



## Environmental Product Declaration

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

### Filli Boya Momento Silan

from

BETEK BOYA VE KİMYA SANAYİİ A.Ş.

|                          |                                                                                       |
|--------------------------|---------------------------------------------------------------------------------------|
| Programme:               | International EPD® System, <a href="http://www.environdec.com">www.environdec.com</a> |
| Programme operator:      | EPD International AB                                                                  |
| Licensee:                | EPD Türkiye                                                                           |
| EPD registration number: | EPD-IES-0015488                                                                       |
| Publication date:        | 2024-08-31                                                                            |
| Revision date:           | 2025-07-07                                                                            |
| Valid until:             | 2029-08-30                                                                            |



## General information

### Programme information

|                   |                                                                  |
|-------------------|------------------------------------------------------------------|
| <b>Programme:</b> | The International EPD® System                                    |
| <b>Address:</b>   | EPD International AB<br>Box 210 60<br>SE-100 31 Stockholm Sweden |
| <b>Website:</b>   | <a href="http://www.environdec.com">www.environdec.com</a>       |
| <b>E-mail:</b>    | <a href="mailto:info@environdec.com">info@environdec.com</a>     |

|                  |                                                            |
|------------------|------------------------------------------------------------|
| <b>Licensee:</b> | EPD Türkiye                                                |
| <b>Address:</b>  | Nef 09 B Blok<br>No:7/15 34415<br>Kağıthane / İstanbul     |
| <b>Website:</b>  | <a href="http://www.epdturkey.org">www.epdturkey.org</a>   |
| <b>E-mail:</b>   | <a href="mailto:info@epdturkey.org">info@epdturkey.org</a> |

|                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| <b>Accountabilities for PCR, LCA and independent, third-party verification</b>                                                                                                                                                                                                                                                                                                 |                                                                                                                             |
| <b>Product Category Rules (PCR)</b>                                                                                                                                                                                                                                                                                                                                            |                                                                                                                             |
| This EPD is in accordance with EN 15804+A2 and ISO 14025:2010 standards. The EN 15804 +A2:2019 serves as the core Product Category Rules (PCR). In addition, the Int'l EPD System PCR 2019:14 Construction products, version 1.3.3, valid until 2024.12.20                                                                                                                     |                                                                                                                             |
| 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><i>'Sustainability Consultancy'</i> |
| Eren Yaman<br>ERKE Sustainability Consultancy<br><a href="http://www.erkeconsultancy.com">www.erkeconsultancy.com</a><br><a href="mailto:info@erkeconsultancy.com">info@erkeconsultancy.com</a>                                                                                                                                                                                |                                                                                                                             |
| <b>Third-party verification</b>                                                                                                                                                                                                                                                                                                                                                |                                                                                                                             |
| Independent third-party verification of the declaration and data, according to ISO 14025:2006:<br><input type="checkbox"/> EPD process certification <input checked="" type="checkbox"/> EPD verification                                                                                                                                                                      |                                                                                                                             |
| Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:<br><input checked="" type="checkbox"/> EPD verification by individual verifier                                                                                                                                                                                             |                                                                                                                             |
| Third-party verifier: <i>Ipek Goktas</i>                                                                                                                                                                                                                                                                                                                                       |                                                                                                                             |
| Approved by: The International EPD® System                                                                                                                                                                                                                                                                                                                                     |                                                                                                                             |
| Procedure for follow-up of data during EPD validity involves third party verifier:<br><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No                                                                                                                                                                                                                      |                                                                                                                             |

Betek has the sole ownership, liability, and responsibility for the EPD.

This product is also available in the export markets under the brand name BETEK Memento Sil.

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:** Betek Boya Kimya ve Sanayi A.Ş.

**Location of Production Site:** GOSB, Tembelova Alanı 3200 sk. No: 3206 Gebze/Kocaeli

### About Betek

Founded in 1988, in its early years in the sector Betek Boya Kimya ve Sanayi A.Ş. developed the high-quality concrete admixtures, ready-mixed mortars, and waterproofing materials that were in high demand within the construction market.

Using cutting-edge manufacturing technologies, Betek gained a reputation as a “leading and Innovative brand known for top quality manufacturing” with its products appealing to consumers and changing the game in the paint industry.

