

# PU-GF Pultruded Profile

Mechanical Data Sheet · Polyurethane / E-Glass Pultruded Composite, 80 mm Section

Document	F1-TDS-PUGF-001
Revision	2026-05
Material	Polyurethane (PU) resin + E-glass roving and multiaxial fabric
Profile family	Pultruded section, 80 mm, automotive structural grade
Test basis	Independent third-party laboratory, China

## 1. Scope

This datasheet summarizes mechanical performance of F1 Composite's **PU-GF** (polyurethane / E-glass) pultruded composite profile, an 80 mm structural-grade section used in automotive, transportation and infrastructure applications. Values are typical results from production-grade specimens tested by an independent third-party laboratory in China against Chinese national (GB/T), international (ISO) and ASTM standards.

## 2. Mechanical properties — Test programme A

Reference: independent third-party laboratory, China · GB/T and ASTM methods · sample programme dated October 2024.

Property	Standard	Unit	Specification	Result
Water absorption	GB/T 1462-2005	%	≤ 0.5	<b>0.114</b>
0° Tensile strength	GB/T 1447-2005	MPa	≥ 1000	<b>1181.77</b>
0° Tensile modulus	GB/T 1447-2005	GPa	≥ 40	<b>46.04</b>
0° Elongation at break	GB/T 1447-2005	%	≥ 2.3	<b>2.83</b>
90° Tensile strength	GB/T 1447-2005	MPa	≥ 200	<b>312.22</b>
90° Tensile modulus	GB/T 1447-2005	GPa	≥ 18	<b>21.58</b>
0° Compressive strength	GB/T 1448-2005	MPa	≥ 750	<b>943.80</b>
0° Compressive modulus	GB/T 1448-2005	GPa	≥ 40	<b>46.10</b>
Interlaminar shear (ILSS)	ASTM D2344	MPa	≥ 55	<b>60.36</b>
0° Flexural strength	GB/T 1449-2005	MPa	≥ 1000	<b>1295.86</b>

## 3. Mechanical properties — Test programme B

Reference: independent third-party laboratory, China · ISO methods · sample programme dated October 2025.

Property	Standard	Unit	Specification	Result
Water absorption	GB/T 1462-2005	%	≤ 0.5	<b>0.099</b>

Property	Standard	Unit	Specification	Result
0° Tensile strength	ISO 527-5:2021	MPa	≥ 750	<b>1287.00</b>
0° Tensile modulus	ISO 527-5:2021	GPa	≥ 35	<b>51.04</b>
0° Tensile strain	ISO 527-5:2021	%	—	<b>2.88</b>
0° Flexural strength	ISO 14125:1998/A1:2011	MPa	≥ 500	<b>974.75</b>
0° Flexural modulus	ISO 14125:1998/A1:2011	GPa	≥ 25	<b>34.66</b>
0° Flexural strain	ISO 14125:1998/A1:2011	%	—	<b>4.34</b>
90° Compressive strength	ISO 14126:1999/Cor1:2000	MPa	≥ 100	<b>204.40</b>
90° Compressive modulus	ISO 14126:1999/Cor1:2000	GPa	≥ 10	<b>21.67</b>
90° Compressive strain	ISO 14126:1999/Cor1:2000	%	—	<b>1.84</b>

## 4. Quality basis

All results in this datasheet were obtained on production-grade pultruded specimens by an independent third-party laboratory. Test methods, instrumentation and specimen preparation conform to the standards cited in each row, including GB/T 1447, GB/T 1448, GB/T 1449, GB/T 1462, ISO 527-5, ISO 14125, ISO 14126 and ASTM D2344. All measured values meet or exceed F1 Composite's published specifications.

## 5. Interpretation notes

**Orientation conventions.** 0° refers to the pultrusion (longitudinal, fibre-aligned) direction; 90° refers to the transverse direction. Pultruded profiles are strongly orthotropic, and longitudinal values typically exceed transverse values by a factor of 4 – 5.

**ILSS.** Interlaminar shear strength per ASTM D2344 is a short-beam test sensitive to resin/fibre interface quality and is the primary indicator of pultrusion consolidation health.

**Specifications vs. measured.** The Specification column lists F1 Composite's published minimum acceptance limits for this profile family. The Result column lists the typical value from the independent test. Production lots are released against the specification, not against any single typical value.

**Project-specific certificates.** Material Test Certificates (MTC) tied to a specific production batch and shipment are issued by F1 Composite at point of order. Contact [sales@f1composite.com](mailto:sales@f1composite.com).

## 6. Disclaimer

*This datasheet is published by F1 Composite as engineering reference data for specifiers. Values are typical and not a guaranteed batch-level result. Project compliance is established by the batch MTC and any project-specific qualification testing.*

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