# VAC-SIL®

# Smart Membranes

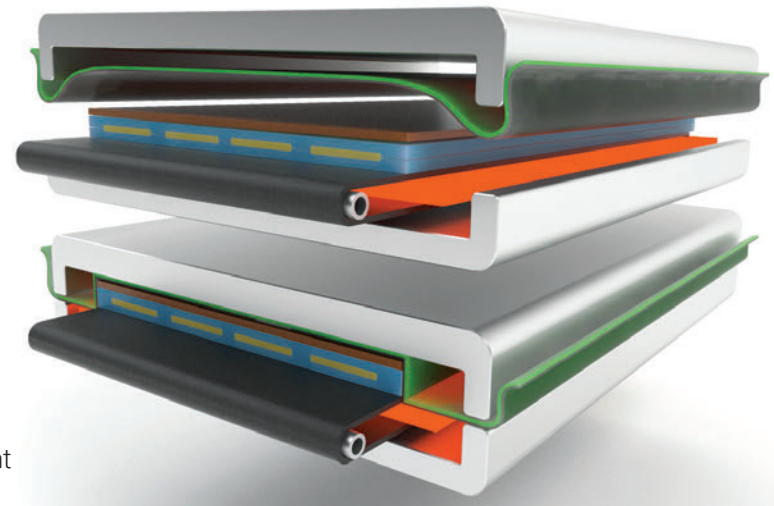
## Installation Guide and Frequently Asked Questions

# VAC-SIL® Installation Guide

The following guidelines are based on our observations and experiences in the Solar Industry and we try to give you assistance based on best practice.

## Receipt, Inspection And Storage

- Goods inward inspection should be carried out as soon as the products arrive from J-Flex.
- Check the condition of the ordered Membrane, sizes and quantity supplied.
- It is important to check that each Membrane is marked with the re-assuring VAC-SIL® brand name. VAC-SIL® is your guarantee of quality.
- Each VAC-SIL® Membrane is allocated a traceable batch number. Apart from being one of the 9 point quality checks - this item can be fully traced back to the raw material batch used; the production date and final inspection process. Therefore in the unlikely event of a problem it is vital that you quote this traceable batch number.
- Store VAC-SIL® Membranes inside the original packaging. Do not place heavy objects on the packaging.
- Store in dry, clean conditions and in temperatures as near ambient as possible, away from direct sources of heat such as boilers, radiators and direct sunlight.
- Generally in accordance with ISO2230 and if stored as above, a minimum shelf life of 10 years can be considered.



## IMPORTANT:
## Before/During Assembly

- Switch the laminator to the “Manual” mode of operation.
- Ensure no modules located in laminator or on the conveyor belts.
- Remove the old membrane.
- Load VAC-SIL® PRO Blue Membrane **with the fabric impression (matt textured) face down against the module surface.**
- Load VAC-SIL® Lamin8 and Endurance Plus Membranes **with the black coloured EVA and Acid resistant face down against the module surface.**
- Place the new membrane spread out on the heating plate and heat laminator to 140°C for approx. 30 minutes.
- Flatten the membrane out and heat again for 30 minutes.
- A total of at least 1 hour can prevent wrinkles caused by insufficient stretching.
- After heating the membrane needs to be stretched by about 1% to effect installation.
- Further protection and life expectancy can be guaranteed by inserting a PTFE / Fabric release sheet between the membrane and module. See service and maintenance notes below.

## Install in accordance with the Manufacturers Instructions - taking care to ensure the following:

- Not to pull the membrane too tightly.
- Ensure it is tensioned sympathetically.
- Do not subject the membrane to heavy tensile loading.
- To recognize if any long-hole formation (bearing stress).
- Ensure the membrane is not sagging.
- That threaded bolts are aligned with respective bolt holes of the laminator cover.
- Maybe worth ensuring that the top chamber is always set at vacuum so when opened this will keep the membrane lifted by vacuum and stop it sagging.
- That screws are not over torqued.
- Check that vacuum in top and bottom chambers is appropriate to the membrane - excessive pressure can seriously overload the membrane and shorten its life expectancy.
- Never try to operate vac or press without ensuring the holding / fixing arrangements are properly fixed / tightened.
- It is important to follow prescribed instructions or it may shorten the life expectancy of the membrane.
- Whilst installing a membrane try and maintain a slight 2% droop angle.
- After installation it may need several closures to check that the membrane is not wrinkled & has created a good vacuum seal. If a wrinkle or sag of more than 2% is observed, stretch the blanket and rectify accordingly.
- Remember the “variables” in the lamination process - temperature; time; pressure (upper & lower chambers) + type of encapsulant. All of these aspects could have an affect on the membrane performance.
- Ensure at all times that when the top chamber is closing it should be at VAC position. Ensure that sag / droop / extra blanket should not get stuck between top and bottom chamber.
- Blanket can be stretched between 3 to 5% depending upon the length and width of the membrane.
- In the laminator if the stretching is achieved by the cylinder ensure the correct pressure is set to achieve the required stretching.
- If everything is good to go, commence production.

