Section 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product Identifier
- Product form: Filament
- Trade name: Metallic Copper HTPLA
- Product code: HTPMxxxx-BOM

1.2 Relevant identified uses of the substance or mixture and uses advised against
- For use in 3D printers at recommended temperatures

1.3 Details of the supplier of the safety data sheet
- Proto Plant
  12001 NE 60th Way, B-2
  Vancouver, WA 98682
- www.proto-pasta.com

  Emergency telephone number: 503-877-5268

Section 2: Hazards identification

2.1 Classification of the substance or mixture
- No classified

2.2 Label elements
- No labeling applicable

2.3 Other hazards
- No additional information applicable

2.4 Unknown acute toxicity (GHS US)
- Not applicable

Section 3: Composition/Information on ingredients

3.1 Substances/Mixtures

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS No</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polyactide resin</td>
<td>9051-89-2</td>
<td>&gt;98</td>
</tr>
<tr>
<td>Mica</td>
<td>12001-26-2</td>
<td>&lt;1.11</td>
</tr>
<tr>
<td>Titanium dioxide</td>
<td>13463-67-7</td>
<td>&lt;0.285</td>
</tr>
<tr>
<td>Iron oxide</td>
<td>1309-37-1</td>
<td>&lt;0.225</td>
</tr>
<tr>
<td>Colorant</td>
<td>n/a</td>
<td>&lt;0.35</td>
</tr>
</tbody>
</table>

Section 4: First-aid measures

4.1 Description of first-aid measures

- First-aid measures after
  - Inhalation
    Most to fresh air. If irritation persists, seek medical attention.
  - Skin contact
    Wash with soap and water. For thermal burns, immediately flush with cold water. Do not attempt to remove polymer from skin. Obtain medical attention.
Eye contact
First aid not likely required. Flush with water. Consult physician if symptoms persist.

Ingestion
Obtain immediate medical attention. For poison emergency in the US, call 1-800-222-1222

4.2 Most important symptoms and effects, both acute and delayed
No additional information available

4.3 Indication of any immediate medical attention and special treatment needed
Treat symptomatically

Section 5: Firefighting measures
5.1 Extinguishing media
Suitable extinguishing data
- Water spray, dry powder, foam

Unsuitable extinguishing data
- None known

5.2 Special hazards arising from the substance or mixture
Burning produces obnoxious and toxic fumes

5.3 Advice for firefighters
As in any fire, wear self-contained breathing apparatus and full protective gear

Section 6: Accidental release measures
6.1 Personal precautions, protective equipment, and emergency procedures
6.1.1 For non-emergency personnel
Sweep up to prevent slipping hazard

6.1.2 For emergency responders
Wear protective gear

6.2 Environmental precautions
Do not flush into surface water or sanitary sewer system. Do not allow material to contaminate ground water systems.

6.3 Methods and material for containment and cleaning up
Clean up promptly with scoop or vacuum. Sweep up and shovel into suitable containers for disposal.

6.4 Reference to other sections
No additional information available

Section 7: Handling and Storage
7.1 Precautions for safe handling
Precautions for safe handling
- Ensure good ventilation of the work station. Wear personal protective equipment.

Hygiene measures
- Do not eat, drink, or smoke when using this product. Always wash hands after handling the product.

7.2 Conditions for safe storage, including any incompatibles
Store in a well-ventilated place. Keep cool.
7.3 Specific end use(s)
No additional information available

Section 8: Exposure controls/personal protection

8.1 Control parameters
Where reasonably practicable, use local exhaust ventilation and good general extraction. Provide appropriate exhaust ventilation in places where dust is formed.

8.2 Exposure controls
- Appropriate engineering controls: Ensure good ventilation of the work station
- Hand protection: Protective gloves
- Eye protection: Safety glasses
- Skin and body protection: Impervious clothing
- Respiratory protection: In case of insufficient ventilation, wear suitable respiratory equipment
- Environmental exposure controls: Avoid release into the environment

Section 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>Solid</td>
</tr>
<tr>
<td>Appearance</td>
<td>Monofilament plastic, thin strand</td>
</tr>
<tr>
<td>Color</td>
<td>Metallic copper</td>
</tr>
<tr>
<td>Odor</td>
<td>Light, sweet odor during processing; none at room temperature</td>
</tr>
<tr>
<td>Odor threshold</td>
<td>Not applicable</td>
</tr>
<tr>
<td>pH</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Melting point</td>
<td>195-225°C</td>
</tr>
<tr>
<td>Freezing point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Boiling point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flash point</td>
<td>Not determined</td>
</tr>
<tr>
<td>Relative evaporation rate</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flammability</td>
<td>Combustible if heated</td>
</tr>
<tr>
<td>Explosion limits</td>
<td>Not determined</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>Not determined</td>
</tr>
<tr>
<td>Relative density</td>
<td>1.2 g/cc</td>
</tr>
<tr>
<td>Relative vapor density at 20°C</td>
<td>Not determined</td>
</tr>
<tr>
<td>Solubility</td>
<td>Insoluble</td>
</tr>
<tr>
<td>Log Pow</td>
<td>Not determined</td>
</tr>
<tr>
<td>Log Kow</td>
<td>Not determined</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>300-400°C</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>250°C</td>
</tr>
<tr>
<td>Viscosity</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Viscosity, kinematic</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>
9.2 Other information

No other information available

Section 10: Stability and reactivity

10.1 Reactivity
Stable when stored as recommended

10.2 Chemical Stability
Stable when stored/used as recommended

10.3 Possibility of hazardous reactions
None known

10.4 Conditions to avoid
Temperatures above 230°C

10.5 Incompatible materials
Oxidizing agents, strong acids, strong bases.

10.6 Hazardous decomposition products
Burning produces obnoxious and toxic fumes. Aldehydes, carbon monoxide, carbon dioxide

Section 11: Toxicological information

11.1 Information on toxicological effects
Acute toxicity
None known
Skin corrosion/irritation
Contact with molten material may cause thermal burns
Serious eye damage/irritation
Contact with dust/fumes may cause irritation
Respiratory or skin sensitization
None known
Germ cell mutagenicity
Not determined
Carcinogenicity
Suspected of causing cancer
Reproductive toxicity
Not classified
STOT-single exposure
Not determined
STOT-repeated exposure
Not determined
Aspiration hazard
None known

Section 12: Ecological information

12.1 Toxicity
Not determined

12.2 Persistence and degradability
Not determined

12.3 Bioaccumulative potential
Not determined

12.4 Mobility in soil
Not determined

12.5 Results of PBT and vPvB assessment
Not applicable

Viscosity, dynamic
Not applicable
12.6  Other adverse effects
No other information available

Section 13: Disposal considerations
13.1  Waste treatment methods
In accordance with local and national regulations. Do not contaminate ponds, waterways, or ditches with chemical or used container. For recycling, contact local waste disposal centers.

Section 14: Transport information
Not regulated under the US Department of Transportation

Section 15: Regulatory information
15.1  US Federal regulations
SARA 313: None
IARC: None
15.2  International regulations
Components are in compliance and/or are listed
15.3  US State regulations
Prop 65: This product contains chemicals, Carbon Black and Titanium Dioxide, which are known to the State of CA to cause cancer when unbound particles are inhaled.
Right to Know Hazardous Substance List-New Jersey: None

Section 16: Other information
Prepared by  Protoplant Inc
Reason for Revision  GHS compliance
Revision Date  11/7/2018

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