Neat+™ Coated Glass

Cardinal's Neat+ is a smooth titanium dioxide (TiO_2) coating designed to keep the exterior glass surface naturally cleaner longer than uncoated glass. Neat+ is deposited in a patented double-sputtering process and is available with all Cardinal LoĒ™ coatings.

Neat+ uses two properties to keep windows naturally cleaner longer: anti-static and photocatalysis.

Features and Benefits

Anti-Static

Neat+ is more conductive than uncoated glass. This inhibits the buildup of static electricity that can attract dust and debris to the surface of the glass. The anti-static property does not require UV light and will work immediately, no activation required.

Neat+ keeps the glass cleaner than uncoated glass regardless of how shaded the windows are. An independent lab test showed a reduction of 34-44% dust on the Neat+ glass compared to uncoated glass.

Photocatalysis

The photocatalysis property of Neat+ requires the UV light from the sun to generate a chemical reaction to decompose absorbed greenhouse gases and pollutants such as methane.

The photoactivity of Neat+ is 25% greater than original Neat®.

The decomposition time of absorbed greenhouse gases and other pollutants will vary with the concentration in the air, amount that absorbs on the Neat+ surface, and the amount of UV light.

The amount of UV light on the window is affected by the following list of common sources of shading, reducing the effectiveness of photocatalysis:

- Roof overhang
- Landscaping (ex. trees and shrubs)
- Awnings
- Screens
- Window Orientation (north vs south facing)
- Proximity to other homes or buildings

Neat+ that has had sufficient UV light from the sun can become hydrophilic (Fig. 01) instead of hydrophobic (Fig. 02), which is typical non-coated glass. Water on a hydrophilic surface will dry about 3 times faster vs. a hydrophobic surface, resulting in fewer visible water marks.

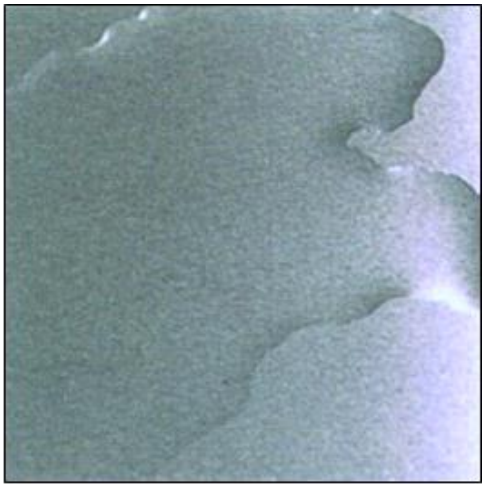

Fig. 01: Hydrophilic surface

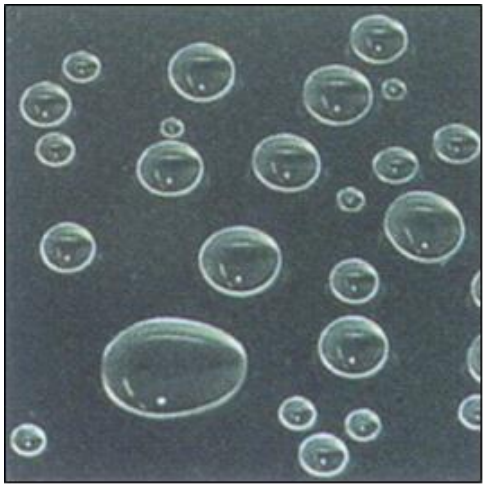

Fig. 02: Hydrophobic surface, non-coated glass

Accelerated UV and condensation exposure testing indicate that the anti-static and photoactivity of Neat+ should continue after 15 years of exposure.

Neat+ decomposes:

- Greenhouse gases and other pollutants such as methane
- Vapor contamination from many sealants, i.e. Dow Corning 1199, GE Silglaze, Novagard, Novaflex, Dow Corning 9-1350 and Dow Corning 3-0117.

