Environmental Product Declaration

In accordance with ISO 14025 and EN 15804:2012+A2:2019 for:

FENIX® 0.9 mm (standard core)

Arpa Industriale S.p.A.

by Nemho, center of excellence for innovation and technology for Arpa Industriale S.p.A., Formica Group, Homapal GmbH, Trespa International B.V. and Westag AG.

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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

General information

Programme 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

CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product category rules (PCR): PCR 2019:14. CONSTRUCTION PRODUCTS. VERSION 1.11
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
Independent third-party verification of the declaration and data, according to ISO 14025:2006: ☒ EPD process certification ☐ EPD verification
Third party verifier: SGS Italia S.p.A. Via Caldera 21, 20153 Milano.www.it.sgs.com Accredited by: Accredia, certificate n. 0005VV
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 from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804. For further information about comparability, see EN 15804 and ISO 14025.

Company information

Owner of the EPD:
Nemho, Wetering 20, 6002 SM Weert

Contact: s.corrado@nemho.com

Description of the organisation:
Nemho is the Innovation Centre of the all material companies of the Broadview Holding, i.e. Arpa Industriale (from now on referred as Arpa), Trespa International (from now on referred as Trespa), Formica, Homapal, Westag and DOS. Nemho carries out all sustainability-related activities, including LCA studies, for the above-mentioned companies.

Description of the manufacturing companies:
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.

Product-related or management system-related certifications: Arpa is, amongst other certification schemes, certified according to ISO 9001:2015, FSC, PEFC, and ISO 45001.

Name and location of production site(s): Arpa Industriale Bra (Italy).

Product information

Product name: Fenix® (standard core) 0,9 mm-thick

Product identification: High pressure decorative thin and solid panels (high-pressure laminates, HPL) tested in accordance with the European standard EN 438 part 2 and solid panels partially CE marked according to EN 438 part 7.

Product description:
FENIX 0.9mm (standard core) 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 0.9mm (standard core) is attributed with one integrated decorative layer, the backside is sanded.
FENIX 0.9mm (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 0.9mm (standard core) is used for interior design horizontal and vertical applications.

UN CPC code: Not available.

LCA information

Declared unit: 1 squared meter of finished panel 0,9-mm thick, weighting 1,238 kg, plus primary packaging

Reference service life: not applicable

Time representativeness: Primary data were collected internally. The reference year is 2020.

Database(s) and LCA software used: The LCA study was performed with the support of the Simapro LCA software (version 9.3), and Ecoinvent 3.8 and Carbon Minds (October 2021 release) database.

Description of system boundaries: Cradle to gate with modules C1–C4 and module D (A1–A3 + C + D).

