



PPA-CF HX

Carbon-Fibre Reinforced PPA (PPA-CF), toughened grade · high strength with improved toughness

1.75 mm ± 0.02

1.00 kg net

OEM / ODM

Document no.	WJ-TDS-PPA-CF-HX-001
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Supersedes	None (first issue)

1. DESCRIPTION

WJ PPA-CF HX is a carbon-fibre reinforced high-temperature polyamide filament with a toughened matrix. It keeps the high stiffness and heat resistance of the PPA family while giving noticeably higher impact resistance, which suits parts that see shock as well as load.

Typical applications

Impact-loaded brackets and mounts · robot and automation structural parts · end effectors and tooling · automotive functional parts · high-temperature parts exposed to vibration and shock.

Processing summary

Requires an all-metal hot end and a hardened steel or ruby nozzle; a heated chamber above 60 °C is recommended. Dry thoroughly before printing and anneal after printing where the application calls for it.

- Nozzle temperature 270 · 300 °C
- Part cooling fan OFF
- Build surface PEI film, PI film
- Printing speed 120·150 mm/s
- Build plate temperature 80 · 90 °C
- Anneal 100 °C for 6 h

2. PRODUCT SPECIFICATION

typical, not a specification for acceptance

Parameter	Unit	Value
Filament diameter	mm	1.75 (2.85 on request)
Diameter tolerance	mm	± 0.02
Roundness tolerance	mm	± 0.02
Net filament weight	kg	1.00 (0.25 / 0.50 / 3.00 on request)
Spool and hub	mm	Ø 200 × 65, hub Ø 55, 4 locating holes
Spool material	·	PC + ABS spool, Ø 200 × 65 mm, hub Ø 55 mm, heat resistant to 90 °C
Sealing	·	Vacuum barrier bag with desiccant; resealable
Colour range	·	Natural / black as standard; RAL, Pantone or physical-sample matching and custom colour development on request

Values are typical for the grade and subject to normal manufacturing tolerance. Colour masterbatch is not included in the base polymer content. Pigment choice can shift impact strength and surface finish noticeably in reinforced grades.

3. RECOMMENDED PRINTING PARAMETERS

starting point, not a guarantee

Parameter	Unit	Value
Nozzle temperature	°C	270 · 300
Cooling fan	·	OFF
Build surface material	·	PEI film, PI film
Printing speed	mm/s	120 · 150

Parameter	Unit	Value
Build plate temperature	°C	80 · 90
Environmental temperature	°C	40 · 60
Annealing (after printing)	°C / h	100 °C for 6 h

Grade-specific reference notes:

- when printing PPA-CF HX. A wear-resistant nozzle, such as hardened steel and ruby nozzle, is highly recommended to be used with PPA-CF HX.
- PPA-CF HX is sensitive to moisture and should always be stored and used under dry conditions (relative humidity below 20 %).
- If PPA-CF HX is used as the support material for itself, please remove the support structure before excessive moisture absorption. Otherwise the support structure can be permanently bonded to the model.
- After the printing process, it is recommended to anneal the model in the oven at 100 °C for 6 hours.

4. MATERIAL PROPERTIES

typical values, see Section 5

Values are typical reference data for standard specimens under the stated conditions. They have not been independently re-tested by WJ and do not guarantee printed-part performance.

4.1 Physical and thermal properties

Property	Test method	Unit	Typical value
Density	ISO 1183	g/cm ³	1.17
Light transmission	N/A	·	N/A
Flame retardancy	N/A	·	N/A
Melting temperature	ISO 11357	·	N/A
Heat deflection temperature	ISO 75-2	·	N/A
Vicat softening temperature	ISO 75-2	·	N/A

N/A = no reference value is available for this property for this grade.

