

# POLYREY HPL® BONDED BOARD

## ENVIRONMENTAL PRODUCT DECLARATION

According to the standards EN 15804, NF EN 15804:2002+A1 and XP P01-064/CN:2014



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### Prepared by



INSTITUT  
TECHNOLOGIQUE

 polyrey®

## READING GUIDE

Abbreviations >

**LCA** > Life Cycle Assessment

**ADP** > Abiotic Depletion Potential

**WEP** > Waste to Energy plant

**EPD** > Environmental Product Declaration

**PCR** > Product category rules

**FU** > Functionnal Unit

## GENERAL INFORMATION

Manufacturer > POLYREY

Prepared by > Institut technologique FCBA - 10 rue Galilée - 77420 Champs-sur-Marne

PCR and standards > EN 15804:2012+A1:2014, XP P01-064/CN:2014 and EN 16485:2014 standards

Verification > **Independent verification of the declaration and data, according to EN ISO 14025:2010 :**  
internal

Program > Not applicable

Issue Date > 01/06/2016

Valid to > 01/06/2021

Informations > Informations are available from Polyrey, 24 150 Baneuil.

Warning on > **Comparisons of EPDs are possible by ensuring that :**

- comparability
- These EPDs are in conformity with the standards EN 15804:2012+A1:2014, and
  - The same functional requirements as defined in the 2 EPDs are met, and
  - The environmental performance and technical performance of any assembled systems, components, or products excluded are the same, and
  - The amounts of any material excluded are the same, and
  - Excluded processes or life cycle stages are the same, and
  - The influence of the product systems on the operational aspects and impacts of the building are taken into account.

## PRODUCT DESCRIPTION

Identification > The Polyrey HPL® 0,8 mm is composed of layers of kraft paper impregnated with phenolic resin and polymerized at high temperature and high pressure.

The Polyrey HPL® is glued on both sides of a chipboard to obtain a decorative panel (thickness 20 mm)

Functional Unit > Polyrey HPL® 0,8 mm glued on the both sides of 1 m<sup>2</sup> of a chipboard of standard quality (thickness 18,5 mm)

Others characteristics > The HPL Polyrey® is a ecocertified product because it is composed of 65% of paper. It has a double certification PEFC™ and FSC®. The chipboard is PEFC™ certified because it comes from a sustainable forest management.

Polyrey is ISO 14001 certified and follows the requirements according to environmental management standard.

Utilisation > The decorative Polyrey HPL is to be glued on a wood panel (or other types) and is designed for indoor fitting. It is very resistant to impacts and scratches, insensitive to stains and water. Hygienic, it has an antibacterial treatment Sanitized®. It is suitable for horizontal use (worktop, furniture) and vertical (door, wall panel).

Aptitude for use > Polyrey HPL® 0.8 mm complies with EN 438 and HPL bonded board complies with ISO 13894-2. The chipboard complies with EN 312 type 2.

Visual representation >



1/ High Pressure laminate glued on the both faces.  
2/ ChipBoard.



Main components > The following table describes the main components of the installed product and the quantity per functional unit:

Component	Material	Weight (kg / FU)	% in weight paper and resin / FU
ChipBoard	Wood	12,4	-
Kraft paper	Paper	0,4	26%
Recycled kraft paper	Paper	0,2	16%
Decorative and protective papers	Paper	0,4	30%
Phenolic and melamine resin	Resin	0,4	28%
<b>TOTAL</b>		<b>13,9</b>	<b>-</b>

Installation and distribution > Packaging material are :

Packaging	Material	Weight (kg / FU)
Pallet	Wood	0,039
Covers	PE	0,0051
PE film	PE	0,0002
Cardboard	Cardboard	0,0016
<b>TOTAL</b>		<b>0,05</b>

The following wastage rate was considered during the installation in the building: 5%

Contents declaration > The product does not contain substances included in the candidate list of substances of very high concern for authorization by the European Chemicals Agency and regulation 1907/2006 (REACH). Biocides contained in the product are authorized by the Biocides Regulation No 528/2012 concerning the placing on the market of biocidal products.

