WOBELEA PTY LTD T/AS YM-FAB POST HARVEST CHEMICALS
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SAFETY DATA SHEET - YM-FAB NYLATE

Version No: 3
Safety Data Sheet according to WHS and ADG requirements
Safety Data Sheet will be reviewed by 25.11.2026

Issue Date: 4/11/2016
Reviewed 08/02/2017
Reviewed 25/11/2021
Next revision date due by 25.11.2026

SECTION 1 IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY / UNDERTAKING

Product Identifier

Product name	YM-FAB NYLATE, YM-FAB NYLATE G980, YMFAB NYLATE P, YMFAB ANYLATE P
Chemical Name	3-bromo-1-chloro-5,5-dimethylhydantoin
Proper shipping name	OXIDIZING SOLID, CORROSIVE N.O.S. (contains 3-bromo-1-chloro-5,5-dimethylhydantoin)
Chemical formula	C5-H6-Br-Cl-N2-O2
Other means of identification	**YM-FAB NYLATE, BROMINE**
CAS number	126-06-7 OR 32718-18-6

Recommended Use: A microbiological disinfectant for cooling towers, irrigation lines, and cut flower holding water. For control of plant and human pathogens in wash water for fruit and vegetables in recirculated or single pass systems.

Details of the supplier of the safety data sheet

Registered company name	WOBELEA PT LTD	YMFAB CHEMICALS LIMITED
Address	18 Embrey Court, Pakenham Vic 3810	C/- Level 2, 123 Carlton Gore Road, Newmarket Auckland 1023 NZ
Telephone	03 5940 1077	61 + 3 5940 1077 or New Zealand on 09 571 0712
Fax	03 5940 2599	61 + 3 5940 2599
Website	www.nylate.com.au	www.nylate.com.au
Email	wobelea@wobelea.com.au	

Emergency telephone number

Association / Organisation	Poisons Information Centre
Emergency telephone numbers	131126 – Poisons Information Australia.
Other emergency telephone numbers	0800 764 766 - Poisons Information New Zealand

WOBELEA EMERGENCY RESPONSE

Primary Number	Alternative Number 1	Alternative Number 2
03 5997 1690 AH	61 + 0427 367 561	Not Available

SECTION 2 HAZARDS IDENTIFICATION

Statement of Hazardous Nature

This product is classified as: T, Toxic. N, Dangerous to the environment. C, Corrosive. Hazardous according to the criteria of SWA.
Dangerous according to Australian Dangerous Goods (ADG) Code, IATA and IMDG/IMSBC criteria.
SUSMP Classification: S6
ADG Classification: Class 5.1: Oxidising substances.

WOBELEA HAZARD RATINGS

		Min	Max
Flammability	1		
Toxicity	2		
Body Contact	3		
Reactivity	2		
Chronic	0		

0 = Minimum
1 = Low
2 = Moderate
3 = High
4 = Extreme

NFPA Ratings (Scale 0-4) Health = 3, Fire = 0, Reactivity = 1, Special Hazard Warning: OXIDIZER

Hazard Classification – New Zealand
5.1.1B, 6.1B, 6.5B, 8.2C, 8.3A, 9.1A, 9.3C Approved Handler and Tracking Apply. This product must be under the personal control of an approved handler or secured location and movement of this product must be recorded at each stage of its life cycle.

Poisons Schedule	6
Classification [2]	Oxidizing Solid Category 2, Metal Corrosion Category 1, Acute Toxicity (Oral) Category 4, Acute Toxicity (Dermal) Category 4, Acute Toxicity (Inhalation) Category 4, Skin Corrosion/Irritation Category 1A, Serious Eye Damage Category 1, Acute Aquatic Hazard Category 1
Legend:	*1. Classification from Wobelea Pty Ltd, 2. Classification drawn from HSIS ; 3. Classification drawn from EC Directive 1272/2008 - Annex VI*

Label elements

GHS label elements	

GHS Signal word: DANGER.

Oxidising liquids or solids Category 2 or 3
Acute Toxicity Oral Category 4
Skin Corrosion /Irritation Category 1
Acute Toxicity Inhalation Category 4
Hazardous to aquatic environment Short term/Chronic Category 1

HAZARD STATEMENT:
H272: May intensify fire; oxidizer.
H302: Harmful if swallowed.
H13: May cause an allergic skin reaction
H314: Causes severe skin burns and eye damage.
H332: Harmful if inhaled.
H400: Very toxic to aquatic life with long lasting effects.

PREVENTION
P102: Keep out of reach of children.
P220: Keep or store away from combustible materials.
P221: Take any precaution to avoid mixing with combustible or flammable materials.
P260: Do not breathe dusts.
P262: Do not get in eyes, on skin, or on clothing.
P264: Wash contacted areas thoroughly after handling.
P270: Do not eat, drink or smoke when using this product.

P271: Use only outdoors or in a well ventilated area.
P273: Avoid release to the environment.
P280: Wear protective gloves, protective clothing and eye or face protection.

RESPONSE

P337: If eye irritation persists: seek medical attention.
P330: Rinse mouth
P363: Wash contaminated clothing before reuse.
P301+P312: IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell.
P301+P330+P331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303+P361+P353: IF ON SKIN (or hair): Remove immediately all contaminated clothing. Rinse skin with water.
P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P370+P378: Not combustible. Use extinguishing media suited to burning materials.
P391: Collect spillage and dispose of according to local law guidelines.

STORAGE

P403: Store in a well-ventilated place.
P405: Store locked up.
P410: Protect from sunlight.
P402+P404: Store in a dry place. Store in a closed container.

DISPOSAL

P501: If product cannot be recycled, contact a specialist waste disposal company (see Section 13 of this SDS)

Emergency Overview

Physical Description & Colour: White GRANULES OR POWDER.

Odour: Halogen (bromine & chlorine) odour.

Major Health Hazards: toxic if inhaled, causes burns, harmful if swallowed.

National Transport Commission (Australia) - Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Dangerous Goods Classification – Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code) AND "New Zealand NZS5433: Transport of Dangerous Goods on Land".

