# **ENVIRONMENTAL PRODUCT DECLARATION**

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

Owner of the Declaration	ZZ Wancor AG
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-ZZW-20200283-CBB1-EN
Issue date	12.03.2021
Valid to	11.03.2026

## Urban cladding tile ZZ Wancor AG



www.ibu-epd.com | https://epd-online.com





## **General Information**

#### ZZ Wancor AG

#### Programme holder

IBU – Institut Bauen und Umwelt e.V. Panoramastr. 1 10178 Berlin Germany

#### Declaration number EPD-ZZW-20200283-CBB1-EN

## This declaration is based on the product category rules: Ceramic panelling, 07.2014 (PCR checked and approved by the SVR)

**Issue date** 12.03.2021

Valid to

11.03.2026

Jam Peter

Dipl. Ing. Hans Peters (chairman of Institut Bauen und Umwelt e.V.)

hand Walls

Dr. Alexander Röder (Managing Director Institut Bauen und Umwelt e.V.))

### Product

#### Information about the enterprise

ZZ Wancor is the Swiss supplier for ceramic building materials. With its two roof tile plants and one brick plant, it is able to supply its customers with local clay materials with correspondingly short delivery distances.

#### Product description/Product definition

The declared product involves small-format ceramic cladding tiles made of clay. The panels are manufactured from various clay masses and differ in their surfaces and colours by using different technics in applying the engobe and different technics of roughening the surface. They are single-shell panels for ventilated façades. The manufacturing corresponds to the extrusion process. Three different types (Urban U, Urban L, Urban T) are produced which differ both in terms of aesthetics and fastening. The Urban T-type façade panels are connected to the primary façade support system using a system-bound aluminium substructure. The Urban U and Urban L-type façade panels can be installed on common support battens made of wood.

### Urban cladding tiles

Owner of the declaration ZZ Wancor AG Eichwatt 1 CH-8105 Regensdorf

#### **Declared product / declared unit** Urban cladding tiles

#### Scope:

This EPD covers the Urban ceramic cladding tiles series produced at one production site in Switzerland by the company ZZ Wancor AG. The EPD document itself refers to the L-Type of the series. In a public annexe to the EPD, the specific LCA results for the U-Type and T-Type variation are declared as well. In the same annexe, representative scenarios for different sub-construction alternatives (aluminium or wood based) are provided, to allow for a full system analysis.

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

The EPD was created according to the specifications of *EN 15804+A2*. In the following, the standard will be simplified as *EN 15804*.

#### Verification

The standard EN 15804 serves as the core PCR

Independent verification of the declaration and data according to ISO 14025:2010

internally x externally

Schindle

Angela Schindler (Independent verifier)

For the placing on the market of the product in the European Union/European Free Trade Association (EU/EFTA) (with the exception of Switzerland) *Regulation (EU) No. 305/2011* (CPR) applies. The product needs a declaration of performance taking into consideration *EN 1304*:2013, Clay roofing tiles and fittings and the CE-marking. For the application and use the respective national provisions apply. Additionally, an European Technical Assessment *ETA* no. ETA-20/0139 exists for Urban T's substructure 'GFT 111'.

#### Application

The systems are attached to a primary substructure. Urban U- and L-Type is fixed by means of a wooden support system, and Urban T-type by means of a system-bound aluminium support system. The weights and number per square metre vary slightly between the types.



Illustration of a System with Urban U (L)



Illustration of a System with Urban T



#### Technical Data

General Technical Data (U, L, T)

Length:	185 mm
Width:	380 mm
Height:	39 mm
Thickness:	19 mm

Further technical details are listed in the specific data sheets or declaration of performance. The declared weight corresponds to the most used type in 2020.

