

ELYCOLD[®]



GELCOAT ROLLS AND SHEETS PRODUCED
IN DISCONTINUOUS LAMINATION



**FIBERGLASS
LAMINATES**

ELYPLAN[®]

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IN CONTINUOUS LAMINATION



Brianza Plastica

FIBERGLASS LAMINATES



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

Up to 2006 the specialty of this production has been the use of the discontinuous laminating process and hot polymerization plant.

Thanks to the important know-how acquired throughout the years and beefed up with requests for material having better features, our laminates are suitable for the production of insulating panels for recreational vehicles and temperature controlled vehicles. In 2006 Brianza Plastica has inaugurated, in its new production site in Rovigo, a discontinuous procedure and cold lamination production of flat laminates called **Elycold**.

Then, in 2009, thanks to the acquisition of the new complex at Ostellato, it has further expanded its production capacity. The big success obtained with this new production has led the company to invest further in the development of the temperature controlled transport sector and in 2008, at its production site in Carate Brianza, it has also started the production of **Elyplan**, a high quality laminate obtained through hot lamination.

What is really peculiar to this production is the very good quality/price relationship which makes Elyplan the best qualified alternative to cold lamination productions.

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.

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

Besides, with its three production sites dedicated to fiberglass, it presents itself as a point of reference in the sector for the next few years.

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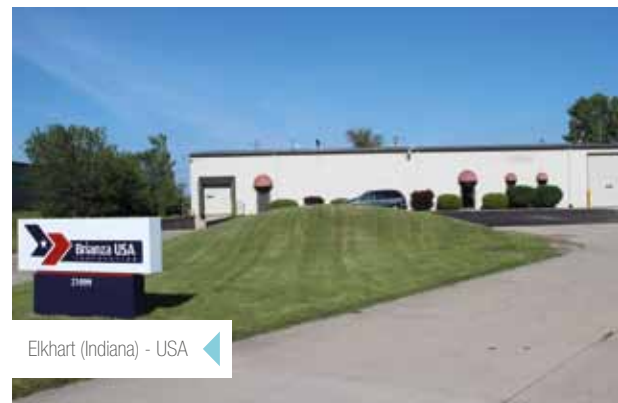
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IN CONTINUOUS LAMINATION



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 in discontinuous lamination

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 technical resistance** and UV protection.

Fiberglass panels are a great product because, unlike aluminium panels, they are easy and quick to repair.

Elycold laminates have the polymerization process at ambient temperature in order to avoid the thermal shocks typical of the continuous product. The result is a **perfect flatness**, which is an indispensable feature for the production of **very high quality panels** having **very good quality aesthetic effects**.

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

▶ Properties

Low withdrawal gelcoat resins poor in styrene but with high resistance to ultraviolet rays, are considerably used to ensure:

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



Elycold 300/300 - 1,4 mm
Elyplan 300/300 - 1,3 mm



► Technical data

		ELYCOLD Only Mat				
Thickness (h) ⁽¹⁾	mm	1,15	1,60	2,00	2,50	3,00
Glass reinforcement ⁽¹⁾	g/m ²	375	600	900	1125	1350
Density ⁽¹⁾	g/cm ³	1,40	1,40	1,45	1,45	1,45
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 resistance (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	2,00	2,70
Glass reinforcement ⁽¹⁾	g/m ²	375/300	600/300	900/500
Density ⁽¹⁾	g/cm ³	1,46	1,45	1,50
Weight ⁽¹⁾	g/m ²	2200	2800	4000
Glass Content ⁽¹⁾	%	30	31	35
Hardness (UNI EN 59)	Barcol	40/45	40/45	40/45
Tensile resistance (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 protected**
100% isophthalic resin, anti-UV, available in **glossy** or **satin** version.
- **Film protected**
To avoid possible damages during handling.
- **Colours**
Different colours found in the RAL code or other colours on demand.

▲ Inner side finishing

- **Film grooved**
A particular "sanded" surface avoiding the presence of dust improving the bonding performances.
- **Mechanically grooved**
Mechanical sanding to grant a good bonding.
- **Open fibers**
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 require particular properties.

▶ ELYCOLD Glass Composition

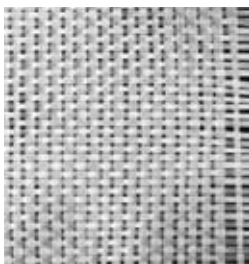


Chopped strand mat

Particular MAT composed by 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 weight of MAT give us the possibility to satisfy all the market requirements.



