

APPENDIX TO THE ENVIRONMENTAL PRODUCT DECLARATION

in accordance with /ISO 14025/ and /EN 15804/

Owner of the Declaration	M. Kaindl KG
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Particle board, raw and coated

M. Kaindl KG

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1. Product description of coated particle board

1.1. Base materials / Ancillaries (re. 2.5 in the EPD)

Raw particle boards with a thickness of 8–38 mm and an average density of 654 kg/m³ comprise the following base materials (details provided as mass percentages per 1m³ manufactured):

- Wood chips, largely spruce, approx. 83-87%. Up to 35% of wood mass used is covered by the use of recycled wood.
- Water, approx. 5-13%
- UF glue / MUF glue (urea-formaldehyde resin, melamine-urea formaldehyde resin) 8-10%
- Water-repellent finish: Paraffin emulsion < 1%

Additional coatings:

Melamine coating with decorative paper with grammages of 60-140 g/m², wood veneer or CPL laminates with a thickness of 0.2–1-2 mm

1.2. Manufacturing (re. 2.6 in the EPD)

Manufacturing directly-coated decorative particle boards:

- Manufacturing impregnated paper: Clamping the untreated paper rolls; impregnating the paper with a melamine urea resin; drying the impregnated film; formatting the paper
- Positioning impregnated films under or over a raw particle board
- Feeding a short cycle press with the bundle of impregnated base board
- Pressing under pressure and temperature
- Visual inspection of bonded boards
- Stacking

Manufacturing composite boards:

- Bonding several layers of impregnated paper (see 2.6.1 of the EPD) to a laminate in a continuous process under pressure and temperature
- Rolling up the laminate
- Glueing the base board on both sides
- Feeding a continuous press with base board and laminate on top and bottom side
- Pressing the bundle under pressure and temperature
- Formatting the ensuing composite board
- Stacking

Manufacturing wood-veneer boards:

- Sorting real wood veneer strips
- Glueing and joining the sorted strips as wood veneer sheets
- Glueing the base board on both sides
- Positioning wood veneer sheets on the top and bottom side of the base board
- Bonding the bundle in a multi-level press
- Clean-cutting the top and bottom sides
- Stacking

1.3. Declared unit (re. 3.1 in the EPD)

Additionally, coated particleboards with coatings made from veneer (13.3 kg/m²), melamine (11.8 kg/m²) und CPL laminate (11.8 kg/m²) per 1 m² are indicated.

The average board thickness was weighted and calculated on the basis of the individual board strengths produced.

Table 1-1 Characteristics of particle board and coatings

1 m ³		
1 m ²	18 mm	18.6
1 m ²	19 mm	18.6
1 m ²	18 mm	18.6
1 m ²	18 mm	18.6

	Declared unit	Average thickness of raw particle board	Weight per product (kg)	Lower calorific value (MJ/kg)
Particle board, raw	1 m ³	18 mm	654	18.6
Particle board, raw	1 m ²	18 mm	11.5	18.6
Coated (veneer)	1 m ²	19 mm	13.3	18.6
Coated (melamine)	1 m ²	18 mm	11.8	18.6
Coated (CPL laminate)	1 m ²	18 mm	11.8	18.6

2. Coated particle board results

2.1. Veneer-coated particle board



LCA RESULTS – ENVIRONMENTAL IMPACT: 1 m² veneer particle board (13.3 kg)

