



RESPONSIBILITY FOR PEOPLE AND THE ENVIRONMENT

The ALPOLIC™ path to a sustainable future



ONE PLANET



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"WE ARE NOT ONLY RESPONSIBLE FOR WHAT WE DO, BUT ALSO FOR WHAT WE DON'T DO."

Molière



FOREWORD

The environmentally friendly and resource-saving use of building materials is one of the major issues of our time. The evaluation of building materials under the aspects of sustainability is therefore becoming increasingly important for architects, private builders and communities.

The EU Commission's "Green Deal" is a major challenge for the building industry. The regulations define clear requirements for the assessment of products and the energy efficiency of buildings.

At ALPOLIC™ we are well equipped to meet these challenges.

As part of the Mitsubishi Chemical Group, the issue of sustainability is strongly embedded in our company – we call it our KAITEKI concept. By anchoring sustainability in our integrated management concept, we ensure that we always consider the environmental impact of everything we do.

We contribute to a world with reduced greenhouse gas emissions. We are also working to reduce our environmental footprint.



Our sustainability promise is based on two pillars. On the one hand, we look at our production process and develop solutions to reduce our resource consumption and avoid waste. On the other hand, our products contribute to active and passive energy and resource savings through their long service life, low maintenance costs, high reusability, recycled content and, of course, their excellent insulating effect.

Through innovation, creativity and the commitment of every employee, we are continuously working on improvements to provide our customers with ever more sustainable solutions for their projects.

Sven Stötzer
General Manager ALPOLIC™ EMEA



KAITEKI – OUR PHILOSOPHY AT THE MITSUBISHI CHEMICAL GROUP

At the Mitsubishi Chemical Group, we see sustainability not just as a concept, but as a way of life. We focus on improving the health and well-being of people and the environment. We are working around the world to develop innovative, sustainable solutions. Our goal is to promote the sustainable well-being of people and our planet – that’s what we call KAITEKI.

We believe that our role in the chemical industry is to be an innovation partner, developing material solutions that promote the circular economy and contribute to the sustainability of our planet and society. This overarching KAITEKI philosophy serves as our guiding principle, consciously using fewer resources to achieve greater benefits.

Less resource consumption

Our technologies extend the cycle and conserve resources by using bio-based and recycled raw materials.

Less waste

We are expanding our raw material base by reusing our own production waste and working closely with our customers to recycle their waste.

Less impact

Through innovation and the development of lighter materials, we actively contribute to reducing our impact on the environment.

Longer product life

We are working to improve the material properties of our products to extend their useful life.

PROGRESS AND GOALS AT ALPOLIC™

At ALPOLIC™, as part of the Mitsubishi Chemical Group, we have been actively engaged in sustainable developments over the past years.

Since our foundation in Germany in 2014, we have benefited from more than 30 years of technology optimisation from our R&D department in Japan. Our goal is to increase our productivity and reduce waste production.

In addition, we are continuously working to further reduce our energy consumption in our own production facility. We are proud to say that since 2017, we have reduced our greenhouse gas emissions for the production of our composite panels by about **20%** per square metre through investments in various projects.

Some examples:

- 1 We have increased the insulation of our heating ovens.
- 2 We have lowered the temperature in certain production stages
- 3 We have converted all the lighting in our production hall to LED.
- 4 We have expanded our portfolio with a special variant (R75) that contains a high proportion of recycled aluminium (85%). With this product we want to offer our customers an environmentally friendly option with a lower carbon footprint.

As Mitsubishi Chemical Group, we support the goals and implementation of the Green Deal and the EU strategy to become climate neutral by 2050.



We are committed to reducing our global greenhouse gas emissions (Scope 1&2) by at least 29% by 2030 compared to 2019.



We have the goal of achieving net zero greenhouse gas emissions (Scope 1&2) by 2050.

Together with our partners along the value chain, we create value by promoting a holistic and systemic green transformation that benefits the environment, the economy and society.



In line with our KAITEKI philosophy, ALPOLIC™ is pursuing the following goals by 2030:

Goal 1:

Reduce manufacturing-related greenhouse gas emissions per square metre ALPOLIC™ composite panels (ACM) by a further 30% by 2030.

