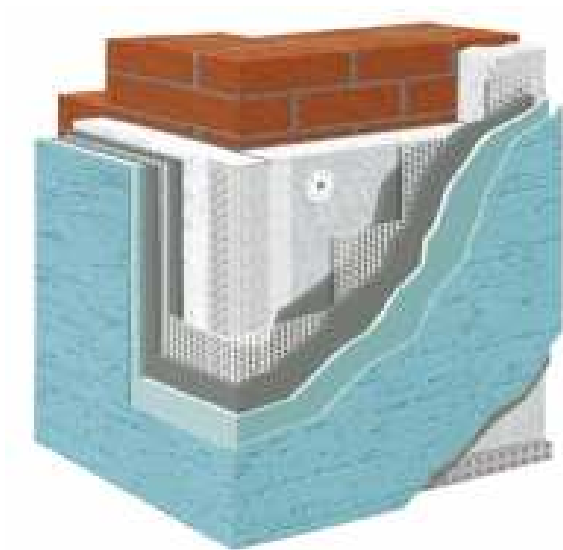


Environmental Product Declaration



BOLIX - EPS-BASED - EXTERNAL THERMAL INSULATION COMPOSITE SYSTEM (ETICS)



BOLIX[®]

Issuance date: 01.03.2014

Validity date: 01.03.2019

EPD program operator:

Building Research Institute (ITB), 00-611 Warsaw, Filtrowa 1

www.itb.pl; www.zb.itb.pl/epd



ITB is the member of **ECO PLATFORM** The European Platform for EPD program operators.

Manufacturer

BOLIX S.A., Stolarska 8 34-300 Żywiec

<http://www.bolix.pl/>

Basic information

This declaration is the type III environmental product declaration based on EN 15804 rules and verified according to ISO 14025 and ECO rules. It contains the environmental information on the impacts and aspects of declared construction materials verified by the independent Advisory Board according to ISO 14025.

Life cycle: Cradle to Gate (EN 15804, A1-A3 modules+A4)

The year of preparing the characteristic: 2013

Declared durability: 25 years

Declared Unit : 1 m² of EPS based EXTERNAL THERMAL INSULATION COMPOSITE SYSTEM
(PCR general for construction products - EN 15804)

BOLIX is external thermal insulation composite systems (ETICS - formerly light-wet method), consisting of state-of-the-art products to be applied on all types of buildings. The systems include the following elements: expanded polystyrene foam boards are fixed to the outer wall with adhesive and/or dowels. They are then coated with a thin-layer plaster that has been reinforced with fibreglass mesh embedded in adhesive. The top coat can be obtained by using the following plaster types: acrylic, mineral, silicate, silicone. Various colors and textures may be created to accomplish the effect desired by the owner or architect.

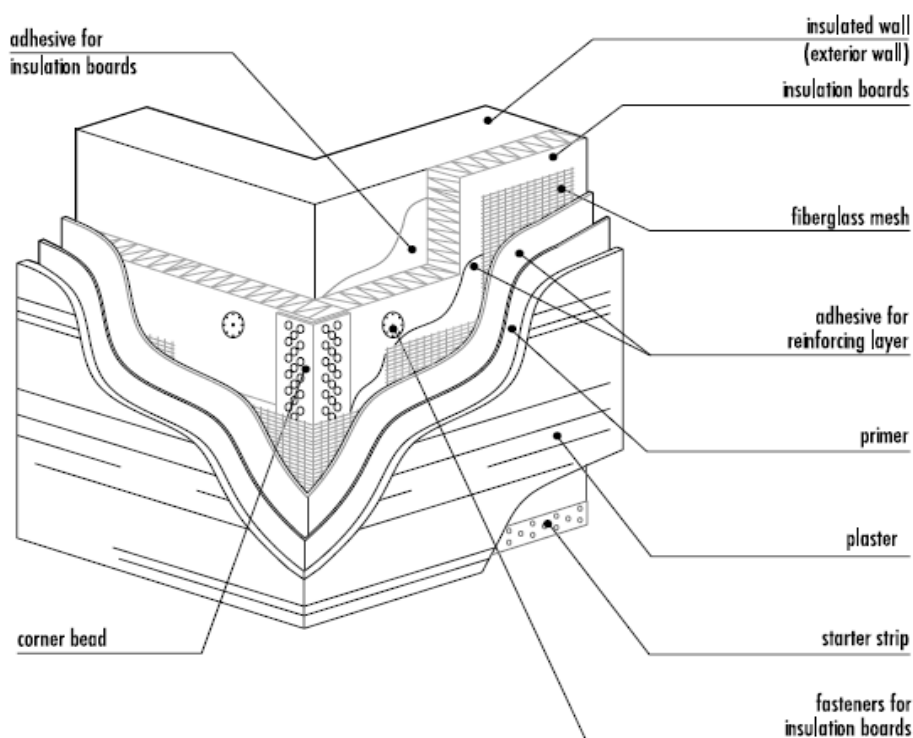


Fig.1. BOLIX - system composition

Intended use

This ETICS is intended to be used as external insulation of buildings' walls made of masonry (bricks, blocks, stones, ..) or concrete (cast on site or as prefabricated panels) with or without rendering (reaction to fire class A1 or A2-s1, d0 according to EN 13501-1). The ETICS is designed to give the wall to which it is applied satisfactory thermal insulation. The ETICS is made of non load-bearing construction elements. It does not contribute directly to the stability of the wall on which it is installed, but it can contribute to durability by providing enhanced protection from the effects of weathering. The ETICS can be used on new or existing (retrofit) vertical walls. It can also be used on horizontal or inclined surfaces which are not exposed to precipitation.

The ETICS is not intended to ensure the airtightness of the building structure. The provisions made in the European Technical Approval (ETA-07/0110) are based on an assumed working life of the ETICS of at least 25 years, provided that the conditions laid down in clauses 4.2, 5.1 and 5.2 of ETA for the packaging, transport, storage, installation as well as appropriate use, maintenance and repair are met. The indications given on the working life cannot be interpreted as a guarantee given by the manufacturer or the Approval Body, but should only be regarded as a means for choosing the appropriate products in relation to the expected economically reasonable working life of the works.

LCI - raw materials, energy, emissions and waste.



