



Supporting the **composite industry**

## Vacuum Bagging Materials

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## • Vacuum Bagging Films

A vacuum bagging film is the flexible membrane used to provide a gas-tight barrier, which allows component processing within a vacuum environment. The preferred material of choice for vacuum bagging films is nylon due to its very low gas permeability combined with its strength, flexibility, elongation and high temperature resistance.

For high temperature applications in excess of 200°C, VAC Innovation offers a range of nylon, mono-layer films, and for applications up to 170°C, a range of nylon-based, co-extruded films.

For lower temperature applications, up to 120°C, VAC Innovation offers a range of specially blended nylon co-polymer films. VAC Innovation vacuum bagging films are available in a range of formats such as flat sheet, folded sheet and lay-flat tube, and a wide range of sizes from 25mm (1”) to 16m wide.

Product Name	Decription				Maximum use temperature	Elongation at break	Colour
	Material	Thickness	Width	Forms			
<b>VACTiteLTG</b>	Mono-layer, nylon blend	75µm	from 2000mm to 16000mm	SHT, V Sheet, Gusseted Sheet	120	500%	Green
<b>VACTiteSRG</b>	Self releasing multilayer nylon	70µm	from 86mm to 450mm	Gusseted Folded	160	350%	Green
<b>VACTiteO</b>	Multilayer nylon	50µm / 75µm	from 95mm to 4600mm	LFT, V Sheet	170	410%	Orange
<b>VACTiteG</b>	Heat stabilized nylon	50µm / 75µm	from 25mm to 2300mm	LFT	200	465%	Green
<b>VACTiteP</b>	Mono-layer, heat stabilized nylon	60µm	from 1500mm to 2300mm	LFT	205	425%	Pink
<b>VACTiteUltraP</b>	Mono-layer, heat stabilized nylon	50µm	from 50mm to 1320mm	LFT	205	190%	Pink

## • Release Films

A release film is used primarily to ensure that the breather fabric and other consumables do not bond to the curing resin. By use of various perforation patterns within the release film, it can also be used to control the amount of resin that is allowed to be drawn out of the laminate (and absorbed into the breather/bleeder fabric), to achieve the correct fibre ratio within the cured laminate.

The VAC Innovation range of release film covers a wide range of application processes and temperatures. For high temperature applications, VAC Innovation offers a range of high specification, cast fluoropolymer release films, made of ETFE, FEP and PTFE. As a standard, the ETFE film is blue in colour, whereas the FEP and PTFE film are standard in red. Other colours can be produced upon request.

For lower temperature applications (up to 150°C), VAC Innovation also offers a specially blended range of release films suitable for a wide range of processes, from resin infusion through to autoclave pre-preg. The standard colours are blue for the VACleaseLTB (suitable for up to 100°C) and yellow for the VACleaseLTY (suitable for up to 150°C).

Product Name	Decription					Available perforations	Maximum use temperature	Elongation at break	Colour
	Material	Thickness	Width	Forms	Method				
<b>VACleaseLT28B</b>	Polypropylene	28µm	1500mm	SHT	Resin infusion and prepregs	NP / P3	100	560%	Blue
<b>VACleaseLT30Y</b>	Polypropylene	30µm	1500mm	SHT	Resin infusion and prepregs	NP / P3	150	500%	Yellow
<b>VACleaseB</b>	ETFE flouropolymer	15µm / 20µm	1200mm	SHT	Most commonly used resin systems	NP / P3	210	300%	Blue
<b>VACleaseR</b>	FEP flouropolymer	15µm / 20µm(*) / 25µm	1200mm	SHT	All commonly used resin systems	NP / P3	230	300%	Red
<b>VACleaseMRR</b>	PTFE	25µm / 50µm	1220mm	SHT	All commonly used resin systems	NP	315	400%	Red

## • Breathers & Bleeders

Breather fabrics are essential air flow media, which provide a flexible pathway through which the air and volatile gasses can be successfully removed. They enable an even vacuum level across the component surface i.e. they prevent localised air entrapment – “lock off”.

