



Wind Energy Repairs

Composite by apITec®
Patch 

Who are we?

2008

A chemical engineer specialized in thermosetting resins, a materials engineer in charge of the material selection and composite structures fabrication processes of America's cup boats and an epoxy resin manufacturer join their experiences to create a composite field repair system.



2011

After 3 years of R+D, AplTec™ Composite Patch SL. is formed and its patches are approved for repairs during the Volvo Ocean Race, the “Everest” of ocean races on board of the Telefónica 70' VOR and proves itself as a valid structural repair system during the race.

2012

International presentation on trades shows of JEC Europe, USA & ASIA and at the METS Amsterdam.

2013

Composite Patch is a success in the yachting market and is being used by 50% of the Vendée Globe 2012/2013 teams and of the Mini Transat 2013. It becomes a standard in polar expeditions thanks to its cold weather cure capability.

Composite Patch is introduced in industrial markets: military, aeronautic, wind power and petrochemical.



2014

The track record of composite patch repairs in all weather field conditions where extreme high humidity conditions with both freezing cold or tropical hot conditions has enabled Composite Patch to be selected as the SOLE on board repair system for all the teams of the 2014/2015 Volvo Ocean Race by the technical committee of the organization.

In partnership with the Spanish Technologic Institute of Aeronautics, Composite Patch launches optic fibre equipped patches for structures monitoring and repairs monitoring with Fibre Bragg gratings connectivity and other monitoring systems.



What is AplTec[™] Composite Patch?

- Composite patch is a permanent structural and fast repair system that works in any climate condition. Composite patch is composed of a sealed plastic pouch containing the exact amount of resin and hardener for the pre cut fibre patch and is ready to use. It enables specialist & non specialists to make quality repairs.
- Composite patch hardens fast in the coldest weather, under the rain or even underwater. Composite patch eliminates the need for resin & hardener pails, electronic scale, mixing cups, stirrers, rollers & brushes and cleaning solvents.



¿How to use Composite Patch?

Simple instructions are included in all patches orange tubes, behind the datasheet.

It is possible to perform structural repairs in under 5 minutes as proved during trans-oceanic races or on windblade repairs.

It may be used by specialists or non specialist alike, in extreme or everyday conditions.

The world's first error proof system, guaranteeing the constant repair quality.

	REMOVE CLIP nº 1
	MIX UNTIL COLOR IS HOMOGENEOUS
	REMOVE CLIP nº 2
	USE THE CLIP TO SPREAD THE RESIN ALL OVER THE FIBRE
	CUT & OPEN THE PLASTIC
	APPLY

Why chose AplTec[™] Composite Patch?

- Composite Patch enables to perform structural repairs with guarantee of constant quality by non composite specialist workers thanks to its error proof system.
- Composite patch may be used in all climate conditions: tropical countries, sub zero conditions, under the rain or even underwater.
- Composite patch is nearly as easy to use as a sticker: once mixed, it may be cut and repositioned as necessary before it hardens – like a pre-preg.
- 4 hours after its application it will obtain 90% of its mechanical properties at room temperature (23°C).
- Composite patch is the lightest repair system and does not create contaminated waste: no scales, mixing pots, rollers, brushes etc..



Why is AplTec[™] Composite Patch the most reliable repair system?

Because AplTec[™] composite patch contains the exact quantity of resin & hardener in the pouch, eliminating the risk of mixing error.

Why is AplTec[™] Composite Patch the easiest to use?

Because carrying AplTec[™] composite patch eliminates the need for carrying resin & hardener pails, scales, mixing pots, acetone, brushes and rollers to carry on a repair – and it reduces the waste material. Being totally enclosed, it reduces to minimum the risk of resin contact with the worker's skin, improving health and safety work condition.



Composite Patch field repair system for wind blades

1. No need of postcuring to obtain 100% of its mechanical properties.
2. Repairs all over the world with identical final properties, reducing the human factor – no more mixing ratio errors, always the same fiber/resin ratio.
3. Possibility to use manufacturer's specified fibre.
4. The harshest climate condition do not impede repairs, reducing dramatically commissioning, down times and repair costs.
5. It cures in freezing conditions and under the rain – elimination of the weather factor.
6. It may be painted.
7. It may be supplied in any RAL color pigmented resin.
8. It is ideal for field repairs.
9. No need for composite trained specialists.
10. It reduces contaminated wastes, improving health & safety.
11. An agreement with DHL enables to ship worldwide.





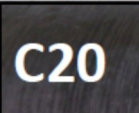




Sizes & Fibres

All patches are 21 cm wide and either 50 or 95 cm long as standard, in glass fibre or carbon fibre.

