

# Safety Data Sheet

Material Name: PLA 3D Printer Filament/ MakerBot PLA

SDS ID: MB-002\_US

---

## Section 1 - PRODUCT AND COMPANY IDENTIFICATION

---

### Material Name

PLA 3D Printer Filament/ MakerBot PLA

### Synonyms

Polyactide resin

### Chemical Family

polymer, copolymer

### Product Use

3D Printing

### Restrictions on Use

Do not use in printers where temperatures exceed 250°C.

### Details of the supplier of the safety data sheet

MakerBot Industries LLC

One MetroTech Center

Brooklyn, NY 11201

USA

Phone #: MakerBot (347) 334-6800

Emergency Phone #: +1 978 495 5580 –USA multi-linguist response

E-mail: RegulatoryCompliance@makerbot.com

Emergency Poison Control Hot Line : 1 (800) 222-1222

---

## Section 2 - HAZARDS IDENTIFICATION

---

### Classification in accordance with paragraph (d) of 29 CFR 1910.1200.

None needed according to classification criteria

### GHS Label Elements

#### Symbol(s)

None needed according to classification criteria

#### Signal Word

None needed according to classification criteria

#### Hazard Statement(s)

None needed according to classification criteria.

#### Precautionary Statement(s)

#### Prevention

None needed according to classification criteria.

#### Response

None needed according to classification criteria.

#### Storage

None needed according to classification criteria.

# Safety Data Sheet

Material Name: PLA 3D Printer Filament/ MakerBot PLA

SDS ID: MB-002\_US

## Disposal

Dispose of contents/container in accordance with local/regional/national/international regulations.

---

## Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

---

CAS	Component Name	Percent
9051-89-2	1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3R-cis)-, polymer with (3S-cis)-3,6-dimethyl-1,4-dioxane-2,5-dione and trans-3,6-dimethyl-1,4-dioxane-2,5-dione	>98

---

## Section 4 - FIRST AID MEASURES

---

### Inhalation

Heating may release vapors which may be irritating. In case of inhalation of decomposition products, affected person should be moved into fresh air and kept still. Get medical advice/attention.

### Skin

It is unlikely that first aid will be required. IF ON SKIN: Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention.

### Eyes

It is unlikely that first aid will be required. Dust may be irritating to the eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention, if needed.

### Ingestion

IF SWALLOWED: Rinse mouth. Get immediate medical advice/attention.

### Indication of any immediate medical attention and special treatment needed

First aid is not expected to be necessary if material is used under ordinary conditions and as recommended. Treat symptomatically and supportively.

### Most Important Symptoms/Effects

#### Acute

Molten material may cause thermal burns.

#### Delayed

No information on significant adverse effects.

### Note to Physicians

Treat symptomatically. Give artificial respiration if not breathing.

### Antidote

None known. Treat symptomatically and supportively.

---

# Safety Data Sheet

Material Name: PLA 3D Printer Filament/ MakerBot PLA

SDS ID: MB-002\_US

## Section 5 - FIRE FIGHTING MEASURES

---

### Extinguishing Media

#### Suitable Extinguishing Media

Water, alcohol resistant foam, regular dry chemical

#### Unsuitable Extinguishing Media

None known

### Special Hazards Arising from the Chemical

Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.

### Hazardous Combustion Products

Oxides of carbon, aldehydes. May decompose upon heating to produce corrosive and/or toxic fumes.

### Fire Fighting Measures

Wear full protective fire fighting gear including self contained breathing apparatus (SCBA) for protection against possible exposure. Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind and keep out of low areas.

### Special Protective Equipment and Precautions for Firefighters

Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

---

## Section 6 - ACCIDENTAL RELEASE MEASURES

---

### Personal Precautions, Protective Equipment and Emergency Procedures

No measures required.

### Methods and Materials for Containment and Cleaning Up

Collect spilled material in appropriate container for reuse or disposal. Dispose in accordance with all applicable regulations.

### Environmental Precautions

Avoid release to the environment. Comply with all applicable regulations on spill and release reporting. Prevent entry into waterways, sewers, basements, or confined areas.

---

## Section 7 - HANDLING AND STORAGE

---

### Precautions for Safe Handling

Minimize dust generation and accumulation. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces. Dry powders can build static electricity charges when subjected to the friction of transfer and mixing operations.

### Conditions for Safe Storage, Including any Incompatibilities

None needed according to classification criteria.

Store in a cool dry place. Store below 50 C. Avoid heat, flames, sparks and other sources of ignition. Keep away from incompatible materials.

