

# Environmental Product Declaration



In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for:

## ***PLANTODECOR Premium Wall Paint No. 524***

from

***AURO Pflanzenchemie AG***



Programme:

Programme operator:

EPD registration number:

Publication date:

Valid until:

The International EPD® System, [www.environdec.com](http://www.environdec.com)

EPD International AB

EPD-IES-0023235:001

2025-06-20

2030-06-20

*An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at [www.environdec.com](http://www.environdec.com)*



## General information

### Programme information

|                   |                                                                     |
|-------------------|---------------------------------------------------------------------|
| <b>Programme:</b> | The International EPD <sup>®</sup> System                           |
| <b>Address:</b>   | EPD International AB<br>Box 210 60<br>SE-100 31 Stockholm<br>Sweden |
| <b>Website:</b>   | <a href="http://www.environdec.com">www.environdec.com</a>          |
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|                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Accountabilities for PCR, LCA and independent, third-party verification</b>                                                                                                                                                                                                                                                                                                 |
| <b>Product Category Rules (PCR)</b>                                                                                                                                                                                                                                                                                                                                            |
| CEN standard EN 15804 serves as the Core Product Category Rules (PCR)                                                                                                                                                                                                                                                                                                          |
| Product Category Rules (PCR): Construction Products, PCR 2019:14, version 1.3.4                                                                                                                                                                                                                                                                                                |
| PCR review was conducted by: The Technical Committee of the International EPD System. See <a href="http://www.environdec.com">www.environdec.com</a> for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat <a href="http://www.environdec.com/contact">www.environdec.com/contact</a> . |
| <b>Life Cycle Assessment (LCA)</b>                                                                                                                                                                                                                                                                                                                                             |
| LCA accountability:<br>Dr. Christopher Hirth, AURO Pflanzenchemie AG                                                                                                                                                                                                                                                                                                           |
| <b>Third-party verification</b>                                                                                                                                                                                                                                                                                                                                                |
| Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:<br><br><input checked="" type="checkbox"/> EPD verification by individual verifier<br><br>Third-party verifier: Andreas Ciroth, GreenDelta GmbH<br><br>Approved by: The International EPD <sup>®</sup> System                                                              |
| Procedure for follow-up of data during EPD validity involves third party verifier:<br><br><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No                                                                                                                                                                                                                  |

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

## Company information

Owner of the EPD and location of production site:

AURO Pflanzenchemie AG, Alte Frankfurter Str. 211 A, 38122 Braunschweig, Germany

Contact:

Dr. Christopher Hirth | R&D Chemist | [info@auro.de](mailto:info@auro.de)

Description of the organisation:

AURO has been an undisputed pioneer in the field of ecological natural paints for over 40 years, specializing in products for home and garden. Our products are created from a clear vision: a "green chemistry" based on sustainable, plant-based, and mineral raw materials, avoiding petroleum. This philosophy was initiated by our founder, chemist Dr. Hermann Fischer, and continues to shape our work to this day.



Sustainability is a core element of our company philosophy, which has remained unchanged since our founding in 1983. We focus on a future-proof, nature-friendly economy and actively engage in climate protection. Our products are not only environmentally conscious but also technically advanced and highly efficient. They theoretically can be easily returned to the natural cycle, thus actively contributing to environmental protection.



Since our founding, AURO has represented a vision: to develop paints and coatings that not only offer the highest quality but also respect both people and nature. As pioneers of "green chemistry," we consistently rely on plant-based and mineral raw materials. Our goal is to create long-lasting alternatives that harmonize living health, environmental compatibility, and aesthetic beauty.

For us, sustainability means more than just biological ingredients. We pursue a holistic approach: from responsible raw material sourcing to resource-efficient production and

biodegradable end products. Our processes are low in CO<sub>2</sub>, we aim to make our packaging as environmentally friendly as possible, and all our actions are geared towards preserving nature.

Thanks to decades of research, we have developed a unique product range that sets standards in eco-consciousness, functionality, and durability. Whether wall paints, wood stains, or varnishes – our new formulations are emission-free and promote a healthy indoor climate.

