SAFETY DATA SHEET

Date Issued : 10/13/2015
SDS No : HAC-00-001-B
Date Revised : 04/21/2017
Revision No : 1

DESCALER

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: DESCALER
PRODUCT DESCRIPTION: Inhibited Hydrochloric Acid Based Descaler and Cleaner

SUPPLIER

Broadmoor Products, Inc.
4201 Brockton Drive, S.E.
Grand Rapids, MI 49512
Customer Service: (616) 285-6440

24 HR. EMERGENCY TELEPHONE NUMBER

P.E.R.S. (US Transportation/ Spill): (800) 633-8253
For after-hours transportation and spill emergencies only.
Direct all other calls to the Customer Service number at left.

2. HAZARDS IDENTIFICATION

GHS CLASSIFICATIONS

Health:

Skin Corrosion, Category 1A
Serious Eye Damage, Category 1
Target Organ Toxicity (Single Exposure), Respiratory System, Category 3
Acute Toxicity (Oral), Category 4

Physical:

Corrosive to Metals, Category 1

GHS LABEL


Corrosion


Exclamation mark

SIGNAL WORD: DANGER

HAZARD STATEMENTS

H314: Causes severe skin burns and eye damage.
H318: Causes serious eye damage.
H335: May cause respiratory irritation.
H302: Harmful if swallowed.
H290: May be corrosive to metals.

PRECAUTIONARY STATEMENTS

Prevention:

P260: Do not breathe vapors/mist/spray.
P271: Use only outdoors or in a well-ventilated area.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P264: Wash hands /any other skin areas possibly contacted by the material thoroughly with soap and water immediately after handling.

P270: Do not eat, drink or smoke when using this product.
P234: Keep only in original packaging.

Response:

P304+P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P312: Call a POISON CENTER or doctor if you feel unwell.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P303+P361+P353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P363: Wash contaminated clothing before reuse.
P301+P330+P331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P310: Immediately call a POISON CENTER, doctor, or for EMERGENCY MEDICAL ASSISTANCE after initiating the first aid measures listed above.
P321: Specific treatment (see First Aid information on label or Section 4 of the SDS).
P390: Absorb spillage to prevent material damage.

Storage:

P405: Store locked up.
P406: Store in a corrosive resistant container (such as high density polyethylene or polypropylene). See Section 10 of the SDS for information on incompatible materials.
P403+P233: Store in a well-ventilated place. Keep container tightly closed.

Disposal:

P501: Dispose of contents/container in accordance with all applicable local, state, and federal regulations. (See Section 13 of the SDS). Be aware that residues in empty containers remain acutely hazardous.

EMERGENCY OVERVIEW

PHYSICAL APPEARANCE: Clear, tinted to straw-colored liquid

IMMEDIATE CONCERNS:

OSHA HAZARDS

Corrosive!

Inhalation of vapors, especially from heated material, or sprays and mists, causes severe irritation of the respiratory tract, with respiratory tract burns from severe overexposures, and may have other harmful effects. Corrosive to eye tissues, causing severe irritation or burns resulting in serious eye damage if not immediately and completely removed. Causes severe irritation and burns to the skin, especially of contact is prolonged. Corrosive to the mucous membranes. Harmful if swallowed and potentially fatal from corrosive and toxic effects.

Concentrated product is corrosive to non-ferrous metals, such as aluminum, zinc, and galvanized materials, with the formation of flammable hydrogen gas. May react violently with concentrated strong bases and other incompatible materials. Application of product to carbonate scales in a confined, poorly ventilated area can result in an asphyxiation hazard from carbon dioxide build-up.

POTENTIAL HEALTH EFFECTS

EYES: Corrosive to eye tissues. Contact with the concentrated liquid product causes pain, swelling, conjunctival irritation, eye ulceration, cataracts, and glaucoma, with permanent eye injury and possible blindness if not immediately and completely removed. Exposure to vapors or mists can also cause eye irritation, which in severe or chronic overexposures can lead to conjunctivitis with possible corneal edema.

SKIN: Concentrated product is highly corrosive to skin, causing severe irritation, itching, redness, swelling, rash, and chemical burns, with possible permanent skin damage if exposure is prolonged. Contact with diluted solutions or high concentrations of vapors or aerosols causes skin irritation. Contact with liquids or high concentrations of vapors or aerosols may exacerbate existing skin conditions such as dermatitis.