### Incompatible Materials

# Safety Data Sheet

Material Name: PLA 3D Printer Filament/ MakerBot PLA

SDS ID: MB-002\_US

Oxidizing agents, strong bases

---

## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

---

### Component Exposure Limits

1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3R-cis)-, polymer with (3S-cis)-3,6-dimethyl-1,4-dioxane-2,5-dione and trans-3,6-dimethyl-1,4-dioxane-2,5-dione	9051-89-2
ACGIH:	10 mg/m <sup>3</sup> TWA inhalable particles, recommended; 3 mg/m <sup>3</sup> TWA respirable particles, recommended (related to Particulates not otherwise classified (PNOC))
OSHA (US):	15 mg/m <sup>3</sup> TWA total dust; 5 mg/m <sup>3</sup> TWA respirable fraction (related to Particulates not otherwise classified (PNOC))
	15 mppcf TWA respirable fraction; 5 mg/m <sup>3</sup> TWA respirable fraction; 50 mppcf TWA total dust; 15 mg/m <sup>3</sup> TWA total dust (related to Particulates not otherwise classified (PNOC))

### EU - Occupational Exposure (98/24/EC) - Binding Biological Limit Values and Health Surveillance Measures

There are no biological limit values for any of this product's components.

### ACGIH - Threshold Limit Values - Biological Exposure Indices (BEI)

There are no biological limit values for any of this product's components.

### Engineering Controls

Provide local exhaust ventilation system. Ventilation should be sufficient to effectively remove and prevent buildup of any dusts or fumes that may be generated during handling or thermal processing.

### Individual Protection Measures, such as Personal Protective Equipment

#### Eye/face protection

None during normal use. Protect against molten solid.

#### Skin Protection

None during normal use. Protect against molten solid.

#### Respiratory Protection

No respirator is required under normal conditions of use. If respirable dusts are generated, respiratory protection may be needed.

#### Glove Recommendations

Protect against molten solid. In the molten form: Wear protective gloves.

---

## Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

---

# Safety Data Sheet

Material Name: PLA 3D Printer Filament/ MakerBot PLA

SDS ID: MB-002\_US

<b>Appearance</b>	Spool,string,strand	<b>Physical State</b>	solid
<b>Odor</b>	odorless,sweet,plastic	<b>Color</b>	clear,translucent,opaque
<b>Odor Threshold</b>	varies	<b>pH</b>	Not available
<b>Melting Point</b>	150 - 180 °C	<b>Boiling Point</b>	Not available
<b>Freezing point</b>	Not available	<b>Evaporation Rate</b>	Not available
<b>Boiling Point Range</b>	Not available	<b>Flammability (solid, gas)</b>	Not available
<b>Autoignition</b>	388 °C	<b>Flash Point</b>	Not available
<b>Lower Explosive Limit</b>	Not applicable	<b>Decomposition</b>	>250 °C
<b>Upper Explosive Limit</b>	Not applicable	<b>Vapor Pressure</b>	Not available
<b>Vapor Density (air=1)</b>	Not available	<b>Specific Gravity (water=1)</b>	Not available
<b>Water Solubility</b>	Insoluble	<b>Partition coefficient: n-octanol/water</b>	Not available
<b>Viscosity</b>	Not available	<b>Solubility (Other)</b>	Not available
<b>Density</b>	1.25 g/cc	<b>Molecular Weight</b>	Not available

---

## Section 10 - STABILITY AND REACTIVITY

---

### Reactivity

The product is chemically stable under recommended conditions of storage, use and temperature.

### Chemical Stability

Stable under normal conditions of use.

### Possibility of Hazardous Reactions

Will not polymerize.

### Conditions to Avoid

Avoid contact with temperatures above 250 C.

### Incompatible Materials

Oxidizing agents, strong bases

### Hazardous decomposition products

Oxides of carbon, aldehydes

### Thermal decomposition products

May decompose upon heating to produce corrosive and/or toxic fumes.

# Safety Data Sheet

Material Name: PLA 3D Printer Filament/ MakerBot PLA

SDS ID: MB-002\_US

---

## Section 11 - TOXICOLOGICAL INFORMATION

---

### Information on Likely Routes of Exposure

#### Inhalation

No hazard is expected from the normal use of this product. Dust may cause irritation of the nose, throat and upper respiratory tract.

#### Skin Contact

Molten material may cause burns.

#### Eye Contact

Molten material may cause burns.

#### Ingestion

No information on significant adverse effects.

### Acute and Chronic Toxicity

#### Component Analysis - LD50/LC50

The components of this material have been reviewed in various sources and the following selected endpoints are published:

1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3R-cis)-, polymer with (3S-cis)-3,6-dimethyl-1,4-dioxane-2,5-dione and trans-3,6-dimethyl-1,4-dioxane-2,5-dione (9051-89-2)

Oral LD50 Rat >5000 mg/kg

Dermal LD50 Rabbit >2000 mg/kg

#### Immediate Effects

Molten material may cause thermal burns.

#### Delayed Effects

No information on significant adverse effects.

