

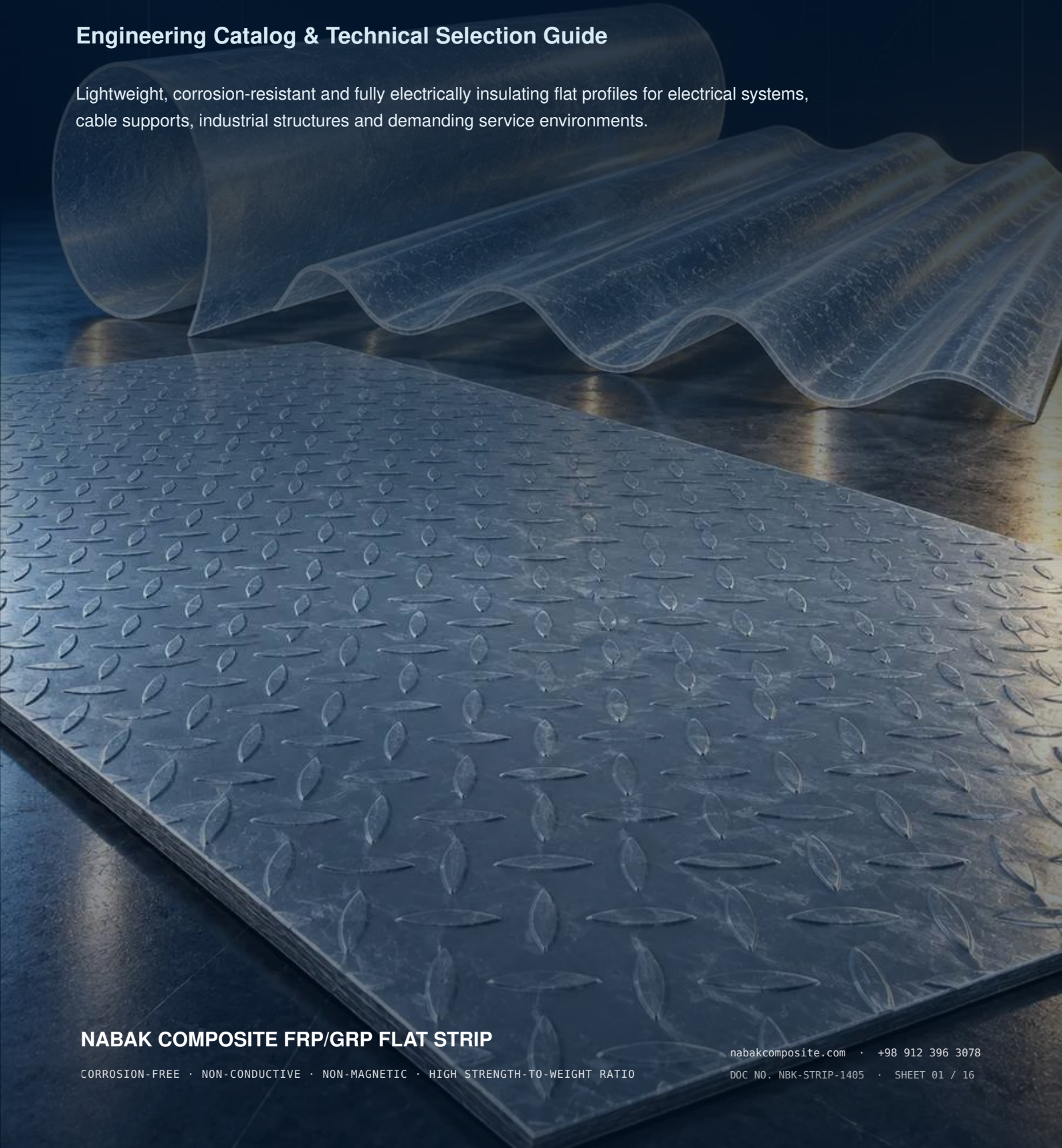


PULTRUDED COMPOSITE STRUCTURAL PROFILE

FRP/GRP COMPOSITE FLAT STRIP

Engineering Catalog & Technical Selection Guide

Lightweight, corrosion-resistant and fully electrically insulating flat profiles for electrical systems, cable supports, industrial structures and demanding service environments.



