

Material Safety Data Sheet

Flux WS 657



1. Product and company identification

Product name	: Flux WS 657
Synonym	: WS 657 LR, WS 657-11, WS 657 UB, WS 657-T
Manufacturer	: In Canada: AIM 9100 Henri Bourassa East Montreal, QC H1E 2S4 (514) 494-2000 In the United States: AIM 25 Kenney Drive Cranston, RI 02920 (800) CALL-AIM
Validation date	: 8/6/2015
Print date	: 8/6/2015
<u>In case of emergency</u>	: INFOTRAC North America: (800) 535-5053 International: (352) 323-3500
Product type	: Liquid.

2. Hazards identification

Emergency overview

Physical state	: Liquid.
Signal word	: DANGER!
Hazard statements	: CAUSES RESPIRATORY TRACT, EYE AND SKIN BURNS. CONTAINS MATERIAL THAT CAN CAUSE TARGET ORGAN DAMAGE. POSSIBLE CANCER HAZARD - CONTAINS MATERIAL WHICH MAY CAUSE CANCER, BASED ON ANIMAL DATA.
Precautionary measures	: Do not handle until all safety precautions have been read and understood. Obtain special instructions before use. Do not breathe vapor or mist. Use only with adequate ventilation. Do not get in eyes. Do not get on skin. Do not eat, drink or smoke when using this product. Keep container tightly closed. Use personal protective equipment as required. Wash thoroughly after handling.
OSHA/HCS status	: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Potential acute health effects

Inhalation	: Corrosive to the respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
Ingestion	: May cause burns to mouth, throat and stomach.
Skin	: Corrosive to the skin. Causes burns.
Eyes	: Corrosive to eyes. Causes burns.

Potential chronic health effects

Chronic effects	: Contains material that can cause target organ damage.
Carcinogenicity	: Contains material which may cause cancer, based on animal data. Risk of cancer depends on duration and level of exposure.
Mutagenicity	: No known significant effects or critical hazards.
Teratogenicity	: No known significant effects or critical hazards.

2. Hazards identification

- Developmental effects** : No known significant effects or critical hazards.
- Fertility effects** : No known significant effects or critical hazards.
- Target organs** : Contains material which causes damage to the following organs: kidneys, the nervous system, liver, bladder, eye, lens or cornea.
 Contains material which may cause damage to the following organs: blood, upper respiratory tract, skin, central nervous system (CNS), teeth.
 Contains material which does not cause damage to the following organs: lungs, the reproductive system.

Over-exposure signs/symptoms

- Inhalation** : Adverse symptoms may include the following:
 respiratory tract irritation
 coughing
- Ingestion** : Adverse symptoms may include the following:
 stomach pains
- Skin** : Adverse symptoms may include the following:
 pain or irritation
 redness
 blistering may occur
- Eyes** : Adverse symptoms may include the following:
 pain
 watering
 redness

- Medical conditions aggravated by over-exposure** : Pre-existing disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

See toxicological information (Section 11)

3. Composition/information on ingredients

United States

Name	CAS number	%
2-(2-butoxyethoxy)ethanol	112-34-5	20 - 30
Hydrobromic acid	10035-10-6	10 - 20
2,2'-iminodiethanol	111-42-2	0.1 - 10
urea	57-13-6	0.1 - 10

Canada

Name	CAS number	%
2-(2-butoxyethoxy)ethanol	112-34-5	20 - 30
Hydrobromic acid	10035-10-6	10 - 20
2,2'-iminodiethanol	111-42-2	0.1 - 10
urea	57-13-6	0.1 - 10

Mexico

Name	CAS number	UN number	%	IDLH	Classification			
					H	F	R	Special
2-(2-butoxyethoxy)ethanol	112-34-5	Not available.	20 - 30	-	2	2	0	-
Hydrobromic acid	10035-10-6	UN1760	10 - 20	30 ppm	3	0	0	-
2,2'-iminodiethanol	111-42-2	UN3082	0.1 - 10	-	2	1	0	-
urea	57-13-6	Not regulated.	0.1 - 10	-	2	1	0	-

