

## Annex

1. StoVentec Carrier Board A (12mm)
2. StoPanel Plus (12mm)
3. StoPanel Plus (20mm)
4. StoVentec Carrier Board (12mm)
5. Sto-Render Carrier Board (20mm)
6. StoPrefa Render Carrier Board (12mm)
7. StoPrefa Shutter Board (20mm)
8. Verolith Carrier Board (15mm)

to the

### ENVIRONMENTAL PRODUCT DECLARATION

as per *ISO 14025* and *EN 15804+A2*

Owner of the Declaration	Sto SE & Co. KGaA
Declaration number	EPD-STO-20230193-IBA1-EN
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## General Information

This document applies to StoVentec Carrier Board A (12mm), StoPanel Plus (12mm), StoPanel Plus (20mm), StoVentec Carrier Board (12mm), Sto-Render Carrier Board (20mm), StoPrefa Render Carrier Board (12mm), StoPrefa Shutter Board (20mm), Verolith Carrier Board (15mm), as a public annex to the EPD-STO-20230193-IBA1-EN document. The declared unit is 1 m<sup>2</sup> with various weights. The LCA data were based on production data from the year 2021.

## 1. Product

### Technical Data

The technical parameters stated below are valid for all glass granulate based boards.

1. StoVentec Carrier Board A (12mm)
2. StoPanel Plus (12mm)
3. StoPanel Plus (20mm)
4. StoVentec Carrier Board (12mm)
5. Sto-Render Carrier Board (20mm)
6. StoPrefa Render Carrier Board (12mm)
7. StoPrefa Shutter Board (20mm)

Data for the Verolith carrier board is stated in the corresponding annex chapter.

Name	Value	Unit
Gross density TIAP 120 (Sto internal)	ca. 500	kg/m <sup>3</sup>
Thermal conductivity DIN 52612	0.12	W/mK
Modulus of elasticity EN ISO 178	1800 – 2000	N/mm <sup>2</sup>
Thermal expansion TIAP 650 (Sto-intern)	0,000011	1/K
Water vapour diffusion-equivalent air layer thickness EN ISO 7783-2	15	μ

Basematerials/ Ancillary materials

Base material	Mass [%]
Expanded glass granulate	< 85
Filling materials	< 20
Propellant and hydrophobic agents	< 1
Reactive polymer resin	< 10
Hardener	< 2
Glass fibre mesh	< 7

## 2. LCA: Calculation rules

### Declared Unit

The declared unit is 1m<sup>2</sup>.

### Declared Unit

Name	Value	Unit
Declared Unit	1	m <sup>2</sup>
Grammage (StoVentec Carrier Board A 12mm)	6.13	kg/m <sup>2</sup>
Grammage (StoPanel Plus 12mm)	6.42	kg/m <sup>2</sup>
Grammage (StoPanel Plus 20mm)	10.16	kg/m <sup>2</sup>
Grammage (StoVentec Carrier Board 12mm)	5.93	kg/m <sup>2</sup>

Grammage (Sto-Render Carrier Board 20mm)	9.55	kg/m <sup>2</sup>
Grammage (StoPrefa Render Carrier Board 12mm)	6.42	kg/m <sup>2</sup>
Grammage (StoPrefa Shutter Board 20mm)	9.55	kg/m <sup>2</sup>
Grammage (Verolith Carrier Board 15mm)	9.96	kg/m <sup>2</sup>

### 3. LCA: Scenarios and additional technical information

#### Characteristics product properties Information on biogenic Carbon

#### Information on describing the biogenic Carbon Content at factory gate

Name	Value	Unit
Biogenic Carbon Content in product	0	kg C
Biogenic Carbon Content in accompanying packaging (StoVentec Carrier Board A 12mm)	0.036	kg C
Biogenic Carbon Content in accompanying packaging (StoPanel Plus 12mm)	0.026	kg C
Biogenic Carbon Content in accompanying packaging (StoPanel Plus 20mm)	0.095	kg C
Biogenic Carbon Content in accompanying packaging (StoVentec Carrier Board 12mm)	0.043	kg C
Biogenic Carbon Content in accompanying packaging (Sto-Render Carrier Board 20mm)	0.103	kg C
Biogenic Carbon Content in accompanying packaging (StoPrefa Render Carrier Board 12mm)	0.026	kg C
Biogenic Carbon Content in accompanying packaging (StoPrefa Shutter Board 20mm)	0.103	kg C
Biogenic Carbon Content in accompanying packaging (Verolith Carrier Board 15mm)	0.248	kg C

The following technical scenario information is required for the declared modules and optional for non-declared modules. The following technical information is a basis for the declared modules or can be used for developing specific scenarios in the context of a building assessment. The values refer to the declared unit of 1 m<sup>2</sup> Carrier Boards.

#### Transport to the building site (A4)

Name	Value	Unit
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Transport distance	100	km
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#### Installation into building (A5)

Module A5 includes installation of the product with machine and the treatment and disposal of packaging material. Benefits for potential avoided burdens due to energy substitution of electricity and thermal energy generation are declared in module D and affects only the rate of primary material (no secondary materials)

#### StoVentec Carrier Board A (12mm)

Name	Value	Unit
Wooden pallets	0.069	kg
paper	0.021	kg
polyethylene	0.002	Kg

#### StoPanel Plus (12mm)

Name	Value	Unit
Wooden pallets	0.047	kg
paper	0.018	kg
polyethylene	0.002	Kg

#### StoPanel Plus (20mm)

Name	Value	Unit
Wooden pallets	0.205	kg
paper	0.032	kg
polyethylene	0.005	Kg

#### StoVentec Carrier Board (12mm)

Name	Value	Unit
Wooden pallets	0.0908	kg
paper	0.017	kg
polyethylene	0.0009	Kg

#### Sto-Render Carrier Board (20mm)

Name	Value	Unit
Woodenpallets	0.222	kg
paper	0.035	kg
polyethylene	0.006	kg

#### StoPrefa Render Carrier Board (12mm)

Name	Value	Unit
Wooden pallets	0.047	kg
paper	0.018	kg
polyethylene	0.002	kg

#### StoPrefa Shutter Board (20mm)



Name	Value	Unit
Wooden pallets	0.222	kg
paper	0.035	kg
polyethylene	0.006	kg

#### Verolith Carrier Board (15mm)

Name	Value	Unit
Wooden pallets	0.54	kg
paper	0.08	kg

#### End of life (C1-C4)

##### Deconstruction (C1)

The product dismantling from the building is done with machine

##### Transport to EoL treatment (C2)

Transport to waste treatment: 50 km by truck

##### Disposal (C4)

landfilling

Name	Value	Unit
Landfilling (StoVentec Carrier Board A 12mm)	6.13	kg
Landfilling (StoPanel Plus 12mm)	6.42	kg
Landfilling (StoPanel Plus 20mm)	10.16	kg
Landfilling (StoVentec Carrier Board 12mm)	5.93	kg
Landfilling (Sto-Render Carrier Board 20mm)	9.55	kg
Landfilling (StoPrefa Render Carrier Board 12mm)	6.42	kg
Landfilling (StoPrefa Shutter Board 20mm)	9.55	kg
Landfilling (Verolith Carrier Board 15mm)	9.96	kg

Packaging energy recovery (StoPanel Plus 20mm)	0.210	kg
Packaging energy recovery (StoVentec Carrier Board 12mm)	0.091	kg
Packaging energy recovery (Sto-Render Carrier Board 20mm)	0.228	kg
Packaging energy recovery (StoPrefa Render Carrier Board 12mm)	0.049	kg
Packaging energy recovery (StoPrefa Shutter Board 20mm)	0.228	kg
Packaging energy recovery (Verolith Carrier Board 15mm)	0.540	kg

#### Reuse, recovery and/or recycling potentials (D), relevant scenario information

Name	Value	Unit
Packaging energy recovery (StoVentec Carrier Board A 12mm)	0.071	kg
Packaging energy recovery (StoPanel Plus 12mm)	0.049	kg

#### 4. LCA: Results StoVentec Carrier Board A (12mm)

The following tables display the environmental relevant results according to /EN 15804/ for 1 m<sup>2</sup> StoVentec Carrier Board A (12mm).