With almost 1300 employees and over 5000 sales points, Betek has made its mark in the sector and secured an important position for not only in the paint sector but also among Turkey’s leading industrial enterprises.

2003 was the year of the beginning of the company’s heat insulation activities and in which it took over the role of leader in this sector resulting from its operations, considered also as part of its social responsibility to the future development of its native country Turkey. Operating in accordance with international environmental protection and environmental health standards, Betek Boya Kimya ve Sanayi A.Ş. actually took the first step towards its environmental work in 1993 by adhering to EU paint standards, and has been managing its manufacturing and R&D processes accordingly ever since. Betek owns following management systems: ISO 9001, ISO 10002, ISO 14001, ISO/IEC 27001, ISO 50001, TS ISO 45001. In line with its mission to extend its domestic success beyond Turkey’s borders, Betek has a 11000 m<sup>2</sup> production facility for paints in Egypt with a capacity of 26000 metric tons. Betek has also opened manufacturing facilities in Kayseri and Balıkesir where it manufactures all major heat insulation system products using the latest technologies and to the highest standards in order to meet Turkey’s insulation demands as awareness gradually increases.

## Product Information

### About the Product

**Product name:** Filli Boya Momento Silan

**Geographical scope:** The geographical scope of this EPD is global.

**Product description:** Filli Boya Momento Silan is manufactured by Betek A.Ş. with certificate of conformity to the standards TS EN ISO 9001, TS EN ISO 14001, TS EN ISO 50001, TS ISO 10002, TS ISO 45001, TS EN ISO/IEC 27001. Filli Boya Momento Silan is applied as a top coat onto surfaces treated with satin plaster, putty, primer etc.; new and even interior surfaces, walls and ceilings; old-painted interior surfaces that have lost their color; glass textiles; and paintable wallpapers. Filli Boya Momento Silan is Wipe-clean, washable, decorative, water-based, VOC-compatible, silicone-modified, top coat interior paint that is developed with the innovative Active Silicone Technology of Filli Boya to add the feeling of spaciousness to interior spaces. Its consumption ranges between 13 - 22 m<sup>2</sup> per 1 liter for single coat, depending on surface evenness and absorbency.

Content of the product and packaging materials as shown in below.

| Product components   | % by weight | Biogenic material, weight-% and kg C/kg |
|----------------------|-------------|-----------------------------------------|
| Additive (%)         | 1-10        | 0%, 0kg C/kg                            |
| Pigments (%)         | 1-10        | 0%, 0kg C/kg                            |
| Fillers (%)          | 20-40       | 0%, 0kg C/kg                            |
| Solvents / Water (%) | 10-30       | 0%, 0kg C/kg                            |
| Binders (%)          | 20-40       | 0%, 0kg C/kg                            |
| Packaging materials  | Weight, kg  | Biogenic material, weight-% and kg C/kg |
| Plastic Bucket       | 0,775 kg    | 0%, 0kg C/kg                            |
| Others               | 0,1452 kg   | 0%, 0kg C/kg                            |

The products do not contain SVHC substances (Substances of Very High Concern), nor post-consumer or renewable materials.

During the entire manufacturing process, no other health protection measures are required extending beyond the legally specified industrial protection measures for commercial enterprises. The products are manufactured under the warranty of the /EN ISO 9001:2015/ Quality Management System to comply with the product requirement specifications. The company also has /EN ISO 45001:2018/ Occupational Health & Safety, /EN ISO 14001:2015/ Environmental Management Systems, and /EN 50001:2001/ Energy Management System in the manufacturing plant.

| Technical Data of the Product |           |                   |
|-------------------------------|-----------|-------------------|
| Name                          | Value     | Unit              |
| Density                       | 1,30-1,35 | kg/L              |
| Solids Content                | 80-90     | %                 |
| Coverage                      | 13-22     | m <sup>2</sup> /L |

UN CPC Code: 35110, Paints and varnishes and related products

## Application

The product, which is resistant to negativities such as wiping or rubbing, is extremely suitable for frequently used living spaces. Silicone paint, which has superior protection against spilling, blistering and cracking factors, is ideal for frequently dirty and frequently used spaces such as kitchens, bathrooms and living rooms.

