Safety Data Sheet
AQUARIAN B120W

1. Identification

Product identifier	AQUARIAN B120W
Product code	B120W
Other means of identification	None.
Recommended use of the chemical and restrictions on use	Boiler water treatment.
Manufacturer	AQUARIAN CHEMICALS INC. 768 Westgate Road Oakville, Ontario Canada L6L 5N2 Tel. 905-825-3711 Fax 905-825-0177 www.aquarianchemicals.com
Emergency phone number	Canutec: 613-996-6666

2. Hazard identification

Summary	FLAMABLE LIQUID! CORROSIVE! TOXIC! Keep away from heat, sparks and open flame. Avoid all contact with skin, eyes and clothing. Do not breathe vapors, mists or aerosols. Do not ingest. If ingested consult physician immediately and show this Safety Data Sheet. Wear eye protection, gloves and other protective clothing that are adapted to the task being performed and the risks involved.

WHMIS 2015/OSHA HCS 2012/GHS

Flammable liquids (Category 3)
Acute toxicity, oral (Category 3)
Acute toxicity, dermal (Category 3)
Acute toxicity, inhalation (Category 4)
Skin corrosion/irritation (Category 1)
Serious eye damage/eye irritation (Category 1)
Reproductive toxicity (Category 2)
Health hazards not otherwise classified (HHNOC)

Other hazards which do not result in classification :
Acute hazard to the aquatic environment (Category 3).

DANGER
H226: Flammable liquid and vapour
H301 + H311: Toxic if swallowed or in contact with skin
H314: Causes severe skin burns and eye damage
H3xx: May cause severe respiratory tract damage
H332: Harmful if inhaled
H361F: Suspected of damaging fertility
P201: Obtain special instructions before use.
P202: Do not handle until all safety precautions have been read and understood.

P210: Keep away from heat, sparks, open flames and hot surfaces. No smoking.
P233: Keep container tightly closed.
P240: Ground or bond container and receiving equipment.
P241: Use explosion-proof electrical, ventilating, lighting and all material-handling equipment.
P242: Use only non-sparking tools.
P261: Avoid breathing mist, vapors and spray.
P264: Wash face, hands and any exposed skin thoroughly after handling.
P270: Do not eat, drink or smoke when using this product.
P271: Use only outdoors or in a well-ventilated area.
P280: Wear protective gloves, protective clothing and eye protection.
P301+P330+P310: IF SWALLOWED: Rinse mouth and immediately call a POISON CENTER or doctor/physician.
P331: Do NOT induce vomiting.
P302+352: IF ON SKIN: Wash with soap and water.
P303+361+353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304+340+P312: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or physician if you feel unwell.
P312: Call a POISON CENTER or doctor/physician if you feel unwell.
P308+313: IF exposed or concerned: Get medical advice/attention.
P361 + P364: Remove/Take off immediately all contaminated clothing and wash before reuse.
P403+235: Store in a well ventilated place. Keep cool.
P405: Store locked up.
P501: Dispose of contents and container to a licensed chemical disposal agency in accordance with local, regional and national regulations.

3. Composition/information on ingredients

Common name	**CAS**	**Weight % content**
Water	7732-18-5	62 – 63 %
Cyclohexylamine	108-91-8	21 - 23 %
Morpholine	110-91-8	9 - 11 %
DIETHYLAMINOETHANOL	100-37-8	4 – 5 %

4. First-aid measures

Inhalation	Move person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen by trained personnel. If a problem develops or persists, seek medical attention.
Skin contact	Flush with water for at least 15 minutes. Remove contaminated clothing and wash before reuse. Avoid touching eyes with contaminated body parts. If a problem develops or persists, seek medical attention.
Eye contact	IMMEDIATELY flush with plenty of water. Remove contact lenses. Flush with water for at least 15 minutes. Hold eyelids apart to rinse properly. If a problem develops or persists, seek medical attention.
Ingestion	DO NOT induce vomiting, unless recommended by medical personnel. If victim is conscious wash out mouth with water and give 1-2 glasses of water to drink. Never give anything by mouth if victim is unconscious or convulsing. If spontaneous vomiting occurs, keep head below hips level to prevent aspiration into the lungs. Seek medical attention or contact a Poison Centre immediately.
Other	No information available.
Symptoms	May cause skin burns and eye damage. May cause burns to the respiratory tract. May cause burns to mouth, throat and stomach. High concentrations may cause central nervous system depression characterized by headache, dizziness, vertigo, nausea, drowsiness and fatigue.
Notes to the physician	Treat according to person's condition and specifics of exposure. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. Fire-fighting measures