#### **Constructional data**

Name	Value	Unit
Gross density	1770	kg/m <sup>3</sup>
Bending strength	5.6	kN

### LCA: Calculation rules

#### **Declared Unit**

#### Urban facade tiles

- L-Type, declared surface weight 47,74 kg/m<sup>2</sup> (in EPD document)
- U-Type, declared surface weight 56,42 kg/m<sup>2</sup> (in public annex to EPD)
- T-Type, declared surface weight 41,65 kg/m<sup>2</sup> (in public annex to EPD)

Water absorbtion	0.7	%
Break load	NR	kN/m
Thermal conductivity	NR	W/(mK)
Sound absorption coefficient (if relevant)	NR	%
ND = net relevent		

NR = not relevant

#### Product according to the CPR, based on a hEN:

- Performance data of the product in accordance with the declaration of performance with respect to its essential characteristics according to *EN 1304*:2013, Clay roofing tiles and fittings.
- Additionally, for Urban T's substructure 'GFT 111' exist an ETA no. ETA-20/0139.

#### **Base materials/Ancillary materials**

The Urban façade system consists of ceramic cladding tiles and either a wooden or an aluminum substructure. The cladding tiles comprise ~95% of clay (weathered products of feldspathic stones), ~4% of coloured pigments (metallic oxides for pigmentation of the raw material), 0.35% of barium carbonate (mineral), and <1% of surface colour coating (engobes.

The main part of clay is originally from the site of Laufen and the regional facility surrounding. A quantity proportion of approximately 12% originates from Schwarzwald in Germany. Coloured pigments and surface coatings are additionally purchased from renowned. Manufacturers of those materials.

This product contains substances listed in the candidate list (21.06.2013) exceeding 0.1 percentage by mass: yes.

0.35% of barium sulfate (CAS no.: 7727-43-7)

No other *REACH*-relevant substances according to the *candidate list* dated 21 June 2013 are used in production.

#### **Reference service life**

Urban cladding tiles do not change after completion of the production process. The expected lifespan according to Bundesinstitut für Bau-, Stadt-, und Raumforschung (*BBSR*) is ≥ 50 years. The tiles are weatherproof, frost-proof, acid-proof as well as colourfast and UV-resistant. Replacing a single or several panels is always possible.

# Sub-construction (declared in public annex to the EPD)

- Aluminium-EPDM (Ethylene Propylene Diene Monomer) sub-construction, declared surface weight 9,25 kg/m<sup>2</sup> (7 kg/m<sup>2</sup> Aluminium, 2,25 kg/m<sup>2</sup> EPDM)
- Wooden sub-construction incl. stainless steel screws, declared surface weight 5,192 kg/m<sup>2</sup> (5,02 kg/m<sup>2</sup> wood, 0,172 kg/m<sup>2</sup> screws)



#### **Declared unit**

Name	Value	Unit
Declared unit (L-Type)	1	m²
Grammage (L-Type)	47.74	kg/m²
Conversion factor to 1 kg (L-Type)	47.74	-

#### System boundary

Type of the EPD: cradle to gate - with options.

The background database used is the one from *GaBi Software*.

Production stage (A1-A3):

Module A1 and A2: Provision of clay via excavator and truck transport to the production site.

Module A3: Production loads, in particular supply and useage of fuels and auxillary material and measured emissions from the burning process. Manufacturing of packaging material.

#### Construction process stage (A4-A5):

Module A4: Truck transport to the construction site (100km). The transport distance can, if necessary, be adjusted at the building level (e.g. for an actual transport distance of 200 km: multiply the life cycle assessment values by a factor of 2).

Module A5: emissions from thermal packaging treatment (resulting credits in module D). Production of the substructure (representative life cycle assessment values for wood and aluminum substructures see the public annex to the EPD document).

Cuttings were not taken into account, as they depend heavily on the building context. Cuttings can be estimated using the declared values for the production stage (e.g. 5% wastage: multiplication of the life cycle assessment values for A1-A3 by the factor 0.05).

Electricity consumption for installation (mainly use of hand machines) was not considered.

End of Life stage (C1-C4): Module C1: Manual dismantling (no loads).

Module C2: truck transport to waste processing (50km). The transport distance can, if necessary, be adjusted at the building level (e.g. for an actual transport distance of 100 km: multiply the life cycle assessment values by a factor of 2).

Module C3: average loads for waste processing (shredding). Material losses cosidered: 3%.