Table 2. Raw materials used in ETICS production

Name of component Number of coat	Name of semi-finished product or raw material	Raw material used on 1 Mg of product [kg] ¹	Raw material used on whole production [Mg]
1. Fix for EPS BOLIX Z (for calculation 4 kg/m ²)	Additive 1	-	55,3
	Additive 2	-	92,2
	Sand	-	10367,3
	Mineral filler	-	553,4
	CEM II	-	7378,9
2. Thermal insulation	EPS		
3. Base coat (Fix for mesh) BOLIX U, BOLIX UZ, BOLIX UZB (for calculation 4 kg/m ²)	Additive 1	-	95,0
	Additive 2	-	403,8
	Sand	-	14584,7
	Mineral filler	-	593,8
	CEM II	-	8076,2
4. Glassfibre mesh AKE 145 (for calculation 0,145 kg/m ²)	Glassfibre reinforcement		
A. ACRYLIC COAT			
5A. Acrylic key coat BOLIX OP (for calculation 0,32 kg/m ²)	Water	-	337,7
	Additive 1	-	1,9
	Mineral filler 1	-	47,8
	Mineral filler 2	-	378,9
	Dispersion	-	153,1
	Pigment	-	30,6
	Coalescent	-	4,8
	Biocide	-	1,9
6A. Acrylic finishing coat BOLIX, BOLIX complex (for calculation 2,5 kg/m ²)	Water	-	191,0
	Additive 1	-	20,1
	Mineral filler 1	-	2085,9
	Mineral filler 2	-	1055,5
	Quartz filler	-	804,2
	Dispersion	-	703,7
	Pigment	-	100,5
	Coalescent	-	25,1
	Modifier	-	30,2
Biocide 1	-	10,1	
7A. Acrylic primer BOLIX N (for calculation 0,15 kg/m ²)	Water	-	34,5
	Dispersion	-	9,2
	Biocide	-	0,1
8A. Decorative coat BOLIX AZ, BOLIX AZ complex (for calculation 0,25 kg/m ²)	Water	-	74,2
	Additive 1	-	0,9
	Quartz filler	-	29,0
	Mineral filler 2	-	40,6
	Mineral filler 2	-	23,2
	Dispersion	-	89,7
	Pigment	-	29,0
	Coalescent	-	2,9
	Biocide	-	0,7
B. SILICONE COAT			
5B. Silicone key coat BOLIX SIG color (for calculation 0,325 kg/m ²)	Water	-	94,9
	Additive 1	-	0,9
	Quartz filler	-	40,3
	Mineral filler 2	-	44,8
	Mineral filler 2	-	4,5
	Dispersion 1	-	24,6
	Dispersion 2	-	6,7

	Pigment	-	5,6
	Coalescent	-	1,1
	Biocide	-	0,4
6B. Silicone finishing coat BOLIX SIT (for calculation 3,25 kg/m ²)	Water	-	101,6
	Additive 1	-	10,4
	Mineral filler 1	-	124,4
	Mineral filler 2	-	816,7
	Filler 1	-	20,7
	Filler 2	-	103,6
	Mineral filler 3	-	62,2
	Mineral filler 4	-	497,5
	Dispersion 1	-	165,8
	Dispersion 2	-	82,9
	Pigment	-	41,5
	Coalescent	-	10,4
	Modifier	-	20,7
	Biocide 1	-	4,1
7B. Silicone primer BOLIX SIG (for calculation 0,15 kg/m ²)	Water	-	10,5
	Dispersion	-	0,7
	Biocide	-	0,0
8B. Decorative coat BOLIX SIL (for calculation 0,23 kg/m ²)	Water	-	130,2
	Additive 1	-	2,0
	Mineral filler 1	-	195,8
	Mineral filler 2	-	24,8
	Dispersion 1	-	64,6
	Dispersion 2	-	23,9
	Pigment	-	49,7
	Coalescent	-	2,5
	Biocide	-	1,0
C. SILICATE COAT			
5C. Silicate key coat BOLIX SG color (for calculation 0,13 kg/m ²)	Water	-	25,2
	Additive 1	-	0,4
	Mineral filler 1	-	23,2
	Mineral filler 2	-	21,1
	Dispersion	-	13,9
	Pigment	-	1,4
	Modifier 1	-	0,6
	Modifier 2	-	0,5
	Additive 2	-	6,5
6C. Silicate finishing coat BOLIX S (for calculation 3 kg/m ²)	Water	-	38,4
	Additive 1	-	6,8
	Mineral filler 1	-	570,9
	Mineral filler 2	-	33,9
	Mineral filler 3	-	62,2
	Quartz filler	-	197,8
	Dispersion	-	79,1
	Additive 2	-	90,4
	Pigment	-	17,0
	Modifier 1	-	18,1
	Modifier 2	-	10,2
Modifier 3	-	5,7	
7C. Silicate primer BOLIX SG (for calculation 0,15 kg/m ²)	Water	-	3,7
	Additive 1	-	1,1
	Dispersion	-	0,5
8C. Decorative coat BOLIX SZ (for calculation 0,23 kg/m ²)	Water	-	33,0
	Additive 1	-	0,6
	Quartz filler	-	43,1
	Mineral filler	-	7,0
	Dispersion	-	18,2

	Pigment	-	16,8
	Modifier 1	-	0,7
	Additive 2	-	19,6
	Modifier 2	-	1,1
D. MINERAL COAT			
5D. Key coat BOLIX OP (for calculation 0,32 kg/m ²)	Water	-	337,7
	Additive 1	-	1,9
	Mineral filler 1	-	47,8
	Mineral filler 2	-	378,9
	Dispersion	-	153,1
	Pigment	-	30,6
	Coalescent	-	4,8
	Biocide	-	1,9
6D. Mineral finishing coat BOLIX MP (for calculation 3 kg/m ²)	Additive 1	-	7,6
	Additive 2	-	50,9
	Quartz filler	-	1086,3
	Filler	-	457,9
	CEM I	-	305,3
	Mineral filler 1	-	178,1
	Mineral filler 2	-	2900,2
	Pigment	-	76,3
Modifier	-	25,4	
7B. Silicone primer BOLIX SIG (for calculation 0,15 kg/m ²)	Water	-	10,5
	Dispersion	-	0,7
	Biocide	-	0,0
8B. Decorative coat BOLIX SIL (for calculation 0,23 kg/m ²)	Water	-	130,2
	Additive 1	-	2,0
	Mineral filler 1	-	195,8
	Mineral filler 2	-	24,8
	Dispersion	-	64,6
	Disp. silicone	-	23,9
	Pigment	-	49,7
	Coalescent	-	2,5
	Biocide	-	1,0
Packing		Use of packaging material 2012y	
Dry products (fix Z, U, UZ, UZB, mineral finishings)	Paper bags		1 892 pcs
	Foil stretch		19 719 kg
	Pallets		39 407 pcs
	Foil PE		4 717 kg
Finishing coats 30 kg (acryl, silicone, silicate)	Plastic buckets		274 316 pcs
	Pallets		11 430 pcs
	Foil stretch power		3 432 pcs
	Paper		22 860
Paints 18 l (acryl, silicone, silicate)	Foil stretch power		436 kg
	Paper		2 905
	Pallets		1 453 pcs
	Buckets		34 865 pcs
Key coats OP 25 kg	Buckets		38 270 pcs
	Paper		3 192
	Pallets		1 595 pcs
	Foil stretch		478 kg
Primers 20 kg (N, SG, SG color, SIG, SIG color)	Buckets		18 841 pcs
	Paper		1 571
	Pallets		785 pcs
	Foil stretch power		236 kg

¹ LCI data presented on the declared unit was analyzed but is not presented because of the confidential issues.