INGESTION: Ingestion causes severe burns to the mucous membranes of the digestive tract with danger of perforation of the esophagus and stomach, and shock. May cause nausea, vomiting, and other severe gastrointestinal symptoms. Inhibitor components may cause toxic systemic effects. Aspiration of swallowed or vomited product may cause pulmonary injury and complications, such as chemical pneumonia.

INHALATION: Inhalation of fumes, vapors, mists, or spray causes irritation to the nose and upper respiratory tract, coughing, chest tightness, shortness of breath (dyspnea), and may result in ulceration of mucous membranes. Exposure to high concentrations may cause rapid breathing, burns to the respiratory tract, respiratory spasms, pulmonary edema, or suffocation.

MEDICAL CONDITIONS AGGRAVATED: Asthma, other Respiratory Disorders (from inhalation of mists, sprays, or fumes).

Dermatitis (from skin contact).

TARGET ORGAN STATEMENT: Inhalation exposures are severely irritating to the entire respiratory tract, and are harmful to the lungs if excessive or prolonged. Inhibitor components may be harmful to the kidneys and liver if ingested, inhaled, or through excessive dermal contact (although the level of exposure required to produce such effects would first cause severe acute burns and corrosive effects).

COMMENTS: See Section 11: TOXICOLOGICAL INFORMATION.
Hazards Not Otherwise Classified: None known.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	Wt.%	CAS
Hydrogen Chloride	28 - 34	7647-01-0
Water	> 64	7732-18-5

COMMENTS: While the identity of some components is claimed as a trade secret in accordance with the provision of OSHA 29 CFR 1910.1200(i), all known hazards are clearly communicated within this document. Exact percentages of the components of this proprietary formulation are considered confidential. Non-listed components of this proprietary product formulation, which include biodegradable surfactant(s), solvent(s), and the inhibitor components, are either considered non-hazardous or are present at concentrations below regulated levels, whose identity is a trade secret.

4. FIRST AID MEASURES

EYES: Immediately flush eyes with a directed stream of water for at least 20 minutes, forcibly holding eyelids apart to ensure complete irrigation of all eye and eyelid tissues. Washing eyes within several seconds after contact is essential to achieve maximum effectiveness. Remove contact lenses, if present, after initiation of flushing. If possible, continue to irrigate the eyes during transportation for medical care. GET MEDICAL ATTENTION IMMEDIATELY, preferably from an ophthalmologist.

SKIN: Immediately flush contaminated areas with water, then wash with mild soap and water for at least 15 minutes. While rinsing, remove all contaminated clothing, jewelry, and shoes immediately, taking care to prevent any contact with the eyes. Thoroughly wash and dry contaminated clothing before re-use, or discard. Discard leather goods that cannot be thoroughly decontaminated. GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION: If swallowed, DO NOT induce vomiting. Never give anything by mouth to a person who is unconscious, convulsing, or unable to swallow. If victim is conscious and able to swallow, immediately rinse out mouth with water, and then give one cup (8 ounces) of milk or water to drink. To prevent aspiration of swallowed material, lay victim on side with head lower than waist. If vomiting occurs spontaneously, keep airway clear. Do not leave victim unattended. GET MEDICAL ATTENTION IMMEDIATELY.

INHALATION: If inhalation exposure to misted material or vapors occurs, remove immediately to fresh air. If exposure was more than incidental, or if symptoms are severe or persistent, seek medical advice/ attention immediately. If breathing is difficult, oxygen should be administered by qualified personnel. If respiration or pulse has stopped, have a trained person administer basic life support (cardiopulmonary resuscitation with rescuer protection and/or Automatic External Defibrillator) as soon as possible, and CALL FOR EMERGENCY MEDICAL SERVICES IMMEDIATELY.

SIGNS AND SYMPTOMS OF OVEREXPOSURE

EYES: Symptoms of contact may include tearing, stinging, burning sensation, inflammation, redness, blurred vision, tissue damage, and burns. May cause serious eye injury and permanent damage if not immediately and completely removed. Exposure to vapors or mists can also cause eye irritation.

SKIN: Signs of skin contact may include itching, stinging sensation, discomfort, irritation, redness, inflammation, and chapping. Contact with the concentrated product causes skin burns, with the potential for permanent damage, if not immediately and completely removed.

