Environmental Product Declaration

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

FENIX NTM® Standard core (0.7 mm)

By Arpa Industriale S.p.A. and Formica Corporation

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

Programme	The International EPD® System www.environdec.com
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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

THE INTERNATIONAL EPD® SYSTEM

ECO PLATFORM EPD VERIFIED

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. (will be referred to as Arpa from here on), 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.

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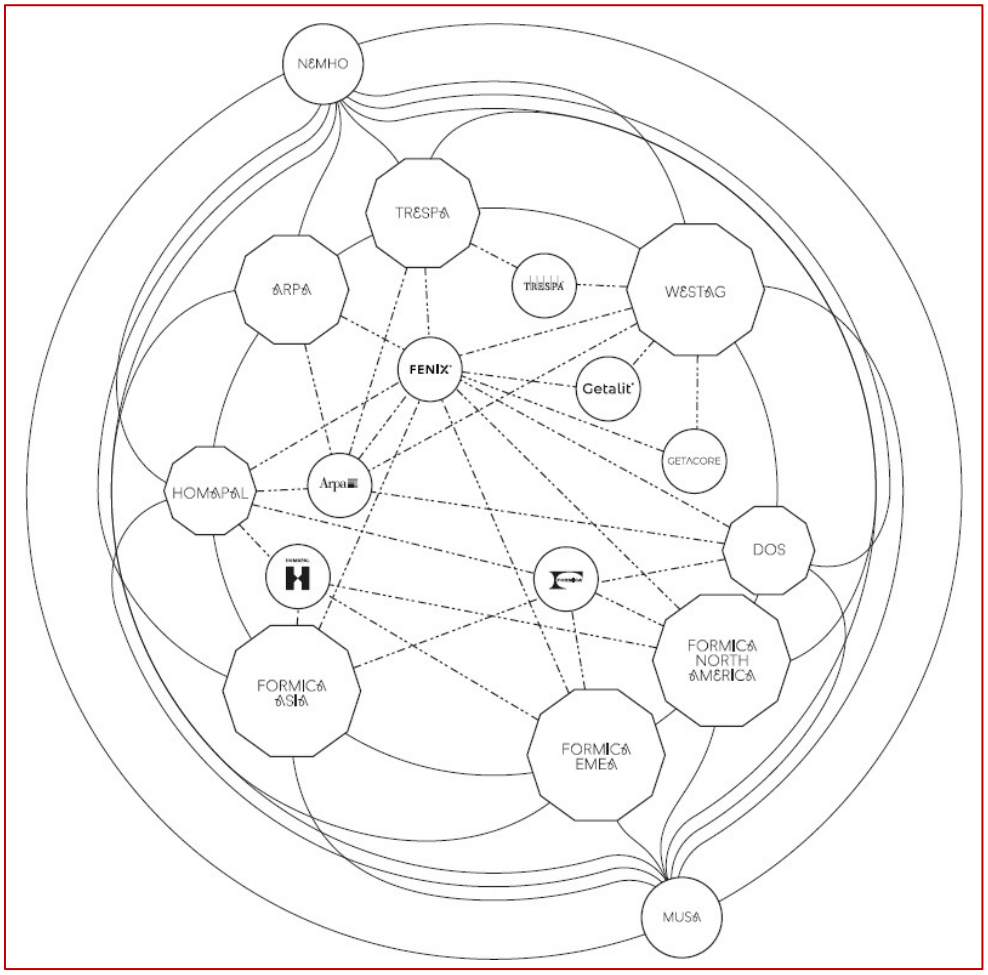


ARPA INDUSTRIALE S.P.A.

