

Section 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: ASTM E407-3 Kellers Etchant
 Part Number: ASTM3-(all sizes)
 Manufacturer: Sturbridge Metallurgical Services Inc.
 City, State, Zip: Sturbridge MA 01566
 Phone Number: 508-347-5288
 Emergency Phone: **CHEMTREC: 1-800-424-9300**

Section 2: Hazard(s) Identification

Hazardous classification of the substance or mixture:

Hazard Class	Category code
Acute Toxicity-Oral	3
Acute Toxicity-Dermal	3
Acute Toxicity-Inhalation	2
Skin Corrosion/Irritation	1
Eye Damage/Irritation	1
Respiratory Sensitizer	1
Skin Sensitizer	1
Specific Target Organs/Systemic Target Following Single Exposure	1
Specific Target Organs/Systemic Target Following Repeated Exposure	1
Corrosive to Metals	1
Hazardous to the Aquatic Environment (Acute)	3

Signal word: Danger

Pictogram:



Hazard Statements:

H290 May be corrosive to metals.
 H301 Toxic if swallowed.
 H311 Toxic in contact with skin.
 H314 Causes severe skin burns and eye damage.
 H317 May cause an allergic skin reaction.
 H318 Causes serious eye damage.
 H330 Fatal if inhaled.
 H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
 H370 Causes damage to organs.
 H372 Causes damage to organs through prolonged or repeated exposure.
 H402 Harmful to aquatic life.

Precautionary Statements:

P234 Keep only in original container.
P260 Do not breathe dust, fumes or mist.
P261 Avoid breathing dust, fumes or mist.
P264 Wash arms, hands and face thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P272 Use only outdoors or in a well ventilated area.
P273 Avoid release to the environment.
P280 Wear protective gloves and eye protection.

Response statements:

P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or physician.
P301+P330+P331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
P302+P352 IF ON SKIN: Wash with plenty of soap and water.
P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P304+P341 IF INHALED: If breathing is difficult, remove person to fresh air and keep comfortable for breathing.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P307+P311 If exposed: Call a POISON CENTER or physician.
P310 Immediately call a POISON CENTER or physician.
P312 Call a POISON CENTER or physician if you feel unwell.
P314 Get medical attention if you feel unwell.
P320 Specific treatment is urgent (Wash areas of contact with water immediately).
P321 Specific treatment (Wash areas of contact with water immediately).
P330 Rinse mouth.
P332+P313 If skin irritation occurs: Get medical attention.
P342+P311 If experiencing respiratory symptoms: Call a POISON CENTER or physician.
P361 Take off immediately all contaminated clothing and wash it before reuse.
P363 Wash contaminated clothing before reuse.
P390 Absorb spillage to prevent material damage.

Storage statements:

P403+P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.
P406 Store in corrosive resistant container with a resistant inner liner.

Disposal statement:

P501 Dispose of contents in accordance with local, state, federal and international regulations.

HMIS Ratings:	NFPA Ratings:
Health: 4	Health: 4
Flammability: 0	Flammability: 0
Reactivity: 2	Reactivity: 2
	Special Hazard:

Section 3: Composition/Information on Ingredients

Component	CAS NUMBER	Concentration
Nitric Acid	7697-37-2	2.5%
Hydrochloric Acid	7647-01-0	1.5%
Hydrofluoric Acid	7664-39-3	1%
Water	7732-18-5	Balance

Section 4: First-Aid Measures

For any route of contact: Detailed First Aid procedure should be planned before beginning work with HF etchants.

Inhalation:

Get medical help immediately. If patient is unconscious, give artificial respiration or use inhalator. Keep patient warm and resting, and send to hospital after first aid is complete.

