



Bird-Friendly Glass Solutions

- Thompson BirdSafe®
- Guardian® Bird1st™
- Vitro BirdSmart™
- Pilkington AviSafe™
- arcon ORNILUX®
- Walker AviProtek®
- Skyline Design SkySafe™
- Eastman FlySafe™
- Kuraray BirdSecure®
- Andluca SafeFlight UV



Thompson's bird-friendly glass solutions protect birds, meet regulatory requirements, and deliver the highest quality performance

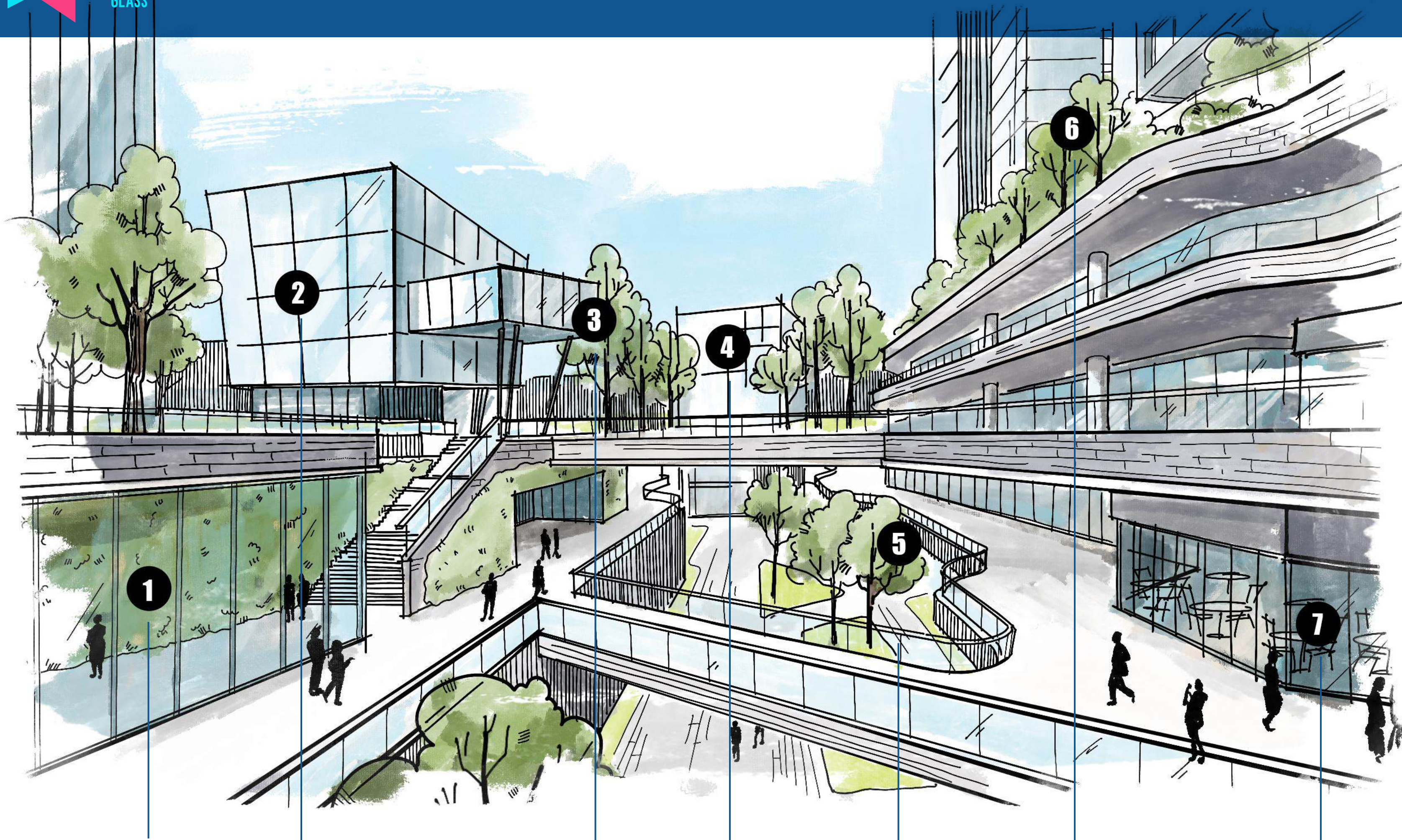
As an Industry leader in advanced glass and lamination technologies, Thompson Innovative Glass offers customers throughout North America a full line of custom glass products. Our Quality Management System is ISO 9001:2015 Certified, assuring the highest quality products.

With access to a variety of bird-friendly glass and interlayer solutions, Thompson is dedicated to providing the highest quality glass products tailored to each customer's exact needs. Our exclusive combination of innovative glass solutions, high-quality fabrication, and expert advice makes us the go-to destination for architects, designers, glaziers, and building owners looking for bird-friendly glass solutions.

With Thompson, you are assured of a bird-friendly glass solution that meets your needs and makes our world safer for birds.



