

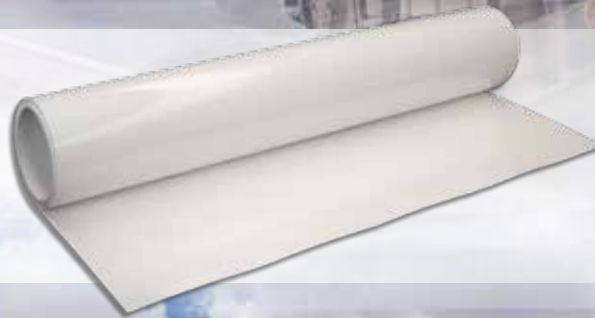
ELYCOLD[®]



GELCOAT ROLLS AND SHEETS PRODUCED
BY DISCONTINUOUS LAMINATION



**FIBERGLASS
LAMINATES**



ELYPLAN[®]

GELCOAT ROLLS AND SHEETS PRODUCED
BY CONTINUOUS LAMINATION



Brienza Plastica

FIBERGLASS LAMINATES



Brianza Plastica has for over 50 years been a leading European Company in the production of **FIBERGLASS LAMINATES IN SHEETS AND ROLLS** used in the most varied fields, from construction to agriculture, from transportation to special applications.

Until 2006 the Company's specialty was production using a continuous hot laminating process.

Thanks to the important know-how acquired through the years and frequent requests for material having better features, in 2006 Brianza Plastica inaugurated, in its new production site in Rovigo, a discontinuous cold lamination process of flat laminates called **Elycold**. These new fiberglass laminates are suitable for the production of insulated panels for recreational and temperature controlled vehicles.

Then, in 2009, thanks to the acquisition of the new complex at Ostellato, it has further expanded its production capacity. The success of this new production has led the Company to invest further in the development of products for the temperature controlled transport sector and in 2008, at its headquarter in Carate Brianza, it started the production of **Elyplan**, a high quality laminate manufactured using a continuous hot lamination process.

These continuous products offer a good quality/price relationship which makes Elyplan the best option to discontinuous cold lamination products.



HIGH DURABILITY



LIGHTNESS



HAIL RESISTANT



STRONG CORROSION RESISTANCE



WATERPROOFING



COST SAVING



QUICK TO INSTALL



SCRATCHING RESISTANT



EASY TO REPAIR



LOW THERMAL EXPANSION COEFFICIENT



IMPACT STRENGTH



UV RESISTANT

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Brianza USA Corporation was established in January 2014 in Elkhart, Indiana (USA). It is equipped with a warehouse and distribution centre to serve manufacturers of recreational vehicles (campers and caravans) and motor vehicles (trucks, buses) throughout the entire US.

In summer 2016 a third production site for discontinuos laminates has been established in Rovigo together with a new continuous plant in Carate Brianza. These productive investments have increased the production capacity of 40%; this makes Brianza Plastica ready to face all the challenges of coming years.

Brianza Plastica supplies fiberglass laminates produced from cold and hot lamination plants which are able to satisfy all market requirements.

With its four production sites dedicated to fiberglass, the Group is in a position to offer a comprehensive service to the sector for the next few years.



