



Material Safety Data Sheet

1. Identification of the substance/mixture and of the company/undertaking

Product:	Polyamid for extrusion-based 3D printing
Manufacturer:	Conrad Electronic SE
Address:	Klaus-Conrad-Str. 1, D-92240 Hirschau
Telephone:	+49 (0) 9604 / 40 - 8988
Date:	31.03.2017

2. Hazards Identification

2.1 Classification of the substance of mixture

2.1.1 Classification according to Directive 67/548/EEC or 1999/45/EC as amended

This substance does not meet the criteria for classification according to Directive 67/548/EEC as amended.

2.1.2 Classification according to Regulation (EC) No 1272/2008 as amended

This substance does not meet the criteria for classification according to Regulation (EC) 1272/2008 as amended.

2.2 Label elements

Not applicable.

2.3 Other hazards

Not likely to be an irritant in the solid form. Danger of burns when heated/molten material is handled.

3. Composition/information on ingredients

3.1 Substances

Chemical Name	CAS No.	Weight %	Exposure Limits
Polyamide copolymer	32131-17-2	> 60%	None



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4. First aid measures

4.1 Description of first aid measures

4.1.1 Inhalation:

Move to fresh air. Call a physician immediately if irritation persists.

4.1.2 Skin contact:

Rinse immediately with plenty of water. If skin irritation persists, call a physician. Cool skin rapidly with cold water after contact with hot polymer.

4.1.3 Eye contact:

Rinse immediately with plenty of water. Call a physician immediately.

4.1.4 Ingestion:

Drink water as a precaution. Never give anything by mouth to an unconscious person. Do not induce vomiting without medical advice. Call a physician immediately.

4.2 Most important symptoms and effects, both acute and delayed

Burns resulted from contacting or handling heated/molten materials

4.3 Indication of any immediate medical attention and special treatment needed

Provide general supportive measures and treat symptomatically.

5. Fire-fighting measures

5.1 Suitable extinguishing media

Use fire-extinguishing media appropriate for surrounding materials. Do not use a solid water stream as it may scatter and spread fire.

5.2 Special hazards arising from the substance or mixture

During fire, gases hazardous to health may be formed.

5.3 Advice for fire fighters

Follow the general fire precautions indicated in the workplace. Self-contained breathing apparatus and full protective clothing must be worn in case of fire. Use standard firefighting procedures and consider the hazards of other involved materials.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Wear gloves when handling hot melt of material.

6.2 Environmental precautions

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

6.3 Methods and materials for containment and cleaning up

Shovel into suitable container for disposal.



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7. Handling and storage

7.1 Precautions for safe handling

Avoid prolonged contact with skin and eyes. Avoid dust formation. Workers should be protected from the possibility of contact with molten material. Low hazard for usual industrial or commercial handling.

7.2 Conditions for safe storage

Store in ambient temperatures. Avoid exposure to high moisture levels. No special restrictions on storage with other products.

8. Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits

UK. EH40 Workplace Exposure Limits (WELs)

Components	Type	Value	Form
Dust (CAS -)	TWA	4 mg/m ³	Respirable dust
	TWA	10 mg/m ³	Inhalable dust

Biological limit values:

No biological exposure limits noted for the ingredient(s)

Recommended monitoring procedures:

Not available

Derived no-effect level (DNEL):

Not available

Predicted no effect concentrations (PNECs):

Not available

8.2 Engineering controls

Provide appropriate exhaust ventilation at places where dust is formed or the material is molten, such as during printing.

8.3 Personal protective equipment

Wear gloves when handling hot/molten material.



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9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance:	Filament, Solid
Color:	Depending on version
Odor:	Odorless
Odor threshold:	Not available
pH:	Not applicable
Melting point/freezing point:	135 – 210 °C
Boiling point:	Not applicable
Flash point:	Not applicable
Evaporation rate:	Not applicable
Flammability:	Not available
Upper/lower flammability or explosive limits:	Not available
Vapor pressure:	Not applicable
Vapor density:	Not applicable
Relative density:	1.1 (20 °C) Approximate
Solubility:	Soluble in alcohols
Partition coefficient (n-octanol/water):	No data available
Auto-ignition temperature:	> 380 °C
Decomposition temperature:	Onset of decomposition > 370 °C
Viscosity:	Not applicable

10. Stability and reactivity

10.1 Reactivity

Stable at normal conditions.

10.2 Chemical stability

Material is stable under normal conditions.

10.3 Possibility of hazardous reactions

Hazardous polymerization does not occur.

