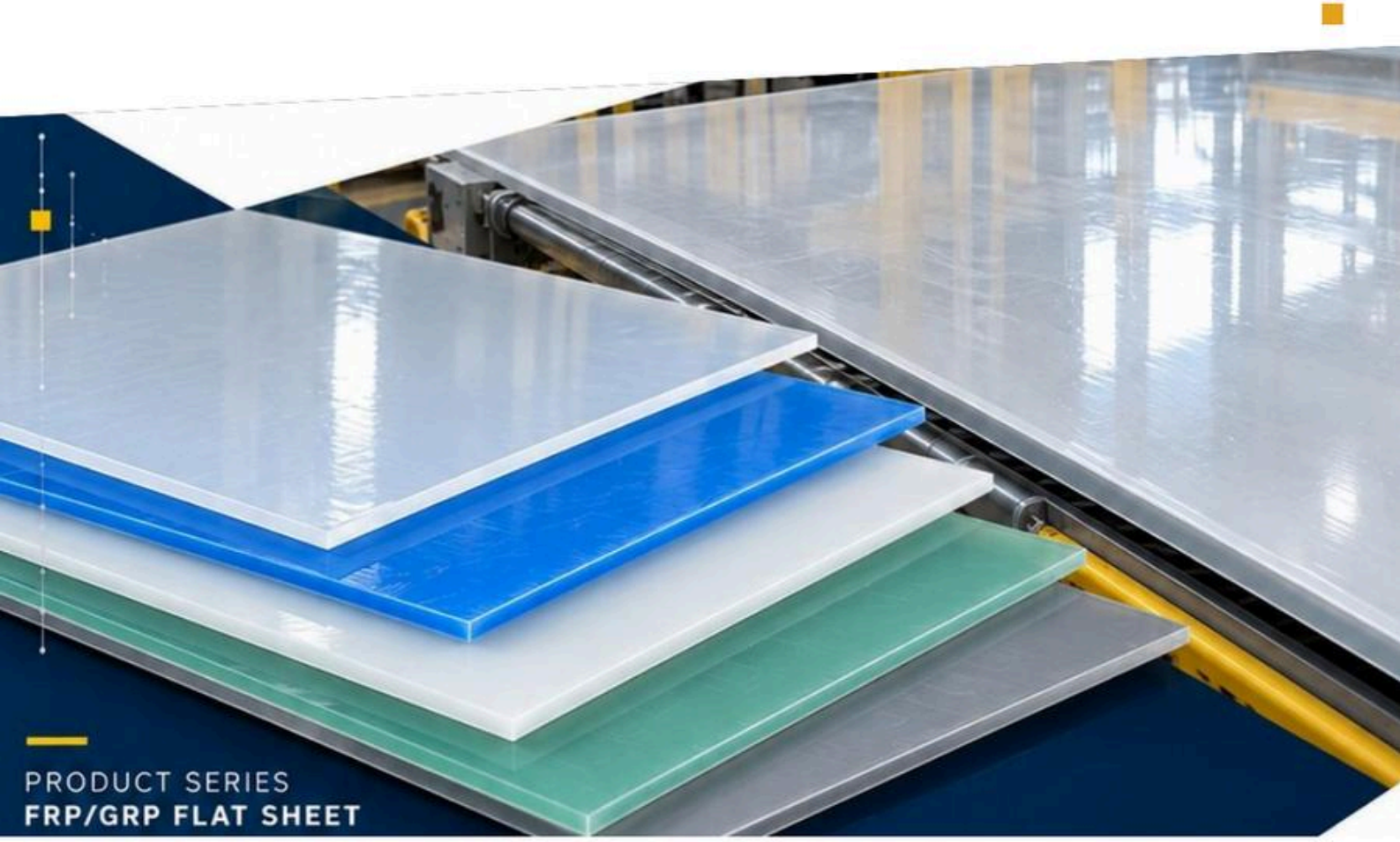
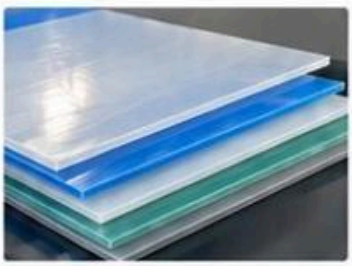
TECHNICAL DATA SHEET
Product Data · Design Formulas · Applications