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

PRODUCT STAGE					CONSTRUCTION PROCESS STAGE	USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	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	X	

##### RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN15804+A2: 1 m<sup>2</sup> StoVentec Carrier Board A (12mm)

Core Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	[kg CO <sub>2</sub> -Eq.]	9,45E+00	3,99E-02	1,64E-01	3,31E-02	1,99E-02	0,00E+00	9,31E-02	-4,24E-02
GWP-fossil	[kg CO <sub>2</sub> -Eq.]	9,46E+00	3,99E-02	3,84E-02	3,16E-02	1,99E-02	0,00E+00	9,28E-02	-4,21E-02
GWP-biogenic	[kg CO <sub>2</sub> -Eq.]	-1,39E-02	0,00E-00	1,25E-01	1,48E-03	0,00E+00	0,00E+00	0,00E+00	-2,16E-04
GWP-luluc	[kg CO <sub>2</sub> -Eq.]	1,61E-03	6,49E-07	8,19E-07	5,23E-07	3,24E-07	0,00E+00	2,67E-04	-4,63E-06
ODP	[kg CFC11-Eq.]	3,53E-11	6,05E-15	1,51E-14	4,88E-15	3,03E-15	0,00E+00	3,44E-16	-2,85E-13
AP	[mol H <sup>+</sup> -Eq.]	2,08E-02	3,04E-05	1,92E-04	1,74E-04	1,52E-05	0,00E+00	6,66E-04	-5,54E-05
EP-freshwater	[kg PO <sub>4</sub> -Eq.]	2,24E-05	8,27E-09	9,13E-09	6,67E-09	4,14E-09	0,00E+00	1,59E-07	-5,80E-08
EP-marine	[kg N-Eq.]	6,59E-03	1,01E-05	9,26E-05	8,67E-05	5,06E-06	0,00E+00	1,71E-04	-1,50E-05
EP-terrestrial	[mol N-Eq.]	7,59E-02	1,13E-04	1,04E-03	9,49E-04	5,63E-05	0,00E+00	1,88E-03	-1,61E-04
POCP	[kg NMVOC-Eq.]	1,82E-02	2,87E-05	2,48E-04	2,32E-04	1,44E-05	0,00E+00	5,19E-04	-4,21E-05
ADPE	[kg Sb-Eq.]	2,53E-06	2,22E-09	2,04E-09	1,79E-09	1,11E-09	0,00E+00	8,34E-09	-6,36E-09
ADPF	[MJ]	1,48E+02	5,58E-01	4,78E-01	4,50E-01	2,79E-01	0,00E+00	1,22E+00	-7,17E-01
WDP	[m <sup>3</sup> world-Eq deprived]	1,22E-01	4,58E-05	1,35E-02	3,69E-05	2,29E-05	0,00E+00	9,73E-03	-4,49E-03

Caption: GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water use

##### RESULTS OF THE LCA – INDICATORS TO DESCRIBE RESOURCE USE according to EN15804+A2: 1 m<sup>2</sup> StoVentec Carrier Board A (12mm)

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	[MJ]	1,66E+01	3,24E-03	1,41E+00	2,61E-03	1,62E-03	0,00E+00	1,59E-01	-1,97E-01
PERM	[MJ]	1,40E+00	0,00E+00	-1,40E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	1,80E+01	3,24E-03	9,08E-03	2,61E-03	1,62E-03	0,00E+00	1,59E-01	-1,97E-01
PENRE	[MJ]	1,29E+02	5,59E-01	5,70E-01	4,51E-01	2,79E-01	0,00E+00	2,01E+01	-7,17E-01
PENRM	[MJ]	1,90E+01	0,00E+00	-9,20E-02	0,00E+00	0,00E+00	0,00E+00	-1,89E+01	0,00E+00
PENRT	[MJ]	1,48E+02	5,59E-01	4,78E-01	4,51E-01	2,79E-01	0,00E+00	1,22E+00	-7,17E-01
SM	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	[m <sup>3</sup> ]	2,15E-02	2,75E-06	3,18E-04	2,22E-06	1,38E-06	0,00E+00	3,07E-04	-1,89E-04

Caption: PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

##### RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN15804+A2: 1 m<sup>2</sup> StoVentec Carrier Board A (12mm)

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
HWD	[kg]	2,34E-08	1,86E-12	4,16E-12	1,50E-12	9,32E-13	0,00E+00	1,86E-08	-9,70E-11
NHWD	[kg]	6,37E-01	6,73E-05	1,40E-03	5,42E-05	3,36E-05	0,00E+00	6,13E+00	-3,62E-04
RWD	[kg]	3,48E-03	4,96E-07	2,01E-06	4,00E-07	2,48E-07	0,00E+00	1,38E-05	-5,65E-05
CRU	[kg]	0,00E+00							
MFR	[kg]	0,00E+00							
MER	[kg]	0,00E+00							
EEE	[MJ]	0,00E+00	0,00E+00	1,90E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	[MJ]	0,00E+00	0,00E+00	3,40E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Caption: HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

**RESULTS OF THE LCA – additional impact categories according to EN15804+A2-optional: 1 m<sup>2</sup> StoVentec Carrier Board A (12mm)**

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PM	[Disease Incidence]	1,78E-07	1,69E-10	3,67E-09	3,57E-09	8,46E-11	0,00E+00	8,24E-09	-4,59E-10
IR	[kBq U235-Eq.]	3,23E-01	4,45E-05	2,97E-04	3,59E-05	2,22E-05	0,00E+00	1,42E-03	-9,56E-03
ETP-fw	[CTUe]	1,34E+02	4,44E-01	3,71E-01	3,58E-01	2,22E-01	0,00E+00	6,96E-01	-1,57E-01
HTP-c	[CTUh]	2,91E-09	8,33E-12	7,57E-12	6,72E-12	4,17E-12	0,00E+00	1,03E-10	-7,23E-12
HTP-nc	[CTUh]	2,41E-07	3,59E-10	4,04E-10	3,69E-10	1,79E-10	0,00E+00	1,14E-08	-2,81E-10
SQP	[ ]	3,08E+01	2,43E-03	1,01E-02	1,96E-03	1,21E-03	0,00E+00	2,54E-01	-1,28E-01

PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans; HTP-nc = Potential comparative Toxic Unit for humans; SQP = Potential soil quality index

The following disclaimers apply to all result tables.

