

MATERIAL SAFETY DATA SHEET

Prepared to U.S. OSHA, CMA, ANSI and Canadian WHMIS Standards

PART I *What is the material and what do I need to know in an emergency?*

1. PRODUCT IDENTIFICATION

TRADE NAME (AS LABELED): **VIA DEP 4471 CONDITIONER**

CHEMICAL NAME/CLASS: Glycolic Acid Solution

PRODUCT CODE NUMBER: 4112

PRODUCT USE: Printed Wiring Board Chemistry

SUPPLIER/MANUFACTURER'S NAME: **ELECTROCHEMICALS, Inc.**

ADDRESS: 5630 Pioneer Creek Drive
Maple Plain MN 55359

EMERGENCY PHONE: 1-800-424-9300 (**CHEMTREC**)

BUSINESS PHONE: 763-479-2008

DATE OF REVISION: December 12, 2006

2. COMPOSITION and INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS #	% w/w	EXPOSURE LIMITS IN AIR					
			ACGIH		OSHA			OTHER
			TLV mg/m ³	STEL mg/m ³	PEL mg/m ³	STEL mg/m ³	IDLH mg/m ³	
Polyethylene Glycol Phenyl Ether Phosphate	39464-70-5	5-10	NE	NE	NE	NE	NE	NE
Glycolic Acid	79-14-1	20-25	NE	NE	NE	NE	NE	10(Dupont 8 HR. TWA)
Water and other low hazard ingredients less than one percent.	-----	Balance	NE	NE	NE	NE	NE	NE

NE = Not Established C = Ceiling Level See Section 16 for Definitions of Terms Used.

NOTE: All WHMIS required information is included. It is located in appropriate sections based on the ANSI Z400.1-1993 format.

3. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW: This colorless solution contains components which are corrosive, and can be damaging to contaminated tissue. Ingestion of large quantities can be fatal. In the event of fire or spill, adequate precautions must be taken. If involved in a fire, this product may decompose to produce carbon oxides.

SYMPTOMS OF OVER-EXPOSURE BY ROUTE OF EXPOSURE: This solution can damage skin, eyes, mucous membranes, and other contaminated tissue.

INHALATION: If mists or sprays of this solution are inhaled, this product may cause pulmonary irritation, irritation of the mucus membranes, coughing, and a sore throat. Damage to the tissues of the respiratory system may occur and result in chemical pneumonitis and pulmonary edema.

CONTACT WITH SKIN or EYES: Contact with the eyes will cause irritation, pain, and reddening. Prolonged exposure of the eyes may result in blindness. Skin contact may cause reddening, discomfort, and irritation. Prolonged exposure may result in burns which could leave scars.

SKIN ABSORPTION: No component of this solution absorbs through the skin.




INGESTION: Burning and irritation of the mouth, throat, esophagus, and other tissues of the digestive system will occur immediately upon contact. Ingestion of large quantities may be fatal.

INJECTION: Accidental injection of this product, via laceration or puncture by a contaminated object, may cause pain and irritation in addition to the wound.

HEALTH EFFECTS OR RISKS FROM EXPOSURE: An Explanation in **Lay Terms**. In the event of exposure, the following symptoms may be observed:

ACUTE: This solution is corrosive, and can burn and damage eyes, skin, mucous membranes, and any other exposed tissue. If inhaled, irritation of the respiratory system may occur, with coughing, and breathing difficulty. Though unlikely to occur during occupational use, ingestion of large quantities may be fatal.

CHRONIC: Persistent irritation and dermatitis may result from repeated exposures to this solution.

HAZARDOUS MATERIAL INFORMATION SYSTEM			
HEALTH		(BLUE)	3
FLAMMABILITY		(RED)	0
REACTIVITY		(YELLOW)	0
PROTECTIVE EQUIPMENT			D
EYES	RESPIRATORY	HANDS	BODY
	SEE SECTION 8		
For routine industrial applications			

PART II *What should I do if a hazardous situation occurs?*

4. FIRST-AID MEASURES

SKIN EXPOSURE: If this product contaminates the skin, immediately begin decontamination with running water. Minimum flushing is for 15 minutes. Remove exposed or contaminated clothing, taking care not to contaminate eyes. Victim must seek immediate medical attention.

EYE EXPOSURE: If this product's liquid or vapors enters the eyes, open victim's eyes while under gentle running water. Use sufficient force to open eyelids. Have victim "roll" eyes. Minimum flushing is for 15 minutes.