San Martino di Venezze (Rovigo) - Italy



Ostellato (Ferrara) - Italy



Elkhart (Indiana) - USA



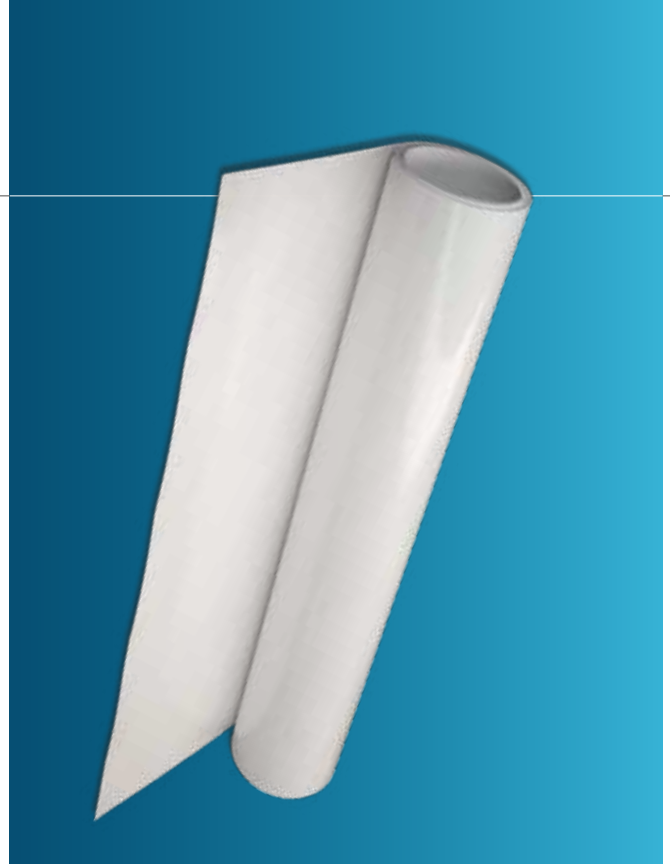
Carate Brianza (Milan) - Italy

Rolls Dimensions

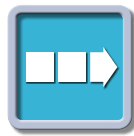
Sheets on demand

Thicknesses: from 1 to 4 mm

Dimensions: max. width 3400 mm
Length 60 m



Gelcoat rolls and sheets produced by discontinuous lamination



PRODUCED IN DISCONTINUOUS

Elycold comes from the combination of polyester resin (orthophthalic and isophthalic) and glass fibre; over the years this composite material has replaced aluminium in the production of refrigeration panels for commercial vehicles, campers, caravans and motorhomes, providing manufacturers with **excellent long-term properties** and UV protection.

Panels with fiberglass layers differ from those using aluminium for their ease and speed of repair and maintenance.

Elycold laminates have the polymerization process at ambient temperature. The result is **perfect flatness**, which is an indispensable feature for the production of **very high quality panels having very good aesthetics**.

The **excellent dimensional stability** of Elycold laminates is guaranteed by the use of fiberglass **CHOPPED STRAND MAT**, which can be combined with **WOVEN ROVING** reinforcement to further improve the mechanical features of the laminate.



Properties

Low shrinkage resins provide a high resistance to ultraviolet rays, are used to ensure:

- **A perfect overlay of the underlying fiberglass**
- **Long time surface durability**
- **Total impermeability and protection of the insulation inside the panel**
- **A low level of yellowing recorded by ageing tests performed with UV – CON**



Technical data

		ELYCOLD Only Mat				
Thickness (h) ⁽¹⁾	mm	1,15	1,60	2,00	2,50	2,90
Glass reinforcement ⁽¹⁾	g/m ²	375	600	900	1125	1350
Density ⁽¹⁾	g/cm ³	1,43	1,41	1,50	1,46	1,48
Weight ⁽¹⁾	g/m ²	1650	2250	3000	3650	4300
Glass Content ⁽¹⁾	%	23	27	30	31	31
Hardness (UNI EN 59)	Barcol	40/45	40/45	40/45	40/45	40/45
Tensile strength (UNI EN ISO 527 - 4/2/2)	Long. Mpa	72	89	95	99	102
	Trasv. Mpa	65	80	86	89	92
Tensile modulus (UNI EN ISO 527 - 4/2/2)	Long. Mpa	6900	7200	7500	7700	7800
	Trasv. Mpa	6100	6400	7100	7300	7400
Water Absorption ⁽¹⁾	%	≤ 1,0	≤ 1,0	≤ 1,0	≤ 1,0	≤ 1,0
Styrene Content ⁽¹⁾	%	≤ 1,0	≤ 1,0	≤ 1,0	≤ 1,0	≤ 1,0

⁽¹⁾ Company Method

		ELYCOLD Mat + Woven Roving		
Thickness (h) ⁽¹⁾	mm	1,50	1,90	2,60
Glass reinforcement ⁽¹⁾	g/m ²	375/300	600/300	900/500
Density ⁽¹⁾	g/cm ³	1,46	1,47	1,54
Weight ⁽¹⁾	g/m ²	2200	2800	4000
Glass Content ⁽¹⁾	%	30	31	34
Hardness (UNI EN 59)	Barcol	40/45	40/45	40/45
Tensile strength (UNI EN ISO 527 - 4/2/2)	Long. Mpa	120	120	131
	Trasv. Mpa	111	111	121
Tensile modulus (UNI EN ISO 527 - 4/2/2)	Long. Mpa	7900	8300	9600
	Trasv. Mpa	7500	7900	9200
Water Absorption ⁽¹⁾	%	≤ 1,0	≤ 1,0	≤ 1,0
Styrene Content ⁽¹⁾	%	≤ 1,0	≤ 1,0	≤ 1,0