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 m^2 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

FORMICA CORPORATION

Formica Corporation was founded in 1913 in Cincinnati, Ohio as The Formica Products Company by former Westinghouse engineers Daniel J. O'Conor and Herbert Faber. The two discovered high-pressure plastic resins could be used as an effective substitute "for mica" in electrical componentry, and with their invention, they created a new category of materials known as high-pressure laminate (HPL). Formica® Brand Laminates became well known for its fashionable designs, durability and ease of cleaning, and Formica surfaces were broadly used in cafes, railway cars and ocean liners. Fast forward to today, the modern-day Formica Corporation remains committed to innovation and maintaining a leading position in design and manufacture of high quality HPL surfaces for applications ranging from health care to single-family homes, education to hospitality, retail to multi-family residences. Today, Formica Corporation operates manufacturing facilities in Cincinnati, Ohio and St. Jean-sur-Richelieu, Quebec along with a network of distribution warehouses across the United States, Canada and Mexico.

Formica® brand laminate products conform to the following characteristics:

- FSC
- NSF/ANSI 35 High pressure Decorative Laminates for Food Surfacing Equipment
- Greenguard Gold
- ANSI/NEMA Standards

FENIX NTM® STANDARD CORE (0.7 MM)

FENIX NTM® Standard core 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.

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 NTM® Standard core (0.7mm) is used for interior design horizontal and vertical applications.

PRODUCT IDENTIFICATION

High pressure decorative panels are tested in North America in accordance to the NEMA LD3-2005 standard.

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

UN CPC CODE

Not applicable.

LOW LIGHT REFLECTIVITY, EXTREMELY MATT SURFACE

SOFT TOUCH

ANTI-FINGERPRINT

THERMAL HEALING OF SUPERFICIAL MICRO-SCRATCHES

METHODOLOGY

This EPD has been developed based on the PCR for construction products 2019:14, Version 1.3.4.

DECLARED UNIT

The declared unit is 1 square meter of finished panel, 0.7 mm thick, weighing 1.021 kg, plus primary and secondary packaging. All the possible product décor layers, different for the color and for the finishing, are covered by this EPD.

FENIX NTM® Standard core (0.7 mm) is produced by Formica Saint-Jean, Canada and by Arpa Industriale located in Bra (Italy).

REFERENCE SERVICE LIFE

Not applicable.

TIME REPRESENTATIVENESS

Data used for the LCA calculation refer to the production year 2023.

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 10.0).

Generic data are taken from Ecoinvent 3.9.1 and Carbon Minds database.

ELECTRICITY MODELLING

Formica St Jean electricity mix correspond to the residual mix of Quebec, which corresponds to 95.4% hydroelectricity, 3.18% Wind electricity, 0.95% biomass/biogas, 0,25% nuclear, and 0,20% fossil (coal, fuel oil, gas).

Electricity used at Arpa comes partially from the grid (86%) and partially is generated onsite through PV panels (14%). The grid electricity mix is modelled based on guarantees of origin (GOs) purchased by Arpa in 2023 and is 100% sourced from PV panels.

The resulting average emission factor of electricity, calculated using the GWP-GHG indicator, is 0,0729 $kgCO_{2eq}$/kWh.

ALLOCATION APPROACH

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

INFRASTRUCTURES AND CAPITAL GOODS

Infrastructures and capital goods in our production sites are excluded from the analysis. Other infrastructures and capital goods are included in the analysis, as reported in Ecoinvent database, with the exception of chemicals taken from Carbon Minds database.

