

Bird-Safe Glass

Reducing bird collisions by making glass visible to birds.

Sustainably made in Chicago.



Nearly **one billion** birds are killed in North America from building collisions alone. Etching or frit printing visible and non-reflective patterning on the glass surface will reduce bird collisions.

Eco-etch® Glass Etching

- Recycled aluminum oxide (no sealer required)
- Imagery or patterning can span from panel to panel
- Available on any surface of the glass (including exterior surface one)
- Lifetime warranty

Ceramic Frit Printing

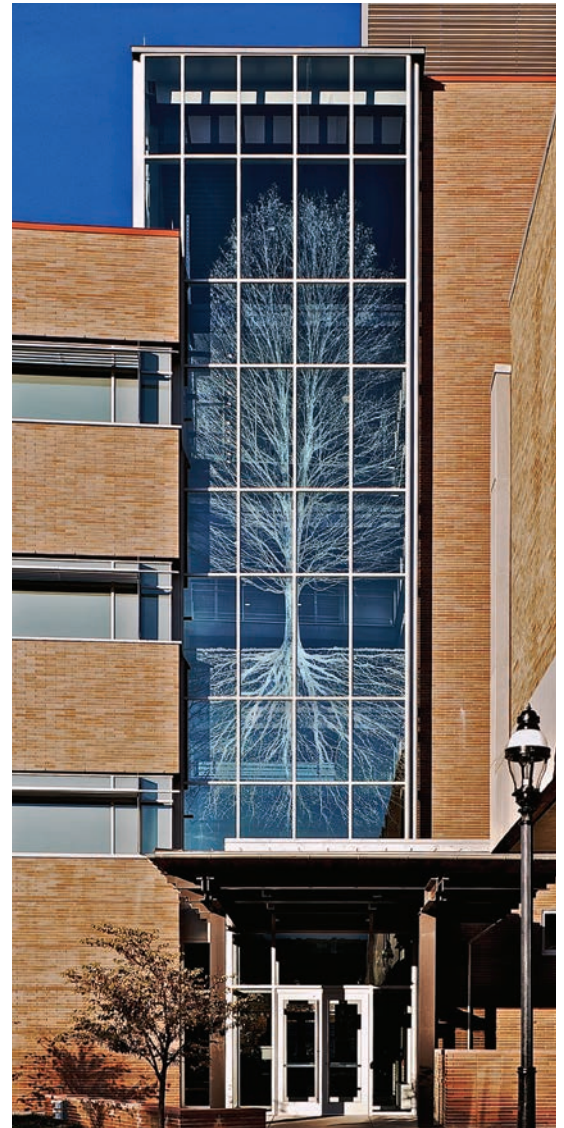
- Exterior-grade inks
- Imagery or patterning can span from panel to panel
- Full color spectrum + Black & White
- 10-year warranty

Where to use

- Buildings • Zoos • Skydecks • Railings • Canopies
- Curtain walls • Rain screens

Glass specifications

- Standard glass thicknesses
- May be combined with low-e coatings
- Available as insulated units, monolithic, or laminated glass





As a leading glass manufacturer in North America, Skyline Design cares deeply about the increasing threat to bird populations due to reflective glass. As birds migrate each year from Central and South America to North America, buildings in their path, particularly in major metropolitan areas and back such as Chicago and Toronto, become deadly obstacles.

Collisions with glass, particularly along migratory patterns in the United States and Canada, are responsible for between 365 and 988 million—edging close to one billion—bird deaths in the United States alone. Collision with building glass is currently estimated to be the second greatest source of direct mortality of birds,¹ and between 20 and 30% of bird species are now endangered or threatened due to these massive fatalities. These collisions are decimating not only bird populations but the entire ecosystem of which they are a fundamental part. Birds play a vital role in insect and vermin control, pollination, and seed dispersal; without them, nothing less than environmental balance is at stake.

