



# PLA+ Silk

Silk-Sheen Polylactic Acid · reflective metallic finish

1.75 mm ± 0.02

1 kg net

OEM / ODM

|              |                        |
|--------------|------------------------|
| Document no. | WJ-TDS-PLAPLUSSILK-001 |
| Revision     | V1.0                   |
| Issue date   | 2026-08-01             |
| Supersedes   | None (first issue)     |

## 1. DESCRIPTION

WJ PLA+ Silk pairs the silk sheen effect with metallic-toned pigments for a polished, reflective finish that reads as metal rather than plastic. It shares PLA Silk's smooth, glossy surface behaviour while offering a bolder, more reflective colour range.

**Typical applications** trophies, awards and decorative pieces, jewellery and accessories, display models, and any print meant to visually read as polished metal.

**Processing summary** print slower and with reduced part cooling to develop maximum shine and metallic reflectivity; retraction and bed adhesion otherwise behave like standard PLA.

- Drying before printing 50 °C for 8 h
- Nozzle size 0.4 mm and above
- Nozzle temperature 210 · 230 °C
- Build plate temperature 45 · 60 °C
- Part cooling fan Medium (50 · 70 %) · lower fan preserves shine
- Printing speed 40 · 90 mm/s

## 2. PRODUCT SPECIFICATION

*typical, not a specification for acceptance*

| Parameter           | Unit | Value                                                                                                        |
|---------------------|------|--------------------------------------------------------------------------------------------------------------|
| Filament diameter   | mm   | 1.75                                                                                                         |
| Diameter tolerance  | mm   | ± 0.02                                                                                                       |
| Net filament weight | kg   | 1                                                                                                            |
| Spool material      | ·    | ABS spool, Ø 200 × 65 mm, hub Ø 55 mm, 4 locating holes                                                      |
| Spool size (Ø × H)  | mm   | Ø 200 × 65 mm                                                                                                |
| Colour range        | ·    | Stock colours as listed on the product page; RAL / Pantone matching and custom colour development on request |

Values are typical for the grade and are subject to normal manufacturing tolerance. Colour masterbatch is not included in the base polymer content.

## 3. RECOMMENDED PRINTING PARAMETERS

*starting point, not a guarantee*

| Parameter                     | Unit   | Value                                         |
|-------------------------------|--------|-----------------------------------------------|
| Drying before printing        | °C / h | 50 °C for 8 h                                 |
| Printing and storage humidity | ·      | Dry storage; sealed with desiccant            |
| Nozzle size                   | mm     | at least 0.4                                  |
| Nozzle type                   | ·      | Brass or hardened steel                       |
| Nozzle temperature            | °C     | 210 · 230                                     |
| Build plate type              | ·      | Cool Plate, Engineering Plate or Textured PEI |
| Bed surface preparation       | ·      | Clean; no adhesive typically needed           |
| Bed temperature               | °C     | 45 · 60                                       |

| Parameter                 | Unit      | Value                                          |
|---------------------------|-----------|------------------------------------------------|
| Part cooling fan          | ·         | Medium (50 · 70 %) · lower fan preserves shine |
| Printing speed            | mm/s      | 40 · 90                                        |
| Enclosed chamber          | ·         | Not required                                   |
| Chamber temperature       | °C        | Ambient                                        |
| Retraction length / speed | mm / mm/s | 0.4 · 0.8 mm / 20 · 40 mm/s                    |
| Max overhang angle        | °         | ~ 50                                           |
| Max bridging length       | mm        | ~ 25                                           |

## 4. MATERIAL PROPERTIES

specimens per section 5

Values are typical results from tests on specimens printed and conditioned as described in Section 5. They are not a guarantee of performance of any individual printed part.

### 4.1 Physical and thermal properties

| Property                     | Test method      | Unit              | Typical value |
|------------------------------|------------------|-------------------|---------------|
| Density                      | ISO 1183         | g/cm <sup>3</sup> | ~ 1.32        |
| Melt flow rate (MFR)         | 210 °C, 2.16 kg  | g/10 min          | ~ 7 ± 1       |
| Melting temperature          | DSC              | °C                | ~ 152         |
| Glass transition temperature | DSC              | °C                | ~ 57          |
| Vicat softening temperature  | ISO 306          | °C                | ~ 56          |
| Heat deflection temperature  | ISO 75, 0.45 MPa | °C                | ~ 50          |
| Heat deflection temperature  | ISO 75, 1.8 MPa  | °C                | ~ 45          |
| Saturated water absorption   | 25 °C, 55 % RH   | %                 | ~ 0.5         |

