

ENVIRONMENTAL PRODUCT DECLARATION

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

Owner of the Declaration	Zürcher Ziegeleien 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
Zürcher Ziegeleien AG

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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

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

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(Managing Director Institut Bauen und Umwelt e.V.)

Urban cladding tiles

Owner of the declaration

Zürcher Ziegeleien 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 Zürcher Ziegeleien 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 externally

Angela Schindler
(Independent verifier)

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.

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)

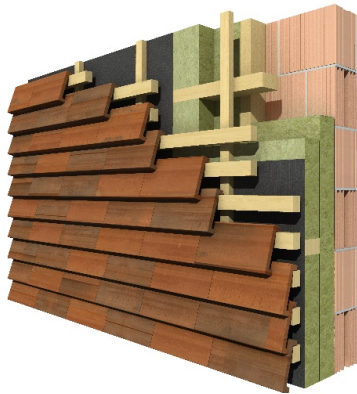


Illustration of a System with Urban T



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 ³
Bending strength	5.6	kN

LCA: Calculation rules

Declared Unit

Urban facade tiles

- L-Type, declared surface weight 47,74 kg/m² (in EPD document)
- U-Type, declared surface weight 56,42 kg/m² (in public annex to EPD)
- T-Type, declared surface weight 41,65 kg/m² (in public annex to EPD)

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

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 colour-fast and UV-resistant.

Replacing a single or several panels is always possible.



Declared unit

Name	Value	Unit
Declared unit (L-Type)	1	m ²
Grammage (L-Type)	47.74	kg/m ²
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%.

Credits and loads beyond the system boundaries (D):

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	a

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/m² / 47,74 kg/m² = 1,0473 = scaling factor to be applied on all indicators in all life cycle stages).

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	ND	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 m² cladding tile "L-type", 47,74 kg/m²

Core Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	D/1	D/2
GWP-total	[kg CO ₂ -Eq.]	1.36E+1	3.31E-1	2.88E+0	0.00E+0	1.58E-1	1.28E-1	-1.18E+0	-1.11E+0
GWP-fossil	[kg CO ₂ -Eq.]	1.68E+1	3.29E-1	2.09E-1	0.00E+0	1.57E-1	1.27E-1	-1.17E+0	-1.10E+0
GWP-biogenic	[kg CO ₂ -Eq.]	-3.13E+0	0.00E+0	2.67E+0	0.00E+0	0.00E+0	2.43E-4	-2.04E-3	1.07E-3
GWP-luluc	[kg CO ₂ -Eq.]	1.06E-2	2.67E-3	3.19E-5	0.00E+0	1.27E-3	4.68E-4	-2.05E-3	-1.18E-3
ODP	[kg CFC11-Eq.]	9.18E-14	3.97E-17	3.79E-16	0.00E+0	1.89E-17	5.41E-16	-1.06E-14	-1.15E-14
AP	[mol H ⁺ -Eq.]	2.71E-2	3.48E-4	4.10E-4	0.00E+0	1.65E-4	1.20E-3	-3.27E-3	-2.10E-3
EP-freshwater	[kg PO ₄ -Eq.]	1.96E-5	1.00E-6	5.73E-8	0.00E+0	4.78E-7	3.04E-7	-1.80E-6	-1.72E-6
EP-marine	[kg N-Eq.]	8.62E-3	1.04E-4	1.33E-4	0.00E+0	4.93E-5	5.88E-4	-1.31E-3	-6.35E-4
EP-terrestrial	[mol N-Eq.]	9.40E-2	1.24E-3	1.93E-3	0.00E+0	5.91E-4	6.47E-3	-1.43E-2	-6.89E-3
POCP	[kg NMVOC-Eq.]	2.52E-2	2.83E-4	3.61E-4	0.00E+0	1.35E-4	1.71E-3	-3.78E-3	-1.83E-3
ADPE	[kg Sb-Eq.]	8.06E-6	2.37E-8	5.97E-9	0.00E+0	1.13E-8	1.40E-7	-1.77E-7	-1.82E-7
ADPF	[MJ]	1.31E+2	4.40E+0	6.47E-1	0.00E+0	2.10E+0	2.39E+0	-1.93E+1	-1.85E+1
WDP	[m ³ world-Eq deprived]	3.87E-1	2.95E-3	2.97E-1	0.00E+0	1.40E-3	2.14E-2	-1.06E-1	-1.16E-1

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

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 m² cladding tile "L-type", 47,74 kg/m²

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	D/1	D/2
PERE	[MJ]	5.53E+1	2.48E-1	2.69E+1	0.00E+0	1.18E-1	2.01E-1	-3.86E+0	-4.10E+0
PERM	[MJ]	2.67E+1	0.00E+0	-2.67E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PERT	[MJ]	8.20E+1	2.48E-1	1.22E-1	0.00E+0	1.18E-1	2.01E-1	-3.86E+0	-4.10E+0
PENRE	[MJ]	1.28E+2	4.41E+0	3.54E+0	0.00E+0	2.10E+0	2.39E+0	-1.93E+1	-1.85E+1
PENRM	[MJ]	2.89E+0	0.00E+0	-2.89E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PENRT	[MJ]	1.31E+2	4.41E+0	6.47E-1	0.00E+0	2.10E+0	2.39E+0	-1.93E+1	-1.85E+1
SM	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
RSF	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
NRSF	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
FW	[m ³]	3.30E-2	2.87E-4	6.99E-3	0.00E+0	1.36E-4	6.27E-4	-4.48E-3	-4.78E-3

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 m² cladding tile "L-type", 47,74 kg/m²

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	D/1	D/2
HWD	[kg]	4.64E-7	2.05E-7	6.27E-10	0.00E+0	9.74E-8	5.05E-8	-1.10E-7	-3.33E-8
NHWD	[kg]	2.98E-1	6.73E-4	3.56E-2	0.00E+0	3.21E-4	7.22E-4	-8.24E-3	-1.94E+0
RWD	[kg]	2.24E-3	5.45E-6	3.60E-5	0.00E+0	2.60E-6	1.92E-5	-1.28E-3	-1.38E-3
CRU	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
MFR	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	4.63E+1	0.00E+0	0.00E+0
MER	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
EEE	[MJ]	0.00E+0	0.00E+0	4.27E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
EET	[MJ]	0.00E+0	0.00E+0	7.67E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0

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 EN 15804+A2-optional:
1 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 (not cancerogenic); SQP = Potential soil quality index

For the indicator IRP:

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.

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 experience 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.

Further References

BBSR - Bundesinstitut für Bau-, Stadt- und Raumforschung

Service Life of Building Components; version 24.02.2017.

https://www.nachhaltigesbauen.de/fileadmin/pdf/Nutzungsdauer_Bauteile/BNB_Nutzungsdauern_von_Bauteilen_2017-02-24.pdf

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 89/106/EEC 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

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