Safety Data Sheet
Superbrite

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifier
Product name: Superbrite
Product code: Superbrite
Synonym(s): Aqueous mixture containing hydrofluoric and sulfuric acids

1.2 Relevant identified uses of the substance or mixture and uses advised against
General use: Aluminum cleaner, brightener, and deoxidizer
Uses advised against: Not for consumer use

1.3 Details of the supplier and of the safety data sheet
Manufacturer/Distributor
Ultra-Look Corp.
4860 Drane Field Rd.
Lakeland, FL 33811 USA
+1-863-607-6700

1.4 Emergency telephone number
INFOTRAC: +1-800-535-5053

SECTION 2 - HAZARDS IDENTIFICATION

2.1 Classification of substance or mixture
Product definition: Mixture

Classification in accordance with 29 CFR 1910 (OSHA HCS) and Regulation EC No. 1272/2008
Acute Toxicity, Oral - Category 2 [H300]
Acute Toxicity, Dermal - Category 1 [H310]
Skin Corrosion - Category 1A [H314]
Acute Toxicity, Inhalation - Category 2 [H330]

2.2 Label elements
Hazard symbol(s):


GHS06


GHS05

Signal word: **Danger**

Hazard statement(s):
H300 - Fatal if swallowed
H310 - Fatal in contact with skin
H314 - Causes severe skin burns and eye damage
H330 - Fatal if inhaled

Precautionary statements

[Prevention]
P260 - Do not breathe mist, spray, or vapor.
P262 - Do not get in eyes, on skin or on clothing.
P264 - Wash hands and other exposed skin 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.
P280 + P284 - Protective gloves, protective clothing, eye protection, face protection, and respiratory protection.

[Response]
P301 + P330 + P331 + P310 - IF SWALLOWED: Rinse mouth. DO NOT induce vomiting. Immediately call a POISON CENTER or doctor.
P303 + P361 + P350 + P310 - IF ON SKIN (or hair): Remove immediately all contaminated clothing. Gently wash with water. Immediately call a POISON CENTER or doctor.
P304 + P340 + P310 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or doctor.
P305 + P351 + P338 + P310 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor.
P320 - Specific treatment is urgent: Immediately contact a POISON CENTER or doctor. Refer to Section 4 of this SDS.
P361 + P363 - Remove immediately all contaminated clothing. Wash contaminated clothing before reuse.

[Storage]
P405 + P403 + P233 - Store locked up in a well-ventilated place.

[Disposal]
P501 - Dispose of contents and containers in accordance with national and local regulations.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS
None as defined under 29 CFR 1900.1200.

SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Not applicable

3.2 Mixtures

% by Weight	Ingredient	CAS Number	EC Number	Index Number	GHS Classification
----------	Hydrofluoric acid	7664-39-3	231-634-8	009-003-00-1	H300, H310, H314, H330
----------	Sulfuric acid	7664-93-9	231-639-5	016-020-00-8	H314
----------	Surfactant	Proprietary	----------	----------	H302, H319, H412
----------	2-Butoxyethanol	111-76-2	203-905-0	603-014-00-0	H227, H302, H312, H315, H319, H332

As per paragraph (i) of 29 CFR 1910.1200, formulation is considered a trade secret and specific chemical identity and exact percentage of composition may have been withheld. Specific chemical identity and exact percentage composition will be provided to health professionals, employees, or designated representatives in accordance with the applicable provisions of paragraph (i).

There are no additional ingredients present in this product 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.

SECTION 4 - FIRST AID MEASURES

4.1 Description of first aid measures

This product contains < 5% free hydrofluoric acid (HF), which can cause serious burns. First aid techniques for treatment of hydrofluoric acid exposures are unique. Even low levels of exposure to HF require a rapid response and the use of calcium (most commonly calcium gluconate solutions or gels) to scavenge and neutralize the fluoride ion. Effects may be delayed, so treatment should be given even if exposure is suspected.

Inhalation: If suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. Move the exposed person to fresh air immediately. If breathing is difficult or irregular, administer oxygen; if respiratory arrest occurs, start artificial respiration by trained personnel. Do not use mouth-to-mouth method if victim inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. If unconscious, maintain an open airway. Loosen tight clothing such as a collar, tie, belt, or waistband. Calcium Gluconate 2.5% in normal saline may be given by nebulizer with oxygen. If unavailable, four Calcium Gluconate (500 mg) tablets should be given by mouth every two hours until the patient is admitted to the hospital. ***Get immediate medical attention***.

