

**SECTION 1: IDENTIFICATION**

**MANUFACTURER:** PACE Technologies  
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**INFORMATION PHONE:** 520-882-6598

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

**TRADE NAME:** Nital Etchant


**CHEMICAL FAMILY:** FLAMMABLE LIQUIDS, CORROSIVE, n.o.s. (Ethanol, 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>	Flammable liquids (Category 2), H225 Oxidizing liquids (Category 3), H272 Acute toxicity, Oral (Category 4), H302 Skin corrosion (Category 1A), H314 Serious eye damage (Category 1), H318 Specific target organ toxicity - single exposure (Category 1), H370 Acute aquatic toxicity (Category 2), H401
<b>PICTOGRAM(s):</b>	
<b>SIGNAL WORD:</b>	Danger

<b>HAZARD STATEMENTS:</b>	<b>Hazard Statement(s):</b> H225- Highly Flammable liquid and vapor H272 - May intensify fire; oxidizer H302- Harmful if swallowed H314- Causes severe skin burns and eye damage H318 - Causes serious eye damage H370- Causes damage to organs H401- Toxic to aquatic life
<b>PRECAUTIONARY STATEMENTS:</b>	<b>Precautionary Statement(s):</b>  <b>Preventions:</b> P210- Keep away from heat/sparks/open flames/hot surfaces. — No smoking. P220- Keep/Store away from clothing and combustible materials. P221- Take any precaution to avoid mixing with combustibles, strong bases, metallic powders, carbides, hydrogen sulfide, turpentine, and combustible organics. P221- Take any precaution to avoid mixing with combustibles P233- Keep container tightly closed. P240- Ground/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 dust/fume/gas/mist/vapors/spray. P264- Wash hands thoroughly after handling. P270- Do not eat, drink or smoke when using this product. P273- Avoid release to the environment. P280- Wear protective gloves/protective clothing/eye protection/face protection.  <b>Response:</b> P301+P312: IF SWALLOWED: call a POISON CENTER or doctor/physician IF you feel unwell. P303+P361+P353- IF ON SKIN (or hair): Remove/Take off Immediately all contaminated clothing. Rinse SKIN with water/shower. 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. P307+P311- P310- 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. P321- Specific treatment (see Section 4 SDS). P330-P363- Wash contaminated clothing before reuse. P363- Avoid release to the environment. P370+P378- In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.  <b>Storage:</b> P403+P235- Store in a well-ventilated place. Keep cool. P405- Store locked up.  <b>Disposal:</b> P501- Dispose of contents/container to Federal, State and Local Regulations.

**Emergency Overview**  
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**POISON! DANGER! CORROSIVE. LIQUID AND MIST CAUSE SEVERE BURNS TO ALL BODY TISSUE. OXIDIZER. CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE. MAY BE FATAL IF SWALLOWED. HARMFUL IF INHALED. INHALATION MAY CAUSE LUNG AND TOOTH DAMAGE. MAY BE FATAL IF SWALLOWED. HARMFUL IF INHALED OR ABSORBED THROUGH SKIN. VAPOR HARMFUL.**

**FLAMMABLE! AFFECTS CENTRAL NERVOUS SYSTEM. MAY CAUSE BLINDNESS. CANNOT BE MADE NONPOISONOUS. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. MAY AFFECT LIVER, BLOOD, REPRODUCTIVE SYSTEM.** -----

Health Rating: 3 - Severe (Poison)

Flammability Rating: 3 - Severe (Flammable)

Reactivity Rating: 2 - Moderate

Contact Rating: 4 - Extreme (Corrosive and Life)

Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES; CLASS B EXTINGUISHER

Storage Color Code: White (Corrosive) and Red (Flammable)  
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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! May cause irritation of the nose, throat, and respiratory tract including coughing and choking. Higher concentrations or prolonged exposure to vapors of nitric acid may lead to pneumonia or pulmonary edema.

**Ingestion:**

Corrosive. May cause immediate pain and burns of the mouth, throat, esophagus and gastrointestinal tract.

**Skin Contact:**

Corrosive! May cause redness, pain, and severe skin burns.

**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. Long term exposures seldom occur due to the corrosive properties of the acid.