INGESTION: Causes corrosive chemical burns to all tissues of the mouth, throat, and gastrointestinal tract, perhaps accompanied by difficulty in swallowing and breathing. Likely to cause symptoms such as throat and abdominal pain and distress, nausea and vomiting. Danger of perforation of throat and stomach, and shock. Aspiration of swallowed or vomited product can cause serious lung injury and pulmonary edema that may be fatal. Ingestion of significant quantities may cause toxic systemic effects.

INHALATION: Inhalation of vapors and mists causes irritation of the mucous membranes of the nose, throat, and entire respiratory tract, causing coughing and tearing. More severe exposures may cause shortness of breath (dyspnea) and burning sensation in the chest, progressing to burns of the respiratory tract and/or pulmonary edema in especially severe overexposures.

ACUTE EFFECTS: Acutely hazardous due to corrosive effects on all tissues of the eye, skin, and mucous membranes. Inhalation of vapors, mists, or spray can cause severe respiratory tract irritation. Intake of large amounts may cause toxic systemic effects, such as liver and kidney damage.

CHRONIC EFFECTS: Repeated or prolonged inhalation exposure to mists or fumes may cause bronchial irritation, diminished lung function, nasal ulceration, and may exacerbate existing respiratory tract disease. Chronic oral exposure can cause inflammation of the mucous membranes of the mouth and throat, and erosion of tooth enamel. Chronic overexposure by any route may cause harm to the liver and kidneys.

NOTES TO PHYSICIAN: All treatment should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred. The absence of visible signs or symptoms of burns does not reliably exclude the presence of actual tissue damage. Symptoms of oral exposure may include marked decrease in blood pressure, moist rales, frothy sputum, and high pulse pressure. Probable mucosal damage may contraindicate the use of gastric lavage. Be aware of the potential for perforation of the stomach or esophagus.

ANTIDOTES: No specific antidote.

ADDITIONAL INFORMATION: Ensure that emergency personnel are aware of the material(s) involved and take precautions to protect themselves from the corrosive and inhalation hazards of the product. Keep victim warm and quiet and move out of danger area. Show a copy of the label or SDS to emergency personnel and attending physicians.

COMMENTS: Refer to Section 2 (Hazards) and Section 11 (Toxicological Information) for additional information on the effects of overexposure.

5. FIRE FIGHTING MEASURES

FLAMMABLE CLASS: Not combustible unless evaporated to dryness.

GENERAL HAZARD: Acutely hazardous to health due to corrosive effects on all tissues of the eye, skin, and mucous membranes. Vapors are highly irritating to the respiratory tract. Corrosive toward active metals such as aluminum, tin, zinc, and galvanized materials with the formation of flammable hydrogen gas.

EXTINGUISHING MEDIA: Use water, carbon dioxide, foam, or dry chemical as appropriate to extinguish surrounding fire. Avoid using direct water stream on spilled liquid due to danger of splashing and splattering corrosive material.

EXPLOSION HAZARDS: Not applicable unless there has been contact with active metals causing the formation of hydrogen gas that is allowed to build up in unventilated spaces.

FIRE FIGHTING PROCEDURES: Highly acidic corrosive material that is acutely toxic to aquatic organisms. Prevent fire run-off from entering drains, storm sewers, and natural waterways. Use fine water spray to cool fire-exposed containers and to knock down noxious vapors. Evacuate unprotected personnel who are downwind of the fire. Persons who may have been exposed to contaminated smoke should be immediately examined by a physician for symptoms of exposure to hydrogen chloride and other toxic chlorine-containing gases, which should not be mistaken for simple smoke inhalation or heat exhaustion.

FIRE FIGHTING EQUIPMENT: Wear full turn-out gear and SCBA with full face protection operated in positive pressure mode when fighting fires involving this material. Be aware that ordinary turn-out gear may not offer adequate protection in spill situations when there is direct contact with concentrated acidic material.

HAZARDOUS DECOMPOSITION PRODUCTS: When subjected to the high temperatures of a fire situation, decomposition of the product will produce corrosive and noxious fumes of chlorine compounds, including hydrogen chloride gas. Ignition of dried residues will produce smoke also containing oxides of carbon and sulfur.

