

Material Safety Data Sheet

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CONDUCTOMOUNT Conductive Copper Mounting Resin

SECTION I PRODUCT IDENTIFICATION

MANUFACTURER: PACE Technologies
1802 W. Grant Rd. No. 102
Tucson, AZ 85745

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

TRADE NAME: CONDUCTOMOUNT™ Copper Conductive Mounting Resin

CAS NO: N/A

CHEMICAL FAMILY: Phenolic Molding Compound with two stage resin with copper

CHEMICAL NAME: PHENOL-FORMALDEHYDE POLYMERIC MOLDING
COMPOUND AND COPPER

HMS RATING: HEALTH: 2 FLAMMABILITY: 1 REACTIVITY: 0

HAZARD RATING:

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

SECTION II HAZARDOUS INGREDIENTS/ SARA TITLE III

CHEMICALS MARKED WITH AN ASTERISK (*) ARE SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF TITLE III OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 AND 40 CFR PART 372.

HAZARDOUS COMPONENT(S)	CAS #	%	TLV/PEL
*PHENOL	108-95-2	<6.3	ACGIH-TWA/SKIN 5 PPM OSHA-TWA/SKIN 5 PPM
CARBON BLACK	1333-86-4	<12	ACGIH-TWA 3.5 mg/m ³ OSHA-TWA 3.5 mg/m ³

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COAL DUST		<18	ACGIH-TWA 2 mg/m ³ OSHA-TWA <5% SiO ₂ 2.4 mg/m ³ %SiO ₂ + 2 OSHA-TWA >5% SiO ₂ 10 mg/m ³ % SiO ₂ +2
GRAPHITE	7782-42-5	<40	ACGIH-TWA 2 mg/m ³ OSHA-TWA 15 MPPCF
MICA	12001-26-2	<60	ACGIH-TWA 3 mg/m ³ OSHA-TWA 20 MPPCF
TALC	14307-96-6	<20	ACGIH-TWA 2 mg/m ³ OSHA-TWA 20 MPPCF
PARTICULATES NOT OTHERWISE CLASSIFIED (PNOC)		<70	ACGIH-TWA/INHAL 10 mg/m ³ ACGIH-TWA/RESPIR 3 mg/m ³ OSHA-TWA/TOTAL 15 mg/m ³ OSHA-TWA/RESPIR 5 mg/m ³
Copper powder	7440-50-8	10-40%	ACGIH-TLV (respirable dust) 1 mg/m ³ OSHA (PEL) 1 mg/m ³ (TWA)

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

SECTION III PHYSICAL DATA

SPECIFIC GRAVITY (H ₂ O=1): N/A	BOILING POINT (760 MM HG): N/A
VAPOR PRESSURE: N/A (MM HG 20°C)	PERCENT VOLATILE BY WIEGHT: N/A
SOLUBILITY IN WATER: NEGLIGIBLE (% BY WEIGHT)	EVAPORATION RATE (BUTY/ACT=1): N/A
VAPOR DENSITY (Air=1): N/A	HEAT OF VAPORIZATION: N/A (DELTA HV)
APPEARANCE AND ODOR: GRANULAR, NODULAR, PELLET OR BRIQUETTE WITH SLIGHT ODOR OF PHENOL	

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SECTION IV FIRE AND EXPLOSION HAZARDS

FLASH POINT:	NO FLASH POINT
FLAMMABLE LIMITS:	LEL: DUST 0.030 OZ./PER CUBIC FOOT UEL: NO DATA
EXTINGUISHING MEDIA:	WATER SPRAY, FOAM, DRY CHEMICAL, CARBON DIOXIDE
SPECIAL FIRE FIGHTING PROCEDURES:	MSHA/NIOSH APPROVED SELF-CONTAINED BREATHING APPARATUS RECOMMENDED. AVOID INHALATION OF GASES.
UNUSUAL FIRE AND EXPLOSION HAZARDS:	ORGANIC DUST/AIR MIXTURES ARE HIGHLY FLAMMABLE (EXPLOSIVE); AVOID DUST ACCUMULATIONS OR DUST-LADEN ATMOSPHERES AND SOURCES OF IGNITION.

