



Advanced
Composites Group

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Prepregs for Automotive Applications

BPS240 Body Panel System

Ginetta Supercars uses ACG's BPS240 for the body panelling on its F400 sports car. A recent development programme, led by Managing Director Chris Marsh, which focussed on vehicle and body construction refinements, together with ACG's prepreg and tooling products, has delivered a great British sports car and a full order book.

Donkervoort Automobielen uses BPS240 for the roof, mudguards and the underbody panel on its D8 GT competition race car. The application of this material and ACG's VTM260 Series structural prepreps for the rear chassis, and the combined scuttle and windscreen framework has delivered improved stiffness and an overall weight reduction.

BPS240 is a ZPREG® rapid deposition system with a stable, high temperature and integrated surface film. BPS240 offers excellent and stable surface quality, effective processing benefits and presents a significant cost saving over traditional prepreg technologies. BPS240 panels can be moulded from high quality, low cost composite tooling, thereby reducing manufacturing times by as much as 50% compared to traditional composite materials.



Features

- A two-ply, partially impregnated epoxy prepreg system providing excellent surface quality from vacuum-only processing.
- Surface ply utilises ACG's ZPREG partial impregnation technology.
- Bulk ply combines low-density syntactic core material and structural fabric to create significant panel rigidity in a rapid laminating format.
- Paint-ready direct from the mould.
- Excellent environmental resistance can be expected from panels painted in Hi-Bake & Lo-Bake paint systems.



DForm® Deformable Composite System

Delta Motorsport's E-4 Coupe electric vehicle has been manufactured using a combination of ACG's DForm® Deformable Composite System and next generation body panel system. To achieve maximum weight reduction, Delta has taken a minimalistic approach to the structural design of many of the key elements of the vehicle, including the door modules; rather than using additional cosmetic mouldings, Delta chose to expose the carbon fibre structural elements so that they form the internal trim.

DForm® offers the performance benefits of a continuous long fibre reinforced composite but with the conformability of a short fibre moulding compound. This unique combination of characteristics deskills an otherwise labour intensive moulding process and lends itself to rapid processing techniques such as press moulding commonly used in the automotive industry for traditional metal forming.



Features

- Rapid lay-up.
- 25 to 30% reduction in lay-up time.
- Accurate control of laminate configuration and resin content minimises distortion.
- Improved detail replication and surface finish.
- Exceptionally high level of surface flatness.
- Automated processing.



Structural Prepregs

Plasan Carbon Composites Inc, GM's preferred composite components supplier, used ACG's MTM®57 carbon fibre prepreg material for the manufacture of the carbon fibre composite roof assembly and the front air splitter on General Motors' 2009 Corvette ZR1. A proprietary, UV-stabilized and colour corrected clear coat was developed to prevent yellowing of exposed-weave carbon fibre composite in this highly visible 'Class A' roof. Replacing a thermoplastic roof assembly, the bonded advanced composite version is lighter and, therefore, lowers the ZR1's centre of gravity. It is also more robust and provides improved rollover protection.

Blackstone Tek (BST) selected MTM®58FRB and MTM®57 prepregs for the structurally critical, autoclave processed wheels for Norton Motorcycle (UK) Ltd's Limited Edition Norton Commando 961SE. Weight reduction and distribution across the wheel architecture was the critical factor in the design.



Features

MTM®57

- Toughened epoxy resin matrix offering flexible processing and a range of handling characteristics.
- Exhibits excellent toughness.

MTM®58FRB

- Improved temperature resistance.
- Black pigmented epoxy prepreg matrix which meets the self-extinguishing requirements of FMV302/ISO3795.
- Developed for automotive structural applications and is suitable for autoclave, vacuum bag and press mould processing.

