TRIGLASS® PROFILES

Top Glass has **over 55 years experience** in composite TRIGLASS® profiles production obtained by **pultrusion process.**

Thanks to its production capacity Top Glass can supply a **wide range** of composite profiles with standard or complex (customized) design, with **constant cross-section** and **unlimited length**. Dimensions range goes from **0.9 mm up to 1500 mm**.

Composite profiles continue to replace traditional materials because of their unique characteristics.

Their **lightweight** combined high **mechanical resistance** make them easy to handle and assemble. In the meantime their intrinsic **resistance to chemicals** and **corrosion** make them last longer with low maintenance costs. They don't require grounding thanks to their **high level of electrical insulation** and their **low coefficient of thermal conductivity** ensuring a one of a kind thermal insulation.

The **sectors** in which TRIGLASS® profiles are extremely successful are countless. We produce profiles and sell solutions for **construction**, **railways**, **electrical** and **chemical** industry, wind and solar **energy**, **transportation** and **automotive.**

We have developed over time an **innovative know-how** in the design and construction of our systems and moulds for the production of TRIGLASS® fibreglass profiles. This has always ensured that Top Glass offers the market an **exclusive** and **high-quality product**.

- LIGHT
- STRONG
- FLEXIBLE
- INSULATING
- DURABLE
- RESISTANT

PULTRUSION SINCE 1963

WHAT ARE THE COMPONENTS OF TRIGLASS® PROFILES?

Composite materials are obtained by combining at least two components:

THE RESIN

The **RESIN** performs the function of transferring applied loads to the fibres and holds fibres together. The adhesion between the resin and fibres is the most important parameter determining the physical and mechanical properties of the composite. The resins used are: polyester, vinylester, epoxy and acrylics.

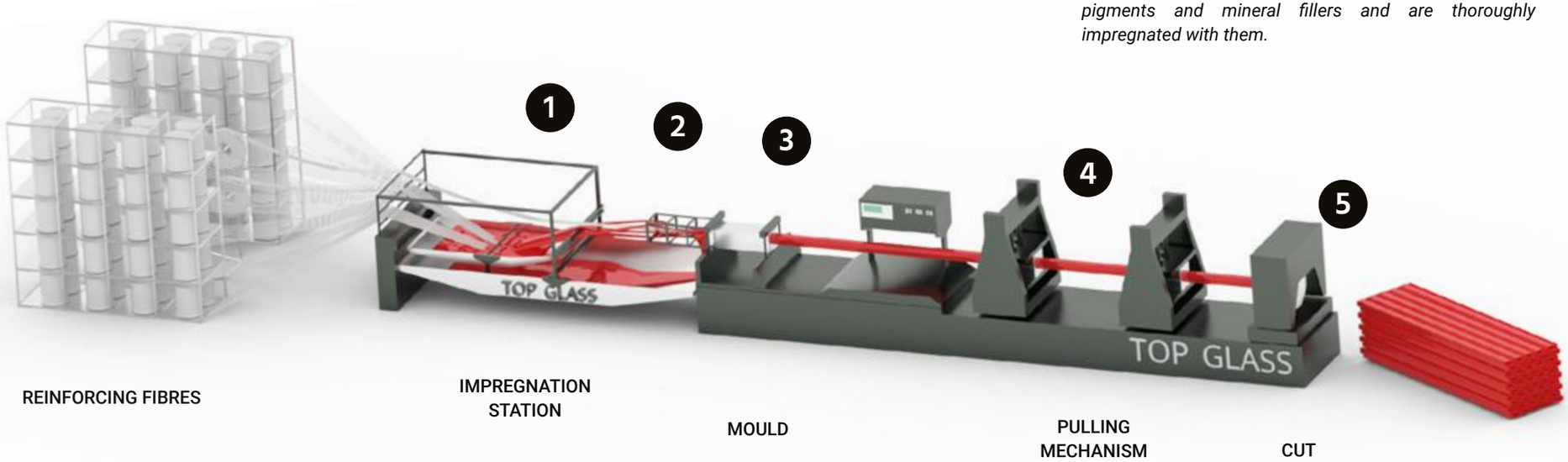
The resin polyester is usually used for standard solutions, vinylester for corrosion resistance, epoxy for mechanical and thermal resistance, phenolic for fire and chemical resistance, acrylic for flame resistance and low smoke emission.

