SECTION 1. IDENTIFICATION

Product Name: HPC-80 EF™ Copper Alloy
Recommended Uses: Wiring for electrical devices.
Use Restriction: None.
Manufacturer/Vendor Information: IWG High Performance Conductors
1570 Campton Road
Inman, South Carolina 29349
24-Hour Emergency Phone: (864) 472-0555
Other Information Phone: (864) 472-0481
FAX: (864) 472-3381

SECTION 2. HAZARDS IDENTIFICATION

Chemical Classification: Metal.
Signal Word: Warning.
Hazard Statement: Specialty bare and insulated wire is generally not considered hazardous in the form shipped or when used for its intended purpose; which is the conveyance of electrical charge. However, the installation of bare and insulated wire into products can release metallic fume and decomposed resin to the atmosphere; which may have health or safety impacts. The following statements reflect installation hazards:

- H302 – Harmful if swallowed.
- H312 – Harmful in contact with skin.
- H315 – Causes skin irritation.
- H332 – Harmful if inhaled.
- H335 – May cause respiratory irritation.

In a solid form this material does not present a significant health hazard to people. Odorless, solid reddish-yellow material in various shapes (rod, wire) that may cause skin, eye, and respiratory irritation when converted to fume forms.

Note: Grinding, melting, welding, cutting, or any other operation(s) that reduces the particle size of the material will change the hazard classification of the product. If the particle size or oxidation state of this product is reduced refer to the applicable regulatory standards for appropriate protection measures.

Pictogram: Health Hazard.
Precautionary Statement:

- P261 – Avoid breathing dust/fume/gas/mist/vapors/spray.
- P262 – Do not get in eyes, on skin, or on clothing.
- P337 + P313 – If eye irritation persists: Get medical advice/attention.
  May irritate eyes.
  Contact with fine particles may irritate skin.
  May be irritating to the nose, throat, and respiratory tract.
  May be irritating to the stomach.

Hazards Not Otherwise Classified: N/A
Mixture of Ingredients with Unknown Toxicity: N/A
Emergency Overview: Under normal use there is no hazard, but thermal decomposition can release toxic vapors, gases, or fumes.
Effects of Overexposure:

Eye: Dust or fume may cause eye irritation.
Skin Contact: Dust may cause skin irritation.
the following adverse effects may result:

Route(s) of Entry: Ingestion or inhalation and may cause skin dysfunction including discoloration.

Inhalation: Dust or fume may cause nose, throat, and respiratory tract irritation. Metal fume fever has been associated with metals such as zinc, magnesium, aluminum, antimony, iron, manganese, mercury, nickel and tin. However, there is insufficient evidence to conclude that exposures to copper dust and copper fume cause metal fume fever. Symptoms of metal fume fever include muscular pains, sudden onset of chills, weakness, fatigue, nausea, vomiting, headache, and diarrhea; onset may be delayed for several hours.

Chronic Exposure: Copper exposure may result in complications for individuals with Wilson’s disease.

Carcinogenicity: NTP: – Copper nor Magnesium not listed as a carcinogen IARC: Copper and Magnesium, classifiable as a human carcinogen; (OSHA): Copper and Magnesium, not regulated as a carcinogen; (NIOSH): Copper and Magnesium, not listed as a carcinogen.

SECTION 3. COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>CAS No.</th>
<th>Chemical Name</th>
<th>Weight Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7440-50-8</td>
<td>Copper</td>
<td>99+</td>
</tr>
<tr>
<td>7439-95-4</td>
<td>Magnesium</td>
<td>&lt;1</td>
</tr>
</tbody>
</table>

SECTION 4. FIRST-AID MEASURES

Initial Care:
Eyes: Flush eyes with plenty of water for at least 15 minutes.
Skin: Wash with soap and water. Flush with large amounts of water. Use soap if available. Remove contaminated clothing, including shoes, after flushing has begun. If irritation persists seek medical attention.
Ingestion: If conscious, give water. Consult a physician.
Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Seek medical attention.

Symptoms or Effects:
Eyes: Irritation.
Skin: Irritation.
Ingestion: Irritation.
Inhalation: Irritation.

Immediate Medical Care and Special Treatment: Wash or irrigate as necessary. Wilson’s Disease (an inherited disorder in which copper accumulates in the liver leading to copper toxicosis) may result from exposure; pre-existing dermatitis may be aggravated.

SECTION 5. FIRE-FIGHTING MEASURES

NFPA Hazard Classification: Health Hazard: 1  Fire Hazard: 0  Reactivity: 0
Flash Point: Not applicable
Flammable Limits in Air-Lower: Not applicable
Flammable Limits in Air-Upper: Not applicable
Auto-Ignition Temperature: Not applicable

Fire Fighting Extinguishing Media: Use extinguishing media appropriate for surrounding fire.

