

Case Study



Fallingwater

MILL RUN, PENNSYLVANIA

Owner

Western Pennsylvania Conservancy

Architect/Designers

Frank Lloyd Wright

Vitro Architectural

Glass Products

Starphire Ultra-Clear® Glass

Glass Fabricator

Dlubak Specialty Glass Corporation

PROJECT BACKGROUND

In September 2019, the Western Pennsylvania Conservancy, owners of Frank Lloyd Wright's Fallingwater, sought to complete restoration work on the window and door glass of the architect's most celebrated masterpiece. As it has done for many years, the organization turned to two trusted sources for their products and expertise: Vitro Architectural Glass (formerly PPG Glass) and Dlubak Specialty Glass Corp., a member of the *Vitro Certified™* Network.

One of Wright's primary goals in designing with glass at Fallingwater was to reduce, as much as possible, the visual barrier between the inside of the house and its iconic location above the falls of Bear Run in Pennsylvania's Laurel Highlands. That, as much as any factor, guided his decision to specify *Waterwhite* glass, an innovative low-iron glass that PPG Glass (now Vitro Glass) had recently introduced to make clear glass more transparent.

Because *Waterwhite* glass is no longer made, the staff of Fallingwater today relies on its more sophisticated counterpart, *Starphire Ultra-Clear®* glass, to preserve the fabled exterior views of the house.

Manufactured by Vitro Glass using a low-iron formulation developed by PPG in the 1990s, *Starphire Ultra-Clear®* glass has been chosen by the Conservancy for all of Fallingwater's window glass replacement projects over the past few decades.



Photo Courtesy of Western Pennsylvania Conservancy

Low-iron *Starphire Ultra-Clear®* glass has been used for window glass replacement projects at Frank Lloyd Wright's Fallingwater for the past several decades. The architect originally specified an early version of low-iron glass for Fallingwater in 1934 to reduce the visual barrier between the house's interior and its iconic waterfall setting.

Fallingwater | Mill Run, Pennsylvania

The Windows of Fallingwater

Fallingwater is the only major work by Frank Lloyd Wright to be brought into the public domain with so much of its original furnishings and artwork intact. While regular maintenance is performed on the home to keep it in prime condition, its caretakers work diligently to ensure that all efforts to preserve the property are made with his legacy in mind.

One significant aspect of this commitment is regular window and door restoration, which Scott W. Perkins, director of preservation and collections for Fallingwater, says is an almost continuous task. "The window glass is replaced on a somewhat routine basis and usually in conjunction with steel conservation," he explained.

Although the last major round of window preservation took place in 2015, the Conservancy determined in September 2019 that 69 of Fallingwater's window and door sashes needed to be repaired, including 16 windows that required complete replacement of the glass. The smallest glass panels were about 8 by 10 inches and the largest, used on the doors, reach a full height of approximately 30 by 75 inches.

To enhance the strength and performance of the refurbished windows while preserving their historic integrity, the Conservancy specified *Starphire Ultra-Clear*® glass with a SentryGlas™ interlayer by Kuraray. In addition to offering five times the strength of ordinary laminating materials and 100 times the stiffness, the SentryGlas interlayer helps protect the wood and artwork inside the house by limiting their exposure to ultraviolet (UV) light.



Photo Courtesy of Western Pennsylvania Conservancy

The Western Pennsylvania Conservancy uses *Starphire Ultra-Clear*® glass to replace window and door glass at Fallingwater. The work is done on a routine basis at the historic house, usually in conjunction with steel conservation.

While the SentryGlas interlayer gives strength to Fallingwater's window glass, *Starphire*® glass preserves its beauty. With visible light transmittance (VLT) of 91 percent in a standard ¼-inch (6-millimeter) thickness, *Starphire*® glass delivers the virtually unobstructed outdoor views Wright envisioned for Fallingwater when he first specified *Waterwhite* low-iron glass for it in 1934. "The clarity of the glass allows for it to appear invisible, a feature Wright admired," Perkins explained.

The Conservancy also works closely with Dlubak Specialty Glass of Butler, Pennsylvania to preserve Fallingwater's windows and doors. "They've been part of the window glass replacement project from the start," Perkins said. "They serve as the lamination facility for the *Starphire*® glass and

SentryGlas products and coordinate with each project vendor to receive the products, fabricate the window and door glass, and ship directly to Fallingwater."

Although nearly 25 years have passed since *Starphire*® glass was introduced, it remains the clearest, most transparent commercial float glass available to architects today. An historic product in its own right, *Starphire*® glass has been used on landmark buildings around the world throughout its history, from the Glass Hall at Leipziger Messe in Germany to Amazon Spheres in downtown Seattle and The Jewel at Changi Airport in Singapore.

To learn more about *Starphire Ultra-Clear*® glass, including its ability to function with *Solarban*® low-e glasses as part of an environmentally advanced glazing system, visit vitroglazings.com or call 1-855-VTRO-GLS (887-6457).