6. ACCIDENTAL RELEASE MEASURES

SMALL SPILL: Wear appropriate Personal Protective Equipment (as described in Section 8 of the SDS) to prevent any contact with eyes, skin, and clothing. Ensure adequate ventilation. Absorb spill with suitable absorbent (e.g., sand, pet litter, vermiculite, universal absorbent, etc.) and scoop up into appropriate sealable containers for proper disposal as hazardous waste. Neutralize residues with a mild base (such as sodium bicarbonate or soda ash), and mop up or flush to sanitary sewer with plenty of water

LARGE SPILL: Wear appropriate personal protective equipment (as described in Section 8 of the SDS) to prevent any contact with eyes, skin, and clothing. Provide adequate ventilation or wear properly fitted respiratory protection equipment. If airborne concentrations might exceed exposure limits, wear properly fitted NIOSH-approved full-face respirators equipped with mist/dust

prefilters and acid gas cartridges. In severe situations a supplied air respirator must be used. If there has been possible contact with reactive metals, eliminate all sources of ignition. Completely contain spilled material with absorbent socks, dikes of sand or earth, etc., to prevent entry into drains, storm sewers, and natural waterways. Consider use of a suitable vacuum or pump to collect as much material as possible in a suitable clean container for use as intended. Absorb spill with suitable absorbent (e.g., sand, pet litter, vermiculite, universal absorbent, etc.) and scoop up into appropriate sealable containers for proper disposal as hazardous waste. Remaining residues can be neutralized with a mild base (such as sodium bicarbonate or soda ash), and flushed to sanitary sewer with large quantities of water. Releases that may have adverse environmental effects should be reported immediately to local, state, and federal authorities.

7. HANDLING AND STORAGE

GENERAL PROCEDURES: Always wear the recommended Personal Protective Equipment when handling this material to avoid any contact with eyes, skin, and clothing. (See Section 8 of the SDS.) Do not breathe vapors or mist. Use only with adequate ventilation, or wear properly fitted NIOSH-approved respiratory protective equipment. Do not eat or drink or use tobacco products in the work area.

HANDLING: Handle container with care. Loosen container closure cautiously before opening. Maintain ventilation and keep face away to avoid breathing any fumes. Prevent contact of concentrated product with incompatible materials, corrodible metals, and concrete surfaces. Follow all SDS/label precautions even after container is emptied because product residues remain acutely hazardous.

STORAGE: Store in a cool, well-ventilated, dry place. Do not store in containers or transfer through lines made of incompatible materials. Keep containers tightly closed when not in use. Store away from strong bases and other incompatible materials. Store away from foods, beverages, and feeds. The use of secondary containment is recommended, and may be required by local regulations. Store in a secured area out of the reach of children.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE GUIDELINES

OSHA HAZARDOUS COMPONENTS (29 CFR1910.1200)				
	EXPOSURE LIMITS			
Chemical Name	**Type**		**ppm**	**mg/m³**
Hydrogen Chloride	**OSHA PEL**	**TWA**	[1]	[1]
		STEL	5 (ceiling)	7 (ceiling)
	ACGIH TLV	**STEL**	2 (ceiling)	2.98 (ceiling)

Footnotes:
1. NIOSH Immediately Dangerous to Life and Health (IDLH) value = 50 ppm as hydrogen chloride.

ENGINEERING CONTROLS: Ensure adequate ventilation, especially in confined areas, where local exhaust or other suitable ventilation should be used to achieve at least 10 air changes per hour. Provide local exhaust in enclosed areas when mists or aerosols are formed by spray applications, or when material is strongly heated. If ventilation is inadequate to maintain airborne concentrations below exposure limits, use properly fitted NIOSH-approved full-face respiratory equipment with mist/ dust prefilters and acid gas cartridges or supplied air respiratory equipment for protection against vapors, mists, and spray.

PERSONAL PROTECTIVE EQUIPMENT

EYES AND FACE: Wear splash-proof chemical goggles. Also always wear a full face shield to protect the face and head whenever engaged in operations that might possibly result in splashing or splattering or hazardous spillage.

SKIN: Wear appropriate acid-proof gloves. (Butyl rubber is rated excellent as a glove material for resistance to hydrochloric acid; natural rubber, neoprene, PVC, nitrile, Viton also offer acceptable protection). Inspect gloves prior to each use. Thoroughly rinse and clean gloves prior to removal.

RESPIRATORY: Wear a properly fitted NIOSH-approved full-face piece respirator with N95 (dust/ fume/ mist) prefilters and acid gas cartridges in situations where airborne concentrations are expected to exceed exposure limits, or where symptoms of overexposure are occurring. In extreme situations where unknown high concentrations of vapors or aerosolized material exist, use a properly fitted full-face NIOSH-approved supplied-air respirator.

