



Material Safety Datasheet

Bronze Filamet™

Identification of the material

Bronze Filamet™

Typical use of the material

This material is suitable for producing metal parts by extrusion, injection-moulding, or 3D printing.

Identification of the company

This material has been produced by The Virtual Foundry, LLC

2. Hazards Identification

2.1 Classification of the substance or mixture

2.1.1. Directive 67/548/EEC & Directive 1999/45/EC Component Bronze powder classified; R50 – very toxic to aquatic organisms.

2.1.2. Regulation (EC) No. 1272/2008 (CLP) Component Bronze powder classified; Hazard statement H400 – very toxic to aquatic life.

2.2 Label elements: GHS09

Note: The components of this product are embedded in a polymer matrix and are therefore considered to present a negligible exposure risk under normal conditions of processing and handling, unless they are liberated during processing (fumes from melting, dusts). No toxicological studies have been performed so far on this compound (polymer mixture). This material is NOT intended to be used for medical applications, and NOT intended to be used for applications in contact with food and/or drinking water.

2.3. Other hazards

Material processing under extreme conditions above 240°C may result in fumes irritating to the eyes, nose and throat. Furthermore, there is a danger of burns while handling the heated or molten product.

3. Composition/Information on Ingredients

Chemical nature: Biodegradable thermoplastic PLA (PolyLactic Acid) blend, bronze powder-filled, with proprietary additivation.

4. First Aid Measures

If inhaled After inhalation of decomposition products, bring the affected person to a source of fresh air and keep calm. Provide medical aid.

On skin contact Areas affected by molten material should be quickly placed under cold running water.

Burns caused by molten material require hospital treatment.

On contact with eyes In case of contact with eyes, rinse immediately for at least 15 minutes with plenty of water. If irritation develops, seek immediate medical attention.

On ingestion Rinse mouth and then drink plenty of water. If difficulties occur, seek medical attention.

Note to the physician Treatment: Treat according to symptoms (decontamination, vital functions), no known specific antidote.

5. Fire Fighting Measures

Suitable extinguishing media Dry extinguishing media, foam, carbon dioxide, water spray or fog.
Specific hazards Carbon dioxide CO₂, carbon monoxide CO, hydrocarbon fragments. These substances/groups of substances mentioned can be released in case of fire.
Special protective equipment Full protective clothing and self contained breathing apparatus.
Further information Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.

6. Accidental Release Measures Personal Precautions

Avoid inhalation. Sources of ignition should be kept well clear. Methods for cleaning up or taking up Sweep/shovel up. Avoid raising dust. Ensure adequate ventilation.
Additional information High risk of slipping due to leakage/spillage of product. Avoid ingress of material into sewer systems.

7. Handling and Storage Handling

Processing machines must be fitted with local exhaust ventilation. Earth/ground all equipment.
Protection against fire and explosion Avoid dust formation. Dust can form an explosive mixture with air. Provide exhaust ventilation. When the product is ground (chopped), dust explosion regulations should be noted.
Storage Protect against moisture. Store material in dry rooms and always carefully seal again after portions of material have been withdrawn. Store at ambient temperatures. Avoid all source of ignition: heat, sparks, open flame.