Glass buildings pose multiple threats to birds. Birds cannot “see” transparent glass; because transparent glass transmits light and reveals interiors, it does not appear as a barrier to birds (or to humans, as anyone who has walked into a glass door can attest). Reflective glass is equally dangerous to birds.

It mirrors the surrounding landscape of sky and trees and thus appears to birds as a continuation of the environment. Light at nighttime—either coming from inside buildings or on their exteriors—exacerbates the problems, as it lures birds to buildings. The result is hundreds of millions of birds stunned or killed by unexpected collisions with glass walls, windows, railings, and rain and wind shelters.

Concerned about the environmental impact of such a staggering loss of birds, many cities are taking steps to remediate bird collisions. In North America, city ordinances regarding bird-friendly construction are already in place in San Francisco, Oakland, and Toronto; similar ordinances are under consideration in Chicago, New York City, and Washington, DC, as is the federal Bird-Safe Buildings Act. The United States Green Building Council has also developed the LEED Pilot Credit 55, “Bird Collision Deterrence,” which offers developers and owners LEED credit for buildings that incorporate bird-friendly glass into their design and construction.

¹ US Fish and Wildlife Service website: <https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds/collisions/buildings-and-glass.php>. Accessed 3/26/19. Also cited in Katie Devlin and Olivia Parker, “Bird Glass Collisions: Making Glass the Solution, not the Problem,” *Glass Magazine* (March 2019): 36.

Such legislation is drawn from the work of conservationists and scientists, who have discovered simple and cost-effective solutions that reduce bird collisions by making glass visible to birds.

These solutions include:

- **Patterns on the glass.**

Both transparent and reflective glass can be made with patterns in specific densities that birds can see. These patterns can be quite subtle and barely discernible to those inside the building. Acid-etched or ceramic frit glass have both proven to be the most successful at reducing bird collisions, particularly in the high-risk zone of the first four or five stories of buildings.

- **Opacity.**

Subtle UV coatings on the glass can render transparent glass opaque to birds while still allowing daylight into buildings. Such opacity can also be achieved with sections of back-painted glass (spandrel glass) on building facades, again with little effect on the amount of daylight reaching the interiors.

- **“Lights out” programs.**

Reducing the amount of light around or from a building makes it less of an attractant to birds. Exterior decorative lighting can be eliminated, reduced, or controlled with timers. Interior lighting, such as in lobbies, can similarly be adjusted based on time of day or during the night. The city of Chicago has had such a program in place since 1995.

Many developers and architects have already embraced many of these measures, leading to environmentally conscious and beautiful buildings. The Fiserv Forum in Milwaukee, home of the Milwaukee Bucks, is one of the most recent buildings to make use of the LEED Pilot Credit 55 for its certification.

The good news is that these measures are highly effective in reducing large-scale bird collisions. According to testing performed by the American Bird Conservancy, alternative glass treatments resulted in 78 to 95% of birds tested avoiding glass with such treatments. So, while the current situation is dire, the solutions are available, simple, and effective.



Bird-Safe Glass / Testing & Specifications

Results

Eco-etch® Glass Etching / Accelerated Weathering

Four samples were subjected to 500 hours of UV weathering per ASTM G154 and four samples were exposed to 500 hours of humidity per ASTM D4587. The glass samples showed no gloss loss and very little to no whitening of the etched areas upon exposure to 500 hours of UV and humidity weathering.

Eco-etch® Glass Etching / Modulus of Rupture

Samples yielded an average modulus of rupture of ~7,100 +/- 1,100 psi when 30 replicates were tested per ASTM C158 Method A.

Full final test results and additional data are available upon request. Contact your sales rep for details.

Specifications

Glass Size

- Fabricated sizes up to 96" x 144"
- Sample size: 12" x 12"

Glass Thickness

- Available in all standard glass thicknesses
- Can be incorporated into an IGU up to 1¼" thick

Glass Weight

- Up to 400 lbs

Finishing Options

- Laminating
- Insulated glass unit (IGU)
- Holes and notches
- Back-painting
- Combination of techniques