



Life Cycle Assessment

kuraray

Mowital®

All about our PVB resin MOWITAL® Life Cycle Assessment

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WHAT IS A LCA?

The European Committee for Standardization defines life cycle assessment as a method for quantifying environmental impacts based on an inventory of environmental factors for a product, process or activity from raw material extraction to final disposal.

2

WHAT IS A CO₂ FOOTPRINT?

A carbon footprint is the amount of greenhouse gases – primarily carbon dioxide – released into the atmosphere by particular human activity. It is measured as tons of CO₂ emitted per year / per ton / per m² of product. It is a number that can be supplemented by tons of CO₂ - equivalent gases, including methane, nitrous oxide, and other.

3

CRADLE TO GATE

From raw material extraction to the factory gate. Since PVB is used in numerous applications, a cradle to gate analysis was performed. This includes all production steps, from the production of raw materials and chemical precursors to energy production and consumption, transport and processing.

4

WHY DO WE HAVE A LCA?

We are aware that we come from an industry that is responsible for a certain proportion of greenhouse gases. As a company, we take responsibility for this and have always been improving our efficiency in all areas of our production. With the calculation of our LCA, we want to make a further contribution to making our product more sustainable in the multitude of its applications.

„For the people and the planet – to achieve what no one else can.“

Therefore, we believe in transparency and honesty.

LIFE CYCLE ASSESSMENT: DATA & SCOPE

- Calculated in 2021 with data from 2018
- The result includes the data from our production site in Frankfurt, Germany
- Cradle to gate
- Includes raw materials, including transport, energy and utility supply, the production process in Frankfurt as well as waste and wastewater treatment
- Climate change and water use were calculated

CLIMATE CHANGE

A measure of greenhouse gas emissions, such as CO₂ and methane. These emissions are causing an increase in the absorption of radiation emitted by the earth, increasing the natural greenhouse effect. This may in turn have adverse impacts on ecosystem health, human health and material welfare.

WATER USE

An assessment of water scarcity accounting for the net intake and release of fresh water across the life of product system considering the availability of water in different regions.



MOWITAL® – CO₂ Footprint

Sustainability means transparency!

LCA Results: MOWITAL® produced in Frankfurt a.M., Germany:

