



CPVT

国家光伏质检中心

检验检测报告

No: 2025DACS20319



产品名称 光伏组件用复合材料边框

规格型号 全耐候改性树脂

委托单位 重庆纤居新材料有限公司

国家太阳能光伏产品质量检验检测中心
无锡市检验检测认证研究院

检验检测专用章

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(2)

ENGLISH TRANSLATION NOTES

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INSPECTION AND TEST REPORT

No. 2025DACS20319.

Product: Composite material frame for photovoltaic modules.

Specification/model: All-weather modified resin.

Client: Chongqing Xianju New Materials Co., Ltd.

Issuing bodies (translated names): National Center for Quality
Inspection and Testing of Solar Photovoltaic Products; Wuxi
Institute of Inspection, Testing and Certification.

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国家光伏质检中心

国家太阳能光伏产品质量检验检测中心/无锡市检验检测认证研究院

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检验机构E-mail：wxt@wxzjs.com

报告验证码：12266369

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Institution: National Center for Quality Inspection and Testing of Solar Photovoltaic Products / Wuxi Institute of Inspection, Testing and Certification.

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Email: wxt@wxzjs.com.

国家太阳能光伏产品质量检验检测中心
无锡市检验检测认证研究院
检验检测报告

No: 2025DACS20319

共 7 页 第 1 页

产品名称	光伏组件用复合材料边框	规格型号	全耐候改性树脂
		商 标	---
标称生产单位	重庆纤居新材料有限公司		
委托单位名称 \地址\邮编	重庆纤居新材料有限公司 \重庆市大渡口区建胜镇新建村(建桥工业B区2-1)号(F01线生产厂房)(3号)\---		
样品数量	1 批	样品状态	符合测试要求
标称生产日期 \批号	--\--	样品接收日期	2025-06-09
检验检测日期	2025-06-09~2025-09-19	检验检测地点	本机构·新华路, 本机构·春新东路
检验检测依据	T/CPIA 0081-2024《光伏组件用玻纤增强复合材料边框》 GB/T 1634.1-2025《塑料 负荷变形温度的测定 第1部分:通用试验方法》 GB/T 1447-2005《纤维增强塑料拉伸性能试验方法》 GB/T 1449-2005《纤维增强塑料弯曲性能试验方法》 GB/T 30969-2014《聚合物基复合材料短梁剪切强度试验方法》 GB/T 31838.2-2019《固体绝缘材料 介电和电阻特性 第2部分:电阻特性(DC方法) 体积电阻和体积电阻率》 GB/T 3854-2017《增强塑料巴柯尔硬度试验方法》 IEC 61215-2:2021《地面用光伏组件设计鉴定和定型第2部分:试验程序》 UL94-2023 Tests for Flammability of Plastic Materials for Parts in Devices and Appliances		
判定依据	---		
检验结论	---		
备 注:	委托单位提供生产单位名称。		

批准: 杨君
杨君

审核: 刘春荣
刘春荣

主检: 李阳
李阳

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REPORT PARTICULARS (printed page 1 of 7)

Product: Composite material frame for PV modules.

Specification/model: All-weather modified resin. Trademark: ---.

Declared manufacturer and client: Chongqing Xianju New
Materials Co., Ltd.

Address: Xinjian Village, Jiansheng Town, Dadukou District,
Chongqing (Jianqiao Industrial Zone B, No. 2-1), F01 production
building (No. 3). Postal code: ---.

Quantity: One batch. Condition: Meets test requirements.

Production date/batch: -- / --. Received: 9 June 2025.

Testing: 9 June-19 September 2025.

Test locations: Institution's Xinhua Road and Chunxin East Road
sites.

TEST REFERENCES

T/CPIA 0081-2024: Glass-fibre-reinforced composite frames for
PV modules.

GB/T 1634.1-2025: Plastics - temperature of deflection under
load, Part 1: general test method.

GB/T 1447-2005: Tensile properties of fibre-reinforced plastics.

GB/T 1449-2005: Flexural properties of fibre-reinforced plastics.

GB/T 30969-2014: Short-beam shear strength of polymer matrix
composites.

GB/T 31838.2-2019: Solid insulating materials -
dielectric/resistive properties, Part 2: DC volume resistance and
volume resistivity.

GB/T 3854-2017: Barcol hardness of reinforced plastics.