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

Substances

CAS No	%[weight]	Name
126-06-7	>98	3-bromo-1-chloro-5,5-dimethylhydantoin
		may contain
16079-88-2		1-bromo-3-chloro-5,5-dimethylhydantoin
		decomposes on contact with water to produce
7790-92-3		hypochlorous acid
13517-11-8		hypobromous acid
7782-50-5		chlorine
7726-95-6		bromine

Mixtures

See section above for composition of Substances

Substances MAY BE MADE UP OF:-

CAS No	% weight	Name
32718-18-6	>98	Bromo-chloro-5, 5 dimethyl hydantoin

SECTION 4 FIRST AID MEASURES

Description of first aid measures – Show SDS to Doctor and/or Hospital

Eye Contact	If this product comes in contact with the eyes: ▸ Immediately hold eyelids apart and flush the eye continuously with running water. ▸ Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids. ▸ Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 20 minutes. ▸ Transport to hospital or doctor without delay. ▸ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.
Skin Contact	If skin or hair contact occurs: Quickly remove all contaminated clothing, including footwear and jewelry/watches. Immediately flush body and clothes with large amounts of water, using safety shower if available for at least 15-20 minutes. Wash skin and hair with running water. Continue flushing with water until advised to stop by the Poisons Information Centre.
Inhalation	If fumes or combustion products are inhaled remove from contaminated area. Lay patient down. Keep warm and rested. Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures. Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary. Transport to hospital, or doctor. Inhalation of vapours or aerosols (mists, fumes) may cause lung oedema. Corrosive substances may cause lung damage (e.g. lung oedema, fluid in the lungs). As this reaction may be delayed up to 24 hours after exposure, affected individuals need complete rest (preferably in semi-recumbent posture) and must be kept under medical observation even if no symptoms are (yet) manifested. Before any such manifestation, the administration of a spray containing a dexamethasone derivative or beclomethasone derivative may be considered. **This must definitely be left to a doctor or person authorised by him/her.** (ICSC13719)
Ingestion	▸ For advice, contact a Poisons Information Centre or a doctor at once. ▸ Urgent hospital treatment is likely to be needed. ▸ If swallowed do **NOT** induce vomiting. ▸ If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration. ▸ Observe the patient carefully. ▸ Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious. ▸ Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink. ▸ Transport to hospital or doctor without delay.

Indication of any immediate medical attention and special treatment needed

First Aid Facilities: an eye wash fountain, safety shower and a general washing facility should be available immediately adjacent to the work area.

Excellent warning properties force rapid escape of personnel from chlorine vapour thus most inhalations are mild to moderate. If escape is not possible,

exposure to high concentrations for a very short time can result in dyspnea, haemophysis and cyanosis with later complications being tracheobroncho-pneumonitis and pulmonary oedema. Oxygen, intermittent positive pressure breathing apparatus and aerosolysed bronchodilators are of therapeutic value where chlorine inhalation has been light to moderate. Severe inhalation should result in hospitalisation and treatment for a respiratory emergency. Any chlorine inhalation in an individual with compromised pulmonary function (COPD) should be regarded as a severe inhalation and a respiratory emergency. [CCINFO, Dow 1988]

Effects from exposure to chlorine gas include pulmonary oedema which may be delayed. Observation in hospital for 48 hours is recommended

Diagnosed asthmatics and those people suffering from certain types of chronic bronchitis should receive medical approval before being employed in occupations involving chlorine exposure.

If burn is present, treat as any thermal burn, after decontamination.

For acute or short term repeated exposures to strong acids:

Airway problems may arise from laryngeal edema and inhalation exposure. Treat with 100% oxygen initially.

Respiratory distress may require cricothyroidotomy if endotracheal intubation is contraindicated by excessive swelling

Intravenous lines should be established immediately in all cases where there is evidence of circulatory compromise.

Strong acids produce a coagulation necrosis characterised by formation of a coagulum (eschar) as a result of the desiccating action of the acid on proteins in specific tissues.

INGESTION:

Immediate dilution (milk or water) within 30 minutes' post ingestion is recommended.

DO NOT attempt to neutralise the acid since exothermic reaction may extend the corrosive injury.

▸ Be careful to avoid further vomit since re-exposure of the mucosa to the acid is harmful. Limit fluids to one or two glasses in an adult.

▸ Charcoal has no place in acid management.

▸ Some authors suggest the use of .5%FESO4 solution and water within 1 hour of ingestion.

SKIN:

▸ Skin lesions require copious saline irrigation. Treat chemical burns as thermal burns with non-adherent gauze and wrapping.

Deep second-degree burns may benefit from topical silver sulfadiazine.

EYE:

- Eye injuries require retraction of the eyelids to ensure thorough irrigation of the conjunctival cul-de-sacs. Irrigation should last at least 20-30 minutes. **DO NOT** use neutralising agents or any other additives. Several litres of saline are required.
- Cycloplegic drops, (1% cyclopentolate for short-term use or 5% homatropine for longer term use) antibiotic drops, vasoconstrictive agents or artificial tears may be indicated dependent on the severity of the injury.
- Steroid eye drops should only be administered with the approval of a consulting ophthalmologist).

[Ellenhorn and Barceloux: Medical Toxicology]

Depending on the degree of exposure, periodic medical examination is indicated. The symptoms of lung oedema often do not manifest until a few hours have passed and they are aggravated by physical effort. Rest and medical observation is therefore essential. Immediate administration of an appropriate spray, by a doctor or a person authorised by him/her should be considered.

(ICSC24419/24421

Using labelled C14 in rats (20, 100 mg/kg), an average of 91% was found in the urine, with 88% elimination during the first 24 hours. No measurable C14 was observed in tissues from the 20 mg/kg dose, but some C14 was found in kidney and bone of rats receiving the higher dose.

SECTION 5 FIREFIGHTING MEASURES

HAZCHEM CODE: 1W

General Measures: If safe to do so move undamaged containers from fire area. Do NOT move cargo if it has been exposed to heat. Dam fire control water for later disposal. Avoid generating dust.

Extinguishing media

FOR **SMALL FIRE:**

- USE FLOODING QUANTITIES OF WATER.
- **DO NOT** use dry chemical, CO2, foam or halogenated-type extinguishers.