AURO's ecological natural paints are distinguished by their unique radiance. They offer harmonious colour effects, high colour fastness, and an authentic, natural appearance – always in harmony with the biological raw materials they contain. With a perfect combination of quality and ecological commitment, we are now the market leader in the field of natural paints and are represented in numerous countries worldwide.



But AURO is more than just a paint manufacturer: We share our knowledge, promote education, and drive innovation in the earth-friendly building and living industry. Through expert articles, books, and research, we are making true pioneering contributions for a future in which healthy living and environmental protection are a matter of course.

We maintain long-term, cooperative relationships with our suppliers and customers and treat both them and our employees with respect and appreciation. We promote fair partnerships, particularly in the growing areas of the exotic raw materials we use.

## Product information

### Product name:

**PLANTODECOR Premium Wall Paint No. 524;**

### Product identification:

Products in the AURO portfolio are identified by their characteristic name and number.

### Product description:

Innovative solvent-free premium dispersion wall paint with highest covering power and abrasion resistance.

- Especially recommended for living spaces
- Low-odour wall paint with excellent coverage
- Adhesion even on latex paint or other difficult substrates
- Low-drip and low-splash application
- Can be tinted with Full-shade tinting colour No. 330
- Emission-free according to AgBB tested according to AgBB and TÜV-Rheinland criteria
- High abrasion resistance class 1 according to DIN EN 13300
- Professional product properties provided by biogenic binder REPLEBIN®

### Dangerous substances from the candidate list of SVHC:

The declared product in this EPD® does not contain any of the "substances of very high concern for authorisation" (SVHC) according to article 59 (10) of the REACH Regulation (last accessed 08.04.2025).

### UN CPC code:

3511 Paints and varnishes and related products

### Geographical scope:

GLO/RER/GER

While AURO focusses on sustainable and ecologic raw materials, some of the natural, partly exotic substances have their sources overseas and therefore a global (GLO) scope. Most materials are sourced locally in Germany (GER) or Europe (RER). Production is centred in Braunschweig, Germany. The assumed scenarios for application, use and end-of-life are based on European standards.

## LCA information

### Declared unit:

The declared unit is 1 m<sup>2</sup> of surface covered by the indicated product and consists of the necessary amount of raw materials, transportation, manufacturing, waste treatment and their corresponding environmental impacts related to the specific product. A weight-based approach was used for averaging products. The conversion rates of the product consumption for coating the declared area are 0.17 kg/m<sup>2</sup> or 0.11 L/m<sup>2</sup>.

### Reference service life:

10 years

### Time representativeness:

2023

### Database(s) and LCA software used:

ecoinvent v.3.10 and Circonomit LCA tool v.1.0

### Description of system boundaries:

The chosen EPD® type for construction products according to EN 15804 and the PCR 2019:14, version 1.3.4 is "Cradle to gate with modules C1–C4 and module D (A1–A3 + C + D)". The reasoning for this choice of declaration and omissions, as well as the assumptions made for each module are explained here after.

As stated in the PCR, the characterization factors are based on the EF 3.1 version of the EN15804 reference package.

## System diagram:



\* D – Reuse, recovery, recycling, potential: While it is theoretically possible to decompose ecological wall paints, it is, at this point in time, highly impractical, uneconomic and unusual to separate them from their substrate for a dedicated recycling effort to achieve a full cradle-to-cradle life cycle.

## Detailed description of modules, assumed scenarios and additional information

### A1-A3 Production stage

The production stage includes the supply of raw materials (A1), the transport of raw materials to the manufacturer (A2) and the manufacturing process itself at the production site (A3).

As module A1 includes all relevant resources committed to the extraction and processing of the materials, it is generally speaking the most impactful module for wall paint products.

Module A2 describes the transportation of raw materials to the production site and therefore consists mostly of the concrete transport distance between the distributor or producer of a given material and the manufacturer, modelled with a dataset for the most often used truck category in this context. The

average transportation scenario for AURO assumes freight lorries with a capacity of 16-32 metric ton, EURO6 in a European setting (RER).