Goal 2:

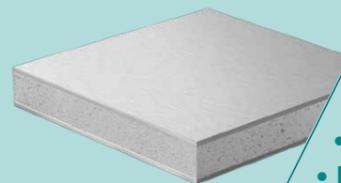
Expanding the existing ACM product portfolio by offering aluminium recycled content of up to 85% by 2024 and 95% by 2025.

Goal 3:

Together with our proven logistics partners, we have started to implement a take-back system for ACM at the end of their use phase. Our goal is to gradually expand the take-back system to other EU member states by 2024.

ALPOLIC™: THE PRODUCT

The use of ALPOLIC™ aluminium composite panels offers not only excellent fire protection properties but also numerous ecological advantages.



- Durable
- Easy care
- Low maintenance
- Reusable
- Easy to dismantle (Designed for reusability)
- EPD (Environmental Product Declaration) certified



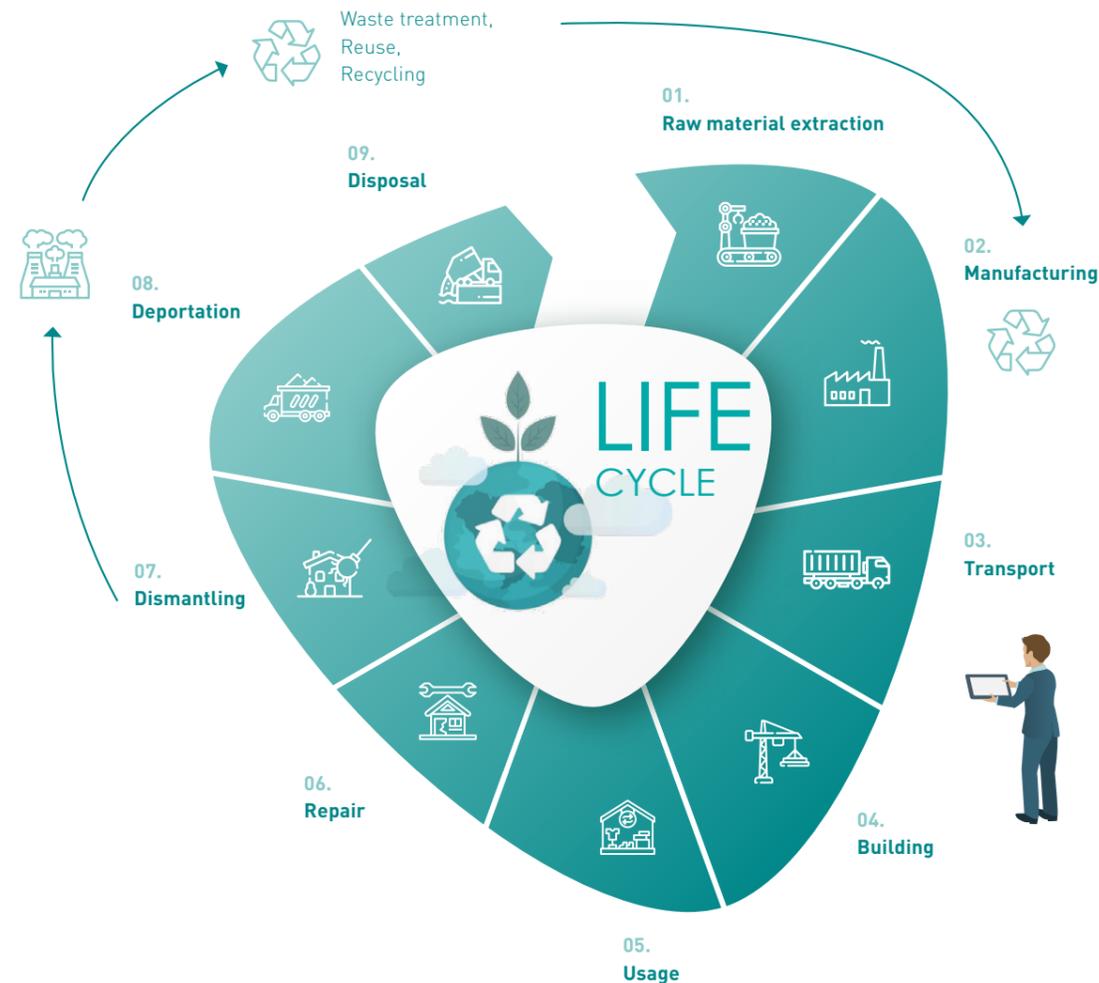
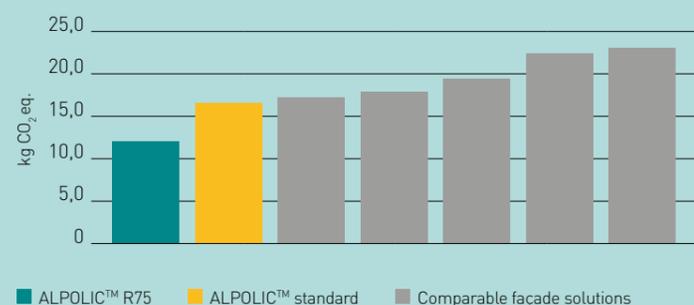
In addition, ALPOLIC™ benefits from the support of the global LCA competence centre of our parent company, Mitsubishi Chemical Group. This enables us to quantify our claims using accurate data in line with current LCA norms and standards.