Eyes: Immediately flush eyes with large amounts of water or saline solution for at least 15 minutes, keeping eyelids apart and away from the eyeball. Remove contact lenses, if present and easy to do, after first 2 minutes and continue rinsing***. Immediately contact a doctor, preferably an ophthalmologist***. If a physician is not immediately available, apply one or two drops of 0.5% tetracaine hydrochloride solution or other topical ophthalmic anesthetic and continue irrigation. Do not use skin treatment preparations for burns for the eyes. Use no oils or greases unless instructed to do so by a doctor. Irrigate with 1% Calcium Gluconate in normal saline for one to two hours to prevent or lessen corneal damage.

Skin: Flush skin with large amounts of water while removing contaminated clothing using PVC gloves and continue rinsing for at least 15 minutes. Apply and continually massage Calcium Gluconate Gel (2.5%) into the burn area with gloved fingers until the pain is relieved. For larger burns or burns treated with Calcium Gluconate Gel (in which pain is present longer than 30 minutes), a physician should inject 5% aqueous Calcium Gluconate beneath, around and in the burned area. Use of local anesthetics is not recommended, as reduction in pain is an indicator of effectiveness of treatment. For large or severe burns four Calcium Gluconate (500 mg) tablets should be given by mouth every two hours, until patient receives medical care. ***Seek immediate medical attention***. Wash contaminated clothing thoroughly before reuse. Discard contaminated shoes.

Ingestion: Rinse mouth with water if the victim is conscious. Remove dentures if present. DO NOT induce vomiting. If swallowed, give 3 - 4 glasses of water to drink if victim is conscious, alert and able to swallow. Give four Calcium Gluconate (500 mg) tablets every two hours; if not available, give the victim milk or milk of magnesia. Never give anything by mouth to an unconscious person. Vomiting may occur spontaneously. To prevent aspiration of swallowed material lay victim on side with head lower than waist. Never give anything by mouth to an unconscious or convulsing person. Do not leave the victim unattended. ***Seek immediate medical attention***.

4.2 Most important symptoms and effects, both acute and delayed

Potential health symptoms and effects

Eyes: *Corrosive*. Causes burns to the eyes and serious eye damage. Symptoms include pain, tearing, corneal opacity, and blindness. Can cause permanent corneal damage. Direct contact with liquid can cause blindness and/or permanent eye damage. This material is extremely destructive to the eyes, mucous membranes, and surrounding tissue.

Skin: Very toxic by skin contact. Causes deep and excruciatingly painful burns to the skin. Symptoms include redness, blistering, localized pain, dermatitis, and deep burns. Large or multiple burns over large body surface area may also cause hypocalcaemia and other toxic effects which may be fatal.

Inhalation: Very toxic if inhaled. Causes severe irritation to the nose, throat, and respiratory tract. Symptoms include dizziness, headache, incoordination, chest pains, coughing respiratory paralysis, and/or respiratory failure.

Additional information: Inhalation of hydrofluoric acid mist may cause severe irritation of the mucous membranes and respiratory tract. Acute symptoms may include burning of the nose, throat and upper respiratory tract, nasal congestion, coughing, choking, chills, chest tightness, and bronchitis. High concentrations in air may cause rapid inflammation and congestion of the lungs as well as severe breathing difficulties that may be delayed in onset (after exposure has ceased).

Ingestion: Very toxic if swallowed. Causes severe burns to the mouth, mucous membranes, throat, esophagus and stomach. Symptoms include spontaneous vomiting, diarrhea and possibly bloody stools.

Additional information: Ingestion of hydrofluoric acid will result in severe burns of the mouth, throat, and stomach. Symptoms may include swelling of the oral mucosa, nausea, vomiting, pain, diarrhea, bleeding, and ulceration. May be fatal if swallowed. Ingestion may also result in the fluoride ion binding with calcium to produce abnormally low levels of serum calcium (hypocalcaemia), which will impair many necessary physiological functions physiological functions in the body (e.g. muscle contractions). Systemic toxicity is likely to occur unless medical treatment is immediate.

Delayed effects: The effects of contact with dilute solutions of hydrofluoric acid or its vapors may be delayed. The potential delay in clinical signs or symptoms for dilute solutions of 0 - 20% is up to 24 hours. Exposure can also cause bone and joint changes in humans (fluorosis).

Chronic; Prolonged or repeated exposure to Hydrofluoric Acid may lead to irreversible damage to health. Prolonged or repeated skin contact will lead to necrosis of the skin. Effects may be delayed.

4.3 Indication of any immediate medical attention and special treatment needed

Advice to doctor and hospital personnel

The damage caused by this product is far more extensive than that caused by solutions of hydrochloric or other acids. First aid and medical treatment must be specific for **Hydrofluoric Acid Solutions**. Hydrofluoric acid penetrates deeply and rapidly below fat layers, binding and depleting tissue calcium. Failure to start or provide correct medical treatment may be fatal.