Neat+ does not:

- Decompose thick contaminations, like silicone (cured or glazing residue), paint, stain, etc.
- Stop bleeding around the edge of a window which can cause moisture picture framing around the perimeter (Fig 03).
  - This effect isn't unique to Neat+ and occurs on uncoated glass as well.
  - Windows with a bed of silicone on the #1 surface for adhering can result in a narrow residue area of higher contact area around the perimeter of the glass.
  - This perimeter area can extend into the vision area approximately 1" to 3" from the edge of the window.

Fig 03: Silicone glazing residue causing picture framing (beading of the water due to silicone residue)

Window Performance with Neat+

NFRC recertification of windows with Neat+ is not required because Neat+ does not affect the following:

- Outdoor or Indoor reflectance
- Visible transmittance
- Solar Heat Gain Coefficient (SHGC)
- U-Factor
- Color

Neat+ will not change the performance regardless of the LoĒ coating configuration.

Example:

		LoĒ²-272®	Neat+ LoĒ²-272®	LoĒ³-366®	Neat+ LoĒ³-366®
Visible	Trans	72%	72%	65%	65%
	Out	11%	11%	11%	11%
SHGC		0.41	0.41	0.27	0.27
Ufactor		0.25	0.25	0.24	0.24
UV Trans		16%	16%	5%	5%

- Data is for center of glass
- IGU Construction 3mm Coated / 11.5mm 90% Argon / 3mm Clear
- Simulated with LBNL Window program

Processing Neat+ Glass

Neat+ can be tempered and heat strengthened.

When fabricating insulating glass units (IGU) with Neat+, Cardinal recommends a pH ≈ 7 for the washer water (pH > 5.5).

Neat+ should be placed in the washer with the Neat+ coated surface down and the LoĒ coated glass surface up and away from the rollers in the washer.

When glazing, care should be taken to avoid direct sealant contact to the Neat+ surface, except as required in the glazing area.

For grilles that are adhered to the #1 glass surface with a PSA glazing tape (Fig. 04), the grille tape manufacturer should be contacted for recommendations on adhering grilles to the Neat+ surface.

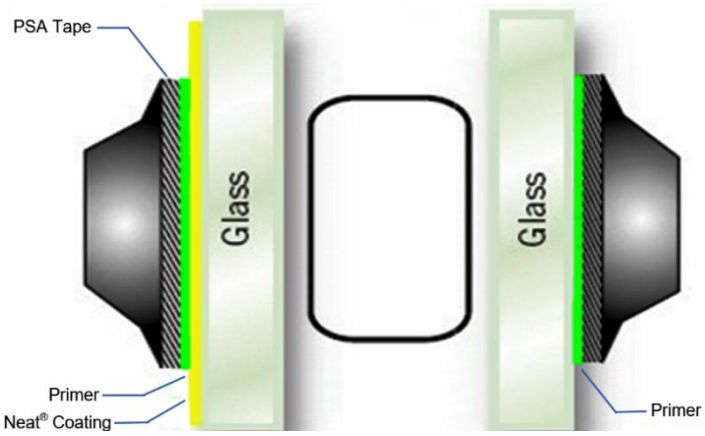

Fig. 04: Grilles adhered to Neat+ coated glass.

Cleaning Neat+ Coated Glass

When a window with Neat+ is installed in the field, normal glass protection practices should be followed to reduce the risk of damage to the Neat+ surface from building materials (ex. stucco, paints, stains, etc.).

Standard window cleaning products can be used to clean Neat+. As with standard glass products, if a squeegee is used to clean the glass, the squeegee should not have exposed metal edges as the metal edges could scratch the coating and/or glass.

As with non-coated glass products, metal blades or any sharp object should not be used as they may scratch the Neat+ coating and/or the glass.

Sprinklers should be adjusted to prevent water contact with the coating. Hard water deposits can be visible on Neat+ coated glass although less visible than on non-coated glass.

Neat+ and Preserve® Coated Products

Cardinal Preserve® is a protective film used on the exposed glass surfaces of insulating glass units and is compatible with Neat+. Cardinal IG Company owns several patents relevant to Preserve film.

The Preserve film protects the glass surfaces during shipping, window fabrication, handling/installation, and from debris to which the glass is exposed on the jobsite.

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