FOR **LARGE FIRE**

- Flood fire area with water from a protected position

Special hazards arising from the substrate or mixture

Fire Incompatibility	▸ Avoid storage with reducing agents. ▸ Avoid any contamination of this material as it is very reactive and any contamination is potentially hazardous

Advice for firefighters

Fire Fighting	▸ Alert Fire Brigade and tell them location and nature of hazard. ▸ May be violently or explosively reactive. ▸ Wear full body protective clothing with breathing apparatus. ▸ Prevent, by any means available, spillage from entering drains or water courses.
Fire/Explosion Hazard	▸ Combustible. Slight fire hazard when exposed to heat or flame. ▸ Acids may react with metals to produce hydrogen, a highly flammable and explosive gas. ▸ Heating may cause expansion or decomposition leading to violent rupture of containers. Combustion products include: amp;43cw, carbon dioxide (CO2), hydrogen bromide, hydrogen chloride, phosgene, nitrogen oxides (NOx), other pyrolysis products typical of burning organic material

SECTION 6 ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Minor Spills	Drains for storage or use areas should have retention basins for pH adjustments and dilution of spills before discharge or disposal of material. Check regularly for spills and leaks. Clean up all spills immediately. ▸ No smoking, naked lights, ignition sources. ▸ Avoid all contact with any organic matter including fuel, solvents, sawdust, paper or cloth and other incompatible materials, as ignition may result. ▸ Avoid breathing dust or vapours and all contact with skin and eyes. ▸
Major Spills	Clear area of personnel and move upwind. ▸ Alert Fire Brigade and tell them location and nature of hazard. ▸ May be violently or explosively reactive. ▸ Wear full body protective clothing with breathing apparatus. ▸ Prevent entry into sewers, water courses. ▸ EPA ▸

Personal Protective Equipment advice is contained in Section 8 of the SDS.

▸

SECTION 7 HANDLING AND STORAGE

Precautions for safe handling

Safe handling	‣ Avoid personal contact and inhalation of dust, mist or vapours. ‣ Provide adequate ventilation. ‣ Always wear protective equipment and wash off any spillage from clothing. ‣ Keep material away from light, heat, flammables or combustibles. ‣ Organic powders when finely divided over a range of concentrations regardless of particulate size or shape and suspended in air or some other oxidizing medium may form explosive dust-air mixtures and result in a fire or dust explosion (including secondary explosions) ‣ Minimise airborne dust and eliminate all ignition sources. Keep away from heat, hot surfaces, sparks, and flame. ‣ Establish good housekeeping practices. ‣ Remove dust accumulations on a regular basis by vacuuming or gentle sweeping to avoid creating dust clouds.
Other information	‣ Store in original containers. ‣ Keep containers securely sealed as supplied. ‣ Store in a cool, well ventilated area. ‣ Keep dry. In addition, Goods of Class 5.1, packing group II should be: ‣ stored in piles so that ‣ the height of the pile does not exceed 1 metre ‣ the maximum quantity in a pile or building does not exceed 1000 tonnes unless the area is provided with automatic fire extinguishers ‣ the maximum height of a pile does not exceed 3 metres where the room is provided with automatic fire extinguishers or 2 meters if not. ‣ the minimum distance between piles is not less than 2 metres where the room is provided with automatic fire extinguishers or 3 meters if not. ‣ the minimum distance to walls is not less than 1 metre.

Conditions for safe storage, including any incompatibilities

Suitable container	‣ Glass container is suitable for laboratory quantities ‣ **DO NOT** repack. Use containers supplied by manufacturer only. For low viscosity materials ‣ Drums and jerricans must be of the non-removable head type. ‣ Where a can is to be used as an inner package, the can must have a screwed enclosure. For materials with a viscosity of at least 2680 cSt. (23 deg. C) and solids: ‣ Removable head packaging and ‣ cans with friction closures may be used.
Storage incompatibility	Chlorine: is a strong oxidiser reacts explosively with acetylene, boron, diborane, or other boron hydrides at ordinary temperatures forms easily ignited, sensitive explosive mixtures with gases and vapours such as anhydrous ammonia, benzene, butane, ethane, ethylene, fluorine, hydrocarbons, formaldehyde, hydrogen, hydrogen bromide, hydrogen chloride, oxygen, propane, propene in the presence of heat, hot surfaces, welding arc, sparks, strong sunlight, UV light, or a catalyst such as mercury oxide contact with 2-carboxymethylisothiouronium chloride or s-ethylisothiouronium hydrogen sulfate may form nitrogen trichloride. a dangerous explosive reacts violently with combustible materials, reducing agents, acetylene, molten aluminium (ignites on contact with the gas), alcohols, arsenic compounds, arsine, bismuth, boron, calcium compounds, carbon, diethylzinc, dimethylformamide, ether, ethyl phosphine, fluorine, germanium, hydrocarbons, hydrazine, hydrogen sulfide, hydroxylamine, iridium, lithium, lithium acetylide, magnesium, magnesium oxide, magnesium phosphide, mercury sulfide, methyl vinyl ether, metal carbides, molybdenum trioxide, potassium acetylide, sodium acetylide, sulfamic, sulfur dioxide, triethylborane and many other substances forms explosive mixtures with gasoline and petroleum products, such as mineral oil, greases, phosphorus, silicones, ‣ turpentine, finely divided metals, organic compounds ‣ in its liquid form reacts explosively with carbon disulfide, linseed oil, propylene, rubber, wax, white phosphorus ‣ attacks some plastics and coatings ‣ may cause dangerous fires in contact with hot solid metals (especially steel - iron/ chlorine fire can cause the bursting of storage containers) ‣ when moist (150 ppm in water) is extremely corrosive to most metals especially in the presence of heat. ‣ reacts with water to give hydrogen chloride, with carbon monoxide to form phosgene, and with sulfur dioxide to give sulfuryl chloride Chlorine storage areas shall be separated from anhydrous ammonia storage areas by a vapour path of at least 10 meters ‣ Reacts with mild steel, galvanised steel / zinc producing hydrogen gas which may form an explosive mixture with air. ‣ Avoid any contamination of this material as it is very reactive and any contamination is potentially hazardous ‣ Segregate from alcohol, water. ‣ Avoid strong bases. ‣ Inorganic reducing agents react with oxidizing agents to generate heat and products that may be flammable, combustible, or otherwise reactive. Their reactions with oxidizing agents may be violent. ‣ **NOTE:** May develop pressure in containers; open carefully. Vent periodically. ‣ Avoid storage with reducing agents.

