Section 1: Identification

1.1 Product identifier
Product Name: Copper Alloy Wire (All Grades)

1.2 Relevant identified uses of the substance or mixture and uses advised against
Identified Uses: Industrial and commercial

1.3 Details of the supplier of the safety data sheet
Manufacturer: Central Wire Industries Ltd.
1 North Street
Perth, Ontario K7H 2S2 Canada
http://www.centralwire.com

Manufacturing Locations
US Locations: Dumas, AR; Fond du Lac, WI; Houston, TX; Lancaster, SC; Milton, FL; Perris, CA, Union, IL
Canada Locations: Erin, Ontario; Perth, Ontario
United Kingdom Location: Rotherham, South Yorkshire, England

1.4 Emergency telephone number
Manufacturer: 613-326-3006

Section 2: Hazard Identification

2.1 Classification of the substance or mixture
OSHA HCS 2012: This product is generally an article and is considered non-hazardous in its solid form, but is regulated under OSHA for the release of dust and fumes during mechanical processing operations.

OSHA Hazards:
- Acute Toxicant
- Irritant
- Target Organ Toxicity – Lungs, Central Nervous System
- Carcinogen Reproductive Toxicant Mutagen
- Skin/Respiratory Sensitizer

GHS Classification:
- Acute Toxicity – Category 3
- Respiratory Sensitizer – Category 1
- Germ Cell Mutagenicity – Category 2
- Carcinogenicity – Category 1B
- Toxic to Reproduction – Category 1A

Specific Target Organ Toxicity (Repeated Exposure) – Category 1
Hazardous to the Aquatic Environment – Acute Hazard – Category 1
Hazardous to the Aquatic Environment – Chronic Hazard – Category 2

2.2 Label Elements – OSHA HCS 2012
Pictogram(s)
Signal Word: Warning

Hazard statements:
There are no health hazards from copper alloy wire in solid form. Exposure to dust and/or fumes from processing such as burning, welding, sawing, brazing and grinding may cause serious health effect.
Causes skin irritation. May cause an allergic skin reaction. Causes serious eye irritation. May cause respiratory irritation. Suspected of causing cancer. Causes damage to organs – lungs via inhalation. Causes damage to organs – lungs through prolonged or repeated exposure via inhalation. May form combustible dust concentrations in air.

Precautionary statements:
Prevention
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Avoid breathing dusts, fumes and gases.
Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.
Contaminated work clothing should not be allowed out of the workplace.
Wear protective gloves – work gloves and eye/face protection – safety glasses or goggles.
In case of inadequate ventilation, wear respiratory protection.

Response
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. IF exposed or concerned: Get medical advice/attention.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
IF ON SKIN: Wash with plenty of soap and water. If skin irritation or rash occurs: Get medical advice/attention. Take off contaminated clothing and wash before reuse.

Storage/Disposal
Store away from strong acids, oxidizes and alkalis.
Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.
Refer to manufacturer/supplier for information on recovery/recycling.

2.3 Other Hazards
OSHA HCS 2012 No data available

2.4 Other information
NFPA Health = 1, Flammability = 0, Special Information = None
HMIS Health = 1*, Flammability = 0, Reactivity = 0, PPE = E
* Chronic Health Hazard
E = Safety glasses, gloves and respirator if above exposure levels

Section 3 - Composition/Information on Ingredients

Mixtures
Copper alloy in its solid state is not considered hazardous. However, operations such as burning, welding, sawing, brazing or grinding may release dust and/or fumes, which may present health hazards. These elements may appear in some or various combinations in any particular grade of stainless steel.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Identifiers</th>
<th>%</th>
<th>Hazardous</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cadmium</td>
<td>CAS: 7440-43-9</td>
<td>&lt; 2%</td>
<td>Yes</td>
</tr>
<tr>
<td>Copper</td>
<td>CAS: 7440-50-8</td>
<td>&lt; 99.95%</td>
<td>Yes</td>
</tr>
<tr>
<td>Iron</td>
<td>CAS: 7439-89-6</td>
<td>&lt; 1%</td>
<td>No</td>
</tr>
<tr>
<td>Manganese</td>
<td>CAS: 7439-96-5</td>
<td>&lt; 2%</td>
<td>Yes</td>
</tr>
<tr>
<td>Tin</td>
<td>CAS: 7440-31-5</td>
<td>&lt; 10%</td>
<td>Yes</td>
</tr>
<tr>
<td>Nickel</td>
<td>CAS: 7440-02-0</td>
<td>&lt; 46%</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Section 4: First-Aid Measures

Description of first aid measures

Inhalation • IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.

