

# Environmental Product Declaration



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

**FENIX®**

from

**Arpa Industriale S.p.A.**

Arpa 

**FENIX**

Programme:	The International EPD® System, <a href="http://www.environdec.com">www.environdec.com</a>
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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](http://www.environdec.com)*



## General information

### Programme information

<b>Programme:</b>	The International EPD <sup>®</sup> System
<b>Address:</b>	EPD International AB Box 210 60 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>

CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product category rules (PCR): <i>PCR 2019:14. Construction Products And Construction Services. Version 1.0. UN CPC 314</i>
PCR review was conducted by: <i>Valentina Fantin</i>
Independent third-party verification of the declaration and data, according to ISO 14025:2006: <input type="checkbox"/> EPD process certification <input checked="" type="checkbox"/> EPD verification
Third party verifier: Valentina Fantin
Approved by: The International EPD <sup>®</sup> System
Procedure for follow-up of data during EPD validity involves third party verifier: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

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

EPDs within the same product category but from different programs 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: Arpa Industriale S.p.A (from now on referred to as 'Arpa'), via Piumati 91, 12042 Bra (Italy).

Contact: a.fusi@nemho.com

Description of the organisation: Since 1954, Arpa Industriale has been designing and producing panels with high-quality HPL technology for the most varied end uses: from architecture to interior design, from health care to naval shipbuilding, from transportation to hospitality, from retail to kitchens. In 2013 Arpa launched FENIX®, an innovative material for interiors which was developed by an international, multidisciplinary team based on proprietary technologies.

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

Name and location of production site(s): This EPD is based on data derived from the production plant in Bra (Italy).

## Product information

Product name: FENIX®

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: Arpa Industriale panels are decorative thin and solid laminates. FENIX panels comprise 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. The panels are attributed with an integrated decorative layer on one or both sides of the panels. In case of a one-sided décor layer, the backside is sanded. The surface of FENIX is based on the EBC technology.

### Panel dimensions

Length: up to 4300 mm

Width: up to 1850 mm

Thickness:  $0,6 \leq t < 2,0$  mm thin panels  
 $2 \leq t \leq 12$  mm solid panels

FENIX panels are available in a wide color and décor range. For further information please refer to the company website: [www.fenixforinteriors.com](http://www.fenixforinteriors.com)

UN CPC code: 314

Geographical scope: Europe

FENIX panels are sold in Europe, Asia, USA and South Africa but it is assumed that 100% of post-consumer panels waste is combusted in an European incineration plant.

