

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.
Formica Corporation**

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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Programme:	The International EPD [®] System, www.environdec.com
Programme operator:	EPD International AB
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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: IVL Swedish Environmental Research Institute (martin.erlandsson@ivl.se) and Secretariat of the International EPD® System
Independent third-party verification of the declaration and data, according to ISO 14025:2006: <input checked="" type="checkbox"/> EPD process certification <input type="checkbox"/> EPD verification
Third party verifier: SGS Italia S.p.A. Via Caldera 21, 20153 Milano. www.it.sgs.com Accredited by: Accredia, certificate n.006H
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 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:

Fenix® panels are produced by the companies Arpa and Formica St Jean (Canada). The manufacturing process of both companies is summarised in Figure 1.

Since 1954, Arpa has been designing and producing panels with high-quality high pressure laminates (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.

Formica Corporation was founded in 1913 in Cincinnati, Ohio as The Formica Products Company by former Westinghouse engineers Daniel J. O'Connor 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). By the 1930s, the Formica Products Company had shifted away from industrial applications to decorative surfaces. 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.

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

Name and location of production site(s): Arpa Industriale Bra (Italy) and Formica St. Jean (Canada).

Product information

Product name: Fenix® (black 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®, 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 side of the panels. The backside is sanded.

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

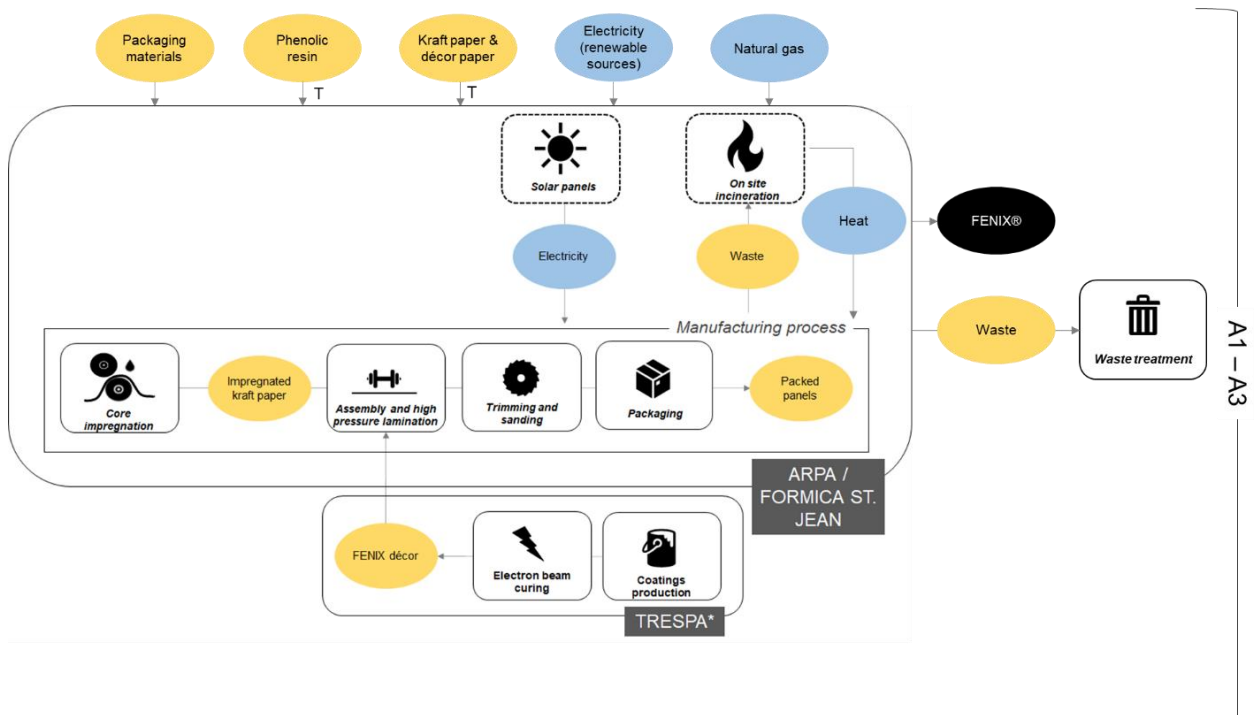
Reference service life: not applicable

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



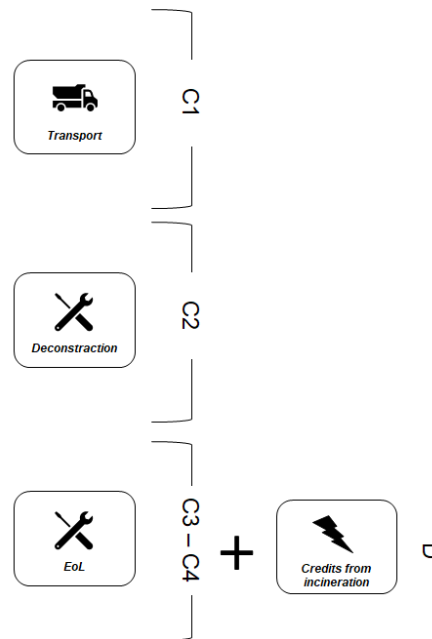


Figure 1: System boundary diagram for Fenix® panels.