## LCA information

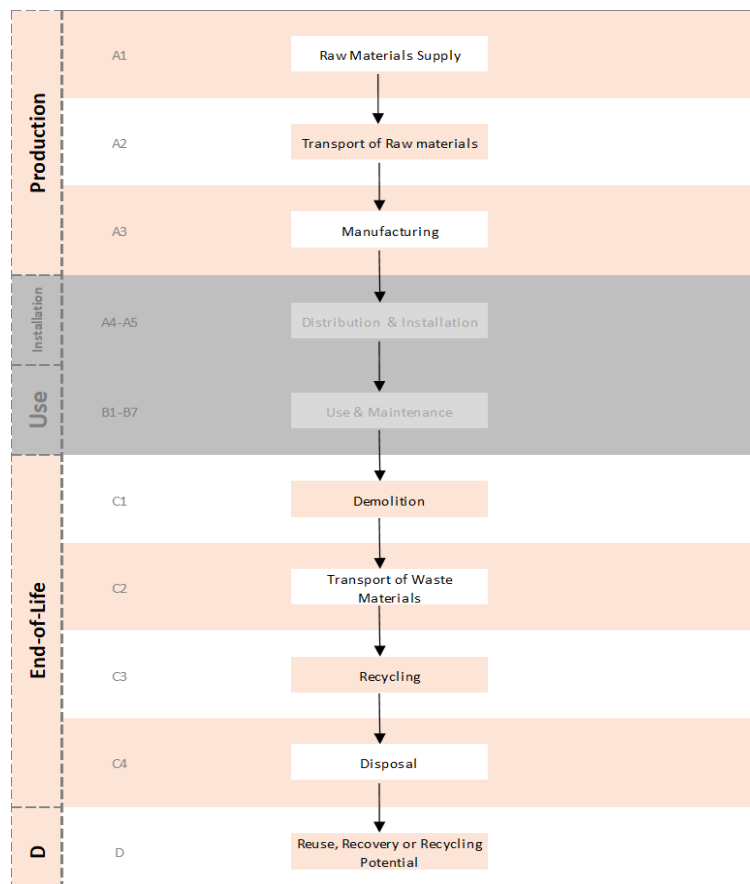
**Declared unit:** 1 kg

**Reference service life:** Not applicable for this product category.

**Time representativeness:** Goal of the study is to determine the actual environmental loads for 12 consecutive months, so data for the time period between 01.01.2023 and 31.12.2023 is used.

**Database(s) and LCA software used:** Ecoinvent v3.8 and OpenLCA v1.11 based on EF 3.0

### System Diagram:



**Description of system boundaries:** Cradle to gate with options, modules C1-C4 and D

**Excluded lifecycle stages:** Modules A4-A5, Modules B1-B7

| SYSTEM BOUNDARY                   | PRODUCT STAGE          |           |               | CONSTRUCT-<br>ION<br>PROCESS<br>STAGE |                  | USE STAGE |             |        |                |                  |                           |                          | END OF LIFE STAGE |           |                  |          | BENEFITS<br>AND LOADS<br>BEYOND THE<br>SYSTEM<br>BOUNDARYS |
|-----------------------------------|------------------------|-----------|---------------|---------------------------------------|------------------|-----------|-------------|--------|----------------|------------------|---------------------------|--------------------------|-------------------|-----------|------------------|----------|------------------------------------------------------------|
|                                   | Raw material<br>supply | Transport | Manufacturing | Transport from<br>gate to site        | Assembly/Install | Use       | Maintenance | Repair | Replacement 1) | Refurbishment 1) | Operational<br>Energy Use | Operational<br>Water Use | Deconstruction    | Transport | Waste processing | Disposal | Reuse,<br>Recovery,<br>Recycling<br>Potential              |
|                                   | A1                     | A2        | A3            | A4                                    | A5               | B1        | B2          | B3     | B4             | B5               | B6                        | B7                       | C1                | C2        | C3               | C4       | D                                                          |
| Cradle to<br>gate with<br>options | x                      | x         | x             | MND                                   | MND              | MND       | MND         | MND    | MND            | MND              | MND                       | MND                      | x                 | x         | x                | x        | x                                                          |
| Spaesific<br>data used            | > 99%                  |           |               | -                                     | -                | -         | -           | -      | -              | -                | -                         | -                        | -                 | -         | -                | -        | -                                                          |
| Variation<br>products             | Not relevant           |           |               | -                                     | -                | -         | -           | -      | -              | -                | -                         | -                        | -                 | -         | -                | -        | -                                                          |
| Variation<br>sites                | Not relevant           |           |               | -                                     | -                | -         | -           | -      | -              | -                | -                         | -                        | -                 | -         | -                | -        | -                                                          |

(MND: Module not declared)

**Period under consideration:** The period under consideration is defined as one year. The monthly data is collected by the producer and is averaged to obtain the yearly data. The specific data for the year 2023 is utilized within this study.