<u>Credits and loads beyond the system boundaries (D):</u> Scenario D / 1: Material recycling as a component of green roof granulate (substitution of lava granulate).

Scenario D / 2: Material recycling as backfill material (substitution of crushed stone).

#### Comparability

Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to *EN 15804* and the building context, respectively the product-specific characteristics of performance, are taken into account.



## LCA: Scenarios and additional technical information

Characteristic 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	0.743	kg C

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

Name	Value	Unit
Litres of fuel	0.0993	l/100km
Transport distance	100	km
Capacity utilisation (including empty runs)	61	%

#### **Reference service life**

Name	Value	Unit
Life Span (according to BBSR)	≥50	а

### End of life (C1-C4)

Name	Value	Unit
Collected separately waste type	47.74	kg
Collected as mixed construction waste	0	kg
Reuse	0	kg
Recycling	46.3	kg
Energy recovery	0	kg
Landfilling	1.44	kg



## LCA: Results

The LCA results for other product variations and the sub-construction can be found in a public annex to this EPD. To assess specific configurations on building level, the results of the LCA may be scaled linear, by using the quotient of actual mass per unit area divided by declared mass per unit area as scaling factor (e.g. 50 kg/m<sup>2</sup> / 47.74 kg/m<sup>2</sup> = 1.0473 = scaling factor to be applied on all indicators in all life cycle stages).

47,74 Kg/m – 1,0475 – Scaling lactor to	b be applied on all indicators in all life cycle stages).
DESCRIPTION OF THE SYSTEM BOU	INDARY (X = INCLUDED IN LCA; ND = MODULE OR INDICATOR NOT
DECLARED: MNR = MODULE NOT R	ELEVANT)

