

Annex

For MASTERIMPACT®-RH fibre cement drywall panels

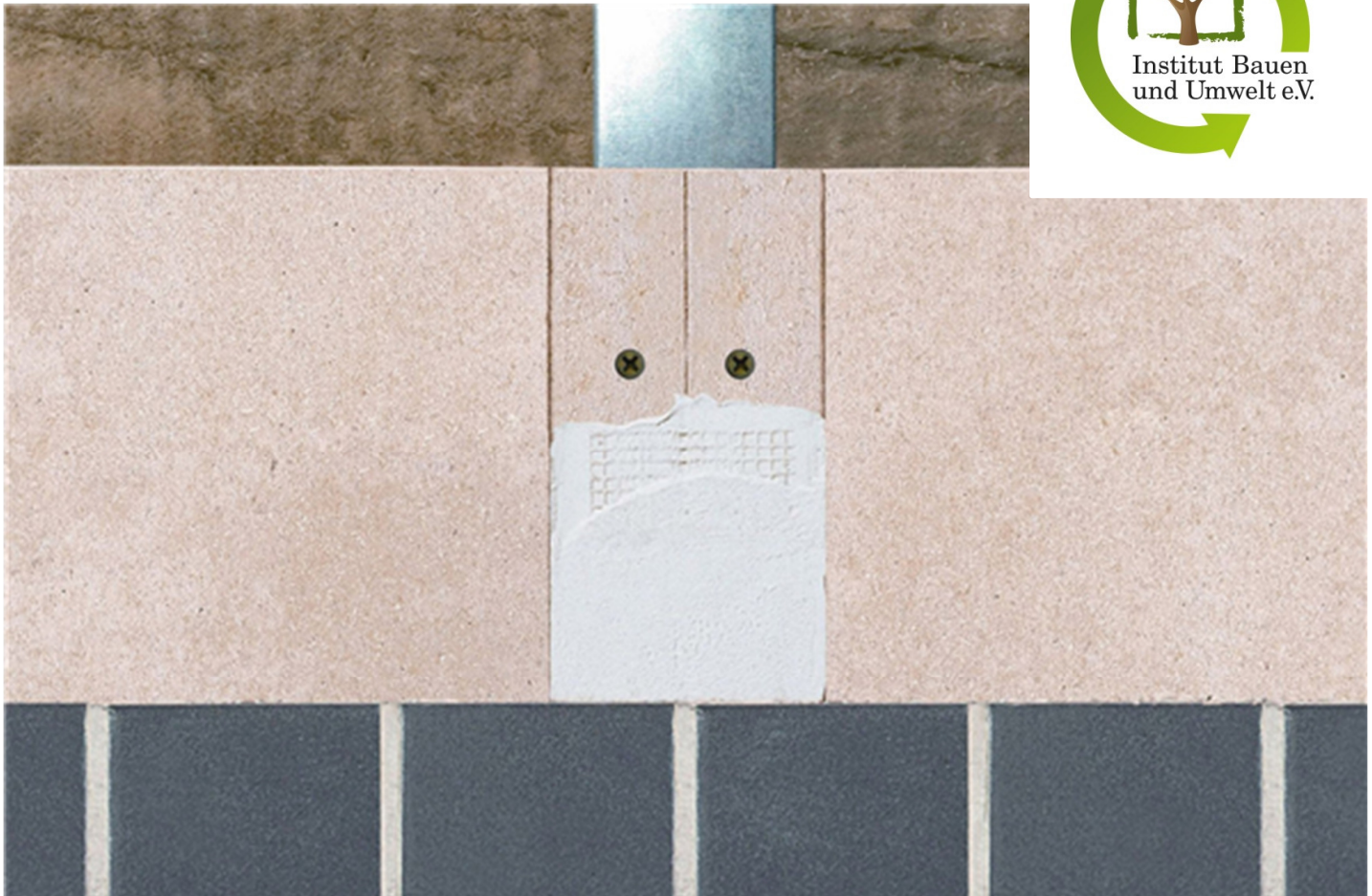
to the

ENVIRONMENTAL PRODUCT DECLARATION

as per /ISO 14025/ and /EN 15804/

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EPD ANNEX

MASTERIMPACT®-RH fibre cement drywall panels (6 mm, 12 mm)

To provide results for product scenarios as an amendment to the EPD for MASTERIMPACT®-RH fibre cement drywall panel construction element (9 mm), this EPD Annex contains results for two additional thicknesses of the declared product (6 mm and 12 mm).

Thickness	6 mm	12 mm
Weight	7,8	15,6

1. LCA: Results: 1 m² MASTERIMPACT®-RH (6 mm)

The following table shows the environmental impacts of 1m² MASTERIMPACT®-RH (6 mm). All declared modules are marked with an “x”.