X X X O O X O

X — Must not be stored together
0 — May be stored together with specific preventions
+ — May be stored together

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters

OCCUPATIONAL EXPOSURE LIMITS (OEL)

INGREDIENT DATA

Source	Ingredient	Material name	TWA	STEL	Peak	Notes
Australia Exposure Standards	chlorine	Chlorine	Not Available	Not Available	3 mg/m3 / 1 ppm	Not Available
Australia Exposure Standards	bromine	Bromine	0.66 mg/m3 / 0.1 ppm	2 mg/m3 / 0.3 ppm	Not Available	Not Available

EMERGENCY LIMITS

Ingredient	Material name	TEEL-1	TEEL-2	TEEL-3
3-bromo-1-chloro-5,5-dimethylhydantoin	Bromo-1-chloro-5,5-dimethylhydantoin 3-; (Bromo-1-chloro-5,5-dimethyl-2,4-imidazolidinedione, 3-)	1.3 mg/m3	14 mg/m3	83 mg/m3
1-bromo-3-chloro-5,5-dimethylhydantoin	Bromo-3-chloro-5,5-dimethylhydantoin, 1-; (1-Bromo-3-chloro-5,5-dimethyl-2,4-imidazolidinedione)	4.2 mg/m3	46 mg/m3	280 mg/m3
chlorine	Chlorine	Not Available	Not Available	Not Available
chlorine	Chlorine Hi dry granular (as Cl)	1 ppm	2.52 ppm	30 ppm
bromine	Bromine	Not Available	Not Available	Not Available

Ingredient	Original IDLH	Revised IDLH
3-bromo-1-chloro-5,5-dimethylhydantoin	Not Available	Not Available
1-bromo-3-chloro-5,5-dimethylhydantoin	Not Available	Not Available
hypochlorous acid	Not Available	Not Available
hypobromous acid	Not Available	Not Available
chlorine	30 ppm	10 ppm
bromine	10 ppm	3 ppm

Exposure controls

Appropriate engineering controls	Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection. The basic types of engineering controls are: Process controls which involve changing the way a job activity or process is done to reduce the risk. Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment.
Personal protection	
Eye and face protection	Chemical goggles. Full face shield may be required for supplementary but never for primary protection of eyes. Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task. Goggles to AS 1336/1337
Skin protection	See Hand protection below

Hands/feet protection	Wear chemical protective gloves, e.g. PVC. To AS 2161 Wear safety footwear or safety gumboots, e.g. Rubber The selection of suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer. Where the chemical is a preparation of several substances, the resistance of the glove material cannot be calculated in advance and has therefore to be checked prior to the application. The exact break through time for substances has to be obtained from the manufacturer of the protective gloves and has to be observed when making a final choice. Suitability and durability of glove type is dependent on usage. **DO NOT** wear cotton or cotton-backed gloves. **DO NOT** wear leather gloves. Promptly hose all spills off leather shoes or boots or ensure that such footwear is protected with PVC over-shoes.
Body protection	See Other protection below
Other protection	Overalls – PVC Apron. PVC protective suit may be required if exposure severe. Eyewash unit. Some plastic personal protective equipment (PPE) (e.g. gloves, aprons, overshoes) are not recommended as they may produce static electricity. For large scale or continuous use wear tight-weave non-static clothing (no metallic fasteners, cuffs or pockets). Non sparking safety or conductive footwear should be considered. Conductive footwear describes a boot or shoe with a sole made from a conductive compound chemically bound to the bottom components, for permanent control to electrically ground the foot and shall dissipate static electricity from the body to reduce the possibility of ignition of volatile compounds. AS 3765/2210
Thermal hazards	Not Available

Recommended material(s)

GLOVE SELECTION INDEX

Glove selection is based on a modified presentation of the:
"Forsberg Clothing Performance Index".
The effect(s) of the following substance(s) are taken into account in the ***computer-generated*** selection:
3-BROMO-1-CHLORO-5,5-DIMETHYLHYDANTOIN

Material	CPI
NEOPRENE	A
BUTYL/NEOPRENE	C
NITRILE	C
PE	C
SARANEX-23	C
TEFLON	C
VITON/NEOPRENE	C

CPI - WOBELEA Performance Index A: Best Selection
B: Satisfactory; may degrade after 4 hours' continuous immersion C: Poor to Dangerous Choice for other than short term immersion
NOTE: As a series of factors will influence the actual performance of the glove, a final selection must be based on detailed observation. -
* Where the glove is to be used on a short term, casual or infrequent
basis, factors such as "feel" or convenience (e.g. disposability) may dictate a choice of gloves. Consult OH & S Officer at Wobelea.

Respiratory protection

Type AB-P Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

Where the concentration of gas/particulates in the breathing zone, approaches or exceeds the "Exposure Standard" (or ES), respiratory protection is required.
Degree of protection varies with both face-piece and Class of filter; the nature of protection varies with Type of filter.

Required Minimum Protection Factor	Half-Face Respirator	Full-Face Respirator	Powered Air Respirator
up to 10 x ES	AB-AUS P2	-	AB-PAPR-AUS / Class 1 P2
up to 50 x ES	-	AB-AUS / Class 1 P2	-
up to 100 x ES	-	AB-2 P2	AB-PAPR-2 P2^

*

^ - Full-face

A (All classes) = Organic vapours, B AUS or B1 = Acid gasses, B2 = Acidgas or hydrogen cyanide(HCN), B3 = Acid gas or hydrogen cyanide(HCN), E = Sulfur dioxide(SO2), G = Agricultural chemicals, K = Ammonia(NH3), Hg = Mercury, NO = Oxides of nitrogen, MB = Methyl bromide, AX = Lowboiling point organic compounds (below 65 degC)

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	Off-white powder with faint halogen odour; may decompose in moist air/ water. Soluble in benzene, acetone, methylene dichloride and chloroform. |The initial hydrolysis produces hypo bromous and hypo chlorous acids and dimethyl hydantoin. Hypobromous acid oxidises the substrate and is reduced to bromide ion. The bromide ions are oxidised with hypochlorous acid to form hypobromous acid. It should be noted that hypochlorous acid does not directly disinfect in this process.