3. Composition/information on ingredients

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

4. First aid measures

- Eye contact** : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.
- Skin contact** : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.
- Inhalation** : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.
- Ingestion** : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.
- Notes to physician** : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

5. Fire-fighting measures

- Flammability of the product** : In a fire or if heated, a pressure increase will occur and the container may burst.
- Extinguishing media**
- Suitable** : Use an extinguishing agent suitable for the surrounding fire.
- Not suitable** : None known.
- Special exposure hazards** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides
halogenated compounds
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6. Accidental release measures

- Personal precautions** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).
- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
- Methods for cleaning up**

6. Accidental release measures

- Small spill** : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
- Large spill** : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

7. Handling and storage

- Handling** : Put on appropriate personal protective equipment (see Section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Storage** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

8. Exposure controls/personal protection

United States

Ingredient	Exposure limits
2-(2-butoxyethoxy)ethanol	ACGIH TLV (United States, 3/2015). TWA: 10 ppm 8 hours. Form: Inhalable fraction and vapor
Hydrobromic acid	ACGIH TLV (United States, 3/2015). C: 2 ppm OSHA PEL 1989 (United States, 3/1989). CEIL: 3 ppm CEIL: 10 mg/m ³ NIOSH REL (United States, 10/2013). CEIL: 3 ppm CEIL: 10 mg/m ³ OSHA PEL (United States, 2/2013). TWA: 3 ppm 8 hours. TWA: 10 mg/m ³ 8 hours.
2,2'-iminodiethanol	ACGIH (United States, 0/1994). Absorbed through skin. TWA: 2 mg/m ³ ACGIH (United States, 0/1989). TWA: 0.46 ppm OSHA PEL 1989 (United States, 3/1989). TWA: 3 ppm 8 hours. TWA: 15 mg/m ³ 8 hours. NIOSH REL (United States, 10/2013). TWA: 3 ppm 10 hours. TWA: 15 mg/m ³ 10 hours.

8. Exposure controls/personal protection

urea	ACGIH TLV (United States, 3/2015). Absorbed through skin. TWA: 1 mg/m ³ 8 hours. Form: Inhalable fraction and vapor AIHA WEEL (United States, 10/2011). TWA: 10 mg/m ³ 8 hours.
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Canada

<u>Occupational exposure limits</u>		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredient	List name	ppm	mg/m ³	Other	ppm	mg/m ³	Other	ppm	mg/m ³	Other	Notations
2-(2-butoxyethoxy)ethanol	US ACGIH 3/2015	10	-	-	-	-	-	-	-	-	[a]
	ON 7/2015	10	-	-	-	-	-	-	-	-	[a]
Hydrobromic acid	US ACGIH 3/2015	-	-	-	-	-	-	2	-	-	
	AB 4/2009	-	-	-	-	-	-	2	6.6	-	[3]
	BC 2/2015	-	-	-	-	-	-	2	-	-	
	ON 7/2015	-	-	-	-	-	-	2	-	-	
2,2'-iminodiethanol	QC 1/2014	-	-	-	3	9.9	-	-	-	-	
	US ACGIH 3/2015	-	1	-	-	-	-	-	-	-	[1] [a]
	AB 4/2009	-	2	-	-	-	-	-	-	-	[1]
	BC 2/2015	-	2	-	-	-	-	-	-	-	[1]
	ON 7/2015	-	1	-	-	-	-	-	-	-	[1] [a]
urea	QC 1/2014	3	13	-	-	-	-	-	-	-	[1]
	US AIHA 10/2011	-	10	-	-	-	-	-	-	-	

[1]Absorbed through skin. [3]Skin sensitization

Form: [a]Inhalable fraction and vapor

Mexico

Occupational exposure limits

Ingredient	Exposure limits
2-(2-butoxyethoxy)ethanol	ACGIH TLV (United States, 3/2015). TWA: 10 ppm 8 hours. Form: Inhalable fraction and vapor
Hydrobromic acid	NOM-010-STPS (Mexico, 9/2000). LMPE-Pico: 10 mg/m ³ LMPE-Pico: 3 ppm
2,2'-iminodiethanol	ACGIH (United States, 0/1994). Absorbed through skin. TWA: 2 mg/m ³ ACGIH (United States, 0/1989). TWA: 0.46 ppm ACGIH TLV (United States, 3/2015). Absorbed through skin. TWA: 1 mg/m ³ 8 hours. Form: Inhalable fraction and vapor

Consult local authorities for acceptable exposure limits.