*Trespa is Arpa and Formica'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: i.akal@nemho.com; s.corrado@nemho.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 the companies Arpa and Formica St Jean.

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}.

The specific electricity mix of Formica St Jean consists of 93,63% hydro, 6,01% other renewable sources (biomass, biogas, wind), 0,32% nuclear, and 0,04% fossil fuels (Hydro Quebec, 2020), the impact on climate change of 1 kWh is 1,93E-2 kgCO_{2eq}.

Main assumptions adopted in the study:

- Each Fenix® panel corresponds to a weighted average of panels produced by Arpa and Formica St Jean, 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	GLO	ND	ND	ND	ND	ND	ND	ND	ND	ND	GLO	GLO	GLO	GLO	GLO
Specific data used	>90%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	Not relevant			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - sites	14%			-	-	-	-	-	-	-	-	-	-	-	-	-	-

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.	4,81E+00	7,82E-02	1,11E-02	1,02E+00	0,00E+00	-1,21E+00
GWP-biogenic	kg CO ₂ eq.	-1,71E+00	0,00E+00	0,00E+00	1,71E+00	0,00E+00	0,00E+00
GWP-luluc	kg CO ₂ eq.	1,02E-02	1,43E-04	4,04E-06	1,01E-05	0,00E+00	-1,25E-03
GWP-total	kg CO ₂ eq.	3,11E+00	7,84E-02	1,11E-02	2,73E+00	0,00E+00	-1,21E+00
ODP	kg CFC 11 eq.	1,71E-06	2,58E-09	2,68E-09	3,12E-09	0,00E+00	-9,91E-08
AP	mol H ⁺ eq.	2,01E-02	3,86E-04	5,66E-05	5,43E-04	0,00E+00	-3,50E-03
EP-freshwater	kg PO ₄ ³⁻ eq.	4,85E-03	1,13E-04	2,15E-06	2,33E-05	0,00E+00	-1,60E-03
EP-freshwater	kg P eq.	1,58E-03	3,67E-05	7,00E-07	7,58E-06	0,00E+00	-5,20E-04
EP-marine	kg N eq.	4,63E-03	7,37E-05	1,94E-05	3,14E-04	0,00E+00	-6,15E-04
EP-terrestrial	mol N eq.	4,77E-02	7,38E-04	2,13E-04	2,86E-03	0,00E+00	-5,63E-03
POCP	kg NMVOC eq.	1,42E-02	1,99E-04	6,35E-05	7,20E-04	0,00E+00	-1,83E-03
ADP-minerals&metals*	kg Sb eq.	2,52E-05	1,02E-07	2,58E-08	8,13E-08	0,00E+00	-2,03E-06
ADP-fossil*	MJ	7,63E+01	1,02E+00	1,75E-01	1,87E-01	0,00E+00	-2,12E+01
WDP	m ³	2,55E+00	1,25E-02	6,03E-04	6,55E-03	0,00E+00	-1,26E-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.	4,73E+00	7,68E-02	1,11E-02	1,02E+00	0,00E+00	-1,18E+00
PM**	Disease incidence	2,04E-07	2,93E-09	1,34E-09	3,67E-09	0,00E+00	-1,14E-08
IRP**	kBq U235 eq.	2,77E-01	1,16E-02	8,85E-04	9,54E-04	0,00E+00	-2,99E-01
ETP-fw**	CTUe	7,60E+01	1,39E+00	1,37E-01	3,91E+00	0,00E+00	-9,35E+00
HTP-c**	CTUh	2,75E-09	1,75E-11	3,78E-12	4,49E-10	0,00E+00	-2,83E-10
HTP-nc**	CTUh	6,25E-08	6,70E-10	1,50E-10	4,66E-09	0,00E+00	-6,44E-09
SQP**	dimensionless	1,86E+02	1,50E-01	2,00E-01	8,48E-02	0,00E+00	-1,93E+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 CO ₂ eq.	4,69E+00	7,59E-02	1,10E-02	1,02E+00	0,00E+00	-1,17E+00
ODP (ISO 21930)	kg CFC-11 eq.	1,64E-06	3,09E-09	2,83E-09	3,24E-09	0,00E+00	-1,04E-07
EP (ISO 21930)	kg N eq	1,53E-02	2,85E-04	1,12E-05	1,10E-03	0,00E+00	-3,98E-03
AP (ISO 21930)	kg SO ₂ eq	1,66E-02	3,30E-04	5,01E-05	4,94E-04	0,00E+00	-2,89E-03
POCP (ISO 21930)	kg NMVOC eq.	2,31E-01	4,16E-03	1,23E-03	1,55E-02	0,00E+00	-3,13E-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						

*** 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.*

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.

