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

1.1 Product Identifier
   - Product form: Filament
   - Trade name: Copper Composite Fiber HTPLA
   - Product code: HTPCxxxx-CU

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;37.4</td>
</tr>
<tr>
<td>Copper powder</td>
<td>7440-50-8</td>
<td>&lt;60</td>
</tr>
<tr>
<td>Polymer</td>
<td>n/a</td>
<td>&lt;2.6</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
   Hygiene measures
   Ensure good ventilation of the work station. Wear personal protective equipment.
   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>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>185-215°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 applicable</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>2.14 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>
<tr>
<td>Viscosity, dynamic</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: Not classified
- 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

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: None
Right to Know Hazardous Substance List-New Jersey: None

Section 16: Other information

Prepared by Protoplan Inc
Reason for Revision GHS compliance
Revision Date 10/05/2018

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