There is a major risk of systemic toxicity following inhalation, ingestion, or skin burns. Calcium depletion and electrolytic disorders may be fatal. A skin burn of more than 5% of body area may be associated with systemic effects. Treatment with intravenous Calcium Gluconate should be started immediately.

Patient may require treatment in an intensive care unit. Serum calcium and magnesium analyses should be performed frequently and the patient's electrolytic balance may need correction. Electrocardiograms should be monitored routinely for prolonged Q-T interval or bradycardia. Hepatic and renal function should be monitored. Intravenous corticosteroids may be necessary.

Inhalation: Inhalation may lead to chemical pneumonitis, hemorrhagic pulmonary edema ,and may be fatal. Acute respiratory failure may develop requiring airway support, 100% oxygen and positive end expiratory pressure treatment for pulmonary edema. Be prepared to intubate or perform a tracheotomy. The use of nebulized Calcium Gluconate in a 2% solution should be considered.

Skin: Skin burns may become necrotic or gangrenous and may spread. Infiltration of Calcium Gluconate into the surrounding tissue may be required for severe burns. This can be performed by the injection of 5% Calcium Gluconate solution. Injection should be made with care on the hands, feet and face. For fingers, toes, and less severe burns, continue application of 2.5% Calcium Gluconate gel four to six times a day for up to three or four days. Wear gloves while applying the gel. If Calcium Gluconate solution is injected into the fingers or toes great care should be taken and not more than 0.5 ml should be injected. Pain not relieved by use of the gel is best managed by inter-arterial infusion of Calcium Gluconate solution by medical personnel experienced in this technique. Surgical debridement of the affected area may be necessary in larger burns to control hypocalcaemia. Delayed pulmonary edema may occur with burns to the face and neck.

Eyes: Following contact with the eyes ensure that first aid treatment has been carried out. Irrigate eyes with 1% Calcium Gluconate solution every two to three hours for as long as considered necessary. Topical anesthetic and corticosteroid drops may be useful. An ophthalmologist should be consulted as severe corneal damage is possible. Long term monitoring may be necessary.

Ingestion: Nasogastric suction with Calcium Gluconate solution may reduce systemic fluoride toxicity. The possibility of chemical burns to the gastrointestinal tract needs to be kept in mind. Acute systemic fluoride poisoning may cause hypocalcaemia (hypomagnesaemia) requiring intravenous calcium (magnesium) therapy. Electrocardiogram results and blood calcium/magnesium need to be monitored in acute systemic fluoride poisoning.

SECTION 5 - FIRE FIGHTING MEASURES

5.1 Extinguishing media

Suitable methods of extinction: Use extinguishing media suitable for the surrounding fire.
Unsuitable methods of extinction: No limitations of extinguishing agents are given for this material.

5.2 Special hazards arising from the substance or mixture

Closed containers may explode due to the buildup of pressure when exposed to extreme heat. During emergency conditions overexposure to decomposition products may cause a health hazard. Symptoms may not be immediately apparent or may be delayed. Obtain medical attention.

Explosion hazards: This product is not considered an explosion hazard.

5.1 Extinguishing media

Suitable methods of extinction: Use extinguishing media suitable for the surrounding fire.
Unsuitable methods of extinction: No limitations of extinguishing agents are given for this material.

5.2 Special hazards arising from the substance or mixture

CORROSIVE. Product may liberate hydrogen gas on contact with metals, creating a fire and explosion hazard. Potential sources of ignition should be removed from the area. Closed containers may rupture due to the buildup of pressure when exposed to extreme heat. During emergency conditions overexposure to decomposition products may cause a health hazard. Symptoms may not be immediately apparent or may be delayed. Obtain medical attention.

Explosion hazards: This product is not considered an explosion hazard.

5.3 Advice to firefighters

Full protective equipment including self-contained breathing apparatus should be used. Water may be used to cool closed containers to prevent pressure buildup and possible autoignition or explosion when exposed to extreme heat. Water contaminated by this material must be contained

from being discharged to any waterway, sewer or drain to prevent environmental contamination.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Evacuate non-essential personnel. Wear appropriate protective clothing and equipment designated in Section 8.2. Ventilate the area. Remove all sources of ignition. NO SMOKING. Clean up spills immediately. Spills create a slip hazard.

6.2 Environmental precautions

Avoid dispersal of spilled material or runoff and prevent contact with soil and entry into drains, sewers, or waterways. Use water sparingly to minimize environmental contamination and reduce disposal requirements.