Ingestion:

If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Skin Contact:

1) Remove the victim from the contaminated area and immediately place him under a safety shower or wash him with a water hose, whichever is available. 2) Remove all contaminated clothing. Handle all HF-contaminated material with gloves made of appropriate material, such as PVC or neoprene. 3) Keep washing with large amounts of water for a minimum of 15 minutes. 4) Have someone make arrangements for medical attention while you continue flushing the affected area with water. 5) If the following materials are available, limit the washing to five minutes and immerse the burned area in a solution of 0.2% iced aqueous Hyamine 1622 or 0.13% iced aqueous Zephiran Chloride. If immersion is not practical, towels should be soaked with one of the above solutions and used as compresses for the burn area. Ideally compresses should be changed every 2 minutes. Alternately, 2.5% calcium gluconate gel should be massaged into the affected area. 6) Seek medical attention as soon as possible for all burns regardless of how minor they may appear initially. Hyamine 1622 is a trade name for tetracaine benzethonium chloride, Merck Index Monograph 1078, a quaternary ammonium compound sold by Rohm & Haas, Philadelphia. Zephiran Chloride is a trade name for benzalkonium chloride, Merck Index Monograph 1059, also a quaternary ammonium compound, sold by Sanofi-Synthelabo Inc., New York, NY.

Eye Contact:

1) Irrigate eyes for at least 30 minutes with copious quantities of water, keeping the eyelids apart and away from eyeballs during irrigation. 2) Get competent medical attention immediately, preferably an eye specialist. 3) If a physician is not immediately available, apply one or two drops of ophthalmic anesthetic, (e.g., 0.5% Pontocaine Hydrochloride solution). 4) Do not use oily drops, ointment or HF skin burn treatments. Place ice pack on eyes until reaching emergency room.

Section 5: Fire-Fighting Measures

Fire: Not considered to be a fire hazard. Fire may produce poisonous or irritating gases.

Explosion: Not considered to be an explosion hazard.

Fire Extinguishing Media: Keep upwind of fire. Use water or carbon dioxide on fires in which Hydrofluoric Acid is involved. Halon or foam may also be used. In case of fire, the sealed containers can be kept cool by spraying with water.

Special Information: In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full face piece operated in the pressure demand or other positive pressure mode. Avoid getting water in tanks or drums; water

can cause generation of heat and spattering. In contact with air, the acid gives off corrosive fumes which are heavier than air.

Section 6: Accidental Release Measures**Personal Precautions, Protective Equipment and Emergency Procedures**

Wear protective gloves and eye protection. In case of inadequate ventilation wear respiratory protection.

Cleanup and Containment Methods and Materials

Absorb with suitable material and dispose of in accordance with local regulations.

Section 7: Handling and Storage

Precautions for safe handling: Keep container tightly sealed. Store in cool, dry place in tightly closed containers. Ensure good ventilation at the workplace. Open and handle with care.

Condition for safe storage: Keep container tightly sealed. Store in cool, dry conditions in tightly closed container.

Incompatibilities: Store away from strong bases and reducing agents.

Specific storage requirement(s): No information.

Section 8: Exposure Controls/Personal Protection Exposure Limits

Component	CAS No.	ACGIH TLV	OSHA PEL
Nitric Acid	7697-37-2	2 ppm (TWA); 4 ppm STEL	2 ppm (TWA)
Hydrochloric Acid	7647-01-0	2 ppm (Ceiling)	5 ppm (Ceiling)
Hydrofluoric Acid	7664-39-3	0.5 ppm (TWA); 2 ppm STEL	3 ppm (TWA)
Water	7732-18-5	NA	NA

Engineering controls: Use general and/or local exhaust ventilation to control the vapor concentration.

Eye protection: Wear safety glasses or goggles.

Skin protection: Wear protective clothing and chemical resistant gloves.

Respiratory protection: Use self-contained respiratory device in emergency situation.

Section 9: Physical and Chemical Properties

Appearance: Colorless, fuming liquid.

Odor: Acrid odor. Do not breathe fumes.

Solubility: Infinitely soluble.

Specific Gravity: 1.15 -1.18

pH: No information found.

% Volatiles by volume @ 21C (70F): 100 (as water and acid)

Boiling Point: ca. 100C (ca. 212F)

Melting Point: < -36C (< -33F)

Vapor Density (Air=1): Essentially the same as water.

Evaporation Rate (BuAc=1): Essentially the same as water.

