SECTION 1. PRODUCT AND COMPANY INFORMATION

MANUFACTURER: PACE Technologies
3601 E. 34th St.
Tucson, AZ 85713

INFORMATION PHONE: 520-882-6598

EMERGENCY PHONE: CHEMTREC 800-424-9300 (US) Day or night
International call collect CHEMTREC 202-483-7616

TRADE NAME: ULTRATHIN 2 EPOXY RESIN

CHEMICAL FAMILY: MODIFIED BISPHENOL A - EPOXY RESIN

HMIS RATING: HEALTH: 1 FLAMMABILITY: 2 REACTIVITY: 4

HAZARD RATING:

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

SECTION 2. HAZARD IDENTIFICATION

The health effects noted below are consistent with requirements under the OHA hazard communication standard (29 CFR 1910.1200).

EYE CONTACT: Based on similar product testing product may be severely irritating to the eyes. May cause corneal damage.

SKIN CONTACT: Based on human experience, component 2 is extremely irritating to the skin and may cause skin damage. Based on human experience, component 2 is a skin sensitizer. Based on presence of component 2 product may be toxic if absorbed.

INHALATION: Based on human experience, component 2 may cause irritation of the respiratory tract. Based on component 2 testing, product may produce central nervous system (CNS) depression. Although no specific information is known, based on skin sensitization experience in humans, component 2 may also be a respiratory tract sensitizer (see signs and symptoms). Because of its low volatility, however, significant exposure by the inhalation route is unlikely under most ambient conditions, but vapors, aerosols, and mists may be formed during some applications, see section x. Based on component 2 testing (see section vi), product may be moderately toxic, may be harmful if inhaled.

INGESTION: Based on similar product testing, product may be slightly toxic. Based on the presence of component 2, product may cause CNS depression.

SIGNS AND SYMPTOMS: Irritation as noted above. Skin sensitization (allergy) may be evidenced by rashes, especially hives. Respiratory tract sensitization (e.g., allergy, asthma) may be evidenced by wheezing with shortness of breath and cough. Early to moderate CNS depression may be evidenced by giddiness, headache, dizziness, and nausea; in extreme cases, unconsciousness and death may occur.

AGGRAVATED MEDICAL CONDITIONS: Preexisting eye, skin, and respiratory disorders may be aggravated by exposure to this product. Preexisting skin or respiratory tract allergies may increase the chance of developing increased allergy symptoms from exposure to this product.

SECTION 3. COMPOSITION / INFORMATION ON INGREDIENTS

NO.	COMPONENT(S)	CAS NO.	%
P	Epoxy resin	Mixture	100
1	Bisphenol a resin	25068-38-6	86.4
2	N-butly glycidyl ether	2426-08-6	13.6

SECTION 4. FIRST-AID PROCEDURES

EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes while holding eyelids open. Get medical attention.

SKIN CONTACT: Immediately remove contaminated clothing or shoes, wipe excess from skin and flush with plenty of water for at least 15 minutes. Use soap if available or follow by washing with soap and water. Do not reuse clothing until thoroughly cleaned. Get medical attention.

INHALATION: Remove victim to fresh air and provide oxygen if breathing is difficult. Give artificial respiration if not breathing. Get medical attention.

INGESTION : Do not give liquids if victim is unconscious or very drowsy. Otherwise, give no more than 2 glasses of water and induce vomiting by giving 30cc (2

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tablespoons) syrup of ipecac.* if ipecac is unavailable, give 2 glasses of water and induce vomiting by touching finger to back of victim's throat. Keep victim's head below hips while vomiting. Get medical attention.

NOTE TO PHYSICIAN

* If victim is a child, give no more than 1 glass of water and 15cc (1 tablespoon) syrup of ipecac. If symptoms such as loss of gag reflex, convulsions or unconsciousness occur before emesis, gastric lavage should be considered following intubation with a cuffed endotracheal tube.