Module A3 encompasses the manufacturing process at AURO. The steps reach from material processing, which is key for the production of the self-developed and proprietary REPLEBIN® binder, over paint production by mixing the components batchwise according to the recipe with a dissolver and filling the products into adequate containers to packaging them ready for transport to customers (A4), as shown in Figure 1 General Production Process:

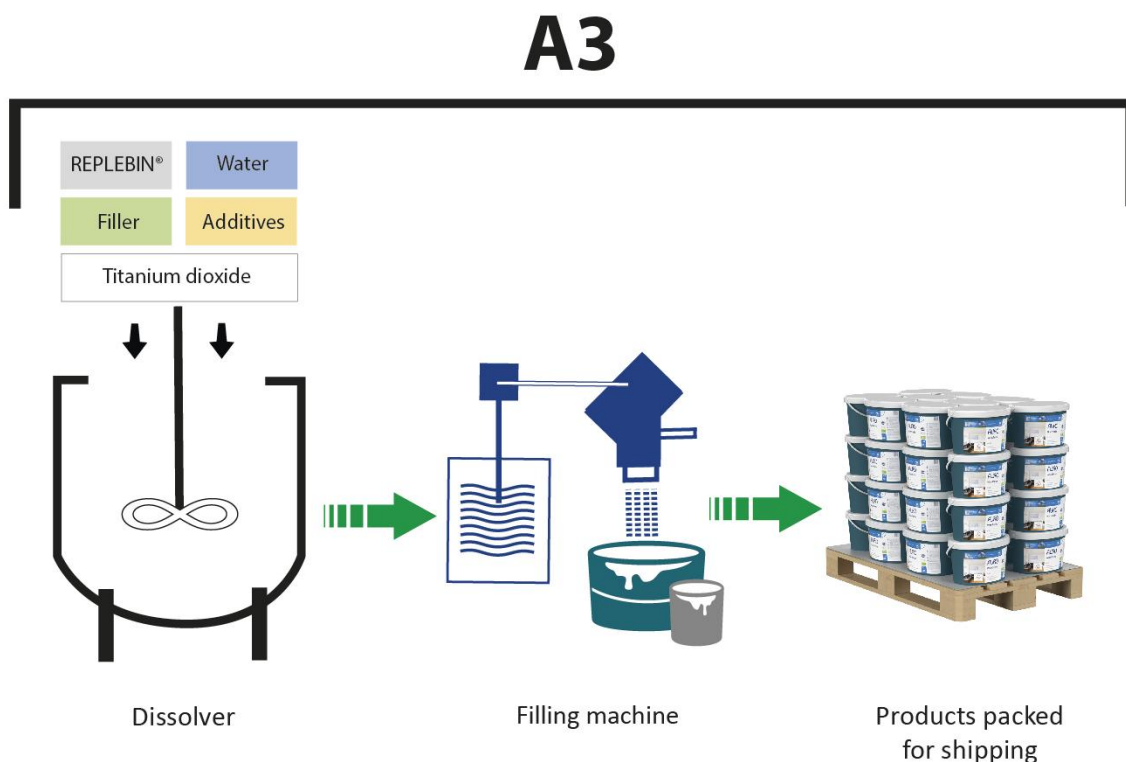


Figure 1 General Production Process

Internal transportation in the facility exclusively by electric forklifts and pallet trucks is also taken into account.

Not accounted were production and maintenance of machinery and vehicles on site (including wooden multi-use pallets), other maintenance work regarding the production plant, the employees' daily commute and research and development and sales activities on site.

Not all suppliers for biobased materials used at AURO have primary data for LCA studies available yet. Especially the materials for REPLEBIN®, PCR plastics and their respective environmental impacts and are difficult to estimate. Therefore, some (if necessary even petrochemical) alternatives were used as proxies for the LCA calculations, serving as a conservative estimate of AURO's ecological dedication. The electricity mix used at AURO is 100% renewable and reported with both 0 g carbon dioxide emissions and radioactive waste per kWh according to the supplier.<sup>1</sup> It was modelled with a data set for renewable energy products that still has minor carbon dioxide emissions and radioactive waste remaining, again serving as a conservative estimate of AURO's ecological commitment.

<sup>1</sup> Scholt Energy – Green Electricity 'Garantiert Grün'. For more information, please follow the link provided in the References section.