### 4.2 Mechanical properties

| Property                   | Test method         | Unit              | Typical value |
|----------------------------|---------------------|-------------------|---------------|
| Young's modulus (X·Y)      | ISO 527 / GB/T 1040 | MPa               | ~ 2100 ± 150  |
| Young's modulus (Z)        | ISO 527 / GB/T 1040 | MPa               | ~ 1800 ± 150  |
| Tensile strength (X·Y)     | ISO 527 / GB/T 1040 | MPa               | ~ 38 ± 4      |
| Tensile strength (Z)       | ISO 527 / GB/T 1040 | MPa               | ~ 33 ± 4      |
| Elongation at break (X·Y)  | ISO 527 / GB/T 1040 | %                 | ~ 5           |
| Elongation at break (Z)    | ISO 527 / GB/T 1040 | %                 | ~ 3           |
| Flexural modulus           | ISO 178 / GB/T 9341 | MPa               | ~ 2100 ± 140  |
| Flexural strength          | ISO 178 / GB/T 9341 | MPa               | ~ 62 ± 5      |
| Impact strength, notched   | ISO 179 / GB/T 1043 | kJ/m <sup>2</sup> | ~ 2.5         |
| Impact strength, unnotched | ISO 179 / GB/T 1043 | kJ/m <sup>2</sup> | ~ 8           |

### 4.3 Chemical and physical characteristics

| Parameter                    | Value                                                          |
|------------------------------|----------------------------------------------------------------|
| Composition                  | Polylactic acid (PLA), silk-effect metallic grade              |
| Odour                        | Mild, faintly sweet odour when printing                        |
| Skin hazard                  | No hazard in solid filament form                               |
| Chemical stability           | Stable under normal storage and handling                       |
| Solubility                   | Insoluble in water; biodegradable under industrial composting  |
| UV and weathering resistance | Poor · degrades and discolours with prolonged outdoor exposure |
| Acid resistance              | Limited resistance                                             |
| Alkali resistance            | Limited resistance                                             |
| Organic solvent resistance   | Softened or dissolved by some solvents                         |
| Oil and grease resistance    | Limited resistance                                             |
| Flammability                 | Flammable                                                      |
| Combustion products          | Carbon oxides                                                  |

## 5. TEST CONDITIONS

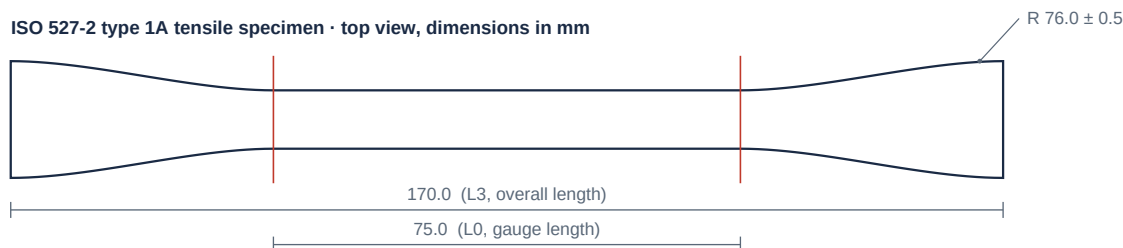
*ISO 291, 23 / 50 class 2*

### 5.1 Specimen printing and conditioning

| Parameter                         | Unit   | Value                   |
|-----------------------------------|--------|-------------------------|
| Nozzle temperature                | °C     | 220                     |
| Bed temperature                   | °C     | 50                      |
| Printing speed                    | mm/s   | 60                      |
| Infill density                    | %      | 100                     |
| Layer height                      | mm     | 0.2                     |
| Specimen conditioning / annealing | °C / h | 50 · 55 °C for 6 · 12 h |

## 5.2 Specimen geometry (dimensions in millimetres)

Fig. 1 ISO 527-2 type 1A tensile specimen · top view, dimensions in mm



Section widths:  $b_1 = 10.00 \pm 0.20$  (narrow section) ·  $b_2 = 20.00 \pm 0.20$  (grip ends) ·  $h = 4.00 \pm 0.20$  (thickness) · gauge length  $L_0 = 75.0$  mm

Fig. 2 ISO 178 flexural specimen  $80 \times 10 \times 4$  mm · three-point bending, span 64 mm

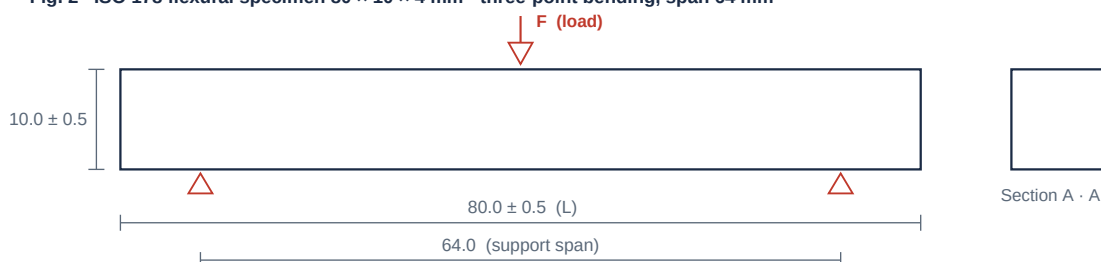


Fig. 3 ISO 179-1 Charpy notched specimen  $80 \times 10 \times 4$  mm, 45° V-notch, depth 2.0 mm