Component 1: chronic studies: recent 2-year bioassays in mice exposed by the dermal route to shell epon resin 828, a resin similar to component 1, the diglycidyl ether of bisphenol a (DGEBPA), or to other commercial resins which are composed predominantly of DGEBPA have yielded very limited evidence of weak carcinogenicity. DGEBPA is a component of this resin. The authors of this work concluded that the renal tumor evidence with shell EPON resin 828 "was of no biological significance" and that the resin "is not a systemic carcinogen when applied to the dorsal skin of cf1 mice." based upon this and all other available information, the international agency for research of cancer (IARC) concluded (1988) that DGEBPA was not classifiable as a carcinogen (IARC group 3) based on the following: human evidence - inadequate; animal evidence - inadequate.

Both EPON resin 828, a resin similar to component 1 and DGEBPA, its major constituent, have proved to be inactive when tested by vivo mutagenicity assays. They have both shown activity in vitro microbial mutagenicity screening tests and have produced chromosomal aberrations in cultured rat liver cells. The significance of this information to man is unknown.

Note: this product contains (trace 2-3 ppm, typical) residual quantities of eipchlorohydrin (ech), CAS no. 106-89-8. It is very unlikely that normal work practices with this product could result in measurable ECH concentrations in the workplace atmosphere. Nevertheless, you should be aware that ECH has been reported to produce cancer in laboratory animals and to produce mutagenic changes in bacteria and cultured human cells. It has been classified by the international agency for research on cancer (IRAC) as a probable human carcinogen (IARC group 2a) based on the following conclusions: human evidence - inadequate; animal evidence - sufficient. It has been classified as an anticipated human carcinogen by the national toxicology program (NTP).

SECTION 5. FIRE-FIGHTING MEASURES

FLASH POINT AND METHOD: 164°F (SETAFLASH)

FLAMMABLE LIMITS/ % VOLUME IN AIR: LOWER: N/AV UPPER: N/AV

EXTINGUISHING MEDIA: Use water fog, "alcohol" foam, dry chemical or co_2

SPECIAL FIRE FIGHTING PROCEDURES:	Caution. Combustible. Do not enter confined fire space without full bunker gear (helmet with face shield, bunker coats, gloves and rubber boots), including a positive pressure NIOSH approved self-contained breathing apparatus. Cool fire exposed containers with water.
UNUSUAL FIRE AND EXPLOSION HAZARDS:	Containers exposed to intense heat from fires should be cooled with water to prevent vapor pressure buildup which could result in container rupture. Container areas exposed to direct flame contact should be cooled with large quantities of water as needed to prevent weakening of container structure.

SECTION 6. ACCIDENTAL RELEASE MEASURES

SPILL OR LEAK PROCEDURES
CAUTION. COMBUSTIBLE. ***** Large Spills ***** eliminate potential sources of ignition. Wear appropriate respirator and other protective clothing. Shut off source of leak only if safe to do so. Dike and contain. Remove with vacuum trucks or pump to storage/salvage vessels. Soak up residue with an absorbent such as clay, sand, or other suitable material; place in non-leaking containers and seal tightly for proper disposal. Flush area with water to remove trace residue; dispose of flush solution as above. ***** Small Spills ***** take up with an absorbent material and place in non-leaking containers for proper disposal.

SECTION 7. HANDLING AND STORAGE

RESPIRATORY PROTECTION:	Avoid breathing vapors which may be produced under some conditions such as heating or applications of uncured material in large surface areas (e.g., flooring and painting). Avoid breathing aerosols and mists which may be formed by various methods of application. If exposure may or does exceed occupational exposure limits (sec. Iv) use a NIOSH-approved respirator to prevent overexposure. In accord with 29 CFR 1910.134 use either a full-face, atmosphere-supplying respirator or air -purifying respirator for organic vapors.
PROTECTIVE CLOTHING:	Avoid contact with eyes. Wear chemical goggles if there is likelihood of contact with eyes. Avoid contact with skin and clothing. Wear chemical - resistant gloves and protective clothing
ADDITIONAL PROTECTIVE MEASURES:	Use explosion-proof ventilation as required to control vapor concentrations. Eye wash fountains and safety showers should be available for emergency use. Heating this resin above 300°f in the presence of air may cause slow oxidative decomposition; above 500°f, polymerization may occur. Some curing agents, e.g., aliphatic polyamines can produce exothermic reactions

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which in large masses can cause runaway polymerization and charring of the reactants. Fumes and vapors from these thermal and chemical decompostions vary widely in composition and toxicity. Do not breathe fumes. Use a NIOSH-approved respirator as required to prevent over exposure. In accord with 29 CFR 1910.134, use either an atmosphere-supply respirator or an air-purifying respirator for organic vapors.

