Environmental Product Declaration

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

Arpa HPL Bloom 0.7mm

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.

Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
EPD registration number:	S-P-07655
Publication date:	2022-12-22
Revision date:	2024-05-28 (version 1)
Valid until:	2027-12-18

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

Accountabilities for PCR, LCA and independent, third-party verification
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 1.2.4
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: 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: 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: *Accredia, certificate n.006H* *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.

Company information

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

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

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

Description of the manufacturing company
Since 1954, Arpa 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, FSC, PEFC, and ISO 45001.

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

Product information

Product name
Arpa HPL Bloom 0.7mm.

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 HPL Bloom 0.7mm is a decorative thin laminate with a decorative layer on one side, whereas the backside is sanded.
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. 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 Arpa HPLs. With Bloom, lignin is introduced to significantly reduce the amount of phenol included in the resin by 50%.
Arpa HPL Bloom 0.7mm is used for interior design applications.

UN CPC code
Not available.

LCA information

Declared unit

1 squared meter of finished panel, 0.7 mm thick, weighting 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.

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 database.

Description of 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 Arpa HPL Bloom 0.7mm carried out in the plant of Arpa located in Bra, and the production of raw materials, electricity, and natural gas.

The deconstruction of Arpa HPL Bloom 0.7mm at the end of life (module C1) is modelled according to Gervasio et al. (2018). The transport of HPLs at the end of life (module C2) assumed an average transport distance equal to 100km. HPLs are commonly used as secondary material for energy recovery, therefore it is assumed that 100% of the HPL panel 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 reported by ICDLI (2015).

System diagram

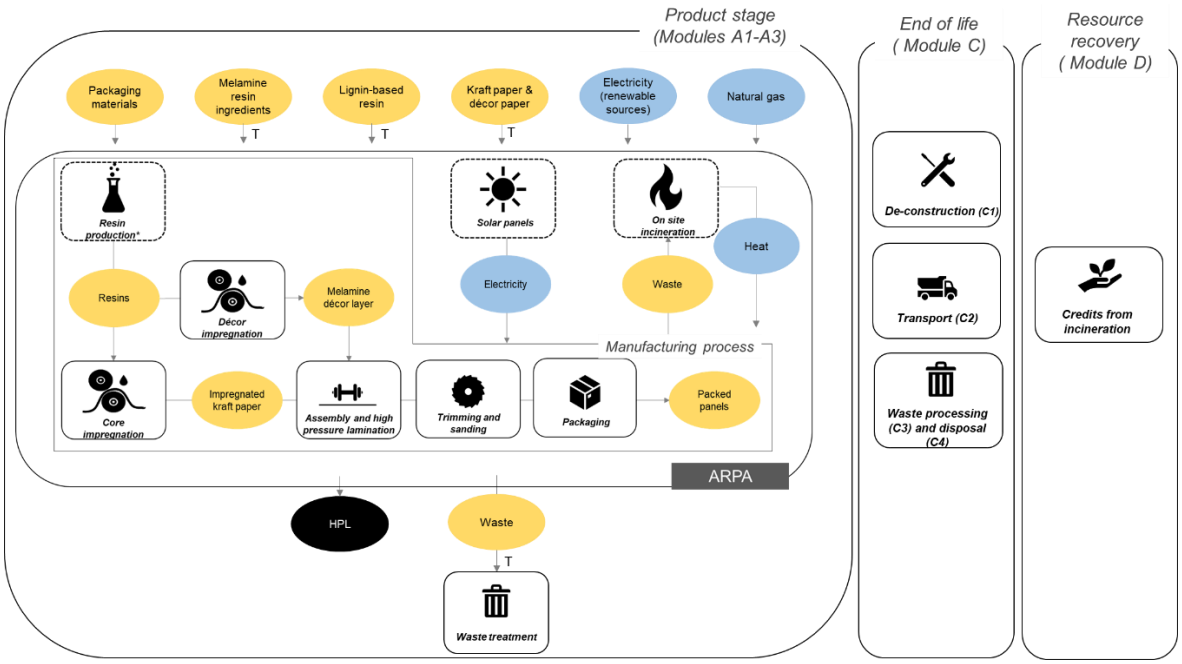

Figure 1: System boundary diagram for Arpa HPL Bloom 0.7mm. T = transport

More information:

Electricity modelling

The electricity mix is modelled based on guarantees of origin (GOs) purchased by Arpa 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.

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 applicale

Content information

Product components	Weight, kg	Post-consumer material, weight-%	Biogenic material, weight-% and kg C/kg
Paper	0,654 ± 0,013	0%	63,9% ± 1,3% 0,347 ± 0,007
Lignin-based resin	0,266 ± 0,005	0%	10,1% ± 0,2% 0,054 ± 0,001
Melamine resins	0,103 ± 0,002	0%	0
TOTAL	1,023 ± 0,02	0%	74,0% ± 1.,5% 0,401 ± 0,008
Packaging materials	**Weight, kg**	**Weight-% (versus the product)**	**Weight biogenic carbon, kg C/kg**
Carboard and carboard boxes	0,001	0%	4,3%
Ledorex®	0,007	1%	0,0%
PP alveolare	0,005	1%	0,0%
TOTAL	0,013	1%	4,3%

