



ELECTRON/C CHEMICALS

Material Safety Data Sheet

Solution B

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Solution B

PRODUCT NUMBER: 81126

OTHER/GENERIC NAMES: Chemical Metal Etchant

PRODUCT USE: Electronic Metal Acid Etchen

MANUFACTURER FOR: Air Products Electronic Chemicals
1969 Palomar Oaks Way
Carlsbad, CA 92009

FOR MORE INFORMATION CALL:

Air Products Electronic Chemicals
In Continental U.S., Canada, Puerto Rico:
1-800-545-9241
Other Locations: 760-603-2254

IN CASE OF EMERGENCY CALL:

Air Products Emergency Response System
24 Hours/Day - 365 Days/Year
In Continental U.S., Canada, Puerto Rico:
800-523-9374
Other locations: 610-481-7711

2. COMPOSITION/INFORMATION ON INGREDIENTS

<u>INGREDIENT NAME</u>	<u>CAS NUMBER</u>	<u>WEIGHT %</u>
ortho-Phosphoric Acid	7664-38-2	- 80%
Acetic Acid	67-19-7	- 10%
Nitric Acid	7697-37-2	- 10%
Water	7732-18-5	Remainder

Trace impurities and additional material names not listed above may also appear in Section 15 towards the end of the MSDS. These materials may be listed for local "Right-To-Know" compliance and for other reasons.

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

Poison! Corrosive! Clear to yellow syrupy liquid with pungent odor. Causes severe burns. May be fatal if swallowed or inhaled

POTENTIAL HEALTH HAZARDS

SKIN: Exposures to the skin will result in severe burns. Moderately toxic by contact.

EYES: Liquid and vapor contact produces severe burns.

INHALATION: Exposure will cause respiratory tract and throat burning and irritation. Pulmonary edema, circulation failure and difficult breathing.

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INGESTION: Is harmful and may be fatal. Severe burns to mouth, throat and stomach, also nausea and vomiting.

DELAYED EFFECTS: Not Applicable

Ingredients that are found on one of the OSHA designated carcinogen lists are listed below.

<u>INGREDIENT NAME</u>	<u>NTP STATUS</u>	<u>IARC STATUS</u>	<u>OSHA LIST</u>
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No ingredients listed in this section.

4. FIRST AID MEASURES

SKIN: Flush with water for at least 15 minutes while remove contaminated clothing and shoes. Wash clothing before reuse.

EYES: Flush with water for at least 15 minutes. Get medical assistance.

INHALATION: Remove to fresh air. If breathing is difficult, give oxygen if qualified personnel are available. Call a physician immediately.

INGESTION: Get immediate medical attention! If patient is conscious, rinse mouth with water. Do not induce vomiting unless instructed to do so by a physician..

ADVICE TO PHYSICIAN: No specific instructions. Treat symptomatically.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASH POINT:	Does Not Burn
FLASH POINT METHOD:	Not applicable
AUTOIGNITION TEMPERATURE:	Not applicable
LOWER FLAME LIMIT (volume % in air):	Not applicable
UPPER FLAME LIMIT (volume % in air):	Not applicable
FLAME PROPAGATION RATE (solids):	Not applicable
OSHA FLAMMABILITY CLASS:	Not applicable

EXTINGUISHING MEDIA:

Use extinguishing media appropriate for surrounding fire.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

May emit toxic fumes of POx gas if heated to decomposition.

SPECIAL FIRE FIGHTING PRECAUTIONS/INSTRUCTIONS:

Wear self-contained positive pressure breathing apparatus. Do not release runoff from fire control methods to sewers or waterways. Keep fire exposed containers cool with water spray. Do not get water inside containers.

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6. ACCIDENTAL RELEASE MEASURES

IN CASES OF SPILL OR OTHER RELEASE: (Always wear recommended personal protective equipment.)
Remove personnel from area. Neutralize spill with chalk and pick-up with absorbent material. Dispose of according to Federal and/or local regulations.

Spills and releases may have to be reported to Federal and/or local authorities. See Section 15 regarding reporting requirements.

7. HANDLING AND STORAGE

NORMAL HANDLING: (Always wear recommended personal protective equipment.)
Keep container tightly closed. Use good personal hygiene and housekeeping practices.

STORAGE RECOMMENDATIONS:
Protect from physical damage. Store in a cool, dry, corrosion-proof area. Isolate from incompatible materials.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS:
Provide general or local exhaust ventilation systems to maintain airborne concentrations below permissible TLV levels. Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by controlling it at its source.

PERSONAL PROTECTIVE EQUIPMENT

SKIN PROTECTION:
Acid resistant protective gloves and clothing if there is repeated or prolonged exposure to liquid or mist. Otherwise, full work clothing. Acceptable materials of construction include: neoprene, rubber, nitrile, and vinyl.

EYE PROTECTION:
Goggles and face shields are considered minimum protection. Do not wear contacts.

RESPIRATORY PROTECTION:
Use NIOSH approved acid gas cartridge respirator. Chemical cartridge respirators do not supply oxygen. In the event of a spill or emergency, use NIOSH approved self-contained breathing apparatus (SCBA).

ADDITIONAL RECOMMENDATIONS:
Eyewash and quick-drench safety shower facilities, protect from freezing, should be available where acids are stored or handled.

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EXPOSURE GUIDELINES

<u>INGREDIENT NAME</u>	<u>ACGIH TLV</u>	<u>OSHA PEL</u>	<u>OTHER LIMIT</u>
Phosphoric Acid	1 mg/m ³ TWA 3 mg/m ³ STEL	1 mg/m ³ TWA	None
Acetic Acid	10 ppm TWA 15 PPM STEL	10 PPM TWA	None
Nitric Acid	2 ppm TWA 4 ppm STEL	2 ppm TWA	None

= Workplace Environmental Exposure Level (AIHA).
= Biological Exposure Index (ACGIH).

