



Don & Low
MEMBER OF THRACE GROUP

armordon[®]

Advanced, high performance composite materials

Luggage

Automotive

Sports & Leisure

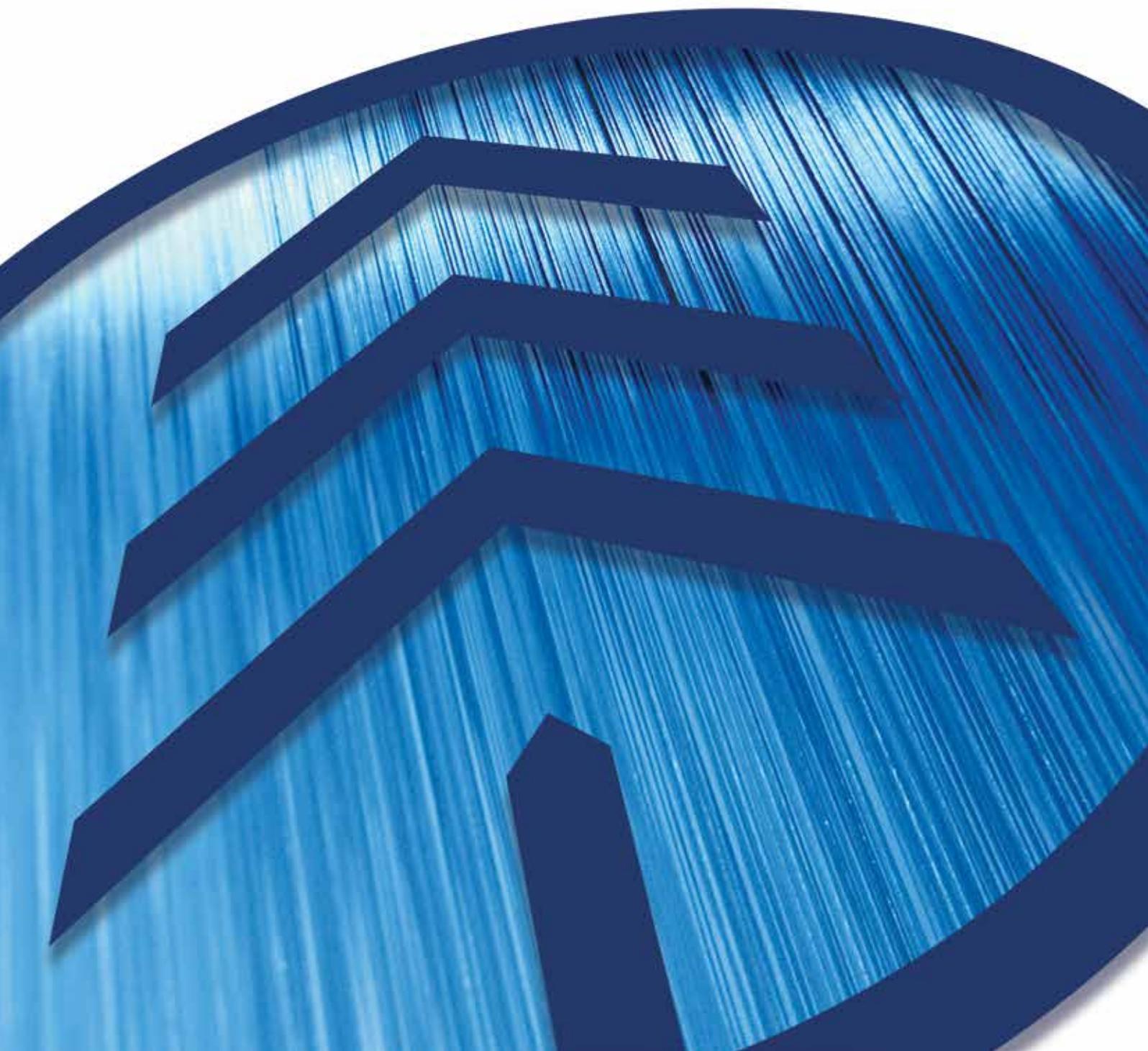
Armour

Orthotics

Oil & Gas

Specialist Packaging

Composites



Don & Low

Engineering tomorrow's technical textiles



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MEMBER OF THRACE GROUP

About Us

From our origins in 1792 as a linen and flax textile weaver, Don & Low has evolved into an internationally recognised innovative polyolefin textile manufacturer. Today, we are part of the multinational Thrace Group, expanding our profile across the globe. We focus on producing high performance, cost effective solutions to our clients' demands, which has led us to become one of the most versatile manufacturers serving global markets.

Quality

Quality is a key focus at Don & Low. We never compromise on quality, from the raw materials we purchase, right through to the finished goods we produce. Continuous investment, quality management systems and experience have all contributed to us being awarded ISO 9001. Combined, this gives us confidence that our products meet the exact specifications required by our diverse range of customers.

Environment

The need for truly sustainable options remains one of Don & Low's crucial challenges. We are committed to improving our impact on the environment through our proactive environmental policies, energy reduction measures and recycling programs.

Innovation & Growth

Innovation, flexibility and a proactive approach to the ever evolving markets have contributed to our success. Don & Low has many long standing relationships with both customers and suppliers with whom we work closely to develop tomorrow's technical textiles. Enabling growth along with our customers, lies at the heart of our innovation philosophy.

www.donlow.co.uk

Developed and manufactured in the UK, Armordon® is a Self-Reinforcing Polypropylene (srPP) fabric that when layered and thermoformed exhibits a range of attractive properties.

Components manufactured from this material are **extremely strong, light and impact resistant.**

These capabilities are illustrated by the early adoption of Armordon® into the demanding arenas of ballistics and blast attenuation and are now being exploited in a range of applications, some of which are highlighted overleaf.

In addition to its **unique price / performance ratio**, Armordon® also delivers the following qualities:

- Low density with good stiffness properties
- Impact resistant at low temperatures > -40°C