IEC 61215-2:2021: Terrestrial PV modules - design qualification
and type approval, Part 2: test procedures.

UL 94-2023: Flammability of plastic materials for parts in devices
and appliances.

Judgment basis: ---. Inspection conclusion: ---.

Issue date: 15 June 2026.

Note: Manufacturer name provided by client.

Approved: Yang Jun. Reviewed: Liu Chunrong. Principal tester: Li
Yang.

检 验 检 测 结 果

No: 2025DACS20319

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序号	检验检测项目	单位	技术要求	检验检测结果	单项评价
1	体积电阻率	$\Omega \cdot m$	--	平均值: 1.0×10^{13}	--
2	外观	--	--	经目测, 样品表面洁净、无污染、平滑无毛刺, 颜色均匀一致。型材表面颜色均匀, 无明显色差、凹凸不平、裂纹、气泡, 无影响外观的擦划伤、碰伤、内层裸露等缺陷。	--
2.1	划伤、划痕、擦伤	--	--	无	--
2.2	面积 (气泡)	--	--	无	--
2.3	凹痕	--	--	无	--
2.4	合模缝	--	--	无	--
3	尺寸	--	--	--	--
3.1	长度	mm	--	长边框: 2278.9 短边框: 1135.0	--
3.2	宽度	mm	--	长边框: 23.6 短边框: 23.6	--
3.3	壁厚	mm	--	长边框的 B 面: 2.51; D 面: 2.33 短边框的 B 面: 2.42 ; D 面: 2.31	--
3.4	B 面切角垂直度	--	--	与 C 面垂直度偏差值 ≤ 0.5 mm	--
3.5	直线度	mm	--	0.02	--
3.6	翘曲度	mm	--	0.01	--
4	拉伸强度	MPa	--	平均值: 1.31×10^3	--
5	弯曲强度	MPa	--	平均值: 1.06×10^3	--
6	弯曲弹性模量	GPa	--	平均值: 48.0	--
7	巴柯尔硬度	HBa	--	平均值: 65	--
8	层间剪切强度	MPa	--	平均值: 55.6	--

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TEST RESULTS (printed page 2 of 7)

Columns: item; test property; unit; technical requirement; result; individual assessment. "--" is retained as reported; no pass/fail assessment is given.

1. Volume resistivity: mean $1.0 \times 10^{13} \Omega \cdot m$.
2. Appearance: Visually clean, uncontaminated, smooth and burr-free; uniform colour. No obvious colour variation, unevenness, cracks, bubbles, scratches, impact damage, exposed inner layer or other defects affecting appearance.
- 2.1 Scratches, score marks, abrasion: None.
- 2.2 Area (bubbles): None.
- 2.3 Indentations: None.
- 2.4 Mould parting line: None.
3. Dimensions.
- 3.1 Length: long frame 2278.9 mm; short frame 1135.0 mm.
- 3.2 Width: long frame 23.6 mm; short frame 23.6 mm.
- 3.3 Wall thickness: long frame B face 2.51 mm, D face 2.33 mm; short frame B face 2.42 mm, D face 2.31 mm.
- 3.4 B-face cut-angle perpendicularity: deviation from perpendicular to C face ≤ 0.5 mm.
- 3.5 Straightness: 0.02 mm.
- 3.6 Warpage: 0.01 mm.
4. Tensile strength: mean 1.31×10^3 MPa.
5. Flexural strength: mean 1.06×10^3 MPa.
6. Flexural modulus: mean 48.0 GPa.
7. Barcol hardness: mean 65 HBa.
8. Interlaminar shear strength: mean 55.6 MPa.

