

TerraLink

MATERIAL SAFETY DATA SHEET

This Material Safety Data Sheet meets or exceeds the requirements of the Canadian Controlled Product Regulations (WHMIS)

1. Product and Supplier Identification

Product: Glass Cleaner – Greenhouse Concentrate

Product Use: Greenhouse Cleaning Solution

Supplier: Terralink Horticulture Inc.
464 Riverside Road, Abbotsford BC V2S 7M1
CEDA Emergency contact: 604-540-4100

2. Composition

Component	% (w/w)	Exposure Limits (ACGIH)*	LD ₅₀	LC ₅₀
Sulphuric Acid CAS No 7664-93-9 EINICS No 231-639-5	30 - 40	TLV-TWA: 0.2 mg/m ³ Basis: Mucostasis, Lung function	2140 mg/kg (oral/rat)	255 mg/m ³ (rat, inhalation/ 4 hour)
Ammonium Bifluoride CAS No 1341-49-7	15 - 20	Not established	No data	No data
Glycolic Acid CAS No 79-14-1 EINICS No 201-180-5	10 - 15	Not established	1357 mg/kg (oral/rat)	2520 mg/m ³ (rat, inhalation/ 4 hour)
Oxalic acid CAS No 6153-56-6 EINICS No 205-634-3	5 – 7.5	TLV-TWA: 1 mg/m ³ Basis: Irritation, burns	475 mg/kg (oral/rat)	>20000 mg/kg (administered as 5% aqueous solution)
Ingredients which are non-hazardous or do not meet requirements for disclosure	5 - 15	Not applicable	Not applicable	Not applicable

*ACGIH – American Conference of Governmental Industrial Hygienists

Exposure limits may vary from time to time and from one jurisdiction to another. Check with local regulatory agency for the exposure limits in your area.

3. Hazards Identification

Routes of Entry:

Skin Contact: Yes Eye Contact: Yes Ingestion: Yes Inhalation: Yes

Emergency Overview: Extremely corrosive liquid. The severity of damage depends on the duration of the exposure. Reactive with water and numerous commonly encountered materials, generating heat. Contact with some metals such as aluminum releases flammable hydrogen gas.

Acute Health Effects:

INHALATION: This product is toxic by inhalation, based on animal information. Although it does not produce a vapour when used as directed, misted produce will cause severe upper respiratory irritation resulting in burns, which may be delayed. This may cause permanent lung damage.

SKIN CONTACT: Direct contact can cause severe burns with deep ulceration, permanent scarring, and baldness. It can penetrate to deeper layers of the skin and corrosion will continue until removed. Pain may be delayed for hours.

EYE CONTACT: Damage can range from severe irritation and mild scarring to blistering, disintegration, ulceration, severe scarring and clouding. Glaucoma and cataracts are possible late developments. In severe cases, permanent blindness results. Use of contact lenses may aggravate the exposure.

INGESTION: Ingestion has produced severe corrosive burns to mouth, throat, and esophagus. Symptoms include severe pain, vomiting, diarrhea, collapse and possible death. Small amounts of caustic which enter the lungs during ingestion or vomiting (aspiration) can cause serious lung injury and death.

Chronic Health Effects: Repeated or prolonged exposure of the skin to low concentrations of liquid can cause dermatitis. There are a few reports of chronic respiratory disease from repeated and prolonged exposure to mists. There is no evidence of carcinogenicity in humans from occupational exposures, but inhalation of sulphuric acid fumes have been linked to cancer. Components of this product are not expected to accumulate in the body. Studies indicate a link between inhalation of oxalic acid through mists and the production of kidney stones.

Medical Conditions Aggravated by Exposure:

Pre-existing skin disorders.

4. First Aid Measures

First Aid procedures:

The following first aid recommendations are based on the assumption the appropriate personal and industrial hygiene practices are followed.

Inhalation: Remove source of contamination or remove victim to fresh air. If breathing is difficult, it may be beneficial for a trained person to give oxygen. Ensure victim is completely at rest - allow no physical exertion. Symptoms of pulmonary edema may be delayed for up to 48 hours. Immediately transport victim to an emergency medical facility.

Ingestion: Never give anything by mouth if victim is rapidly losing consciousness, or is unconscious or is convulsing. Have victim rinse mouth thoroughly with water. **DO NOT INDUCE VOMITING.** Have victim drink 300 mL (10 oz.) of water. If milk is available, administer **AFTER** the water. If vomiting occurs naturally, have the victim lean forward to reduce risk of aspiration. Repeat administration of water. Immediately transport to emergency medical facility.

