



Sustainability at Alcoa Architectural Products



We bear responsibility. For people, nature and society.

At Alcoa, and hence also at Alcoa Architectural Products in Merxheim, we have been taking corporate responsibility very seriously for many years. We set the respective targets in the “2020 Framework for Sustainability”. The term “sustainability” refers not only to the environment, but to all areas of business activity: respectful working relations, workplace safety, environmentally friendly products, energy efficiency, resource conservation, increasing recycling rates and social commitment – for us, this is all part of a sustainable strategy.

Pioneers for each generation

To achieve all of these requirements and our own aims, we continually invest in our production facilities and in the education and training of our employees. Each planned investment is part of our development and takes into account economic, environmental and social responsibilities.

Since 1988, Alcoa has been working to create new and sustainable solutions. In over twelve decades we were able to improve our products and services continuously to meet and even surpass the needs of our customers in various markets. To date, Alcoa has been listed for eleven years in a row in the Dow Jones Sustainability Index. This is one of the oldest and worldwide most respected sustainability indices.

We support the region in which we work

Merxheim for us is not only a production site, but a place where many of our employees and their families live. The region has given us a friendly welcome, and we are happy to give something back by making regular contributions to social, cultural and social development. An example: Alcoa Architectural Products installed a rainwater collection tank with an oil separator and storm-water tank. If there is a fire, a special valve in the system will prevent the extinguishing water from reaching the surrounding rivers and polluting the water.

With rigorous environmental, health and safety (EHS) management, Alcoa Architectural Products in Merxheim reduces the environmental and noise pollution and safeguards the health of employees. The frequency and severity of accidents are thus ten times less than the average for industrial production in France. Our company is also certified to OHSAS 18001 (Occupational Health and Safety Assessment Series) and ISO 9001.

Alcoa – Aluminium for the whole world

Alcoa is the world’s leading producer of primary aluminium and aluminium products. Alcoa employs approximately 61,000 people – including researchers, scientists and engineers – in 31 countries. As the founder of the modern aluminium industry, for more than 120 years Alcoa has been a byword for major innovations in many industries, including aerospace, automotive, packaging, building and construction, transport and consumer electronics. Of all the aluminium produced since 1888, currently about 75 % is still in use.

Alcoa’s expertise extends from sheet products through the pressing of hard aluminium alloys, forgings, fastening systems, precision and investment castings, as well as building systems and even the processing of other light metals.

Doing good thanks to the Alcoa Foundation

Our company is responsible not only for its own employees, but also for the environment and society. One example is the Alcoa Foundation. In this, we invest millions of dollars in environmental protection and sustainable development:

- In 2011, Alcoa employees worldwide contributed more than 900,000 hours of voluntary work in 1,200 local projects. This include outreach to 80,000 children, planting 34,000 trees and supporting 1,800 non-profit organisations.
- The Worldwide Month of Service has a long tradition: Thousands of Alcoa employees around the world participate in local non-profit projects.

Alcoa Architectural Products – Local commitment

2012: US \$ 1,500 for the “plan climat” event of the Enjeu Nature association in Merxheim

2011: US \$ 30,000 for a biodiversity project of the ARIENA association in the Alsace

2011: US \$ 50,000 for a project of the Kraing Speu association and the Construction High School in Cernay for installing drinking water in a village in Cambodia

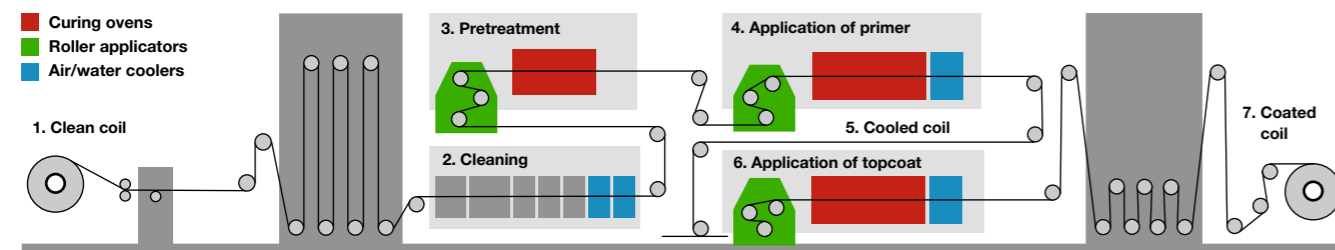


We produce with respect to the environment. Thanks to modern coating technology.