System diagram

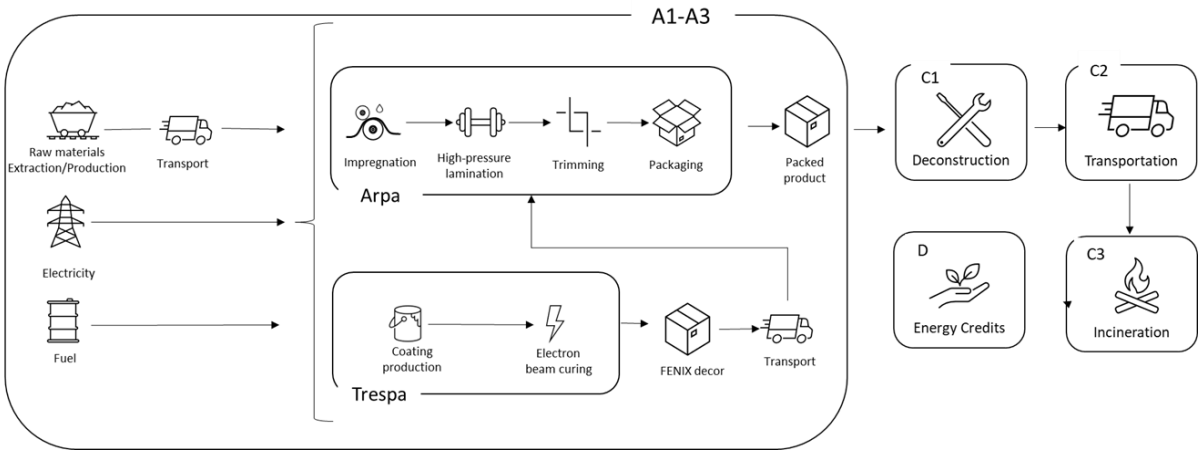


Figure 1: System boundary diagram for Fenix® panels.
**Trespa is Arpa's sister company. Dashed blocks identify processes carried out only at the Arpa site. T = transport*

More information:

Name and contact information of LCA practitioner: s.corrado@nehmo.com

Name of the organisation carrying out the underlying study: Nemho Innovation B.V.

Modelling of electricity in module A3: The electricity mix is modelled according to the specific energy mix of the electricity bought by Arpa.
The specific electricity mix of Arpa corresponds to 100% renewable energy from hydropower (30,9%), solid biomass (18,8%), bioliquids (41,4%), and solar energy (8,9%). The impact on climate change of 1 kWh is 8.84E-2 kgCO_{2eq}.

Main assumptions adopted in the study:

- Each Fenix® panel corresponds to a weighted average of panels produced by Arpa, calculated based on the yearly production.
- Secondary data are taken from the database ecoinvent v 3.8 and Carbon Minds. In the selection of secondary data, priority is given to more representative data in terms of temporal coverage, geographical coverage, and production technology.
- When the supplier of a raw material is known ,specific transport distances from the supplier to the factory are considered in the study, otherwise transport is modelled according to average transport distances reflecting the market mix.
- The transport of packaging materials is excluded from the system boundary.
- A default distance of 50 km and 100 km is considered for the transport respectively of manufacturing waste and wasted HPL panels to the waste facility.

End of life scenario for Fenix HPL panels:

Fenix® panels are commonly used as secondary material for energy recovery, therefore it is assumed that 100% of the HPL panel at the end of life us sent to incineration. Loads from material incineration and resulted energy credits for both electricity and heat are declared. Energy credits are calculated considering a lower heating value (LHV) of panels equal to 19 MJ/kg as declared by ICDLI (2015) and an efficiency of incineration respectively equal to 20% for eletricity and 40% for heat.

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	ND	ND	ND	ND	ND	ND	ND	ND	ND	GLO	GLO	GLO	GLO	GLO
Specific data used	>90%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variarion – products	Not relevant			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - sites	Not relevant			-	-	-	-	-	-	-	-	-	-	-	-	-	-

Content information

Product components	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%
Phenolic Resin	0,303 ± 0,006	0%	0%
Kraft paper	0,632 ± 0,013	0%	100%
Coating and Acrylic Resin	0,194 ± 0,004	0%	0%
Décor paper	0,109 ± 0,002	0%	100%
TOTAL	1,238 ± 0,025	0%	60%

Packaging materials	Weight, kg	Weight-% (versus the product)
PP film	0,006	0,5%
PE film	0,009	0,7%
Boxboard	0,001	0,1%
Cardboard boxes	0,001	0,1%
Ledorex ®	0,007	0,6%
TOTAL	0,024	1,9%

Dangerous substances from the candidate list of SVHC for Authorisation
Fenix® panels do 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 Information