⁽¹⁾ Company Method



Outer side finishing

- **Gelcoat protection**
100% isophthalic resin, anti-UV, available in **glossy** or **satin** version.
- **Film protection**
To avoid possible damages during handling.
- **Colours**
Different colours found in the RAL code or other colours on request.

Inner side finishing

- **Film grooved**
A particular "sanded" surface avoiding the presence of dust improving the bonding performances.
- **Mechanically sanded**
Mechanical sanding to provide a good bonding surface.
- **Open fibres**
The fiber of glass are visible on the surface, this solution is suitable for those who prefer resins for the bonding.
- **Smooth**
No treatment, for those who don't require particular properties.

ELYCOLD[®]
ANTI-SLIP ❄️



ANTISLIP

Particularly suitable for interior floors of van and truck bodies, Elycold Anti-Slip is made with the addition of quartzite.

The rough surface of the laminate prevents slipping of vehicle loads.

Available in different thicknesses and in the version with MAT or MAT + WOVEN ROVING.



ELYCOLD Glass Composition

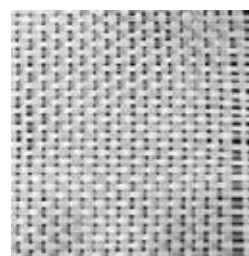


Chopped strand mat

Particular MAT composed of chopped fibers.

The MAT gives all the physical characteristics to the laminate ensuring a perfect smooth surface on the outer side.

The use of different weights of MAT give us the possibility to satisfy all the market requirements.



Woven roving

Layer of woven fiberglass used to increase the strength of the laminate.

Brianza Plastica offers 2 different types of woven roving:

- 300 gr/m²: suggested for applications requiring good strength properties
- 500 gr/m²: suggested for applications requiring high strength properties

ELYCOLD
XLITE

ELYCOLD
LITE

Ultralight laminates with extraordinary features



LIGHTNESS

Elycold Xlite / Lite

Represents the ideal solution for those who need **thicker laminates with good rigidity and low specific weights**, while retaining all aesthetic details and values.

The use of resins and specific components allows increased thickness without adding weight and providing greater rigidity contributing to the flatness of the panel and to conceal of the underlying structures.

It is particularly suitable for the production of ultra-light vans and large recreational vehicles and prestigious equestrian vehicles.

Unaltered performances of Brianza Plastica's laminates, such as:

- Gelcoat resistant to UV rays and to chemical agents
- Availability in different colours
- Mechanical performances suitable for different uses

Elycold Xlite laminates are available in 60 m-long rolls and in different thicknesses from 1,5 to 2,8 mm.

Elycold Lite laminates are available in 60 m-long rolls and in different thicknesses from 3 mm.



Microspheres

Microspheres in the resin result in a lighter laminate by reducing the density of the material.

Technical data

		ELYCOLD Only Mat				ELYCOLD Mat + Woven Roving		
		Xlite		Lite		Xlite		Lite
Thickness (h) ⁽¹⁾	mm	1,50	1,90	2,50	3,00	1,90	2,40	3,10
Glass reinforcement ⁽¹⁾	g/m ²	450	675	900	1125	500/300	675/300	900/500
Density ⁽¹⁾	g/cm ³	1,33	1,34	1,26	1,27	1,37	1,29	1,34
Weight ⁽¹⁾	g/m ²	2000	2550	3150	3800	2600	3100	4150
Glass Content ⁽¹⁾	%	22	26	29	30	31	31	35
Hardness (UNI EN 59)	Barcol	35/40	35/40	35/40	35/40	35/40	35/40	35/40
Tensile strength (UNI EN ISO 527 - 4/2/2)	Long. Mpa	67	79	86	89	100	100	111
	Trasv. Mpa	62	73	79	82	93	92	102
Tensile modulus (UNI EN ISO 527 - 4/2/2)	Long. Mpa	4650	5400	5900	6100	6900	7000	8100
	Trasv. Mpa	4400	5200	5600	5800	6550	6600	7800
Water Absorption ⁽¹⁾	%	≤ 1,0	≤ 1,0	≤ 1,0	≤ 1,0	≤ 1,0	≤ 1,0	≤ 1,0
Styrene Content ⁽¹⁾	%	≤ 1,0	≤ 1,0	≤ 1,0	≤ 1,0	≤ 1,0	≤ 1,0	≤ 1,0