10.4 Conditions to avoid

Avoid extreme heat. Avoid all sources of ignition: heat, sparks, open flames, etc.

10.5 Incompatible materials

Strong oxidizing agents. Strong acids.

10.6 Hazardous decomposition products

Carbon oxides



11. Toxicological information

11.1 Likely routes of exposure

Inhalation:

Dust irritates the respiratory system, and may cause coughing and difficulties in breathing.

Skin contact:

Dust may irritate skin.

Eye contact:

Dust may irritate the eyes.

Ingestion:

May cause discomfort if swallowed.

11.2 Symptoms

Dust may irritate throat and respiratory system and cause coughing. Direct contact with eyes may cause temporary irritation.

11.3 Information on toxicological effects

Acute toxicity: Dusts may irritate the respiratory tract, skin and eyes.

Skin corrosion/irritation: Dust may irritate skin.

Serious eye damage/eye irritation: Dust may irritate the eyes. Exposed may experience eye tearing, redness, and discomfort.

Respiratory sensitization: Not classified.

Skin sensitization: Not a skin sensitiser.

Germ cell mutagenicity: Not expected to be mutagenic.

Carcinogenicity: Not classified.

Reproductive toxicity: Not classified.

Specific target organ toxicity - single exposure: No data available

Specific target organ toxicity - repeated exposure: No data available

Aspiration hazard: Due to the physical form of the product it is not an aspiration hazard.

Mixture versus substance information: Not applicable.

Other information: Pre-existing skin and respiratory conditions including dermatitis, asthma and chronic lung disease might be aggravated by exposure.



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12. Ecological information

12.1 Toxicity

The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

12.2 Persistence and degradability

No data available.

12.3 Bioaccumulative potential

No data available.

12.4 Mobility in soil

Not available

12.5 Other adverse effects

The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

13. Disposal considerations

13.1 Waste treatment methods

In accordance with local and national regulations. Do not contaminate ponds, waterways or ditches with chemical or used container. Contact manufacturer if needed.

14. Transport information

ADR

Not regulated as dangerous goods.

RID

Not regulated as dangerous goods.

ADN

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

This substance/mixture is not intended to be transported in bulk.



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15. Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture EU regulations

Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex I

Not listed.

Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex II

Not listed.

Regulation (EC) No. 850/2004 On persistent organic pollutants, Annex I as amended

Not listed.

Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 1 as amended

Not listed.

Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 2 as amended

Not listed.

Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 3 as amended

Not listed.

Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex V as amended

Not listed.

Regulation (EC) No. 166/2006 Annex II Pollutant Release and Transfer Registry

Not listed.

Regulation (EC) No. 1907/2006, REACH Article 59(10) Candidate List as currently published by ECHA

Not listed.

Authorisations

Regulation (EC) No. 1907/2006, REACH Annex XIV Substances subject to authorisation, as amended

Not listed.

Restrictions on use

Regulation (EC) No. 1907/2006, REACH Annex XVII Substances subject to restriction on marketing and use as amended

Not listed.

Directive 2004/37/EC: on the protection of workers from the risks related to exposure to carcinogens and mutagens at work

Not listed.

Directive 92/85/EEC: on the safety and health of pregnant workers and workers who have recently given birth or are breastfeeding

Not listed.



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Other EU regulations

Directive 96/82/EC (Seveso II) on the control of major-accident hazards involving dangerous substances

Not listed.

Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work

Not listed.

Directive 94/33/EC on the protection of young people at work

Not listed.

Other regulations

This Safety Data Sheet complies with the requirements of Regulation (EC) No 1907/2006.

National regulations:

Not available.

15.2 Chemical safety assessment

No Chemical Safety Assessment has been carried out.

16. Other information

Declare to reader

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. This shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Not likely to be an irritant in the solid form. Burning produces obnoxious and toxic fumes. Avoid prolonged contact with skin and contact with eyes. Not likely to form a dust in the solid filament form.

Potential Acute Health Effects

Inhalation:



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Not likely to form an inhalable dust in the solid filament form and for the intended use. Aerosols generated during printing may cause shortness of breath, tightness of the chest, a sore throat and cough.

Eye:

Direct contact with eyes may cause irritation.

Skin:

May cause slight skin irritation.

