Safety Data Sheet

Section 1: Identification of the Substance/Mixture and of the Company/Undertaking

1.1 Product identifier

Product Name • **TA-R Etch**

Product Code • 70003

1.2 Relevant identified uses of the substance or mixture and uses advised against

Relevant identified use(s) • Various Industrial Uses

1.3 Details of the supplier of the safety data sheet

Manufacturer • Air Liquide

2700 Post Oak Blvd.
Houston, TX 77056
United States
www.us.airliquide.com
sds@airliquide.com

Telephone (Technical) • 713-896-2896

Telephone (Technical) • 800-819-1704

1.4 Emergency telephone number

Manufacturer • 800-424-9300

Manufacturer • +1 703-527-3887

Section 2: Hazards Identification

EU/EEC

According to: Regulation (EC) No 1272/2008 (CLP)/REACH 1907/2006 [amended by 453/2010]
According to: EU Directive 67/548/EEC (DSD) or 1999/45/EC (DPD)

2.1 Classification of the substance or mixture

CLP • Flammable Liquids 3 - H226
Acute Toxicity Oral 2 - H300
Acute Toxicity Dermal 1 - H310
Skin Corrosion 1B - H314
Acute Toxicity Inhalation 4 - H332

DSD/DPD • Corrosive (C)
Toxic (T)
R10, R23/24/25, R34

2.2 Label Elements

CLP

DANGER

Hazard statements

- H226 - Flammable liquid and vapour
  H300 - Fatal if swallowed
  H310 - Fatal in contact with skin
  H314 - Causes severe skin burns and eye damage
  H332 - Harmful if inhaled

Precautionary statements

Prevention

- P210 - Keep away from heat, sparks, open flames and/or hot surfaces. - No smoking.
  P233 - Keep container tightly closed.
  P240 - Ground and/or bond container and receiving equipment.
  P241 - Use explosion-proof electrical/ventilating/lighting/equipment.
  P242 - Use only non-sparking tools.
  P243 - Take precautionary measures against static discharge.
  P260 - Do not breathe mist/vapours/spray.
  P262 - Do not get in eyes, on skin, or on clothing.
  P264 - Wash 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 - Wear protective gloves/protective clothing/eye protection/face protection.

Response

- P370+P378 - In case of fire: Use appropriate media for extinction.
  P304+P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
  P312 - Call a POISON CENTER or doctor/physician if you feel unwell.
  P303+P361+P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
  P321 - Specific treatment, see supplemental first aid information.
  P361 - Remove/Take off immediately all contaminated clothing.
  P363 - Wash contaminated clothing before reuse.
  P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
  P301+P330+P331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
  P310 - Immediately call a POISON CENTER or doctor/physician.
  P330 - Rinse mouth.

Storage/Disposal

- P233 - Keep container tightly closed.
  P403+P235 - Store in a well-ventilated place. Keep cool.
  P405 - Store locked up.
  P501 - Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

DSD/DPD

Risk phrases

- R10 - Flammable.
  R23/24/25 - Toxic by inhalation, in contact with skin and if swallowed.
  R34 - Causes burns.

Safety phrases

- S27 - Take off immediately all contaminated clothing.
  S36 - Wear suitable protective clothing.
  S37 - Wear suitable gloves.
  S39 - Wear eye/face protection.
  S45 - In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

2.3 Other Hazards

CLP

- According to Regulation (EC) No. 1272/2008 (CLP) this material is considered hazardous.

DSD/DPD

- According to European Directive 1999/45/EC this preparation is considered dangerous.

United States (US)

According to: OSHA 29 CFR 1910.1200 HCS

2.1 Classification of the substance or mixture

OSHA HCS 2012

- Flammable Liquids 3
  Skin Corrosion 1B
  Serious Eye Damage 1

2.2 Label elements

OSHA HCS 2012

DANGER

Hazard statements

- Flammable liquid and vapour
  Causes severe skin burns and eye damage
  Causes serious eye damage

Precautionary statements

Prevention

- Keep away from heat, sparks, open flames and/or hot surfaces. - No smoking.
  Keep container tightly closed.
  Ground and/or bond container and receiving equipment.
  Use explosion-proof electrical/ventilating/lighting/equipment.
  Use only non-sparking tools.
  Take precautionary measures against static discharge.
  Do not breathe dusts or mists.
  Wash thoroughly after handling.
  Wear protective gloves/protective clothing/eye protection/face protection.

Response

- In case of fire: Use appropriate media for extinction.
  IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
  IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
  Specific treatment, see supplemental first aid information.
  Wash contaminated clothing before reuse.
  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/physician.
  IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

Storage/Disposal

- Keep container tightly closed.
  Store in a well-ventilated place. Keep cool.
  Store locked up.
  Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

2.3 Other hazards

OSHA HCS 2012

- Under United States Regulations (29 CFR 1910.1200 - Hazard Communication Standard), this product is considered hazardous.

Canada

According to: WHMIS

2.1 Classification of the substance or mixture

WHMIS

- Combustible Liquids - B3
  Very Toxic - D1A
  Other Toxic Effects - D2A
  Corrosive - E

2.2 Label elements

WHMIS

- Combustible Liquids - B3
  Very Toxic - D1A
  Other Toxic Effects - D2A
  Corrosive - E

2.3 Other hazards

WHMIS

- In Canada, the product mentioned above is considered hazardous under the Workplace Hazardous Materials Information System (WHMIS).

