



**General information**

**Product:**

Wall&Water, watertight wall panel

**Program operator:**

The Norwegian EPD Foundation  
P.O Box 5250 Majorstuen, 0303 Oslo, Norway  
Phone: +47 23 08 82 92  
e-mail: post@epd-norge.no

**Declaration number:**

POUØEFGJGH FI EP

**ECO Platform reference number:**

E

**This declaration is based on Product Category Rules:**

CEN Standard EN 15804 serves as core PCR.  
NPCR 010 rev1 (12/2013) Building boards.

**Statement of liability:**

The owner of the declaration shall be liable for the underlying information and evidence. EPD Norway shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

**Declared unit:**

1 m<sup>2</sup> of produced Wall&Water laminate panel

**Declared unit with option:**

1 m<sup>2</sup> Wall&Water laminate panel with an expected service life of 20 years

**Functional unit:**

-

**Verification:**

The CEN Norm EN 15804 serves as the core PCR. Independent verification of the declaration and data, according to ISO14025:2010

internal  external

Third party verifier:

*Marte Reenaas*

Marte Reenaas

(Independent verifier approved by EPD Norway)

**Owner of the declaration:**

Alloc AS  
Contact person: John Vonli  
Phone: +47 38 34 22 00  
e-mail: Alloc.Reception@berryalloc.com

**Manufacturer:**

Alloc AS  
Fiboveien 26, 4580 Lyngdal, Norway  
Phone: +47 38 34 22 00  
e-mail: Alloc.Reception@berryalloc.com

**Place of production:**

Lyngdal, Norway

**Management system:**

ISO 14001 and ISO 9001

**Organisation no:**

937655894

**Issue date:**

~~06.10.2017~~

**Valid to:**

~~06.10.2020~~

**Year of study:**

2016-2017

**Comparability:**

EPD of construction products may not be comparable if they do not comply with EN 15804 and are seen in a building context.

**The EPD has been worked out by:**

Christofer Skaar, PhD

*Christofer Skaar*



Approved

*Håkon Hauan*

Håkon Hauan

Managing Director of EPD-Norway

## Product

### Product description:

BerryAlloc Wall&Water is a watertight wall panel system based on plywood panels coated with high-pressure laminate. The product can be used on walls in sanitary rooms as a waterproof lining or in other rooms, e.g. cloakrooms, washrooms, etc.

See SINTEF Technical Approval No. 2410 for further information.

### Product specification:

Panel thickness: 10 mm. Standard dimensions are 2400 mm x 600 mm. Product weight excluding packaging is 8.18 kg/m<sup>2</sup>.

Materials	kg	%
Plywood	6,39	78,10
High-pressure laminate	1,46	17,82
Glue	0,33	4,08
<b>Total, product</b>	<b>8,18</b>	<b>100,00</b>
Packaging	0,22	2,71
<b>Total, inc. packaging</b>	<b>8,40</b>	

### Technical data:

The panel consists of 7 sheets of wood, glued with waterproof adhesive according to NS-EN 636-3. The front of the panels is covered with 1.10 mm high-pressure laminate, and the backside is covered with a 0.20 mm thick transverse balancing layer.

### Market:

Norway

### Reference service life, product:

20 years

### Reference service life, building:

The reference service life of a building is 60 years.

## LCA: Calculation rules

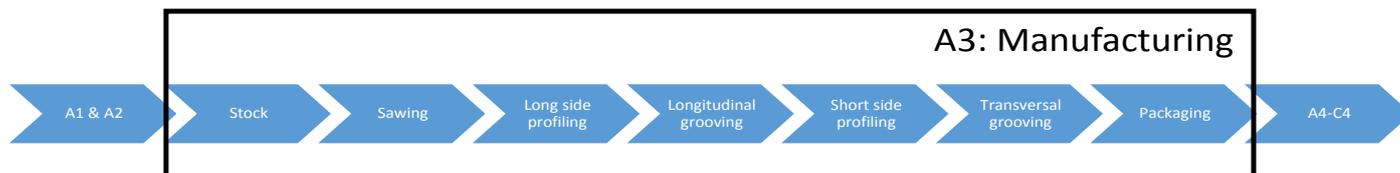
### Declared unit:

1 m<sup>2</sup> of produced Wall&Water laminate panel.

### System boundary:

This is cradle-to-gate with options, with modules A1-A5 and C1-C4 declared. This covers the product stage (A1-A3, as shown in flowsheet below), assembly stage (A4-A5), and end of life stage (C1-C4).

Figure 1: Flowsheet of the production process



### Data quality:

Data for the production process (A3) is based on average data from 2013. The background data are based on ecoinvent 3.1 (system model: cut-off by classification), released in 2014. The system has been modelled in SimaPro version 8.0.4.26.

### Cut-off criteria:

All major raw materials and all the essential energy is included. The production process for raw materials and energy flows that are included with very small amounts (<1%) can be excluded. This cut-off rule does not apply for hazardous materials and substances.

