



Nomex® honeycomb carbon fibre panel made using XC130 prepreg and XA120 adhesive film.

- Industry-leading bond strength
- Service temperature up to 120°C
- Easy handling (4 week out-life)
- Minimal shrinkage, very low CTE
- Compatible with most prepregs

XA120 | PREPREG ADHESIVE FILM

XPREG® XA120 is a structural epoxy adhesive film used to provide a high strength bond between composite laminate and core materials such as aluminium honeycomb, Nomex® or foam core (such as Rohacell®). This adhesive film can also be used to provide additional resin around bonding fasteners and inserts or underneath peel-ply when using peel-ply to provide a secondary bonding surface.

XA120's advanced, toughened epoxy formulation results in outstanding bond and peel-strength at the very forefront of adhesive film performance.

This adhesive film prepreg is suitable for autoclave, oven or heated platen press cure at temperatures from 80°C to 120°C. XA120 cannot be cured at room temperature.

STANDARD SPECIFICATION

XPREG® XA120 is held in stock in the following specification:

SKU	Resin Weight (gsm)	Scrim	Width (mm)
XA120-GPL-150(1250)	150	13g Glass	1250

CURING

Recommended initial cure is 8hrs at 90°C (ramp rate 2°C/min). Where the maximum Tg is required, a post cure of 120°C for 1hr should be followed (ramp rate 0.3°C/min).

CURE CYCLES AND RESULTS

Cure	Comments	Duration	Tg
80°C	(minimum)	16 hours	90°C
90°C		8 hours	100°C
100°C		4 hours	110°C
120°C	(maximum)	1 hour	120°C
120°C	Post cure	1 hour	120°C

Cure cycles listed are a guide only and are subject to a number of factors. Ramp rates should not exceed 3°C per minute during initial cure and 0.3°C per minute during post-cure.

TECHNICAL SPECIFICATION

GENERAL PROPERTIES

Cure temperature range	80°C to 120°C
Maximum service temperature	120°C (after post cure)
Out-life (at 20°C)	30 days
Freezer-life (at -18 °C)	12 months
VOC content	Very low (solvent free)

CURED MECHANICAL PROPERTIES

Tests performed on XA120-GPL-150(1250) cured sample.

Test	Standard	Results	Units	Result
Climbing Drum Peel	ASTM D3165	Peel Strength (L)	N	437
	ASTM D1781	Peel Strength (L)	N	538
DMA	AITM 1-003	Tg Storage Modulus Onset	°C	141
		Tan Peak	°C	150

STORAGE & HANDLING

When not in use, XPREG® prepregs should be kept frozen at -18°C (0°F) in sealed plastic packaging. When ready to use, the material should be removed from the freezer and allowed to thaw fully to room temperature before being removed from the packaging.

Remaining material should be re-sealed before returning to the freezer to avoid the risk of moisture uptake.

SAFETY INFORMATION

This material contains uncured epoxy resin which can cause allergic reactions with skin contact. Repeated and prolonged skin contact must be avoided.

Please refer to the product safety data sheet before working with this material.

PROCESSING GUIDELINES

WORKING WITH PEEL-PLY

Most construction methods using a honeycomb core one or both skins of the laminate to be cured first before a second cure to bond the honeycomb to the skins. When following this procedure, peel-ply can be layered onto the laminate where the adhesive film will be used to aid with bonding and eliminate the need for surface preparation. If a peel-ply is not used to provide a bonding surface for the adhesive film then the surface of the laminate should be prepared by keying the surface using a coarse abrasive paper once the laminate has been cured.

The use of peel-ply will absorb some of the resin from the laminate. Testing has shown that peel-ply applied to the reverse (inside) of a laminate made up of three or more plies will not affect the surface finish of the component. Peel-ply applied to the reverse of a laminate of only one or two plies will absorb some of the resin needed for the laminate itself and therefore could locally affect the surface finish (causing pin holing). In this situation, an additional layer of XPREG® XC120 Prepreg Adhesive Film can be positioned under the peel ply at the time of laminating the inner or outer skin in order to provide additional resin content.

Nylon 66 peel-ply such as AeroFilm® PP230 Aero-Grade Nylon 66 Peel-Ply due to the increased ease with which this grade of peel-ply will release from the prepreg.

HONEYCOMB CORE CONSTRUCTION METHODS

2-Shot Cure Process

The simplest construction method for a honeycomb-cored panel or component is a '2-shot' cure. In a 2-shot cure the outer (visible) skin of the panel is laminated and cured first before the adhesive film, core material and inside skin laminate are added to the cured outer skin, vacuum bagged and then oven (or autoclave) cured for a second time.

The advantage to this process is that the component requires only two vacuum bagging and cure cycles and the process does not require a separate mould for the inside skin. The disadvantage however is that the laminate of the inside skin will be pressed into the honeycomb structure as it cures resulting in less flat fibre alignment, known as crimping. Crimped fibres in a laminate can straighten under tension, reducing the tensile modulus of the laminate and therefore the overall stiffness of the completed panel.

To prepare the laminate for bonding to the adhesive film, a peel-ply is usually layered onto the inside of the laminate before vacuum bagging (see notes about peel-ply in previous section).

Once the laminate is cured, the peel ply is removed leaving the bonding surface. The XA120 adhesive film is positioned onto the textured bonding surface left by the peel ply. The honeycomb core (Nomex®, aluminium etc.) is then placed into the adhesive film. To create the inside skin, XA120 adhesive film is positioned over the honeycomb and the remaining plies of prepreg are laid directly onto the uncured adhesive film. The structure is then vacuum bagged and oven (or autoclave) cured to cure the adhesive film and the inside skin prepreg laminate.

3-Shot Cure Process

More sophisticated honeycomb core constructions require a 3-shot cure process whereby the inside and outside skins are laminated and cured separately before then being combined together with the honeycomb core using adhesive film before being vacuum bagged and oven (or autoclave) cured to flow and cure the adhesive.

The advantage to a 3-shot cure is that the inside and outside skins of the panel or component are cured with full consolidating pressure evenly distributed across them. Because the laminate is cured against a flat mould-surface, the fibres remain straight, maximises their mechanical performance. The disadvantage to this method is the requirement for a separate mould for the inside skin and the need for a total of 3 vacuum bagging and cure cycles (although both inside and outside skin components could be cured at the same time).

The bonding surfaces of the cured skins should be prepared in advance using peel-ply or otherwise will require keying with abrasive paper to allow the adhesive film to bond properly.

Disclaimer

This data is not to be used for specifications. Values listed are for typical properties and should not be considered minimum or maximum.

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