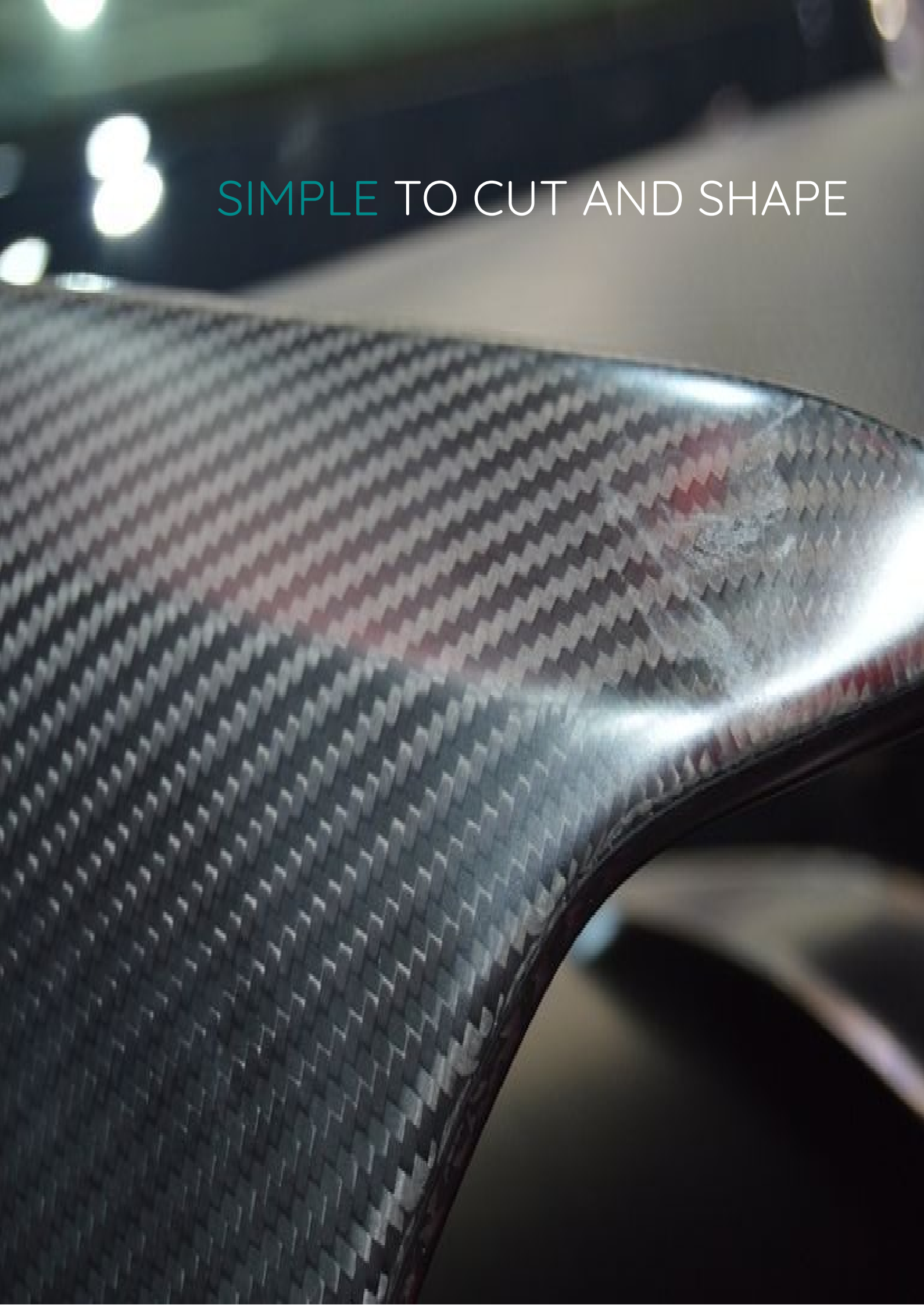
duralite COMPOSITES

INNOVATIVE THERMOPLASTIC COMPOSITES

DISTRIBUTOR CATALOGUE


SIMPLE TO CUT AND SHAPE

PRODUCT HIGHLIGHTS

Durable, strong, fully **deformable** thermoplastic composite materials

Duralite Composites is a range of performance fibre reinforced composite materials for the construction of orthopaedic and orthotic components. Duralite proprietary technology has advantages over other thermoplastic technologies in the method that the materials are produced, which leads to greater consistency and accuracy.