⁽¹⁾ Company Method

NO BAC

Continuous anti-bacterial protection



ANTIBACTERIAL

The NO BAC laminate developed by Brianza Plastica allows **eliminating almost all traces of bacteria** present on a surface, preventing their subsequent colonisation and providing an additional level of protection in any environment.

The NO BAC technology is permanently integrated on the surface of the laminate, right from the production phase, and is evenly distributed across the entire surface, actively protecting the product throughout its life cycle.

This innovative product has numerous fields of application: food storage, cleanrooms, laboratories, refrigerated containers for transportation and, in general, all **environments with high hygiene requirements**: schools, kindergartens, health facilities, kitchens, bathrooms, spas, gyms and shopping centres.



Public areas



Health sector

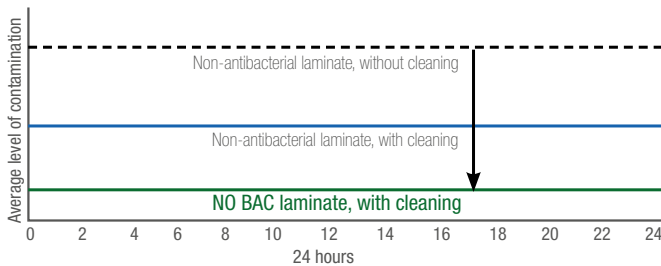
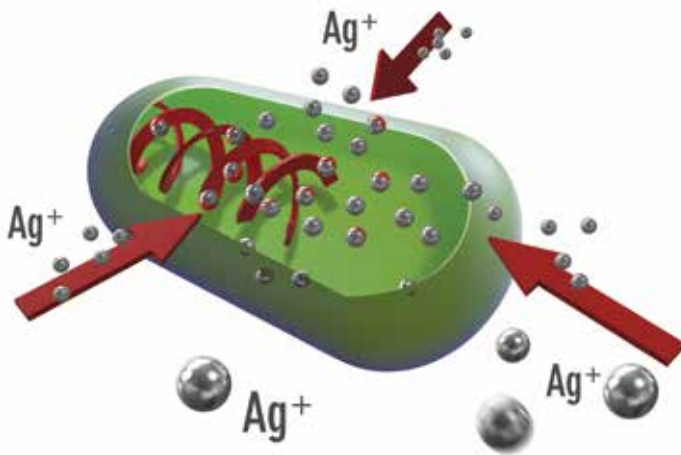


Cold rooms

The antibacterial technology

The antibacterial technology is based on silver, known since ancient times for its antibacterial and antimicrobial properties and widely used to prevent bacterial proliferation in sanitary environments and environments with high hygiene requirements.

The silver ions inhibit the reproduction of bacteria, penetrating through the surface of the cell, attacking the DNA and preventing it from reproducing. **99.9% of bacteria are eliminated over 24 hours** (ISO 22196:2011), **constantly for 365 days a year**.



The graph shows:

- **High levels of contamination** (dotted line: non-antibacterial laminate WITHOUT cleaning or disinfection), averaged over 24 hours
- **Average levels of contamination** (continuous blue line: non-antibacterial laminate WITH cleaning or disinfection), averaged over 24 hours
- **Low levels of contamination** (continuous green line: "NO BAC" antibacterial laminate WITH cleaning or disinfection), averaged over 24 hours

The sample treated with NO BAC has a lower level of surface contamination over a 24-hour period when compared to non-treated samples, clean and disinfected as well as unclean and not disinfected.

ESCHERICHIA COLI

Escherichia is a gram-negative, rod-shaped bacterium that is commonly found in the human intestine. It can cause urinary tract infections, intestinal disorders (gastroenteritis) and neonatal meningitis.



