Material Safety Data Sheet

According to EU Regulation No. 1907/2006
Issued on: 1 June 2016

MetalFil™ - Classic Copper

1. Identification of the substance/preparation and of the company

1.1	Trade name:	MetalFil™ - Classic Copper
1.2	Chemical name:	Highly Copper filled PLA based polymer blend
1.3	Typical use of the material:	Monofilament for FFF/FDM technology based 3D printing
1.4	Identification of the company:	Formfutura VOF Groenestraat 215 6531 HH Nijmegen The Netherlands Phone: +31 (0)85 002 0881 ***Emergency phone number: +31 (0)30 274 8888***

2. Identification of the substance/preparation and of the company

2.1 Risk advise to man and the environment:

No risk exists to the health of users if the product is handled and processed properly.

2.2 Classification of the substance or mixture:

Classification according to Directive 1272/2008/EEC.

- **Aquatic Acute 1:** H400 Very toxic to aquatic life.
- **Aquatic Chronic 3:** H412 Harmful to aquatic life with long lasting effects.

2.3 Label elements

Labelling according to Directive 1272/2008/EEC.
The substance is classified and labelled according to the CLP regulation.

Hazard pictograms: GHS09

Signal word: Warning

Hazard statements

- H400 Very toxic to aquatic life.
- H412 Harmful to aquatic life with long lasting effects.

Precautionary statements

- **P273**: Avoid release to the environment.
- **P391:** Collect spillage.
- **P501:** Dispose of contents/container in accordance with local/regional/national/international regulations.

2.4 Special advice on hazards:

Danger of burns while handling the heated or molten product. Inhalation of dust or fumes leads to irritation of respiratory system.

3. Composition / information on ingredients

3.1	Chemical nature:	Blend of PLA based polymers filled with copper powder enhanced for 3D printing
3.2	CAS number:	**Copper:** 7440-50-8 **PolyLactic Acid:** 9051-89-2
3.3	Additional information:	None of the substances, named in the Candidate list art. 59 (1,10) of the REACH regulation EC no. 1907/2006 has been used in a concentration > 0,1%.

4. First-aid measures

4.1	If inhaled:	After inhalation of decomposition products, gases or dust, bring the affected person to a source of fresh air and keep calm. Contact a physician in case of discomfort.
4.2	On skin contact:	In case of contact with melted material, immediately cool the skin with plenty of cold running water. Removal of adhering to skin polymer, or burns caused by molten material require hospital treatment.
4.3	On contact with eyes:	In case of contact with eyes, rinse open eyes thoroughly with water. If irritation develops, seek immediate medical attention.
4.4	On ingestion:	Rinse mouth with water and induce vomiting immediately. Seek immediate medical attention. If a person vomits when lying on his back, place him in the recovery position.
4.5	Note to the physician:	Treat symptomatically

5. Firefighting measures

5.1	Suitable extinguishing media:	Dry chemical extinguishing media, foam, CO2, water spray jet.
5.1.1	Unsuitable extinguishing media	High volume water jet.
5.2	Specific hazards:	Do not use a solid water stream as it may scatter and spread fire. Exposure to decomposition products may be a hazard to health. In case of fire possible decomposition products are, Carbon oxide's
5.3	Special protective equipment:	Full protective clothing and self-contained breathing apparatus.
5.4	Further information:	Fine dust dispersed in air may ignite. Risk of ignition followed by flame propagation or secondary explosions shall be prevented by avoiding accumulation of dust. Standard procedure for chemical fires. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. In the event of fire and/or explosion do not breathe fumes. Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.

6. Accidental Release Measures

6.1 Personal precautions:	Use personal protective equipment/clothing (see Section 8). Avoid eye contact and dust formation and remove all sources of ignition. Sweep up to prevent slipping hazard.
6.2 Environmental precautions:	Prevent entry into drainage systems, or surface water.
6.3 Methods for cleaning up:	Sweep/shovel into suitable container for disposal. Avoid raising dust and ensure adequate ventilation. Clean contaminated surface thoroughly.

7. Handling and storage

7.1 Handling:	Handle in a well ventilated area. Install local exhaust at 3D printers area is recommended when many printers are operated at once. Avoid contact with heated or molten product. Use personal protective equipment (see Section 8). Avoid dust formation and electrostatic charge. Keep away from fire ignition sources.
7.2 Storage:	Protect from water, moisture and direct sunlight. Store material in dry rooms and keep material in closed packaging/container with desiccant when not in use. Store at ambient temperatures. Avoid all sources of ignition. Keep away from food, drink and animal feedingstuffs.
7.3 Precautions:	No special precautions required.
7.4 Specific end use(s):	Primarily used for 3D printing.