INHALATION: If vapors, mists, or sprays of this product are inhaled, remove victim to fresh air. If necessary, use artificial respiration to support vital functions. Remove or cover gross contamination to avoid exposure to rescuers.

4. FIRST-AID MEASURES (Continued)

INGESTION: If this product is swallowed, CALL PHYSICIAN OR POISON CONTROL CENTER FOR MOST CURRENT INFORMATION. If professional advice is not available, do not induce vomiting. Rinse mouth with water immediately. Victim should drink milk, egg whites, or large quantities of water. Never induce vomiting or give diluents (milk or water) to someone who is unconscious, having convulsions, or who cannot swallow.

Victims of chemical exposure must be taken for medical attention. Rescuers should be taken for medical attention, if necessary. Take copy of label and MSDS to physician or health professional with victim.

5. FIRE-FIGHTING MEASURES

FLASH POINT, °C (method): Not flammable.

AUTOIGNITION TEMPERATURE, °C: Not flammable.

FLAMMABLE LIMITS (in air by volume, %): Lower (LEL): Not applicable.

Upper (UEL): Not applicable.

FIRE EXTINGUISHING MATERIALS: This material is not flammable, use extinguishing agent appropriate to surrounding area.

Water Spray: YES

Carbon Dioxide: YES

Foam: YES

Dry Chemical: YES

Halon: YES

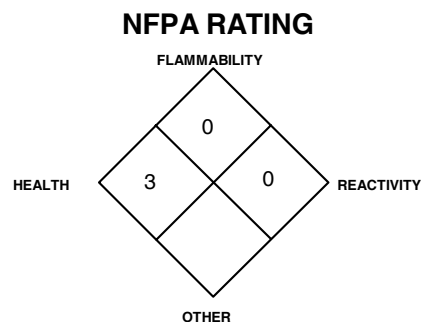
Other: Any "ABC" Class.

UNUSUAL FIRE AND EXPLOSION HAZARDS: When involved in a fire, this material may decompose and produce irritating vapors and oxides of carbon.

Explosion Sensitivity to Mechanical Impact: Not sensitive.

Explosion Sensitivity to Static Discharge: Not sensitive.

SPECIAL FIRE-FIGHTING PROCEDURES: Incipient fire responders should wear eye protection. Structural fire fighters must wear Self-Contained Breathing Apparatus and full protective equipment. If this product is involved in a fire, fire run-off water should be contained to prevent possible environmental damage.



6. ACCIDENTAL RELEASE MEASURES

SPILL AND LEAK RESPONSE: Uncontrolled releases should be responded to by trained personnel using pre-planned procedures. Proper protective equipment should be used. In case of a large spill, clear the affected area, protect people, and respond with trained personnel. Minimum Personal Protective Equipment should be **Level B: triple-gloves (rubber gloves and nitrile gloves, over latex gloves), chemically resistant suit and boots, hard-hat, and Self Contained Breathing Apparatus**. Absorb spilled liquid with polypads or other suitable absorbent materials. Neutralize residue with soda ash or other acid neutralizing agent. Decontaminate the area thoroughly. Test area with pH paper to ensure neutralization is complete. Place all spill residue in a double plastic bag and seal. Dispose of in accordance with Federal, State, and local hazardous waste disposal regulations (see Section 13, Disposal Considerations).

PART III *How can I prevent hazardous situations from occurring?*

7. HANDLING and STORAGE

WORK PRACTICES AND HYGIENE PRACTICES: As with all chemicals, avoid getting this product ON YOU or IN YOU. Wash hands after handling this product. Do not eat or drink while handling this product.

STORAGE AND HANDLING PRACTICES: All employees who handle this material should be trained to handle it safely. Avoid breathing vapors or mists generated by this product. Use in a well-ventilated location. Open containers slowly, on a stable surface. Containers of this product must be properly labeled.

7. HANDLING and STORAGE (Continued)

Store containers in a cool, dry location, away from direct sunlight, sources of intense heat, or where freezing is possible. Store away from incompatible materials (see Section 10, Stability and Reactivity). Material should be stored in secondary containers, or in a diked area, as appropriate. Keep container tightly closed when not in use. Wash thoroughly after using this material. Storage areas should be made of fire-resistant materials. If appropriate, post warning signs in storage and use areas. Inspect all incoming containers before storage, to ensure containers are properly labeled and not damaged. Empty containers may contain residual liquid or vapors. Therefore, empty containers should be handled with care. Do not cut, grind, weld or drill on or near this container.

