Environmental Product Declaration

according to ISO 14025

EGGER Laminates Flex, MED, Micro

Declaration number
EPD-EHW-2010711-D

Institut Bauen und Umwelt e.V.
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Brief Version

Environmental Product Declaration

Programme holder

Institut Bauen und Umwelt e.V.

www.bau-umwelt.com

Declaration holder

Fritz EGGER GmbH & Co. OG
Company Headquarters
Weiberndorf 20
A – 6380 St. Johann in Tirol

Declaration number

EPD-EHW-2010711-E

Declared building products

EGGER laminates Flex, MED and Micro for the building trade

This declaration is an environmental product declaration in accordance with ISO 14025 and describes the environmental performance of the construction products listed here. It is intended to promote the development of environmentally and health-friendly construction.
All relevant environmental data are disclosed in this validated declaration.
The declaration is based on the PCR document "Laminates", base year 2009.

Validity

This validated document entitles the declaration holder to use the logo of the Institut Bauen und Umwelt e.V. (Institute Construction and Environment).
It is valid exclusively for the declared products for a period of three years from the issue date.
The declaration holder guarantees the accuracy of the underlying information and certificates.

Content of the declaration

This **declaration** is complete and contains the following in detailed form:

- Product definition and structural-physical specifications
- Information on base materials and material origins
- Description of the product production process
- Information on product processing
- Information on the state of use, unusual influences and the post-usage phase
- Life cycle assessment results
- Certificates and tests

Date of issue

January 21st 2013

Signatures

Prof. Dr.-Ing. Horst J. Bossenmayer (President, Institut Bauen und Umwelt e.V. (Institute Construction and Environment)

Verification of the declaration

This declaration and the underlying rules were verified by an independent expert committee in accordance with ISO 14025.

Signatures

Prof. Dr.-Ing. Hans-Wolf Reinhardt (Chairman of the Expert Committee)

Dr. Frank Werner (Auditor appointed by the Expert Committee)

Brief Version Environmental Product-Declaration

Product description

The EGGER laminates Flex, MED and Micro are decorative laminates based on curable resins (laminates). Laminates consist of cellulose fibre web (paper) impregnated with heat-setting resins.
They have a multilayer structure and consist of melamine resin impregnated decorative paper and one or more layers of soda kraft paper impregnated with phenolic resins, which are laminated under high pressure and heat. The laminate structure, resin and paper quality, surface texture, use of special overlays and the press parameters during production determine the laminate quality and therefore the subsequent use or area of application.

Area of application

EGGER laminates Flex, MED and Micro are suitable for a large range of applications as joining elements in combination with wood-based materials or other coreboards.

Flex example: Kitchen worktops, post-forming fronts, stair treads.

MED example: Laminate bonded boards for partition walls, work surfaces and desks.

Micro example: Door leaves, door fillings, decorative trim, PVC window sill cladding, baseboards.

Scope of the LCA

The **Life Cycle Assessment (LCA)** was conducted according to DIN ISO 14040 ff. in keeping with the require-ments of the IBU guidelines for type III declarations. Specific data for the products that were examined as well as data from the “GaBi 4” database were used in the assessment. The life cycle assessment includes the proc-esses for obtaining raw materials and energy, the transportation of raw materials, the production phase itself including the production and disposal of packaging as well as the end of life in a biomass power plant with energy recovery. One square meter each of the laminates “Flex”, “MED” and "Micro” are declared.

Results of the LCA

Evaluated Parameter	Unit Per m²	Total	Production	End of Life
Flex [per m²]				
Primary energy, non-renewable	[MJ]	35.821	48.034	-12.213
Primary energy, renewable	[MJ]	12.839	12.982	-0.143
Greenhouse warming potential (GWP 100 years)	[kg CO2-Equiv.]	2.102	1.784	0.319
Ozone depletion potential (ODP)	[kg R11-Equiv.]	7.75E-08	1.08E-07	-3.01E-08
Acidification potential (AP)	[kg SO2-Equiv.]	6.93E-03	5.69E-03	1.24E-03
Eutrophication potential (EP)	[kg PO4-Equiv.]	1.39E-03	1.35E-03	4.14E-05
Photochemical oxidant creation potential (POCP)	[kg Ethylene-Equiv.]	1.07E-03	1.06E-03	1.39E-05
MED [per m²]				
Primary energy, non-renewable	[MJ]	43.626	61.957	-18.331
Primary energy, renewable	[MJ]	18.192	18.406	-0.214
Greenhouse warming potential (GWP 100 years)	[kg CO2-Equiv.]	2.588	2.118	0.470
Ozone depletion potential (ODP)	[kg R11-Equiv.]	9.51E-08	1.40E-07	-4.50E-08
Acidification potential (AP)	[kg SO2-Equiv.]	9.08E-03	7.49E-03	1.60E-03
Eutrophication potential (EP)	[kg PO4-Equiv.]	1.64E-03	1.64E-03	-1.06E-06
Photochemical oxidant creation potential (POCP)	[kg Ethylene-Equiv.]	1.37E-03	1.36E-03	1.41E-05
Micro [per m²]				
Primary energy, non-renewable	[MJ]	20.372	23.632	-3.260
Primary energy, renewable	[MJ]	4.436	4.475	-0.039
Greenhouse warming potential (GWP 100 years)	[kg CO2-Equiv.]	1.163	1.070	0.093
Ozone depletion potential (ODP)	[kg R11-Equiv.]	4.58E-08	5.40E-08	-8.15E-09
Acidification potential (AP)	[kg SO2-Equiv.]	3.24E-03	2.64E-03	6.03E-04
Eutrophication potential (EP)	[kg PO4-Equiv.]	8.06E-04	7.49E-04	5.73E-05
Photochemical oxidant creation potential (POCP)	[kg Ethylene-Equiv.]	5.95E-04	5.82E-04	1.26E-05

Prepared by: PE INTERNATIONAL, Leinfelden-Echterdingen
in cooperation with EGGER Holzwerkstoffe Gifhorn GmbH & Co.

PE INTERNATIONAL
EXPERTS IN SUSTAINABILITY

Certificates and tests

The results of the following tests are also presented in the environmental product declaration:

Formaldehyde according to EN 13130-23, Measurement authority: Fraunhofer-Institut für Verfahrenstechnik und Ver-packung (Fraunhofer Institute for Process Technology and Packaging), Freising

Melamine according to EN 13130-27, Measurement authority: Fraunhofer-Institut für Verfahrenstechnik und Verpackung (Fraunhofer Institute for Process Technology and Packaging), Freising

Migration according to EN 1186-15, Measurement authority: Fraunhofer-Institut für Verfahrenstechnik und Verpackung (Fraunhofer Institute for Process Technology and Packaging), Freising

Eluate analysis according to DIN EN 71-3, Measurement authority: Fraunhofer-Institut für Verfahrenstechnik und Ver-packung (Fraunhofer Institute for Process Technology and Packaging), Freising

Free phenol according to VDI Directive 3485, Measurement authority: WESSLING Beratende Ingenieure GmbH, Altenberge

Free formaldehyde according to DIN EN 717-1, Measurement authority: WESSLING Beratende Ingenieure GmbH, Altenberge

Reaction to fire according to DIN EN 13501-1, Measurement authority: Prüfinstitut Hoch (Hoch Test Institute), Fladungen

Area of application

This document refers to decorative laminates in the product qualities MED, Flex and Micro produced in the following plant of the Group:

EGGER Kunststoffe GmbH & Co.KG, Im Weilandmoor 2, D-38518 Gifhorn

1 Product Definition

Product definition

The EGGER laminates Flex, MED, and Micro are decorative laminate panels. Depending on the pressure during production and the product thickness, EGGER laminates are produced in accordance with or based on EN 438:2005. The laminate grades are produced in various nominal thicknesses and versions according to customer requirements and the subsequent area of application.

Laminate MED => Nominal thickness: 0.80 mm (0.03")
Laminate Micro => Nominal thicknesses: 0.15 and 0.20 mm (0.006 and 0.008")
Laminate Flex => Nominal thicknesses: 0.40 to 1.20 mm (0.02 to 0.05")

Versions => Various overlay versions can be applied in order to improve abrasion-resistance.

Laminate Structure MED	**Laminate Structure Flex**	**Laminate Structure Micro**
NT 0.80 mm (0.03")	NT 0.40 - 1.2 mm (0.02 - 0.05")	NT 0.15 mm (0.006")
1st layer = overlay (optional)	1st layer = overlay (optional)	1st layer = impreg. decor-paper
2nd layer = impreg. decor-paper	2nd layer = impreg. decor-paper	2nd layer = parchment
3rd to 5th layer = impreg. core paper	3rd to nth layer = impreg core paper	
6th layer = parchment	Final layer = parchment	

Applications

Laminates are non-weight-bearing and therefore only serve as lamination materials. EGGER laminates are only suitable for indoor applications. The laminate grades MED, Flex and Micro are used for the lamination of wood-based materials or other coreboards as so-called joining elements for indoor applications in furniture construction and interior design. Fore example, these joining elements are found as post-forming worktops in kitchen applications.

Product standard / approval

EN 438-2:2005 – Decorative high-pressure laminate panels – panels based on curable resins
Lloyd's certificate (MED laminate only)

- Certificate of fire approval

Quality assurance

EN ISO 9001:2000 – ÖQS Vienna, A

Internal monitoring by the Gifhorn plant laboratory

Lloyd's certificate (MED laminate only)

- Module B - EC Type Examination Certificate
- Module D – EC Certificate of Conformity

Delivery status, characteristics

The EGGER laminates Flex, MED and Micro are delivered as dimensioned or rolled goods depending on customer requirements and the laminate thickness. Please see the following statements and Table 1.