4.2 Mechanical properties

Property	Test method	Unit	Typical value
Tensile strength (X-Y)	ISO 527	MPa	71
Tensile strength (Z)	ISO 527	MPa	63
Elongation at break (X-Y)	ISO 527	%	5
Elongation at break (Z)	ISO 527	%	5
Bending strength (X-Y)	ISO 178	MPa	113
Bending strength (Z)	ISO 178	MPa	84
Bending modulus (X-Y)	ISO 178	MPa	3840
Bending modulus (Z)	ISO 178	MPa	2870
Charpy impact strength (X-Y)	ISO 179	KJ/m ²	34
Charpy impact strength (Z)	ISO 179	KJ/m ²	23

4.3 Chemical resistance and general characteristics

Qualitative statements below describe the polymer family in general terms and are given for material selection only. They are not test results for this grade and do not replace a compatibility test with the actual medium, concentration and temperature of the application.

Composition	Polyamide (PA / PPA), fibre reinforced where applicable
Odour when printing	Faint, characteristic odour
Skin hazard	No hazard in solid filament form; cut fibre ends irritate skin
Chemical stability	Stable under normal storage and handling
Moisture uptake	Noticeable · keep sealed and dry before printing
Solubility	Insoluble in water; dissolved by formic acid, phenols and strong acids
UV and weathering	Poor to fair · protect from prolonged direct sunlight
Acid resistance	Poor against strong mineral acids
Alkali resistance	Good
Organic solvent resistance	Good against hydrocarbons and oils; poor against phenols
Flammability	Flammable solid
Combustion products	Carbon oxides, nitrogen oxides

5. TEST CONDITIONS AND DATA SOURCE

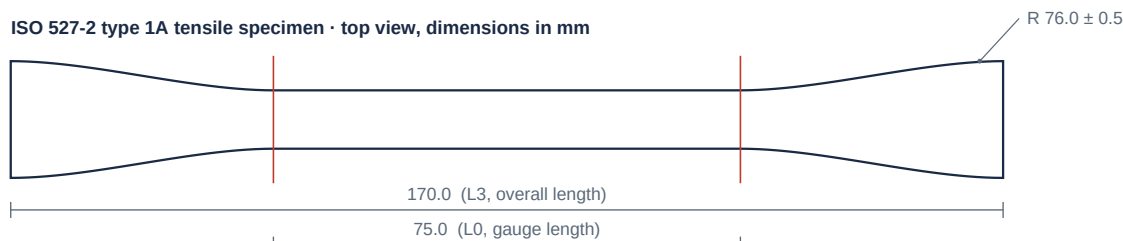
read before use

5.1 How the values in Section 4 were obtained

Data status	Typical reference values; not independently re-tested by WJ on this batch.
Test standards	ISO 1183 (density) · ISO 11357 (melting temperature) · ISO 75-2 (heat deflection and Vicat) · ISO 527 (tensile) · ISO 178 (flexural) · ISO 179 (Charpy impact).
Specimen orientation	X·Y: printed flat on the build plate. Z: printed standing upright so that the load acts across the layer stack.
Conditioning	Specimens conditioned to ISO 291, 23 °C / 50 % RH, before testing.
Printing conditions	Specimens printed with the parameters in Section 3: 100 % infill, three or more perimeters, 0.4 mm nozzle or larger.
Status of this sheet	Indicative. WJ is building its own test programme; values will be replaced with WJ in-house data as it becomes available. Contact us for the current status before design release.

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

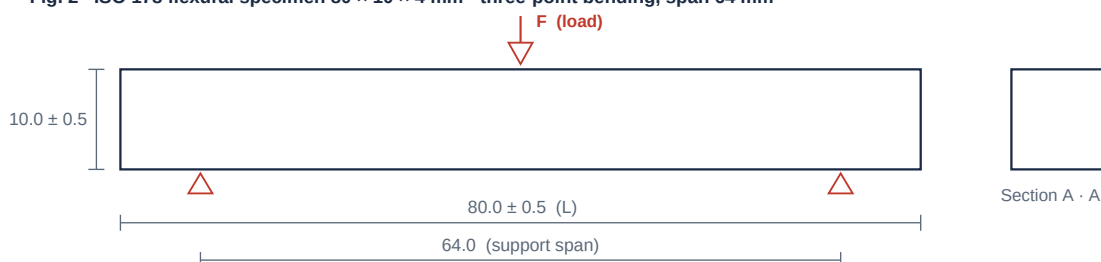


Fig. 3 ISO 179-1 Charpy notched specimen $80 \times 10 \times 4$ mm, 45° V-notch, depth 2.0 mm



