Material Safety Data Sheet

Durobrom™ RW granules

Version 2.0 Revision Date 2011.08.18 Print Date 2011.08.19

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	Durobrom™ RW granules
Product Use Description	:	Biocides
Company	:	Lonza Inc. 90 Boroline Road Allendale, NJ 07401
Telephone	:	1-201-316-9200
Emergency telephone number	:	CHEMTREC 1-800-424-9300

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

Danger

Form: granules, Colour: off-white, Odour: slightpungent

Hazard Summary	:	Causes burns. Harmful to aquatic organisms.
OSHA Hazards	:	CORROSIVE OXIDIZER

Potential Health Effects

Primary Routes of Entry	:	Inhalation Ingestion Eyes Skin
Inhalation	:	No information available.
Skin	:	Causes skin burns.
Eyes	:	Causes eye burns.
Ingestion	:	Harmful or fatal if swallowed.

Environmental Effects

Environmental Effects	:	Harmful to aquatic organisms; may cause long-term adverse effects in the aquatic environment. Marine pollutant.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS-No.	Weight percent
3-Bromo-1-chloro-5,5-dimethylimidazolidine-2,4-dione	126-06-7	60,00
1,3-Dichloro-5,5-dimethylhydantoin	118-52-5	27,40
1,3-dichloro-5-ethyl-5-methylimidazolidine-2,4-dione	89415-87-2	10,60
Sodium chloride	7647-14-5	1,00

SECTION 4. FIRST AID MEASURES

First aid procedures

Inhalation : Move to fresh air.
If breathing is irregular or stopped, administer artificial respiration.
Give oxygen.
First aider needs to protect himself.
Call a physician immediately.

Skin contact : Take off all contaminated clothing immediately.
After contact with skin, wash immediately with plenty of soap and water.
Call a physician immediately.

Eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Call a physician immediately.

Ingestion : Call a physician immediately.
Clean mouth with water and drink afterwards plenty of water.
Do not induce vomiting without medical advice.
Never give anything by mouth to an unconscious person.

SECTION 5. FIREFIGHTING MEASURES

Flammable properties

Flash point : 210,79 °F (99,33 °C)

Ignition temperature : Remarks: no data available

Lower explosion limit	:	Remarks: no data available
Upper explosion limit	:	Remarks: no data available

Fire fighting

Suitable extinguishing media	:	Dry powder Foam
Further information	:	Use water spray to cool unopened containers.

Protective equipment and precautions for firefighters

Specific hazards during firefighting	:	Heating or fire can release toxic gas.
Special protective equipment for firefighters	:	In the event of fire, wear self-contained breathing apparatus.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions	:	In the case of respirable dust and/or fumes, use self-contained breathing apparatus and dust impervious protective suit.
Environmental precautions	:	Do not flush into surface water or sanitary sewer system.
Methods for containment / Methods for cleaning up	:	Do not flush into surface water or sanitary sewer system. Sweep up or vacuum up spillage and collect in suitable container for disposal.

SECTION 7. HANDLING AND STORAGE

Handling

Handling	:	Provide sufficient air exchange and/or exhaust in work rooms. Avoid contact with skin and eyes. Avoid formation of respirable particles.
Advice on protection against fire and explosion	:	Keep away from combustible material. Avoid dust formation. Take precautionary measures against static discharges.
Dust explosion class	:	St1

Storage

Further information on	:	Avoid dust formation.

storage conditions Keep container tightly closed.
Store in a cool and shaded area.

Advice on common storage : Keep away from combustible material.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

Components with workplace control parameters

Components	CAS-No.	Value	Control parameters	Update	Basis
1,3-Dichloro-5,5-dimethylhydantoin	118-52-5	TWA	0,2 mg/m3	2009	ACGIH
		STEL	0,4 mg/m3	2009	ACGIH
		REL	0,2 mg/m3	2005	NIOSH/GUIDE
		STEL	0,4 mg/m3	2005	NIOSH/GUIDE

Engineering measures

Personal protective equipment

Eye protection : Tightly fitting safety goggles

Hand protection : Suitable material : Nitrile rubber
Break through time : > 480 min

Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact).

Skin and body protection : Choose body protection according to the amount and concentration of the dangerous substance at the work place.
No special protective equipment required.

Respiratory protection : In the case of dust or aerosol formation use respirator with an approved filter.

