



Advanced
Composites Group

umeco composites



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Composite Materials for Tube Rolling Applications

Introducing ACG's Prepregs for Composite Tube Rolling

ACG has significant experience in the formulation and manufacture of pre-impregnated materials (prepregs) for the tube rolling industry.

ACG supplies the defence, aerospace, sports & leisure, automotive, and general industrial sectors where glass, carbon and Kevlar reinforcements pre-impregnated with ACG's phenolic, epoxy, polyester and bismaleimide resin systems are used in a wide variety of applications.

A programme of continuous product development keeps ACG at the forefront of the composites industry.

ACG offers:

- Standard and custom formats
- Product design assistance
- Material selection service
- Process technology development
- Small quantities delivered to short lead times
- On-site support from ACG's Applied Technologies Team

Market	Typical Applications
Military/Defence	Antennae, masts, aerials and disposable launch tubes
Aerospace	Spacers and sleeves
Sports & Leisure	Tillers, spinnaker poles, booms, masts, fishing rods, golf club shafts, canoe paddles, telescopes, air rifle silencers and model helicopters
Industrial	Lightweight tubing, lifting equipment, telescopic tubing sets, pipes and bearings
Automotive	Exhaust cans and drive shafts

Resin System	Resin Type	Characteristics
MTM®80S	Phenolic	Outstanding fire performance
MTM®28 Series	Epoxy *	Suitable for all substrates
MTM®21S Series	Polyester *	Ideal for woven glass fabrics
MTM®22S Series	Polyester *	Ideal for woven glass fabrics
HTM®556	Bismaleimide	250°C performance

* ACG's epoxy and polyester systems are available in a range of colours and can be colour matched to RAL numbers or swatches/samples.

High strength woven carbon prepregs:				
Fabric Reference*	Fibre Areal Weight (gsm)	Weave Style	Fibre Filaments	Construction End/cm x Picks/cm
CF1300	150	2x2 Twill	1K	11 x 11
CF0300	200	2x2 Twill	3K	4.9 x 4.9
CF0500	200	Plain	3K	5 x 5
CF0100	283	4x4 Twill	3K	7 x 7

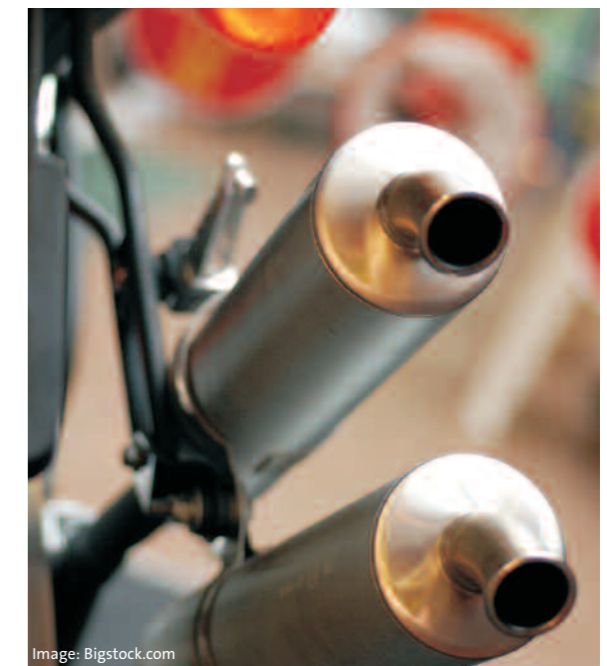
* Modus range 230 to 2400PGa

ACG offers a full range of woven hybrid prepregs, including Carbon-Kevlar and Carbon-Glass.

Woven glass prepregs:				
Fabric Reference	Fibre Areal Weight (gsm)	Weave Style	Warp:Weft Ratio	Nominal Thickness (mm)
F010	190	4H Satin	4:1	0.14
F012	290	4H Satin	7:1	0.21
F013	430	8H Satin	9:1	0.32
F221	425	Plain	9:1	0.32

ACG offers a full range of woven hybrid fabrics, including carbon-glass.

Unidirectional carbon prepregs:
ACG offers high strength, intermediate and high modulus fibres in the following weights: 70, 105, 135, 150 and 250gsm.
For ease of handling, ACG also offers unidirectional carbon prepregs with a glass scrim reinforcement. The most commonly used scrims are 24 and 50gsm lightweight plain weave fabrics.