SECTION V HEALTH HAZARD DATA

AS SOLD:

THE PRODUCT IS A PLASTIC MOLDING COMPOUND: A PLASTIC RESIN (PHENOL-FORMALDEHYDE POLYMER) INTIMATELY MIXED AND REACTED WITH ONE OR MORE OF A VARIETY OF ORGANIC AND/OR INORGANIC FILLING MATERIALS. THE PLASTIC RESIN IS NOT BELIEVED OR KNOWN TO BE HAZARDOUS. WHEN FULLY "CURED" OR REACTED, THE PLASTIC RESIN IS INSOLUBLE, INFUSIBLE AND BINDS THE WELL-DISPERSED, EMBEDDED FILLING MATERIALS. HOWEVER, "AS SOLD" THE PLASTIC RESIN IS NOT COMPLETELY "CURED" OR REACTED AND CONTAINS SOME UNREACTED INGREDIENTS DISSOLVED WITHIN IT. SO DISSOLVED, THESE CHEMICALS ARE EXTREMELY UNLIKELY TO POSE A HAZARD; BUT BECAUSE THEY ARE HAZARDOUS IN THEIR PURE FORMS, OSHA REQUIRES THAT THEY BE REPORTED AND DESCRIBED AS HAZARDOUS INGREDIENTS (SEE BELOW AND SECTION II). UNDER NORMAL CONDITIONS OF STORAGE AND HANDLING, NO SIGNIFICANT AMOUNT OF HAZARDOUS VAPORS SHOULD EVOLVE FROM THE "AS SOLD" PRODUCT. BECAUSE PHENOL IS MORE SOLUBLE IN THE RESIN THAN IN WATER, THERE IS NO LIKELY SIGNIFICANT HEALTH HAZARD THROUGH SKIN ABSORPTION. THE GREAT MAJORITY OF FILLING MATERIALS ARE EMBEDDED WITHIN COMPOUND GRANDULES THAT ARE LARGE ENOUGH NOT TO CONSTITUTE AN INHALATION HAZARD. NEVERTHELESS, SOME PARTICLES OF PLASTIC RESIN AND/OR FILLING MATERIALS MAY BE PRESENT IN A SIZE THAT CONSTITUTES A RESPIRABLE DUST (INCLUDING, IN SOME PRODUCTS, UP TO 1% INORGANIC FILLING MATERIAL MIXED IN AFTER COMPOUNDING). THIS RESPIRABLE DUST MAY CONTAIN ONE OR MORE OF THE FOLLOWING MATERIALS: CARBON BLACK, COAL DUST, FIBROUS GLASS, GARPHITE, MICA,

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MINERAL WOL FIBER, TALC, AND/OR WOOD FLOUR (SOFT). CHRONIC INHALATION OF EACH OF THE ABOVE HAS BEEN ASSOCIATED WITH FIBROTIC LUNG DISEASE. FOR MOST OR ALL, IT HAS BEEN ASSOCIATED WITH INCREASED RISK OF LUNG CANCER, ESPECIALLY AMONG SMOKERS. INHALATION OF DUST SHOULD BE AVOIDABLE WITH PROPER MATERIAL HANDLING PROCEDURES AND GOOD VENTILATION, BUT IF NOT, RESPIRATORS SHOULD BE WORN. THE PRIMARY ACUTE HEALTH RISK FROM EXPOSURE TO THE PRODUCT "AS SOLD" IS IRRITATION, ESPECIALLY FROM THE DUST. INGESTION, INHALATION OF DUST, AND CONTACT WITH SKIN AND EYES SHOULD BE AVOIDED.

AS USED:

DURING POLYMERIZATION (E.G., CURING OF THE PRODUCT DURING NORMAL PROCESSING) OR DECOMPOSITION (E.G., OVERHEATING OR BURNING OF THE PRODUCT) SMALL AMOUNTS OF GASEOUS AMMONIA, PHENOL AND FORMALDEHYDE (AS WELL AS WATER VAPOR, CARBON MONOXIDE AND CARBON DIOXIDE) ARE EVOLVED. BREATHING OF THE FUMES CAN BE HARMFUL. IF THE ODOR OF AMMONIA OR FORMALDEHYDE IS NOTICEABLE, THEN THE AIRBORNE CONCENTRATION OF THOSE CHEMICALS SHOULD BE CAREFULLY MONITORED AND VENTILATION IMPROVEMENTS CONSIDERED; THOSE CHEMICALS BEGIN TO BE DETECTABLE BY ODOR AT CONCENTRATIONS APPROACHING OR EXCEEDING THE PELs. THE ODOR OF PHENOL BEGINS TO BE NOTICEABLE AT A CONCENTRATION ABOUT ONE-FIFTH THE PEL. IN ANY CASE, ADEQUACY OF VENTILATION CAN BEST BE DETERMINED BY USE OF INSTRUMENTS TO MONITOR AIRBORNE CONCENTRATIONS OF AMMONIA, PHENOL, AND FORMALDEHYDE. GRINDING OR MACHINING OF CURED MOLDED MATERIAL MAY CREATE A DUST THAT POSES A RESPIRATORY HAZARD IF INHALED (SEE ABOVE) AND MAY RELEASE SMALL AMOUNTS OF GASEOUS AMMONIA.