2.4 Other information

NFPA

Section 3 - Composition/Information on Ingredients

3.1 Substances

- Material does not meet the criteria of a substance in accordance with Regulation (EC) No 1272/2008.

3.2 Mixtures

Composition					
Chemical Name	**Identifiers**	**%**	**LD50/LC50**	**Classifications According to Regulation/Directive**	**Comments**
Acetic acid	**CAS:**64-19-7 **EC Number:**200-580-7 **EU Index:**607-002-00-6	81%	Ingestion/Oral-Rat LD50 • 3310 mg/kg Skin-Rabbit LD50 • 1060 mg/kg Inhalation-Rat LC50 • 11400 mg/m³ 4 Hour(s)	**EU DSD/DPD:** Annex VI, Table 3.2: R10; C, R35 **EU CLP:** Annex VI, Table 3.1: Flam. Liq. 3, H226; Skin Corr. 1A, H314 **OSHA HCS 2012:** Flam. Liq. 3; Eye Dam. 1; Skin Corr .1B	NDA
Nitric acid	**CAS:**7697-37-2 **EC Number:**231-714-2 **EU Index:**007-004-00-1	7.5%	Inhalation-Rat LC50 • 260 mg/m³ 30 Minute(s)	**EU DSD/DPD:** Annex VI, Table 3.2: O, R8; C, R35 **EU CLP:** Annex VI, Table 3.1: Ox. Liq. 3, H272; Skin Corr. 1A, H314 **OSHA HCS 2012:** Skin Corr. 1A; Eye Dam. 1	NDA
Hydrofluoric acid	**CAS:**7664-39-3 **EC Number:**231-634-8	2.5%	Inhalation-Rat LC50 • 1276 ppm	**EU DSD/DPD:** Annex VI, Table 3.2: T+; R26/27/28 C; R35 **EU CLP:** Annex VI, Table 3.1: Acute Tox. 3, H300; Acute Tox. 2, H330; Acute Tox. 1, H310; Skin Corr. 1A, H314 **OSHA HCS 2012:** Acute Tox. 2 (inhl); Eye Dam. 1; Skin Corr. 1A	NDA

See Section 16 for full text of H-statements and R-phrases.

Section 4 - First Aid Measures

4.1 Description of first aid measures

Inhalation
- Move victim to fresh air. Administer oxygen if breathing is difficult. Give artificial respiration if victim is not breathing. 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. Get medical attention immediately.

Skin
- For minor skin contact, avoid spreading material on unaffected skin. In case of contact with substance, immediately flush skin with running water for at least 20 minutes. Remove and isolate contaminated clothing. Wash skin with soap and water. Get medical attention immediately.

Eye
- Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first five minutes, then continue rinsing eye. Get medical attention immediately.

Ingestion
- Do NOT induce vomiting. Victim should drink milk, egg whites, or large quantities of water. Never give anything by mouth to an unconscious person. Do not use mouth-to-mouth method if victim ingested the substance. Obtain medical attention immediately if ingested.

4.2 Most important symptoms and effects, both acute and delayed

- Refer to Section 11 - Toxicological Information.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to Physician
- All treatments 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.

Section 5 - Firefighting Measures

5.1 Extinguishing media

Suitable Extinguishing Media
- SMALL FIRES: Dry chemical, CO2, water spray or alcohol-resistant foam.
  LARGE FIRES: Water spray, fog or alcohol-resistant foam.

Unsuitable Extinguishing Media
- No data available

5.2 Special hazards arising from the substance or mixture

Unusual Fire and Explosion Hazards
- Containers may explode when heated.
  Vapor explosion hazard indoors, outdoors or in sewers.
  HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames.
  Many liquids are lighter than water.
  Runoff to sewer may create fire or explosion hazard.
  Vapors may form explosive mixtures with air.
  Vapors may travel to source of ignition and flash back.
  Acid reacts with most metals to release hydrogen gas, which can form explosive mixtures with air.

Hazardous Combustion Products
- No data available

5.3 Advice for firefighters

- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.
  Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.

Wear positive pressure self-contained breathing apparatus (SCBA).
Structural firefighters' protective clothing will only provide limited protection.
Runoff from fire control may cause pollution.
Move containers from fire area if you can do it without risk.
LARGE FIRES: Cool containers with flooding quantities of water until well after fire is out.

Section 6 - Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal Precautions

- Ventilate enclosed areas. Do not walk through spilled material. Wear appropriate personal protective equipment, avoid direct contact. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

Emergency Procedures

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions. Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Do not get water inside container. If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions. LARGE SPILL: Consider initial downwind evacuation for at least 300 meters (1000 feet) Ventilate closed spaces before entering.

6.2 Environmental precautions

- Prevent entry into waterways, sewers, basements or confined areas.

6.3 Methods and material for containment and cleaning up

Containment/Clean-up Measures

- Stop leak if you can do it without risk.
  Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
  Dike to collect large liquid spills.
  A vapor suppressing foam may be used to reduce vapors.
  Use water spray to reduce vapors or divert vapor cloud drift.
  Use clean non-sparking tools to collect absorbed material.
  All equipment used when handling the product must be grounded.
  LARGE SPILLS: Water spray may reduce vapor; but may not prevent ignition in closed spaces.
  Neutralize residue with neutralizing agent appropriate for acidic materials. Test area with litmus paper to ensure neutralization is complete.