- Self-reinforcing – requires no glass/carbon fibres or resin matrix
- 100% recyclable
- Safer to handle and easier to machine than 'glass' or 'fibre' composites
- Non-toxic and inert
- Good resistance to chemical corrosion
- Broad thermoforming window with the possibility of reduced cycle times
- Available as tape, fabric, sheet or component



armordon®

Armordon® by Don & Low is a technical textile available in a range of constructions, weights and weave patterns designed by our in-house technical team to meet different end uses and processing conditions.

Where the situation demands, Don & Low can also supply fully finished Armordon® components produced to the highest QA standards.

Whilst applications for this material are almost limitless, Armordon® delivers recognisable benefits in the following sectors.

Luggage

Armordon® luggage - A travelling companion for the 21st Century

- Armordon® belongs to a family of materials that represents the world's best performing luggage.
- Armordon® is extremely lightweight and incredibly tough - built to meet the needs of the modern traveller.
- Designed to suit global tastes - Armordon® can be produced with a range of bespoke finishes from hi-tec metallic to traditional textile.

Automotive

Lightweight material solutions for the automotive industry

- With mechanical characteristics outperforming those of industry standard thermoplastics, Armordon® is a fully recyclable material capable of delivering benefits in a variety of structural and supporting applications.
- Available with a range of decorative and functional finishes Armordon® components support the drive to produce lighter, more fuel efficient vehicles.
- Working with leading automotive materials partners Don & Low have developed Armordon® / expanded foam composites which offer significant strength and weight benefits over existing materials. Armordon® and Armordon® / EPP composite materials are 100% 'end of life' recyclable.



Sports & Leisure

'Lighter, Tougher, Stronger'

- Lightweight performance clothing and equipment is now demanded by sports professionals and committed amateurs alike.
- The unique price performance ratio of Armordon® brings previously cost-prohibitive material improvements within reach.
- Don & Low have developed a range of composite materials in conjunction with a leading supplier of foam products to the sports industry.
- These composite materials offer an attractive combination of 'protection and comfort' attributes providing manufacturers and their customers with additional competitive advantage.