PROTECTIVE CLOTHING: Wear an impervious chemical resistant apron or suit and rubber boots when there is potential for bodily contact with the product. Contaminated clothing should be immediately removed and laundered or discarded.

WORK HYGIENIC PRACTICES: Always use the recommended personal protective equipment to prevent any contact with eyes and skin. Wash skin and contaminated clothing thoroughly after handling. Do not eat, drink or smoke when using this product. Handle in accordance with good industrial hygiene and safety practices.

OTHER USE PRECAUTIONS: A safety shower and eye wash fountain should be located in the immediate vicinity.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: Liquid

ODOR: Acrid, biting, irritating odor

ODOR THRESHOLD: 0.3 ppm for hydrogen chloride (prolonged exposure causes olfactory fatigue)

APPEARANCE: Clear, tinted to straw yellow liquid

pH: ~ 1 (1% solution in water)

FLASH POINT AND METHOD: >200°F. Not combustible unless evaporated to dryness.

FLAMMABLE LIMITS: Not applicable

AUTOIGNITION TEMPERATURE: Not applicable

VAPOR PRESSURE: approx. 30 mm Hg (4.0 kPa) at 68°F (20°C)

VAPOR DENSITY: approx. 1.3 (air = 1)

BOILING POINT: approx. 176°F (80°C)

FREEZING POINT: approx. -50°F (-45.5°C)

THERMAL DECOMPOSITION TEMPERATURE: Not Established

SOLUBILITY IN WATER: Complete

PARTITION COEFFICIENT: N-OCTANOL/WATER: Not relevant

EVAPORATION RATE: Somewhat greater than water.

DENSITY: More dense than water.

SPECIFIC GRAVITY: 1.15-1.20

VISCOSITY: Not Established

10. STABILITY AND REACTIVITY

REACTIVITY: No

HAZARDOUS POLYMERIZATION: No

STABILITY: Stable under normal conditions.

CONDITIONS TO AVOID: Avoid exposure to high temperatures. Reacts corrosively with many metals with the release of flammable hydrogen gas. May react violently with incompatible materials - do not mix with other chemicals.

POSSIBILITY OF HAZARDOUS REACTIONS: May react violently with strong bases, concentrated sulfuric acid, alcohols, aldehydes, and epoxides. Contact with cyanides, sulfides, sulfites, nitrites, hypochlorites (including bleach), and related compounds will produce toxic, noxious gases. Reacts with oxidizers, possibly violently, with the production of toxic chlorine gas. Corrosive toward active metals such as aluminum, tin, zinc, and galvanized materials with the formation of flammable hydrogen gas. Descaling applications may produce large volumes of carbon dioxide gas from dissolving carbonates that can be an asphyxiation hazard in unventilated enclosed spaces.

HAZARDOUS DECOMPOSITION PRODUCTS: Produces corrosive hydrochloric acid mists, hydrogen chloride gas, and possibly toxic chlorine gas, when overheated or exposed to fire situations. Ignition of evaporated residues will produce smoke also containing oxides of carbon and sulfur.

INCOMPATIBLE MATERIALS: Alkalis; Cyanides, sulfides, sulfites, nitrites, hypochlorites (including bleach), and related compounds; Amines; Acid anhydrides; Oxidizing agents (including perchlorates, peroxides, permanganates, chlorates, nitrates, and halogens); Concentrated sulfuric acid; Aldehydes and epoxides; Powdered metals. Corrosive toward active metals such as aluminum, tin, zinc, and galvanized materials with the formation of flammable hydrogen gas. Corrosive to concrete. May be corrosive to copper and copper alloys. Although inhibited, concentrated product may also be corrosive to ferrous metals, including iron and steel, especially if heated.

11. TOXICOLOGICAL INFORMATION

ACUTE TOXICITY

DERMAL LD_{50}: No reliable testing data are available for the product as a whole. Not classified for acute dermal toxicity based on currently available information about the known components.
Acute dermal harmful effects are expected from the corrosive properties of the material. Testing of 37% hydrochloric acid demonstrated severe corrosive effects to the skin for 1 and 4 hour exposures (rabbits).