Recommended monitoring procedures : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to appropriate monitoring standards. Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

Engineering measures : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal protection

8. Exposure controls/personal protection

- Respiratory** : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
- Hands** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
- Eyes** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead.
- Skin** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9. Physical and chemical properties

Physical state : Liquid.

10. Stability and reactivity

- Chemical stability** : The product is stable.
- Conditions to avoid** : No specific data.
- Incompatible materials** : No specific data.
- Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.
- Possibility of hazardous reactions** : Under normal conditions of storage and use, hazardous reactions will not occur.

11. Toxicological information

United States

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
2-(2-butoxyethoxy)ethanol	LD50 Dermal	Rabbit	2700 mg/kg	-
	LD50 Dermal	Rabbit	4120 mg/kg	-
	LD50 Oral	Mouse	2400 mg/kg	-
	LD50 Oral	Mouse	2400 mg/kg	-
	LD50 Oral	Rat	4500 mg/kg	-
	LD50 Oral	Rat	5660 mg/kg	-
Hydrobromic acid	LC50 Inhalation Gas.	Rat	2858 ppm	1 hours
2,2'-iminodiethanol	LD50 Oral	Mouse	3300 mg/kg	-
	LD50 Oral	Rabbit	2200 mg/kg	-
urea	LD50 Oral	Rat	8471 mg/kg	-
	LD50 Oral	Rat	14300 mg/kg	-

Conclusion/Summary : Not available.

11. Toxicological information

Chronic toxicity

Conclusion/Summary : Not available.

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
2-(2-butoxyethoxy)ethanol	Eyes - Moderate irritant	Rabbit	-	24 hours 20 milligrams	-
2,2'-iminodiethanol	Eyes - Severe irritant	Rabbit	-	20 milligrams	-
	Eyes - Severe irritant	Rabbit	-	24 hours 750 Micrograms	-
	Eyes - Severe irritant	Rabbit	-	5500 milligrams	-
urea	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Mild irritant	Rabbit	-	50 milligrams	-
	Skin - Mild irritant	Human	-	72 hours 22 milligrams Intermittent	-
	Skin - Moderate irritant	Human	-	24 hours 20 Percent	-

Conclusion/Summary : Not available.

Sensitizer

Conclusion/Summary : Not available.

Carcinogenicity

Conclusion/Summary : Not available.

Classification

Product/ingredient name	OSHA	IARC	NTP	ACGIH	EPA	NIOSH
2-(2-butoxyethoxy)ethanol	-	4	-	A5	-	None.
2,2'-iminodiethanol	-	2B	-	A3	-	None.
urea	-	-	-	A5	-	-

Mutagenicity

Conclusion/Summary : Not available.

Teratogenicity

Conclusion/Summary : Not available.

Reproductive toxicity

Conclusion/Summary : Not available.

Canada

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
2-(2-butoxyethoxy)ethanol	LD50 Dermal	Rabbit	2700 mg/kg	-
	LD50 Dermal	Rabbit	4120 mg/kg	-
	LD50 Oral	Mouse	2400 mg/kg	-
	LD50 Oral	Mouse	2400 mg/kg	-
	LD50 Oral	Rat	4500 mg/kg	-
	LD50 Oral	Rat	5660 mg/kg	-
Hydrobromic acid	LC50 Inhalation Gas.	Rat	2858 ppm	1 hours
2,2'-iminodiethanol	LD50 Oral	Mouse	3300 mg/kg	-
	LD50 Oral	Rabbit	2200 mg/kg	-
urea	LD50 Oral	Rat	8471 mg/kg	-
	LD50 Oral	Rat	14300 mg/kg	-

Conclusion/Summary : Not available.

11. Toxicological information

Chronic toxicity

Conclusion/Summary : Not available.

