



PRESS RELEASE
For immediate release

Low Temperature GMS EP-250 Epoxy Tooling Prepreg Improves Reverse Engineering Aviation MRO Capabilities for Boeing 777

An ongoing challenge for aviation maintenance, repair and overhaul (MRO) service providers is how to easily and cost effectively make durable low temperature cure tooling suitable for accurately repairing damaged small to medium size composite parts or for fabricating new replacements. For reverse engineering MRO jobs, tooling needs to exactly match the composite part taken off an aircraft for the best fit, plus the tool must provide structural support during the autoclaving stage at moulding temperatures of up to 177 °C (350 °F). Wet resin tooling systems are well established, but are not ideal for many composite MRO production units where shop floor operators are much more familiar with handling and using prepregs. GMS EP-250, a low temperature epoxy prepreg tooling system developed by the Australian custom prepreg manufacturer, GMS Composites Pty Ltd. has proved to be a winning solution for a major aerospace production operation based in Melbourne, Australia which repairs Boeing 777 composite parts, as well as reverse engineers other aircraft components.

For this Australian MRO production team, switching to using GMS EP-250 epoxy prepreg tooling system, with its extended shelf life, has eliminated the mixing, mess and handling issues associated with a traditional wet resin tooling system. At the same time, it has improved reverse engineering fabrication capabilities by enabling more dimensionally accurate MRO aircraft parts to be moulded. A GMS EP-250 epoxy carbon fibre prepreg tooling system is now used as an autoclave support tool for repairing a variety of composite parts, including a Boeing 777 leading edge wing flap section autoclaved at 177 °C (350 °F), and a nose cone part.

The following two stage tool making procedure was implemented by the MRO production team to ensure that a fully cured, autoclave support tool was fabricated which would ultimately produce a dimensionally accurate replacement MRO leading edge wing flap part to fit the aircraft, with the flight performance properties required by Boeing. The damaged leading edge part was first patch repaired to recreate the exact dimensions prior to damage. Then, the GMS EP-250 carbon fibre prepreg system was applied to the patched up part, (surface pre-treated with mould release agent) and low temperature cured at ~65 °C to create the new tooling mould copy imprint of the complete part (stage 1). After this initial low temperature cure stage was completed, the partially cured new tool was then removed from the damaged part. The next step was to fully cure the new epoxy prepreg tool, free standing, at 200 °C (stage 2). The final new carbon epoxy prepreg tool was a perfect size match to the original leading edge wing flap part from the aircraft. With a fully cured, fabricated tool, the MRO team was then able to remove the patch from the damaged part, lay up the qualified repair material and complete the repair process with a full autoclave cure.

Using the GMS EP-250 epoxy prepreg system has not just made MRO tool making easier, quicker and cleaner. For repetitive MRO jobs needing multiple identical replacement parts to be fabricated, overall mid to long term manufacturing costs have been reduced since the GMS EP-250 epoxy prepreg tools have proved much more durable, lasting for well over 50 pulls, with no cracking, or loss of vacuum integrity on the tool, while at the same time maintaining end part surface quality and dimensional stability.

GMS EP-250 epoxy prepreg tools have proved sufficiently long lasting that increasingly, both OEMs and tier 1 convertors are using the GMS prepreg tooling systems, not only for MRO composite parts, but also as cost competitive tooling in preference to wet lay up or aluminium for shorter run manufacturing jobs requiring up to ~100 off parts. For even higher volume production tooling needs, GMS Composites also offers GMS BP-190, a Bismaleimide matrix (BMI) prepreg with a maximum Tg of 310 °C (590 °F).

Supply of all GMS tooling prepreg options, as well as other grades in the GMS Composites prepreg range are manufactured to ISO 9001:2008 accredited quality assurance systems and procedures at the company's main factory in Melbourne, Australia,. The production facilities are set up as a flexible, lean manufacturing operation able to offer responsive lead times, coupled with a global airfreight delivery service. GMS EP-250 prepregs typically have a shelf life of ~3 weeks at a 23 °C ambient temperature and 12 months in -18 °C cold storage conditions. This long shelf life allows them to be air transported to anywhere in Asia, India, the Middle East and beyond, while still giving MRO service providers sufficient processing time. As such, GMS EP-250 epoxy prepregs can be considered in practice as a cost competitive, feasible alternative to other tooling systems.

For more information about GMS Composites full range of moulding and tooling resin systems and custom prepreg design services visit the company's new website at www.gmscomposites.com .

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Websites featured in this article: www.gmscomposites.com

Photos & Captions:

Photo 1 (a) and (b)



Photo 1 (a) and (b) caption:

A GMS EP-250 epoxy carbon fibre prepreg tooling system is now used as an autoclave support tool for repairing a variety of composite parts, including a Boeing 777 leading edge wing flap section autoclaved at 177 °C (350° F).

Photo 2



Photo 2 caption:

GMS EP-250 epoxy prepreg tools have proved much more durable, lasting for well over 50 pulls, with no cracking, or loss of vacuum integrity on the tool.

About GMS Composites

GMS Composites is located in the Melbourne suburb of Dandenong South, Victoria, Australia, where R & D, production and warehousing operations are based. GMS Composites has been manufacturing epoxy prepregs for over 12 years and now has an established range of over 10 different prepreg resin systems, which cover a wide range of industries including: aerospace, defence, ballistics, rail, motorsport, automotive and tooling. GMS Composites also provide CNC machining services and distributes nationally across Australia a wide range of vacuum consumables, reinforcement fabrics, cores and mould release agents from leading global ancillary and reinforcement suppliers.

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