



Prepregs for Defence Applications

Products to Enhance Military Mobility and Survivability

ACG's Defence Experience

ACG's prepregs are used extensively in an ever-increasing variety of defence applications. These range from ballistic and blast protection systems in armoured fighting vehicles to structural components for vehicle, naval and aerospace applications, including: UAVs, radomes and communication dishes.

The dismounted soldier is also catered for with advanced composite materials used in lightweight helmets and body armour.

ACG's extensive R&D facility includes a team dedicated to developing a wide variety of materials for specific customer needs. This activity has

resulted in world-leading technologically advanced prepregs, adhesives and ancillaries which, collectively, allow processing both in the autoclave and out-of-autoclave (OoA) through oven/vacuum bag and press moulding techniques.

Foxhound

ACG's MTM®248S and MTM®48 prepregs have been chosen for the Foxhound pod to provide the optimum combination of lightweight protection and structural integrity.

Following extensive testing and qualification, the pod, which was designed and developed by a team led by Force Protection Europe specifically for the UK Ministry of Defence (MoD), marks a significant development in the use of composites in the armoured fighting vehicle market.

Watchkeeper

ACG's MTM®46 prepreg has been selected by Elbit Systems for the Thales Watchkeeper 450 UAV.

Developed by the Group's research facility, MTM46 is used for primary and secondary structures of FAR 23 approved aircraft and UAVs. This resin system was developed for OoA processing. The moulder uses an initial low temperature/low pressure cure which permits the use of low cost tooling. A free-standing OoA post-cure develops the required material performance.

Warthog

Permali Gloucester Ltd is manufacturing appliqué armour and spall liners for the UK MoD's Warthog vehicle using ACG's phenolic materials.

Based on ST Kinetics' Bronco All Terrain Vehicle, the use of the phenolic systems on the Warthog provides a cost-effective, weight saving solution when compared to traditional metallic options.

Surface										
Glass, aramid, carbon, UHMWPE, nylon, hybrid or thermoplastic combined with:	Vehicle armour	Spall liners	Body armour	Helmets	Ballistic seats	VIP protection	Anti-piracy, aircraft doors, panic cells	Cargo liners	Building protection	R&D
Epoxy	✓		✓	✓	✓	✓	✓	✓	✓	✓
Phenolic	✓	✓	✓		✓	✓	✓	✓	✓	✓
Phenolic/PVB		✓		✓			✓	✓		✓
Thermoplastic		✓	✓	✓			✓			✓
Polyester			✓		✓				✓	✓
Cyanate ester										✓
Polyimide										✓
BMI										✓
Ceramic/wrapped ceramic	✓		✓		✓	✓	✓			✓

Airborne & Marine					
Glass, aramid, carbon, hybrid or thermoplastic combined with:	UAVs	Helicopters	Ballistic seats	Missiles	Rocket motors
Epoxy	✓	✓	✓		✓
Phenolic			✓		✓
Polyester		✓	✓		✓
Cyanate ester ⁽¹⁾	✓	✓		✓	✓
Thermoplastic					✓
Polyimide ⁽¹⁾					✓
BMI ⁽¹⁾	✓	✓			✓
Ceramic/wrapped ceramic			✓		✓

⁽¹⁾ Cyanate ester, BMI & polyimide can be used around engine nacelles

ACG provides a wide variety of materials for marine and submarine applications, details of which can be provided upon request.



Lightweight strength and lightweight protection for land, sea and air.

Why Choose ACG?

ACG is a world-class composites solution provider that works closely with its network of partners to provide integrated services to its customers. Through its expertise, technology, products and flexibility, ACG offers unparalleled benefits to its users.

ACG is the front-runner prepreg manufacturer of choice for defence applications. ACG:

- manufactures a complete range of thermoset and thermoplastic prepreps for use in ballistic, blast and structural applications.
- has full prepreg processing capability in Europe and the USA, and can supply unidirectional (UD) and fabric prepreps using all types of fibres, including carbon, glass and thermoplastic.
- delivers prepreps in a wide range of formats, including cross ply UD and differentially coated fabrics.
- offers prepreps that can be processed in autoclave and OoA.
- has world-leading R&D capability to support customer material requirement.
- can process small (50 to 500m²) or large batch quantities of customer specific products.
- offers manufacturing and design support.
- offers a world-wide support service with sales representatives and technical assistance.

Summary

Resin type	Processing routes			Features					
	Autoclave	Vacuum bag	Press moulding	Structural	Fire retardancy	Service range °C	Moisture resistance	Ballistic	Blast
Epoxy	✓	✓	✓	✓	✓	100 to 180	Good		✓
Phenolic	✓	✓	✓		✓	Up to 250, short term to 300		✓	
Phenolic/PVB			✓		Self-extinguishing	Up to 90		✓	
Polyester	✓	✓				Up to 80	Good	✓	
Cyanate ester	✓		✓			Up to 250			
Thermoplastic	✓		✓			Varies		✓	
Polyimide	✓		✓			250			
BMI	✓		✓	✓		Up to 250			
Ceramic/ Wrapped ceramic	✓		✓			Material dependant			

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