ACUTE OR CHRONIC HEALTH HAZARD INFORMATION

ORDINARY USE OF THIS PRODUCT IS UNLIKELY TO PRODUCE SIGNIFICANT EXPOSURE TO HAZARDOUS CHEMICALS. PELs FOR THESE CHEMICALS ARE SET AT LEVELS DESIGNED TO AVOID ANY SIGNIFICANT HEALTH RISK AND ARE ACHIEVABLE WITH PROPER MATERIAL HANDLING PROCEDURES, VENTILATION AND HOUSEKEEPING. NEVERTHELESS, PER OSHA REQUIREMENT, WE LIST THE FOLLOWING POSSIBLE HEALTH HAZARDS IF ONE WERE EXPOSED TO THE FOLLOWING CHEMICALS AT LEVELS MUCH HIGHER, OR IN A DIFFERENT FORM, THAN EXPECTED FROM ORDINARY USE OF THIS PRODUCT:

- 1 PHENOL - HIGHLY TOXIC. POISONING MAY OCCUR VIA SKIN ABSORPTION, VAPOR INHALATION, OR INGESTION. INHALATION OF THE VAPORS MAY CAUSE SEVERE IRRITATION TO THE NOSE, THROAT, AND RESPIRATORY TRACT. MAY CAUSE LIVER, KIDNEY AND HEART DAMAGE.
- 2 FORMALDEHYDE - IRRITANT TO EYES, LUNGS, AND SKIN. HAS BEEN SHOWN TO CAUSE CANCER IN LABORATORY ANIMALS. LISTED AS AN IARC CARCINOGEN. CALIFORNIA LAW REQUIRES THE FOLLOWING STATEMENT BE INCLUDED: CONTAINS A CHEMICAL (FORMALDEHYDE) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER. NATIONAL CANCER INSTITUTE STUDY FINDS LITTLE

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EVIDENCE TO CONNECT FORMALDEHYDE EXPOSURE WITH CANCER IN HUMANS.

- 3 AMMONIA - IRRITANT TO EYES, MUCOUS MEMBRANES AND RESPIRATORY TRACT.

POSSIBLE RESPRIABLE DUST COMPONENTS (UP TO 8% MAY GO THRU 100 MESH):

- 4 CARBON BLACK - IRRITANT TO EYES AND RESPIRATORY TRACTS. EXPOSURE AT HIGH LEVELS IS ASSOCIATED WITH DECLINES IN PULMONARY FUNCTION AND CARDIO VASCULAR STRESS.
- 5 COAL DUST - IRRITANT TO EYES, NOSE AND THROAT. CAN CAUSE RESPIRATORY EFFECTS SUCH AS PNEUMOCONIOSIS, BRONCHITIS, EMPHYSEMA AND PROGRESSIVE MASSIVE FIBROSIS, WITH LONG EXPOSURE.
- 6 FIBROUS GLASS - MECHANICAL IRRITANT TO EYES, NOSE AND SKIN. CAN CAUSE IRRITATION AND INFLAMMATION OF THE NASOPHARYNGEAL REGION AND UPPER RESPIRATORY TRACT.
- 7 GRAPHITE - IRRITANT TO EYES AND RESPIRATORY TRACTS. CAN CAUSE PNEUMOCONIOSIS, ALTHOUGH STUDIES SUGGEST THAT PNEUMOCONIOSIS IS A MIXED DUST REACTION.
- 8 MICA - IRRITANT TO EYES. OSHA BELIEVES THAT THE EVIDENCE STRONGLY SUGGESTS THAT IT IS A PNEUMOCONISTIC AGENT.
- 9 MINERAL WOOL FIBER - IRRITANT TO EYES AND SKIN. SEVERAL STUDIES HAVE SHOWN EXCESS RISK OF NON MALIGNANT RESPIRATORY DISEASE.
- 10 TALC - IRRITANT TO EYES, MUCOUS MEMBRANES AND RESPIRATORY TRACTS. MEDICAL EVIDENCE IS COMPLICATED BY THE FACT THAT TALCS CONTAIN AMPHIBOLES AND OTHER MINERALS.
- 11 WOOD FLOUR (SOFT) - IRRITANT TO EYES, MUCOUS MEMBRANES AND UPPER RESPIRATORY TRACTS. VARIOUS SPECIES OF WOOD DUST CAN ELICIT ALLERGIC CONTACT DERMATITIS IN SENSITIZED INDIVIDUALS. MAY CAUSE REPIRATORY SENSITIZATION.
- 12 GRAPHITE POWER - IRRITANT TO EYES, SKIN AND MUCOUS MEMBRANES. NO SENSITIZING EFFECT KNOWN. CAN CAUSE RESPIRATORY EFFECTS SUCH PNEUMOCONIOSIS WITH PROLONGED USE.