NABAK COMPOSITE FRP/GRP FLAT STRIP

CORROSION-FREE · NON-CONDUCTIVE · NON-MAGNETIC · HIGH STRENGTH-TO-WEIGHT RATIO

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01 – COMPANY PROFILE

ABOUT NABAK COMPOSITE

AN IRANIAN MANUFACTURER OF ENGINEERED FRP/GRP STRUCTURAL PROFILES

Nabak Composite manufactures pultruded FRP/GRP profiles using current composite-material technology, including channels, angles, I-beams, composite sheets and flat strips. These products provide a dependable alternative to metal and aluminum strips in environments where corrosion, moisture, aggressive chemicals and electrical-insulation requirements sharply reduce the life and performance of metallic components.

The production line is designed to deliver a lightweight, insulating and durable substitute for steel strip in projects where component weight, electrical safety and corrosion resistance are critical. Typical uses include electrical equipment and switchboards, cable-tray supports, lightweight industrial structures and installations where metal corrosion or conductivity increases safety risk and maintenance cost. Glass-fiber content, resin cure and section dimensions are controlled throughout production.

"A strip that never rusts, never conducts."

In many industrial and electrical projects, corrosion and electrical conductivity in metal strip increase long-term maintenance costs and safety risks. By manufacturing composite flat strip, Nabak Composite removes these fundamental sources of cost and hazard from the project life cycle.



FIG.03-A - Nabak Composite product showcase: a complete range of FRP/GRP profiles including flat strips, I-beams, channels and composite sheets.

$\frac{1}{4}$	0%	. Non - Cond
Approximate weight compared with an equal-volume steel strip	Corrosion and rust throughout service life	Fully electrically -insulating and non magnetic



01 – WHY FRP FLAT STRIP

WHY COMPOSITE FLAT STRIP?

ENGINEERING RATIONALE ACROSS INDUSTRIAL & ELECTRICAL APPLICATIONS

Moisture and chemical corrosion, unwanted electrical conductivity near energized installations, and high handling and installation weight are three common challenges of steel and aluminum strips. FRP/GRP composite strip eliminates these risk mechanisms and is engineered for applications where electrical safety, long service life and reduced maintenance cost are essential.

SCOPE 01

Electrical and Switchboard Industries

ELECTRICAL & SWITCHGEAR INDUSTRIES

Insulating strips for switchboards, phase spacers and non-conductive parts near energized equipment.

SCOPE 02

Oil, Gas and Petrochemical

OIL, GAS & PETROCHEMICAL FACILITIES

Cable-tray supports, equipment bracing strips and non-conductive components in process units exposed to corrosive vapors.

SCOPE 03

Water and Wastewater Treatment

WATER & WASTEWATER TREATMENT PLANTS

Equipment supports and grating frames in continuous contact with moisture and chlorine.

SCOPE 04

Marine and Coastal Structures

MARINE & COASTAL STRUCTURES

Bracing and connection strips for coastal equipment exposed directly to saltwater and marine humidity.

ENGINEERING
VALUE

- ✓

Eliminates corrosion and rust throughout the profile service life
- ✓

Reduces dead load and handling and installation costs
- ✓

Inherently electrically insulating and non-magnetic
- ✓

High chemical resistance to moisture, vapors and salts
- ✓

No periodic painting or maintenance after installation
- ✓

Custom dimensions, colors and resin systems for project requirements

"The strip should never be the risk on site."



02 – MATERIAL & STRUCTURE

WHAT IS FRP/GRP FLAT STRIP?