## LCA information

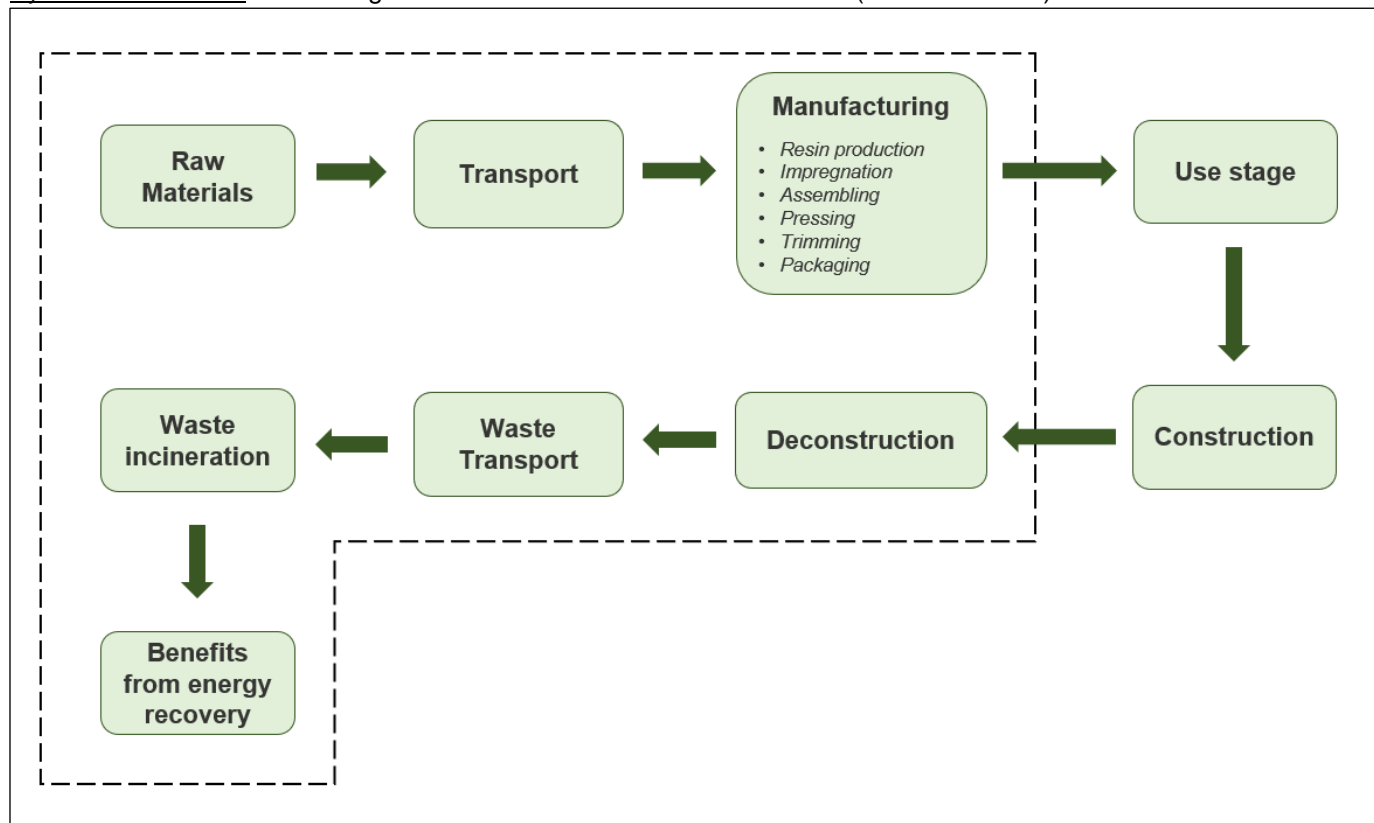
Functional unit / declared unit: In accordance to the PCR the declared unit is 1 m<sup>2</sup> of product with 0.9 mm thickness. The product has an area weight of 1.27 kg/m<sup>2</sup> (and a density of 1.412 kg/m<sup>3</sup>).

Reference service life: Due to the wide range of applications (e.g. desks, kitchens, wall lining) no single reference service lifetime can be established.

Time representativeness: Primary data were collected internally. The production data refer to an average of the year 2019.

Database(s) and LCA software used: The Ecoinvent database provides the life cycle inventory data for the raw and process materials obtained from the background system. The used database is Ecoinvent 3.5. The LCA software used is SimaPro 9. The Italian electricity mix has been used in the model (0.48kg CO<sub>2</sub>/kWh).

System boundaries: Cradle to gate with modules C1–C4 and module D (A1–A3 + C + D)



Data quality: The foreground data collected internally are based on yearly production amounts and extrapolations of measurements on specific machines and plants. Overall the data quality can be described as good. The primary data collection has been done thoroughly.

Cut-off criteria: In the assessment, nearly all available data from production process are considered, i.e. all raw materials used, utilised thermal energy, and electric power consumption. Thus energy flows contributing less than 1% of mass or energy are considered. Certain chemicals from the decor are cut off. The cut off materials make up less than 0,01% of the total material input.

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	MND	MND	MND	MND	MND	MND	MND	MND	MND	X	X	X	X	X

X=included; MND=module not declared

The system boundary includes the production of raw materials, all relevant transport to the factory, the manufacturing process, the deconstruction of the product, the transport of the deconstructed material to the waste processing facility with an assumed distance of 50 km. For deconstruction stage, 0.323 MJ electricity use per kg of material was assumed (Gervasio et al., 2018). For benefits beyond the system boundaries, a calorific value of 18 MJ per kg of product was assumed to calculate the amount of avoided natural gas use for heating.

