

## Section 1: Identification

**MANUFACTURER:** PACE Technologies  
3601 E. 34<sup>th</sup> St.  
Tucson, AZ 85713

**INFORMATION PHONE:** 520-882-6598

**EMERGENCY PHONE:** CHEMTREC 800-424-9300 (US) Day or night  
Customer No. 16568

**TRADE NAME:** V2A Etchant (Hydrochloric acid, nitric acid and water)


**CHEMICAL FAMILY:** CORROSIVE LIQUIDS, ACIDIC, INORGANIC N.O.S  
(Hydrochloric acid, Nitric acid Solution)

**HMIS RATING:** HEALTH: 3 FLAMMABILITY: 3 REACTIVITY: 2

**HAZARD RATING:**

LEAST: 0 SLIGHT: 1 MODERATE: 2 HIGH: 3 EXTREME: 4

## Section 2: Hazard(s) Identification

<b>GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)</b>	Oxidizing liquids (Category 3), H272 Corrosive to metals (Category 1), H290 Skin corrosion (Category 1B), H314 Serious eye damage (Category 1), H318 Specific target organ toxicity - single exposure (Category 3), Respiratory system, H335
<b>PICTOGRAM(s):</b>	
<b>SIGNAL WORD:</b>	Danger
<b>HAZARD STATEMENTS:</b>	<b>Hazard Statement(s):</b> H272- May intensify fire; oxidizer H290 - May be corrosive to metals H314- Causes severe skin burns and eye damage H318 - Causes serious eye damage H335- May cause respiratory irritation

**PRECAUTIONARY  
STATEMENTS:**

**Precautionary Statement(s):**

**Preventions:**

P210- Keep away from heat/sparks/open flames/hot surfaces. — No smoking.  
P220- Keep/Store away from clothing combustible materials.  
P221- Take any precaution to avoid mixing with combustibles  
P234- Keep only in original container.  
P260- Do not breathe dust/fume/gas/mist/vapors/spray.  
P261-Avoid breathing dust/fume/gas/mist/vapors/spray.  
P264- Wash skin thoroughly after handling.  
P271-Use only outdoors or in a well-ventilated area.  
P280- Wear protective gloves/protective clothing/eye protection/face protection.

**Response:**

P301+P330+P331- IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.  
P304+P340- IF INHALED: Remove victim to fresh air and Keep at rest in a position 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.  
P310- Immediately call a POISON CENTER or doctor/physician.  
P312-Call a POISON CENTER or doctor/physician if you feel unwell.  
P321- Specific treatment (see Section 4 SDS).  
P370+P378- In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.  
P390- Absorb spillage to prevent material damage.

**Storage:**

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:**

P501- Dispose of contents/container to Federal, State and Local Regulations.

**Emergency Overview**

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**POISON! DANGER! STRONG OXIDIZER. CONTACT WITH OTHER MATERIAL  
MAY CAUSE FIRE. CORROSIVE. LIQUID AND MIST CAUSE SEVERE BURNS TO  
ALL BODY TISSUE. MAY BE FATAL IF SWALLOWED OR INHALED.  
INHALATION MAY CAUSE LUNG AND TOOTH DAMAGE.**  
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**Potential Health Effects**

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Nitric acid is extremely hazardous; it is corrosive, reactive, an oxidizer, and a poison.

**Inhalation:**

Corrosive! Inhalation of vapors can cause breathing difficulties and lead to pneumonia and pulmonary edema, which may be fatal. Other symptoms may include coughing, choking, and

irritation of the nose, throat, and respiratory tract.

**Ingestion:**

Corrosive! Swallowing nitric acid can cause immediate pain and burns of the mouth, throat, esophagus and gastrointestinal tract.

**Skin Contact:**

Corrosive! Can cause redness, pain, and severe skin burns. Concentrated solutions cause deep ulcers and stain skin a yellow or yellow-brown color.

**Eye Contact:**

Corrosive! Vapors are irritating and may cause damage to the eyes. Contact may cause severe burns and permanent eye damage.

**Chronic Exposure:**

Long-term exposure to concentrated vapors may cause erosion of teeth and lung damage. Long-term exposures seldom occur due to the corrosive properties of the acid.

