

**MATERIAL SAFETY DATA SHEET**

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SPEC/MSDS NUMBER  
4001DATE  
3/20/2008**PRODUCT IDENTIFICATION**

|                                   |  |
|-----------------------------------|--|
| TRADE NAME<br>ELECTROLYTIC COPPER | GENERIC NAME<br>ELECTROLYTIC COPPER      |
| MANUFACTURER'S NAME<br>[REDACTED] | CAS NUMBER<br>SEE BELOW                  |
| ADDRESS (STREET)<br>[REDACTED]    | PHONE NUMBER (EMERGENCY)<br>718-342-4900 |
| CITY<br>[REDACTED]                | STATE<br>[REDACTED]                      |
| ZIP<br>[REDACTED]                 | CHEMICAL STRUCTURE                       |

**I • PRODUCT INGREDIENTS**

| CHEMICAL AND/OR COMMON NAME | CAS NUMBER | %     | TLV mg/m <sup>3</sup>        | PEL mg/m <sup>3</sup>  |
|-----------------------------|------------|-------|------------------------------|------------------------|
| *COPPER                     | 7440-50-8  | 99.95 | 1.0 DUST & MISTS<br>0.2-FUME | 1.0 DUST<br>0.1 - FUME |

**II • PHYSICAL DATA**

|   |   |  |
|---|---|--|
| BOILING POINT<br>NOT APPLICABLE                   | VAPOR PRESSURE<br>NOT APPLICABLE        | MELTING POINT<br>1982°                   |
| SOLUBILITY IN WATER<br>NOT APPLICABLE             | VAPOR DENSITY (AIR=1)<br>NOT APPLICABLE | PERCENT VOLATILE<br>NOT APPLICABLE       |
| APPEARANCE AND ODOR<br>COPPERY METALLIC – NO ODOR |   | EVAPORATION RATE ( =1)<br>NOT APPLICABLE |

**III • FIRE AND EXPLOSION DATA**

|  |                                    |                       |                       |
|--|------------------------------------|-----------------------|-----------------------|
| FLASH POINT<br>NOT APPLICABLE  | FLAMMABLE LIMITS<br>NOT APPLICABLE | LEL<br>NOT APPLICABLE | UEL<br>NOT APPLICABLE |
| EXTINGUISHING MEDIA SAND, DRY CHEMICAL, OR CO <sub>2</sub> SHOULD BE USED ON SURROUNDING FIRE. DO NOT USE WATER ON FIRE WHERE MOLTEN METAL IS PRESENT.               |                                    |                       |                       |
| SPECIAL FIREFIGHTING PROCEDURES USE FULL BODY PROTECTIVE CLOTHING AND FULL FACE PIECE, SELF CONTAINED BREATHING APPARATUS OPERATED ON POSITIVE PRESSURE MODE.        |                                    |                       |                       |
| UNUSUAL FIRE OR EXPLOSION HAZARDS MOLTEN METALS PRODUCE FUME, VAPOR, AND OR DUST THAT MAY BE TOXIC AND/OR RESPIRATORY IRRITANTS. METAL REACTS WITH OXIDIZING AGENTS. |                                    |                       |                       |

**IV • HEALTH HAZARD INFORMATION**

HAZARD BY ROUTES OF EXPOSURE (Indicate chronic and acute)

|   |
|---|
| INHALATION VAPOR AND/OR FUME MAY BE IRRITATING TO THE RESPIRATORY SYSTEM AND CAN RESULT IN BOTH ACUTE AND CHRONIC OVEREXPOSURE. |
| INGESTION DUST VAPOR AND/OR FUME MAY BE ABSORBED BY THE DIGESTIVE SYSTEM AND CAN RESULT IN BOTH ACUTE AND CHRONIC OVER EXPOSURE |
| EYE<br>DUST VAPOR AND/OR FUME MAY CAUSE IRRITATION  |
| SKIN CONTACT/ABSORPTION<br>DUST VAPOR AND/OR FUME MAY CAUSE IRRITATION  |
| SIGNS AND SYMPTOMS ASSOCIATED WITH EXPOSURE OVER TLV<br>SEE ATTACHED  |
| MEDICAL CONDITIONS WHICH MAY BE AGGRAVATED<br>NOT APPLICABLE  |
| ANY PART LISTED AS CARCINOGENS (NTP,IARC,OSHA)<br>SEE SECTION X   |

