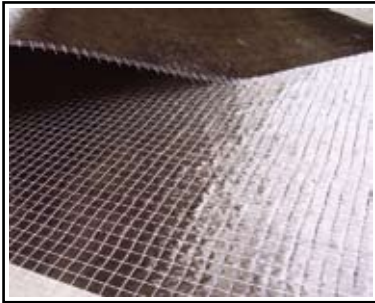


Carficom UD Sheet

Unidirectional carbon fibre sheet.



• field of application

Carficom UD Sheets are used for the post-reinforcement of concrete elements, wood, masonry.

Elements made out of reinforced concrete are statically calculated and executed to a set load bearing capacity. These loads can change during the life span of the construction and the original assumptions can become insufficient due to:

- Changes in the code of construction concerning the load bearing capacity or loads.
- Openings cut in the floors or beams.
- The fact that the construction is appointed another use and the loads are raised.
- Aging of the construction materials used.
- Corrosion of the reinforcement.
- Concrete rot.
- Cutting through of pre- or post-stressing cables.
- Damage through fire in certain areas of the construction.
- Earthquakes which have happened or will happen.

Carficom UD sheets are used for the reinforcement of columns, beams, chimneys, silos, tunnels and other elements of the construction which are subjected to unfavourable loads. The sheets offer a unique solution for the reinforcement of compound forms because they can be wrapped around the element. This allows the designer to reinforce round cylindrical columns, arced tunnel segments, complicated caps, tubes and chimneys, which is not possible with PFT laminates. (See Technical Data Sheet for the Carficom PFT laminates type UDS).

Carficom UD sheets are also ideally suited for making stirrups necessary to anchor Carficom PFT laminates.

• advantages

- Only high quality fibres used in manufacture.
- Large freedom of design.
- Clear advantages over steel plates in certain applications.
- Can be applied to wooden as well as concrete beams, columns, floors and walls.
- Lasting reinforcement under both positive and negative bending moment.
- Light and flexible: no heavy tools required.

- Resistant to corrosion, no additional treatment required.
- No difficult connections and transitions.
- Less risk of buckling.
- Low esthetical impact.

• **description**

Carficom UD sheets compose of unidirectional stretched carbon fibres in warp which are bonded by a thin glass fibre mesh in weft. Available in two types: an E-modulus of 395 GPa and an E-modulus of 260 GPa.

• **application**

1. Preparation of the surface

- To ensure optimum transfer of the loads from the substrate to the Carficom UD Sheet, the surface needs to be roughened through sanding or sandblasting. All damaged areas (cracks, honeycombs and deficiencies in the surface) need to be repaired before application of the Carficom UD Sheet. Cracks need to be structurally repaired through injection with Deltapox INJ.
- Roughness of the substrate needs to be filled and levelled out with suitable materials.
- The adhesion strength of the prepared substrate needs to be verified by adhesion tests performed on random spots. The minimal adhesion strength of the concrete needs to be 1,5 N/mm².
- The surface needs to be dry, clean and dust-free before application of Multitek Impreg.
- Sharp angles need to be rounded to a radius of minimum 3 cm.
- The substrate needs to be treated with Multitek Primer beforehand to ensure good adhesion of the carbon fibre sheet.
- First apply a thin layer of Multitek Primer ($\pm 150 \text{ g/m}^2$) to the substrate using a roller.

2. Preparation of the Carficom UD Sheet

- Carficom UD Sheet is supplied on rolls of 500 mm wide and 100 m long. Always wear suitable protective clothing and equipment.
- Carficom UD sheets are cut with standard scissors.

3. Preparation of the Multitek Impreg

- Mix both components before adding together.
- Mix for both products the A- and B-component in a clean container and mix thoroughly for 3 minutes at low speed (500 rpm) with a paddle mixer until a homogenous mixture is obtained. Only mix the quantity of product which can be applied within the pot life of the Multitek Impreg.
- Mixing Ratio A/B = 2/1.

4. Application of the Carficom UD Sheet

- Apply Multitek Impreg with a roller ($\pm 300 \text{ g/m}^2$) in level thickness and a width $\pm 5 \text{ cm}$ larger than the Carficom UD Sheet.
- Press the carbon fibre sheet into the epoxy resin with a special roller. Always work front to rear in the direction of the carbon fibres. Start at one end and work to the other or alternatively, start in the middle and move to the outsides. This to eliminate all air entrapment.
- Apply a second layer of resin on top of the carbon fibre sheet with a consumption of 200 g/m^2 .
- To apply a second layer of Carficom UD carbon fibre sheet, the above procedure is repeated. The second layer is applied wet-in-wet on the last applied layer of Multitek Impreg within the pot life mentioned on the TDS ($\pm 40 \text{ min}$ at 20°C).
- Finish with a final layer of Multitek Impreg (200 g/m^2).
- When applying Carficom UD Sheet to already cured carbon fibre sheet or laminate, the surface needs to be prepared using an approved method.
- The material should not be disturbed within 24 hours after application. Multitek Impreg will reach its full mechanical strength after 7 days.

• **technical data/properties**

Property	Value	
Physical properties	Carficom UD Sheet 395	Carficom UD Sheet 260
Composition	Fabric of continuous unidirectional carbon fibres	
V_f	100% fibres	
Mechanical properties	Carficom UD Sheet 395	Carficom UD Sheet 260
Weight	300 g/m ²	200 g/m ²
E-modulus	395 GPa	260 GPa
Tensile strength	3550 MPa	
Elongation limit	1,50%	
Fiber density	1,8 g/cm ³	
Thickness for calculation	0,167 mm	0,11 mm

• **appearance**

Black carbon fibre fabric on roll.

• **consumption**

Consumptions depend on site conditions and the calculated number of layers.

• **packaging**

Rolls of 500 mm wide and 100 m long.

• **storage**

Carficom UD Sheets need to be stored in a dry and dust-free environment.

• **accessories**

To be ordered separately

- Deltapox INJ.
 - Multitek Primer.
 - Multitek Impreg.
 - Multitek Cleaner.
- (See respective Technical Data Sheets).

• **health & safety**

Carficom PFT laminates are manufactured from carbon fibres. Always wear suitable protective clothing and equipment. Please refer to the respective Material Safety Data Sheets for additional information.

All data mentioned on this technical data sheet are product descriptions. They are the result of general experience and experiments and don't take any specific application into account. No further demands may be derived from these data. The manufacturer has the privilege to implement technical changes, which result from new research concerning the material composition and form. To verify that you are holding the latest version of this Technical Data Sheet, please visit www.deneef.eu.

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