Suitable extinguishing media	Dried powder, water spray, carbon dioxide (CO2), chemical foam. Do not use direct water jet.
Specific hazards arising from the chemical	Flammable liquid and vapors. May be ignited by heat, sparks, flame or static electricity. Emits toxic fumes under fire conditions.
Special protective equipment	Firefighters must wear self contained breathing apparatus with full face mask. Firefighting suit may not be efficient against chemicals.
Special protective actions for fire-fighters	Use water spray to cool fire-exposed containers. Prevent run-off from fire control or dilution from entering streams, sewers or drinking water supply.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Do not touch spilled material. Make sure to wear personal protective equipment mentioned in this Safety Data Sheet.
Environmental precautions	Prevent entry in sewer and other enclosed area. For a large spillage, consult the Department of Environment or the relevant authorities.
Methods and materials for containment and cleaning up	Remove sources of ignition. Ventilate the area well. Stop leak, if it's possible to do so without risk. Absorb with inert material (soil, sand, vermiculite) and place in an appropriate waste disposal clearly identified. Use non-sparkling and antistatic tools. Dispose via a licensed waste disposal contractor.

7. Handling and storage

Precautions for safe handling	Keep away from heat, sparks and open flame. Avoid all sources of ignition. Use non-sparkling and antistatic tools. Ground/bond all containers when transfer large quantities (5 gallons US or 20 L and more). Use only in well ventilated area. Do not breathe vapors, mists or aerosols. Avoid all contact with skin, eyes and clothing. Wear eye protection, gloves and other protective clothing that are adapted to the task being performed and the risks involved. Keep in the workplace only the quantities necessary for the work being performed. Keep containers tightly closed when not used. Do not eat, do not drink and do not smoke during use. Wash hands, forearms and face thoroughly after handling this compound and before eating, drinking or using toilet articles. Remove contaminated clothing and wash before reuse.
Conditions for safe storage, including any incompatibilities	Storage and handling should follow the NFPA 30 Flammable and/or Combustible Liquids Code and the National Fire Code of Canada (NFCC). Ground or bond large containers. Store tightly close and in properly labelled containers in a cool, dry and well ventilated place. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Keep away from direct sunlight and heat. Keep off freezing. Store away from oxidizing materials and incompatible materials (see section 10).
Storage temperature	5 to 40°C (41 to 104°F)

8. Exposure controls/personal protection

Immediately Dangerous to Life or Health	Morpholine : 1400 ppm.

Cyclohexylamine	TWA (8h)	10 ppm		ACGIH , BC, ON
		10 ppm	41 mg/m^3	RSST
Morpholine	TWA (8h)	20 ppm		ACGIH , BC
		20 ppm	70 mg/m^3	ON , OSHA
		20 ppm	71 mg/m^3	RSST (Pc)

Appropriate engineering controls	Provide sufficient mechanical ventilation (general and/or local exhaust) to keep the airborn concentrations of vapors, mists, aerosols or dust below their respective occupational exposure limits.
Individual protection measures	
Eye	Wear chemical splash goggles. If risk of contact with eyes or the face, wear a face shield. If respiratory hazards exist, a full face respirator may be required instead.
Hands	Chemical-resistant, impervious gloves should be worn at all times when handling this chemical product. Wear nitrile gloves, neoprene gloves, butyl rubber gloves or multilayer polymer laminate gloves. Be aware that the liquid may penetrate the gloves. Frequent change is advisable. Before using, user should confirm impermeability. Discard gloves that show tears, pinholes, or signs of wear. Gloves must only be worn on clean hands. Wash gloves with water before removing them. After using gloves, hands should be washed and dried thoroughly.
Skin	Personal protective equipment for the body should be selected based on the task being performed and the risks involved. Wear normal work clothing covering arms and legs as required by employer code. Wear synthetic or a neoprene apron, if necessary, to prevent repeated or prolonged contact with skin. To clean up a spill, if necessary, wear a synthetic polyethylene coveralls such as the Tychem (DuPont) or equivalent coveralls manufactured to provide protection against liquid chemical.
Respiratory	In case of insufficient ventilation or in confined or enclosed space and for an assigned protection factor (APF) up to 10 times the exposure limit: wear a half mask respirator with appropriate cartridges fitted with P100 filters. For an APF until maximum 100 times of exposure limit, wear a full face respirator mask with appropriate cartridges and P100 filters. For concentrations higher than the Threshold Limit Value, wear any self-contained breathing apparatus that has a full face piece and is operated in a pressure-demand or other positive-pressure mode.
Feet	Wear rubber boots to clean up a spill.