Dimensioned Form of Delivery	**Rolled Goods Form of Delivery**
Min. length: 800 mm (31.5")	Max. roll length[1)]: 400 m (1,312.34')
Max. length: 5,600 mm (220.47")	Max. roll width: 1,300 mm (51.18")
Max. width: 1,300 mm (51.18")	

1) Laminate Micro available up to 800 m (2,624.67')

Product group:	Laminates	Compilation
Declaration holder:	Fritz EGGER GmbH & Co. OG	21-01-2010
Declaration number:	EPD-EHW-2010711-E	

Table 1 – Delivery condition and dimension tolerances

Nominal Thickness [mm / inch]	Form of Delivery		Thickness Tolerance [mm / inch]	Length Tolerance * [mm / inch]	Width Tolerance [mm / inch]
	Roll	Dimensioned			
0.15 and 0.20 / 0.006 and 0.008	●	-	± 0.05 / 0.002	-	+10/-0 / +0.39/-0
0.30 / 0.01	●	-	± 0.08 / 0.003	-	+10/-0 / +0.39/-0
0.40 / 0.02	●	●	± 0.08 / 0.003	+10/-0 / +0.39/-0	+10/-0 / +0.39/-0
0.50 to 0.70 / 0.02 to 0.03	●	●	± 0.10 / 0.004	+10/-0 / +0.39/-0	+10/-0 / +0.39/-0
0.80 to 1.0 / 0.03 to 0.04	-	●	± 0.10 / 0.004	+10/-0 / +0.39/-0	+10/-0 / +0.39/-0
1.10 to 1.20 / 0.04 to 0.05	-	●	± 0.15 / 0.006	+10/-0 / +0.39/-0	+10/-0 / +0.39/-0

*) Length tolerance only applies to dimensioned laminate and not to rolled goods.

Raw density: The raw density is at least 1.35 g/cm³ for all laminate grades.

Mass per unit area: The mass per unit area is calculated using the following formula:

Mass per unit area [g/m²]= raw density 1.35 g/cm³ x 1,000 x laminate thickness [mm]

The laminate characteristics are established based on the application according to EN 438:2005. In accordance with EN 438:2005, EGGER laminates can be classified as laminate P (post-forming). Laminate P is classified according to strength:

- Moderate strength **VGP** - **V**ertical **G**eneral-purpose **P**ost-forming
- High strength **HGP** - **H**orizontal **G**eneral-purpose **P**ost-forming
- Very high strength **HDP** - **H**orizontal Heavy-**D**uty **P**ost-forming

The VGP, HGP and HDP classifications specify the minimum requirements for laminate quality characteristics (application classes) and define that the laminate can be used for horizontal and / or vertical applications with post-forming requirements. The table below shows the standards that must be met for the quality characteristics of abrasion resistance, impact resistance and scratch resistance. See Table 2 below.

Table 2 – Classification system and typical applications (also see EN 438-3, Table 3)

Requirements	Classification According to EN 438-3:2005		
	Moderate Strength Code 2 - VGP	High Strength Code 3 - HGP	Very High Strength Code 4 - HDP
Abrasion resistance Initial abrasion point [revolutions]	≥ 50	≥ 150	≥ 350
Abrasion value [revolutions]	≥ 150	≥ 350	≥ 1000
Impact resistance Impact by a small sphere [Newton]	≥ 15	≥ 20	≥ 25
Scratch resistance Scratch resistance [degree]	2	3	4
Application examples	Kitchen front elements, office and bathroom furniture, wall cladding, ceiling panels, shelves and furniture elements	Kitchen worktops, restaurant and hotel tables, door and wall cladding subject to high demands	Counters, flooring on special coreboards

Table 3 – Dimensional accuracy requirements (also see EN 438-3, Table 4)

Characteristic	Test Method (Section in EN 438-2)	Requirements
Thickness	5	0.5 mm ≤ t ≤ 1.0 mm (0.02 ≤ t ≤ 0.04”): Maximum deviation ± 0.10 mm (0.004”) 1.0 mm < t < 2.0 mm (0.4 < t < 0.08"): Maximum deviation of ± 0.15 mm (0.006”) (t is the nominal thickness)
Levelness[a]	9	Maximum deviation 60 mm/m (2.36” / 39.37”)
Length and width[b]	6	+10 mm/-0 mm (+0.39”/-0”)
Edge straightness[b]	7	Maximum deviation 1.5 mm/m (0.06” / 39.37”)
Squareness[b]	8	Maximum deviation 1.5 mm/m (0.06” / 39.37”)

[a] Assuming that the laminates are stored under the conditions recommended by the manufacturer, they have to meet the levelness requirements according to Table 4 as measured according to EN 438-2, Section 9.

[b] The maximum deviations for panels that are cut to size have to be agreed between the supplier and buyer.

Table 4 – General requirements (also see EN 438-3, Table 5)

Characteristic	Test Method (Section in EN 438-2, unless otherwise specified)	Unit (max. or min.)	Laminate		
			HDP	HGP	VGP
			444	333	222
Resistance against surface abrasion	10	Number of revolutions (minute) Initial abrasion point Abrasion value	350 1000	150 350	50 150
Resistance against impacts from a sphere with a small diameter	20	N (min.)	25	20	15
Scratch resistance	25	Degree	4	3	2
Dimensional stability at elevated temperatures	17	% (max.) La Tb	0.45 0.90	0.55 1.05	0.75 1.25
Resistance to boiling water	12	Degree (min.) Gloss surfaces Other surfaces	3 4	3 4	3 4
Resistance against dry heat (180 °C)	16	Degree (min.) Gloss surfaces Other surfaces	3 4	3 4	3 4
Resistance against moist heat (100 °C)	EN12721:1997	Degree (min.) Gloss surfaces Other surfaces	3 4	3 4	3 4
Resistance to stains	26	Degree (min.) Groups 1 and 2 Group 3	5 4	5 4	5 4
Light fastness (xenon arc lamp)	27	Grey scale	4 to 5	4 to 5	4 to 5
Resistance against water vapour	14	Degree (min.) Gloss surfaces Other surfaces	3 4	3 4	3 4
Resistance against glowing cigarette	30	Degree (min.)	3	3	3
Susceptibility to cracking under stress (optional)	23	Degree (min.)	4	4	4

Density	EN ISO 1183:1987	g/cm³ (min.)	1.35	1.35	1.35

[a] L = in the longitudinal direction (or fibre direction) of the fibre web (usually in the direction of the longest panel dimension for laminates).

[b] T = in the transverse direction (across the fibre direction) of the fibre web (at right angles to direction L).

Table 5 – Additional requirements for laminates (also see EN 438-3, Table 6)

Characteristic	Test Method (Section in EN 438-2)	Unit	Requirements
Post-forming	31 or 32 (1.22 or 1.26)	mm (inch)	L[a]: ≤ 10 x nominal thickness of the laminate T[b]: ≤ 20 x nominal thickness of the laminate
Resistance against the formation of bubbles	33 or 34	Seconds	Nominal thickness < 0.8 mm (0.03"): ≥ 10 Nominal thickness ≥ 0.8 mm (0.03"): ≥ 15

[a] L = bending axis parallel to the direction of the fibre web (usually parallel to the sanding direction).
[b] T = bending axis at right angles to the direction of the fibre web.

2 Raw Materials

Raw materials / primary products

EGGER laminates in the thickness range from 0.15 to 1.20mm (0.006 to 0.05") with a density of ≥ 1.35 g/cm³ consisting of:

Secondary materials / additives

- Decorative papers with a grammage of 50 -125 g/m²
- Soda kraft papers with a grammage of 60 – 150 g/m²
- Parchments with a grammage of 50 – 100 g/m²
- Overlay papers with a grammage of 20 – 25 g/m²
- Melamine-formaldehyde resin
- Phenol-formaldehyde resin

Laminate MED – 0.80 mm (0.03")
Paper ratio = 57 %
Resin ratio = 42 %
Additive ratio = 1 %

Laminate Flex – 0.60 mm (0.02")
Paper ratio = 57 %
Resin ratio = 42 %
Additive ratio = 1 %

Laminate Micro – 0.15 mm (0.006")
Paper ratio = 72 %
Resin ratio = 28 %
Additive ratio = < 1 %

Material explanation

Decorative paper: Either consists of decorative paper printed as a woodgrain or fantasy decor, or of uni or white decors.

Soda kraft paper: Soda kraft papers (core layers) are unprinted paper fibre webs.

Parchment: Parchment is a boil-proof, oil-proof and waterproof paper. The base product is an absorbent raw paper treated in an acid bath in order to seal the surface of the paper.

Overlay paper: Overlay paper is a bleached, transparent paper with a high resin absorbing capacity. It is used to protect the printed image of printed decorative papers and to improve resistance to abrasion.

Melamine-formaldehyde resin: Aminoplastic resins used for the impregnation of decorative papers and overlay papers for hard, transparent lamination.

Phenolic-formaldehyde resins: Phenoplastic resins for the impregnation of the core layers; brown and relatively elastic phenolic-formaldehyde resins are used here. The resins that are used are mainly produced in Germany. Decorative papers, parchment and overlay papers are purchased within Europe while soda kraft papers are procured from around the world.

Production and source of raw materials

Purchasing is exclusively from external suppliers. Regional purchasing is possible for some products but not for others – see raw material production and material origin. The materials that are used originate from suppliers with a maximum distance from the production site as per the following overview.

- Overlay max. 394 km
- Decorative paper max. 535 km
- Kraft paper max. 4,250 km
- Parchment max. 625 km
- Melamine-formaldehyde resin max. 270 km
- Phenolic-formaldehyde resin max. 270 km

Local and general availability of the raw materials

The wood used for paper production is a renewable resource. The impregnation resins that are used are synthesised from crude oil, a fossil raw material with limited availability.

3 Product Production Process

Product production process

EGGER laminates are only produced using a continuous process. Dual-belt presses allow the continuous production of various laminate thicknesses and grades. This grade or type of laminate production is generally known as CPL. Depending on the pressure during production, EGGER laminates are produced in accordance with or based on EN 438:2005. The laminates consist of layers of cellulose fibre webs (usually paper) that are impregnated with curable resins. The one-sided outer layer(s) with decorative colours or patterns is (are) impregnated with melamine-based resins. The core layers are impregnated with phenolic resins.
Applying heat and pressure causes the resins to flow and subsequently cure. Cross-linking of the resins, reinforced by the cellulose fibres of the papers, results in a very dense material with a sealed surface.