All inputs of raw materials and energy carriers have been included in LCA calculations. No cut-offs done.

Table 3. Primary energy consumption for A3 module

Energy carriers	Unit	Total	Energy per m ²
Electricity	kWh	1321600	0,14
ON (only inside fabric)	litrs	11000	0,0012
Petrol 95 (only inside fabric)	litrs	90	9,7E-06
Oil	litrs	272000	0,03
LPG	litrs	43000	0,0046

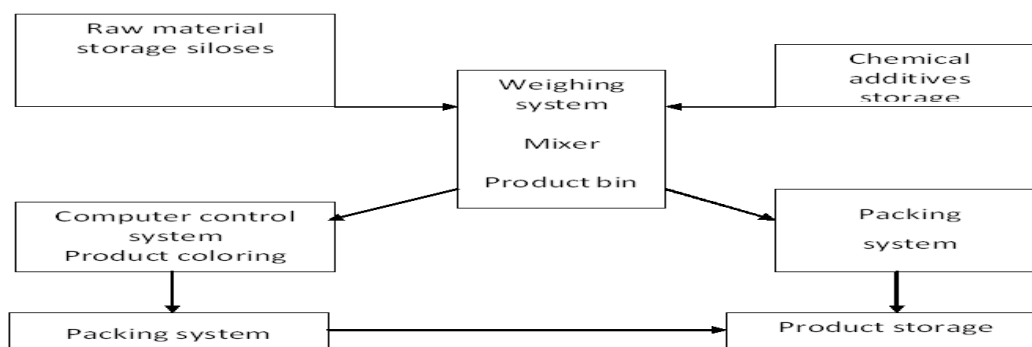


Fig.2. BOLIX production scheme (A3 module)

Table 4. Emissions into air generated during production stage A3(oil combustion)

Emission during production	Unit	Total amount	Emission per m ² of product
CO	kg	1186	0,0001
CO ₂	kg	425828	0,046
NO ₂	kg	1052	0,0001
SO ₂	kg	433	5E-05
Aromatic hydrocarbons	kg	81	8,7E-06
NMVO ¹	kg	392	7,8E-05
N ₂ O ¹	kg	3,4	6,7E-07
CH ₄ ¹	kg	117,7	2,3E-05

Note 1: Some values shown in table 4 were estimated basing on fuel consumption and combustion factors. Manufacturer doesn't provide measurement service for these substances.

Table 5. Emissions into water generated during production stage A3

Sewage	Unit	Total amount	Emission mg/m ² of product
Wastewater	m ³	1712	5E-04
Composition of wastewater			
COD	mg/l	348	5,55
BOD	mg/l	200	3,19
General suspended matter	mg/l	100	1,59
Ammonia	mg/l	48,3	0,77
Phosphates	mg/l	5,76	0,092
Zn	mg/l	0,056	0,00089
Pb	mg/l	0,067	0,001
Cu	mg/l	0,013	0,0002

Table 6. Waste generated in the phase of product manufacturing A3

Waste produced	Description of waste	EWC Code*	Quantity per year (Mg)	Destination type e.g. reuse, recycling, landfill, incineration
Controlled: Commercial	Municipal wastes	20 03 01	12,98	Disposal
	Used line elements	16 02 16	0,0025	Reuse
	Alkali batteries	16 06 04	0,005	Recycling
Controlled: Industrial	Paper packaging	15 01 01	17,4	Recycling
	Wooden	15 01 03	45,6	Re-use
	Mixed packing	15 01 06	25,6	Re-use
	Sorbents, filters	15 02 03	0,1	Recycling
	Industrial slag	19 08 14	325,4	Disposal
	Mineral /sand	01 04 09	340,5	Re-use
	Reject products	10 13 82	170,2	Recycling
	Organic	16 03 06	47,3	Disposal
	Tires	16 01 03	0,133	Recycling
	Steel	17 04 05	5,0	Recycling
	Plastic packaging	15 01 02	12,8	Recycling
Controlled: Hazardous	Hazardous material packings	15 01 10	0,086	Re-use
	Sorbents, filters, others	15 02 02	0,45	Re-use
	Used oils	13 02 08	0,370	Recycling
	Oil filters	16 01 07	0,030	Recycling
	Installation elements	16 02 13	0,029	Re-use
	Organic mix with hazardous	16 03 05	0,03	Disposal

Environmental characteristics (LCA)- ETICS



Table 7. Environmental characteristic for 1m² ETICS, acryl system, 10 cm EPS

Environmental assessment information (MND – Module not declared, MD – Module Declared, INA- indicator not assessed)																
Product stage			Construction process		Use stage							End of life				Benefits and loads beyond the system boundary
Raw material supply	Transport	Manufacturing	Transport to construction site	Construction- installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction 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
MD	MD	MD	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

Environmental impacts: 1 m ²					
Indicator	Unit	A1	A2	A3	A1-A3
Global warming potential	[kg CO ₂ eq.]	11,8	0,12	0,15	12,07
Depletion potential of the stratospheric ozone layer	[kg CFC 11 eq.]	2,73E-07	8,02E-07	1,4E-09	1,07E-06
Acidification potential of soil and water	[kg SO ₂ eq.]	0,037	0,0009	0,0003	0,038
Eutrophication potential	[kg (PO ₄) ³⁻ eq.]	0,0037	0,001	8,6E-06	0,005
Formation potential of tropospheric ozone	[kg Ethene eq.]	0,0024	6,5E-05	0,003	0,005
Abiotic depletion potential (ADP-elements) for non-fossil resources	[kg Sb eq.]	0,122	1,2E-08	0	0,12
Abiotic depletion potential (ADP-fossil fuels) for fossil resources	[MJ]	194,6	1,6	9,1	205,3
Environmental aspects on resource use: 1 m ²					
Indicator	Unit	A1	A2	A3	A1-A3
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	INA
Use of renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	INA
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	[MJ]	2,7	0	0,13	2,83
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	INA
Use of non-renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	INA
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)	[MJ]	216,4	1,6	9,2	227,2
Use of secondary material	[kg]	1,36	0	0	1,36
Use of renewable secondary fuels	[MJ]	1,59	0	0	1,59
Use of non-renewable secondary fuels	[MJ]	2,56	0	0	2,56
Net use of fresh water	[dm ³]	5,9	0,02	0,5	6,42
Other environmental information describing waste categories: 1 m ³					
Indicator	Unit	A1	A2	A3	A1-A3
Hazardous waste disposed	[kg]	0,002	0	0	0,002
Non-hazardous waste disposed	[kg]	0,98	0,007	0,1	1,09
Radioactive waste disposed	[kg]	0,0	0	0	0
Components for re-use	[kg]	0,0	0	0,054	0,054
Materials for recycling	[kg]	0,09	0	0,01	0,1
Materials for energy recovery	[kg]	0,0	0	0	0
Exported energy	[MJ]	0,0	0	0	0

