



Case Study High Performance Marine Fabric

The
Technical
Textiles
Specialist



Arville



Case Study

High Performance Marine Fabric

? Background

Arville have worked with a contractor who is involved with the manufacture and supply of equipment used primarily in maritime applications by the military. They approached Arville with a specific problem they were facing when using particular fabrics and were looking for a technical solution.

The customer was attempting to carry out a process where two layers of fabric were being combined into a laminated structure to create an end material with differential properties from one side of the fabric to the other.

The particular stresses and strains put on the fabric were causing the bond between the layers to weaken and fail over time with the result that the structure was found to be de-laminating.

@ Project brief

The key requirements for the customer were:-

- A need for a woven fabric with the natural appearance of cotton, but with exceptional tensile strength performance in both warp and weft directions.
- An ability for the fabric to achieve a tested tensile strength in excess of 3,000 Newtons/cm.
- The presence of a highly receptive nylon fibre to promote bonding for subsequent coating processes had to be factored into the design (the fabric was put through a secondary coating process by the customer to apply a saltwater resistant coating).
- Lightweight properties.



@ Solution

We were able to call on our technical weaving experience to propose a suitable weave construction which would create a multi-layer fabric with completely different performance properties. If successful, this would not only allow the customer to completely eliminate the lamination process, but would also serve to reduce the overall weight of the fabric.

As a reinforcement, although there were many options, a Dyneema yarn was suggested due to its extreme strength with low elongation and stretch. However, whilst these characteristics make it ideal for the application, the same characteristics actually make Dyneema a very difficult yarn to weave consistently, needing very specialist and skilled loom set-up and operation.

Dyneema fibres don't absorb water so tend to remain light and easy to handle in wet conditions, they have a specific gravity of 0.97 which actually makes them buoyant in water. Being approx. 15x stronger than steel on a weight-for-weight basis, plus thinner, lighter and easier to handle – Dyneema is frequently employed in a wide range of marine and offshore applications. It is highly resistant to abrasion with a coefficient of friction comparable to PTFE (Teflon).



✓ Outcome

Not only did the fabric perform well in a very demanding end application, the customer received a number of secondary benefits unique to the project:-

- They were able to eliminate the need for some of the processes in their own manufacturing. Without the need to further laminate the fabric, Arville reduced their production costs and increased their speed to market for this particular product.
- Removal of the lamination process allowed for further light-weighting of the fabric and the overall product.
- They gained peace of mind knowing that Arville were a supplier with specialist technical experience who they could rely on as a resource for their own business.
- Arville were able to give them consistent quality and continuity of supply of their fabrics on which they could secure future sales of their product.

To find out more about how we can help with your requirements please contact us T: +44 (0) 1937 582735 or email sales@arville.com

An Integrated Approach To Textile Design

Arville are experts at all areas of the technical textile manufacturing process. Our integrated approach means we can develop highly complex technical textiles, tailoring the yarn types, weave constructions, finishes and coatings to produce fabrics which are custom-made to perform to consistently high standards in even the most demanding of applications.

At the heart of this lies our ability as technical textiles specialists to design the manufacturing processes, which allows us to develop for our customers an end product of high-quality fabric, engineered to have performance characteristics that exactly meet their requirements.

