ENVIRONMENTAL PRODUCT DECLARATION
as per /ISO 14025/ and /EN 15804/

<table>
<thead>
<tr>
<th>Owner of the Declaration</th>
<th>ICDLI aisbl – International Committee of the Decorative Laminates Industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Programme holder</td>
<td>Institut Bauen und Umwelt e.V. (IBU)</td>
</tr>
<tr>
<td>Publisher</td>
<td>Institut Bauen und Umwelt e.V. (IBU)</td>
</tr>
<tr>
<td>Declaration number</td>
<td>EPD-ICL-20170155-CBE1-EN</td>
</tr>
<tr>
<td>ECO EPD Ref. No.</td>
<td>ECO-00000591</td>
</tr>
<tr>
<td>Issue date</td>
<td>13/11/2017</td>
</tr>
<tr>
<td>Valid to</td>
<td>12/11/2022</td>
</tr>
</tbody>
</table>

Decorative High-Pressure Thin Laminates (HPL)
International Committee of the Decorative Laminates Industry (ICDLI aisbl)

www.ibu-epd.com / https://epd-online.com
### General Information

<table>
<thead>
<tr>
<th><strong>International Committee of the Decorative Laminates Industry aisbl (ICDLI)</strong></th>
<th><strong>Decorative High-Pressure Thin Laminates</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Programme holder</strong></td>
<td><strong>Owner of the Declaration</strong></td>
</tr>
<tr>
<td>IBU - Institut Bauen und Umwelt e.V. Panoramastr. 1 10178 Berlin Germany</td>
<td>ICDLI aisbl – International Committee of the Decorative Laminates Industry Rue de la presse 4 1000 Brussels/Belgium Headoffice: Städelstraße 10 60596 Frankfurt am Main/Germany</td>
</tr>
<tr>
<td><strong>Declaration number</strong></td>
<td><strong>Declared product / Declared unit</strong></td>
</tr>
<tr>
<td>EPD-ICL-20170155-CBE1-EN</td>
<td>Decorative High-Pressure Thin Laminates (HPL) according to /EN 438-3/ produced by ICDLI aisbl members. The EPD applies to 1 m² of HPL without fire-retardant properties with an average density of 1350 kg/m³.</td>
</tr>
</tbody>
</table>

### This Declaration is based on the Product Category Rules: |

Laminates, 07.2014 (PCR tested and approved by the SVR)

### Issue date

13/11/2017

### Valid to

12/11/2022

### Verification

The CEN Norm /EN 15804/ serves as the core PCR

Independent verification of the declaration according to /ISO 14025/ |

- [ ] internally
- [x] externally

Prof. Dr.-Ing. Horst J. Bossenmayer (President of Institut Bauen und Umwelt e.V.)

Dr. Burkhard Lehmans (Managing Director IBU)

Dr. Stefan Diederichs (Independent verifier appointed by SVR)

### Product

#### Product description / Product definition

This EPD describes High-pressure decorative laminates (HPL) according to /EN 438-3/ (Thin HPL, thickness < 2 mm) with a density of at least 1350 kg/m³. High-pressure decorative thin laminates (HPL) are characterised by their aesthetic qualities, strength, durability and functional performance. HPL sheets are available in a wide variety of colours, patterns and surface finishes. They are resistant to wear, impact, scratching, moisture, heat, staining and light and possess good hygienic and -antistatic properties. HPL are easy to clean and maintain.

Thin HPL are not self-supporting and require bonding to a substrate. Typically they are glued to wood-based substrates to from a HPL Composite Panel.

#### Dimensions:

- Length: up to 5600 mm
- Width: up to 2200 mm
- Thickness 0.5 ≤ t < 2.0 mm (thin HPL, /EN 438-3/)

A large number of HPL manufacturing plants are certified to /ISO 9001/ and/or /ISO 14001/.

#### Product according to the /CPR/ based on a hEN:

For the placing on the market of HPL Composite Panels in the EU/EFTA (with the exception of Switzerland) Regulation (EU) No. 305/2011 (CPR) applies. HPL Composite Panels needs a Declaration of Performance taking into consideration /EN 438-7:2005/ and the CE-marking. For the application and use the respective national provisions apply.
Application
Thin High-pressure decorative laminates can be used for private and residential housing, hospitals and laboratories, public buildings, railway stations, airport terminals/infrastructure, transportation, hotels, education, retail and commercial buildings, sport & recreation centers and industrial buildings. The performance properties of thin HPL make them suitable for use in a wide variety of interior applications such as: wall cladding, railing infill panels, furniture, tables, desks, column cladding and lab equipment, cubicles, ceilings, window sills, worktops, counter tops, wash basins, etc.

Technical Data
An extract of the technical properties of thin HPL according to EN 438 part 3 is given in the following table. For horizontal grade, thin HPL used in general purpose products without flame retardants, the following properties are given:

**Constructional data**

<table>
<thead>
<tr>
<th>Name</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross density</td>
<td>≥ 1350</td>
<td>kg/m³</td>
</tr>
<tr>
<td>Resistance to abrasion</td>
<td>≥ 150</td>
<td>U</td>
</tr>
<tr>
<td>Resistance to scratches</td>
<td>≥ 2</td>
<td>Degree</td>
</tr>
<tr>
<td>Light resistance</td>
<td>≥ 4</td>
<td>-</td>
</tr>
<tr>
<td>Dimensional deviation -</td>
<td>± 0.1</td>
<td>mm</td>
</tr>
<tr>
<td>Thickness tolerance</td>
<td>+10/-0</td>
<td>mm</td>
</tr>
</tbody>
</table>

**Performance data of HPL Composite Panels in accordance with the Declaration of Performance (DoP) with respect to its Essential Characteristics according to /EN 438-7:2005/**

**Base materials / Ancillary materials**
More than 60% of the HPL consists of paper, and the remaining 30 to 40% consists of cured phenol resin for core layers and melamine resin for the surface layer. HPL is produced in a high-pressure process. Papers are impregnated with thermosetting resins and pressed together under simultaneous application of heat (temperature > 120 °C) and high specific pressure (≥ 5 MPa). This method produces a homogeneous, nonporous material with a density ≥ 1350 kg/m³. Thin HPL with thickness < 2.0 mm typically has one decorative surface.