		Kaindl veneer particle board			
		Production stage	Installation	Waste processing	Net credits and loads
Parameter	Unit	A1-A3	A5	C3	D
Global Warming Potential (GWP)	[kg CO ₂ equiv.]	-1.62E+01	8.03E-03	1.94E+01	-1.49E+01
Ozone Depletion Potential (ODP)	[kg CFC11 equiv.]	2.19E-07	2.68E-15	0.00E+00	-3.21E-09
Acidification Potential of soil and water (AP)	[kg SO ₂ equiv.]	1.27E-02	4.90E-07	0.00E+00	5.44E-03
Eutrophication Potential (EP)	[kg PO ₄₃ equiv.]	3.48E-03	1.10E-07	0.00E+00	-5.09E-05
Formation Potential of Tropospheric Ozone Photochemical Oxidants (POCP)	[kg ethene equiv.]	4.72E-03	5.54E-08	0.00E+00	9.88E-04
Abiotic Depletion Potential non-Fossil Resources (ADPE)	[kg Sb equiv.]	4.92E-06	6.75E-11	0.00E+00	-1.58E-06
Abiotic Depletion Potential Fossil Resources (ADPF)	[MJ]	6.73E+01	1.16E-03	0.00E+00	-9.43E+01

LCA RESULTS – RESOURCE USE: 1 m² veneer particle board (13.3 kg)

		Kaindl veneer particle board			
		Production stage	Installation	Waste processing	Net credits and loads
Parameter	Unit	A1-A3	A5	C3	D
Renewable primary energy as energy carrier (PERE)	[MJ]	5.11E+01	2.24E-04	0.00E+00	-2.26E+01
Renewable primary energy as material utilisation (PERM)	[MJ]	9.26E+01	0.00E+00	-9.26E+01	0.00E+00
Total use of renewable primary energy sources (PERT)	[MJ]	1.44E+02	2.24E-04	-9.26E+01	-2.26E+01
Non-renewable primary energy as energy carrier (PERE)	[MJ]	4.81E+01	1.17E+00	0.00E+00	-1.24E+02
Non-renewable primary energy as material utilisation (PENRM)	[MJ]	2.36E+01	-1.17E+00	-2.24E+01	0.00E+00
Total use of non-renewable primary energy sources (PENRT)	[MJ]	7.17E+01	1.30E-03	-2.24E+01	-1.24E+02
Use of secondary materials (SM)	[kg]	5.45E+00	0.00E+00	0.00E+00	0.00E+00
Renewable secondary fuels (RSF)	[MJ]	2.25E+01	0.00E+00	0.00E+00	9.27E+01
Non-renewable secondary fuels (NRSF)	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.43E+01
Net use of fresh water (FW)	[m ³]	2.57E-02	1.67E-05	0.00E+00	-2.50E-02

LCA RESULTS – OUTPUT FLOWS AND WASTE CATEGORIES: 1 m² veneer particle board (13.3 kg)

		Kaindl veneer particle board			
		Production stage	Installation	Waste processing	Net credits and loads
Parameter	Unit	A1-A3	A5	C3	D

Hazardous waste for disposal (HWD)	[kg]	4.00E-07	1.37E-12	0.00E+00	-4.99E-08
Non-hazardous waste for disposal (NHWD)	[kg]	8.32E+00	2.74E-04	0.00E+00	-1.92E+01
Radioactive waste for disposal (RWD)	[kg]	1.73E-03	5.39E-08	0.00E+00	-1.19E-02
Components for re-use (CRU)	[kg]	0.00E+00	0.00E+00	0.00E+00	IND
Materials for recycling (MFR)	[kg]	0.00E+00	0.00E+00	0.00E+00	IND
Materials for energy recovery (MER)	[kg]	0.00E+00	0.00E+00	1.33E+01	IND
Exported energy per type (electricity)	[MJ]	0.00E+00	5.26E-01	0.00E+00	IND
Exported energy per type (thermal energy)	[MJ]	0.00E+00	6.43E-01	0.00E+00	IND