Structure of the production process:

3.1 Impregnation

Description: Soda kraft paper and decorative paper are supplied in large rolls from approximately 0.5 to 1.5 tons by a printer or paper manufacturer. The paper is unrolled in continuous horizontal-feed impregnation lines, dipped into the resin bath and saturated with resin in this manner. Corresponding rollers or strippers press out the excess resin; then the wet paper is dried in a heating channel – approximately 30 m (98 feet) in length – by a stream of hot air at a temperature of approximately 120 to 165 °C (248 to 329 °F). The infeed speed depends on the amount of resin that is applied and the grammage of the paper. For a melamine resin impregnation line, the infeed speed is approximately 15 to 45 m (49 to 148 feet) per minute, and for a phenolic resin impregnation line approximately 35 to 45 m (115 to 148 feet) per minute. The stream of air is cleaned by means of reburning. The dried impregnated paper with a low level of residual moisture is rolled up and stored in air-conditioned rooms for subsequent production.

Production of impregnated papers
1. Unrolling the decorative paper, overlay and / or soda kraft paper
2. Addition of impregnation resins in the plant
3. Drying the impregnated decorative paper and / or soda kraft paper in heated dryers
4. Rolling up the continuous impregnated papers

3.2 Laminate Production

Description: EGGER laminates are produced in continuous dual-belt presses with a pressure of 25 to 50 bar and temperatures between 150 °C and 170 °C (302 °F and 338 °F) Depending on the laminate thickness, the infeed speed varies between 8 and 15 m/min (26 and 49 feet/min). The surface texture is applied within the dual-belt press by textured steel bands or textured papers.
After pressing, the laminates are trimmed for width and / or formatted, and the back may be sanded (depending on the customer and thickness). They are then either sized for length or spooled into rolls, sorted by grade and stacked.

Production of laminates
1. Unrolling the decorative papers, overlay and / or soda kraft papers as well as parchment
2. Pressing and texturing
3. Trimming for width and / or formatting
4. Sorting by grades and stacking and / or spooling into rolls

Occupational safety during production

Measures to avoid health hazards and prevent the impairment of health during the production process:

Due to the production conditions, no occupational safety measures beyond compliance with the applicable the legal and other regulations are required. Values in all areas of the plant are significantly below the workplace concentration limits (Germany).

- **Air:** Exhaust air from the production process is cleaned in accordance with the applicable legal regulations. Emissions are significantly below the values imposed by the German technical instructions on air.
- **Water / ground:** There is no contamination of water or the ground. Waste water from the production process is cleaned internally and fed into the sewer system.
- **Noise control:** Noise level measurements have shown that all values recorded within and outside the production plant are far below the applicable requirements for Germany. Sections of the plant where high noise levels are produced have been shielded by suitable construction measures.

Environmental protection during production

- **Air:** Exhaust air from the production process is cleaned in accordance with the applicable legal regulations. Emissions are significantly below the values imposed by the German technical instructions on air.
- **Water / ground:** There is no contamination of water or the ground. Waste water from the production process is cleaned internally and fed into the sewer system.
- **Noise control:** Noise level measurements have shown that all values recorded within and outside the production plant are far below the applicable requirements for Germany. Sections of the plant where high noise levels are produced have been shielded by suitable construction measures.

4 Product Processing

Processing recommendations

Suitable for the lamination of classic wood-based materials such as: Chipboard, MDF and HDF boards. May be processed with conventional urea-formaldehyde resin glue and dispersion glue in presses (flat, short cycle and dual-belt presses) using the hot or cold process. Conventional wood processing machines such as a panel saw, table saw, circular saw or jigsaw may be used to cut laminates to size. Laminates are usually cut to size using a panel saw or table saw. Breathing protection should be worn when processing laminates without a dust / chip extraction system.

For detailed information and processing recommendations, please visit www.egger.com.

Occupational safety and environmental protection

In principle, all persons transporting and / or handling laminates should wear personal protective equipment such as gloves, safety footwear and suitable work clothing. The Employer's Liability Insurance Association provisions should be observed for commercial processing. No special workplace hygiene precautions are required. According to the European Waste List Regulation (Waste List Regulation - AVV - German Technical Instructions on Waste – version dated 10th December 2001 / 28th March 1991), laminates have to be declared under EWC (European Waste Code) 0702 13 for plastic waste. Category 1, no. 571, laminate scraps are classified as “other cured plastic waste”. Category 1 means that a material is similar to household garbage.

Residual material

The laminates are packaged and delivered as formatted or rolled goods on non-returnable or returnable wood palettes. Other packaging materials include: Cardboard, wood-based materials, PE films and PET strapping.

Packaging

The laminates are packaged and delivered as formatted or rolled goods on non-returnable or returnable wood palettes. Other packaging materials include: Cardboard, wood-based materials, PE films and PET strapping.

5 State of Use

Components

The components for laminates correspond in their proportions to those of the base material composition in Section 2 “Raw Materials".

Interactions

Environment – health

Environmental protection:

When the described products are used properly in accordance with the area of application, there is no risk of water, air or ground contamination according to the current state of knowledge.

Health protection:

No impairment of or damage to health is to be expected when laminates are used normally and in accordance with the intended purpose. With the exception of minor amounts of formaldehyde in quantities that are harmless to health, no emissions of hazardous substances can be detected.

Long term durability in usage condition

The stability in the state of use is defined by the application classes in accordance with EN 438:2005 (see Section 1 "Product Definition" and Table 1, 2, 3, 4 and 5).

6 Unusual Influences

Fire

In regards to their reaction to fire in accordance with EN 13501-1, the EGGER laminates MED, Flex and Micro were classified as follows:

- Flex is classified in Class E
- MED is classified in Class E
- Micro is classified in Class F

Water effects

No substances of content that could be hazardous to water are washed out. All substances that were detectable fall significantly below the legal limits (also see Section 9 under certificates, Section 9.3 Migration). Laminates are not resistant against continuous exposure to water (standing water).

Mechanical destruction

The fracture pattern of laminates indicates brittle characteristics. The fracture edges are sharp so that wearing protective gloves is essential.

7 Post-Usage Phase

Reuse

Since laminates are usually used as composite materials, reuse is not possible as a rule.

Reclamation

Reclamation for energy generation (in approved facilities): Due to the high heating value of approximately 17-18 MJ/kg, reclamation for the generation of process energy and electricity (cogeneration plants) is possible.

Disposal

Disposal in regular household garbage is possible (see residual material).

8 Life Cycle Assessment

8.1 Production of EGGER Laminates

Declared unit

The declared unit is one square meter of the laminates Flex (approximately 0.686 kg/m²), MED (approximately 1.020 kg/m²) and Micro (approximately 0.197 kg/m²), respectively.

System boundaries

The chosen system limits for production encompass the production of the laminates under consideration, including the production of raw materials, all the way to the finished product packaged and at the plant gates ("cradle to gate").

In particular, the scope for production includes:

- Paper production processes, including forestry processes and pro-rata transportation
- Production of all raw materials, preliminary products and auxiliary materials including the corresponding relevant transportation
- Transportation and packaging of the raw materials and preliminary products
- Laminate production processes (energy from resources, waste and its thermal recovery, emissions) as well as all impregnated paper and preliminary laminate product production processes
- Packaging including its thermal recovery and disposal

Coreboards (various wood-based materials) and the lamination process (applying the laminate to the coreboard) are not included in the life cycle assessment. This is due to the fact that the laminates are applied to a wide variety of coreboards and this is done at the plants where the respective coreboards are produced. The finished laminates are also delivered to external customers by EGGER. Transportation for the purpose of distribution from the plant to the location where the laminates are applied to coreboards is not taken into account for any of the declared products. The usage phase was not investigated. In the evaluation of systems, transportation in accordance with the actual geographic conditions as well as the lamination process and the usage phase have to be taken into account.

The system limit for the end of life scenario includes the assumption of a biomass power plant with energy recovery (credits according to the substitution approach) ("gate to grave"). On the output side, it is assumed that the resulting ashes are taken to a landfill.

Cut-off criteria

On the input side, all substance streams that enter the system and account for more than 1% of its total mass or contribute more than 1% to total primary energy consumption are considered as a minimum. On the output side, all substance streams that leave the system and where the environmental impact is greater than 1% of the total impact of an effect category under consideration are considered as a minimum. All of the inputs that are used as well as all process-specific wastes and process emissions were included in the assessment. This means the substance streams that account for less than 1% of the total mass were also included. The cut-off criteria in accordance with the IBU guidelines have therefore been met.

Transportation

The relevant transportation of the raw materials and auxiliary materials used was taken into account in all cases.

Period under consideration

The quantities of raw materials, energy, auxiliary materials and supplies were calculated as mean annual values for the EGGER plant in Gifhorn. The data that were used were collected from the actual production processes in the business year from 1st May 2007 to 30th April 2008.

Background data

The "GaBi 4" integrated assessment software system (GaBi 2006) was used to model the life cycle for the production and disposal of the laminates under review. All of background datasets relevant to production and disposal were obtained from the database of the GaBi 4 software based on Germany as the reference area.

Assumptions

The results of the life cycle assessment are based on the following assumptions.

The transportation of all raw materials and auxiliary materials was calculated according to the means of transportation (truck, universal bulk carrier – seagoing vessel, on-site diesel consumption) and the specified transportation distances with data from GaBi.

The energy carriers and energy sources used for the production site were taken into account for the energy supply.

All waste generated in production and finishing (cutting and stamping waste) is used to produce thermal energy in an external waste incineration plant. The credits for the extraction of energy in the incineration plant are included in the assessment.

A biomass power plant was assumed in the end-of-life scenario and was modelled in accordance with the average laminate composition. The laminates are usually incinerated in efficient biomass power plants at the same time as the coreboards made of wood-based materials.

For each laminate, the life cycle inventory analysis and life cycle impact assessment were modelled and evaluated separately.

