

ABET LAMINATI S.p.A.



ENVIRONMENTAL PRODUCT DECLARATION

Product Name: **PRINT HPL (High Pressure Laminate) Thin**
Site Plant: BRA, Viale Industria 21, 12042 (CN), Italia

in compliance with ISO 14025 and EN 15804


Program Operator:	EPDItaly
Publisher:	EPDItaly

Declaration Number:	HPL T_01
EPDItaly Registration Number:	EPDITALY0064
ECO EPD Registration Number	00000959

Issue Date:	18 June 2019
Valid to:	17 June 2024



1. GENERAL INFORMATION

EPD OWNER:	Abet Laminati S.p.A. Viale Industria 21, 12042Bra (CN), Italia
PLANTS INVOLVED IN THE EPD:	Viale Industria 21, 12042 Bra (CN), Italia Strada Falchetto 30, 12042 Bra (CN), Italia
FIELD OF APPLICATION:	The applicability of this document is restricted to high pressure laminate with a thickness between 0,6mm and 2mm ("PRINT HPL Thin"), manufactured by Abet Laminati S.p.A., in its Bra (CN) plants.
PROGRAM OPERATOR:	EPDITALY, via Gaetano De Castillia 10, 20124 Milano, Italia.
EXTERNAL AUDIT:	<p>This declaration has been developed referring to EPDIItaly, following the General Programme Instruction; further information and the document itself are available at: www.epditaly.it.</p> <p>CEN standard EN 15804 served as the core PCR (PCR ICMQ-001/15 rev 2.1). PCR review was conducted by Daniele Pace. Contact via info@epditaly.it.</p> <p>Independent verification of the declaration and data, according to EN ISO 14025:2010</p> <p><input type="checkbox"/> Internal <input checked="" type="checkbox"/> External</p> <p>Third party verifier: ICMQ SpA, via De Castillia, 10 20124 Milano (www.icmq.it)</p> <p>Accredited by: Accredia</p>
CPC CODE:	36390
COMPANY CONTACT:	Sabrina Accolla, Abet Laminati S.p.A. Viale Industria 21, 12042 Bra (CN), Italia sabrina.accolla@abet-laminati.it
TECHNICAL SUPPORT:	Thinkstep Italia, via Bovini 41 Ravenna (IT) www.thinkstep.com  thinkstep
COMPARABILITY:	Environmental statements published within the same product category, but originating from different Program Operators and created with different PCR specifications may not be comparable. The comparison of the results of this EPD declaration with other studies and documents is only possible if all the data sets (database) to be compared have been created according to EN 15804.
LIABILITY:	Abet Laminati S.p.A. relieves EPDIItaly from any failure to comply with the environmental legislation. The holder of the declaration will be responsible for the information and supporting evidence; EPDIItaly disclaims any liability with regard to the manufacturer's information, data and life cycle assessment results.

REFERENCE DOCUMENT:

This declaration is based on the EPDItaly regulation, available on the website www.epditaly.com

PRODUCT CATEGORY RULES (PCR):

PCR ICMQ-001/15 rev 2.1 Prodotti da costruzione e servizi per costruzioni, EPD Italy. Issue Date: 03/06/2019

The EN 15804 standard constitutes the framework reference for the PCR

2. THE COMPANY



Abet Laminati was founded in Bra and is one of the world's leading manufacturers of high pressure decorative laminate HPL, with a sales network which is widespread in Italy and abroad.

Its over sixty years of history reveals a continued commitment to the research and development of products which satisfy the market demand, operating in full respect of the environment.

The Company has constantly invested its own resources to be able to propose also customised decorative laminates thanks to digital print system.

Furthermore, collaborations with renowned international architects and designers complete a whole range of proposals, which continues to interest and satisfy the customers.

PRINT HPL Thin decorative laminates are intended for surface coatings and require bonding to a substrate. Their significant performance properties, aesthetic qualities and the rich variety of surface finishes and texture make them suitable in a wide range of interior applications: private and residential housing, hospitals and laboratories, public buildings, railway stations, airport terminals/infrastructure, transportation, hotels, education, retail and commercial buildings, sport & recreation centres and industrial buildings.

Thanks to the advantages from its use and its versatile performance across many applications, PRINT HPL Thin is a product increasingly appreciated by project managers and used in public environments.