Potential environmental impact – mandatory indicators according to EN 15804

Results per functional or declared unit							
Indicator	**Unit**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-fossil	kg CO_2 eq.	4,92E+00	7,82E-02	1,11E-02	1,02E+00	0,00E+00	-1,24E+00
GWP-biogenic	kg CO_2 eq.	-1,70E+00	0,00E+00	0,00E+00	1,70E+00	0,00E+00	0,00E+00
GWP-luluc	kg CO_2 eq.	9,90E-03	1,43E-04	4,04E-06	1,01E-05	0,00E+00	-1,29E-03
GWP-total	kg CO_2 eq.	3,22E+00	7,84E-02	1,11E-02	2,72E+00	0,00E+00	-1,24E+00
ODP	kg CFC 11 eq.	1,74E-06	2,58E-09	2,68E-09	3,12E-09	0,00E+00	-1,02E-07
AP	mol H^+ eq.	2,05E-02	3,86E-04	5,66E-05	5,43E-04	0,00E+00	-3,60E-03
EP-freshwater	kg PO_4^{3-} eq.	4,88E-03	1,13E-04	2,15E-06	2,33E-05	0,00E+00	-1,64E-03
EP-freshwater	kg P eq.	1,59E-03	3,67E-05	7,00E-07	7,58E-06	0,00E+00	-5,35E-04
EP-marine	kg N eq.	4,71E-03	7,37E-05	1,94E-05	3,14E-04	0,00E+00	-6,33E-04
EP-terrestrial	mol N eq.	4,86E-02	7,38E-04	2,13E-04	2,86E-03	0,00E+00	-5,79E-03
POCP	kg NMVOC eq.	1,44E-02	1,99E-04	6,35E-05	7,20E-04	0,00E+00	-1,89E-03
ADP-minerals&metals*	kg Sb eq.	2,51E-05	1,02E-07	2,58E-08	8,13E-08	0,00E+00	-2,09E-06
ADP-fossil*	MJ	7,88E+01	1,02E+00	1,75E-01	1,87E-01	0,00E+00	-2,18E+01
WDP	m^3	2,61E+00	1,25E-02	6,03E-04	6,55E-03	0,00E+00	-1,29E-01
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption						

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

Potential environmental impact – additional mandatory and voluntary indicators

Results per functional or declared unit							
Indicator	**Unit**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG[1]	kg CO_2 eq.	4,83E+00	7,68E-02	1,11E-02	1,02E+00	0,00E+00	-1,22E+00
PM**	Disease incidence	2,08E-07	2,93E-09	1,34E-09	3,67E-09	0,00E+00	-1,18E-08
IRP**	kBq U235 eq.	2,89E-01	1,16E-02	8,85E-04	9,54E-04	0,00E+00	-3,07E-01
ETP-fw**	CTUe	7,78E+01	1,39E+00	1,37E-01	3,91E+00	0,00E+00	-9,62E+00
HTP-c**	CTUh	2,76E-09	1,75E-11	3,78E-12	4,49E-10	0,00E+00	-2,91E-10
HTP-nc**	CTUh	6,27E-08	6,70E-10	1,50E-10	4,66E-09	0,00E+00	-6,62E-09
SQP**	dimensionless	1,87E+02	1,50E-01	2,00E-01	8,48E-02	0,00E+00	-1,98E+00
Acronyms	PM= Particulate matter emissions; IRP= Ionizing radiation, human health; ETP-fw= Eco-toxicity – freshwater; HTP-C= -Human toxicity, cancer effect; HTP-nc= Human toxicity, non-cancer effects; SQP= Land use related impacts/Soil quality						

Potential environmental impact – additional mandatory and voluntary indicators. Results for North America calculated according to ISO 21930

Results per functional or declared unit							
Indicator	**Unit**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
GWP (ISO 21930)	kg CO2 eq.	4,79E+00	7,59E-02	1,10E-02	1,02E+00	0,00E+00	-1,20E+00
ODP (ISO 21930)	kg CFC-11 eq.	1,67E-06	3,09E-09	2,83E-09	3,24E-09	0,00E+00	-1,07E-07
EP (ISO 21930)	kg N eq	1,54E-02	2,85E-04	1,12E-05	1,10E-03	0,00E+00	-4,10E-03
AP (ISO 21930)	kg SO2 eq	1,69E-02	3,30E-04	5,01E-05	4,94E-04	0,00E+00	-2,98E-03
POCP (ISO 21930)	kg NMVOC eq.	2,36E-01	4,16E-03	1,23E-03	1,55E-02	0,00E+00	-3,22E-02
Acronyms	GWP (ISO 21930)= Global Warming Potential calculated with TRACI; ODP (ISO 21930)= Ozone Depletion Potential calculated with TRACI; EP (ISO 21930)= Eutrophication Potential calculated with TRACI; AP (ISO 21930)= Acidification Potential calculated with TRACI; POCP (ISO 21930)= Photochemical oxidant creation potential calculated with TRACI						