DEGE		·,	$\mathbf{x} = \mathbf{w} \mathbf{c}$															
PROD	UCT S	TAGE	CONST ON PRC STA	RUCTI OCESS GE		USE STAGE END OF LIFE STAGE BEYOND THE SYSTEM BOUNDARIES					END OF LIFE STAGE							
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy	nse	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery-	Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	5 В6	6	B7	C1	C2	C	3 C4	1	2
X	Х	Х	X	Х	ND	ND	MNR	MNR	MN	r ni	כ	ND	Х	X	X	ND	>	×
RESU	LTS (	OF TH	IE LCA	- EN	VIRON	IMENT	AL IM	IPACT	acc	ordin	g to	<b>EN</b> 1	15804-	-A2: 1	m² (	cladding	tile "L	
type",	47,74	4 kg/r	n²															
Core In	dicator		Unit	A1	-A3	A4		A5		C1		c	2	C3		D/1		D/2
GWF	P-total	[kg (	CO <sub>2</sub> -Eq.]	1.36	E+1	3.31E	-1	2.88E+0	)	0.00E+	0	1.58	3E-1	1.28E-	1	-1.18E+0	-1.1	11E+0
GWP-t	-iossii Dioaenic	[kg (	<u>202-Eq.j</u> 202-Ea.1	-3.13	3E+0	3.29E	+0	2.09E-1 2.67E+0	)	0.00E+	0	0.00	E+0	2.43E-	4	-1.17E+0 -2.04E-3	-1.	07E-3
GWF	2-luluc	[kg (	CO <sub>2</sub> -Eq.]	1.06	6E-2	2.67E	-3	3.19E-5		0.00E+	0	1.27	7E-3	4.68E-	4	-2.05E-3	-1.	18E-3
OI	OP	[kg Cl	FC11-Eq.]	9.18	E-14	3.97E-	-17	3.79E-16	6	0.00E+	0	1.89	E-17	5.41E-1	16	-1.06E-14	-1.1	15E-14
A	P .	[mo	<u>IH⁺-Eq.]</u>	2.71	1E-2	3.48E	4	4.10E-4		0.00E+	0	1.65	5E-4	1.20E-	3	-3.27E-3	-2.	10E-3
EP-fres	snwater	[Kg H	N-Eq.]	1.96	0E-5	1.00E-6		5.73E-8		0.00E+	0	4.78	3E-7	3.04E-	/ /	-1.80E-0	-1.	12E-0 35E-1
EP-ter	=P-terrestrial [mol N-Eq.]		N-Ea.1	9.40	)E-2	1.24E-3		1.93E-3		0.00E+	0	5.91	IE-4	6.47E-	3	-1.43E-2	-0.	89E-3
PC	POCP [kg NMVOC-E		/VOC-Eq.]	2.52	2E-2	2.83E-4		3.61E-4	E-4 0.00E		0	1.35E-4		1.71E-3		-3.78E-3	-1.0	83E-3
AD	ADPE [kg S		Sb-Eq.]	8.06	6E-6	2.37E	-8	5.97E-9		0.00E+	0	) 1.13E-8		1.40E-	7	-1.77E-7	-1./	82E-7
AD	PF	<b>F</b> == 3 -	[MJ]	1.31	E+2	4.40E	+0	6.47E-1		0.00E+	E+0 2.10E+		E+0	2.39E+	0	-1.93E+1	-1.8	35E+1
W	WDP [m <sup>3</sup> world-Eq deprived]		vona-Eq prived]	3.87	7E-1	2.95E-3		2.97E-1	97E-1 0.00E		·0 1.40E-3		)E-3	-3 2.14E-2		-1.06E-1	-1.	16E-1
Captior	GWP Eutro	e = Glob Ophicatio	al warming on potentia fossil re	g potent al; POCF sources	ial; ODP P = Form s: ADPF	= Deple ation poi = Abiotic	tion poter ential of depletio	ntial of th troposph n potenti	e strati eric oz al for fo	ospheric cone pho ossil reso	otoch	ne laye nemical es: WDF	r; AP = A oxidants; P = Wate	cidificatio ADPE = r (user) d	n pot Abiot epriva	ential of land ic depletion ation potenti	l and wat potential al	er; EP = for non-
RESU	LTS (	OF TH		- IND		ORS T	O DES	CRIB	E RE	SOU	RCI	E USE	acco	rdina f	to E	N 15804	+A2: 1	m²
cladd	ina til	e "L-	type". 4	17.74	ka/m²										_			
Indiant		Init	A4 A2				A.5					<u></u>		<u></u>		D/4		
Indicat			AI-AJ		A4		AJ	(				62		03				<i>n</i> Z
PERE		MJ]	5.53E+1	1	2.48E-	1	2.69E+1	1	0.00E+0 1.18E-1			2	.01E-1	_	-3.86E+0	-4.1	0E+0	
PERI			2.07E+ 8.20E+1	1	2.48E	1	-2.07E+ 1.22E-1	1	0.00E+0 0.00E+0 0.00E+0 1.18E-1		2.01E-1			-3.86E+0				
PENR	EN	VJ]	1.28E+2	2	4.41E+	0	3.54E+0	)	0.00E+0 1.18E-1			2.39E+0			-1.93E+1	-1.8	5E+1	
PENR	M	NJ]	2.89E+0	)	0.00E+	0	-2.89E+0	0	0.00E	+0	0	.00E+0	0	.00E+0		0.00E+0	0.00	DE+0
PENR	<u>T [1</u>	VJ]	1.31E+2	2	4.41E+	0	6.47E-1		0.00E	+0	2	.10E+0	2	.39E+0		-1.93E+1	-1.8	5E+1
SM		kgj	0.00E+0		0.00E+	0	0.00E+0		0.00E	)E+0 0.0		.00E+0	0	00E+0	_	0.00E+0	0.00	
NRS	= n	vij Vij	0.00E+0	)	0.00E+	0	0.00E+0		0.00E	+0	0	.00E+0	0	.00E+0		0.00E+0	0.00	DE+0
FW	[	m³]	3.30E-2	2	2.87E-	4	6.99E-3	5	0.00E	+0	1	.36E-4	6	.27E-4		-4.48E-3	-4.7	'8E-3
Caption Reference and the secondary fuels; PERF = Use of renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources; used as raw materials; PERM = Use of non-renewable primary energy resources; penke = Use of non-renewable primary energy resources; used as raw materials; PERT = Total use of renewable primary energy resources; SM = Use of non-renewable primary energy resources; used as raw materials; PENK = Use of non-renewable primary energy resources; SM = 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 not fresh								se of = Use of non- M = Use net fresh										
RESU	LTS (	DF TH	IE LCA	- WA	STE	CATE	GORIE	S ANI	D OU	<b>TPUT</b>	FL	OWS	acco	rding t	o El	N 15 <u>804</u> .	A2:	
1 m² c	laddi	ng til	e "L-ty	pe", 4	7,74 k	(g/m²												
Indicat	or U	Init	A1-A3		A4		A5		C1			C2		C3		D/1	C	)/2
HWD		kg]	4.64E-7	'	2.05E-	7	6.27E-10	0	0.00E	+0	9	.74E-8	5	.05E-8		-1.10E-7	-3.3	3E-8
NHW		kg]	2.98E-1		6.73E-	4	3.56E-2	2	0.00E	+0	3	.21E-4	7	.22E-4		-8.24E-3	-1.9	4E+0
		kgj	2.24E-3		5.45E-	0	3.60E-5		0.00E	+0	2			92E-5	_	-1.28E-3	-1.3	0E+0
MFR		kaj	0.00E+0	)	0.00E+	ŏ	0.00E+0	)	0.00E	+0	0	.00E+0	4	.63E+1	+	0.00E+0	0.00	)E+0

