

Pultruded FRP for Rooftop Solar Mounting & Retrofit

Rooftop PV adds permanent dead load to a structure rarely designed for it — and on retrofits the roof's reserve capacity is often undocumented. Galvanised-steel and aluminium racking adds that weight, plus grounding scope and galvanic corrosion at the roof interface. F1 Composite pultruded FRP rails and clamp systems cut racking dead load by roughly 70 % versus steel, are non-conductive and corrosion-immune, and bolt onto metal-tile, trapezoidal and standing-seam roofs.



Rooftop PV on metal-tile roof — FRP rail with bolt-on clamps, no



Corrosion-free, low-dead-load racking for load-sensitive rooftop

CORE PERFORMANCE REQUIREMENTS

Low Roof Dead Load

~70 % lighter than steel; guards retrofit load margin

Non-Conductive Interface

No grounding / bonding; no galvanic corrosion at clamp

Corrosion-Free Outdoors

No galvanizing or paint; metal-tile & coastal roofs

Wind & Snow Uplift

Rail + clamp sized to ASCE 7 / AS-NZS 1170 uplift load

UV & Weathering

UV-stable veil; low strength loss over decades

Fast Manual Install

Light bolt-on sections; crane-free, lower BOS labour

STANDARDS & CODES

EN 13706 Structural pultruded profiles (E23)

ASTM D3917 Pultruded profile dimensional tolerance

ASCE 7 Wind & snow structural load basis (US)

AS/NZS 1170 Wind & snow load basis (AU/NZ)

ASTM D790 Flexural strength & modulus

ASTM E84 Flame spread — Class 1 rooftop

-70 %

Racking Weight vs. Steel

Nil

Grounding / Bonding
Required

25+ yr

Outdoor Service Life

0

Repaint · Re-Galvanize
Cycles

RELATED F1 PRODUCTS · SPEC EXCERPT

Product	Form / Size	Key Spec	Standard
Roof Mounting Rail	SHS / channel	~70 % lighter than steel	EN 13706 · D3917
Module Clamps	Mid & end, M8	FRP body; non-conductive	EN 13706
Seam / Tile Clamp	Seam / trapezoidal	No-penetration; seam roofs	EN 13706
Walkway Grating	Molded / pultruded	Anti-slip; non-conductive	EN ISO 14122

Pultruded GFRP for PV Module Frames

The anodised-aluminium module frame carries the grounding path, galvanic corrosion at the clamp, scrap-metal theft value and a thermal expansion far from the glass laminate. F1 Composite pultruded GFRP frames are intrinsically non-conductive, immune to galvanic and salt corrosion, have no resale theft value, and expand closer to glass — while holding the edge stiffness the laminate needs under snow and wind load.



PV modules with pultruded GFRP frame in place of anodised aluminium



Utility-scale array — dielectric frame cuts PID path & galvanic

CORE PERFORMANCE REQUIREMENTS

Dielectric Frame

Non-conductive; no frame grounding; cuts PID leakage path

No Galvanic Corrosion

No galvanic cell at frame / clamp; salt & humid service

No Scrap-Metal Theft

No aluminium resale value; deters field frame theft

Thermal Match to Glass

CTE closer to glass laminate than aluminium

Edge Load Strength

Stiff laminate edge for snow & wind load

UV & 25-yr Outdoor

UV-stable veil; 25+ yr; no anodise or repaint

STANDARDS & CODES

EN 13706 Structural pultruded profiles (E23)

ASTM D3917 Pultruded profile dimensional tolerance

ISO 14125 Composite flexural properties

ASTM D149 Dielectric strength

ASTM D570 Water absorption

IEC 61730 PV module safety — frame insulation context

Nil

Frame Grounding / Bonding

0

Galvanic · Salt Corrosion

25+ yr

Outdoor Service Life

Insulator

Dielectric Module Frame

RELATED F1 PRODUCTS · SPEC EXCERPT

Product	Form / Size	Key Spec	Standard
Frame Section	Custom U / box	CTE near glass; dielectric	EN 13706
Corner Spline	Keyed / bonded	Sealed mitre joint	EN 13706
Clamp Profile	Mid / end seat	Non-conductive clamp seat	EN 13706
Custom Pultrusion	To drawing	Bespoke section; tooling	EN 13706

Pultruded FRP for Offshore, Floating & Saline PV

Saltwater, brackish fishery-PV ponds and saline-alkali tidal flats corrode galvanised steel and aluminium racking from day one — driving sacrificial anodes, cathodic protection, hot-dip coatings and endless repaint. F1 Composite pultruded FRP posts, rails and decking are corrosion-immune in chloride and alkaline service, non-conductive and UV-stable — removing the anode, coating and grounding scope for fixed-offshore, floating and saline ground-mount arrays.



Fishery-PV (aquavoltaic) racking in FRP over brackish ponds



Coastal / offshore array — no anode, no galvanizing, no repaint

CORE PERFORMANCE REQUIREMENTS

Chloride / Salt Immunity

Corrosion-immune in seawater & salt spray; no anode

Alkaline Soil Service

Resists saline-alkali tidal-flat & sabkha soils

No Cathodic Protection

No sacrificial anode or impressed-current system

Non-Conductive

No grounding / bonding; ends galvanic corrosion

Floating-PV Ready

Stable on pontoons; UV & humidity resistant

Low-Maintenance OPEX

No repaint / re-galvanize; 25+ yr in marine air

STANDARDS & CODES

EN 13706 Structural pultruded profiles (E23)

ASTM D3917 Pultruded profile dimensional tolerance

ASTM D790 Flexural strength & modulus

ASTM D543 Chemical / corrosion resistance

ASCE 7 Wind & snow structural load basis

DNV-ST-C501 Offshore composite structures

0

Anode · Coating · Repaint

Nil

Grounding / Bonding
Required

25+ yr

Marine-Air Service Life

-70 %

Weight vs. Steel Racking

RELATED F1 PRODUCTS · SPEC EXCERPT

Product	Form / Size	Key Spec	Standard
FRP Support Post	SHS 50-120 mm	Corrosion-free in seawater	EN 13706
Rail & Bracing	Channel / angle	240-400 MPa; dielectric	EN 13706
Walkway Grating	Molded grating	Anti-slip; floating-PV O&M	EN ISO 14122
Custom Pultrusion	To drawing	Pontoon & fender sections	EN 13706