## 6. STORAGE, HANDLING AND SAFETY

stewardship

|                       |                                                                                                                                                                                                   |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Storage before use    | Sealed bag, 15 · 25 °C, below 50 % RH, away from direct sunlight and UV, away from ignition sources. Shelf life 24 months.                                                                        |
| Storage after opening | Reseal with the supplied desiccant. In humid climates print within 4 weeks of opening; the spool can be re-dried at 45 · 55 °C for 4 · 6 h.                                                       |
| Symptoms of moisture  | Bubbling or popping sounds at the nozzle, rough surface, stringing, weak layer bonding, inconsistent extrusion. Dry the spool before changing settings.                                           |
| Handling              | PLA filament is brittle when overloaded. Keep the spool on its holder and avoid sharp bends at the extruder inlet, especially on direct-drive toolheads.                                          |
| Ventilation           | Printing releases trace lactide vapour with a faintly sweet odour. Print in a ventilated area and avoid breathing the fumes directly. Not for use in enclosed occupied spaces without extraction. |
| Fire and disposal     | PLA is a combustible solid. Keep away from open flame and hot surfaces above 250 °C. Spool, bag and carton are recyclable; offcuts can go to industrial composting per EN 13432.                  |
| Personal protection   | No special protection required for normal use. Wear gloves when handling hot parts and safety glasses when cutting filament.                                                                      |

## 7. ORDERING INFORMATION AND PACKAGING

commercial

|                                |                                                                                                                                                                                   |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Standard spool                 | 1.00 kg net, Ø 200 mm, 68 mm hub bore, 4 locating holes. 0.25 / 0.50 / 3.00 kg spools on request.                                                                                 |
| Standard diameter              | 1.75 mm (2.85 mm on request). Tolerance per Section 2.                                                                                                                            |
| Export carton                  | 10 rolls per carton, 5-ply corrugated. Carton net 10.0 kg, gross approx. 13.1 kg. Neutral print as standard.                                                                      |
| Colour range                   | Stock colours as listed in Section 2. Custom colours matched to RAL, Pantone or a physical sample, subject to a minimum batch quantity.                                           |
| OEM services                   | Spool label, shrink film print, spool material and colour, carton artwork and user manual. Artwork setup and MOQ are quoted per project.                                          |
| Order confirmation             | Every order is confirmed by a proforma invoice stating grade, colour, diameter, quantity, unit price, Incoterms and lead time.                                                    |
| Shipping and quality documents | Commercial invoice, packing list, bill of lading, certificate of origin and batch certificate of analysis as standard. RoHS / REACH declaration and safety data sheet on request. |

Commercial terms shown here are indicative. The signed proforma invoice or sales contract prevails in case of any conflict.

## 8. DISCLAIMER AND REVISION CONTROL

The data in this document are typical values obtained from tests on standard specimens produced under the conditions described in Section 5. They are provided for material comparison and selection only and do not constitute a specification, warranty or guarantee of performance. Properties of an actual printed part depend on printer hardware, slicing parameters, part geometry, build orientation, ambient conditions and post-processing. WJ reserves the right to amend this document without notice. The buyer is responsible for verifying that the material is suitable for the intended application, including any regulatory or food-contact requirement.

### 8.1 How to read the data in this sheet

|                      |                                                                                                                                                                                                                             |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Typical, not minimum | The property tables describe specimens printed exactly as stated in Section 5. They describe the material, not a machined or moulded part.                                                                                  |
| Orientation matters  | Values marked X·Y apply to specimens printed flat on the build plate. Z values are measured on parts printed standing up and are typically lower than X·Y. Design for the direction that carries the load.                  |
| Batch variation      | Values carry a ± range where extrusion, pigment and ambient humidity vary between batches; colour masterbatch can shift impact strength noticeably. Where no deviation is given, the value is a single representative test. |
| Not a certificate    | This sheet is not an inspection certificate, a Declaration of Conformity, or a certificate of analysis. Batch-specific CoA, RoHS / REACH declarations and safety data sheets are issued separately on request.              |

### 8.2 Revision history

| Rev  | Date       | Description                                    | Approved |
|------|------------|------------------------------------------------|----------|
| V1.0 | 2026-08-01 | First issue of PLA+ Silk technical data sheet. | QC / WJ  |

Prepared and released by

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Authorised signature and company stamp



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## PLA+ Silk - Data disclosure addendum

WJ-TDS-PLAPLUSSILK-001 | Original revision V1.0 | Addendum A1 | 2026-08-01

### TYPICAL REFERENCE VALUES / NO THIRD-PARTY REPORT

This technical data sheet provides typical reference values for material comparison and selection only. It is not an independent third-party test report and does not constitute a product specification, warranty or guarantee of performance. Test methods and specimen conditions are stated in the corresponding sections. The user must verify suitability for the intended application.

### DOCUMENT CONTROL

This addendum supplements Section 8 of the original TDS. Numerical property values and processing ranges are unchanged. The original revision history remains unchanged. This TDS is not a certificate of analysis or conformity.