6. STORAGE, HANDLING AND SAFETY

stewardship

Storage before use	Sealed bag with desiccant, 15 · 25 °C, below 50 % RH, away from direct sunlight and UV. Shelf life 24 months in the sealed bag.
Storage after opening	Engineering grades absorb moisture noticeably. Reseal with desiccant immediately after use and re-dry before critical prints: 70 · 80 °C for 4 · 6 h, or follow the grade-specific schedule in Section 3 where one is given.
Symptoms of moisture	Popping and hissing at the nozzle, steam bubbles, rough extrusion, weak layer bonding and loss of impact strength. Dry the spool before changing any printing settings.
Nozzle wear	Carbon- and glass-fibre reinforced grades are abrasive. Use a hardened steel, carbide or ruby nozzle: a brass nozzle can wear out within a few hundred grams of reinforced filament.
Annealing	Where a grade is annealed (Section 3), move the print straight into a cold oven, ramp slowly, hold, then cool inside the oven. Never anneal filament on the spool · most spools deform above 90 °C.
Handling	Keep the spool on its holder and avoid sharp bends at the extruder inlet. Cut reinforced filament leaves sharp fibre ends · wear gloves when handling.
Ventilation	Printing releases a noticeable odour and measurable VOC, particularly with PA, PPA, ABS and PPS grades. Print under extraction or in a filtered enclosure. Not for use in enclosed occupied spaces.
Fire and disposal	Combustible solid. Keep away from open flame and hot surfaces. Spool, bag and carton are recyclable; offcuts are not biodegradable and should go to plastics recycling.
Personal protection	No special protection required for normal use. Wear gloves when handling hot parts or cut filament and safety glasses when cutting. Use an organic-vapour respirator for prolonged printing in a confined space.

7. ORDERING INFORMATION AND PACKAGING

commercial

Standard spool	1.00 kg net, Ø 200 mm, hub Ø 55 mm, 4 locating holes. 0.25 / 0.50 / 3.00 kg spools on request.
Spool material	PC + ABS spool, Ø 200 × 65 mm, hub Ø 55 mm, heat resistant to 90 °C. Grades intended for annealing are supplied on request on a metal or high-temperature carrier.
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	Natural / black as standard; RAL, Pantone or physical-sample matching and custom colour development on request.
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 as 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. Fibre-reinforced grades are strongly anisotropic and must be qualified by the user for the intended load case. 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, electrical or food-contact requirement.

8.1 How to read the data in this sheet

Typical, not minimum	Typical reference values for standard specimens under the stated conditions; not finished-part performance.
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.
Reinforced grades are anisotropic	Fibre-reinforced grades show a larger X·Y to Z difference than unfilled grades. Where the Z value is much lower, orient the part so that the load runs along the layers.
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 PPA-CF HX technical data sheet.	QC / WJ

Prepared and released by

Shenzhen Wuju Creative Trading Co., Ltd.

Quality Control Department · Shenzhen, China

Authorised signature and company stamp



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PPA CF HX - Data disclosure addendum

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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.

DATA STATUS FOR THIS GRADE

The physical, thermal and mechanical values are typical reference data. They have not been independently re-tested by WJ on this batch. Do not interpret these values as results of WJ internal testing.

DOCUMENT CONTROL

This addendum supplements Section 8 of the original TDS. Numerical property values and processing ranges are unchanged. For this grade, values remain reference data and have not been independently re-tested by WJ. The original revision history remains unchanged. This TDS is not a certificate of analysis or conformity.