Physical state	Divided Solid	**Relative density (Water = 1)**	Not Available
Odour	Faint halogen smell	**Partition coefficient n-octanol / water**	Not Available
Odour threshold	Not Available	**Auto-ignition temperature (°C)**	Not Available
Colour	White / Off white		
pH (as supplied)	3.5 – 4.5 1% BCDMH in water	**Decomposition temperature**	Not Available
Melting point / freezing point (°C)	160-164	**Viscosity (cSt)**	Not Applicable
Initial boiling point and boiling range (°C)	Not Applicable	**Molecular weight (g/mol)**	241.48
Flash point (°C)	Not burnable 'C	**Taste**	Not Available
Evaporation rate	Not Applicable	**Explosive properties**	Not Available
Flammability	Not Available	**Oxidising properties**	Not Available
Upper Explosive Limit (%)	Not Available	**Surface Tension (dyn/cm or mN/m)**	Not Applicable
Lower Explosive Limit (%)	Not Available	**Volatile Component (%vol)**	Negligible
Vapour pressure (kPa)	Negligible	**Gas group**	Not Available
Solubility in water (g/L)	1.9 g/L 25'c in water	**pH as a solution (1%)**	Not Available
Vapour density (Air = 1)	>1	**VOC g/L**	Not Available

SECTION 10 STABILITY AND REACTIVITY

Reactivity	See section 7
Chemical stability	▸ Product is stable under normal conditions of Use, Storage and Temperature. ▸ Hazardous reactions or instability may occur ▸ In presence of combustible materials. ▸
Possibility of hazardous reactions	See section 7
Conditions to avoid	See section 7
Incompatible materials	See section 7
Hazardous decomposition products	See section 5

SECTION 11 TOXICOLOGICAL INFORMATION

Inhaled	Inhalation of dusts, generated by the material, during the course of normal handling may be harmful. Persons with impaired respiratory function, airway diseases and conditions such as emphysema or chronic bronchitis, may incur further disability if excessive concentrations of particulate are inhaled. If prior damage to the circulatory of nervous systems has occurred or if kidney damage has been sustained, proper screenings should be conducted on individuals who may be exposed to further risk if handling and use of the material result in excessive exposures. Chlorine vapour is extremely irritating to the airways and lungs, causing coughing, choking, breathing difficulty, chest pain,headache, vomiting, fluid accumulation in the lungs, chest infection and loss of consciousness. Effects may be delayed.Long term exposure (at workplace) may lead to corrosion of the teeth, irritate the linings of the nose and may increase thelikelihood of developing tuberculosis. Recent studies have not confirmed these findings. Corrosive acids can cause irritation of the respiratory tract, with coughing, choking and mucous membrane damage. Theremay be dizziness, headache, nausea and weakness.
Ingestion	Accidental ingestion of the material may be harmful; animal experiments indicate that ingestion of less than 150 grams may be fatal or may produce serious damage to the health of the individual. The material can produce chemical burns within the oral cavity and gastrointestinal tract following ingestion. Ingestion of acidic corrosives may produce burns around and in the mouth, the throat and oesophagus. Immediate pain and difficulties in swallowing and speaking may also be evident. Hydantoin derivatives may damage the stem cell which acts as the precursor to components of the blood, thus producing disorders in blood cell distribution. Most blood cells originate from a single "common" stem cell. A reduction in granular white cells develops within days, and loss of platelets within 1-2 weeks.
Skin Contact	Skin contact with the material may be harmful; systemic effects may result following absorption. The material can produce chemical burns following direct contact with the skin. Open cuts, abraded or irritated skin should not be exposed to this material Skin contact with acidic corrosives may result in pain and burns; these may be deep with distinct edges and may heal slowly with the formation of scar tissue. Entry into the blood-stream through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected
Eye	The material can produce chemical burns to the eye following direct contact. Vapours or mists may be extremely irritating.If applied to the eyes, this material causes severe eye damage. Direct eye contact with acid corrosives may produce pain, tears, sensitivity to light and burns. Mild burns of the epithelia generally recover rapidly and completely. |Contact with dilute solution (0.1%) is not irritating.
Chronic	Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-termoccupational exposure. There is some evidence from animal testing that exposure to this material may result in toxic effects to the unborn baby. Long term exposure to high dust concentrations may cause changes in lung function i.e. pneumoconiosis, caused by particles less than 0.5 micron penetrating and remaining in the lung. Repeated or prolonged exposure to acids may result in the erosion of teeth, swelling and/or ulceration of mouth lining.Irritation of airways to lung, with cough, and inflammation of lung tissue often occurs. Chronic intoxication with ionic bromides, historically, has resulted from medical use of bromides but not from environmental or occupational exposure; depression, hallucinosis, and schizophreniform psychosis can be seen in the absence of other signs of intoxication. Bromides may also induce sedation, irritability, agitation, delirium, memory loss, confusion, disorientation, forgetfulness (aphasias), dysarthria, weakness, fatigue, vertigo, stupor, coma, decreased appetite, nausea and vomiting, diarrhea, hallucinations, an acne like rash on the face, legs and trunk, known as Broncho derma (seen in 25-30% of case involving bromide ion), and a profuse discharge from the nostrils (coryza). Ataxia and generalised hyperreflexia have also been observed. Correlation of neurologic symptoms with blood levels of bromide is inexact. Reduced respiratory capacity may result from chronic low level exposure to chlorine gas. Chronic poisoning may result incoughing, severe chest pains, sore throat and haemoptysis (bloody sputum). Moderate to severe exposures over 3 years produced decreased lung capacity in a number of workers. Delayed effects can include shortness of breath, violent headaches, pulmonary oedema and pneumonia. |Three 5 month old female rats receiving 10 and 60 mg/kg/day (duration and route unspecified) showed no gross pathological changes, no significant changes to haemoglobin, erythrocytes, leucocytes, no internal disturbances and no treatment related lesions on autopsy to heart, lungs, gastrointestinal tract and kidneys. Oral administration to female rats (7.5, 10 mg/kg) produced embryo lethality in the high dose group. No malformations or increased development variants were seen in the range 500-4500 mg/kg.
3-bromo-1-chloro-5,5-dimethylhydantoin	**TOXICITY** — Inhalation (rat) LC50: 1.88 mg/L/4H[2]; Oral (rat) LD50: 200 mg/kg*E[2] **IRRITATION** — Eye (rabbit): 100 mg/30s- SEVERE; Skin (rabbit): 500 mg/24h-SEVERE
1-bromo-3-chloro-5,5-dimethylhydantoin	**TOXICITY** **Dermal (rabbit) LD50: >2000 mg/kg][2]** **Oral (rat) LD50: 1390 mg/kg1[2]** **IRRITATION [Manufacturer]** **Primary Skin Irritation Index 6.1** **Skin (rabbit): SEVERE ****
hypochlorous acid	**Toxicity – Not available** **Irritation – Not available**