Fire Extinguishing Equipment: As in any fire, wear approved or equivalent MSHA/NIOSH self-contained breathing apparatus pressure-demand and full protective gear.

Fire Fighting Instructions: Evacuate area and fight fire from a safe distance. Molten form explodes (i.e., forms steam and/or releases hydrogen) upon contact with water.

Fire and Explosion Hazards: Not applicable

Unusual Hazards: Heavy airborne concentrations of fine powder in enclosed spaces may ignite or explode in the presence of sources of ignition. In the presence of halogenates, copper powder may be explosive with heat, percussion, or light friction. On long standing a white deposit, which is a readily explosive peroxide, may form. In the presence of wet acetylene and ammonia, copper forms explosive acetylides.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Fire Extinguishing Equipment: As in any fire, wear approved or equivalent MSHA/NIOSH self-contained breathing apparatus pressure-demand and full protective gear.

Fire Fighting Instructions: Evacuate area and fight fire from a safe distance.

Fire and Explosion Hazards: Will not burn, will not explode.

Unusual Hazards: None. Use clean-up methods that avoid dust generation (vacuum wet). Wear a NIOSH approved respirator if dust will be generated in clean up. Use protective clothing if skin contact is likely.
SECTION 7. HANDLING AND STORAGE

Signal Word: Warning.
Handling Precautions: Not hazardous with normal use.
Storage Recommendations: Do not store near acetylene, chlorine, hydrogen peroxide, acids, or incompatible materials described in Section 10.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

OSHA Permissible Exposure Limit:

<table>
<thead>
<tr>
<th>Chemical</th>
<th>CAS No.</th>
<th>ACGIH TWA (mg/kg)</th>
<th>OSHA PEL/TWA (mg/kg)</th>
<th>UK WEL/TWA (mg/kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Dusts</td>
<td>Fume</td>
<td>Dusts</td>
</tr>
<tr>
<td>Copper</td>
<td>7440-50-8</td>
<td>1</td>
<td>0.2</td>
<td>1</td>
</tr>
<tr>
<td>Magnesium</td>
<td>7439-95-4</td>
<td>--</td>
<td>--</td>
<td>15</td>
</tr>
</tbody>
</table>

Engineering Controls: Control airborne concentrations below the exposure limits.
Protective Devices
Eye Protection: Safety glasses with side shields.
Skin Protection: Use protective clothing to prevent repeated or prolonged skin contact.
Respiratory Protection: If dust or vapors are created and workplace conditions warrant respirator use, a respiratory protection program that meets OSHA 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed. For concentrations up to 10 times the exposure limit, use NIOSH or MSHA approved half- or full-face, air-purifying respirator with appropriate particulate cartridges. For higher concentrations, consult a professional industrial hygienist. The American Conference of Governmental Industrial Hygienists (ACGIH) 8-hour time-weighted average (TWA), threshold limit value (TLV) for welding fume (total particulate) is 5 mg/m³.
Ventilation: General ventilation is recommended. Local exhaust recommended if dust, mist, or fumes are generated.
Special Protective Device Requirements: Not applicable.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Reddish-yellow metal, various shapes, solid.
Odor: N/A
Odor Threshold: N/A
pH: N/A
Melting Point/Freezing Point:
Copper: 1,083 °C
Magnesium: 649 °C
Initial Boiling Point:
Copper: 2,595 °C
Magnesium: 1,100 °C
Boiling Point Range: N/A
Flash Point: N/A
Evaporation Rate: N/A
Flammability (solid, gas): N/A
Upper/Lower Explosive Limits: N/A
Vapor Pressure: 1 mm Hg at 1,628 °C, 20 mm Hg at 1,970 °C
Vapor Density: N/A
Relative Density: Copper/Magnesium Alloy: 8.94 g/cm³
Solubility in Water: Insoluble
Partition Coefficient (n-octanol/water): N/A
Auto-ignition Temperature: N/A
Decomposition Temperature: N/A
Viscosity: N/A

SECTION 10. STABILITY AND REACTIVITY

Reactivity: Non-reactive.
Chemical Stability: Stable. Decomposition products may evolve when heated.
Other:
Hazardous Reactions: Not applicable.
Incompatible Conditions: Incompatible with oxidizing agents.
Incompatible Chemicals: Resistant to a wide variety of chemicals. It is soluble in strong acids and bases. It is infusible. Copper is potentially explosive with acetylic compounds, 3-bromopropene, ethylene oxide, lead azide, and ammonium nitrate. Ignites on contact with chlorine, fluorine, and hydrazine mononitrate. Reacts violently with sodium azide,
halogenates, peroxides, hydrogen sulfide, hydrozoic acid, bromates, chlorates, iodates, chloride and potassium oxide. Avoid contact with strong acids.  