**Estimates and Assumptions:** Since there is no follow up procedure, transportation distance to the closest recycling facilities, disposal area is estimated as 50 km and common transportation type and fuel are used in the calculation. C1 is assumed to be 0 because no future dismantling activities are expected for the paint. No additional energy consumption is anticipated as the paint will be disposed of along with the building demolition. In C2, due to the lack of tracking procedures, the distance to the nearest recycling facility and disposal site is estimated to be 50 km. Common transportation modes and fuels are used in the calculation. All other estimations and assumptions related to cut-off criteria and allocation are declared in these sections. No additional estimations or assumptions are made within the scope of this study. The applied paint cannot be removed and recycled. Therefore, the C3 has not been considered and 100% landfilling is assumed. 100% landfill in C4.

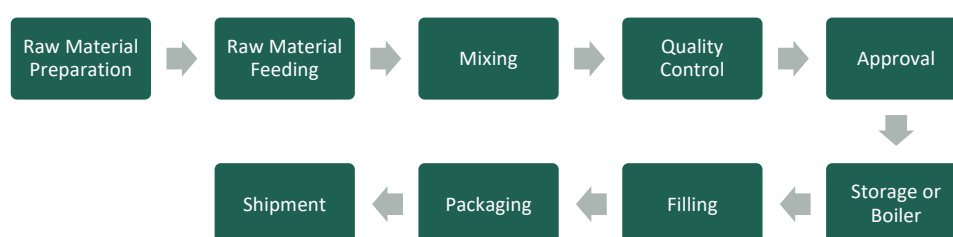
All the other estimations and assumptions regarding the cut off criteria and the allocation are declared in that parts. There are no other additional estimations and/or assumptions in the scope of this study.

**Cut of Rules:** All inputs and outputs to a (unit) process are included in the calculation, for which data were available. The cut-off rule for insufficient data or data gaps that are less than 1% of the total input mass or mass per module was applied. In case of insufficient input data or data gaps for a unit process, the cut-off criteria shall be 1% of renewable and nonrenewable primary energy usage and 1% of the total mass input of that unit process. Infrastructure/capital goods for upstream, core and downstream processes are cut off. There is wastage during production; however, it is less than 1% and has therefore not been considered.

The infrastructure/capital goods are excluded for upstream, core and downstream processes.

**Allocation:** The allocation was performed in which the product output fixed to 1 kg and the corresponding amount of product was used in calculations. Average breakdown was done by considering product total weight per year production. According to this, the total energy, water, and raw materials used to produce the product were divided by the total annual production. Since the production processes of products are the same, the annual production percentages are taken into consideration to allocate water and energy consumption. Since electricity and natural gas are used in the production of other products in the factory, the share of energy is calculated by proportioning the production amount. The raw material and energy/water inputs and waste outputs were allocated depending on the total mass annual production and calculated for 1 kg product. Co-product allocation is not applicable, since there is no co-product generation in the production line.

## Production Process



### The energy source datasets from openLCA

| Process     | Data                                                                                                                           | Data Source   | Publication Date |
|-------------|--------------------------------------------------------------------------------------------------------------------------------|---------------|------------------|
| Electricity | market for electricity, medium voltage   electricity, medium voltage   Cutoff, S – TR<br>GWP-GHG = 0.63 KgCO <sub>2</sub> /KWh | Ecoinvent 3.8 | 2021             |