FIBER-REINFORCED POLYMER FLAT STRIP – COMPOSITION & MECHANICAL BEHAVIOR

Composite flat strip is made from thousands of continuous glass-fiber strands embedded in a thermoset resin matrix and pulled into a uniform flat section. Its simple geometry provides consistent material distribution across the width and thickness, giving reliable behavior under tensile and light flexural loads. Electrical insulation and complete corrosion resistance further distinguish it from comparable metal strip.

01

Reinforcing Fibers
REINFORCEMENT FIBER
Continuous E-glass fibers, approximately 65% of the section, provide the strip's primary tensile and flexural strength.

02

Resin Matrix
RESIN MATRIX
UV-resistant isophthalic polyester is standard; vinyl ester is available for higher chemical resistance.

03

External Profile Surface
SURFACE VEIL FINISH
A thin protective resin-rich surface veil provides a uniform finish and enhanced resistance to UV degradation.



FIG.05-A - Precision composite-strip sections in standard colors, showing consistent geometry and surface quality along the pultruded length.

TYPICAL MECHANICAL AND PHYSICAL PROPERTIES - FRP FLAT STRIP

Property	Typical Value	Compared with Steel / Aluminum
Density (specific gravity)	1.8 - 2.0 g/cm3	Approximately one-quarter the weight of steel
Longitudinal tensile strength	240 - 400 MPa	Higher strength-to-weight ratio than steel
Flexural strength	250 - 350 MPa	Suitable for light to moderate flexural loads
Elastic modulus	22 - 30 GPa	



02 – MANUFACTURING PROCESS

PULTRUSION MANUFACTURING PROCESS AND RAW MATERIALS

CONTINUOUS PULTRUSION PROCESS & RAW MATERIAL COMPOSITION



FIG.06-A - Continuous glass-fiber feed from creels toward the resin bath in the Nabak Composite pultrusion line.

Nabak Composite flat strip is manufactured by pultrusion, a continuous process in which resin-saturated glass fibers are pulled through a heated steel die with an accurate flat-section geometry, then cured and drawn continuously. The process provides consistent dimensions and stable mechanical quality along the full profile length.

RAW MATERIAL COMPOSITION

Production Parameter		Specification
Manufacturing method	Pultrusion - continuous pulling of the flat section through a heated die	
Reinforcement	Continuous E-glass fiber; approximately 65% of section volume	
Standard base resin	UV-resistant isophthalic polyester	
Optional resin	Vinyl ester for enhanced chemical resistance; made to order at approximately twice the standard listed rate	
Standard fire performance	Self-extinguishing additive incorporated during production	
Special fire performance	Fire-retardant resin systems available for projects with demanding HSE requirements	

PRODUCTION WORKFLOW



02 – COMPARATIVE ANALYSIS

COMPOSITE FLAT STRIP VS. STEEL AND ALUMINUM STRIP

FRP/GRP FLAT STRIP VS. CONVENTIONAL STEEL & ALUMINUM STRIP

Selection must consider environmental exposure, electrical-safety requirements and the project's life-cycle cost horizon. The table compares the principal performance indicators.

Criterion	FRP/GRP Flat Strip	Steel / Aluminum Strip
Corrosion in wet or chemical environments	Resistant and corrosion-free	Prone to rust or surface corrosion
Relative weight at equal volume	Lightweight - about one-quarter of steel	Heavier (steel)
Electrical conductivity	Fully insulating	Conducts electric current
Magnetic behavior	Non-magnetic	Magnetic (steel)
Periodic protective painting	Not required - integrally pigmented	Required for steel in corrosive environments
Service life in corrosive environments	More than 25 years	3 to 12 years depending on coating
Handling and installation cost	Lower due to low weight	Higher for steel
Elastic modulus / stiffness	Lower - requires appropriate design	Higher (steel: 200 GPa)
Life-cycle maintenance cost	Low	High in corrosive environments

Engineering takeaway

Composite flat strip is not a universal replacement for steel. Its lower elastic modulus requires design in accordance with structural principles and allowable loads. In corrosive environments, electrical panels and projects where maintenance and electrical safety matter, however, eliminating corrosion and conductivity makes FRP the superior option.