ORAL LD_{50}: The supplier-provided acute oral toxicity estimate for this inhibited acid mixture is LD_{50} = 754 mg/kg, corresponding to a classification of Acute Oral Toxicity Category 4, "Harmful if swallowed."
Literature data for hydrochloric acid (without clear indication of acid strength) include LD_{50} values of 700 mg/kg (rat) and 900 mg/kg (rabbit). Given that hydrochloric acid is a natural component of stomach secretions, the acute harmfulness of uninhibited concentrated acid can be assumed to be solely from corrosive effects, which do not result in classification for acute oral toxicity.
The contribution of the inhibitor components to the acute oral toxicity is indeterminable from currently available information.

Notes: Ingestion may cause chemical burns to the lips, oral cavity, upper airway, esophagus, and possibly the stomach and intestinal tract.

INHALATION LC_{50}:
No reliable testing data are available for the product as a whole.
For the components:
Hydrochloric acid is not classified for inhalation toxicity, although at concentrations of 10% HCl and above it is classified for Specific Target Organ Toxicity by Single Exposure, Category 3 (May Cause Respiratory Irritation).
Aerosolized hydrochloric acid for 5 min. exposure had an average LD_{50} (rat) = 45.6 mg/L, equivalent to 31,00 ppm (as HCl).
Aerosolized hydrochloric acid for 30 min. exposure had an average LD_{50} (rat) = 8.3 mg/L, equivalent to 5660 ppm (as HCl).
For reference, HCl gas for 5 min exposure had an average LD_{50} (rat) = 40,990 ppm;
for 30 min exposure the average LD_{50} (rat) = 4700 ppm.
Toxic signs during exposure to HCl gas or aerosol were essentially identical.
The contribution of the inhibitor components to the acute inhalation toxicity is indeterminable from currently available information. It is anticipated that attaining sufficient levels of airborne product to pose an acute inhalation hazard from inhibitor content would first cause intolerable respiratory irritation from the hydrochloric acid content.

Notes: HCl exposure in the inhalation study on male rats reported above caused severe irritation to the eyes, mucous membranes and exposed areas of skin, with corneal erosion and clouding, and ulceration of the scrotum. Rapid and shallow breathing patterns were typical by the end of the exposure period. Exposure to higher concentrations caused bloody nasal discharges and audibly labored breathing. Fur took on a greenish "singed" appearance. Food consumption decreased resulting in weight loss following exposure. Pathological examination showed that the respiratory tract was the main target for HCl damage, with moderate to severe alveolar emphysema, atelectasis, edema of the lungs, and occasional â€˜spottingâ€™ of lung tissue. Upper respiratory tract effects included severe damage of the epithelia tissue of nose and trachea. Recovery of surviving rats was not complete within 7 days post-exposure, with abnormal grey coloration of lungs and evidence of consolidation of lung tissue. No abnormality was detected in internal tissues other than the respiratory tract.

NIOSH Immediately Dangerous to Life and Health (IDLH) value = 50 ppm as hydrogen chloride.

**Use only with adequate ventilation and engineering controls or respiratory protective equipment --
Do not breathe vapors/ mist/ spray.**

SKIN CORROSION/IRRITATION: Hydrochloric acid solutions containing ≥10% HCl are classified as corrosive to skin.

SERIOUS EYE DAMAGE/IRRITATION: Corrosive to eye tissues. Contact with the eyes causes immediate severe irritation, inflammation and chemical burns, with possible permanent eye injury or blindness if not immediately and completely removed. Material can penetrate deep into eye tissues if not immediately and completely rinsed away.

RESPIRATORY OR SKIN SENSITIZATION: Not classified for respiratory or dermal sensitization, based on available information about the known components and their concentrations within the product.
Do not breathe vapors/ mist/ spray. Wear impervious gloves and clothing when working with the product to prevent any skin contact.

GERM CELL MUTAGENICITY: For hydrochloric acid, some *in vitro* tests for mutagenicity have given negative results, while other tests have been positive. Where positive results have occurred, the results are attributed to low pH test conditions, which are not relevant to physiologically realistic conditions. No reports of positive *in vivo* mutagenicity tests for hydrochloric acid have been found in the literature.
No other known components present at concentrations of ≥0.1% are known to have mutagenic effects.

CARCINOGENICITY

IARC: No known component of this product present at levels greater than or equal to 0.1% is listed as a probable or confirmed human carcinogen by the International Agency for Research on Cancer (IARC). IARC lists hydrogen chloride gas as Category 3, "Unclassifiable as to Carcinogenicity in Humans," presumably for inhalation exposures.

NTP: No known component of this product present at levels greater than or equal to 0.1% is listed as a probable or confirmed human carcinogen by the National Toxicology Program.