Environmental and quality certifications

Abet Laminati S.p.A. is certified according to the international management standards UNI EN ISO 9001:2015 and UNI EN ISO 14001:2015.

To be in line with European and international requirements, Abet Laminati products are certified according to the following standards:

- FSC-STD-40-003 V2.1 - FSC-STD-40-004 V3.0.
- PEFC ITA 1002:2013 (Appendix 2) - PEFC ST 2002:2013 (Appendix 2).
- *Indoor Advantage™ Gold*: Indoor Air Quality Certified to SCS-EC10.3-2014 v4.0
- *Attestation A+*: Décret n. 2011-321 du 23 mars 2011 (*DEVL1101903D*); Arrêté du 19 avril 2011 (*DEVL1104875A*).
- *M1 Classification*: Emission classification of building materials, *THE BUILDING INFORMATION FOUNDATION RTS sr.*
- *LEED v4*: VOC emissions specifications in LEED EQ credit "Low-emitting products", the requirements

of CDPH-IAQ (California Department of Public Health, Jan 2017); and a TVOC below 0,5 mg/m³ in both office and class room.

3. EPD SCOPE AND TYPE

The life cycle of the product considered is from raw materials supply to transport to the site (Type of EPD: cradle to gate with option) and the modules described below are declared in this EPD.

Modules **A1-A3** include those processes that provide energy and material input for the system (A1), transport up to the factory gate of the plant (A2), manufacturing processes as well as waste processing (A3).

Module **A4** includes the transport from the production site to the customer or to the point of installation of the products.

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

MND: MODULE NOT DECLARED

EPD TYPE

Declaration related with average laminate print HPL thin produced by the plant of Abet Laminati located in Bra (CN).

GEOGRAPHICAL VALIDITY

Plant performances and production technologies are referred to the Bra (CN) factory. Reference market is global.

DATABASE

GaBi 2019, SP37

SOFTWARE

EPD process creator, implemented with the LCA software GaBi Professional 9.0 and GaBi Envision 4.0. The identification code of the tool is: **Abet Laminati LCA tool creator v1 (SP37)**.

EPD DONE WITH VALIDATED CALCULATION ALGORITHM

During year 2018/2019 Abet Laminati implemented and certified a process for generating EPD using a validate and certified calculation algorithm by ICMQ S.p.A, according with EPDIItaly requirement. Process is based on data collection from the factory, information are then integrated, verified and validated according with all the internal procedures developed ad hoc. The algorithm allows automatic LCA results generation for laminates products that are used to generate EPD document.

4. DETAILED PRODUCT DESCRIPTION

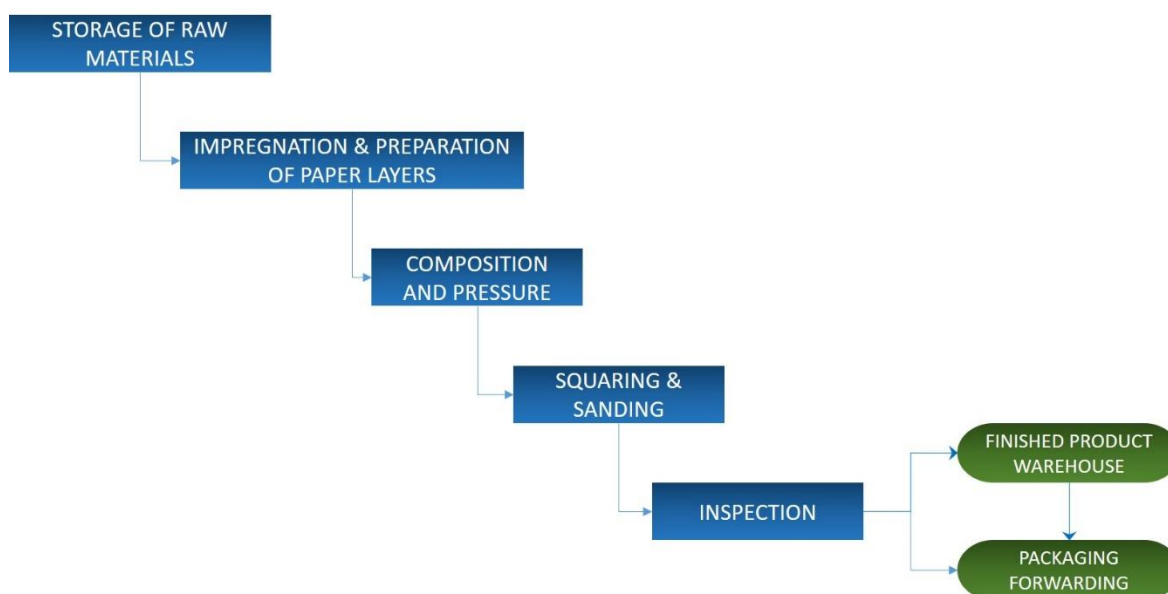
The decorative laminates PRINT HPL Thin are sheets consisting of layers of cellulose fibrous material (saturated Kraft paper) impregnated with phenolic or melamine resins and bonded together with one or more surface decorative layers impregnated with melamine or acrylic resins. Some typologies of product can