**Aggravation of Pre-existing Conditions:**

Persons with pre-existing skin disorders, eye disease, or cardiopulmonary diseases may be more susceptible to the effects of this substance.

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### Section 3: Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Hydrogen Chloride	7647-01-0	15-20%	Yes
Nitric Acid	7697-37-2	1-5%	Yes
Water	7732-18-5	50-80%	No

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### Section 4: First-Aid Measures

Immediate first aid treatment reduces the health effects of this substance.

**Inhalation:**

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

**Ingestion:**

DO NOT INDUCE VOMITING! Give large quantities of water or milk if available. Never give anything by mouth to an unconscious person. Get medical attention immediately.

**Skin Contact:**

In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

**Eye Contact:**

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

## **Section 5: Fire-Fighting Measures**

### **Fire:**

Not combustible, but substance is a strong oxidizer and its heat of reaction with reducing agents or combustibles may cause ignition. Can react with metals to release flammable hydrogen gas.

### **Explosion:**

Reacts explosively with combustible organic or readily oxidizable materials such as: alcohols, turpentine, charcoal, organic refuse, metal powder, hydrogen sulfide, etc. Reacts with most metals to release hydrogen gas which can form explosive mixtures with air.

### **Fire Extinguishing Media:**

Water spray may be used to keep fire exposed containers cool. Do not get water inside container. Neutralize with soda ash or slaked lime.

### **Special Information:**

Increases the flammability of combustible, organic and readily oxidizable materials. In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

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## **Section 6: Accidental Release Measures**

Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Neutralize with alkaline material (soda ash, lime), then absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

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## **Section 7: Handling and Storage**

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Store in a cool, dry, ventilated storage area with acid resistant floors and good drainage. Protect from physical damage. Keep out of direct sunlight and away from heat, water, and incompatible materials. Do not wash out container and use it for other purposes. When diluting, the acid should always be added slowly to water and in small amounts. Never use hot water and never add water to the acid. Water added to acid can cause uncontrolled boiling and splashing. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

## **Section 8: Exposure Controls/ Personal Protection**

### **Nitric Acid:**

-OSHA Permissible Exposure Limit (PEL):

2 ppm (TWA), 4 ppm (STEL)

-ACGIH Threshold Limit Value (TLV):

2 ppm (TWA); 4 ppm (STEL)

### **Hydrochloric Acid:**

-OSHA Permissible Exposure Limit (PEL):

5 ppm Ceiling

-ACGIH Threshold Limit Value (TLV):

5 ppm Ceiling

### **Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

### **Personal Respirators (NIOSH Approved):**

If the exposure limit is exceeded, a full facepiece respirator with an acid gas cartridge may be worn up to 50 times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive pressure, air-supplied respirator. **WARNING:** Air purifying respirators do not protect workers in oxygen deficient atmospheres. Nitric acid is an oxidizer and should not come in contact with cartridges and canisters that contain oxidizable materials, such as activated charcoal. Canister-type respirators using sorbents are ineffective.

### **Skin Protection:**

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

### **Eye Protection:**

Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

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## **Section 9: Physical and Chemical Properties**

### **Appearance:**

Colorless to yellowish fuming liquid.

### **Odor:**

Suffocating, acrid.

**Solubility:**

Infinitely soluble with slight evolution of heat.

**Specific Gravity:**

1.2-1.3

**pH:**

For HNO<sub>3</sub> 1.0 (0.1M solution)

FOR HCl solutions: 0.1 (1.0N), 1.1 (0.1 N), 2.02 (0.01 N)

**% Volatiles by volume @ 21C (70F):**

100 (as water and acid)

**Boiling Point:**

No information found

**Melting Point:**

No information found

**Vapor Density (Air=1):**

No information found

**Vapor Pressure (mm Hg):**

No information found

**Evaporation Rate (BuAc=1):**

No information found.

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## **Section 10: Stability and Reactivity**

**Stability:**

Stable under ordinary conditions of use and storage. Containers may burst when heated.