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Skin Contact: Avoid direct contact. Wear impervious protective gloves if necessary. Under running water, remove contaminated clothing, shoes, and leather goods such as watchbands and belts. Immediately flush contaminated areas with lukewarm, gently running water for at least 20 minutes. **DO NOT INTERRUPT FLUSHING** - have emergency vehicle wait if necessary. Transport victim to emergency medical facility. Completely decontaminate clothing, shoes and leather goods before reuse or discarding.

Eye Contact: Immediately flush contaminated eye(s) with lukewarm, gently running water for at least 60 minutes while holding the eyelid(s) open. Take care not to rinse contaminated water into a non-affected eye. Neutral saline solution may be used for flushing if available. **DO NOT INTERRUPT FLUSHING** - keep emergency vehicle waiting if necessary. Transport victim to emergency medical facility.

General Comments: Provide general supportive measures (comfort, warmth, rest). Seek medical attention for all exposures except minor instances of inhalation. First-aid procedures should be reviewed by appropriate personnel familiar with strongly caustic products used in the workplace.

5. Fire Fighting Measures

Flash point:	None to boiling
Autoignition temperature:	Not applicable. See information under "Fire Fighting Instructions"
Lower Explosive Limit:	Not applicable
Upper Explosion Limit:	Not applicable
Sensitivity to Impact:	Not sensitive.
Sensitivity to Static Discharge:	Not sensitive.

Hazardous Decomposition Products: Oxides of sulphur, very toxic and corrosive hydrogen fluoride, oxides of carbon.

Extinguishing Media: Does not burn or support combustion. Use extinguishing agents suitable for the surrounding fire. Use water with caution since it can generate heat if applied directly to product solutions. Do NOT use carbon dioxide as a fire extinguishing agent.

Fire Fighting Instructions: Evacuate area and fight fire from a safe distance. Wear adequate personal protective equipment. Approach fire from upwind. Remove or isolate materials not involved in the fire if it can be done without risk. At high temperatures, fuming may occur, giving off a strong corrosive gas. Chemical resistant clothing and positive pressure SCBA may be required. Water may be used to keep fire-exposed containers cool to prevent rupture. Do not direct water at source of leak. Contact with some common metals (aluminum, zinc) produces hydrogen gas which may form explosive mixtures in air.

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) HAZARD INDEX:

HEALTH: 3 - Short exposure could cause serious temporary or residual injury.

FLAMMABILITY: 0 - Will not burn.

REACTIVITY: 1 - Normally stable but can become unstable at elevated temperatures and pressures, or may react violently with water.

SPECIFIC HAZARDS: Corrosive

6. Accidental Release Measures

Personal Protection: Evacuate unnecessary personnel from spill area. Wear appropriate personal protective equipment. Ventilate area. Remove chemicals which can react with the spilled material if it can be done without risk. Do not touch spilled product.

Environmental Considerations: Implement spill control plan. Stop or reduce leak if safe to do so. Prevent from entering sanitary or storm sewers, waterways, or confined spaces by dyking with inert materials such as earth or sand.

Remedial Measures: Restrict access to area until completion of cleanup. Ensure cleanup is conducted by trained personnel only. Use all appropriate personal protective equipment. Contain and absorb spill with inert materials. Neutralization with water and acetic or hydrochloric acid. Ventilate and flush cleaned area with water. Notify government occupational health and safety and environmental authorities as applicable.

7. Handling and Storage

Handling: Prevent release of highly corrosive and reactive liquid. Avoid generation of mists. Ensure adequate ventilation. Have emergency equipment readily available. When diluting, slowly add caustic to cold water to avoid boiling or spattering. Keep containers closed when not in use.

Storage: Store in a cool, dry, and well ventilated area. Store away from incompatible materials such as strong acids. Keep storage area separate from populated work areas. Drums may need to be vented periodically by trained personnel. If drums are swollen, contact manufacturer for advice on special procedures and equipment.

8. Exposure Controls, Personal Protection

Engineering Controls: Use general or local exhaust ventilation to maintain exposure below the exposure limits. These controls may need to be augmented by the use of process or personnel enclosures, control of process conditions, or by process modification.

Respiratory Protection:

Not normally required for most uses. If respiratory protection is required, NIOSH recommendations for strongly caustic products in air are:

Up to 10 mg/m³: SAR operated in continuous-flow mode; or a full-face piece respirator with high-efficiency particulate filter(s); or a powered air-purifying respirator with dust and mist filter(s); or a full face-piece SCBA or full face-piece SAR.