## SYSTEM BOUNDARIES

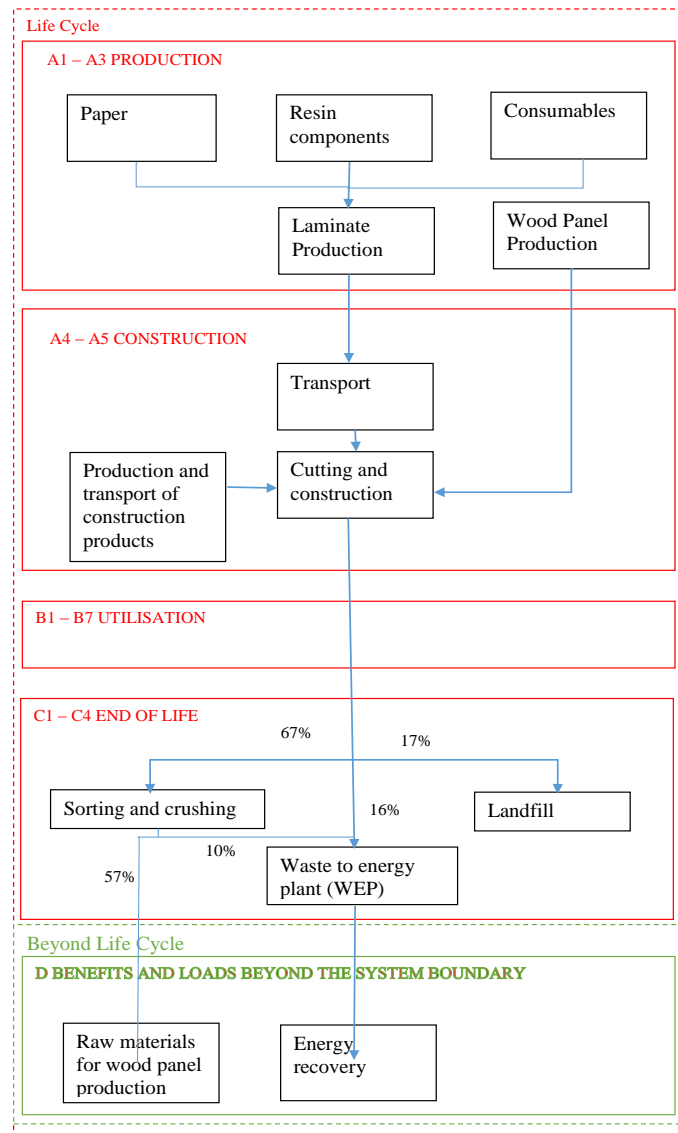
EPD type > "Cradle to Grave"

Excluded steps > Due to lack of data, the deconstruction was not modeled (step C1).

Representativity > This EPD is representative of Polyrey HPL in accordance with :  
 - the description done in this EPD,  
 - the Technical Standard EN 438.