Skin • If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash before reuse.

Eye • IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Ingestion • Low hazard for usual industrial or commercial handling. Get medical attention if symptoms occur.

Most important symptoms and effects, both acute and delayed
• Refer to Section 11 - Toxicological Information.

Section 5: Fire-Fighting Measures

5.1 Extinguishing Media
Suitable extinguishing media: Product as supplied in solid form is non-combustible. Use firefighting measures for surrounding materials. Use Class D fire extinguisher for fires involving metal dusts. Do not use water on product if it has become molten.

5.2 Special hazards arising from the substance or mixture
Vapors and fumes containing metals (or their oxides) may be formed at temperature above the melting point. Exposure to unknown concentrations of vapors and fumes require the wearing of a pressure-demand airline respirator or pressure-demand self-contained breathing apparatus (SCBA).

5.3 Advice for firefighters
Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information
Product as supplied in solid form is not classified as a U.S. Department of Transportation hazardous material.

Section 6 - Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

<table>
<thead>
<tr>
<th>Personal precautions</th>
<th>No data available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency Procedures</td>
<td>Solid form: Not applicable. In dusty environment, ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Clean up using methods which avoid dust generation. During cleanup avoid inhalation and skin and eye contact. Provide local exhaust or dilution ventilation as required.</td>
</tr>
</tbody>
</table>

6.2 Environmental precautions
No data available

6.3 Methods and material for containment and cleaning up
Pick up and arrange disposal without creating dust. Vacuum type equipment of effective for control and cleanup. Vacuum and ventilation equipment should have HEPA type filters where appropriate. Material should be swept or vacuumed and placed into appropriate disposable containers. Keep in suitable, closed containers for disposal.

Section 7 - Handling and Storage
7.1 Precautions for safe handling
Stable under normal temperature and pressure. Do not breathe (dust or fumes). Do not use in areas without adequate ventilation. Do not use sparking tools. Keep away from heat and ignition sources – No Smoking. Use good safety and industrial hygiene practices.

7.2 Conditions for safe storage, including any incompatibilities
Store away from strong acids and oxidizers.

Section 8 - Exposure Controls/Personal Protection

Control parameters
Exposure Limits/Guidelines • No data available on product. Individual elements may be emitted during processing.

<table>
<thead>
<tr>
<th>Intentionally added elements only</th>
<th>ACGIH – TWA (mg/m³)</th>
<th>NIOSH – IDLH (mg/m³)</th>
<th>OSHA – TWA (mg/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copper (fume)</td>
<td>0.2</td>
<td>100</td>
<td>0.1</td>
</tr>
<tr>
<td>Copper (dust and mist)</td>
<td>1.0</td>
<td>100</td>
<td>1.0</td>
</tr>
<tr>
<td>Nickel (metal and insoluble compounds)</td>
<td>1.5 (as Ni)</td>
<td>10</td>
<td>1.0</td>
</tr>
<tr>
<td>Manganese (compounds and fume)</td>
<td>0.2</td>
<td>500</td>
<td>5.0</td>
</tr>
<tr>
<td>Iron (oxide fume)</td>
<td>5.0</td>
<td>2500</td>
<td>10.0</td>
</tr>
<tr>
<td>Silicon (total dust)</td>
<td>10.0</td>
<td>-</td>
<td>15.0</td>
</tr>
<tr>
<td>Silicon (respirable fraction)</td>
<td>-</td>
<td>-</td>
<td>5.0</td>
</tr>
<tr>
<td>Phosphorus (yellow)</td>
<td>0.1</td>
<td>5</td>
<td>0.1</td>
</tr>
<tr>
<td>Zinc (oxide fume)</td>
<td>5.0</td>
<td>500</td>
<td>5.0</td>
</tr>
<tr>
<td>Zinc (oxide total dust)</td>
<td>10.0</td>
<td>500</td>
<td>15.0</td>
</tr>
<tr>
<td>Zinc (oxide dust respirable fraction)</td>
<td>-</td>
<td>500</td>
<td>5.0</td>
</tr>
<tr>
<td>Tin (inorganic compounds except tin oxide)</td>
<td>2.0</td>
<td>100</td>
<td>2.0</td>
</tr>
<tr>
<td>Tin (oxide)</td>
<td>2.0</td>
<td>100</td>
<td>-</td>
</tr>
</tbody>
</table>

Exposure controls
Engineering Measures/Controls • Adequate ventilation systems as needed to control concentrations of airborne contaminants below applicable threshold limit values. Use only appropriately classified electrical equipment.

