

Trosifol® and SentryGlas® Bird-Friendly solutions

BirdSecure® Pro

Photo: © ImageFlow - Kriengsak Prasertsung/shutterstock.com



kuraray

Trosifol® **SentryGlas®**

Introduction

Interlayer strength, depth and capabilities

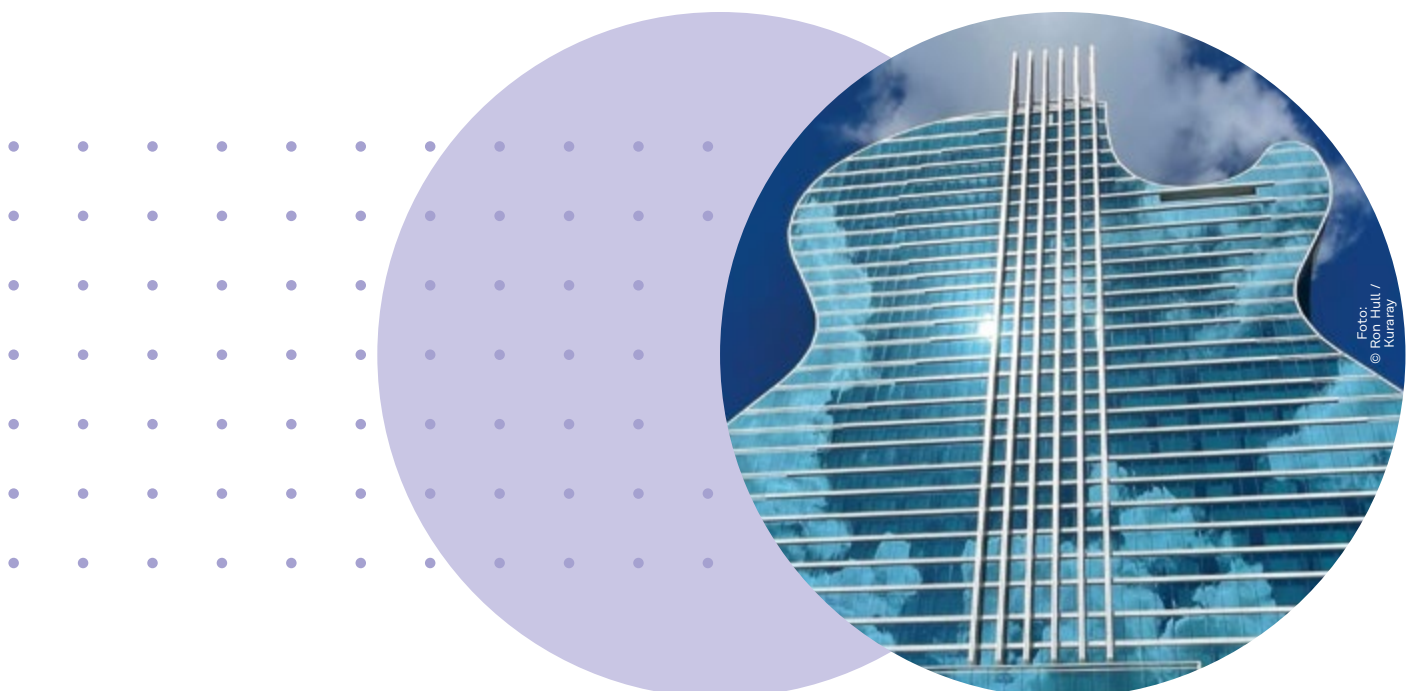
Delivering your window into the world of advanced interlayers for laminated safety glass, Kuraray's Advanced Interlayer Solutions Division (AIS) is underpinned by decades of innovation, application knowledge, domain experience and market success.

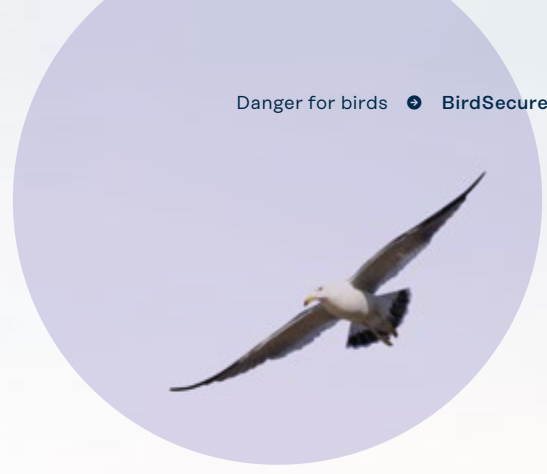
OUR ADVANCED INTERLAYER PORTFOLIO – comprising Trosifol® PVB and SentryGlas® ionoplast interlayers – has continually revolutionized aesthetic, structural and functional design, fabrication and installation in the architectural and automotive/transportation segments.