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
2-(2-butoxyethoxy)ethanol	Eyes - Moderate irritant	Rabbit	-	24 hours 20 milligrams	-
2,2'-iminodiethanol	Eyes - Severe irritant	Rabbit	-	20 milligrams	-
	Eyes - Severe irritant	Rabbit	-	24 hours 750 Micrograms	-
	Eyes - Severe irritant	Rabbit	-	5500 milligrams	-
urea	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Mild irritant	Rabbit	-	50 milligrams	-
	Skin - Mild irritant	Human	-	72 hours 22 milligrams	-
	Skin - Moderate irritant	Human	-	Intermittent 24 hours 20 Percent	-

Conclusion/Summary : Not available.

Sensitizer

Conclusion/Summary : Not available.

Carcinogenicity

Conclusion/Summary : Not available.

Classification

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
2-(2-butoxyethoxy)ethanol	A5	4	-	None.	-	-
2,2'-iminodiethanol	A3	2B	-	None.	-	-
urea	A5	-	-	-	-	-

Mutagenicity

Conclusion/Summary : Not available.

Teratogenicity

Conclusion/Summary : Not available.

Reproductive toxicity

Conclusion/Summary : Not available.

Mexico

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
2-(2-butoxyethoxy)ethanol	LD50 Dermal	Rabbit	2700 mg/kg	-
	LD50 Dermal	Rabbit	4120 mg/kg	-
	LD50 Oral	Mouse	2400 mg/kg	-
	LD50 Oral	Mouse	2400 mg/kg	-
	LD50 Oral	Rat	4500 mg/kg	-
	LD50 Oral	Rat	5660 mg/kg	-
Hydrobromic acid	LC50 Inhalation Gas.	Rat	2858 ppm	1 hours
2,2'-iminodiethanol	LD50 Oral	Mouse	3300 mg/kg	-
	LD50 Oral	Rabbit	2200 mg/kg	-
urea	LD50 Oral	Rat	8471 mg/kg	-
	LD50 Oral	Rat	14300 mg/kg	-

Conclusion/Summary : Not available.

11. Toxicological information

Chronic toxicity

Conclusion/Summary : Not available.

Irritation/Corrosion

Product/ingredient name	Result	Score	Score	Exposure	Observation
2-(2-butoxyethoxy)ethanol	Eyes - Moderate irritant	Rabbit	-	24 hours 20 milligrams	-
2,2'-iminodiethanol	Eyes - Severe irritant	Rabbit	-	20 milligrams	-
	Eyes - Severe irritant	Rabbit	-	24 hours 750 Micrograms	-
urea	Eyes - Severe irritant	Rabbit	-	5500 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Mild irritant	Rabbit	-	50 milligrams	-
	Skin - Mild irritant	Human	-	72 hours 22 milligrams Intermittent	-
	Skin - Moderate irritant	Human	-	24 hours 20 Percent	-

Conclusion/Summary : Not available.

Sensitizer

Conclusion/Summary : Not available.

Carcinogenicity

Conclusion/Summary : Not available.

Classification

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
2-(2-butoxyethoxy)ethanol	A5	4	-	None.	-	-
2,2'-iminodiethanol	A3	2B	-	None.	-	-
urea	A5	-	-	-	-	-

Mutagenicity

Conclusion/Summary : Not available.

Teratogenicity

Conclusion/Summary : Not available.

Reproductive toxicity

Conclusion/Summary : Not available.

Other information

: To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

12. Ecological information

Ecotoxicity : No known significant effects or critical hazards.

United States

Aquatic ecotoxicity

Product/ingredient name	Result	Species	Exposure
2-(2-butoxyethoxy)ethanol 2,2'-iminodiethanol	Acute LC50 1300000 µg/l Fresh water	Fish - Lepomis macrochirus	96 hours
	Acute EC50 12 mg/l Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours
urea	Acute LC50 28800 µg/l Fresh water	Crustaceans - Ceriodaphnia dubia - Neonate	48 hours
	Acute LC50 2150 µg/l Fresh water	Daphnia - Daphnia pulex	48 hours
	Acute LC50 775 mg/l Fresh water	Fish - Lepomis macrochirus	96 hours
	Acute EC50 6573.1 mg/l Fresh water	Crustaceans - Ceriodaphnia dubia - Neonate	48 hours
	Acute EC50 3910000 µg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 22.5 ppt Fresh water	Fish - Oreochromis mossambicus - Young	96 hours
	Chronic NOEC 2 g/L Fresh water	Fish - Heteropneustes fossilis	30 days

Conclusion/Summary : Not available.