Process flow diagram >

### Boundaries of the EPD "Polyrey HPL® Bonded Board"



## ENVIRONMENTAL PARAMETERS

		Product Stage	Construction Process Stage		End Of Life			Benefits and loads beyond the system boundary
		Raw material supply, transport and manufacturing	Transport	Construction Installation Process	Transport	Waste processing	Disposal	Reuse, recovery, recycling potential
		A1-A3	A4	A5	C2	C3	C4	D
<b>Parameters describing environmental impacts</b>								
Global warming potential	kg CO <sub>2</sub> eq. / FU	6,36	0,168	-15,3	0,0912	12,9	7,43	-4,04
Depletion potential of the stratospheric ozone layer	kg CFC-11 eq. / UF	7,78 E-07	2,52 E-08	4,20 E-08	1,41 E-08	1,58 E-08	1,52 E-08	-4,32 E-07
Acidification potential of soil and water	kg SO <sub>2</sub> eq. / FU	0,0253	0,000947	0,0915	0,000512	0,000936	0,00111	-0,00993
Eutrophication potential	kg PO <sub>4</sub> <sup>3-</sup> eq. / FU	0,00504	0,000214	0,0193	0,000115	0,000197	0,000282	-0,000121
Formation potential of tropospheric ozone	kg ethene eq. / FU	0,00232	2,11 E-05	0,00316	1,48 E-05	2,62 E-05	0,000344	-0,000502
Abiotic depletion potential (ADP-elements) for non fossil resources	kg Sb eq. / FU	1,11 E-05	9,32 E-09	3,04 E-05	9,70 E-08	1,50 E-07	1,18 E-07	-6,34 E-07
Abiotic depletion potential (ADP-elements) for fossil resources	MJ / FU	142	2,39	84,9	1,35	1,92	1,1	-59
Air pollution	m <sup>3</sup> / FU	440	10,3	2 030	6,66	15,6	42,3	-61,4
Water pollution	m <sup>3</sup> / FU	4,33	0,0534	1,03	0,0297	0,0582	0,0524	-0,377
<b>Parameters describing resource use</b>								
Use of renewable primary energy exluding renewable primary energy resources used as raw materials	MJ / FU	37,6	0,00576	-206	0,00875	-0,142	0,0202	27,1
Use of renewable primary energy resources used as raw materials	MJ / FU	19,8		208		-129		
Total use of renewable primary energy resources	MJ / FU	57,3	0,00576	1,87	0,00875	-129	0,0202	27,1
Use of non renewable primary energy excluding non renewable primary energy resources used as raw materials	MJ / FU	163	2,42	109	1,39	9,77	1,25	-76,7
Use of non renewable primary energy resources used as raw materials	MJ / FU	11,5		2,81		-7,79		
Total use of non renewable primary energy resources	MJ / FU	175	2,42	112	1,39	1,97	1,25	-76,7
Use of secondary material	kg / FU			15,1				
Use of renewable secondary fuels	MJ / FU							
Use of non renewable secondary fuels	MJ / FU			0,000133				
Net use of fresh water	m <sup>3</sup> / FU	0,0906	0,000198	0,0214	0,000199	0,000246	0,00483	-0,0113
<b>Parameters describing waste categories</b>								
Hazardous waste disposed	kg / FU	0,129	0,000237	0,0532	0,000476	0,00239	0,128	-0,0289
Non hazardous waste disposed	kg / FU	0,68	0,00146	0,243	0,00513	0,00604	2,89	-0,443
Radioactive waste disposed	kg / FU	0,000449	4,45 E-07	5,71 E-05	5,59 E-07	7,83 E-07	4,26 E-06	-0,000252
<b>Parameters describing output flows</b>								
Components for re-use	kg / FU							
Materials for recycling	kg / FU	4,19 E-06		0,736		8,43	0,92	0,219
Materials for energy recovery	kg / FU							
Materials for energy recovery (heat)	MJ / FU			0,0588			11,2	
Materials for energy recovery (electricity)	kWh / FU			0,0085			1,62	