ENVIRONMENTAL PERFORMANCE ASSESSMENT

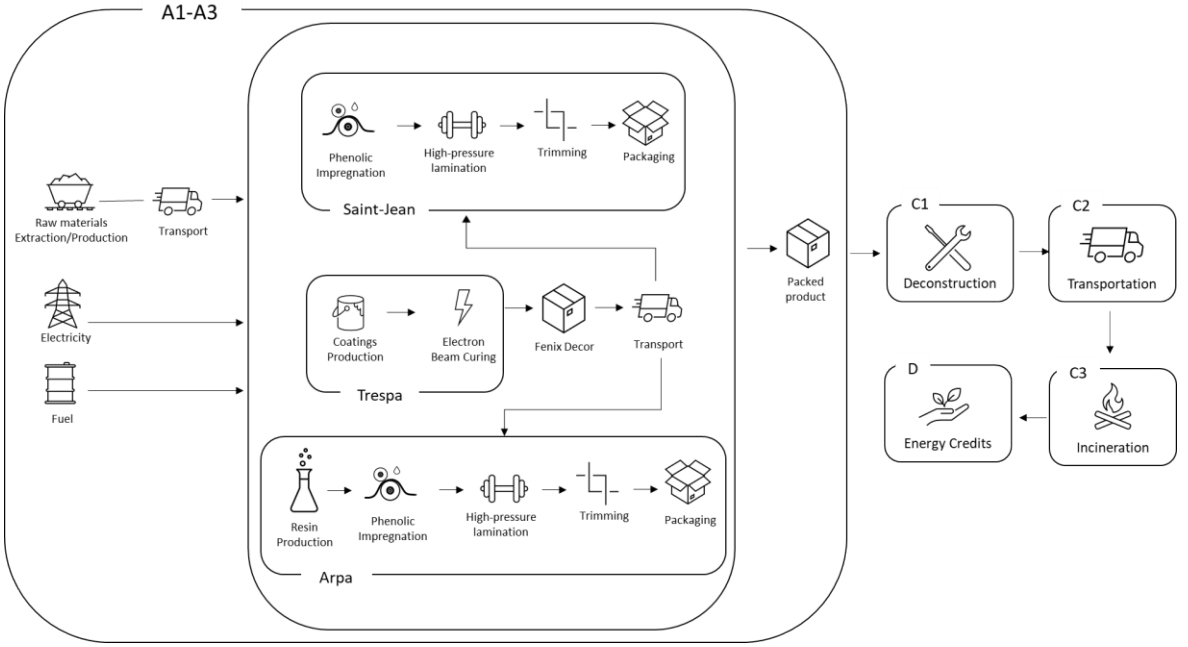
Mandatory potential impact indicators are calculated using the EN 15804 reference package based on EF 3.1.

SYSTEM BOUNDARIES

The system boundary of this EPD is from cradle to gate with modules C1–C4 and module D (A1–A3 + C + D). The results of modules A1-A3 shouldn't be used without considering the results of module C.

The product stage (modules A1-A3) includes the manufacturing process of FENIX NTM® Standard core (0.7 mm), carried out in the plants of Saint-Jean, Canada and Arpa located in Bra (Italy), the production of raw materials, electricity, and natural gas for both locations.

The deconstruction of FENIX NTM® Standard core 0.7 mm (module C1) is modelled according to Gervasio et al. (2018). The transport of panels at the end of life (module C2) assumed an average transport distance equal to 100km. FENIX is commonly used as secondary material for energy recovery, therefore it is assumed that at the end of life it is sent to incineration with thermal efficiency higher than 60% (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, Luhnen).



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	CAN, IT	-	-	-	-	-	-	-	-	-	GLO	GLO	GLO	GLO		GLO
Specific data used	>90%			-	-	-	-	-	-	-	-	-	-	-	-	-		-
Variation – sites	15%			-	-	-	-	-	-	-	-	-	-	-	-	-		-

X: module declared, ND: module not declared

CONTENT INFORMATION

Product components	Weight *kg*	Post-consumer material *Weight %*	Biogenic material *Weight-% of product*	Biogenic material *kg C/m²*
Paper	0.581 ± 0.012	0%	56.9% ± 1.1%	0.321 ± 0.006
Phenolic resin	0.297 ± 0.006	0%	0.2% ± 0.0%	0.001 ± 0.000
Melamine and acrylic resin	0.143 ± 0.003	0%	0.0% ± 0.0%	0.000 ± 0.000
TOTAL	1.021 ± 0.020	0%	57.1% ± 1.1%	0.322 ± 0.006

Packaging materials	Weight *kg*	Weight *% (versus the product)*	Weight biogenic carbon *kg C/m²*
Cardboard	0.008	1%	0.004
Polypropylene	0.003	0%	0.000
Polyethylene	0.006	1%	0.000
TOTAL	**0.017**	**2%**	**0.004**

The biogenic carbon content of the product and packaging is respectively 1.182 kgCO2eq/m^2 and 0.013 kgCO2eq/m^2.

