

## **Bubbles Because Of Bad Vacuuming, EVA Laminated Glass Safety Glazing Case Study and Solutions By Peter Lin**

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Summary:

The bubbles of laminated glass with EVA interlayer film happened because of bad vacuuming, and the bad vacuuming was because the vacuum pump was completely choked.

The solutions is to clean the vacuum pump and renew it.

<http://www.evafilms.com/bubbles-because-of-bad-vacuuming-eva-laminated-glass-safety-glazing-case-study-and-solutions-by-peter-lin/>

Dear Peter

We really suffer with the wastes in laminating glass with EVA interlayer film. Every week we recycle a big volume of laminating glass because of the bubble problem.

Most of them are Tempered glasses. However we can't understand why some of laminated glass come up with good lamination in the end of the laminating cycle but some of them wrinkled and bubbles between two glasses. We use 0.76EVA+0.38EVA for tempered glass and never single 0.38EVA interlayer film.

We don't understand the reason of this problem. In attachment I send you the images of the bubbled laminated glass we got last 2-3 cycle.

The heating process is like below :

30 minutes till 60 C

15 minutes stay in 60 C

45 minutes till 133 C

70 minutes stay in 133 C

Then cooling and keep vacuuming till 30 C

Can you suggest us where the problem could be.

Best Regards

Glazing E

Following are the photos of the failed laminated glass with bubbles:



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Dear Glazier E

Our first analysis is: The vacuuming system is not strong enough. According the photos of laminated glass you sent to us, the bubbles area was big and gathered in one place, and close to edges, because the vacuuming is not strong enough to vacuuming them out. Please check your vacuuming value and the vacuum pump to see if it's working well.

And we need to ask you some more questions to analyze the situation:

It's the bubbles close to the position of the heating pipe of the oven?

Is the heating of the oven not well-distributed?

How many combinations of pre-laminated glass was put in each silicone vacuum bag?

Dear Peter

Here is the answer:

The vacuum indicates the minimum on the scale.

There are wrinkles mostly and they are close to the edges. You are right .

We will check the rotation of the air pumps.

We put mostly the two couple of laminated glasses on top each other. I mean in one floor two levels (6+0.76+6) to the top (6+0.76 + 6).

Soon another email came from the Glazier E.

Dear Peter

Thank you very much for your kind assistance. We really appreciate it highly and we are really happy of cooperation with you.

We checked the vacuum pump and the Filter was completely choked. Today we cleaned it and will load some glasses in order to control the process. Now the problem is well solved.

Thank you for your professional help.

Dear Glazier E

You are always welcome. We are always here for you.

Peter Lin

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CNC Glass Interlayer



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www.cncglass.com    www.c-n-c.com

1-Super clear eva glass interlayer film, for both indoor and outdoor laminated glass application;

Super Clear EVA Film for Massive Lamination

EVAFORCE SUPER+

\*Super Clear EVA Film for Massive Lamination

\*Massive,Largest sold quantity in all EVA films

\*Great performance with affordable price

\*Aim for architectural safety laminated glass

\*Applied both indoor and outdoor

\*Replacing PVB Film

Super Clear EVA Film for Tempered Curved Glazing

EVAFORCE EXTREME

\*Super Clear EVA Film for Tempered Curved Glazing

\*Less overflowing during vacuuming heating

\*Strengthened safety mechanical properties

\*Recommended for extreme environments, safety tempered glazing or curved glass laminating

\*Applied both Indoor and Outdoor

\*Replacing PVB Film

Super Clear EVA Film for Graphic Insertions

EVAFORCE LOW80-120

\*Super Clear EVA Film for Graphic Insertions

\*Laminating both at 80° C and at 130° C

\*Protect the insertions from above 100° C

2-White eva glass interlayer film, for both indoor and outdoor laminated glass application;

\*Milky White/White Opaque EVA Film

0% Visible Light Transmittance

\*Sandblasting White/White Translucent EVA Film

65% Visible Light Transmittance

\*Super Milky White/Super White Opaque EVA Film

0% Visible Light Transmittance

\*Arctic Snow White Translucent EVA Film

78% Visible Light Transmittance

\*Cool Jade White/Cool Acid White Translucent EVA Film

81% Visible Light Transmittance



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3-Thermal cutter for trimming laminated glass edges overflowed remains;

4-Green tape for fixing laminated glass, high temperature resistance;