* Values are typical ranges reported in industry references for FRP profiles and common metals and may vary with resin and reinforcement grade.



03 – FRP FLAT STRIP PROFILE

COMPOSITE FLAT STRIP - PRODUCTION SPECIFICATIONS

FRP/GRP FLAT STRIP – MANUFACTURING SPECIFICATIONS



FIG.08-A - Nabak Composite composite-sheet product, corrosion resistant, lightweight and electrically insulating.

Production Parameter		Specification
Manufacturing method	Pultrusion - continuous pulling through a heated flat-section die	
Reinforcement	Continuous E-glass fiber; approximately 65% by weight	
Standard base resin	UV-resistant isophthalic polyester	
Optional resin	Vinyl ester for enhanced project-specific chemical resistance	
External surface	Protective resin-rich surface veil with a uniform gloss finish	
Standard fire performance	Self-extinguishing additive incorporated during production	
Special fire performance	Fire-retardant resin systems available for projects with demanding HSE requirements	
Primary applications	Electrical equipment and panels, cable-tray supports and lightweight industrial structures; compatible with bolted connections	

REFERENCE PRODUCT STANDARDS

ASTM D638 / ISO 14125 TENSILE & FLEXURAL PROPERTIES OF FRP	ASTM D635 / UL 94 FLAMMABILITY & SELF- EXTINGUISHING TEST	ASTM G154 UV WEATHERING RESISTANCE TEST
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03 – FRP FLAT STRIP PROFILE

COMPLETE DIMENSIONS AND WEIGHT TABLE - F7 TO F100 COMPOSITE FLAT STRIP

FULL DIMENSION & WEIGHT TABLE – FRP FLAT STRIP PROFILES

The full Nabak Composite production range with accurate mass per linear meter for rapid order-tonnage estimates and project logistics planning.

Profile Code	Width A (mm)	Thickness T (mm)	Weight per Meter (kg/m)	12 m Length Weight (kg)
F7	7	4	0.045	0.54
F8	8	5	0.070	0.84
F10	10	3	0.060	0.72
F30	30	5	0.350	4.20
F33	33	10	0.650	7.80
F40.5	40	5	0.450	5.40
F40.10	40	10	0.760	9.12
F44	44	10	0.900	10.80
F50.6	50	6	0.600	7.20
F50.10	50	10	1.010	12.12
F60	60	6	0.750	9.00
F64	64	10	1.350	16.20
F70	70	10	1.390	16.68
F87	87	10	1.700	20.40
F100	100	10	2.000	24.00

15	100 – 7	m 12	2.0 – 0.045
Standard sizes in the production range	Section widths from 7 to 100 mm	Minimum orderable length per piece	Weight range per meter (kg/m) across the complete product range

Table guide: A = strip width; T = strip thickness. The 12 m piece weight is calculated using the minimum orderable length.

SIZE SELECTION GUIDE



03 – FRP FLAT STRIP PROFILE

SECTION DETAILS AND SURFACE QUALITY

SECTION GEOMETRY, DIMENSIONAL ACCURACY & SURFACE QUALITY



FIG.10-A - Precision composite-strip section with a uniform resin gloss and sharp pultruded edges.

Dimensional Accuracy

Precision steel dies keep section tolerances within accepted industrial limits, allowing fittings, bolts and accessories to be installed without additional machining.

Cutting and Machining

Composite strip can be cut and drilled in the workshop with conventional tools such as diamond saws and grinders, with no welding or specialist equipment.

Protective Resin Surface

The thin resin-rich surface veil produces a uniform glossy finish, prevents glass-fiber bloom and improves UV resistance.

Mechanical Connection Compatibility

Strips can be connected with bolts, composite or galvanized-metal plates, and structural epoxy adhesives. Correct edge distance prevents local cracking.

SURFACE VEIL PROTECTED	DIMENSIONALLY STABLE	FIELD-MACHINABLE	NON-CONDUCTIVE
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* FRP/GRP profiles cannot be welded. Connections must use bolts, connection plates or structural adhesives.