FENIX NTM® Standard core (0.7 mm) 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 at date of issuing this EPD.

ENVIRONMENTAL PERFORMANCE

POTENTIAL ENVIRONMENTAL IMPACT – MANDATORY INDICATORS ACCORDING TO EN 15804

Results for 1 m² of FENIX NTM® Standard core (0.7 mm)							
Indicator	**Unit**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
Climate change – total	kg CO_2 eq.	3.18E+00	6.49E-02	1.05E-02	2.03E+00	0.00E+00	-1.01E+00
Climate change - fossil	kg CO_2 eq.	4.33E+00	6.46E-02	1.05E-02	8.42E-01	0.00E+00	-1.00E+00
Climate change – biogenic	kg CO_2 eq.	-1.16E+00	1.35E-04	3.41E-06	1.18E+00	0.00E+00	-2.22E-03
Climate change – land use and land use change	kg CO_2 eq.	5.30E-03	1.34E-04	5.01E-06	7.24E-06	0.00E+00	-1.08E-03
Ozone depletion	kg CFC 11 eq.	1.58E-06	4.19E-10	2.28E-10	1.60E-09	0.00E+00	-3.18E-08
Acidification	mol H^+ eq.	1.56E-02	3.13E-04	4.36E-05	4.16E-04	0.00E+00	-2.48E-03
Eutrophication aquatic freshwater	kg P eq.	1.47E-04	3.25E-06	8.67E-08	3.24E-07	0.00E+00	-3.94E-05
Eutrophication aquatic marine	kg N eq.	3.72E-03	5.68E-05	1.65E-05	2.13E-04	0.00E+00	-4.34E-04
Eutrophication terrestrial	mol N eq.	4.07E-02	6.32E-04	1.77E-04	2.31E-03	0.00E+00	-4.91E-03
Photochemical ozone formation	kg NMVOC eq.	1.49E-02	1.87E-04	6.64E-05	5.92E-04	0.00E+00	-2.09E-03
Depletion of abiotic resources - minerals and metals*	kg Sb eq.	1.79E-05	5.88E-08	2.86E-08	4.69E-08	0.00E+00	-1.32E-06
Depletion of abiotic resources - fossil fuels*	MJ	7.22E+01	8.36E-01	1.55E-01	1.62E-01	0.00E+00	-1.73E+01
Water use*	m^3 eq.	1.76E+00	1.08E-02	7.44E-04	4.60E-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. The results of the impact categories abiotic depletion of minerals and metals may be highly uncertain in LCAs that include capital goods/infrastructure in generic datasets, in case infrastructure/capital goods contribute greatly to the total results. This is because the LCI data of infrastructure/capital goods used to quantify these indicators in currently available generic datasets sometimes lack temporal, technological and geographical representativeness. Caution should be exercised when using the results of these indicators for decision-making purposes.*

POTENTIAL ENVIRONMENTAL IMPACT – ADDITIONAL MANDATORY AND VOLUNTARY INDICATORS

Results per for 1 m² of FENIX NTM® Standard core (0.7 mm)							
Indicator	**Unit**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG**	kg CO_2 eq.	4.34E+00	6.48E-02	1.06E-02	8.43E-01	0.00E+00	-1.01E+00

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

Results per for 1 m² of FENIX NTM® Standard core (0.7 mm)							
Indicator	**Unit**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
Climate change – GWP 100 (ISO 21930)	kg CO_2 eq.	4.25E+00	6.38E-02	1.04E-02	8.43E-01	0.00E+00	-9.91E-01
Ozone depletion - ODP (ISO 21930)	kg CFC-11 eq.	1.47E-06	7.42E-10	2.46E-10	1.66E-09	0.00E+00	-3.38E-08
Eutrophication potential - EP (ISO 21930)	kg N eq	3.36E-03	3.10E-05	3.55E-06	4.91E-05	0.00E+00	-3.52E-04
Acidification potential - AP (ISO 21930)	kg SO_2 eq	1.37E-02	2.71E-04	3.93E-05	4.00E-04	0.00E+00	-2.10E-03
Photochemical ozone formation potential – POCP (ISO 21930)	kg O_3 eq.	2.08E-01	3.58E-03	1.02E-03	1.26E-02	0.00E+00	-2.72E-02

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.