Section 10: Stability and Reactivity

Stability: Stable at room temperature (68) F when stored and used under proper conditions.

Hazardous Decomposition Products: On contact with metals, liberates hydrogen gas. On heating to decomposition, could yield toxic

fumes of fluorides. Attacks glass and other silicon containing compounds. Reacts with silica to produce silicon tetrafluoride, a hazardous colorless gas.

Hazardous Polymerization: Will not occur

Incompatibilities: Strong bases and reducing agents. May react with metallic aluminum and generate hydrogen gas.

Section 11: Toxicological Information:

Acute Toxicity - Oral Exposure:

Toxic if swallowed. Wash arms, hands and face thoroughly after handling. Do not eat, drink or smoke when using this product. IF SWALLOWED: Immediately call a POISON CENTER or physician. Specific treatment (Wash areas of contact with water immediately). Rinse mouth. Store locked up. Dispose of contents in accordance with local, state, federal and international regulations.

Acute Toxicity - Dermal Exposure:

Toxic in contact with skin. Wear protective gloves and eye protection. IF ON SKIN: Wash with plenty of soap and water. Call a POISON CENTER or physician if you feel unwell. Specific treatment (Wash areas of contact with water immediately). Take off immediately all contaminated clothing and wash it before reuse. Store locked up. Dispose of contents in accordance with local, state, federal and international regulations.

Acute Toxicity - Inhalation Exposure:

Fatal if inhaled. Do not breathe dust, fumes or mist. Use only outdoors or in a well-ventilated area. In case of inadequate ventilation wear respiratory protection. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or physician. Specific treatment is urgent (Wash areas of contact with water immediately). Store in a well-ventilated place. Keep container tightly closed. Store locked up. Dispose of contents in accordance with local, state, federal and international regulations.

Acute Toxicity - Other Information:

LDLo, Oral, Human: 430 mg/kg (Nitric Acid), details of toxic effects not reported other than lethal dose value. LC50, Inhalation, Rat: 1276 ppm/1 H (Hydrofluoric Acid). LD50, Oral, Rabbit (Hydrochloric Acid) 900 mg/kg; Details of toxic effects not reported other than lethal dose value. LCLo, inhalation, human: (Hydrochloric Acid) 3000 ppm/5 minutes: No toxic effects noted.

Skin Corrosion and Irritation:

Causes severe skin burns and eye damage. Do not breathe dust, fumes or mist. Wash arms, hands and face thoroughly after handling. Wear protective gloves and eye protection. IF SWALLOWED: rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. Wash contaminated clothing before reuse. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or physician. Specific treatment (Wash areas of contact with water immediately). IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Store locked up. Dispose of contents in accordance with local, state, federal and international regulations.

Serious Eye Damage and Irritation:

Causes serious eye damage. Wear protective gloves and eye protection. 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 physician.

Respiratory Sensitization:

May cause allergy or asthma symptoms or breathing difficulties if inhaled. Avoid breathing dust, fumes or mist. In case of inadequate ventilation wear respiratory protection. IF INHALED: If breathing is difficult, remove person to fresh air and keep comfortable for breathing. If experiencing respiratory symptoms: Call a POISON CENTER or physician. Dispose of contents in accordance with local, state, federal and international regulations.

Skin Sensitization:

May cause an allergic skin reaction. Avoid breathing dust, fumes or mist. Contaminated work clothing must not be allowed out of the workplace. Wear protective gloves and eye protection. IF ON SKIN: Wash with plenty of soap and water. If skin irritation occurs: Get medical attention. Specific treatment (Wash areas of contact with water immediately). Wash contaminated clothing before reuse. Dispose of contents in accordance with local, state, federal and international regulations.

Germ Cell Mutagenicity: Not applicable.

Carcinogenicity: Not applicable.

Reproductive Toxicity: Not applicable.

Specific Target Organ Toxicity from Single Exposure:

Causes damage to organs. Do not breathe dust, fumes or mist. Wash arms, hands and face thoroughly after handling. Do not eat, drink or smoke when using this product. IF exposed: Call a POISON CENTER or physician. Specific treatment (Wash areas of contact with water immediately). Store locked up. Dispose of contents in accordance with local, state, federal and international regulations.

