

Environmental Product Declaration

In accordance with ISO 14025:2006,
EN 15804:2012+A2:2019/AC:2021, and ISO 21930:2017

FENIX® Bloom 0.7mm

Arpa Industriale S.p.A.

By Nemho, center of excellence for innovation and
technology for Broadview Holding B.V.

| | |
|-------------------------|---|
| Programme | The International EPD® System www.environdec.com |
| Programme operator | EPD International AB |
| EPD registration number | S-P-07656 |
| Publication date | 2023-03-21 |
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| Valid until | 2028-03-20 |

*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*

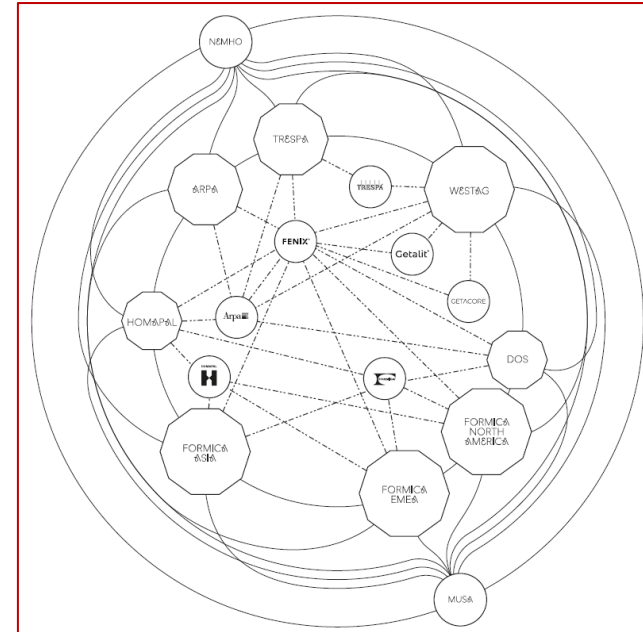


NEMHO

Nemho is located in Weert in the Netherlands and it is the Innovation Centre of the material companies of the Broadview Holding, namely Arpa Industriale S.p.A., Trespa International, Formica, Homapal, Westag and DOS. Nemho carries out all sustainability-related activities, including LCA studies, for the above-mentioned companies.

Nemho is the owner of this EPD.

Contact Person: Sara Corrado (s.corrado@nemho.com).



ARPA INDUSTRIALE S.P.A.

Since 1954, Arpa Industriale S.p.A. has been designing and manufacturing high-quality surface materials for a vast array of interior design uses. It offers a wide range of extremely diversified products, both in terms of structure and aesthetics. Arpa is also the creator of FENIX®, the innovative materials for interior design. Arpa Industriale S.p.A. decorative laminates are made in the 150,000 m² plant in Bra, Piedmont, and are the expression of the vivid and original Italian creativity. Over 65 years of investments in research, advanced technology, and personnel training have allowed Arpa to consolidate its reputation as a highly reliable player in the industry.

Arpa Industriale S.p.A. is, amongst other certification schemes, certified according to:

- ISO 9001:2015
- FSC
- PEFC
- ISO 45001

FENIX BLOOM 0.7MM

FENIX Bloom 0.7mm is a paper based material. It comprises individual layers of natural fibres, treated with thermosetting resins and pressed by simultaneous application of heat and pressure, in order to obtain a homogeneous non-porous high density product. FENIX Bloom 0.7mm is attributed with one integrated decorative layer, the backside is sanded.

FENIX Bloom is made of paper (over 60%) and thermosetting resins (30 - 40%). The FENIX products are created by a pressing process in which heat and pressure are applied simultaneously in order to obtain a homogeneous non-porous product.

The core structure is composed of paper, impregnated with thermosetting resins. The outer colored surface is treated with next generation acrylic resins, which are hardened and fixed through an Electron Beam Curing process.

The distinctive characteristic of this product is Bloom, the lignin-based technology created by the company's R&D department to

increase the use of natural raw materials in the core of FENIX products. With Bloom, lignin is introduced to significantly reduce the amount of phenol included in the resin by 50%.