Prolonged skin contact causes drying and cracking of skin. May affect the nervous system. May affect liver, blood, reproductive system. Continued ingestion of small amounts could result in blindness

eye problems or impaired liver or kidney function

**Aggravation of Pre-existing Conditions:**

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

### Section 3: Composition/Information on Ingredients

#### HAZARD INGREDIENTS

CHEMICAL	CAS NUMBER	% PRESENT	Hazardous
Ethyl Alcohol	64-17-5	85-98%	Yes
Methyl Alcohol	67-56-1	1 - 5%	Yes
Isopropyl Alcohol	67-63-0	1 - 5%	Yes
Nitric Acid	7697-37-2	1 - 8%	Yes

### 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. Call a physician.

**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:**

Flash point: 13C (55F) CC

Autoignition temperature: 422C (792F)

Flammable limits in air % by volume:

lcl: 3.3; uel: 19

Flammable liquid and vapor!

Dangerous fire hazard when exposed to heat or flame.

**Explosion:**

Above flash point, vapor-air mixtures are explosive within flammable limits noted above. Vapors can flow along surfaces to distant ignition source and flash back. Sealed containers may rupture when heated. Sensitive to static discharge.

**Fire Extinguishing Media:**

Water spray, dry chemical, alcohol foam, or carbon dioxide. Water may be ineffective.

**Special Information:**

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.

Water spray can be used to extinguish fires and cool fire-exposed containers. Water may be used to flush spills away from exposures and to dilute spills to non-flammable mixtures.

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## Section 6: Accidental Release Measures

Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Use non-sparking tools and equipment. Collect liquid in an appropriate container or 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

Protect against physical damage. Store in a cool, dry well-ventilated location, away from any area where the fire hazard may be acute. Outside or detached storage is preferred. Separate from incompatibles. Containers should be bonded and grounded for transfers to avoid static sparks. Storage and use areas should be No Smoking areas. Use non-sparking type tools and equipment, including explosion proof ventilation. 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**

### **Airborne Exposure Limits:**

Denatured Alcohol:

- OSHA Permissible Exposure Limit (PEL):

1000 ppm (TWA) for ethyl alcohol

400 ppm (TWA) for isopropyl alcohol

200 ppm (TWA) for methyl alcohol

- ACGIH Threshold Limit Value (TLV):

1000 ppm (TWA), A4 - not classifiable as a human carcinogen for ethyl alcohol

200 ppm (TWA), 400 ppm (STEL), A4 - not classifiable as a human carcinogen for isopropyl alcohol

200 ppm (TWA), 250 ppm (STEL) skin, for methyl alcohol

For Nitric Acid:

OSHA Permissible Exposure Limit (PEL):

2 ppm (TWA)

ACGIH Threshold Limit Value (TLV):

2 ppm (TWA); 4 ppm (STEL)

### **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 and engineering controls are not feasible, wear a supplied air, full-facepiece respirator, airtight hood, or full-facepiece self-contained breathing apparatus. Breathing air quality must meet the requirements of the OSHA respiratory protection standard (29CFR1910.134). 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.

## Section 9: Physical and Chemical Properties

**Appearance:**

Clear to pale yellow solution.

**Odor:**

Suffocating, acrid with whiskey-like odor.

**Solubility:**

No information found

**Density:**

No information found

**pH:**

No information found.

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

100

**Boiling Point:**

78C (172F) (ethanol)

**Melting Point:**

-114C (-173F) (ethanol)

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

1.6 (ethanol)

**Vapor Pressure (mm Hg):**

40 @ 19C (66F) (ethanol)

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

ca. 1.4 (CCl4=1) (ethanol)

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## Section 10: Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage.

**Hazardous Decomposition Products:**

Carbon dioxide and carbon monoxide may form along with toxic nitrogen oxides fumes and hydrogen nitrate when heated to decomposition.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Strong oxidants, silver salts, acid chlorides, alkali metals, metal hydrides, hydrazine, and many other substances. Strong bases, metallic powders, carbides, hydrogen sulfide, turpentine, and combustible organics.

**Conditions to Avoid:**

Heat, flames, ignition sources and incompatibles.

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## Section 11: Toxicological Information

For Nitric Acid: Investigated as a mutagen and reproductive effector.

For Denatured Alcohol:

### Toxicological Data:

Ethyl alcohol: oral rat LD50: 7060 mg/kg; inhalation rat LC50: 20,000 ppm/10H; Irritation data, eye, rabbit: 500 mg/24H moderate; Investigated as a tumorigen, mutagen, reproductive effector. Methyl alcohol: oral rat LD50: 5628 mg/kg; inhalation rat LC50: 64000 ppm/4H; skin rabbit LD50: 15800 mg/kg; Irritation data, skin, rabbit: 20 mg/24H, Moderate; Investigated as a tumorigen, mutagen, reproductive effector. Isopropyl alcohol: oral rat LD50: 5045 mg/kg; skin rabbit LD50: 12.8 gm/kg; inhalation, rat: 16,000 ppm 8 hr. Investigated as a mutagen, tumorigen, reproductive effector.