Coil coating is the most economical, efficient, high-quality and environmentally friendly method for applying coatings to aluminium panels. The continuous high-tech coating process makes it possible for a complete aluminium to receive a uniform coating in just ten minutes. As a member of the ECCA (European Coil Coating Association), we adhere closely to the prescribed quality and environmental standards, and try to surpass them.

Advantages of coil coating

- **High precision:** Roller application ensures an even and precise coating thickness and uniformity of colour. This reduces the amount of coating used and also reduces waste.
- **Less cleaning:** Chemical pretreatment by cleaning rollers ensures good adhesion between metal and coating, increasing the corrosion resistance. Coil coating reduces or even eliminates the need for the time-consuming and costly cleaning of products.
- **Lower VOC emissions:** In classical coating techniques, chemicals for pretreatment, solvents and waste pollute the environment. With the coil-coating process we capture the volatile organic compounds (VOCs) and feed them to an incinerator.
- **Good carbon footprint:** According to calculations by the ECCA, the complete CO₂ footprint in the coil-coating process is 0.53 (CO₂)/m². This value represents an improvement of 7% compared to 2009.
- **Quality:** By coil coating, we improve all the properties of the coating finish – durability, superior quality, absolute colour accuracy and reproducibility.



We are improving every day – using innovative technology and resource conservation.

Our commitment is reflected in the various product areas, whether in material and process optimisation for packaging or protecting the environment. Our objectives are to reduce greenhouse gas emissions even further, to increase use of renewable energy sources, to use energy more efficiently and to continuously increase recycled content.

Reduction of VOC emissions

99.7% of all volatile organic compounds (VOCs) produced during coil coating are captured and destroyed in an incinerator. What remains is a residue of only 0.5%. Altogether, only 0.8% VOCs are emitted, which is far below the 10% required by law.

Reduction of water consumption

In the coil-coating process, we use water for cleaning and rinsing the sheets, as well as for pretreating the metal and cooling it after stoving. We are constantly working to reduce water consumption and avoid contamination of river and ground water. By cleaning the water and reusing it, we were able to reduce water consumption from 2003 to 2011 by 89%.

1991: Introduction of alkali-cascade rinsing.

1995: Investment in rinse-free pretreatment technology led to a waste-water reduction of 59%.

2005: The introduction of a closed water circuit led to a reduction in cooling water consumption of 70%. In one of the coil-coating lines we were able to reduce the monthly water consumption from 15,000 m³ to 1,500 m³.

Waste prevention

We sort and recycle recyclable materials such as cardboard, paper, wood, steel, aluminium and plastic. Our entire production creates only 650 g of waste material per ton produced. Of the waste generated in the production of PE and FR core for Reynobond® composite panel, 99% is returned to our production process. 80% of the hazardous materials, including those in waste water, are recycled by specialist companies. The wastewater is recycled, and 90% can be reused as fresh water.



Development of environmentally friendly coatings

We dedicate ourselves every day, not only to the creation of new colours and aesthetic effects, but also to working closely with our suppliers so we can provide our customers with the most environmentally friendly solutions possible. Our Reynobond® and Reynolux® products are intended to meet market requirements as well as the different application needs. We develop continuously by improving the coatings in terms of their composition (solvents and pigments), their durability and their cleaning requirements.

- We have voluntarily stopped the use of strontium chromate for our primary colours.
- All our colours are now produced only with lead-chromate-free pigments.
- We voluntarily do not use any pigments or solvents that are carcinogenic, mutagenic or toxic for reproduction.



Made in France

Reynolux® sheets and Reynobond® composite panels are coated and fabricated in France. Alcoa Architectural Products is certified to ISO 14001. This illustrates our voluntary commitment to reducing the impact of our actions on the environment at all levels: water, energy, waste and use of resources ...

We verify the sustainability of our products.

To ensure the sustainability of Reynobond® and Reynolux®, we record their complete life cycles. As part of the voluntary environmental product declaration (EPD) we describe the environmental impact resulting from the manufacture and use of our products. At the same time, we also demonstrate the high recyclability of our products. With this, we give our customers the assurance of working with a completely environmentally friendly product.

Aluminium – Building material for the present and for the future

The mining and production of primary aluminium consume a great deal of energy. However, 55% of aluminium is produced using renewable energy in the form of hydroelectricity. In addition, aluminium is 100% recyclable. More than half of the aluminium currently produced in Europe comes from recycled raw aluminium. The problem here is the high demand, which cannot be satisfied by the quantity of recycled aluminium alone.

