

Product name: MDFLEX™

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SAFETY DATA SHEET

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

Product name: MDFLEX™

Product Use: A Thermoplastic polyurethane plus additive based on copper zeolites which can be used for 3D Printer Filament for Material Extrusion

Supplier: Copper3D Inc.

Information mail: contact@copper3d.com

2. HAZARDS IDENTIFICATION

Hazard Statement: None

Precautionary Statement: None

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ANTIBACTERIAL INNOVATIONS

Signal word: None

Pictogram: None

Potential health effects: See Section 11 for more information

Environmental precautions: See Section 12 for more information

Other Hazards: See Section 7 and 8 for additional information

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical name	Weight %	OSHA Exposure Limits:	ACGIH Exposure Limits:
Thermoplastic polyurethane	>99	None	None
NanoCu PCZ001 (Zeolite 4A: 75% Copper Hydroxyacetate: 25%)	< 1	None	None

All ingredients in quantities > 1.0% (0.1% for carcinogens) that are potentially hazardous per OSHA definitions.

Other standards: This material can generate Particulates Not Otherwise Classifiable (PNOC). The Occupational Safety and Health Administration (OSHA) PEL/TWA for PNOC is 15 mg/m³ for total dust and 5 mg/m³ for the respirable fraction. The American Conference of Governmental Industrial Hygienists (ACGIH) TLV/TWA for PNOC is 10 mg/m³ for inhalable particulates and 3 mg/m³ for respirable particulates.

No hazardous ingredients according to the Regulation (EC) No 1907/2006 (REACH).

This product contains no substances mentioned in the Article 57 of the Regulation (EC) No 1907/2006.

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4. FIRST AID MEASURES

Eye contact: Immediately rinse the eye with plenty of clean running water for at least 15 minutes. Remove contact lenses, if present and easy to do. Rinse thoroughly the inner side of the eye lid. Get medical attention as soon as possible.

Skin contact: In case of contact with **melted material**, fully cool down by pouring plenty of water over the clothing. Then take off clothing, cover with clean gauze and get medical attention immediately. Get medical attention if appearance changes, irritating pain occurs or feeling unwell.

Inhalation: If you feel unwell by inhalation of vapor or gas, move to fresh air and keep at rest in a position comfortable for breathing. Call a doctor if you feel unwell.

Ingestion: If swallowed by accident, keep at rest and get medical attention immediately. Avoid vomit entering into respiratory tract. Do not induce vomiting unless instructed by a doctor.

Indication of any immediate medical attention and special treatment needed: Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Extinguishing media:

Suitable extinguishing media: CO₂, water, dry extinguishing agent

Special hazards arising from the substance or mixture: In the event of fire, the material releases carbon oxide, carbon dioxide, nitrogen oxides and traces of hydrogen cyanide (hydrocyanic acid). Do not inhale gaseous vapours in the event of fire or explosion.

Advice for firefighters: In the event of fire disposal, it is necessary to use the respiratory protection with independent air supply. Water contaminated by fire disposal should not get into the soil, into bottom and surface water

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6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

No measures required.

Methods and Materials for Containment and Cleaning Up

Collect spilled material in appropriate container for reuse or disposal. Dispose in accordance with all applicable regulations.

Environmental Precautions Avoid release to the environment.

Comply with all applicable regulations on spill and release reporting. Prevent entry into waterways, sewers, basements, or confined areas.

7. HANDLING AND STORAGE

Precautions for safe handling: Handle in a well-ventilated area. Installation of local exhaust at 3D printers area is recommended when many printers are operated at once. Keep away from fire (ignition source) and store at ambient temperature.

Storage: Protect from water, moisture and direct sunlight and store indoors at ambient temperature and well-ventilated. No special restrictions on storage with other products.

Precautions: No special precautions required.

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8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

While processing of this product, the regulations for the substances listed below must be complied. The limits stated below may be complied only with sufficient ventilation of vapours released during processing.

Exposure controls

Hand protection: Materials suitable for the protective gloves according to EN 374: polyvinylchloride – PVC ($\geq 0,5$ mm)

Eye protection: Use personal protection equipment for eyes and face.

Skin and body protection: Use the protective clothing

Other protective measures: Do not inhale dust or vapours. Lubricate the skin.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance physical state: Filament Shape

Color: Red, Grey-Blue

Odor: Characteristic

Printing Temp: 225 +/- 10 degrees (Celsius)

Autoignition temperature: Not applicable

Combustibility: Flammable when exposed to any ignition source

Water solubility: Practically insoluble substance

Solubility in other solvents: Not determined

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10. STABILITY AND REACTIVITY

Reactivity: No information available.