检 验 检 测 结 果

No: 2025DACS20319

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序号	检验检测项目	单位	技术要求	检验检测结果	单项评价
9	耐热性能（负荷变形温度 HDT）	--	--	达到 290℃，样品变形量未达到标准挠度，即负荷变形温度 >290℃	--
10	阻燃等级	--	--	V-1 级	--
11	角码拉拔力	N	--	703	--
12	耐紫外辐照性能	--	按要求将试样放入试验箱内，温度控制在 60℃±5℃；试样经受波长在 280nm-400nm 的紫外辐照，辐照强度：450W/m²。累计辐照量：300kWh/m²。	--	--
12.1	外观	--	--	样品无肉眼可见缺陷，涂层无明显粉化、色差。	--
12.2	拉伸强度	MPa	--	平均值： 无划伤样品：1.26×10³ 有划伤样品：1.28×10³	--
12.3	弯曲强度	MPa	--	平均值： 无划伤样品：994 有划伤样品：981	--
12.4	层间剪切强度	MPa	--	平均值： 无划伤样品：58.5 有划伤样品：59.1	--
12.5	角码拉拔力	N	--	650	--
13	耐紫外湿热老化性能	--	按要求将试样放入紫外湿热老化试验箱内，试验条件：样品温度：（85±2）℃；相对湿度：（85±5）%；同时经受波长 280nm-400nm 的紫外辐照，辐照强度：350W/m²。累计辐照量：350kWh/m²。	--	--
13.1	外观	--	--	样品无肉眼可见缺陷，涂层无明显粉化、色差。	--

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TEST RESULTS (printed page 3 of 7)

9. Heat resistance / heat deflection temperature (HDT): At 290 °C, specimen deformation had not reached the standard deflection; therefore HDT >290 °C.

10. Flammability classification: V-1.

11. Corner-key pull-out force: 703 N.

12. UV radiation resistance: chamber at 60 ± 5 °C; wavelength 280-400 nm; irradiance 450 W/m²; cumulative exposure 300 kWh/m².

12.1 Appearance: No defects visible to the naked eye; no obvious coating chalking or colour difference.

Rows 12.2-12.4 show mean values, unscratched / scratched specimens:

12.2 Tensile strength: 1.26 × 10³ / 1.28 × 10³ MPa.

12.3 Flexural strength: 994 / 981 MPa.

12.4 Interlaminar shear strength: 58.5 / 59.1 MPa.

12.5 Corner-key pull-out force: 650 N.

13. UV/damp-heat ageing resistance: specimen temperature 85 ± 2 °C; relative humidity 85 ± 5%; simultaneous UV at 280-400 nm, 350 W/m²; cumulative exposure 350 kWh/m².

13.1 Appearance: No defects visible to the naked eye; no obvious coating chalking or colour difference.

Individual assessments: --, as reported.

检验检测结果

No: 2025DACS20319

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序号	检验检测项目	单位	技术要求	检验检测结果	单项评价
13.2	拉伸强度	MPa	---	平均值: 无划伤样品: 1.28×10^3 有划伤样品: 1.27×10^3	---
13.3	弯曲强度	MPa	---	平均值: 无划伤样品: 826 有划伤样品: 844	---
13.4	层间剪切强度	MPa	---	平均值: 无划伤样品: 51.8 有划伤样品: 57.2	---
13.5	角码拉拔力	N	---	674	---
14	耐紫外湿冻老化性能	---	将试样放入试验箱内, 试验箱环境温度在-40℃~+85℃之间进行高低温交变湿冻试验。同时试样经受波长 280nm-400nm 的紫外辐照, 辐照强度 350W/m², 试验开始时立即开启紫外灯光源, 正常运行至 0℃, 关闭光源。当循环试验温度升至 0℃, 打开光源, 如此循环 10 次。	---	---
14.1	外观	---	国家光伏质检中心	样品无肉眼可见缺陷, 涂层无明显粉化、色差。	---
14.2	拉伸强度	MPa	---	平均值: 1.17×10^3	---
14.3	弯曲强度	MPa	---	平均值: 893	---
14.4	层间剪切强度	MPa	---	平均值: 58.6	---
14.5	角码拉拔力	N	---	681	---

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TEST RESULTS (printed page 4 of 7)

13. UV/damp-heat ageing results (continued).

Rows 13.2-13.4 show mean values, unscratched / scratched specimens:

13.2 Tensile strength: 1.28×10^3 / 1.27×10^3 MPa.

13.3 Flexural strength: 826 / 844 MPa.

13.4 Interlaminar shear strength: 51.8 / 57.2 MPa.

13.5 Corner-key pull-out force: 674 N.

14. UV/humidity-freeze ageing resistance: chamber alternates between -40 °C and +85 °C. Simultaneous UV at 280-400 nm and 350 W/m². UV lamp switched on at the start, switched off when temperature reaches 0 °C on cooling, and switched on when temperature rises to 0 °C. Repeat for 10 cycles.