Designed to benefit consumers, society and industry, our products are advancing the functionality of glass, while our engineers and consultants are setting new application benchmarks by collaborating on solutions that both sustain and inspire.

We are committed to helping you transform your mindset and take your applications to the next level – aesthetically, functionally and structurally. Enjoy greater design freedom and give your glazing strength, clarity, character and purpose with solutions that cover safety, security, sound insulation, UV/solar/energy management, color and print.

OUR DIVERSE PRODUCT RANGE, the broadest on the global market and our domain expertise create strength; and we channel this strength into helping you succeed. We strive to be your strongest ally and supporter and will help you navigate and conquer the ever-changing demands of the global glass industry. Worldwide production, R&D and support, means we are always by your side ... no matter where you are.





Glass in architecture – and its danger for birds

AS THE HUMAN POPULATION GROWS, so does its effect on local flora and fauna. Urbanization has seen human habitation creeping into areas that were traditionally the realm of wildlife, presenting birds and animals with unfamiliar obstacles and structures, to which many find it hard or impossible to adapt.

With this urbanization and population growth has come the need for greater population density and more efficient land use and, as a result, buildings have risen in height, often into the flight paths of domestic and migratory species of birds.

This problem is then compounded by the increasing use of glazing in architecture. From skyscraper curtain walls to feature windows in domestic buildings, glass has become an important material for both structural and aesthetic purposes.

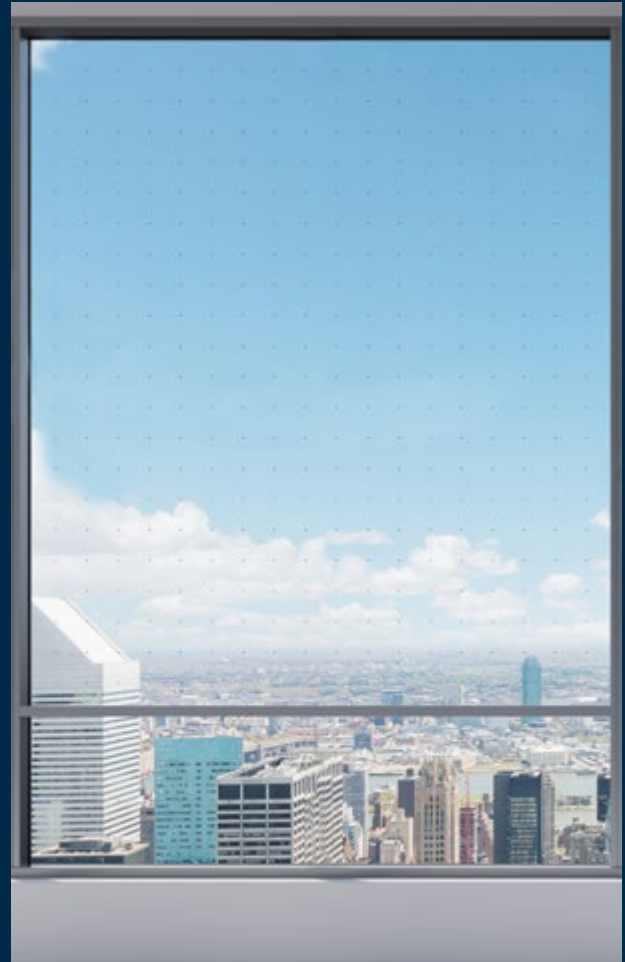
Birds do not perceive glass in the way we do. Although it is transparent, we see all the visual cues, such as geometric shapes, frames, mullions and mounts, but to a bird, a modern float-glass panel is an opening or an entrance to a tunnel, it may also reflect vegetation and appear to them as safe passage. They simply don't have the same perception as us.

Urbanization, habitat encroachment, taller buildings and the wider proliferation of glazing have come together to create a real danger for birds, so we have to be conscious of this in our design exercise.

The following pages represent a potential solution, especially for areas where bird habitats or migratory paths may conflict with modern buildings.