Lower global warming potential (GWP = Global Warming Potential)

It is also possible to make comparisons with competing materials. The publication of an Environmental Product Declaration (EPD) is mandatory for all building materials. The EPD shows the total emissions per life phase of the product. A comparison of ALPOLIC™ composite panels with products from other European manufacturers per square metre shows that both ALPOLIC™ standard and R75 products cause lower greenhouse gas emissions during their production.

Comparison Global Warming Potential (GWP)

Production phase (A1-A3), panels per square metre



ALPOLIC™: LIFE CYCLE

In order to fully assess the environmental impact of a product, the entire product life cycle must be evaluated.

The best known method for systematically analysing the environmental impact of products is Life Cycle Assessment (LCA). It takes into account all the environmental impacts that occur during the life cycle of a product:

Raw material extraction and production (01, 02, 03, 04):

This includes the processes of raw material extraction, production, transport, installation and energy consumption during these phases.

Product use (05, 06): Aspects such as energy saving, repairs, cleaning and the whole life cycle of the product are considered.

Dismantling (07, 08, 09): This refers to the dismantling of the product, the transport during dismantling and the disposal methods used.

Reuse or recycling: It is analysed whether the product can be reused or recycled and what impact this has on the environment.

By assessing all aspects, the full extent of a product's environmental impact can be assessed and compared.

ALPOLIC™: ADVANTAGES

Raw material and production

Recycled aluminium can be used for aluminium sheets without any loss of quality. This reduces the need for new aluminium.

Recycled aluminium requires **95% less energy** than virgin material, which enormously reduces greenhouse gas emissions.

Product usage

ALPOLIC™ composite panels are mainly used as cladding material for rear ventilated façades. The rear ventilated façade system has long proven itself both in new construction and in the renovation of public and private buildings with high energy efficiency requirements.

Compared to solid structures, it offers improved thermal insulation in summer and reduces heat loss through wind and precipitation in winter.

Dismantling

The ALPOLIC™ products can be easily removed from the building due to their modular construction as a ventilated façade. The individual product components can be separated by type into aluminium and core.

Recycling and reuse

Aluminium has a recovery potential of 100%. The FR core material can also be almost 100% recycled and reused for the production of new ALPOLIC™ panels.

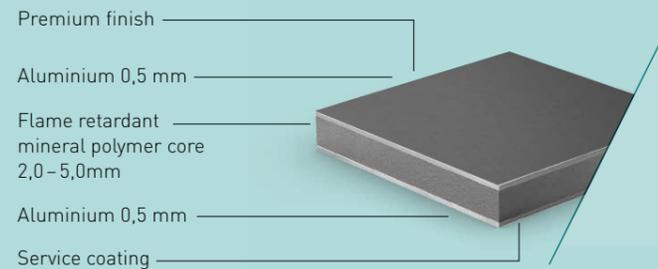
ALPOLIC™: TAKE-BACK & REUSE

In order to recycle composites, the different components must first be separated from each other. Various methods with different costs and results are available for this. Since the commissioning of our site in Germany in 2014, we have relied on the direct delamination of our FR waste to achieve the highest yield.

