

ARBEITSGEMEINSCHAFT
ICDLI

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LCA Life Cycle Assessment

INTERNATIONAL COMMITTEE OF

ICDLI

DECORATIVE LAMINATES INDUSTRY

Environmental declaration for
High Pressure Laminate HPL and its
elements

LIFE CYCLE ASSESSMENT FOR AN
EUROPEAN HPL

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1 WHAT IS LCA?

LCA (Life Cycle Assessment) is a systematic way to evaluate the environmental impact of products or activities by following a so-called “cradle-to-grave” approach.

This approach implies the identification and quantification of emissions and material and energy consumption which affect the environment at all stages of the entire product life cycle.

It means that LCA consists of all the processes related to the functioning of a product, from the extraction of raw material through the production, use and reuse and disposal of all final waste.

Normative reference:

“Environmental management. Life cycle assessment”. ISA 14040 - 1403, 1996 - 1997 (see annex 2).

2 WHEN TO USE LCA?

When a single company or an association wants to compare the environmental impacts of different products with the same function (final application).

To identify the most dominant and critical stage in a product life cycle.

To indicate strategically the direction of a product development.

3 WHO DID LCA?

European producers of HPL represented by ICDLI (International Committee of Decorative Laminates Industry) have undertaken an accurate and large study for the first time on a common scientific basis in order to establish the influence of HPL on the environment. Producers from 9 European countries, representing up to 70% of the total European market, have contributed to this study. The work was conducted by INTRON BV (The Netherlands), a well known independent institute for the quality assessment for the building industry.

4 GOAL DEFINITION AND SCOPE

PURPOSE: ICDLI has identified the most typical application of HPL in a worktop in its entire life.

SUBJECT: The subject of an LCA is always defined in a so-called “functional unit”.

What is a functional unit? It is the unit for which data are collected and the environmental profile is calculated.

ICDLI identified the following basic functional units covering its entire life cycle (cradle to grave):

- 1 m² of high pressure decorative elements consisting of high pressure decorative laminate of 1.0 mm thickness HGS grade according to EN 438.1 and 38 mm chipboard backed with kraft paper, functioning in a long life indoor use application.

and

- 1 m² of high pressure decorative laminates of 1.0 mm thickness HGS grade according to EN 438.1
- the production of 1 m² of an HPL element consisting of high pressure laminate of 1.0 mm thickness HGS grade and 38 mm chipboard backed with kraft paper

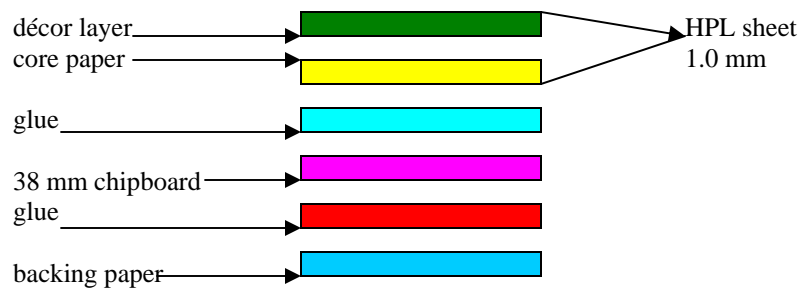


fig. 1

The study started with the gathering of data concerning the constituents necessary for the production of HPL, such as paper, pigments, chemical products and resins. Similarly for the chipboard (wood and glue). Additionally, transport to the producers of HPL, the production itself of HPL and HPL elements, packaging and final delivery to the customer have also been considered. The LCA ends with the disposal of waste material and incineration with energy recovery (see fig. 2).