Created with proprietary technologies, FENIX makes you experience unique features. At first glance, the surfaces strike for their super-matt appearance. By touching them, you feel how pleasantly soft they

are, with the further surprise of leaving no fingerprints. Thermal healing of superficial micro-scratches is also possible.

FENIX Bloom is used for interior design horizontal and vertical applications.

PRODUCT IDENTIFICATION:

High pressure decorative thin and solid panels tested in accordance with the European standard EN 438 part 2.

UN CPC CODE

Not applicable.



OPAQUE SURFACE



SOFT TOUCH



ANTI-FINGERPRINT



THERMAL HEALING OF MICRO-
SCRATCHES

METHODOLOGY

This EPD has been developed based on the PCR for construction products 2019:14, Version 1.2.5.

DECLARED UNIT

The declared unit is 1 square meter of finished panel, 0.7 mm thick, weighing 1.02 kg, plus primary packaging. All the possible product décor layers, different for the color and for the finishing, are covered by this EPD.

REFERENCE SERVICE LIFE

Not applicable.

TIME REPRESENTATIVENESS

Data used for the LCA calculation refer to the production year 2021.

DATA, DATABASE(S) AND LCA SOFTWARE

Activities under the direct control of the company are modelled using specific data.

The LCA study was performed with the support of the Simapro LCA software (version 9.3).

Generic data are taken from Ecoinvent 3.8 ad Carbon Minds database.

ELECTRICITY MODELLING

Electricity used at Arpa Industriale S.p.A. comes partially from the grid and partially is generated onsite through PV panels.

The grid electricity mix is modelled based on guarantees of origin (GOs) purchased by Arpa Industriale S.p.A in 2021 and includes the following sources: wind (41,7%), solar (33,7%), and hydropower (24,6%).

ALLOCATION APPROACH

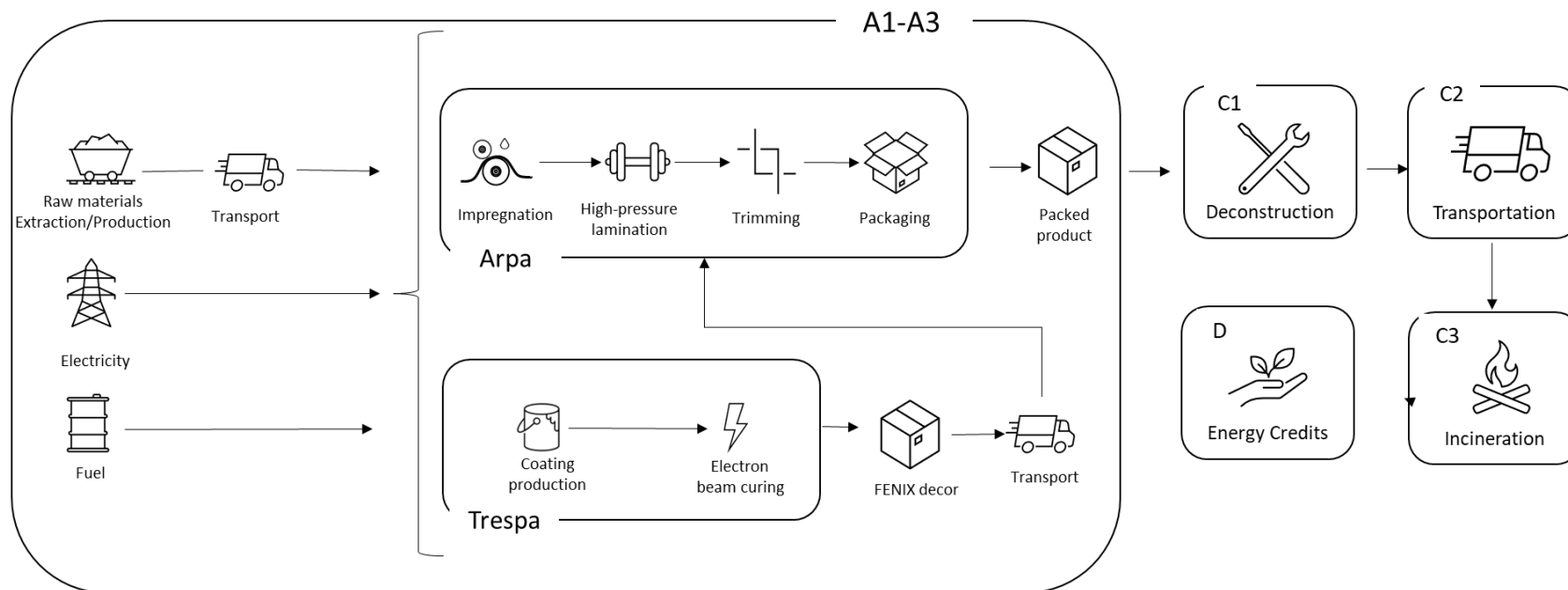
Environmental impacts of multi-output processes at the plant level are allocated to the outputs based on their mass.