ALPOLIC™/fr

Delamination is generally difficult due to the robustness of the composite panels. However, through years of experience and testing with different temperatures, speeds, pressures and other variables, we are now able to separate the materials efficiently and reliably.

The FR core material of the composite panel is shredded at our own factory and then mixed with our new FR core. The new core contains up to 15% recycled core material.



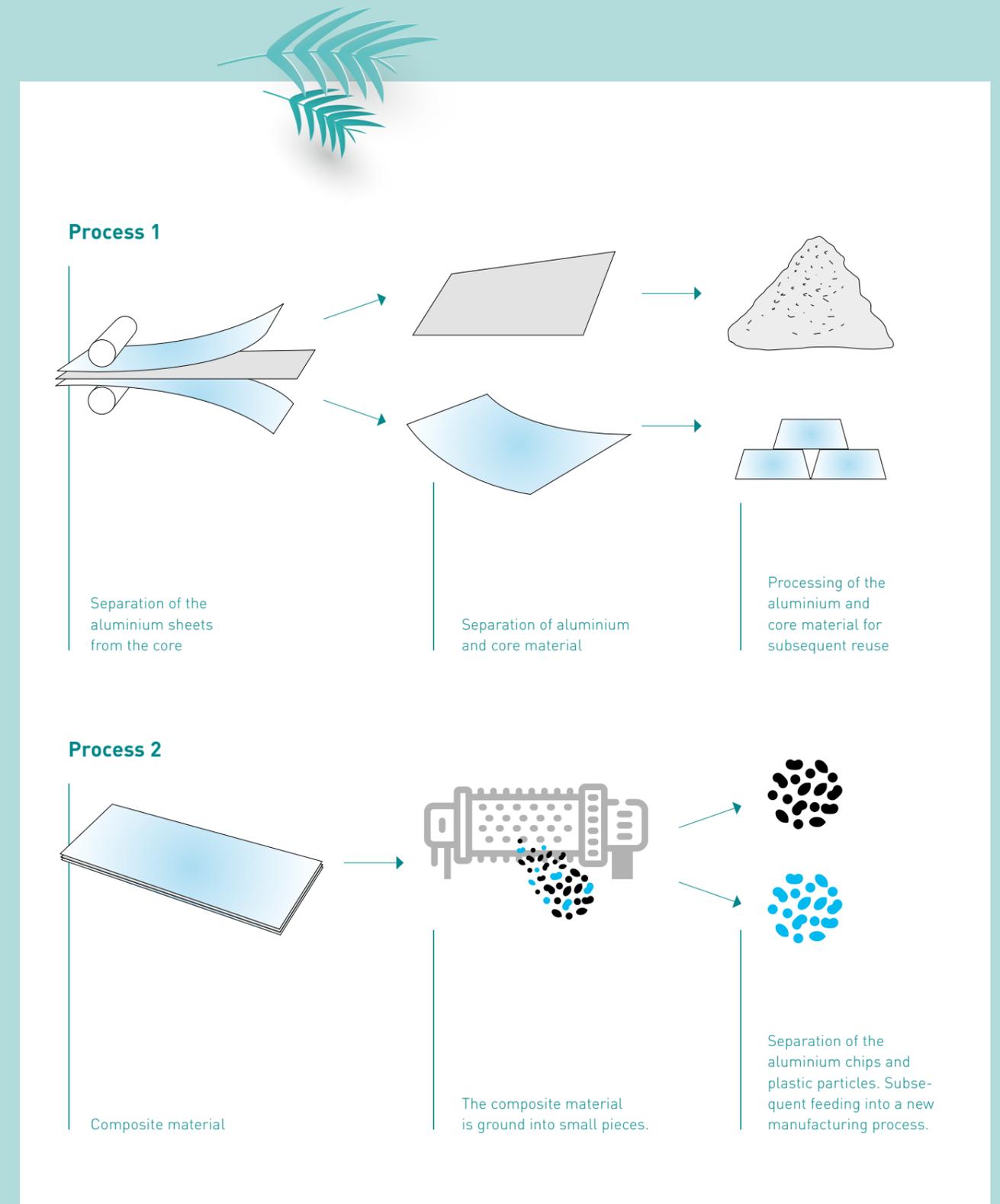
ALPOLIC™ A2

Recycling A2 composite material is more difficult, so we work with external partners in Germany. These are able to fully recover the valuable aluminium and produce a relatively clean core.