*.** 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 m² of FENIX NTM® Standard core (0.7 mm)							
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	3.85E+01	1.02E-01	2.25E-03	8.75E-03	0.00E+00	-1.66E+00
Use of renewable primary energy resources used as raw materials (PERM)***	MJ	6.59E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources (PERT)***	MJ	4.51E+01	1.02E-01	2.25E-03	8.75E-03	0.00E+00	-1.66E+00
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials (PENRE)***	MJ	6.11E+01	8.36E-01	1.55E-01	1.63E-01	0.00E+00	-1.73E+01
Use of non-renewable primary energy resources used as raw materials (PENRM)***	MJ	1.12E+01	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	7.22E+01	8.36E-01	1.55E-01	1.63E-01	0.00E+00	-1.73E+01
Use of secondary material (SM)	kg	1.75E-02	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)	m³	4.90E-02	4.47E-04	2.44E-05	5.39E-04	0.00E+00	-7.03E-03

*** *Primary energy use indicators are calculated following option B described in Annex 3 of PCR for Construction products v 1.3.1.*

WASTE PRODUCTION

Results for 1 m² of FENIX NTM® Standard core (0.7 mm)							
Indicator	**Unit**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	6.36E-03	2.63E-05	4.32E-06	5.42E-02	0.00E+00	-3.33E-04
Non-hazardous waste disposed	kg	5.26E-01	3.83E-03	1.36E-02	2.30E-02	0.00E+00	-3.93E-02
Radioactive waste disposed	kg	1.51E-04	2.26E-06	4.63E-08	1.74E-07	0.00E+00	-6.20E-05

OUTPUT FLOWS

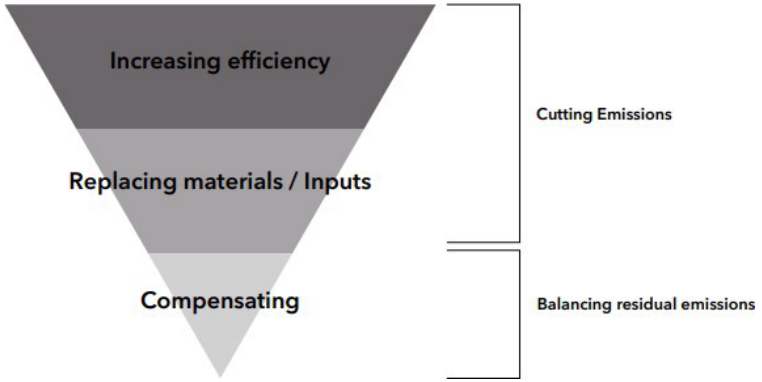
Results for 1 m² of FENIX NTM® Standard core (0.7 mm)							
Indicator	**Unit**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	3.70E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for 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	2.82E-01	0.00E+00	0.00E+00
Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00	5.73E-01	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

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 1.3.4
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: David Sette, Sara Corrado (Nemho)
Third-party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006 via: ☒ EPD verification by EPD Process Certification* Internal auditor: Lara Naested, 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: Accredia, certificate n.0005VV *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: ☐ Yes ☒ 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.

REFERENCES

- General Programme instructions of the International EPD® System. Version 4.0.
- Gervasio, Dimova, Pinto (2018). Benchmarking the Life-Cycle Environmental Performance of Buildings. Sustainability.
- PCR 2019:14 Construction products, Version 1.3.4.