Orthotics

Medical Background – Material Advantage

- Don & Low have a track record of working with medical product designers in delivering high performing, cost effective materials solutions.
- Stiffer, stronger, lighter and more impact resistant than commonly used thermoplastics. Armordon® is an ideal material for volume produced orthotics devices.
- In contrast to the fibre and resin based composites currently used for high-end devices, Armordon® is easier to handle and machine. In addition, Armordon® behaves predictably at the limits of its performance envelope allowing for safe, planned replacement.



Oil & Gas

A capable material for a demanding arena

- Tough with excellent insulating properties, Armordon® is recognised as a high performance material in the field of pipeline, valve and equipment protection.
- Non-toxic, inert and corrosion resistant, Armordon® performs maintenance free in the harshest of environments.
- Unlike many thermoplastics, the impact resistance of Armordon® actually improves at temperatures as low as -40°C.

Specialist Packaging

Armordon® packaging saves energy and resources

- Lighter, tougher Armordon® containers go further, more often, at a lower energy cost.
- Cases and containers manufactured from Armordon®:
 - require less material to achieve the same performance as other thermoplastics.
 - are extremely durable - improving packaging lifetime value.
 - are 100% recyclable. Polymer material is sought after by recyclers at 'end of life'.
- Assists the packaging industry in meeting 'Reduce, Re-use, Recycle' targets.
- Don & Low can deliver Armordon® packaging solutions ranging from bespoke produced containers to flat panel or fabric for contract fabrication / manufacturing.

Armour

This is where it all began for Armordon®

- Armordon® offers excellent cost effective performance in areas of ballistic and blast protection, helping armouring specialists meet the increasing need for budget led protective solutions.
- As well as 100% Armordon® vehicle and personal armouring products, components have been produced utilising Armordon® in conjunction with other hard and soft armouring materials reflecting the trend for composite panel solutions.
- Don & Low have also produced a series of hybrid weaves; pairing Armordon® with a range of other recognised ballistic materials and further increasing the options available to the armouring technician.

composites

Armordon® Hybrid Textiles

A series of hybrid textiles have been developed in response to specific performance challenges. Armordon® has been successfully paired with various aramid, glass-based and polyolefin materials to produce an exciting range of Armordon® based textiles with excellent price performance ratios.

Armordon® Expanded Foam Composites

We have recognised the benefits of developing composite solutions which build on the strong, lightweight, impact resistant capabilities of Armordon® by combining these with expanded polymer (foams) in sheet or shaped forms.

Armordon® / EPP (Expanded Polypropylene)

Developed in conjunction with a partner EPP processor, the impact resistance of Armordon® with Expanded Polypropylene is available in a super- lightweight, 100% recyclable 3-D form. This combination of material delivers attractive process cycle times and unique capabilities at commercially attractive costs. Applications include orthotics, prosthetics, automotive and leisure with particular suitability for non-ballistic body protection, water sports and flotation applications.

Available as:

- Armordon® skin on one face of an EPP formed shape
- Armordon® skin fully encapsulating an EPP formed shape

Both options have the added advantage of being able to be formed in a single thermoforming process.

Armordon® / cross-linked Polyolefin foam composites

Whether in flat sheet or co-thermoformed shape formats, these composite materials provide excellent performance for blunt trauma body protection in impact sports or public order applications.

Manufacturers can achieve target levels of product performance e.g. impact resistance, buoyancy, flexibility, stiffness, and resilience by selecting a combination of materials from a menu of options.