Data quality

The age of the data that were used is less than 5 years.

For the products under review, the data were collected directly at the production site in the Gifhorn plant based on a questionnaire prepared by PE International. The input and output data were provided by EGGER based on operational data and verified for plausibility. It can therefore be assumed that the data are highly representative.

Most of the data for the upstream chains come from industrial sources and were collected subject to consistent constraints in terms of time and methodology. The process data and the background data that were used are consistent. Emphasis was placed on comprehensively capturing the environmentally relevant substance and energy streams.

Allocation

Allocation refers to the assignment of the input and output streams of a life cycle assessment module to the product system under review /ISO 14040/.

In regards to the system for the production of the products under review, no allocations are required. The wastes that are generated are used to generate thermal energy. The incineration of the packaging is assessed based on the corresponding GaBi 2006 datasets and allocated to production based on the credits in the German energy mix.

Energy credits for the electricity and thermal energy produced in the biomass power plant at the end of life are allocated according to the heating value of the inputs and based on the efficiency of the plant. The calculation of the input-specific emissions (e.g. CO_2, HCl, SO_2 or heavy metals) at the end of life was based on the substance composition of the products under review. The technology-dependent emissions (e.g. CO) are allocated according to the exhaust emission quantity. The credit for thermal energy is calculated based on the dataset "DE: Thermische Energie aus Erdgas 94% PE" (DE: Thermal Energy from Natural Gas 94% PE); the credit for electricity is calculated based on the dataset "DE: Strom-Mix PE" (DE: Electricity Mix PE). Since other laminates are produced in Gifhorn in addition to the laminates Flex, MED and Micro and the packaging information refers to the total production quantity, the packaging quantities were allocated according to mass and assigned to the laminates under review. In doing so, the total laminate quantity with an average density of 0.641kg/m² calculated by EGGER was used to compute the total mass of the laminates produced. The laminates under review account for 82% of all laminates produced by the plant. As a result, 82% of the packaging quantity was assigned to the laminates under review, which was in turn allocated to the individual laminates based on the quantity produced.

Notes on the usage phase

The state of use and any possible unusual influences during this phase were not investigated as part of the life cycle assessment. For system comparisons, the durability of the laminates depending on stress and strain aspects must be taken into account.

8.2 Thermal Recovery of Laminates

Selection of the disposal process

For the purpose of this life cycle assessment, the thermal recovery of the laminates in a biomass power plant was assumed and modelled according to the composition of the individual laminates. The plant is equipped with an SCNR system for the removal of nitrogen from flue gas, a dry scrubbing system for sulphur removal and a baghouse filter for the removal of particles. The fuel utilisation factor is 93%. In practice, the laminates are usually incinerated in such plants along with the coreboards made of wood-based materials.

Credits

The substitution approach is applied in regards to the generation of energy. Suitable methods are applied in order to assign credits to the products – electricity and thermal energy – that are produced. These credits would result from reductions in fossil fuel consumption and the resulting emissions from conventional energy generation (also see allocations). DE: Electricity and DE: Thermal Energy from Natural Gas (respectively GaBi 2006) were substituted.

8.3 Presentation of the Assessments and Evaluation

Life cycle inventory analysis

The life cycle inventory analysis is presented in the following section based on primary energy consumption and waste, followed by the life cycle impact assessment.

Primary energy

For the assessment of the consumption of renewable and non-renewable energy, the lower heating value was used consistently. The following Table 6 shows the energy consumption for the production of one square meter of EGGER laminate Flex / MED / Micro. The consumption of non-renewable energy for laminate production (cradle to gate) is between 23.63 and 61.96 MJ per m^2. Production accounts for approximately 11-15%, providing raw materials for approximately 84-88% and transportation and packaging together for approximately 1%.

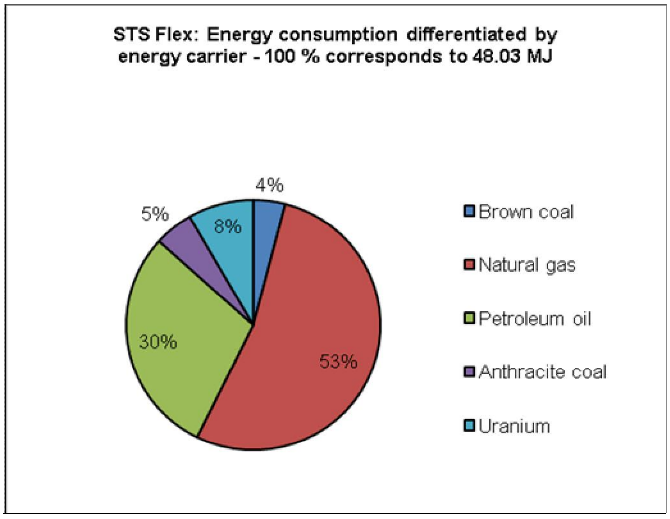
In addition, 4.48 to 18.41 MJ of renewable energy (respectively consisting of 1 - 2% wind, approximately 2 - 3% hydroelectric and around 95 - 97% solar energy mainly stored in the biomass (paper)) is used for the production of one square meter of laminate.

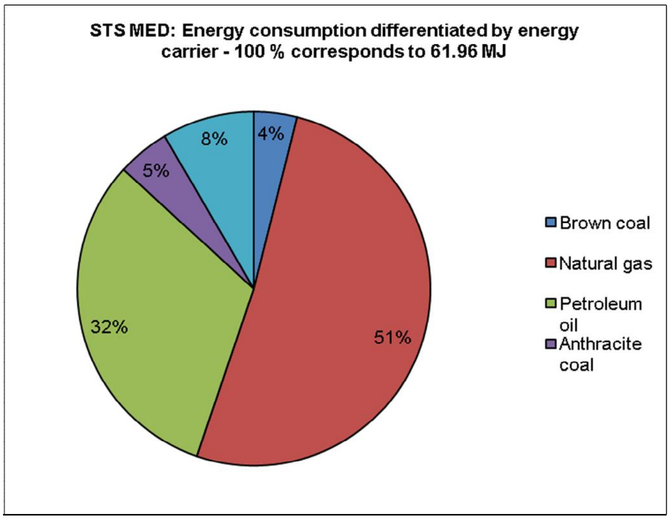
Table 6 – Primary energy consumption for the production of 1 square meter of the laminates Flex, MED and Micro, respectively

Evaluated Parameter	Unit	Total	Production	End of Life
Flex				
Primary energy, non-renewable	[MJ/m²]	35.82	48.03	-12.21
Primary energy, renewable	[MJ/m²]	12.84	12.98	-0.143
MED				
Primary energy, non-renewable	[MJ/m²]	43.63	61.96	-18.33
Primary energy, renewable	[MJ/m²]	18.19	18.41	-0.214
Micro				
Primary energy, non-renewable	[MJ/m²]	20.37	23.63	-3.26
Primary energy, renewable	[MJ/m²]	4.44	4.48	-0.0388

A more detailed examination of the primary energy consumption components shows that energy stored in the product is recovered at the end of life. This is composed of renewable primary energy (stored in the paper) and non-renewable primary energy (stored in the resins). 1 kg of finished laminate Flex / MED / Micro has a lower heating value of approximately 15.9 MJ / 15.9 / 15.3 MJ.

A more detailed evaluation of the non-renewable energy requirements for the production of one square meter of the laminates Flex / MED / Micro shows that natural gas is used as a major primary energy carrier, accounting for approximately 54 / 51 / 56 % of total primary energy consumption. Around 5-6% of the energy requirements are covered by anthracite coal, 4% by brown coal and another 8% by uranium. The 8% share of primary energy consumption covered by uranium is due to electricity purchased externally from the public electricity network according to the respective electricity mix at the production sites, which also includes nuclear energy. The remaining 29 / 32 / 26% are covered by petroleum oil.