## SCENARIOS AND ADDITIONNAL TECHNICAL INFORMATION

Stage	Parameter	Unit	Value	
<b>A4</b> Transport to the building site	Vehicle and fuel type	l / km	Long distance truck with fuel consumption : - full : 0,43 l / km, - empty : 0,26 l / km.	
	Distance	km	719	
	Capacity utilisation (including empty returns)	%	Loading ratio : 68% of weight Empty return ratio : 16,1%	
	Volume of transported products	m <sup>3</sup>	12,6	
	Weight of transported products	t	17	
<b>Construction Process Stage</b>  <b>A5</b> Construction Installation Process	Ancillary materials	kg / UF	Neoprene Glue : 0,045 kg / UF Vinyl Glue : 0,06 kg/UF Steel : 0,35 kg / UF	
	Water use	m <sup>3</sup> / UF	Neither	
	Other resource use	kg / UF	Neither	
	Energy consumption	MJ / UF	Neither	
	Waste materials before waste processing	kg / UF	Polyrey HPL : 0,0345 kg / UF	
	Opout materials as result of waste processing at the building site	kg / UF	- 0,017 kg / FU in WEP, - 0,017 kg / UF stored in landfill.	
	Direct emissions to ambient air, soil and water	-	Chemically inert : no emission in soil and water Emissions to air below the regulatory threshold. Cutting the panels generate dust to be collected (wearing of personal protective equipment when no collection system is provided.).	
<b>Use Stage information modules related to the building fabric</b>	<b>B2</b> Maintenance	Maintenance process	-	Polyrey HPL is resistant to corrosion and oxidation, it requires no additional surface protection (eg. lacquer or paint) or specific maintenance during its life stage. Non-porous surfaces of Polyrey HPL are easy to clean with hot water and steam and with all types of conventional cleaners.
		Maintenance cycle	-	Polyrey HPL has an antibacterial treatment based on silver ions to ensure a healthy product during a long period.
		Ancillary materials	-	Neither
		Waste material	-	Neither
		Net fresh water consumption	-	Neither
		Energy input	-	Neither
	<b>B3</b> Repair	Repair process	-	Neither
		Inspection process	-	Neither
		Repair cycle	-	Neither
		Ancillary materials	-	Neither
		Waste material	-	Neither
	<b>B4</b> Replacement	Net fresh water consumption	-	Neither
		Energy input	-	Neither
		Replacement cycle	-	Neither
	<b>B5</b> Refurbishment	Energy input	-	Neither
Exchange of worn parts		-	Neither	
Refurbishment process		-	Neither	
Refurbishment cycle		-	Neither	
Energy input		-	Neither	
	Material input	-	Neither	
	Waste material	-	Neither	
	Further assumptions for scenario development	-	Not applicable	
	Reference service life	Years	50	
Reference service life	Declared product properties at the gate and properties	-	Polyrey HPL® 0.8 mm complies with EN 438. The HPL® bonded board complies with ISO 13894-2.	
	Design application parameters	-	-	
	An assumed quality of work when installed in accordance with the manufacturer's instructions	-	Not applicable	
	Outdoor environment	-	Not applicable	
	Indoor environment	-	-	
	Usage conditions	-	Suitable for horizontal applications (furniture, counter, worktop...) and vertical (wall, door, furniture) even under conditions of intensive or sensitive use (moisture, impact, surface resistance). Use in new or renovated building	
	Maintenance	-	During the reference service life no maintenance is required.	
Stage	Parameter	Unit	Value	
<b>Use Stage information modules related to the building fabric</b>	Carbon storage during use stage	Biogenic carbon content	kg CO <sub>2</sub> eq. / FU	22,6
		Storage life	years	50
		Effect of timing of GHG emissions due to biogenic carbon storage according to PAS 2050:2011	kg CO <sub>2</sub> eq. / FU	-11,3
	Bio-based content	Amount of bio-based matter	kg / FU	12,3 kg (with 16% post consumer recycled kraft)

<b>Use stage information modules related to the operation of the building</b>	<b>B6 - B7</b> Use of energy and use of water Utilisation d'eau	Ancillary materials	-	Neither	
		Net fresh water consumption	-	Neither	
		Type of energy carrier	-	Neither	
		Power output of equipment	-	Not applicable	
		Characteristic performance	-	Not applicable	
		Further assumptions for scenario development	-	Not applicable	
<b>End of life</b>	<b>C1 to C4</b>	Collection process	Collected separately	kg / FU	9,35
			Collected with mixed construction waste	kg / FU	4,55
		Recovery system	Reuse	kg / FU	Neither
			Recycling	kg / FU	7,92
			Energy recovery	kg / FU	1,39
		Disposal	Incineration in WEP	kg / FU	2,1
			Storage in landfill	kg / FU	2,4
Assumptions for scenario development	-	-	Average French scenario of construction waste (Study FCBA / CSTB / DHUP / CODIFAB / FBF, Convention DHUP / CSTB 2009 Action 33 Sous-action 6 ACV & DEP pour des produits et composants de la construction bois – Volet 2 Prise en compte de la fin de vie des produits bois, 2012)		

## RELEASE OF DANGEROUS SUBSTANCES TO INDOOR AIR, SOIL, AND WATER DURING THE USE STAGE

Stage	Parameter	Unit	Value		
<b>Use Stage information modules related to the building fabric</b>	<b>B1</b> Use of the installed product in terms of emissions in the environment	Emissions to indoor air	Regulatory emissions of volatile compounds to indoor air according to the French decree of the 19th april 2011	-	Tests were carried out according to regulations. The VOC emission rate is low (A). Formaldehyde rate is below the E1 limit: the lowest level of the recognized standard related to wood based materials. All panels are below the E0.5 threshold (level not recognised) or less than 1.75 mg / m <sup>3</sup> · h, according to EN 1717.2 standard.
			Other emissions of volatile compounds to indoor air	-	No emissions beyond regulatory label
			Natural radioactive emissions	-	No test has been performed.
			Other informations on the sanitary risks inside the building	-	Polyrey HPL are physiologically safe. The migration rates of the components are well below the thresholds tolerated and are approved for food contact according to EN1186. Polyrey laminates provide healthy decorative solutions due to a silver ion based, antibacterial "Sanitized" treatment integrated in the material.
Emissions to water	Water for human consumption	-	Not applicable because the product is not in contact with water for human consumption.		
	Runoff water, seepage water, surface waters or groundwater	-	Not applicable because the product is not in contact with runoff water, seepage water, surface waters or groundwater.		
Emissions to soil	-	-	No test have been performed.		