3-BROMO-1-CHLORO-5,5-DIMETHYLHYDANTOIN – YM-FAB NYLATE

hypobromous acid	**Toxicity – Not available**	**Irritation – Not available**
chlorine	**TOXICITY** Dermal (rabbit) LD50: >10000 mg/kg[1] Inhalation (rat) LC50: 293 ppm/1H[2] Oral (rat) LD50: >237 mg/kg[1]	**IRRITATION** Not Avail
bromine	**TOXICITY** Inhalation (rat) LC50: 2.7 mg/L/4h[2] Oral (rat) LD50: 1700 mg/kg[2]	**IRRITATION – Nil Reported**
Legend	*1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2.* Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances*	

3-BROMO-1-CHLORO-5,5-DIMETHYLHYDANTOIN	No significant acute toxicological data identified in literature search. The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis. The material may cause severe skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin. Repeated exposures may produce severe ulceration. Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound. Key criteria for the diagnosis of RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. A reversible airflow pattern, on spirometry, with the presence of moderate to severe bronchial hyper reactivity on methacholine challenge testing and the lack of minimal lymphocytic inflammation, without eosinophilia, have also been included in the criteria for diagnosis of RADS. 551halhyd Genotoxicity assays with Salmonellla typhimurium TA98, TA100 and with Saccharomyces cerevisiae, both withand without metabolic activation were negative. ** RED for Halo-hydantoins
1-BROMO-3-CHLORO-5,5-DIMETHYLHYDANTOIN	The following information refers to contact allergens as a group and may not be specific to this product. Contact allergies quickly manifest themselves as contact eczema, more rarely as urticaria or Quincke's oedema. The pathogenesis of contact eczema involves a cell-mediated (T lymphocytes) immune reaction of the delayed type. Other allergic skin reactions, e.g. contact urticaria, involve antibody-mediated immune reactions. No significant acute toxicological data identified in literature search. Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound. Key criteria for the diagnosis of RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. A reversible airflow pattern, on spirometry, with the presence of moderate to severe bronchial hyper reactivity on methacholine challenge testing and the lack of minimal lymphocytic inflammation, without eosinophilia, have also been included in the criteria for diagnosis of RADS. for halo hydantoins **Acute toxicity:** The halo hydantoins were shown to be of low toxicity by the oral and dermal routes of exposure. Acute toxicity by the inhalation route is more significant. The halo hydantoins are significant eye and skin irritants. Dermal sensitization has also been observed for some of the halo hydantoin compounds. Positive sensitiser in guinea pig skin assay ** * [Farm Chem. Handbook] ** Red for Halo hydantoins
HYPOCHLOROUS ACID	No significant acute toxicological data identified in literature search.
CHLORINE	Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure tohigh levels of highly irritating compound. Key criteria for the diagnosis of RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. A reversible airflow pattern, on spirometry, with the presence of moderate to severe bronchial hyper reactivity on methacholine challenge testing and the lack of minimal lymphocytic inflammation,without eosinophilia, have also been included in the criteria for diagnosis of RADS.
BROMINE	Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound. Key criteria for the diagnosis of RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. A reversible airflow pattern, on spirometry, with the presence of moderate to severe bronchial hyper reactivity on methacholine challenge testing and the lack of minimal lymphocytic inflammation, without eosinophilia, have also been included in the criteria for diagnosis of RADS. The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis. The material may cause severe skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin. Repeated exposures may produce severe ulcerations.

3-BROMO-1-CHLORO-5,5-DIMETHYLHYDANTOIN – YM-FAB NYLATE

Acute Toxicity	✔	**Carcinogenicity**	
Skin Irritation/Corrosion	✔	**Re productivity**	
Serious Eye Damage/Irritation	✔	**STOT - Single Exposure**	⊘
Respiratory or Skin sensitisation	⊘	**STOT - Repeated Exposure**	⊘
Mutagenicity	⊘	**Aspiration Hazard**	⊘

Legend: ✘ *– Data available but does not fill the criteria for classification* ✔ *– Data required to make classification available* ⊘ *– Data Not Available to make classification*

SECTION 12 ECOLOGICAL INFORMATION

TOXICITY

Ingredient		Endpoint	Test Duration (hr)	Species	Value	Source
3-bromo-1-chloro-5,5-dimethylhydantoin		LC50	96	Fish	22556.311mg/L	3
1-bromo-3-chloro-5,5-dimethylhydantoin		EC50	48	Crustacea	0.4mg/L	4
1-bromo-3-chloro-5,5-dimethylhydantoin		EC50	96	Crustacea	0.1mg/L	4
1-bromo-3-chloro-5,5-dimethylhydantoin		LC50	96	Fish	0.14mg/L	4
hypobromous acid		LC50	96	Fish	0.065mg/L	4
chlorine		EC50	24	Crustacea	0.0186mg/L	4
chlorine		LC50	96	Fish	0.014mg/L	4
chlorine		EC50	48	Crustacea	0.026mg/L	2
chlorine		NOEC	504	Crustacea	0.01mg/L	2
chlorine		EC50	96	Algae or other aquatic plants	ca.0.1- ca.0.4mg/L	2
bromine		EC50	0.08	Crustacea	0.015mg/L	4
bromine		NOEC	48	Crustacea	>=0.46mg/L	2
Legend:		*Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. EPIWIN Suite V3.12 - Aquatic Toxicity Data (Estimated) 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bio concentration Data 7. METI (Japan) - Bio concentration Data 8. Vendor Data*				