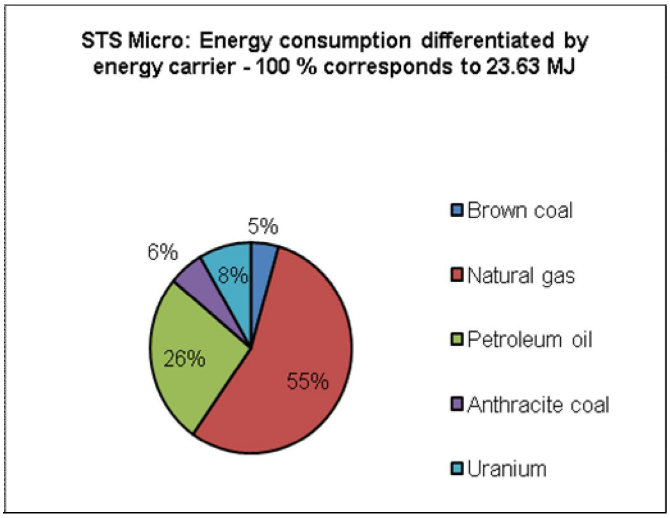
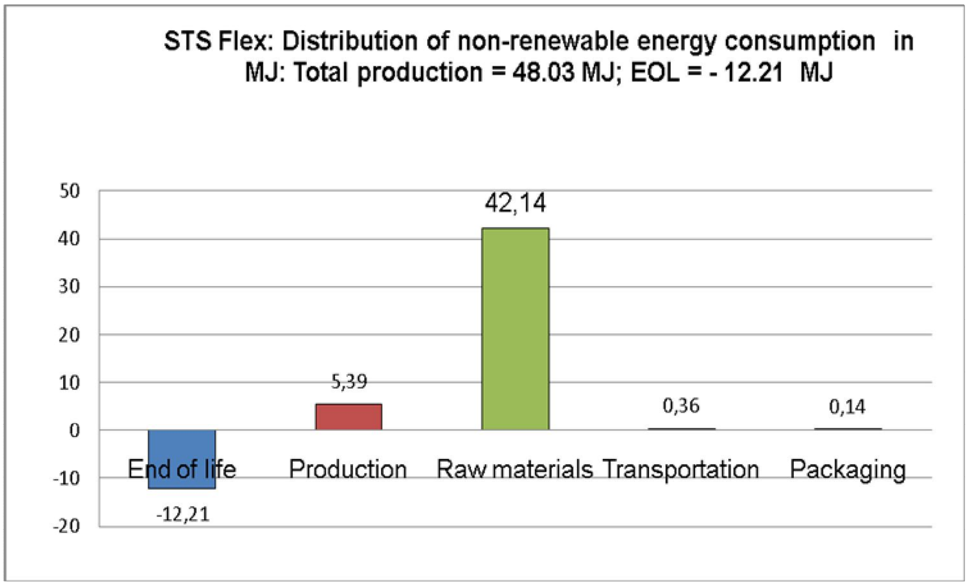
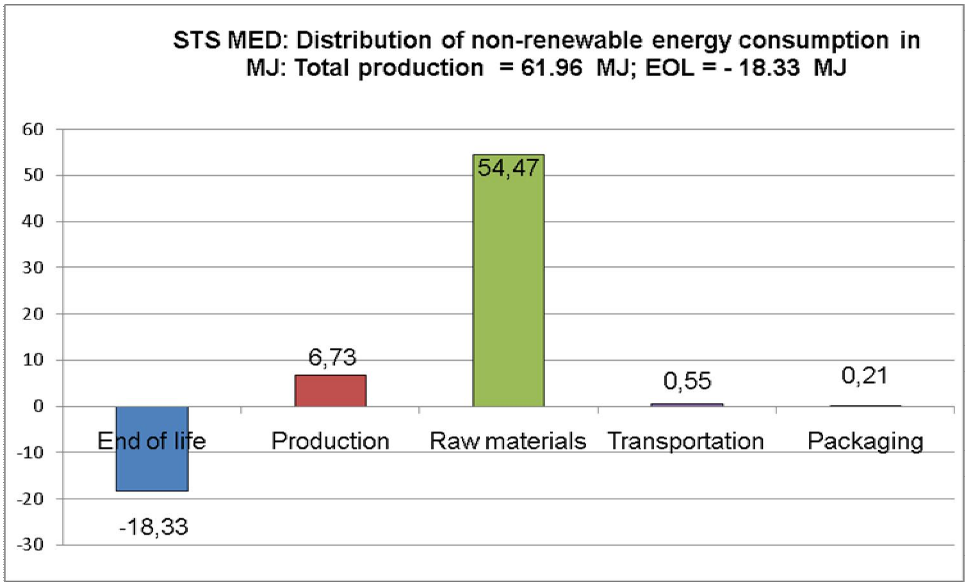


Figure 1 – Distribution of non-renewable energy consumption by energy carriers in the production of 1 m² of the laminates Flex / MED / Micro

The share of non-renewable energy carriers corresponds to Figure 1. The distribution of the non-renewable energy carriers to the individual processes is shown in Figure 2. Production accounts for approximately 5.39 / 6.73 / 3.65 MJ, providing raw materials for 42.14 / 54.47 / 19.85 MJ and transportation and packaging together for around 0.5 / 0.76 / 0.13 MJ. These values are partly offset by a credit at the end of life of 12.21 / 18.33 / 3.26 MJ.

The thermal recovery of the packaging and other waste is modelled based on average waste incineration for the respective substance class with steam conversion and electricity production. This results in electricity credits for the substitution of electricity in the public network in accordance with the respective electricity mix and a credit for thermal energy according to the average production of thermal energy from natural gas per m^2 of finished laminate produced.





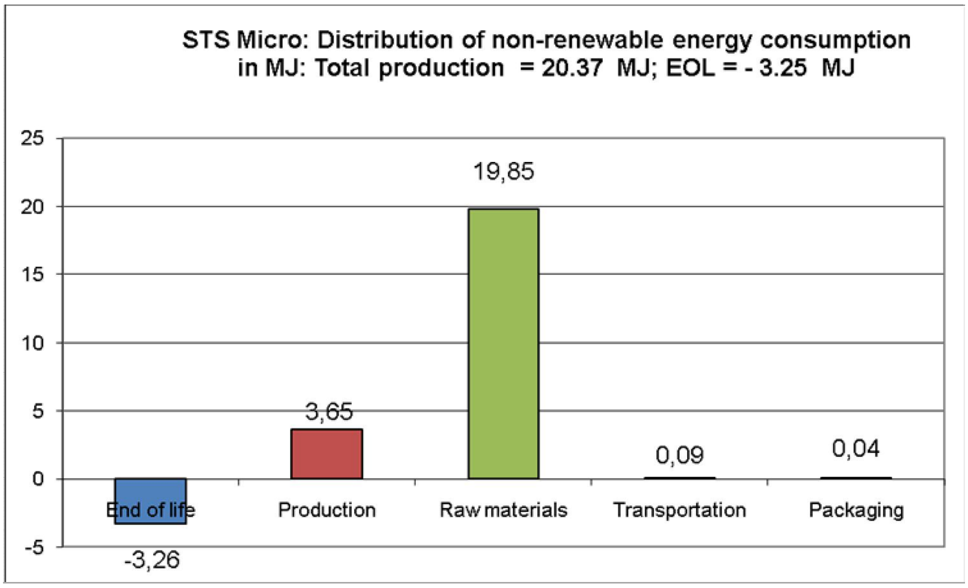
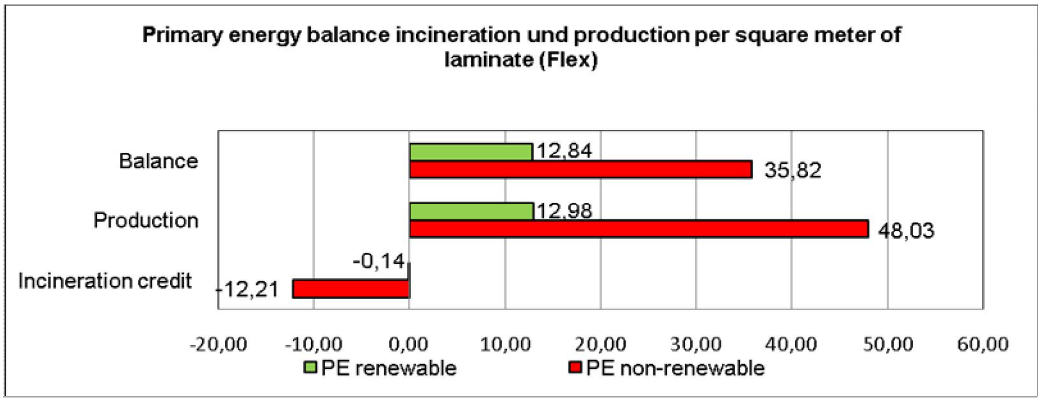
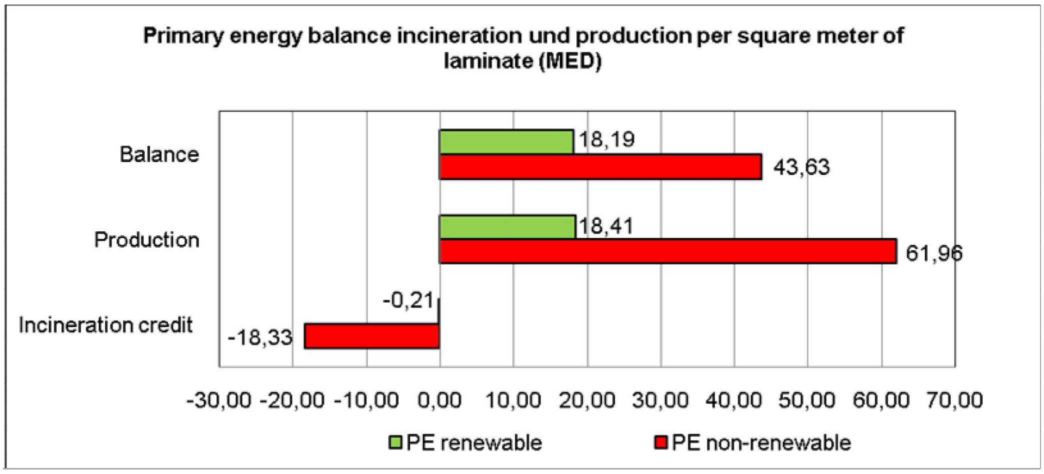


Figure 2 - Distribution of non-renewable energy consumption in the production of 1 m^2 of the laminates Flex / MED / Micro

Evaluating production and the end of life (incineration of the laminate Flex / MED / Micro in a biomass power plant) shows that the energy credit for electricity and thermal energy (credit for DE: Electricity Mix and DE: Thermal Energy from Natural Gas) amounts to 12.21 / 18.33 / 3.26 MJ of non-renewable energy carriers per m^2 of the laminates Flex / MED / Micro. This means that the consumption of non-renewable primary energy when production and the end of life are offset is reduced from 48.03 / 61.96 / 23.63 MJ/m² to a value of 35.82 / 43.63 / 20.37 MJ/ m².





