

## MATERIAL SAFETY DATA SHEET

### BUSAN<sup>®</sup> 94

#### SECTION 1: PRODUCT INFORMATION

<b>PRODUCT NAME:</b> Busan 94	<b>PRODUCT USE:</b> Microbicide
<b>MANUFACTURER/SUPPLIER:</b> Buckman Laboratories of Canada, Ltd. 351 Joseph Carrier Vaudreuil-Dorion, Quebec J7V 5V5	<b>EMERGENCY TELEPHONE NUMBER:</b> 1-800-685-6376

#### SECTION 2: PREPARATION INFORMATION

<b>MSDS PREPARED BY:</b> Buckman Laboratories of Canada, Ltd.	<b>DATE PREPARED:</b> May 29, 2014 (M/D/Y)
<b>TELEPHONE:</b> 450-424-4404	<b>SUPERSEDES:</b> May 28, 2013

#### SECTION 3: HAZARDOUS INGREDIENTS

INGREDIENT	CHEMICAL NAME	CAS REGISTRY #	% BY WT.
1	2,2-dibromo-3-nitrilopropionamide	10222-01-2	10.0 - 30.0
2	Sodium bromide	7647-15-6	<=4.0
3	Polyethylene glycol	25322-68-3	30.0 - 60.0
4	Dibromoacetonitrile	3252-43-5	<=3.0

INGREDIENT	ACUTE ORAL LD50 (mg/kg)	ACUTE DERMAL LD50 (mg/kg)	ACUTE INHALATION LC50 (ppm)	TLV
1	Not available	Not available	Not available	2 mg/m <sup>3</sup> (ceiling)
2	> 2000 (rabbit)	Not available	Not available	6 mg/m <sup>3</sup> (TWA)
3	Not available	Not available	Not available	10 mg/m <sup>3</sup> (TWA)
4	Not available	Not available	Not available	0.1 ppm (ceiling - skin)

The balance of the components are not hazardous according to WHMIS classifications and are not listed on the Ingredient Disclosure List.

#### SECTION 4: PHYSICAL DATA

<b>APPEARANCE:</b> Colorless to brown	<b>PHYSICAL STATE:</b> Liquid	<b>ODOUR:</b> Odorless to mild	<b>ODOUR THRESHOLD:</b> Not available
<b>DENSITY (g/ml @ 25°C):</b> 1.20 - 1.30	<b>EVAPORATION RATE:</b> Not available (n-Butyl Acetate = 1)	<b>VAPOUR DENSITY:</b> Not available (air = 1)	<b>VAPOUR PRESSURE:</b> 18.9 mm Hg @ 25°C (Estimated)
<b>pH (neat):</b> 1.5 - 5.0	<b>Viscosity @ 25°C</b> 20 cPs	<b>BOILING POINT:</b> Decomposes at > 70 °C	<b>FREEZING POINT:</b> < -50°C

<b>OIL/WATER PARTITION COEFFICIENT:</b> Not available	<b>SOLUBILITY:</b> Disperse in water (7.5% @ 20°C)
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*NOTE: The physical data presented above are typical values and should not be construed as specifications.*

#### SECTION 5: FIRE AND EXPLOSION HAZARDS

<b>FLASH POINT &amp; METHOD:</b> >=182°C (Cleveland open cup)	<b>AUTO-IGNITION TEMPERATURE:</b> Not available
<b>UPPER FLAMMABLE LIMIT (% vol. in air):</b> Not available	<b>LOWER FLAMMABLE LIMIT (% vol. in air):</b> Not available
<b>FLAMMABILITY CONDITIONS:</b> Material will not burn until the water has evaporated.	<b>HAZARDOUS COMBUSTION PRODUCTS:</b> Under fire conditions some components of this product may decompose. The smoke may contain unidentified toxic and/or irritating compounds. Combustion products may include and are not limited to: Nitrogen oxides. Hydrogen bromide. Carbon monoxide. Carbon dioxide.
<b>EXTINGUISHING MEDIA:</b> Use water spray to cool fire exposed surfaces and to protect personnel. Water fog, carbon dioxide, foam or dry chemical may be used to extinguish fire.	<b>SPECIAL FIRE FIGHTING PROCEDURES:</b> Wear NIOSH approved self-contained breathing apparatus (such as "Scott Air-Pak") , and full protective gear. Isolate "fuel" supply from fire.
<b>EXPLOSION (Sensitivity to Mechanical Impact):</b> Not available	<b>EXPLOSION (Sensitivity to Static Discharge):</b> Not available

#### SECTION 6: REACTIVITY

<b>CHEMICAL STABILITY:</b> Stable under normal conditions of use and storage.	<b>CONDITIONS OF UNSTABILITY:</b> Avoid temperatures above 70°C. Exposure to elevated temperatures can cause product to decompose. Generation of gas during decomposition can cause pressure in closed systems.
<b>INCOMPATIBILITY WITH OTHER SUBSTANCES:</b> Oxidizers and strong bases. Avoid contact with metals such as: Aluminum.	<b>HAZARDOUS DECOMPOSITION PRODUCTS:</b> Carbon dioxide. Bromine. Cyanogen bromide. Dibromoacetoneitrile.