6.4 Reference to other sections

- Refer to Section 8 - Exposure Controls/Personal Protection and Section 13 - Disposal Considerations.

Section 7 - Handling and Storage

7.1 Precautions for safe handling

Handling

- Handle and open container with care. Use only with adequate ventilation. Keep away from heat and ignition sources – No Smoking. Take precautionary measures against static charges. Use only non-sparking tools. All equipment used when handling the product must be grounded. Use caution when combining with water; DO NOT add water to corrosive liquid, ALWAYS add corrosive liquid to water while stirring to prevent release of heat, steam and fumes. Wear appropriate personal protective equipment, avoid direct contact. Do not breathe mist, vapours, spray. Do not get in eyes, on skin, or on clothing. Do not ingest. Empty containers retain product residue and can be hazardous. Do not cut, weld, puncture or incinerate container. Wash thoroughly with soap and water after handling and before eating, drinking, or using tobacco.

7.2 Conditions for safe storage, including any incompatibilities

Storage

- Keep container tightly closed. Store in a cool, dry, well-ventilated place. Keep away from incompatible materials. Inspect all incoming containers before storage, to ensure

containers are properly labeled and not damaged. Keep away from heat, sparks, and flame.

7.3 Specific end use(s)

- Refer to Section 1.2 - Relevant identified uses.

Section 8 - Exposure Controls/Personal Protection

8.1 Control parameters

Exposure Limits/Guidelines						
	Result	**ACGIH**	**Canada Ontario**	**Canada Quebec**	**China**	**China Highly Toxic Goods**
Hydrofluoric acid (7664-39-3)	Ceilings	2 ppm Ceiling (as F)	2 ppm Ceiling (as F)	3 ppm Ceiling (as F); 2.6 mg/m3 Ceiling (as F)	2 mg/m3 Ceiling [MAC] (as F)	2 mg/m3 Ceiling
	TWAs	0.5 ppm TWA (as F)	0.5 ppm TWA (as F)	Not established	Not established	Not established
Nitric acid (7697-37-2)	STELs	4 ppm STEL	4 ppm STEL	4 ppm STEV; 10 mg/m3 STEV	Not established	Not established
	TWAs	2 ppm TWA	2 ppm TWA	2 ppm TWAEV; 5.2 mg/m3 TWAEV	Not established	Not established
Acetic acid (64-19-7)	STELs	15 ppm STEL	15 ppm STEL	15 ppm STEV; 37 mg/m3 STEV	20 mg/m3 STEL	Not established
	TWAs	10 ppm TWA	10 ppm TWA	10 ppm TWAEV; 25 mg/m3 TWAEV	10 mg/m3 TWA	Not established

Exposure Limits/Guidelines (Con't.)						
	Result	**Europe**	**France**	**Germany DFG**	**Germany TRGS**	**Ireland**
Hydrofluoric acid (7664-39-3)	STELs	Not established	3 ppm STEL [VLCT] (restrictive limit); 2.5 mg/m3 STEL [VLCT] (restrictive limit)	Not established	Not established	3 ppm STEL (as F); 2.5 mg/m3 STEL (inhalable, as F)
	TWAs	Not established	1.8 ppm TWA [VME] (restrictive limit); 1.5 mg/m3 TWA [VME] (restrictive limit)	Not established	1 ppm TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed, exposure factor 2); 0.83 mg/m3 TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed, exposure factor 2)	1.8 ppm TWA (as F); 1.5 mg/m3 TWA (as F)
	Ceilings	Not established	Not established	2 ppm Peak; 1.66 mg/m3 Peak	Not established	Not established
	MAKs	Not established	Not established	1 ppm TWA MAK; 0.83 mg/m3 TWA MAK	Not established	Not established
	STELs	1 ppm STEL; 2.6 mg/m3 STEL	1 ppm STEL [VLCT] (indicative limit); 2.6 mg/m3 STEL [VLCT]	Not established	Not established	1 ppm STEL; 2.6 mg/m3 STEL

Nitric acid (7697-37-2)			(indicative limit)			
	TWAs	Not established	Not established	Not established	1 ppm TWA AGW (exposure factor 1); 2.6 mg/m3 TWA AGW	Not established
Acetic acid (64-19-7)	STELs	Not established	10 ppm STEL [VLCT]; 25 mg/m3 STEL [VLCT]	Not established	Not established	15 ppm STEL; 37 mg/m3 STEL
	TWAs	Not established	Not established	Not established	10 ppm TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed, exposure factor 2); 25 mg/m3 TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed, exposure factor 2)	10 ppm TWA; 25 mg/m3 TWA
	Ceilings	Not established	Not established	20 ppm Peak; 50 mg/m3 Peak	Not established	Not established
	MAKs	Not established	Not established	10 ppm TWA MAK; 25 mg/m3 TWA MAK	Not established	Not established

Exposure Limits/Guidelines (Con't.)