SYSTEM BOUNDARIES

The system boundaries of this EPD are from cradle to gate with modules C1–C4 and module D (A1–A3 + C + D).

The product stage (modules A1-A3) includes the manufacturing process of FENIX Bloom 0.7mm, carried out in the plant of Arpa Industriale S.p.A., the production of raw materials, electricity, and natural gas.

The deconstruction of FENIX Bloom 0.7mm (module C1) is modelled according to Gervasio et al. (2018). The transport at the end of life (module C2) assumed an average transport distance equal to 100km. Panels are commonly used as secondary material for energy recovery, therefore it is assumed that 100% of the product at the end of life is sent to incineration (module C3). Loads from material incineration and resulting energy credits (module D) are declared. Energy credits are calculated considering a lower heating value (LHV) of panels equal to 19 MJ/kg as showed by an incineration test run internally with the support of BioMassaKraftcentrale (Germany, Luhnien).



MODULES DECLARED, GEOGRAPHICAL SCOPE, SHARE OF SPECIFIC DATA (IN GWP-GHG INDICATOR) AND DATA VARIATION

| | 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 | IT | - | - | - | - | - | - | - | - | - | GLO | GLO | GLO | GLO | GLO |
| Specific data used | > 90% | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Variation – sites | n.a. | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

X: module declared, ND: module not declared, n.a.: not applicable

CONTENT INFORMATION

| Product components | Weight kg | Post-consumer material weight-% | Biogenic material weight-% and kg C/kg |
|-----------------------------|---------------------|---------------------------------|---|
| Paper | 0,594 ± 0,012 | 0% | 58,1% ± 1,2% 0,33 ± 0,007 |
| Phenolic resin | 0,235 ± 0,005 | 0% | 8,9% ± 0,2% 0,047 ± 0,001 |
| Acrylic resins and coatings | 0,194 ± 0,004 | 0% | 0 0% |
| TOTAL | 1,023 ± 0,02 | 0% | 67,0% ± 1,3% 0,377 ± 0,008 |

| Packaging materials | Weight, kg | Weight-% (versus the product) | Weight biogenic carbon, kg C/kg |
|-----------------------------|--------------|-------------------------------|---------------------------------|
| Carboard and carboard boxes | 0,018 | 0% | 4,3% |
| Ledorex® | 0,096 | 1% | 0,0% |
| PP alveolare | 0,076 | 1% | 0,0% |
| TOTAL | 0,189 | 1% | 4,3% |

FENIX Bloom 0.7mm does not contain substances listed on the candidate list of Substances of Very High Concern, as published on the ECHA website, in concentrations exceeding 0.1 percentage by mass.