Personal Protective Equipment
Pictograms

Respiratory • Use of a NIOSH/MSHA approved dust respirator is recommended where airborne dust levels exceed appropriate PELs and TLVs.

Eye/Face • Wear protective eyewear (goggles, face shield, or safety glasses).

Hands • Wear protective gloves - suitable for protection against physical injury and skin contact during handling and processing.

Skin/Body • Wear protective clothing - such as long sleeves and or coveralls during processing.

General Industrial Hygiene Considerations • Practice good housekeeping and avoid creating/breathing dust. Do not allow dust to collect. Maintain, clean, and fit test respirators in accordance with OSHA regulations. Provide readily accessible eyewash stations.

Environmental Exposure Controls • No data available

Section 9 - Physical and Chemical Properties

Information on Physical and Chemical Properties
Appearance and Odor : Golden Yellow to Brown/Bronze Solid
Boiling Point : Not available
Melting Point : 880°C - 1150°C (1616°F – 2102°F)
pH : Not applicable
Density : 8.33 – 8.94 г/см³ (0.3 – 0.32 lb/in³)
Auto-Ignition Temperature : Not applicable
Viscosity : Not applicable
Vapor Pressure : Not applicable
Vapor Density (air = 1) : Not applicable
% Volatile, by volume : None
Solubility in Water : Insoluble
Evaporation Rate (butyl acetate = 1) : <1
Other Physical and Chemical Data : None

---

**Section 10: Stability and Reactivity**

**Reactivity**
- No dangerous reaction known under conditions of normal use.

**Chemical stability**
- Stable under recommended storage conditions.

**Possibility of hazardous reactions**
- No data available.

**Conditions to avoid**
- Incompatible materials.

**Incompatible materials**
- Do not let molten material come into contact with water. Reacts with strong acids and may form hydrogen gas. Do not store near strong oxidizers. Reacts with some acids and caustic solutions to produce hydrogen gas. Hydrogen gas can be an explosion hazard. Avoid contact with oxidizers. Reacts violently with acetylene, ammonium nitrate, bromates, chlorates, iodates, chlorine, chlorine trifluoride, ethylene oxide, fluorine, hydrogen peroxide, hydrazine mononitrate, hydrogen sulfide, hydrazoic acid, lead azide, potassium peroxide, sodium azide and sodium peroxide.

**Hazardous decomposition products**
- Hazardous decomposition may occur during certain operations such as welding, burning, melting or hot rolling, generating hazardous metal fumes.

---

**Section 11 - Toxicological Information**

**Information on toxicological effects**
- **Acute toxicity**: Harmful if swallowed
- **Skin corrosion/irritation**: No data available
- **Serious eye damage/eye irritation**: No data available
- **Respiratory or skin sensitization**: No data available
- **Germ cell mutagenicity**: No data available
- **Carcinogenicity**: Nickel – NTP Reasonably Anticipated to be Human Carcinogen
  Nickel – IARC Group 2B (possibly carcinogenic to human)

**Reproductive toxicity**: No data available
**Specific target organ toxicity (single exposure)**: No data available
**Specific target organ toxicity (repeated exposure)**: No data available
**Aspiration hazard**: No data available

**Target Organs**
- Skin/Dermal, Lungs, Central Nervous System (CNS), Liver/Hepatotoxic, Kidney/Nephrotoxin, Metal Fume Fever, Nasal Cavity

Nickel is listed by the State of California as a substance known to cause cancer under Proposition 65, as of June 1, 2015.
Route(s) of entry/exposure: Dermal contact with and/or inhalation of dust or fume during welding, cutting, grinding, burning, and other operations. Overexposure to dust and/or fume generated during processing can pose health hazards as defined below.

Medical Conditions Aggravated by Exposure: May aggravate asthma or other respiratory disorders. May aggravate skin disorders.

