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# GRP Cable Trays

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## GRP CABLE TRAYS

### THE NEED

Electrical cable trays need to meet strict requirements regarding structural and fire behavior. Cable trays made with a Glass-fibre Reinforced Plastic material provide these benefits.



FIGURE 1 GRP CABLE TRAYS USED IN THE CHANNEL TUNNEL

### THE TECHNOLOGY

The Glass-fibre Reinforced Plastic is a material consisting of: fibreglass fabric and/or glass or aramid fibre (a synthetic fibre with high mechanical resistance) bound together by a thermohardening resin which has been suitably polymerized (polyester, epoxy, acrylic or phenolic). With this technology known as "Pultrusion", it is possible to combine the mentioned range of fibres with the resin in such a way as to obtain the required mechanical characteristics, which may vary in different parts of the same profile or be uniform throughout.

- Increase the corrosion resistance.
- Increase the flame retardant performances.
- Reduce the smokes emission and the toxicity of the gas produced by the material in case of fire.
- Increase the electrical insulation.
- Reduce the moisture absorption.
- Increase the adhesion to the reinforcements.

In the same way, it is possible to use a variety of reinforcements types in order to:



- Increase the strength and the stiffness of the profile in the longitudinal direction.
- Increase the strength of the profile in transversal direction.
- Increase the bearing strength of the holes in the connections.
- Increase or reduce the weight of the profile.

For the cable trays of the Channel Tunnel the main profiles produced were: 2-ways cable trays, 600 x 200 mm, for high power cables, located in main tunnels; 5-ways, 450 x 100 mm, and other cable trays, for telephone, sound, radio and fiber optics cables, located in the service tunnel.

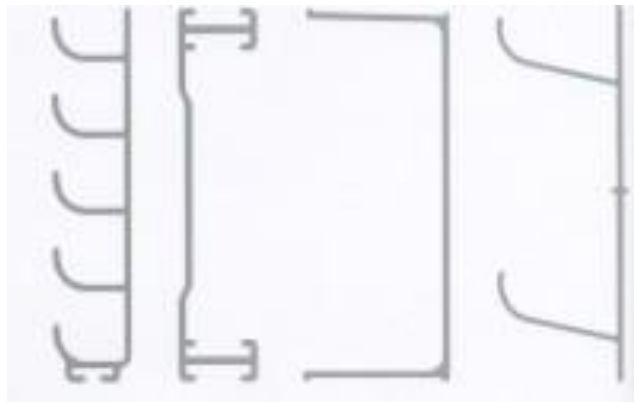


FIGURE 2 DIFFERENT CABLE TRAY PROFILES

## THE BENEFITS

- Lightweight, easy installation, and low transportation costs.
- Have extensive mechanical properties. High strength.
- Maintain stable dimensions.
- Have extensive dielectric properties. Non-conductive thermally and electrically.
- Withstands chemical and atmospheric agents.
- Fire resistant.
- Do not require maintenance.
- Have a low linear thermal expansion coefficient.

## STATUS

Top Glass GRP Cable trays are being used along the main European tunnels. It was used for the Channel Tunnel with a production that covered 400 km of cable trays, corresponding to a quantity of more than 2000 tons of pultruded profiles.

## BARRIERS

Non US manufacturer is known.



## POINTS OF CONTACT

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## REFERENCES

1. Top Glass: A Story of Pultrusion. Company catalog.
2. [Top Glass Web site](#)

## REVIEWERS

Peer reviewed as an emerging construction technology

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## PUBLISHER

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