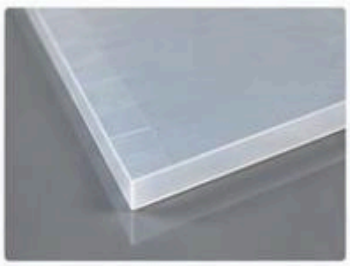
FRP Flat Sheet

FLAT GFRP FIBERGLASS PANEL

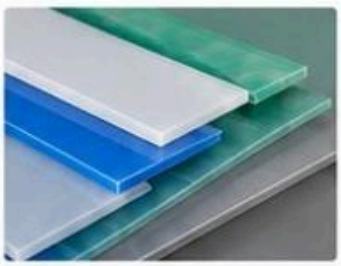




Types & Sizes



Specifications



Colors & Finish



Applications

NBK-TDS-FLS-01-EN | REV 1.0 · NOV 2026

NABAK COMPOSITE flat fiberglass sheet (FRP / GRP Flat Sheet) is a flat GFRP composite sheet made of glass fibre and polyester resin. Lightweight, non-porous, waterproof, corrosion-resistant and impact-resistant, it is supplied clear, opal or coloured, in rolls or cut sheets, and is used for hygienic wall and ceiling cladding, cold rooms, refrigerated truck bodies, skylights and partitions, and lining of industrial equipment.

0.8 – 6 mm	≤ 3000 mm	≈ 1.45 kg/m²	≤ 86%
Sheet thickness	Roll or sheet width	Weight per millimetre of thickness	Light transmission of clear sheet

What is flat fiberglass sheet (flat FRP sheet)?

Flat fiberglass sheet, also known as **flat GRP sheet**, **FRP flat sheet**, **flat composite sheet**, **GFRP sheet**, **fiberglass sheet in rolls** and **FRP wall panel**, is made by continuous lamination on a flat production line: chopped glass-fibre mat or roving is impregnated with polyester resin between two carrier films, passes through thickness-setting rollers and is cured into a uniform sheet in a heated tunnel. Thicker composite sheets are made by hot pressing or hand lay-up on a polished plate.

FRP is the general name for fibre-reinforced polymers, and GFRP (or GRP) is FRP made with glass fibre. Depending on resin, pigment and surface layer, flat fiberglass sheet can be translucent and light-transmitting or fully opaque and coloured, with a gloss, matt or embossed surface; in every case it has a monolithic, non-porous structure that needs no painting.

NABAK COMPOSITE flat fiberglass sheet types

Clear and opal sheet
Light-transmitting flat FRP sheet for skylights, partitions, luminous ceilings and greenhouses

Hygienic wall and ceiling panel
Matt or embossed white composite sheet for industrial kitchens, slaughterhouses and food industries

Cold-room and refrigerated sheet
GFRP skins for sandwich panels, refrigerated truck bodies and containers

Coloured gelcoat sheet
Flat fiberglass sheet with a glossy matching gelcoat for facades, signs and decorative parts

Fire-retardant sheet
Composite sheet with fire-retardant resin for public spaces and transport

Thick industrial sheet
4 to 6 mm FRP sheet for tank lining, channel covers and light structural parts

Benefits of flat fiberglass sheet

- **Hygienic and non-porous:** the surface of flat FRP sheet does not absorb water, grease or dirt and does not support mould or bacteria.
- **Waterproof and moisture-resistant:** composite sheet does not swell, rot or delaminate; suited to permanently wet areas and frequent washdown.
- **Impact-resistant:** unlike tiles and ceramics, fiberglass sheet does not break or crack.
- **Corrosion- and chemical-resistant:** GFRP sheet withstands salt, mild acids, detergents and disinfectants.
- **Lightweight and flexible:** thin flat fiberglass sheet is shipped in rolls and can be installed on curved surfaces.
- **Fast, low-cost installation:** cut with a cutter or saw, fixed with adhesive and rivets; no tiling, grouting or painting.

Which flat fiberglass sheet? For hygienic walls and ceilings, choose matt or embossed white sheet 1.2 to 2 mm; for refrigerated truck bodies and sandwich-panel skins, gloss sheet 1 to 1.5 mm; for free-spanning skylights and partitions on a frame, clear or opal sheet 2.5 to 4 mm; and for tank lining and industrial parts, 4 to 6 mm composite sheet with chemical-resistant resin.