04 – ORDERING & DELIVERY

ORDERING, CUTTING AND DELIVERY GUIDE

ORDERING, CUTTING & LEAD-TIME GUIDE – FRP FLAT STRIP PROFILE

ORDERING AND DELIVERY TERMS

- ✓ Orders are cut and supplied to the customer's technical requirements and requested length. The minimum orderable length is 12 meters.
- ✓ Where stock is available, estimated delivery is approximately five working days.
- ✓ If the requested size is not in stock, it enters a new production cycle. The minimum production quantity is 200 linear meters. The exact lead time is stated transparently in the pro forma invoice according to production capacity.
- ✓ Final pricing requires a complete specification inquiry. After cut lengths and quantities are confirmed, the final rate is stated in the pro forma invoice.
- ✓ Higher-volume orders that can be scheduled into the production cycle are eligible for graduated discounts and special rate adjustments.
- ✓ Payment terms, shipping method and final delivery location are stated separately in each pro forma invoice. Depending on destination, full-truck, cargo-bus or nationwide freight-company delivery is available.

ORDER PROCESSING FLOW



* These ordering and delivery terms summarize Nabak Composite's standard sales procedure and do not replace the official pro forma invoice. Final figures and conditions are valid only as stated in that document.



04 – COLOR, SURFACE FINISH & PRICING

COLORS, SURFACE FINISHES AND PRICING NOTES

COLOR OPTIONS, SURFACE COATING & PRICING NOTES – FRP FLAT STRIP

STANDARD AND CUSTOM COLORS

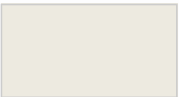
For orders supplied from inventory, the final color is confirmed according to available stock in the pro forma invoice; typical stock colors are yellow, grey and white. New production orders may select yellow, grey, white or black. Other custom colors are available for sufficiently large production quantities.



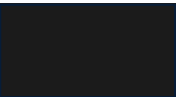
YELLOW - STOCK



GREY - STOCK



WHITE - STOCK



BLACK - NEW PRODUCTION

SURFACE FINISH OPTIONS

Integral Pigmentation - pigment is added to the resin during production	Custom RAL Coating - applied to the requested RAL code
Wood-Grain Finish - available to order for architectural and visual applications	Enhanced UV Resistance - achieved through appropriate RAL coating for outdoor exposure

Integral pigments are mixed directly into the resin during production, so color extends into the section and remains stable against superficial scratching. Project-specific surface coatings are formulated for composite substrates and provide strong adhesion, improved appearance and additional sunlight resistance.

PRICING NOTE

- ✓ Dimensions and weights provide a preliminary basis for order-tonnage estimation and do not constitute a final price. Final rates are issued after cut lengths and quantities are confirmed.
- ✓ Production-scale orders and larger quantities are eligible for rate adjustments and graduated discounts.

* These color and pricing terms summarize Nabak Composite's standard sales procedure and do not replace an official pro forma invoice.

04 – PACKAGING & QUALITY CONTROL

INDUSTRIAL PACKAGING, DISPATCH AND QUALITY CONTROL

INDUSTRIAL PACKAGING, DISPATCH & FINAL QUALITY INSPECTION



FIG.13-A - Flexible translucent FRP sheet manufactured for industrial and architectural applications.

- ✓ Profiles arranged on wooden pallets with appropriate spacing to prevent local pressure
- ✓ Industrial strapping with edge protectors at all contact points
- ✓ Protective film against moisture and dust during transport
- ✓ Full-truck, cargo-bus or nationwide freight-company delivery according to destination
- ✓ Waybill and shipping documents supplied with product quality certification
- ✓ Final verification of dimensions, cut lengths and quantities against the pro forma invoice before dispatch

Quality commitment

Every shipment is inspected for dimensions, cut length, quantity and surface quality before dispatch to ensure complete conformity with the issued pro forma invoice. Stable quality throughout production, packaging and transport is Nabak Composite's commitment to industrial clients.

