

SUSTAINABILITY CONTRIBUTION DECLARATION

LEED v4[®] (Leadership in Energy and Environmental Design)



Ceramic tiles and panels

Ceramic tiles produced by extrusion or dry pressing used for internal and external floorings and walls.

For example:

- bathroom, kitchen, entrance, hall, living room and bedroom etc.
- terrace, balcony, facades etc.
- commercial and industrial use

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Sustainable Sites (SS)

Heat Island Reduction

→ To minimize effects on microclimates and human and wildlife habitats by reducing heat islands.

Product information

Item	Value	Unit
Solar reflectance (SR) value (shading device for nonroof applications, or paving material)	0 100	-

Evidence/calculation formula

Color measurement device



Water Efficiency (WE)

Not relevant for this product (only for products that use water).



Energy & Atmosphere (EA)

Not relevant for this product (only for products that use refrigerants).



Materials & Resources (MR)

Building product disclosure and optimization - environmental product declarations

→ To encourage the use of products and materials for which life-cycle information is available and that have environmentally, economically, and socially preferable life-cycle impacts.

SUSTAINABILITY CONTRIBUTION DECLARATION

Product information

Item	Value
Critically reviewed LCA acc. to ISO 14044?	yes
Reviewer	Matthias Klingler
Author of the LCA	LCEE Life Cycle Engineering Experts GmbH, Darmstadt, Germany
Download link of the document/study	https://ibu-epd.com/en/published-epds/
Industry-wide (generic) EPD (Type III, incl. external verification)?	yes
Product specific EPD (Type III, incl. external verification)?	no
EPD program operator	Institute Construction and Environment (IBU - Institut Bauen und Umwelt e.V.), Berlin
EPD program operator country	Germany
EPD number	EPD-BKF-20220184-ICG1-DE
Declared unit	1 m ² (area weight: 17.97 kg/m ²)

Results of the LCA – ENVIRONMENTAL IMPACTS

Life cycle stages	Product stage	Construction process stage		Use stage	End of life stage				Benefits and loads beyond the system boundaries	
		A4	A5		B2	C1	C2	C3	C4	D
Declared life cycle stages (DIN EN 15978)	A1-A3	A4	A5	B2	C1	C2	C3	C4	D	D/1
GWP-total [kg CO ₂ -Äq.]	9,47 E+00	3,32 E-01	2,33 E-01	2,62 E-04	1,36 E-03	2,19 E-02	4,54 E-02	1,64 E-02	-4,03 E-02	-4,98 E-02
GWP-fossil [kg CO ₂ -Äq.]	9,43 E+00	3,29 E-01	6,70 E-02	2,59 E-04	1,00 E-03	2,18 E-02	4,50 E-02	1,68 E-02	-4,01 E-02	-4,96 E-02
GWP-biogenic [kg CO ₂ -Äq.]	4,33 E-02	1,66 E-04	1,66 E-01	2,26 E-06	3,14 E-04	1,10 E-05	1,16 E-04	4,87 E-04	-2,98 E-05	-1,73 E-04
GWP-luluc [kg CO ₂ -Äq.]	7,39 E-03	2,14 E-03	3,59 E-06	7,31 E-08	4,60 E-05	1,42 E-04	2,46 E-04	4,94 E-05	-1,83 E-04	-2,31 E-06
ODP [kg CFC11-Äq.]	2,89 E-13	8,54 E-17	4,11 E-17	6,60 E-19	1,83 E-18	5,65 E-18	2,01 E-16	6,59 E-17	-5,18 E-16	-4,07 E-18
AP [kg SO ₂ -Äq.]	1,07 E-02	2,83 E-03	5,69 E-05	2,92 E-07	3,61 E-06	1,87 E-04	4,19 E-04	1,20 E-04	-1,33 E-04	-3,12 E-05
EP-freshwater [kg PO ₄ ³⁻ -Äq.]	1,06 E-05	6,86 E-07	7,07 E-09	1,39 E-09	1,47 E-08	4,54 E-08	1,02 E-07	2,83 E-08	-1,12 E-07	-5,00 E-09
EP-marine [kg PO ₄ ³⁻ -Äq.]	4,50 E-03	1,43 E-03	1,87 E-05	1,12 E-07	6,38 E-07	9,44 E-05	2,07 E-04	3,10 E-05	-5,16 E-05	-1,43 E-05
EP-terrestrial [kg PO ₄ ³⁻ -Äq.]	4,91 E-02	1,57 E-02	2,59 E-04	1,18 E-06	8,89 E-06	1,04 E-03	2,28 E-03	3,41 E-04	-5,68 E-04	-1,57 E-04
POCP [kg Ethen Äq.]	1,14 E-02	2,64 E-03	4,97 E-05	3,38 E-07	2,66 E-06	1,75 E-04	6,03 E-04	9,41 E-05	-1,22 E-04	-4,07 E-05
ADPE [kg Sb Äq.]	1,38 E-06	2,90 E-08	6,22 E-10	3,85 E-11	6,24 E-10	1,92 E-09	4,96 E-08	1,59 E-09	-8,19 E-09	-3,91 E-09
ADPF [MJ]	1,52 E+02	4,42 E+00	6,42 E-02	7,18 E-03	9,50 E-02	2,93 E-01	8,49 E-01	2,23 E-01	-5,29 E-01	-8,72 E-05
WDP [m ³ Welt-Äq. Entzogen]	9,04 E-01	1,30 E-03	2,68 E-02	4,31 E-03	2,79 E-05	8,58 E-05	7,56 E-03	1,80 E-03	-9,77 E-04	-2,89 E-05