also be composed of surface or internal metal layers, i.e. aluminium or iron, and also of surface veneer layers. The process, defined as the simultaneous application of heat ($\geq 120^{\circ}\text{C}$) and high specific pressure ($\geq 5\text{ MPa}$) provides flowing and subsequent curing of the thermosetting resins to obtain a homogenous non-porous material ($\geq 1350\text{ kg/m}^3$) with characteristics which are totally different from those of its component parts. The final product is a stable, resistant and long-lasting material, easy to handle and machine. PRINT HPL Thin ensures mechanical, physical and chemical properties: impact resistant, scratch and wear resistant, light resistant, heat resistant and it possesses good hygienic and anti-static properties, being easy to clean and maintain.

PRINT HPL Thin panels, with a thickness between 0,6 mm and 2 mm, are supplied in sheet form in a variety of sizes, colours and surface finishes. For an improved fire behaviour, fire retardant panels are available. In this case, the laminate core may be treated with a halogen-free additive.

DESCRIPTION OF THE PRODUCTION PROCESS

The production process of the PRINT HPL Thin is divided into five activities that are carried out consecutively: storage of raw materials (paper, resins and chemical additives); impregnation of papers (kraft and decorative papers) with specific resins; high pressure lamination of overlapped kraft, decor and overlay sheets; squaring and sanding; final inspection and forwarding.



Raw material storage and placing on the production

All the raw materials are purchased from external suppliers. Before the storage papers, resins and chemical additives shall be subject to laboratory acceptance controls. The approved materials are stored in warehouses, the resins are stored in tanks.

Impregnation and preparation of paper layers

The impregnation process is performed continuously on lines that are provided with unwinder systems, immersion bath, squeeze rollers, drying ovens and cutter.

Paper is stretched on unwinder system, passes through immersion bath in which it is saturated with phenolic/melamine resins before squeeze rollers remove excess resin. At this stage, paper travels quickly through the drying oven under controlled temperature ($100^{\circ}\text{C} - 180^{\circ}\text{C}$) in order to dry the resin but to avoid too much curing. In the downstream end of the process impregnated paper is cut into sheets and stacked in pallets.

The sheets of Kraft paper impregnated with phenolic resin are assembled in packs. The number of kraft sheets determines the thickness of the final panel, the core of decorative laminate.

The sheets of decor paper impregnated with melamine resins are stored in appropriated and controlled warehouse.

During the pressing phase other ancillary papers are used. Those papers are purchased from external suppliers and they are cut to size in specific lines.

Composition and pressure

The different impregnated paper and ancillary paper sheets are overlapped, creating what will be the PRINT HPL Thin. The assembled panels are carried in a multi-daylight press, where they are pressed under a pressure between 5 MPa and 9 MPa and a temperature higher than 120°C.

During the process, the thermosetting resins flow throughout the paper fibres and subsequently are irreversibly interacted through cross-linked chemical bonds, formed during the curing process, converting the paper sheets into a single rigid laminate panel.

Squaring and sanding

After the thermal lamination, the edges of the panel are refined, and the backside is sanded to make panels suitable for gluing on substrates.

Inspection and forwarding

The finished panels are sent to final inspection for both aesthetic and dimensional characteristic control and consequently, the classification into classes.

As a last step, the final products are packed, identified and sent to their destination. The packaging is composed of cardboard boxes, polyethylene film, strapping and wood pallets, on which panels are stacked. Packaging may be changed to take account of different distribution ways. If required, the single panel can be covered by a removable protective film.