PROTECTIVE PRACTICES DURING MAINTENANCE OF CONTAMINATED EQUIPMENT: Follow practices indicated in Section 6 (Accidental Release Measures). Make certain application equipment is locked and tagged-out safely. Always use this product in areas where adequate ventilation is provided. Decontaminate equipment using acid neutralizing agent, followed by a triple-rinse with water, before maintenance begins. Test equipment with litmus paper to ensure neutralization is complete. Collect all rinsates and dispose of according to applicable Federal, State, or local procedures.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

VENTILATION AND ENGINEERING CONTROLS: Use with adequate ventilation. Use a mechanical fan or vent area to outside. Ensure eyewash/safety shower stations are available near areas where this product is used.

RESPIRATORY PROTECTION: Maintain airborne contaminant concentrations below guidelines listed in Section 2 (Composition and Information on Ingredients). If respiratory protection is needed, use only protection authorized in 29 CFR 1910.134, or applicable State regulations. Use supplied air respiration protection during response procedures to non-incident releases and if oxygen levels are below 19.5% or are unknown.

EYE PROTECTION: Splash goggles or safety glasses. Face shields recommended when using quantities of this solution in excess of 1 gallon.

HAND PROTECTION: Wear Neoprene Rubber or vinyl gloves for routine industrial use. Use triple gloves for spill response, as stated in Section 6 (Accidental Release Measures) of this MSDS.

BODY PROTECTION: Use body protection appropriate for task. An apron, or other impermeable body protection is suggested. Full-body chemical protective clothing is recommended for emergency response procedures.

9. PHYSICAL and CHEMICAL PROPERTIES

RELATIVE VAPOR DENSITY (air = 1): Equal to Water.

SPECIFIC GRAVITY: 1.13

SOLUBILITY IN WATER: 100% soluble.

VAPOR PRESSURE, mm Hg @ 20 °C: 18

LOG WATER/OIL DISTRIBUTION COEFFICIENT: Not available.

EVAPORATION RATE (n-BuAc=1): Similar to water.

MELTING/FREEZING POINT: Not available.

BOILING POINT: > 100°C

pH: 1.0

APPEARANCE AND COLOR: This product is a light yellow solution with a sweet odor.

HOW TO DETECT THIS SUBSTANCE (warning properties): Litmus paper will turn red upon contact with this solution.

10. STABILITY and REACTIVITY

STABILITY: Stable.

DECOMPOSITION PRODUCTS: Carbon oxides.

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: Strong bases, cyanides, sulfides, aluminum, and other metals. Though concentrated Acid is water-reactive, the solution is substantially more dilute and comprised chiefly of water, so water-reactivity hazards are minimal.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: Contact with incompatible materials.

PART IV *Is there any other useful information about this material?*

11. TOXICOLOGICAL INFORMATION

TOXICITY DATA: Additional toxicology information for components greater than 1 percent in concentration is provided below.

GLYCOLIC ACID:

Oral-Rat : 1950 mg/kg (LD50)

Inhalation-Rat: 7.1 mg/m3 (LC50)

SUSPECTED CANCER AGENT: None

IRRITANCY OF PRODUCT: This product is irritating to contaminated tissue.

SENSITIZATION OF PRODUCT: This product contains no known sensitizer.

REPRODUCTIVE TOXICITY INFORMATION: Listed below is information concerning the effects of this product and its components on the human reproductive system.

Mutagenicity: This product is not reported to produce mutagenic effects in humans.

Embryotoxicity: This product is not reported to produce embryotoxic effects in humans.

Teratogenicity: This product is not expected to cause teratogenic effects in humans.

Reproductive Toxicity: This product is not expected to cause reproductive toxicity effects in humans.

A mutagen is a chemical which causes permanent changes to genetic material (DNA) such that the changes will propagate through generational lines. An embryotoxin is a chemical which causes damage to a developing embryo (i.e. within the first eight weeks of pregnancy in humans), but the damage does not propagate across generational lines. A teratogen is a chemical which causes damage to a developing fetus, but the damage does not propagate across generational lines. A reproductive toxin is any substance which interferes in any way with the reproductive process.

BIOLOGICAL EXPOSURE INDICES: Currently there are no Biological Exposure Indices (BEIs) associated with the component of this product

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Pre-existing dermatitis and respiratory problems may be aggravated by over-exposure to this product.

RECOMMENDATIONS TO PHYSICIANS: Treat symptoms and reduce over-exposure.

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL STABILITY: Stable in the environment.

EFFECT OF MATERIAL ON PLANTS or ANIMALS: Glycolic Acid solution can be harmful to plant and animal life, if released into the environment. All work practices must minimize potential or actual releases to the environment.