Thickness, weight and stiffness table of flat fiberglass sheet

Table 1 — Flat FRP sheet specifications by thickness (ρ = 1.45 g/cm³, E = 7 GPa)

Thickness (mm)	Weight (kg/m²)	Plate bending stiffness D (N·m)	Light transmission (clear sheet)	Supply form	Recommended use
0.8	1.16	0.33	≈ 86%	Roll	Suspended ceilings, light lining
1.0	1.45	0.64	≈ 85%	Roll	Sandwich-panel skin, hygienic walls
1.2	1.74	1.11	≈ 84%	Roll / sheet	Industrial kitchen walls, cold rooms
1.5	2.17	2.16	≈ 82%	Roll / sheet	Refrigerated truck bodies, containers
2.0	2.90	5.13	≈ 78%	Roll / sheet	High-traffic walls, framed skylights
2.5	3.62	10.0	≈ 75%	Sheet	Light truck floors, partitions
3.0	4.35	17.3	≈ 72%	Sheet	Partitions, facades, channel covers
4.0	5.80	41.0	≈ 67%	Sheet	Tank lining, industrial parts
5.0	7.25	80.1	≈ 61%	Sheet	Light floors and covers
6.0	8.70	138.5	≈ 57%	Sheet	Light structural panels, electrical insulation

Plate stiffness is calculated with Formula 3 and light transmission with Formula 2 (page 4). Stiffness grows with the cube of thickness; a 2 mm sheet is about 8 times stiffer than a 1 mm sheet.

Sizes and supply forms of flat composite sheet

Table 2 — Common sizes of flat fiberglass sheet

Supply form	Width (mm)	Length (mm)	Thickness (mm)	Thickness tolerance
Roll (coil)	1200 / 1500 / 2000 / 2500 / 3000	30 – 100 m per roll	0.8 – 2.0	±10%
Standard cut sheet	1220	2440 / 3050	0.8 – 6.0	±10%
Custom sheet	Up to 3000	To order, up to 12 m	1.0 – 6.0	±10%

Colours and surface types of flat fiberglass sheet

Table 3 — Colour and surface options for flat FRP sheet

Surface / colour	Feature	Recommended use
High gloss	Mirror-like surface, very easy to clean	Hygienic walls, refrigerated bodies, facades
Matt	No reflection or glare	Suspended ceilings, partitions, offices
Embossed (pebble / orange-peel)	Hides lines and scratches, higher surface strength	Industrial kitchens, slaughterhouses, high-traffic corridors
Grit anti-slip	Quartz grains in the surface resin	Truck floors, ramps, wet surfaces
Clear, opal, blue, green	Translucent, diffused light	Skylights, light partitions, greenhouses
White, cream, grey and custom colours	Matt and opaque, coloured gelcoat	Hygienic walls and ceilings, facades, signs

Profiles and accessories for installing flat FRP sheet

Table 4 — Common installation accessories for flat fiberglass sheet

Item	Material	Application
H-joint profile (division bar)	PVC or matching composite	Joins two sheets at a vertical seam with expansion gap
Inside and outside corner profiles	PVC or composite	Covers wall/ceiling corners and columns
End profile (end cap / J)	PVC or aluminium	Covers the free sheet edge at doors, windows and floor
Two-piece plastic rivet	Matching nylon	Fixes the composite sheet to the substrate without rust
Installation adhesive	Polyurethane or FRP-specific adhesive	Full bonding of the sheet to plaster, concrete, board or metal sheet
Sanitary silicone	Anti-fungal silicone	Sealing perimeter joints and the floor junction

Mechanical and physical properties of flat composite sheet

Table 5 — Reference properties of flat GFRP fiberglass sheet

Property	Test standard	Unit	Typical value
Glass fibre content (by weight)	ASTM D2584	%	25 – 35
Density	ASTM D792	g/cm³	1.4 – 1.5
Tensile strength	ASTM D638	MPa	80 – 120
Flexural strength	ASTM D790	MPa	130 – 200
Flexural modulus	ASTM D790	GPa	6 – 8
Poisson's ratio	—	—	≈ 0.3
Izod impact strength (unnotched)	ASTM D256	kJ/m²	40 – 80
Barcol hardness	ASTM D2583	—	35 – 50
Water absorption (24 h)	ASTM D570	%	≤ 0.3
Coefficient of thermal expansion	ASTM D696	10^{-6} /°C	25 – 35
Thermal conductivity	—	W/m·K	0.18 – 0.25
Dielectric strength	ASTM D149	kV/mm	10 – 15
Flame spread (fire-retardant grade)	ASTM E84	—	Class A to C depending on grade