Pallet ready for dispatch are stored in finished product warehouse, waiting for forwarding.

ENVIRONMENTAL PROTECTION

Abet Laminati S.p.A. has adopted and certified its environmental management system according to UNI EN ISO 14001:2015, as evidence of its great commitment towards all aspects of environmental issues. Internal practices are implemented in order to continuously improve the environmental performances (reduction in consumption of primary resources and less pollution).

Raw materials – From January 2014 Abet Laminati has obtained both the voluntary “Chain of Custody” certifications FSC® (FSC-C119591) and PEFC™, that guarantee that the final product has been manufactured using exclusively materials coming from forests responsibly/sustainably managed and/or from other controlled sources, according to FSC® and PEFC™ schemes.

Abet Laminati chose to make the transition from alcohol-based phenolic resins many years before environmental regulations came into force, with a significant reduction of VOC emissions during the process. This is considered fundamental to improving environmental conditions, both inside production facilities as well as for external emissions.

Waste – On average, 80% of the waste generated by the Abet Laminati activities is recovered. Part of recovery, about 45%, is used for energy recovery through its own coincineration system installed at the site of Strada Falchetto 30. The coincineration plant treats waste resulting from manufacturing process of company itself and associated and subcontractor companies (impregnated papers and not, cardboard cores, filter cakes, pieces of laminate, wood packaging).

Energy – From 1997 Abet Laminati S.p.A. owns a coincineration plant. This solution allows energy recovery through waste burning. The generated heat is intended to produce vapour, used within the processes of the

company itself. Waste to energy process makes possible an evident reduction in non-renewable energy consumption. During this process thermal energy is produced, saving 0,09 Sm³ for every square meter; considering the whole production of Abet Laminati, on yearly basis, the amount saved is around 1.330.816,92 Sm³.

Emissions – The adopted technologies to reduce emissions of pollutants resulting from the thermal treatment of waste are SNCR (selective non-catalytic reduction) to reduce nitrogen oxide emissions, and cyclone separators and filters to remove particulates and dust from air. Dust from finishing operations is treated by using cyclone separators and filters. The COV emissions from impregnation processes are treated with a thermal regenerative oxidiser in Strada Falchetto plant and with a catalytic burner in Viale Industria plant. All the external emissions are rigorously monitored by regular self-inspections. CO₂ emissions are monitored according to the European Union Emissions Trading Scheme (Directive 2003/87/CE).

Water – The plant has been equipped with closed cycle cooling towers that allow for a reduction in consumption estimated at around 90%. The process waters are completely reused in the production cycle. Since waste water from manufacturing process does not contain pollutant, no water treatment is required.

Noise – The company takes appropriate action in order to mitigate noise pollution caused by the manufacturing process, inside and outside the facilities. Monitoring system periodically controls the noise, according to Italian legislation.

Technical properties

The decorative laminate PRINT HPL Thin is produced according to standards EN 438 and ISO 4586.

Technical properties of the product are tested according to EN 438-2:2016+A1:2018 and they fulfil technical requirements of standard EN 438-3:2016, EN 438-8:2018, EN 438-9:2017, depending on product collections.

For more details on general and quality properties see specific informative technical sheets available on the website www.abetlaminati.com, section “Documents”.

An example of the main technical features is shown in the table below.

PRINT HPL, HPL/EN 438-3:2016/HGS-HGF			
Property	Test Method (EN 438-2:2016)	Values (max or min)	Unit
Dimensional deviation - Thickness	EN 438-2.5	0,6 < s < 1 ± 0,10 1,0 < s < 1,8 ± 0,15	mm
Dimensional deviation - Length and width	EN 438-2.6	+10 / 0	mm
Density	ISO 1183	≥1,35	g/cm ³
Resistance to impact by small-diameter ball	EN 438-2.20	≥20	N

PRINT HPL, HPL/EN 438-3:2016/HGS-HGF			
Property	Test Method (EN 438-2:2016)	Values (max or min)	Unit
Resistance to scratching	EN 438-2.25	≥2 ≥3	force smooth finish force textured finish
Resistance to surface wear	EN 438-2.10	IP 150	revolutions (min)
Lightfastness	EN 438-2.27	≥4	grey scale rating (min)

Please note that the product line Polaris is characterised by a surface layer impregnated with acrylic based resins, which is not addressed in standard EN 438. However, technical requirements of EN 438-3:2016 are ensured also for this product.