6.3 Methods and materials for containment and cleaning up

Approach spill from upwind direction. DO NOT FLUSH SPILLS DOWN THE DRAIN. Discharged material may produce hydrogen fluoride fumes. Avoid drainage to areas that cannot be treated. Cover drains and contain spill. Carefully neutralize material with lime slurry, soda ash, limestone, caustic soda, or other alkaline material. Exercise caution during neutralization as considerable heat may be generated. Cover with a large quantity of non-combustible, inert absorbent (e.g. sand, vermiculite, diatomaceous earth). DO NOT use combustible material such as sawdust. Collect using non-sparking tools and place into an approved container for proper disposal. Observe possible material restrictions (Sections 7.2, 10.5 and 13). Dispose of contents and containers via licensed waste disposal contractor. Contaminated absorbent poses the same hazard as the spilled product.

Spills and releases may have to be reported to Federal and/or local authorized. See Section 15 regarding reporting requirements.

6.4 Reference to other sections

Refer to Section 1 for emergency contact information.
Section 8 contains information on appropriate personal protective equipment.
For indications about waste treatment, see Section 13.

SECTION 7 - HANDLING AND STORAGE

7.1 Precautions for safe handling

DO NOT MIX WITH BLEACH OR OTHER CHEMICALS AND PRODUCTS. Wear all appropriate personal protective equipment specified in Section 8.2. DO NOT get in eyes or on skin or clothing. DO NOT inhale mist or vapor. NO SMOKING. If normal use of material presents a respiratory hazard, use only adequate ventilation or wear an appropriate respirator. Wash contaminated clothing thoroughly before reuse. Discard contaminated shoes.

Advice on protection against fire and explosion

Keep away from heat and sources of ignition.

7.2 Conditions for safe storage, including any incompatibilities

Store in the original container in dry, cool, well-ventilated areas away from incompatible materials (see Section 10.5), food, and drink. Separate from alkalis. DO NOT store in glass or metal containers. Transfer only to approved containers having correct labeling. Keep containers tightly closed when not in use. Protect containers against physical damage. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. DO NOT reuse containers when empty as they contain product residue. Use appropriate containment to avoid environmental contamination. Ventilate closed areas. Keep locked up and out of reach of children.

7.3 Specific end uses

Apart from the uses mentioned in Section 1.2, no other specific uses are stipulated.

SECTION 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Occupational exposure limit values

CAS Number	Ingredient	OSHA PEL	ACGIH TLV	NIOSH
111-76-2	2-Butoxyethanol	50 ppm; 240 mg/m^3 TWA	20 ppm; 97 mg/m^3 TWA; skin	50 ppm; 24 mg/ m^3 TWA 700 ppm IDLH; skin
67-17-5	Hydrofluoric acid	3 ppm TWA	0.5 ppm TWA	3 ppm; 2.5 mg/m^3 TWA; 30 ppm IDLH
764-93-9	Sulfuric Acid	1 mg/m^3 TWA	2 mg/m^3 TLV; 3 mg/m^3 STEL	1 mg/ m^3 TWA; 15 mg/ m^3 IDLH

A "skin" notation following the inhalation exposure guideline refers to the potential for dermal absorption of the material, including eyes and mucous membranes, either by direct contact with vapors or by direct skin contact. It is intended to alert the reader that inhalation may not be the only route of exposure and that measures to minimize dermal exposure should be considered.

8.2 Exposure controls

Engineering measures: Technical measures and appropriate working operations should be given priority over the use of personal protective equipment. Use adequate ventilation. Local exhaust is preferable. Refer to Section 7.1.

Individual protection measures: Wear acid resistant, protective clothing to prevent repeated or prolonged contact with product. Protective clothing needs to be selected specifically for the workplace, depending on concentrations and quantities of hazardous substances handled. The chemical resistance of the protective equipment should be enquired at the representative supplier.

Engineering measures: Technical measures and appropriate working operations should be given priority over the use of personal protective

equipment. Use adequate ventilation. Local exhaust is preferable. Refer to Section 7.1.

Individual protection measures: Wear protective clothing to prevent repeated or prolonged contact with product. Protective clothing needs to be selected specifically for the workplace, depending on concentrations and quantities of hazardous substances handled. The chemical resistance of the protective equipment should be enquired at the representative supplier.

Hygiene measures: Facilities storing or using this material should be equipped with an eyewash station and safety shower. First Aid Kits should include Calcium Gluconate (500 mg) tablets, Calcium Gluconate gel (3%) and Calcium Gluconate solution (10%). Change contaminated clothing Immediately. Preventive skin protection is recommended. Wash hands thoroughly after use, before eating, drinking, or using the lavatory.

Eye/face protection: Wear tightly fitting chemical safety goggles (plastic lenses). A face shield is recommended in addition to eye protection. Refer to 29 CFR 1910.133, ANSI Z87.1 or European Standard EN 166.

