产品名称 Product Name: PLA-METALLIC PLA 金属

产品特性 Product features

磨砂质感，高强度，层间粘结力极佳，翘曲低，多种颜色，细节好

主要应用 Main applications:

工程/功能性制件，摆件、玩具、饰品、手办

注意事项 Points for attention:

性 能[1] Properties	测试标准 Test Method	测试条件 Test Condition	国际单位 S.I. Units	典型值 S.I.[2] Typical Values
机械性能 Mechanical				
拉伸强度(X-Y) Tensile Strength	ISO 527/2	50 mm/min	MPa	45±5
杨氏模量(X-Y) Young's Modulus	ISO 527/2	1 mm/min	MPa	/
断裂伸长率(X-Y) Elongation at break	ISO 527/2	50 mm/min	%	11±2
弯曲强度(X-Y) Flexural Strength	ISO 178	2 mm/min	MPa	76±5
弯曲模量(X-Y) Flexural Modulus	ISO 178	2 mm/min	MPa	2600±500
悬臂梁缺口冲击强度(X-Y) Izod Impact Strength of Notched Specimen	ISO 180	23℃	KJ/m^2	6±2
悬臂梁无缺口冲击强度(Z-X) Izod Impact Strength of Unnotched Specimen	ISO 180	23℃	KJ/m^2	5±2
邵氏硬度 Shore Hardness	ISO 868	23℃	HA/HD	82D
热 性 能 Thermal				
热变形温度(X-Y) Heat Distortion (HDT)	ISO 75	0.45 MPa	℃	56±5
玻璃化转变温度 Glass Transition (Tg)	ISO 11357-2	10 ℃/min	℃	60
熔点温度 Melting Temperature	ISO 11357-3	10 ℃/min	℃	165
分解温度@5%Decomposition Temp.	ISO 11358	20 ℃/min	℃	/
维卡软化温度 Vicat Softening Temp.	ISO 306	5kg, 50℃/h	℃	/
收缩率 Moulding Shrinkage	ISO 294	23℃	%	/
其 他 Others				
熔体指数 Melt Mass-flow Rate	ISO 1133	220℃/10 kg	g/10 min	5.1
密度 Density	ISO 1183	23℃	g/cm^3	1.21±0.02
体积电阻率 Volume Resistivity	IEC 60093	-	ohm-cm	/
介电常数 Permittivity	IEC 60250	1 kHz		/
阻燃性 Flammability	UL 94	1.5 mm	Class	HB

耐化学性能 Chemical	
项目 Item	**等级 Class**
弱酸 Weak Acid (pH 3-6)	好
强酸 Strong Acid (pH<3)	差
弱碱 Weak Bases (pH 8-10)	好
强碱 Strong Bases (pH >10)	好
去离子水 Deionized Water	优异

乙醇 Alcohol	一般
丙酮 Ketone	一般
汽油 Petroleum Fuels	优异
醚 Ester	优异

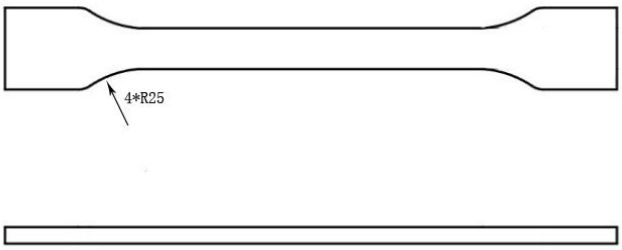
等级分类：优异、好、一般、差

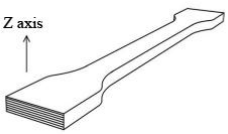
建议打印参数 Recommended Printing Parameters

参　数 Parameters	范　围 Range	
喷嘴温度 Nozzle Temp.	温度 Temperature ℃	速度 Speed mm/s
	200-230	<200
平台温度 Plate Temp.	50-60℃	
平台材料 Plate Material	常规	
平台表面处理 Plate Treatment	无	
冷却风扇 Cooling Fan	开☑/关☐	
底阀分离距离 Raft Distance	0.4-0.6mm	
回抽距离 Retraction Distance	0.8-1.2mm	
回抽速度 Retraction Speed	30-40mm/s	
环境温度 Room Temp.	常温	
推荐支撑材料 Supported Material	PVA	
烘干温度 Drying Temp.	50-60℃	