#### **A4-A5 Construction process stage**

The construction process stage handles the transport of products from the manufacturer to distributors, retailers and end-customers (A4) and subsequently the installation of the product for its intended use (A5), mainly by brush or roller application. As AURO distributes its products globally, but with a majority of European customers, it is challenging to average a representative transport distance from AURO to the end-customer and deducing the correct composition of the applied means of transportation. Especially the certain share of DIY customers buying locally from AURO's retailer network is a great unknown for approximation.

With such an uncertainty in calculated average values and possibly enormous deviations from these values in single cases, representativeness is not a given and the module is therefore not declared. It is estimated to be the second most impactful segment of the whole life cycle, after the combination of modules A1-A3.

Regarding the installation process, the product is attuned to being immediately applicable by brush or roller, in some cases also by spraying. Without the need for extra dilution with water (though possible) or energy intake, leaving only the waste treatment of packaging material and paint residue, the total impact of this module is estimated to be very low. So, while a basic model for the installation process is feasible, it is ill-advised to only declare this part of the construction stage and it is therefore also omitted. As a consequence, the results of A1-A3 already include the "balancing-out-reporting" of the biogenic CO<sub>2</sub> of packaging released in module A5.

#### **B1-B7 Use stage**

The use stage includes all environmental impacts caused by the product during its reference life time of approximately 10 years, for example by reactions with the ambient surrounding in form of emissions or material uptake, necessary maintenance or repair. None of these apply for the emission-free wall paint products. Thus, the module is not declared.

#### **C1-C4 End-of-life stage**

The end-of-life stage is dedicated to the appropriate disposal of the product after its reference life time and all steps necessary to do so.

As the wall paint product is usually not separated from its substrate before deconstruction and demolition (C1) and instead treated as part of the wall material, no impacts are declared for module C1. Instead, the typical disposal scenario for bricks and concrete is applied: Transport of the debris to a landfill (C2) and ensuing disposal (C4) without the need for waste processing (C3).

For a typical European or German landfill disposal scenario, an average transportation distance of 20 km to the nearest station is assumed. Transport over this short distance is, analogue to module A2, modelled with freight lorries with a capacity of 16-32 metric ton, EURO6 in a European setting (RER).

The GWP-biogenic results over all modules have to equal zero, as no credits due to delayed emissions or permanent storage of biogenic carbon in the landfilled product are allowed in consideration of the product's life cycle. A virtual emission of biogenic CO<sub>2</sub> is therefore applied in C4, equalling the product's inherent storage of biogenic carbon from modules A1-A3.

## D Benefits and loads beyond the system boundary

This stage of the LCA assesses the reuse, recovery and recycling potential of the product. While it is theoretically possible to decompose AURO wall paints, it is, at this point in time, highly impractical, uneconomic and unusual to separate them from their substrate for a dedicated recycling effort to achieve a full cradle-to-cradle life cycle. Due to these practical reasons, no such potential is declared for the discussed product.

Modules declared, geographical scope, share of specific data (in GWP-GHG results) and data variation (in GWP-GHG results):

|                      | Product stage                |           |               | Construction process stage |                           | Use stage |             |        |             |               |                        |                       | End of life stage          |           |                  |          | Resource recovery stage            |
|----------------------|------------------------------|-----------|---------------|----------------------------|---------------------------|-----------|-------------|--------|-------------|---------------|------------------------|-----------------------|----------------------------|-----------|------------------|----------|------------------------------------|
|                      | Raw material supply          | Transport | Manufacturing | Transport                  | Construction installation | Use       | Maintenance | Repair | Replacement | Refurbishment | Operational energy use | Operational water use | De-construction demolition | Transport | Waste processing | Disposal | Reuse-Recovery-Recycling-potential |
| Module               | A1                           | A2        | A3            | A4                         | A5                        | B1        | B2          | B3     | B4          | B5            | B6                     | B7                    | C1                         | C2        | C3               | C4       | D                                  |
| Modules declared     | X                            | X         | X             | ND                         | ND                        | ND        | ND          | ND     | ND          | ND            | ND                     | ND                    | X                          | X         | X                | X        | X                                  |
| Geography            | GLO                          | GLO       | GER           | ND                         | ND                        | ND        | ND          | ND     | ND          | ND            | ND                     | ND                    | RER                        | RER       | RER              | RER      | -                                  |
| Specific data used   | > 90%                        |           |               | -                          | -                         | -         | -           | -      | -           | -             | -                      | -                     | -                          | -         | -                | -        | -                                  |
| Variation – products | < 10% for each product group |           |               | -                          | -                         | -         | -           | -      | -           | -             | -                      | -                     | -                          | -         | -                | -        | -                                  |
| Variation – sites    | Manufactured in one site     |           |               | -                          | -                         | -         | -           | -      | -           | -             | -                      | -                     | -                          | -         | -                | -        | -                                  |