LEGIONELLA PNEUMOPHILA

Legionella pneumophila is a thin, gram-negative bacterium of the genus Legionella, and causes legionellosis or Legionnaires disease, an infection that affects the respiratory system. It is the third highest cause of community-acquired pneumonia.



STAPHYLOCOCCUS AUREUS

Staphylococcus aureus is a gram-positive, round-shaped bacterium that appears in the form of irregular microscopic clusters. It can cause infections, skin lesions such as boils and sties, but also more serious infections such as pneumonia and urinary tract infections.



PSEUDOMONAS AERUGINOSA

Pseudomonas Aeruginosa is a small, gram-negative, ubiquitous and very virulent bacillus able to withstand the action of diverse antibiotics. It is particularly dangerous for immunodepressed patients and is the cause of skin infections, urinary tract infections, ear and eye infections and endocarditis.



10

ELYPLAN®

Rolls Dimensions

Sheets on demand

Thicknesses: from 0,8 to 3 mm

Dimensions: max. width 3200 mm
Length on request



Continuous lamination with isophthalic gelcoat



PRODUCED IN
CONTINUOUS

Elyplan is manufactured on next-generation machines, a crowning achievement in Brianza Plastica's over fifty years experience in the flat laminates sector; the plant's flexibility allows the production of a wide range of laminates to meet the demands of various applications in the field of recreational vehicles, commercial vehicles and buses.

Traditionally requested for **indoor coverings**, the protective gelcoat gives Elyplan high resistance to UV rays, making it also suitable for **outdoor use**.

The laminates specified with woven roving are used for all those applications that require greater **mechanical resistance**. The main advantage of continuous production is that this process achieves the **highest possible polymerization** of the composite material resulting in laminates with excellent and repeatable qualities.

This technology not only allows obtaining a **perfectly flat product with very tight dimensional tolerances**, but also provides the economic advantages of the continuous production process.

Available in standard or NO BAC version

Properties

The high quality of Elyplan is guaranteed through the use of **the finest raw materials** and a **gelcoat** made from highly elastic isophthalic resins, ensuring high resistance to yellowing, impermeability to water vapor and condensations.

Elyplan gives complete protection from humidity of the panel's sensitive elements, either expanded insulations or timber based elements. It also helps maintain the insulation material's integrity ensuring ATP certifications are kept on a long term basis or a better performance of refrigeration machines.



Technical data

		ELYPLAN NO GEL Only Roving				ELYPLAN GEL Only Roving			
Thickness (h) ⁽¹⁾	mm	0,80	1,00	1,50	2,00	1,00	1,50	2,00	2,50
Density ⁽¹⁾	g/cm ³	1,38	1,40	1,40	1,40	1,40	1,40	1,40	1,40
Weight ⁽¹⁾	g/m ²	1100	1400	2100	2800	1400	2100	2800	3500
Glass Content ⁽¹⁾	%	27	27	27	27	23	25	26	27
Hardness (UNI EN 59)	Barcol	40/45	40/45	40/45	40/45	40/45	40/45	40/45	40/45
Tensile strength (UNI EN ISO 527 - 4/2/2)	Long. Mpa	72	80	95	100	63	81	89	94
	Trasv. Mpa	66	70	88	90	55	75	80	85
Tensile modulus (UNI EN ISO 527 - 4/2/2)	Long. Mpa	6770	7240	7560	7870	6210	6480	6750	7060
	Trasv. Mpa	5940	6400	6720	7450	5490	5760	6390	6750
Water Absorption ⁽¹⁾	%	≤ 1,0	≤ 1,0	≤ 1,0	≤ 1,0	≤ 1,0	≤ 1,0	≤ 1,0	≤ 1,0
Styrene Content ⁽¹⁾	%	≤ 1,0	≤ 1,0	≤ 1,0	≤ 1,0	≤ 1,0	≤ 1,0	≤ 1,0	≤ 1,0

