SUNLU

PLA

Product features:	**Main applications:**
High compatibility, environmental protection, non-toxic and completely degradable Multiple colors	Ornaments, toys, ornaments, handcrafts **Points for attention**:

Properties	**Test Method**	**Test Condition**	**S.I. Units**	**Typical Values**
Mechanical				
Tensile Strength (X-Y)	ISO527/2	50mm/min	MPa	61
Young's Modulus (X-Y)	ISO527/2	1mm/min	MPa	3500
Elongation at break (X-Y)	ISO527/2	50mm/min	%	3.1
Flexural Strength (X-Y)	ISO178	2mm/min	MPa	83
Flexural Modulus (X-Y)	ISO178	2mm/min	MPa	2240
IZOD Impact Notched (X-Y)	ISO180	23℃	KJ/m^2	3.9
IZOD Impact Notched (Z-X)	ISO180	23℃	KJ/m^2	/
Shore hardness	ISO868	23℃	HD	85
Thermal				
Heat Deflection (HDT)	ISO75	0.45MPa	℃	53
Glass Transition(Tg)	ISO11357-3	10℃/min	℃	63
Melting Point	ISO11357-3	10℃/min	℃	164
@5%Decomposition Temp.	ISO11358	20℃/min	℃	≥374
Vicat Softening Temp.	ISO306	5kg,50℃/h	℃	54
Mold Shrinkage	ISO294	23℃	%	0.1-0.3
Coefficient of Thermal Exp.	ISO11359-2		μm (m·℃)	101×10^{-6}
Others				
Melt Flow Rate	ISO1133	190℃/2.16kg	g/10min	6.9
Density	ISO1183	23℃	g/cm^3	1.23
Volume Resistivity	IEC60093	-	ohm-cm	2.90E+15
Dielectric Constant	IEC60250	1kHz		1.51
Flammability	UL94	1.5mm	Class	HB
Chemical resistance				
Item		Class		
Weak Acid (pH 3-6)		Good		
Strong Acid (pH<3)		Poor		
Weak Bases (pH 8-10)		Good		
Strong Bases (pH >10)		Poor		
Deionized Water		Good		
Alcohol		Fair		
Ketone		Poor		
Petroleum Fuels		Good		

Ester	Good

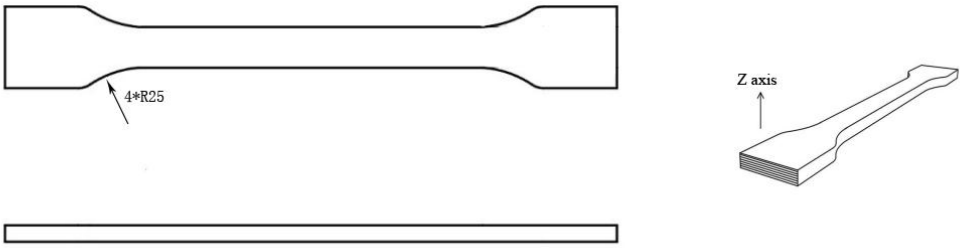
Class: Excellent, Good, Fair, Poor

Recommended Printing Parameters

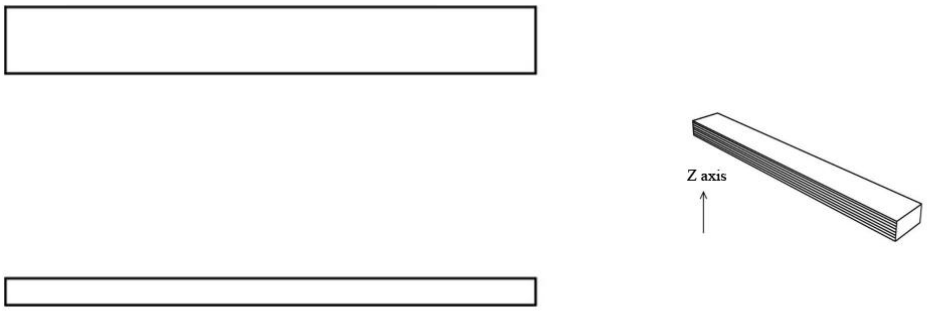
Parameters	Range	
Nozzle Print Temp.	Temperature ℃	Speed mm/s
	200-210	50-100
	210-240	100-200
Print Platform Temp.	50-60℃	
Print Platform Material	Normal	
Print Platform Treatment	No processing required	
Cool Fan	On☑/Off☐	
Raft Distance	0.4-0.6mm	
Retraction Distance	0.8-1.2mm	
Retraction Speed	30-40mm/s	
Room Temp.	Normal temperature	
Support Material	PVA	
Drying Temp.	50℃	

The above values are for the reference of the printer only, and the above process can be adjusted appropriately according to different models, different models and product requirements