FM 734735



1
Transparency where birds try to reach something behind the glass

2
Large reflective areas

3
Glass corners where glass lites meet at 90 degree angles

4
Channeling effect where a flight path toward glass is created by trees and shrubs

5
Design elements such as interior courtyards and alcoves

6
Glass facades next to roof gardens and terraces

7
Passage-effect where dark/black glass looks like a safe fly-through area

Dangers for birds in an urban environment

As human urbanization increases and natural habitats shrink, animals progressively find obstacles in their path that they are not instinctively familiar with. And with the available space for urban development decreasing, high-rises are more and more common, now also creating obstacles for birds in natural and migratory flight paths. The danger for birds is further amplified by the increased use of glass in architecture.

Architecturally, the use of glass provides a valuable connection with the outside, increasing our well-being. Birds, however, do not recognize glass as an obstacle. They see fly-through or reflected habitat conditions or dark areas that seem like passages through which they can fly, often with deadly results.

As glass is increasingly used in design, muting reflections in glass facades and creating visual markers are ways to create more bird-friendly environments.



Two Approaches to Bird-Friendly Glass

Thompson Innovative Glass can utilize multiple Bird Friendly Glass solutions to meet virtually any project criteria for aesthetics, cost, and bird safety. There are two main pathways to achieve a product that is considered bird-friendly: Performance and Prescriptive.

All of the materials produced by Thompson Innovative Glass fall under one of these headings; with each, a threat factor is generated. A lower threat factor corresponds with the effectiveness of the visible markings (patterns) in reducing bird collisions. The American Bird Conservancy (ABC) defines "bird-friendly" materials as having a Threat Factor less than 30. Please consult local standards/ guidelines/codes for more information.

Performance

The Performance path usually refers to an alternative approach, where specific performance metrics are established instead of following strict prescriptive requirements. This approach allows designers and builders more flexibility in achieving the desired outcomes by demonstrating that their design meets or exceeds the performance criteria specified.

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| Requires bird-friendly products to be tested for effectiveness. |
| <ul style="list-style-type: none">• Requires live bird test subjects |
| <ul style="list-style-type: none">• Relies on test facility availability |
| Acceptable products must meet a maximum allowable tested metric. |
| Test protocols and experiment facilities will continue to evolve to keep pace with common glazing solutions. |



Prescriptive

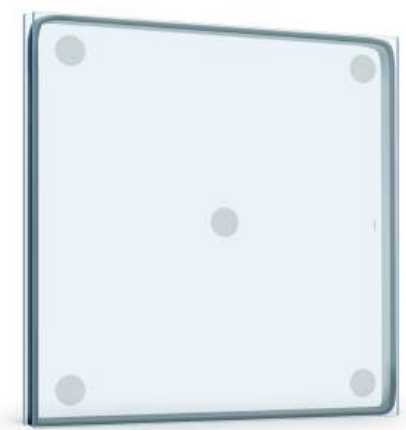
The Prescriptive path involves adhering to specific guidelines and criteria designed to reduce bird collisions with glass surfaces. These criteria outline the design specifications, materials, and application techniques recommended by organizations like the American Bird Conservancy. When these three prescribed characteristics are met, no further bird-friendly testing is required for certification.

| |
|--|
| Either |
| <ul style="list-style-type: none">• A Surface 1 application using an opaque frit or other opaque pattern applied on clear or low-iron glass, or; |
| <ul style="list-style-type: none">• A Surface 2 application using an opaque frit or other opaque pattern applied on clear or low-iron glass where the Visible Light Reflection is <=15%. |
| As viewed from Surface 1, all Low-E coatings must be behind the pattern. |
| A pattern that is made up of one of the following elements or a combination: |
| <ul style="list-style-type: none">• Continuous solid lines at least 1/8" wide, nowhere more than 2" apart for horizontal or angled lines, 4" for vertical lines, measured edge to edge. |
| <ul style="list-style-type: none">• Circular, square, or irregular solid shapes that are nowhere more than 2" from another shape vertically and nowhere more than 4" from another shape horizontally, or 4.47" diagonally, measured edge to edge. Each shape must have an area of ≥ 0.049 in², which corresponds approximately to circles with a diameter of 1/4" (~6mm). |

Thompson BirdSafe®

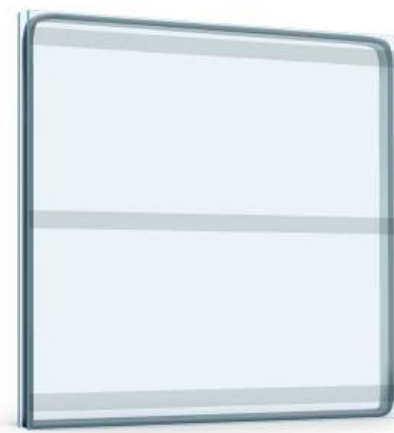
BirdSafe® by Thompson Innovative Glass utilizes Glass Coatings & Concepts' latest innovation, Surface 1. This line of ceramic glass enamels allows visual markers to be placed on Surface 1, which is recognized through testing to be the most effective bird / glass deterrent¹. This ceramic enamel is a permanent coating of engineered ceramics and inorganic pigments. It is highly durable and resistant to UV and outdoor elements. Thompson applies this product directly to the glass via its state-of-the-art screen-printing technology.