	Result	Israel	Italy	NIOSH	OSHA	OSHA Vacated
Hydrofluoric acid (7664-39-3)	STELs	Not established	3 ppm STEL Breve termine; 2.5 mg/m3 STEL Breve termine	Not established	Not established	6 ppm STEL (as F)
	TWAs	0.5 ppm TWA (as F)	1.8 ppm TWA; 1.5 mg/m3 TWA	3 ppm TWA; 2.5 mg/m3 TWA	3 ppm TWA (as F)	3 ppm TWA (as F)
	Ceilings	2 ppm Ceiling (as F)	Not established	6 ppm Ceiling (15 min); 5 mg/m3 Ceiling (15 min)	Not established	Not established
Nitric acid (7697-37-2)	STELs	4 ppm STEL	1 ppm STEL Breve termine; 2.6 mg/m3 STEL Breve termine	4 ppm STEL; 10 mg/m3 STEL	Not established	4 ppm STEL; 10 mg/m3 STEL
	TWAs	2 ppm TWA	Not established	2 ppm TWA; 5 mg/m3 TWA	2 ppm TWA; 5 mg/m3 TWA	2 ppm TWA; 5 mg/m3 TWA
Acetic acid (64-19-7)	STELs	15 ppm STEL	Not established	15 ppm STEL; 37 mg/m3 STEL	Not established	Not established
	TWAs	10 ppm TWA	Not established	10 ppm TWA; 25 mg/m3 TWA	10 ppm TWA; 25 mg/m3 TWA	10 ppm TWA; 25 mg/m3 TWA

Exposure Limits/Guidelines (Con't.)

	Result	Portugal	Spain	Sweden
	Ceilings	2 ppm Ceiling [VLE-CM] (as F)	Not established	2 ppm CLV; 1.7 mg/m3 CLV
	STELs	3 ppm STEL [VLE-CD] (indicative limit value); 2.5 mg/m3 STEL [VLE-CD] (indicative limit	3 ppm STEL [VLA-EC]; 2.5 mg/m3 STEL [VLA-EC]	Not established

		value)		
Hydrofluoric acid (7664-39-3)	TWAs	1.8 ppm TWA [VLE-MP] (indicative limit value, as F); 1.5 mg/m3 TWA [VLE-MP] (indicative limit value)	1.8 ppm TWA [VLA-ED] (indicative limit value); 1.5 mg/m3 TWA [VLA-ED] (indicative limit value)	Not established
	Under Review	Not established	3 mg/l Medium: urine Time: end of shift Parameter: Fluorides (F, I); 2 mg/l Medium: urine Time: pre-shift Parameter: Fluorides (F, I)	Not established
	Biological Limit Values (BLV)	Not established	8 mg/L urine end of shift Fluorides (2,F,I)	Not established
Nitric acid (7697-37-2)	STELs	1 ppm STEL [VLE-CD] (indicative limit value); 2.6 mg/m3 STEL [VLE-CD] (indicative limit value)	1 ppm STEL [VLA-EC]; 2.6 mg/m3 STEL [VLA-EC]	5 ppm STV; 13 mg/m3 STV
	TWAs	2 ppm TWA [VLE-MP]	Not established	2 ppm LLV; 5 mg/m3 LLV
Acetic acid (64-19-7)	STELs	15 ppm STEL [VLE-CD]	15 ppm STEL [VLA-EC]; 37 mg/m3 STEL [VLA-EC]	10 ppm STV; 25 mg/m3 STV
	TWAs	10 ppm TWA [VLE-MP] (indicative limit value); 25 mg/m3 TWA [VLE-MP] (indicative limit value)	10 ppm TWA [VLA-ED]; 25 mg/m3 TWA [VLA-ED]	5 ppm LLV; 13 mg/m3 LLV

Exposure Control Notations

Ireland

•Hydrofluoric acid (7664-39-3): **Skin:** (Potential for cutaneous absorption)

Germany TRGS

•Hydrofluoric acid (7664-39-3): **Skin:** (skin notation)

Germany DFG

•Acetic acid (64-19-7): **Pregnancy:** (no risk to embryo/fetus if exposure limits adhered to)

•Hydrofluoric acid (7664-39-3): **Pregnancy:** (no risk to embryo/fetus if exposure limits adhered to)

8.2 Exposure controls

Engineering Measures/Controls

- Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Personal Protective Equipment

Respiratory

- Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or symptoms are experienced.

Eye/Face

- Wear chemical splash safety goggles.

Skin/Body

- Wear appropriate gloves.

Environmental Exposure Controls

- Controls should be engineered to prevent release to the environment, including procedures to prevent spills, atmospheric release and release to waterways. Follow

best practice for site management and disposal of waste.

Key to abbreviations

ACGIH = American Conference of Governmental Industrial Hygiene
LLV = Limit Level Value is the exposure limit for 8-hour work day
MAK = Maximale Arbeitsplatz Konzentration is the maximum permissible concentration
NIOSH = National Institute of Occupational Safety and Health
OSHA = Occupational Safety and Health Administration
STEL = Short Term Exposure Limits are based on 15-minute exposures
STEV = Short Term Exposure Value
TWA = Time-Weighted Averages are based on 8h/day, 40h/week exposures
TWAEV = Time-Weighted Average Exposure Value