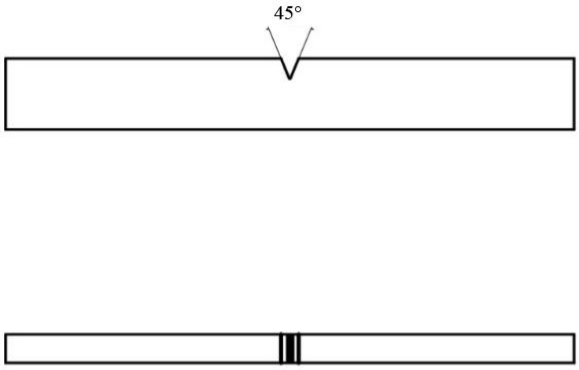
TENSILE TESTING SPECIMEN



FLEXURAL TESTING SPECIMEN



IMPACT TESTING SPECIMEN



Note:

[1] Test the spline printing speed__45__mm/s,print temperature__210__℃,Fill 100%,the cabling mode is 90 degrees

[2] Typical value refers to the laboratory average data, only for use as a reference, not as the standard of the product, different printers have different printing.

Safety and Handling Precautions

A Material Safety Data Sheet (SDS) for this product is available from your local Sunlu office.

The SDS provides customers with information on material handling, safety and disposal, as well as the requirements of applicable local health and safety regulations. The following are general precautions and apply only to the resins supplied. The various additives and processing aids used in plastics moulding and other materials used in secondary processes have their own safety requirements and must be understood separately.

This product has extremely low toxicity, and under normal conditions of use, there are no particular issues with inhalation, eye contact, or skin contact.However, care must be taken when handling, storing, using or disposing of these resins.Workplace should be kept clean to avoid dust accumulation. Contact with molten resins during processing operations should be minimized.Plastic resin products generate dust and gases during the manufacturing process. Dust generated during operations such as sawing, filing and sanding of printed parts may irritate the eyes and upper respiratory tract. In dusty manufacturing environments, it is recommended that operators use respirators or masks approved by the appropriate authorities.

The print processing area should be well ventilated as required by proper operating procedures. When plastics are processed above the melting temperature, fumes containing decomposing substances are released and may be irritating. In most cases, good general ventilation equipment is sufficient. Local extract ventilation should be used when necessary. When there is a risk of eye injury from airborne particles during work, protective goggles should be worn. If necessary, wear insulated gloves for protection when handling the resin. The product may yellow under the action of ultraviolet light, so it should be stored away from direct sunlight.

Users are advised to investigate the final use of their product beforehand to ensure the correct use of Sunlu products. To prevent misuse or incorrect use of Sunlu products, it is advisable to contact the Sunlu R&D department or the marketing department.

Note: Due to variations in usage conditions and applicable laws by location and time, customers are responsible for determining whether the products and product information in this document are suitable for their use. Customers should ensure that their workspaces and handling methods comply with applicable laws and other government regulations. Sunlu assumes no responsibility or liability for the information in this document and does not provide any warranties. All implied warranties of merchantability or fitness for a particular purpose under this document are hereby expressly excluded.

Safety Data Sheet(SDS)

According to GHS

Product name: PLA filament **Prepared by GB/T 16483 and GB/T 17951**
Revision date: 2023.10.19 **SDS Number: SLFDM2105001**
Initial date: 2017.1.15 **Version: 5.4**

Section 1 - Identification of the substance/preparation and of the company/undertaking

Product identifier

Product name: PLA filament

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

Details of the supplier of the safety data sheet

Manufacture/Supplier : Zhuhai SUNLU Industrial Co., Ltd.

Address: Room 501C, Building 2 No.35 Jinzhou Road, Tianjiawan Town, High-tech District, Zhuhai Guangdong China.

Tel: (086) 0756 3385639

E-mail : jk@sunlugw.com

Fax : (086)0756 3385639

Further information obtainable from: Zhuhai SUNLU Industrial Co.,Ltd

Section 2 - Hazards Identification

	Min	Max
Flammability	1	0=Minimum
Toxicity	0	1=Low
Body Contact	0	2=Moderate
Reactivit	1	3=High
Chronic	0	4=Extreme

GHS classification

Not Applicable

Label elements:

GHS label elements

Not Applicable

SIGNAL WORD:

Not Applicable

Section 3 –Composition/Information on Ingredients

Ingredient Name	CAS No.	EC No.	Content (%)
L-Lactide	4511-42-6	224-832-0	5
DL-Lactide	95-96-5	202-468-3	5
Poly (DL- lactide)	51063-13-9	--	35
Polylactide resin	9051-89-2	618-575-7	55

Section 4 - First Aid Measures

INGESTION

- Immediately give a glass of water.
- First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.

EYE

If this product comes in contact with eyes:

- Wash out immediately with water.
- If irritation continues, seek medical attention.
- Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN

If skin or hair contact occurs:

- Flush skin and hair with running water (and soap if available).
- Seek medical attention in event of irritation.

