

**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:** ASTM No. 30 Etchant


**CHEMICAL FAMILY:** AMMONIA SOLUTIONS (WITH 10-35% AMMONIA)

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

**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>	Acute toxicity, Oral (Category 4), H302 Skin corrosion (Category 1), H314 Serious eye damage (Category 1), H318 Acute aquatic toxicity (Category 1), H400
<b>PICTOGRAM(s):</b>	
<b>SIGNAL WORD:</b>	Danger
<b>HAZARD STATEMENTS:</b>	<b>Hazard Statement(s):</b> H302- Harmful if swallowed H314- Causes severe skin burns and eye damage H318 - Causes serious eye damage H335- May cause respiratory irritation H400- Very toxic to aquatic life
<b>PRECAUTIONARY</b>	<b>Precautionary Statement(s):</b>

**STATEMENTS:**

**Preventions:**

P260- Do not breathe dust/fume/gas/mist/vapors/spray.  
P264- Wash skin 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.

**Response:**

P301+312- IF SWALLOWED: call a POISON CENTER or doctor/physician IF you feel unwell.  
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.  
P321- Specific treatment (see Section 4 SDS).  
P330- Rinse mouth.  
P391- Collect spillage. Hazardous to the aquatic environment.

**Storage:**

P405- Store locked up.

**Disposal:**

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

**Emergency Overview**

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**POISON! DANGER! CORROSIVE. MAY BE FATAL IF SWALLOWED OR INHALED. MIST AND VAPOR CAUSE BURNS TO EVERY AREA OF CONTACT.**  
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Health Rating: 3 - Severe (Poison)

Flammability Rating: 0 - None

Reactivity Rating: 1 - Slight

Contact Rating: 4 - Extreme (Corrosive)

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

Storage Color Code: White Stripe (Store Separately)  
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**Potential Health Effects**

**Inhalation:**

Vapors and mists cause irritation to the respiratory tract. Higher concentrations can cause burns, pulmonary edema and death. Brief exposure to 5000 ppm can be fatal.

**Ingestion:**

Toxic! May cause corrosion to the esophagus and stomach with perforation and peritonitis. Symptoms may include pain in the mouth, chest, and abdomen, with coughing, vomiting and

collapse. Ingestion of as little as 3-4 mL may be fatal.

**Skin Contact:**

Causes irritation and burns to the skin.

**Eye Contact:**

Vapors cause irritation. Splashes cause severe pain, eye damage, and permanent blindness.

**Chronic Exposure:**

Repeated exposure may cause damage to the tissues of the mucous membranes, upper respiratory tract, eyes and skin.

**Aggravation of Pre-existing Conditions:**

Persons with pre-existing eye disorders or impaired respiratory function may be more susceptible to the effects of this material.

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**Section 3: Composition/Information on Ingredients**

Ingredient	CAS No	Percent	Hazardous
Ammonium Hydroxide	1336-21-6	21 - 72%	Yes
Hydrogen Peroxide	7722-84-1	1 - 4%	Yes
Water	7732-18-5	28 - 79%	No

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**Section 4: First-Aid Measures**

**Inhalation:**

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

**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:**

Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician, immediately. Wash clothing before reuse.

**Eye Contact:**

Immediately flush eyes with gentle but large stream of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Call a physician immediately. Immediate action is critical to minimize possibility of blindness.

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**Section 5: Fire-Fighting Measures**

**Fire:**

Autoignition temperature: 651C (1204F)

Flammable limits in air % by volume:

l<sub>el</sub>: 16; u<sub>el</sub>: 25

**Explosion:**

Flammable vapors may accumulate in confined spaces.

**Fire Extinguishing Media:**

Use any means suitable for extinguishing surrounding fire. Use water spray to blanket fire, cool fire exposed containers, and to flush non-ignited spills or vapors away from fire.

**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.

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**Section 6: Accidental Release Measures**

Ventilate area of leak or spill. Keep unnecessary and unprotected people away from area of spill. Wear appropriate personal protective equipment as specified in Section 8. Contain and recover liquid when possible. Do not flush caustic residues to the sewer. Residues from spills can be diluted with water, neutralized with dilute acid such as acetic, hydrochloric or sulfuric. Absorb neutralized caustic residue on clay, vermiculite or other inert substance and package in a suitable container for disposal.

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**

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Separate from incompatibilities. Store below 25C. Protect from direct sunlight.

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.

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

**Airborne Exposure Limits:**

-OSHA Permissible Exposure Limit (PEL):

50 ppm (NH<sub>3</sub>)

1 ppm (H<sub>2</sub>O<sub>2</sub>)

-ACGIH Threshold Limit Value (TLV):

25 ppm (NH<sub>3</sub>) (TWA) 35 ppm (STEL)

1 ppm (H<sub>2</sub>O<sub>2</sub>) (TWA), A3: Animal carcinogen.