Ingestion:

Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Potential Chronic Health Effects

Carcinogenic Effects: No known carcinogenic effects

Mutagenic Effects: No known mutagenic effects

Teratogenic Effects: No known teratogenic effects

Developmental Toxicity: No known developmental toxicity

3 . Composition/information on ingredients

Chemical Name	CAS No.	Weight %	Exposure Limits
Poly(lactic acid) resin	9051-89-2	80-100%	None
Acrylic polymer(s)	-	0-20%	None

4 . First aid measures

Inhalation:

Move to fresh air and keep at rest in a position comfortable for breathing. Call a physician immediately if irritation persists.

Skin contact:

Rinse immediately with plenty of water. If skin irritation persists, call a physician. Cool skin rapidly with cold water after contact with hot polymer.

Eye contact:

Rinse immediately with plenty of water. Call a physician immediately.

Ingestion:

Drink water as a precaution. Never give anything by mouth to an unconscious person. Do not induce vomiting without medical advice. Call a physician immediately.



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Notes for the doctor:

Treat symptomatically.

5 . Fire-fighting measures

General Information:

As in any fire, wear self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

Suitable Extinguishing Agents:

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.

Products of Combustion:

Burning produces obnoxious and toxic fumes, aldehydes, carbon monoxide (CO), and carbon dioxide (CO₂).

Special Fire Fighting Procedures:

Firefighters should wear self-contained breathing apparatus and full fire-fighting turn-out gear (bunker gear). Keep personnel removed and upwind of fire. Water should be used to keep fire-exposed containers cool.

Special Remarks on Fire and Explosion Hazards:

Toxic gases/vapors/fumes may emit in a fire.

6 . Accidental release measures

General:

Wear gloves when handling hot melt of the material.

Environmental precautions:

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

Methods and material for containment and cleaning up:

Shovel into suitable container for disposal.

7 . Handling and storage

Precautions:

No special precautions required.

Handling:

Wear gloves when handling molten material. Low hazard for usual industrial or commercial handling.

Storage:

Store in cool place. Keep at temperatures below 122°F (50°C). No special restrictions on storage with other products.



8 . Exposure controls/personal protection

Ventilation protection:

Provide good ventilation during 3D printing processes.

Skin protection:

Avoid direct contact to the hot melt of material or wear gloves.

Eye and face protection:

Safety glasses if necessary.

General:

Wear protective clothing to prevent contact with hot melt materials.

9 . Physical and chemical properties

Appearance:	Filament, Solid
Color:	Various
Odour:	Odorless
pH:	Not applicable
Melting point:	> 140 °C
Boiling point:	Not applicable
Density:	1.22 g/cm ³
Vapor pressure:	Not applicable
Partition coefficient (n -octanol/water):	Not applicable
Solubility(ies):	Not determined
Flash point:	Not determined
Auto-ignition temperature:	> 350 °C

10 . Stability and reactivity



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Stability:

Stable under recommended storage conditions

Polymerization:

Not applicable

Dangerous Decomposition Products:

Burning produces obnoxious and toxic fumes. Aldehydes. Carbon monoxide (CO). carbon dioxide (CO₂).

Conditions to avoid:

Temperatures above 446F (230 ° C).

Materials to avoid:

Oxidizing agents. Strong bases.

11 . Toxicological information

Routes of entry:

N.A.

Acute toxicity:

Not likely to cause targeted organ effects or skin allergic reactions.

12 . Ecological information

Mobility:

No data available

Bioaccumulation:

The main resin is biodegradable.

Ecotoxicity effects:

Data not available.

13 . Disposal considerations

Waste Disposal Methods:

In accordance with local and national regulations. Do not contaminate ponds, waterways or ditches with chemical or used container. Contact manufacturer if needed.

14 . Transport information

No a DOT controlled material (United States)



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Proper Shipping Name:	Not regulated
Hazard Class:	Not regulated
UN. NO.:	Not regulated
Packing Group:	Not regulated
IMDG EMS:	Not regulated

15 . Regulatory information

European/International Regulations

This product is on the European Inventory of Existing Commercial Chemical Substances.

European Labeling in Accordance with EC Directives

Hazard Symbols: N/A

Risk phrases: N/A

Safety phrases: N/A

HMIS (U.S.A.):

Health Hazard: 0

Fire Hazard: 1

Reactivity: 0

Personal Protection:

National Fire Protection Association(U.S.A.):

Health: 0

Flammability: 1

Reactivity: 0



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Specific Hazard:

Federal and State Regulations: TSCA 8(b) inventory: Listed

Canada--WHMIS: Not controlled

For details regulations you should contact the appropriate agency in your country.

16 . Other information

Declare to reader

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. This shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.