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

1.1 Product identifier

Material Name

PLA 3D Printer Filament/ MakerBot PLA

Synonyms

Polyactide resin

Chemical Family

polymer, copolymer

Substance Registration Number(s)

Polymers are exempted from the provisions on registration of Title II of REACH (Article 2(9)). The appropriate monomers of this polymer have been registered.

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

Identified uses

3D Printing

Uses advised against

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

1.3 Details of the supplier of the safety data sheet

MakerBot Industries LLC

One MetroTech Center

Brooklyn, NY 11201

USA

Emergency Phone #: MakerBot (347) 334-6800

E-mail: regulatorycompliance@makerbot.com

Stratasys GmbH | MakerBot Division

Airport Boulevard B120

77836 Rheinmuenster

Germany

Phone: +49-7229-7772-0

E-mail: eu-contact@makerbot.com

1.4 Emergency telephone number

+49 722 97772280

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 [CLP]

None needed according to classification criteria

2.2 Label elements

Labeling according to Regulation (EC) No. 1272/2008 [CLP]**Hazard symbols**

None needed according to classification criteria

Signal word

None needed according to classification criteria

Hazard statements

None needed according to classification criteria.

Precautionary statements

Prevention

None needed according to classification criteria.

Response

None needed according to classification criteria.

Storage

None needed according to classification criteria.

Disposal

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

SECTION 3: Composition / information on ingredients

CAS EC No Registration No	Component Name Synonyms	1272/2008 (CLP)	Percent
9051-89-2 --	Polyactide resin	--	>98

SECTION 4: First aid measures

4.1 Description of first aid measures

Inhalation

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. In case of inhalation of decomposition products, affected person should be moved into fresh air and kept still. Get medical advice/attention.

Skin

IF ON SKIN: Wash with plenty of soap and water. Get medical advice/attention.

Eyes

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical advice/attention.

Ingestion

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

4.2 Most Important Symptoms/Effects

Acute

Molten material may cause thermal burns.

Delayed

No information on significant adverse effects.

4.3 Indication of Immediate Medical Attention and Special Treatment

Treat symptomatically and supportively.

Note to Physicians

Treat symptomatically. Give artificial respiration if not breathing.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

Water, alcohol resistant foam, regular dry chemical

Unsuitable Extinguishing Media

None known

5.2 Special hazards arising from the substance or mixture

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.

Combustion

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.

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

6.1 Personal precautions, protective equipment and emergency procedures

No measures required.

6.2 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.

6.3 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.

6.4 Reference to other sections

Safe handling: see section 7. Personal protection equipment (PPE): see section 8. Disposal: see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Do not eat, drink or smoke when using this product. 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.

7.2 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

Oxidizing agents, strong bases

7.3 Specific end use(s)

3D Printing

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Component Exposure Limits

Polyactide resin	9051-89-2
Belgium:	3 mg/m ³ TWA alveolar fraction; 10 mg/m ³ TWA inhalable fraction (related to Particulates not otherwise classified (PNOC))
France:	10 mg/m ³ TWA [VME] (restrictive limit); 5 mg/m ³ TWA [VME] (restrictive limit) (related to Particulates not otherwise classified (PNOC))
Ireland:	10 mg/m ³ TWA total inhalable; 4 mg/m ³ TWA respirable (related to Particulates not otherwise classified (PNOC))
	30 mg/m ³ STEL (calculated) total inhalable; 12 mg/m ³ STEL (calculated) respirable (related to Particulates not otherwise classified (PNOC))
Portugal:	10 mg/m ³ TWA [VLE-MP] inhalable fraction, particulate matter containing no Asbestos and <1% Crystalline silica; 3 mg/m ³ TWA [VLE-MP] respirable fraction, particulate matter containing no Asbestos and <1% Crystalline silica (related to Particulates not otherwise classified (PNOC))
Spain:	10 mg/m ³ TWA [VLA-ED] (recommended limit, this value is for the particulate matter that is free from Asbestos and contains less than 1% of Crystalline silica;no toxicological data to support TWA. Do not exceed generic limit value provided) inhalable fraction; 3 mg/m ³

	TWA [VLA-ED] (recommended limit, this value is for the particulate matter that is free from Asbestos and contains less than 1% of Crystalline silica;no toxicological data to support TWA. Do not exceed generic limit value provided) respirable fraction (related to Particulates not otherwise classified (PNOC))
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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.

Derived No Effect Levels (DNELs)

No DNELs available.

Predicted No Effect Concentrations (PNECs)

No PNECs available.

8.2 Exposure Controls

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.

Eye/face protection

Safety glasses or goggles are recommended when there is a potential for eye contact. 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.