Hand protection: Wear heavy gloves made of Neoprene, nitrile, chlorinated polyethylene or PVC or those recommended by glove supplier for protection against materials in Section 3. Inspect gloves before use. Gloves should be impermeable to chemicals and oil. Breakthrough time of selected gloves must be greater than the intended use period. Use proper glove removal technique (without touching glove's surface) to avoid skin contact with this product. Change gloves as needed to prevent skin contact.

Skin protection: Wear protective clothing. Wear protective boots if the situation requires.

Respiratory protection: Always use an approved respirator when vapor/aerosols exceed permissible exposure limits. Where risk assessment shows air-purifying respirators are appropriate use a half-mask respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). Follow OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149.

Environmental exposure controls: Do not empty into drains.

PPE must not be considered a long-term solution to exposure control. PPE usage must be accompanied by employer programs to properly select, maintain, clean, fit, and use. Consult a competent industrial hygiene resource to determine hazard potential and/or the PPE manufacturers to ensure adequate protection.

** It is recommended that a face shield be worn with splash goggles when handling this product.*

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	Clear, colorless liquid
Odor	Sharp, burning, acrid odor
Odor Threshold	No data available
Molecular Weight	Not applicable
Chemical Formula	Not applicable
pH	< 2.0
Freezing/Melting Point	< 0 °C (< 32 °F)
Initial Boiling Point	100 °C (212 °F)
Evaporation Rate	No data available
Flammability (solid, gas)	Not applicable
Flash Point	No data available
Autoignition Temperature	No data available
Decomposition Temperature	No data available
Lower Explosive Limit (LEL)	No data available
Upper Explosive Limit (UEL)	No data available
Vapor Pressure	No data available
Vapor Density	No data available
Density	1.064 - 1.124 g/ml (8.88 - 9.038 lb/gal)
Viscosity	No data available
Solubility in Water	Miscible
Partition Coefficient (n-octanol/water)	Not applicable
Oxidizing Properties	Not applicable
Explosive Properties	Not applicable
Volatiles by Weight @ 21 °C	93.2%
VOC (wt. %)	1.5% (15 g/l; 0.13 lb/gal)

9.2 Other Data

No data available

SECTION 10 - STABILITY AND REACTIVITY

10.1 Reactivity
No special reactivity has been reported during normal conditions of handling and use.

10.2 Chemical Stability
This material is stable under recommended storage and handling conditions.

10.3 Possibility of hazardous reactions
Hydrofluoric acid reacts with glass, concrete and other silicon bearing materials to form silicon tetrafluoride gas. Reacts with carbonates, sulfides, and cyanides to yield toxic gases (carbon dioxide, hydrogen sulfide, hydrogen cyanide). Product reacts violently and exothermically with alkalis and some oxides. Reaction with metals yields hydrogen gas, a fire and explosive reactive hazard. Corrosive to many materials including leather, natural rubber and many organics. Hazardous polymerization will not occur.

10.4 Conditions to avoid
Avoid temperature extremes and contact with incompatible materials.

10.5 Incompatible materials
Metals and metal powders, strong oxidizing agents, strong bases, strong reducing agents, acetic anhydride, alcohols, amines, glass, concrete silicone bearing materials, carbonates, cyanides, acrylonitrile, chlorates, nitrates, perchlorates, permanganates, epichlorohydrin, aniline, carbides, organic materials

10.6 Hazardous decomposition products
Thermal decomposition products include hydrogen fluoride gas, sulfur oxides, and oxides of carbon.

SECTION 11 - TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects
Acute oral toxicity
Hydrofluoric acid solutions can be fatal if swallowed.

Acute inhalation toxicity
Hydrofluoric Acid: LC_{50}, rat - 1.34 mg/l, 1 h; LC_{Lo}, human - 0.04 mg/l, 30 min.

Acute dermal toxicity
Hydrofluoric acid solutions of 1 - 7% can be fatal by absorption.

Skin irritation
Corrosive to skin. Causes severe skin irritation and burns. Solutions of 1 - 7% hydrofluoric acid cause severe burns.

Eye irritation
Causes serious eye damage. Risk of blindness! Hydrofluoric acid solutions of 1 - 7% causes severe eye burns and serious eye damage.

Sensitization
No data available

Carcinogenicity
No data available

Germ cell mutagenicity
No data available

Reproductive toxicity
No data available

Specific organ toxicity - single exposure
May cause respiratory irritation.

Specific organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

11.2 Further information
2-Butoxyethanol (CAS #111-76-2): IARC Group 3 carcinogen - *Not classifiable as to its carcinogenicity to humans*. Not listed as a carcinogen by ACGIH, NTP or OSHA. In long-term animal studies with 2-butoxyethanol, small but statistically significant increases in tumors were observed in mice but not rats. The effects are not believed to be relevant to humans. In animals, hemolysis (red blood cell breakage) and secondary effects to the kidneys and liver have been reported. Human red blood cells have been shown to be significantly less sensitive to hemolysis than those of rodents and rabbits.