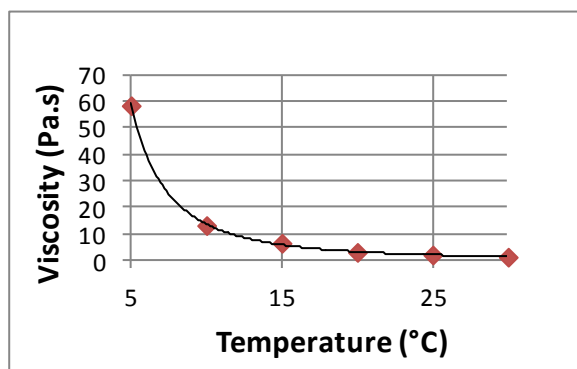
Non standard sizes up to 4 m long have been supplied, adapting to specific customer requirements, with specifically oriented fibres & fibre choices.

Other resin options such as high TG, self extinguishing, food grade certified, flexible or custom pigmented may be supplied.

 G10	E - Glass fibre	Complex shapes
	Type: Biaxial +/-45°	Weight: 600g/m ²
	Width: 21 cm	Length: 50cm
 G20	E - Glass fibre	Flat shapes
	Type: Quadriaxial	Weight: 800g/m ²
	Width: 21 cm	Length: 50cm
 C5	Carbon fibre 3k	Complex shapes
	Type: Twill 2x2	Weight: 200g/m ²
	Width: 21 cm	Length: 50cm
 C10	Carbon fibre 12k	Complex shapes
	Type: Biaxial +/-45°	Weight: 400g/m ²
	Width: 21 cm	Length: 50cm
 C20	Carbon fibre 12K	Straight shapes
	Type: Unidirectional	Weight: 450g/m ²
	Width: 21 cm	Length: 50cm
 C30	Carbon fibre 12k	Flat shapes
	Type: Quadriaxial	Weight: 800g/m ²
	Width: 21 cm	Length: 50cm
 B:ADH	STRUCTURAL EPOXY ADHESIVE	
	Adhesion promoter for secondary laminations	
	Density: 1,00 g/cm ³	Viscosity: 3.700 Mpa.s

Temperature, Viscosity and Working Time

It is advisable to keep the patch above 14° C for easy mixing. The graph below shows viscosity over temperature.



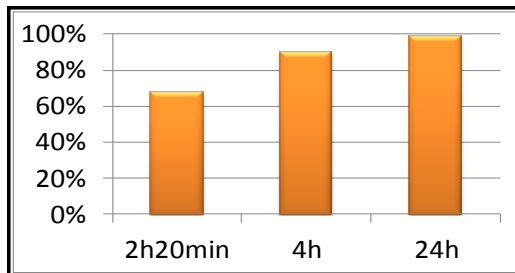
The table below shows how long the user have to use AplTecTM composite patch once the resin and hardener are mixed.

Temperature (° C)	Working time (hh:mm)
5° C	1h 20min
10° C	50min
22° C	35min
30° C	15min

Mechanical Properties

90% of the properties are obtained after 4h at 25° C.

Mechanical properties evolution VS time (at 25° C)



Time measures for 1 mm thickness test sample.

Reparation time depends on the temperature

Temperature (° C)	Curing time (hh:mm)
5° C	15h
25° C	4h
50° C	40min
100° C	5min

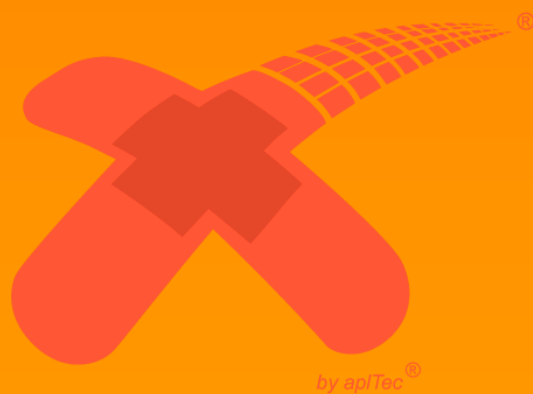
Reinforcement data	
Nominal area weight	600 g/m ²
Composition	Biaxial +/- 45°
Fibre type	E-glass
Nominal fibre density	2,55 g/cm ³

Resin properties	
Glass transition temperature	70° C
Nominal resin density	1,12 g/cm ³

AplTec composite patch Data	
Nominal area weight	1200 g/m ²
Nominal resin content	50% (weight)
Final thickness	0.7mm

Properties	Value	Standar
Lam. Compression Modulus	13,38 GPa	UNE-EN ISO 14126
Lam. Compression Strength	175,03 MPa	UNE-EN ISO 14126
Laminate ILSS	23,80 MPa	UNE-EN ISO 14130
Tensile strength	147,00 MPa	UNE-EN ISO 527
Tensile Modulus	12,34 GPa	UNE-EN ISO 527





CompositePatch

www.compositepatch.com

Composite Patch S.L.
C/ Carlos I, nº 2 Piso 6º Puerta 3
20018 Donostia-San Sebastián (Gipuzkoa)
Spain
Email: info@compositepatch.com
Telephone: +34 653600180



@compositepatch



facebook.com/compositepatch.apltec