ENVIRONMENTAL PERFORMANCE

POTENTIAL ENVIRONMENTAL IMPACT – MANDATORY INDICATORS ACCORDING TO EN 15804

| Results for 1 m ² of FENIX Bloom 0.7mm | | | | | | | |
|---|------------------------|-----------|----------|----------|----------|----------|-----------|
| Indicator | Unit | Tot.A1-A3 | C1 | C2 | C3 | C4 | D |
| Climate change – total | kg CO ₂ eq. | 2,63E+00 | 6,47E-02 | 9,21E-03 | 2,26E+00 | 0,00E+00 | -1,02E+00 |
| Climate change - fossil | kg CO ₂ eq. | 4,04E+00 | 6,46E-02 | 9,20E-03 | 8,43E-01 | 0,00E+00 | -1,02E+00 |
| Climate change – biogenic | kg CO ₂ eq. | -1,41E+00 | 0,00E+00 | 0,00E+00 | 1,41E+00 | 0,00E+00 | 0,00E+00 |
| Climate change – land use and land use change | kg CO ₂ eq. | 3,64E-03 | 1,18E-04 | 3,34E-06 | 8,35E-06 | 0,00E+00 | -1,05E-03 |
| Ozone depletion | kg CFC 11 eq. | 1,98E-06 | 2,14E-09 | 2,21E-09 | 2,57E-09 | 0,00E+00 | -8,40E-08 |
| Acidification | mol H ⁺ eq. | 1,64E-02 | 3,19E-04 | 4,68E-05 | 4,49E-04 | 0,00E+00 | -2,96E-03 |
| Eutrophication aquatic freshwater | kg P eq. | 1,27E-03 | 3,03E-05 | 5,78E-07 | 6,26E-06 | 0,00E+00 | -4,39E-04 |
| Eutrophication aquatic marine | kg N eq. | 3,52E-03 | 6,09E-05 | 1,61E-05 | 2,60E-04 | 0,00E+00 | -5,20E-04 |
| Eutrophication terrestrial | mol N eq. | 3,54E-02 | 6,09E-04 | 1,76E-04 | 2,36E-03 | 0,00E+00 | -4,76E-03 |
| Photochemical ozone formation | kg NMVOC eq. | 1,17E-02 | 1,64E-04 | 5,25E-05 | 5,95E-04 | 0,00E+00 | -1,55E-03 |
| Depletion of abiotic resources - minerals and metals* | kg Sb eq. | 2,16E-05 | 8,40E-08 | 2,13E-08 | 6,72E-08 | 0,00E+00 | -1,72E-06 |
| Depletion of abiotic resources - fossil fuels* | MJ | 6,54E+01 | 8,42E-01 | 1,45E-01 | 1,55E-01 | 0,00E+00 | -1,80E+01 |
| Water use* | m ³ eq. | 1,60E+00 | 1,03E-02 | 4,98E-04 | 5,41E-03 | 0,00E+00 | -1,06E-01 |

* 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.

POTENTIAL ENVIRONMENTAL IMPACT – ADDITIONAL MANDATORY AND VOLUNTARY INDICATORS

| Results for 1 m ² of FENIX Bloom 0.7mm | | | | | | | |
|---|------------|-----------|----------|----------|----------|----------|-----------|
| Indicator | Unit | Tot.A1-A3 | C1 | C2 | C3 | C4 | D |
| GWP-GHG** | kg CO2 eq. | 3,98E+00 | 6,35E-02 | 9,14E-03 | 8,42E-01 | 0,00E+00 | -1,00E+00 |

POTENTIAL ENVIRONMENTAL IMPACT – ADDITIONAL VOLUNTARY INDICATORS. RESULTS FOR NORTH AMERICA CALCULATED ACCORDING TO ISO 21930