Very toxic to aquatic organisms.
Do NOT allow product to come in contact with surface waters or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment wash-waters.
Wastes resulting from use of the product must be disposed of on site or at approved waste sites.
DO NOT discharge into sewer or waterways.
Halo hydantoins:
Structurally, the halo hydantoins consist of a central organic hydantoin ring moiety (either dimethyl hydantoin or ethyl methyl hydantoin) to which halogen atoms (bromine and/or chlorine) can be attached at both the 1 and 3 positions on the hydantoin ring.
Environmental Fate: In concentrated form, the halo hydantoins are very stable. Upon usage, which involves dilution in water or a water system, the halo hydantoins rapidly decompose to release chlorine and/or bromine and dimethyl hydantoin (DMH) and, for certain products, ethyl methyl hydantoin(EMH). These released halogens react with water to form either hypochlorous or hypobromous acid, which is the actual biocidal agent.
|Eco toxicity:|Fish LC50 (96 h) fathead minnow (adult) 0.46-0.57 mg/L; (juvenile) 0.28-0.41 mg/L, bluegill sunfish 0.56-0.71 mg/L, rainbow trout 0.87 mg/L, sheepshead minnow 20 mg/L, Daphnia EC50 48 h) 0.47 mg/L, Grass shrimp LC50 (48 h) 13 mg/L. American oyster gt;640 mg/L, Environmental fate:|During aC14 biodegradation study with activated sludge it was observed that dehalogenation to 5,5-dimethylhydantoin (CAS RN: 77-77-4) occurred, which in turndecreased to lt;1 ppm in 3 days and by day 19, 94% of the label had been recovered as carbon dioxide.

Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
3-bromo-1-chloro-5,5-dimethylhydantoin	HIGH	HIGH

1-bromo-3-chloro-5,5-dimethylhydantoin	HIGH	HIGH

Bio accumulative potential

Ingredient	Bioaccumulation
3-bromo-1-chloro-5,5-dimethylhydantoin	LOW (Log KOW = -0.9441)
1-bromo-3-chloro-5,5-dimethylhydantoin	LOW (Log KOW = -0.9441)

Mobility in soil

Ingredient	Mobility
3-bromo-1-chloro-5,5-dimethylhydantoin	LOW (KOC = 23.14)
1-bromo-3-chloro-5,5-dimethylhydantoin	LOW (KOC = 23.14)

SECTION 13 DISPOSAL CONSIDERATIONS

Waste treatment methods

Product / Packaging disposal

- Containers may still present a chemical hazard/ danger when empty.
- Return to supplier for reuse/ recycling if possible.

Otherwise:

- If container cannot be cleaned sufficiently well to ensure that residuals do not remain or if the container cannot be used to store the same product, then puncture containers, to prevent re-use, and bury at an authorised landfill.
- Where possible retain label warnings and SDS and observe all notices pertaining to the product.

Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked.

A Hierarchy of Controls seems to be common - the user should investigate:

- Reduction
- Reuse
- Recycling
- Disposal (if all else fails)

This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use.

- **DO NOT** allow wash water from cleaning or process equipment to enter drains.
- It may be necessary to collect all wash water for treatment before disposal.
- In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first.
- Where in doubt contact the responsible authority.

Recycle wherever possible.

- Consult manufacturer for recycling options or consult local or regional waste management authority for disposal if no suitable treatment or disposal facility can be identified.
- Treat and neutralise at an approved treatment plant. Treatment should involve: Mixing or slurrying in water; Neutralisation with soda-lime or soda-ash followed by: burial in a land-fill specifically licensed to accept chemical and / or pharmaceutical wastes or Incineration in a licensed apparatus (after admixture with suitable combustible material)
- Decontaminate empty containers with 5% aqueous sodium hydroxide or soda ash, followed by water.

For small quantities of oxidising agent:

- Cautiously acidify a 3% solution to pH 2 with sulfuric acid.
- Gradually add a 50% excess of sodium bisulfite solution with stirring.
- Add a further 10% sodium bisulfite.
- If no further reaction occurs (as indicated by a rise in temperature) cautiously add more acid.

SECTION 14 TRANSPORT INFORMATION

Labels Required

Marine Pollutant

HAZCHEM	1W

Land transport (ADG) and New Zealand S5433

UN number	3085
Packing group	II
EPG	**31 Oxidising Substances**
UN proper shipping name	OXIDIZING SOLID, CORROSIVE, N.O.S. (contains 3-bromo-1-chloro-5,5-dimethylhydantoin)
Environmental hazard	Not Applicable
Transport hazard class(es)	Class: 5.1 Sub risk: 8
Special precautions for user	Special provisions: 274 Limited quantity: 1 kg

Air transport (ICAO-IATA / DGR)

UN number	3085
Packing group	II
UN proper shipping name	Oxidizing solid, corrosive, n.o.s. * (contains 3-bromo-1-chloro-5,5-dimethylhydantoin)
Environmental hazard	Not Applicable
Transport hazard class(es)	ICAO/IATA Class: 5.1 ICAO / IATA Sub risk: 8 ERG Code: 5C
Special precautions for user	Special provisions: A3 Cargo Only Packing Instructions: 562 Cargo Only Maximum Qty / Pack: 25 kg Passenger and Cargo Packing Instructions: 558 Passenger and Cargo Maximum Qty / Pack: 5 kg Passenger and Cargo Limited Quantity Packing Instructions: Y544 Passenger and Cargo Limited Maximum Qty / Pack: 2.5 kg

