

Product name:  
Ingeo™ biopolymer  
Product code:  
3D870

Revision Number: 1

Revision date:  
02/03/2017

Print date:  
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## SAFETY DATA SHEET

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

#### 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 2: 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

The information in this Safety Data Sheet (SDS) is provided in good faith and believed to be accurate. This SDS contains a general summary of hazards known to NatureWorks, but does not purport to describe every hazard that exists. NatureWorks and its subsidiaries ("NatureWorks") expect each customer or user of its products (each, a "User") to study this SDS carefully and consult appropriate expertise to become aware of any hazards associated with NatureWorks products. NATUREWORKS MAKES NO WARRANTY, EXPRESS OR IMPLIED, REGARDING THE INFORMATION CONTAINED HEREIN OR ITS PRODUCTS, INCLUDING BUT NOT LIMITED TO ANY WARRANTY AS TO ACCURACY OR COMPLETENESS OF INFORMATION, OR ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

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### 2.3. Other hazards

No information available

## SECTION 3: Composition/information on ingredients

Chemical name and CAS	Weight %
Polylactide resin 9051-89-2	>85

**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.

## SECTION 4: 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

### 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 5: Firefighting measures

**Flammability:**

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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 (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.

**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 (CO<sub>2</sub>)

**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.

## SECTION 6: 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 7: 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

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## 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)

# SECTION 8: 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/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.

### 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.

# SECTION 9: 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

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Vapor pressure:	Not determined
Vapor density:	Not determined
Evaporation rate:	Not determined
Density:	Not determined
Boiling point / boiling range:	Not applicable
Autoignition temperature:	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

### SECTION 10: 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 (CO<sub>2</sub>)

### SECTION 11: 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

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diarrhea Inhalation of dust may cause shortness of breath, tightness of the chest, a sore throat and cough Burning produces irritant fumes.

**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 12: 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

## SECTION 13: 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 14: Transport information

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#### 14.4. Packaging group

### SECTION 15: 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

### SECTION 16: Other information

Label information: Ingeo™ biopolymer  
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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.