

Case Study

Breier Mono and Stereo Swimfins Use ACG's Prepregs



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Eric Breier, owner of Breier SAS, said: “ACG offered us total freedom of choice on fabric and the resin, including the percentage of impregnation, while also providing essential technical support and critical data to allow us to develop our products. This value-added service allowed us to improve our fins and continue to equip our world champions in freediving, underwater hunting, and underwater hockey.”

Company:

Based in Vannes - France, Breier SAS, *The Swimfins Company*, designs and manufactures a range of technologically advanced, high performance monofins and stereofins swimfins, used for freediving, spearfishing, finswimming and underwater hockey.

Objective:

Develop the product range using a prepreg manufacturer that offered:

- Total freedom to analyse prepreg mechanical data
- The ability to select the most appropriate reinforcement, resin and percentage of impregnation
- Freedom to increase knowledge on fibre orientation and prepreg lay-up techniques

Production Process:

Breier's M2C5 Monofin (illustrated), which is used for freediving (dynamic apnea), was oven/vacuum bag processed with the plies sandwiched between two coated plates and heated to 120°C.

Breier uses a combination of ACG's MTM®28 Series glass and carbon reinforced prepregs across their entire product range, including their type M2C5 Monofin.

The MTM®28 plies (especially the internal ones) were laid in a specific orientation to follow Breier's 'Active Stringer Technology', a technique developed specifically for underwater hockey fins. Twin arm stringers, integrated into the edges of the blade boot, improve propulsion and make the swimfins more manoeuvrable and durable. Breier's leisure and competition products now deliver greater performance (up to 15%) for less effort.

Prepreg Features:

ACG MTM28 Series prepregs are based on 120°C curing toughened, epoxy matrix resins that have been specifically developed for the manufacture of components requiring high damage tolerance.

Improvements Gained:

Eric Breier said: “The value-added service provided by ACG allowed us to improve our fins and continue to equip our world champions in freediving, underwater hunting, and underwater hockey.”

Continuing, he said: “Compared to other products that we have used, ACG's MTM®28 contributed to a significant improvement in the reliability of our composite structures, mainly through ACG's flexible approach to reinforcement and resin selection, which has led to a major reduction in void content.”



MTM[®]28 Prepreg:

- Versatile processing: autoclave, vacuum bag or press moulding cures
- Up to 90 days out life
- Good tack and drape
- 85 to 120°C cure
- Excellent impact resistance
- Excellent adhesion to core materials and will bond to honeycombs without an additional adhesive film
- 80°C end use temperature

MTM[®]28 Series Variants:

- MTM28-1: formatted for unidirectional fibre reinforcement
- MTM28-2: (-5 in the USA) provides a higher Tg and a lower tack level
- MTM28-3: (-4 in the USA) provides higher grab characteristics for tube rolling
- Black pigmentation: all of the above variants are available in black pigmented format and, consequently, are identified as 'B' products, i.e. the black pigmented variant of 'MTM28-1' is 'MTM28-1B'



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For further information about Breier SAS, please visit:
www.breier.fr

Advanced Composites Group Ltd

Composites House, Sinclair Close,
Heanor, Derbyshire, DE75 7SP, UK
Tel: +44 (0)1773 766200
Fax: +44 (0)1773 530245
e-mail: sales@acg.co.uk

www.acg.co.uk



Advanced Composites Group Inc

5350 South, 129th East Avenue,
Tulsa, Oklahoma 74134, USA
Tel: +1 918 252 3922
Fax: +1 918 252 7371
e-mail: sales@acg-us.com

www.acg-us.com