| Results for 1 m ² of FENIX Bloom 0.7mm | | | | | | | |
|--|---------------|-----------|----------|----------|----------|----------|-----------|
| Indicator | Unit | Tot.A1-A3 | C1 | C2 | C3 | C4 | D |
| Climate change – GWP 100 (ISO 21930) | kg CO2 eq. | 3,92E+00 | 6,27E-02 | 9,11E-03 | 8,42E-01 | 0,00E+00 | -9,86E-01 |
| Ozone depletion - ODP (ISO 21930) | kg CFC-11 eq. | 1,87E-06 | 2,55E-09 | 2,34E-09 | 2,67E-09 | 0,00E+00 | -8,80E-08 |
| Eutrophication potential - EP (ISO 21930) | kg N eq | 1,24E-02 | 2,35E-04 | 9,25E-06 | 9,12E-04 | 0,00E+00 | -3,36E-03 |
| Acidification potential - AP (ISO 21930) | kg SO2 eq | 1,37E-02 | 2,72E-04 | 4,14E-05 | 4,08E-04 | 0,00E+00 | -2,44E-03 |
| Photochemical ozone formation potential – POCP (ISO 21930) | kg O3 eq. | 1,94E-01 | 3,43E-03 | 1,01E-03 | 1,28E-02 | 0,00E+00 | -2,64E-02 |

. ** The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product.

USE OF RESOURCES

| Results for 1 m ² of FENIX Bloom 0.7mm | | | | | | | |
|--|----------------|-----------|----------|----------|----------|----------|-----------|
| Indicator | Unit | Tot.A1-A3 | C1 | C2 | C3 | C4 | D |
| Use of renewable primary energy excluding renewable primary energy resources used as raw materials (PERE) | MJ | 4,41E+00 | 8,37E-02 | 1,43E-03 | 7,12E-03 | 0,00E+00 | -1,37E+00 |
| Use of renewable primary energy resources used as raw materials (PERM) | MJ | 3,11E+01 | 1,30E-02 | 4,13E-04 | 1,81E-03 | 0,00E+00 | -2,44E-01 |
| Total use of renewable primary energy resources (PERT) | MJ | 3,55E+01 | 9,67E-02 | 1,84E-03 | 8,93E-03 | 0,00E+00 | -1,61E+00 |
| Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials (PENRE) | MJ | 5,93E+01 | 8,42E-01 | 1,45E-01 | 1,55E-01 | 0,00E+00 | -1,80E+01 |
| Use of non-renewable primary energy resources used as raw materials (PENRM) | MJ | 6,10E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Total use of non-renewable primary energy re-sources (PENRT) | MJ | 6,54E+01 | 8,42E-01 | 1,45E-01 | 1,55E-01 | 0,00E+00 | -1,80E+01 |
| Use of secondary material (SM) | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Use of renewable secondary fuels (RSF) | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Use of non-renewable secondary fuels (NRSF) | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Use of net fresh water (FW) | m ³ | 4,20E-02 | 4,69E-04 | 1,72E-05 | 5,86E-04 | 0,00E+00 | -7,80E-03 |

WASTE PRODUCTION

| Results for 1 m ² of FENIX Bloom 0.7mm | | | | | | | |
|---|------|-----------|----------|----------|----------|----------|-----------|
| Indicator | Unit | Tot.A1-A3 | C1 | C2 | C3 | C4 | D |
| Hazardous waste disposed | kg | 1,16E-02 | 3,08E-04 | 7,97E-06 | 5,35E-02 | 0,00E+00 | -1,36E-03 |
| Non-hazardous waste disposed | kg | 7,04E-01 | 4,08E-03 | 1,35E-02 | 2,22E-02 | 0,00E+00 | -3,49E-02 |
| Radioactive waste disposed | kg | 1,57E-04 | 2,61E-06 | 9,79E-07 | 4,46E-07 | 0,00E+00 | -6,89E-05 |

OUTPUT FLOWS

| Results for 1 m ² of FENIX Bloom 0.7mm | | | | | | | |
|---|------|-----------|----------|----------|----------|----------|----------|
| Indicator | Unit | Tot.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 |
| Material for recycling | kg | 3,06E-02 | 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 |
| Exported energy, electricity | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 3,85E+00 | 0,00E+00 | 0,00E+00 |
| Exported energy, thermal | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 7,81E+00 | 0,00E+00 | 0,00E+00 |

ADDITIONAL INFORMATION

Reducing FENIX's carbon footprint is a key component of our sustainability policy.