2.2. Melamine-coated particle board

Table 2-2: Results for melamine-coated particle boards

LCA RESULTS – ENVIRONMENTAL IMPACT: 1 m ² particle board with melamine coating (11.8 kg)					
		Kaindl particle board with melamine coating			
		Production stage	Installation	Waste processing	Net credits and loads
Parameter	Unit	A1-A3	A5	C3	D
Global Warming Potential (GWP)	[kg CO ₂ equiv.]	-1.26E+01	6.76E-03	1.79E+01	-1.40E+01
Ozone Depletion Potential (ODP)	[kg CFC11 equiv.]	2.02E-07	2.26E-15	0.00E+00	-2.73E-09
Acidification Potential of soil and water (AP)	[kg SO ₂ equiv.]	1.09E-02	4.12E-07	0.00E+00	4.70E-03
Eutrophication Potential (EP)	[kg PO ₄ 3 equiv.]	3.36E-03	9.30E-08	0.00E+00	-3.29E-05
Formation Potential of Tropospheric Ozone Photochemical Oxidants (POCP)	[kg ethene equiv.]	4.01E-03	4.66E-08	0.00E+00	8.50E-04
Abiotic Depletion Potential non-Fossil Resources (ADPE)	[kg Sb equiv.]	4.38E-06	5.68E-11	0.00E+00	-1.33E-06
Abiotic Depletion Potential Fossil Resources (ADPF)	[MJ]	7.71E+01	9.79E-04	0.00E+00	-7.96E+01
LCA RESULTS – RESOURCE USE: 1 m ² particle board with melamine coating (11.8 kg)					
		Kaindl particle board with melamine coating			
		Production stage	Installation	Waste processing	Net credits and loads
Parameter	Unit	A1-A3	A5	C3	D
Renewable primary energy as energy carrier (PERE)	[MJ]	2.35E+01	1.89E-04	0.00E+00	-1.89E+01
Renewable primary energy as material utilisation (PERM)	[MJ]	7.75E+01	0.00E+00	-7.75E+01	0.00E+00
Total use of renewable primary energy sources (PERT)	[MJ]	1.01E+02	1.89E-04	-7.75E+01	-1.89E+01
Non-renewable primary energy as energy carrier (PERE)	[MJ]	5.92E+01	3.67E-01	0.00E+00	-1.05E+02
Non-renewable primary energy as material utilisation (PENRM)	[MJ]	2.09E+01	-3.66E-01	-2.05E+01	0.00E+00
Total use of non-renewable primary energy sources (PENRT)	[MJ]	8.01E+01	1.09E-03	-2.05E+01	-1.05E+02
Use of secondary materials (SM)	[kg]	5.04E+00	0.00E+00	0.00E+00	0.00E+00
Renewable secondary fuels (RSF)	[MJ]	2.08E+01	0.00E+00	0.00E+00	7.75E+01
Non-renewable secondary fuels (NRSF)	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.27E+01
Net use of fresh water (FW)	[m ³]	2.05E-02	1.40E-05	0.00E+00	-2.10E-02
LCA RESULTS – OUTPUT FLOWS AND WASTE CATEGORIES: 1 m ² particle board with melamine coating (11.8 kg)					
		Kaindl particle board with melamine coating			
		Production	Installation	Waste processing	Net credits



Parameter	Unit	stage			and loads
		A1-A3	A5	C3	D
Hazardous waste for disposal (HWD)	[kg]	8.83E-07	1.15E-12	0.00E+00	-4.18E-08
Non-hazardous waste for disposal (NHWD)	[kg]	5.65E+00	2.31E-04	0.00E+00	-1.63E+01
Radioactive waste for disposal (RWD)	[kg]	1.17E-03	4.54E-08	0.00E+00	-1.01E-02
Components for re-use (CRU)	[kg]	0.00E+00	0.00E+00	0.00E+00	IND
Materials for recycling (MFR)	[kg]	0.00E+00	0.00E+00	0.00E+00	IND
Materials for energy recovery (MER)	[kg]	0.00E+00	0.00E+00	1.18E+01	IND
Exported energy per type (electricity)	[MJ]	0.00E+00	1.62E-01	0.00E+00	IND
Exported energy per type (thermal energy)	[MJ]	0.00E+00	2.04E-01	0.00E+00	IND