Warning! Combustible liquid. Keep liquid and vapor away from heat, sparks and flame. Surfaces that are sufficiently hot may ignite even liquid product in the absence of sparks or flame. Extinguish pilot lights, cigarettes and turn off other sources of ignition prior to use and until all vapors are gone. Vapors may accumulate and travel to ignition sources distant from the handling site; flash-fire can result. Keep containers closed when not in use. Use with adequate ventilation.

Containers, even those that have been emptied, can contain explosive vapors. Do not cut, drill, grind, weld or perform similar operations on or near containers. Do not pressurize drum containers to empty them. Static electricity may accumulate and create a fire hazard. Ground fixed equipment. Bond and ground transfer containers and equipment.

Warning! Skin sensitizer. Potential respiratory tract sensitizer. Eye and skin irritant. Containers, even those that have been emptied, can contain hazardous product residues. Wash with soap and water before eating, drinking, smoking, applying cosmetics, or using toilet facilities. Launder contaminated clothing before reuse. Contaminated leather articles, including shoes, cannot be decontaminated and should be destroyed to prevent reuse.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

NO.	OSHA PEL/TWA	OSHA PEL/CEILING	ACGIH TLV/TWA	ACGIH TLV/STEL	OTHER
P	NONE ESTABLISHED				
1	NONE ESTABLISHED				

EYE/FACE PROTECTION: Use safety glasses with side shields as minimum protection.

RESPIRATOR PROTECTION: Use approved chemical/mechanical filters designed to remove a combination of

particulates and organic vapors in open and restricted areas when ventilation does not meet the requirements of 29 CFR 1910-134. Use approved airline type respirators or hoods in confined areas.

PROTECTIVE GLOVES: Use neoprene or other impervious gloves to prevent skin contact.

VENTILATION: Sufficient ventilation in pattern and volume to keep the air contaminant concentration below applicable exposure limits. All application areas should be ventilated in accordance with OSHA regulation 29 CFR 1910.134

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

SPECIFIC GRAVITY (H_2O=1): 1.13	**BOILING POINT:** NOT AVAILABLE
VAPOR PRESSURE (MM HG): 1	**MELTING TEMPERATURE:** NOT AVAILABLE
SOLUBILITY IN WATER: NEGLIGIBLE	**EVAPORATION RATE:** NOT AVAILABLE
APPEARANCE AND ODOR: LIGHT YELLOW LIQUID.	**VAPOR DENSITY (AIR=1):** 4.5

SECTION 10. STABILITY AND REACTIVITY

STABILITY: Stable

HAZARDOUS POLYMERIZATION: Will not occur

CONDITIONS AND MATERIALS TO AVOID: Avoid heat, flame and contact with strong oxidizing agents. Can react vigorously with strong Lewis or mineral acids and strong mineral and organic bases/especially primary and secondary aliphatic amines. Reaction with some curing agents may produce considerable heat

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, aldehydes and acids may be formed during combustion

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SECTION 11. TOXICOLOGY INFORMATION

NO.	ACUTE ORAL LD50	ACUTE DERMAL LD50	ACUTE INHALATION LC50
P	9.0 G/KG (RAT)	NO DATA AVAILABLE	NO DATA AVAILABLE
1	11.4 G/KG (RAT)	>20 ML/KG (RABBIT)	NO DATA AVAILABLE
1	15.6 G/KG (MOUSE)		
2	1.53 G/KG (MOUSE)	788 MG/KG (RABBIT)	>3500 PPM/4H (MOUSE)
2	2.26 G/KG (RAT)		1030 PPM/8H (RAT)

Ingredients are listed on the TSCA Inventory of Chemical Substances. Those not identified are non-hazardous.