BASE MATERIALS/ANCILLARY MATERIALS

Main raw materials

- Phenolic resin: 22,5% - 25%
- Melamine resin: 5,45% - 15,85%
- Paper: 61,5% - 69,5%
- Chemical additives: 0,05 % - 0,15%

Main chemical additives

- Hardener
- Wetting agent
- Release agent

PRODUCT PROCESSING/INSTALLATION

PRINT HPL Thin is normally intended for bonding to supporting substrates. General conditions for bonding the product depend on the substrate, the type of adhesive and its reactivity. Therefore, the manufacturer must adapt the process parameters to his specific bonding system. For information see chapter 10 of the brochure "Technical information", available on the website www.abetlaminati.com, or contact the Information Service of Abet Laminati.

Because of the possibility of sharp edges, when handling laminates protective gloves should always be worn and safety-glasses to prevent eye injury. Special working equipment is not required, except protections to minimize dust formation and exposure in case of sheet machining.

DECLARED UNIT

The declared unit is 1 m² of PRINT HPL Thin, with a density about 1415 kg/m³. Average mass per unit area, considering an average thickness of 0,88 mm, is 1,24 kg/m². All collected data involved in the LCA study is representative for the production process of the year 2017.

REFERENCE SERVICE LIFE (RSL)

The period of use was not taken into account in the model.

Due to the wide range of applications of the decorative laminate, it was not possible to establish a single reference service lifetime.

However, PRINT HPL Thin is considered to be one of the most strong and durable decorative surface materials. Durability plays an important role in the sustainability: it means the consumption of less resources and the production of less waste.

The minimum life time expected for thin laminates for indoor applications is 20 years (suggestion by ICDLI aisbl, International Committee of the Decorative Laminates Industry, based on expert judgment).

EXTRAORDINARY EFFECTS

Fire: PRINT HPL Thin provides a good fire behaviour, it does not melt nor drip.

However, PRINT HPL Thin is not self-supporting and fire performance will depend on the laminate thickness and construction, type and thickness of the substrate and adhesive used. The fire classification of the composite panel is under the responsibility of the manufacturer of the final composite.

The requirements for reaction to fire are determined by the fire regulations of the country in which the material is to be used.

In Europe, laminate panels intended for construction applications are tested in accordance with EN ISO 9239 - 1 and EN ISO 11925 - 2, and the resulting reaction-to-fire performance is expressed in accordance with EN 13501 - 1.

Water: PRINT HPL Thin is insoluble in water. Prolonged and intense exposure to water shall be avoided. Panels are not resistant against continuous exposure to water. No tests were carried out to evaluate any environmental impacts by panels on water quality and health.

RE-USE PHASE

On account of their high calorific value (18 - 20 MJ/kg) PRINT HPL Thin are ideal for energy recovery in officially approved industrial incinerators.

However, decorative thin laminates are usually used as composite materials and reuse is not possible as a rule.

DISPOSAL

PRINT HPL is not classified as hazardous waste and can be brought to controlled waste disposal sites according to current national and/or regional regulations. The WEC code for the disposal of the laminate and the dust of laminate is 03 01 05.

5. LCA RESULTS

The tables below show the results of the LCA (Life Cycle Assessment). Basic information on all declared modules can be found in chapter 3.

You can convert the results per kg using the following conversion factor: 0,80

LCA RESULTS - Environmental Impact: 1 m ² of average PRINT HPL thin			
Parameter	Unit	A1-A3	A4
GWP	[kg CO ₂ -eq.]	3,43	0,123
ODP	[kg CFC ₁₁ -eq.]	2,28E-11	1,88E-17
AP	[kg SO ₂ -eq.]	1,1E-02	1,61E-03
EP	[kg (PO ₄) ³⁻ -eq.]	1,75E-03	2,03E-04
POCP	[kg etilene-eq.]	2,28E-11	2,03E-05
ADPE	[kg Sb-eq.]	1,79E-06	1,65E-08
ADPF	[MJ]	109	1,64
Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources		