## Service & Maintenance

VAC-SIL® Membranes are wear and tear consumable parts, but to obtain maximum service life we recommend routine inspection each shift.

Best performance of Membranes is achieved by continuous running of laminator at the normal process temperature (140°/150°C). ‘Stop start’ production where temperature drops and is then ramped up again can shorten the rated performance by 500 /800 cycles. It is also necessary to check and restore vacuum to the designated process temperature for more than 2 hours before re-commencing production.

Regular cleaning of EVA deposits could help. If deterioration is spotted, spare parts can be ordered in time so that membranes can be changed at the first available opportunity.

Re-tensioning the membrane regularly can alleviate the stresses that attack the usual corner / side weak points.

Avoid sharp edges and to clean EVA stuck on the membrane.

To extend life of membrane, insert PTFE / Glassfabric between the membrane and modules to avoid the contamination caused by EVA residue. J-Flex have stock options available - just ask us.

Ensure that there are no breaks, cracks or holes in the PTFE belt to avoid seepage of EVA coming into direct contact with the membrane.

# VAC-SIL® Frequently Asked Questions

Answers to a selection of questions relating to VAC-SIL® Membranes.

## What thicknesses and tolerences are VAC-SIL® membranes made to?

**VAC-SIL**® Membranes are manufactured in accordance with International tolerance standards - (+/-10%) - and these are confirmed for the most popular thicknesses as follows:-

VAC-SIL® Supreme
1mm

VAC-SIL® Pro
1.5mm & 3mm

VAC-SIL® Lamin8
Fabric Reinforced: 3.8mm

VAC-SIL® Endurance
Fabric Reinforced: 4.0mm

## What standard of packaging can you expect with VAC-SIL® Membranes?

Membranes are rolled onto a cardboard tube interleaved with polythene, then packed inside a heavy duty cardboard tube, which is then packed inside polypropylene sacking.

## What is the correct way to store stocks of VAC-SIL® Membranes?

After goods inward inspection of membranes upon receipt, we suggest you store inside the packaging. We then recommend you store in accordance with ISO2230, which generally suggests "storage temperature should be below 25°C and products should be stored away from direct sources of heat such as boilers, radiators and direct sunlight."

If you need further help with this, please ask - we are here to help.

## How are the physical properties of VAC-SIL® Membranes measured?

J-Flex use tangible world class rubber norms to measure the physical properties of VAC-SIL® Membranes - typically ISO or ASTM specifications.

## Are the ingredients used in VAC-SIL® Membranes safe and fit for purpose?

This is a very good question and we confirm that most of our recipe ingredients are of European origin. As such we have fully traceable Material Safety Data Sheets (M.S.D.S.) and these are available upon request.

All of the raw material ingredients have been tested for compliance and guarantee that no banned substances are included in our finished product.

## What is the best membrane for your application?

A VAC-SIL® Membrane of course!

This is a vital question though, and there is no one answer that is right for everyone. There are many factors that can effect the choice of membrane, for example :-

- type of encapsulant (EVA etc.)
- make up of p.v. / solar module
- type of laminator
- operating cycle - time/temperature
- budget constraints

We would be delighted to discuss your own specific requirements further.

## How long should a membrane last?

This is really very subjective as operating conditions and controls can be so very different from company to company. For example we have one very large European customer who has modified the encapsulant used and strictly controls their production process - so much so **they achieve over 10,000 cycles using our standard VAC-SIL Pro®** Membranes.

Membrane cycle life can be variable as there are many factors outside of our control. The improved performance of the material offers the potential for significant and proven improvement, depending on the operating conditions.

See our Guides:
"Solar PV Module Lamination Membranes - Optimising Performance"
"Reducing the total cost of ownership of a Solar/PV Laminator"
Also our handy
VAC-SIL® Membranes Specification Sheet - all available on request or via our website Downloads section.