2-Butoxyethanol inhalation exposure in laboratory animals has been found to reduce body weight gain and food consumption in addition to hemolysis. After exposure was discontinued, these effects in animals disappeared. Adverse reproductive or birth effects were not reported in animals except when exposures were high enough to cause significant maternal toxicity.

Sulfuric Acid (*contained in strong inorganic acid mists*): IARC Group 1 - *Carcinogenic to humans*; AGIH Group A2 - S*uspected human carcinogen*; NTP: *Known carcinogen*. Not listed as a carcinogen by OSHA, Workers exposed to sulfuric acid mists showed a statistical increase

in laryngeal cancer. This suggests a possible relationship between carcinogenesis and inhalation of sulfuric acid mist.

This product contains no substances present at levels greater than or equal to the 0.1% threshold (de minimis) that are identified as a probable, possible, potential, or confirmed carcinogens by ACGIH, IARC, NTP, or OSHA. No data is available regarding the mutagenicity or teratogenicity of this product, nor is there any available data that indicates it causes adverse developmental or fertility effects.

Handle in accordance with good industrial hygiene and safety practice.

SECTION 12 - ECOLOGICAL INFORMATION

12.1 Toxicity

Large discharges of this product to the environment may decrease the pH of aquatic systems to a value < 2, which can be fatal to aquatic life and soil micro-organisms. Depending on the concentration, phosphorus compounds may contribute to the eutrophication of water supplies.

12.2 Persistence and degradability

Organic substances in this product are biodegradable. Inorganic substances are not biodegradable. Methods for the determination of biodegradability are not applicable to inorganic substances.

12.3 Bioaccumulation potential

No data available

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

This substances in this material are not considered to be persistent, bioaccumulating ,and toxic or very persistent or very bioaccumulating.

12.6 Other effects

Additional ecological information

Do not allow material to enter surface waters, wastewater, or soil.
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

SECTION 13 - DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Methods of disposal: The generation of waste should be avoided or minimized whenever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products in accordance with national, state and local regulations. 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. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains, and sewers.

RCRA F-Series: No listings above the reportable threshold (de minimis)
RCRA U-Series: Hydrofluoric Acid (CAS #7664-39-3), U134

SECTION 14 - TRANSPORT INFORMATION

Note: Transportation information provided is for reference only. Customer is urged to consult 49 CFR 100 - 177, IMDG, IATA, EC, United Nations TDG, and WHMIS (Canada) TDG information manuals for detailed regulations and exceptions covering specific container sizes, packaging materials, and methods of shipping.

Limited quantity for corrosive liquids in Packing Group II when inner packagings are not over 1.0 liter (0.3 gallon) net capacity each, packed in a strong outer packaging.

USA DOT (Ground Transportation)	
Proper Shipping Name	Corrosive liquid, n.o.s. (Hydrofluoric acid, Sulfuric Acid)
Hazard Class	8
UN	UN1760
Packing Group	II
NAERG	Guide #154
Packaging Authorization	Non-Bulk: 49 CFR 173.202; Bulk: 173.242
Packaging Exceptions	49 CFR 173.154
IMO/IMDG (Water Transportation)	
Proper Shipping Name	Corrosive liquid, n.o.s. (Hydrofluoric acid, Sulfuric Acid)
Hazard Class	8
UN	UN1760
Packing Group	II
Marine Pollutant	No
EMS Number	F-A, S-B
ICAO/IATA (Air Transportation)	
Proper Shipping Name	Corrosive liquid, n.o.s. (Hydrofluoric acid, Sulfuric Acid)
Hazard Class	8

Placard(s)

UN	UN1760
Packing Group	II
Quantity Limitations	49 CFR 175.27 and 175.75 - Cargo Aircraft Only: 30 l; Passenger Aircraft: 1 l

RID/ADR (Rail Transportation)

Proper Shipping Name	Corrosive liquid, n.o.s. (Hydrofluoric acid, Sulfuric Acid)
Hazard Class	8
UN	UN1760
Packing Group	II

SECTION 15 - REGULATORY INFORMATION

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

U. S. Federal Regulations

OSHA Hazard Communication Standard: This material is classified as hazardous in accordance with OSHA 29 CFR 1910.1200.

OSHA Process Safety Management Standard: Hydrofluoric Acid (CAS # 7664-39-3) is regulated under OSHA PSM Standard 29 CFR 1910.119.

EPA Risk Management Planning Standard: Hydrofluoric Acid (CAS #7664-39-3) is regulated under EPA RMP Standard (RMP) 40 CFR Part 68.