**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, a full facepiece respirator with an ammonia/methylamine 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.

**Skin Protection:**

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact. Neoprene and nitrile rubber are recommended materials. Polyvinyl alcohol is not recommended.

**Eye Protection:**

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

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**Section 9: Physical and Chemical Properties**

**Appearance:**

Clear, colorless solution.

**Odor:**

Ammonia odor.

**Solubility:**

Infinitely soluble.

**Specific Gravity:**

0.9 (28% NH<sub>4</sub>OH)

**pH:**

13.8 (29% solution).

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

No information found.

**Boiling Point:**

ca. 36C (ca. 97F)

**Melting Point:**

-72C (-98F)

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

0.60 NH<sub>3</sub>

**Vapor Pressure (mm Hg):**

115 @ 20C for 10% solution; 580 @ 20C for 28% solution.

**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.

**Hazardous Decomposition Products:**

Burning may produce ammonia, nitrogen oxides.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Acids, acrolein, dimethyl sulfate, halogens, silver nitrate, propylene oxide, nitromethane, silver oxide, silver permanganate, oleum, beta-propiolactone, heat, reducing agents, organic materials, dirt, alkalis, rust, most common metals.

**Conditions to Avoid:**

Heat, sunlight, incompatibles, sources of ignition.

**Section 11: Toxicological Information**

For ammonium hydroxide:

oral rat LD50: 350 mg/kg; eye, rabbit, standard Draize, 250 ug; severe, investigated as a mutagen.

For ammonia:

inhalation rat LC50: 2000 ppm/4-hr; investigated as a tumorigen, mutagen.

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

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Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Ammonium Hydroxide (1336-21-6)	No	No	None
Hydrogen Peroxide (7722-84-1)	No	No	3
Water (7732-18-5)	No	No	None

**Section 12: Ecological Information**

**Environmental Fate:**

This material is not expected to significantly bioaccumulate.

**Environmental Toxicity:**

24 Hr LC50 rainbow trout: 0.008 mg/L;

96 Hr LC50 fathead minnow: 8.2 mg/L;

48 Hr LC50 bluegill: 0.024 mg/L;

48 Hr EC50 water flea: 0.66 mg/L

**Section 13: Disposal Considerations**

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.)**

**Proper Shipping Name:** AMMONIA SOLUTIONS (WITH 10-35% AMMONIA)

**Hazard Class:** 8

**UN/NA:** UN2672

**Packing Group:** III

**Information reported for product/size:** 385LB

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

**Proper Shipping Name:** AMMONIA SOLUTIONS (WITH 10-35% AMMONIA)

**Hazard Class:** 8

**UN/NA:** UN2672

**Packing Group:** III

**Information reported for product/size:** 385LB

**Section 15: Regulatory Information**

WHMIS Classification: D1B, E

-----\Chemical Inventory Status - Part 1\-----

Ingredient	TSCA	EC	Japan	Australia
Ammonium Hydroxide (1336-21-6)	Yes	Yes	Yes	Yes
Hydrogen Peroxide (7722-84-1)	Yes	Yes	Yes	Yes
Water (7732-18-5)	Yes	Yes	Yes	Yes

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

Ingredient	Korea	--Canada--		Phil.
		DSL	NDSL	
Ammonium Hydroxide (1336-21-6)	Yes	Yes	No	Yes
Hydrogen Peroxide (7722-84-1)	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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Ammonium Hydroxide (1336-21-6)	No	No	No	No
Hydrogen Peroxide (7722-84-1)	No	No	No	No
Water (7732-18-5)	No	No	No	No
-----\Federal, State & International Regulations - Part 2\-----				
	-RCRA-		-TSCA-	
Ingredient	CERCLA	261.33	8 (d)	
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Ammonium Hydroxide (1336-21-6)	1000	No	No	
Hydrogen Peroxide (7722-84-1)	No	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: No      Pressure: No  
 Reactivity: Yes      (Mixture / Liquid)

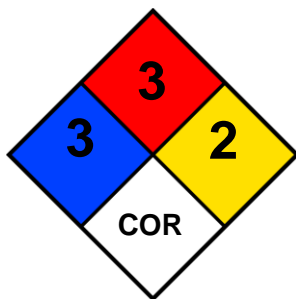
**WARNING:**  
 THIS PRODUCT CONTAINS A CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER.

**Australian Hazchem Code: 2P**  
**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:**

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 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. IMMEDIATE ACTION IS ESSENTIAL FOR EYE EXPOSURES. In all cases call a physician immediately.

**Product Use:**

Laboratory Reagent.

**Disclaimer:**

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