## Results of the environmental performance indicators

### Mandatory impact category indicators according to EN 15804

| Results per functional or declared unit |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |          |          |          |          |          |          |          |          |          |
|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Indicator                               | Unit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | A1       | A2       | A3       | A1-A3    | C1       | C2       | C3       | C4       | D        |
| GWP-fossil                              | kg CO <sub>2</sub> eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 3,08E+00 | 9,81E-02 | 1,81E+00 | 5,00E+00 | 0,00E+00 | 2,69E-02 | 0,00E+00 | 8,53E-01 | 0,00E+00 |
| GWP-biogenic                            | kg CO <sub>2</sub> eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1,28E-01 | 6,00E-04 | 1,97E-02 | 1,48E-01 | 0,00E+00 | 2,60E-04 | 0,00E+00 | 4,90E-04 | 0,00E+00 |
| GWP-luluc                               | kg CO <sub>2</sub> eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 2,18E-03 | 3,56E-05 | 1,08E-03 | 3,30E-03 | 0,00E+00 | 1,71E-05 | 0,00E+00 | 4,08E-05 | 0,00E+00 |
| GWP-total                               | kg CO <sub>2</sub> eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 3,21E+00 | 9,87E-02 | 1,84E+00 | 5,15E+00 | 0,00E+00 | 2,72E-02 | 0,00E+00 | 8,54E-01 | 0,00E+00 |
| ODP                                     | kg CFC 11 eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 2,68E-07 | 1,68E-08 | 3,86E-08 | 3,23E-07 | 0,00E+00 | 4,39E-09 | 0,00E+00 | 2,04E-08 | 0,00E+00 |
| AP                                      | mol H <sup>+</sup> eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 2,00E-02 | 6,10E-04 | 7,63E-03 | 2,82E-02 | 0,00E+00 | 1,10E-04 | 0,00E+00 | 4,10E-04 | 0,00E+00 |
| EP-freshwater <sup>r1</sup>             | kg P eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 8,80E-04 | 7,07E-06 | 3,30E-04 | 1,22E-03 | 0,00E+00 | 2,75E-06 | 0,00E+00 | 5,08E-06 | 0,00E+00 |
| EP-marine                               | kg N eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 3,04E-03 | 1,40E-04 | 1,47E-03 | 4,65E-03 | 0,00E+00 | 2,92E-05 | 0,00E+00 | 8,99E-05 | 0,00E+00 |
| EP-terrestrial                          | mol N eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 3,05E-02 | 1,54E-03 | 1,56E-02 | 4,76E-02 | 0,00E+00 | 3,20E-04 | 0,00E+00 | 9,90E-04 | 0,00E+00 |
| POCP                                    | kg NMVO C eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1,09E-02 | 4,60E-04 | 6,43E-03 | 1,78E-02 | 0,00E+00 | 9,58E-05 | 0,00E+00 | 3,00E-04 | 0,00E+00 |
| ADP-minerals&metals <sup>2</sup>        | kg Sb eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 3,85E-05 | 3,21E-07 | 1,12E-05 | 5,01E-05 | 0,00E+00 | 1,61E-07 | 0,00E+00 | 2,16E-07 | 0,00E+00 |
| ADP-fossil <sup>2</sup>                 | MJ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 5,68E+01 | 1,42E+00 | 5,58E+01 | 1,14E+02 | 0,00E+00 | 3,82E-01 | 0,00E+00 | 1,64E+00 | 0,00E+00 |
| WDP <sup>2</sup>                        | m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 2,02E+00 | 6,82E-03 | 8,12E-01 | 2,84E+00 | 0,00E+00 | 2,31E-03 | 0,00E+00 | 1,50E-02 | 0,00E+00 |
| 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 |          |          |          |          |          |          |          |          |          |

<sup>1</sup> Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO<sub>4</sub>e.

<sup>2</sup> The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.