Disclaimer 1 – for the indicator “Potential Human exposure efficiency relative to U235”. This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

Disclaimer 2 – for the indicators “abiotic depletion potential for non-fossil resources”, “abiotic depletion potential for fossil resources”, “water (user) deprivation potential, deprivation-weighted water consumption”, “potential comparative toxic unit for ecosystems”, “potential comparative toxic unit for humans – cancerogenic”, “Potential comparative toxic unit for humans - not cancerogenic”, “potential soil quality index”. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

**5. LCA: Results StoPanel Plus (12mm)**

**DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; ND = MODULE OR INDICATOR NOT DECLARED; MNR = MODULE NOT RELEVANT)**

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	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	ND	ND	MNR	MNR	MNR	ND	ND	X	X	X	X	X

**RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 m<sup>2</sup> StoPanel Plus (12 mm)**

Core Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	[kg CO <sub>2</sub> -Eq.]	9,36E+00	4,18E-02	1,24E-01	3,31E-02	2,09E-02	0,00E+00	9,77E-02	-2,96E-02
GWP-fossil	[kg CO <sub>2</sub> -Eq.]	9,34E+00	4,18E-02	3,76E-02	3,16E-02	2,09E-02	0,00E+00	9,74E-02	-2,95E-02
GWP-biogenic	[kg CO <sub>2</sub> -Eq.]	1,89E-02	0,00E+00	8,64E-02	1,48E-03	0,00E+00	0,00E+00	0,00E+00	-1,51E-04
GWP-luluc	[kg CO <sub>2</sub> -Eq.]	1,57E-03	6,81E-07	7,43E-07	5,23E-07	3,40E-07	0,00E+00	2,80E-04	-3,24E-06
ODP	[kg CFC11-Eq.]	3,45E-11	6,35E-15	1,22E-14	4,88E-15	3,17E-15	0,00E+00	3,61E-16	-2,00E-13
AP	[mol H <sup>+</sup> -Eq.]	2,11E-02	3,18E-05	1,86E-04	1,74E-04	1,59E-05	0,00E+00	6,99E-04	-3,88E-05
EP-freshwater	[kg P-Eq.]	2,11E-05	8,68E-09	8,43E-09	6,67E-09	4,34E-09	0,00E+00	1,67E-07	-4,06E-08
EP-marine	[kg N-Eq.]	6,64E-03	1,06E-05	9,08E-05	8,67E-05	5,31E-06	0,00E+00	1,80E-04	-1,05E-05
EP-terrestrial	[mol N-Eq.]	7,65E-02	1,18E-04	1,01E-03	9,49E-04	5,91E-05	0,00E+00	1,98E-03	-1,13E-04
POCP	[kg NMVOC-Eq.]	1,83E-02	3,01E-05	2,43E-04	2,32E-04	1,51E-05	0,00E+00	5,45E-04	-2,95E-05
ADPE	[kg Sb-Eq.]	2,50E-06	2,33E-09	1,97E-09	1,79E-09	1,16E-09	0,00E+00	8,74E-09	-4,45E-09
ADPF	[MJ]	1,45E+02	5,86E-01	4,70E-01	4,50E-01	2,93E-01	0,00E+00	1,28E+00	-5,02E-01
WDP	[m <sup>3</sup> world-Eq deprived]	1,28E-01	4,80E-05	9,38E-03	3,69E-05	2,40E-05	0,00E+00	1,02E-02	-3,14E-03

GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

**RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 m<sup>2</sup> StoPanel Plus (12mm)**

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	[MJ]	1,62E+01	3,40E-03	1,03E+00	2,61E-03	1,70E-03	0,00E+00	1,67E-01	-1,38E-01
PERM	[MJ]	1,02E+00	0,00E+00	-1,02E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	1,73E+01	3,40E-03	7,19E-03	2,61E-03	1,70E-03	0,00E+00	1,67E-01	-1,38E-01
PENRE	[MJ]	1,25E+02	5,86E-01	5,58E-01	4,51E-01	2,93E-01	0,00E+00	2,11E+01	-5,02E-01
PENRM	[MJ]	1,99E+01	0,00E+00	-8,83E-02	0,00E+00	0,00E+00	0,00E+00	-1,98E+01	0,00E+00
PENRT	[MJ]	1,45E+02	5,86E-01	4,70E-01	4,51E-01	2,93E-01	0,00E+00	1,28E+00	-5,02E-01
SM	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	[m <sup>3</sup> ]	2,13E-02	2,89E-06	2,22E-04	2,22E-06	1,44E-06	0,00E+00	3,22E-04	-1,33E-04

Caption PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

**RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 m<sup>2</sup> StoPanel Plus (12mm)**

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
HWD	[kg]	2,21E-08	1,96E-12	3,37E-12	1,50E-12	9,78E-13	0,00E+00	1,95E-08	-6,79E-11
NHWD	[kg]	7,95E-01	7,06E-05	1,10E-03	5,42E-05	3,53E-05	0,00E+00	6,43E+00	-2,54E-04
RWD	[kg]	3,47E-03	5,21E-07	1,52E-06	4,00E-07	2,60E-07	0,00E+00	1,45E-05	-3,95E-05
CRU	[kg]	0,00E+00							
MFR	[kg]	0,00E+00							
MER	[kg]	0,00E+00							
EEE	[MJ]	0,00E+00	0,00E+00	1,33E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	[MJ]	0,00E+00	0,00E+00	2,38E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Caption HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy

**RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 m<sup>2</sup> StoPanel Plus (12mm)**

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PM	[Disease Incidence]	1,80E-07	1,78E-10	3,64E-09	3,57E-09	8,88E-11	0,00E+00	8,65E-09	-3,21E-10
IRP	[kBq U235-Eq.]	3,25E-01	4,66E-05	2,18E-04	3,59E-05	2,33E-05	0,00E+00	1,49E-03	-6,69E-03
ETP-fw	[CTUe]	1,33E+02	4,66E-01	3,67E-01	3,58E-01	2,33E-01	0,00E+00	7,30E-01	-1,10E-01
HTP-c	[CTUh]	2,82E-09	8,74E-12	7,32E-12	6,72E-12	4,37E-12	0,00E+00	1,08E-10	-5,06E-12
HTP-nc	[CTUh]	2,32E-07	3,76E-10	3,95E-10	3,69E-10	1,88E-10	0,00E+00	1,19E-08	-1,96E-10
SQP	[-]	2,55E+01	2,55E-03	7,67E-03	1,96E-03	1,27E-03	0,00E+00	2,66E-01	-8,95E-02

Caption PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

**6. LCA: Results StoPanel Plus (20mm)**

The following tables display the environmental relevant results according to /EN 15804/ for 1 m<sup>2</sup> StoPanel Plus (20mm)

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

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE			USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	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	X	

**RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN15804+A2: 1 m<sup>2</sup> StoPanel Plus (20mm)**

Core Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	[kg CO <sub>2</sub> -Eq.]	1,35E+01	6,62E-02	4,19E-01	3,31E-02	3,31E-02	0,00E+00	1,54E-01	-1,25E-01
GWP-fossil	[kg CO <sub>2</sub> -Eq.]	1,37E+01	6,62E-02	4,98E-02	3,16E-02	3,31E-02	0,00E+00	1,54E-01	-1,24E-01
GWP-biogenic	[kg CO <sub>2</sub> -Eq.]	-1,75E-01	0,00E+00	3,69E-01	1,48E-03	0,00E+00	0,00E+00	0,00E+00	-6,37E-04
GWP-luluc	[kg CO <sub>2</sub> -Eq.]	2,47E-03	1,08E-06	1,38E-06	5,23E-07	5,39E-07	0,00E+00	4,44E-04	-1,37E-05
ODP	[kg CFC11-Eq.]	5,35E-11	1,00E-14	3,50E-14	4,88E-15	5,02E-15	0,00E+00	5,71E-16	-8,42E-13
AP	[mol H <sup>+</sup> -Eq.]	3,03E-02	5,04E-05	2,28E-04	1,74E-04	2,52E-05	0,00E+00	1,11E-03	-1,64E-04
EP-freshwater	[kg PO <sub>4</sub> -Eq.]	3,61E-05	1,37E-08	1,39E-08	6,67E-09	6,87E-09	0,00E+00	2,65E-07	-1,71E-07
EP-marine	[kg N-Eq.]	1,00E-02	1,68E-05	1,04E-04	8,67E-05	8,41E-06	0,00E+00	2,85E-04	-4,44E-05
EP-terrestrial	[mol N-Eq.]	1,16E-01	1,87E-04	1,21E-03	9,49E-04	9,35E-05	0,00E+00	3,13E-03	-4,76E-04
POCP	[kg NMVOC-Eq.]	2,74E-02	4,77E-05	2,80E-04	2,32E-04	2,38E-05	0,00E+00	8,62E-04	-1,24E-04
ADPE	[kg Sb-Eq.]	3,10E-06	3,68E-09	2,52E-09	1,79E-09	1,84E-09	0,00E+00	1,38E-08	-1,88E-08
ADPF	[MJ]	2,15E+02	9,27E-01	5,32E-01	4,50E-01	4,63E-01	0,00E+00	2,02E+00	-2,12E+00
WDP	[m <sup>3</sup> world-Eq deprived]	1,37E-01	7,60E-05	3,97E-02	3,69E-05	3,80E-05	0,00E+00	1,62E-02	-1,33E-02

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

**RESULTS OF THE LCA – INDICATORS TO DESCRIBE RESOURCE USE according to EN15804+A2: 1 m<sup>2</sup> StoPanel Plus (20mm)**

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	[MJ]	2,57E+01	5,38E-03	3,63E+00	2,61E-03	2,69E-03	0,00E+00	2,65E-01	-5,81E-01
PERM	[MJ]	3,61E+00	0,00E+00	-3,61E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	2,93E+01	5,38E-03	2,16E-02	2,61E-03	2,69E-03	0,00E+00	2,65E-01	-5,81E-01
PENRE	[MJ]	1,83E+02	9,28E-01	7,70E-01	4,51E-01	4,64E-01	0,00E+00	3,34E+01	-2,12E+00
PENRM	[MJ]	3,16E+01	0,00E+00	-2,38E-01	0,00E+00	0,00E+00	0,00E+00	-3,14E+01	0,00E+00
PENRT	[MJ]	2,15E+02	9,28E-01	5,32E-01	4,51E-01	4,64E-01	0,00E+00	2,02E+00	-2,12E+00
SM	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	[m <sup>3</sup> ]	3,17E-02	4,57E-06	9,35E-04	2,22E-06	2,28E-06	0,00E+00	5,10E-04	-5,59E-04

PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

**RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN15804+A2: 1 m<sup>2</sup> StoPanel Plus (20mm)**

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
HWD	[kg]	3,53E-08	3,10E-12	9,32E-12	1,50E-12	1,55E-12	0,00E+00	3,08E-08	-2,86E-10
NHWD	[kg]	8,31E-01	1,12E-04	3,88E-03	5,42E-05	5,58E-05	0,00E+00	1,02E+01	-1,07E-03
RWD	[kg]	4,48E-03	8,24E-07	5,14E-06	4,00E-07	4,12E-07	0,00E+00	2,30E-05	-1,67E-04
CRU	[kg]	0,00E+00							
MFR	[kg]	0,00E+00							
MER	[kg]	0,00E+00							
EEE	[MJ]	0,00E+00	0,00E+00	5,60E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	[MJ]	0,00E+00	0,00E+00	1,01E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

**RESULTS OF THE LCA– additional impact categories according to EN15804+A2-optional: 1 m<sup>2</sup> StoPanel Plus (20mm)**

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PM	[Disease Incidence]	2,84E-07	2,81E-10	3,85E-09	3,57E-09	1,40E-10	0,00E+00	1,37E-08	-1,36E-09
IR	[kBq U235-Eq.]	4,30E-01	7,38E-05	8,08E-04	3,59E-05	3,69E-05	0,00E+00	2,36E-03	-2,82E-02
ETP-fw	[CTUe]	2,11E+02	7,37E-01	3,95E-01	3,58E-01	3,69E-01	0,00E+00	1,16E+00	-4,65E-01
HTP-c	[CTUh]	4,21E-09	1,38E-11	9,22E-12	6,72E-12	6,92E-12	0,00E+00	1,71E-10	-2,13E-11
HTP-nc	[CTUh]	3,51E-07	5,95E-10	4,69E-10	3,69E-10	2,98E-10	0,00E+00	1,89E-08	-8,29E-10
SQP	[-]	6,83E+01	4,03E-03	2,59E-02	1,96E-03	2,01E-03	0,00E+00	4,21E-01	-3,78E-01

PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans; HTP-nc = Potential comparative Toxic Unit for humans; SQP = Potential soil quality index

**7. LCA: Results StoVentec Carrier Board (12mm)**

The following tables display the environmental relevant results according to /EN 15804/ for 1 m<sup>2</sup> StoVentec Carrier Board (12mm).

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

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE								END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	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	X	

Core Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	[kg CO2-Eq.]	9,36E+00	3,86E-02	2,00E-01	3,31E-02	1,93E-02	0,00E+00	9,02E-02	-5,40E-02
GWP-fossil	[kg CO2-Eq.]	9,40E+00	3,86E-02	3,62E-02	3,16E-02	1,93E-02	0,00E+00	8,99E-02	-5,37E-02
GWP-biogenic	[kg CO2-Eq.]	-4,12E-02	0,00E+00	1,64E-01	1,48E-03	0,00E+00	0,00E+00	0,00E+00	-2,75E-04
GWP-luluc	[kg CO2-Eq.]	1,59E-03	6,29E-07	8,61E-07	5,23E-07	3,14E-07	0,00E+00	2,59E-04	-5,91E-06
ODP	[kg CFC11-Eq.]	3,50E-11	5,86E-15	1,76E-14	4,88E-15	2,93E-15	0,00E+00	3,33E-16	-3,63E-13
AP	[mol H+-Eq.]	2,04E-02	2,94E-05	1,97E-04	1,74E-04	1,47E-05	0,00E+00	6,45E-04	-7,07E-05
EP-freshwater	[kg PO4-Eq.]	2,23E-05	8,02E-09	9,72E-09	6,67E-09	4,01E-09	0,00E+00	1,54E-07	-7,39E-08
EP-marine	[kg N-Eq.]	6,51E-03	9,81E-06	9,44E-05	8,67E-05	4,91E-06	0,00E+00	1,66E-04	-1,92E-05
EP-terrestrial	[mol N-Eq.]	7,50E-02	1,09E-04	1,06E-03	9,49E-04	5,46E-05	0,00E+00	1,82E-03	-2,05E-04
POCP	[kg NMVOC-Eq.]	1,80E-02	2,78E-05	2,53E-04	2,32E-04	1,39E-05	0,00E+00	5,03E-04	-5,36E-05
ADPE	[kg Sb-Eq.]	2,52E-06	2,15E-09	2,10E-09	1,79E-09	1,07E-09	0,00E+00	8,08E-09	-8,11E-09
ADPF	[MJ]	1,48E+02	5,41E-01	4,85E-01	4,50E-01	2,70E-01	0,00E+00	1,18E+00	-9,13E-01
WDP	[m³ world-Eq deprived]	1,13E-01	4,44E-05	1,73E-02	3,69E-05	2,22E-05	0,00E+00	9,43E-03	-5,72E-03

