



MATERIAL SAFETY DATA SHEET

SCALE-KLEEN™

SECTION 1—CHEMICAL PRODUCT AND COMPANY INFORMATION

Product Name: Scale-Kleen™ (Dry mixture of aluminum salts and weak organic acids used to dissolve lime scale in food service equipment that uses water)

Company:	Everpure, Inc. 1040 Muirfield Drive Hanover Park IL 60133 USA	N.V. Everpure (Europe) S.A. Research Park, Haasrode B-3001 Heverlee Belgium	Everpure Japan, Inc. 1-18-19, Tsumada Kita Atsugi-Shi Kanagawa 243 Japan
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Chemical Emergency Number (CHEMTREC®):	(800)424-9300		

Issue Date: June 16, 2004

Revision Date: March 1, 2000

SECTION 2—COMPOSITION INFORMATION

<u>Chemical Name</u>	<u>CAS Number</u>	<u>Percent by Weight</u>
Aluminum Chloride hexahydrate	7784-13-6	50
Citric Acid monohydrate	5949-29-1	50

SECTION 3—HAZARDS IDENTIFICATION

Emergency Overview: Scale-Kleen is not considered toxic or corrosive, but it can be an irritant to eyes, skin and mucous membranes. Fire may produce corrosive fumes of HCl.

Appearance & Odor: White or off-white granules, like coarse salt or sugar; no odor.

Fire & Explosion Hazards: Not flammable, but can be oxidized by fire to produce carbon monoxide and fumes of hydrochloric acid.

Primary Routes of Exposure:

INHALATION—ACUTE EFFECTS: There is no hazard under normal circumstances, but fire or high temperature can produce carbon monoxide and hydrochloric acid fumes. CO can kill, and HCl fumes can be highly irritating, leading to pulmonary edema.

SKIN CONTACT—ACUTE EFFECTS: Mild irritation may develop if not washed off.

EYE CONTACT—ACUTE EFFECTS: Immediate pain and irritation; possible transient erosion of the cornea if not rinsed out.

INGESTION—ACUTE EFFECTS: Ingestion of significant amounts is unlikely because of the taste; getting small drips or spatters of the working solution in the mouth will have no toxic effect. Consuming more than a spoonful of the dry product, or more than a cupful of the working solution, can result in corrosion of the esophagus and absorption of toxic levels of aluminum.



SECTION 4—FIRST AID MEASURES

Inhalation First Aid: Remove affected person from area to fresh air and provide oxygen if breathing is difficult. Give artificial respiration ONLY if breathing has stopped and give CPR ONLY if there is no breathing and no pulse. Obtain medical attention.

Skin Contact First Aid: Immediately remove clothing from affected area and wash skin vigorously with soap and water. Clothing should be washed before reuse. DO NOT instruct person to neutralize affected skin area.

Eye Contact First Aid: Immediately irrigate eyes with flowing water continuously for 15 minutes while holding the eyes open. Contact lenses should be removed before or during flushing. Obtain medical attention immediately. DO NOT instruct the person to neutralize.

Ingestion First Aid: Immediately give large amounts of water or milk, or a dose of milk of magnesia or liquid antacid. Vomiting may have to be induced but should be directed by a physician or poison control center. DO NOT have an unqualified person induce vomiting. Obtain medical attention immediately.

Medical Conditions Aggravated: None known.

Note to Physician: Both the Citric Acid and the Aluminum salt are acids, but the citrate ion buffers acidity to about pH 3.0 (less acidic than stomach acid) while at the same time combining with the Al to form a complex ion that may be absorbable. Thus, the acidity is a lesser hazard than the toxicity of aluminum, but neutralizing the acidity with excess alkali in any form should convert all Aluminum to $Al(OH)_3$, which is inert and should pass harmlessly through the system. If neutralization is delayed and significant levels of aluminum are absorbed into the blood, chelation therapy may be indicated.

SECTION 5—FIRE FIGHTING MEASURES

Flash Point and Method: Not Applicable.

Autolgnition Temperature: Above 1000°C

Upper and Lower Explosion Limits: Not Applicable

Extinguishing Media: No restrictions.

Fire Fighting Procedures: No special procedures indicated.

Fire & Explosion Hazards: Not flammable, but can be oxidized by fire to produce carbon monoxide and fumes of hydrochloric acid.

Hazardous Products of Decomposition and/or Combustion: The waters of crystallization are lost at 100°C. High temperature or fire can produce carbon monoxide and hydrochloric acid fumes.

NFPA Ratings:

HEALTH:	1 = SLIGHT HAZARD
FLAMMABILITY:	0 = MINIMAL HAZARD
REACTIVITY:	1 = SLIGHT HAZARD
OTHER:	NONE



SECTION 6—ACCIDENTAL RELEASE MEASURES

General: The product is a weak acid, so wear rubber or plastic gloves and goggles or face mask, and protect metals from corrosion.

Solid Material: Sweep up, store in plastic bag, discard in ordinary trash (if a single package) or in a waste facility approved for acidic wastes (if more than one package)

Working Solution: Absorb with paper or other suitable absorbent and discard with ordinary trash, or mop up and rinse with plain water—if a single package. If a larger amount is spilled, first neutralize with any alkali and then absorb and discard in non-hazardous trash.

