REYNOBOND® | REYNOLUX®
ARCHITECTURE BUILDING

Reynobond®|Reynolux® with EcoClean™

# Build a forest!
# With every building!

ALCOA

excellence in innovation

# The first aluminium wall cladding to clean itself. And the air as well.

Just imagine if you could build a bit of forest with each building! Now you yourself can actually turn such a dream into reality – thanks to Reynobond®|Reynolux® with EcoClean™, a revolutionary protective coating from Reynobond® Architecture and Reynolux® Building. This surface means you can permanently retain the value and appearance of your wall claddings. And at the same time you will be actively combating smog, as 1,000 $m^2$ of EcoClean™ have the air cleaning power of approximately 80 trees.

Under the influence of UV radiation, EcoClean™ breaks up harmful organisms such as algae or mosses, as well as intrusive odours or industrial emissions and car fumes. This means that the cladding and surrounding air are cleaned more or less round the clock. Not only does this result in a measurable impact on the environment; it also helps retain the condition of the cladding over the long term and reduce the time, effort and costs involved in maintenance.

## Proven in practice – now for the first time on aluminium.

The EcoClean™ coating is based on the HYDROTECT technology developed by TOTO®, involving a principle that has been successfully applied in practice over many years. Up until now, HYDROTECT could only be applied by hand roller or spray to smooth surfaces such as concrete, glass, non-machined metals, plastic and ceramic. The new aluminium cladding material from Reynobond® Architecture and Reynolux® Building means that you now have a global innovation which, thanks to its functional properties, does not just clean itself, but also the air around it. The decisive factor here has been a further development of the HYDROTECT technology for our coating, which can now for the first time be coil-coated onto the painted aluminium sheets. As a result, the production has become not just exceedingly cost-effective, but also allows the same quality controls as for all our products.

**Reynobond®|Reynolux® with EcoClean™**

powered by Hydrotect™

## Doesn’t give dirt a chance.

A directly visible effect of EcoClean™ is the fact that the cladding cleans itself. Organic dirt is simply washed away leaving hardly a trace behind. This means that the surface retains its new appearance for years. Cleaning is only required from time to time. When calculated over the lifetime of the cladding, the lower maintenance costs result in a clear cost benefit. In addition, the clean cladding definitely enhances the overall image of the building.

## Gives smog short shrift.

But the new coating is not just about keeping the surface clean. It is also able to break down harmful substances from the surrounding air into their harmless constituents. All that is needed is sunlight and humidity. This means that your cladding reduces the smog content of the air, thereby making a contribution to a cleaner environment.

# Sun and rain.
# That’s all you need.

## How Reynobond®|Reynolux® with EcoClean™ combats smog.

Essentially, EcoClean™ consists of a titanium dioxide layer that is applied to the painted aluminium using a coil-coating process. Under the incidence of sunlight, the light-sensitive titanium dioxide acts as a catalyst, even in conditions of low humidity. On the surface, the electrons released by the UV light form oxygen radicals, and these in turn break down the smog molecules into their harmless constituents.

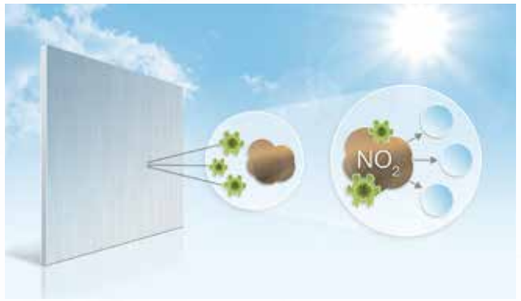
Smog consists of various nitrogen compounds, generally designated by the abbreviation $NO_x$. Nitrogen oxide does not just dirty buildings; it also pollutes the air we breathe. On cladding that is coated with EcoClean™, the nitrogen oxide molecules are attacked by the free oxygen radicals and broken down into harmless reaction products such as water and nitrates.

## How Reynobond®|Reynolux® with EcoClean™ combats dirt.

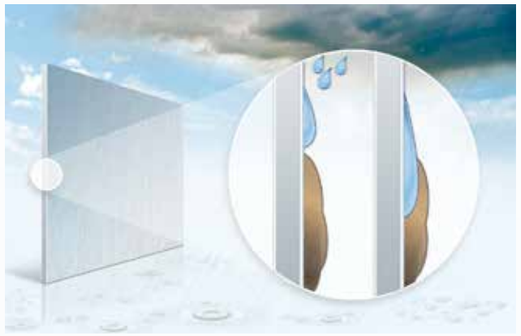
This is where the second feature of EcoClean™ comes into play – its hydrophilic properties. The coating does not repel water, but binds damp and humidity to the surface, which becomes extremely smooth as a result. Once the free oxygen superanions and hydroxyl radicals have broken up the harmful substances and dirt into their individual constituents, the decomposed organic material or smog will be washed off the surface in the presence of rain water. Thus the cladding keeps on cleaning itself. The result is a significant reduction in the time, effort and costs required to maintain it in good condition, as well as cladding that will stay clean for many years to come.