For packaging the materials cardboard, wood/wooden pallets and polyethylene film are used.

**Reference service life**
Due to the wide range of applications no single reference service lifetime can be established. For information, the service life in standard applications can range from 20 to 50 years (ICDLI aisbl suggestion based on expert judgment).

**LCA: Calculation rules**

**Declared Unit**
The declared unit is 1 m² of HPL product with 0.8 mm thickness for Thin HPL with a density of at least 1350 kg/m³. The declared unit refers to the HPL products manufactured with phenolic impregnated kraft paper core and melamine impregnated decor paper. Special decors, fire retardants or alternative core production technologies are not included. The declared unit refers to the average HPL products manufactured by ICDLI aisbl members (weighted average).

<table>
<thead>
<tr>
<th>Name</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Declared unit</td>
<td>1</td>
<td>m²</td>
</tr>
<tr>
<td>Grammage</td>
<td>1.08</td>
<td>kg/m²</td>
</tr>
<tr>
<td>Conversion factor to 1 kg</td>
<td>0.926</td>
<td>-</td>
</tr>
</tbody>
</table>
context, respectively the product-specific characteristics of performance, are taken into account.

GaBi ts serves as background database for the calculation /GaBi ts/.

LCA: Scenarios and additional technical information

The following technical information is a basis for the declared modules. This information can also be used for developing specific scenarios in the context of a building assessment for modules that are not declared (MND).

Transport to the building site (A4)

<table>
<thead>
<tr>
<th>Name</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport distance</td>
<td>100</td>
<td>km</td>
</tr>
<tr>
<td>Capacity utilisation (including empty runs)</td>
<td>70</td>
<td>%</td>
</tr>
<tr>
<td>Gross density of products transported</td>
<td>1350</td>
<td>kg/m³</td>
</tr>
<tr>
<td>Capacity utilisation volume factor</td>
<td>1</td>
<td>-</td>
</tr>
</tbody>
</table>

Packaging material:
8 g polyethylene film, 5 g cardboard, 60 g wood (from pallets) proportional per 1 m² HPL thin product.

End of life (C2-C4)
The transport to waste processing (module C2) is assumed to be 50 km. This scenario is valid for both EoL scenarios.

<table>
<thead>
<tr>
<th>Name</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collected separately</td>
<td>1.08</td>
<td>kg</td>
</tr>
<tr>
<td>Energy recovery EoL1</td>
<td>1.08</td>
<td>kg</td>
</tr>
<tr>
<td>Landfilling EoL2</td>
<td>1.08</td>
<td>kg</td>
</tr>
</tbody>
</table>

Reuse, recovery and/or recycling potentials (D), relevant scenario information
Scenario 1: Module D/1 includes the potential benefits in form of energy recovery of the incineration process C3/1 (incineration of HPL thin). A waste incineration plant with R1-value > 0.6 is assumed.
Scenario 2: Landfilling with potential benefits in D/2 by use of landfill gas for electricity generation (C4/2).
LCA: Results

The following tables display the environmental relevant results according to /EN 15804/ for 1 m² HPL thin. The two End-of-Life Scenarios are represented in modules C2 to C4 and D. Scenario 1 reflects the thermal treatment of HPL thin with energy recovery. Scenario 2 shows the environmental results in case of disposal on landfill.

### RESULTS OF THE LCA - ENVIRONMENTAL IMPACT

#### 1 m² HPL thin, thickness 0.8 mm (1.08 kg/m²)

#### RESULTS OF THE LCA - RESOURCE USE

#### DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE NOT DECLARED)

#### RESULTS OF THE LCA - RESOURCE USE: 1 m² HPL thin, thickness 0.8 mm (1.08 kg/m²)

#### RESULTS OF THE LCA - BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES

#### RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES: 1 m² HPL thin, thickness 0.8 mm (1.08 kg/m²)

The incorporation of CO₂ in packaging materials (paper, cardboard, wood) represents 2.5% of the GWP impact in module A1-A3.

### References

Institut Bauen und Umwelt

Institut Bauen und Umwelt e.V., Berlin (publ.):
Generation of Environmental Product Declarations (EPDs);

**General Principles**
for the EPD range of Institut Bauen und Umwelt e.V. (IBU), 2013/04
www.ibu-epd.de

/ISO 14025/
DIN EN/ISO 14025:2011-10/, Environmental labels and declarations — Type III environmental declarations — Principles and procedures

/EN 15804/
/EN 15804:2012-04+A1 2013/, Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products

/PCR Part A/

/PCR Part B/
Part B: Requirements on the EPD for Laminates, 07/2014

/EN 438-3/
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 438-3:2005

/EN 438-7/
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; EN 438-7:2005

/GaBi ts/
GaBi ts 8 dataset documentation for the software system and databases, LBP, University of Stuttgart and thinkstep, Leinfelden-Echterdingen, 2016 (http://documentation.gabi-software.com/)

/CPR/

/ISO 9001/
Quality management systems - Requirements

/ISO 14001/
Environmental management systems - Requirements with guidance for use