## PLANTODECOR Premium Wall Paint No. 524:



### Technical Data

| Property                      | Value     |
|-------------------------------|-----------|
| Whiteness Degree (luminosity) | 98        |
| Opacity (contrast ratio)      | Class 1   |
| Sheen level (85° angle)       | Matt      |
| Abrasion (DIN EN 53778)       | Class 1   |
| Density                       | 1.57 kg/L |
| sd value                      | <0.05 m   |

### 1. SUBSTRATE

#### 1.1 Suitable substrates

Wallpaper, plaster, concrete, lime-sand stone, brickwork, clay, gypsum plaster boards, lime plaster, old coatings able of wetting (dispersions, lime paints, silicate paints). Conduct test coating to establish compatibility before application on glass-fibre fabric, textile, vinyl and structured wall coverings.

#### 1.2 General substrate requirements

The substrate must be dry, clean, firm, chemically neutral to mildly alkaline, able to support, adhering, free from oil, fat, separating or staining substances.

### 2. COATING SYSTEM

#### 2.1. Substrate preparation

Brush off loose particles. Flourey and sanding substances must be removed by brushing. Remove sinter skin by grinding. Wash off releasing agents. Fill holes and cracks with AURO High-grade wall filler No. 338 and sand smooth, remove burrs. Carefully reseal wallpaper seams; remove paste residues. Completely remove poorly adhering, peeling coatings, as well as old coatings that have a poor wetting ability or are otherwise improper.

#### 2.2 Basic treatment

Intact, uniformly absorbing bases can be primed with AURO PLANTODECOR Premium wall paint No. 524, diluted with max. 20% water. Intensely or varyingly absorbent surfaces are primed with AURO Plaster primer No. 301, diluted with water in a 1:1 ratio.

### Content information

| Product components                                      | Weight, kg / kg | Post-consumer material, weight-% |
|---------------------------------------------------------|-----------------|----------------------------------|
| REPLEBIN <sup>®</sup> (Binder)                          | 14              | 0                                |
| Water                                                   | 30              | 0                                |
| Fillers                                                 | 40              | 0                                |
| Titanium dioxide                                        | 15              | 0                                |
| Additives                                               | 1               | 0                                |
| TOTAL                                                   | 100             | 0                                |
| Packaging materials                                     | Weight, kg / kg | Weight-% (versus the product)    |
| Post-consumer polypropylene (bucket and handle)         | 2.94E-03        | 2.23%                            |
| Virgin polypropylene (bucket lid, Bag-in-Box IBC shell) | 8.44E-04        | 0.64%                            |
| Polyethylene (IBC-Inliner)                              | 0               | 0.00%                            |
| Steel (bucket, lid and handle)                          | 0               | 0.00%                            |
| Paper labels                                            | 5.38E-05        | 0.04%                            |
| Corrugated paperboard (transport protection)            | 5.35E-04        | 0.41%                            |
| Adhesive tape (transport protection)                    | 2.89E-06        | 0.00%                            |
| Polypropylene (strapping tape, transport protection)    | 2.11E-05        | 0.02%                            |
| TOTAL                                                   | 4.40E-03        | 3.34%                            |

### 2.3 Intermediate treatment

Apply uniformly with a brush, roller or spray gun (airless). Can be thinned with up to max. 20 % of water, depending on the kind of base and the method of application. For coloured decoration, the product can be tinted with AURO Full-shade tinting colour No. 330. For strong colour shades, the tinting ex-factory is recommendable. It is recommended to do a representative test coating to determine the actual colour effect and appearance.

### 2.4 Final treatment

Proceed as described in 2.3, add up to max. 20 % water if necessary. Final treatment is not necessary if intermediate treatment already produces the desired result.