## Content information

Product components	CAS number	Weight %
Décor (paper or, only in case of FENIX NTA, aluminium) and core (paper).	Cellulose CAS number 9004-34-6 - Aluminium CAS number 7429-90-5	57 - 63 %
Acrylic coating	No CAS number disclosed (supplier's trade recipe)	5 – 8%
Thermosetting resin (core) Standard core	CAS numbers for the main ingredients of the recipe 108-95-2 + 50-00-0	32 - 35 %
Thermosetting resin (core) Matched color core	CAS numbers for the main ingredients of the recipe 1336-21-6 + 50-00-0 + 108-78-1	32 - 35 %

## Packaging

Packaging of Arpa panels include:

- wooden pallets
- paper sheets
- polypropylene cover sheets
- PP and PE film
- Steel and plastic strip

Arpa Industriale recycles and reuses mentioned products as much as possible.

## Dangerous substances from the candidate list of SVHC for Authorisation

FENIX 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

The LCA results shown in this document, representing the impact of the average FENIX product manufactured by Arpa.

### Potential environmental impact – mandatory indicators according to EN 15804

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP-fossil	kg CO <sub>2</sub> eq.	5,29E+00	4,81E-02	5,84E-03	3,30E+00	0,00E+00	-2,67E+00
GWP-biogenic	kg CO <sub>2</sub> eq.	-1,53E+00	1,73E-03	3,33E-06	6,89E-02	0,00E+00	-9,19E-02
GWP-luluc	kg CO <sub>2</sub> eq.	1,47E-02	1,30E-04	1,88E-06	1,20E-03	0,00E+00	-6,91E-03
GWP-total	kg CO <sub>2</sub> eq.	3,77E+00	4,99E-02	5,84E-03	3,37E+00	0,00E+00	-2,77E+00
ODP	kg CFC 11 eq.	6,44E-07	4,58E-09	1,38E-09	2,50E-07	0,00E+00	-2,55E-07
AP	mol H <sup>+</sup> eq.	2,49E-02	2,67E-04	4,06E-05	7,73E-03	0,00E+00	-1,43E-02
EP-freshwater	kg PO <sub>4</sub> <sup>3-</sup> eq.	1,52E-03	4,82E-05	4,04E-07	1,16E-03	0,00E+00	-2,56E-03
EP-marine	kg N eq.	4,80E-03	4,68E-05	1,59E-05	1,24E-03	0,00E+00	-2,51E-03
EP-terrestrial	mol N eq.	5,48E-02	4,14E-04	1,74E-04	1,23E-02	0,00E+00	-2,22E-02
POCP	kg NMVOC eq.	2,05E-02	1,11E-04	4,88E-05	5,64E-03	0,00E+00	-5,98E-03
ADP-minerals&metals*	kg Sb eq.	7,62E-05	1,00E+00	9,16E-08	1,24E+01	0,00E+00	-1,06E-05
ADP-fossil*	MJ	9,09E+01	1,96E-07	9,11E-02	1,22E-05	0,00E+00	-5,49E+01
WDP	m <sup>3</sup>	4,59E+00	1,46E-02	3,10E-04	5,55E-01	0,00E+00	-7,73E-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
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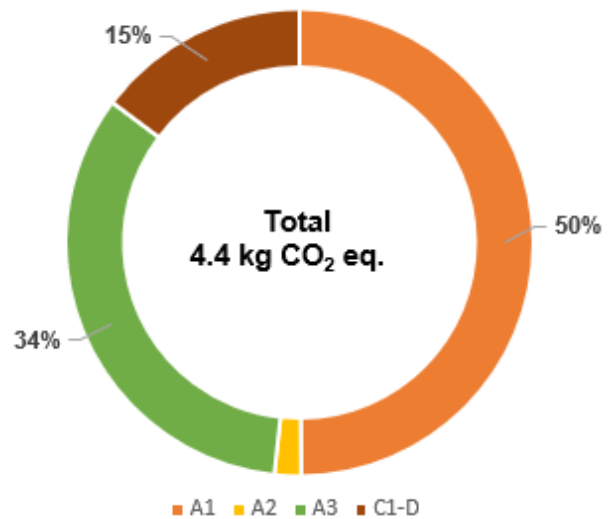
*\* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.*

## Potential environmental impact – additional mandatory and voluntary indicators

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP-GHG <sup>1</sup>	kg CO <sub>2</sub> eq.	5,30E+00	4,82E-02	5,84E-03	3,30E+00	0,00E+00	-2,68E+00

A1 – Raw materials stage is the biggest contributor to Global Warming Potential with 50%.

A3 – Manufacturing stage and C1 – D stages follow with 34% and 15%, respectively.



