

**FY-COMPOSITES**



## **BALLISTIC PROTECTION**

**When Lightweight Makes Difference**



Mobile protection

# Product Range

FY-Composites Oy has long experience of the development, design, manufacturing and maintenance of a wide range of ballistic protection products. Our business philosophy is to work in close cooperation with customers to find the best solutions, technically and economically, for their individual needs. FY-Composites is not just a producer of catalogue products. We are also skilled and experienced in customer-driven projects.

Our products are suitable for many purposes – including combat, mine clearing or humanitarian operations. The Army, Navy, Air Force, Police, Border Guards or humanitarian organizations are among

potential users. Our product line consists of helmets offering different levels of protection, special helmets, ballistic visors, the Rapid Armor Shelter System “RASS”, de-mining shields, anti-bullet shields and armored panels for vehicles, ships, containers, etc. We also often handle confidential special projects for our customers.

All our products have undergone stringent tests and verification procedures – not only ballistic tests, but also field tests, aging tests and safety tests. Although we apply all internationally established test standards in our product verification, the customer can also request his own test procedures.



# Material selection

Structural lightness is an essential property, if we want to ensure ballistic protection combined with maximum performance and mobility. But composite-based materials also offer a wide range of other desirable properties compared with conventional materials. Depending on the chosen material, composites can be rustproof, nonmagnetic, heat-insulating, heat-resistant or chemicals-resistant. Adding ballistic protection doesn't always mean a great weight increase. In vehicle and container solutions, ballistic composite materials may replace other construction materials. A good example is our

glass phenolic spall liner panels which can be used in containers to replace the plywood inner liner.

We use various fiber materials. Mostly we use aramid as our helmet material, which is better known by the trade names Kevlar and Twaron. Other common materials are polyethylene, polypropylene, E-glass and S2-glass. Most of the materials we use in ballistics are in prepreg form. Our normal matrix materials are phenolic resin, polyethylene and polyester. Depending on the application, we can offer solutions based on a single reinforcement material or different combinations of materials.



## After-sales

FY-Composites Oy provides life cycle support for delivered products. After-sales service takes care of maintenance, damage repair, installation, customer training and spare parts supply.

# Defining the right material

The key consideration in specifying the right ballistic material is to define the threat and the conditions. Here are some points to consider:

- Maintenance
- Environmental conditions
- Weather conditions
- Transportation
- Weight
- Possible / most likely threats
- Budget
- Compatibility
- User
- Other desired properties

weight

performance

price

There are numerous solutions available in terms of price, weight and level of protection. These are the three factors to weigh up when choosing the right ballistic material. The provision of tailored solutions is our everyday work. Just ask for the solution you need!

It isn't always easy. Sometimes it's quite a challenge – but one we are very willing to meet when helping you choose the precise product for your needs.

# References



## Composite combat helmets

Our basic combat helmet models, FH-580 and FH-610, provide a superb combination of good protection and light weight. But we also have many solutions for special needs, such as for police work, mine clearing, explosives handling and tank crews.



## Rapid Armor Shelter System

The Rapid Armor Shelter System (international patent pending) is a new, innovative ballistic protection system. This military-certified lightweight fortification wall system is ideal for fast-moving troops. The fortification walls can be built and dismantled in a few minutes, affording protection for troops during even short stops or operations. The panels, which have a protection level of  $v_{50} > 600$  m/s (1.1 g FSP, STANAG 2920), protect men or property from fragments and bullets. The weight of a square module is 18 kg, while a triangular module weighs 8 kg.



## Ballistic shields

FY-Composites offers a wide range of shields made for different purposes. We have models suitable for mine clearance, explosives handling and disposal, training and anti-riot purposes, for example.

## Spall liners

FY-Composites Oy has supplied spall liners for numerous vehicles. It is possible to buy spall liners cut into certain shapes or plain panels to be cut by the customer.



## Surveillance vehicles

Some surveillance vehicles fully armored by us have been used in real combat situations. Even in encounters with explosives, our armor has saved the lives of the men on board. In this project we also mounted the armored panels for the customer.