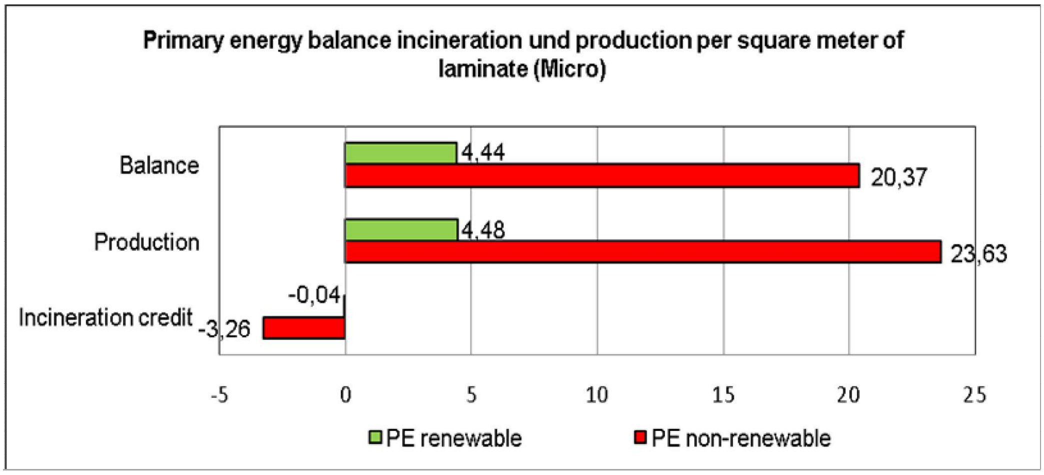


Figure 3 – Primary energy assessment, renewable and non-renewable energy carriers for the production and incineration of 1 m^2 of the laminates Flex / MED / Micro

CO_2 balance sheet

The CO_2 assessment in Figure 4 shows that production per m^2 of the laminates Flex / MED / Micro generates 3.02 / 3.91 / 1.55 kg of CO_2 emissions. This is partly offset by the fact that production per m² of the laminates Flex / MED / Micro stores a total of 1.45 / 2.06 / 0.5 kg CO_2, which is removed from the air by photosynthesis in the course of tree growth and bound in the wood required by paper production. This largely remains bound during the usage phase. The CO_2 bound in 1 m² of the laminates Flex / MED / Micro is only released at the end of the life cycle, e.g. upon the thermal recovery of the laminate. When CO_2 absorption (input bar) and CO_2 emissions (output bar) from production are offset, the net emissions in the production phase are 1.57 / 1.86 / 1.06 kg per m² of the laminates Flex / MED / Micro. During incineration at the end of life in a biomass power plant, the carbon stored in the panel is released back into the atmosphere - mainly in the form of CO_2. But at the same time, there is a substitution of fossil fuels and therefore CO_2 from the combustion of these fossil energy carriers in the amount of -0.72 / -1.06 / -0.20 kg CO_2. This energy substitution effect results in an overall balance for the life cycle of 1.93 / 2.39 / 1.16 kg CO_2.

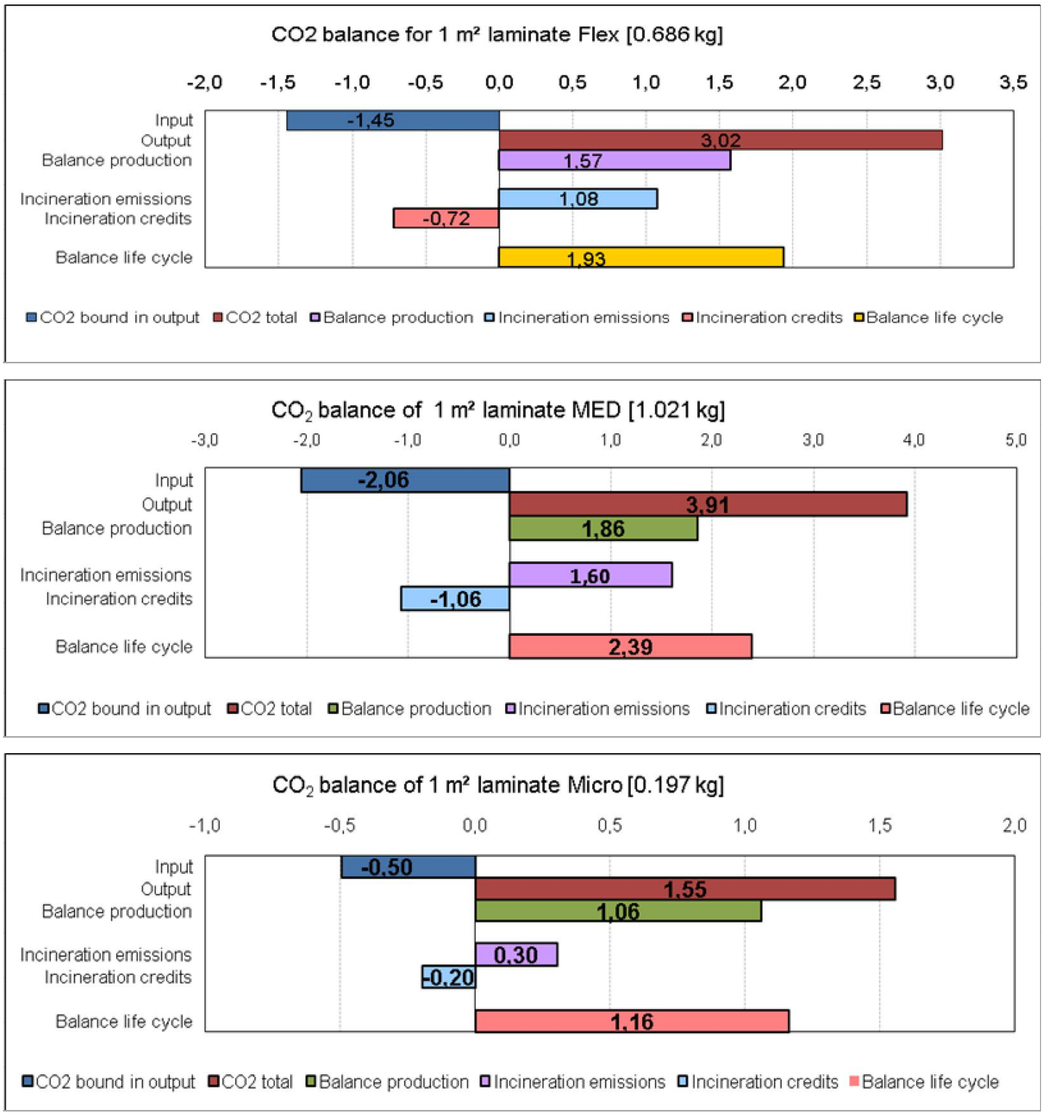


Figure 4 – CO_2 assessment for the production and end of life of 1 m^2 of the laminates Flex / MED / Micro.

Waste

Waste generated during the production and at the end of life of 1 m^2 of the laminates Flex / MED / Micro is presented separately for the three segments of rubble / debris (including ore processing residues), municipal waste (including household garbage and commercial waste) and special wastes including radioactive waste (Table 7).

Table 7 – Waste generated by the production and incineration of 1 m² of the laminates Flex / MED / Micro

Evaluated Parameter	Production [kg / m²]	EoL [kg / m²]	Total [kg / m²]
Flex			
Tipping / debris	2.96	-1.03	1.93
Municipal waste	1.83E-02	0.00E+00	1.83E-02
Special wastes	1.53E-02	-4.08E-04	1.49E-02
Thereof radioactive waste	1.42E-03	-4.08E-04	1.01E-03
MED			
Tipping / debris	3.66	-1.54	2.12
Municipal waste	2.43E-02	0.00E+00	2.43E-02
Special wastes	1.75E-02	-6.07E-04	1.69E-02
Thereof radioactive waste	1.84E-03	-6.07E-04	1.24E-03
Micro			
Tipping / debris	1.72	-0.29	1.43
Municipal waste	8.04E-03	0.00E+00	8.04E-03
Special wastes	8.99E-03	-1.13E-04	8.88E-03
Thereof radioactive waste	7.11E-04	-1.13E-04	5.99E-04

Debris accounts for the largest quantity by far, followed by municipal waste and special wastes.

In case of **debris**, rubble accounts for the largest quantity during production at over 99%, followed by the tipping of ore processing residues and wastes etc. with an overall share of less than 1%. Rubble is mainly generated when extracting mineral raw materials and coal in the production of raw materials and energy carriers. Incinerating the laminate panel at the end of the life cycle substitutes debris from energy generation in the amount of 1.03 / 1.54 / 0.29 kg/m² of laminate.

Non-specific waste and sludge from paper production are the main parameters in the **municipal waste** segment. Incineration at the end of life does not have an impact on this segment.

Special wastes are mainly the wastes from the upstream stages. “Sludge”, “hazardous waste", “liquid hazardous waste” and “hazardous waste (stored underground)” accounted for most of the special wastes. Per m² of the laminates Flex / MED / Micro that are produced, 1.42-03 / 1.84E-03 / 7.11E-04 kg of radioactive wastes are also generated. Of this amount, approximately 95% consists of ore processing residues assigned to the upstream chain of the electricity mix. Part of these radioactive wastes are substituted at the end of life.

