MSDS FOR BRASS POWDER, 1100 SERIES

SECTION I (General Information)

NAME: BRASS POWDER

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

Fourth Street
Palmerton, PA 18071
215-826-9692

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

TRADE NAME AND SYNONYMS: Brass Powder, 1100 Series

CHEMICAL FAMILY: Metal Alloy Powder

FORMULA: Cu/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 de minimis concentrations and are listed as Toxic Chemicals in 40 CFR 372.65.

ISSUE DATE: 3/15/88
REVISION DATE: 1/11/90

SECTION II - INGREDIENTS

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>CAS NO</th>
<th>%</th>
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<tbody>
<tr>
<td>COPPER</td>
<td>7440-50-8</td>
<td>55-99</td>
</tr>
<tr>
<td>ZINC</td>
<td>7440-66-6</td>
<td>.5-44</td>
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<tr>
<td>LEAD</td>
<td>7439-92-1</td>
<td>1.75max</td>
</tr>
<tr>
<td>ALUMINUM</td>
<td>7429-90-5</td>
<td>1.75max</td>
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</tbody>
</table>

*NAIF - No applicable information found.
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SECTION III PHYSICAL DATA

BOILING POINT (760 MM HG): N/A
SPECIFIC GRAVITY: 8.5-8.9
VAPOR DENSITY (air = 1): N/A
PERCENT VOLATILE BY VOLUME (%): N/A
APPEARANCE AND ODOR: Brass-colored metallic particles with no odor

MELTING POINT: 1710-1970° F
EVAPORATION RATE ( =1): N/A
SOLUBILITY IN WATER: Insoluble
VAPOR PRESSURE AT 20° C: N/A

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (METHOD USED): N/A
FLAMMABLE LIMITS: LEL: N/A
UEL: N/A
NFPA FIRE RATING
HEALTH 0
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

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FORM</th>
<th>OSHA - PEL</th>
<th>ACGIH - TLV</th>
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<tr>
<td></td>
<td>TWA mg/M3</td>
<td>STEL mg/M3</td>
<td>TWA mg/M3</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>STEL mg/M3</td>
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<tr>
<td>COPPER</td>
<td>Dust</td>
<td>1.0</td>
<td>1.0</td>
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<tr>
<td></td>
<td>Oxide Fume</td>
<td>0.1</td>
<td>0.2</td>
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<tr>
<td>ZINC</td>
<td>Dust</td>
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</tr>
<tr>
<td></td>
<td>Oxide Fume</td>
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<td>5</td>
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<tr>
<td></td>
<td></td>
<td>10</td>
<td>10</td>
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<tr>
<td>LEAD</td>
<td>Total Dust</td>
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<tr>
<td>ALUMINUM</td>
<td>Respiration</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td></td>
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<td>5</td>
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</table>

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.

LEAD: Exposure to high concentrations of lead may cause headache, nausea, vomiting, abdominal spasms, fatigue, sleep disturbances, weight loss, anemia, and pain in legs, arms and joints.

ALUMINUM: Exposure to aluminum metal dust presents only minimal health hazards. No deleterious lung or systemic effects have been observed.

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.

LEAD: Prolonged exposure to lead may produce many of the symptoms of short-term exposure and may also cause central nervous system damage, gastrointestinal disturbances, anemia, and weight drop. Symptoms of central nervous system damage include fatigue, headaches, tremors, hypertension, hallucinations, convulsions, and delirium. Kidney dysfunction and possible injury has also been associated with chronic lead poisoning.

Chronic overexposure to lead has been implicated as a causative agent for the impairment of male and female reproductive organs, but there is not present substantiation of this.

Pregnant women should be protected from excessive exposure. Lead can cross the placental barrier and it is reported that infants with neurologic disorders have been born to women who have experienced excessive exposure.

CARCINOGENIC ASSESSMENT:

NTP? No  IRAC MONOGRAPH? No  OSHA? No
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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: Contain in a dry, closed container. Material may be recycled or disposed 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.

EYE PROTECTION: Use safety eyewear 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 cool, dry, well-ventilated space, separate from acids and alkalis.

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