Flat fiberglass sheet compared with other wall finishes

Table 6 — Flat FRP sheet vs tiles, PVC panel and stainless steel sheet

Feature	Flat fiberglass sheet	Tiles and ceramics	PVC panel	Stainless steel sheet
Joints and grouting	Very few	Many (dirt traps)	Low	Low
Impact resistance	Excellent	Brittle	Moderate	Good (dents)
Heat stability	Up to ≈ 90 °C	Excellent	Up to ≈ 60 °C	Excellent
Resistance to salt and detergents	Excellent	Good	Good	Moderate (chlorine)
Weight (kg/m²)	1.5 – 3	15 – 25	2 – 4	6 – 10
Installation cost and speed	Low and fast	High and slow	Low and fast	High

Reference standards for flat fiberglass sheet

Table 7 — Common standards for flat composite sheet

Standard	Topic	Application to flat GFRP sheet
ASTM D5319	Glass-fibre-reinforced polyester wall and ceiling panels	Dimensional, mechanical and surface requirements of hygienic FRP panels
ASTM E84 / EN 13501-1	Fire behaviour	Flame-spread and smoke class of fiberglass sheet
ASTM D1003	Light transmission and haze	Light transmission of clear and opal FRP sheet
ISO 4892 / ASTM G154	Weathering and UV ageing	Colour and surface durability of fiberglass sheet outdoors

Values in Tables 5 and 6 are common reference ranges of the FRP and GFRP composites industry and are not NABAK COMPOSITE's own laboratory results.

Weight, light and stiffness formulas for flat composite sheet

1. Areal weight of flat fiberglass sheet

$$w = \rho \cdot t \quad [\mathrm{kg/m^2}]$$

ρ in g/cm³ and t in mm. 1.5 mm sheet: 1.45 × 1.5 ≈ 2.17 kg/m²

2. Light transmission vs thickness (Beer–Lambert)

$$\tau = (1 - R)^2 \cdot e^{-\mu t}$$

R ≈ 0.04 reflectance per surface, μ ≈ 0.081 /mm for clear FRP sheet. t = 3 mm → τ ≈ 0.92 × $e^{-0.243}$ ≈ 72%

3. Plate bending stiffness of fiberglass sheet

$$D = \frac{E \cdot t^3}{12\,(1 - \nu^2)}$$

E ≈ 7 GPa, ν ≈ 0.3. 3 mm sheet: D = 7000 × 27 / (12 × 0.91) ≈ 17 300 N·mm = 17.3 N·m

4. Deflection and stress of a simply supported rectangular plate under uniform pressure

$$w_{max} = \alpha \cdot \frac{q\,b^4}{D}, \quad \sigma_{max} = \beta \cdot \frac{q\,b^2}{t^2}$$

b shorter side, a longer side (Kirchhoff-Timoshenko plate theory, ν = 0.3):

Ratio a/b	1.0	1.5	2.0	∞
α	0.00406	0.00772	0.01013	0.01302
β	0.287	0.487	0.610	0.750

Example — 3 mm flat fiberglass sheet on a 400×400 square frame, wind pressure 0.5 kPa:

$w = 0.00406 \times 0.0005 \times 400^4 / 17\,300 \approx 3.0$ mm ≤ b/100 = 4 mm ✓

$\sigma = 0.287 \times 0.0005 \times 400^2 / 3^2 \approx 2.6$ MPa ≪ σ_u

If deflection exceeds about half the thickness, the sheet starts to act as a membrane and the linear formula is conservative.