**Hazardous Decomposition Products:**

When heated to decomposition, emits toxic nitrogen oxides fumes and hydrogen nitrate. Will react with water or steam to produce heat and toxic and corrosive fumes.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

A dangerously powerful oxidizing agent, concentrated nitric acid is incompatible with most substances, especially strong bases, metallic powders, carbides, hydrogen sulfide, turpentine, and combustible organics. Concentrated hydrochloric acid is incompatible with many substances and highly reactive with strong bases, metals, metal oxides, hydroxides, amines, carbonates and other alkaline materials. Incompatible with materials such as cyanides, sulfides, sulfites, and formaldehyde.

**Conditions to Avoid:**

Light and heat.

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## Section 11: Toxicological Information

Nitric acid: Inhalation rat LC50: 244 ppm (NO<sub>2</sub>)/30M; Investigated as a mutagen, reproductive effector. Oral (human) LDLo: 430 mg/kg.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Hydrogen Chloride (7647-01-0)	No	No	3
Nitric Acid (7697-37-2)	No	No	None
Water (7732-18-5)	No	No	None

## Section 12: Ecological Information

### Environmental Fate:

No information found.

### Environmental Toxicity:

No information found.

## Section 13: Disposal Considerations

Dilute with water and flush to sewer if local ordinances allow, otherwise, whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. Although not a listed RCRA hazardous waste, this material may exhibit one or more characteristics of a hazardous waste and require appropriate analysis to determine specific disposal requirements. 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

### Domestic (Land, D.O.T.)

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**Proper Shipping Name:** CORROSIVE LIQUIDS, ACIDIC, INORGANIC N.O.S  
(Hydrochloric acid, Nitric acid, solution)

**Hazard Class:** 8

**UN/NA:** UN3264

**Packing Group:** II

**Limited Quantity** < 1 L

**International (Water, I.M.O.)**

**Proper Shipping Name:** CORROSIVE LIQUIDS, ACIDIC, INORGANIC N.O.S (Nitric acid, Hydrochloric acid solution)

**Hazard Class:** 8

**UN/NA:** UN3264

**Packing Group:** II

**Section 15: Regulatory Information**

-----\Chemical Inventory Status - Part 1\-----				
Ingredient	TSCA	EC	Japan	Australia
Hydrogen Chloride (7647-01-0)	Yes	Yes	Yes	Yes
Nitric Acid (7697-37-2)	Yes	Yes	Yes	Yes
Water (7732-18-5)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----				
Ingredient	Korea	--Canada--		Phil.
		DSL	NDSL	
Hydrogen Chloride (7647-01-0)	Yes	Yes	No	Yes
Nitric Acid (7697-37-2)	Yes	Yes	No	Yes
Water (7732-18-5)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----					
	-SARA 302-		-----SARA 313-----		
Ingredient	RQ	TPQ	List	Chemical Catg.	
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Hydrogen Chloride (7647-01-0)		5000	500*	Yes	No
Nitric Acid (7697-37-2)		1000	1000	Yes	No
Water (7732-18-5)		No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----			
Ingredient	CERCLA	-RCRA-	-TSCA-
		261.33	8 (d)
Hydrogen Chloride (7647-01-0)	5000	No	No
Nitric Acid (7697-37-2)	1000	No	No
Water (7732-18-5)	No	No	No

Chemical Weapons Convention: No      TSCA 12(b): No      CDTA: No  
SARA 311/312: Acute: Yes      Chronic: Yes      Fire: Yes      Pressure: No  
Reactivity: No      (Mixture / Liquid)



**Australian Hazchem Code:** 2PE, 2R

**Poison Schedule:** S6

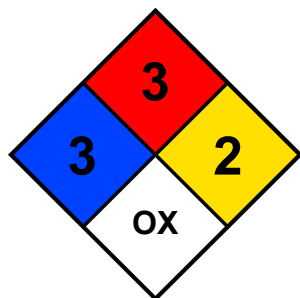
**WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

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## **Section 16: Other Information**

### **16.1 NFPA 704**



**Top, Flammability:** 3 – Severe Hazard

**Left, Health Hazard:** 3 – Severe Hazard

**Right, Reactivity:** 2 – Moderate Hazard

**Bottom, Special Notice:** OX - Oxidizer

#### **Label First Aid:**

In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In all cases get medical attention immediately.

#### **Product Use:**

Laboratory Reagent.

#### **Disclaimer:**

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