**Hazardous Decomposition Products:** May include carbon monoxide, ozone, and oxides of nitrogen. Polyurethanes used as insulation may also emit isocyanate derivatives upon decomposition.  

**Hazardous Polymerization:** Will not occur.

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### SECTION 11. TOXICOLOGICAL INFORMATION

**Exposure Routes**

- Eyes, skin, ingestion, inhalation.

**Exposure Effects**

- **Delayed:** Not applicable.
- **Immediate:** Eyes, skin, ingestion, inhalation.
- **Chronic:** Not applicable.

**Toxicity (Copper)**

Scientific evidence does not indicate that exposure to copper dust or fume causes upper respiratory irritation in a manner that is different than that following high-dose exposure to other non-specific irritants.

**Toxicity (Magnesium)**

Volunteers exposed to freshly generated fume at concentrations ranging from 410 to 580 mg/m³ experienced only slight (unspecified) reactions.

**Symptoms**

- **Eyes:** Irritation.
- **Skin:** Irritation.
- **Ingestion:** Irritation.
- **Inhalation:** Irritation.

**National Toxicology Program Listing**

Not applicable.

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### SECTION 12. ECOLOGICAL INFORMATION

**Toxicity Test Information:** See below.

**Aquatic Organisms:** Not available.

**Terrestrial Organisms:** Not available.

**Plants:** Not available.

**LD50:** Copper

- **Test Type:** Acute
- **Test Species:** Mouse
- **Test Route:** Intraperitoneal
- **LD₅₀:** 3.5 mg/kg

Inhalation Toxicity: Scientific evidence does not indicate that exposure to copper dust or fume causes upper respiratory irritation in a manner that is different than that following high-dose exposure to other non-specific irritants.

Reproduction: Female mice 22 weeks prior to mating, via an oral route, a dose of 1,520 µg/kg produces specific developmental abnormalities (musculoskeletal system). At 152 mg/kg effects included stunted fetus and central nervous system. Female mice 35 weeks prior to mating, via an oral route, a dose of 1,210 µg/kg produces effects on fertility (pre- and post-implantation mortality) (RTECS).

**Additional Information:** There are no human data and inadequate animal data (HSDB) for carcinogenicity.

**LD50:** Magnesium

- **Test Species:** Rat
- **Test Route:** Oral
- **LD₅₀:** 225 mg/kg

**Aquatic Organisms:** Not available.

**Terrestrial Organisms:** Not available.

**Plants:** Not available.

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### SECTION 13. DISPOSAL CONSIDERATIONS

**Waste Disposal Method:** Waste must be disposed of in accordance with federal, state and local environmental control regulations.

**Appropriate Disposal Containers:** Not limited.

**Appropriate Disposal Methods:** Recycling.

**Physical and Chemical Properties Affecting Disposal Activities:** Metal concentration limited.

**Sewage Disposal Limits:** Metal concentration limited.
**SECTION 14. TRANSPORT INFORMATION**

<table>
<thead>
<tr>
<th>DOT: Not Regulated</th>
<th>Technical Name (If N.O.S.): Wire.</th>
<th>Hazard Class: Not applicable.</th>
<th>ID:</th>
<th>PG:</th>
</tr>
</thead>
</table>

**SECTION 15. REGULATORY INFORMATION**

**US Federal Programs:**

**SARA Title III:** This product may contain one or more of the following toxic chemicals subject to reporting requirements of Section 313: aluminum (fume or dust), beryllium, cadmium, chromium, copper, magnesium, manganese, nickel, platinum, silicon, silver, tin, or zinc (fume or dust).

**CERCLA:** Not Listed

**RCRA:** This product may contain one or more of the following chemicals subject to reporting requirements of RCRA: cadmium, chromium, or silver.

**TSCA:** This product may contain one or more of the following toxic chemicals subject to reporting requirements of TSCA: aluminum, beryllium, cadmium, chromium, copper, manganese, nickel, platinum, silicon, silver, tin, or zinc.

**SECTION 16. OTHER INFORMATION**

**Prepared By:** IWG High Performance Conductors Environmental Health and Safety Department

**Disclaimer:** This information is based on available scientific evidence known to IWG High Performance Conductors. It is provided solely for compliance to the Hazard Communication Standard as revised in 2012. This information is furnished without warranty, expressed or implicit.

**Version:** 1.0

**Version Date:** July 31, 2015