## SECTION 7: TOXICOLOGICAL DATA

### PRIMARY ROUTES OF EXPOSURE:

<b>Eyes:</b>	Yes	<b>Skin:</b>	Yes	<b>Inhalation</b>	Yes	<b>Ingestion:</b>	Yes
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### EFFECTS FROM ACUTE EXPOSURE:

<b>Eye exposure:</b>	May cause pain disproportionate to the level of irritation to eye tissues. May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness. Chemical burns may occur.
<b>Skin exposure:</b>	Prolonged contact may cause severe skin irritation with local redness and discomfort. Repeated exposure may cause irritation, even a burn. May cause more severe response if skin is abraded (scratched or cut). Prolonged skin contact is unlikely to result in absorption of harmful amounts.
<b>Inhalation:</b>	Mist may cause irritation of upper respiratory tract (nose and throat).
<b>Ingestion:</b>	Harmful if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause serious injury, even death.

### EFFECTS FROM CHRONIC EXPOSURE:

Excessive exposure may increase the blood and tissue levels of bromine. Observations in animals include kidney effects following repeated ingestion of active ingredient, but no evidence of systemic toxicity following repeated dermal exposure at maximum attainable doses.

### ACUTE EFFECTS (Exposure Limits):

<b>Acute Oral LD50:</b>	510 mg/kg (rat)
<b>Acute Dermal LD50:</b>	> 2000 mg/kg (rabbit)
<b>Acute Inhalation LC50:</b>	1.25 mg/l (female rat, 4hr); 1.40 mg/l (male rat, 4hr)

<b>IRRITANT EFFECTS:</b>	Corrosive to the eyes and skin.
<b>SENSITIZATION EFFECTS:</b>	A similar formulation with less active ingredient has caused allergic skin reactions when tested in guinea pigs. Did not cause allergic skin reactions when tested in humans.
<b>CARCINOGENIC POTENTIAL:</b>	Not listed in any of OSHA Standards Section 1910.1200 sources as carcinogenic.
<b>REPRODUCTIVE TOXICITY:</b>	None known.
<b>TERATOGENICITY:</b>	For the active ingredient(s): Has been toxic to the fetus in lab animals at doses toxic to the mother. Did not cause birth defects in laboratory animals.
<b>MUTAGENICITY:</b>	None known.
<b>SYNERGISTIC EFFECTS:</b>	None known.

## **SECTION 8: PREVENTION MEASURES**

(The precautions for this product are based on the characteristics of the neat product unless otherwise specified.)

<b>PERSONAL PROTECTION EQUIPMENT:</b>
<b>Hands:</b> Chemically impermeable gloves required.
<b>Eyes:</b> Safety goggles or safety glasses with face shield required.
<b>Respiratory:</b> If misting can occur under poorly ventilated work conditions, a NIOSH approved half-mask respirator is required.  The local EHS (Environmental Health and Safety) professional must identify and evaluate the respiratory hazards in the workplace. Based on this evaluation, the EHS professional must select the appropriate respiratory type and/or filter as required.
<b>Body Protective Clothing:</b> A chemical resistant protective clothing is required.
<b>Footwear:</b> Chemical resistant protective footwear required.
<b>Other:</b> An emergency shower complete with eye-wash fountain is strongly recommended.