BirdSafe meets the prescriptive rating guidelines of bird-friendly glass as developed by the American Bird Conservancy by following the 2x2 Rule or the 2x4 Rule for pattern locations, glass types and orientation of Low-E coatings. When certain requirements are met, the adherence to these rules allows bird-friendly threat factor ratings to be achieved². Thompson uses its standard patterns or custom patterns supplied via a digital file from the customer.



Threat Factor 20

1/4" dots, 2"x2" staggered



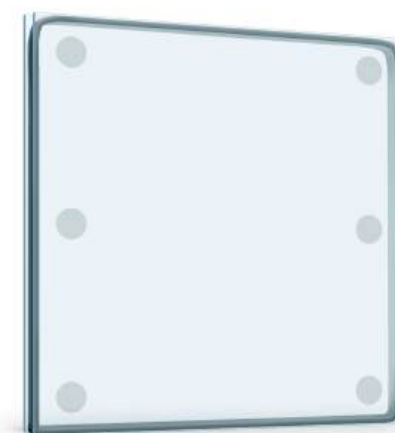
Threat Factor 20

1/8" lines, 2" on-center



Threat Factor 25

1/8" vertical lines,
4" on-center



Threat Factor 25

1/4" dots, 2x4 inline

At Thompson Innovative Glass, our full-service fabrication capabilities allow us to provide custom bird-friendly glass solutions to fit the specific needs of any project. We are able to combine BirdSafe with any number of our advanced glass technologies to meet your project's requirements for aesthetics, energy, privacy, safety, security, sound, etc.

BirdSafe can be combined with Thompson's Low-E glass offerings to provide best-in-class thermal performance while not sacrificing natural light. Thompson can manufacture glass products with energy efficient coatings to reach the U-value, shading coefficient, solar heat gain, and visible light transmittance specified.

BirdSafe can also be matched with Thompson's Defender™ line of security and safety glass to offer the peace of mind that building owners and occupants desire. The Defender™ line focuses on bullet-resistant (BR) and forced entry products and is extensively used in school and institutional security. Our Defender BR-rated products are certified through third-party testing to meet industry standard UL 752 safety code requirements.

By leveraging our BirdSafe technology and wide range of solutions, Thompson can tailor its services to fit any design concept that comes from the architectural community.

On the following pages, you will see additional bird-friendly glass solutions Thompson can offer in conjunction with our valued partners.

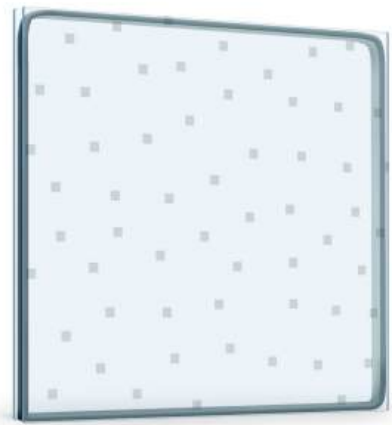
¹ Visual markers applied on the outside surface of the glass (Surface 1) are typically preferred because research indicates this placement can be the most effective in deterring bird collisions under the widest possible lighting and viewing conditions. (Best Practices for Bird-Friendly Glazing Design, National Glass Association Design Guide DG01-21)

² American Bird Conservancy Prescriptive Rating Guidelines for Bird-friendly Materials 2021

Guardian® Bird1st™ Etch

Guardian Bird1st™ Etch meets both energy performance and bird-friendly regulations and is offered in four patterns that safeguard the style and aesthetics of facades and curtain walls, while meeting bird safety requirements.

Bird1st Etch has been tested and has proven its effectiveness in collision-avoidance.



Bird1st Etch SqX22

Non-directional 6mm squares, randomly spaced no more than 2" x 2" apart



Bird1st Etch DX 22

2" x 2" 5mm dots



Bird1st Etch SqX24

Non-directional 6mm squares, randomly spaced no more than 2" x 4" apart



Bird1st Etch DV 24

2" x 4" 6mm dots

Need more information?

Find out what Guardian® Bird1st™ Etch can do for your project.