14.1 Appearance: No defects visible to the naked eye; no obvious coating chalking or colour difference.

14.2 Tensile strength: mean 1.17×10^3 MPa.

14.3 Flexural strength: mean 893 MPa.

14.4 Interlaminar shear strength: mean 58.6 MPa.

14.5 Corner-key pull-out force: 681 N.

Individual assessments: --, as reported.

检 验 检 测 结 果

No: 2025DACS20319

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序号	检验检测项目	单位	技术要求	检验检测结果	单项评价
15	耐紫外热循环老化性能	---	试验箱环境温度在-40℃~+85℃之间循环，循环次数200。同时试样经受波长 280nm-400nm 的紫外辐照，辐照强度 350W/m²，累计辐照量 420kWh/m²。	---	---
15.1	外观	---	---	样品无肉眼可见缺陷，涂层无明显粉化、色差。	---
15.2	拉伸强度	MPa	---	平均值：1.24×10³	---
15.3	弯曲强度	MPa	---	平均值：1.00×10³	---
15.4	层间剪切强度	MPa	---	平均值：56.7	---
15.5	角码拉拔力	N	---	642	---
16	耐盐雾腐蚀性能	---	试验方法参照 IEC 61701-2020 进行，一个循环共 8 小时，包括在 35℃±2℃温度下对试样进行 2h 的盐雾喷洒（酸性溶液），然后在温度 60℃±2k，小于等于 30% 的相对湿度条件下储存 4 小时，然后在温度 50℃±5k，大于等于 95%相对湿度条件下储存 2 小时。共进行 240 个循环试验（480h）。	---	---
16.1	外观	---	---	样品无肉眼可见缺陷，涂层无明显粉化、色差。	---
16.2	拉伸强度	MPa	---	平均值：1.16×10³	---
16.3	弯曲强度	MPa	---	平均值：865	---

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TEST RESULTS (printed page 5 of 7)

15. UV/thermal-cycle ageing resistance: chamber cycles between -40 °C and +85 °C for 200 cycles, with simultaneous UV at 280-400 nm and 350 W/m²; cumulative exposure 420 kWh/m².

15.1 Appearance: No defects visible to the naked eye; no obvious coating chalking or colour difference.

15.2 Tensile strength: mean 1.24 × 10³ MPa.

15.3 Flexural strength: mean 1.00 × 10³ MPa.

15.4 Interlaminar shear strength: mean 56.7 MPa.

15.5 Corner-key pull-out force: 642 N.

16. Salt-mist corrosion resistance: method refers to IEC 61701-2020. Each cycle totals 8 h: acidic salt spray for 2 h at 35 ± 2 °C; storage for 4 h at 60 °C ± 2 K and ≤30% RH; then storage for 2 h at 50 °C ± 5 K and ≥95% RH. The source states “240 cycles (480 h)”.

TRANSLATOR'S NOTE: The stated cycle count and total duration are inconsistent. Both are preserved; clarification from the issuer is required to establish total exposure.

16.1 Appearance: No defects visible to the naked eye; no obvious coating chalking or colour difference.

16.2 Tensile strength: mean 1.16 × 10³ MPa.

16.3 Flexural strength: mean 865 MPa.

Individual assessments: --, as reported.

检 验 检 测 结 果

No: 2025DACS20319

共 7 页第 6 页

序号	检验检测项目	单位	技术要求	检验检测结果	单项评价
16.4	层间剪切强度	MPa	--	平均值: 58.5	--
16.5	角码拉拔力	N	--	689	--
17	耐氨气腐蚀性能	--	(1) 试验箱氨气初始加入浓度为6667ppm、试样在温度 60℃±3℃、相对湿度 100%的条件下, 试验时间 8 小时; (包含加热时间) (2) 在无氨标准大气、温度范围 18℃~28℃、最高相对湿度 75%的条件下, 试验时间 16 小时 (包含冷却时间); 将 (1) 和 (2) 整个过程重复 20 次 (480h)。	--	--
17.1	外观	--	--	样品无肉眼可见缺陷, 涂层无明显粉化、色差。	--
17.2	拉伸强度	MPa	--	平均值: 1.07×10 ³	--
17.3	弯曲强度	MPa	--	平均值: 860	--
17.4	层间剪切强度	MPa	--	平均值: 58.2	--
17.5	角码拉拔力	N	--	674	--
备注: --					

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TEST RESULTS (printed page 6 of 7)

