solubility in other solvents	No information available
Partition coefficient :	
Autoignition temperature	No information available
Decomposition temperature	No information available
Viscosity, kinematic	No information available
Dynamic viscosity	No information available
Explosive Properties	No information available
Oxidizing Properties	Oxidizer

10. STABILITY AND REACTIVITY

Reactivity Hazard	No data available.
Stability	No information available
Hazardous Reactions	No hazardous reaction expected under normal handling.
Hazardous Polymerization	None under normal processing.
Conditions to Avoid	Avoid extremely high heat and flame.
Materials to avoid	This product is a strong oxidizing and brominating agent. Avoid contact with reducing agents, acids, ammonia-containing products, organic materials (such as aldehydes and alcohols) and other oxidizing agents (such as calcium hypochlorite). Avoid contact with common metals such as aluminum, iron, copper, brass and steel. Contact with incompatible materials can promote the exothermic decomposition of the product.
Hazardous decomposition products	Carbon oxides. Bromine.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Inhalation	Yes.
Eye contact	Yes. Possible risk of irreversible effects.
Skin contact	Yes. Harmful if absorbed through skin.
Ingestion	Yes. Harmful if swallowed.

Potential Health Effects

Acute Effects

Skin Corrosion/irritation	Corrosive to skin. Causes burns.
Serious eye damage/eye irritation	Risk of serious damage to eyes.
Respiratory irritation :	Harmful by inhalation
Sensitization	Not expected to be a sensitizer.
STOT - single exposure	No information available.

Chronic Effects

Mutagenic Effects	No information available.
Carcinogenicity	The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	ACGIH Carcinogens	IARC	NTP	OSHA Regulated Carcinogens
1,3-Dibromo-5,5-dimethyl hydantoin	77-48-5	-	-	-	-

Reproductive Effects	None known.
STOT - repeated exposure	No information available.
Chronic Effects	None known.
Aspiration hazard	No information available.

Numerical measures of toxicity**Product Information**

The following values are calculated based on chapter 3.1 of the GHS document .

ATEmix (oral)	448 mg/kg
ATEmix (dermal)	2001 mg/kg
LD50 Oral:	448 mg/kg of body weight (rat) mg/kg (EVIC-CEBA n° 98/0194 - 03/1998)
LD50 Dermal:	> 2,000 (guinea pig) (rat) estimated

Component Information

Component	Rat Oral LD50:	Rabbit Dermal LD50:	Rat Dermal LD50 :	Rat Inhalation LC50:
1,3-Dibromo-5,5-dimethyl hydantoin 77-48-5	448 mg/kg bw	-	>2000 mg/kg bw	0.51 - 2.02 mg/l (4h)

Other data	SKIN IRRITATION, Rabbit (albino New Zealand): Product is considered corrosive to the skin.
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12. ECOLOGICAL INFORMATION

Ecotoxicity

Very toxic to aquatic life with long lasting effects

EC50/48h/Daphnia : 0.7 mg/L
EC50/48h/Rainbow Trout = 0.4 mg/L

Component	Freshwater Algae EC50/72h :	Freshwater Fish LC50/96h :	Water Flea EC50/48h :
1,3-Dibromo-5,5-dimethyl hydantoin (CAS #: 77-48-5)	-	0.53 mg/l	0.7 mg/l

Persistence/Degradability	No information available.
Bioaccumulation/ Accumulation	No information available.
Mobility in Environmental Media	No information available.
Other adverse effects	No information available

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Waste Disposal Method Dispose in a safe manner in accordance with local/national regulations.

Contaminated Packaging Do not reuse container.

14. TRANSPORT INFORMATION

DOT

Proper Shipping Name Oxidizing solid, corrosive, n.o.s. (1,3-Dibromo-5,5-dimethyl hydantoin)
Hazard Class 5.1
Subsidiary Class 8
UN No. 3085
Packing Group II
Marine Pollutant: Y.
Description UN 3085 Oxidizing solid, corrosive, n.o.s. (1,3-Dibromo-5,5-dimethyl hydantoin), 5.1, II

TDG

This material is considered as Dangerous Goods per regulations of Transport Canada. The use of the above US DOT information from US 49 CDR regulations is allowed for shipments that originate in the United States.

IMDG/IMO

IMO Class 5.1
Packing Group II
UN-No 3085
IMO Labelling and Marking 5.1 + 8 + Marine Pollutant Marking
Proper Shipping Name Oxidizing solid, corrosive, n.o.s. (1,3-Dibromo-5,5-dimethyl hydantoin)
EmS F-A, S-Q
Marpol - Annex II Not applicable
Marpol - Annex III Marine pollutant
Transport Description UN 3085 Oxidizing solid, corrosive, n.o.s. (1,3-Dibromo-5,5-dimethyl hydantoin), 5.1, II, Marine pollutant

IATA/ICAO

IATA/ICAO Class 5.1
Packing Group II
UN-No 3085
IATA/ICAO Labelling/Marking 5.1 + 8 + 'Environmentally hazardous substance' mark
Passenger Aircraft Maximum net quantity per package: 5 kg
Cargo aircraft only Maximum net quantity per package: 25 kg
Proper shipping name Oxidizing solid, corrosive, n.o.s. (1,3-Dibromo-5,5-dimethyl hydantoin)
Transport Description UN 3085 Oxidizing solid, corrosive, n.o.s. (1,3-Dibromo-5,5-dimethyl hydantoin), 5.1, II, Environmentally hazardous substance

15. REGULATORY INFORMATION

International Inventories	TSCA	DSL	NDSL	AICS	EINECS	ENCS	KECL	PICCS	IECSC	NZIoC	TCSI
BOVIBROM®	X	X	-	X	X	X	X	X	X	X	X

(X) Complies (-) Does not Comply

THIS MATERIAL IS EXEMPT FROM THE TOXIC SUBSTANCES CONTROL ACT (15 USC 2601-2629)

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

SARA 311/312 Hazardous Categorization

Acute Health Hazard Yes
Chronic Health Hazard No
Fire Hazard No
Sudden Release of Pressure Hazard No
Reactive Hazard Yes

Reportable and Threshold Planning Quantities

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

State Right-to-Know

16. OTHER INFORMATION

NFPA	Health 3	Flammability 1	Instability 1	Physical Hazards -
HMIS	Health 3	Flammability 1		Physical Hazards 1

Prepared By Health & Environment Department Albemarle Corporation

FOR ADDITIONAL NONEMERGENCY PRODUCT INFORMATION, CONTACT:

HEALTH AND ENVIRONMENT DEPARTMENT
 ALBEMARLE CORPORATION
 451 FLORIDA ST.
 BATON ROUGE, LA. 70801
 (800) 535-3030

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Disclaimer:

The information contained herein is accurate to the best of our knowledge. The Company makes no warranty of any kind, express or implied, concerning the safe use of this material in your process or in combination with other substances.

End of Safety Data Sheet