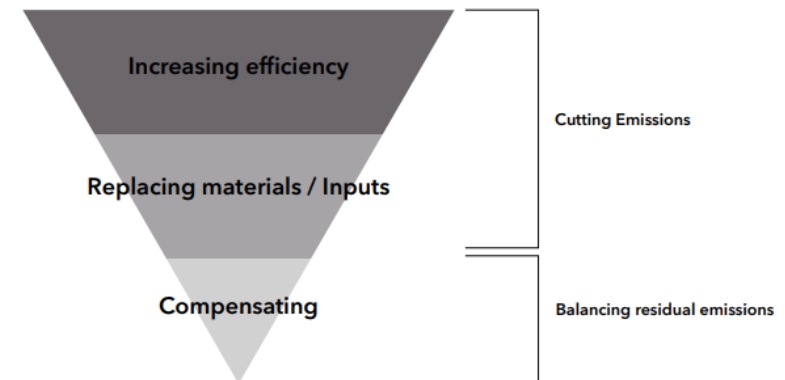
The road to reducing the carbon footprint starts with the replacement of the most impactful inputs and the improvement of our products and processes efficiency.

FENIX® was developed with this strategy in mind and is reflected in:

- How it is manufactured: FENIX® panels are produced in a state-of-the-art plants;
- The source of electricity: only renewable electricity is used in the manufacturing process, either from the solar panels installed on the factory's roof or purchased from the grid;
- Its composition: approximately 60% of FENIX® is made of bio-based material.

Besides actively working on finding further opportunities to reduce its carbon footprint, FENIX compensates the emissions generated through its whole life cycle through carbon offsetting projects. The selected carbon-captured projects are waste-to-energy facilities in which the methane gas released from the landfills is used to generate electricity.

Further details can be found on fenixforinteriors.com, and technical information is available on fenixforinteriors.info.



PROGRAM INFORMATION

| | |
|-------------------|---|
| Programme: | The International EPD® System |
| Address: | EPD International AB Box 210 60 SE-100 31 Stockholm Sweden |
| Website: | www.environdec.com |
| E-mail: | info@environdec.com |

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|---|
| Product Category Rules (PCR) |
| CEN standard EN 15804 serves as the Core Product Category Rules (PCR) |
| Product category rules (PCR): PCR 2019:14 CONSTRUCTION PRODUCTS VERSION 1.2.5 |
| PCR review was conducted by: the Technical Committee of the International EPD® System. Chair of the review is Claudia A. Peña. The review panel may be contacted via info@environdec.com |
| Life Cycle Assessment (LCA) |
| LCA accountability: Sara Corrado, Nemho |
| Third-party verification |
| Independent third-party verification of the declaration and data, according to ISO 14025:2006 via: <input checked="" type="checkbox"/> EPD verification by EPD Process Certification* Internal auditor: Irmak Akal, Nemho Third-party verification: SGS Italia S.p.A. Via Caldera 21, 20153 Milano.(www.it.sgs.com) is an approved certification body accountable for third-party verification Third-party verifier is accredited by: <i>Accredia, certificate n. 0005VV</i> *For EPD Process Certification, an accredited certification body certifies and reviews the management process and verifies EPDs published on a regular basis. For details about third-party verification procedure of the EPDs, see GPI v.4, Section 7.5. |
| Procedure for follow-up of data during EPD validity involves third party verifier: <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.

DIFFERENCES PREVIOUS VERSION

- 2024/05/29 – Version 2

Editorial changes and updated indicators non-renewable secondary fuel and renewable secondary fuel

- 2025/03/21 - Version 3

Editorial changes

REFERENCES

- General Programme instructions of the International EPD® System. Version 4.
- Gervasio, Dimova, Pinto (2018). Benchmarking the Life-Cycle Environmental Performance of Buildings. Sustainability.
- LCA background report for FENIX Bloom 0.7mm.
- PCR 2019:14 Construction products, Version 1.2.5.