Hygiene measures : Wash hands before breaks and immediately after handling the product.
Avoid contact with skin, eyes and clothing.
Remove and wash contaminated clothing and gloves,

including the inside, before re-use.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	:	granules
Colour	:	off-white
Odour	:	slight pungent

Safety data

Flash point	:	210,79 °F (99,33 °C)
Ignition temperature	:	Remarks: no data available
Lower explosion limit	:	Note: no data available
Upper explosion limit	:	Note: no data available
Oxidizing properties	:	The product has been shown not to be oxidising in a test following Directive 67/548/EEC (Method A17, oxidising properties). Method: Oxidizing properties (solids)
pH	:	Note: no data available
Melting point/range	:	248 - 298 °F (120 - 148 °C)
Decomposition temperature		329 °F (165 °C)
Boiling point/boiling range	:	Note: no data available
Vapour pressure	:	Note: no data available
Density	:	Note: no data available
Water solubility	:	0,54 g/l at 77 °F (25 °C)
Viscosity, dynamic	:	Note: no data available
Dust explosion class	:	St1
Relative vapour density	:	Note: no data available

SECTION 10. STABILITY AND REACTIVITY

Conditions to avoid	:	Remarks: Elevated temperature and impurities (alkalis). Protect from moisture. Avoid dust formation. Exposure to sunlight.
Materials to avoid	:	Remarks: Strong acids alkalines Oxidizing agents
Hazardous decomposition products	:	Note: nitrogen oxides (NOx) Carbon oxides Chlorine Bromine
Hazardous reactions	:	Hazardous polymerisation does not occur. Note: Stable under normal conditions.

SECTION 11. TOXICOLOGICAL INFORMATION

Further information	:	Information given is based on data on the components and the toxicology of similar products. No data is available on the product itself.

The following toxicological data refer to:

1,3-Dichloro-5,5-dimethylhydantoin (DCDMH) (CAS-No.: 118-52-5)

Acute oral toxicity	:	LD50 rat Dose: 618 mg/kg Method: FIFRA
Acute dermal toxicity	:	LD50 rabbit Dose: > 20 g/kg
Skin irritation	:	rabbit Result: Corrosive
Eye irritation	:	rabbit Result: severe irritant Method: FIFRA
Sensitisation	:	Buehler Test guinea pig

Result: Sensitising

SECTION 12. ECOLOGICAL INFORMATION

Environmental Effects	:	Harmful to aquatic organisms; may cause long-term adverse effects in the aquatic environment. Marine pollutant.
Additional ecological information	:	Information given is based on data on the components and the ecotoxicology of similar products.

The following ecotoxicological data refer to:

5,5-Dimethylhydantoin (DMH) (CAS-No.: 77-71-4)

Biodegradability	:	Die-Away Test Concentration: 25 mg/l Exposure time: 19 d Result: Biodegradable 94 % CO2 Evolution Test Concentration: 10 mg/l Exposure time: 28 d Result: Readily biodegradable. 88 % Method: OECD 301 B
Bioaccumulation	:	Species: Lepomis macrochirus (Bluegill sunfish) Exposure time: 42 d Bioconcentration factor (BCF): 1,79 Method: OECD 305
Acute Fish toxicity	:	Acute toxicity LC50 Species: Oncorhynchus mykiss (rainbow trout) Concentration: > 972,00 mg/l Exposure time: 96 h Analytical monitoring: no Method: US-EPA Acute toxicity LC50 Species: Pimephales promelas (fathead minnow) Concentration: 16 500,00 mg/l Exposure time: 96 h

Early-life Stage NOEC
Species: Pimephales promelas (fathead minnow)
Concentration: 14,00 mg/l
Exposure time: 33 d
Analytical monitoring: yes
Method: FIFRA

Toxicity to daphnia and other aquatic invertebrates. : Immobilization EC50
Species: Daphnia magna (Water flea)
Concentration: 6 200,00 mg/l
Exposure time: 48 h
Analytical monitoring: no
Method: EPA-FIFRA

Reproduction Test NOEC
Species: Daphnia magna (Water flea)
Concentration: 71,00 mg/l
Exposure time: 21 d
Analytical monitoring: yes
Method: OECD Test Guideline 202

Toxicity to algae : Growth inhibition EC50
Species: Pseudokirchneriella subcapitata
Dose: > 1 000,00 mg/l
Exposure time: 96 h
Analytical monitoring: yes
Method: OECD Test Guideline 201

Toxicity to bacteria : Respiration inhibition EC50
Species: activated sludge
Dose: > 1 000,00 mg/l
Exposure time: 3 h
Analytical monitoring: no
Method: OECD 209

