

FUSION 
FILAMENTS
MATERIAL SAFETY DATA SHEET
HTPLA+

SECTION ONE: IDENTIFICATION

1.1. Product identifier

Product name: Ingeo™ biopolymer

Product code: 3D870

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

Product Use:

A biopolymer to be used in 3D printing applications.

1.3. Details of the supplier of the safety data sheet

Supplier:

NatureWorks LLC, 15305 Minnetonka Blvd, Minnetonka, MN 55345 USA

Customer Information Center: 800-664-6436

sdsinquiry@natureworksllc.com

952-562-3450

1.4. Emergency telephone number

Emergency telephone numbers (24 hours a day):

(Medical Information) (651) 632-9273

(Transportation Information) CHEMTREC: 800-424-9300 (in the United States)

(Transportation Information) CHEMTREC: (703) 527-3887 (outside the United States)

SECTION TWO: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

Classification: This product is NOT classified as hazardous according to Regulation EU 1272/2008 or with Directive 67/548/EC or 1999/45/EC as amended.

2.2. Label elements

Symbols/Pictograms None required

Signal word: None

Hazard Statements: None required

Precautionary Statements None required

2.3. Other hazards

No information available

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SECTION THREE: COMPOSITION AND INFORMATION

3.1. Chemical Name and CAS

Chemical name: Polylactide Resin

CAS: 9051-89-2

Weight: >85%

3.2. Other standards

This material can generate Particulates Not Otherwise Classifiable (PNOC). The Occupational Safety and Health Administration (OSHA) PEL/TWA for PNOC is 15mg/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.

SECTION FOUR: FIRST AID MEASURES

Emergency telephone numbers (24 hours a day):

- (Medical Information) (651) 632-9273
- (Transportation Information) CHEMTREC: 800-424-9300 (in the United States)
- (Transportation Information) CHEMTREC: (703) 527-3887 (outside the United States)

4.1. Description of 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. Do not peel polymer from the skin. Consult a physician.

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.

Notes to physician: Treat symptomatically.

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SECTION FOUR: COMPOSITION AND INFORMATION CONT.

4.2. Most important symptoms and effects, both acute and delayed

No information available

4.3. Indication of any immediate medical attention and special treatment needed

No information available

SECTION FIVE: FIRE FIGHTING MEASURES

Flammability:

Autoignition temperature: Not determined

Flammability Limits in Air:

Flammable limits in air - lower (%): Not applicable

Flammable limits in air - upper (%): Not applicable

5.1. Extinguishing media

Suitable extinguishing media: 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.

Unsuitable extinguishing media - None

5.2. Special hazards arising from the substance or mixture

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

5.3. Advice for firefighters

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 water spray Water mist may be used to cool closed containers 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.

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SECTION SIX: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

6.1.2. For emergency responders

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 material for containment and cleaning up

- Shovel into suitable container for disposal.

6.4. Reference to other sections

- No information available

SECTION SEVEN: HANDLING AND STORAGE

7.1. Precautions for safe handling

- Avoid contact with skin and eyes
- Workers should be protected from the possibility of contact with molten material during fabrication
- Use personal protective equipment as required
- See Section 8
- If small particles are generated during further processing, handling, or by other means, combustible dust concentrations in air may form
- Low hazard for usual industrial or commercial handling

7.2. Conditions for safe storage, including any incompatibilities

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

7.3. Specific end use (s)

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SECTION EIGHT: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Exposure limits:

- None established.
- 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.

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.

8.2. Exposure controls

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 listed in the control parameters 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.

Special hazard: Workers should be protected from the possibility of contact with molten material during fabrication

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SECTION NINE: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Physical State:	Solid Pellet
Appearance:	opaque, pellets.
Color:	Opaque Light brown Beige
Odor:	Sweet
pH:	Not Applicable
Vapor Pressure:	Not Determined
Vapor Density:	Not Determined
Evaporation Rate:	Not Determined
Density:	Not Determined
Boiling Point/Range:	Not Applicable
Autoignition Temp:	Not Determined
Flammability:	Fine dust dispersed in air may ignite
Flammability Limits in Air:	No information Available
Water Solubility:	Insoluble
Solubility in other Solvents:	None Known
Solubility:	Not Determined
Other Standards:	See section 8 for more information

9.2. Other information

None

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SECTION TEN: STABILITY AND REACTIVITY

10.1. Reactivity

None expected under conditions of normal use.

10.2. Chemical stability

10.3. Possibility of hazardous reactions

None expected under conditions of normal use

10.4. Conditions to avoid

Temperatures above 446F (230 °C).

10.5. Incompatible materials

Oxidizing agents
Strong bases

10.6. Hazardous decomposition products

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

SECTION ELEVEN: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Principle routes of exposure: Eye contact Skin contact Inhalation Ingestion

Acute toxicity: Not determined

Local effects: May cause eye/skin irritation. Product dust may be irritating to eyes, skin and respiratory system
Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea

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.

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SECTION ELEVEN: TOXICOLOGICAL INFORMATION CONT.

Mutagenic effects:	No data is available on the product itself.
Reproductive toxicity:	No data is available on the product itself.
Carcinogenic effects:	No data is available on the product itself.
Target organ effects:	Not determined
Ingestion:	No data is available on the product itself
Further information:	No information available

SECTION TWELVE: ECOLOGICAL INFORMATION

12.1. Toxicity

No data available

12.2. Persistence and degradability

No data available

12.3. Bioaccumulative potential

No data available

12.4. Mobility in soil

No data available

12.5. Results of PBT and vPvB assessment

12.6. Other adverse effects

No information available

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SECTION THIRTEEN: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

In compliance with the requirements of Directive 2008/98/EC

Waste from residues / unused products: In accordance with local and national regulations Do not contaminate ponds, waterways or ditches with chemical or used container. Contact manufacturer.

Contaminated packaging: Empty remaining contents Do not re-use empty containers. Empty containers should be transported/delivered using a registered waste carrier to local recyclers for disposal.

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

SECTION FOURTEEN: TRANSPORT INFORMATION

U.S. Department of Transportation (DOT):

Proper shipping name:	None
Hazard class:	Not regulated
UN-No:	None
Packing group:	None
Hazardous Substances RQs:	None

IMDG:

Proper shipping name:	None
Hazard class:	Not regulated
UN/Id No.:	None
Packing group:	None

ICAO/IATA:

Proper shipping name:	None
Hazard Class:	Not regulated
UN-No.:	None
Packing group:	None

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SECTION FIFTEEN: REGULATORY INFORMATION

15.1. Safety, health and environmental regulations/legislation specific for the substance of mixture

- No information available

15.2. Chemical safety assessment

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

INTERNATIONAL INVENTORIES

Canada DSL Inventory List :

Listed

Japanese inventory (ENCS):

Listed

Australia (AICS):

Listed

Korean chemical inventory:

Listed

China inventory of existing chemical substances list: Listed

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SECTION SIXTEEN: OTHER INFORMATION

Label information: Ingeo™ biopolymer

Product code: 3D870

Reason for revision: New SDS

Revision Number: 1

Revision date: 02/03/2017

Print date: 02/03/2017

Prepared by: NatureWorks LLC Health and Safety

**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.