

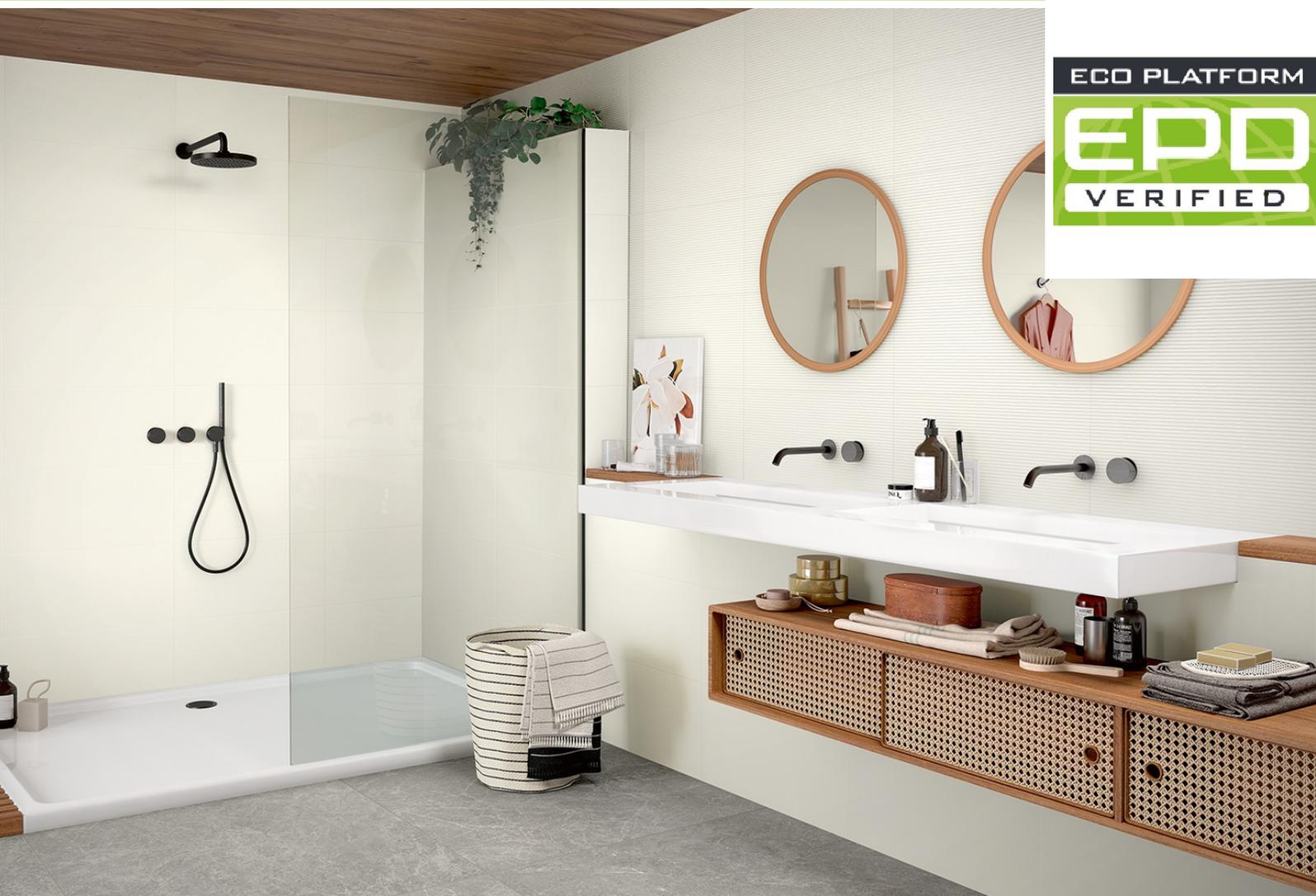
ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804+A2

Owner of the Declaration	Revirés
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-REV-20250134-CBC1-EN
Issue date	05.08.2025
Valid to	04.08.2030

Glazed ceramic wall tiles (Blll group) Revirés

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General Information

Revigrés

Programme holder

IBU – Institut Bauen und Umwelt e.V.
Hegelplatz 1
10117 Berlin
Germany

Declaration number

EPD-REV-20250134-CBC1-EN

This declaration is based on the product category rules:

Ceramic tiles and panels, 01.08.2021
(PCR checked and approved by the SVR)

Issue date

05.08.2025

Valid to

04.08.2030



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



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

Glazed ceramic wall tiles (Bill group)

Owner of the declaration

Revigrés
Apartado 1 Barrô
3754 Águeda
Portugal

Declared product / declared unit

The EPD applies to 1m² of glazed ceramic wall tiles, produced by Revigrés.