2.3. CPL-coated particle board



Table 2-3: Results for CPL-coated particle boards

LCA RESULTS – ENVIRONMENTAL IMPACT: 1 m ² particle board with CPL coating (11.8kg)					
Kaindl particle board with CPL coating					
		Production stage	Installation	Waste processing	Net credits and loads
Parameter	Unit	A1-A3	A5	C3	D
Global Warming Potential (GWP)	[kg CO2 equiv.]	-1.22E+01	4.41E-03	1.80E+01	-1.41E+01
Ozone Depletion Potential (ODP)	[kg CFC11 equiv.]	2.04E-07	1.47E-15	0.00E+00	-2.71E-09
Acidification Potential of soil and water (AP)	[kg SO2 equiv.]	1.22E-02	2.69E-07	0.00E+00	4.71E-03
Eutrophication Potential (EP)	[kg PO43 equiv.]	3.62E-03	6.06E-08	0.00E+00	-2.72E-05
Formation Potential of Tropospheric Ozone Photochemical Oxidants (POCP)	[kg ethene equiv.]	4.11E-03	3.04E-08	0.00E+00	8.49E-04
Abiotic Depletion Potential non-Fossil Resources (ADPE)	[kg Sb equiv.]	4.79E-06	3.70E-11	0.00E+00	-1.31E-06
Abiotic Depletion Potential Fossil Resources (ADPF)	[MJ]	7.89E+01	6.38E-04	0.00E+00	-7.88E+01
LCA RESULTS – RESOURCE USE: 1 m ² particle board with CPL coating (11.8kg)					
Kaindl particle board with CPL coating					
		Production stage	Installation	Waste processing	Net credits and loads
Parameter	Unit	A1-A3	A5	C3	D
Renewable primary energy as energy carrier (PERE)	[MJ]	2.90E+01	1.23E-04	0.00E+00	-1.86E+01
Renewable primary energy as material utilisation (PERM)	[MJ]	7.60E+01	0.00E+00	-7.60E+01	0.00E+00
Total use of renewable primary energy sources (PERT)	[MJ]	1.05E+02	1.23E-04	-7.60E+01	-1.86E+01
Non-renewable primary energy as energy carrier (PERE)	[MJ]	6.12E+01	1.95E-02	0.00E+00	-1.04E+02
Non-renewable primary energy as material utilisation (PENRM)	[MJ]	2.08E+01	-1.88E-02	-2.08E+01	0.00E+00
Total use of non-renewable primary energy sources (PENRT)	[MJ]	8.20E+01	7.13E-04	-2.08E+01	-1.04E+02
Use of secondary materials (SM)	[kg]	5.06E+00	0.00E+00	0.00E+00	0.00E+00
Renewable secondary fuels (RSF)	[MJ]	7.60E+01	0.00E+00	0.00E+00	6.78E+00
Non-renewable secondary fuels (NRSF)	[MJ]	0.00E+00	0.00E+00	0.00E+00	1.27E+01
Net use of fresh water (FW)	[m ³]	2.22E-02	9.16E-06	0.00E+00	-2.08E-02
LCA RESULTS – OUTPUT FLOWS AND WASTE CATEGORIES: 1 m ² particle board with CPL coating (11.8kg)					
Kaindl particle board with CPL coating					

		Production stage	Installation	Waste processing	Net credits and loads
Parameter	Unit	A1-A3	A5	C3	D
Hazardous waste for disposal (HWD)	[kg]	1.38E-06	7.53E-13	0.00E+00	-4.12E-08
Non-hazardous waste for disposal (NHWD)	[kg]	5.98E+00	1.50E-04	0.00E+00	-1.61E+01
Radioactive waste for disposal (RWD)	[kg]	1.23E-03	2.96E-08	0.00E+00	-1.00E-02
Components for re-use (CRU)	[kg]	0.00E+00	0.00E+00	0.00E+00	IND
Materials for recycling (MFR)	[kg]	0.00E+00	0.00E+00	0.00E+00	IND
Materials for energy recovery (MER)	[kg]	0.00E+00	0.00E+00	1.18E+01	IND
Exported energy per type (electricity)	[MJ]	0.00E+00	5.44E-03	0.00E+00	IND
Exported energy per type (thermal energy)	[MJ]	0.00E+00	1.34E-02	0.00E+00	IND