Persistence/degradability

Conclusion/Summary : Not available.

Canada

Aquatic ecotoxicity

Product/ingredient name	Result	Species	Exposure
2-(2-butoxyethoxy)ethanol 2,2'-iminodiethanol	Acute LC50 1300000 µg/l Fresh water	Fish - Lepomis macrochirus	96 hours
	Acute EC50 12 mg/l Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours
urea	Acute LC50 28800 µg/l Fresh water	Crustaceans - Ceriodaphnia dubia - Neonate	48 hours
	Acute LC50 2150 µg/l Fresh water	Daphnia - Daphnia pulex	48 hours
	Acute LC50 775 mg/l Fresh water	Fish - Lepomis macrochirus	96 hours
	Acute EC50 6573.1 mg/l Fresh water	Crustaceans - Ceriodaphnia dubia - Neonate	48 hours
	Acute EC50 3910000 µg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 22.5 ppt Fresh water	Fish - Oreochromis mossambicus - Young	96 hours
	Chronic NOEC 2 g/L Fresh water	Fish - Heteropneustes fossilis	30 days

Conclusion/Summary : Not available.

Persistence/degradability

Conclusion/Summary : Not available.

Mexico

Aquatic ecotoxicity

12. Ecological information

Product/ingredient name	Result	Species	Exposure
2-(2-butoxyethoxy)ethanol 2,2'-iminodiethanol	Acute LC50 1300000 µg/l Fresh water	Fish - Lepomis macrochirus	96 hours
	Acute EC50 12 mg/l Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours
urea	Acute LC50 28800 µg/l Fresh water	Crustaceans - Ceriodaphnia dubia - Neonate	48 hours
	Acute LC50 2150 µg/l Fresh water	Daphnia - Daphnia pulex	48 hours
	Acute LC50 775 mg/l Fresh water	Fish - Lepomis macrochirus	96 hours
	Acute EC50 6573.1 mg/l Fresh water	Crustaceans - Ceriodaphnia dubia - Neonate	48 hours
	Acute EC50 3910000 µg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 22.5 ppt Fresh water	Fish - Oreochromis mossambicus - Young	96 hours
	Chronic NOEC 2 g/L Fresh water	Fish - Heteropneustes fossilis	30 days

Conclusion/Summary : Not available.

Persistence/degradability

Conclusion/Summary : Not available.

Other adverse effects : No known significant effects or critical hazards.


13. Disposal considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.









Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

14. Transport information

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label	Additional information
DOT Classification	1788	(Hydrobromic acid)	8	III		Reportable quantity 2673.8 lbs / 1213.9 kg Package sizes shipped in quantities less than the product reportable quantity are not subject to the RQ (reportable quantity) transportation requirements.

14. Transport information

TDG Classification	1788	(Hydrobromic acid)	8	III	 	Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.40-2.42 (Class 8), 2.7 (Marine pollutant mark). The marine pollutant mark is not required when transported by road or rail.
Mexico Classification	1788	(Hydrobromic acid)	8	III		-
ADR/RID Class	1788	(hydrobromic acid 49% or less strength)	8	III	 	The environmentally hazardous substance mark is not required when transported in sizes of ≤5 L or ≤5 kg.
IMDG Class	1788	(Hydrobromic acid)	8	III	 	The marine pollutant mark is not required when transported in sizes of ≤5 L or ≤5 kg.
IATA-DGR Class	1788	(hydrobromic acid 49% or less strength)	8	III		The environmentally hazardous substance mark may appear if required by other transportation regulations.