↻ BirdSecure® Pro 90/6



↻ BirdSecure® Pro 90/3

BIRDSECURE® PRO HIGHLIGHTS

- Easy to process
- Outstanding threat level
- Added benefit of safety and security
- Outstanding optic in combination with BirdSecure®
- Blocks UV light
- Advantages in contrast to screen printing on glass
- Less than 0.4% of surface coverage

The problem glass

FACTORS THAT ARE DANGEROUS TO BIRDS WHEN USING GLASS

Reflection



Transparency

Black hole or Passage effect



Building size



Reflected vegetation



Light

Applications for BirdSecure® Pro glazing



Photo: © J.Wang An Qishutterstock.com

1

• Transparent aerial walkways

2

• Plants behind transparent surfaces

3

• Transparent noise barriers, glazed entrances or winter gardens with ineffective black silhouettes

4

• Glazed balcony walls and balustrades

5

• Reflective façades

6

• Attractive green spaces in front of reflective façades

7

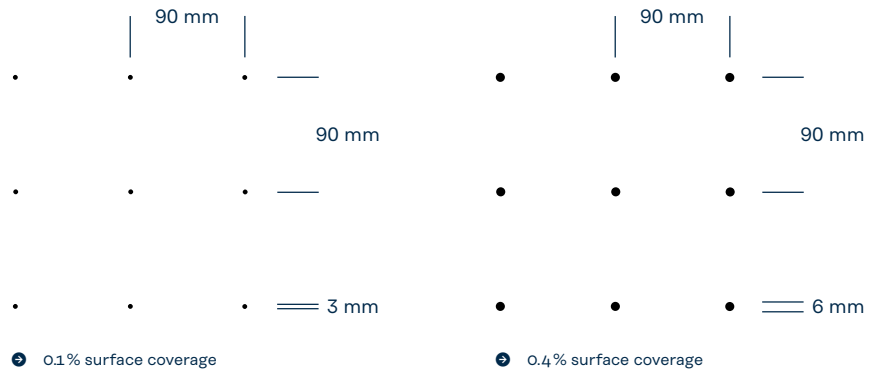
• Transparent building corners

The solution

Trosifol®

BirdSecure® Pro 90/3
BirdSecure® Pro 90/6

- Dot pattern on Trosifol® UltraClear



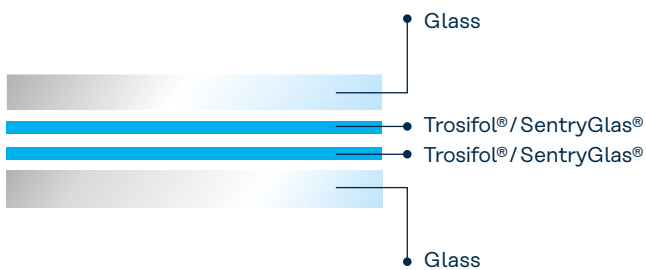
SentryGlas®

BirdSecure® Pro 90/3
BirdSecure® Pro 90/6

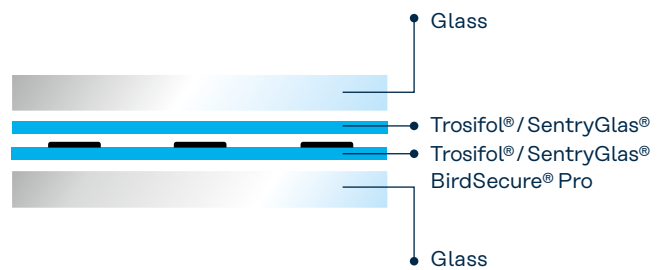
- Dot pattern on SentryGlas®

The principle

Laminated safety glass



Laminated safety glass with BirdSecure® Pro





Distance: 1 m



Distance: 2 m



Distance: 3 m

Guidelines and characteristics

Handling and Processing Guidelines

- Trosifol® BirdSecure® Pro needs to be combined with Trosifol® products
- SentryGlas® BirdSecure® Pro needs to be combined with SentryGlas®*
- The pattern may not be facing towards the glass surface (see graphic page 7)
- Products can be laminated in nipp-roll, vacuum bag and autoclave free systems
- In combination with insulated glass BirdSecure needs to be in the outer pane

* Laminate SentryGlas® directly to the tin-side of the glass (an orientation of ATTA - glass airside / glass tin-side / SentryGlas® / glass tin-side / glass airside).

Characteristics of Kuraray BirdSecure® Pro

- Outstanding threat level
 - Tested at American Bird Conservatory
 - No need for own bird testing
 - Monolithic and in combination with solar control coating
- Relevant safety features remain unchanged
 - Cullets are glued to the interlayer in case of glass breakage
- Outstanding optic in combination with BirdSecure® Pro
 - From a distance of more than 3 m the dot pattern is unnoticeable (see pictures)
- Solar control performance
 - Measured at notified body (Fraunhofer ISE)
 - Calculations can be done using WinSLT or Optics (Berkely Lab) (see table)
- BirdSecure® Pro versus screenprinting on glass
 - Faster delivery times (esp. for replacements)
 - Thinner glass combinations
 - Combination with annealed glasses for better optical properties

