

## MATERIAL SAFETY DATA SHEET

according to Regulation (EU) No. 1907/2006

PLA by Innofil3D BV

### 1. IDENTIFICATION OF THE PRODUCT AND OF THE COMPANY

Trade name	: Innofil3D PLA
Chemical name	: Polylactic Acid
Chemical family	: Thermoplastic Polylactic Acid
Use	: Monofilament for 3D-printing
Company	: Innofil3D BV
Street address	: Eerste Bokslootweg 17
Postal code and city	: 7821 AT Emmen
Country	: The Netherlands
Telephone number	: +31 (0) 591 820 389

### 2. HAZARDS IDENTIFICATION

Classification according to Regulation (EG) No. 1272/2008 [CLP/GHS]:

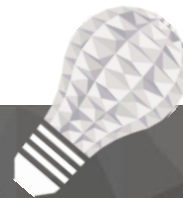
This product is not classified as hazardous according to Regulation (EG) 1272/2008 as amended.

Risk advice to man and the environment:

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

Potential health effects

Eye contact	: Contact with eyes may cause irritation.
Skin contact	: Substance may cause slight skin irritation.
Ingestion	: Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.
Inhalation	: Inhalation of dust may cause shortness of breath, tightness of the chest, a sore throat and cough.
Target organ effects	: There were no target organ effects noted following ingestion or dermal exposure in animal studies.
Sensitization	: Did not cause sensitization on laboratory animals.
Specific hazards	: No information available.
Flammability	: Fine dust dispersed in air may ignite.



### 3. COMPOSITION/INFORMATION ON INGREDIENTS

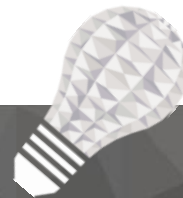
Chemical name	: Polylactic Acid
CAS Number	: 9051-89-2
Weight	: > 98%
OSHA Exposure Limits	: None.
ACGIH Exposure Limits	: None.
Other standards	: This material can generate Particulates Not Otherwise Classifiable (PNOC). The Occupational Safety and Health Administration (OSHA) PEL/TWA for PNOC is 15 mg/m <sup>3</sup> for total dust and 5 mg/m <sup>3</sup> for the respirable fraction. The American Conference of Governmental Industrial Hygienists (ACGIH) TLV/TWA for PNOC is 10 mg/m <sup>3</sup> for inhalable particulates and 3 mg/m <sup>3</sup> for respirable particulates.

### 4. FIRST-AID MEASURES

Eye contact	: Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Call a physician immediately.
Skin contact	: Rinse immediately with plenty of water for at least 15 minutes. If skin irritation persists, call a physician. Cool skin rapidly with cold water after contact with hot polymer.
Inhalation	: Move to fresh air. 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.
Note to physician	: Treat symptomatically.

### 5. FIRE-FIGHTING MEASURES

Flammable properties	: Autoignition temperature: 388 °C.
Suitable extinguishing media	: Foam. Water. Carbon dioxide (CO <sub>2</sub> ). Dry chemical. Alcohol resistant foams are preferred if available. General-purpose synthetic foams (including AFFF) or protein foams may function, but much less effectively.
Hazardous decomposition products	: Burning produces obnoxious and toxic fumes Aldehyde Carbon monoxide (CO) carbon dioxide (CO <sub>2</sub> ).
Special protective equipment for firefighters	: As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.
Under fire conditions	: Cool containers / tanks with spray water. Water mist may be used to cool closed containers.
Other information	: Fine dust dispersed in air may ignite. Risks of ignition followed by flame propagation or secondary explosions shall be prevented by avoiding accumulation of dust, e.g. on floors and ledges.



## 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions : Use personal protective equipment. See Section 8. Remove all sources of ignition. Avoid dust formation. Avoid contact with skin and eyes. Sweep up to prevent slipping hazard.
- Environmental precautions : Do not flush into surface water or sanitary sewer system. Do not allow material to contaminate ground water system.
- Methods for cleaning up : Shovel into suitable container for disposal.

## 7. HANDLING AND STORAGE

- Safe handling advice : Avoid contact with skin and eyes. Avoid dust formation. Workers should be protected from the possibility of contact with molten material during fabrication. Low hazard for usual industrial or commercial handling. Use personal protective equipment. See Section 8.
- Storage conditions : Store in cool place. Keep at temperatures below 50 °C (122F). No special restrictions on storage with other products.
- Precautions : No special precautions required.

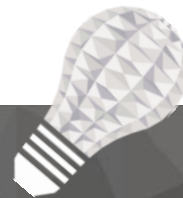
## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

- Engineering measures : Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction. Provide appropriate exhaust ventilation at places where dust is formed.