EEE 0.00E+0 0.00E+0 4.27E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 [MJ] [MJ] EET 0.00E+0 0.00E+0 7.67E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components Caption for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

0.00E+0

0.00E+0

0.00E+0

0.00E+0

0.00E+0

0.00E+0

MER

[kg]

0.00E+0

0.00E+0



RESUL <sup>*</sup> 1 m <sup>2</sup> cla	RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: m² cladding tile "L-type", 47,74 kg/m²								
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	D/1	D/2
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND	ND	ND
IR	[kBq U235- Eq.]	ND	ND	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND	ND	ND
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 (cancerogenic); SDP = Potential soil quality index								

#### For the indicator IRP:

This impact category deals mainly with the eventual impact of low dose ionizingradiation on human health of the nuclear fuel cycle. It does not consider effects due to possiblenuclear accidents, occupational exposure nor due to radioactive waste disposal in undergroundfacilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

#### For the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:

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 experienced with the indicator.

#### References

#### Standards

#### EN 1304

EN 1304:2005: Clay roofing tiles and fittings - Product definitions and specifications

#### EN 15804+A2

EN 15804:2019+A2, Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products.

#### ISO 14025

DIN EN ISO 14025:2011-10, Environmental labels and declarations — Type III environmental declarations — Principles and procedures.

## European Technical Assessment ETA no. ETA-20/0139 from 2020/03/13

Technical Assessment Body issuing the ETA and designated according to Article 29 of the Regulation (EU) No 305/2011: ETA-Danmark A/S

#### GaBi Software

GaBi Software and databases, SP40, Sphera Solution GmbH, 2020.

#### IBU 2016

Institut Bauen und Umwelt e.V.: General Programme Instructions for the Preparation of EPDs at the Institut Bauen und Umwelt e.V. Version 1., Berlin: Institut Bauen und Umwelt e.V., 2016. www.ibu-epd.com.

#### **European Chemicals Agency**

Substances restricted under REACH https://echa.europa.eu/de/substances-restricted-under-reach

#### Regulation (EU) No 305/2011

Harmonised conditions for the marketing of construction products and repealing Council Directive 89/106EEC Text with EEA relevance

#### Public annex:

## PCR Product Category Rules for Building-Related Products and Services

Part A: Calculation Rules for the life Cycle Assessment and Requirements on the Project Report according to EN 15804+A2:2019 Part B: Requirements on the EPD for Ceramic

panelling

#### **Further References**

## BBSR - Bundesinstitut für Bau-, Stadt- und Raumforschung

Service Life of Building Components; version 24.02.2017. https://www.nachhaltigesbauen.de/fileadmin/pdf/Nutzu

ngsdauer\_Bauteile/BNB\_Nutzungsdauern\_von\_Bauteil en\_2017-02-24.pdf

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