IDLH Conditions (10 mg/m³) or Planned Entry in Unknown Concentrations: Positive pressure, full face-piece SCBA, or positive pressure full face-piece SAR with an auxiliary positive pressure SCBA.

Escape: Full face-piece respirator with high-efficiency particulate filter(s), or escape type SCBA.
NOTE: Air purifying respirators do not protect against oxygen deficient atmospheres

Skin Protection: Wear impervious gloves and boots and/or other protective clothing according to circumstances. Avoid use of leather and wool. Some operations may require the use of an impervious full-body encapsulating suit.

Eye and Face Protection: Eye protection is required. Chemical safety goggles are recommended. A full face shield may also be necessary. The wearing of contact lenses is not recommended.

Footwear: As required by worksite rules.

General precautions: Do not ingest. Do not eat, drink or smoke when using this product. Wash exposed areas thoroughly with soap and water. Have a safety shower and eye wash station

9. Physical and Chemical Properties

Appearance:	Blue liquid	Freezing Point:	not determined
Odour:	Acrid odour	Boiling Point:	not determined
Odour Threshold:	Not determined	Critical Temperature:	Not available
pH:	~1 (1.5% solution)	Relative Density:	~ 1.10 (water = 1)
Vapour Pressure:	Not available	Partition Coefficient:	Not available
Solubility:	Soluble in water in all concentrations.	Evaporation Rate:	Not available
Vapour Density:	Not available		

10. Stability and Reactivity

Chemical Stability and Reactivity: Stable

Materials and Conditions to Avoid: Do not mix with bases. Corrodes any active metal such as zinc, aluminum, magnesium, brass or bronze. Do not mix with inorganic chemicals including water, acrylonitrile, alkali solutions, carbides, chlorates, fulminates, nitrates, perchlorates, permanganates, picrates, powdered metals, metal acetylides or carbides, epichlorohydrin, aniline, ethylenediamine.

Hazardous Reactions: Risk of exothermic reactions exists for mixing with aqueous solutions. Contact with active metals will produce hydrogen gas, an extremely flammable gas.

Hazardous Decomposition Products: Oxides of sulphur, very toxic and corrosive hydrogen fluoride, oxides of carbon.

Hazardous Polymerization: Hazardous polymerization will not occur.

11. Toxicological Information

Acute Exposure: Theoretical oral LD₅₀ for the product is 687 mg/kg (oral/rat). The LD₅₀ (dermal) has not been determined.

Chronic Exposure:	See Section 3.
Exposure Limits:	See Section 2
Irritancy:	Severely irritating to skin and eyes.
Sensitization:	Insufficient data exists to indicate that this product is a skin sensitizer.
Carcinogenicity:	Not expected to be carcinogenic except as indication in Section 3.
Teratogenicity:	Not expected to be teratogenic.
Reproductive Toxicity:	Not expected to be a reproductive toxin.
Mutagenicity:	No evidence found.
Synergistic Products:	None expected.

12. Ecological Information

Environmental toxicity:

Sulphuric Acid:	TLm <i>Gambusia affinis</i> (mosquito fish) 42 mg/l/48 hr turbid water TLm <i>Lepomis macrochirus</i> (bluegill) 49 mg/l/48 hr tap water 20 deg C
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Biodegradability: No data available.

13. Disposal Considerations

Canadian Environmental Protection Act: All ingredients are listed on the DSL. Dispose according to all local, provincial and federal requirements.

14. Transportation Information

Canadian Transportation of Dangerous Goods Regulations: UN 3264, CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (Sulphuric acid, Ammonium biofloride), Class 8, PG II

International Air Transport Association (IATA): UN 3264, CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (Sulphuric acid, Ammonium biofloride), Class 8, PG II

International Maritime Organization (IMO): UN 3264, CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (Sulphuric acid, Ammonium biofloride), Class 8, PG II, EmS No F-A, S-B, Stowage category "B" Clear of Living Quarters, "away from" alkalis

15. Regulatory Information

Canadian Federal Regulations:

Canadian Environmental Protection Act: All ingredients are on the Domestic Substances List.
WHMIS Classification: D1A, D2A, E

16. Other Information

Original Preparation Date: February 4, 2010

Prepared by: Ravcor Cleaning Solutions, 108-6249-205th Street, Langley, BC, Canada, V2Y 1N7

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Revisions: None