Use of resources

Results per functional or declared unit							
Indicator	Unit	Tot.A1-A3	C1	C2	C3	C4	D
PERE	MJ	3,97E+01	1,17E-01	2,23E-03	1,08E-02	0,00E+00	-1,91E+00
PERM	MJ	1,02E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	5,00E+01	1,17E-01	2,23E-03	1,08E-02	0,00E+00	-1,91E+00
PENRE	MJ	6,24E+01	1,02E+00	1,75E-01	1,87E-01	0,00E+00	-2,12E+01
PENRM	MJ	1,39E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	7,63E+01	1,02E+00	1,75E-01	1,87E-01	0,00E+00	-2,12E+01
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	6,53E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	8,79E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m ³	6,84E-02	5,68E-04	2,08E-05	7,09E-04	0,00E+00	-9,25E-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	1,67E-02	3,73E-04	9,65E-06	6,48E-02	0,00E+00	-1,61E-03
Non-hazardous waste disposed	kg	6,13E-01	4,94E-03	1,64E-02	2,69E-02	0,00E+00	-4,13E-02
Radioactive waste disposed	kg	1,92E-04	3,16E-06	1,18E-06	5,40E-07	0,00E+00	-8,17E-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	2,77E-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	2.91E-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

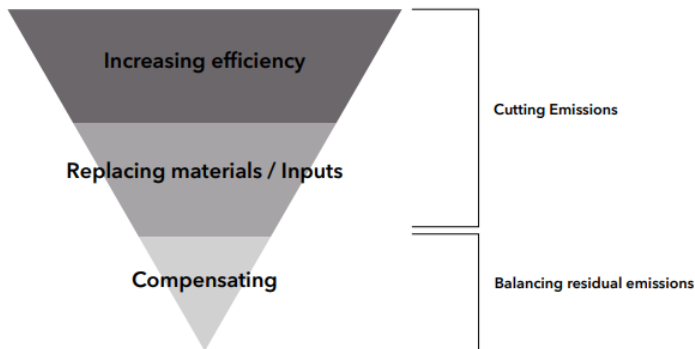
Results per functional or declared unit		
BIOGENIC CARBON CONTENT	Unit	QUANTITY
Biogenic carbon content in product	kg C	4,66E-01
Biogenic carbon content in packaging	kg C	n.c.

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO₂.

Additional information

The emissions generated throughout the whole life cycle of all our FENIX® products have been calculated (and verified by a third party) and are completely compensated via certified carbon offsets, making our products carbon neutral.

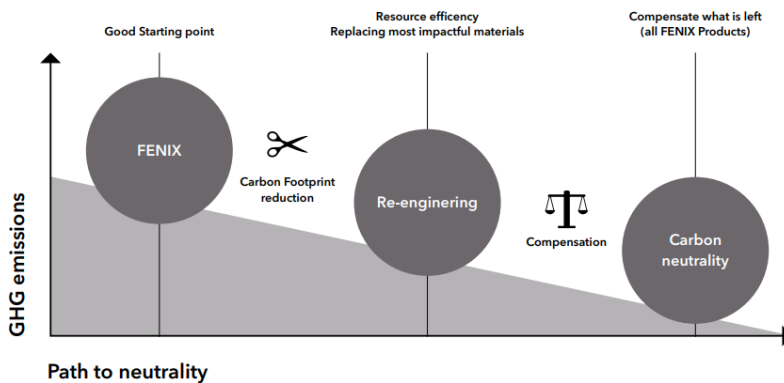
A credible carbon neutrality strategy is a long-term strategy. Companies should first invest in building a robust climate impact reduction strategy and compensate only what cannot be reasonably cut or reduced. In light of that, our strategy towards carbon neutrality is based on the following solutions' hierarchy:



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 plant;
- 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 from the grid;
- Its composition: approximately 60% of FENIX® is made of bio-based material.

Despite all the efforts, CO₂ emissions cannot be completely eliminated, at least not in the short-term. Hard-to-abate emissions can be then compensated by an equivalent amount of removed CO₂. By doing so, a product can be declared carbon neutral. The emissions generated throughout the whole life cycle of our FENIX® products have been calculated (and verified by a third party) and will be completely compensated via certified carbon offsets, making our products carbon neutral.



Further details can be found in the fenixforinteriors.com website.

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
- Hydro Quebec: Electricity Supply and Air Emissions (2020)