Breather Fabrics generally are of a non-woven construction, which allows the fabric to stretch and conform to complex shapes, and are supplied in various synthetic materials, in a choice of weights depending upon the process temperature and pressure requirements. These same fabrics can also be utilised as a “bleeder” layer during component cure to absorb any excess resin.

Product Name	Decription			Maximum use temperature	Nominal thickness (uncompressed)	Colour
	Material	Weight	Width			
<b>VACBN10</b>	80% Nylon, 20% polyester	335 gr/m2	750mm - 1500mm	200	4.2mm	White
<b>VACB4</b>	100% polyester	150 gr/m2	100mm - 220mm - 750mm - 1500mm	200	2.5mm	White
<b>VACB10</b>	100% polyester	340 gr/m2	50mm - 70mm - 100mm - 120mm - 750mm - 1500mm	200	4.0mm	White

## • Release Fabrics & Peel Plies

Peel-ply fabric is used to create a textured (or “broken”) finish on the B (non-tool) surface of the composite component. This greatly reduces the amount of surface abrasion required (or even eliminates it altogether) when preparing the component for painting or secondary bonding (to foam or honeycomb cores etc, or to another composite surface). To achieve this type of surface finish, typically a peel-ply fabric with a weight of approximately 80 to 90 grams per square metre (gsm) is used.

Peel-ply fabric is also used to achieve a more aesthetic component finish, by preventing the imprint which is otherwise created by the release film and breather fabric on the B surface of the component. This is generally when the component is to be left unpainted, and when a matt B surface is acceptable. To achieve this type of surface finish, typically a peel-ply fabric with a weight of approximately 60gsm is used.

Product Name	Decription				Maximum use temperature	Colour
	Material	Weight	Width	Method		
<b>PeelplyN64ps</b>	Nylon	64 gr/m2	from 50mm to 1000mm	Most commercial resin systems	190	White with red pin-stripe
<b>PeelplyN85</b>	Nylon	85 gr/m2	from 25mm to 1500mm	Most commercial resin systems	200	White with red pin-stripe
<b>PeelplyP90</b>	Polyester	90 gr/m2	from 50mm to 1650mm	Epoxy, phenolic and polyester	210	White with green and orange pin-stripe, or plain white

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## • Sealant Tapes

Sealant tape is used to create a vacuum integral seal between the vacuum bagging film and the tool surface (“bag to tool”), or to seal the vacuum bagging film to itself (“bag to bag”) to form an “envelope bag” (within which the part is processed).

The VAC Innovation range of sealant tapes has been especially formulated to encompass a wide spectrum of applications and temperatures, from vacuum only at ambient temperature (such as debulk and infusion); through to autoclave cures at over 12 bar pressure and in excess of 200°C.

Product Name	Description			Maximum use temperature
	Size	Colour	Rolls / Case	
VACsealB	3mm x 12mm x 15m	Black	22	150
VACsealG	3mm x 12mm x 15m	Grey	24	160
VACsealB-B4	4mm dia. x 12m	Black	30	150
VACsealY-40	3mm x 12mm x 7.5m	Yellow	40	205

## • Release Tapes & Flash Tapes

**PTFE release tape** – also known as tool release tape, is used to provide a smooth multiple release surface on most tooling substrates including tooling board. PTFE release tape provides a lay-up surface from which all resin systems will release. The high elongation of PTFE release tape enables ease of application around complex contours. It is commonly used to build up a tool surface locally – e.g. to allow the moulding of a joggle-joint in a multi-part component.

**Flash Tape** – is used to cleanly break off excessive resin flash around the edge of part or adhesive flash alongside a bond line. Due to the high temperature capability of both the tape film and the adhesive, flash tape is also used extensively to hold other vacuum bagging materials in place (either taped to each other or to the mould tool) during the oven or autoclave cure.

VAC Innovation flash tapes can be stripped cleanly from the mould tool following such a cure, without leaving an adhesive residue.

