Safety Data Sheet

CMG Tech-X Copper filament

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

1.1 Product identifier — **CMG Tech-X Copper filament**

1.2 Relevant identified uses of the substance or mixture and uses advised against

Metal filament for 3D printing fabrication.

Uses advised against: not available.

1.3 Details of the supplier of the safety data sheet

CMG Technologies Ltd,
Building I1, Thompson Drive,
Base Business Park,
Rendlesham IP12 2TZ,
United Kingdom.
Tel: +44 (0) 1394 445 100; email: obatka@cmgtechnologies.co.uk; www.cmgtechnologies.co.uk

1.4 Emergency telephone number

Tel +44 (0) 1394 445 100 (UK business hours).

UK: 111 (public NHS number for less urgent medical problems). Medical professionals can contact the National Poisons Information Service (NPIS): 0344 892 0111.

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to CLP Regulation (1272/2008): Aquatic Acute 1, H400; Aquatic Chronic 2, H411.

See Section 16 ‘Other information’ for full text of the H-statements.

2.2 Label elements

Signal word: Warning.

Hazard statements: Very toxic to aquatic life with long lasting effects.

Precautionary statements

- general: None.
- prevention: Avoid release to the environment.
- response: None.
- storage: None.
- disposal: Dispose of contents/container in accordance with local/national regulation.

Supplemental information: Not available.

2.3 Other hazards The product does not contain any ingredient identified as having endocrine disrupting properties.

SECTION 3: Composition/information on ingredients

3.2 Mixtures [a,b]

Declarable components	*Conc. (wt%)*	*EC No.*	*CAS No.*	*REACH Reg. No.*	*Classification, supplemental hazards, ATE, M-factor, and SCL*
Copper	>75	231-159-6	7440-50-8	01-2119480154-42-0238	Aquatic Acute 1, H400 (M = 1); Aquatic Chronic 2, H411
Other components					
NA					

[a] NA: not available.

[b] See Section 16 'Other information' for full text of the H-statements.

SECTION 4: First aid measures

4.1 Description of first aid measures

Inhalation: For symptoms of inhalation, eg coughing, breathing difficulty, or respiratory irritation, remove exposed person to fresh air and keep warm and at rest in a position comfortable for breathing. Get medical help if symptoms persist.

Skin: For skin contamination, remove contaminated clothing and wash affected area with soap and water. If irritation, rash, or other symptom occurs, get medical help. Wash contaminated clothing before re-use.

Eye: If product or dust or vapour cause irritation, irrigate affected eye with room-temperature water or eyewash solution for several minutes, occasionally lifting eyelids. Remove any contact lenses if easy to do. Continue rinsing. Get medical help if irritation persists.

Ingestion: If in mouth, rinse mouth thoroughly with water and spit out rinsings. Water may be given to drink if product has been swallowed. If patient feels unwell or is concerned, get medical help. Do not induce vomiting, unless instructed by medical personnel.

4.2 Most important symptoms and effects, both acute and delayed Not available.

4.3 Indication of any immediate medical attention and special treatment needed Treat symptoms as they occur.

SECTION 5: Firefighting measures

5.1 Extinguishing media

	Suitable	In case of fire, use extinguishing powder, sand, or water spray.
	Unsuitable	Not available.
5.2	**Special hazards arising from the substance or mixture**	The product is not classified as flammable, but will decompose if involved in a fire, producing smoke, and hazardous fumes and gases.
5.3	**Advice for firefighters**	Remove containers from fire or cool them with water spray. For larger fires, firefighters should wear breathing apparatus and protective clothing.

Section 6: Accidental release measures

6.1	**Personal precautions, protective equipment and emergency procedures**	The product is supplied in small containers as coiled filament on a roll, which can be collected. In a professional setting, wear personal protection. Ventilate area. Avoid creating airborne dust. Follow prescribed procedures for responding to spills.
6.2	**Environmental precautions**	Prevent product from entering water courses or drainage system.
6.3	**Methods and material for containment and cleaning up**	Clean up spill as soon as possible. For small quantities, collect pieces, and wash off any residue with detergent and water. For large quantities, carefully sweep up, preventing formation of airborne dust, or collect using vacuum cleaner equipped with air filtration. Collect spill, contaminated materials, and washings in a container for disposal.
6.4	**Reference to other sections**	For recommended personal protective equipment, see Section 8. For disposal considerations, see Section 13.