OTHER EXPOSURE LIMITS FOR POTENTIAL DECOMPOSITION PRODUCTS:

None

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Clear to yellow, syrupy liquid.
PHYSICAL STATE:	Liquid
MOLECULAR WEIGHT:	Mixture
CHEMICAL FORMULA:	Mixture
ODOR:	Pungent odor
SPECIFIC GRAVITY (water = 1.0):	Mixture
SOLUBILITY IN WATER (weight %):	Complete
pH:	
BOILING POINT:	> 212°F (100°C)
FREEZING POINT:	Not applicable
VAPOR PRESSURE: @ 20°C	Not applicable
VAPOR DENSITY (air = 1.0):	Not applicable
EVAPORATION RATE:	Not applicable
VOLATILES:	Not applicable
FLASH POINT:	Not applicable
(Flash point method and additional flammability data are found in section 5.)	

10. STABILITY AND REACTIVITY

NORMALLY STABLE? (CONDITIONS TO AVOID):

Stable at room temperatures. Avoid contact with heat and moisture sources.

INCOMPATIBILITIES:

Most common metals, and strong alkalizes. Potentially violent reaction with sodium tetrahydroborate.

HAZARDOUS DECOMPOSITION PRODUCTS:

Combustion by products includes oxides of phosphorus.

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HAZARDOUS POLYMERIZATION:

Will not occur.

11. TOXICOLOGICAL INFORMATION

Phosphoric Acid**IMMEDIATE (ACUTE) EFFECTS:**

Oral LD₅₀ (rat): 1530 mg/kg

Eye Irritation (rabbit): 119 mg - severe irritation effects

Skin Irritation (rabbit): 595 mg/24H - severe irritation effects

Acetic Acid**IMMEDIATE (ACUTE) EFFECTS:**

Oral LD₅₀ (rat): 3310 mg/kg

Inhalation LC₅₀ (rat): 5620 ppm, 1 hour

Eye Irritation LD₅₀ (rabbit): 1.06 g/kg Strong

Nitric Acid**IMMEDIATE (ACUTE) EFFECTS:**

Oral LD₅₀ (rat): Limited data

Inhalation LC₅₀ (rat): 65 ppm, 4 hour

Eye Irritation (rabbit): -100 mg - Strong

DELAYED (SUBCHRONIC AND CHRONIC) EFFECTS:

None

OTHER DATA:

None

12. ECOLOGICAL INFORMATION

None known.

13. DISPOSAL CONSIDERATIONS

RCRA

Is the unused product a RCRA hazardous waste if discarded?

Yes

If yes, the RCRA ID number is:

D002 Corrosive

OTHER DISPOSAL CONSIDERATIONS:

Disposer must comply with Federal, State and Local disposal or discharge laws.

The information offered here is for the product as shipped. Use and/or alterations to the product such as mixing with other materials may significantly change the characteristics of the material and alter the RCRA classification and the proper disposal method.

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14. TRANSPORT INFORMATION

US DOT PROPER SHIPPING NAME: Corrosive liquid n.o.s. (Phosphoric acid and acetic acid)
US DOT HAZARD CLASS: 8, Corrosive
US DOT ID NUMBER: UN1760
US DOT PACKING GROUP: II
NA EMERGENCY RESPONSE GUIDE: 154

For additional information on shipping regulations affecting this material, contact the information number found in Section 1.

15. REGULATORY INFORMATION

TOXIC SUBSTANCES CONTROL ACT (TSCA)

TSCA INVENTORY STATUS: Listed on the inventory.

OTHER TSCA ISSUES: Not subject to export notification.

SARA TITLE IIVCERCLA

"Reportable Quantities" (RQs) and/or "Threshold Planning Quantities" (TPQs) exist for the following ingredients.

<u>INGREDIENT NAME</u>	<u>SARA/CERCLA RO (lb)</u>	<u>SARA EHS TPO (lb)</u>
Phosphoric Acid	5,000	None
Acetic Acid	5,000	None
Nitric Acid	1,000	1,000 (vapor)

Spills or releases resulting in the loss of any ingredient at or above its RQ requires immediate notification to the National Response **Center** [(800) 424-8802] and to your Local Emergency Planning Committee.

SECTION 311 HAZARD CLASS: Immediate
Reactive

SARA 313 TOXIC CHEMICALS:

The following ingredients are SARA 313 "Toxic Chemicals". CAS numbers and weight percents are found in Section 2.

<u>INGREDIENT NAME</u>	<u>COMMENT</u>
Phosphoric Acid	1%
Nitric Acid	1%

STATE RIGHT-TO-KNOW

In addition to the ingredients found in Section 2, the following are listed for state right-to-know purposes.

<u>INGREDIENT NAME</u>	<u>WEIGHT %</u>	<u>COMMENT</u>
No ingredients listed in this section		



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ADDITIONAL REGULATORY INFORMATION:

None

WHMIS CLASSIFICATION (CANADA):

Class E

FOREIGN INVENTORY STATUS:

Listed on the Canadian DSL and EINECS

16. OTHER INFORMATION

CURRENT ISSUE DATE: May 2000

PREVIOUS ISSUE DATE: New

CHANGES TO MSDS FROM PREVIOUS ISSUE DATE ARE DUE TO THE FOLLOWING:

New

OTHER INFORMATION: NFPA Classification: Health - 3

Flammability - 0

Reactivity - 0