- Control parameters : None.

### Personal protective equipment

- Eye protection : Safety glasses with side-shields. Goggles.
- Skin and body protection : Impervious clothing.
- Respiratory protection : Respirator must be worn if exposed to dust. Wear respirator with dust filter. Respiratory protection is needed if any of the exposure limits in Section 2 are exceeded. Consult an industrial hygiene professional prior to respirator selection and use. Use a positive-pressure air supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air purifying respirators may not provide adequate protection. **WARNING:** Air purifying respirators do not protect workers in oxygen deficient atmospheres.
- Hand protection : Preventive skin protection.
- Hygiene measures : Avoid contact with skin, eyes and clothing.



## 9. PHYSICAL AND CHEMICAL PROPERTIES

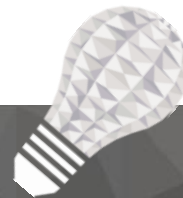
Appearance	: Filament
Color	: Natural translucent, multiple colors transparent and solid colored.
Physical state	: Solid at room temperature.
Odor	: Sweet.
Melting point/range	: 145 – 160 °C.
Boiling point/range	: Not applicable.
Decomposition temperature	: 250 °C (485F)
Density	: 1.24 g/cm <sup>3</sup> .
pH	: Not applicable.
Vapor pressure	: Not determined.
Vapor density	: Not determined.
Evaporation rate	: Not determined.
Water solubility	: Insoluble.
Solubility in other solvents	: None known.

## 10. STABILITY AND REACTIVITY

Stability	: Stable under recommended storage conditions.
Conditions to avoid	: Temperatures above 230°C (446F).
Materials to avoid	: Oxidizing agents. Strong bases.
Decomposition	: Burning produces obnoxious and toxic fumes. Aldehydes. Carbon monoxide (CO). Carbon dioxide (CO <sub>2</sub> ).
Polymerization	: Not applicable.

## 11. TOXICOLOGICAL INFORMATION

Principle routes of exposure	: Eye contact. Skin contact. Inhalation. Ingestion.
Acute toxicity	: There were no target organ effects noted following ingestion or dermal exposure in animal studies.
Local effects	: May cause eye/skin irritation. Product dust may be irritating to eyes, skin and respiratory system. Caused mild to moderate conjunctival irritation in eye irritation studies using rabbits. Caused very mild redness in dermal irritation studies using rabbits (slightly irritating). Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.
Long term toxicity	: Did not cause skin allergic reactions in skin sensitization studies using guinea pigs.
Specific effects	: May cause skin irritation and/or dermatitis. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. Inhalation of dust may cause shortness of breath, tightness of the chest, a sore throat and cough. Burning produces irritant fumes.
Mutagenic effects	: Not mutagenic in AMES Test.



Reproductive toxicity	: No data is available on the product itself.
Carcinogenic effects	: No data is available on the product itself.
Target organ effects	: There were no target organ effects noted following ingestion or dermal exposure in animal studies.

## 12. ECOLOGICAL INFORMATION

Mobility	: No data available.
Bioaccumulation	: Does not bioaccumulate. Inherently biodegradable.
Ecotoxicity effects	: EC50/72h/algae > 1100 mg/L.

## 13. DISPOSAL CONSIDERATIONS

### Waste from residues / unused products:

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

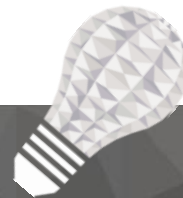
## 14. TRANSPORT INFORMATION

IMDG	: Not regulated.
ICAO/IATA	: Not regulated.

## 15. REGULATORY INFORMATION

NOTICE: The information herein is presented in good faith and believed to be accurate as of the print date shown above. However, no warranty, express or implied is given. Regulatory requirements are subject to change and may differ from one location to another; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. See other sections for health and safety information.

EU regulation 10/2011	: Approved.
RoHS Directive	: Certified.
EN 71-3; Toy safety	: Certified.
REACH; 1907/2006/EC	: Certified.
FDA	: Approved.(except some colors, see TDS)



## 16. OTHER INFORMATION

- The information in this Material Safety Data Sheet (MSDS) is mainly based on information used from the supplier of the raw materials which are used for production of the filaments.
- The information in this Material Safety Data Sheet (MSDS) is based on current knowledge and experience. No liability can be assumed for the accuracy and completeness of this information.
- Users should consider this information only as additional to other data gathered. Independent determination of suitability and completeness of information from all available sources is essential to ensure proper and safe use and disposal of these materials.
- The information in this MSDS applies for this specific material only. It therefore does not apply for its usage in combination with other materials or ways of processing.