EFFECT OF CHEMICAL ON AQUATIC LIFE: Glycolic Acid Solution can substantially lower the pH of an aquatic environment and can be extremely toxic to fish and aquatic plants. All work practices must minimize potential or actual releases to the environment. .

13. DISPOSAL CONSIDERATIONS

PREPARING WASTES FOR DISPOSAL: Waste disposal must be in accordance with appropriate Federal, State, and local regulations. This solution, if unaltered by use, may be disposed of by treatment at a permitted facility or as advised by your local hazardous waste regulatory authority.

EPA WASTE NUMBER: D002, applicable to wastes consisting only of this solution.

14. TRANSPORTATION INFORMATION

THIS MATERIAL IS HAZARDOUS AS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION.

PROPER SHIPPING NAME: Corrosive Liquid acidic organic N.O.S.(Contains Glycolic Acid)
HAZARD CLASS NUMBER and DESCRIPTION: 8 (Corrosive Material)
UN IDENTIFICATION NUMBER: UN3265
PACKING GROUP: II
DOT LABEL(S) REQUIRED: Corrosive

NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER, 2004: 153

MARINE POLLUTANT: This product contains no components designated by the Department of Transportation to be Marine Pollutants (49 CFR 172.101, Appendix B).

TRANSPORT CANADA TRANSPORTATION OF DANGEROUS GOODS REGULATIONS: THIS MATERIAL IS CONSIDERED AS DANGEROUS GOODS. Refer to the above information for Canadian Shipments.

15. REGULATORY INFORMATION

SARA REPORTING REQUIREMENTS: This product is subject to the reporting requirements of Sections 302, 304 and 313 of Title III of the Superfund Amendments and Reauthorization Act., as follows:

COMPONENT	SARA 302	SARA 304	SARA 313
Glycolic Acid	No	No	No

SARA Threshold Planning Quantity: 10,000 lbs.

TSCA INVENTORY STATUS: All components are listed on the TSCA Inventory.

CERCLA REPORTABLE QUANTITY (RQ): Not applicable

STATE REGULATORY INFORMATION: Glycolic Acid is covered under specific State regulations, as denoted below:

Alaska - Designated Toxic and Hazardous Substances: None .

California - Permissible Exposure Limits for Chemical Contaminants: None.

Florida - Substance List: None.

Illinois - Toxic Substance List: None.

Kansas - Section 302/313 List: None.

Massachusetts - Substance List: None.

Minnesota - List of Hazardous Substances: None.

Missouri - Employer Information/Toxic Substance List: None.

New Jersey - Right to Know Hazardous Substance List: None.

North Dakota - List of Hazardous Chemicals, Reportable Quantities: None.

Pennsylvania - Hazardous Substance List: None.

Rhode Island - Hazardous Substance List: None.

Texas - Hazardous Substance List: None.

West Virginia - Hazardous Substance List: None.

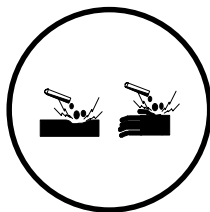
Wisconsin - Toxic and Hazardous Substances: None.

CALIFORNIA PROPOSITION 65: No components are on the California Proposition 65 lists.

LABELING (Precautionary Statements): **DANGER!** MAY BE FATAL IF SWALLOWED. CAUSES SKIN AND EYE BURNS. POISON. Do not take internally. Do not get in eyes or on skin. Avoid breathing dust. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. FIRST AID: In case of contact, immediately flush skin or eyes for at least 15 minutes. If inhaled, move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. IN CASE OF FIRE: Use fog, foam, dry chemical or CO2. IN CASE OF SPILL: Absorb spill with inert material then place in a suitable container. Neutralize spill with soda ash or lime. Refer to MSDS for additional information.

TARGET ORGANS: Respiratory system, skin, eyes.

WHMIS SYMBOLS



16. OTHER INFORMATION

PREPARED BY:

Electrochemicals, Inc.

763-479-2008

DATE OF PRINTING:

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All statement, technical information and recommendations herein are based on tests we believe to be reliable, but the accuracy or completeness thereof is not guaranteed. **THE FOLLOWING IS MADE IN LIEU OF ALL WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PURPOSE.** Seller's and manufacturer's only obligation shall be to replace such quantity of the product proved to be defective. Before using, user shall determine the suitability of the product for its intended use, and user assumes all risks and liability whatsoever in connection therewith.
NEITHER SELLER NOR MANUFACTURER SHALL BE LIABLE EITHER IN TORT OR IN CONTRACT FOR ANY LOSS OR DAMAGE, DIRECT, INCIDENTAL OR CONSEQUENTIAL, ARISING OUT OF THE USE OR THE INABILITY TO USE THE PRODUCT.