### Allocation:

The allocation is made in accordance with the provisions of EN 15804. Incoming energy and water and waste production in-house is allocated equally among all products through allocation based on production volume (m<sup>2</sup>).

## LCA: Scenarios and additional technical information

The following information describe the scenarios in the different modules of the EPD.

### Transport from production place to user (A4)

Type	Capacity utilisation (incl. return)	Type of vehicle	Distance km	Fuel/Energy consumption	Value (l/t)
Truck	53 %	Truck, >32 ton	400	0.02 l/tkm	8
Truck	26 %	Truck, 3.5-7 ton	20	0.045 l/tkm	0,9

The transportation is 400 km by truck to central warehouse in Oslo and 20 km by truck to building site.

### Assembly (A5)

	Unit	Value
Auxiliary	kg	0,377
Water consumption	m <sup>3</sup>	
Electricity consumption	kWh	0,001
Other energy carriers	MJ	0
Material loss	kg	0,818
Output materials from waste treatment	kg	
Dust in the air	kg	

For the assembly at the building site this scenario includes a 10 % loss in the installation stage. Auxiliary inputs are electricity for power tools, steel screws (0.032 kg), an aluminium profile (1 m profile per m2 Wall&Water = 0.28 kg) and a sealant (0.065 kg). Wall&Water can be installed on various surfaces (e.g. tile, concrete and timber framework) and in various rooms (including wet areas).

### End of Life (C1, C3, C4)

	Unit	Value
Hazardous waste disposed	kg	
Collected as mixed construction waste	kg	
Reuse	kg	
Recycling	kg	
Energy recovery	kg	8,25
To landfill	kg	

Wall&Water can be landfilled, energy recycled or material recycled. In this scenario 100 % of the product and 100 % of the sealant goes to incineration with energy recovery. Ancillaries that are not possible to separate from the product (e.g. sealant) are included in C1-C4.

### Transport to waste processing (C2)

Type	Capacity utilisation (incl. return)	Type of vehicle	Distance km	Fuel/Energy consumption	Value (l/t)
Truck	26 %	Truck, 16-32 tons	85	0.045 l/tkm	2,25

The waste is transported 85 km by truck to waste processing.

## LCA: Results

The results include uptake of 12.04 kg CO<sub>2</sub>-eq. of biogenic carbon in A1, which is subsequently emitted in C3.

### System boundaries (X=included, MND= module not declared, MNR=module not relevant)

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries
Raw materials	Transport	Manufacturing	Transport	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	X	MND	MND	MND	MND	MND	MND	MND	X	X	X	X	MND

### Environmental impact

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4
GWP	kg CO <sub>2</sub> -eqv	2,73E-01	3,12E-01	2,35E+00	2,53E-05	1,18E-01	1,36E+01	0
ODP	kg CFC11-eqv	1,54E-06	5,86E-08	1,95E-07	2,19E-12	2,15E-08	2,83E-08	0
POCP	kg C <sub>2</sub> H <sub>4</sub> -eqv	7,43E-03	5,43E-05	1,02E-03	6,74E-09	2,04E-05	3,24E-04	0
AP	kg SO <sub>2</sub> -eqv	9,10E-02	1,09E-03	1,44E-02	1,41E-07	4,07E-04	3,04E-03	0
EP	kg PO <sub>4</sub> <sup>3-</sup> -eqv	1,32E-02	1,61E-04	1,75E-03	3,16E-08	6,24E-05	1,86E-03	0
ADPM	kg Sb-eqv	5,88E-05	7,20E-07	4,98E-05	6,25E-10	3,81E-07	4,43E-07	0
ADPE	MJ	2,09E+02	4,84E+00	2,79E+01	1,95E-04	1,77E+00	2,80E+00	0

GWP Global warming potential; ODP Depletion potential of the stratospheric ozone layer; POCP Formation potential of tropospheric photochemical oxidants; AP Acidification potential of land and water; EP Eutrophication potential; ADPM Abiotic depletion potential for non fossil resources; ADPE Abiotic depletion potential for fossil resources

### Resource use

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4
RPEE	MJ	4,01E+02	7,15E-02	4,10E+01	4,08E-03	2,21E-02	1,46E-01	0
RPEM	MJ	1,12E+02	-	1,12E+01	-	-	-	-
TPE	MJ	5,13E+02	7,15E-02	5,23E+01	4,08E-03	2,21E-02	1,46E-01	0
NRPE	MJ	1,86E+02	4,93E+00	2,59E+01	3,29E-04	1,80E+00	3,26E+00	0
NRPM	MJ	4,34E+01	-	4,34E+00	-	-	-	-
TRPE	MJ	2,29E+02	4,93E+00	3,02E+01	3,29E-04	1,80E+00	3,26E+00	0
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0
RSF	MJ	-	-	-	-	-	-	-
NRSF	MJ	-	-	-	-	-	-	-
W	m <sup>3</sup>	6,98E+01	4,03E-01	1,91E+01	2,69E-03	1,29E-01	1,45E+00	0

"-" means indicator not assessed (INA)