PG* : Packing group

15. Regulatory information

United States

HCS Classification : Corrosive material
Carcinogen
Target organ effects

U.S. Federal regulations : **TSCA 4(a) final test rules:** 2-(2-butoxyethoxy)ethanol
TSCA 8(a) PAIR: 2,2'-iminodiethanol; Poly(oxy-1,2-ethanediyl), α-[(1,1,3,3-tetramethylbutyl)phenyl]-ω-hydroxy-
TSCA 8(a) CDR Exempt/Partial exemption: Not determined
TSCA 8(d) H and S data reporting: 2,2'-iminodiethanol: 1989
TSCA 12(b) one-time export: 2-(2-butoxyethoxy)ethanol
All components are listed or exempted.

15. Regulatory information

Clean Air Act Section 112 : Listed

(b) Hazardous Air Pollutants (HAPs)

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Immediate (acute) health hazard
Delayed (chronic) health hazard

Composition/information on ingredients

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
2-(2-butoxyethoxy)ethanol	20 - 30	Yes.	No.	No.	Yes.	No.
Hydrobromic acid	10 - 20	No.	Yes.	No.	Yes.	No.
2,2'-iminodiethanol	0.1 - 10	No.	No.	No.	Yes.	No.
urea	0.1 - 10	No.	No.	No.	Yes.	Yes.

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	2-(2-butoxyethoxy)ethanol	112-34-5	20 - 30
	2,2'-iminodiethanol	111-42-2	0.1 - 10
Supplier notification	2-(2-butoxyethoxy)ethanol	112-34-5	20 - 30
	2,2'-iminodiethanol	111-42-2	0.1 - 10

SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

State regulations

Massachusetts : The following components are listed: Hydrobromic acid; 2,2'-iminodiethanol

New York : The following components are listed: Diethanolamine

New Jersey : The following components are listed: 2-(2-butoxyethoxy)ethanol; Hydrobromic acid; 2,2'-iminodiethanol

Pennsylvania : The following components are listed: 2-(2-butoxyethoxy)ethanol; Hydrobromic acid; 2,2'-iminodiethanol

California Prop. 65

WARNING: This product contains a chemical known to the State of California to cause cancer.

15. Regulatory information

Ingredient name	Cancer	Reproductive	No significant risk level	Maximum acceptable dosage level
2,2'-iminodiethanol	Yes.	No.	No.	No.

United States inventory (TSCA 8b) : All components are listed or exempted.

Canada

WHMIS (Canada) : Class D-1A: Material causing immediate and serious toxic effects (Very toxic).
Class D-2A: Material causing other toxic effects (Very toxic).
Class E: Corrosive material

Canadian lists

Canadian NPRI : The following components are listed: Diethylene glycol butyl ether; 2,2'-iminodiethanol

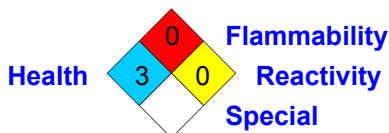
CEPA Toxic substances : The following components are listed: 2-(2-butoxyethoxy)ethanol

Canada inventory : All components are listed or exempted.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Mexico

Classification :



International regulations

International lists :

- Australia inventory (AICS)**: All components are listed or exempted.
- China inventory (IECSC)**: All components are listed or exempted.
- Japan inventory**: All components are listed or exempted.
- Korea inventory**: All components are listed or exempted.
- Malaysia Inventory (EHS Register)**: Not determined.
- New Zealand Inventory of Chemicals (NZIoC)**: All components are listed or exempted.
- Philippines inventory (PICCS)**: All components are listed or exempted.
- Taiwan inventory (CSNN)**: All components are listed or exempted.

Chemical Weapons Convention List Schedule I Chemicals : Not listed

Chemical Weapons Convention List Schedule II Chemicals : Not listed

Chemical Weapons Convention List Schedule III Chemicals : Not listed

16. Other information

Label requirements : CAUSES RESPIRATORY TRACT, EYE AND SKIN BURNS. CONTAINS MATERIAL THAT CAN CAUSE TARGET ORGAN DAMAGE. POSSIBLE CANCER HAZARD - CONTAINS MATERIAL WHICH MAY CAUSE CANCER, BASED ON ANIMAL DATA.

Hazardous Material Information System (U.S.A.) :

Health	3
Flammability	0

16. Other information

Physical hazards	0

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on MSDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material.

[National Fire Protection Association \(U.S.A.\)](#) :



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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

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Notice to reader

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Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.