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	X	X	MNR	MNR	MNR	X	X	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: 1 m² MASTERIMPACT®-RH (6 mm)

Parameter	Unit	A1-A3	A4	A5	B1	B2	B6	B7	C1	C2	C3	C4	D
GWP	[kg CO ₂ -Eq.]	2.72E+00	2.96E-01	8.29E-01	0	0	0	0	8.76E-03	2.60E-02	0	1.31E-01	-1.94E-01
ODP	[kg CFC11-Eq.]	9.26E-12	8.05E-15	7.17E-11	0	0	0	0	3.89E-14	7.07E-16	0	2.97E-14	3.81E-14
AP	[kg SO ₂ -Eq.]	6.05E-03	6.86E-04	2.03E-03	0	0	0	0	2.49E-05	6.02E-05	0	7.76E-04	-4.67E-04
EP	[kg (PO ₄) ³ -Eq.]	9.14E-04	1.74E-04	2.46E-04	0	0	0	0	2.33E-06	1.53E-05	0	1.07E-04	-4.00E-05
POCP	[kg ethene-Eq.]	6.28E-04	-2.32E-04	2.20E-04	0	0	0	0	1.56E-06	-2.04E-05	0	6.03E-05	-6.01E-05
ADPE	[kg Sb-Eq.]	3.54E-06	2.42E-08	2.45E-05	0	0	0	0	4.65E-09	2.12E-09	0	5.03E-08	2.00E-08
ADPF	[MJ]	2.62E+01	4.01E+00	7.41E+00	0	0	0	0	9.32E-02	3.52E-01	0	1.69E+00	-1.54E+00

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

RESULTS OF THE LCA - RESOURCE USE: 1 m² MASTERIMPACT®-RH (6 mm)

Parameter	Unit	A1-A3	A4	A5	B1	B2	B6	B7	C1	C2	C3	C4	D
PERE	[MJ]	1.72E+01	2.22E-01	2.71E+00	0	0	0	0	6.01E-02	1.95E-02	0	2.18E-01	1.41E-01
PERM	[MJ]	9.96E+00	0.00E+00	-1.60E-01	0	0	0	0	0.00E+00	0.00E+00	0	0.00E+00	0.00E+00
PERT	[MJ]	2.71E+01	2.22E-01	2.55E+00	0	0	0	0	6.01E-02	1.95E-02	0	2.18E-01	1.41E-01
PENRE	[MJ]	3.02E+01	4.02E+00	8.38E+00	0	0	0	0	1.60E-01	3.53E-01	0	1.76E+00	-1.45E+00
PENRM	[MJ]	0.00E+00	0.00E+00	0.00E+00	0	0	0	0	0.00E+00	0.00E+00	0	0.00E+00	0.00E+00
PENRT	[MJ]	3.02E+01	4.02E+00	8.38E+00	0	0	0	0	1.60E-01	3.53E-01	0	1.76E+00	-1.45E+00
SM	[kg]	0.00E+00	0.00E+00	0.00E+00	0	0	0	0	0.00E+00	0.00E+00	0	0.00E+00	0.00E+00
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0	0	0	0	0.00E+00	0.00E+00	0	0.00E+00	0.00E+00
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0	0	0	0	0.00E+00	0.00E+00	0	0.00E+00	0.00E+00
FW	[m ³]	1.05E-02	4.09E-04	4.84E-03	0	0	0	0	8.19E-05	3.59E-05	0	3.36E-04	6.83E-05

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 – OUTPUT FLOWS AND WASTE CATEGORIES:

1 m² MASTERIMPACT®-RH (6 mm)

Parameter	Unit	A1-A3	A4	A5	B1	B2	B6	B7	C1	C2	C3	C4	D
HWD	[kg]	2.72E-07	2.33E-07	1.72E-04	0	0	0	0	7.50E-11	2.04E-08	0	3.03E-08	-9.95E-10
NHWD	[kg]	2.50E-01	3.37E-04	2.61E-01	0	0	0	0	1.13E-04	2.96E-05	0	8.25E+00	3.42E-03
RWD	[kg]	1.58E-03	5.51E-06	3.92E-04	0	0	0	0	2.65E-05	4.84E-07	0	2.55E-05	3.46E-05
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0	0	0	0	0.00E+00	0.00E+00	0	0.00E+00	0.00E+00
MFR	[kg]	4.51E-01	0.00E+00	1.35E-02	0	0	0	0	0.00E+00	0.00E+00	0	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0	0	0	0	0.00E+00	0.00E+00	0	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	0	0	0	0	0.00E+00	0.00E+00	0	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	0	0	0	0	0.00E+00	0.00E+00	0	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

2. LCA: Results: 1 m² MASTERIMPACT®-RH (12 mm)

The following table shows the environmental impacts of 1m² MASTERIMPACT®-RH (12 mm). All declared modules are marked with an “x”.