Goggles


Neoprene gloves (thin)

9. Physical and chemical properties

Physical state	Liquid	**Flammability**	Combustible
Colour	Clear to yellow	**Flammability limits**	N/Av.
Odour	Ammonia-like	**Flash point**	60°C (140°F) Tagliabu open cup
Odour threshold	N/Av.	**Auto-ignition temperature**	N/Av.
pH	10	**Sensibility to electrostatic charges**	N/Av.
Melting point	0°C (32°F)	**Sensibility aux sparks and/or friction**	N/Av.
Freezing point	0°C (32°F)	**Vapour density**	N/Av. (Air = 1)
Boiling point	<130°C (266°F)	**Relative density**	1.09 kg/L (Water = 1)
Solubility	Highly soluble in water.	**Partition coefficient n-octanol/water**	N/Av.

Evaporation rate	N/Av.	**Decomposition temperature**	N/Av.
Vapour pressure	0.8 to 5kPa (6 to 37.5 mm Hg) @ 20°C (68°F)	**Viscosity**	N/Av.
Percent Volatile	100%	**Molecular mass**	N/Ap.
N/Av.: Not Available N/Ap.: Not Applicable Und.: Undetermined N/E: Not Established			

10. Stability and reactivity

Reactivity	No information available for this product.
Chemical stability	Stable under recommended storage conditions.
Possibility of hazardous reactions (including polymerizations)	A dangerous reaction will not occur.
Conditions to avoid	Avoid heat, flame and sparks. Avoid contact with incompatible materials.
Incompatible materials	Strong oxidizing agents (such as nitric acid, perchloric acid, peroxides, chlorates and perchlorates), acids.
Hazardous decomposition products	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11. Toxicological information

Numerical measures of toxicity

Cyclohexylamine	Ingestion	156 mg/kg	Rat	LD50
	Inhalation	7.5 mg/l/4h	Rat	LC50
	Skin	277 mg/kg	Rabbit	LD50
Morpholine	Ingestion	1050 mg/kg	Rat	LD50
	Inhalation	>24 mg/l/4h	Rat	LC50
		9.4 mg/l/4h	Mouse	LC50
	Skin	504 mg/kg	Rabbit	LD50

Likely routes of exposure

Skin, eyes, inhalation, ingestion.

Delayed, immediate and chronic effects

Eye contact
May cause burns and damages to eyes. Undiluted morpholine is corrosive to the eyes of rabbits (OECD TG 405). Cyclohexylamine induces serious eye damages in rabbits (1 drop, 1% solution) and corneal opacity (1 drop, 50% solution) (INRS).

Skin contact
Toxic if absorbed through skin. Widespread contact with skin for several hours can cause large amounts of material to be absorbed and cause toxic effects similar to those for ingestion and death. May cause skin burns. Undiluted morpholine is corrosive to the skin (OECD TG 404). Cyclohexylamine is corrosive to rabbit skin with a cicatrisation period of 2 to 4 weeks (INRS).

Inhalation
Harmful if inhaled. Overexposure may cause burns of the respiratory system, High concentrations may cause central nervous system depression characterized by headache, dizziness, vertigo, nausea, drowsiness and fatigue.

Ingestion
Toxic if swallowed. May cause burns to mouth, throat and stomach. Swallowing will causes digestive tract disturbances resulting in nausea, vomiting, cramps and diarrhea.