[Learn more](#) →

Guardian® Bird1st™ UV

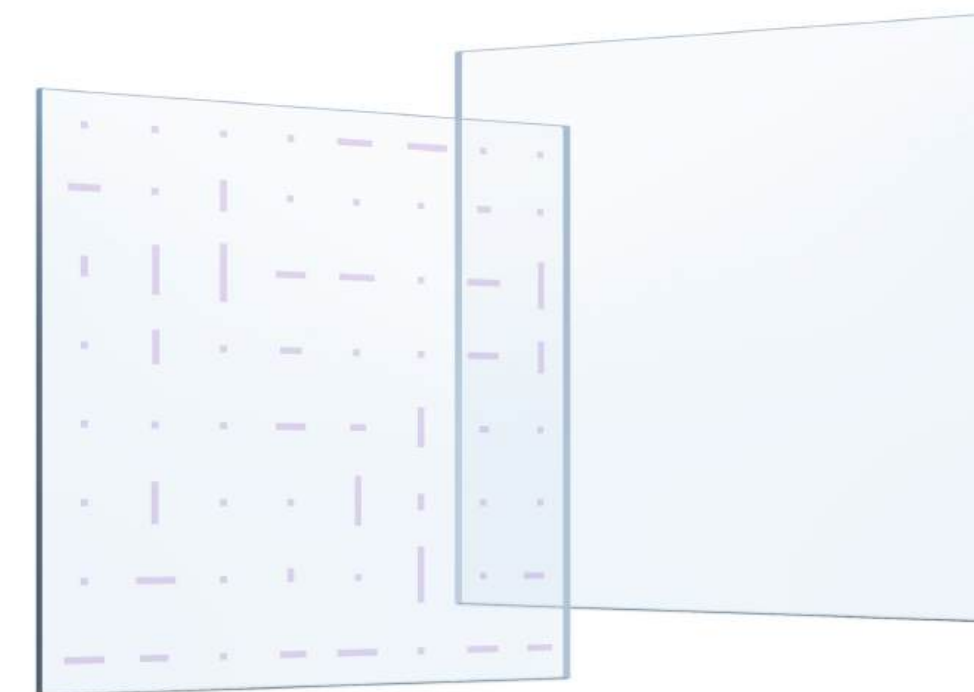
The latest advancement from Guardian Glass is their Bird1st™ UV product. This option can help you meet building requirements, while protecting clean, unobstructed views. With jumbo sheet sizes and non-directional patterning, it can help lower installation costs (vs. our first-generation product)

While many alternative UV deterrents reflect about 30% of UV light, this Bird1st UV pattern reflects

upwards of 75%, creating a signal to birds with an as-strong-as-possible chance of being seen. Boosting the contrast further, this requires use of a laminated outboard glass to absorb >99% of UV light outside the pattern. The result? A glass that provides a deterrent with a low level of visibility to humans, while earning a Threat Factor score of ≤ 25 from the American Bird Conservancy.

**The American Bird Conservancy defines "bird-friendly" materials as those with a Threat Factor score of ≤ 30 .*

To birds the UV pattern is visible



To the human eye, the UV coating is transparent in most viewing conditions.

Need more information?

Find out what Guardian® Bird1st™ UV can do for your project.

[Learn more](#) →

Vitro BirdSmart™

BirdSmart™ Bird Safe Glass is a first-surface laser-etched glass featuring four dot patterns (2x2 square, 2x4 rectangle, 2x4 diamond and 2x2 diamond) with directional and non-directional orientation.

BirdSmart™ is manufactured using laser etching, which is a “clean” etching process that is non-caustic and uses no harsh chemicals to apply bird-friendly visual markers, offering a greener way to prevent bird strikes.

BirdSmart™ glass has received American Bird Conservancy (ABC) tunnel testing approval to comply with existing and emerging building codes.

The 2x2 patterns have a threat factor of 20, while the 2x4 patterns come in at 25. First-surface dot patterns enhance glass visibility to birds, making it easier for them to recognize this as an impassable barrier.

In addition, pairing laser-etched BirdSmart™ glass with a low-e coating can lead to peak energy performance without impacting Visible Light Transmittance (VLT) or Solar Heat Gain Coefficient (SHGC).



BirdSmart™
Speck 6 Inline 2x2*

Threat Factor 20



BirdSmart™
Speck 6 Inline 2x4

Threat Factor 25



BirdSmart™
Speck 6 Shift 2x2

Threat Factor 20



BirdSmart™
Speck 6 Shift 2x4

Threat Factor 25

Need more information?

Find out what Vitro BirdSmart™ can do for your project.

[Learn more](#) →

Pilkington AviSafe™

Pilkington AviSafe™ uses a unique-patterned, UV-enhanced coating that disrupts reflections, providing a visible marker to birds and preventing collisions. The technologically-advanced patterned coating on Pilkington AviSafe uses the industry accepted

2x4 Rule making the glass more visible to birds while remaining aesthetically appealing.

When combined with other products, Thompson can offer customized solutions that also address thermal comfort, safety, and noise reduction.