Potential Health Effects

Inhalation

Acute (Immediate)
- May cause respiratory irritation. May cause sensitization. May cause metal fume fever.

Chronic (Delayed)
- Prolonged inhalation of dust or fume may cause lung, central nervous system, liver, kidney and nasal cavity damage.

Skin

Acute (Immediate)
- Causes skin irritation. May cause skin sensitization. Symptoms include redness, and skin rash.

Chronic (Delayed)
- Repeated and prolonged exposure may cause irritation. Repeated and prolonged exposure may cause sensitization.

Eye

Acute (Immediate)
- Exposure to dust and fumes may cause irritation. Exposure to fumes and dusts may cause sensitization and conjunctivitis.

Chronic (Delayed)
- Repeated and prolonged exposure to dust and fumes may cause irritation. Repeated and prolonged exposure to dusts and fumes may cause sensitization and conjunctivitis.

Ingestion

Acute (Immediate)
- Low hazard for usual industrial or commercial handling. Gastrointestinal disturbances including nausea and vomiting may result from ingestion of dusts.

Chronic (Delayed)
- Low hazard for usual industrial or commercial handling. Repeated and prolonged exposure may cause gastrointestinal disturbances including nausea and vomiting.

Carcinogenic Effects

- No carcinogenic effects resulting from exposure to stainless steels have been reported, either in epidemiological studies or in tests with animals. Stainless steel does contain carcinogenic components above the cut-off threshold amount of 0.1% (nickel and cobalt) and therefore stainless steel (as dusts and fumes) must be classified as a carcinogen.

<table>
<thead>
<tr>
<th>Carcinogenic Effects</th>
<th>CAS</th>
<th>IARC</th>
<th>NTP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nickel</td>
<td>7440-02-0</td>
<td>Group 2B-Possible Carcinogen</td>
<td>Reasonably Anticipated to be Human Carcinogen</td>
</tr>
<tr>
<td>Nickel as Nickel Compounds</td>
<td>NDA</td>
<td>Group 1-Carcinogenic</td>
<td>Known Human Carcinogen</td>
</tr>
</tbody>
</table>

Section 12 - Ecological Information

Toxicity
- Copper is very toxic to aquatic organisms and may cause long-term adverse effects in the aquatic environment. Most heavy metals can affect microorganisms at concentrations found in the environment. However, the toxicity of metal depends on the physiochemical characteristics of the environment where it is deposited.

As with all foreign substances do not allow to enter the storm drainage systems.

Persistence and degradability
- No data available

Bioaccumulative potential
- No data available

Mobility in Soil
Section 13 - Disposal Considerations

Waste treatment methods

Product waste

- Product as shipped is not considered hazardous and should be recycled. Product dusts from processing may be classified as hazardous waste, as defined in 40 CFR 261 as well as state and/or local regulation. Solid waste generated from product processing should be classified by a competent environmental professional and disposed, processed or recycled in accordance with federal, state and local regulation.

Packaging waste

- Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Section 14 - Transport Information

Component Marine Pollutants

This product contains one or more of the following chemicals required by U.S. DOT to be identified as marine pollutants.

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS No.</th>
<th>DOT regulated severe marine pollutant (powder)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copper</td>
<td>7440-50-8</td>
<td>DOT regulated severe marine pollutant (powder)</td>
</tr>
</tbody>
</table>

DOT Information

Shipping Name : Not Regulated

IATA Information

Shipping Name : Not Regulated

ICAO Information

Shipping Name : Not Regulated

IMDG Information

Shipping Name : Not Regulated

Section 15 - Regulatory Information

NOTE: The regulatory information contained in this Safety Data Sheet (SDS) is not intended to be comprehensive. Consult country, federal, state and local laws, rule and regulations before use.

California Proposition 65: This product contains chemicals (nickel) known to the State of California to cause cancer.

Pennsylvania Hazardous Substance List: Copper, Manganese, Nickel, Phosphorus, Silicon, Tin, Iron oxide dust and Zinc.

New Jersey Hazardous Substance List: Copper, Manganese, Nickel, Phosphorus, Silicon, Tin, Iron oxide dust and Zinc.

Massachusetts Substance List: Copper, Manganese, Nickel, Phosphorus, Silicon, Tin, Iron oxide dust and Zinc.

