SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Proto-pasta Stainless Steel PLA
SYNONYMS: Proto-pasta SSPLA
PRODUCT CODES: SSP1XXXX

RECOMMENDED USE: For use in 3D printers at recommended temperatures

MANUFACTURER: Proto Plant
ADDRESS: 5601 East 18Th Street #102
            Vancouver, WA 98661
EMERGENCY PHONE: 503-877-5268
OTHER CALLS: 503-877-5268
HOMEPAGE: www.protoplant.com

CONTACTS: Dustin Cram – Chief Engineer dustin@protoplant.com

SECTION 2: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: This is a polymeric compound. All ingredients are encapsulated by the polymer and present no likelihood of exposure under normal conditions of processing and handling. Dust may be generated during polishing, sanding, or machining. Appropriate PPE must be worn for these activities and the release of hazardous dust is possible.

GHS-US CLASSIFICATION

<table>
<thead>
<tr>
<th>SKIN SENSITIZATION:</th>
<th>AS SHIPPED</th>
<th>GROUND/POLISHED/MACHINED</th>
</tr>
</thead>
<tbody>
<tr>
<td>NONE</td>
<td>CATEGORY 1</td>
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</tr>
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</table>

<table>
<thead>
<tr>
<th>CARCINOGENICITY</th>
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<tr>
<td>NONE</td>
<td>CATEGORY 1A</td>
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</table>

<table>
<thead>
<tr>
<th>SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE):</th>
<th>AS SHIPPED</th>
<th>GROUND/POLISHED/MACHINED</th>
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</thead>
<tbody>
<tr>
<td>NONE</td>
<td>CATEGORY 1</td>
<td></td>
</tr>
<tr>
<td>COMBUSTIBLE DUST</td>
<td>CLASSIFIED</td>
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</tr>
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</table>

<table>
<thead>
<tr>
<th>SIGNAL WORD:</th>
<th>AS SHIPPED</th>
<th>GROUND/POLISHED/MACHINED</th>
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</thead>
<tbody>
<tr>
<td>NONE</td>
<td>DANGER</td>
<td></td>
</tr>
<tr>
<td>HAZARD STATEMENT:</td>
<td>AS SHIPPED</td>
<td>GROUND/POLISHED/MACHINED</td>
</tr>
<tr>
<td>NONE</td>
<td>May cause an allergic skin reaction</td>
<td></td>
</tr>
<tr>
<td></td>
<td>May cause cancer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Causes damage to organs through prolonged or repeated exposure</td>
<td></td>
</tr>
<tr>
<td></td>
<td>May form combustible dust concentrations in air</td>
<td></td>
</tr>
</tbody>
</table>

LABEL ELEMENTS: NONE
SAFETY DATA SHEET
PROTO-PASTA STAINLESS STEEL PLA

PRECAUTIONARY STATEMENT:

AS SHIPPED: NONE

IF GROUND/POLISHED/MACHINED

Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Contaminated work clothing should not be allowed out of the workplace
Wear protective gloves
Do not breathe dust/fume/gas/mist/vapors/spray
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when handling dust generated from this product

Precautionary Statements - Response
IF exposed or concerned: Get medical advice/attention
IF ON SKIN: Wash with plenty of soap and water
If skin irritation or rash occurs: Get medical advice/attention
Wash contaminated clothing before reuse

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

HAZARDS THAT DO NOT RESULT IN CLASSIFICATION

EYES: Solid/dust may cause irritation due to mechanical action. Dust will not be generated under normal use conditions.

SKIN: Filament is not likely to cause irritation.
Contact with molten material may cause thermal burns.

BURNS: Molten material will cause thermal burns, avoid contact.

INHALATION: Processing fumes may cause irritation to the respiratory tract, use in well ventilated areas only.

