



VIRACON®
GLASS IS EVERYTHING™



T E C H T A L K

B I R D F R I E N D L Y G L A S S

BIRD FRIENDLY GLASS

When designing buildings with bird safety in mind, it is important to understand that birds do not perceive glass as an obstacle to their flight path. To aid in reducing collisions, the lighting of the glass, elements placed near the glass as well as the glass selection itself must all be considered.

Multiple organizations are involved in researching the ability of birds to perceive glass and what can be done to help mitigate bird collisions with glass facades. The increased awareness has led organizations such as the New York City Audubon Society and Audubon Minnesota to develop bird safe building guidelines. It is also driving some cities and states to pass laws and develop official standards, such as the bird-safe ordinance in Cook County, IL and San Francisco Planning Commission's Bird Safe Building Standards, passed in July 2011.

Viracon's Involvement

As a glass fabricator, Viracon has been actively involved in on-going research to understand the effect of various glass products and their potential to reduce bird strikes. To date, our focus has been finding practical solutions using conventional glass products and enhancements to these products.

Viracon provided a number of insulating glass units used for field testing during bird migration in the fall of 2010. The primary objective was to test the effectiveness of silk-screen patterns as a means of mitigating bird collisions with glass. The field testing was designed by the American Bird Conservancy (ABC) – Washington, D.C. Testing was performed at Carnegie Museum's Powdermill Nature Reserve in Pennsylvania. In the test, birds are released into a tunnel with two different glass types installed at the far end. The birds fly toward the glass and as they come upon the end of the tunnel must make a decision whether to fly toward glass type A or B. The glass type they avoid is presumably a more bird safe option. Light netting is installed in front of the glass to prevent any collisions with the glass. In the testing, various silk-screen patterns are installed alongside a control unit.

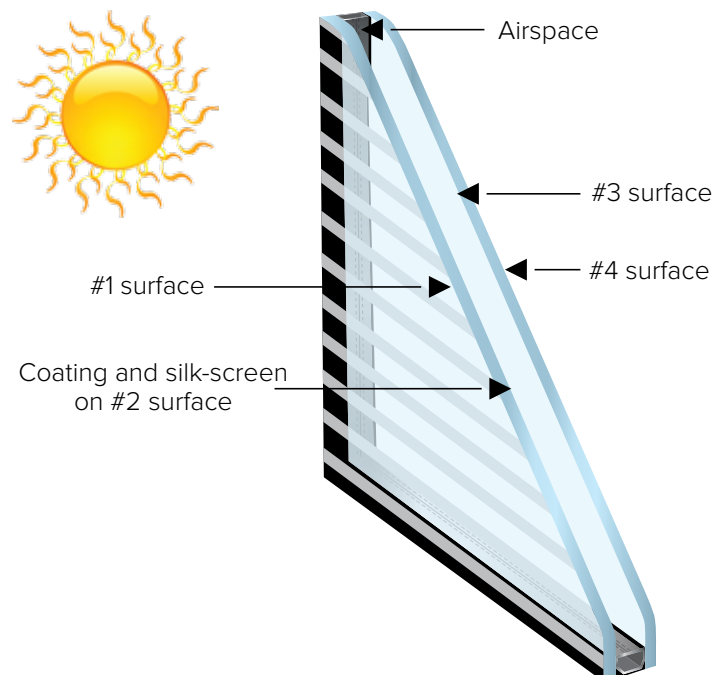


Silk-screened Glass

Control Glass

Tested Products

All glass products tested were 1" Insulating units. The outboard glass ply was 1/4" clear glass with the silk-screen pattern applied to the second surface, Viracon's VE-2M low emissivity coating applied over the silk-screen pattern, a 1/2" air space and 1/4" clear glass inboard. The control unit for testing was the identical glass construction as listed above, excluding any silk-screen pattern.



The Results

The following results have been provided by Dr. Christine Sheppard through the American Bird Conservancy (ABC).

Scenario 1

- Silk-screen Color: V901 Dark Gray Viraspan
- Silk-screen Pattern: 1/8" horizontal lines alternating with 1/2" spaces, equating to 20% coverage (screen 2256)

This pattern was tested with 35 birds, only one flew toward the silk-screened glass; 94% flew toward the control.

This pattern was highly effective. It seems likely that the spacing between the lines could be increased to as much as two inches without much reduction in effectiveness concluded the testing facility.

Scenario 2

- Silk-screen Color: V948 Medium Gray Viraspan
- Silk-screen Pattern: 1/8" horizontal lines alternating with 1/2" spaces, equating to 20% coverage (screen 2256)

This pattern was tested with 42 birds, only four flew toward the silk-screened glass; 90% flew toward the control.

This pattern was highly effective and we felt we could not discriminate between this version and scenario one (which might be slightly more effective).

In tests using tape to make similar patterns with wider line spacing, the horizontal version was more effective than the vertical.

Scenario 3

- Silk-screen Color: V175 High Opacity White
- Silk-screen Pattern: 1/8" dots, 1/4" on center equating to 20% coverage (screen 5065)

We ran two sets of trials with this pattern. In the first, there was significant back-lighting of the glass. We tested 50 birds, of which 11 flew toward the silk-screened glass, for 78% deterrence.

In the second set of trials a background was used to block most of the back-lighting. We tested 107 birds, of which 44 flew towards the pattern, for 59% deterrence. It seems possible that back-lighting increased the contrast seen by the birds.

Scenario 4

- Silk-screen Color: V175 High Opacity White
- Silk-screen Pattern: 1/8" dots equating to 40% coverage (screen 5006)

This pattern was tested with 58 birds and 14 flew toward the pattern, a deterrence of 76%. This testing was done with a background and primarily front lighting.

Alternate Products

Additional testing was performed at the Powdermill facility to determine the effectiveness of patterned, ultraviolet reflective coatings. These products are intended to be visible to birds, because they can see in the ultraviolet spectrum, however remain less visible to humans.

In testing, these products were less effective than the silk-screened glass products. The deterrence ranged from 58% to 65% versus 76% to 94% for the silk-screened products tested.

Conclusion

While on-going testing is necessary to further review various silk-screen patterns and coatings, such as those with low, medium and high levels of reflectivity, it is evident based on the testing done thus far, that silk-screen patterns can be an effective way to reduce bird collisions with glass in building design.

It appears, based on the testing to date, a few statements can be made:

- Horizontal and vertical line patterns are highly effective and seemingly more effective than dot patterns.
- A strong pattern seems to be easier for birds to see than an all-over pattern.
- It is expected that the effectiveness of all-over patterns would increase as the coverage increases.
- Since silk-screen patterns are inside insulating units, in situations where the angle of view obscures the pattern, lower effectiveness would be expected.



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The information contained in this publication is presented in good faith. It is believed to be accurate at the time of publication. Viracon reserves the right to change product specifications without notice and without incurring obligation.

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