Product Name	Description					Maximum use temperature
	Total Thickness	Colour	Carrier type	Adhesive type	Width	
FT YSX	86µm	Yellow	Polyester	Silicone	25mm - 50mm	200
FT BS	63µm	Dark Blue	Polyester	Silicone	12.5mm - 25mm - 50mm	200
FT TS	75µm	Turquoise	Polyester	Silicone	12.5mm - 25mm - 50mm	200
FT GS	87µm	Green	Polyester	Silicone	24mm - 36mm - 48mm	200
RT PTFE	85µm	Bronze	PTFE	Silicone	from 12.5mm to 305mm	260

## • Vacuum Hoses & Valves

**Vacuum Hoses** – provide a flexible, vacuum integral means of linking the vacuum connector within the vacuum bag to the fixed vacuum source – the vacuum pump directly, or the oven or autoclave vacuum ports. VAC Innovation supplies various types of hoses to suit different temperature requirements.

**Vacuum Connectors** – also referred to as vacuum breach units (VBUs) or vacuum valves, provide a vacuum integral connection through the vacuum bagging film, in order to allow the composite laminate to be evacuated.

**Plugs and Sockets** – also known as Vacuum Valves or as Quick Disconnects (or even vacuum sniffers), are self-closing (spring-loaded), non-return valves. When the vacuum Plug and Socket are connected together, the spring-valves are opened to allow flow to the vacuum source (pump). When disconnected, the spring-valves self close to provide a vacuum seal.

Product Name	Description			
	Material	Max. Pressure	End Fitting	Temperature
VACHoseSIL	Silicone	up to 12 bar	1/4 inch male BSPP	230
VACHoseHT	PTFE	up to 12 bar	1/4 inch male BSPP	300
VACconnector	Steel top piece / Aluminium base plate	N.A.	1/4 inch male BSPP	260
VACplugB	Brass body - Viton seal double O-ring	N.A.	1/4 inch female BSPP	210
VACsocketB	Brass body - Viton seal double O-ring	N.A.	1/4 inch female BSPP	210

## • Miscellaneous Infusion Products

Product Name	Description
Scissors	Scissors 6"-8"-10" for cutting carbon & aramid fabrics.
Silcon60	Uncured silicone rubber intensifier material - colour Orange - max. Temp. 230 °C.
InfmeshD227G	High-speed resin flow, compatible with both polyester and epoxy infusion resins.
VACgauge63	Portable, 63mm diameter, analogue vacuum gauge that is glycerine filled for shock resistance.
Leak Detector	VPE hand-help, battery operated, ultrasonic leak detector supplied complete with head-phones and storage cage
Cutting Surface	Polyurethane sheet, "self-sealing", cutting surface. Silicone-free. 80° shore A hardness. Different size different thickness.
VACpot10	VACpot10 Bespoke resin catch pot / degassing pot 10 litre volume (250mm diameter x 200mm high)
VACregulator	Maintains a reduced set level of vacuum without drawing air through the vacuum pump
VACGripPC1 & VACGripEG3	It is primarily used during resin infusion processes to hold dry materials in place. 500ml cans with an adjustable spray nozzle.

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# Supporting the Composite Industry



## Outstanding Support

VAC Innovation Ltd supports the composite and glass laminating industries with a range of vacuum bagging process materials all developed to provide a technical solution at a highly competitive price.



## Technical Expertise

For further information relating to any of the VAC Innovation range of vacuum bagging consumables or ancillary products, and to find out how they may be a benefit to your manufacturing process, please do not hesitate to contact us.



## Assured Quality

VAC Innovation has a reputation for superior quality of products and service. This has established its position as the preferred supplier of vacuum bagging process materials to many diverse companies within the composite industry.

VAC Innovation Ltd supplies processing materials suitable for the production of glass fibre, carbon fibre and aramid fibre components, manufactured using either epoxy, phenolic, vinyl ester or polyester resin systems. VAC Innovation materials are also ideally suited to glass laminating applications.

For further information relating to any of the VAC Innovation range of vacuum bagging consumables or ancillary products, and to find out how they may be a benefit to your manufacturing process, please do not hesitate to contact us. We will be pleased to discuss your requirements and will assist wherever possible.

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Mimar Sinan Mh. Üsküdar Cd. Yedpa Ticaret Merkezi D-Cd. No:139  
34779, Ataşehir / İstanbul



[www.limitech.com.tr](http://www.limitech.com.tr)



[info@limitech.com.tr](mailto:info@limitech.com.tr)