OSHA: No known component of this product present at levels greater than or equal to 0.1% is listed as a probable or confirmed human carcinogen by OSHA.

REPRODUCTIVE TOXICITY: None of the known components present at ≥0.1% have caused interference with reproduction or fertility at doses below maternally toxic levels, according to laboratory animal studies on the individual components.

STOT-SINGLE EXPOSURE: Classified for Specific Target Organ Toxicity (Single Exposure) Category 3 for inhalation overexposures to vapors, mists and aerosols that may cause irritation to respiratory tract tissues, based on the STOT-SE Category 3 classification of the hydrochloric acid component. Inhalation overexposures are harmful to the respiratory tract (including the lungs).

STOT-REPEATED EXPOSURE: None of the known components at the levels present in the product are classified for Specific Target Organ Toxicity - Repeated Exposure.

ASPIRATION HAZARD: Not classified as an aspiration hazard based on the characteristics of the material. However, respiratory intake during swallowing or vomiting of the product is likely to produce lung injury with the potential for chemical pneumonia or pulmonary edema, which can be fatal.

GENERAL COMMENTS: No testing data for other health effects are available for the product as a whole. No additional health risks are known from literature reports of toxicological studies of the known components.

12. ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION: This material exhibits significant acute and chronic toxicity to aquatic organisms. Do not contaminate natural waters by spills or discharges.

BIOACCUMULATION/ACCUMULATION: No bioaccumulation potential is anticipated for any of the known components present at â‰¥1%.

AQUATIC TOXICITY (ACUTE)

96-HOUR LC_{50}: No testing data are available for the product as a whole.
For hydrochloric acid, the 96 hr LC_{50} = 282 mg/L for *Gambusia affinis* (Mosquito fish) reported for 37% hydrochloric acid.
For hydrochloric acid, the measured 96 hr LC_{50} values for *Lepomis macrochirus* (bluegill sunfish) corresponded to a pH range of 3.25 to 3.50; for *Oncorhynchus mykiss* (rainbow trout) the LC_{50} pH range was from 4.0 to 4.12, depending on water hardness.
These LC_{50} pH values correspond to concentrations of 2.75 - 20.5 mg/L HCl, or approximately 8.6 - 64 ppm product in unbuffered water.
The effective product concentration to achieve these pH levels is highly dependent upon the characteristics of the receiving water; acid toxicity will be considerably reduced by the buffering capacity of typical natural waters.
Added surfactant is relatively non-toxic to fish at the levels present in the product.
Inhibitor components will increase the toxicity to fish by an unknown degree.

48-HOUR EC_{50}: No testing data are available for the product as a whole.
For hydrochloric acid, the measured 48 hr LC_{50} = pH 4.92 for *Daphnia magna*, which corresponds to a concentration of 0.45 mg/L HCl in unbuffered water.
This would correspond to a product concentration of approximately 1.4 ppm in unbuffered water.
The effective product concentration to achieve these pH levels is highly dependent upon the characteristics of the receiving water; acid toxicity will be considerably reduced by the buffering capacity of typical natural waters.
Added surfactant is relatively non-toxic to daphnia at the levels present in the product.
Inhibitor components will increase the toxicity to daphnia by an unknown degree.

GENERAL COMMENTS: Discharges to the aquatic environment are prohibited and must be prevented. Do not discharge any unneutralized material into any drain. Do not dump, spill, or discharge the product onto the ground, into storm sewers or drains to natural waterways, or into any body of water. Spills or discharges that may exceed reportable quantity limits, or that may adversely affect the environment, should be reported immediately to federal, state and local authorities.

13. DISPOSAL CONSIDERATIONS

PRODUCT DISPOSAL: Dispose of only in conformity with all applicable federal, state, and local regulations. Contact a licensed

professional waste disposal service for proper disposal of this material.

EMPTY CONTAINER: Be aware that product residues in empty containers remain acutely hazardous. Follow all SDS and label precautions even after container is emptied because of the severe hazards posed by product residues.

RCRA/EPA WASTE INFORMATION: For disposal, material is considered hazardous waste with RCRA characteristic of corrosivity (D002), as defined by 40CFR §262.22.

14. TRANSPORT INFORMATION

DOT (DEPARTMENT OF TRANSPORTATION)

PROPER SHIPPING NAME: UN1789, Hydrochloric Acid, 8, PGII

NAERG: 157

REPORTABLE QUANTITY (RQ) UNDER CERCLA: 5000 lbs

MARINE POLLUTANTS: None in excess of threshold levels.