* Packaging and shipping methods may vary according to product, destination and order volume. Final shipment details are specified in the pro forma invoice.



05 – INDUSTRIAL APPLICATIONS

COMPOSITE FLAT-STRIP APPLICATIONS ACROSS INDUSTRIES

FRP FLAT STRIP APPLICATIONS ACROSS CORROSIVE & ELECTRICAL ENVIRONMENTS



FIG.14-A - Translucent corrugated FRP sheet suitable for daylighting and corrosion-resistant industrial envelopes.

01 Electrical and Switchboard Industries Insulating strip for panels, phase spacers and non-conductive parts near energized equipment	02 Oil, Gas and Petrochemical Cable-tray supports and bracing for precision equipment and piping in process units with acidic vapors	03 Water and Wastewater Treatment Grating framing strips and equipment supports in continuous contact with moisture and chlorine
04 Marine and Coastal Structures Bracing and connection strips for jetties and equipment exposed directly to saltwater and marine humidity	05 Power Generation and Mining Support strips in halls with corrosive dust and non-conductive parts near energized installations	06 Mining and Processing Industries Lightweight strip for dusty, high-humidity environments as an alternative to galvanized steel

* Final component arrangement, strip size and load capacity are engineered by the Nabak Composite technical department according to site conditions and project safety requirements.



05 - ENGINEERING INSIGHT

LIFE-CYCLE COST OF METAL STRIP IN CORROSIVE ENVIRONMENTS AND A PRACTICAL COMPOSITE-SELECTION GUIDE

LIFE-CYCLE COST OF METAL STRIPS IN CORROSIVE & ELECTRICAL ENVIRONMENTS – A PRACTICAL FRP SELECTION GUIDE

In industrial and electrical projects located in humid regions or process units with chemical contaminants, the real cost of a metal strip extends far beyond its purchase price. Periodic painting, electrical-safety risk near energized equipment and premature replacement are hidden costs often omitted from initial calculations. Composite strip eliminates corrosion and conductivity from the project life cycle. Although its initial price per meter may exceed basic steel, its total cost of ownership over a 15- to 25-year horizon can be substantially lower.

SELECTION CHECKLIST

- ✓ Project Environment - exposure to moisture, chemical vapors or sea salt
- ✓ Fire Requirements - dedicated fire-retardant resin where required by HSE criteria
- ✓ Electrical Safety - requirement for complete insulation near energized equipment
- ✓ Connection Method - bolts, connection plates or structural epoxy adhesive
- ✓ Resin System - polyester for general service; vinyl ester for higher chemical resistance
- ✓ Special Requirements - electrical insulation or non-magnetic section behavior

Engineering takeaway

Because composite strip has a lower modulus than steel, it requires a different design approach to loads and supports. In return, it eliminates the principal life-cycle sources of metal-strip cost and risk: corrosion and electrical conductivity. Nabak Composite's technical team supports engineers in selecting section size, resin system and connection layout for each project.

CONCLUSION: Where corrosion, electrical safety or long-term maintenance matters, FRP/GRP composite strip improves component safety and durability while significantly reducing project life-cycle cost.

CLOSING - PARTNERING WITH NABAK COMPOSITE

WHY NABAK COMPOSITE?

YOUR ENGINEERING PARTNER FOR COMPOSITE STRUCTURAL PROFILES

- ✓ A project-specific engineering solution, not merely a component sale
- ✓ Domestic production of composite strip and other FRP profiles with documented quality control throughout the process
- ✓ Technical support from section and resin selection to connection layout and installation planning
- ✓ Compatibility with internationally recognized composite-industry standards
- ✓ Custom production of length, color and resin system to suit project requirements



QUALITY · INNOVATION · DURABILITY

Quality, innovation and durability are the guiding principles of Nabak Composite in every entrusted project.

For supplementary technical documents, test reports and reference-project lists, contact the Nabak Composite technical and sales departments.

Contact us for technical consultation and order inquiries

GET IN TOUCH FOR PROJECT CONSULTATION & TECHNICAL SUPPORT

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