## **3. AFTER-TREATMENT**

Decorative follow-up treatment is possible with AURO Colour wash plant glazes No. 360, Wall glaze waxes No. 370 or Colour wash binder No. 379 with the addition of pigments.

## **4. REMARKS**

- Check the base for suitability and compatibility prior to product application.
- Avoid direct exposure to sunlight, moisture influences and dirt while the coat is drying.
- Mix products with different batch numbers prior to application to offset batch-induced differences.
- Process temperature at least 10 °C, max. 30 °C, max. 85% rel. humidity, optimal 20-23 °C, 40-65% rel. humidity.
- Stir thoroughly prior to application.
- Protect surrounding surfaces, remove stains and spatters immediately with water and AURO Plant soap No. 411.
- Leave new plasters and lime-sand brick walls untreated for at least 6 weeks; neutralise if necessary.
- Slightly cloudy surfaces can form, depending on the given object conditions (e.g. large surfaces exposed to intense light). Consequently, avoid partial drying and work speedily wet-on-wet.
- Check and maintain the surfaces regularly for optimal, permanent protection and immediately repair damaged areas.
- Observe the state of the art for planning and coating (applicable regulations and procedures).
- All coating work must be adapted to the given object and its use.

**Disclaimer:** For other AURO products mentioned here, see the respective Technical Data Sheets.

## Results of the environmental performance indicators

**Disclaimer:** The results of modules A1-A3 should not be used without consideration of the results of module C. The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding threshold values, safety margins and/or risks.

### Mandatory impact category indicators according to EN 15804

| Results per functional or declared unit |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |    |    |    |    |    |    |    |    |    |    |          |    |          |   |
|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----|----|----|----|----|----|----|----|----|----|----------|----|----------|---|
| Indicator                               | Unit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | A1-A3     | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2       | C3 | C4       | D |
| GWP-fossil                              | kg CO <sub>2</sub> eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1.99E-01  | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0  | 4.14E-04 | 0  | 1.03E-02 | 0 |
| GWP-biogenic                            | kg CO <sub>2</sub> eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | -1.59E-02 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0  | 2.87E-07 | 0  | 1.59E-02 | 0 |
| GWP-luluc                               | kg CO <sub>2</sub> eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 4.03E-03  | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0  | 1.38E-07 | 0  | 6.36E-07 | 0 |
| GWP-total                               | kg CO <sub>2</sub> eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1.90E-01  | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0  | 4.15E-04 | 0  | 2.63E-02 | 0 |
| ODP                                     | kg CFC 11 eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 7.70E-09  | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0  | 8.24E-12 | 0  | 3.51E-11 | 0 |
| AP                                      | mol H <sup>+</sup> eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 2.13E-03  | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0  | 8.63E-07 | 0  | 8.17E-06 | 0 |
| EP-freshwater                           | kg P eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 6.06E-05  | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0  | 2.81E-08 | 0  | 1.15E-07 | 0 |
| EP-marine                               | kg N eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 3.81E-04  | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0  | 2.07E-07 | 0  | 3.17E-06 | 0 |
| EP-terrestrial                          | mol N eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 2.52E-03  | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0  | 2.24E-06 | 0  | 3.44E-05 | 0 |
| POCP                                    | kg NMVOC eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 8.18E-04  | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0  | 1.43E-06 | 0  | 1.47E-05 | 0 |
| ADP-minerals&metals*                    | kg Sb eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 3.85E-06  | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0  | 1.38E-09 | 0  | 2.49E-09 | 0 |
| ADP-fossil*                             | MJ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 2.37E+01  | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0  | 5.83E-03 | 0  | 2.67E-02 | 0 |
| WDP*                                    | m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 3.03E-01  | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0  | 2.85E-05 | 0  | 1.22E-04 | 0 |
| Acronyms                                | GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption |           |    |    |    |    |    |    |    |    |    |    |          |    |          |   |

\* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

## Additional mandatory and voluntary impact category indicators

| Results per functional or declared unit |                        |          |    |    |    |    |    |    |    |    |    |    |          |    |          |   |
|-----------------------------------------|------------------------|----------|----|----|----|----|----|----|----|----|----|----|----------|----|----------|---|
| Indicator                               | Unit                   | A1-A3    | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2       | C3 | C4       | D |
| GWP-GHG <sup>1</sup>                    | kg CO <sub>2</sub> eq. | 2.08E-01 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0  | 4.15E-04 | 0  | 1.03E-02 | 0 |

Almost 60% of the declared GWP-GHG value results from the production process of titanium dioxide (A1), with every other component being far less impactful in that regard.