Table 8. Environmental characteristic for 1m² ETICS, acryl system, 12 cm EPS

Environmental assessment information (MND – Module not declared, MD – Module Declared, INA- indicator not assessed)																
Product stage			Construction process		Use stage							End of life				Benefits and loads beyond the system boundary
Raw material supply	Transport	Manufacturing	Transport to construction site	Construction-installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction 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
MD	MD	MD	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

Environmental impacts: 1 m ²					
Indicator	Unit	A1	A2	A3	A1-A3
Global warming potential	[kg CO ₂ eq.]	14,5	0,12	0,15	14,77
Depletion potential of the stratospheric ozone layer	[kg CFC 11 eq.]	3,04E-07	8,02E-07	1,4E-09	8,3E-06
Acidification potential of soil and water	[kg SO ₂ eq.]	0,045	0,0009	0,0003	0,046
Eutrophication potential	[kg (PO ₄) ³⁻ eq.]	0,0046	0,001	8,6E-06	0,0056
Formation potential of tropospheric ozone	[kg Ethene eq.]	0,003	6,5E-05	0,003	0,0061
Abiotic depletion potential (ADP-elements) for non-fossil resources	[kg Sb eq.]	0,15	1,2E-08	0	0,15
Abiotic depletion potential (ADP-fossil fuels) for fossil resources	[MJ]	275,4	1,6	9,1	286,1
Environmental aspects on resource use: 1 m ²					
Indicator	Unit	A1	A2	A3	A1-A3
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	INA
Use of renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	INA
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	[MJ]	2,7	0	0,13	2,83
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	INA
Use of non-renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	INA
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)	[MJ]	305,3	1,6	9,2	316,1
Use of secondary material	[kg]	1,4	0	0	1,4
Use of renewable secondary fuels	[MJ]	1,6	0	0	1,6
Use of non-renewable secondary fuels	[MJ]	2,6	0	0	2,6
Net use of fresh water	[dm ³]	5,99	0,015	0,5	6,51
Other environmental information describing waste categories: 1 m ²					
Indicator	Unit	A1	A2	A3	A1-A3
Hazardous waste disposed	[kg]	0,002	0	0	0,002
Non hazardous waste disposed	[kg]	0,99	0,007	0,1	1,097
Radioactive waste disposed	[kg]	0,0	0	0	0
Components for re-use	[kg]	0,0	0	0,054	0,054
Materials for recycling	[kg]	0,0	0	0,01	0,01
Materials for energy recovery	[kg]	0,0	0	0	0
Exported energy	[MJ]	0,0	0	0	0

Table 9. Environmental characteristic for 1m² ETICS, acryl system, 15 cm EPS

Environmental assessment information (MND – Module not declared, MD – Module Declared, INA- indicator not assessed)																
Product stage			Construction process		Use stage							End of life				Benefits and loads beyond the system boundary
Raw material supply	Transport	Manufacturing	Transport to construction site	Construction-installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction 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
MD	MD	MD	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

Environmental impacts: 1 m ²					
Indicator	Unit	A1	A2	A3	A1-A3
Global warming potential	[kg CO ₂ eq.]	18,5	0,12	0,15	18,77
Depletion potential of the stratospheric ozone layer	[kg CFC 11 eq.]	3,51E-07	8,00E-06	1,40E-09	8,352E-06
Acidification potential of soil and water	[kg SO ₂ eq.]	0,06	0,0009	0,0003	0,06
Eutrophication potential	[kg (PO ₄) ³⁻ eq.]	0,006	0,001	8,60E-06	0,007
Formation potential of tropospheric ozone	[kg Ethene eq.]	0,004	6,50E-05	0,003	0,007
Abiotic depletion potential (ADP-elements) for non-fossil resources	[kg Sb eq.]	0,2	1,20E-08	0	0,2
Abiotic depletion potential (ADP-fossil fuels) for fossil resources	[MJ]	383,4	1,6	9,1	394,1
Environmental aspects on resource use: 1 m ²					
Indicator	Unit	A1	A2	A3	A1-A3
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	INA
Use of renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	INA
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	[MJ]	2,7	0	0,13	2,83
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	0
Use of non-renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	0
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)	[MJ]	424,1	1,6	9,2	434,9
Use of secondary material	[kg]	1,7	0	0	1,7
Use of renewable secondary fuels	[MJ]	1,6	0	0	1,6
Use of non-renewable secondary fuels	[MJ]	2,6	0	0	2,6
Net use of fresh water	[dm ³]	6,11	0,015	0,5	6,63
Other environmental information describing waste categories: 1 m ³					
Indicator	Unit	A1	A2	A3	A1-A3
Hazardous waste disposed	[kg]	0,002	0	0	0,002
Non hazardous waste disposed	[kg]	1,01	0,007	0,1	1,12
Radioactive waste disposed	[kg]	0,0	0	0	0
Components for re-use	[kg]	0,0	0	0,054	0,054
Materials for recycling	[kg]	0,0	0	0,01	0,01
Materials for energy recovery	[kg]	0,0	0	0	0
Exported energy	[MJ]	0,0	0	0	0

Table 10. Environmental characteristic for 1m² ETICS, silicone system, 10 cm EPS

Environmental assessment information (MND – Module not declared, MD – Module Declared, INA- indicator not assessed)																
Product stage			Construction process		Use stage							End of life				Benefits and loads beyond the system boundary
Raw material supply	Transport	Manufacturing	Transport to construction site	Construction-installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction 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
MD	MD	MD	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