## Additional mandatory and voluntary impact category indicators

| Results per functional or declared unit |                                                                                                                                                                                                                                                                   |           |          |          |          |          |          |          |          |           |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------|----------|----------|----------|----------|----------|----------|-----------|
| Indicator                               | Unit                                                                                                                                                                                                                                                              | A1        | A2       | A3       | A1-A3    | C1       | C2       | C3       | C4       | D         |
| GWP-GHG <sup>1</sup>                    | kg CO <sub>2</sub> eq.                                                                                                                                                                                                                                            | 3,21E+00  | 9,87E-02 | 1,84E+00 | 5,15E+00 | 0,00E+00 | 2,72E-02 | 0,00E+00 | 8,54E-01 | 0,00E+00  |
| PM                                      | Disease inc.                                                                                                                                                                                                                                                      | 1,85E-07  | 5,89E-09 | 6,45E-08 | 2,56E-07 | 0,00E+00 | 1,46E-09 | 0,00E+00 | 4,25E-09 | 1,85E-07  |
| IR                                      | kBq U-235 eq                                                                                                                                                                                                                                                      | 1,34E-01  | 6,60E-04 | 5,99E-02 | 1,95E-01 | 0,00E+00 | 1,77E-03 | 0,00E+00 | 7,51E-03 | 1,34E-01  |
| SQP                                     | Pt                                                                                                                                                                                                                                                                | -1,92E+00 | 8,84E-01 | 1,80E+00 | 7,65E-01 | 0,00E+00 | 1,77E-01 | 0,00E+00 | 4,02E-01 | -1,92E+00 |
| HTTP-C                                  | CTUh                                                                                                                                                                                                                                                              | 1,80E-07  | 5,40E-09 | 1,08E-07 | 2,93E-07 | 0,00E+00 | 2,21E-09 | 0,00E+00 | 5,13E-07 | 1,80E-07  |
| HTTP-NC                                 | CTUh                                                                                                                                                                                                                                                              | 6,10E-07  | 1,21E-08 | 1,77E-07 | 7,99E-07 | 0,00E+00 | 3,94E-09 | 0,00E+00 | 1,05E-06 | 6,10E-07  |
| Acronyms                                | GWP-GHG = Global Warming Potential greenhouse gases, PM = Particulate Matter emissions, IR = Ionizing radiation, human health, SQP = Land use related impacts/Soil quality, HTTP-C = Human toxicity, cancer effects, HTTP-NC = Human toxicity, non-cancer effects |           |          |          |          |          |          |          |          |           |

<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.

<sup>2</sup> This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

<sup>2</sup> The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

## Resource use indicators

| Results per functional or declared unit |      |          |          |          |          |          |          |          |           |          |
|-----------------------------------------|------|----------|----------|----------|----------|----------|----------|----------|-----------|----------|
| Indicator                               | Unit | A1       | A2       | A3       | A1-A3    | C1       | C2       | C3       | C4        | D        |
| PERE                                    | MJ   | 1,17E+00 | 1,14E-02 | 8,15E-01 | 1,99E+00 | 0,00E+00 | 2,03E-03 | 0,00E+00 | 1,02E+00  | 0,00E+00 |
| PERM                                    | MJ   | 1,02E+00 | 0,00E+00 | 0,00E+00 | 1,02E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 1,02E+00  | 0,00E+00 |
| PERT                                    | MJ   | 2,18E+00 | 1,14E-02 | 8,15E-01 | 3,01E+00 | 0,00E+00 | 2,03E-03 | 0,00E+00 | 3,35E-03  | 0,00E+00 |
| PENRE                                   | MJ   | 6,35E+01 | 1,53E+00 | 6,21E+01 | 1,27E+02 | 0,00E+00 | 4,06E-01 | 0,00E+00 | 1,75E+00  | 0,00E+00 |
| PENRM                                   | MJ   | 4,25E-03 | 0,00E+00 | 0,00E+00 | 4,25E-03 | 0,00E+00 | 0,00E+00 | 0,00E+00 | -4,25E-03 | 0,00E+00 |
| PENRT                                   | MJ   | 6,35E+01 | 1,53E+00 | 6,21E+01 | 1,27E+02 | 0,00E+00 | 4,06E-01 | 0,00E+00 | 1,74E+00  | 0,00E+00 |
| SM                                      | kg   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00  | 0,00E+00 |
| RSF                                     | MJ   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00  | 0,00E+00 |
| NRSF                                    | MJ   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00  | 0,00E+00 |

|          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |          |          |          |          |          |          |          |          |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| FW       | m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 4,71E-02 | 1,60E-04 | 1,89E-02 | 6,62E-02 | 0,00E+00 | 5,38E-05 | 0,00E+00 | 3,50E-04 | 0,00E+00 |
| 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 |          |          |          |          |          |          |          |          |          |