CHRONIC HEALTH HAZARDS: None known for this compound.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>INGREDIENTS</th>
<th>CAS NO.</th>
<th>% WT</th>
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<tbody>
<tr>
<td>Polylactide resin</td>
<td>9051-89-2</td>
<td>&gt;30</td>
</tr>
<tr>
<td>Iron</td>
<td>7439-89-6</td>
<td>43-52</td>
</tr>
<tr>
<td>Chromium</td>
<td>7440-47-3</td>
<td>10-11</td>
</tr>
<tr>
<td>Nickel Powder</td>
<td>7440-02-0</td>
<td>6-14</td>
</tr>
<tr>
<td>Molybdenum</td>
<td>7439-98-7</td>
<td>1-1.5</td>
</tr>
<tr>
<td>Silicon</td>
<td>7440-21-3</td>
<td>.3-.6</td>
</tr>
</tbody>
</table>

SECTION 4: FIRST AID MEASURES
SAFETY DATA SHEET
PROTO-PASTA STAINLESS STEEL PLA

EYES:
First Aid not likely required. Flush with water. Consult physician if symptoms persist.

SKIN:
Wash with soap and water. For thermal burns, immediately flush with cold water. Do not attempt to remove polymer from skin. Obtain medical attention.

INGESTION:
Obtain immediate medical attention. For a poison emergency in the U.S. call 1-800-222-1222.

INHALATION:
Leave exposed area and seek fresh air. If irritation persists, seek medical attention. When generating dust or processing use appropriate ventilation and protective equipment.

NOTES TO PHYSICIANS OR FIRST AID PROVIDERS:
Treat symptomatically.

SECTION 5: FIRE-FIGHTING MEASURES

FLAMMABILITY CLASS: 1

EXTINGUISHING MEDIA:
Foam. Water. Carbon Dioxide (CO2). Dry Chemical. Alcohol resistant foams are preferred if available. General purpose synthetic foams (including AFFF) or protein foams may function, but much less effectively.

UNSUITABLE EXTINGUISHING MEDIA:
None Known

SPECIAL FIREFIGHTING PROCEDURES:
Persons exposed to products of combustion should wear NIOSH approved self contained breathing apparatus and full protective equipment.

UNUSUAL FIRE & EXPLOSION HAZARDS:
This compound has no unusual fire or explosion hazards.

SECTION 6: ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS:
Sweep up scrap and store material neatly to prevent slipping hazard.

ENVIRONMENTAL PRECAUTIONS:
Do not flush into surface water or sanitary sewer system. Do not allow material to contaminate ground water system.

METHODS FOR CLEANING UP:
Cut filament into short pieces to prevent tripping. Dispose of in suitable containers.

SECTION 7: HANDLING AND STORAGE
PRECAUTIONS:
Proper purging and shut down procedures should be followed to avoid overheating of this compound. Use only at recommended printing temperatures. Product as shipped is not a combustible dust. Mechanical abrasion such as cutting, sanding, and grinding can release metal powder which may cause skin, eye, and respiratory irritation. Use appropriate exposure controls (Section 8)

HANDLING AND STORAGE:
Store in a cool, dry place. Product as shipped is not a combustible dust. Mechanical handling can cause the formation of dusts. To reduce the risk for dust explosion do not permit dust to accumulate.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

<table>
<thead>
<tr>
<th>Substance</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
<th>NIOSH IDLH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron</td>
<td>Nuisance dust: 15 mg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chromium</td>
<td>TWA: 0.5 mg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chromium</td>
<td>OSHA PEL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chromium</td>
<td>TWA: 1 mg/m³; (vacated) TWA: 1 mg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chromium</td>
<td>IDLH: 250 mg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chromium</td>
<td>NIOSH IDLH</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chromium</td>
<td>TWA: 0.5 mg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nickel Powder</td>
<td>ACGIH TLV</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Molybdenum</td>
<td>TWA: 10 mg/m³; (vacated) TWA 1 mg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Molybdenum</td>
<td>OSHA PEL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Molybdenum</td>
<td>TWA: 0.015 mg/m³ except Nickel carbyl Ni</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Molybdenum</td>
<td>NIOSH IDLH</td>
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<td></td>
</tr>
<tr>
<td>Molybdenum</td>
<td>TWA: 10 mg/m³ IDLH: 5000 mg/m³</td>
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<td></td>
</tr>
<tr>
<td>Molybdenum</td>
<td>Silicon</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Silicon</td>
<td>ACGIH TLV</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Silicon</td>
<td>TWA: 15 mg/m³ total dust</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Silicon</td>
<td>TWA: 5 mg/m³; (vacated) TWA: 10 mg/m³</td>
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<td></td>
</tr>
<tr>
<td>Silicon</td>
<td>OSHA PEL</td>
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<td></td>
</tr>
<tr>
<td>Silicon</td>
<td>TWA: 10 mg/m³ total dust</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Silicon</td>
<td>TWA: 5 mg/m³; (vacated) TWA: 5 mg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Silicon</td>
<td>NIOSH IDLH</td>
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</tr>
<tr>
<td>Silicon</td>
<td>TWA: 10 mg/m³ total dust</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Silicon</td>
<td>TWA: 5 mg/m³; (vacated) TWA: 5 mg/m³</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ENGINEERING CONTROLS:
Ensure adequate ventilation on workstation. Avoid dust build up from mechanical abrasion.