HEALTH HAZARD INFORMATION CONTINUED ON PAGE 2

|  |                          |  |                |
|--|--------------------------|--|----------------|
| <b>V • HEALTH HAZARD INFORMATION (Continued)</b>   |                          |  |                |
| EMERGENCY/FIRST AID PROCEDURES   |                          |  |                |
| INHALATION   |                          |  |                |
| REMOVE FROM EXPOSURE. GET MEDICAL ATTENTION  |                          |  |                |
| INGESTION  |                          |  |                |
| GET IMMEDIATE MEDICAL ATTENTION  |                          |  |                |
| EYE CONTACT  |                          |  |                |
| FLUSH WITH COPIOUS QUANTITIES OF WATER, GET MEDICAL ATTENTION IMMEDIATELY  |                          |  |                |
| SKIN CONTACT   |                          |  |                |
| WASH THOROUGHLY WITH SOAP AND WATER  |                          |  |                |
| SKIN ABSORPTION  |                          |  |                |
| NOT APPLICABLE   |                          |  |                |
| <b>VI • CONDITIONS FOR SAFE USE (When over TLV)</b>  |                          |  |                |
| RESPIRATORY PROTECTION   |                          |  |                |
| NIOSH/MSHA APPROVED RESPIRATOR FOR TOXIC DUST AND OR FUME  |                          |  |                |
| EYE PROTECTION   |                          |  |                |
| FACE SHIELD OR VENTED GOGGLES SHOULD BE WORN   |                          |  |                |
| PROTECTIVE GLOVES  |                          |  |                |
| GLOVES SHOULD BE WORN WHEN HANDLING THIS PRODUCT   |                          |  |                |
| OTHER PROTECTIVE CLOTHING/EQUIPMENT FULL PROTECTIVE CLOTHING (COVERALLS) SHOULD BE WORN DURING PRODUCT USE AND PROPERLY LAUNDERED AFTER USE  |                          |  |                |
| VENTILATION REQUIREMENTS   |                          |  |                |
| LOCAL VENTILATION RECOMMENDED – REQUIRED IF THRESHOLD LIMITS ARE EXCEEDED  |                          |  |                |
| <b>VII • REACTIVITY DATA</b>   |                          |  |                |
| IS MATERIAL STABLE?  |                          | WILL HAZARDOUS POLYMERIZATION OCCUR    |                |
| YES  |                          | NO                                     |                |
| INCOMPATIBILITY  |                          | CONDITIONS TO AVOID                    |                |
| STRONG OXIDIZERS MAY CAUSE A VIOLENT REACTION  |                          | NOT APPLICABLE                         |                |
| HAZARDOUS DECOMPOSITION PRODUCTS   |                          |  |                |
| AT TEMPERATURES ABOVE MELTING POINT TOXIC FUMES OR VAPORS MAY BE EMITTED   |                          |  |                |
| <b>VIII • SPILL OR LEAK PROCEDURES</b>   |                          |  |                |
| STEPS TO BE TAKEN IF MATERIAL IS SPILLED OR RELEASED MATERIAL SHOULD BE VACUUMED OR WET SWEEPED WHEN VACUUMING IS NOT FEASIBLE – PARTICULATE MATTER SHOULD BE STORED IN DRY CONTAINERS FOR LATER DISPOSAL. DO NOT USE COMPRESSED AIR AS A MEANS OF CLEANING.   |                          |  |                |
| WASTE DISPOSAL METHOD DISPOSE OF TOXIC SUBSTANCES AND HAZARDOUS WASTE IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS.  |                          |  |                |
| RCRA REGULATED   | RCRA NUMBER              | CERCLA (Superfund) REPORTABLE QUANTITY |                |
| NO   | NOT APPLICABLE           | NOT APPLICABLE                         |                |
| DOT REGULATED  | DOT PROPER SHIPPING NAME | DOT HAZARD CLASS                       | DOT NUMBER     |
| NO   | NOT APPLICABLE           | NOT APPLICABLE                         | NOT APPLICABLE |
| <b>IX • SPECIAL PRECAUTIONS</b>  |                          |  |                |
| SPECIAL PRECAUTIONS FOR HANDLING AND STORAGE SIGNS & LABELS IN WORK AREAS AND FOR CONTAMINATED CONTAINERS OR EQUIPMENT MAY BE REQUIRED UNDER OSHA REGULATIONS. MEDICAL EXAMINATIONS, MONITORING, RECORD KEEPING AND HYGIENE FACILITIES AND PRACTICES SPECIFIED BY OSHA MAY HAVE TO BE MET. EMPLOYEE TRAINING PROGRAM MAY ALSO BE REQUIRED. |                          |  |                |
| OTHER PRECAUTIONS PRACTICE GOOD HOUSEKEEPING & PERSONAL HYGIENE PROCEDURES. NO TOBACCO, OR FOOD IN WORK AREA. WASH THOROUGHLY BEFORE EATING OR SMOKING. AVOID INGESTION OR INHALATION. TAKE A SHOWER AND CHANGE CLOTHES AT END OF SHIFT. DO NOT WEAR CONTAMINATED CLOTHING HOME. DO NOT USE COMPRESSED AIR ON CLOTHING.                    |                          |  |                |
| PREPARED BY  |                          | TITLE                                  |                |
| [REDACTED]   |                          | [REDACTED]                             |                |