<b>ENGINEERING CONTROLS:</b> General mechanical ventilation system is adequate. However, local exhaust system is preferred to maintain airborne concentrations below the recommended occupational exposure limits, whenever misting conditions are present or the material is used in a confined space.
<b>LEAK AND SPILL PROCEDURES:</b> Before responding to a spill or leak of this product, review each section of this MSDS. Follow the recommendations given in the "Handling Procedures and Equipment" section. Check the "Fire and Explosion Hazards" section to determine if the use of non-sparking tools is merited. Insure that spilled or leaked product does not come into contact with materials listed as incompatible. If irritating fumes are present, consider evacuation of affected areas. Initially minimize area affected by the spill or leak. Block any potential routes to water systems. Place in a properly labeled container for later disposal. Larger spills may require a vacuum.
<b>WASTE DISPOSAL METHODS:</b> Disposal shall be in accordance with all applicable federal, provincial and municipal waste regulations.
<b>HANDLING PROCEDURES AND EQUIPMENT:</b> Do not handle unless the safety precautions have been read and understood. Avoid skin and eye contact. Avoid inhalation of dust or vapours. Do not puncture, drag or slide containers. Do not smoke in any chemical handling or storage area. Wash hands before eating.
<b>STORAGE REQUIREMENTS:</b> Store in a dry well-ventilated location. Protect from freezing. Keep containers tightly closed. Store away from incompatible materials and ignition sources. Do not store in aluminum.
<b>SPECIAL SHIPPING INFORMATION:</b> Refer to Section 10: TDG Classification.

## **SECTION 9: FIRST AID MEASURES**

### **EYE EXPOSURE:**

Immediately flush the contaminated eye(s) with lukewarm, gently flowing water for at least 20-30 minutes, by the clock, while holding the eyelid(s) open. Neutral saline solution may be used as soon as it is available. DO NOT INTERRUPT FLUSHING. If necessary, keep emergency vehicle waiting. Take care not to rinse contaminated water into the unaffected eye or unto face. If irritation persists, repeat flushing. Quickly transport victim to an emergency care facility.

### **SKIN EXPOSURE:**

As quickly as possible, flush with lukewarm, gently flowing water for at least 20 - 30 minutes or until the chemical is removed. Under running water, remove contaminated clothing, shoes and leather goods (e.g. watchbands, belts). If irritation persists, repeat flushing. Obtain medical advice immediately. Completely decontaminate clothing, shoes and leather goods before reuse or discard.

### **INHALATION:**

Use proper respiratory protection to immediately move exposed individual to fresh air. If breathing is difficult, oxygen may be beneficial if administered by trained personnel, preferably on a doctor's advice. If breathing is stopped, trained personnel should begin artificial respiration (AR) or, if the heart has stopped, cardiopulmonary resuscitation (CPR) immediately. Avoid mouth to mouth contact by using mouth guards or shields. Immediately transport victim to an emergency care facility.

### **INGESTION:**

NEVER give anything by mouth if victim is rapidly losing consciousness, or is unconscious or convulsing. Have victim rinse mouth thoroughly with water. DO NOT INDUCE VOMITING. Have victim drink 240 to 300 ml (8 to 10 oz.) of water to dilute material in stomach. If milk is available, it may be administered AFTER the water has been given. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Repeat administration of water. If breathing is difficult, oxygen may be beneficial if administered by trained personnel, preferably on a doctor's advice. Quickly transport victim to an emergency care facility.

## **SECTION 10: REGULATORY CLASSIFICATIONS**

### **TDG CLASSIFICATION:**

CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. [2, 2-Dibromo-3-nitrilopropionamide]  
Class 8 - UN 3265 - PG III

**Pest Control Products Act: REGISTRATION NUMBER:** 17571

### **U.S. FDA REGULATIONS: FDA (21 CFR) Section(s):**

173.320 (Limitation: Not more than 10.0 and not less than 2.0 ppm. By product molasses, bagasse, and pulp containing residues of 2, 2-dibromo-3-nitrilopropionamide are not authorized for use in animal feed.), 175.105 (Limitation: For use only as a preservative.), 176.170 (Limitation: For use as a preservative at a level not to exceed 100 ppm in coating formulations and in component slurries and emulsions, used in the production of paper and paperboard and coating for paper and paperboard.); 176.300 (Limitation: For use at a maximum level of 0.5 lb/ton dry weight fiber.).

### **WHMIS CLASSIFICATION:**

Not regulated. This product is regulated by Pest Control Products Act - Health Canada.

### **DOMESTIC SUBSTANCES LIST (DSL):**

Not applicable. This product is regulated by the Pest Control Products Act - Health Canada.

### **HAZARD RATING:**

<b>RATING</b>	<b>HEALTH</b>	<b>FLAMMABILITY</b>	<b>REACTIVITY</b>
<b>HMIS</b>	3	1	1
<b>NFPA</b>	3	1	1

While the information and recommendations set forth are believed to be accurate as of the date of the Material Safety Data Sheet, Buckman Laboratories of Canada, Ltd. makes no warranty with respect thereto and disclaims all liability from reliance thereon. Buckman Laboratories of Canada, Ltd. urges each customer or recipient of this MSDS to study it carefully to become aware of and understand the hazards associated with the product. To promote the safe use and handling of this product, each customer or recipient should distribute this MSDS to the product users.

This MSDS expires May 29, 2017