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EMERGENCY AND FIRST AID PROCEDURES:

- EYES:** IMMEDIATELY FLUSH EYES WITH COPIOUS AMOUNTS OF WATER FOR AT LEAST 15 MINUTES. GET MEDICAL ATTENTION
- SKIN:** WASH THOROUGHLY WITH SOAP AND WATER
- INHALATION:** USE WITH ADEQUATE VENTILATION. IF BREATHING IS AFFECTED, REMOVE TO FRESH AIR. IF BREATHING STOPS, APPLY MOUTH TO MOUTH RESUSCITATION. GET IMMEDIATE MEDICAL ATTENTION.
- INGESTION:** IF CONSCIOUS, GIVE WATER IMMEDIATELY AND INDUCE VOMITING BY PLACING FINGER DOWN THROAT. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. GET IMMEDIATE MEDICAL ATTENTION.

SECTION VI REACTIVITY DATA

- STABILITY:** STABLE. AVOID CONTAMINATION, EXPOSURE TO FLAME OR HEAT, OR STORAGE TEMPERATURES IN EXCESS OF 100°F.
- INCOMPATIBILITY:** THIS PRODUCT IS SENSITIVE TO STRONG OXIDIZING AGENTS, ACIDS, HALOGENS, INTERHALOGENS, ALKALI METALS AND MAY EITHER DECOMPOSE OR IGNITE WHEN MIXED WITH THE SAME.
- HAZARDOUS DECOMPOSITION PRODUCTS:** VAPORS EVOLVED DURING POLYMERIZATION MAY CONTAIN - PHENOL, FORMALDEHYDE, OR AMMONIA. OTHER PRODUCTS OF DECOMPOSITION INCLUDE CARBON MONOXIDE AND CARBON DIOXIDE.
- HAZARDOUS POLYMERIZATION:** SHOULD NOT OCCUR

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SECTION VII CONTROL MEASURES

WORK/HYGIENIC PRACTICES:	EYE WASH AND SHOWER FACILITY SHOULD BE AVAILABLE. PRACTICE GOOD HYGIENE AND MAINTAIN A CLEAN WORK ENVIRONMENT
VENTILATION:	POINT SOURCE EXHAUST RECOMMENDED TO REMOVE DUST AND VAPORS EVOLVED DURING USE (DUST COLLECTION SYSTEM). USE EXPLOSION PROOF MOTORS
RESPIRATORY PROTECTION:	NIOSH APPROVED RESPIRATORS RECOMMENDED IF TLVS ARE EXCEEDED
PROTECTIVE CLOTHING:	GLOVES RECOMMENDED
EYE PROTECTION:	SAFETY GLASSES WITH SIDE SHIELDS
STORAGE:	STORE IN A COOL, DRY PLACE. KEEP CONTAINERS CLOSED TO AVOID CONTAMINATION. PREVENT ACCUMULATIONS OF DUST. AVOID EXCESSIVE HEAT AND SOURCES OF IGNITION. OBSERVE GOOD HOUSEKEEPING PRACTICES

SECTION VIII SPILL, LEAK AND DISPOSAL

SPILL OR LEAK PROCEDURE: VACUUM OR SWEEP WITH SWEEPING COMPOUND, SAWDUST OR SAND. AVOID GENERATING DUST. VACUUMS WITH EXPLOSION PROOF MOTORS ARE RECOMMENDED. THIS PRODUCT CONTAINS FREE PHENOL WHICH IS SUBJECT TO EFFLUENT LIMITS UNDER THE CLEAN WATER ACT.

WASTE DISPOSAL METHOD: BURY OR INCINERATE IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS.

SECTION IX TRANSPORTATION INFORMATION

SHIPPING CLASSIFICATION	D.O.T. HAZARD CLASS
PLASTIC MATERIALS VIZ: POWDERED FORM NMFC ITEM #156200	NON HAZARDOUS

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SECTION X ADDITIONAL INFORMATION

FOR COMPANY USE

THE INFORMATION AND RECOMMENDATIONS SET FORTH HEREIN ARE TAKEN FROM SOURCES BELIEVED TO BE ACCURATE AS OF THE DATE HEREOR; HOWEVER PACE TECHNOLOGIES MAKES NO WARRANTY, EXPRESS OR IMPLIED WITH RESPECT TO THE ACCURACY OF THE INFORMATION OR THE SUITABILITY OF THE RECOMMENDATIONS, AND ASSUMES NO LIABILITY TO ANY USER THEREOF.

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