⁽¹⁾ Company Method

		ELYPLAN NO GEL Woven Roving			ELYPLAN GEL Woven Roving			
Thickness (h) ⁽¹⁾	mm	1,50	2,00	2,50	1,30	1,50	2,00	2,50
Density ⁽¹⁾	g/cm ³	1,50	1,50	1,48	1,46	1,50	1,50	1,48
Weight ⁽¹⁾	g/m ²	2250	3000	3700	1900	2250	3000	3700
Glass Content ⁽¹⁾	%	36	33	32	33	33	32	31
Hardness (UNI EN 59)	Barcol	40/45	40/45	40/45	40/45	40/45	40/45	40/45
Tensile strength (UNI EN ISO 527 - 4/2/2)	Long. Mpa	130	128	125	110	113	114	114
	Trasv. Mpa	129	126	123	109	112	113	113
Tensile modulus (UNI EN ISO 527 - 4/2/2)	Long. Mpa	8800	8800	8900	7300	7500	7950	8125
	Trasv. Mpa	8400	8700	8900	7100	7150	7550	7800
Water Absorption ⁽¹⁾	%	≤ 1,0	≤ 1,0	≤ 1,0	≤ 1,0	≤ 1,0	≤ 1,0	≤ 1,0
Styrene Content ⁽¹⁾	%	≤ 1,0	≤ 1,0	≤ 1,0	≤ 1,0	≤ 1,0	≤ 1,0	≤ 1,0

⁽¹⁾ Company Method



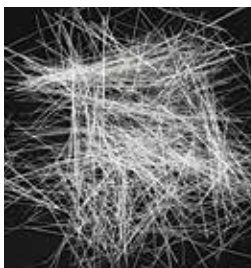
Outer side finishing

- **Gelcoat protection**
100% isophthalic resin, anti-UV, available in **glossy** or **satin** version.
- **Film protection**
To avoid possible damages during handling.
- **Colours**
Different colours found in the RAL code or other colours on request.

Inner side finishing

- **Corona treatment**
This treatment consists in a high voltage, high frequency but low current wave that increases the surface energy and wetting out of the laminate. The result is a smooth surface perfect for the bonding with polyurethane mono/bi-component glues.
- **Mechanically sanded**
Mechanical sanding to provide a good bonding surface.
- **Smooth**
No treatment, for those who don't require particular properties.

ELYPLAN Glass Composition



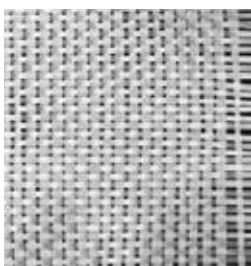
Roving

Fiberglass cut to a length of 5 cm evenly distributed on the laminate.



Tissue

Available in the version Elyplan HF.



Woven roving

Layer of woven fiberglass used to increase the strength of the laminate.

SPECIAL PRODUCTS

Brianza Plastica's constant research has allowed enriching the offer of laminates with multiple finishes able to meet the different needs of the recreational vehicle, commercial vehicle and public transport sectors. These include **Elyplan Embossed**, with embossed finish and easily washable surface, **Elyplan Extra-Glass**, which combines

lightness with extreme impact resistance, **Elyplan High Finishing**, with superior appearance, and **Elyplan Design**, with numerous colour versions made possible by the bonding of PVC and PAPER during the production process.

ELYPLAN® EXTRA-GLASS

Rolls and sheets with or without gelcoat produced by continuous lamination

This laminate has been designed specifically to meet the needs of customers who need products for more demanding applications. Available with or without gelcoat, Elyplan Extra Glass contains a high percentage of glass that ensures **high mechanical strength** together with a **low specific weight**. Elyplan Extra-Glass is suitable for vehicles that require high impact resistance, such as bus roofs. It is one of the market's most popular product and it's often requested for standard applications.



Available in standard or NO BAC version

COMMERCIAL VEHICLE

- Interior and exterior walls
- Interior floor



BUS

- Exterior roof
- Interior roof
- Exterior floor
- Interior floor



ELYPLAN®

EMBOSSED

Rolls and sheets produced with continuous lamination process with embossed finish

Elyplan Embossed is well-known and appreciated for its particular finish. It has a different design from the other laminates; therefore it can be used in numerous applications, such as the interior of cooling boxes and building applications, such as medical environments, where its easily washable surface is much appreciated. Elyplan Embossed is supplied without gelcoat and has the same technical characteristics of standard Elyplan.