LCA RESULTS - Resource use: 1 m ² of average PRINT HPL thin			
Parameter	Unit	A1-A3	A4
PERE	[MJ]	32	0
PERM	[MJ]	12,1	0
PERT	[MJ]	44,1	5,54E-02
PENRE	[MJ]	102	0
PENRM	[MJ]	11,3	0
PENRT	[MJ]	113	1,65
SM	[kg]	0	0
RSF	[MJ]	0	0
NRSF	[MJ]	0,266	0
FW	[m ³]	3,52E-02	1,17E-04
Caption	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		

LCA RESULTS – Output flows and waste categories: 1 m ² of average PRINT HPL thin			
Parameter	Unit	A1-A3	A4
HWD	[kg]	5,45E-07	4,34E-08
NHWD	[kg]	1,19E-01	8,16E-05
RWD	[kg]	1,21E-03	3,37E-06
CRU	[kg]	0	0
MFR	[kg]	0	0
MER	[kg]	0	0
EEE	[MJ]	0	0
EET	[MJ]	0	0
Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy		

6. CALCULATION RULES

REFERENCE FLOW

Name	Value	Unit
Declared Unit	1	m ²
Grammage	1,24	kg/m ²
Conversion factor to 1 kg	0,80	-

ASSUMPTIONS

Module A4 is based and assumed on weighted average distances.

CUT-OFF CRITERIA

Cut-off rules applied for data and information not available are compliant with the reference standards (EN15804). Mass flows not considered can influence final results for a percentage lower than 1%. These materials are listed in the table below.

Data omitted	Reasons
Optical brightener	No dataset or proxy available
WEC "17xxxx family"	Such wastes refer to construction material due to extraordinary maintenance activities.
WEC 16 05 06	Laboratory activities

DATA QUALITY

The reference year of the secondary/background data from thinkstep database is between 2016 and 2018. Most of the primary data connected with raw materials and energy consumption are measured and or calculated directly at the factory level. Information regarding emission to air and wastes production are from official document required by the European laws like for the IPPC document (called AIA, i.e. Integrated

Pollution Prevention and Control), MUD (for wastes management), ETS (Emission Trading System). Detailed data are also used for defining chemical composition of all materials consumed. Overall data quality is considered more than satisfactory.

PERIOD UNDER REVIEW

Primary data collected production volume are referred to year 2017.

ALLOCATION

Allocation rules adopted for the LCA model are compliance with the reference standard (EN15804, ISO 14044) and they are mainly based on mass produced. This mass is calculated considering the density (kg/m^3) and the square meters of the several product categories manufactured in the company. Only where the surface produced has an impact for energy or material consumption (e.g. for the pressing phase or auxiliaries) square meters are used for allocation factor calculation.

7. SCENARIOS

All the necessary processes described in chapter 4 have been incorporated into modules A1-A3.

Transport (A4):

For transport specific distances for print HPL thin are collected and aggregated with average. Print HPL thin are commercialized nationally, in Europe and the rest of the world.

Name	Value	Unit
National destination: Truck	500	km
European destination: Truck	1390	km
International (outside-Europe) destination: Truck	630	km
International (outside-Europe) destination: Transoceanic freight ship	7950	km

8. ENVIRONMENT AND HEALTH DURING USE

Indoor air quality plays a significant role for human health, since daily time is spent, on average, 90% in closed environments with a high concentration of pollutants. Among the pollutants there are volatile organic compounds (VOC) and formaldehyde. Abet Laminati S.p.A. has always paid great attention to indoor quality and it is constantly committed to contribute to the healthiness of living spaces with its products.

PRINT HPL Thin emissions are very low, as attested by indoor air quality certification Indoor Advantage™ Gold. The classification depends on legislation of the country in which the material is to be used and the test method required. Overall, PRINT HPL Thin is classified as A+ according to French Regulation, M1 according to Finnish Regulation and it can contribute to EQ credit of LEED v4 (see pag. 3 “Environmental and quality certifications”). The mentioned certifications also attest low formaldehyde emissions, below admitted thresholds.

If used under the expected service conditions, PRINT HPL Thin does not pose any risk to the environment.