Woven roving

Layer of orthogonally 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 ANTI-SLIP



Particularly suitable for the interior floors of vans, Elycold Anti-Slip is made up of grey gelcoat with the addition of quartzite.

The rough surface of the laminate prevents slipping of vehicle loads and has greater impact resistance than standard laminates.

Available in various thicknesses and in a version with MAT and MAT + WOVEN ROVING.

▶ Ultralight laminates with extraordinary features

▼ Microspheres

Inert gas microspheres in the resin grant a lighter laminate reducing the density of the material.



▶ Elycold Xlite / Lite

Represents the ideal solution for those who needs **laminate with high thicknesses, rigidity and low specific weights** keeping unaltered all aesthetic details and values.

The type of resins and specific particular components allows to increase the thickness without adding weight, by decreasing the laminate density and also obtaining a greater rigidity contributing to the flatness of the panel and on the covering of the underlying structures.

It is particularly suitable for the production of ultra-light vans, and large recreational vehicles, special paddock vehicles of great prestige.

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

- Gelcoat resistant to UV and to chemical agents
- Availability in different colours
- Mechanical performances according to different needs

Elycold Xlite laminates are available in rolls 60 m lengths and variable thickness from 1,5 to 2,9 mm.

Elycold Lite laminates are available in rolls 60 m lengths and variable thickness from 3 to 4 mm.

▶ Technical data

		ELYCOLD Only Mat					ELYCOLD Mat + Woven Rovng		
		Xlite			Lite		Xlite		Lite
Thickness (h) ⁽¹⁾	mm	1,60	2,00	2,50	3,00	4,00	2,00	2,50	3,20
Glass reinforcement ⁽¹⁾	g/m ²	450	675	900	1125	1350	500/300	675/300	900/500
Density ⁽¹⁾	g/cm ³	1,25	1,26	1,26	1,27	1,20	1,30	1,24	1,30
Weight ⁽¹⁾	g/m ²	2000	2550	3150	3800	4800	2600	3100	4150
Glass Content ⁽¹⁾	%	23	26	29	30	28	31	31	35
Hardness (UNI EN 59)	Barcol	35/40	35/40	35/40	35/40	35/40	35/40	35/40	35/40
Tensile resistance (UNI EN ISO 527 - 4/2/2)	Long. Mpa	67	79	86	89	84	100	100	111
	Trasv. Mpa	62	73	79	82	78	93	92	102
Tensile modulus (UNI EN ISO 527 - 4/2/2)	Long. Mpa	4650	5400	5900	6100	5800	6900	7000	8100
	Trasv. Mpa	4400	5200	5600	5800	5500	6550	6600	7800
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



► Rolls Dimensions

Sheets on demand

Thicknesses: from 1 to 2,5 mm

Dimensions: max. width 3200 mm
Length on request

► Continuous lamination with isophthalic gelcoat

Brianza Plastica is the only Company in the sector that can boast both a discontinuous and continuous production line.

With the aim of expanding its range of products and of better meeting the growing needs of the Market, the Company has recently invested in an innovative continuous production line, created specifically to meet the various qualitative and quantitative requirements.

The main advantage of continuous production is to achieve the highest possible polymerisation of the composite material, coming from the use of technologies that best maximise this value.

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

Elyplan is manufactured on a next-generation new plant, crowning Brianza Plastica's over fifty years experience in the flat laminates sector.

The plant's flexibility allows to select the most suitable laminate according to the different production criteria on each application in the temperature controlled transport industry, vans, the refurbishment of walls, cold storage rooms and translucent roofs for sheeted articulated lorries, wherever there are required to be **smooth and cleanable surfaces**, with **high resistance** to corrosive elements found within the environment.

► Properties

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

Elyplan gives absolute protection from humidity to the panel's sensitive elements, be they expanded insulations or wood stratifications. It keeps unaltered the insulation features, granting that 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 resistance (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	1,50	1,50	1,50	1,50	1,50
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 resistance (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



▶ Inner side

▲ Outer side finishing

- Gelcoat protected

100% isophthalic resin, anti-UV, available in **glossy** or **satın** version.

- Film protected

To avoid possible damages during handling.