## Waste indicators

| Results per functional or declared unit |      |          |          |          |          |          |          |          |          |          |
|-----------------------------------------|------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Indicator                               | Unit | A1       | A2       | A3       | A1-A3    | C1       | C2       | C3       | C4       | D        |
| Hazardous waste disposed                | kg   | 4,15E-05 | 3,57E-06 | 7,60E-04 | 8,05E-04 | 0,00E+00 | 1,06E-06 | 0,00E+00 | 1,32E-05 | 0,00E+00 |
| Non-hazardous waste disposed            | kg   | 7,78E-01 | 6,76E-02 | 1,37E-01 | 9,83E-01 | 0,00E+00 | 1,25E-02 | 0,00E+00 | 6,97E-01 | 0,00E+00 |
| Radioactive waste disposed              | kg   | 8,41E-05 | 9,46E-06 | 2,65E-05 | 1,20E-04 | 0,00E+00 | 2,40E-06 | 0,00E+00 | 1,12E-05 | 0,00E+00 |

## Output flow indicators

| Results per functional or declared unit |      |          |          |          |          |          |          |          |          |          |
|-----------------------------------------|------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Indicator                               | Unit | A1       | A2       | A3       | A1-A3    | C1       | C2       | C3       | C4       | D        |
| Components for re-use                   | kg   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Material for recycling                  | kg   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Materials for energy recovery           | kg   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Exported energy, electricity            | MJ   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Exported energy, thermal                | MJ   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |

Mass balance approaches (MBAs), to claim, for example, biobased, renewable, and/or recycled product content, are not applied.

The use of the results of modules A1-A3 (A1-A5 for services) without considering the results of module C is not encouraged.

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.

## References

- PCR 2019:14 Construction products v1.3.3
- EN 15804:2012+A2:2019: Sustainability of construction works — Environmental product declarations — Core rules for the product category of construction product
- ISO 14040: 2006 Environmental management - Life cycle assessment - Principles and framework
- ISO 14044: 2006 Environmental management - Life cycle assessment - Requirements and Guidelines
- ISO 14020: 2002 Environmental labels and declarations- General principles
- ISO 14025: 2006 Environmental labels and declarations - Type III environmental declarations - Principles and procedures
- The International EPD® System; [www.environdec.com](http://www.environdec.com)
- The International EPD® System / The General Programme Instructions; <http://www.environdec.com/tr/The-International-EPD-System/General-Programme-Instructions>
- openLCA Software, ecoinvent 3.8 database; <https://www.openlca.org/openlca>

## Contact Information

### Programme Operator & Licensee

International EPD® System  
EPD International AB Box 210 60  
SE-100 31 Stockholm / Sweden

[www.environdec.com](http://www.environdec.com)  
[info@environdec.com](mailto:info@environdec.com)



EPD Türkiye  
Süratam Sustainability Services  
NEF 09 Blok No: 7/15, 34415  
Kağıthane/İstanbul, Türkiye

[www.epdturkey.org](http://www.epdturkey.org)  
[info@epdturkey.org](mailto:info@epdturkey.org)



### Owner of the declaration



Betek Boya Kimya ve Sanayi A.Ş  
1. GOSB, Tembelova Alanı 3200 sk. No:  
3206 Gebze/Kocaeli

Contact: Berk Aygen  
Product Development Manager  
Phone: +90 216 571 10 00

[www.betek.com.tr](http://www.betek.com.tr)  
[www.nipponboya.com](http://www.nipponboya.com)

### LCA practitioner



'Sustainability Consultancy'

Eren Yaman  
ERKE Sustainability Consultancy  
[www.erkeconsultancy.com](http://www.erkeconsultancy.com)  
[info@erkeconsultancy.com](mailto:info@erkeconsultancy.com)

Türkiye: Kısıklı Mahallesi  
Hanımseti Sokak No:5  
Üsküdar/İstanbul  
+90 216 369 73 93

The United Kingdom: 71 75  
Shelton St, London WC2H 9FD,  
UK  
+44 20 8159 8932

United Arab Emirates: Meydan  
Grandstand, 6th floor, Meydan  
Road, Nad Al Sheba, Dubai,  
U.A.E.  
+971 50 388 7393

### 3rd party verifier

Ipek Göktas Kalkan  
Göktas Kalkan Ipek TMI  
[info@ipekgoktas.com](mailto:info@ipekgoktas.com)

Leikosaarentie 11 D 59 00980  
Helsinki / Finland

