English

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Trosifol® and SentryGlas®

Salt spray testing

kuraray Trosifol® SentryGlas®

Delivering peace of mind for hostile environmental conditions

The adoption of laminated glass as a structural material is a significant and growing trend in construction, as architects, designers and engineers realise the capabilities of glazed structures and panels that leverage the impressive functional performance of modern interlayers.

TRADITIONALLY ADOPTED FOR THEIR AESTHETICS, materials such as Trosifol® PVBs and SentryGlas® ionoplast interlayers have significantly expanded applications for glass, especially where support needs to be minimal or post-breakage safety is a concern. However, with this expanded uptake in newer, more-demanding applications, additional testing must take place to create the peace of mind that architectural glazed panels can endure the same environmental conditions as the structural elements surrounding or supporting them.

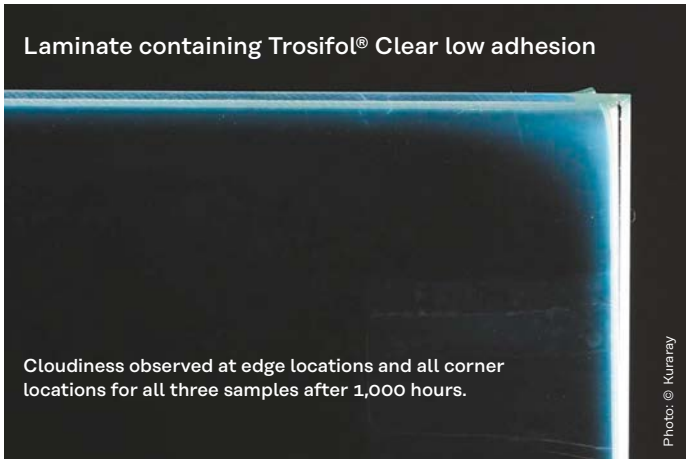
According to Vicente Montes, Vice President at Curtain Wall Design & Consulting, Inc. (CDC): "It's in everybody's best interest to help building systems last as long as possible. In general, we want testing that replicates the conditions the building will face, such as accelerated weathering, structural testing, load durations over time, structural capacity, and material-compatibility testing.

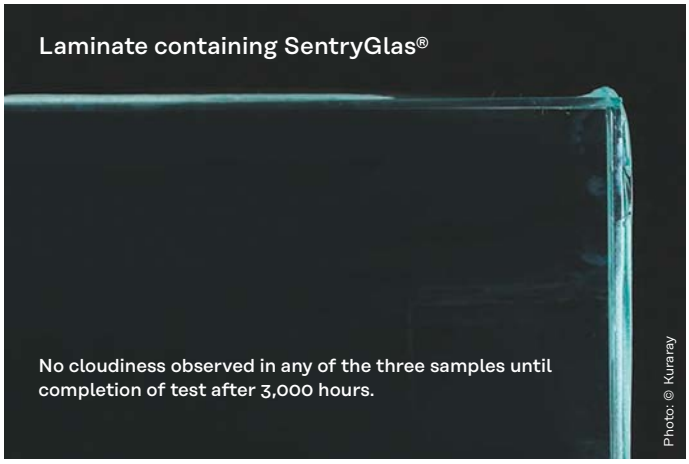
"As a leading façade consultant, we must be able to specify products that allow us to design with confidence. As such, we need accurate and representative test data that we can apply to our real-world designs, to ensure optimum aesthetics and functional performance.

"The companies we work with have reputations to protect, and the façades they construct are literally at the forefront of their brands. There is nothing worse than seeing beautiful buildings re-engineered after just a few years due to laminate failures, which result in aesthetic degradation, remodelling and functional/safety issues."

One important testing regimen involves the effects of adverse environmental conditions, especially those faced by salt-laden coastal applications. In fact, the salt spray test is one of the most widespread and long-established corrosion tests; with ASTM B117 Standard Practice for Operating Salt Spray (Fog) Apparatus being the first internationally recognized salt spray standard and originally published in 1939.

Other standards, including the American Architectural Manufacturers Association standard AAMA 2604-05, requires all coated architectural metal components to demonstrate corrosion resistance through a Salt Spray Test for 3,000 hours exposure. In addition, the Centre for Window and Cladding Technology CWCT-Guidelines in the UK recommends the use of saltwater-proof materials up to 50 miles from the coastline.