Specific Target Organ Toxicity from Repeated Exposure:

Causes damage to organs through prolonged or repeated exposure. Do not breathe dust, fumes or mist. Wash arms, hands and face thoroughly after handling. Do not eat, drink or smoke when using this product. Get medical attention if you feel unwell. Dispose of contents in accordance with local, state, federal and international regulations.

Aspiration Hazard:

Not applicable.

Additional Toxicology Information:

Data not available.

Section 12: Ecological Information

Environmental Fate:

If the pH is > 6.5, soil can bind fluorides tightly. High calcium content will immobilize fluorides, which can be damaging to plants when present in acid soils.

Environmental Toxicity:

This material is expected to be slightly toxic to aquatic life. 60 ppm/*/Fish/Lethal/Fresh Water *=time period not specified. > 300ppm/48hr./Shrimp/LC50/Aerated Saltwater

Section 13: Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved incinerator or disposed in a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

Section 14: Transportation Information

Transportation by Land - Department of Transportation (DOT, United States of America)

UN Number: UN3264

Proper Shipping Name: Corrosive liquid, acidic, inorganic, nos (Nitric Acid, Hydrochloric Acid, Hydrofluoric Acid)

Hazard Class: 8

Packing Group: III

Hazard Placard Labels:



Transportation by Air-International Air Transport Association (IATA)

UN Number: UN3264

Proper Shipping Name: Corrosive liquid, acidic, inorganic, nos (Nitric Acid, Hydrochloric Acid, Hydrofluoric Acid)

Hazard Class: 8

Packing Group: III

Hazard Placard Labels:



Section 15: Regulatory Information

Occupational Safety and Health Administration (OSHA) Hazards

Not listed.

Superfund Amendments and Reauthorization Act (SARA) 302 Extremely Hazardous Substances

Hydrochloric Acid (CAS # 7647-01-0): 500 lb TPQ (gas only)

Hydrochloric Acid (CAS # 7647-01-0): 5000 lb EPCRA RQ (gas only)

Hydrofluoric Acid (CAS # 7664-39-3): 100 lb EPCRA RQ

Hydrofluoric Acid (CAS # 7664-39-3): 100 lb TPQ

Nitric Acid (CAS # 7697-37-2): 1000 lb EPCRA RQ

Nitric Acid (CAS # 7697-37-2): 1000 lb TPQ

Superfund Amendments and Reauthorization Act (SARA) 311/312 Hazardous Chemicals

Hydrochloric Acid (CAS # 7647-01-0): 5000 lb final RQ; 2270 kg final RQ

Hydrofluoric Acid (CAS # 7664-39-3): 100 lb final RQ; 45.4 kg final RQ

Nitric Acid (CAS # 7697-37-2): 1000 lb final RQ; 454 kg final RQ

Superfund Amendments and Reauthorization Act (SARA) 313 Toxic Release Inventory (TRI)

Hydrochloric Acid (CAS # 7647-01-0): 1.0 % de minimis concentration (acid aerosols including mists, vapors, gas, fog, and other airborne forms of any particle size)

Hydrofluoric Acid (CAS # 7664-39-3): 1.0 % de minimis concentration

Nitric Acid (CAS # 7697-37-2): 1.0 % de minimis concentration

Massachusetts Right-to-Know Substance List

Hydrochloric Acid (CAS # 7647-01-0): Extraordinarily hazardous

Hydrofluoric Acid (CAS # 7664-39-3): Extraordinarily hazardous

Nitric Acid (CAS # 7697-37-2): Extraordinarily hazardous

Pennsylvania Right-to-Know Hazardous Substances

Hydrochloric Acid (CAS # 7647-01-0): Environmental hazard

Hydrochloric Acid (CAS # 7647-01-0): Present

Hydrofluoric Acid (CAS # 7664-39-3): Environmental hazard

Hydrofluoric Acid (CAS # 7664-39-3): Present

Hydrofluoric Acid (CAS # 7664-39-3): Present (dust)