Dangerous substances from the candidate list of SVHC for Authorization

Arpa HPL Bloom 0.7mm does not contain substances listed on the candidate list of Substances of Very High Concern (SVHC), 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.	2,96E+00	6,46E-02	9,20E-03	8,43E-01	0,00E+00	-1,02E+00
GWP-biogenic	kg CO_2 eq.	-1,50E+00	0,00E+00	0,00E+00	1,50E+00	0,00E+00	0,00E+00
GWP-luluc	kg CO_2 eq.	3,02E-03	1,18E-04	3,34E-06	8,35E-06	0,00E+00	-1,05E-03
GWP-total	kg CO_2 eq.	1,46E+00	6,47E-02	9,21E-03	2,35E+00	0,00E+00	-1,02E+00
ODP	kg CFC 11 eq.	5,45E-07	2,14E-09	2,21E-09	2,57E-09	0,00E+00	-8,40E-08
AP	mol H^+ eq.	1,26E-02	3,19E-04	4,68E-05	4,49E-04	0,00E+00	-2,96E-03
EP-freshwater	kg P eq.	1,04E-03	3,03E-05	5,78E-07	6,26E-06	0,00E+00	-4,39E-04
EP-marine	kg N eq.	2,74E-03	6,09E-05	1,61E-05	2,60E-04	0,00E+00	-5,20E-04
EP-terrestrial	mol N eq.	3,01E-02	6,09E-04	1,76E-04	2,36E-03	0,00E+00	-4,76E-03
POCP	kg NMVOC eq.	8,66E-03	1,64E-04	5,25E-05	5,95E-04	0,00E+00	-1,55E-03
ADP-minerals&metals*	kg Sb eq.	1,31E-05	8,40E-08	2,13E-08	6,72E-08	0,00E+00	-1,72E-06
ADP-fossil*	MJ	4,95E+01	8,42E-01	1,45E-01	1,55E-01	0,00E+00	-1,80E+01
WDP	m^3 eq.	1,40E+00	1,03E-02	4,98E-04	5,41E-03	0,00E+00	-1,06E-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.	2,92E+00	6,35E-02	9,14E-03	8,42E-01	0,00E+00	-1,00E+00

[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.

Potential environmental impact – additional 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.	2,88E+00	6,27E-02	9,11E-03	8,42E-01	0,00E+00	-9,86E-01
ODP (ISO 21930)	kg CFC-11 eq.	5,70E-07	2,55E-09	2,34E-09	2,67E-09	0,00E+00	-8,80E-08
EP (ISO 21930)	kg N eq	9,61E-03	2,35E-04	9,25E-06	9,12E-04	0,00E+00	-3,36E-03
AP (ISO 21930)	kg SO2 eq	1,04E-02	2,72E-04	4,14E-05	4,08E-04	0,00E+00	-2,44E-03
POCP (ISO 21930)	kg O_3 eq.	1,45E-01	3,43E-03	1,01E-03	1,28E-02	0,00E+00	-2,64E-02

Use of resources

Results per functional or declared unit							
Indicator	**Unit**	**Tot.A1-A3**	**1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	2,62E+00	8,37E-02	1,43E-03	7,12E-03	0,00E+00	-1,37E+00
PERM	MJ	3,23E+01	1,30E-02	4,13E-04	1,81E-03	0,00E+00	-2,44E-01
PERT	MJ	3,50E+01	9,67E-02	1,84E-03	8,93E-03	0,00E+00	-1,61E+00
PENRE	MJ	4,07E+01	8,42E-01	1,45E-01	1,55E-01	0,00E+00	-1,80E+01
PENRM	MJ	8,79E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	4,95E+01	8,42E-01	1,45E-01	1,55E-01	0,00E+00	-1,80E+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	3,76E-02	4,69E-04	1,72E-05	5,86E-04	0,00E+00	-7,80E-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	4,59E-03	3,08E-04	7,97E-06	5,35E-02	0,00E+00	-1,36E-03
Non-hazardous waste disposed	kg	5,78E-01	4,08E-03	1,35E-02	2,22E-02	0,00E+00	-3,49E-02
Radioactive waste disposed	kg	1,28E-04	2,61E-06	9,79E-07	4,46E-07	0,00E+00	-6,89E-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	4,27E-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 the carbon footprint are key parts of our overall sustainability policy and it is based on our core belief that it is the right thing to do. We are also convinced that reducing our overall environmental footprint is essential to the long-term success of our business and the environment around us. That is why sustainability is embedded in our business philosophy with the credo 'do no harm, do good, do better.'

At the core of our sustainability strategy is the principle that we should start with ourselves when we seek to improve the world: 'do no harm.' Our approach is straightforward: we measure our impact, select targets to reduce this impact and monitor and report on progress. To measure our impact, we use the Life Cycle Assessment (LCA) methodology.

The second element of our strategy is to look for opportunities that support the environment beyond the direct scope of our own manufacturing footprint: 'do good.' This includes creating highly durable products that have a long lifespan that limit the need for replacement. Additionally, we will develop projects that absorb or reduce carbon emissions that are not directly linked to our factories or product portfolio. We believe that addressing sustainability challenges will allow our company to continue to grow and 'do better' in the future. Investing in sustainability should – in the end – ensure that these efforts go beyond established regulatory requirements and the net effect of our efforts will positively impact the environment in which we operate.

Further details on our philosophy, approach and goals can be found in our position paper available online.

More details on Bloom technology are reported in the brochure available online.

Differences versus previous version

- 2024-05-28 version 1
  Editorial changes and updated indicators non-renewable secondary fuel and renewable secondary fuel

References

General Programme Instructions of the International EPD® System. Version 4
PCR 2019:14. CONSTRUCTION PRODUCTS. VERSION 1.2.4
ICDLI (2015). Technical characteristics and physical properties of HPL (Technical leaflet)
LCA Background report for Arpa HPL Bloom 0.7mm

EPD®

www.environdec.com