Environmental impacts: 1 m ²					
Indicator	Unit	A1	A2	A3	A1-A3
Global warming potential	[kg CO ₂ eq.]	11,5	0,13	0,17	11,8
Depletion potential of the stratospheric ozone layer	[kg CFC 11 eq.]	6,7E-07	9E-07	1,5E-09	1,57E-06
Acidification potential of soil and water	[kg SO ₂ eq.]	0,038	0,001	0,0003	0,039
Eutrophication potential	[kg (PO ₄) ³⁻ eq.]	0,0043	0,001	9,2E-06	0,0053
Formation potential of tropospheric ozone	[kg Ethene eq.]	0,0025	6,9E-05	0,003	0,0056
Abiotic depletion potential (ADP-elements) for non-fossil resources	[kg Sb eq.]	0,11	1,3E-08	0	0,11
Abiotic depletion potential (ADP-fossil fuels) for fossil resources	[MJ]	193,5	1,7	9,7	204,9
Environmental aspects on resource use: 1 m ²					
Indicator	Unit	A1	A2	A3	A1-A3
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	INA
Use of renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	INA
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	[MJ]	2,7	0	0,15	2,85
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	INA
Use of non-renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	INA
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)	[MJ]	215,1	1,73	9,8	226,63
Use of secondary material	[kg]	1,36	0	0	1,36
Use of renewable secondary fuels	[MJ]	1,59	0	0	1,59
Use of non-renewable secondary fuels	[MJ]	2,56	0	0	2,56
Net use of fresh water	[dm ³]	6,01	0,016	0,54	6,566
Other environmental information describing waste categories: 1 m ³					
Indicator	Unit	A1	A2	A3	A1-A3
Hazardous waste disposed	[kg]	0,002	0	0	0,002
Non-hazardous waste disposed	[kg]	0,98	0,009	0,1	1,089
Radioactive waste disposed	[kg]	0,0	0	0	0
Components for re-use	[kg]	0,0	0	0,054	0,054
Materials for recycling	[kg]	0,0	0	0,01	0,01
Materials for energy recovery	[kg]	0,0	0	0	0
Exported energy	[MJ]	0,0	0	0	0

Table 11. Environmental characteristic for 1m² ETICS, silicone system, 12 cm EPS

Environmental assessment information (MND – Module not declared, MD – Module Declared, INA- indicator not assessed)																
Product stage			Construction process		Use stage							End of life				Benefits and loads beyond the system boundary
Raw material supply	Transport	Manufacturing	Transport to construction site	Construction-installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction 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
MD	MD	MD	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

Environmental impacts: 1 m ²					
Indicator	Unit	A1	A2	A3	A1-A3
Global warming potential	[kg CO ₂ eq.]	14,2	0,13	0,17	14,5
Depletion potential of the stratospheric ozone layer	[kg CFC 11 eq.]	7,03E-07	0,000009	1,5E-09	9,7E-06
Acidification potential of soil and water	[kg SO ₂ eq.]	0,05	0,001	0,0003	0,05
Eutrophication potential	[kg (PO ₄) ³⁻ eq.]	0,005	0,001	9,2E-06	0,006
Formation potential of tropospheric ozone	[kg Ethene eq.]	0,003	6,9E-05	0,003	0,006
Abiotic depletion potential (ADP-elements) for non-fossil resources	[kg Sb eq.]	0,15	1,30E-08	0	0,15
Abiotic depletion potential (ADP-fossil fuels) for fossil resources	[MJ]	274,4	1,7	9,7	285,8
Environmental aspects on resource use: 1 m ²					
Indicator	Unit	A1	A2	A3	A1-A3
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	INA
Use of renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	INA
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	[MJ]	2,68	0	0,15	2,83
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	[MJ]	0	INA	INA	INA
Use of non-renewable primary energy resources used as raw materials	[MJ]	0	INA	INA	INA
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)	[MJ]	303,98	1,73	9,8	315,5
Use of secondary material	[kg]	1,4	0	0	1,4
Use of renewable secondary fuels	[MJ]	1,59	0	0	1,59
Use of non-renewable secondary fuels	[MJ]	2,57	0	0	2,57
Net use of fresh water	[dm ³]	6,09	0,016	0,54	6,65
Other environmental information describing waste categories: 1 m ²					
Indicator	Unit	A1	A2	A3	A1-A3
Hazardous waste disposed	[kg]	0,002	0	0	0,002
Non hazardous waste disposed	[kg]	0,99	0,009	0,1	1,099
Radioactive waste disposed	[kg]	0,0	0	0	0
Components for re-use	[kg]	0,0	0	0,054	0,054
Materials for recycling	[kg]	0,0	0	0,01	0,01
Materials for energy recovery	[kg]	0,0	0	0	0
Exported energy	[MJ]	0,0	0	0	0

Table 12. Environmental characteristic for 1m² ETICS, silicone system, 15 cm EPS

Environmental assessment information (MND – Module not declared, MD – Module Declared, INA- indicator not assessed)																
Product stage			Construction process		Use stage							End of life				Benefits and loads beyond the system boundary
Raw material supply	Transport	Manufacturing	Transport to construction site	Construction-installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction 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
MD	MD	MD	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Environmental impacts: 1 m²																
Indicator									Unit	A1	A2	A3	A1-A3			
Global warming potential									[kg CO ₂ eq.]	18,2	0,13	0,17	18,5			
Depletion potential of the stratospheric ozone layer									[kg CFC 11 eq.]	7,49E-07	0,00001	1,5E-09	1,08E-05			
Acidification potential of soil and water									[kg SO ₂ eq.]	0,06	0,001	0,0003	0,0613			
Eutrophication potential									[kg (PO ₄) ³ -eq.]	0,006	0,001	9,2E-06	0,0070092			
Formation potential of tropospheric ozone									[kg Ethene eq.]	0,0038	6,9E-05	0,003	0,007			
Abiotic depletion potential (ADP-elements) for non-fossil resources									[kg Sb eq.]	0,19	1,30E-08	0	0,19			
Abiotic depletion potential (ADP-fossil fuels) for fossil resources									[MJ]	382,3	1,7	9,7	393,7			
Environmental aspects on resource use: 1 m²																
Indicator									Unit	A1	A2	A3	A1-A3			
Use of renewable primary energy excluding renewable primary energy resources used as raw materials									[MJ]	INA	INA	INA	INA			
Use of renewable primary energy resources used as raw materials									[MJ]	INA	INA	INA	INA			
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)									[MJ]	2,68	0	0,15	2,83			
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials									[MJ]	0	INA	INA	INA			
Use of non-renewable primary energy resources used as raw materials									[MJ]	0	INA	INA	INA			
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)									[MJ]	422,78	1,73	9,8	434,3			
Use of secondary material									[kg]	1,37	0	0	1,37			
Use of renewable secondary fuels									[MJ]	1,59	0	0	1,59			
Use of non-renewable secondary fuels									[MJ]	2,57	0	0	2,57			
Net use of fresh water									[dm ³]	6,2	0,016	0,54	6,76			
Other environmental information describing waste categories: 1 m³																
Indicator									Unit	A1	A2	A3	A1-A3			
Hazardous waste disposed									[kg]	0,002	0	0	0,002			
Non hazardous waste disposed									[kg]	1,01	0,009	0,1	1,119			
Radioactive waste disposed									[kg]	0,0	0	0	0			
Components for re-use									[kg]	0,0	0	0,054	0,054			
Materials for recycling									[kg]	0,0	0	0,01	0,01			
Materials for energy recovery									[kg]	0,0	0	0	0			
Exported energy									[MJ]	0,0	0	0	0			