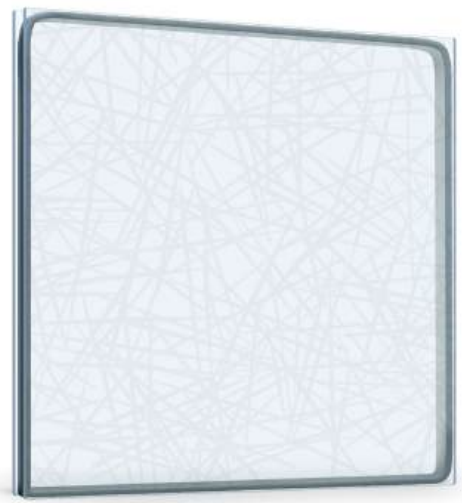
Need more information?

Find out what Pilkington AviSafe™ can do for your project.

[Learn more](#) →

arcon ORNILUX®

ORNILUX® Bird-Friendly Glass, an innovative product designed to reduce bird collisions with glass surfaces while maintaining the aesthetic and functional benefits of glass architecture. The ORNILUX® product family offers the largest variety of bird-friendly solutions for vision glass, spandrel glass, and glass railings/balustrades that are certified by the American Bird Conservancy. Mikado UV-coatings feature a spider-web-like appearance that is visible to the birds but is nearly invisible to the human eye.



ORNILUX® mikado

ORNILUX® Mikado UV-coated bird-friendly glass designed for use in insulated glazing units on surfaces 1 & 2 and, in some cases, surface 3. There are more than 1,000 certified buildup variations incorporating several different types and manufactures of low-e glass. The transparency of the UV-coating facilitates use in different applications and provides maximum variability in the design of facades.



ORNILUX® super mikado

ORNILUX® super mikado UV-coated bird-friendly glass that is specially formulated for the glass railing and balustrade segment. There are more than 120 buildup certified variations for balustrades and railings. Suitable for a variety of applications such as rooftops, pool fences, and terraces. Its freestanding application adds flexibility to your design choices.

Need more information?

Find out what ORNILUX® mikado / supermikado can do for your project.

[Learn more](#) →

Walker AviProtek®

With Walker's AviProtek® bird-friendly glass products, Thompson can fabricate glass make-ups in various patterns. These acid-etched markers on Surface 1 maximize the visibility of patterns to birds and minimize the risk of collision, while retaining an aesthetically pleasing appearance.

Walker AviProtek® E

AviProtek E bird-friendly glass combines acid-etched patterns on Surface 1 of the glass with a choice of high-performance Low-E coating on Surface 2. This results in a very effective bird-friendly and energy-efficient glazing solution that puts environmental goals and earning LEED® credits within reach of architects and building owners.

Walker AviProtek® T

AviProtek T bird-friendly glass combines the acid etched markers with pyrolytic UV coatings from Pilkington. This product is well-suited for use in IGU configurations, guard rails, linkways, and shelters and can also help with project certification under LEED and other green building rating systems.

Need more information?

Find out what Walker AviProtek can do for your project.

[Learn more](#) →

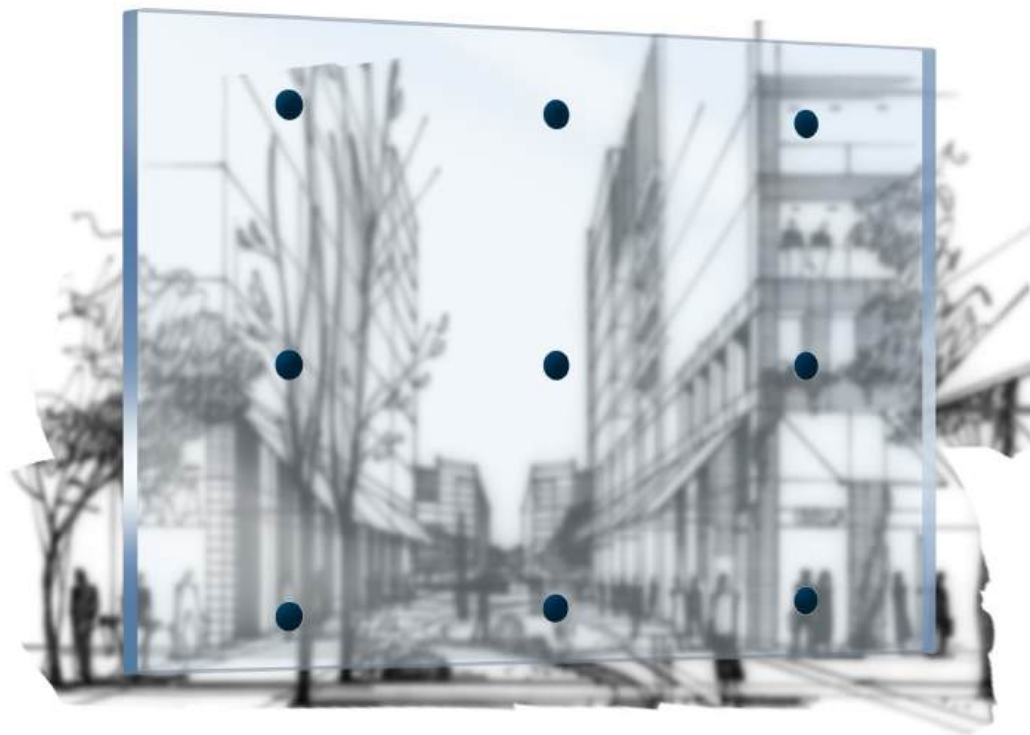
Eastman FlySafe™ 3D

FlySafe™ 3D by Eastman is unique in the way its proven patterns to prevent bird collisions are created. 3D sequins are embedded in the PVB interlayer that catch the light and produce subtle twinkles.

