



Anti slip

Application

- Truck flooring
- Loading ramps
- Toy haulers
- Rear garages in the caravan industry
- Slip resistance as claimed in complete bottom surface



FrigoSer® Anti Slip Technical Specifications

Properties	Method	Unit	Value	Tolerance
Thickness	internal	mm	2,1	± %10
Weight	internal	g /m ²	2500	± %10
Glass Content	internal	%	1,45	1,4 - 1,5
Tensile Strength	EN ISO 527-4	MPA	75	≥70
Tensile e-modulus	EN ISO 527-4	MPA	5550	≥5000
Flexural Strength	EN ISO 14125	MPA	80	≥75
Flexural e-modulus	EN ISO 14125	MPA	3100	≥3000
Anti Slip Grade	DIN 51130	class	R13	
Pendulum Test value PTV Dry / Wet	EN 13036-4	PTV	85 / 80	≥80
Thermal Co-Efficient of Expansion	internal	internal	30 x 10 ⁻⁵ (-6) / °C	
Thermal Conductivity	DIN 51046	w / mK	0,28	
Fire resistance	EN 13501-1	class	E,S3,d0	

FRIGOSER® GRP SHEETS FOR THE BODYWORK INDUSTRY

TECHNICAL SPECIFICATIONS

Test	Standard	Unit	For Walls			For Roof
			1,5 mm	1,8 mm	2,0 mm	1,3 mm
Flexural strength	ASTM D790	Mpa	160	165	170	150
Flexural modulus	ASTM D790	Mpa	5000	4500	4000	5500
Tensile strength	ASTM D638	Mpa	75	80	85	70
Tensile modulus	ASTM D638	Mpa	5000	5500	6000	5000
Elongation	ASTM D638	%	1.5	1.5	1.5	1.5
Impact resistance	ASTM D256	KJ/m ²	30 - 50	40 - 60	40 - 60	30 - 50
Thermal Linear Expansion Coefficient	ASTM D696	cm/cm°C	2.7 x 10 ⁻⁵	2.7 x 10 ⁻⁵	2.7 x 10 ⁻⁵	2.7 x 10 ⁻⁵
Barcol Hardness	ASTM D2583	Barcol	45	45	45	45
Thermal Conductivity ("K")	ASTM D177	W/m ² K	0.21	0.21	0.21	0.21
Water Absorption	ASTM D570	%	0.3	0.3	0.3	0.3
Density	ASTM D792	g/cm ³	1.4 - 1.5	1.4 - 1.5	1.4 - 1.5	1.4 - 1.5

TOLERANCES

Type	Nominal Thickness (mm)	Thickness Tolerance	Fiberglass Content (%)	Fiberglass Content (g/m ²)	Product Weight (g/m ²)	Colour
JUV ST YT CS *	1.3	± 5%	≥25%	465 ±%10	1860 ±%10	All RAL Colors, or Natural Transparent
	1.5	± 5%	≥25%	500 ±%10	2000 ±%10	
	1.8	± 5%	≥25%	600 ±%10	2400 ±%10	
	2.0	± 5%	≥25%	675 ±%10	2700 ±%10	

* JUV - ISO NPG Gel Coat
YT - Surface Veil
CS - Chopped Strand Mat



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TSE
Türk Standartları Enstitüsü
Kalite Belgesi
Turkish Standards Institution
Quality Certification
TS-EN 1013

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Quality Certification
TS-EN 1013

TSE
Class CS3d0 EN 13501
Class DS3d0 EN 13501
Class ES3d0 EN 13501

BRE
Darbe Dayanım Sertifikası
Impact Resistance Certification
ACR(M) 001-200 Class B

BIOLAB
Mikrobiyolojik İnceleme
Microbiological Examination

Warrington
research
CONSULTANCY • TESTING
Alev Dayanım Sertifikası
Fire Resistance Certification
BS 476-7 Class 3 SAB3
Class 1 SAA

MFPFA
Alev Dayanım Sertifikası
Fire Resistance Certification
DIN 4102:B2

ASTM
Alev Dayanım Sertifikası
Fire Resistance Certification
E - 84 FS-25

CSTB
Alev Dayanım Sertifikası
Fire Resistance Certification
No RA01-153 - M 2

BIOLAB
Mikrobiyolojik Analiz
Microbiological Analysis



FRIGOSER®

FRIGOSER PRODUCTS FOR TRANSPORTATION,
FOOD AND HYGIENE MARKETS





FRIGOSER®

GRP SHEETS FOR THE BODYWORK INDUSTRY

Frigoser® is a trademark of Polser FRP Panels Inc. It is a high performance GRP sheet for the dry and refrigerated truck boxes and bodies, as well as many other applications; vans, coaches, caravans, ambulances, etc.

Frigoser® sheets when requested can be produced with woven roving to increase the mechanical strength.