NOTE: ADDITIONAL TOXICOLOGICAL INFORMATION

Rats exposed to n-butly glycidyl ether at 150 ppm for 50 7-hour exposures demonstrated significantly retarded growth. In the same study, there was 50% mortality in rats exposed at 300 ppm, with additional signs of toxicity in the survivors. Testicular atrophy was observed in rats exposed at 300 ppm, but the rats were juvenile, obscuring the significance, if any, of the result.

In a 28 day inhalation study, rats exposed at 188 ppm showed decreased body weight and changes in blood chemistry. Severe irritation of the upper respiratory tract was observed in rats exposed at 94 ppm and 188 ppm.

N-BGE has tested positive in a number of in vitro genetic toxicity assays with and without metabolic activation. Mixed results were observed in the dominant lethal and the mouse micronucleus tests.

SECTION 12. ECOLOGICAL INFORMATION

ENVIRONMENTAL EFFECTS: No known significant effects or critical hazards.

OTHER ADVERSE EFFECTS: No know significant effects or critical hazards.

SECTION 13. DISPOSAL CONSIDERATIONS

Dispose of in accordance with Federal, State and Local Regulations.

Keep out of surface waters, sewers, and waterways entering or leading to surface waters. Notify authorities if any exposure to the general public or environment occurs or is likely to occur.

EPA - comprehensive environmental response, compensation and liability act. Under EPA-CERCLA ("SUPERFUND") releases to air, land or water which exceed the reportable quantity must be reported to the national response center, 800-424-8802.

SECTION 14. TRANSPORT INFORMATION

DEPARTMENT OF TRANSPORTATION CLASSIFICATION:	Combustible Liquid: CLASS 3
D.O.T. PROPER SHIPPING NAME:	Resin solution
OTHER REQUIREMENTS:	UN 1866, Guide 127. Not regulated by D.O.T. if in a container of 119 gallon capacity or less

SECTION 15. REGULATORY INFORMATION

The components of this product are listed on the EPA/TSCA inventory of chemical substances.

Protection of stratospheric ozone (pursuant to section 6111 of the clean air act amendments of 1990): per 40 cfr part 82, this product does not contain nor was it directly manufactured with any class i or class ii ozone depleting substances.

The following chemicals are specifically listed by individual states; other product specific health and safety data in other sections of the MSDS may also be applicable for state requirements. For details on your regulatory requirements you should contact the appropriate agency in your state.

STATE LISTED COMPONENT	PERCENT	STATE CODE
BUTYL GLYCIDYL ETHER (CAS NO: 2426-08-6)	13.6	FL, IL, MA, ME, MN, PA, RI, NJ
EPICHLOROHYDRIN (CAS NO: 106-89-8)	2-3 PPM	MA, CA65C
PHENYL GLYCIDYL ETHER (CAS NO: 122-60-1)	5 PPM	CA65C
DIGLYCIDYL ETHER (CAS NO: 2238-07-5)	<200 PPM	MA

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CA = CALIFORNIA HAZ. SUBST. LIST; CA65C, CA65R, CA65C/R = CALIFORNIA SAFE DRINKING WATER AND TOXICS ENFORCEMENT ACT OF 1986 OR PROPOSITION 65 LIST;

CT = CONNECTICUT TOXIC. SUBST. LIST; FL = FLORIDA SUBST LIST; IL= ILLINOIS TOX. SUBST. LIST; LA = LOUISIANA HAZ. SUBST. LIST; MA = MASSACHUSETTS SUBST. LIST; ME=MAINE HAZ. SUBST. LIST; MN = MINNESOTA HAZ. SUBST. LIST; NJ = NEW JERSEY HAZ. SUBST. LIST; PA = PENNSYLVANIA HAZ. SUBST. LIST; RI = RHODE ISLAND HAZ. SUBST. LIST.

SECTION 16. OTHER INFORMATION

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