Respiratory or skin sensitization
Ingredients present at levels greater than or equal to 0.1% of this product are skin or respiratory sensitizers.

IRAC/NTP Classification
No ingredients listed.

Carcinogenicity
Ingredients present at levels greater than or equal to 0.1% of this product are not listed as a carcinogen by IARC, ACGIH, NIOSH, NTP or OSHA.

Mutagenicity

		Ingredients in this product present at levels greater than or equal to 0.1% are not known to cause mutagenic effect.
	Reproductive toxicity	Tests on rats showed that cyclohexylamine is toxic to sperm. It decreases male fertility but has no effect on females fertility. No effect was observed on the embryo development (CERI Hazard Data 2001-54 (2002)).
	Specific target organ toxicity - single exposure	No target organ is listed.
	Specific target organ toxicity - repeated exposure	No target organ is listed.
Interactive effects	No information available for this product.	
Other information	The oral acute toxicity estimate (ATE) of the mixture was calculated to be greater than 50 mg/Kg but lower than 300 mg/kg. This value is classified according to GHS: Acute toxicity, oral (Category 3). The skin acute toxicity estimates (ATE) of the mixture was calculated to be greater than 200 mg/kg but lower than 1000 mg/Kg. This value is classified according to GHS: Acute toxicity, dermal (Category 3). The acute toxicity estimate (ATE) by inhalation of the mixture was calculated to be greater than 10 mg/L/4h but lower than 20 mg/L/4h. This value is classified according to GHS: Acute toxicity, inhalation (Category 4).	

12. Ecological information

Ecological toxicity	Fish - Oryzias latipes	LC50 33 mg/L; 96h (cyclohexylamine)
	Fish - Oryzias latipes	LC50 >100 mg/L; 96h (morpholine)
	Aquatic Invertebrate - Daphnia Magna, Water flea, fresh water	EC50 45 mg/L; 48h (morpholine)
	Algea, Pseudokirchnerilla subcapitata	EC50 51 mg/L; 72h (morpholine)
	Fish - Leuciscus idus	LC50 44 mg/L; 96h (cyclohexylamine)
Persistence	No persistent in environment.	
Degradability	The product in air rapidly decomposed by photochemical processes, mainly through oxidation by hydroxyl free radicals as well as some decomposition by direct photolysis. Biochemical Oxygen Demand (BOD) of 61% show that cyclohexylamine is rapidly degrading. EG is readily biodegradable (96% in 28 days) OECD Guideline 301D.	
Bioaccumulative potential	No bioaccumulation. Cyclohexylamine is not expected to bioaccumulate based on measured bioconcentration factors (BCF) of 3.2 and a low partition coefficient (Log Kow 1.49). Morpholine is not expected to bioaccumulate based on measured bioconcentration factors (BCF) of < 2.8 (OECD 305C) and a low partition coefficient (Log Kow -2.5).	
Mobility in soil	The estimated Koc value of 150 for cyclohexylamine suggests a very high mobility in soil. The Koc of morpholine is estimated as 7.4 using suggests a very high mobility in soil.	
Other adverse effects	This chemical does not deplete the ozone layer.	

13. Disposal considerations

Container 	Important! Prevent waste generation. Use in full. DO NOT throw residual to sewer, streams, sewers or drinking water supply. Residues and empty containers must be considered as hazardous waste. Dispose via a licensed waste disposal contractor. Observe all federal, state/provincial and municipal regulations. If necessary consult the Department of Environment or the relevant authorities.

14. Transport information

UN Number	UN 2920
UN Proper Shipping Name	CORROSIVE LIQUID, FLAMMABLE, N.O.S. (cyclohexylamine, morpholine)
Environmental hazards	This material is listed as a marine pollutant.
Special precautions for user	Permit required for transportation with proper placards displayed on vehicle.
TDG - Transportation of Dangerous Goods (Canada)	
Transport hazard class(es)	 Class 8 Class 3
Packing group	II
Emergency response guidebook 2012	132
IMO/IMDG - International Maritime Transport	
Classification	UN 2920. CORROSIVE LIQUID, FLAMMABLE, N.O.S. (cyclohexylamine, morpholine). Class 8 (3), PG II. Emergency schedules (EmS-No) F-E, S-C
IATA - International Air Transport Association	
Classification	UN 2920. CORROSIVE LIQUID, FLAMMABLE, N.O.S. (cyclohexylamine, morpholine). Class 8 (3), PG II.