#### Irritation/Corrosivity Data

No data available.

#### Respiratory Sensitization

No data available.

#### Dermal Sensitization

Found to be non-sensitizing when tested on guinea pigs.

#### Component Carcinogenicity

None of this product's components are listed by ACGIH, IARC, NTP, DFG or OSHA

#### Germ Cell Mutagenicity

Negative in the Ames test for mutagenicity.

#### Tumorigenic Data

No data available

#### Reproductive Toxicity

No data available.

#### Specific Target Organ Toxicity - Single Exposure

No target organs identified.

#### Specific Target Organ Toxicity - Repeated Exposure

# Safety Data Sheet

**Material Name: PLA 3D Printer Filament/ MakerBot PLA**

**SDS ID: MB-002\_US**

No target organs identified.

**Aspiration hazard**

No data available.

**Medical Conditions Aggravated by Exposure**

No data available.

---

## Section 12 - ECOLOGICAL INFORMATION

---

**Component Analysis - Aquatic Toxicity**

1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3R-cis)-, polymer with (3S-cis)-3,6-dimethyl-1,4-dioxane-2,5-dione and trans-3,6-dimethyl-1,4-dioxane-2,5-dione	9051-89-2
Algae:	EC50 72 hr Algae >1100 mg/L

**Persistence and Degradability**

No information available for the product.

**Bioaccumulative Potential**

No information available for the product.

**Mobility**

No information available for the product.

---

## Section 13 - DISPOSAL CONSIDERATIONS

---

**Disposal Methods**

Dispose of contents/container in accordance with local/regional/national/international regulations. Avoid release to the environment. Incineration should be done in accordance with prevailing municipal, state, and federal laws and standards from local environmental agencies.

**Component Waste Numbers**

The U.S. EPA has not published waste numbers for this product's components

---

## Section 14 - TRANSPORT INFORMATION

---

**US DOT Information:**

UN#: Not regulated

---

## Section 15 - REGULATORY INFORMATION

---

**U.S. Federal Regulations**

# Safety Data Sheet

**Material Name: PLA 3D Printer Filament/ MakerBot PLA**

**SDS ID: MB-002\_US**

None of this products components are listed under SARA Sections 302/304 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), or require an OSHA process safety plan.

**SARA Section 311/312 (40 CFR 370 Subparts B and C)**

**Acute Health: No Chronic Health: No Fire: No Pressure: No Reactivity: No**

## U.S. State Regulations

None of this product's components are listed on the state lists from CA, MA, MN, NJ or PA

## Not listed under California Proposition 65

## Canadian WHMIS Ingredient Disclosure List (IDL)

The components of this product are either not listed on the IDL or are present below the threshold limit listed on the IDL.

## Component Analysis - Inventory

1,4-Dioxane-2,5-dione, 3,6-dimethyl-, (3R-cis)-, polymer with (3S-cis)-3,6-dimethyl-1,4-dioxane-2,5-dione and trans-3,6-dimethyl-1,4-dioxane-2,5-dione (9051-89-2)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR - KECI/KECL	KR - TCCA	CN	NZ	MX	TW
Yes	DSL	No	Yes	No	Yes	No	No	No	Yes	Yes	No	Yes

---

## Section 16 - OTHER INFORMATION

---

## NFPA Ratings

Health: 0 Fire: 1 Reactivity: 0

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

## Summary of Changes

New SDS : 08/26/2015

New SDS : 09/26/2016 Updated phone numbers, email

## Key / Legend

ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CLP - Classification, Labelling, and Packaging; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSD - Dangerous Substance Directive; DSL - Domestic Substances List; EEC - European Economic Community; EINECS - European Inventory of Existing Commercial Chemical Substances; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; JP - Japan; Kow - Octanol/water partition coefficient; KR - Korea; LEL - Lower Explosive Limit; LLV - Level Limit Value; LOLI - List Of Lists™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PH -



# Safety Data Sheet

**Material Name: PLA 3D Printer Filament/ MakerBot PLA**

**SDS ID: MB-002\_US**

Philippines; RCRA - Resource Conservation and Recovery Act; REACH- Registration, Evaluation, Authorisation, and restriction of Chemicals; RID - European Rail Transport; SARA - Superfund Amendments and Reauthorization Act; STEL - Short-term Exposure Limit; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act; TWA - Time Weighted Average; UEL - Upper Explosive Limit; US - United States.

## **Other Information**

### **Disclaimer:**

Supplier gives no warranty whatsoever, including the warranties of merchantability or of fitness for a particular purpose. Any product purchased is sold on the assumption the purchaser shall determine the quality and suitability of the product. Supplier expressly disclaims any and all liability for incidental, consequential or any other damages arising out of the use or misuse of this product. No information provided shall be deemed to be a recommendation to use any product in conflict with any existing patent rights.