Material savings

The high strength of aluminium means it can be used to support heavy loads with low usage of materials, and to strengthen other materials.

Design freedom

The great stiffness of the metal opens up a greater design freedom.

Durability

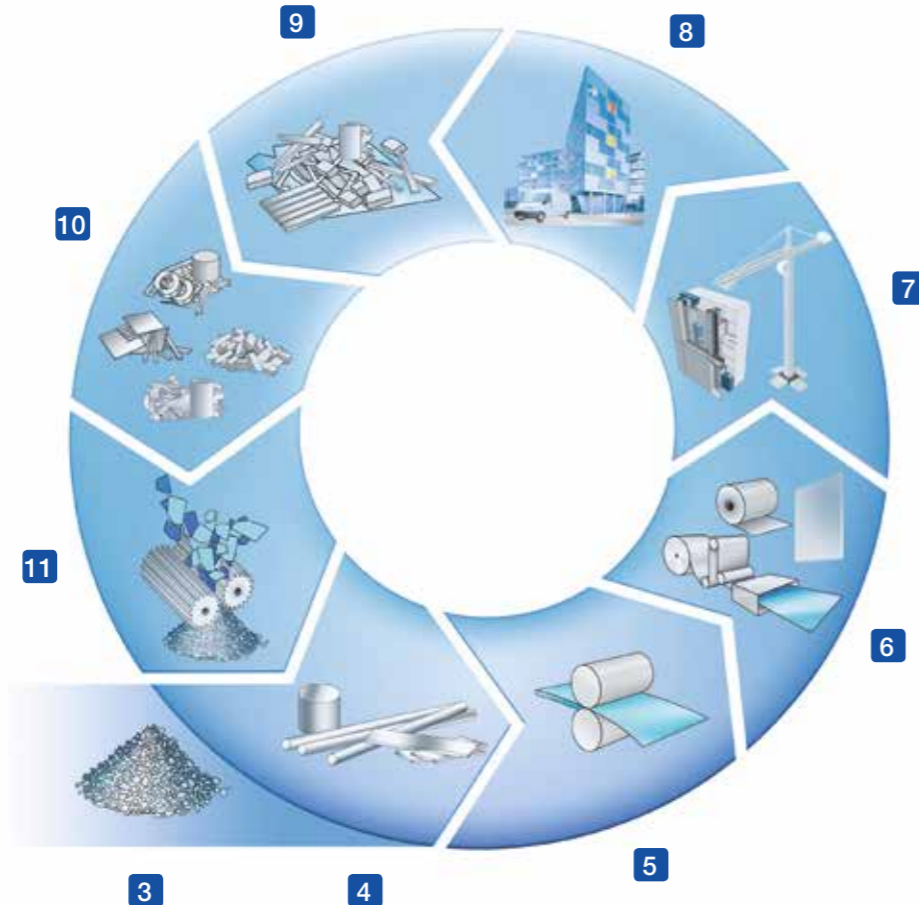
Metal construction products such as Reynobond® include weather, earthquake, corrosion and UV resistance among their properties. Hence they are highly durable without diminishing aesthetic appeal.

Recyclability

Aluminium can be recycled without loss of quality because its metal bonds are restored even after several recycling operations. Hence, about 70% of the aluminium produced in the past hundred years is still in use today. In the European construction sector even 92% of the aluminium is sent for recycling. Just 5% of the energy that is necessary for the production of primary aluminium is needed to recycle used aluminium remelt it again at low cost.



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- 2 Alumina production
- 3 Primary aluminium
- 4 Metal sourcing
- 5 Transformation
- 6 Finishing & manufacturing
- 7 Construction
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- 9 Demolition & collection
- 10 Separation
- 11 Aluminium recycling



Standards for green building

EPD – Europe

The EPD documentation for Reynolux® and Reynobond® based is on the EN 15804 and ISO 14040 standards. They meet the requirements of German DGNB certification. They provide standardised and comparable information available on their environmental performance, and include details such as life cycle, environmental parameters, recycling, and test results for a detailed assessment.

LEED – USA

The U.S. LEED system (Leadership in Energy and Environmental Design) is used for the classification of energy-efficient and environmentally friendly buildings. Reynobond® and Reynolux® contribute to the implementation of such projects by up to two points. The certification is in progress.



We provide environmentally friendly facades for new construction and renovation.