Section 9 - Physical and Chemical Properties

9.1 Information on Physical and Chemical Properties

Material Description			
Physical Form	Liquid	Appearance/Description	A colorless solution with a pungent odor.
Color	Colorless	Odor	Pungent
Odor Threshold	0.037 to 0.15 ppm (detection) [for Acetic Acid]		
General Properties			
Boiling Point	117.9 C(244.22 F) [for Acetic Acid]	Melting Point	16.6 C(61.88 F) [for Acetic Acid]
Decomposition Temperature	Data lacking	pH	< 1 [for Acetic Acid]
Specific Gravity/Relative Density	= 1.5 @ 20 C(68 F) Water=1 [for Acetic Acid]	Water Solubility	Soluble [for Acetic Acid]
Viscosity	Data lacking	Explosive Properties	Not explosive.
Oxidizing Properties:	Not an oxidizer.		
Volatility			
Vapor Pressure	11.4 mmHg (torr) @ 20 C(68 F) [for Acetic Acid]	Vapor Density	2.07 Air=1 [for Acetic Acid]
Evaporation Rate	0.97 n-Butyl Acetate = 1 [for Acetic Acid]		
Flammability			
Flash Point	40 C(104 F) [for Acetic Acid]	UEL	16 % [for Acetic Acid]
LEL	5.4 % [for Acetic Acid]	Autoignition	427 C(800.6 F) [for Acetic Acid]
Flammability (solid, gas)	Flammable Liquid.		
Environmental			
Octanol/Water Partition coefficient	Data lacking		

9.2 Other Information

- No additional physical and chemical parameters noted.

Section 10: Stability and Reactivity

10.1 Reactivity

- No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

- Stable

10.3 Possibility of hazardous reactions

- Hazardous polymerization will not occur.

10.4 Conditions to avoid

- Keep away from heat, sparks and flame.

10.5 Incompatible materials

- The components of this product are incompatible with strong oxidizing agents, strong reducing agents. Contact of this product with most common metals (except aluminum) will produce flammable hydrogen gas. The Acetic Acid component of this product may ignite when mixed with ammonium nitrate, if warmed. Acetic Acid may react violently with phosphorous isocyanate. When mixed with phosphorous trichloride, Acetic Acid can react explosively, due to the possible formation of spontaneously flammable phosphine. Acetic Acid will dissolve many types of plastics, rubber and coatings. Acetic Acid dissolves synthetic resins and rubber. Due to the presence of a fluoride compound in this product, this solution must be considered incompatible with glass, and other silica-based compounds.

10.6 Hazardous decomposition products

- Products of thermal decomposition include carbon monoxide, carbon dioxide, fluorides, and potassium and ammonia compounds.

Section 11 - Toxicological Information

11.1 Information on toxicological effects

Components		
Acetic acid (81%)	64-19-7	**Acute Toxicity:** Ingestion/Oral-Rat LD50 • 3310 mg/kg; Inhalation-Rat LC50 • 11400 mg/m³ 4 Hour(s); **Irritation:** Eye-Rabbit • 5 mg 30 Second(s)-Rinse • Mild irritation; Skin-Rabbit • 525 mg-Open • Severe irritation; **Reproductive:** Ingestion/Oral-Rat TDLo • 700 mg/kg (18D post); *Reproductive Effects:Effects on Newborn*:**Behavioral**
Nitric acid (7.5%)	7697-37-2	**Acute Toxicity:** Inhalation-Rat LC50 • 130 mg/m³ 4 Hour(s); **Reproductive:** Ingestion/Oral-Rat TDLo • 2345 mg/kg (18D preg); *Reproductive Effects:Effects on Newborn*:**Biochemical and metabolic**
Hydrofluoric acid (2.5%)	7664-39-3	**Acute Toxicity:** Inhalation-Rat LC50 • 1276 ppm 1 Hour(s); *Sense Organs and Special Senses:Eye*:**Lacrimation**; *Behavioral*:**Changes in motor activity (specific assay)**; *Gastrointestinal*:**Changes in structure or function of salivary glands**; **Irritation:** Eye-Human • 50 mg • Severe irritation; Skin-Rat • 50 % 3 Minute(s) • Severe irritation; **Reproductive:** Inhalation-Rat TCLo • 470 µg/m³ 4 Hour(s)(1-22D preg); *Reproductive Effects:Effects on Fertility*:**Pre-implantation mortality**; *Reproductive Effects:Effects on Fertility*:**Post-implantation mortality**

GHS Properties	Classification
Acute toxicity	**EU/CLP** • Acute Toxicity - Dermal 1; Acute Toxicity - Inhalation 4; Acute Toxicity - Oral 2 **OSHA HCS 2012** • Classification criteria not met
Aspiration Hazard	**EU/CLP** • Classification criteria not met **OSHA HCS 2012** • Classification criteria not met
Carcinogenicity	**EU/CLP** • Classification criteria not met **OSHA HCS 2012** • Classification criteria not met
Germ Cell Mutagenicity	**EU/CLP** • Classification criteria not met **OSHA HCS 2012** • Classification criteria not met

Skin corrosion/Irritation	**EU/CLP** • Skin Corrosion 1B **OSHA HCS 2012** • Skin Corrosion 1B
Skin sensitization	**EU/CLP** • Classification criteria not met **OSHA HCS 2012** • Classification criteria not met
STOT-RE	**EU/CLP** • Classification criteria not met **OSHA HCS 2012** • Classification criteria not met
STOT-SE	**EU/CLP** • Classification criteria not met **OSHA HCS 2012** • Classification criteria not met
Toxicity for Reproduction	**EU/CLP** • Classification criteria not met **OSHA HCS 2012** • Classification criteria not met
Respiratory sensitization	**EU/CLP** • Classification criteria not met **OSHA HCS 2012** • Classification criteria not met
Serious eye damage/Irritation	**EU/CLP** • Classification criteria not met **OSHA HCS 2012** • Serious Eye Damage 1

Potential Health Effects

Inhalation

Acute (Immediate)
- Harmful if inhaled. May cause corrosive burns - irreversible damage.