## Resource use indicators

| Results per functional or declared unit |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |    |    |    |    |    |    |    |    |    |    |          |    |           |   |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|----|----|----|----|----|----|----|----|----|----------|----|-----------|---|
| Indicator                               | Unit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | A1-A3    | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2       | C3 | C4        | D |
| PERE                                    | MJ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 1.36E+00 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0  | 8.80E-05 | 0  | 3.67E-04  | 0 |
| PERM                                    | MJ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 8.43E+01 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0  | 1.21E-05 | 0  | 5.12E-05  | 0 |
| PERT                                    | MJ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 8.57E+01 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0  | 1.00E-04 | 0  | 4.18E-04  | 0 |
| PENRE                                   | MJ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 2.54E+01 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0  | 5.29E-03 | 0  | 2.42E-02  | 0 |
| PENRM                                   | MJ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 5.79E+01 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0  | 5.42E-04 | 0  | 2.48E-03  | 0 |
| PENRT                                   | MJ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 8.33E+01 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0  | 5.83E-03 | 0  | 2.67E-02  | 0 |
| SM                                      | kg                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 2.10E-02 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0  | 6.66E-06 | 0  | 2.51E-05  | 0 |
| RSF                                     | MJ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 1.43E-01 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0  | 1.86E-06 | 0  | 7.10E-06  | 0 |
| NRSF                                    | MJ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 0        | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0  | 0        | 0  | 0         | 0 |
| FW                                      | m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 8.22E-03 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0  | 7.83E-07 | 0  | -2.51E-04 | 0 |
| Acronyms                                | PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water |          |    |    |    |    |    |    |    |    |    |    |          |    |           |   |

<sup>1</sup> This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO<sub>2</sub> is set to zero.

## Waste indicators

| Results per functional or declared unit |      |          |    |    |    |    |    |    |    |    |    |    |          |    |          |   |
|-----------------------------------------|------|----------|----|----|----|----|----|----|----|----|----|----|----------|----|----------|---|
| Indicator                               | Unit | A1-A3    | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2       | C3 | C4       | D |
| Hazardous waste disposed                | kg   | 2.65E-02 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0  | 5.78E-06 | 0  | 2.80E-05 | 0 |
| Non-hazardous waste disposed            | kg   | 7.79E-01 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0  | 6.41E-05 | 0  | 3.88E-01 | 0 |
| Radioactive waste disposed              | kg   | 1.84E-06 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0  | 1.88E-09 | 0  | 8.16E-09 | 0 |

## Output flow indicators

| Results per functional or declared unit |      |          |    |    |    |    |    |    |    |    |    |    |          |    |          |   |
|-----------------------------------------|------|----------|----|----|----|----|----|----|----|----|----|----|----------|----|----------|---|
| Indicator                               | Unit | A1-A3    | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2       | C3 | C4       | D |
| Components for re-use                   | kg   | 0        | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0  | 0        | 0  | 0        | 0 |
| Material for recycling                  | kg   | 1.59E-02 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0  | 6.04E-06 | 0  | 1.96E-05 | 0 |
| Materials for energy recovery           | kg   | 6.39E-07 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0  | 8.36E-10 | 0  | 3.19E-09 | 0 |
| Exported energy, electricity            | MJ   | 2.31E-03 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0  | 9.91E-07 | 0  | 4.11E-06 | 0 |
| Exported energy, thermal                | MJ   | 6.57E-03 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0  | 1.40E-06 | 0  | 2.27E-05 | 0 |

## LCA result interpretation

In most categories, 95% to 99% of the total impact declared stems from the sum of modules A1-A3. The exception is the non-hazardous waste disposed, where the final disposal in module C4 contributes as approximately one fourth of the total impact. Especially for the non-GWP indicators barring the stated exception, the impact from the end-of-life stage is almost negligible.

## Additional environmental, social and economic information

For further information, please take a look at our [\*latest sustainability report\*](#) (German only).

## References

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