EPA Federal Insecticide, Fungicide and Rodenticide Act: This product is not a registered Pesticide under the FIFRA, 40 CFR Part 150.

Toxic Substance Control Act (TSCA) Inventory: All substances in this product are listed on the TSCA Inventory. This product is not subject to TSCA 12(b) Export Notification.

Drug Enforcement Administration (DEA) List 2, Essential Chemicals (21 CFR 1310.02(b)) and 1310.4(f)(2)) and Chemical Code Number
Sulfuric Acid (CAS 7664-93-9), DEA Chemical Code 6552

Drug Enforcement Administration (DEA) Lists 1 & 2, Exempt Chemical Mixtures (21 CFR 1310.12(c)) and Code Number
Sulfuric Acid (CAS 7664-93-9), DEA Chemical Code 6552 - 20% by Weight or Volume; Sulfuric acid in inert carrier solvent, such as aqueous or alcoholic solutions, is not considered a mixture. Weight is based on sulfuric acid in the mixture and not the combined weight of the carrier solvent, if any.

Department of Homeland Security (DHS) Chemical Facility Anti-Terrorism Standards (CFATS) Chemicals
Hydrofluoric Acid (CAS 7664-39-3) at concentrations of ≥ 50%

Superfund Amendments and Reauthorization Act (SARA)
SARA Section 311/312 Hazard Categories
Fatal if swallowed, inhaled or in contact with skin Causes severe skin burns and eye damage

SARA 313 Information: Hydrofluoric Acid and Sulfuric Acid are subject to the reporting levels established by Section 313 of the Emergency Planning and Community Right-to Know Act of 1986.

SARA 302/304 Extremely Hazardous Substance: Hydrofluoric Acid (CAS #7664-39-3) is subject to the reporting levels established by these sections of Title III of SARA.

SARA 302/304 Emergency Planning & Notification: Hydrofluoric Acid (CAS #7664-39-3) is subject to the reporting levels established by these sections of Title III of SARA.

Comprehensive Response Compensation and Liability Act (CERCLA): This product contains the following CERCLA reportable substances:
Hydrofluoric Acid (CAS #7664-39-3), RQ - 45.36 kg (100 lb) Sulfuric Acid (CAS #7664-93-9), RQ - 453.6 kg (1,000 lb)

2-Butoxyethanol is listed under Glycol Ethers. There is no RQ assigned to this broad class, although the class is a CERCLA hazardous substances. Refer to 50 Federal Register 13456 (April 4, 1985)

Clean Air Act (CAA)
Hydrofluoric Acid (CAS #7664-39-3), as 100% HF, is a Hazardous Air Pollutant (HAPs) designated in CAA Section 112 (b).
Hydrofluoric Acid (CAS #7664-39-3), as 100% HF, is found on the CAA Section 112 (b) list of Accidental Release Prevention Substances.
This product does not contain Class 1 ozone depletors.
This product does not contain Class 2 ozone depletors.

Clean Water Act (CWA)
2-Butoxyethanol and Hydrofluoric Acid are Hazardous Substances.
This product does not contain Priority Pollutants.
This product does not contain Toxic Pollutants.

U.S. State Regulations

California Prop 65, Safe Drinking Water and Toxic Enforcement Act of 1986
This product contains no chemical(s) known to the state of California to cause cancer, birth defects, or reproductive harm in concentrations that exceed the threshold (de minimis) reporting levels established under Proposition 65.

Other U.S. State Inventories
2-Butoxyethanol (CAS #111-76-2) is listed on the following State Hazardous Substance Inventories, Right-to-Know lists and/or Air Quality/Air Pollutants lists: CA, MN, PA, RI, WI.

Hydrofluoric Acid (CAS #7664-39-3) is listed on the following State Hazardous Substance Inventories, Right-to-Know lists, and/or Air Quality/Air Pollutants List(s): CA, DE, MA, MN, NJ, NY, PA, RI, WI, WV.

Sulfuric Acid (CAS #7664-93-9) is listed on the following State Hazardous Substance Inventories, Right-to-Know lists, and/or Air Quality/Air Pollutants List(s): CA, DE, ID, IL, ME, MA, MN, NC, NJ, NY, PA, RI, WA, WI.

Canada

WHMIS Hazard Classification

Fatal if swallowed
Causes severe skin burns and eye damage
Causes damage to organs through prolonged and repeated use
Causes severe damage to the respiratory system

Canadian National Pollutant Release Inventory (NPRI): Hydrogen Fluoride and Sulfuric Acid are listed on the NPRI.