One of our main goals for the coming years is to reuse and continuously increase the amount of core material returned to our production process and to find secondary uses for the remaining core material. We are always open to suggestions and cooperation in this regard.



THE RECYCLING PROCESSES OF ALUMINIUM COMPOSITE PANELS



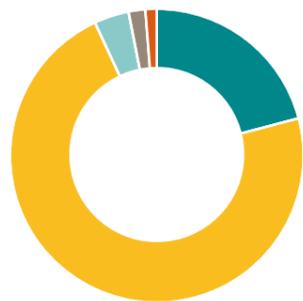


OUR GOAL: INCREASING THE SHARE OF RECYCLED ALUMINIUM

We are aware that aluminium is the largest contributor to the carbon footprint of our products, accounting for almost 75% of the total. (Figure bottom left). For this reason, we have set a target to offer composite panels with higher recycled aluminium content for special projects. This goal is supported by data from our Life Cycle Assessment calculations.

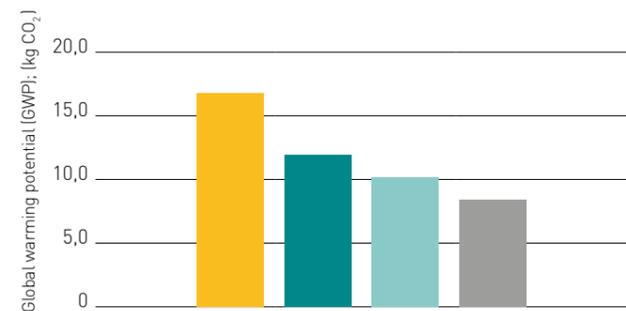
In addition to our standard ALPOLIC™ products, we currently offer our R75 composite material, which contains up to 75% recycled aluminium. Our goal is to expand our range to 85% and even 95% recycled aluminium to significantly reduce the greenhouse gas emissions of our composite material (Figure bottom right).

Global Warming Potential (GWP)
(kg CO₂ eq.)



■ Core ■ Aluminium ■ Transport ■ Production ■ Protective film

Environmental impact recycling grades
(per sqm)

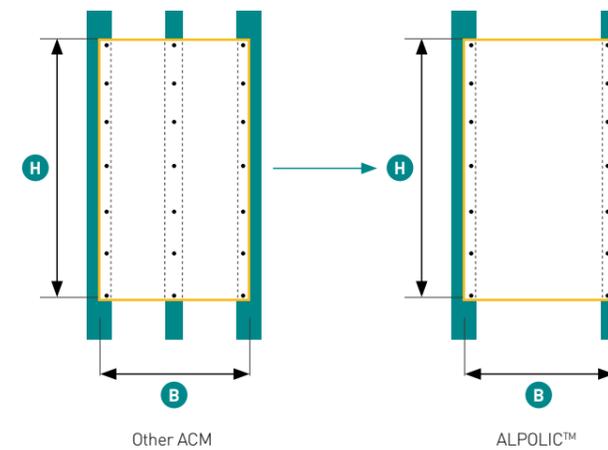


■ ALPOLIC™ standard ■ ALPOLIC™ R75 ■ ALPOLIC™ R85 ■ ALPOLIC™ R95

FEWER RESOURCES FOR SUBSTRUCTURE AND INSTALLATION

The greater rigidity of ALPOLIC™ composite panels allows significantly larger greater spacing between the support rails of the substructure when installed as a rear ventilated façade. This results in lower resource consumption, both in terms of material and installation time.