Scope:

Revigrés have two production units: Revigrés Mãe, for the production of Glazed ceramic wall tiles, and Revigrés Porcelanato, for the production of Glazed and unglazed porcelain tiles. Both units are located side by side in Barrô - Águeda - Aveiro - Portugal. The results presented correspond to an average EPD of the Revigrés.

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 14025:2011	
<input type="checkbox"/>	internally
<input checked="" type="checkbox"/>	externally



Dipl. Natw. ETH Sascha Iqbal,
(Independent verifier)

Product

Product description/Product definition

Revigrés glazed ceramic wall tiles (Bill group) are dry pressed with a water absorption of around 10- 16%, are resistant to cracking and have good chemical and stain resistance.

They are available on the market in a wide range of aesthetic and dimensional options, in terms of visual effects, texture and colors.

In these products, each series can have different dimensions, colors, textures/surfaces and edge finishes (edge natural and rectified), which allows the Designer to satisfy all project requirements.

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 14411:2012 Ceramic tiles — Definitions, classification, characteristics, evaluation of conformity and marking and the CE-marking*. For the application and use the respective national provisions apply.

Application

Glazed ceramic wall tiles are recommended for interior wall coverings in the following applications:

- Residential areas and buildings;
- Public spaces and buildings;
- Industrial areas and buildings.

Technical Data

The Revigrés glazed ceramic wall tiles comply with the requirements of (the standard) *EN 14411:2012 Group Bill* (dry-pressed with water absorption $E > 10\%$), and *ISO 10545* standards.

For each product, the data provided in the Declaration of Performance applies.

Most relevant technical characteristics:

Constructional data

Name	Value	Unit
Length and width (ISO 10545-2)	± 0.3	%
Deviation of mean thickness from manufacturing thickness (ISO 10545-2)	± 5	%
Water Absorption (ISO 10545-3)	> 16 - 19	% (W/W)
Bending load (ISO 10545-4)	> 600	N
Flexural strength (ISO 10545-4)	> 15	N/mm ²
Cracking Resistance (glazed tiles) (ISO 10545-11)	Resistant	--
Resistance to household chemicals and swimming pool water additives (ISO 10545-13)	Type A	--
Resistance to staining (ISO 10545-14)	Min. Type 4	--
Reaction to fire (EN 13823 . EN 9239-1)	CLASSE A1 TYPE A1	--

- Performance data of the product in accordance with the declaration of performance with respect to its essential characteristics according to *EN 14411:2012* (Group Bill GL), Ceramic tiles - Definition, classification, characteristics, assessment and verification of constancy of performance and marking.

Base materials/Ancillary materials

Glazed ceramic wall tiles are formed by the ceramic support (> 97 % of the total weight) and the glaze used for decoration (< 3 % of the total weight). The ceramic support is composed of clays, kaolins, feldspars, carbonates, sand and additives. Glaze is formed by feldspars, carbonates, borates, silicates, kaolin, zirconium oxides, clays, alumina, zinc oxides and other additives.

Name	Value	Unit
Ceramic support (atomized powder)	> 97	%
Glaze (decoration)	< 3	%

The product contains substances according to the *ECHA* list of candidate substances of very high concern (SVHC) for authorisation (dated 25-Jun-2025) above 0.1 mass %: no.

Reference service life

The life cycle duration was based on product standard *EN 1441:2012* and annex H of *EN 15804:2012+A2:2019/AC:2021*. According to *EN 17160*, IBU PCR – Part B of this product, which is based on *EN 14411:2012* (Ceramic tiles - Definitions, classification, characteristics, conformity assessment and marking), the reference life of the product is estimated at 50 years (Table ZA.1.2). No repair, renewal or replacement is necessary during this lifetime.

LCA: Calculation rules

Declared Unit

1 m² of glazed ceramic wall tiles.