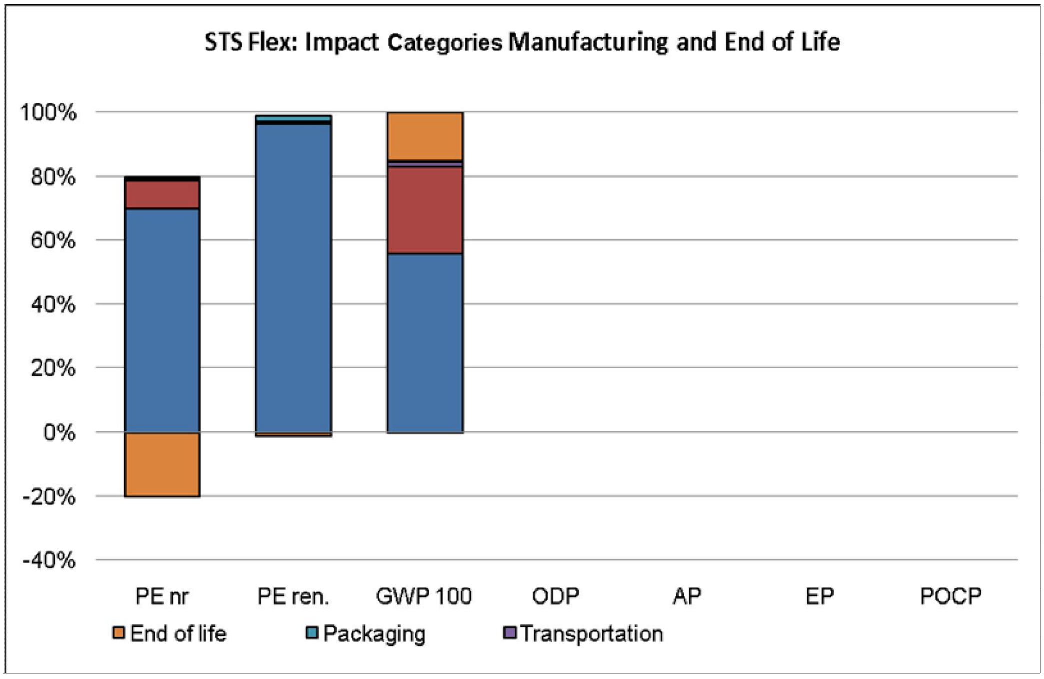
Impact assessment

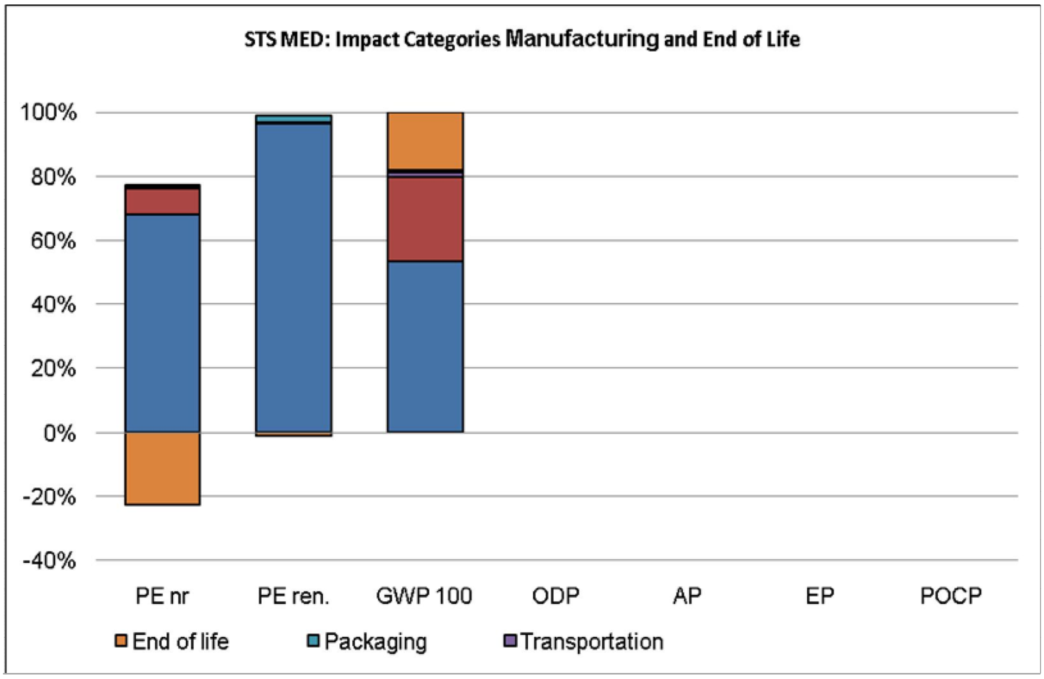
The following Table 8 shows the contributions from the production of 1 m² of the laminates Flex / MED / Micro to the impact categories of greenhouse warming potential (GWP 100), ozone depletion potential (ODP), acidification potential (AP), eutrophication potential (EP) and photochemical oxidant creation potential (summer smog potential POCP). Renewable primary energy (PE ren.) and non-renewable primary energy (PE nr) are also listed again.

Table 8 – Absolute contribution of the production and end of life per square meter of finished laminate Flex / MED / Micro to the impact categories under consideration

	PE nr	PE ren.	GWP 100	ODP	AP	EP	POCP
Unit	MJ	MJ	kg CO2-Equiv.	kg R11-Equiv.	kg SO2-Equiv.	kg PO4-Equiv.	kg Ethylene-Equiv.
Flex							
Raw materials	42,14	12,6	1,17	8.54E-08	4.38E-03	1.17E-03	7.42E-04
Production	5,39	0,1	0,57	2.17E-08	8.41E-04	1.24E-04	2.91E-04
Transportation	0,36	0,000	0,03	4.37E-11	4.48E-04	4.87E-05	2.68E-05
Packaging	0,14	0,24	0,01	4.75E-10	2.76E-05	4.18E-06	0.00E+00
Manufacturing total	**48,0**	**13,0**	**1,78**	**1.08E-07**	**5.69E-03**	**1.35E-03**	**1.06E-03**
End of life	-12,2	-0,14	0,32	-3.01E-08	1.24E-03	4.14E-05	1.39E-05
Total	**35,8**	**12,8**	**2,10**	**7.75E-08**	**6.93E-03**	**1.39E-03**	**1.08E-03**
MED							
	PE nr	**PE ren.**	**GWP 100**	**ODP**	**AP**	**EP**	**POCP**
Unit	MJ	MJ	kg CO2-Equiv.	kg R11-Equiv.	kg SO2-Equiv.	kg PO4-Equiv.	kg Ethylene-Equiv.
Raw materials	54,47	17,9	1,38	1.14E-07	5.65E-03	1.40E-03	8.91E-04
Production	6,73	0,1	0,68	2.50E-08	1.04E-03	1.56E-04	4.24E-04
Transportation	0,55	0,001	0,04	6.62E-11	7.50E-04	7.93E-05	4.43E-05
Packaging	0,21	0,35	0,02	7.07E-10	4.11E-05	6.21E-06	0.00E+00
Manufacturing total	**62,0**	**18,4**	**2,12**	**1.40E-07**	**7.49E-03**	**1.64E-03**	**1.36E-03**
End of life	-18,3	-0,21	0,47	-4.50E-08	1.60E-03	-1.06E-06	1.41E-05
Total	**43,6**	**18,2**	**2,59**	**9.51E-08**	**9.08E-03**	**1.64E-03**	**1.38E-03**
Micro							
	PE nr	**PE ren.**	**GWP 100**	**ODP**	**AP**	**EP**	**POCP**
Unit	MJ	MJ	kg CO2-Equiv.	kg R11-Equiv.	kg SO2-Equiv.	kg PO4-Equiv.	kg Ethylene-Equiv.
Raw materials	19,85	4,33	0,69	3.66E-08	2.08E-03	6.72E-04	4.16E-04
Production	3,65	0,08	0,37	1.72E-08	5.06E-04	6.93E-05	1.63E-04
Transportation	9.42E-02	1.02E-04	6.73E-03	1.11E-11	3.89E-05	6.74E-06	2.99E-06
Packaging	3.97E-02	6.75E-02	3.32E-03	1.37E-10	7.93E-06	1.20E-06	0.00E+00
Manufacturing total	**23,63**	**4.48E+00**	**1.07E+00**	**5.40E-08**	**2.64E-03**	**7.49E-04**	**5.82E-04**
End of life	-3,26	-3.88E-02	9.26E-02	-8.15E-09	6.03E-04	5.73E-05	1.26E-05
Total	**20,37**	**4.44E+00**	**1.16E+00**	**4.58E-08**	**3.24E-03**	**8.06E-04**	**5.96E-04**

In the evaluation of the system limit for production including the end of life in a biomass power plant, the significance of the type of recovery and / or disposal on the environmental impact over the entire life cycle is revealed. The resulting additional emissions and / or related substitution effects in the energy supply system are illustrated graphically in Figure 5. The end of life share that is shown is the result of offsetting the emissions from the incineration process against the emissions that are avoided for the generation of electricity and thermal energy. Therefore this is the difference between the emissions from laminate incineration and the average energy generation emissions avoided as a result (credits). This end of life substitution effect reduces the consumption of non-renewable and renewable energy carriers as well as the ozone depletion potential. All other environmental impact categories experience increases since the substituted emissions are less than the emissions from the incineration of the laminates in the assumed biomass power plant.





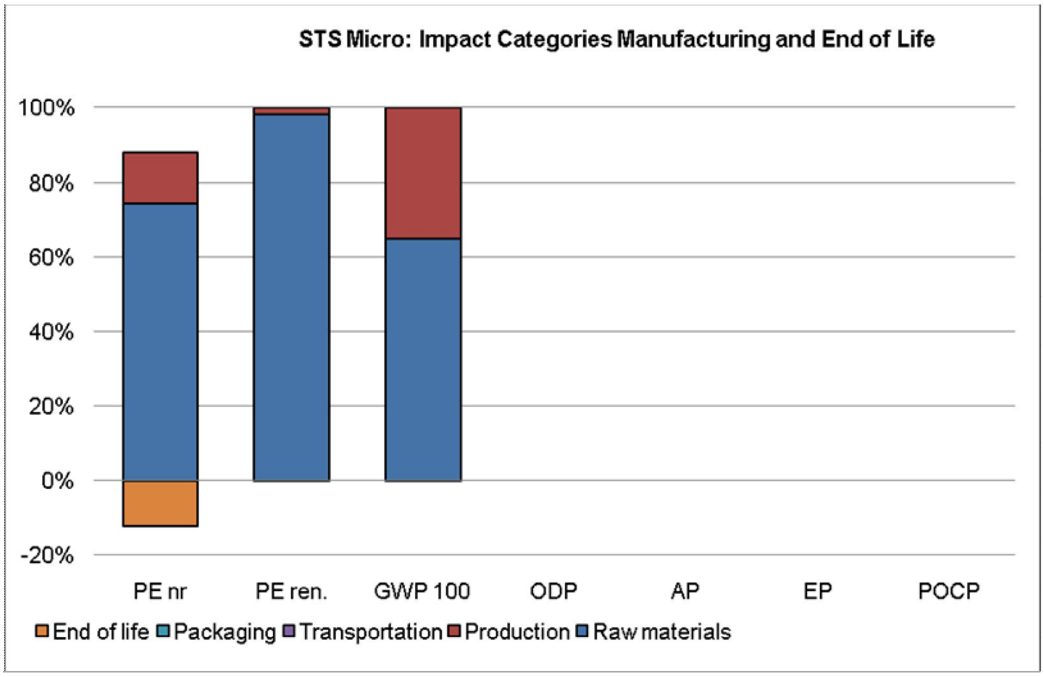


Figure 5 – Share of the processes in the impact categories – system limit plant gates and incineration of the laminate at the end of life

The **greenhouse warming potential** in production is dominated by carbon dioxide. 1.45 / 2.06 / 1.55 kg of CO_2 per m² of the laminates Flex / MED / Micro are bound in the renewable raw materials required for production. This binding of CO_2 through the use of wood in paper production is opposed by additional greenhouse warming CO_2 emissions due to providing raw materials, production, transportation and packaging. More than 93.6 – 95.1% of the emissions consist of carbon dioxide; the remainder largely consists of methane and nitrous oxide emissions. This means production releases emissions with a CO_2 equivalent of approximately 1.78 / 2.12 / 1.07 kg. The emission values at the end of life result from the incineration less the credit (substitution effects in the electricity mix and in average thermal energy) from 1 m^2 of the finished laminates Flex / MED / Micro in the amount of 0.32 / 0.47 / 0.093 kg of CO_2 equivalents. This means the greenhouse warming potential within the system under consideration (production and end of life) is 2.1 / 2.59 / 1.16 kg of CO_2 equivalents per m² of the laminates Flex / MED / Micro.