Chronic (Delayed)
- Repeated or prolonged exposure to corrosive fumes may cause bronchial irritation with chronic cough.

Skin

Acute (Immediate)
- Fatal in contact with skin. Causes severe skin burns and eye damage.

Chronic (Delayed)
- Repeated or prolonged exposure to corrosive materials will cause dermatitis.

Eye

Acute (Immediate)
- Causes serious eye damage.

Chronic (Delayed)
- Repeated or prolonged exposure to corrosive materials or fumes may cause conjunctivitis.

Ingestion

Acute (Immediate)
- Fatal if swallowed. May cause irreversible damage to mucous membranes.

Chronic (Delayed)
- Repeated or prolonged exposure to corrosive materials or fumes may cause gastrointestinal distrubances.

Key to abbreviations

LC = Lethal Concentration
LD = Lethal Dose
TC = Toxic Concentration
TD = Toxic Dose

Section 12 - Ecological Information

12.1 Toxicity

- Material data lacking.

12.2 Persistence and degradability

- Material data lacking.

12.3 Bioaccumulative potential

- Material data lacking.

12.4 Mobility in Soil

- Material data lacking.

12.5 Results of PBT and vPvB assessment

- No PBT and vPvB assessment has been conducted.

12.6 Other adverse effects

- No studies have been found.

Section 13 - Disposal Considerations

13.1 Waste treatment methods

Product waste
- Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Packaging waste
- Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Section 14 - Transport Information

	14.1 UN number	14.2 UN proper shipping name	14.3 Transport hazard class(es)	14.4 Packing group	14.5 Environmental hazards
DOT	UN3264	Corrosive liquid, acidic, inorganic, n.o.s (Acetic acid, Nitric acid, Hydrofluoric acid)	8	II	NDA
TDG	UN3264	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (Acetic acid, Nitric acid, Hydrofluoric acid)	8	II	NDA
IMO/IMDG	UN3264	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (Acetic acid, Nitric acid, Hydrofluoric acid)	8	II	NDA
IATA/ICAO	UN3264	Corrosive liquid, acidic, inorganic, n.o.s (Acetic acid, Nitric acid, Hydrofluoric acid)	8	II	NDA

14.6 Special precautions for user
- None known.

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
- Not relevant.

14.8 Other information

DOT
- Acetic acid has a reportable quantity of 5000 lbs (2270 kg) as listed in Appendix A to 49 CFR 172.101. Hydrofluoric Acid has a reportable quantity of 100 lbs (45.4 kg) as listed in Appendix A to 49 CFR 172.101. Nitric acid has a reportable quantity of 1000 lbs (454 kg) as listed in Appendix A to 49 CFR 172.101.

Section 15 - Regulatory Information

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

SARA Hazard Classifications
- Acute

State Right To Know				
Component	**CAS**	**MA**	**NJ**	**PA**
Acetic acid	64-19-7	Yes	Yes	Yes

Hydrofluoric acid	7664-39-3	Yes	Yes	Yes
Nitric acid	7697-37-2	Yes	Yes	Yes

Inventory						
Component	**CAS**	**Canada DSL**	**Canada NDSL**	**China**	**EU EINECS**	**EU ELNICS**
Acetic acid	64-19-7	Yes	No	Yes	Yes	No
Hydrofluoric acid	7664-39-3	Yes	No	Yes	Yes	No
Nitric acid	7697-37-2	Yes	No	Yes	Yes	No

Inventory (Con't.)		
Component	**CAS**	**TSCA**
Acetic acid	64-19-7	Yes
Hydrofluoric acid	7664-39-3	Yes
Nitric acid	7697-37-2	Yes

Canada

Labor

Canada - WHMIS - Classifications of Substances

• Acetic acid	64-19-7	B3, E (including 10-80% [Available data does not allow a precise evaluation of the threshold concentration from which solutions meet the B3 criterion], >80%); D2B (3-10%)
• Hydrofluoric acid	7664-39-3	D1A, D2A, E; D1B, D2A, E (40%, 50%, 70%, listed under Hydrofluoric acid)
• Nitric acid	7697-37-2	C, E (including 61.3%, 67.18%, 70%); E (0.63%, 6.3%)

Canada - WHMIS - Ingredient Disclosure List

• Acetic acid	64-19-7	1 %
• Hydrofluoric acid	7664-39-3	1 %
• Nitric acid	7697-37-2	1 %

Environment

Canada - CEPA - Priority Substances List

• Acetic acid	64-19-7	Not Listed
• Hydrofluoric acid	7664-39-3	Not Listed
• Nitric acid	7697-37-2	Not Listed

China

Environment

China - Ozone Depleting Substances - First Schedule

• Acetic acid	64-19-7	Not Listed
• Hydrofluoric acid	7664-39-3	Not Listed
• Nitric acid	7697-37-2	Not Listed