Declared unit and mass reference

Name	Value	Unit
Declared unit	1	m ²
Grammage	17.36	kg/m ²
Conversion factor to 1 kg	0.0576	-
Layer thickness	0.0103	m

System boundary

Type of the EPD: cradle to grave and module D.

Geographic Representativeness

Land or region, in which the declared product system is manufactured, used or handled at the end of the product's lifespan: Europe

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. The Ecoinvent v3.9.1 background database (system model: allocation, cut-off by classification, *EN 15804+A2*), has been used to calculate the EPD results.

LCA: Scenarios and additional technical information

Characteristic product properties of biogenic carbon

The product does not contain biogenic carbon. Packaging material contains biogenic carbon that is accounted for in this section (wooden pallets and cardboard boxes).

Information on describing the biogenic carbon content at factory gate

Name	Value	Unit
Biogenic carbon content in product	-	kg C
Biogenic carbon content in accompanying packaging	0.876	kg C

Note: 1 kg of biogenic carbon is equivalent to 44/12 kg of CO₂.

The following information refers to the declared modules and is the basis for calculations or can be used for further calculations. The indicated values refer to the declared unit.

Transport to the building site (A4)

Name	Value	Unit
Transport distance	1390	km
Capacity utilisation (including empty runs)	< 100	%
Gross density of products transported	270	kg/m ³

This scenario is based on *EN 17160* and *IBU PCR - Part B*.

Installation into the building (A5)

Name	Value	Unit
Auxiliary (cement mortar)	3.3	kg
Water consumption	0.0008	m ³
Material loss	0.521	kg
Wood pallets	0.378	kg
Paper waste	0.116	kg
Plastic waste	0.014	kg

This scenario is based on *EN 17160* and *IBU PCR - Part B*.

Use or application of the installed product (B1) see section 2.12 "Use"

Name	Value	Unit
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According to *EN 17160* and *IBU PCR - Part B* ceramic tiles are intrinsically inert and therefore do not have environmental impacts during their use to be addressed in module B1.

Maintenance (B2)

Name	Value	Unit
Information on maintenance	Cleaning 4 times a year (residential use)	-
Maintenance cycle	200	Number/RSL
Water consumption	0.02	m ³ /RSL
Detergent consumption	4.00E-02	l/RSL

Reference service life

Name	Value	Unit
Reference service life (according to ISO 15686-1, -2, -7 and -8)	50	a

End of life (C1-C4)

Name	Value	Unit
Waste for recycling	14.46	kg
Waste for landfilling	6.20	kg

This scenario is based on *EN 17160* and *IBU PCR - Part B*.

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

After the demolition/deconstruction stage, ceramic tiles can be crushed and then used in a range of different applications such as described in *EN 17160* and *IBU PCR - Part B*:

- recycled ceramic aggregates which can be integrated as a partial substitute of natural aggregate in hotmix asphalt (Silvestre et al., 2013);
- recycled ceramic aggregates can be used in the construction of landfills;
- recycled ceramic aggregates can be utilized in the construction of subbase courses on secondary roads.

In this case, the modelling was carried out based on the replacement of natural aggregates (70 %).

Name	Value	Unit
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LCA: Results

It should be noted that the results of the estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = 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	X	X	X	X	X	X	X	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 m2 Glazed ceramic wall tiles

Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq	1.91E+01	3.69E+00	1.92E+00	0	6.39E-02	0	0	0	0	0	0	1.33E-01	9.25E-02	5.16E-02	-2.49E-02
GWP-fossil	kg CO ₂ eq	1.99E+01	3.69E+00	1.27E+00	0	6.23E-02	0	0	0	0	0	0	1.33E-01	9.11E-02	5.15E-02	-2.34E-02
GWP-biogenic	kg CO ₂ eq	-8.32E-01	2.08E-03	6.43E-01	0	1.57E-03	0	0	0	0	0	0	7.49E-05	1.39E-03	1.48E-04	-1.54E-03
GWP-luluc	kg CO ₂ eq	3.45E-02	7.06E-05	1.13E-03	0	3.43E-05	0	0	0	0	0	0	2.54E-06	4.4E-05	1.16E-06	-1.38E-05
ODP	kg CFC11 eq	6.69E-07	7.79E-08	4.27E-08	0	6.92E-09	0	0	0	0	0	0	2.8E-09	1.67E-08	1.16E-08	-4.33E-09
AP	mol H ⁺ eq	4.29E-02	4.53E-03	3.38E-03	0	4.26E-04	0	0	0	0	0	0	1.63E-04	8.12E-04	4.64E-04	-2E-04
EP-freshwater	kg P eq	2.46E-04	2.83E-06	1.82E-05	0	2.35E-06	0	0	0	0	0	0	1.02E-07	2.2E-06	5.65E-08	-5.51E-07
EP-marine	kg N eq	1.14E-02	1.12E-03	9.84E-04	0	5.77E-05	0	0	0	0	0	0	4.04E-05	3.25E-04	2.02E-04	-7.96E-05
EP-terrestrial	mol N eq	1.06E-01	1.09E-02	9.59E-03	0	6.32E-04	0	0	0	0	0	0	3.94E-04	3.57E-03	2.22E-03	-8.76E-04
POCP	kg NMVOC eq	3.47E-02	3.15E-03	2.76E-03	0	2.82E-04	0	0	0	0	0	0	1.13E-04	9.75E-04	6.02E-04	-2.43E-04
ADPE	kg Sb eq	9.5E-05	1.24E-07	2.87E-06	0	2.87E-08	0	0	0	0	0	0	4.46E-09	4.08E-09	2.48E-09	-6.69E-09
ADPF	MJ	2.94E+02	4.79E+01	1.25E+01	0	2.17E+00	0	0	0	0	0	0	1.72E+00	1.39E+00	7.19E-01	-4.78E-01
WDP	m ³ world eq deprived	7E+00	4.41E-02	2.38E-01	0	8.94E-01	0	0	0	0	0	0	1.59E-03	4.24E-03	1.19E-04	-7.18E-03

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

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 m2 Glazed ceramic wall tiles

Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	5.48E+01	6.79E-02	2.41E+00	0	4.34E-02	0	0	0	0	0	0	2.44E-03	7.51E-02	1.31E-02	-1.74E-01
PERM	MJ	1.89E-04	0	2.19E-01	0	0	0	0	0	0	0	0	0	0	0	0
PERT	MJ	5.48E+01	6.79E-02	2.63E+00	0	4.34E-02	0	0	0	0	0	0	2.44E-03	7.51E-02	1.31E-02	-1.74E-01
PENRE	MJ	3.22E+02	4.9E+01	1.35E+01	0	2.32E+00	0	0	0	0	0	0	1.76E+00	1.48E+00	7.68E-01	-4.99E-01
PENRM	MJ	2.17E-05	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PENRT	MJ	3.22E+02	4.9E+01	1.35E+01	0	2.32E+00	0	0	0	0	0	0	1.76E+00	1.48E+00	7.68E-01	-4.99E-01
SM	kg	5.68E-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FW	m ³	1.81E-01	9.15E-04	8.62E-03	0	2.09E-02	0	0	0	0	0	0	3.29E-05	3.54E-04	4.25E-05	-4.21E-03

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 Glazed ceramic wall tiles

Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	1.36E-03	1.22E-04	4.51E-05	0	1.1E-06	0	0	0	0	0	0	4.4E-06	2.66E-06	1.89E-06	-6.94E-07
NHWD	kg	1.72E+00	1.93E-03	2.56E-01	0	1.9E-03	0	0	0	0	0	0	6.95E-05	2.12E+00	6.19E+00	-5.69E-04
RWD	kg	2.89E-04	3.35E-04	3.04E-05	0	1.45E-06	0	0	0	0	0	0	1.2E-05	9.91E-06	5.24E-06	-4.38E-06

CRU	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MFR	kg	1.21E+00	0	6.08E-01	0	0	0	0	0	0	0	0	0	1.45E+01	0	0
MER	kg	3.95E-02	0	1.27E-01	0	0	0	0	0	0	0	0	0	0	0	0
EEE	MJ	6.77E+00	0	2.08E+01	0	0	0	0	0	0	0	0	0	0	0	0
EET	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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

**RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional:
1 m² Glazed ceramic wall tiles**

Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM	Disease incidence	1.22E-06	1.85E-07	6.09E-08	0	3.98E-09	0	0	0	0	0	0	6.67E-09	7.56E-08	3.61E-08	-5.29E-09
IR	kBq U235 eq	3.76E-01	7.63E-03	3.5E-02	0	1.54E-03	0	0	0	0	0	0	2.74E-04	7.85E-03	3.17E-03	-5.55E-03
ETP-fw	CTUe	7.07E+01	1.79E+01	8.17E+00	0	9.69E-01	0	0	0	0	0	0	6.42E-01	5.23E-01	2.73E-01	-2.34E-01
HTP-c	CTUh	1.85E-09	1.18E-10	1.78E-10	0	2.13E-10	0	0	0	0	0	0	4.25E-12	9.36E-12	5.59E-12	-1.8E-11
HTP-nc	CTUh	2.44E-08	7.98E-09	5.71E-09	0	2.12E-09	0	0	0	0	0	0	2.87E-10	6.04E-10	3.77E-10	-1.95E-10
SQP	SQP	2.49E+02	1.04E-01	1.51E+01	0	1.05E-01	0	0	0	0	0	0	3.75E-03	4.16E-01	2.64E-01	-8.14E-01

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

Disclaimer 1 – for the indicator “Potential Human exposure efficiency relative to U235”. This impact category deals mainly with the eventual impact of low-dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure or radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, radon and from some construction materials is also not measured by this indicator.

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

References

CRP

Regulation (EU) No. 305/2011 of the European Parliament and of the Council of 9 March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC

ECHA

ECHA list of candidate substances of very high concern (SVCHC) for authorisation (dated 14/06/2023); <https://echa.europa.eu/pt/candidate-list-table>

EN 13823

EN 13823:2020+A1:2022. Reaction to fire tests for building products - Building products excluding floorings exposed to the thermal attack by a single burning item

EN 14411

EN 14411:2012. Ceramic tiles. Definitions, classification, characteristics, evaluation of conformity and marking. Brussels, Belgium.

EN 15804

EN 15804:2012+A2:2019+AC:2021, Sustainability of construction works — Environmental Product Declaration — Core rules for the product category of construction products.

EN ISO 14025

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

EN 17160

EN 17160:2019. Product category rules for ceramic tiles.

IBU

Institut Bauen und Umwelt e.V.: General Instructions for the EPD programme of Institut Bauen und Umwelt e.V., Version 2.1, Berlin: Institut Bauen und Umwelt e.V., 01.10.2022 www.ibu-epd.com.

IBU PCR Part A

Institut Bauen und Umwelt e.V. (IBU): Product Category Rules for Building-Related Products and Services | Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report, Version 1.4, Berlin Institut Bauen und Umwelt e.V., 15.04.2024

IBU PCR Part B

Institut Bauen und Umwelt e.V. (IBU): Product Category Rules for Building-Related Products and Services | Part B: Requirements on the EPD for Ceramic tiles and panels, v11, 01.08.2024

ISO 10545-2

ISO 10545-2:2018. Ceramic tiles – Part 2: Determination of dimensions and surface quality

ISO 10545-3

ISO 10545-3:2018. Ceramic tiles – Part 3: Determination of water absorption, apparent porosity, apparent relative density and bulk density

ISO 10545-4

ISO 10545-4:2019. Ceramic tiles – Part 4: Determination of modulus of rupture and breaking strength

ISO 10545-8

ISO 10545-8:2014. Ceramic tiles – Part 8: Determination of linear thermal expansion

ISO 10545-9

ISO 10545-9:2013. Ceramic tiles – Part 9: Determination of resistance to thermal shock

ISO 10545-11

ISO 10545-11:1994. Ceramic tiles – Part 11: Determination of crazing resistance for glazed tiles

ISO 10545-13

ISO 10545-13:2016. Ceramic tiles – Part 13: Determination of chemical resistance

ISO 10545-14

ISO 10545-14:2015. Ceramic tiles – Part 14: Determination of resistance to stains

ISO 13006

ISO 13006: 012. Ceramic tiles - Definitions, classification, characteristics and marking, 2nd edn. International Organization for Standardization, USA

Regulation (EU) No. 305/2011

Regulation (EU) No. 305/2011 of the European Parliament and of the Council of 9 March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC

SimaProSimaPro/ SimaPro LCA Software. Pré Consultants. the Netherlands. www.presustainability.com



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