MSDS FOR COPPER POWDER, A68

SECTION I (General Information)

NAME: COPPER POWDER

MANUFACTURER: ZINC CORPORATION OF AMERICA
300 Frankfort Road
Monaca, PA 15061
412-774-1020

Fourth Street
Palmerton, PA 18071
215-826-8892

EMERGENCY: 412-774-1020
CHEMTREC: 800-424-9300

TRADE NAME AND SYNONYMS: Copper Powder, A68

CHEMICAL FAMILY: Metal Alloy Powder

CAS NO.: 7440-50-8

FORMULA: Cu/Fe/Zn

DOT HAZARD CLASS: Not listed

UN NO.: NAIF*
NA NO.: NAIF*

SARA SECTION 313: This product is subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act and 40 CFR 372. The materials underlined below are present in quantities above the applicable deminimis concentrations and are listed as Toxic Chemicals in 40 CFR 372.65.

ISSUE DATE: 3/29/88
REVISION DATE: 1/20/90

SECTION II - INGREDIENTS

<table>
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<tr>
<th>MATERIAL</th>
<th>CAS NO</th>
<th>%</th>
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<tr>
<td>COPPER</td>
<td>7440-50-8</td>
<td>90-92</td>
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<tr>
<td>ZINC</td>
<td>7440-66-6</td>
<td>2.6-3.4</td>
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<tr>
<td>IRON</td>
<td>7439-89-6</td>
<td>1.5-2.0</td>
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<tr>
<td>MANGANESE</td>
<td>7439-96-5</td>
<td>3.0-3.5</td>
</tr>
<tr>
<td>TIN</td>
<td>7440-31-5</td>
<td>.9-1.1</td>
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</table>

* NAIF - No applicable information.
MSDS FOR COPPER POWDER, A68

SECTION III PHYSICAL DATA

BOILING POINT (760 MM HG): N/A
MELTING POINT: 1710-1970 F
SPECIFIC GRAVITY: 8.5-8.9
EVAPORATION RATE (='1): N/A
VAPOR DENSITY (air = 1): N/A
SOLUBILITY IN WATER: Insoluble
PERCENT VOLATILE BY VOLUME (%): N/A
VAPOR PRESSURE AT 20°C: N/A

APPEARANCE AND ODOR: Copper-colored metallic particles with no odor

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (METHOD USED): N/A
NFPA FIRE RATING

FLAMMABLE LIMITS: LEL: N/A
HEALTH: 0
UEL: N/A
FLAMMABILITY: 0
REACTIVITY: 0

EXTINGUISHING MEDIA: N/A

SPECIAL FIRE FIGHTING PROCEDURES: N/A

UNUSUAL FIRE AND EXPLOSION HAZARDS: N/A

SECTION V - HEALTH HAZARD DATA

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<th>FORM</th>
<th>OSHA - PEL</th>
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<td>TWA</td>
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<tr>
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<td>mg/M3</td>
<td>mg/M3</td>
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<td>Oxide Fume</td>
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<td>Dust</td>
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<td>Oxide Fume</td>
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<td>TIN</td>
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<td>2</td>
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ROUTES OF ENTRY

PRIMARY: Inhalation if the dust has become airborne.

SECONDARY: Ingestion
EFFECTS OF SHORT TERM OVEREXPOSURE:

COPPER (FUME): Excessive inhalation of copper fumes can produce an acute reaction known as "metal fume fever." Symptoms consist of chills and fever (very similar to and easily confused with flu symptoms) which come on a few hours after large exposures.

ZINC: Inhalation of high levels of zinc vapor (zinc oxide fumes) may result in tightness of chest, metallic taste, cough, dizziness, fever, chills, headache, nausea, and dry throat. Overexposure may produce symptoms known as metal fume fever or "zinc shakes": an acute, self-limiting condition without recognized complications. Symptoms of metal fume fever include: chills, fever, muscular pain, nausea and vomiting.

MANGANESE (FUME): Effects of overexposure are similar to those listed above for zinc.

TIN: In general, the toxicity of inorganic tin salts is low. These compounds may cause irritation of the eyes, nose, throat and skin.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: Inhalation of dust may be an irritant to pre-existing respiratory conditions.

EMERGENCY AND FIRST AID PROCEDURES: Symptoms resulting from inhalation overexposure usually disappear within 24 hours. Symptomatic treatment, such as bed rest and possibly aspirin is recommended to provide relief from fever and chills. Eye contact - flush areas with copious amounts of water. Skin contact - thoroughly wash affected areas with water. In all cases, consult physician for medical attention.

EFFECTS OF LONG TERM EXPOSURE:

COPPER (FUME): Chronic exposure to copper may result in anemia but chronic poisoning does not occur.

ZINC: Chronic exposure to zinc may cause respiratory tract irritation with nasopharyngitis and laryngitis. However, zinc is an essential substance for humans. The recommended daily dietary allowance (RDA) for zinc is 15mg per day.

IRON OXIDE: Chronic exposure to iron oxide dust or fume may result in siderosis, a benign pneumoconiosis.

MANGANESE: Prolonged or repeated exposure to manganese may affect the nervous system with difficulty in walking and balancing, weakness or cramps in the legs, hoarseness of the voice, trouble with memory and judgment, unstable emotions or unusual irritability. The respiratory system may be affected by a condition known as "manganese pneumonia" which may result in symptoms and signs of coughing, fever, chills, general aching of the body, chest pain, and other common signs of pneumonia.

TIN: None known.

CARCINOGENIC ASSESSMENT:

NTP? No
IRAC MONOGRAPH? No
OSHA? No
MSDS FOR COPPER POWDER, A68

SECTION VI - REACTIVITY DATA

STABILITY:  ( ) Unstable  
( ) Stable

CONDITIONS TO AVOID: N/A

INCOMPATIBILITY (MATERIALS TO AVOID): Avoid contact with oxidizers.

HAZARDOUS DECOMPOSITION PRODUCTS: None

HAZARDOUS POLYMERIZATION:  ( ) May occur  
( ) Will not occur

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Avoid dusting; metal should be
contained for recycling.

WASTE DISPOSAL METHOD: Insert into a dry, closed container for removal. Material may be recycled or
dispensed of in accordance with Federal, State, and Local Environmental Regulations. This material may be
regulated under CERCLA, TSCA, SARA, and/or RCRA Regulations.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (SPECIFY TYPE): Use NIOSH/MSHA approved type respirator against dusting
conditions.

VENTILATION: Local exhaust or other ventilation that will reduce dust concentrations to less than permissible
exposure limits.

PROTECTIVE GLOVES: Recommended to prevent skin irritation in hypersensitive individuals.

EYE PROTECTION: Use safety eyeware for protection against airborne particulate matter.

OTHER PROTECTIVE EQUIPMENT: Barrier creams may help prevent skin irritation in hypersensitive individuals.

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Store in a dry location, separate from acids and
alkalis.

OTHER PRECAUTIONS: Practice good personal hygiene when working in areas where this material is used.

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