[1] 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. This indicator is thus almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

*** Disclaimer 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 experience with the indicator.*

Use of resources

Results per functional or declared unit							
Indicator	**Unit**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	3,88E+01	1,17E-01	2,23E-03	1,08E-02	0,00E+00	-1,96E+00
PERM	MJ	1,15E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	5,03E+01	1,17E-01	2,23E-03	1,08E-02	0,00E+00	-1,96E+00
PENRE	MJ	6,46E+01	1,02E+00	1,75E-01	1,87E-01	0,00E+00	-2,18E+01
PENRM	MJ.	1,42E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	7,88E+01	1,02E+00	1,75E-01	1,87E-01	0,00E+00	-2,18E+01
SM	Kg	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
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m^3	6,97E-02	5,68E-04	2,08E-05	7,09E-04	0,00E+00	-9,51E-03
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 production and output flows

Waste production

Results per functional or declared unit							
Indicator	**Unit**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	1,70E-02	3,73E-04	9,65E-06	6,48E-02	0,00E+00	-1,66E-03
Non-hazardous waste disposed	kg	6,11E-01	4,94E-03	1,64E-02	2,69E-02	0,00E+00	-4,25E-02
Radioactive waste disposed	kg	2,07E-04	3,16E-06	1,18E-06	5,40E-07	0,00E+00	-8,40E-05

Output flows

Results per functional or declared unit							
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	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
Exported energy, electricity	MJ	3,01E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,52E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,11E+01

Information on biogenic carbon content

Results per functional or declared unit		
BIOGENIC CARBON CONTENT	**Unit**	**QUANTITY**
Biogenic carbon content in product	kg C	4,64E-01
Biogenic carbon content in packaging	kg C	n.c.

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO_2.

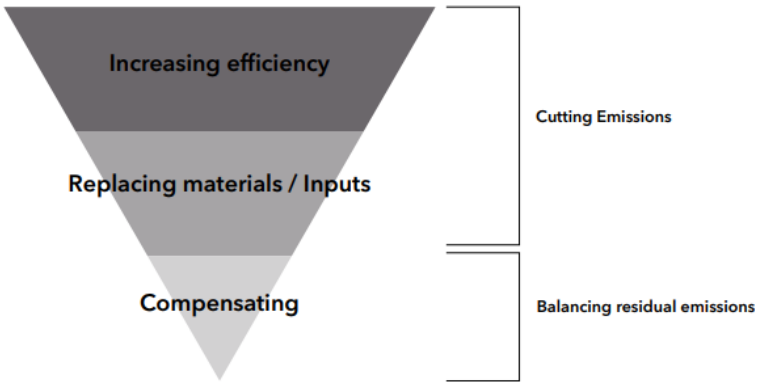
Additional information

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.



Differences versus previous version

- 28/05/2024, version 2
  Editorial changes and updated indicators non-renewable secondary fuel and renewable secondary fuel.
- 21/03/2025,version 3
  Editorial changes

References

- General Programme Instructions of the International EPD® System. Version 3.01.
- PCR 2019:14. CONSTRUCTION PRODUCTS. VERSION 1.11
- EN 438-2:2016 High-pressure decorative laminates (HPL).
- EN 15804:2012+A2 Sustainability of construction works – Environmental product declarations - Core rules for the product category of construction products.
- ICDLI (2015). Technical characteristics and physical properties of HPL (Technical leaflet),
- ISO (2017): ISO 21930:2017, Sustainability in buildings and civil engineering works -- Core rules for environmental product declarations of construction products and services

EPD®

www.environdec.com