- **1,000 m² of EcoClean™ disperse as much smog as approximately 80 trees**
- **Self-cleaning using sun and rain**
- **Wall claddings remain cleaner over the long term**
- **Almost no cleaning costs – reduction of the frequence of washing and use of chemical cleaning agents**

## In detail: This is how the EcoClean™ coating works.




- Under the influence of sunlight, a photoelectric effect in the titanium dioxide layer results in the creation of available energy from electrons.
- This energy creates free oxygen superanions and hydroxyl radicals that lead to the breakdown of organic substances.



- The superhydrophilic properties come from the increase in surface energy caused by the electrons. The surface attracts humidity with the result that no drops are formed, but a thin layer instead.
- The harmful substances that have been broken down slide off this smooth surface or are simply washed to the bottom by rain.

# Questions and answers for Reynobond®IReynolux® with EcoClean™.

## What is so revolutionary about the new coating?

Because titanium dioxide attacks all organic matter, up until now it has proved impossible to apply it to painted aluminium sheet using coil-coating, as it tended to destroy the paint coat. Now researchers at Alcoa have developed a patent-pending process that ensures the paint coat remains unaffected.

## What evidence is there that EcoClean™ is effective?

For more than ten years, the TOTO® HYDROTECT technology has been used in outdoor applications. During this period, the self-cleaning and air-cleaning characteristics of the coating have been demonstrated many times over. Alcoa has also carried out its own trials which clearly demonstrate the effects of EcoClean™.

## Why is Reynobond®IReynolux® with EcoClean™ absolutely safe?

Titanium dioxide, the core constituent of EcoClean™, is a substance that is completely non-hazardous for living creatures. It is used in a wide range of day-to-day items, from toothpaste to kitchen tiles.

Though it is true that EcoClean™ is based on the nanotechnology of TOTO®, it does not itself consist of nanoparticles. The free radicals that it forms do not represent a hazard, nor do they result in stripping of the protective coating. No titanium dioxide is released into the environment.

## How does a cost-benefit analysis of EcoClean™ turn out?

Because EcoClean™ is applied using a coil-coating process, any additional costs are kept to a strict minimum. If to this we add the lower maintenance costs and effort over the lifetime of the cladding, together with the fact that it remains cleaner over the long term, then the new coating represents a good investment.

HYDROTECT

## Is the dispersion of smog measurable?

Definitely, without a doubt. For instance, samples coated with EcoClean™ were subjected to observation in a test chamber containing nitrogen oxide. The gas was introduced in the dark; as soon as the light was switched on, the $NO_x$ values in the chamber decreased dramatically. The same results were evident in outdoor tests as well.

## Does the coating become reduced over time?

No. The free radicals are created by a photocatalytic reaction that occurs when humidity and oxygen on the surface of EcoClean™ are subjected to UV radiation. The coating itself does not release any particles and does not therefore become worn out or used up. The strength of the photocatalytic effect remains consistent over the entire lifetime of the product. As long as the EcoClean™ coating is on the surface it will continue to perform.

REYNOBOND® ARCHITECTURE | REYNOLUX® BUILDING

## excellence in innovation

With **excellence in innovation**, Reynobond® Architecture and Reynolux® Building are your partners for more creativity, more versatility and more reliability. As innovation leader in our market segment we offer you:

| Inspiration<br>more SURFACES | Protection<br>more PROTECTIVE COATINGS | Integration<br>more SYSTEM SOLUTIONS |
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**excellence in innovation** is at the same time an aspiration and a challenge. It not only relates to our products, but also involves responsible management of our natural resources. And it is our benchmark ensuring we always provide you with the best available solution for your very particular requirements. Find out more at **www.excellence-in-innovation.eu.**

### About Reynobond® Architecture and Reynolux® Building

Reynobond® Architecture and Reynolux® Building are trademarks of Alcoa Architectural Products based in Merxheim, France – a subsidiary of Alcoa, the market leader in aluminium. In Reynobond® aluminium composite panels and Reynolux® aluminium sheets, we offer you a wide range of products for architecture and building projects.

What's more, they come with all the solid virtues you would expect of a global company. This means, for example, that you get a warranty of up to 20 years on our DURAGLOSS® surfaces. Member of the ECCA (European Coil Coating Association), our company is certified according to the international standards ISO 14001 and 9001 and OHSAS 18001.

BSI ISO 14001 EMS 90851 | BSI OHSAS 18001 OHS 572 475 | BSI ISO 9001 FM 90850

### Controlled French manufacturing

Reynobond® Architecture and Reynolux® Building panels are all made in France. Alcoa Architectural Products have ISO 14001 certification, indicating their voluntary engagement in reducing the impact of their activity on the environment at all levels: water, energy or waste.

MADE IN FRANCE
MERXHEIM | ALSACE

**Alcoa Architectural Products**
1 rue du Ballon
68500 Merxheim, France
Tel. +33 (0) 3 89 74 47 63
Fax +33 (0) 3 89 74 46 90
Reynobond.Service@alcoa.com
Reynolux.Service@alcoa.com
www.alcoaarchitecturalproducts.eu

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