climate change

4.17

The climate change for a period of 100 years is 4.17 kg CO₂-eq per kg MOWITAL®

➔ **The smaller our footprint,
the better is yours!**

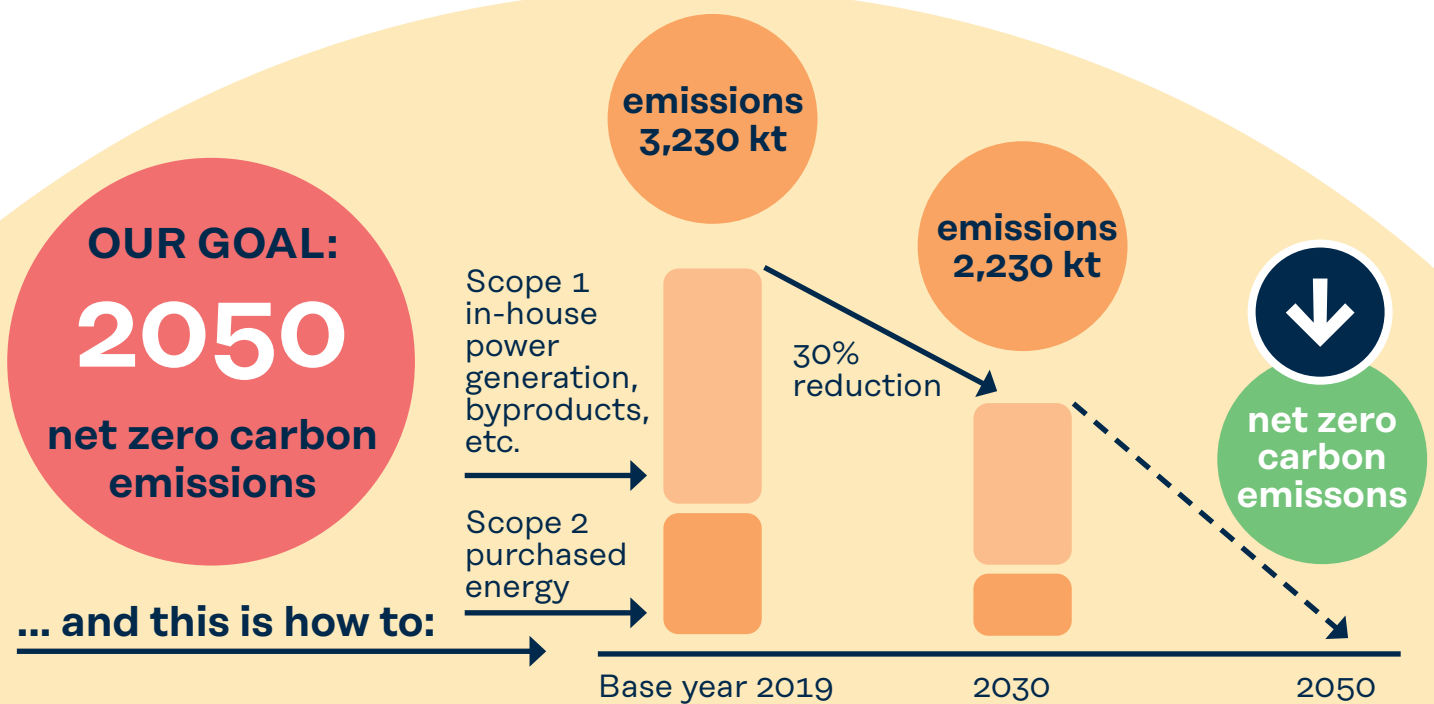
INTERPRETATION OF THE RESULTS

Climate Change is mainly influenced by the raw materials PVA resin and butyraldehyde during the production of PVB resin. In addition, both steam and electricity consumption are factors that influence the Climate Change value. The transportation of raw materials is not a determining factor of the Climate Change of PVB resin, among others, because of the location within an industrial park, which produces the required raw materials regionally.

As water is produced during the reaction of PVA (polyvinyl alcohol) and butanal, the water use shows a negative result.

➔ **The carbon footprint of our PVB resin produced in Germany is lower than the average of a renowned database.**

GREEN HOUSE GAS (GHG) EMISSIONS REDUCTION MEASURES



AGEEN Arbeitsgemeinschaft der Energieeffizienz-Netzwerke Deutschland

OUR SUSTAINABILITY ACTIVITIES

IMPROVE ENERGY EFFICIENCY:

Our production has been ISO 50001 certified for many years. A few years ago, these measures were cost-driven, but today we are also driving energy-saving projects in awareness of our environmental and social responsibility.

OUR PAST & PRESENT:

In addition to transparency, we believe that dialog is also an important component of sustainable development. We want to share our experience and knowledge in the field of energy efficiency and become more sustainable and environmentally friendly together with other companies in the region. Since the beginning of 2020 we have been a member of the 3rd Rhine-Main Energy Efficiency network. We have been awarded the AGEEN seal of approval for our efforts towards more efficient use of energy resources.

... NOW LOOKING TO OUR FUTURE!

Our Sustainability taskforce is continuously working to reduce our energy consumption and improve our sustainability performance. It is important to note that the largest part of our carbon footprint comes from our raw material PVA resin and butyraldehyde. We take responsibility for our share by continuously working on optimization and innovation. Sustainability must be viewed holistically, therefore we are a member of the Process4Sustainability initiative at our production site in Frankfurt-Höchst. It is a cooperative effort with other local companies and the site operator Infraserv to work on future-oriented, green solutions to make our industry fit for the future.



„Safety and careful consumption of resources and energy have always been important issues for us. In the context of sustainability, we will work to further reduce our CO₂ emissions in order to achieve our sustainability goals.“

*Dr. Jörg Schappel,
Director Safety,
Health and Sustainability*



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