## Use of resources

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
PERE	MJ	3,67E+01	1,70E-01	1,20E-03	7,66E-01	0,00E+00	-9,03E+00
PERM	MJ	1,04E+01	0,00E+00	0,00E+00	-1,04E+01	0,00E+00	0,00E+00
PERT	MJ	4,71E+01	1,70E-01	1,20E-03	-9,63E+00	0,00E+00	-9,03E+00
PENRE	MJ	7,87E+01	1,00E+00	9,11E-02	1,24E+01	0,00E+00	-5,49E+01
PENRM	MJ.	1,23E+01	0,00E+00	0,00E+00	-1,23E+01	0,00E+00	0,00E+00
PENRT	MJ	9,10E+01	1,00E+00	9,11E-02	1,51E-01	0,00E+00	-5,49E+01
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

<sup>1</sup> 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 equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.



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 <sup>3</sup>	1,19E-01	9,13E-04	1,2E-05	1,44E-02	0,00E+00	-4,85E-02

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 resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water
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## Waste production and output flows

### Waste production

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
Hazardous waste disposed	kg	2,21E-04	3,52E-07	2,19E-07	3,26E-05	0,00E+00	-2,04E-05
Non-hazardous waste disposed	kg	5,55E-01	3,44E-03	7,82E-03	5,83E-01	0,00E+00	-1,83E-01
Radioactive waste disposed	kg	1,75E-04	7,11E-06	6,24E-07	3,34E-05	0,00E+00	-3,78E-04

### Output flows

Indicator	Unit	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	1,27E+00	0,00E+00	0,00E+00
Exported energy, electricity	MJ	0,00E+00	0,00E+00	0,00E+00	2,27E+0	0,00E+00	0,00E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00	0,00E+00	1,69E+1	0,00E+00	0,00E+00

## Additional information

Technical information:

An extract of the technical properties of Fenix is given in the following table.

Properties	Unit	Values
Surface quality		
Spots, dirt and similar surface defects	mm <sup>2</sup> /m <sup>2</sup>	≤ 1
Fibres, hair and scratches	mm/m <sup>2</sup>	≤ 10
Surface properties		
Resistance to surface wear	Revolutions	≥ 200
Resistance to water vapour	Rating	5
Resistance to dry heat (160 °C/20')	Rating	5
Resistance to scratching	Rating	≥ 4
Resistance to staining	Rating	5 Group 1 and 2 ≥ 4 Group 3
Light fastness (Xenon-arc)	Grey scale rating	≥ 4
Surface specular reflectance	Gloss unit	8 ÷ 16 at 85°
Acids resistance	Suitability	Compliant
Physical properties		
Density	g/cm <sup>3</sup>	≥ 1,35
Resistance to immersion in boiling water	Rating	5
Flexural Modulus ( <i>only for solid</i> )	Mpa	≥ 9000
Flexural strength ( <i>only for solid</i> )	Mpa	≥ 80
Thickness tolerance	mm	± 0,10 for thickness 0,5 ≤ t ≤ 1,0 ± 0,15 for thickness 1,0 < t < 2,0  Depending on thickness for solid panels
Length and width tolerance	Mm	+ 10 / - 0

Release of formaldehyde Class E1 according to EN 13986. FENIX products are also certified GreenGuard Gold.

For further information please refer to the MPDS (Material Properties Data Sheet) available on to the company website: [www.fenixforinteriors.com](http://www.fenixforinteriors.com)

## References

- General Programme Instructions of the International EPD® System. Version 3.01.
- PCR 2019:14. Construction Products And Construction Services. Version 1.1.
- ISO 14040:2006. Environmental management. Life cycle assessment. Principles and framework.
- ISO 14044:2006. Environmental management. Life cycle assessment. Requirements and guidelines.
- UNE-EN 15804:2013 Sustainability of construction works. Environmental product declarations.
- UNE-EN 15804:2012 Sustainability of construction works. Environmental product declarations.
- EN 438-2:2019 High-pressure decorative laminates (HPL).
- EN ISO 1183 Plastics — Methods for determining the density of non-cellular plastics.
- EN ISO 178 Plastics — Determination of flexural properties.
- EN 13986 Wood-based panels for use in construction Characteristics, evaluation of conformity and Marking.
- Gervasio et al., 2018. Model for Life Cycle Assessment of buildings LCA, JRC Technical Reports, 2018.