DEFINITIONS OF TERMS

A large number of abbreviations and acronyms appear on a MSDS. Some of these which are commonly used include the following:

CAS #: This is the Chemical Abstract Service Number which uniquely identifies each constituent. It is used for computer-related searching.

EXPOSURE LIMITS IN AIR:

ACGIH - American Conference of Governmental Industrial Hygienists, a professional association which establishes exposure limits.

TLV - Threshold Limit Value - an airborne concentration of a substance which represents conditions under which it is generally believed that nearly all workers may be repeatedly exposed without adverse effect. The duration must be considered, including the 8-hour **Time Weighted Average (TWA)**, the 15-minute **Short Term Exposure Limit**, and the instantaneous **Ceiling Level**. Skin adsorption effects must also be considered.

OSHA - U.S. Occupational Safety and Health Administration.

PEL - Permissible Exposure Limit - This exposure value means exactly the same as a TLV, except that it is enforceable by OSHA. The OSHA Permissible Exposure Limits are based in the 1989 PELs and the June, 1993 Air Contaminants Rule (Federal Register: 58: 35338-35351 and 58: 40191). Both the current PELs and the vacated PELs are indicated. The phrase, "Vacated 1989 PEL," is placed next to the PEL which was vacated by Court Order.

IDLH - Immediately Dangerous to Life and Health - This level represents a concentration from which one can escape within 30-minutes without suffering escape-preventing or permanent injury. **The DFG - MAK** is the Republic of Germany's Maximum Exposure Level, similar to the U.S. PEL. **NIOSH** is the National Institute of Occupational Safety and Health, which is the research arm of the U.S. Occupational Safety and Health Administration (**OSHA**). NIOSH issues exposure guidelines called **Recommended Exposure Levels (RELs)**. When no exposure guidelines are established, an entry of **NE** is made for reference.

FLAMMABILITY LIMITS IN AIR:

Much of the information related to fire and explosion is derived from the **National Fire Protection Association (NFPA)**. **LEL** - the lowest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source. **UEL** - the highest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source.

TOXICOLOGICAL INFORMATION:

Possible health hazards as derived from human data, animal studies, or from the results of studies with similar compounds are presented. Definitions of some terms used in this section are: **LD₅₀** - Lethal Dose (solids & liquids) which kills 50% of the exposed animals; **LC₅₀** - Lethal Concentration (gases) which kills 50% of the exposed animals; **ppm** concentration expressed in parts of material per million parts of air or water; **mg/m³** concentration expressed in weight of substance per volume of air; **mg/kg** quantity of material, by weight, administered to a test subject, based on their body weight in kg. Data from several sources are used to evaluate the cancer-causing potential of the material. The sources are: **IARC** - the International Agency for Research on Cancer; **NTP** - the National Toxicology Program, **RTECS** - the Registry of Toxic Effects of Chemical Substances, **OSHA** and **CAL/OSHA**. IARC and NTP rate chemicals on a scale of decreasing potential to cause human cancer with rankings from 1 to 4. Subrankings (2A, 2B, etc.) are also used. Other measures of toxicity include **TDLo**, the lowest dose to cause a symptom and **TCLo** the lowest concentration to cause a symptom; **TD₀₁**, **LDLo**, and **LDo**, or **TC**, **TC₀₁**, **LCLo**, and **LCo**, the lowest dose (or concentration) to cause death. **BEI** - Biological Exposure Indices, represent the levels of determinants which are most likely to be observed in specimens collected from a healthy worker who has been exposed to chemicals to the same extent as a worker with inhalation exposure to the TLV.

REGULATORY INFORMATION:

This section explains the impact of various laws and regulations on the material. **EPA** is the U.S. Environmental Protection Agency. **WHMIS** is the Canadian Workplace Hazardous Materials Information System. **DOT** and **TC** are the U.S. Department of Transportation and the Transport Canada, respectively. Other acronyms used are: **Superfund Amendments and Reauthorization Act (SARA)**; the **Toxic Substance Control Act (TSCA)**; Marine Pollutant status according to the **DOT**; California's Safe Drinking Water Act (**Proposition 65**); the **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund)**; and various state regulations. This section also includes information on the precautionary warnings which appear on the materials package label.