Sea transport (IMDG-Code / GGVSee)

UN number	3085
Packing group	II
UN proper shipping name	OXIDIZING SOLID CORROSIVE, N.O.S. (contains 3-bromo-1-chloro-5,5-dimethylhydantoin)
Environmental hazard	Marine Pollutant
Transport hazard class(es)	IMDG Class: 5.1 IMDG Sub risk: 8
Special precautions for user	EMS Number: F-A, S-Q Special provisions: 274 Limited Quantities: 1 kg

Transport in bulk according to Annex II of MARPOL and the IBC code

Not Applicable

SECTION 15 REGULATORY INFORMATION

Safety, health and environmental regulations / legislation specific for the substance or mixture

3-BROMO-1-CHLORO-5,5-DIMETHYLHYDANTOIN (126-06-7) IS FOUND ON THE FOLLOWING REGULATORY LISTS

Australia Inventory of Chemical Substances (AICS)

1-BROMO-3-CHLORO-5,5-DIMETHYLHYDANTOIN (16079-88-2) IS FOUND ON THE FOLLOWING REGULATORY LISTS

Australia Inventory of Chemical Substances (AICS)

Environmental Protection Authority (New Zealand) - Hazardous Substances and New Organisms Amendment Act 2015

Registered name Ym-Fab Nylate G980 has HSNO Approval number HSRR000774

HYPOCHLOROUS ACID (7790-92-3) IS FOUND ON THE FOLLOWING REGULATORY LISTS

International Air Transport Association (IATA) Dangerous Goods Regulations - Prohibited List Passenger and Cargo Aircraft

HYPOBROMOUS ACID (13517-11-8) IS FOUND ON THE FOLLOWING REGULATORY LISTS

International Air Transport Association (IATA) Dangerous Goods Regulations - Prohibited List Passenger and Cargo Aircraft

CHLORINE (7782-50-5) IS FOUND ON THE FOLLOWING REGULATORY LISTS

Australia Exposure Standards

Australia Hazardous Substances Information System - Consolidated Lists

Australia Inventory of Chemical Substances (AICS)

International Air Transport Association (IATA) Dangerous Goods Regulations - Prohibited List Passenger and Cargo Aircraft

BROMINE (7726-95-6) IS FOUND ON THE FOLLOWING REGULATORY LISTS

Australia Exposure Standards

Australia Hazardous Substances Information System - Consolidated Lists

Australia Inventory of Chemical Substances (AICS)

International Air Transport Association (IATA) Dangerous Goods Regulations - Prohibited List Passenger and Cargo Aircraft

National Inventory	Status
Australia - AICS	N (hypobromous acid; hypochlorous acid)
Canada - DSL	N (hypobromous acid; hypochlorous acid)
Canada - NDSL	N (chlorine; bromine; 1-bromo-3-chloro-5,5-dimethyl hydantoin; 3-bromo-1-chloro-5,5-dimethylhydantoin)
China - IECSC	N (hypobromous acid; 3-bromo-1-chloro-5,5-dimethylhydantoin; hypochlorous acid)
Europe - EINEC / ELINCS / NLP	N (hypobromous acid)
Japan - ENCS	N (hypobromous acid; chlorine; bromine; 3-bromo-1-chloro-5,5-dimethylhydantoin; hypochlorous acid)
Korea - KECI	N (hypobromous acid)
New Zealand - NZIoC	N (hypobromous acid; hypochlorous acid)
Philippines - PICCS	N (hypobromous acid; hypochlorous acid)
USA - TSCA	Y
Legend:	*Y = All ingredients are on the inventory* *N = Not determined or one or more ingredients are not on the inventory and are not exempt from listing (see specific ingredients in brackets)*

SECTION 16 OTHER INFORMATION

Other information

Ingredients with multiple CAS numbers

Name	CAS No
1-bromo-3-chloro-5,5-dimethylhydantoin	16079-88-2,
Bromo chloro 5, 5 dimethyl hydantoin	32718-18-6

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by Wobelea Pty Ltd using available literature references.

The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, Frequency of use and Current or Available engineering controls must be considered.

Definitions and abbreviations

PC—TWA: Permissible Concentration-Time Weighted Average
PC—STEL: Permissible Concentration-Short Term Exposure Limit
APVMA – Australian Pesticide and Veterinary Medicine Authority
ACVM – Agricultural Compounds and Veterinary medicine – New Zealand
IARC: International Agency for Research on Cancer
ACGIH: American Conference of Governmental Industrial Hygienists
STEL: Short Term Exposure Limit
TEEL: Temporary Emergency Exposure Limit。

IDLH: Immediately Dangerous to Life or Health Concentrations
OSF: Odour Safety Factor
NOAEL: No Observed Adverse Effect Level
LOAEL: Lowest Observed Adverse Effect Level
TLV: Threshold Limit Value
LOD: Limit of Detection
OTV: Odour Threshold Value
BCF: Bio Concentration Factors
BEI: Biological Exposure Index

References:

'Standard for the Uniform Scheduling of Medicines and Poisons No. 6', Commonwealth of Australia, February 2015.
Lewis, Richard J. Sr. 'Hawley's Condensed Chemical Dictionary 13th. Ed.', Rev., John Wiley and Sons, Inc., NY, 1997.
National Road Transport Commission, 'Australian Code for the Transport of Dangerous Goods by Road and Rail 7th. Ed.', 2007.
Safe Work Australia, 'National Code of Practice for the Preparation of Safety Data Sheets for Hazardous Chemicals', 2011.
Standards Australia, 'SAA/SNZ HB 76:2010 Dangerous Goods - Initial Emergency Response Guide', Standards Australia/Standards New Zealand, 2010.
Safe Work Australia, 'Approved Criteria for Classifying Hazardous Substances [NOHSC:1008 (2004)]'. Safe Work Australia, 'Hazardous Substances Information System, 2005'.
Safe Work Australia, 'National Code of Practice for the Labelling of Safe Work Hazardous Substances (2011)'.
Safe Work Australia, 'National Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC:1003(1995) 3rd Edition]'.

DISCLAIMER:

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********** END OF SDS **********