European Economic Community

WGK, Germany (Water danger/protection): 3 (highly hazardous to water)

Global Chemical Inventory Lists

Country	Inventory Name	Listed
Canada	Domestic Substance List (DSL)	Yes
Canada	Non-Domestic Substance List (NDSL)	No
Europe	Inventory of New and Existing Chemicals (EINECS)	Yes
United States	Toxic Substance Control Act (TSCA)	Yes
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
New Zealand	New Zealand Inventory of Chemicals (NZIoC)	Yes
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (KECI)	Yes
Philippines	Philippines Inventory of Chemicals and Chemical Substances (PICCS)	Yes

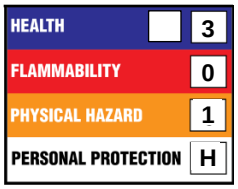
*Yes - All components of this product comply with the inventory requirements administered by the governing country.
No - One or more components of this product are not on the inventory or are exempt from listing.

15.2 Chemical safety assessment

A chemical safety assessment was not carried out for this product.

SECTION 16 - OTHER INFORMATION

Hazardous Material Information System (HMIS)



H = splash goggles, gloves, apron, & vapor respirator

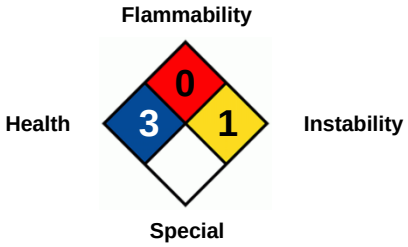
HMIS Hazard Rating Legend

0 = Minimal 1 = Slight 2 = Moderate
3 = Serious 4 = Severe
* = Chronic Health Hazard

NFPA Hazard Rating Legend

0 = Insignificant 1 = Slight 2 = Moderate
3 = High 4 = Extreme

National Fire Protection Association (NFPA)



Full Text of GHS Hazard Phrases Referenced in Section 3 (not covered in Section 2)

H227 - Combustible liquid
H302 - Harmful if swallowed
H312 - Harmful in contact with skin
H315 - Causes skin irritation
H319 - Causes serious skin irritation
H332 - Harmful if inhaled
H412 - Harmful to aquatic life with long lasting effects

Abbreviation Key

ACGIH	American Conference of Governmental Industrial Hygienists	**LD_{Lo}**	Lowest Lethal Dose
ADR	Accord Dangereux Routier (European regulations concerning the international transport of dangerous goods by road)	**mppcf**	Millions of Particles Per Cubic Foot
CAS	Chemical Abstract Services	**NA**	North America
CFR	Code of Federal Regulations	**NAERG**	North American Emergency Response Guide Book
COC	Cleveland Open Cup	**NIOSH**	National Institute for Occupational Safety & Health
DOT	Department of Transportation	**NTP**	National Toxicology Program
EC_{50}	Half maximal effective concentration	**OSHA**	Occupational Safety and Health Administration
EMS	Emergency Response Procedures for Ships Carrying	**PBT**	Persistent, Bioaccumulating and Toxic
EPA	Environmental Protection Agency	**PEL**	Permissible exposure limit
ErC_{50}	Reduction of Growth Rate	**PMCC**	Pensky-Martens Closed Cup
ERG	Emergency Response Guide Book	**ppm**	Parts Per Million
FDA	Food and Drug Administration	**RCRA**	Resource Conservation and Recovery Act
GHS	Globally Harmonized System of Classification and Labelling of Chemicals (GHS)	**RID**	Dangerous Goods by Rail
HCS	Hazard Communication Standard	**RQ**	Reportable Quantity
IARC	International Agency for Research on Cancer	**TCC/Tag**	Tagliabue Closed Cup
IATA	International Air Transport Association	**TLV**	Threshold Limit Value
IC_{50}	Half Maximal Inhibitory Concentration	**TSCA**	Toxic Substance Control Act
ICAO	International Civil Aviation Organization	**TWA**	Time-weighted Average

IDLH	Immediately Dangerous to Life and Health
IMDG	International Maritime Dangerous Goods
IMO	International Maritime Organization
LC_{50}	50% Lethal Concentration
LD_{50}	50% Lethal Dose
UN	United Nations
VOC	Volatile Organic Compounds
vPvB	Very Persistent and Very Bioaccumulating
WHMIS	Workplace Hazardous Materials Information System

DISCLAIMER OF RESPONSIBILITY

The information on this SDS was obtained from sources which we believe are reliable. However, the information is provided without any warranty, expressed or implied, regarding its correctness. Some information presented, and conclusions drawn herein are from sources other than direct test data on the substance itself. The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume damage or expense arising out of or in any way responsibility and expressly disclaim liability for loss, connected with handling, storage, use, or disposal of this product. If the product is used as a component in another product, this SDS information may not be applicable.

Revision date: 14 September 2023, Version 3
Supersedes SDS: 01 June 2015, Version 2

<end of document>