8. Exposure controls / personal protection

8.1 Occupational exposure limits:	Given suitable ventilation it can be that the threshold limits will not be reached.
8.2 Exposure controls:	Provide appropriate exhaust ventilation at places where dust is formed. Avoid electrostatic charge by use of grounding cables. In the case of dust or aerosol formation use respirator with an approved filter. Half mask with a particle filter P2 (EN 143).
8.3 <u>Personal protective equipment</u>	
8.3.1 Hand protection:	Wear heat protection gloves, preferably cotton or leather, when handling hot molten product.
8.3.2 Eye protection:	Wear protective glasses, preferable with side-shields.
8.3.3 Skin and body protection:	Wear (protective) clothing to avoid direct exposure of skin to hot molten product when handling.
8.3.4 Safety and hygiene measures:	Avoid contact of hot molten material to skin. Avoid inhalation of dust, mists and vapours. Eye wash fountains and safety showers must be easily accessible. Handle in accordance with good industrial hygiene and safety practice. No eating or drinking during working.
8.4 Environmental exposure controls:	Prevent entry into drainage systems, or surface water.

9. Physical and chemical properties

9.1	Form:	Filament
9.2	Colour:	Copper
9.3	Odour:	Neutral
9.4	Melting point:	150-170° C
9.5	Auto-ignition temperature:	No specified
9.6	Explosions limit:	Not specified
9.7	Density:	± 3.40 g/cc
9.8	Solubility in water:	Insoluble

10. Stability and reactivity

10.1	Stability:	Product is stable at recommended storage conditions.
10.2	Conditions to avoid:	Avoid extreme heat, moisture, static discharges and all other sources of ignition.
10.3	Substances to avoid:	Strong oxidizing agents.
10.4	Hazardous reactions:	The product is chemically stable.
10.4.1	Hazardous decomposition products:	Dangerous/toxic metal fumes and other gaseous products of degradation can be given off if the product is greatly overheated.

11. Toxicological information

11.1	Information on toxicological effects:	Toxicological data has not been determined for this product. Information is based on similar products.
11.1.1	Acute toxicity	
	Inhalation:	No data available, but not expected.
	Ingestion:	No data available, but not expected.
	Skin contact:	No data available, but not expected.
	Eye contact:	No data available, but not expected.
11.1.2	Irritation	
	Skin:	No data available, but not expected to be irritating.
	Eye:	No data available, but not expected to be irritating.
11.1.3	Sensitization:	Not expected to be a skin sensitizer.
11.1.4	Repeated dose toxicity:	Negative.
11.1.5	Carcinogenicity:	No data available, but not expected.
11.1.6	Mutagenicity:	No data available, but not expected.
11.1.7	Toxicity for reproduction:	No data available, but not expected.
11.2	Other information:	Based on our state of knowledge and experience no injurious health effects are expected if product is properly handled for the designated use.

12. Ecological information

12.1	Information on eco-toxicity:	No ecological toxicity data has been generated for this product. There are no test results available and information is based on similar products.
12.1.1	Ecological toxicity effects:	No negative ecological effects are known at the present state of knowledge.
12.2	Mobility in soil:	No data available, but expected to be insoluble in soil.

12.3	Persistence and degradability:	No data available concerning biodegradation and elimination, but expected to be difficult to degrade.
12.4	Bioaccumulation potential:	No data available, but product is expected not to be readily bioavailable due to its consistency and insolubility in water.

13. Disposal considerations

13.1	Product:	Generation of waste should be minimized, check possibility for recycling. Waste product can be incinerated or dumped together with domestic waste in compliance with local authority requirements.
13.2	Packaging:	Packaging material has to be emptied completely and disposed in accordance with the regulations. Packaging can be recycled if not contaminated.

14. Transport information

14.1	International Air Transportation Association Classification (IATA):	This product is not classified as hazardous.
14.2	International Maritime Organization (IMDG):	This product is not classified as hazardous.
14.3	14.3 UN, IMO, ADR/RID, ICAO Code:	This product is not classified as hazardous.

15. Regulatory information

15.1	EU / National regulations:	This product does not require a hazard warning label in accordance with EC Directives. EU regulation (EC) 1907/2006 (Reach) ANNEX XVII (restrictions) Not applicable.

16. Other information

Company name:	Formfutura VOF
Additional data:	In addition to the information given in this Material Safety Data Sheet (MSDS) we refer to the products specific Technical Data Sheet (TDS).
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. The information given in this Material Safety Data Sheet is not required according to article 31 and Annex II of Regulation (EC) No.1907/2006. It merely serves the purpose of providing sufficient information on a voluntary basis to ensure safe use of the compound/product. There is no obligation on the part of Formfutura to revise this document.