SECTION 7: Handling and storage

7.1	**Precautions for safe handling**	Do not handle until all safety precautions have been read and understood. Avoid skin and eye contact with the product, and inhalation of vapours or dust. Use only in a well-ventilated area. See Section 8 for engineering controls and personal protection. Wash hands after use. Do not eat, drink or smoke when using this product. Upon mechanical (eg cutting, grinding or polishing), thermal, or chemical treatment the product can release dust. Do no inhale dusts when formed. Avoid generating airborne dust and keep work areas clean Dust in sufficient concentration can result in an explosive mixture in air. Eliminate open flame and other sources of ignition.
7.2	**Conditions for safe storage, including any incompatibilities**	Keep packages in a cool, dry place away from direct sunlight. Keep out of reach of children.
7.3	**Specific end use(s)**	Metal filament for 3D printing fabrication.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

EU limit values	None.
National limit values	UK: Copper and compounds: dust and mists (as Cu): WEL: 8 h TWA 1 mg/m^3; 15 min 2 mg/m^3. Copper fume (as Cu): WEL: 8 h TWA 0.2 mg/m^3; 15 min 2 mg/m^3.
Monitoring procedure	BS EN 14042:2003; Workplace Atmospheres; Guide for the Application and Use of Procedures for the Assessment of Exposure to Chemical and Biological Agents, or specific national equivalent.
Other: human health (DNELs, DMELs)	Copper: DNEL: workers, long-term exposure, local effects, inhalation, 1 mg/m^3; workers, short-term exposure, local effects, inhalation, 1 mg/m^3; workers, long-term exposure, systemic effects, dermal, 137 mg/kg/day; workers, short-term exposure, systemic effects, dermal, 273 mg/kg/day.
Other: environmental (PNEC)	Copper: PNECs: freshwater, 0.0063 mg/L; sewage treatment plant, 0.23 mg/L; freshwater sediment, 87 mg/kg dry sediment; soil, 65 mg/kg dry soil.

8.2 Exposure controls

Engineering controls	Use in a well-ventilated area (3 to 5 air changes/hour) is recommended. For bulk use, and for processing causing formation of dust or fumes, local exhaust ventilation is recommended.
Personal protective equipment	The need for personal protective equipment should be based on a workplace risk assessment for the particular use. Avoid skin and eye contact by wearing chemical resistant gloves (eg EN374, EN 420; nitrile rubber gloves, 0.2 mm) and eye protection (EN166). Where more extensive contact may occur, wear protective clothing (eg apron, overalls). Additional protection from burns may be required for hot processing. A dust mask (EN 143) may be required if the processing causes dust. For guidance on respiratory protection see HSE Guide HSG53 and BS4275. PPE should conform to British (EN) standards, or national equivalent. Consult PPE manufacturers concerning breakthrough times.
Environmental exposure controls	Not available.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

(a)	Physical state	Coiled filament on a roll
(b)	Colour	Dark orange
(c)	Odour	Odourless
(d)	Melting/freezing point	120 to 160 °C

(e)	Boiling point or initial boiling point and boiling range	Not available
(f)	Flammability	Not classified as flammable
(g)	Lower and upper explosion limit	Not available
(h)	Flash point	Not available
(i)	Auto-ignition temp.	Not available
(j)	Decomposition temp.	Not available
(k)	pH	Not available
(l)	Kinematic viscosity	Not applicable to solid
(m)	Solubility	Not soluble in water
(n)	Partition coeff. n-octanol/water (log value)	Not available
(o)	Vapour pressure	Not available
(p)	Density or rel. density	Copper: 8.9
(q)	Relative vapour density	Not available
(r)	Particle characteristics	Filament of 1.75 or 2.85 mm diameter
9.2	**Other information**	No ingredient classified as explosive or oxidising.

SECTION 10: Stability and reactivity

10.1	**Reactivity**	Not available.
10.2	**Chemical stability**	Stable.
10.3	**Possibility of hazardous reactions**	Not available
10.4	**Conditions to avoid**	Open flames, strong heat
10.5	**Incompatible materials**	Strong oxidizing agents (eg hydrogen peroxide), strong acids, alkalis.
10.6	**Hazardous decomposition products**	Not available.

SECTION 11: Toxicological information

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

(a)	Acute toxicity	Based on available data on the ingredients, the classification criteria are not met for the oral, dermal or inhalation routes of exposure. ATE_{mix} (oral) > 2000 mg/kg; ATE_{mix} (dermal) > 2000 mg/kg; ATE_{mix} (inhalation, mist) > 5 mg/L.

