

Product name:

Ingeo™ Biopolymer

Product code:

3D450

Revision Number: 5**Revision date:**

08/06/2020

Print date:

08/10/2020

SAFETY DATA SHEET

Regulation (EC) No. 1907/2006

SECTION 1: Identification of the substance/mixture and of the company/undertaking**1.1. Product identifier****Product name:** Ingeo™ Biopolymer**Product code:** 3D450**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

sdsinquiry@natureworksllc.com

952-562-3450

1.4. Emergency telephone number**Emergency telephone numbers (24 hours a day):**

(Medical Information) +1-(651)-632-9273

(Transportation Information) CHEMTREC: +1-(800)-424-9300 (in the United States)

(Transportation Information) CHEMTREC: +1-(703)-527-3887 (outside the United States)

SECTION 2: Hazards identification**2.1. Classification of the substance or mixture**

Not classified

2.2. Label elements**Signal word:** None**Hazard Statements:** None**Precautionary Statements:** None**2.3. Other hazards**

No information available

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SECTION 3: Composition/information on ingredients

Chemical name and CAS	Weight %
Poly lactide resin 9051-89-2	>75
Magnesium Silicate 14807-96-6	<25

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.

SECTION 4: First aid measures

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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: Adverse effects are not expected from accidental skin contact following occupational exposure. After contact with skin, wash immediately with plenty of water If skin irritation persists, call a physician Cool skin rapidly with cold water after contact with hot polymer. DO NOT attempt to remove hot polymer from skin or contaminated clothing as skin may be easily damaged. Call a physician immediately

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

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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:**

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 known

5.2. Special hazards arising from the substance or mixtureBurning 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 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

- Use personal protective equipment as required
- Avoid contact with skin and eyes
- Avoid dust formation
- Remove all sources of ignition
- Sweep up to prevent slipping hazard

6.1.2. For emergency responders

- Use with proper personal protective equipment (see Section 8).

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

- Clean up promptly by scoop or vacuum.
- Sweep up and shovel into suitable containers for disposal

6.4. Reference to other sections

- No information available

SECTION 7: Handling and storage

7.1. Precautions for safe handling

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

7.2. Conditions for safe storage, including any incompatibilities

- Store at temperatures not exceeding 50 °C/ 122 °F. Keep cool
- No special restrictions on storage with other products.

7.3. Specific end use(s)

- No data available

SECTION 8: Exposure controls/personal protection

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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 in Section 3 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

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Appearance:	opaque, pellets.
Color:	Off-white
Odor:	Sweet
pH:	No information available
Vapor pressure:	Not determined
Vapor density:	Not determined
Evaporation rate:	Not determined
Partition Coefficient (n-octanol/water):	Not determined
Density:	Not determined
Decomposition temperature:	482F (250C)
Boiling point / boiling range:	Not applicable
Melting point / melting range:	Not determined
Autoignition temperature:	Not determined
Freezing point °C:	Not determined
Flash point:	Not determined
Flammability:	Fine dust dispersed in air may ignite
Flammability Limits in Air:	No information available
Water solubility:	Insoluble
Solubility in other solvents:	Not determined
Solubility:	Not determined

9.2. Other information**SECTION 10: Stability and reactivity****10.1. Reactivity**

None expected under conditions of normal use.

10.2. Chemical stability

Stable under recommended storage conditions

10.3. Possibility of hazardous reactions

None expected under conditions of normal use

10.4. Conditions to avoid

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Temperatures above 446F (230 °C).

Avoid keeping resin molten for excessive periods of time at elevated temperatures. Prolonged exposure will cause polymer degradation

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 11: Toxicological information****11.1. Information on toxicological effects**

Principle routes of exposure: Eye contact Skin contact Inhalation Ingestion

Acute toxicity: No data available

Local effects: Product dust may be irritating to eyes, skin and respiratory system Resin particles, like other inert materials, are mechanically irritating to eyes. 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.

Long term toxicity: No data available

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

Skin: No data available

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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

Not applicable

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 Should not be released into the environment 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.

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SECTION 14: Transport information**Applicable to:** ADR/RID: IMDG: ICAO/IATA: ADN**14.1. UN number** None**14.2. UN proper shipping name** None**14.3. Transport hazard class(es)** None**14.4. Packaging group** None**14.5. Environmental hazards** None**14.7. Transport in bulk according to** None

Annex II of Marpol and the IBC Code

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

- Not applicable

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:** Listed**INTERNATIONAL INVENTORIES****Canada DSL Inventory List :** Listed**REACH/EU EINECS List :** Components are in compliance with and/or are listed.

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Japanese inventory (ENCS): Listed**Australia (AICS):** Listed**Korean chemical inventory:** Listed**Phillipines (PICCS) inventory:** Contact NatureWorks for additional information.**Taiwan Chemical Substance inventory (TCSI):** Listed**China inventory of existing chemical substances list :** Listed**SECTION 16: Other information****Label information:**

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Reason for revision:

Document Review

Revision Number:

5

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Prepared by:

NatureWorks LLC Health and Safety

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