5 IMPACT ASSESSMENT: CLASSIFICATION

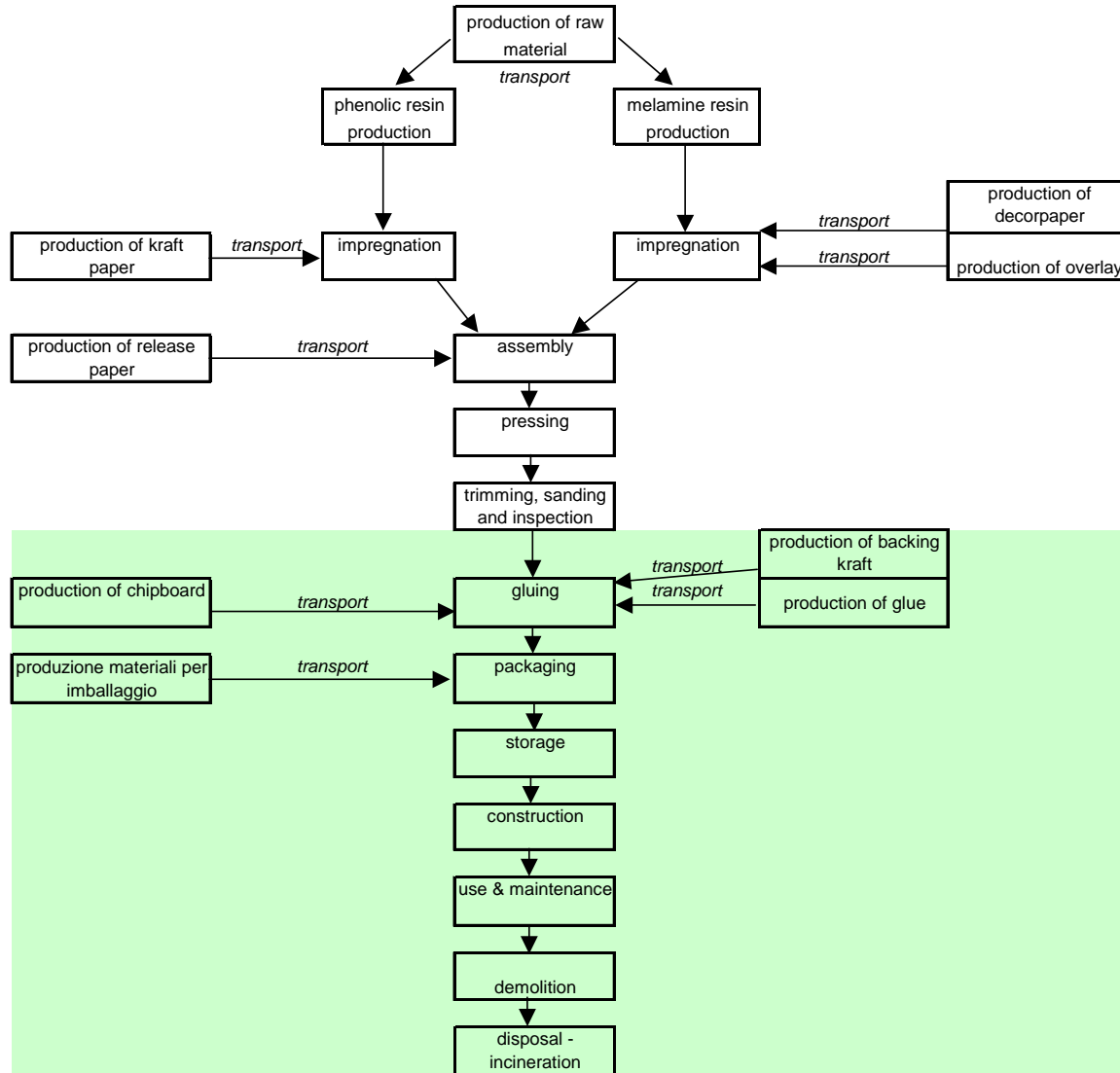
The environmental profiles consist of several impact classes as below:

ENVIRONMENTAL IMPACT CLASS		Hight Pressure Decorative Laminate, 1 m ² A		Chipboard 1 m ² B	HPL Element 1 m ² C			Total life cycle A+B+C
		Raw materials	Production	Raw materials and Production	Gluing and packing	Service Life	Waste treatment	
Abiotic depletion (1)	10 ¹⁵	12	3	41	2.9	3.1	.42	20
Biotic depletion (1)	yr	0	0	0	0	0	0	0
Greenhouse effect (1)	Kg	4.5	1.4	19	2.0	1.2	5.0	33
Depletion of the ozone layer	10 ⁷ kg	0.77	0.52	15	0.68	0	.21	4.2
Energy	MJ	63	20	271	34	17	.385	24
Waste	Kg	0.066	0.074	0.446	0.062	0.001	0.381	0.267

Fonte: Intron BV (Eco profiles of high pressure decorative laminate (HPL) according to EN 438.1 and its elements. Final Technical Report R97402”, 29 april, 1998)

(1) See page 5 for definitions

Fig. 2: Life cycle of HPL elements



High Pressure Decorative Laminate

HPL elements

ANNEX A: DEFINITIONS

Abiotic depletion

The use of non-renewable resources, such as oil, natural gas, coal, metals, etc.

The figure has been indicated with no unit of measure, since the use of resources necessary for the product is related to the (estimate) amount of recoverable reserves:

$$abiotic\ depletion = \frac{use\ (Kg)}{stock\ (Kg)}$$

Biotic depletion

The use of renewable resources.

By this figure the use of renewable resources necessary for the product is related to the total recoverable reserves per year:

$$biotic\ depletion\ (yr) = BDF \frac{stock}{production} \times use$$

Note: all the paper used for HPL is obtained from sustainable forests.

Greenhouse effect

Global heating of the atmosphere due to the absorption of IR rays which cannot pass through the atmosphere due to the presence of polluting gases.

It is expressed in form of CO2 equivalents (Kg).

Depletion of the ozone layer

Reduction of the ozone layer due to the emission of ozone depleting gases in the Stratosphere.

Ozone depletion potential is taken as a reference related to the ozone depleting emissions caused by the resources necessary for the product.

It is expressed in form of CFK 11 equivalents (kg).

Energy

The figure originates from the total energy consumption expressed in MJ, including the transport of energy carriers, the generation efficiency and transport to the user.

Waste

Solid waste fractions produced.

ANNEX B: LITERATURE

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Technical information are based on the best knowledge of the technical experts of all ICDLI member companies.

ICDLI MEMBER COMPANIES

A	ISOVOLTA AG
CH	ARGOLITE AG NOVOPAN Keller AG
D	FACHGRUPPE DEKORATIVE SCHICHTSTOFFPLATTEN Dekorplattenwerk Hirschhorn Formica Vertriebs-GmbH Hornitex-Werke Isovolta MAX-Schichtstoffplatten Perstorp GmbH Resopal GmbH Thermopal Dekorplatten Trespa International Westag & Getalig AG
F	SYNDICAT DE PRODUCTEURS DE “LAMIFIE” ET DE STRATIFIES DECORATIFS Formica Polyrey SNC
GB	FORMICA Ltd
I	ABET LAMINATI SpA ARPA INDUSTRIALE SpA
N	NORSKE SKOG FLOORING
NL	TRESPA International BV
P	SONAE INDUSTRIA DE REVESTIMENTOS, SA
S	PERSTORP AB