### Reproductive Toxicity:

Ethanol has been linked to birth defects in humans.

### Carcinogenicity:

Ethanol has been linked to cancer in humans. Chronic ethanol ingestion is associated with liver cancer. Most industrial ethanol contains denaturants that render it undesirable to drink.

-----\Cancer Lists\-----

Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Nitric Acid (7697-37-2)	No	No	None
Water (7732-18-5)	No	No	None
Ethyl Alcohol (64-17-5)	No	No	None
Methyl Alcohol (67-56-1)	No	No	None
Isopropyl Alcohol (67-63-0)	No	No	3

## Section 12: Ecological Information

### Environmental Fate:

Following data for ethanol: When released into the soil, this material is expected to readily biodegrade. When released into the soil, this material is expected to leach into groundwater. When released into the soil, this material is expected to quickly evaporate. When released into water, this material is expected to readily biodegrade. When released into water, this material may evaporate to a moderate extent. This material is not expected to significantly bioaccumulate. When released into the air, this material is expected to be readily degraded by reaction with photochemically produced hydroxyl radicals. When released into the air, this material is expected to be readily removed from the atmosphere by dry and wet deposition. When released into the air, this material is expected to have a half-life between 1 and 10 days.



**Environmental Toxicity:**

This material is not expected to be toxic to aquatic life. The LC50/96-hour values for fish are over 100 mg/l.

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**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.

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**Section 14: Transport Information**

**Domestic (Land, D.O.T.)**  
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**Proper Shipping Name:** FLAMMABLE LIQUIDS, CORROSIVE, n.o.s.  
(Ethanol, Nitric Acid solution)

**Hazard Class:** 3,8

**UN/NA:** UN 2924

**Packing Group:** II

**Label Codes:** 3,8

Limited Quantity Shipment < 1 L

**NMFC:** 45615-11

Shipping Class CL125

**International (Air, I.C.A.O.)**  
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**Proper Shipping Name:** FLAMMABLE LIQUIDS, CORROSIVE, n.o.s.  
(Ethanol, Nitric Acid solution)

**Hazard Class:** 3,8

**UN/NA:** UN 2924

**Packing Group:** II

**Label Codes:** 3,8

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**Section 15: Regulatory Information**

-----\Chemical Inventory Status - Part 1\----- Ingredient	TSCA	EC	Japan	Australia
Nitric Acid (7697-37-2)	Yes	Yes	Yes	Yes

Water (7732-18-5)	Yes	Yes	Yes	Yes
Ethyl Alcohol (64-17-5)	Yes	Yes	Yes	Yes
Methyl Alcohol (67-56-1)	Yes	Yes	Yes	Yes
Isopropyl Alcohol (67-63-0)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----

Ingredient	--Canada--			
	Korea	DSL	NDSL	Phil.
Nitric Acid (7697-37-2)	Yes	Yes	No	Yes
Water (7732-18-5)	Yes	Yes	No	Yes
Ethyl Alcohol (64-17-5)	Yes	Yes	No	Yes
Methyl Alcohol (67-56-1)	Yes	Yes	No	Yes
Isopropyl Alcohol (67-63-0)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----

Ingredient	-SARA 302-		-----SARA 313-----	
	RQ	TPQ	List	Chemical Catg.
Nitric Acid (7697-37-2)	1000	1000	Yes	No
Water (7732-18-5)	No	No	No	No
Ethyl Alcohol (64-17-5)	No	No	No	No
Methyl Alcohol (67-56-1)	No	No	Yes	No
Isopropyl Alcohol (67-63-0)	No	No	Yes	No

-----\Federal, State & International Regulations - Part 2\-----

Ingredient	CERCLA	-RCRA-	-TSCA-
		261.33	8 (d)
Nitric Acid (7697-37-2)	1000	No	No
Water (7732-18-5)	No	No	No
Ethyl Alcohol (64-17-5)	No	No	No
Methyl Alcohol (67-56-1)	5000	U154	No
Isopropyl Alcohol (67-63-0)	No	No	No

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

**Australian Hazchem Code:** 2PE and 2[S]E

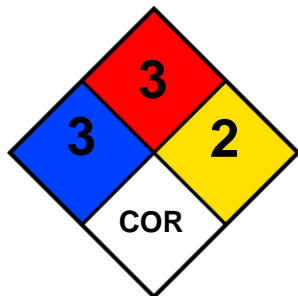
**Poison Schedule:** S5, S6

**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.

## 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: COR – Corrosive**

#### **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 call a physician.

**Product Use:** Laboratory Reagent.

#### **Disclaimer:**

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