Lower resource consumption



By incorporating ALPOLIC™ at an early stage in the design and calculation of the façade, the following savings can be achieved across the entire façade:

- 20%** Up to 20% less insulation material necessary to get the same U-value
- 50%** Up to 50% less substructure required for the same panel size
- 50%** Up to 50% less installation time
- 50%** Up to 50% less CO₂ emission due to the material savings
- 23%** Up to 23% less energy consumption in building operation for heating and cooling

Find out more about ALPOLIC™
Performance Power in our video:



For further information, please contact our technical department.

COOPERATIONS & CERTIFICATIONS

Working closely with our partners, we are committed to excellence in environmental protection.



LEED (Leadership in Energy and Environmental Design)

ALPOLIC™ façade materials can help earn points towards LEED certification. The number of points awarded depends on the type of product and the recycled content chosen. If you would like more information, please contact our Sales Office.

www.german-gba.org/leed/



CDP

Since 2010, the Mitsubishi Chemical Group has regularly published reports on its greenhouse gas emissions in accordance with the requirements of the Carbon Disclosure Project. In 2021, the Mitsubishi Chemical Group received the highest A-list rating in the CDP Water Security category.

www.cdp.net/en



value balancing alliance

In 2020, we became the first Japanese company to join the Value Balancing Alliance e.V. (VBA). The VBA was founded in June 2019 to establish a global standard for measuring and evaluating the positive and negative impacts of corporate activities.

www.value-balancing.com



European Aluminium Association

ALPOLIC™ is a member of the European Aluminium Association, a group dedicated to preserving and improving the use of aluminium products in the construction industry.

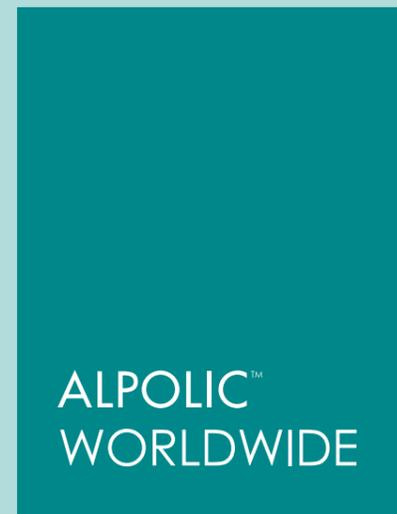
www.european-aluminium.eu/



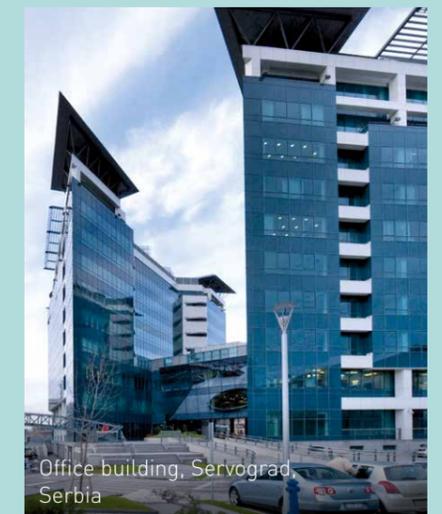
EPD

EPD certified positive life cycle assessment for ALPOLIC™ NC/A1, A2 und ALPOLIC™/fr

www.ibu-epd.com



Maranello Village, Italy



Office building, Servograd, Serbia



City Green Court, Prague, Czechia



Mercator Shopping Center, Ljubljana, Slovenia



Burj Al Arab, Dubai, United Arab Emirates



GÜRALLAR LAPIS HAN, Kartal, Istanbul, Turkey



Mosae Forum, Maastricht, Netherlands



Residential house, Gava, Spain



Marina Bay Sands, Singapore



IBG Office building, Groningen, Netherlands

ALPOLIC™ – THE WORLD'S FIRST ADDRESS FOR ALUMINIUM COMPOSITE PANELS

Contact us! We will be happy to advise you - also in a personal meeting

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ALPOLIC™ – the world's first address for aluminium composite panels



Recycling
Our materials are almost 100% recyclable. Even waste from ALPOLIC™ plants is collected and recycled.

Certifications



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