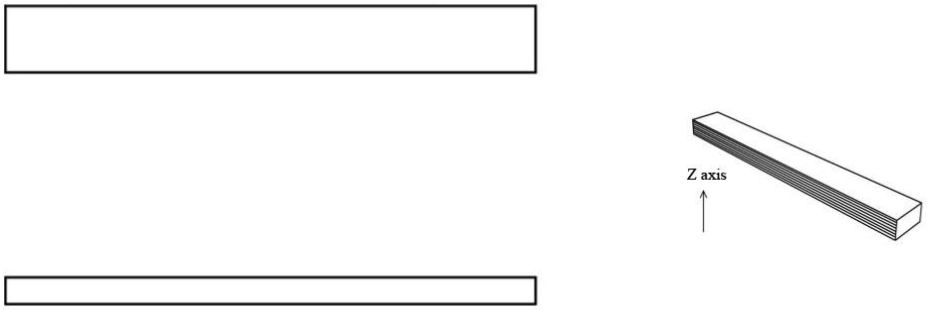
以上数值仅供打印机参考使用，可根据不同机型、不同模型以及产品要求，对上述工艺做适当调整

拉伸测试 TENSILE TESTING SPECIMEN

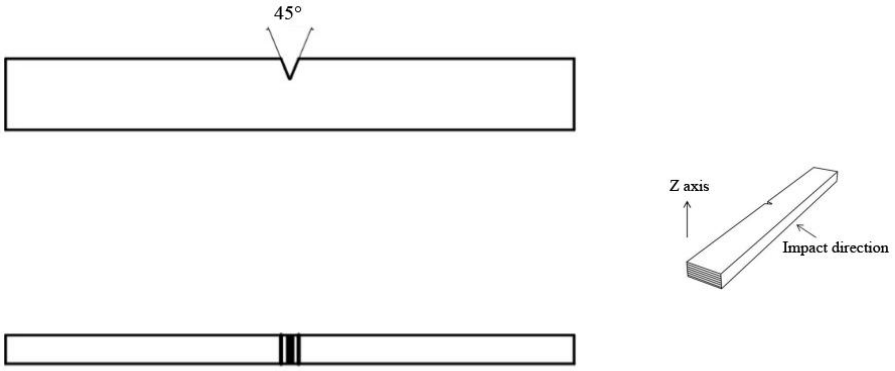




弯曲测试 FLEXURAL TESTING SPECIMEN



冲击测试 IMPACT TESTING SPECIMEN



注意事项：

[1] 测试样条打印速度 100-200 mm/s，打印温度 270 ℃。填充 100%，走线方式为 90 度。

[2] 典型值是指实验室平均数据，仅用于使用时的参考，不作为产品的标准，不同打印机打印有区别。

安全及处理注意事项：

客户可向当地的三绿办事处索取本产品的材料安全数据表（SDS）。客户从 SDS 中可得到材料处理、安全和弃置方面的资料，以及当地适用的健康和安全规定的要求。下面所述只是一般注意事项，仅适用于所提供的树脂。用于塑料成型的各类添加剂和加工助剂，以及用于二次加工工序的其它材料有其自身的安全要求，因此必须分别去了解。

本产品的毒性极低，在正常条件下使用时，人体吸入、眼部及皮肤接触都没有特别问题。不过，在处理、储存、使用或弃置这些树脂时仍须谨慎小心。工作场所应保持整洁，以避免粉尘聚积。在加工操作中，应尽量避免接触熔融的树脂。塑料树脂产品在制造过程会产生粉尘和气体。对打印制件进行锯、锉、打磨等操作时产生的粉尘可能会刺激眼睛和上呼吸道。在多尘的生产环境中，建议操作工人使用经有关部门认可的呼吸器或面罩。

按正确操作规程要求，打印加工区应有良好的通风。塑料在加工过程中超过熔融温度时会释放出含有分解物质的烟雾，此类烟雾可能具刺激性。在大多数情况下，一般良好的通风设备便已足够。当有需要时，应使用局部抽气通风方法。如在工作中会接触到飞扬的微粒而对眼睛造成伤害时，便要配戴防化护目镜。处理本树脂时，若有需要，可戴上隔热手套作保护。

该产品在紫外线作用下会有发黄现象，因此产品存储时应避免太阳光直接照射。

公司建议用户事先调查自己产品的最终用途，以保证能正确使用三绿公司的产品。为保证三绿公司的产品不被误用或错用，建议与三绿公司研发部联系，或与公司市场部联系。

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.

注意：由于使用条件和适用法律可能因地因时而异，客户有责任确定本文件里的产品和产品信息是否适合客户使用，并确保自己的工作场地和处理产品的方式符合可适用的法律和其它政府法规。三绿公司对本文件信息不承担任何责任与义务，也未提供任何保证。在本文件下关于产品的可售性或某一特殊用途的可适用性的所有默示保证在此明确地予以排除。

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.