(b)	Skin corrosion/irritation	Based on available data on the ingredients, the classification criteria are not met.
(c)	Serious eye damage/irritation	Based on available data on the ingredients, the classification criteria are not met.
(d)	Respiratory or skin sensitisation	Based on available data on the ingredients, the classification criteria are not met. No relevant ingredient has been classified for this effect.
(e)	Germ cell mutagenicity	Based on available data on the ingredients, the classification criteria are not met. No relevant ingredient has been classified for this effect.
(f)	Carcinogenicity	Based on available data on the ingredients, the classification criteria are not met. No relevant ingredient has been classified for this effect.
(g)	Reproductive toxicity	Based on available data on the ingredients, the classification criteria are not met. No relevant ingredient has been classified for this effect.
(h)	STOT-single exposure	Based on available data on the ingredients, the classification criteria are not met. No relevant ingredient has been classified for this effect.
(i)	STOT-repeated exposure	Based on available data on the ingredients, the classification criteria are not met. No relevant ingredient has been classified for this effect.
(j)	Aspiration hazard	Based on available data on the ingredients, the classification criteria are not met.
11.2	Information on other hazards	No ingredient has been classified with endocrine disrupting properties relevant for humans.

SECTION 12: Ecological information

12.1 Toxicity

Based on available data on the ingredients, the classification criteria are met for Aquatic Acute Category 1 (very toxic to aquatic life) and Aquatic Chronic Category 2 (toxic to aquatic life with long lasting effects).

Copper:

Fish: LC_{50} (freshwater fish, 96 h) 1.1 mg/L. Fish NOEC/L(E)C10 values are available for 14 species and range between 0.001 mg/L Cu (effect endpoint growth) to 0.188 mg/L Cu (endpoint mortality).

Invertebrates: LC_{50} (invertebrate, 48 h) 0.014 to 0.098 mg/L. Aquatic invertebrate NOEC/L(E)C10 values are available for 17 species and range between 0.0018 µg Cu/L (effect endpoint reproduction) to 0.306 mg Cu/L (effect endpoint reproduction).

Algae: Algal NOEC/L(E)C_{10} values are available for 3 species and range from 0.054 mg/L Cu for (effect endpoint growth) to 0.138 mg/L Cu (effect endpoint growth).

12.2 Persistence and degradability

Product comprises of metal powder in a polymer, and is expected to persist in the environment.

12.3 Bioaccumulative potential	Bioaccumulation not applicable to metals.
12.4 Mobility in soil	Not available.
12.5 Results of PBT and vPvB assessment	PBT or vPvB assessment not applicable to metals.
12.6 Endocrine disrupting properties	No ingredient has been classified with endocrine disrupting properties relevant for the environment.
12.7 Other adverse effects	The mixture is not classified as hazardous to the ozone layer.

SECTION 13: Disposal considerations

13.1 Waste treatment methods	Product comprises copper powder in a polymer. Recycling is recommended for bulk disposal of this product. Landfill or disposal via the drains is not recommended. Disposal must be in accordance with national and local regulations. Chemical residues generally count as special waste. General EU requirements are given in Directive 2008/98/EC.

SECTION 14: Transport information

14.1 UN Number	UN 3077.
14.2 UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N O S (contains copper).
14.3 Transport hazard class(es)	9.
14.4 Packing group	III.
14.5 Environmental hazards	Marine pollutant/environmentally hazardous.
14.6 Special precautions for user	Limited Quantities, 5 kg; Excepted Quantities, E1; Emergency Action Code, 2Z; Special Provisions, 274, 335, 375, 601.
14.7 Maritime transport in bulk according to IMO instruments	Not applicable.

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture	*UK*: Control of Substances Hazardous to Health Regulations 2002 (COSHH), as amended. COSHH Essentials: Easy Steps to Control Chemicals; HSE Books 2003 (also available on the HSE web site). Workplace Exposure Limits EH40/2005 (Fourth Edition, 2020); Health and Safety Executive.
15.2 Chemical safety assessment	Not available.

SECTION 16: Other information

Revisions	This SDS is the first version in EU format (Regulation 2020/878), using classification according to the CLP Regulation (1272/2008).
Abbreviations	ATE, acute toxicity estimate; DNEL, derived no-effect level; DMEL, derived minimum effect level; EC, effect concentration; LC, lethal concentration; NOEC, no-observed-effect-concentration; PBT, persistent, bioaccumulative, and toxic; PNEC, predicted no-effect concentration; SCL, specific concentration limit; STOT RE, specific target organ toxicity repeated exposure; STOT SE, specific target organ toxicity single exposure; TWA, time-weighted average; vPvB, very persistent, very bioaccumulative; WEL, UK workplace exposure limit.
References	Search for chemicals; available at the European Chemicals Agency website: http://echa.europa.eu/.
Basis of classification	The mixture is self-classified from available information on the ingredients.
List of hazard statements	H400: Very toxic to aquatic life; H411: Toxic to aquatic life with long lasting effects.