Caption GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water use

**RESULTS OF THE LCA – INDICATORS TO DESCRIBE RESOURCE USE according to EN15804+A2: 1 m<sup>2</sup> StoVentec Carrier Board (12mm)**

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	[MJ]	1,65E+01	3,14E-03	1,66E+00	2,61E-03	1,57E-03	0,00E+00	1,55E-01	-2,51E-01
PERM	[MJ]	1,65E+00	0,00E+00	-1,65E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	1,82E+01	3,14E-03	1,07E-02	2,61E-03	1,57E-03	0,00E+00	1,55E-01	-2,51E-01
PENRE	[MJ]	1,29E+02	5,41E-01	5,27E-01	4,51E-01	2,71E-01	0,00E+00	1,95E+01	-9,14E-01
PENRM	[MJ]	1,84E+01	0,00E+00	-4,14E-02	0,00E+00	0,00E+00	0,00E+00	-1,83E+01	0,00E+00
PENRT	[MJ]	1,48E+02	5,41E-01	4,86E-01	4,51E-01	2,71E-01	0,00E+00	1,18E+00	-9,14E-01
SM	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	[m³]	2,12E-02	2,67E-06	4,08E-04	2,22E-06	1,33E-06	0,00E+00	2,98E-04	-2,41E-04

Caption PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

**RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN15804+A2: 1 m<sup>2</sup> StoVentec Carrier Board (12mm)**

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
HWD	[kg]	2,22E-08	1,81E-12	4,86E-12	1,50E-12	9,03E-13	0,00E+00	1,80E-08	-1,24E-10
NHWD	[kg]	5,19E-01	6,52E-05	1,44E-03	5,42E-05	3,26E-05	0,00E+00	5,94E+00	-4,62E-04
RWD	[kg]	3,44E-03	4,81E-07	2,45E-06	4,00E-07	2,40E-07	0,00E+00	1,34E-05	-7,20E-05
CRU	[kg]	0,00E+00							
MFR	[kg]	0,00E+00							
MER	[kg]	0,00E+00							
EEE	[MJ]	0,00E+00	0,00E+00	2,42E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	[MJ]	0,00E+00	0,00E+00	4,34E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Caption HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

**RESULTS OF THE LCA– additional impact categories according to EN15804+A2-optional: 1 m<sup>2</sup> StoVentec Carrier Board (12mm)**

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PM	[Disease Incidence]	1,76E-07	1,64E-10	3,69E-09	3,57E-09	8,20E-11	0,00E+00	7,99E-09	-5,85E-10
IR	[kBq U235-Eq.]	3,18E-01	4,31E-05	3,71E-04	3,59E-05	2,15E-05	0,00E+00	1,38E-03	-1,22E-02
ETP-fw	[CTUe]	1,35E+02	4,30E-01	3,74E-01	3,58E-01	2,15E-01	0,00E+00	6,74E-01	-2,01E-01
HTP-c	[CTUh]	2,89E-09	8,07E-12	7,77E-12	6,72E-12	4,04E-12	0,00E+00	9,99E-11	-9,21E-12
HTP-nc	[CTUh]	2,39E-07	3,47E-10	4,08E-10	3,69E-10	1,74E-10	0,00E+00	1,10E-08	-3,58E-10
SQP	[-]	3,53E+01	2,35E-03	1,22E-02	1,96E-03	1,18E-03	0,00E+00	2,46E-01	-1,63E-01

Caption: PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans; HTP-nc = Potential comparative Toxic Unit for humans; SQP = Potential soil quality index

## 8. LCA: Results Sto-Render Carrier Board (20mm)

The following tables display the environmental relevant results according to /EN 15804/ for 1 m<sup>2</sup> Sto-Render Carrier Board (20mm)

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

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE								END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	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	X	

### RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN15804+A2: 1 m<sup>2</sup> Sto-Render Carrier Board (20mm)

Core Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	[kg CO <sub>2</sub> -Eq.]	1,35E+01	6,22E-02	4,52E-01	3,31E-02	3,11E-02	0,00E+00	1,45E-01	-1,36E-01
GWP-fossil	[kg CO <sub>2</sub> -Eq.]	1,37E+01	6,22E-02	5,14E-02	3,16E-02	3,11E-02	0,00E+00	1,45E-01	-1,35E-01
GWP-biogenic	[kg CO <sub>2</sub> -Eq.]	-2,02E-01	0,00E+00	4,01E-01	1,48E-03	0,00E+00	0,00E+00	0,00E+00	-6,92E-04
GWP-luluc	[kg CO <sub>2</sub> -Eq.]	2,57E-03	1,01E-06	1,45E-06	5,23E-07	5,06E-07	0,00E+00	4,17E-04	-1,49E-05
ODP	[kg CFC11-Eq.]	5,42E-11	9,44E-15	3,76E-14	4,88E-15	4,72E-15	0,00E+00	5,37E-16	-9,15E-13
AP	[mol H <sup>+</sup> -Eq.]	2,99E-02	4,74E-05	2,32E-04	1,74E-04	2,37E-05	0,00E+00	1,04E-03	-1,78E-04
EP-freshwater	[kg PO <sub>4</sub> -Eq.]	3,72E-05	1,29E-08	1,45E-08	6,67E-09	6,46E-09	0,00E+00	2,49E-07	-1,86E-07
EP-marine	[kg N-Eq.]	9,93E-03	1,58E-05	1,06E-04	8,67E-05	7,90E-06	0,00E+00	2,67E-04	-4,83E-05
EP-terrestrial	[mol N-Eq.]	1,14E-01	1,76E-04	1,23E-03	9,49E-04	8,79E-05	0,00E+00	2,94E-03	-5,17E-04
POCP	[kg NMVOC-Eq.]	2,72E-02	4,48E-05	2,84E-04	2,32E-04	2,24E-05	0,00E+00	8,10E-04	-1,35E-04
ADPE	[kg Sb-Eq.]	4,48E-06	3,46E-09	2,59E-09	1,79E-09	1,73E-09	0,00E+00	1,30E-08	-2,04E-08
ADPF	[MJ]	2,18E+02	8,71E-01	5,39E-01	4,50E-01	4,35E-01	0,00E+00	1,90E+00	-2,30E+00
WDP	[m <sup>3</sup> world-Eq deprived]	1,34E-01	7,14E-05	4,32E-02	3,69E-05	3,57E-05	0,00E+00	1,52E-02	-1,44E-02

Caption: GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water use

### RESULTS OF THE LCA – INDICATORS TO DESCRIBE RESOURCE USE according to EN15804+A2: 1 m<sup>2</sup> Sto-Render Carrier Board (20mm)

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	[MJ]	2,64E+01	5,06E-03	3,94E+00	2,61E-03	2,53E-03	0,00E+00	2,49E-01	-6,32E-01
PERM	[MJ]	3,92E+00	0,00E+00	-3,92E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	3,03E+01	5,06E-03	2,33E-02	2,61E-03	2,53E-03	0,00E+00	2,49E-01	-6,32E-01
PENRE	[MJ]	1,88E+02	8,72E-01	7,97E-01	4,51E-01	4,36E-01	0,00E+00	3,14E+01	-2,30E+00
PENRM	[MJ]	2,98E+01	0,00E+00	-2,58E-01	0,00E+00	0,00E+00	0,00E+00	-2,95E+01	0,00E+00
PENRT	[MJ]	2,18E+02	8,72E-01	5,39E-01	4,51E-01	4,36E-01	0,00E+00	1,90E+00	-2,30E+00
SM	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	[m <sup>3</sup> ]	3,24E-02	4,30E-06	1,02E-03	2,22E-06	2,15E-06	0,00E+00	4,79E-04	-6,07E-04