COMMERCIAL VEHICLE

- Interior walls



ELYPLAN®

HIGH FINISHING

Rolls and sheets with mat produced using continuous lamination process

Elyplan High Finishing is Brianza Plastica's answer to a market increasingly demanding a laminate that combines the advantages of a continuous product with high aesthetic finish.

Elyplan High Finishing laminate uses a tissue which gives the laminate a better appearance by reducing the visibility of fibres on the surface.

It is often used for outdoor surfaces thanks to the protective gelcoat, which ensures high resistance to UV rays.



Available in standard or NO BAC version

COMMERCIAL VEHICLE

- Interior and exterior walls
- Roofs
- Doors



RECREATIONAL VEHICLE

- Roof
- Interior and exterior walls



ELYPLAN® DESIGN

Rolls and sheets produced in a continuous lamination process with printed-paper or pvc finish



NATURAL
LOOK

Driven by the market demand to expand its product range, Brianza Plastica has developed Elyplan Design, a composite laminate of excellent quality, characterized by the bonding of materials such as PVC and PAPER directly onto the fiberglass laminate on the production line.

It is normally used for indoor applications, (e.g. floors and walls) of recreational vehicles as an excellent alternative to plywood because it is a ready-to-use composite element.



RECREATIONAL VEHICLE

- Flooring
- Interior walls



BUS

- Interior roof
- Interior floor





ECO-FRIENDLY PRODUCTION

Brianza Plastica has always stood for a business model that focuses on safety, environment and people.

Brianza Plastica operates in full compliance with the laws on environmental hygiene and for this purpose has equipped its fiberglass laminates production facilities with powerful suction systems that purify the internal air of the production areas by carrying the volatile organic compounds (V.O.C.) generated during the production process to **modern abatement plants**.

In the four fiberglass laminates factories located in Carate Brianza, S. Martino di Venezze (site 1 & 2) and Ostellato, Brianza Plastica has installed four state-of-the-art abatement plants with innovative V.O.C. concentration and destruction process.

The abatement plant **automatically feeds itself by recovering the heat** generated by the combustion of the V.O.C..

The heat recovered from the combustion is reused in part to feed the plant itself and in part to generate hot water for heating.



MAIN USES



TRUCKS



RECREATION VEHICLES



BUSES



FOOD INDUSTRY



HOSPITAL



BUILDINGS

- Thermo- insulating panels for refrigerated trucks with a temperature controlled
- Campers and caravans
- Covering of cold storage rooms
- Ambient reclamation with high hygienic needs (NO BAC)
- Covering of insulated tankers and containers
- Manufacture of road signs
- Street vendor vehicles
- Door panels



GENERAL CHARACTERISTICS

Resins

Brianza Plastica guarantees the use of the best available resins on the market. The use of orthophthalic resins for core and isophthalic resin for gelcoat helps the laminate to be more flexible and resistant.

Styrene

Controlling the amount of styrene contained in the laminate ensures optimum efficiency during bonding; Brianza Plastica laminates have a styrene content $\leq 1\%$. Thanks to this property, it is perfectly suited for bonding with polyester resins and mono/bi-component polyurethane glues.

Packing

Elycold rolls are transported in steel or in polystyrene and wood cradles.

Elyplan rolls, can be delivered on pallets or loaded directly on to the vehicle and secured with wedges and straps.

Elyplan and Elycold sheets are delivered on pallets.

Identification and tracking

To guarantee the identification and tracking of the products, the rolls are marked with labels.

Internal surfaces

Brianza Plastica offers 5 solutions for different bonding methods:

INTERNAL SURFACE	TYPE OF LAMINATE	BONDING WITH RESINS	BONDING WITH GLUE
SMOOTH	Elyplan - Elycold	NO	YES
ROUGH	Elycold	YES	NO
CORONA TREATMENT	Elyplan	NO	YES
MECHANICALLY SANDED	Elyplan - Elycold	YES	YES
FILM GROOVED	Elycold	NO	YES

The above combinations are just a suggestion, we recommend to make trials before the final use.



Polystyrene cradle



Steel cradle (to be made)



GELCOAT ROLLS AND SHEETS PRODUCED
IN DISCONTINUOUS LAMINATION



GELCOAT ROLLS AND SHEETS PRODUCED
IN CONTINUOUS LAMINATION



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