Chemical stability: Decomposition under temperature higher than 230 °C.

Possibility of hazardous reactions: No hazardous reactions were observed.

Conditions to avoid: No information available.

Incompatible materials: No information available

Hazardous decomposition products: In case of glowing or incomplete combustion, the mixtures of toxic gases with CO and CO₂ content develop. While temperature stress (during processing or drying), small quantities of the product can be converted to isocyanates. In fact, the substance is diisopropylphenyl isocyanate.

Exceeding of the recommended processing temperature significantly increases the isolation of isocyanates.

Overexposure causes a risk of concentration-dependent inhalation irritation and/or of sensitization due to isocyanates (possible respiratory failure, cough, asthma). For hypersensitive people, reactions may occur at very low concentrations of isocyanate.

11. TOXICOLOGICAL INFORMATION

General information: Occupational exposure to the substance or mixture may cause adverse effects.

Information on likely routes of exposure:

Inhalation: No adverse effects due to inhalation are expected.

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ANTIBACTERIAL INNOVATIONS

Skin contact: Molten material may cause burns.

Eye contact: Direct contact with eyes may cause temporary irritation. Molten material may cause burns.

Ingestion: May cause discomfort if swallowed. However, ingestion is not likely to be a primary route of occupational exposure.

Information on toxicological effects

Immediate Effects: Molten material may cause thermal burns.

Delayed Effects: No information on significant adverse effects.

Reproductive toxicity: No data is available on the product itself.

Carcinogenic effects: no data available

12. ECOLOGICAL INFORMATION

Ecological tests on product are not submitted. Avoid getting into the soil, into bottom and surface water or into waste water

Persistence and degradability: Inherently biodegradable under industrial composting conditions.

Bioaccumulation: Not expected to bioconcentrate or bioaccumulate.

Mobility in soil: No data available.

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13. DISPOSAL CONSIDERATIONS

Disposal in compliance with all applicable international, national and local laws, regulations and statutes. For disposal within the EU, the European Waste Catalog (EWC) is so far a valid waste disposal key

Residual waste: Dispose of in accordance with local regulations

Disposal methods/ information: Do not dump into sewers, on the ground or into any body of water. Burn in an adequate incinerator or bury in landfill in accordance with applicable regulations.

Special precautions: Dispose in accordance with all applicable regulations.

THE COMPANY HAS NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION

14. TRANSPORT INFORMATION

U.S. Department of Transportation (DOT):

Proper shipping name: Not regulated as dangerous goods.

Hazard class: Not regulated as dangerous goods.

Packing group: None Hazardous substances (RQ): None

IMDG:

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ANTIBACTERIAL INNOVATIONS

Proper shipping name: Not regulated as dangerous goods.

Hazard class: Not regulated as dangerous goods.

UN/Id No.: Not regulated as dangerous goods.

Packing group: Not regulated as dangerous goods.

ICAO/IATA:

Proper shipping name: Not regulated as dangerous goods.

Hazard Class: Not regulated as dangerous goods.

UN-No.: Not regulated as dangerous goods.

Packing group: Not regulated as dangerous goods.

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15. REGULATORY INFORMATION

(not meant to be all inclusive - selective regulations represented)

Regulatory requirements are subject to change and may differ between locations. It is the User's responsibility to ensure that all activities comply with all federal, state or provincial and local laws and regulations. The following specific information is made for the purpose of complying with numerous national, federal, state or provincial, and local laws and regulations. See other sections for health and safety information

U.S. REGULATIONS

Sara 313 title III: Not Listed

TSCA Inventory List: Listed

STATE REGULATIONS

California Proposition 65: Not Listed

INTERNATIONAL INVENTORIES

REACH/EU EINECS List: Components are in compliance with and/or are listed.

Japan (ECL): Listed

Australia (AICS): Listed

Korean chemical inventory: Listed

16. OTHER INFORMATION INCLUDING INFORMATION ON PREPARATION AND REVISION OF THE SDS

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Label information: MDFLEX™

Recommended restrictions: None

Prepared by: Copper3D Inc.

NOTICE REGARDING APPLICATION RESTRICTIONS: The company does not recommend any of its products, including samples, for use: (A) in any application which is intended for any internal contact with human body fluids or body tissues (B) as a critical component in any medical device that supports or sustains human life; and (C) specifically pregnant women or in any applications designed specifically to promote or interfere with human reproduction. Components of products intended for human or animal consumption

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