The Resource Conservation and Recovery Act (RCRA)

Product is NOT a Hazardous Waste when disposed.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)

US EPA allows a reporting exception for massive forms of certain solid metals (antimony, arsenic, beryllium, cadmium, chromium, copper, lead, nickel, selenium, silver, thallium and zinc) when diameter of the released metal equals or exceeds 100 micrometers (0.004 inches) (50 FR 13461, April 4, 1985). The Agency deliberately set the cutoff size 10 times larger than the maximum size considered by EPA to be respirable dust to ensure that the government would be notified of releases containing small, inhalable particles of metals.

Superfund Amendments and Reauthorization Act of 1986 (SARA), Title III

Section 311/312 HAZARD CATEGORIES: Immediate Health Effect (acute), Delayed Health Effect (chronic)

Section 313 Supplier Notification
This product contains EPCRA Section 313 chemicals subject to the reporting requirements of the Emergency Planning and Community Right-to-Know Act of 1986 (40 CFR 372) as indicated below.

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS No.</th>
<th>Concentration (%wt)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copper</td>
<td>7440-50-8</td>
<td>See Section 3</td>
</tr>
<tr>
<td>Manganese</td>
<td>7439-96-5</td>
<td>See Section 3</td>
</tr>
<tr>
<td>Nickel</td>
<td>7440-02-0</td>
<td>See Section 3</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>7723-14-0</td>
<td>See Section 3</td>
</tr>
<tr>
<td>Zinc</td>
<td>7440-66-6</td>
<td>See Section 3</td>
</tr>
</tbody>
</table>

Component Analysis – WHMIS IDL
The following components are identified under the Canadian Hazardous Product Act Ingredient Disclosure Act List:

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS No.</th>
<th>Minimum Concentration (%wt)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copper</td>
<td>7440-50-8</td>
<td>1%</td>
</tr>
<tr>
<td>Manganese</td>
<td>7439-96-5</td>
<td>1%</td>
</tr>
<tr>
<td>Nickel</td>
<td>7440-02-0</td>
<td>0.1%</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>7723-14-0</td>
<td>1%</td>
</tr>
<tr>
<td>Zinc</td>
<td>7440-66-6</td>
<td>1%</td>
</tr>
<tr>
<td>Iron</td>
<td>7439-89-6</td>
<td>1%</td>
</tr>
<tr>
<td>Silicon</td>
<td>7440-21-3</td>
<td>1%</td>
</tr>
<tr>
<td>Tin</td>
<td>7440-31-5</td>
<td>1%</td>
</tr>
</tbody>
</table>

Component Analysis – Inventory
The following components are identified under the following inventory lists:

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS No.</th>
<th>TSCA</th>
<th>CAN</th>
<th>EEC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copper</td>
<td>7440-50-8</td>
<td>Yes</td>
<td>DSL</td>
<td>EINECS</td>
</tr>
<tr>
<td>Manganese</td>
<td>7439-96-5</td>
<td>Yes</td>
<td>DSL</td>
<td>EINECS</td>
</tr>
<tr>
<td>Nickel</td>
<td>7440-02-0</td>
<td>Yes</td>
<td>DSL</td>
<td>EINECS</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>7723-14-0</td>
<td>Yes</td>
<td>DSL</td>
<td>EINECS</td>
</tr>
<tr>
<td>Zinc</td>
<td>7440-66-6</td>
<td>Yes</td>
<td>DSL</td>
<td>EINECS</td>
</tr>
<tr>
<td>Iron</td>
<td>7439-89-6</td>
<td>Yes</td>
<td>DSL</td>
<td>EINECS</td>
</tr>
<tr>
<td>Tin</td>
<td>7440-31-5</td>
<td>Yes</td>
<td>DSL</td>
<td>EINECS</td>
</tr>
<tr>
<td>Silicon</td>
<td>7440-21-3</td>
<td>Yes</td>
<td>DSL</td>
<td>EINECS</td>
</tr>
</tbody>
</table>

Section 16 - Other Information

Classification method for mixtures
- Cut-off values/concentration limits of ingredients.

Last Revision Date
- No data available

Preparation Date
- June 8, 2015

Disclaimer/Statement of Liability
- This information is taken from sources or based upon data believed to be reliable. However, Central Wire Industries Ltd makes no warranty as to the absolute correctness or sufficiency of any of the foregoing information or that additional or other measures may not be required under particular conditions.