Physical properties

Design	Light transmittance [%]	Light reflection outside [%]	g-value [%]	Absorption outer pane [%]
Monolithic glass				
6 mm - 0.76 mm BirdSecure® Pro 90/6 + 0.76 mm Ultra Clear - 6 mm	87	8	74	26
6 mm - 0.76 mm BirdSecure® Pro 90/3 + 0.76 mm Ultra Clear - 6 mm	87	8	74	26
Product Threat factor				
BirdSecure® Pro 90/6	14			
BirdSecure® Pro 90/3	29			

TAB 1 • Estimated values based on calculations

Trosifol® BirdSecure® Pro and SentryGlas® BirdSecure® Pro – Dimensions

Product	Thickness		Roll widths		Roll lengths	
	[mm]	[mil]	[mm]	[in]	[m]	[ft]
Trosifol® BirdSecure® Pro 90/3	0.76	30	1220/1830/2500	48/72/98	50	164
Trosifol® BirdSecure® Pro 90/6	0.76	30	1220/1830/2500	48/72/98	50	164
SentryGlas® BirdSecure® Pro 90/3	0.76	30	1220/1830/2500	48/72/98	50	164
SentryGlas® BirdSecure® Pro 90/6	0.76	30	1220/1830/2500	48/72/98	50	164

TAB 2

ABOUT THE TUNNEL TEST

The American Bird Conservancy Tunnel Test is a cutting-edge evaluation tool used to assess the potential bird-friendly design of glazing materials. The test simulates a real-world scenario in a controlled environment to measure the degree to which birds are attracted to and collide with glazing materials.

Here's how it works: A sample of the glazing material is mounted in an opening located at the end of a 24 feet (8 m) dark tunnel. The opening is about 18 inches, in front of this opening a mounting apparatus holds two panels of glass side by side.

During a tunnel test, birds are monitored and recorded as they navigate through the darkened passageway toward the light at the end. They are observed to fly towards the exit, either towards an invisible control glass or a test panel. To prevent birds from coming into direct contact with the glass, a mist net is placed in front of it. This net is designed to be taut so that birds gently bounce off rather than becoming ensnared. The ABC defines the Material Threat Factor (TF) for a pattern or material as the percentage of birds tested that flew toward that material. So, if 20 of 80 birds fly toward the tested glass, $20/80 = 25\%$ and the $TF=25$.

The Tunnel Test is an essential tool for architects, building owners, and glazing manufacturers who are committed to reducing bird mortality and preserving bird populations. By choosing bird-friendly glazing materials that have been tested and proven to be effective, you can help protect our feathered friends and preserve the delicate balance of our ecosystem.

Reports can be find here:

[Products & Solutions to Stop Birds Flying Into Windows | ABC \(abcbirds.org\)](https://www.abcbirds.org)

Link to video and podcast:

www.trosifol.com/tools-resources/videos/birdsecure

www.trosifol.com/about-us/podcasts

TESTING CONDITIONS

- Visibility without reflection (ONR-Test)
- Introduction of reflections in front of natural, light backgrounds



The ABC defines "bird-friendly" materials, as materials having a threat factor ≤ 30 , which corresponds to a reduction of collisions of at least 50% under real-world conditions.

AIS Product brochures:



Contact



FOR FURTHER INFORMATION

on products from Kuraray, please visit www.kuraray.com.

You can find further information on our Trosifol® and SentryGlas® products at www.trosifol.com.

Kuraray America, Inc.

Advanced Interlayer Solutions Division
 Wells Fargo Tower
 2200 Concord Pike, Ste. 1101
 Wilmington, DE 19803, USA
 P +1 800 635 3182

Kuraray Europe GmbH

Advanced Interlayer Solutions Division
 Kronenstr. 55
 53840 Troisdorf
 Germany
 P +49 2241 2555 226

Kuraray Co., Ltd

Advanced Interlayer Solutions Division
 Tokiwabashi Tower
 2-6-4 Otemachi, Chiyoda-ku
 Tokyo 100-0004, Japan
 P +813 6701 1508

trosifol@kuraray.com

1/2024

Copyright © 2023 Kuraray. All rights reserved.

Trosifol, Butacite, SentryGlas, SG, SentryGlas Xtra, SGX, SentryGlas Acoustic, SGA and Spallshield are trademarks or registered trademarks of Kuraray Co., Ltd. or its affiliates. Trademarks may not be applied for or registered in all countries. The information, recommendations and details given in this document have been compiled with care and to our best knowledge and belief. They do not entail an assurance of properties above and beyond the product specification. Final determination of suitability of any material or process and whether there is any infringement of patents is the sole responsibility of the user.



**WORLD OF
INTERLAYERS**

**New world of possibilities
in glazing.**

**trosifol@kuraray.com
www.trosifol.com**