While the information and recommendations set forth herein are believed to be accurate as of the date hereof, THE MANUFACTURER MAKES NO WARRANTY WITH RESPECT THERETO, AND DISCLAIMS ALL LIABILITY FROM RELIANCE THEREON

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**X HEALTH HAZARD DATA**

OVER HEATING OF ALLOY CAN PRODUCE METAL FUMES AND OXIDES. MACHINING OPERATIONS SUCH AS GRINDING, SAWING, BUFFING CAN GENERATE AIRBORNE PARTICULATE IN THE WORK AREA. THE EXPOSURE LEVELS INDICATED IN SECTION II ARE RELEVANT TO THESE AND OTHER OPERATIONS.

FOLLOWING ARE SYMPTOMS OF OVER EXPOSURE TO THE VARIOUS INGREDIENTS:

**\*COPPER**

MELTING, GRINDING, and CUTTING OF COPPER MAY PRODUCE FUMES OR DUST EXPOSURE AND BREATHING THESE FUMES OR DUST MAY PRESENT POTENTIALLY SIGNIFICANT HEALTH HAZARDS. FUMES OF COPPER MAY CAUSE METAL FUME FEVER WITH FLU-LIKE SYMPTOMS AND SKIN AND HAIR DISCOLORATION. WHILE INDUSTRIAL DERMATITIS HAS NOT BEEN REPORTED, KERATINIZATION OF THE HANDS AND THE SOLES OF THE FEET HAS BEEN REPORTED. SYSTEMICALLY AS WELL, COPPER DUST AND FUME CAUSE IRRITATION OF THE UPPER RESPIRATORY TRACT, METALLIC TASTE IN THE MOUTH, AND NAUSEA. CHRONIC POISONING RESULTS IN WILSON'S DISEASE CHARACTERIZED BY A HEPATIC CIRRHOSIS, BRAIN DAMAGE, DEMYELINATION, RENAL DISEASE AND COPPER DEPOSITION IN THE CORNEA.

**XI SPECIAL INSTRUCTIONS FOR CHEMICALS MARKED WITH AN ASTERISK (\*)**

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

THIS INFORMATION IS TAKEN FROM SOURCES BELIEVED TO BE RELIABLE; HOWEVER, THE MANUFACTURER MAKES NO WARRANTY AS TO THE ABSOLUTE CORRECTNESS OR SUFFICIENCY OR ANY OF THE FOREGOING OR THAT ADDITIONAL OR OTHER MEASURES MAY BE REQUIRED UNDER PARTICULAR CONDITIONS.

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