Table 13. Environmental characteristic for 1m² ETICS, silicate system, 10 cm EPS

Environmental assessment information (MND – Module not declared, MD – Module Declared, INA- indicator not assessed)																
Product stage			Construction process		Use stage							End of life				Benefits and loads beyond the system boundary
Raw material supply	Transport	Manufacturing	Transport to construction site	Construction- installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction 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
MD	MD	MD	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

Environmental impacts: 1 m ²					
Indicator	Unit	A1	A2	A3	A1-A3
Global warming potential	[kg CO ₂ eq.]	11,5	0,125	0,16	11,8
Depletion potential of the stratospheric ozone layer	[kg CFC 11 eq.]	3,6E-07	8,2E-07	1,4E-09	1,18E-06
Acidification potential of soil and water	[kg SO ₂ eq.]	0,037	0,0009	0,00029	0,038
Eutrophication potential	[kg (PO ₄) ³⁻ eq.]	0,004	0,001	8,8E-06	0,005
Formation potential of tropospheric ozone	[kg Ethene eq.]	0,0024	6,7E-05	0,003	0,0055
Abiotic depletion potential (ADP-elements) for non-fossil resources	[kg Sb eq.]	0,11	1,3E-08	0	0,11
Abiotic depletion potential (ADP-fossil fuels) for fossil resources	[MJ]	193,5	1,66	9,3	204,5
Environmental aspects on resource use: 1 m ²					
Indicator	Unit	A1	A2	A3	A1-A3
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	INA
Use of renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	INA
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	[MJ]	2,7	0	0,14	2,84
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	INA
Use of non-renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	INA
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)	[MJ]	215,1	1,66	9,4	226,16
Use of secondary material	[kg]	1,36	0	0	1,36
Use of renewable secondary fuels	[MJ]	1,59	0	0	1,59
Use of non-renewable secondary fuels	[MJ]	2,56	0	0	2,56
Net use of fresh water	[dm ³]	5,94	0,016	0,51	6,466
Other environmental information describing waste categories: 1 m ³					
Indicator	Unit	A1	A2	A3	A1-A3
Hazardous waste disposed	[kg]	0,002	0	0	0,002
Non-hazardous waste disposed	[kg]	0,98	0,0083	0,1	1,09
Radioactive waste disposed	[kg]	0,0	0	0	0
Components for re-use	[kg]	0,0	0	0,054	0,054
Materials for recycling	[kg]	0,0	0	0,01	0,01
Materials for energy recovery	[kg]	0,0	0	0	0
Exported energy	[MJ]	0,0	0	0	0

Table 14. Environmental characteristic for 1m² ETICS, silicate system, 12 cm EPS

Environmental assessment information (MND – Module not declared, MD – Module Declared, INA- indicator not assessed)																
Product stage			Construction process		Use stage							End of life				Benefits and loads beyond the system boundary
Raw material supply	Transport	Manufacturing	Transport to construction site	Construction-installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction 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
MD	MD	MD	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

Environmental impacts: 1 m ²					
Indicator	Unit	A1	A2	A3	A1-A3
Global warming potential	[kg CO ₂ eq.]	14,2	0,125	0,16	14,5
Depletion potential of the stratospheric ozone layer	[kg CFC 11 eq.]	3,92E-07	8,20E-06	1,40E-09	8,6E-06
Acidification potential of soil and water	[kg SO ₂ eq.]	0,046	0,0009	0,0003	0,047
Eutrophication potential	[kg (PO ₄) ³⁻ eq.]	0,0049	0,001	8,80E-06	0,006
Formation potential of tropospheric ozone	[kg Ethene eq.]	0,003	6,70E-05	0,003	0,006
Abiotic depletion potential (ADP-elements) for non-fossil resources	[kg Sb eq.]	0,14	1,30E-08	0	0,14
Abiotic depletion potential (ADP-fossil fuels) for fossil resources	[MJ]	274,3	1,66	9,3	285,3
Environmental aspects on resource use: 1 m ²					
Indicator	Unit	A1	A2	A3	A1-A3
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	INA
Use of renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	INA
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	[MJ]	2,7	0	0,14	2,84
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	INA
Use of non-renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	INA
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)	[MJ]	303,9	1,66	9,4	314,96
Use of secondary material	[kg]	1,368	0	0	1,37
Use of renewable secondary fuels	[MJ]	1,6	0	0	1,6
Use of non-renewable secondary fuels	[MJ]	2,5	0	0	2,5
Net use of fresh water	[dm ³]	6,01	0,016	0,51	6,54
Other environmental information describing waste categories: 1 m ²					
Indicator	Unit	A1	A2	A3	A1-A3
Hazardous waste disposed	[kg]	0,002	0	0	0,002
Non hazardous waste disposed	[kg]	0,99	0,0083	0,1	1,1
Radioactive waste disposed	[kg]	0,0	0	0	0
Components for re-use	[kg]	0,0	0	0,054	0,054
Materials for recycling	[kg]	0,0	0	0,01	0,01
Materials for energy recovery	[kg]	0,0	0	0	0
Exported energy	[MJ]	0,0	0	0	0

Table 15. Environmental characteristic for 1m² ETICS, silicate system, 15 cm EPS

Environmental assessment information (MND – Module not declared, MD – Module Declared, INA- indicator not assessed)																
Product stage			Construction process		Use stage							End of life				Benefits and loads beyond the system boundary
Raw material supply	Transport	Manufacturing	Transport to construction site	Construction-installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction 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
MD	MD	MD	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

Environmental impacts: 1 m ²					
Indicator	Unit	A1	A2	A3	A1-A3
Global warming potential	[kg CO ₂ eq.]	18,2	0,125	0,16	18,5
Depletion potential of the stratospheric ozone layer	[kg CFC 11 eq.]	4,38E-07	8,20E-06	1,40E-09	8,64E-06
Acidification potential of soil and water	[kg SO ₂ eq.]	0,06	0,0009	0,00029	0,06
Eutrophication potential	[kg (PO ₄) ³⁻ eq.]	0,0061	0,001	8,80E-06	0,007
Formation potential of tropospheric ozone	[kg Ethene eq.]	0,0037	6,7E-05	0,003	0,0068
Abiotic depletion potential (ADP-elements) for non-fossil resources	[kg Sb eq.]	0,19	1,30E-08	0	0,19
Abiotic depletion potential (ADP-fossil fuels) for fossil resources	[MJ]	382,3	1,7	9,3	393,3
Environmental aspects on resource use: 1 m ²					
Indicator	Unit	A1	A2	A3	A1-A3
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	INA
Use of renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	INA
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	[MJ]	2,67	0	0,14	2,81
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	INA
Use of non-renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	INA
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)	[MJ]	422,74	1,66	9,4	433,8
Use of secondary material	[kg]	1,37	0	0	1,37
Use of renewable secondary fuels	[MJ]	1,59	0	0	1,59
Use of non-renewable secondary fuels	[MJ]	2,57	0	0	2,57
Net use of fresh water	[dm ³]	6,13	0,016	0,51	6,656
Other environmental information describing waste categories: 1 m ³					
Indicator	Unit	A1	A2	A3	A1-A3
Hazardous waste disposed	[kg]	0,002	0	0	0,002
Non hazardous waste disposed	[kg]	1,01	0,0083	0,1	1,12
Radioactive waste disposed	[kg]	0,0	0	0	0
Components for re-use	[kg]	0,0	0	0,054	0,054
Materials for recycling	[kg]	0,0	0	0,01	0,01
Materials for energy recovery	[kg]	0,0	0	0	0
Exported energy	[MJ]	0,0	0	0	0