Providing raw materials (approximately 70 – 80%) and production (20 – 30%) are the main contributors to the **ozone depletion potential.** Production results in a total ozone depletion potential of 1.08E-07 / 1.40E-07 / 5.40E-08 kg of R11 equivalents per m² of the laminates Flex / MED / Micro. The substitution of electricity at the end of life results in an overall system value for the ozone depletion potential of 7.75E-08 / 9.51E-08 / 4.58E-08 kg of R11 equivalents.

Providing raw materials (around 75 – 80%), production (around 15 – 20%) and transportation (around 8 – 10%) are the main contributors to the acidification potential. 5.69E-03 / 7.48E-03 / 2.64E-03 kg of SO2 equivalents are emitted in the production phase per m² of the laminates Flex / MED / Micro. The incineration emissions less the emission credits from energy recovery at the end of life of the laminates Flex / MED / Micro amount to 1.24E-03 / 1.60E-03 / 6.03E-04 kg of SO2 equivalents. This means the acidification potential in the overall system under review is 6.93E-03 / 9.09E-03 / 3.24E-03 kg of SO2 equivalents.

Providing raw materials (85 - 90%) and production (9%) are the main contributors to the **eutrophication potential** in manufacturing. Transportation contributes 3.61 / 4.84 / 0.9%. The eutrophication potential in the production phase amounts to 1.35E-03 / 1.64E-03 / 7.49E-04 kg of phosphate equivalents. When substitution effects are taken into account, the end of life increases the eutrophication potential by another 1.39E-03 / 1.64E-03 / 8.06E-04 kg of phosphate equivalents.

Providing raw materials contributes approximately 65 – 70% to the **photochemical oxidant creation potential** (POCP, ozone formation close to the ground) while production contributes 30%. The total POCP within the system limits of the plant gates is 1.06E-03 / 1.36E-03 / 5.82E-04 kg of ethylene equivalents. With energy substitution at the end of life, the POCP increases to 1.08E-03 / 1.38E-03 / 5.96E-04 kg of ethylene equivalents.

9 Certificates

9.1 Formaldehyde

Measurement authority: Fraunhofer-Institut für Verfahrenstechnik und Verpackung (Fraunhofer Institute for Process Technology and Packaging), Freising

Test reports, date: PA/4444/05, 20th October 2005

Results: EN 13130-23 v. 04.

Formaldehyde was derivatised into a red pigment with chromic acid in the presence of sulphuric acid. A spectral photometer analysis of the solution was conducted at 575 nm.

Formaldehyde was not detected at a detection limit of 0.08mg/dm³ for surface-specific migration or 0.45mg/kg for bulk material-specific migration.

9.2 Melamine

Measurement authority: Fraunhofer-Institut für Verfahrenstechnik und Verpackung (Fraunhofer Institute for Process Technology and Packaging), Freising

Test reports, date: PA/4444/05, 20th October 2005

Results: EN 13130-27 v.03

The migration solution was analysed directly without reconditioning. HPLC with UV detection was used to carry out the analysis. External calibration was used for quantification. A standard addition analysis was conducted in order to validate the analysis results. Melamine was not detected at a detection limit of 0.11mg/dm³ for surface-specific migration or 0.68mg/kg for bulk material-specific migration.

9.3 Migration

Measurement authority: Fraunhofer-Institut für Verfahrenstechnik und Verpackung (Fraunhofer Institute for Process Technology and Packaging), Freising

Test reports, date: PA/4444/05, 20th October 2005

Results: EN 1186-15 Result 0.2mg/dm²

The total migration limit is 10mg/dm² for consumer products or 60mg/kg for food contact material (simulation) pursuant to Section 8, Paragraph 2 of the German Food Contact Material and Consumer Products Act (most recently amended on 13th July 2005) and pursuant to Article 2 of EU Directive 2002/72/EC (most recently amended by RL 2004/19/EC). The analysis tolerance is +/- 2mg/dm² or +/- 12 mg/kg. Rapid extraction captures the substances of content capable of migration. The test method is between being comparable to and being significantly stricter than the determination of overall migration in olive oil (simulation D) and may be used as an alternative to the overall migration test pursuant to EU Directive 97/48/EC.

Total migration is specified in mg / dm² of contact surface.

9.4 Eluate Analysis

Measurement authority: Fraunhofer-Institut für Verfahrenstechnik und Verpackung (Fraunhofer Institute for Process Technology and Packaging), Freising

Test reports, date: PA/4440/09 24th June 2009

Results: DIN EN 71-3

The migration samples were prepared pursuant to the DIN EN 71-3 standard. Inductive coupled plasma mass spectrometry (ICP-MS) was used to examine the migration samples pursuant to DIN EN ISO 17294-2. Calibration was carried out with rhodium and rhenium as internal standards. The elements As, Ba, Cd, Cr, Hg, Pb, Sb, and Se were detected for specific migration. All heavy metals fell significantly below the limits pursuant to EN71-3.

9.5 Free Phenol

Measurement authority: WESSLING Beratende Ingenieure GmbH, Altenberge

Project number, date: IAL-09-0392, 9th December 2009

Results: Analysis for phenols pursuant to the VDI Guideline 3485
No phenol emissions were detected after 18 hours. The tested product meets the requirements of RAL-UZ 76, 3.1.

9.6 Free Formaldehyde

Measurement authority: WESSLING Beratende Ingenieure GmbH, Altenberge

Project number, date: IAL-09-0392, 9th December 2009

Results: Emission chamber test of wood-based materials / products pursuant to DIN EN 717-1.

The formaldehyde equalisation concentration pursuant to DIN EN 717-1 was reached after 18 days. The tested product meets the requirements of RAL-UZ 76, 3.1.

9.7 Reaction to Fire

Measurement authority: Prüfinstitut Hoch (Hoch Test Institute), Fladungen

Classification report, date: EGGER laminate Flex KB-Hoch-091030, 10th November 2009

Results: DIN EN 13501-1:2007

Classification according to DIN EN 13501-1:2007, Section 11.3. EGGER laminate Flex is classified in Class E. There is no dripping / dropping while burning. The tests were conducted according to DIN EN 11925-2:2007 – test report: PB-Hoch-091029.

Classification report, date: EGGER laminate MED KB-Hoch-091224, 21st December 2009

Results: DIN EN 13501-1:2007

Classification according to DIN EN 13501-1:2007, Section 11.3. EGGER laminate MED is classified in Class E. There is no dripping / dropping while burning. The tests were conducted according to DIN EN 11925-2:2007 – test report: PB-Hoch-091223.

Test reports, date: EGGER laminate Micro H-091230, 28th December 2009

Results: DIN EN 13501-1:2007

Classification according to DIN EN 13501-1:2007, Section 11.3. EGGER laminate Micro is classified in Class F. There is no dripping / dropping while burning. The tests were conducted according to DIN EN 11925-2:2007 – test report: H-091230

10 PCR Document and Verification

This declaration is based on the wood-based materials PCR document Laminates, base year 2009.

Review of the PCR document by the expert committee. Chairman of the expert committee: Prof. Dr.-Ing. Hans-Wolf Reinhardt (Stuttgart University, IWB)
Independent audit of the declaration pursuant to ISO 14025: ☐ Internal ☒ External
Validation of the declaration: Dr. Frank Werner

11 References

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Standards and laws

DIN EN ISO 9001 DIN EN ISO 9001:2008-12, Quality Management Systems – Requirements (ISO 9001:2008); trilingual version EN ISO 9001:2008

ISO 14025 ISO 14025:2007-10, Environmental Labels and Declarations – Type III Environmental Declarations – Principles and Procedures (ISO 14025:2006); German and English version.

DIN EN ISO 14040 DIN EN ISO 14040:2006-10, Environmental Management – Life Cycle Assessment – Principles and Framework (ISO 14040:2006); German and English Version EN ISO 14040:2006

DIN EN ISO 14044 DIN EN ISO 14044:2006-10, Environmental Management – Life Cycle Assessment – Requirements and guidelines (ISO 14044:2006); German and English Version EN ISO 14044:2006

DIN EN 438-1 DIN EN 438-1:2005, High-Pressure Decorative Laminates (HPL) – Sheets based on thermosetting resins (usually called laminates) - Part 1: Introduction and general information

DIN EN 438-2 DIN EN 438-2:2005, High-Pressure Decorative Laminates (HPL) – Sheets based on thermosetting resins (usually called laminates) - Part 2: Determination of properties

DIN EN 438-3 DIN EN 438-3:2005, 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

DIN EN 438-7 DIN 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

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DIN CEN/TS 13130-27 DIN CEN/TS 13130-27:2005-05, Materials and articles in contact with foodstuffs – Plastics substances subject to limitation – Part 27: Determination of 2,4,6-triamino-1,3,5-triazine in food simulants; German version CEN/TS 13130-27:2005

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