## CONTRIBUTION OF THE PRODUCT TO THE QUALITY OF LIFE

Stage	Parameter	Unit	Value		
<b>Use Stage information modules related to the building fabric</b>	<b>B1</b> Use of the installed product in terms of emissions in the environment	Quality of life	Hygrothermal comfort	-	The water vapour diffusion resistance factor of Polyrey HPL bonded board is 50 μ under dry cup and 15 μ under wet cup according to EN 438-7. The coefficient of thermal conductivity λ of the chipboard is equal to 0.12 W / m · ° K according to the standard EN 13986. The thermal resistance R of the chipboard is equal to 0.16 m <sup>2</sup> · ° K / W. The thermal conductivity coefficient λ of HPL is 0.3 W / m · ° K according to DIN EN 12524. The thermal resistance R of HPL 0.8 mm equals 0.0026 m <sup>2</sup> · ° K / W.
			Acoustic comfort	-	The sound absorption coefficient according to standard EN 13986 (when the panel is used as an acoustic panel) is equal to 0.10 for a frequency range of 250 to 500 hertz. The sound reduction index Rw for the chipboard 19 mm is equal to 27 (-1; -1) dB according to the study "Prise en compte de la variabilité des matériaux et des aléas constructifs dans la prévision des performances acoustiques des systèmes constructifs en bois » ; Jean-Luc Kouyoumji (1), Patrick Castéra (2), Lionel Vernois (2) ; January 2003. (1) Coordinator, FCBA, Allée de Boutaut BP 227 33 028 Bordeaux Cedex, (2) Autors N°1&2, LRBB, Domaine de l'Hermitage, BP 10, 33 610 Cestas Gazinet.
			Visual comfort	-	The Polyrey HPL contribute to the harmony and atmosphere of the building. For this, a wide choice of designs is possible (color, pattern and texture).
			Olfactory comfort	-	No test has been performed.
Other informations on comfort	-	-	-		

## INTERPRETATION

Polyrey HPL contain mainly paper made from renewable resources. The use of renewable resources reduces the impact on abiotic resource depletion. Also a part of the paper waste is recycled into energy which can recover 15 MJ / kg.  
The use of paper as a material contributes to climate change mitigation by storing CO<sub>2</sub>. 22,6 kg CO<sub>2</sub> equivalent are stored per functional unit over the life cycle. And also it avoids the use of fossil resources. The impact on climate change of Polyrey HPL for the production phase is 6,36 kg eq. CO<sub>2</sub> and 7,6 kg eq. CO<sub>2</sub> during the whole life cycle which is equivalent to a car journey of about 27 km and 32 km respectively.

## REFERENCES

EN 438-1:2016	High-pressure decorative laminates (HPL) - Sheets based on thermosetting resins (usually called laminates) - Part 1: Introduction and general Information
EN 438-2:2016	High-pressure decorative laminates (HPL) - Sheets based on thermosetting resins (usually called laminates) - Part 2: Determination of properties
EN 438-3:2016	High-pressure decorative laminates (HPL) - Sheets based on thermosetting resins (usually called laminates) - Part 3: Classification and specifications for laminates less than 2 mm thick intended for bonding to supporting substrates
EN ISO 717-2:2013	Acoustics - Rating of sound insulation in buildings and of building elements -- Part 2: Impact sound insulation
EN ISO 16 000-9:2006	Indoor air - Part 9: Determination of the emission of volatile organic compounds from building products and furnishing -- Emission test chamber method
EN 1186:2003	Migration Testing for Food Contact Materials
EN ISO 14025:2010	Environmental labels and declarations — Type III environmental declarations — Principles and procedures
EN 15804:2014	Sustainability of construction works — Environmental product declarations — Core rules for the product category of construction products

## FOR MORE INFORMATION

**Web site** [www.polyrey.com/polygreen](http://www.polyrey.com/polygreen)

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