8. Exposure Controls and Personal Protection Control Parameters

Occupational exposure limits Given suitable ventilation, it can be assumed that the threshold limits will not be reached. Ideally, granulated material is not expected to contain dust; however, dust may be generated by material abrasion in transport systems, or by cutting or machining of plastic material.
Ingredient agency values OSHA-PEL : Nuisance Dust 15 mg/m³; Respirable Dust 5 mg/m³. US ACGIH : Inhalable Dust 10 mg/m³ ; Respirable Dust 3 mg/m³. EH40-WEL (rev.2011) : Inhalable Dust 8-hour TWA 10 mg/m³ ; Respirable Dust 8-hour TWA 4 mg/m³. Copper: Short term value: 2 mg/m³ (dusts and mists) Long term value: 0.2 mg/m³ (dusts and mists) Tin: Short term value: 4 mg/m³ (dusts and mists) Long term value: 2 mg/m³ (dusts and mists)
Personal protective equipment Respiratory protection (only when dust has formed): Particle filter Type P1 or FFP1 (low efficiency for solid particles e.g. EN143, 149).
Hand protection: Use additional heat protection gloves when handling hot molten masses (e.g. of textile or leather; EN 374).
Eye protection: Safety glasses with side-shields (frame goggles) (EN 166)
Body protection: Body protection must be chosen depending on activity and possible exposure, e.g. apron, protecting boots, chemical protection suit (according to DIN-EN 465)
General safety and hygiene measures: Avoid contact of molten material with skin. Avoid inhalation of dust/mists/vapours. Eye wash fountains and safety showers must be easily accessible. Handle in accordance with good industrial hygiene and safety practice.

9. Physical and Chemical Properties

Form: Filament or Pellets
Color: Brown.
Odor: Almost odourless.
Melting range: Approx.. 150- 170 °C
Flash point: Not applicable Volatiles content (Vol. %) < 1 Density: Approx. 3.90 g/cm³ (20°C, 1 bar)

Thermal decomposition > 240 °C
Solubility in water: Insoluble

10. Stability and Reactivity Stability

The material is stable under normal conditions.

Conditions to avoid: Avoid moisture absorption. Avoid all sources of ignition: heat, sparks, open flame.

Thermal decomposition: To avoid thermal decomposition, do not overheat. See on the technical datasheet for the appropriate processing temperatures.

Hazardous reactions: The product is chemically stable.

Hazardous decomposition products: Carbon dioxide CO₂, carbon monoxide CO, hydrocarbon fragments.

11. Toxicological Information

Acute toxicity: no data, but not expected.

Primary irritant effect:

- on the skin: Irritation could be caused by dust formed during product handling
- on the eye: Irritation could be caused by dust formed during product handling

Sensitization: No sensitizing effects known.

Inhalation: Large quantities may cause irritation and give rise to symptoms similar to metal fume fever.

12. Ecological Information

Basis for assessment No ecotoxicological data has been generated for this product. The information below is based on components and on similar products.

Aquatic toxicity: No data have been generated for this mixture; bronze powder does not meet the classification for chronic aquatic toxicity.

Information about elimination (persistence and degradability): PLA base resin of this compound is biodegradable

Other adverse effects: Bronze powder filler is not expected to contribute to ozone depletion, ozone formation, global warming or acidification.

PBT: Not applicable VPvB: Not applicable.

13. Disposal Considerations

Product disposal Recover or recycle if possible, contact supplier for recycling information. Dispose as hazardous waste, using the applicable EWC. Do not allow to enter the water course or sewage system.

Container disposal Remove all packaging for recovery or disposal in line with the local authority regulations and EWC.

Local legislation Consult local, state, federal, international or country specific regulations as appropriate.

14. Transport Information

International Air Transportation Association Classification (IATA) This product is not classified.

International Maritime Organization (IMDG) This product is not classified.

UN, IMO, ADR/RID, ICAO Code This product is not dangerous.

15. Regulatory Information

This document is compliant with the Globally Harmonized System (GHS) for the classification, labeling, and packaging (CLP) of substances and mixtures.

EU Regulation (EC) 1907/2006 REACH Polymers are exempted from registration and evaluation.

Therefore, Bronze Filamet™ products are exempted by regulation. Annex V exempts from registration additives used in our polymers as antioxidants, defoaming agents, stabilisers, etc., and exempts substances that are naturally occurring that have not been chemically modified, Article 2(7)(b).

Disclaimer The information given in the Material Safety Data Sheet only applies to the described product in connection with its appropriate use. All information is based on the latest state of our knowledge. In particular, it describes our product under the aspect of possible hazards and pertaining safety measures. The information does not constitute any guarantee of specific product and/or quality properties.

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