These transportation classifications are provided as a customer service. As the shipper YOU remain responsible for complying with all applicable laws and regulations, including proper transportation classification and packaging. In addition, if a domestic exemption exists, it is the responsibility of the shipper to define the application of it.

15. Regulatory information

Other regulations

UNITED STATE OF AMERICA:
- Toxic Substance Control Act (TSCA) :
All ingredients are listed in the TSCA Inventory or otherwise comply with TSCA requirements.
- EPCRA Section 313 Toxic Chemicals:
No material is listed.
- CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act):
No material is listed.
- EPCRA Section 302/304 Extremely Hazardous Substances:
Cyclohexylamine (CAS no 108-91-8).
- Clean Water Act (CWA) 311 Hazardous Substances:
No material is listed.
- Clean Water Act (CWA) Priority Pollutants:
No material is listed.
- Clean Air Act (CAA) 111:
Morpholine (CAS no 110-91-8).
Cyclohexylamine (CAS no 108-91-8).
- Clean Air Act (CAA 112b) HON - Hazardous Organic National Emission Air Pollutants:
Cyclohexylamine (CAS no 108-91-8).
- Clean Air Act (CAA 112b) HAP - Hazardous Air Pollutants:
No material is listed.
- CAA 112(r) Regulated Chemicals for Accidental Release Prevention:
Cyclohexylamine (CAS no 108-91-8).
- California Proposition 65:
No material is listed.
CANADA :

	- Canada DSL and NDSL: All ingredients are listed in the Domestic Substances List (DSL). - Canadian National Pollutant Release Inventory Substances (NPRI): No material is listed.
	WHMIS 1988  B3 D1B E Class B3 : Combustible Liquid Class D1B : Toxic material causing immediate and serious toxic effects Class E : Corrosive material **HMIS**  **NFPA** 

16. Other information

Date (YYYY-MM-DD)	AQUARIAN CHEMICALS INC. 2015-09-17
Version	01
Other information	REFERENCES: - Haz-Map, Information on Hazardous Chemicals and Occupational Diseases, http://hazmap.nlm.nih.gov/index.php - Service du répertoire toxicologique de la Commission de la santé et de la sécurité du travail (CSST), http://www.reptox.csst.qc.ca - IPCS INCHEM, Chemical Safety Information from Intergovernmental Organizations, Canadian Centre for Occupational Health and Safety (CCOHS), Copyright International Programme on Chemical Safety (IPCS), http://www.inchem.org - NIOSH Pocket Guide to Chemical Hazards, Centers for Disease Control and Prevention, NIOSH Publications, 2007, http://www.cdc.gov/niosh/npg/npg.html - OECD Existing Chemicals Database, Chemicals Screening Information DataSet (SIDS) for High Volume Chemicals, UNEP publications, http://webnet.oecd.org/HPV/UI/Search.aspx - Database, Institut National de Recherche et de Sécurité, http://www.inrs.fr/accueil/produits/bdd.html - TOXNET Databases, Toxicology Data Network, NIH U.S. National Library of Medicine, http://toxnet.nlm.nih.gov/ - Toxicological Review, Integrated Risk Information System (IRIS), USA Environment Protection Agency, www.epa.gov/iris ACGIH: American Conference of Governmental Industrial Hygienists AIHA: American Industrial Hygiene Association HMIS: Hazardous Materials Identification System NFPA: National Fire Protection Association OSHA: Occupational Safety and Health Administration (USA) NIOSH: National Institute for Occupational Safety and Health NTP: National Toxicology Program RSST: Règlement sur la santé et la sécurité du travail (Québec) GHS: Globally Harmonized System IARC: International Agency for Research on Cancer IDLH: Immediately Dangerous to Life or Health STEL: Short Term Exposure Limit (15 min) TWA: Time Weighted Averages

	WHMIS: Workplace Hazardous Materials Information System To the best of our knowledge, the information contained herein is accurate. However, neither Préventis System 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.