VENTILATION:
Local exhaust is preferred.

RESPIRATORY PROTECTION:
A NIOSH approved respirator is recommended for protection against processing fumes, or from dust generated from grinding, sanding, or sawing operations.

**EYE PROTECTION:**
Safety glasses with side shields are recommended.

**SKIN PROTECTION:**
Impervious clothing. For prolonged handling, canvas or cotton gloves are recommended.

**WORK HYGIENIC PRACTICES:**
Wash hands and dry hands thoroughly before and after handling product.

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**SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**

**APPEARANCE:** light gray, textured/rough, thin strand

**ODOR:** Light sweet odor during processing, no odor at room temperature

**ODOR THRESHOLD:** Not determined

**pH:** Not Applicable

**MELTING RANGE:** 150C-180C

**BOILING POINT/RANGE:** Not applicable

**FLASH POINT:** Not Determined

**EVAPORATION RATE:** Not determined

**FLAMMABILITY:** Combustible if heated

**UPPER/LOWER FLAMMABILITY OR EXPLOSIVE LIMITS:** Not Determined

**VAPOR PRESSURE:** Not Determined

**VAPOR DENSITY:** Not Determined

**DENSITY:** 2.7 g/cc

**WATER SOLUBILITY:** Insoluble

**SOLUBILITY IN OTHER SOLVENTS:** Not determined

**PARTITION COEFFICIENT: N-OCTANOL/WATER:** Not Determined

**AUTO-IGNITION TEMPERATURE:** 300C-400C

**DECOMPOSITION TEMPERATURE:** 482F (250C)

**VISCOSITY:** Not applicable
SECTION 10: STABILITY AND REACTIVITY

REACTIVITY: Stable when stored as recommended

CONDITIONS TO AVOID: Temperatures above 446°F (230 °C).

MATERIALS TO AVOID: Oxidizing agents. Strong bases.


Polymerization: Not applicable

SECTION 11: TOXICOLOGICAL INFORMATION

PRINCIPLE ROUTES OF EXPOSURE: Eye contact, Skin contact, Inhalation, Ingestion.

ACUTE TOXICITY: None Known

SKIN CORROSION/IRRITATION: Contact with dust/fumes may cause irritation

SERIOUS EYE DAMAGE/IRRITATION: Contact with dust/fumes may cause irritation

RESPIRATORY OR SKIN SENSITIZATION: None Known

GERM CELL MUTAGENICITY: Not Determined

CARCINOGENICITY: Not Determined

REPRODUCTIVE TOXICITY: Not Determined

STOT-SINGLE EXPOSURE: Not Determined

STOT-SINGLE EXPOSURE: Not Determined

ASPIRATION HAZARD: Not Determined

SECTION 12: ECOLOGICAL INFORMATION

ECOTOXICITY EFFECTS: Not Determined

DEGRADABILITY AND PERSISTENCE: Not Determined

BIOACCUMULATIVE POTENTIAL: Not Determined

MOBILITY IN SOIL: Not Determined

SECTION 13: DISPOSAL CONSIDERATIONS
WASTE DISPOSAL METHOD: 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

SECTION 14 NOTES: Not regulated under the US Department of Transportation.

SECTION 15: REGULATORY INFORMATION

This product contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right To Know Act of 1986 and of 40 CFR 372:

Chromium 7440-47-3
Nickel Powder 7440-02-0

The end user must determine whether a report is required to EPA for any amounts of this material disposed of or otherwise released to into the environment.

SECTION 16: OTHER INFORMATION

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