Caption: PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-

	renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water
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### RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN15804+A2: 1 m<sup>2</sup> Sto-Render Carrier Board (20mm)

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
HWD	[kg]	3,69E-08	2,91E-12	1,00E-11	1,50E-12	1,45E-12	0,00E+00	2,90E-08	-3,11E-10
NHWD	[kg]	7,49E-01	1,05E-04	4,21E-03	5,42E-05	5,25E-05	0,00E+00	9,56E+00	-1,16E-03
RWD	[kg]	4,50E-03	7,75E-07	5,56E-06	4,00E-07	3,87E-07	0,00E+00	2,16E-05	-1,81E-04
CRU	[kg]	0,00E+00							
MFR	[kg]	0,00E+00							
MER	[kg]	0,00E+00							
EEE	[MJ]	0,00E+00	0,00E+00	6,08E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	[MJ]	0,00E+00	0,00E+00	1,09E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy
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### RESULTS OF THE LCA– additional impact categories according to EN15804+A2-optional: 1 m<sup>2</sup> Sto-Render Carrier Board (20mm)

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PM	[Disease Incidence]	2,79E-07	2,64E-10	3,87E-09	3,57E-09	1,32E-10	0,00E+00	1,29E-08	-1,47E-09
IR	[kBq U235-Eq.]	4,27E-01	6,94E-05	8,75E-04	3,59E-05	3,47E-05	0,00E+00	2,22E-03	-3,07E-02
ETP-fw	[CTUe]	2,13E+02	6,93E-01	3,99E-01	3,58E-01	3,46E-01	0,00E+00	1,09E+00	-5,05E-01
HTP-c	[CTUh]	4,63E-09	1,30E-11	9,43E-12	6,72E-12	6,50E-12	0,00E+00	1,61E-10	-2,32E-11
HTP-nc	[CTUh]	3,98E-07	5,60E-10	4,78E-10	3,69E-10	2,80E-10	0,00E+00	1,77E-08	-9,00E-10
SQP	[-]	7,48E+01	3,79E-03	2,80E-02	1,96E-03	1,89E-03	0,00E+00	3,96E-01	-4,10E-01

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans; HTP-nc = Potential comparative Toxic Unit for humans; SQP = Potential soil quality index
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## 9. LCA: Results StoPrefa Render Carrier Board (12mm)

The following tables display the environmental relevant results according to /EN 15804/ for 1 m<sup>2</sup> StoPrefa Render Carrier Board (12mm)

### DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; ND = MODULE OR INDICATOR NOT DECLARED; MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE			USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	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	ND	ND	MNR	MNR	MNR	ND	ND	X	X	X	X	X	

### RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 m<sup>2</sup> StoPrefa Render Carrier Board (12 mm)

Core Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	[kg CO <sub>2</sub> -Eq.]	9,36E+00	4,18E-02	1,24E-01	3,31E-02	2,09E-02	0,00E+00	9,77E-02	-2,96E-02
GWP-fossil	[kg CO <sub>2</sub> -Eq.]	9,34E+00	4,18E-02	3,76E-02	3,16E-02	2,09E-02	0,00E+00	9,74E-02	-2,95E-02
GWP-biogenic	[kg CO <sub>2</sub> -Eq.]	1,89E-02	0,00E+00	8,64E-02	1,48E-03	0,00E+00	0,00E+00	0,00E+00	-1,51E-04
GWP-luluc	[kg CO <sub>2</sub> -Eq.]	1,57E-03	6,81E-07	7,43E-07	5,23E-07	3,40E-07	0,00E+00	2,80E-04	-3,24E-06
ODP	[kg CFC11-Eq.]	3,45E-11	6,35E-15	1,22E-14	4,88E-15	3,17E-15	0,00E+00	3,61E-16	-2,00E-13
AP	[mol H <sup>+</sup> -Eq.]	2,11E-02	3,18E-05	1,86E-04	1,74E-04	1,59E-05	0,00E+00	6,99E-04	-3,88E-05
EP-freshwater	[kg P-Eq.]	2,11E-05	8,68E-09	8,43E-09	6,67E-09	4,34E-09	0,00E+00	1,67E-07	-4,06E-08
EP-marine	[kg N-Eq.]	6,64E-03	1,06E-05	9,08E-05	8,67E-05	5,31E-06	0,00E+00	1,80E-04	-1,05E-05
EP-terrestrial	[mol N-Eq.]	7,65E-02	1,18E-04	1,01E-03	9,49E-04	5,91E-05	0,00E+00	1,98E-03	-1,13E-04
POCP	[kg NMVOC-Eq.]	1,83E-02	3,01E-05	2,43E-04	2,32E-04	1,51E-05	0,00E+00	5,45E-04	-2,95E-05
ADPE	[kg Sb-Eq.]	2,50E-06	2,33E-09	1,97E-09	1,79E-09	1,16E-09	0,00E+00	8,74E-09	-4,45E-09
ADPF	[MJ]	1,45E+02	5,86E-01	4,70E-01	4,50E-01	2,93E-01	0,00E+00	1,28E+00	-5,02E-01
WDP	[m <sup>3</sup> world-Eq deprived]	1,28E-01	4,80E-05	9,38E-03	3,69E-05	2,40E-05	0,00E+00	1,02E-02	-3,14E-03

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential
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**RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 m<sup>2</sup> StoPrefa Render Carrier Board (12mm)**

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	[MJ]	1,62E+01	3,40E-03	1,03E+00	2,61E-03	1,70E-03	0,00E+00	1,67E-01	-1,38E-01
PERM	[MJ]	1,02E+00	0,00E+00	-1,02E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	1,73E+01	3,40E-03	7,19E-03	2,61E-03	1,70E-03	0,00E+00	1,67E-01	-1,38E-01
PENRE	[MJ]	1,25E+02	5,86E-01	5,58E-01	4,51E-01	2,93E-01	0,00E+00	2,11E+01	-5,02E-01
PENRM	[MJ]	1,99E+01	0,00E+00	-8,83E-02	0,00E+00	0,00E+00	0,00E+00	-1,98E+01	0,00E+00
PENRT	[MJ]	1,45E+02	5,86E-01	4,70E-01	4,51E-01	2,93E-01	0,00E+00	1,28E+00	-5,02E-01
SM	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	[m <sup>3</sup> ]	2,13E-02	2,89E-06	2,22E-04	2,22E-06	1,44E-06	0,00E+00	3,22E-04	-1,33E-04

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water
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**RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 m<sup>2</sup> StoPrefa Render Carrier Board (12mm)**