# VAC-SIL® Frequently Asked Questions

continued...

## What can be done to extend the life of membranes?

A whole host of things can be done including - correct fitting and tensioning, regular maintenance checks, regular cleaning of EVA deposits.

In addition you could protect the membrane with a layer of PTFE / Fabric release sheet between the modules and the membrane. (We do have stock options available - just talk to us).

If you need EVA resistance our VAC-SIL® Lamin8 and Endurance Plus membranes have great resistance to outgassing and give far better life than standard membranes. See test results on the VAC-SIL® membranes Specification Sheet.

## Is it wise to use membranes with seamed joints?

In our opinion joints are mechanically weak areas. Continuous "draw down" under vacuum condition s will search out any weaknesses in the seam and lead to early membrane failure.

In addition seams can sometimes leave unwanted impression marks on modules - NOT what you want!

For J-Flex, one piece sizing is not a problem. We can offer VAC-SIL® membranes up to 3850mm wide in one piece.

## Does colour or surface finish have any impact on membrane performance?

Based on feedback from customers worldwide, we can see no advantage or disadvantage of different colours, or indeed surface finish. For this reason we offer:-

**VAC-SIL® Supreme**
in Black *

**VAC-SIL® Pro®**
in Blue

**VAC-SIL® Lamin8**
Fabric Reinforced in
Green/Black

**VAC-SIL® Endurance Plus**
Fabric Reinforced in
Orange/Black

## WHY?

Most of our competitors offer a standard Grey or Translucent and this makes it very difficult to differentiate between suppliers. J-Flex offer these distinctive colours to distinguish materials. For better or worse J-Flex don't hide away from our responsibilities.

It is vital that VAC-SIL® Lamin8 and Endurance Plus membranes are loaded with the black coloured Acid / EVA resistant face down against the module surface.

We find the question of surface finish interesting - but in conclusion we see no evidence that one option is better than another. Common sense says that a fabric impression will provide a natural venting path to aid release especially in hot / sticky conditions. Most of our customers do prefer fabric impression 1 side and smooth the other side.

The physical properties of the material will be exactly the same irrespective of colour or surface finish - these do not change.

* **VAC-SIL® Supreme** is not suitable for Solar P.V. panel production, it is purely for vacuum forming of composites and surface finishes within the Automotive, Furniture, Marine & Aerospace markets.

# Get Smart - Get VAC-SIL® Quality Membranes

**Download now at www.j-flex.com**

- our VAC-SIL® Installation Guide & FAQs
- All Material Specifications
- Plus our White Papers;
  - Solar PV Module Lamination Membranes - Optimising Performance"
  - Reducing the total cost of ownership of a Solar/PV Laminator


VAC-SIL® membranes by provide superior performance, not only in the Solar Panel industry, but also for:

**Automotive Sector** - *in the production of interior components and chassis tubs, using laminates and composites.*

**Furniture Lamination** - *used for the process of applying decorative foil veneer finishes to kitchen doors and carcasses.*

**Marine applications** - *applying decorative foil veneer finishes within yachts and ships, (tables, instrument panels, cupboards, etc.).*

**Aerospace** - *for the application of veneer finishes to aircraft interiors, (area divider panels, tables, cupboards, consoles, trims.etc.)*




## Do you have unique requirements?

We specialise in unique and unusual requests
Get in touch and put our experts the test!

Established in 1984, J-Flex is a privately owned company involved in the manufacturing & distribution of high end sheet products. Over this time our manufacturing facility has gained an enviable reputation for high quality elastomeric sheets and PTFE fabrics & belts.

Our Production Facilities are laboratory controlled and we are ISO9001 approved. J-Flex is also a member of the official Chemours Viton™ licensee programme.

J-Flex currently exports to over 50 countries worldwide.

Each VAC-SIL® Membrane from J-Flex passes a 9 point Quality Plan ensuring the best quality possible time after time. VAC-SIL® Quality Membranes conform to current Reach / SVHC requirements.

An active R & D programme keeps J-Flex at the forefront with top quality & innovative product offerings.

Sounds like perfection:
Sounds like J-Flex

CYBER ESSENTIALS

bsi ISO 9001 Quality Management Systems CERTIFIED
RS 27920

Viton™
Partner of Viton,™ a Brand of the Chemours Company

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