16. Salt-mist corrosion results (continued).
- 16.4 Interlaminar shear strength: mean 58.5 MPa.
- 16.5 Corner-key pull-out force: 689 N.
17. Ammonia corrosion resistance:
- (1) Initial ammonia concentration 6667 ppm; specimen at 60 ± 3 °C and 100% RH for 8 h, including heating time.
- (2) Ammonia-free standard atmosphere, 18-28 °C, maximum 75% RH, for 16 h, including cooling time.
- Repeat steps (1) and (2) for 20 cycles (480 h).
- 17.1 Appearance: No defects visible to the naked eye; no obvious coating chalking or colour difference.
- 17.2 Tensile strength: mean 1.07 × 10³ MPa.
- 17.3 Flexural strength: mean 860 MPa.
- 17.4 Interlaminar shear strength: mean 58.2 MPa.
- 17.5 Corner-key pull-out force: 674 N.
- Remarks: --. Individual assessments: --, as reported.

检验检测报告附图或附表

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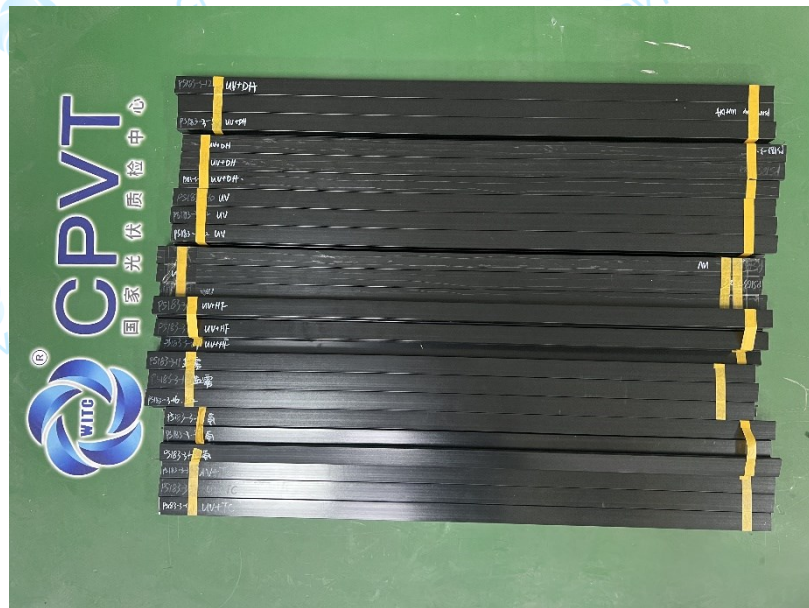


图 1：样品

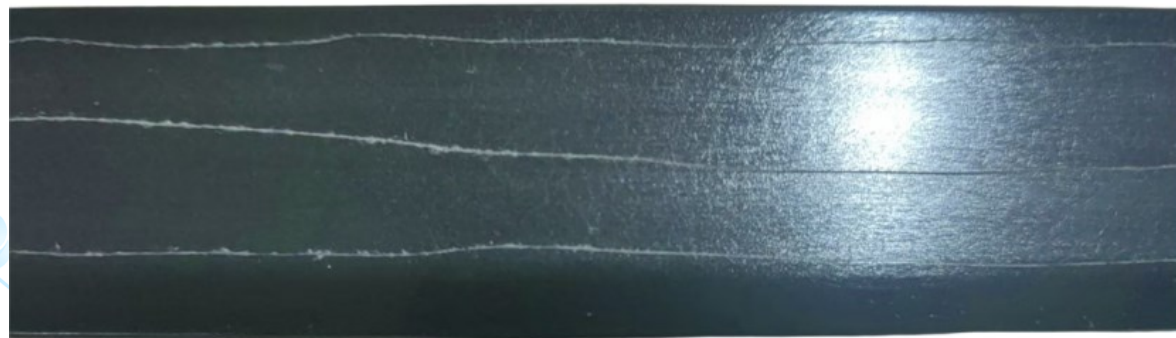


图 2：初试样品表面划伤示意图

ENGLISH TRANSLATION NOTES

F1 Composite translation copy • Original page retained at 100%.
Added notes are not issued or certified by the laboratory. Verify
seals/signatures using the untouched source PDF.

REPORT FIGURES / ATTACHED TABLES

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Figure 1: Sample.

Figure 2: Schematic illustration of surface scratches on the initial
test specimen.