Nitric Acid (CAS # 7697-37-2): Environmental hazard

Nitric Acid (CAS # 7697-37-2): Present

Water (CAS # 7732-18-5): Present

New Jersey Worker and Community Right-to-Know Components

Hydrochloric Acid (CAS # 7647-01-0): corrosive

Hydrochloric Acid (CAS # 7647-01-0): sn 1012

Hydrochloric Acid (CAS # 7647-01-0): SN 1012 TPQ: 500 lb (>=37% concentration); SN 2909 TPQ: 500 lb (Hydrogen chloride gas only. NJ uses UN1050 for reporting purposes)

Hydrofluoric Acid (CAS # 7664-39-3): corrosive Hydrofluoric Acid (CAS # 7664-39-3): sn 0936 Hydrofluoric Acid (CAS # 7664-39-3): sn 3759

Hydrofluoric Acid (CAS # 7664-39-3): SN 3759 TPQ: 100 lb; SN 1014 TPQ: 500 lb (Hydrogen fluoride gas only, NJ uses UN1052 for reporting purposes)

Nitric Acid (CAS # 7697-37-2): corrosive; reactive - second degree Nitric Acid (CAS # 7697-37-2): sn 1356

Nitric Acid (CAS # 7697-37-2): SN 1356 TPQ: 500 lb

Nitric Acid (CAS # 7697-37-2): sn 3722

Nitric Acid (CAS # 7697-37-2): SN 3722 TPQ: 500 lb (water dissociable, Category Code N511)

California Proposition 65

Not listed

Canada Domestic Substances List / Non-Domestic Substances List (DSL/NDSL)

Hydrochloric Acid (CAS # 7647-01-0): Present

Hydrofluoric Acid (CAS # 7664-39-3): Present

Nitric Acid (CAS # 7697-37-2): Present

Water (CAS # 7732-18-5): Present

United States of America Toxic Substances Control Act (TSCA) List

Hydrochloric Acid (CAS # 7647-01-0): Present [T]

Hydrofluoric Acid (CAS # 7664-39-3): Present [T]

Nitric Acid (CAS # 7697-37-2): Present

Water (CAS # 7732-18-5): Present

**European Inventory of Existing Commercial Chemical Substances (EINECS),
European List of Notified Chemical Substances (ELINCS), and No Longer Polymers (NLP)**

Not listed.

Section 16: Other Information

May be corrosive to metals. Toxic if swallowed. Toxic in contact with skin. Causes severe skin burns and eye damage. May cause an allergic skin reaction. Causes serious eye damage. Fatal if inhaled. May cause allergy or asthma symptoms or breathing difficulties if inhaled. Causes damage to organs. Causes damage to organs through prolonged or repeated exposure. Harmful to aquatic life.

Keep only in original container. Do not breathe dust, fumes or mist. Wash arms, hands and face thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Contaminated work clothing must not be allowed out of the workplace. Avoid release to the environment. Wear protective gloves and eye protection. In case of inadequate ventilation wear respiratory protection.

IF SWALLOWED: Immediately call a POISON CENTER or physician. IF ON SKIN: Wash with plenty of soap and water. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. IF INHALED: Remove person to fresh air and keep comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF exposed: Call a POISON CENTER or physician. Get medical attention if you feel unwell. Specific treatment is urgent (Wash areas of contact with water immediately). If skin irritation occurs: Get medical attention. If experiencing respiratory symptoms: Call a POISON CENTER or physician. Wash contaminated clothing before reuse. Absorb spillage to prevent material

damage.

Store in a well-ventilated place. Keep container tightly closed. Store locked up. Store in corrosive resistant container with a resistant inner liner. Dispose of contents in accordance with local, state, federal and international regulations

Disclaimer: The information above is believed to be accurate and represents the best information currently available to us. SMS, Inc. makes no warranty, express or implied, as to its accuracy, and we assumes no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. We shall not be liable for any damages to person or property resulting from its use.