9. ADDITIONAL ENVIRONMENTAL INFORMATION

PRINT HPL Thin does not contain SVHC substances (substances of very high concern) that are included in the “candidate list”, that is the list of candidate substances candidate to be introduced in the list of “substances to be authorized” (annex XIV of REACH). Abet Laminati S.p.A. established an internal periodic system of control, linked to the updating of the above-mentioned list (SVHC), taking care of reviewing the document in case of change to what reported.

With reference to formaldehyde emission, high pressure decorative laminate can be classified as E1 (formaldehyde $\leq 3,5 \text{ mg/m}^2 \text{ h}$), according with EN ISO 12460 - 3:2015.

Abet Laminati Spa informs that concerning PRINT HPL Thin intended to be glued on substrates, the standard EN 438-7:2005 states that **"In the case of HPL wood-based composite panels, if the substrate complies with Class E1 requirements, then the complete panel shall be accepted as meeting Class E1 without need for testing"**.

Standard	HPL Typical value	E1 Requirements
EN 717-1	0,05 ppm	$\leq 0,1 \text{ ppm}$ ($\leq 0,124 \text{ mg/m}^3 \text{ air}$)
EN ISO 12460-3*	$0,2 \text{ mg/m}^2 \text{ h}$	$\leq 3,5 \text{ mg/m}^2 \text{ h}$

*Standard EN 717-2:1996 has been superseded by EN ISO 12460-3: 2015 but test method and limits have not changed.

REFERENCE

ISO 14040:2006 Environmental management - Life cycle assessment - Principles and framework

ISO 14044:2006 Environmental management - Life cycle assessment - Requirements and guidelines

ISO 14020:2000 Environmental labels and declarations - General principles

ISO 14025:2007 Environmental labels and declarations – Type III environmental declarations – Principles and procedures

ISO 14001:2015 Environmental management systems - Requirements with guidance for use

ISO 12460:2007 Wood-based panels -- Determination of formaldehyde release

ISO 9239-1:2010 Reaction to fire tests for floorings - Part 1: Determination of the burning behaviour using a radiant heat source

ISO 11925:2010 Reaction to fire tests -- Ignitability of products subjected to direct impingement of flame

ISO 1183-1:2004 Plastics - Methods for determining the density of non-cellular plastics -- Part 1: Immersion method, liquid pycnometer method and titration method

ISO 4586-1:2018 High-pressure decorative laminates (HPL, HPDL) -- Sheets based on thermosetting resins (usually called laminates) -- Part 1: Introduction and general information

ISO 9001:2015 Quality management systems -- Requirements

EN 13501:2007 Fire classification of construction products and building elements

EN 15804:2013+A1:2014 Sustainability of construction works – Environmental product declarations Core rules for the product category of construction works

EN 717-1:2004 Wood-based panels - Determination of formaldehyde release

EN 438-2:2016+A1:2018 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 438-8:2018 High-pressure decorative laminates (HPL) - Sheets based on thermosetting resins (usually called laminates) - Part 8: Classification and specifications for design laminates

EN 438-9:2017 High-pressure decorative laminates (HPL) - Sheets based on thermosetting resins (usually called laminates) - Part 9: Classification and specifications for alternative core laminates

EN 438-7:2005 High-pressure decorative laminates (HPL) - Sheets based on thermosetting resins (Usually called Laminates) - Part 7: Compact laminate and HPL composite panels for internal and external wall and ceiling finishes

FSC-STD-40-003 V2.1 EN REQUIREMENTS FOR USE OF THE FSC TRADEMARKS BY CERTIFICATE HOLDERS

GaBi LCA Database Documentation 2018. Retrieved from thinkstep AG: <http://www.gabi-software.com/international/databases/gabi-databases/>

LEED Reference Guide for Building Design and Construction v4, 2018

PEFC Programme for the Endorsement of Forest Certification schemes

SCS Global Services – Indoor Air Quality Certified to SCS-EC10.3-2014 v4.0

PCR ICMQ – 001/15 rev. 2.1 Prodotti da costruzione e servizi per costruzioni, EPD Italy. Issue Date: 03/06/2019

PD CEN/TR 16970:2016 Sustainability of construction works – Guidance for the implementation of EN 15804

BS EN 16757:2017 Sustainability of construction works – Environmental Product Declarations – Product category rules for concrete and concrete elements

PD CEN/TR 15941:2010 Sustainability of construction works – Environmental Product Declarations – Methodology for selection and use of generic data

REACH: Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)