Inhalation

- If fumes, aerosols or combustion products are inhaled remove from contaminated area.
- Other measures are usually unnecessary.

Indication of any immediate medical attention and special treatment needed

- Treat symptomatically.

Section 5 - Firefighting Measures

EXTINGUISHING MEDIA

- Foam.
- Dry chemical powder.
- BCF (where regulations permit).
- Carbon dioxide.

FIRE FIGHTING

- Alert Fire Brigade and tell them location and nature of hazard.
- Wear breathing apparatus plus protective gloves.

- Prevent, by any means available, spillage from entering drains or water courses.
- Use water delivered as a fine spray to control fire and cool adjacent area.

FIRE/EXPLOSION HAZARD

- Combustible solid which burns but propagates flame with difficulty.
- Organic powders when finely divided over a range of concentrations regardless of particulate size or shape and suspended in air or some other oxidizing medium may form explosive dust-air mixtures and result in a fire or dust explosion (including secondary explosions).

FIRE INCOMPATIBILITY

- Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc.as ignition may result

Section 6 –Accidental Release Measures

MINOR SPILLS

- Generally not applicable

MAJOR SPILLS

- Generally not applicable

Personal Protective Equipment advice is contained in Section 8 of the SDS.

Section 7 - Handling and Storage

PROCEDURE FOR HANDLING

- Limit all unnecessary personal contact.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- Avoid contact with incompatible materials.
- Store in original containers.
- Keep containers securely sealed.
- Store in a cool, dry, well-ventilated area.

SUITABLE CONTAINER

- Polyethylene or polypropylene container.
- Check all containers are clearly labelled and free from leaks.
- Packing as recommended by manufacturer.

STORAGE INCOMPATIBILITY

Avoid contamination of water, foodstuffs, feed or seed.

- Avoid reaction with oxidising agents

Section 8 - Exposure Controls, Personal Protection

EXPOSURE CONTROLS

Appropriate engineering controls

Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.

The basic types of engineering controls are:

Process controls which involve changing the way a job activity or process is done to reduce the risk.

Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment.

Personal protection

Eye and face protection

- Safety glasses with side shields.
- Chemical goggles.
- Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task.

Skin protection

See Hand protection below

Hands/feet protection

The selection of suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer. Where the chemical is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

The exact break through time for substances has to be obtained from the manufacturer of the protective gloves and.has to be observed when making a final choice.

Suitability and durability of glove type is dependent on usage.

Body protection

See Other protection below

Other protection

- Overalls.
- P.V.C. apron.
- Barrier cream.

Section 9 - Physical and Chemical Properties

Information on basic physical and chemical properties

Odour	**Odorlessness**
Form	Solid
Melting Range (°C)	No data
Boiling Range (°C)	No data
Flash Point (°C)	No data
Decomposition Temp (°C)	No data
Autoignition Temp (°C)	No data
Upper Explosive Limit (%)	No data
Lower Explosive Limit (%)	No data
Volatile Component (%vol)	No data
Solubility in water (g/L)	Insoluble in water
p H (1% solution)	No data
p H (as supplied)	No data
Print Temp (°C)	200-230
Bed Temp(°C)	60-80
Density(g/cm^3)	1.25
Heat Distortion Temp（℃,0.45MPa）	56
Melt Flow Index（g/10min）	5（190℃/2.16kg）
Tensile Strength（MPa）	65
Elongation at Break（%）	8
Flexural Strength（MPa）	90
Flexural Modulus（MPa）	3500
IZOD Impact Strength（kJ/m^2）	

Section 10 - Stability and Reactivity

Reactivity

See section 7

Chemical stability

- Unstable in the presence of incompatible materials.
- Product is considered stable.
- Hazardous polymerisation will not occur.

Section 11 - Toxicological Information

Information on toxicological affects

Acute Toxicity

LD/LC50 values relevant for classification

No data.

Primary irritant effect

On the skin

No data.

On the eyes

No data.

Inhaled

No data.

Sensitization： No data.

Section 12 - Ecological Information

Ingredient	Persistence:Water/Soil	Persistence: Air	Bioaccumulation	Mobility
L-Lactide	LOW	LOW	LOW	LOW
DL-Lactide	LOW	LOW	LOW	LOW
Poly (DL- lactide)	No Data available	No Data available	No Data available	No Data available
Polylactide resin	No Data available	No Data available	No Data available	No Data available

Section 13 - Disposal Considerations

Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked. A Hierarchy of Controls seems to be common - the user should investigate:

- Reduction
- Reuse
- Recycling
- Disposal (if all else fails)

This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for ts intended use.

Section 14 - Transport Information

Labels Required

Marine Pollutant: NO

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS: ADR, IATA, IMDG,ADN

Section 15 - Regulatory Information

REGULATIONS

The product needs to follow local regulations.

Section 16 - Other Information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

***End ***