Our Reynobond® and Reynolux® products are ideal for use in external thermal insulation and projects that have to meet certain environmental requirements and require external thermal insulation. Thus, they are, for example, ideal for energy-efficient building modernisation under the terms of the Kyoto Protocol. Reynolux® also meets the criteria of fire-protection class A2 according to DIN 4102.

Advantages of the ventilated facade

Reduced energy consumption

Back-ventilated curtain facades fit like a second skin around the building and ensure optimal external thermal insulation based on the following properties:

- High thermal inertia
- Minimization of thermal bridges
- Increased thermal performance

This in turn reduces the energy consumed in buildings for heating and air conditioning. This makes ventilated facades the most efficient solution for the external thermal insulation to improve the energy balance of a building.

Reduction of CO₂

The energy savings also reduce CO₂ emissions. In this way, Reynobond® and Reynolux® contribute to new building such as in the compliance with modernized statutory environmental policies, such as EnEV, DGNB, RT 2012, Effinergie and for passive houses or LEED projects.

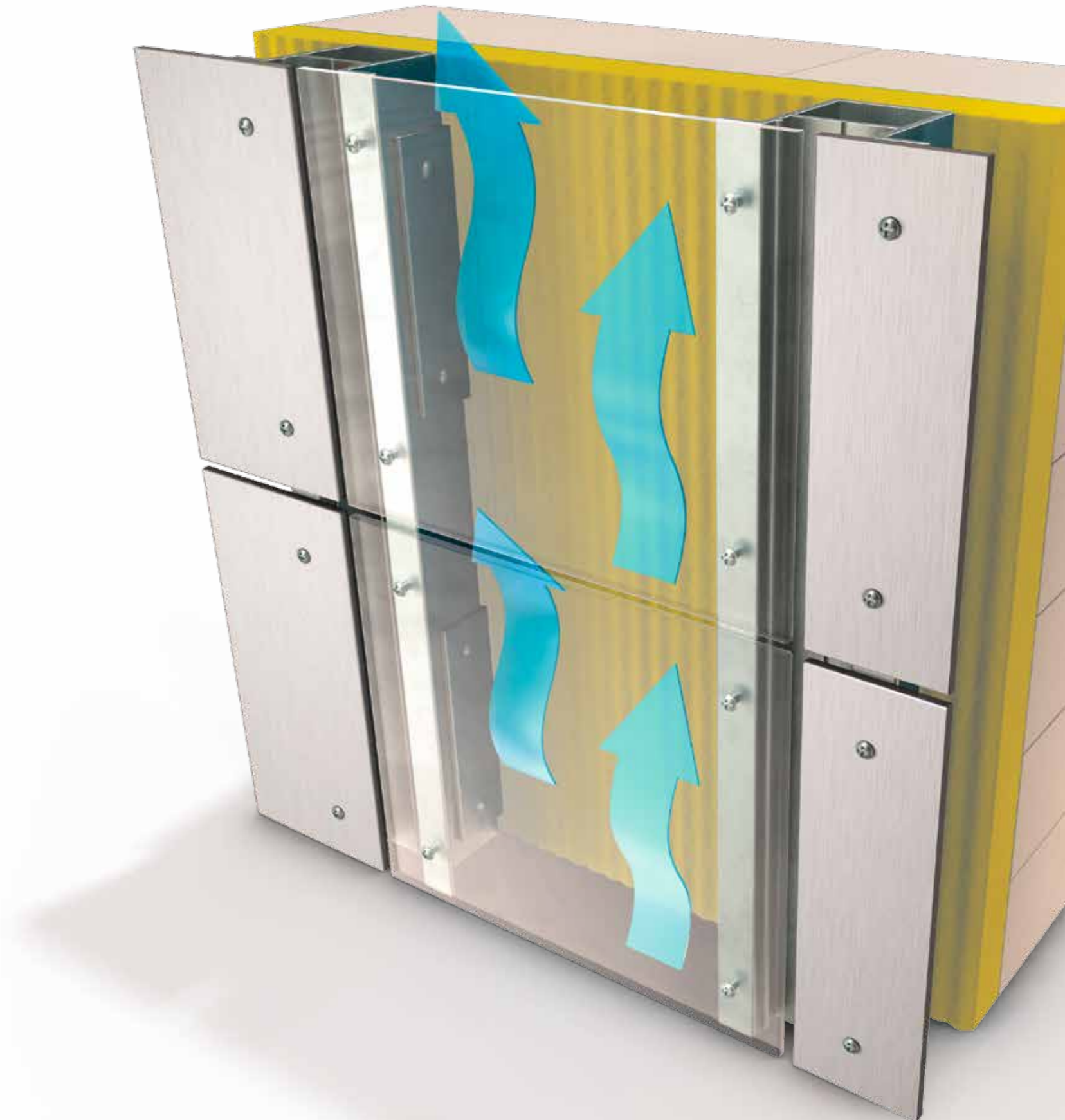
Modern and healthy buildings

With a ventilated facade even older buildings can be restored to a healthy and robust status. Insulation from outside not only improves the preservation and aesthetics of the building, but simply turns an unsightly facade into an affordable, modern and attractive facade.



Six "Herriot et Suisse" high-rise blocks | Le Mans | France | Nomade Architectes | Inter-Pliage | Product: Reynolux® Building 1.47 mm, 3 special finishes: champagne, gold and bronze with 30 % gloss

An extensive renovation plan of the city of Le Mans and a housing association had the aim of enhancing a social housing district with contemporary architecture and the integration of insulating and energy-saving components. In addition, the existing facades of six high-rise buildings were provided with external thermal insulation. Instead of uniform, prefabricated concrete components, Reynolux® Building was used in three high-gloss finishes.





We produce attractive, economical and environmentally friendly products.

Due to its characteristic optical, physical, economical and environmentally friendly properties, aluminium is widely used not only in facades, but also for many other indoor and outdoor applications. These include building fixtures, furniture, interior designs, exhibition stands and signage. The material offers advantages in particular with its durability, weather resistance, easy and low-cost care and maintenance, insulating properties in ventilated curtain facades and the versatile design and processing options.

Creativity and research for the environment

Alcoa Architectural Products extends these advantages with the particular properties of its products. For environmentally friendly projects, we supply aluminium products that provide additional help for the environment – be it through a self-cleaning surface, material savings or wood-look surfaces and surfaces made of real metals (zinc, stainless steel).