Environmental exposure controls

No information available.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	spool string strand	Physical State	solid
Odor	odorless,sweet,plastic	Color	clear,translucent,opaque
Odor Threshold	varies	pH	Not available
Melting Point	150 - 180 °C	Boiling Point	Not available
Freezing point	Not available	Evaporation Rate	Not available
Boiling Point Range	Not available	Flammability (solid, gas)	Not available

Autoignition	388 °C	Flash Point	Not available
Lower Explosive Limit	Not applicable	Decomposition	>250 °C
Upper Explosive Limit	Not applicable	Vapor Pressure	Not available
Vapor Density (air=1)	Not available	Specific Gravity (water=1)	Not available
Water Solubility	Insoluble	Partition coefficient: n-octanol/water	Not available
Viscosity	Not available	Solubility (Other)	Not available
Density	1.25 g/cc		

SECTION 10: Stability and reactivity

10.1 Reactivity

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

10.2 Chemical stability

Stable under normal conditions of use.

10.3 Possibility of hazardous reactions

Will not polymerize.

10.4 Conditions to avoid

Avoid contact with temperatures above 250 C.

10.5 Incompatible materials

Oxidizing agents, strong bases

10.6 Hazardous decomposition products

Oxides of carbon, aldehydes

Thermal decomposition products

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

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Component Analysis - LD50/LC50

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

Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH)

Material Name: PLA 3D Printer Filament/ MakerBot PLA

SDS ID: MB-002_EU

Polyactide resin (9051-89-2)
Oral LD50 Rat >5000 mg/kg
Dermal LD50 Rabbit >2000 mg/kg

Irritation/Corrosivity Data

No data available.

Respiratory Sensitization

No data available.

Dermal Sensitization

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

Germ Cell Mutagenicity

Negative in the Ames test for mutagenicity.

Component Carcinogenicity

None of this product's components are listed by IARC or DFG.

Reproductive toxicity

No data available.

Specific Target Organ Toxicity - Single Exposure

No target organs identified.

Specific Target Organ Toxicity - Repeated Exposure

No target organs identified.

Aspiration hazard

No data available.

SECTION 12: Ecological information

12.1 Toxicity

Component Analysis - Aquatic Toxicity

Polyactide resin	9051-89-2
Algae:	EC50 72 hr Algae >1100 mg/L

12.2 Persistence and degradability

No information available for the product.

12.3 Bioaccumulative potential

No information available for the product.

12.4 Mobility in soil

No information available for the product.

12.5 Results of PBT and vPvB assessment

EU - Interim Strategy for Management of PBT and vPvB Substances

No components of this material are listed.

SECTION 13: Disposal considerations

13.1 Waste treatment 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.

SECTION 14: Transport information

Component Marine Pollutants (IMDG)

Not regulated as dangerous goods.

		ADR	RID	ICAO	IATA	ADN	IMDG
14.1	UN Number	Not regulated	Not regulated	Not regulated	Not regulated	Not regulated	Not regulated
14.2	UN Proper Shipping Name	--	--	--	--	--	--
14.3	Transport Hazard Class(es)	--	--	--	--	--	--
14.4	Packing Group	--	--	--	--	--	--
14.5	Environmental Hazards	--	--	--	--	--	--
14.6	Special Precautions For User	--	--	--	--	--	--
14.7	Transport in Bulk According to Annex II or MARPOL 73/78 and the IBC Code	--	--	--	--	--	--
14.8	Additional information	--	--	--	--	--	--

International Bulk Chemical Code

This material does not contain any chemicals required by the IBC Code to be identified as dangerous chemicals in bulk.

SECTION 15: Regulatory information

Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH)

Material Name: PLA 3D Printer Filament/ MakerBot PLA

SDS ID: MB-002_EU

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

EU - REACH (1907/2006) - Annex XIV List of Substances Subject to Authorization

No components of this material are listed.

EU - REACH (1907/2006) - Article 59(1) Candidate List of Substances Subject to Authorization

No components of this material are listed.

EU - REACH (1907/2006) - Annex XVII Restrictions of Certain Dangerous Substances, Mixtures and Articles

No components of this material are listed.

EU - Biocides (1451/2007) - Existing Active Substance

No components of this material are listed.

Germany Regulations

Germany Water Classification

No components of this material are listed.

Denmark Regulations

No components of this material are listed.

Component Analysis - Inventory

Polyactide resin (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

16.1 Indication of changes

New SDS : 07/29/2015

New SDS : 09/22/2016

16.2 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 - Philippines; RCRA - Resource Conservation and Recovery Act; REACH- Registration, Evaluation,

Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH)

Material Name: PLA 3D Printer Filament/ MakerBot PLA

SDS ID: MB-002_EU

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

16.3 Key literature references and sources for data

Available upon request.

16.4 Methods Used for Classification of Mixture According to Regulation (EC) No 1272/2008

Available upon request.

16.5 Relevant H- and EUH-phrases (Number and full text)

None needed according to classification criteria

16.6 Training advice

Read the Safety Data Sheet before handling product.

16.7 Further 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.