Table 16. Environmental characteristic for 1m² ETICS, mineral system, 10 cm EPS

Environmental assessment information (MND – Module not declared, MD – Module Declared, INA- indicator not assessed)																
Product stage			Construction process		Use stage							End of life				Benefits and loads beyond the system boundary
Raw material supply	Transport	Manufacturing	Transport to construction site	Construction-installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction 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
MD	MD	MD	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

Environmental impacts: 1 m ²					
Indicator	Unit	A1	A2	A3	A1-A3
Global warming potential	[kg CO ₂ eq.]	10,8	0,13	0,16	11,09
Depletion potential of the stratospheric ozone layer	[kg CFC 11 eq.]	2,8E-07	8,37E-07	1,43E-09	1,11E-06
Acidification potential of soil and water	[kg SO ₂ eq.]	0,034	0,0009	0,0003	0,035
Eutrophication potential	[kg (PO ₄) ³⁻ eq.]	0,003	0,0011	8,9E-06	0,004
Formation potential of tropospheric ozone	[kg Ethene eq.]	0,0022	6,78E-05	0,003	0,0053
Abiotic depletion potential (ADP-elements) for non-fossil resources	[kg Sb eq.]	0,10	1,31E-08	0	0,1
Abiotic depletion potential (ADP-fossil fuels) for fossil resources	[MJ]	189,9	1,69	9,46	201,05
Environmental aspects on resource use: 1 m ²					
Indicator	Unit	A1	A2	A3	A1-A3
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	INA
Use of renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	INA
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	[MJ]	2,5	0	0,14	2,64
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	INA
Use of non-renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	INA
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)	[MJ]	210,1	1,69	9,6	221,39
Use of secondary material	[kg]	1,36	0	0	1,36
Use of renewable secondary fuels	[MJ]	1,59	0	0	1,59
Use of non-renewable secondary fuels	[MJ]	2,56	0	0	2,56
Net use of fresh water	[dm ³]	9,2	0,016	0,52	9,74
Other environmental information describing waste categories: 1 m ³					
Indicator	Unit	A1	A2	A3	A1-A3
Hazardous waste disposed	[kg]	0,002	0	0	0,002
Non-hazardous waste disposed	[kg]	0,98	0,0084	0,1	1,09
Radioactive waste disposed	[kg]	0,0	0	0	0
Components for re-use	[kg]	0,0	0	0,054	0,054
Materials for recycling	[kg]	0,0	0	0,01	0,01
Materials for energy recovery	[kg]	0,0	0	0	0
Exported energy	[MJ]	0,0	0	0	0

Table 17. Environmental characteristic for 1m² ETICS, mineral system, 12 cm EPS

Environmental assessment information (MND – Module not declared, MD – Module Declared, INA- indicator not assessed)																
Product stage			Construction process		Use stage							End of life				Benefits and loads beyond the system boundary
Raw material supply	Transport	Manufacturing	Transport to construction site	Construction-installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction 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
MD	MD	MD	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

Environmental impacts: 1 m ²					
Indicator	Unit	A1	A2	A3	A1-A3
Global warming potential	[kg CO ₂ eq.]	13,4	0,13	0,16	11,19
Depletion potential of the stratospheric ozone layer	[kg CFC 11 eq.]	3,07E-07	8,37E-07	1,43E-09	1,11E-06
Acidification potential of soil and water	[kg SO ₂ eq.]	0,04	0,0009	0,0003	0,035
Eutrophication potential	[kg (PO ₄) ³⁻ eq.]	0,004	0,0011	8,90E-06	0,0045
Formation potential of tropospheric ozone	[kg Ethene eq.]	0,0027	6,78E-05	0,003	0,005
Abiotic depletion potential (ADP-elements) for non-fossil resources	[kg Sb eq.]	0,13	1,31E-08	0	0,1
Abiotic depletion potential (ADP-fossil fuels) for fossil resources	[MJ]	270,74	1,69	9,46	204,6
Environmental aspects on resource use: 1 m ²					
Indicator	Unit	A1	A2	A3	A1-A3
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	INA
Use of renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	INA
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	[MJ]	2,44	0	0,14	2,64
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	INA
Use of non-renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	INA
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)	[MJ]	299,7	1,69	9,6	225,8
Use of secondary material	[kg]	1,37	0	0	1,36
Use of renewable secondary fuels	[MJ]	1,59	0	0	1,59
Use of non-renewable secondary fuels	[MJ]	2,57	0	0	2,56
Net use of fresh water	[dm ³]	9,28	0,016	0,52	9,74
Other environmental information describing waste categories: 1 m ²					
Indicator	Unit	A1	A2	A3	A1-A3
Hazardous waste disposed	[kg]	0,002	0	0	0,002
Non hazardous waste disposed	[kg]	0,99	0,0084	0,1	1,1
Radioactive waste disposed	[kg]	0,0	0	0	0
Components for re-use	[kg]	0,0	0	0,054	0,054
Materials for recycling	[kg]	0,0	0	0,01	0,01
Materials for energy recovery	[kg]	0,0	0	0	0
Exported energy	[MJ]	0,0	0	0	0

Table 18. Environmental characteristic for 1m² ETICS, mineral system, 15 cm EPS

Environmental assessment information (MND – Module not declared, MD – Module Declared, INA- indicator not assessed)																
Product stage			Construction process		Use stage							End of life				Benefits and loads beyond the system boundary
Raw material supply	Transport	Manufacturing	Transport to construction site	Construction-installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction 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
MD	MD	MD	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