THE REINFORCING FIBRES

The **REINFORCING FIBRES**, impregnated by the resin, determine the structure and overall mechanical behaviour of the composite.

The fibres used consist of: glass, carbon, aramid and other natural, synthetic and metallic ones. The properties of the fibres are used to give stiffness and resistance to tensile and compressive loads.

Other substances are sometimes be added to these two main raw materials (for example, chemical additives, catalysts, pigments, mineral fillers and others) in order to obtain profiles with specific physical and mechanical properties.



HOW TO PRODUCE TRIGLASS® PROFILES?

TRIGLASS® profiles are obtained by Pultrusion technology (from the words: pull + extrusion).

It is a continuous process which is ideal for high-volume industrial production and adapted for making constant section straight profiles without length limits.

Traditional pultrusion technology produces unique results that are aimed at users who need composite profiles with high performance in a longitudinal direction but also crosswise thanks to the insertion of fabrics and very strong polymers.

DIFFERENT STAGES OF PULTRUSION PROCESS

1 IMPREGNATION STATION

The reinforcing fibres are bringing together according to the specified requirements of the process and final product. This occurs through in an IMPREGNATION STATION.
At this stage, the fibres come in contact with a polymer matrix containing the base resin, additives, catalysts, pigments and mineral fillers and are thoroughly impregnated with them.

2 PROFILE CONFIGURATION

The impregnated fibres go through an area where they are preformed, taking on the STRUCTURAL CONFIGURATION and final shape of the desired profile section.

3 INSERTION INTO MOULD

The preformed material passes into a HEATED MOULD where a polymerization reaction occurs. This generates a transition into a polymer matrix phase going from liquid to solid.

4 5 PULTRUSION AND CUT

Once in a solid state, a PULLING MECHANISM grips the profile area by means of special devices and directs it continuously to the last station, which cuts the profile according to a predefined length.

HOW TO PROCESS TRIGLASS® PROFILES

TRIGLASS® profiles can be machined by **grinding, drilling, milling** and **cutting.**
You can employ **traditional woodworking machines** with pultruded profiles. The only addition is you need to use tools, such as diamond blades or **specialized cutters**, made for working on fibreglass products. Extensive machining of composite materials causes dust (not harmful to health in terms of composition and granulometry) that must be removed using a vacuum system
For assemble fiberglass profiles you can use the following technologies: **bonding, bolting** and **riveting**. Pultruded profiles can be also **glued** together or to different materials such as metals. They cannot be merged and welded.

WHY CHOOSE TRIGLASS® PROFILES

PROPERTY	UNIT	TRIGLASS®	STEEL	ALUMINIUM	WOOD
Thermal Conductivity	W/m°C	0,25 ÷ 0,35	30 ÷ 60	100 ÷ 230	0,12 ÷ 0,30
Specific weight	g/cm3	1,85	7,8	2,7	0,5 ÷ 0,9
Tensile strength	MPa	400 ÷ 500	370 ÷ 500	200 ÷ 400	16 ÷ 26
Tensile elongation	%	1,5 ÷ 2,0	15 ÷ 35	10 ÷ 45	0,5 ÷ 2
Flexural strength	MPa	400 ÷ 500	330 ÷ 500	200 ÷ 400	24 ÷ 36
Tensile modulus	GPa	25 ÷ 30	210	70	10 ÷ 15
Flexural modulus full scale	GPa	25 ÷ 30	210	70	10 ÷ 15
Impact resistance	KJ/m^2	170 ÷ 220	400	200	-
Coefficient of thermal expansion	$°C^{-1}$	$9 \div 12x10^6$	$10 \div 14x10^6$	$20 \div 25x10^6$	$5 \div 6x10^6$
Dieletric strenght	KV/mm	5 ÷ 7	-	-	-
Corrosion and wear resistance	-	EXCELLENT	LOW	GOOD	LOW

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