- Colours

Different colours found in the RAL code or other colours on demand.

▲ Inner side finishing

- Corona treatment

This treatment consists in a high voltage, high frequency but low current wave that increase 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 grooved

Mechanical sanding to grant a good bonding.

- Smooth

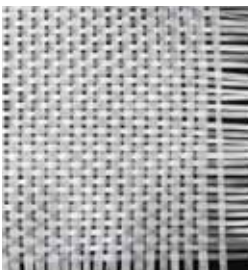
No treatment, for those who do not require particular properties.

▶ ELYPLAN Glass Composition



Roving

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



Woven roving

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



Mat

Available in the version Elyplan HF.



► SPECIAL PRODUCTS

► ELYPLAN EXTRA GLASS

Rolls and sheets with and without gelcoat produced in a continuous process

This type of laminate has been designed specifically to meet the needs of customers who want more technically efficient materials. Available with or without gelcoat, Elyplan Extra Glass contains a high percentage of glass that offers **high rigidity** combined **with low specific weight**. Suitable for special applications such as roofs for buses and the inner and outer walls of temperature-controlled vehicles.



► ELYPLAN EMBOSSED

Rolls and sheets produced in a continuous process with embossed finish

This **particular finish**, widely used for the bodies of campervans and caravans, is now used with considerable success in various design applications, such as finishes for interior doors or partitions. Elyplan Embossed is supplied **without gelcoat** and has the same technical characteristics of standard Elyplan. Available in rolls or sheets up to 3 metres in width.





▲ ELYPLAN HIGH FINISHING

Rolls and sheets with mat produced in a continuous process

As part of the Company's continual improvement process, Brianza Plastica recently expanded its range in order to offer customers a greater selection of products designed for any type of need.

Introduced in 2013, the new Elyplan High Finishing laminate uses **"chopped strand mat"** which gives the laminate a better appearance by reducing the visibility of fibres on the surface.

Particularly suitable for large industrial vehicles, it combines the advantages of continuous production in terms of material quality to the economic advantages coming from the type of production.

► ELYPLAN DESIGN

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

Available in standard thicknesses, the Elyplan Design is ideal for customers who want a non-standard finish.

All the basic characteristics of the laminate remain unchanged; the paper finish is available up to a maximum width of 2.2 metres.

Particularly suitable for the inside of campers, caravans and motor homes, it combines the properties of lightness and water-resistance of polyester laminate with **the aesthetic beauty of paper finishes.**

The wood effect, for example, also comes in a 3D version to recreate the enveloping sensation of warmth generated by wood.



Example of 3D wood finish ◀



ECO-FRIENDLY PRODUCTION



► Brianza Plastica has always stood out for its business model that focuses on safety, the environment and people.

It 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 production areas by carrying the solvents generated during the production process to modern **abatement plants**.

In the three fiberglass laminates factories located in Carate Brianza (MB), in S. Martino di Venezze (RO) and in Ostellato (FE), Brianza Plastica has installed three state-of-the-art abatement plants with innovative solvent concentration and destruction process.

The abatement plant **automatically feeds itself** by **recovering the heat** generated by the combustion of the solvent. 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



- ▶ - Thermo- insulating panels for refrigerated trucks with a temperature controlled
- Campers and caravans
- Covering of cold storage rooms
- Ambient reclamation with high hygienic needs
- Covering of insulated tankers and containers
- Realization of road signs
- Street vendor vehicles
- Door panels



► GENERAL CHARACTERISTICS

► Resins

Brianza Plastica guarantees the use of the best available on the Market. The use of pure of orthophthalic stratification resin and isophthalic gelcoat resin helps the laminate to be more flexible and resistant.

► Styrene

Optimizing 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.

► Internal surfaces

Brianza Plastica offers 5 solutions according to the different kind of bonding:

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 GROOVED	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.

► Packing

Elycold rolls are suitably lodged in steel cradles or in polystyrene and wood.

Elyplan rolls, besides on pallets, could be carried freely on wooden supports provided directly within the transport vehicle.

Elyplan and Elycold sheets are carried on pallets.

► Identification and tracking

To guarantee the identification and tracking of the products the rolls are provided with a suitable serialized identification tag.



Polystyrene cradle ◀



Steel cradle (to be made) ◀



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CTL_135EN/REV.4_09.14



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