

COMFIL[®] Usage Manual



THERMO FORMABLE COMPOSITE



algeos
Orthotics & Prosthetics

Algeos UK:

call us: +44 (0)151 448 1228
email us: sales@algeos.com
visit us: algeos.com

Application Guide: TFC Carbon Composites

TFC (Thermo Formable Composite) is a versatile thermoformable carbon composite material. TFC combines the high localised strength of carbon composite with the modeling properties of thermoplastics.

Available in unidirectional and bidirectional, the carbon fibres are interwoven with a revolutionary thermoplastic fibre that allows the material to be heated and formed at lower temperatures.

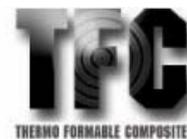
This thermoplastic material also acts as a high-strength matrix for active performance and flexibility.

TFC can be simply custom formed to your mould with a heat gun or by placing the material into an oven to achieve molding and extra reinforcement materials can be simply heated and applied to customise your brace for the patient's needs.

Your custom lay-up is then placed into an oven under vacuum at a maximum of 430°F for 30-45 minutes to consolidate the lay-up into one piece for an individual orthotic or prosthetic solution. TFC is also fully heat remouldable, and allows adjustable fitting just like thermoplastics.

The material comes in unidirectional and bidirectional reinforcement for different structural properties with three different thicknesses and can be cut simply with scissors.

Equipment such as vacuum lines, vacuum chamber, water reduction, stands, and oven adaptations are available. See 'Algeos Complete' catalogue for full details on the range.



1. Plaster Preparation

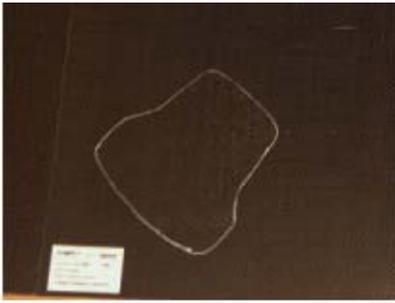
- Dry plaster @ 50 C for 12 hours.
- Cover the plaster in a cotton stockinette.
- Mark out Material lay up.



2. Material Lay Up

- Cut out pieces according to fiber direction (see the sheet label for fiber directions).

- Cut out as close to final shape as possible to avoid excess cutting and grinding after.
- Grind using course paper then finish with smooth wet sandpaper. Keep the material cool.



3. - Heat the material with a heat gun @ 630 C with a sweeping motion.
- For thicker materials heat in oven @ 220C for 5 minutes.



4. Heat the pieces onto the plaster using sandwich construction.



5. Preparing for vacuum
 - Take the product off the plaster.
 - Grind using course paper then finish with smooth wet sandpaper. (Ensure you smooth edges)
 - Put thin Teflon film directly on the plaster to create a moisture barrier.
 - Do not worry about the wrinkles they will not show in the finished product.
 - Put a PET stockinette over the Teflon film to evacuate the air.



6. Set the product back on the plaster

- Put a release film on the outside of the carbon. (This will determine the finish the product)
- Stretch the material and tape it firmly to prevent wrinkles.
- If you use a silicon bag it can be put under vacuum instead of using tape.
- Put on a PET stockinette on the outside of the release bag or film.



7. Preparing vacuum bag

- Seal one end of the vacuum bag with sealant tape.
- Cut the bag to length.
- Set the vacuum bag over the plaster.
- Tie the bag under the Vacuum hole.
- Turn on Vacuum. Do not worry about the wrinkles they will not show in the finished product.



8. Lamination

- Set the oven @ 220C
- Put the plaster in the oven under vacuum.
- 30 minutes in the oven. (Time is dependant on plaster size and moisture content)

Cool Down

- Take the plaster out of the oven and cool down under vacuum.
- When material is cool enough to touch (30minutes)
- Turn off Vacuum
- Take off product