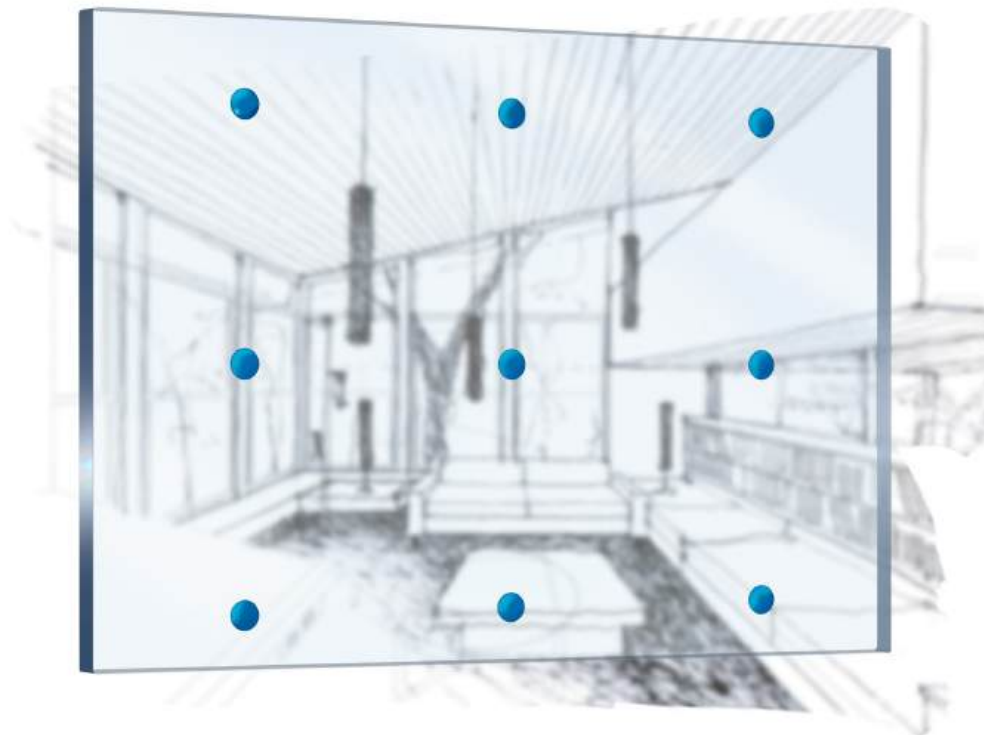
This interlayer's high effectiveness in mitigating bird collisions enables architects and glass laminators to

meet bird-friendly regulations without compromising on safety, security, structural integrity, aesthetics, UV screening, or acoustic control.

The pattern is 3.5" x 3.5" (90mm x 90mm) with sequins that are 3/8" (9mm) in diameter.



Interior



Exterior

Need more information?

Find out what Eastman FlySafe™ 3D can do for your project.