Maximum support spacing of flat FRP sheet

Table 8 — Maximum square frame size (mm) for deflection b/100 and stress ≤ 40 MPa (linear, conservative method)

Thickness (mm)	1.0	1.5	2.0	2.5	3.0	4.0	5.0	6.0
Pressure 0.5 kPa	140	220	290	360	440	580	730	880
Pressure 1.0 kPa	110	170	230	290	340	460	580	690

Thin flat fiberglass sheets (0.8 to 2 mm) for wall and ceiling cladding are bonded to a continuous substrate, and this table does not apply to them. For free-spanning skylights and partitions, choose a thicker sheet or a frame with closer spacing.

5. Thickness required for allowable deflection

$$t_{req} = \left(\frac{12\,(1 - \nu^2) \cdot \alpha \cdot q \cdot b^4}{E \cdot w_{lim}} \right)^{1/3}$$

Light partition with a 600×600 frame, pressure 0.5 kPa and w_{lim} = b/100 = 6 mm: t_{req} ≈ 4.1 mm → 5 mm flat fiberglass sheet, or 4 mm sheet with a frame of at most 580 mm (Table 8)

Installation formulas for flat fiberglass sheet

6. Expansion gap between sheets

$$g \geq \alpha \cdot L \cdot \Delta T$$

3050 mm sheet, α = 30×10⁻⁶, ΔT = 30 °C → g ≥ 2.7 mm; 3 mm gap with an H-joint profile

7. Minimum cold bending radius of the sheet

$$R_{min} = \frac{t}{2\,\varepsilon_a}$$

Allowable strain $\varepsilon_a \approx 0.5\%$ → $R_{min} \approx 100\ t$. 1.5 mm sheet: 150 mm; 3 mm sheet: 300 mm

8. Sheet length in one roll

$$L = \frac{M}{\rho \cdot t \cdot W}$$

104 kg roll, t = 1.2 mm, W = 1.2 m: L = 104 / (1.45 × 1.2 × 1.2) ≈ 50 m

9. Installation adhesive consumption

$$m_a = A \cdot c \cdot (1 + s)$$

c ≈ 0.3 – 0.5 kg/m², s ≈ 0.10 waste. 100 m² wall with c = 0.35: m_a ≈ 38.5 kg

10. Number of rivets or screws per sheet

$$N \approx \frac{P}{s_p} + \frac{A}{s_f^2}$$

1220×2440 sheet, edges every 200 mm and field every 400 mm: 7.32/0.2 + 2.98/0.16 ≈ 37 + 19 = 56

11. Area and number of sheets for a wall

$$n = \lceil \frac{A_{wall} \cdot (1 + s)}{A_{sheet}} \rceil$$

80 m² wall, 8% waste, 2.98 m² sheet: n = ⌈86.4 / 2.98⌉ = 30 sheets

Installation guide for flat fiberglass sheet

1. **Substrate preparation:** the wall or ceiling surface must be flat, dry, clean and free of dust and grease; level uneven substrates with board or plaster.
2. **Measuring and cutting:** cut flat FRP sheet with an industrial cutter, fine-tooth circular saw or sheet shears and sand the edge.
3. **Drilling:** drill rivet holes 1 to 2 mm larger than the rivet diameter so the composite sheet can expand freely.
4. **Adhesive:** spread the adhesive with a notched trowel on the back of the fiberglass sheet and press the sheet onto the substrate with a roller.
5. **Rivets and profiles:** fix the sheet with plastic rivets and cover joints with H, inside-corner and outside-corner profiles.
6. **Sealing and cleaning:** seal perimeter joints with sanitary silicone and clean the surface with water and mild detergent.

Applications of flat fiberglass sheet

Hygienic walls and ceilings of industrial kitchens, slaughterhouses, dairy and food plants and laboratories; skins of cold-room sandwich panels and refrigerated truck and container bodies; skylights, light partitions and suspended ceilings; lining of tanks, channels and industrial equipment; facades, signs and decorative parts. In all these applications, NABAK COMPOSITE flat fiberglass sheet and GFRP composite sheet are a lightweight, hygienic and durable replacement for tiles, metal sheet and PVC panels.

NABAK COMPOSITE

Request a quote for flat fiberglass sheet: send thickness, clear or opaque, colour, surface type (gloss, matt, embossed), roll or sheet, dimensions, area and application.
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Disclaimer: The information in this data sheet is based on general, typical data of the FRP and GFRP composites industry and is intended as guidance only. NABAK COMPOSITE reserves the right to change the technical specifications of flat fiberglass sheet without notice.