1,3-Dichloro-5-ethyl-5-methylimidazolidine-2,4-dione (DCEMH) (CAS-No.: 89415-87-2)

Acute Fish toxicity : static test LC50
Species: Oncorhynchus mykiss (rainbow trout)
Concentration: 1,10 mg/l
Exposure time: 96 h
Analytical monitoring: no
Method: US-EPA

static test LC50
Species: Lepomis macrochirus (Bluegill sunfish)
Concentration: 0,87 mg/l

		Exposure time: 96 h Analytical monitoring: no Method: US-EPA
Toxicity to daphnia and other aquatic invertebrates.	:	Immobilization EC50 Species: Daphnia magna (Water flea) Concentration: 0,95 mg/l Exposure time: 48 h
Toxicity to algae	:	Growth inhibition EbC50 Species: Pseudokirchneriella subcapitata (green algae) Dose: 0,12 mg/l Exposure time: 72 h Method: OECD Test Guideline 201
Toxicity to bacteria	:	Respiration inhibition EC50 Species: activated sludge Dose: 26,20 mg/l Exposure time: 3 h Analytical monitoring: no Method: OECD 209

SECTION 13. DISPOSAL CONSIDERATIONS

Further information	:	Dispose of in accordance with local regulations. The organic ingredients can be incinerated in a suitable installation when in accordance with local regulations. For accidental release measures for each mixture refer to attached material safety data sheets.
Contaminated packaging	:	CONTAINER DISPOSAL - METAL CONTAINERS: Neutralize residue in containers as noted in Section 6 of this MSDS ("Accidental Release Measures"). Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities. CONTAINER DISPOSAL - PLASTIC CONTAINERS: Neutralize residue in containers as noted in Section 6 of this MSDS ("AccidentalRelease Measures"). Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke. Do not burn, or use a cutting torch on, the empty drum.

SECTION 14. TRANSPORT INFORMATION

DOT

UN number	:	3085
Description of the goods	:	Oxidizing solid, corrosive, n.o.s.
	:	(Bromochloro-5,5-dimethylimidazolidine-2,4-dione)
Class	:	5.1
Packing group	:	III
Labels	:	5.1 (8)

IATA

UN number	:	3085
Description of the goods	:	Oxidizing solid, corrosive, n.o.s. (Bromochloro-5,5-dimethylimidazolidine-2,4-dione)
Class	:	5.1
Packing group	:	III
Labels	:	5.1 (8)
Packing instruction (cargo aircraft)	:	563
Packing instruction (passenger aircraft)	:	559
Packing instruction (passenger aircraft)	:	Y545

IMDG-CODE

UN number	:	3085
Description of the goods	:	OXIDIZING SOLID, CORROSIVE, N.O.S. (Bromochloro-5,5-dimethylimidazolidine-2,4-dione)
Class	:	5.1
Packing group	:	III
Labels	:	5.1 (8)
EmS Number 1	:	F-A
EmS Number 2	:	S-Q
Marine pollutant	:	yes

RID

UN number	:	3085
Description of the goods	:	OXIDIZING SOLID, CORROSIVE, N.O.S. (Bromochloro-5,5-dimethylimidazolidine-2,4-dione)
Class	:	5.1
Packing group	:	III
Classification Code	:	OC2
Hazard identification No	:	58
Labels	:	5.1 (8)

SECTION 15. REGULATORY INFORMATION

OSHA Hazards : Corrosive, Oxidizer
SARA 311/312 Hazards : Acute Health Hazard

EPCRA - EMERGENCY PLANNING COMMUNITY RIGHT - TO - KNOW

SARA 302 Components : SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components : SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

US State Regulations

Massachusetts Right To Know Components : 1,3-Dichloro-5,5-dimethylhydantoin 118-52-5
Listed

Pennsylvania Right To Know Components : 1,3-Dichloro-5,5-dimethylhydantoin 118-52-5
Listed

New Jersey Right To Know Components : 1,3-Dichloro-5,5-dimethylhydantoin 118-52-5
Listed

California Prop. 65 Components : This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

Federal regulatory information:

This product is EPA registered : EPA registration No: 6836-237

SECTION 16. OTHER INFORMATION

Further information

HMIS Classification : Health hazard: 3

Flammability: 1
Reactivity: 1

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Prepared by: : Product Safety Americas
Email: regcomamer@lonza.com