Epoxy System:

Applications:
Suitable for carbon and glass fibre tubes.

MTM®28 Series

Main Features:

- Excellent compromise between mechanical performance and ease of processing.
- Available at various tack levels.

Polyester Systems:

Applications:
General purpose tubes in woven glass fabrics.

MTM®21S and MTM®22S Series

Main Features:

- Low cost.
- Rapid processing.
- Styrene free.

Phenolic System:

Applications:
High temperature resistance and excellent fire, smoke and toxicity characteristics.

MTM®80S

Main Features:

- Suitable for all reinforcements.
- 320°C dry Tg after 160°C post-cure.
- Out life 4 weeks.

BMI System:

Applications:
High service temperature parts

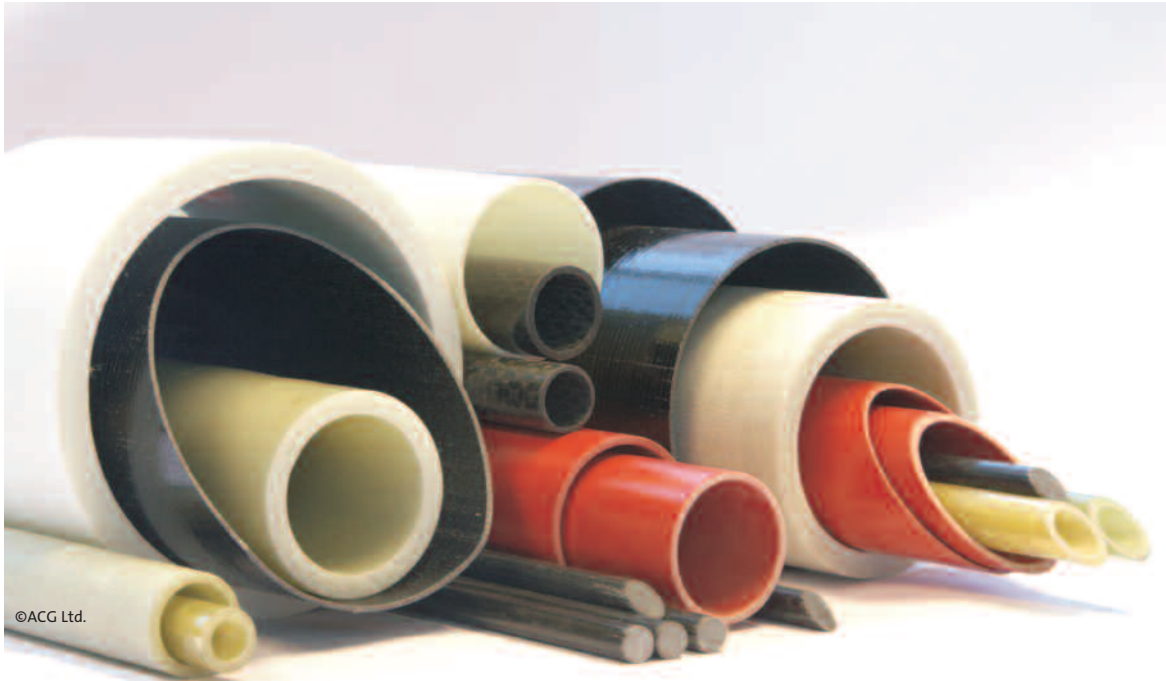
HTM®556

Main Features:

- Controlled flow.
- Toughened.
- 270°C dry Tg after 240°C post-cure.
- Out life greater than 4 weeks.

ACG Prepregs for Tube Rolling Applications

	ResinType	Carbon Fibre		Glass Fibre		Aramid Fibre	Typical Cure Schedule
		UD	Woven	UD	Woven		
MTM®28	Epoxy		Yes			Yes	1 hour at 120°C
MTM®28-3	Epoxy	Yes		Yes			1 hour at 120°C
MTM®28S-6	Epoxy		Yes		Yes		1 hour at 120°C
MTM®21S	Polyester				Yes		1 hour at 120°C
MTM®22S	Polyester				Yes		1 hour at 140°C
MTM®80S	Phenolic		Yes		Yes	Yes	30 minutes at 160°C
HTM®556	BMI	Yes	Yes	Yes	Yes		6 hours at 190°C



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