China - Ozone Depleting Substances - Second Schedule

• Acetic acid	64-19-7	Not Listed
• Hydrofluoric acid	7664-39-3	Not Listed

• Nitric acid	7697-37-2	Not Listed

China - Ozone Depleting Substances - Third Schedule

• Acetic acid	64-19-7	Not Listed
• Hydrofluoric acid	7664-39-3	Not Listed
• Nitric acid	7697-37-2	Not Listed

Other

China - Annex I & II - Controlled Chemicals Lists

• Acetic acid	64-19-7	Not Listed
• Hydrofluoric acid	7664-39-3	Not Listed
• Nitric acid	7697-37-2	Not Listed

China - Dangerous Goods List

• Acetic acid	64-19-7	(glacial or solution)
• Hydrofluoric acid	7664-39-3	(anhydrous or solution, with >60% Hydrofluoric acid; solution, with not >60% Hydrofluoric acid)
• Nitric acid	7697-37-2	(other than red fuming, with >70% Nitric acid; other than red fuming, with not >70% Nitric acid)

China - Export Control List - Part I Chemicals

• Acetic acid	64-19-7	Not Listed
• Hydrofluoric acid	7664-39-3	
• Nitric acid	7697-37-2	Not Listed

Europe

Other

EU - CLP (1272/2008) - Annex VI - Table 3.2 - Classification

• Acetic acid	64-19-7	R10 C; R35
• Hydrofluoric acid	7664-39-3	T+; R26/27/28 C; R35
• Nitric acid	7697-37-2	C; R35 O; R8

EU - CLP (1272/2008) - Annex VI - Table 3.2 - Concentration Limits

• Acetic acid	64-19-7	10%<=C<25%: Xi; R:36/38 90%<=C: C; R:35 25% <=C<90%: C; R:34
• Hydrofluoric acid	7664-39-3	Not Listed
• Nitric acid	7697-37-2	70%<=C: O; R:8 20%<=C: C; R:35 5%<=C<20%: C; R:34

EU - CLP (1272/2008) - Annex VI - Table 3.2 - Labelling

• Acetic acid	64-19-7	C R:10-35 S:(1/2)-23-26-45
• Hydrofluoric acid	7664-39-3	T+ C R:26/27/28-35 S:(1/2)-7/9-26-36/37/39-45
• Nitric acid	7697-37-2	O C R:8-35 S:(1/2)-23-26-36-45

EU - CLP (1272/2008) - Annex VI - Table 3.2 - Notes - Substances and Preparations

• Acetic acid	64-19-7	B
• Hydrofluoric acid	7664-39-3	Not Listed
• Nitric acid	7697-37-2	B

EU - CLP (1272/2008) - Annex VI - Table 3.2 - Safety Phrases

• Acetic acid	64-19-7	S:(1/2)-23-26-45
• Hydrofluoric acid	7664-39-3	S:(1/2)-7/9-26-36/37/39-45
• Nitric acid	7697-37-2	S:(1/2)-23-26-36-45

Germany

Environment

Germany - TA Luft - Types and Classes

• Acetic acid	64-19-7	organic Substance: 5.2.5, Class II
• Hydrofluoric acid	7664-39-3	Not Listed
• Nitric acid	7697-37-2	Not Listed

Germany - Water Classification (VwVwS) - Annex 1

• Acetic acid	64-19-7	Not Listed
• Hydrofluoric acid	7664-39-3	Not Listed
• Nitric acid	7697-37-2	Not Listed

Germany - Water Classification (VwVwS) - Annex 2 - Water Hazard Classes

• Acetic acid	64-19-7	ID Number 93, hazard class 1 - low hazard to waters (>25%)
• Hydrofluoric acid	7664-39-3	Not Listed
• Nitric acid	7697-37-2	ID Number 414, hazard class 1 - low hazard to waters (except fuming)

Germany - Water Classification (VwVwS) - Annex 3

• Acetic acid	64-19-7	Not Listed
• Hydrofluoric acid	7664-39-3	ID Number 254, hazard class 2 - hazard to waters
• Nitric acid	7697-37-2	Not Listed

Other

Germany - Specifically Regulated Chemicals in TRGS

• Acetic acid	64-19-7	Not Listed
• Hydrofluoric acid	7664-39-3	Not Listed
• Nitric acid	7697-37-2	Not Listed

Portugal

Other

Portugal - Prohibited Substances

• Acetic acid	64-19-7	Not Listed
• Hydrofluoric acid	7664-39-3	Not Listed
• Nitric acid	7697-37-2	Not Listed

United Kingdom

Environment

United Kingdom - Pollution Inventory - Schedule 1 - Thresholds for Releases to Air

• Acetic acid	64-19-7	Not Listed
• Hydrofluoric acid	7664-39-3	Not Listed
• Nitric acid	7697-37-2	Not Listed

Other

United Kingdom - Workplace Exposure Limits (WELs) - Substances in Review

• Acetic acid	64-19-7	Not Listed
• Hydrofluoric acid	7664-39-3	Not Listed
• Nitric acid	7697-37-2	Not Listed

United Kingdom - List of Dangerous Substances in Water

• Acetic acid	64-19-7	Not Listed
• Hydrofluoric acid	7664-39-3	Not Listed
• Nitric acid	7697-37-2	Not Listed