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
HWD	[kg]	2,21E-08	1,96E-12	3,37E-12	1,50E-12	9,78E-13	0,00E+00	1,95E-08	-6,79E-11
NHWD	[kg]	7,95E-01	7,06E-05	1,10E-03	5,42E-05	3,53E-05	0,00E+00	6,43E+00	-2,54E-04
RWD	[kg]	3,47E-03	5,21E-07	1,52E-06	4,00E-07	2,60E-07	0,00E+00	1,45E-05	-3,95E-05
CRU	[kg]	0,00E+00							
MFR	[kg]	0,00E+00							
MER	[kg]	0,00E+00							
EEE	[MJ]	0,00E+00	0,00E+00	1,33E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	[MJ]	0,00E+00	0,00E+00	2,38E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy
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**RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 m<sup>2</sup> StoPrefa Render Carrier Board (12mm)**

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PM	[Disease Incidence]	1,80E-07	1,78E-10	3,64E-09	3,57E-09	8,88E-11	0,00E+00	8,65E-09	-3,21E-10
IRP	[kBq U235-Eq.]	3,25E-01	4,66E-05	2,18E-04	3,59E-05	2,33E-05	0,00E+00	1,49E-03	-6,69E-03
ETP-fw	[CTUe]	1,33E+02	4,66E-01	3,67E-01	3,58E-01	2,33E-01	0,00E+00	7,30E-01	-1,10E-01
HTP-c	[CTUh]	2,82E-09	8,74E-12	7,32E-12	6,72E-12	4,37E-12	0,00E+00	1,08E-10	-5,06E-12
HTP-nc	[CTUh]	2,32E-07	3,76E-10	3,95E-10	3,69E-10	1,88E-10	0,00E+00	1,19E-08	-1,96E-10
SQP	[-]	2,55E+01	2,55E-03	7,67E-03	1,96E-03	1,27E-03	0,00E+00	2,66E-01	-8,95E-02

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index
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**10. LCA: Results StoPrefa Shutter Board (20mm)**

The following tables display the environmental relevant results according to /EN 15804/ for 1 m<sup>2</sup> StoPrefa Shutter Board (20mm).

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

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE								END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	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	X	

**RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN15804+A2: 1 m<sup>2</sup> StoPrefa Shutter Board (20mm)**

Core Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	[kg CO <sub>2</sub> -Eq.]	1,35E+01	6,22E-02	4,52E-01	3,31E-02	3,11E-02	0,00E+00	1,45E-01	-1,36E-01
GWP-fossil	[kg CO <sub>2</sub> -Eq.]	1,37E+01	6,22E-02	5,14E-02	3,16E-02	3,11E-02	0,00E+00	1,45E-01	-1,35E-01
GWP-biogenic	[kg CO <sub>2</sub> -Eq.]	-2,02E-01	0,00E+00	4,01E-01	1,48E-03	0,00E+00	0,00E+00	0,00E+00	-6,92E-04
GWP-luluc	[kg CO <sub>2</sub> -Eq.]	2,57E-03	1,01E-06	1,45E-06	5,23E-07	5,06E-07	0,00E+00	4,17E-04	-1,49E-05
ODP	[kg CFC11-Eq.]	5,42E-11	9,44E-15	3,76E-14	4,88E-15	4,72E-15	0,00E+00	5,37E-16	-9,15E-13
AP	[mol H <sup>+</sup> -Eq.]	2,99E-02	4,74E-05	2,32E-04	1,74E-04	2,37E-05	0,00E+00	1,04E-03	-1,78E-04
EP-freshwater	[kg PO <sub>4</sub> -Eq.]	3,72E-05	1,29E-08	1,45E-08	6,67E-09	6,46E-09	0,00E+00	2,49E-07	-1,86E-07
EP-marine	[kg N-Eq.]	9,93E-03	1,58E-05	1,06E-04	8,67E-05	7,90E-06	0,00E+00	2,67E-04	-4,83E-05
EP-terrestrial	[mol N-Eq.]	1,14E-01	1,76E-04	1,23E-03	9,49E-04	8,79E-05	0,00E+00	2,94E-03	-5,17E-04
POCP	[kg NMVOC-Eq.]	2,72E-02	4,48E-05	2,84E-04	2,32E-04	2,24E-05	0,00E+00	8,10E-04	-1,35E-04
ADPE	[kg Sb-Eq.]	4,48E-06	3,46E-09	2,59E-09	1,79E-09	1,73E-09	0,00E+00	1,30E-08	-2,04E-08
ADPF	[MJ]	2,18E+02	8,71E-01	5,39E-01	4,50E-01	4,35E-01	0,00E+00	1,90E+00	-2,30E+00
WDP	[m <sup>3</sup> world-Eq deprived]	1,34E-01	7,14E-05	4,32E-02	3,69E-05	3,57E-05	0,00E+00	1,52E-02	-1,44E-02

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

**RESULTS OF THE LCA – INDICATORS TO DESCRIBE RESOURCE USE according to EN15804+A2: 1 m<sup>2</sup> StoPrefa Shutter Board (20mm)**

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	[MJ]	2,64E+01	5,06E-03	3,94E+00	2,61E-03	2,53E-03	0,00E+00	2,49E-01	-6,32E-01
PERM	[MJ]	3,92E+00	0,00E+00	-3,92E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	3,03E+01	5,06E-03	2,33E-02	2,61E-03	2,53E-03	0,00E+00	2,49E-01	-6,32E-01
PENRE	[MJ]	1,88E+02	8,72E-01	7,97E-01	4,51E-01	4,36E-01	0,00E+00	3,14E+01	-2,30E+00
PENRM	[MJ]	2,98E+01	0,00E+00	-2,58E-01	0,00E+00	0,00E+00	0,00E+00	-2,95E+01	0,00E+00
PENRT	[MJ]	2,18E+02	8,72E-01	5,39E-01	4,51E-01	4,36E-01	0,00E+00	1,90E+00	-2,30E+00
SM	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	[m <sup>3</sup> ]	3,24E-02	4,30E-06	1,02E-03	2,22E-06	2,15E-06	0,00E+00	4,79E-04	-6,07E-04

PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

**RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN15804+A2: 1 m<sup>2</sup> StoPrefa Shutter Board (20mm)**

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
HWD	[kg]	3,69E-08	2,91E-12	1,00E-11	1,50E-12	1,45E-12	0,00E+00	2,90E-08	-3,11E-10
NHWD	[kg]	7,49E-01	1,05E-04	4,21E-03	5,42E-05	5,25E-05	0,00E+00	9,56E+00	-1,16E-03
RWD	[kg]	4,50E-03	7,75E-07	5,56E-06	4,00E-07	3,87E-07	0,00E+00	2,16E-05	-1,81E-04
CRU	[kg]	0,00E+00							
MFR	[kg]	0,00E+00							
MER	[kg]	0,00E+00							
EEE	[MJ]	0,00E+00	0,00E+00	6,08E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	[MJ]	0,00E+00	0,00E+00	1,09E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

**RESULTS OF THE LCA– additional impact categories according to EN15804+A2-optional: 1 m<sup>2</sup> StoPrefa Shutter Board (20mm)**

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PM	[Disease Incidence]	2,79E-07	2,64E-10	3,87E-09	3,57E-09	1,32E-10	0,00E+00	1,29E-08	-1,47E-09
IR	[kBq U235-Eq.]	4,27E-01	6,94E-05	8,75E-04	3,59E-05	3,47E-05	0,00E+00	2,22E-03	-3,07E-02
ETP-fw	[CTUe]	2,13E+02	6,93E-01	3,99E-01	3,58E-01	3,46E-01	0,00E+00	1,09E+00	-5,05E-01
HTP-c	[CTUh]	4,63E-09	1,30E-11	9,43E-12	6,72E-12	6,50E-12	0,00E+00	1,61E-10	-2,32E-11
HTP-nc	[CTUh]	3,98E-07	5,60E-10	4,78E-10	3,69E-10	2,80E-10	0,00E+00	1,77E-08	-9,00E-10
SQP	[-]	7,48E+01	3,79E-03	2,80E-02	1,96E-03	1,89E-03	0,00E+00	3,96E-01	-4,10E-01

PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans; HTP-nc = Potential comparative Toxic Unit for humans; SQP = Potential soil quality index

## 11. LCA: Results Verolith Carrier Board (15mm)

### Technical data Constructional data

Name	Value	Unit
Gross density TIAP 120 (Sto internal)	ca. 660	kg/m <sup>3</sup>
Thermal conductivity /DIN 52612/	0.174	W/(mK)
Modulus of elasticity /EN ISO 178/	2200 – 2600	N/mm <sup>2</sup>
Thermal expansion TIAP 650 (Sto-intern)	0,000011	1/K
Water vapour diffusion-equivalent air layer thickness /EN ISO 7783-2/	Ca. 7-9	μ

### Base materials/Ancillary materials

Base material	Mass [%]
Expanded perlite granulate	< 95
Propellant and hydrophobic agents	< 5
Reactive polymer resin	< 10
Glass fibre mesh	< 5

The following tables display the environmental relevant results according to /EN 15804/ for 1 m<sup>2</sup> Verolith Carrier Board (15mm)

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

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	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	X

### RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN15804+A2: 1 m<sup>2</sup> Verolith Carrier Board (15mm)

Core Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	[kg CO <sub>2</sub> -Eq.]	9,57E+00	6,49E-02	1,01E+00	3,31E-02	3,24E-02	0,00E+00	1,51E-01	-3,16E-01
GWP-fossil	[kg CO <sub>2</sub> -Eq.]	1,04E+01	6,49E-02	4,56E-02	3,16E-02	3,24E-02	0,00E+00	1,51E-01	-3,14E-01
GWP-biogenic	[kg CO <sub>2</sub> -Eq.]	-8,13E-01	0,00E+00	9,69E-01	1,48E-03	0,00E+00	0,00E+00	0,00E+00	-1,61E-03
GWP-luluc	[kg CO <sub>2</sub> -Eq.]	1,86E-03	1,06E-06	2,37E-06	5,23E-07	5,28E-07	0,00E+00	4,35E-04	-3,45E-05
ODP	[kg CFC11-Eq.]	2,81E-11	9,85E-15	7,82E-14	4,88E-15	4,92E-15	0,00E+00	5,60E-16	-2,12E-12
AP	[mol H <sup>+</sup> -Eq.]	1,56E-02	4,94E-05	3,12E-04	1,74E-04	2,47E-05	0,00E+00	1,08E-03	-4,13E-04
EP-freshwater	[kg PO <sub>4</sub> -Eq.]	2,19E-05	1,35E-08	2,42E-08	6,67E-09	6,73E-09	0,00E+00	2,59E-07	-4,32E-07
EP-marine	[kg N-Eq.]	4,81E-03	1,65E-05	1,32E-04	8,67E-05	8,24E-06	0,00E+00	2,79E-04	-1,12E-04
EP-terrestrial	[mol N-Eq.]	5,26E-02	1,83E-04	1,61E-03	9,49E-04	9,17E-05	0,00E+00	3,07E-03	-1,20E-03
POCP	[kg NMVOC-Eq.]	1,47E-02	4,67E-05	3,55E-04	2,32E-04	2,34E-05	0,00E+00	8,45E-04	-3,14E-04
ADPE	[kg Sb-Eq.]	1,11E-06	3,61E-09	3,58E-09	1,79E-09	1,81E-09	0,00E+00	1,36E-08	-4,74E-08
ADPF	[MJ]	1,63E+02	9,08E-01	6,53E-01	4,50E-01	4,54E-01	0,00E+00	1,98E+00	-5,34E+00
WDP	[m <sup>3</sup> world-Eq deprived]	1,87E-01	7,45E-05	1,01E-01	3,69E-05	3,72E-05	0,00E+00	1,58E-02	-3,35E-02

Caption GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water use

### RESULTS OF THE LCA – INDICATORS TO DESCRIBE RESOURCE USE according to EN15804+A2: 1 m<sup>2</sup> Verolith Carrier Board (15mm)

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	[MJ]	1,39E+01	5,28E-03	9,46E+00	2,61E-03	2,64E-03	0,00E+00	2,60E-01	-1,47E+00
PERM	[MJ]	9,41E+00	0,00E+00	-9,41E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	2,33E+01	5,28E-03	4,95E-02	2,61E-03	2,64E-03	0,00E+00	2,60E-01	-1,47E+00
PENRE	[MJ]	1,32E+02	9,09E-01	6,53E-01	4,51E-01	4,55E-01	0,00E+00	3,28E+01	-5,34E+00
PENRM	[MJ]	3,08E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-3,08E+01	0,00E+00
PENRT	[MJ]	1,63E+02	9,09E-01	6,53E-01	4,51E-01	4,55E-01	0,00E+00	1,98E+00	-5,34E+00
SM	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	[m <sup>3</sup> ]	1,58E-02	4,48E-06	2,38E-03	2,22E-06	2,24E-06	0,00E+00	5,00E-04	-1,41E-03

Caption PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

### RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN15804+A2: 1 m<sup>2</sup> Verolith Carrier Board (15mm)

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
HWD	[kg]	3,32E-08	3,03E-12	2,11E-11	1,50E-12	1,52E-12	0,00E+00	3,02E-08	-7,23E-10
NHWD	[kg]	1,62E-01	1,09E-04	7,07E-03	5,42E-05	5,47E-05	0,00E+00	9,97E+00	-2,70E-03
RWD	[kg]	3,36E-03	8,08E-07	1,24E-05	4,00E-07	4,04E-07	0,00E+00	2,25E-05	-4,21E-04
CRU	[kg]	0,00E+00							
MFR	[kg]	0,00E+00							
MER	[kg]	0,00E+00							
EEE	[MJ]	0,00E+00	0,00E+00	1,41E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	[MJ]	0,00E+00	0,00E+00	2,54E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Caption HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

### RESULTS OF THE LCA– additional impact categories according to EN15804+A2-optional: 1 m<sup>2</sup> Verolith Carrier Board (15mm)

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PM	[Disease Incidence]	2,25E-07	2,75E-10	4,25E-09	3,57E-09	1,38E-10	0,00E+00	1,34E-08	-3,42E-09
IR	[kBq U235-Eq.]	3,00E-01	7,24E-05	2,00E-03	3,59E-05	3,62E-05	0,00E+00	2,31E-03	-7,13E-02
ETP-fw	[CTUe]	9,44E+01	7,23E-01	4,47E-01	3,58E-01	3,61E-01	0,00E+00	1,13E+00	-1,17E+00
HTP-c	[CTUh]	3,25E-09	1,36E-11	1,28E-11	6,72E-12	6,78E-12	0,00E+00	1,68E-10	-5,39E-11
HTP-nc	[CTUh]	2,07E-07	5,84E-10	5,82E-10	3,69E-10	2,92E-10	0,00E+00	1,85E-08	-2,09E-09
SQP	[-]	1,35E+02	3,95E-03	6,19E-02	1,96E-03	1,97E-03	0,00E+00	4,13E-01	-9,53E-01

Caption PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans; HTP-nc = Potential comparative Toxic Unit for humans; SQP = Potential soil quality index

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