15. REGULATORY INFORMATION

UNITED STATES

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

313 REPORTABLE INGREDIENTS: No listed chemicals are known to be present at or above the threshold levels for which reporting is required under the provisions of Section 313.

302/304 EMERGENCY PLANNING

THRESHOLD PLANNING QUANTITY / REPORTABLE QUANTITIES:
Applicable only to anhydrous (gaseous) hydrogen chloride; not applicable to aqueous hydrochloric acid solutions

CERCLA (COMPREHENSIVE RESPONSE, COMPENSATION, AND LIABILITY ACT)

CERCLA RQ: 5000 lbs (equivalent to approx. 515 gallons of this product).

TSCA (TOXIC SUBSTANCE CONTROL ACT)

TSCA STATUS: All components of this product are listed on the Toxic Substance Control Act (TSCA) inventory, or are exempt.

CLEAN AIR ACT

40 CFR PART 68---RISK MANAGEMENT FOR CHEMICAL ACCIDENT RELEASE PREVENTION: Not applicable. CAA 112(r) TQ = 15,000 lbs. applies only to concentrations of 37% HCl or greater.

16. OTHER INFORMATION

REASON FOR ISSUE: Revision 1 of GHS Compliant SDS. **Reason for Revision:** General update from complete review, with specific updates and additions to:
Section 2: SKIN CORROSION/ IRRITATION CLASSIFICATION revised to conform to a change in the internationally-established Specific Concentration Limits for HCl content of hydrochloric acid. EMERGENCY OVERVIEW - IMMEDIATE CONCERNS â€“ OSHA HAZARDS updated to more comprehensive. POTENTIAL HEALTH EFFECTS (SKIN, INGESTION), TARGET ORGANS. **Section 3:** COMMENTS. **Section 4:** FIRST AID MEASURES â€“ EYES, SKIN statements refined. SIGNS AND SYMPTOMS OF OVEREXPOSURE (EYES, SKIN, INGESTION, SKIN) updated with greater detail; CHRONIC EFFECTS moved from Section 11. ADDITIONAL INFORMATION updated. **Section 5:** FLAMMABLE CLASS, EXTINGUISHING MEDIA, FIRE FIGHTING PROCEDURES, HAZARDOUS DECOMPOSITION PRODUCTS statements updated. **Section 6:** LARGE SPILL, SMALL SPILL directions slightly revised. **Section 7:** HANDLING section updated. **Section 8:** ENGINEERING CONTROLS statement expanded. **Section 10:** POSSIBILITY OF HAZARDOUS REACTIONS statement expanded. HAZARDOUS DECOMPOSITION PRODUCTS statement updated. **Section 11:** ACUTE (DERMAL LD50, ORAL LD50, INHALATION LC50, NOTES) statements expanded. RESPIRATORY OR SKIN SENSITIZATION STOT-REPEATED EXPOSURE, STOT-SINGLE EXPOSURE statements added. GENERAL COMMENTS statement updated. **Section 12:** ECOTOXICOLOGICAL INFORMATION, BIOACCUMULATION, AQUATIC TOXICITY (ACUTE) (96-HOUR LC50, 48-HOUR EC50) statements refined. **Section 14:** DOT (DEPARTMENT OF TRANSPORTATION) - MARINE POLLUTANTS statement updated. **Section 15:** SARA TITLE 313 statement updated.

APPROVED BY: Technical Director

PREPARED BY: Technical Services - Broadmoor Products **Date Revised:** 04/21/2017

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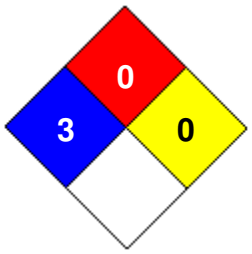
REVISION SUMMARY: This SDS replaces the 10/14/2015 SDS.

HMIS RATING

HEALTH	*	3
FLAMMABILITY		0
PHYSICAL HAZARD		0
PERSONAL PROTECTION		D

NFPA CODES



GENERAL STATEMENTS: Each user of this product is expected and urged to read and understand the entire SDS (consulting appropriate expertise as necessary) in order to comprehend the information contained in this SDS and any hazards associated with the product, with the expectation that the precautions identified in this document will be followed unless your use conditions would necessitate other appropriate methods or actions.

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