Duralite composites have high durability with excellent damping and shock attenaution and resiliency which results in enhanced energy return and response. The composites provide superior stability and support, yet are lightweight and thin to reduce fatigue and stress.

MANUFACTURING OVERVIEW

Glass Fibre- **The most cost effective woven composite.** Glass fibre products consist of woven glass fibre layers with a thermoplastic matrix. Similar performance characteristics to the carbon/glass options but slightly thicker. The glass fibre products are available in various thicknesses.

Carbon Fibre- **The greatest strength to weight option.** The carbon fibre products are the lightweight and resilient products for improved performance.

Carbon/Glass Fibre- **The most efficient carbon product.** Carbon/Glass fibre products blend the optimal performance, aesthetics and cost effectiveness with glass replacing of carbon fibres on the outside. Carbon fibres are orientated 90 degrees to the glass fibres for bi-directional mechanical properties.

MATERIAL SELECTION GUIDE

Duralite is built up out of carbon or glass fibre layers or a combination of both with a thermoplastic artificial resin. The high percentage of fibre layers (one fibre layer per 0.25 mm of material volume) makes Duralite one of the most durable composite materials. An increasing percentage of carbon fibres ensures a higher stiffness at a lower material weight.

Duralite offers excellent mechanical properties and good chemical resistance. At a temperature of 100°C, Duralite is already slightly deformable and at 210-230°C it is fully thermoplastic. After deformation and compression the material stiffness and stability increases by a factor of eight. The sheets may be sawn, die cutting, snipped or punched.

duralite GLASS 	100% glass fiber	1 fiber layer 2 fiber layers 3 fiber layers 4 fiber layers 6 fiber layers 8 fiber layers	290 gr/m² ***66 oz/in²***	86 x 100 cm ***33,86 x 39,37 in***	0,25 mm 0,50 mm 0,75 mm 1,00 mm 1,50 mm 2,00 mm
duralite MIX 	carbon-/ glass fiber	3 fiber layers 4 fiber layers 6 fiber layers 8 fiber layers 10 fiber layers 12 fiber layers	245 gr/m² ***55,76 oz/in²***	86 x 100 cm ***33,86 x 39,37 in***	0,75 mm 1,00 mm 1,50 mm 2,00 mm 2,50 mm 3,00 mm
duralite CARBON 	carbon fiber	1 fiber layer 2 fiber layers 3 fiber layers 4 fiber layers	200 gr/m² ***45,51 oz/in²***	86 x 100 cm ***33,86 x 39,37 in***	0,25 mm 0,50 mm 0,75 mm 1,00 mm
SILICONE VACUUM FORM SHEETS	100% silicones			100 x 120 cm ***39,37 x 47,24 in***	2,00 mm

PROCESSING

Duralite is already slightly deformable at a temperature of 100°C. By heating the sheet material to a temperature of 210 to 230°C, it becomes fully deformable. It is important that Duralite is processed within 15 to a maximum of 30 seconds when activated. As a result, the fabric layers fuse together, making the structure more solid and increases its original stiffness.

-With a press Place the activated plate (210-230°C) in the pre-heated press (175°C) within seconds. Press the sheet material for a time of 20 seconds at a pressure of approximately 6 bar. During this time, the temperature is reduced to approximately 60°C, which cools the material and keeps the applied shape. This way of forming is ideal for serial productions.

-With a Vacutherm machine Perhaps the most commonly used way. Applicable to all thickness variants and compositions of Duralite. To prevent sticking, the plate to be formed must be enclosed between two layers of silicone foil. Sufficient pressure is essential to obtain a stable and homogeneous end result.

-With an industrial hair dryer Post-processing is easily possible by locally reactivating the material using an industrial hair dryer.

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