If we were to apply this test to glass on its own, we would not see any adverse effects; with glass being a relatively inert material. However, this may not be the case for the panels fabricated using interlayers, especially if they are deployed in open-edged laminated panels.

With this in mind, and as part of ongoing product-development activities, engineers at the Advanced Interlayer Solutions Division of The Kuraray Group commission regular rigorous salt spray testing of a variety of laminated glass samples at approved external laboratories.

Interlayers that are regularly tested include Trosifol® Clear, Trosifol® Extra Stiff, Trosifol® UltraClear, new Trosifol® Extra Stiff Pro, SentryGlas® and SentryGlas Xtra®.

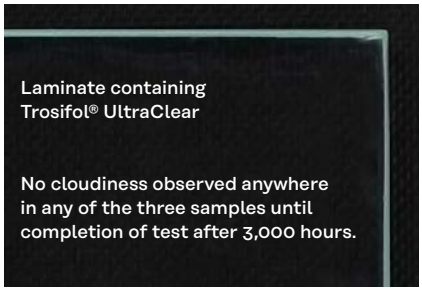
Each interlayer is used to create glass panel test samples with ground edges. The 150 x 100 mm (5.9 x 3.9 in) panels comprise two 3 mm (0.12 in) annealed glass panes sandwiching a 1.52 mm (6 mil) interlayer.

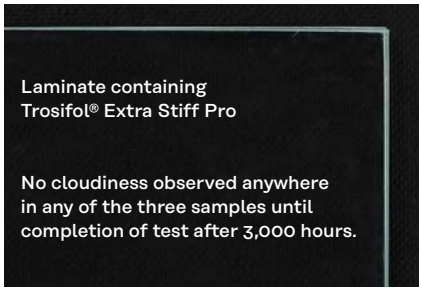
Three samples from each sample type are randomly selected for testing, with the fourth being kept for reference. All the glass panels are exposed to salt fog environment in accordance with the specified test method (example below) and test conditions. Each glass panel is then visually assessed at 500 hours, 1,500 hours, 3,000 hours and eventually 5,000 hours for any kind of edge defect, such as delamination, cloudiness, bubbles, etc.

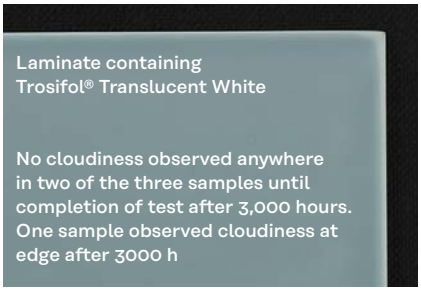
Typical Test Conditions

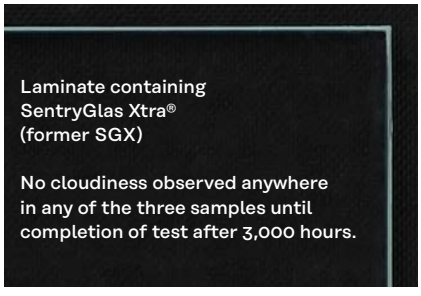
Test Conditions	Values
Concentration of salt solution	5 ± 1% w/w NaCl
S.G of condensate	1.029-1.033
pH of condensate	6.5-6.9
Volume of condensate	1.0-2.0 ml/hr/80 cm^2
Test chamber temperature	35 ± 2°C
Position of glass panel	Inclined 15° from vertical
Exposure Time	500, 1,500, 3,000 and 5,000 hrs.

At the first 500-hour interval, none of the samples exhibited any ill effects from the salt spray. After 1,000 hours, one sample started exhibiting very light cloudiness at its edges. As the test progressed to 3,000 hours, more samples began to demonstrate elevated edge cloudiness while after 5,000 hours (after a polish) SentryGlas® was showing no signs of delamination, closely followed by new Trosifol® ES Pro and Trosifol® UltraClear.









Contact

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on products from Kuraray, please visit www.kuraray.com.
You can find further information on our Trosifol® and SentryGlas® products at www.trosifol.com.

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