Frigoser® JUV sheets are produced only with high quality UV stabilized ISO NPG gelcoats to ensure high resistance to UV and environmental weathering.

Frigoser® sheets can be produced with surface veil to increase the weathering resistance.

Frigoser® sheets are produced using a continuous process which complies with international standards.

Frigoser® sheets have wide range of fiberglass reinforced polyester products that have different finishes and gelcoat protection specially made to meet the bodywork industry requirements.

The Main Advantages of Frigoser® Sheets

- High mechanical strength, particularly against impacts
- Flexible and easily combined with insulation materials
- Corrosion and chemical resistant
- Easy application because of its low weight
- Panels could be delivered with a protective temporary film on the external side
- Thermal resistance (Low heat transfer coefficient)
- Easy to clean : does not support mould, mildew or fungi.
- Seamless hygienic finish
- Low cost installation
- Excellent weathering properties



Frigoser® sheets are characterized by their high sanitary quality

- They have a concentration of residual styrene lower than 0,06%
- They do not contain any heavy metal in higher concentration than the allowed limit.
- They are the best option to cover surfaces that could be susceptible of bacterial contamination because fungi and bacteria adhesion is very limited



Application Areas;

- Trucks with dry and refrigerated boxes
- Trailers
- Vans
- Sport vehicles
- Caravans and recreational vehicles
- Ambulances



FRIGOSER® PRODUCT ALTERNATIVES

Properties	STD	HYG	FR
Definition	Standard	Hygienic	Flame Retardant
Resin type	Orthophtalic Resin		Flame Retardant Resin

Thickness	: 0,7 mm - 5 mm
Width	: 1200 mm - 3200 mm
Length for sheets	: Max. 12 meter
Length for rolls	: 60 m - 300 m (depending on the thickness)
Surface	: Embossed / Gelcoat / Gelcoat or Embossed
Application	: For all surfaces, wet or dry
Colour	: Products could be manufactured in all RAL colors, natural transparent, opal white and tailor made colors.

Heat Resistance	: -40°C + 120°C
Hygiene Property	: After disinfection, no bacteria growth
Self-Ignition Temperature	: > 480°C
Flame Retardant Property	: TS EN 13501-1 / class E see below *
High Temperature and Chemical Resistance:	Good (Please contact our sales department for specific resistance requirements.)
Corrosion Resistance	: Resistant against general corrosion
Available Fire Retardancy Classes:	TS EN 13501-1 C S3 d0 / TS EN 13501-1 B S3 d0 ASTM E 84 FS ≤25 / BS 476 Part 6 Class0 BS 476 Part 7 Class1 / DIN 4012 B2



SURFACE FINISH TYPES

Surface Reference	Explanation
ST	Standart - No protective surface coating
EMB	Cracked ice embossed surface (increases scratch resistance and makes it easier to clean)
MATT	Matt (non glossy) surface
JUV	Gel coat - smooth and glossy surface
GL	Glossy surface
HG	High gloss
YT	Surface veil
MUV	PET film-coated surface (provides resistance to environmental weathering)
MXUV	UV resistant extra PET film (provides exapntional resistance to environmental weathering and yellowing)
KF	Surface protection film (provides protection against scratches during handling and transportation)
Embossed surface patterns **	Cracked ice / Honeycomb / Wood grain

REINFORCEMENT TYPES

Reinforcement Reference	Explanation
FT	Chopped Roving
CS	Chopped Strand Mat
WR	Woven Roving
CB	Combi Matg

OPTIONS FOR BACK SURFACE

Surface Reference	Explanation
ST	Standart - untreated
CR	Corona treatment
MATT	Matt surface
ZM	Rough
WP	Wet peeling



Anti slip

FRP with anti slip-coating

Frigoser GRP anti-slip flooring panels and treads, provide a quick, safe, effective solution to slippery pedestrian and vehicle traffic areas where slips and falls are potential hazard.

Fiberglass product which combines the good mechanical strengths and durability of fiber-reinforced materials with an anti slip coating. Due to the unique continuous production process the coating is applied very constantly and shows a very regular distribution and excellent adhesion.

Frigoser® Anti Slip is a available

- In thicknesses of 1.5 mm. - 2.4 mm (quality: standard) and in width up to 3.20 m.
- In sheets or coils
- With various grades of anti slip effect
- Colors: black (similar RAL 9005), grey shades (similar RAL 7043, RAL 7040 or RAL 7001)
- Other thicknesses, colors and dimensions on request
- Optional in the version PES (based on polyester resin)



Specific advantages

- Good strengths and durability
- Adjustable anti slip - effect (Classification R 10 up to R 13 according to DIN 51130)
- High quality continuous manufacturing process
- High values indicating good slip resistant. (Pendulum test dry and and wet)