Armordon® / cross-linked Polyamide foam composites

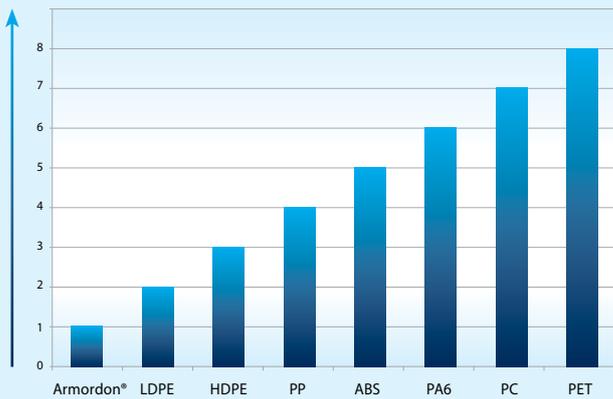
Armordon® composites incorporating polyamide foams offer all of the features described above with greater insulation or heat deflection properties.

Specialist materials advice is available from Don & Low in conjunction with our composite materials partners.

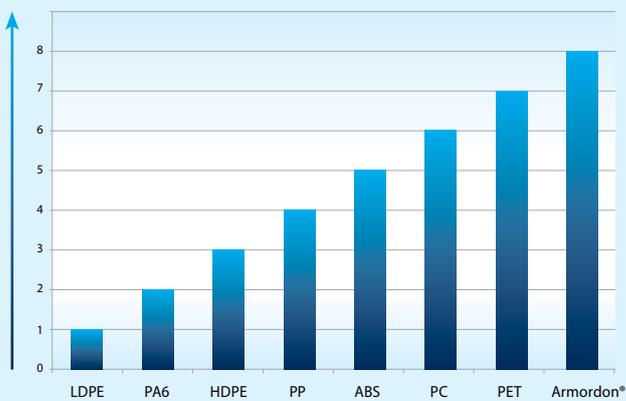
Technical

Testing and technical comparison to other high performance manufacturing materials shows excellent *performance .v. weight .v. cost* ratios in favour of Armordon®.

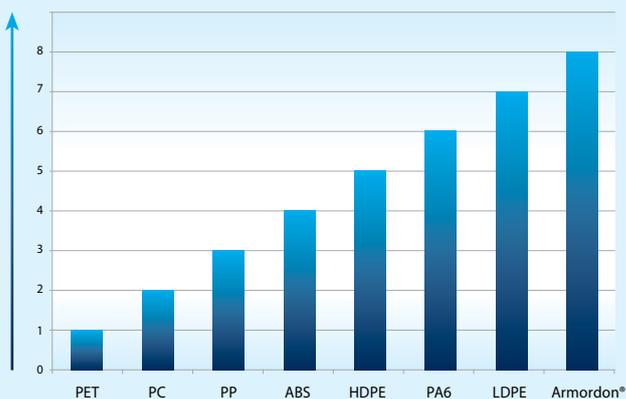
Density



Flexural Strength



Impact Resistance



Processing

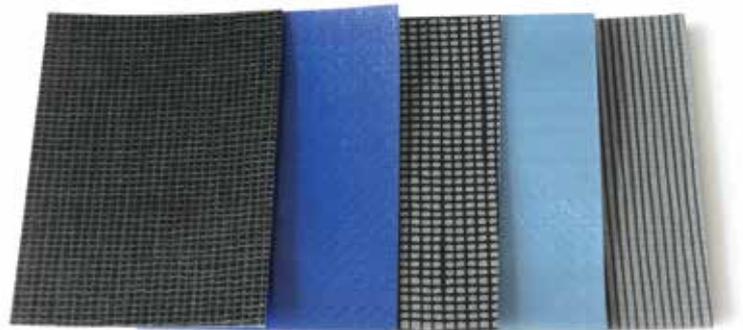
The key properties of Armordon® are created when the fabric is 'consolidated' under conditions of heat and pressure (Thermoforming).

Thermoforming generally involves preheating the material to between 120 - 140°C and compressing at a minimum of 50psi in matched (M/F) tools.

Working closely with our customers we are constantly challenging these parameters and recommend that you contact us to discuss your specific performance requirements and processing capabilities.

Finishes

Armordon® is currently available to order in three basic colours natural (white), mid grey and dark grey/black.



A range of decorative finishes can also be applied



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 Printed on paper produced with 75% recycled fibre