RPEE Renewable primary energy resources used as energy carrier; RPEM Renewable primary energy resources used as raw materials; TPE Total use of renewable primary energy resources; NRPE Non renewable primary energy resources used as energy carrier; NRPM Non renewable primary energy resources used as materials; TRPE Total use of non renewable primary energy resources; SM Use of secondary materials; RSF Use of renewable secondary fuels; NRSF Use of non renewable secondary fuels; W Use of net fresh water

### End of life - Waste

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4
HW	kg	2,25E-04	2,81E-06	3,24E-04	5,35E-10	1,06E-06	4,64E-06	0
NHW	kg	3,41E+00	4,31E-01	8,92E-01	2,37E-05	8,33E-02	2,08E+00	0
RW	kg	8,48E-04	3,33E-05	1,03E-04	2,59E-09	1,22E-05	1,80E-05	0

HW Hazardous waste disposed; NHW Non hazardous waste disposed; RW Radioactive waste disposed

### End of life - Output flow

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4
CR	kg	0	0	0	0	0	0	0
MR	kg	0	0	0,15	0	0	0	0
MER	kg	0	0	0	0	0	0	0
EEE	MJ	0	0	1,17	0	0	10,73	0
ETE	MJ	0	0	2,47	0	0	22,61	0

CR Components for reuse; MR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy

Reading example:  $9,0 \text{ E-03} = 9,0 \cdot 10^{-3} = 0,009$

## Additional Norwegian requirements

### Greenhouse gas emission from the use of electricity in the manufacturing phase

National Norwegian production mix from import, low voltage (production of transmission lines, in addition to direct emissions and losses in grid) of applied electricity for the manufacturing process(A3).

Data source	Amount	Unit
ecoinvent 3.1 (system model: allocation, recycled content)	25,3 g = 0,0253 kg	CO <sub>2</sub> -eqv/kWh

### Dangerous substances

- The product contains no substances given by the REACH Candidate list or the Norwegian priority list
- The product contains substances given by the REACH Candidate list or the Norwegian priority list that are less than 0,1 % by weight.
- The product contain dangerous substances, more then 0,1% by weight, given by the REACH Candidate List or the Norwegian Priority list, see table.
- The product contains no substances given by the REACH Candidate list or the Norwegian priority list. The product is classified as hazardous waste (Avfallsforskiten, Annex III), see table.

### Indoor environment

The product has not been tested for emissions to indoor air. According to SINTEF Technical Approval No. 2410 the product is regarded as not emitting any particles, gases or radiation that have a perceptible impact on the indoor climate, or to have any significant health impact.

### Carbon footprint

Carbon footprint has not been worked out for the product. The table below shows the contribution of fossil and biogenic emissions to the carbon footprint for each module.

### Global warming potential (GWP)

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4
GWP	kg CO <sub>2</sub> -eqv	0,27	0,31	2,35	0,00	0,12	13,64	0,00
- fossil	kg CO <sub>2</sub> -eqv	12,31	0,31	2,35	0,00	0,12	1,61	0,00
- biogenic	kg CO <sub>2</sub> -eqv	-12,04	0,00	0,00	0,00	0,00	12,04	0,00

**Bibliography**

ISO 14025:2010 *Environmental labels and declarations - Type III environmental declarations - Principles and procedures*

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

EN 15804:2012+A1:2013 *Sustainability of construction works - Environmental product declaration - Core rules for the product category of construction products*

EN 16449:2014 *Wood and wood-based products - Calculation of the biogenic carbon content of wood and conversion to carbon dioxide*

ISO 21930:2007 *Sustainability in building construction - Environmental declaration of building products*

Skaar, Christofer *LCI/LCA report Wall&Water, SINTEF Building and Infrastructure, Report no. 102014688*

The Norwegian EPD Foundation *NPCR010 rev1 Building Boards (12/2013)*

 <p><b>epd-norge.no</b> The Norwegian EPD Foundation</p>	<p><b>Programme operator and publisher</b> The Norwegian EPD Foundation Post Box 5250 Majorstuen, 0303 Oslo Norway</p>	<p>Phone: +47 23 08 82 92 e-mail: <a href="mailto:post@epd-norge.no">post@epd-norge.no</a> web: <a href="http://www.epd-norge.no">www.epd-norge.no</a></p>
	<p><b>Owner of the declaration</b> Alloc AS Fiboveien 26 4580 Lyngdal, Norway</p>	<p>Phone: +47 38 34 22 00 Fax: - e-mail: <a href="mailto:Alloc.Reception@berryalloc.com">Alloc.Reception@berryalloc.com</a> web: <a href="http://www.berryalloc.com">http://www.berryalloc.com</a></p>
	<p><b>Author of the Life Cycle Assessment</b> SINTEF Building and Infrastructure Høgskoleringen 7B 7465 Trondheim, Norway</p>	<p>Phone: +47 73 59 30 00 Fax: - e-mail: <a href="mailto:byggforsk@sintef.no">byggforsk@sintef.no</a> web: <a href="http://www.sintef.no">http://www.sintef.no</a></p>