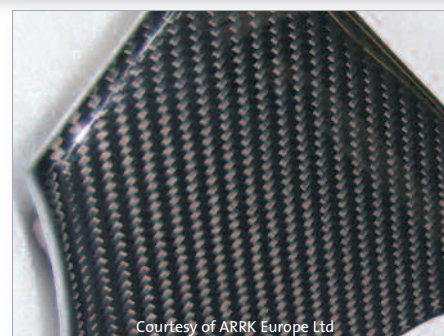


Cosmetic Prepregs

The automotive industry is unyielding in its quest for aesthetically pleasing, low cost, high quality carbon components for interior and exterior applications. To satisfy this burgeoning demand ACG has developed a range of resin systems that provide exceptional high quality optical finish together with excellent UV stability straight from the mould. In collaboration with its fibre supplies and weavers, ACG has developed a higher fabric specification (SVQ standard) that satisfies the visual applications demanded by the industry.

ARRK Europe Ltd and other major automotive parts manufacturers are using ACG's MTM®57 and MTM®55 prepregs to press mould interior carbon trim moulds and exterior features, including rear diffusers and front spoilers. MTM®57 and MTM®55 have been chosen for their high quality optical appearance together with exceptional UV stability.

To develop next generation products, and deliver superior products to the market, ACG is currently evaluating a unique fabric, incorporating a herringbone central 'V' join woven directly into the fabric, which will eliminate the need for the parts manufacturer to match individually cut pieces in order to achieve faultless visual material joints.



Low Temperature Systems

ACG offers a range of low temperature curing prepreg options which have proved popular for the manufacture of low volume vehicles and, in particular, prototypes and show cars.

The Limited Edition Mustang began its life on a 2009 Mustang platform and was then modified and coach-built using ACG's LTM®26EL panels to replace approximately 50% of the visual and inner panels on the vehicle, including the hood, deck lid, front grill panel, front and rear underskirts, rear tail light panel and rear quarter panel extensions, and the right hand and left hand roof side panels. LTM®26EL, the extended life version of ACG's LTM®26 Series prepregs, was specially formulated to cure at low initial cure temperatures. LTM26EL is ideally suited to this type of application, giving true flexibility to accomplish component lay up procedures while also offering flexible processing via autoclave, press or vacuum bag moulding techniques.

Donkervoort Automobielen uses ACG's VTM260 Series vacuum-only structural prepregs for the rear chassis and the combined scuttle and windscreen framework. The application of this material and ACG's BPS240 body panel system has delivered improved stiffness and an overall weight reduction.

In addition to using BPS240 body panel materials to achieve a paint-ready finish for the exterior of its prestigious F400 road car, Ginetta Supercars uses ACG's VTF261 surfacing materials for the clear cosmetic carbon fibre dashboard and transmission tunnel mouldings. VTF261 materials employ ACG's ZPREG® selective impregnation surfacing technology and are used with ACG's VTM®260 Series rapid lay-up prepregs. As is evident from this application, surfacing materials achieve high quality cosmetic finish or paint ready surfaces direct from the mould.

Features

VTM®260 Series

- Toughened epoxy resin matrix offering flexible processing and a range of handling characteristics.
- Exhibits excellent toughness.

LTM®26EL

- Extended out life, low viscosity epoxy matrix formulated for curing at low temperature.



	Processing					Applications				
	Typical Cure Cycle	Maximum Service Temperature	Autoclave	Press Moulding	Vacuum Bag	Chassis	Body Panels	Cosmetic	Structural	Prototypes/Show Cars
LTM®26/26EL	5 hours at 60°C + variable post-cure	115°C	R	Y	Y	N	Y	Y	Y	Y
MTM®49 Series	1 hour at 120°C + variable post-cure	150°C	R	Y	N	Y	N	N	Y	N
MTM®55	1 hour at 120°C	90°C	R	Y	N	N	N	Y	Y	N
MTM®57 Series	1 hour at 120°C	90°C	Y	Y	Y	N	N	Y	Y	Y
MTM®58B*/FRB	1 hour at 120°C + variable post-cure	120°C	Y	Y	Y	Y	N	Y*	Y	Y
VTF261	5 hours at 80°C + variable post-cure	100°C	N	N	R	N	Y	Y	N	Y
VTM®260 Series	5 hours at 80°C + variable post-cure	100°C	N	N	Y	N	Y	Y	Y	Y
BPS240	1 hour at 120°C + variable post-cure	160°C	Y	Y	R	N	Y	N	N	Y

Key: Y=Yes, N=No, R=Recommended

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