Environmental impacts: 1 m ²					
Indicator	Unit	A1	A2	A3	A1-A3
Global warming potential	[kg CO ₂ eq.]	17,4	0,13	0,16	11,4
Depletion potential of the stratospheric ozone layer	[kg CFC 11 eq.]	3,54E-07	8,37E-07	1,43E-09	1,65E-06
Acidification potential of soil and water	[kg SO ₂ eq.]	0,055	0,0009	0,0003	0,04
Eutrophication potential	[kg (PO ₄) ³⁻ eq.]	0,0054	0,0011	8,90E-06	0,0041
Formation potential of tropospheric ozone	[kg Ethene eq.]	0,0035	6,78E-05	0,003	0,005
Abiotic depletion potential (ADP-elements) for non-fossil resources	[kg Sb eq.]	0,18	1,31E-08	0	0,1
Abiotic depletion potential (ADP-fossil fuels) for fossil resources	[MJ]	378,74	1,69	9,46	209,6
Environmental aspects on resource use: 1 m ²					
Indicator	Unit	A1	A2	A3	A1-A3
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	INA
Use of renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	INA
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	[MJ]	2,44	0	0,14	2,64
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	INA
Use of non-renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	INA
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)	[MJ]	418,49	1,69	9,6	231,49
Use of secondary material	[kg]	1,37	0	0	1,36
Use of renewable secondary fuels	[MJ]	1,59	0	0	1,59
Use of non-renewable secondary fuels	[MJ]	2,57	0	0	2,56
Net use of fresh water	[dm ³]	9,4	0,016	0,52	9,74
Other environmental information describing waste categories: 1 m ³					
Indicator	Unit	A1	A2	A3	A1-A3
Hazardous waste disposed	[kg]	0,002	0	0	0,002
Non-hazardous waste disposed	[kg]	1,01	0,0084	0,1	1,12
Radioactive waste disposed	[kg]	0,0	0	0	0
Components for re-use	[kg]	0,0	0	0,054	0,054
Materials for recycling	[kg]	0,0	0	0,01	0,01
Materials for energy recovery	[kg]	0,0	0	0	0
Exported energy	[MJ]	0,0	0	0	0

Environmental characteristics (LCA) - transport of product "A4"



Table 19. Environmental profile for transport of 1 m² BOLIX System to Poland, Germany, Scandinavia and Czech from manufacturing plant (transport TIR or TIR+ship)

Environmental impacts: transport of 1 m ² to:					
Indicator	Unit	Poland	Germany	Scandinavia	Czech
Global warming potential	[kg CO ₂ eq.]	0,08	0,13	0,34	0,1
Depletion potential of the stratospheric ozone layer	[kg CFC 11 eq.]	0	0	0	0
Acidification potential of soil and water	[kg SO ₂ eq.]	0,0009	0,0015	0,0040	0,0012
Eutrophication potential	[kg (PO ₄) ³⁻ eq.]	3,39E-05	5,28E-05	0,00014	4,15E-05
Formation potential of tropospheric ozone	[kg Ethene eq.]	0,0002	0,0002	0,0007	0,00019
Abiotic depletion potential (ADP-elements) for non-fossil resources	[kg Sb eq.]	8,35E-09	1,3E-08	3,55645E-08	1,021E-08
Abiotic depletion potential (ADP-fossil fuels) for fossil resources	[MJ]	1,08	1,68	4,59	1,32
Environmental aspects on resource use: transport of 1 m ² to:					
Indicator	Unit	Poland	Germany	Scandinavia	Czech
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	INA
Use of renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	INA
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	[MJ]	0	0	0	0
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	INA
Use of non-renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	INA
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)	[MJ]	1,08	1,68	4,59	1,32
Use of secondary material	[kg]	0	0	0	0
Use of renewable secondary fuels	[MJ]	0	0	0	0
Use of non-renewable secondary fuels	[MJ]	0	0	0	0
Net use of fresh water	[dm ³]	0,01	0,012	0,04	0,012
Other environmental information describing waste categories: transport of 1 m ² to:					
Indicator	Unit	Poland	Germany	Scandinavia	Czech
Hazardous waste disposed	[kg]	0	0	0	0
Non-hazardous waste disposed	[kg]	0,0054	0,008	0,023	0,0065
Radioactive waste disposed	[kg]	0	0	0	0
Components for re-use	[kg]	0	0	0	0
Materials for recycling	[kg]	0	0	0	0
Materials for energy recovery	[kg]	0	0	0	0
Exported energy	[MJ]	0	0	0	0

The process of verification of an EPD is in accordance with EN ISO14025, clause 8 and ISO 21930, clause 9. After verification this EPD is valid for a 5 years period. EPD does not have to be recalculated after 5 years if the underlying data has not changed significantly.

The basis for LCA analysis was EN 15804
Independent verification corresponding to ISO 14025 & 8.3.1. <input checked="" type="checkbox"/> external <input type="checkbox"/> internal
Verification of EPD: PhD. Eng. Aleksander Panek LCI audit and input data verification: M.Sc. Eng. Dominik Bekierski LCA: PhD. Eng. Michał Piasecki, m.piasecki@itb.pl Verification of procedures and declaration: PhD. Eng Halina Prejzner

<http://www.zb.itb.pl/epd>



ITB is the member of  The European Platform of EPD program operators.

Normative references

- ISO14025: 2006, Environmental management – Type III environmental declarations – Principles and procedure.
- ISO 21930: 2007, Sustainability in building and construction – Environmental declaration of building products.
- ISO14044: 2006, Environmental management – Life cycle assessment – Requirements and guidelines.
- ISO15686-1: 2000, Buildings and constructed assets — Service life planning — Part 1: General principles
- ISO15686-8: 2008, Buildings and constructed assets – Service life planning – Part 8: Reference service life
- PN EN15804: 2013, Sustainability in construction works – Environmental product declarations – Core rules for the product category of construction products.
- EN15942: 2011, Sustainability of construction works. Environmental product declarations. Communication format business-to-business



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ŚWIADECTWO nr 011/2014 DEKLARACJI ŚRODOWISKOWEJ III TYPU

Wyrób:

ZŁOŻONY SYSTEM IZOLACJI CIEPLNEJ Z WYPRAWAMI TYNKARSKIMI BOLIX

Wnioskodawca:

BOLIX S.A.

34-300 Żywiec, ul. Stolarska 8

Potwierdza się poprawność ustalenia danych uwzględnionych przy opracowaniu Deklaracji Środowiskowej III typu oraz zgodność z wymaganiami normy:

PN-EN 15804:2012

Zrównoważoność obiektów budowlanych.

Deklaracje środowiskowe wyrobów.

Podstawowe zasady kategoryzacji wyrobów budowlanych.

Niniejsze świadectwo, wydane po raz pierwszy 3 stycznia 2014 r. jest ważne 5 lat,
lub do czasu zmiany wymienionej Deklaracji Środowiskowej

Kierownik
Zakładu Fizyki Ciepłej,
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Robert Geryło



dyktator
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Jan Bobrowicz

Warszawa, styczeń 2014 r.