United States

Labor

U.S. - OSHA - Process Safety Management - Highly Hazardous Chemicals

• Acetic acid	64-19-7	Not Listed
• Hydrofluoric acid	7664-39-3	1000 lb TQ; 1000 lb TQ (anhydrous)
• Nitric acid	7697-37-2	500 lb TQ (>=94.5% by weight)

U.S. - OSHA - Specifically Regulated Chemicals

• Acetic acid	64-19-7	Not Listed
• Hydrofluoric acid	7664-39-3	Not Listed
• Nitric acid	7697-37-2	Not Listed

Environment

U.S. - CAA (Clean Air Act) - 1990 Hazardous Air Pollutants

• Acetic acid	64-19-7	Not Listed
• Hydrofluoric acid	7664-39-3	
• Nitric acid	7697-37-2	Not Listed

U.S. - CERCLA/SARA - Hazardous Substances and their Reportable Quantities

• Acetic acid	64-19-7	5000 lb final RQ; 2270 kg final RQ
• Hydrofluoric acid	7664-39-3	100 lb final RQ; 45.4 kg final RQ
• Nitric acid	7697-37-2	1000 lb final RQ; 454 kg final RQ

U.S. - CERCLA/SARA - Radionuclides and Their Reportable Quantities

• Acetic acid	64-19-7	Not Listed
• Hydrofluoric acid	7664-39-3	Not Listed
• Nitric acid	7697-37-2	Not Listed

U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances EPCRA RQs

• Acetic acid	64-19-7	Not Listed
• Hydrofluoric acid	7664-39-3	100 lb EPCRA RQ
• Nitric acid	7697-37-2	1000 lb EPCRA RQ

U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances TPQs

• Acetic acid	64-19-7	Not Listed
• Hydrofluoric acid	7664-39-3	100 lb TPQ
• Nitric acid	7697-37-2	1000 lb TPQ

U.S. - CERCLA/SARA - Section 313 - Emission Reporting

• Acetic acid	64-19-7	Not Listed
• Hydrofluoric acid	7664-39-3	1.0 % de minimis concentration
• Nitric acid	7697-37-2	1.0 % de minimis concentration

U.S. - CERCLA/SARA - Section 313 - PBT Chemical Listing

• Acetic acid	64-19-7	Not Listed
• Hydrofluoric acid	7664-39-3	Not Listed
• Nitric acid	7697-37-2	Not Listed

U.S. - RCRA (Resource Conservation & Recovery Act) - Hazardous Constituents - Appendix VIII to 40 CFR 261

• Acetic acid	64-19-7	Not Listed
• Hydrofluoric acid	7664-39-3	waste number U134
• Nitric acid	7697-37-2	Not Listed

U.S. - RCRA (Resource Conservation & Recovery Act) - U Series Wastes - Acutely Toxic Wastes & Other Hazardous Characteristics

• Acetic acid	64-19-7	Not Listed
• Hydrofluoric acid	7664-39-3	waste number U134 (Corrosive waste, Toxic waste)
• Nitric acid	7697-37-2	Not Listed

United States - California

Environment

U.S. - California - Proposition 65 - Carcinogens List

• Acetic acid	64-19-7	Not Listed
• Hydrofluoric acid	7664-39-3	Not Listed
• Nitric acid	7697-37-2	Not Listed

U.S. - California - Proposition 65 - Developmental Toxicity

• Acetic acid	64-19-7	Not Listed
• Hydrofluoric acid	7664-39-3	Not Listed
• Nitric acid	7697-37-2	Not Listed

U.S. - California - Proposition 65 - Maximum Allowable Dose Levels (MADL)

• Acetic acid	64-19-7	Not Listed
• Hydrofluoric acid	7664-39-3	Not Listed
• Nitric acid	7697-37-2	Not Listed

U.S. - California - Proposition 65 - No Significant Risk Levels (NSRL)

• Acetic acid	64-19-7	Not Listed
• Hydrofluoric acid	7664-39-3	Not Listed
• Nitric acid	7697-37-2	Not Listed

U.S. - California - Proposition 65 - Reproductive Toxicity - Female

• Acetic acid	64-19-7	Not Listed
• Hydrofluoric acid	7664-39-3	Not Listed
• Nitric acid	7697-37-2	Not Listed

U.S. - California - Proposition 65 - Reproductive Toxicity - Male

• Acetic acid	64-19-7	Not Listed

• Hydrofluoric acid	7664-39-3	Not Listed
• Nitric acid	7697-37-2	Not Listed

United States - Pennsylvania

Labor

U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List

• Acetic acid	64-19-7
• Hydrofluoric acid	7664-39-3
• Nitric acid	7697-37-2

U.S. - Pennsylvania - RTK (Right to Know) - Special Hazardous Substances

• Acetic acid	64-19-7	Not Listed
• Hydrofluoric acid	7664-39-3	Not Listed
• Nitric acid	7697-37-2	Not Listed

15.2 Chemical Safety Assessment

- No Chemical Safety Assessment has been carried out.

Section 16 - Other Information

Relevant Phrases (code & full text)

- H272 - May intensify fire; oxidizer
  H330 - Fatal if inhaled

  R8 - Contact with combustible material may cause fire.
  R26/27/28 - Very toxic by inhalation, in contact with skin and if swallowed.
  R35 - Causes severe burns.

Last Revision Date
- 13/May/2015

Preparation Date
- 13/May/2015

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Key to abbreviations

NDA = No data available