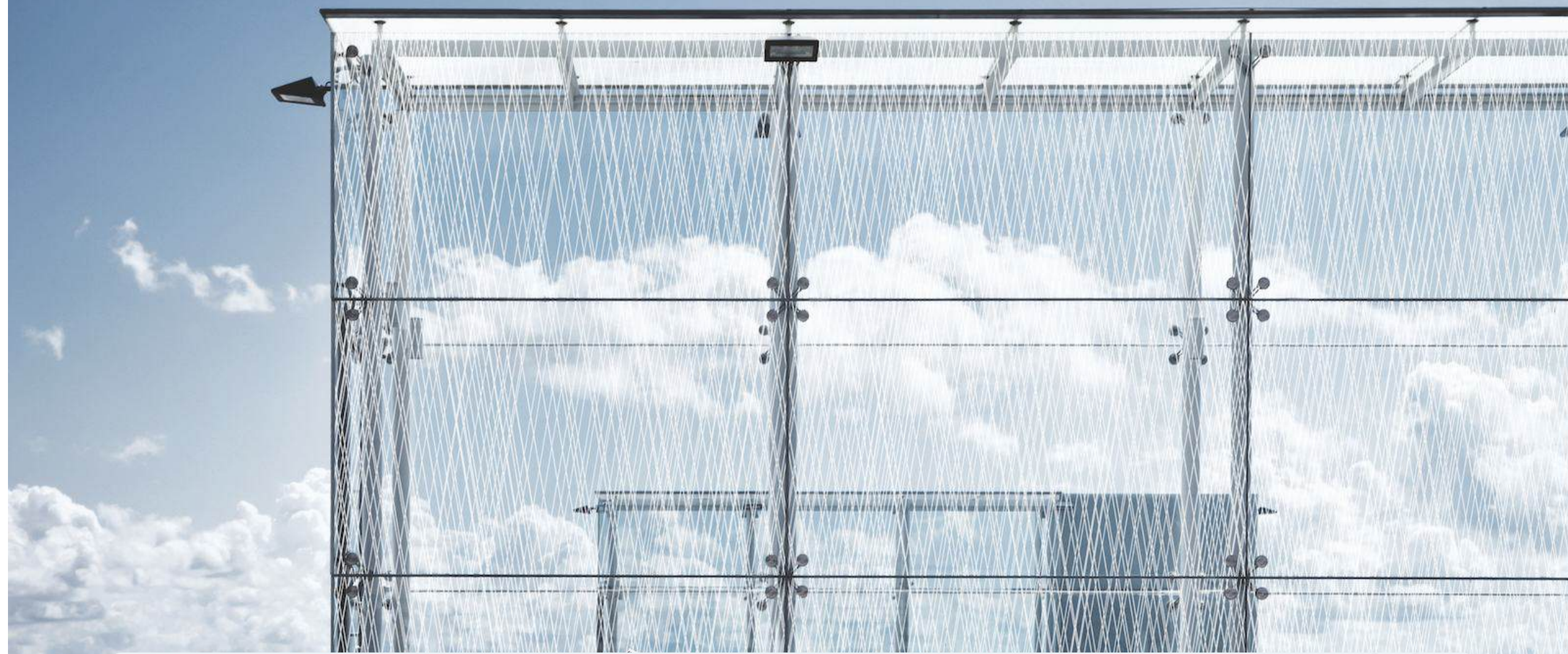
[Learn more](#) →

Skyline Design SkySafe™ Bird-Friendly Glass

With SkySafe™, customers have access to Skyline Design's library of proprietary, proven bird-safe patterns or custom patterns can be created. These patterns can be permanently engraved into Surface 1 using Skyline's proprietary Eco-etch® technology, digitally printed onto Surface 1 with ceramic frit, or

laminated between two lites of glass with EVA interlayers.

Unique designs can be created from customer-supplied artwork and tailored to specifications for façades, curtain walls, rain-screens, canopies, railings, wayfinding, and bird-friendly glass.



Need more information?

Find out what Skyline Design SkySafe™ can do for your project.

[Learn more](#) →

Kuraray BirdSecure® Pro

Known as BirdSecure® Pro, Kuraray's Trosifol® and SentryGlas® bird-friendly solutions are designed to benefit consumers, society, and the environment by advancing the functionality of glass. Thompson Innovative Glass can utilize BirdSecure Pro interlayer to fabricate laminated glass to specific safety and bird-friendly requirements. Incorporating a dot

pattern that makes it more visible to birds, BirdSecure Pro combines the properties of traditional safety glass with the advanced aesthetics and functionality of its bird-friendly design.

BirdSecure Pro is available in a 3.5" x 3.5" (90 x 90 mm) pattern that features dots with a 1/8" (3mm) or 1/4" (6mm) diameter.

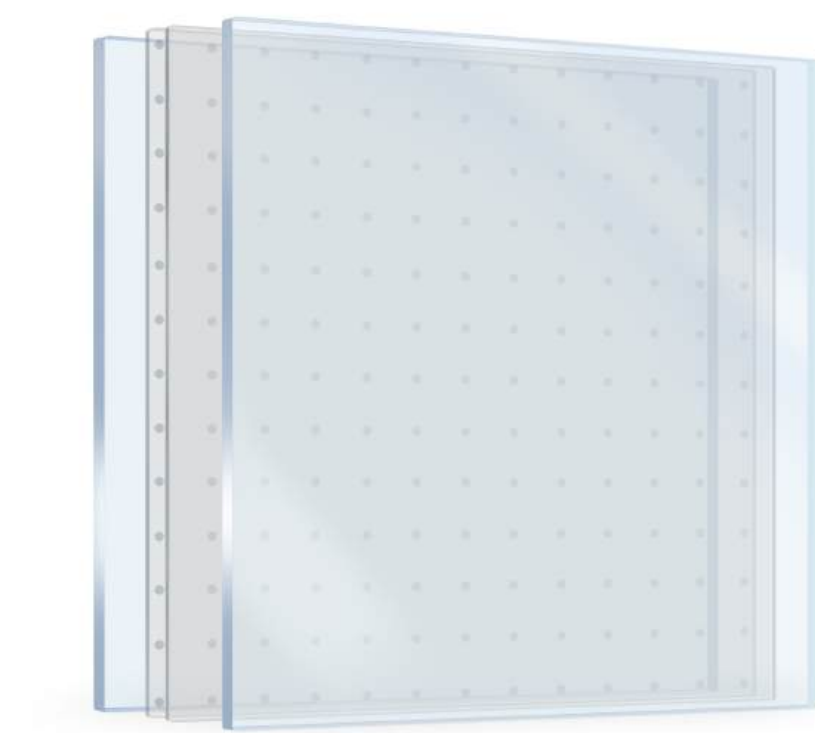


Image of exploded glass make-up

Need more information?