In addition, with the optimised coil-coating process we can not only ensure good colour reproducibility for all products, but also increase their corrosion resistance and durability: According to the EPD life cycle our products have a life span of 50 years with 20-year warranty on the coating.

At the end of their life span, Reynolux® coated aluminium sheets can be completely recycled and Reynobond® aluminium composite panels can be 99% recycled. Specialist firms separate the aluminium sheets from the PE or FR core and send them for separate recycling.

EcoClean®

The first self-cleaning and air-purifying aluminium facade: Reynobond®/Reynolux® with EcoClean™ use the sun and rain to eliminate dirt and smog!

- 1,000 m² of EcoClean™ destroy as much smog as about 80 trees
- Self-cleaning using sun and rain
- Wall claddings remain permanently clean
- Cleaning and maintenance costs reduced by more than half

Wood Design

Reynobond® and Reynolux® Wood Design are facade panels with a coil-coated wood-look surface. This allows architects and facade builders to conserve forest resources while benefiting from the aesthetics of natural building materials and the advantages of an aluminium composite panel or aluminium sheet. Moreover, the durability is greater than for real wood: The surface is scratch resistant and retains its elegance for decades – that's why we guarantee it for up to 20 years.

- Low weight
- Good resistance to environmental influences and UV
- Durability
- Flexible and deformable; making curves and 3-D components possible

NATURAL METALS

The fire resistant core of NATURAL METALS is coated on both sides with real zinc or stainless steel. The composite panel is lighter, more resistant and easier to work with than a full metal panel. Both curves and angles as well as other design elements can be easily realized.

XXL

A further contribution to environmental protection is provided by Reynolux® and Reynobond® XXL in 2,000 mm width.

- Shorter installation times
- Reduced processing and construction cost per square metre
- Reduced aluminium waste through minimal trimming
- Reduced number of visible joints

Roof cooling through reflection

The principal for additional roof cooling is based on surface reflectance. Instead of transferring the heat of sunlight to the building, the roof reflects it off. This reduces the energy consumption for air conditioning. In general, shades of white have a high solar reflectance. On request, Alcoa Architectural Products can provide Reynolux® and Reynobond® roofs with special coatings that have very high reflectivity.

 **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:



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, construction and industry. 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.

Sources:
European Coil Coating Association (ECCA) – www.prepaintedmetal.eu
European Aluminium Association (EAA) – www.alueurope.eu
International Aluminium Institute (IAI) – www.world-aluminium.org