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	X	X	MNR	MNR	MNR	X	X	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: 1 m² MASTERIMPACT®-RH (12 mm)

Parameter	Unit	A1-A3	A4	A5	B1	B2	B6	B7	C1	C2	C3	C4	D
GWP	[kg CO ₂ -Eq.]	5.43E+00	5.93E-01	9.35E-01	0	0	0	0	8.53E-03	5.07E-02	0	2.55E-01	-1.97E-01
ODP	[kg CFC11-Eq.]	1.85E-11	1.61E-14	7.19E-11	0	0	0	0	3.79E-14	1.38E-15	0	5.79E-14	3.89E-14
AP	[kg SO ₂ -Eq.]	1.21E-02	1.37E-03	2.23E-03	0	0	0	0	2.42E-05	1.17E-04	0	1.51E-03	-4.76E-04
EP	[kg (PO ₄) ³⁻ -Eq.]	1.83E-03	3.49E-04	2.77E-04	0	0	0	0	2.27E-06	2.98E-05	0	2.09E-04	-4.07E-05
POCP	[kg ethene-Eq.]	1.26E-03	-4.65E-04	2.70E-04	0	0	0	0	1.52E-06	-3.97E-05	0	1.17E-04	-6.12E-05
ADPE	[kg Sb-Eq.]	7.09E-06	4.84E-08	2.47E-05	0	0	0	0	4.53E-09	4.14E-09	0	9.80E-08	2.03E-08
ADPF	[MJ]	5.24E+01	8.02E+00	8.14E+00	0	0	0	0	9.08E-02	6.86E-01	0	3.30E+00	-1.57E+00

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

RESULTS OF THE LCA - RESOURCE USE: 1 m² MASTERIMPACT®-RH (12 mm)

Parameter	Unit	A1-A3	A4	A5	B1	B2	B6	B7	C1	C2	C3	C4	D
PERE	[MJ]	4.41E+01	4.44E-01	3.56E+00	0	0	0	0	5.85E-02	3.80E-02	0	4.24E-01	1.44E-01
PERM	[MJ]	1.01E+01	0.00E+00	-3.10E-01	0	0	0	0	0.00E+00	0.00E+00	0	0.00E+00	0.00E+00
PERT	[MJ]	5.42E+01	4.44E-01	3.25E+00	0	0	0	0	5.85E-02	3.80E-02	0	4.24E-01	1.44E-01
PENRE	[MJ]	6.04E+01	8.05E+00	9.19E+00	0	0	0	0	1.56E-01	6.88E-01	0	3.42E+00	-1.48E+00
PENRM	[MJ]	0.00E+00	0.00E+00	0.00E+00	0	0	0	0	0.00E+00	0.00E+00	0	0.00E+00	0.00E+00
PENRT	[MJ]	6.04E+01	8.05E+00	9.19E+00	0	0	0	0	1.56E-01	6.88E-01	0	3.42E+00	-1.48E+00
SM	[kg]	4.09E-01	0.00E+00	1.23E-02	0	0	0	0	0.00E+00	0.00E+00	0	0.00E+00	0.00E+00
RSF	[MJ]	1.03E-07	4.35E-29	3.08E-09	0	0	0	0	0.00E+00	3.72E-30	0	5.19E-23	-4.16E-23
NRSF	[MJ]	1.21E-06	6.59E-28	3.61E-08	0	0	0	0	2.32E-31	5.64E-29	0	6.09E-22	-4.88E-22
FW	[m ³]	2.11E-02	8.18E-04	4.96E-03	0	0	0	0	7.98E-05	6.99E-05	0	6.54E-04	6.95E-05

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 – OUTPUT FLOWS AND WASTE CATEGORIES:
1 m² MASTERIMPACT®-RH (12 mm)**

Parameter	Unit	A1-A3	A4	A5	B1	B2	B6	B7	C1	C2	C3	C4	D
HWD	[kg]	5.43E-07	4.65E-07	1.72E-04	0	0	0	0	7.31E-11	3.98E-08	0	5.89E-08	-1.01E-09
NHWD	[kg]	5.01E-01	6.74E-04	5.03E-01	0	0	0	0	1.10E-04	5.76E-05	0	1.61E+01	3.47E-03
RWD	[kg]	3.17E-03	1.10E-05	4.23E-04	0	0	0	0	2.58E-05	9.42E-07	0	4.96E-05	3.52E-05
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0	0	0	0	0.00E+00	0.00E+00	0	0.00E+00	0.00E+00
MFR	[kg]	9.02E-01	0.00E+00	2.71E-02	0	0	0	0	0.00E+00	0.00E+00	0	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0	0	0	0	0.00E+00	0.00E+00	0	0.00E+00	0.00E+00
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	0	0	0	0	0.00E+00	0.00E+00	0	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	0	0	0	0	0.00E+00	0.00E+00	0	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												