Do not dump large amounts into any sewers, on the ground or into any body of water. All disposal methods must be in compliance with all federal, state, provincial, or local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the sole responsibility of the waste generator.

SECTION 7—HANDLING AND STORAGE

Handling: Protect from physical damage. If plastic bag is punctured or unsealed, transfer to a sealed container to prevent contact with moisture. Scale-Kleen will actively absorb moisture from the air; wet Scale-Kleen forms an acid. Do not touch without protective gloves.

Storage: Store in clean, dry environment; protect from excessive heat.

General Comments: None.

SECTION 8—PERSONAL PROTECTION and EXPOSURE CONTROL

Respiratory Protection: not needed under normal circumstances. If excessive heat and moisture create fumes of hydrochloric acid, an acid-gas respirator may be indicated.

Skin Protection: Rubber or plastic gloves are recommended.

Eye Protection: Goggles or face mask is recommended.

Ventilation Protection: General ventilation should be sufficient.

Other Protection: Cool-to-tepid water for washing skin and irrigating eyes should be readily available in all areas where this materials is handled or stored.

Exposure Limits:

- OSHA P.E.L.: 15 mg/m³ total dust (nuisance dust)
- OSHA P.E.L.: 5 mg/m³ respirable dust
- OSHA P.E.L.: 2 mg/m³ as Al
- ACGIH T.L.V.: 2 mg/m³
- LD₅₀: < 7500 mg/kg (oral, mouse, rat)

SECTION 9—PHYSICAL and CHEMICAL PROPERTIES

Appearance and Odor: White or off-white granules, like coarse salt or sugar; no odor.

Vapor Pressure: Not Applicable.

Vapor Density (Air = 1): Not applicable.

Boiling Point: Not applicable.



Melting Point: ~100°C (Citric Acid)

Density: 2.05 g/cm³

Solubility in Water: Very soluble

Volatile Percentage: Zero.

pH of Solution: pH 3.0

Flash Point/Method: Not Applicable.

Autolgnition Temperature: Not Applicable.

Upper/Lower Explosion Limits: Not Applicable.

Other: **None.**

SECTION 10—STABILITY and REACTIVITY

Stability: Waters of crystallization are lost at 100°C, making the Aluminum Chloride more likely to produce HCl fumes at elevated temperatures. The Citric Acid begins to char at 338°C.

Incompatibilities: Incompatible with alkalis.

Polymerization: Will not polymerize.

Decomposition: Heating and/or active drying may produce HCl fumes.

Conditions to Avoid: Do not puncture or unseal container until ready to use. Protect from excessive heat.

TOXICOLOGICAL INFORMATION

Inhalation—Acute: No hazard under normal circumstances. Excess heat can produce fumes of HCl, which has NIOSH and OSHA TWA exposure limits of ~5 ppm (7 mg/m³) and IDLH of 100 ppm.

Inhalation—Chronic: No information available.

Skin Contact—Acute: No hazard under normal circumstances. May cause slight, transient irritation.

Skin Contact—Chronic: no information available; no chronic effects are expected.

Eye contact—Acute: Immediate pain and irritation; transient corneal corrosion possible if not rinsed out.

Eye Contact—Chronic: No information available; no chronic effects are expected.

Ingestion—Acute: Unlikely to be consumed. Possible corrosion and scarring of esophagus, aluminum poisoning.

Ingestion—Chronic: No information available; chronic ingestion of Scale-Kleen is not possible.

Carcinogenicity and Mutagenicity: Not carcinogenic or mutagenic.



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SCALE-KLEEN™

Reproductive Effects: None known.

Neurotoxicity: Aluminum salts are suspected to be neurotoxic. However, ingestion of Aluminum is NOT a cause of Alzheimer's Disease, as had once been postulated.

Other Effects: None known.

Target Organ: Brain.

SECTION 12—ECOLOGICAL INFORMATION

Scale-Kleen is an ecologically friendly product. Aluminum is the most prevalent element in the Earth's crust, but its chemistry produces compounds that are highly insoluble (aluminum silicate, $Al(OH)_3$ "floc"), which limits its toxicity and absorption. Aluminum floc is welcome in all waste treatment operations. Likewise, Citric Acid is completely nontoxic and readily consumed by waste treatment organisms. The acidity of Scale-Kleen is its only negative attribute, requiring neutralization or dilution.

SECTION 13—DISPOSAL CONSIDERATIONS

Material that cannot be used or chemically reprocessed and empty containers should be disposed of in accordance with all applicable regulations. Product containers should be thoroughly emptied before disposal. Generators of waste material are required to evaluate all waste for compliance with RCRA and any local procedures and regulations. Note that state and local regulations may be more stringent than federal regs.

SECTION 14—TRANSPORT INFORMATION

Scale-Kleen is not a hazardous material, and there are no restrictions in its transport.

SECTION 15—REGULATORY INFORMATION

No information is available.

SECTION 16—OTHER INFORMATION

No other information is available.

Disclaimer: The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the user thereof. It is the buyer's responsibility to ensure that its activities comply with federal, state, provincial, and local laws.

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