Find out what Kuraray BirdSecure® Pro can do for your project.

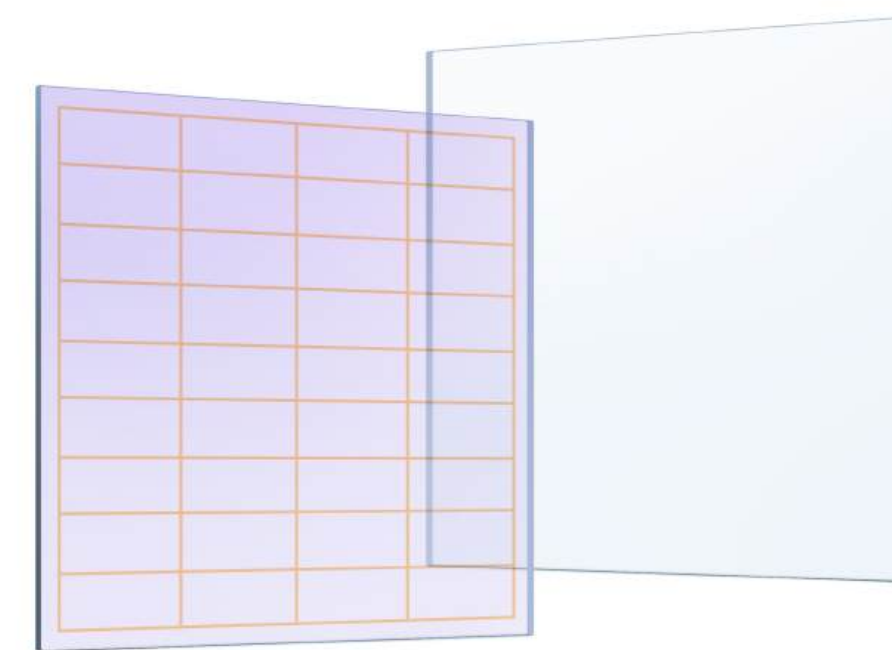
[Learn more](#) →

Andluca SafeFlight UV

Andluca SafeFlight UV is a bird-friendly solution that deters bird collisions while maintaining clear views for humans. This glass incorporates bird-visible patterns imperceptible to the human eye, effectively reducing bird strikes without compromising building aesthetics. SafeFlight UV is a highly contrasted UV pattern visible to a wide range of bird species that effectively prevent bird collisions with buildings.

SafeFlight UV is a coating applied to a standard laminated interlayer, and the end product features the same properties as traditional laminated glass, including safety, structural, and acoustic improvements. It also installs the same as a conventional lite of laminated glass.

Birds can see the pattern created by the UV coating



The UV pattern is invisible to the human eye in most conditions

Need more information?

Find out what Andluca SafeFlight UV can do for your project.

[Learn more](#) →

Why Choose Thompson?

When it comes to bird-friendly glass there are many options.

What makes having Thompson Innovative Glass as your partner unique?

1. One-stop shop

As a full-service glass fabricator, Thompson Innovative Glass offers a complete line of glass products, including insulated and laminated glass. This means that projects requiring safety glass and 'regular' insulated glass can get it all from the same source.

2. Many Bird-Friendly Glass Solutions

There are multiple glass-based solutions to help protect the bird population. We are proud to fabricate many of them, ensuring your ability to meet virtually any application, code, regulation, or guideline.

3. Customizable

Because Thompson is a full-service fabricator, we can offer customized bird-friendly glass solutions. Customizations can include high-performance Low-E, safety glass, school security, or other specialty glass.

4. Faster Lead Times

With a large team of dedicated employees, Thompson Innovative Glass has the flexibility to pool manpower where most urgently needed. This results in faster lead times when you need your glass 'yesterday'.

5. Competitive pricing

As a full-service fabricator, we work on 'regular' insulated glass as well as on specialty glass products like bird-friendly glass. This translates to zero down-time and lower overhead, resulting in very competitive pricing for you!

6. High-quality

With a state-of-the-art manufacturing facility and multi-step inspection procedures and ISO 9001-certified Quality Management Systems, we guarantee high quality.

7. A partner, not just a supplier

We partner with our customers. We offer advice, on-site visits, and informational presentations to ensure you have the best solution for your project.



Your Partner.

At Thompson Innovative Glass we are proud to do our part to keep birds as safe as the building occupants. Instead of simply being a supplier, we enjoy partnering with you so you get the best solution and ROI for your specific project. When it comes to bird-friendly glass, we can offer many options. So let's take a look at your project and figure out the best solution together.

Please contact us now
at **810.629.9558** or send an
e-mail to info@thompsonig.com

www.thompsonig.com

