

PRODUCT OVERVIEW

COMPOSITE REPAIR MATERIALS FOR WIND TURBINE BLADES



COMPOSITE REPAIR MATERIALS OVERVIEW

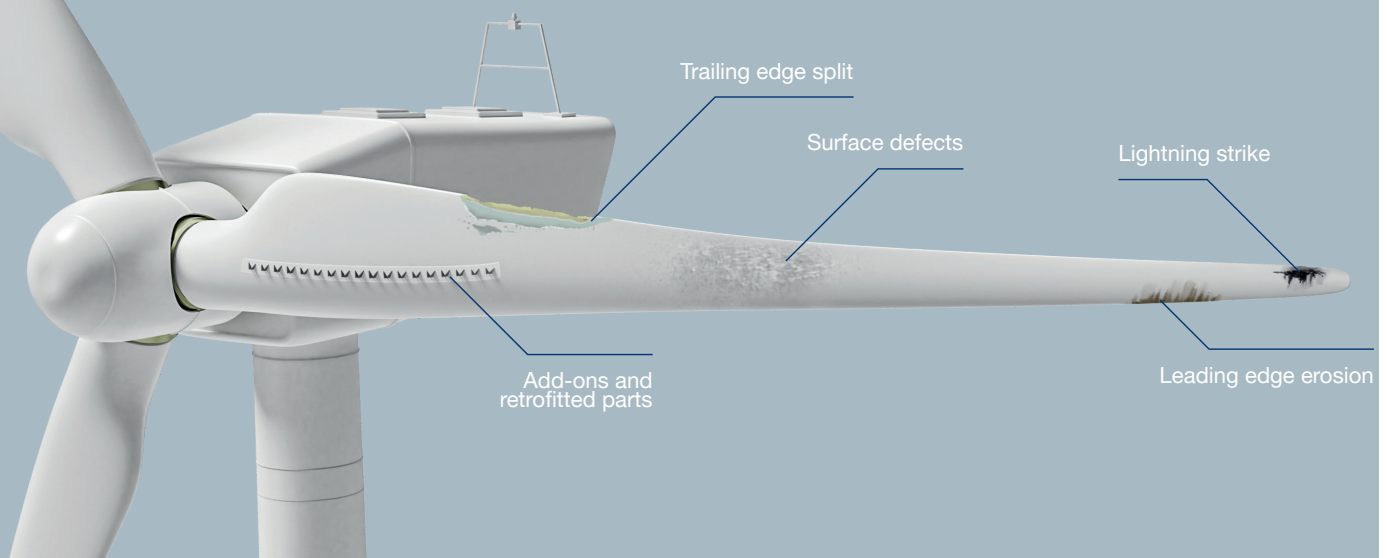
Gurit offers repair solutions that focus on achieving:

- Minimum turbine down time
- Consistent repair quality
- Ease of application
- Maximum weather window
- Minimum environmental impact
- Maximum operator health and safety









Through:

- Market leading product health and safety
- Practical repair packaging
- Easy processing through smart mixing and dispensing for heat-curing laminating systems
- Robust process for UV curing prepreg laminating, ideal for temporary repairs
- Technical support helpline
- Choice of two product streams, Heat and UV cured to suit the best repair scenario
- NEW cartridge dispense system for up-tower wet laminating, Ampreg™ 3X CDS
- NEW improved tools for up-tower UV curing, RENUVO™ prepreg laminating



HEAT CURED REPAIR SOLUTIONS

Gurit has a wide range of heat cured products that are OEM qualified and available globally through our distribution network. The range includes epoxy laminating, filler and adhesive systems.

		Application Temperature Range	Sizes	Speeds
				
	Ampreg™ 30**	5-30°C	600ml cartridge	Fast & Standard
			1.26kg & 4.66kg packs	Fast to X-Slow
	Ampreg™ 31		1.26kg & 4.66kg packs	Fast to X-Slow
	S'Fill 15-Minute	10-20°C	5L & 10L packs	Fast
	S-Fair 600		2L packs	Fast & Standard
	Spabond™ 440	10-20°C	400ml cartridge	Fast to X-Slow
	Spabond™ 730		600ml cartridge	Fast
	Spabond™ 5-Minute		400ml cartridge	Fast

** Also available in 600ml cartridge dispense system (Ampreg™ 3X CDS) - see below

AMPREG™ 3X SERIES

The AMPREG™ 3X range of laminating systems have excellent mechanical and thermal properties and good cure progression from ambient only cures. Additional features include:

- EASY MIXING AND APPLICATION**
 Gurit Ampreg™ 3X Laminating Series is available with a single range of hardener speeds from fast to extra slow. Small packs optimised for wind repair operations are available
- UV STABILITY**
 Ampreg™ 3X is UV stable for most wind repair applications for short periods of time, facilitating emergency repairs between routine maintenance windows, without topcoat and whilst retaining its mechanical properties

- LIGHT REFLECTIVE TECHNOLOGY**
 Gurit Ampreg™ 3X Laminating Series has Light Reflective Technology (LRT) as standard, allowing the material to fluoresce under UV light. This can be used for contamination checks, health and safety monitoring or for fast inspection of repaired parts
- EXCELLENT HEALTH & SAFETY**
 Gurit Ampreg™ 3X Laminating Series is free from SVHC's & CMR's
- AWARD WINNING**
 Gurit's innovative approach to prioritising user health & safety has been recognised and awarded the Composites UK Innovation in Composite Materials award
- CERTIFICATIONS**
 Ampreg™ 30 and Ampreg™ 31 are DNV-GL and Lloyd's Register certified

AMPREG™ 3X CDS CARTRIDGE DISPENSE SYSTEM







- 70% reduction of hazardous material and packaging waste
- 70% reduction in CO2 emission in packaging going from hard plastic containers to bags
- Elimination of human error of mixing and dispensing
 - Perfect mix ratio (pre-weighed)
 - Perfect mix quality (mixer nozzle)
- Clean application process
- Pot life advantages/extensions - taking stress out of laminating operation
- Reduction of numbers of hardener speeds needed



UV CURED REPAIR SOLUTIONS

Gurit's RENUVO™ UV curing solutions offers substantial time savings, expanded weather window for application and improved EH&S for the repair operations.

This market leading UV curing solution consists of RENUVO™ PP (prepreg), and RENUVO™ MPS (multi-purpose paste) primer solution. RENUVO™ offers a unique solution for robust, temporary and permanent up-tower repairs.

 5 MINUTE CURE	 Prepreg + Primer	Application Temperature Range	Sizes
	 OEM Qualified		
	RENUVO™ PP	5°C - 55°C	600gsm E-Glass UD & Biax
	RENUVO™ MPS	5°C - 55°C	310 ml cartridges
	RENUVO™ PP-MPS	5°C - 55°C	See above

Main steps for a RENUVO™ repair:

- A. **INITIAL PREPARATIONS** (like any repair scenario)
- B. **PREPARATION OF REPAIR PATCH** and vacuum consolidation (preparation area)
- C. **REPAIR AREA PREPARATION** for patch application (on-blade)
- D. **APPLICATION AND CURE OF REPAIR PATCH** to damaged area (on-blade, no vacuum)
- E. **FINISHING OPERATIONS** (like any repair scenario)

Using the RENUVO™ method, requires specialist training and equipment. Technical support, product and process training is available through HF Industri & Marine ApS (RENUVO distribution hub) , or from Gurit (UK) Ltd. See the Availability & Contacts page for more details.

RENUVO™ PREPREG LAMINATING SYSTEM

- Time saving and efficiency - ultimately saving up-tower/on-blade time and an expanded repair weather window
- In particular fit for temporary repairs:
 - Laminating repairs
 - Filling and fairing
- Improved health and safety - CMR free and removes risks of resin curing on ropes
- No need for vacuum or heating for up-tower laminating
- A quickly finished laminating repair up-tower/ on-blade, before fill, fair and final coating system application
- No hazardous waste

NEW IMPROVED TOOLS

- RENUVO™ Cure Lamp
 - Robust aluminium casing
 - Extended light array, width: 16.5 cm
 - Powered by 2 standard DeWalt/Milwaukee rechargeable hand tool batteries (to be carried up tower in a canvas belt bag)
- Repair Patch Preparation Tools
 - Silicone vacuum consolidating heater mat
 - Spike roller for air evacuation

Plus other useful tools.



AVAILABILITY & CONTACTS

HEAT CURED

- **PRODUCT:** The Gurit range of heat cured products including the Ampreg™ 3X series, S'Fill, S-Fair 600 and Spabond™ adhesive range are available globally through the Gurit distribution network. To find your nearest stockist, please visit www.gurit.com/contact

UV CURED

- **PRODUCT & TRAINING:** The Gurit RENUVO™ range of UV cured products are available to purchase from HF Industri & Marine ApS. For further details, demonstrations and training, contact: info@hfmarine.dk or: www.hfmarine.dk

FURTHER INFORMATION

- For more detailed information on Gurit materials for wind repair as well as the complete Gurit product portfolio, please visit: www.gurit.com/wind-repair
- For Technical Support please contact: technical.support@gurit.com
- For pricing or other enquiries, please contact: uk-customer.support@gurit.com