Note: Two scenarios were assessed. Scenario 1 (D): 93,9 % material recovery with benefits beyond the system boundary for the aggregate and 6,1 % landfill. Scenario 2 (D/1): benefits beyond the system boundary for thermal recycling of packaging from modul A5.

Detailed names of the given abbreviations can be found in the Glossary.

SUSTAINABILITY CONTRIBUTION DECLARATION



Materials & Resources (MR)

Building product disclosure and optimization - environmental product declarations
(continued)

Results of the LCA – RESOURCE USE

Life cycle stages	Product stage	Construction process stage		Use stage	End of life stage				Benefits and loads beyond the system boundaries	
		A4	A5		B2	C1	C2	C3	C4	D
Declared life cycle stages (DIN EN 15978)	A1-A3	A4	A5	B2	C1	C2	C3	C4	D	D/1
PERE [MJ]	1,67 E+01	2,57 E-01	1,93 E+0	5,52 E-03	5,52 E-03	1,70 E-02	7,50 E-02	3,01 E-02	-1,44 E-01	-2,04 E-03
PERM [MJ]	1,92 E+00	0,00 E+00	-1,93 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
PERT [MJ]	1,86 E+01	2,57 E-01	1,23 E-02	5,52 E-03	5,52 E-03	1,70 E-02	7,50 E-02	3,01 E-02	-1,44 E-01	-2,04 E-03
PENRE [MJ]	1,52 E+02	4,42 E+00	4,74 E-01	9,50 E-02	9,50 E-02	2,93 E-01	8,49 E-01	2,23 E-01	-5,29 E-01	-8,72 E-01
PENRM [MJ]	4,10 E-01	0,00 E+00	-4,10 E-01	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
PENRT [MJ]	1,52 E+02	4,42 E+00	6,42 E-02	9,50 E-02	9,50 E-02	2,93 E-01	8,49 E-01	2,23 E-01	-5,29 E-01	-8,72 E-01
SM [kg]	1,02 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	1,69 E+01	0,00 E+00
RSF [MJ]	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
NRSF [MJ]	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
FW [m³]	2,84 E-02	2,28 E-04	6,30 E-04	4,90 E-06	4,90 E-06	1,51 E-05	2,20 E-04	5,49 E-05	-8,73 E-05	-2,86 E-06

SUSTAINABILITY CONTRIBUTION DECLARATION



Materials & Resources (MR)

Building product disclosure and optimization - environmental product declarations
(continued)

Results of the LCA – OUTPUT FLOWS AND WASTE CATEGORIES

Life cycle stages	Product stage	Construction process stage		Use stage	End of life stage				Benefits and loads beyond the system boundaries	
		A4	A5		B2	C1	C2	C3	C4	D
Declared life cycle stages (DIN EN 15978)	A1-A3	A4	A5	B2	C1	C2	C3	C4	D	D/1
HWD [kg]	5,50 E-08	1,94 E-06	1,89 E-04	1,05 E-12	3,97 E-12	1,22 E-11	4,93 E-11	2,37 E-11	-8,52 E-11	-2,48 E-10
NHWD [kg]	1,63 E-01	9,13 E-03	-1,31 E-02	3,02 E-05	1,53 E-05	4,72 E-05	2,44 E-04	1,11 E+00	-3,51 E-01	-2,75 E-04
RWD [kg]	2,03 E-03	5,47 E-05	1,40 E-04	2,45 E-08	9,12 E-08	2,81 E-07	6,25 E-06	2,30 E-06	-1,56 E-05	-2,08 E-07
CRU [kg]	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
MFR [kg]	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	1,69 E+01	0,00 E+00	0,00 E+00	0,00 E+00
MER [kg]	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
EEE [MJ]	0,00 E+00	0,00 E+00	3,71 E-01	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
EET [MJ]	0,00 E+00	0,00 E+00	7,30 E-01	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00

SUSTAINABILITY CONTRIBUTION DECLARATION



Materials & Resources (MR)

Building product disclosure and optimization – sourcing of raw materials

→ To encourage the use of products and materials for which life-cycle information is available and that have environmentally, economically and socially preferable life-cycle impacts and sourcing.

Product information

Option 1. raw material source and extraction reporting (1 point)		Description / Unit
Third-party verified Corporate Sustainability Report (CSR)?	yes	
Link to download the report	https://unglobalcompact.org/what-is-gc/participants/133799-Deutsche-Steinzeug-Cremer-Breuer-AG	
Option 2. leadership extraction practices (1 point)		Description / Unit
Participation in an extended producer responsibility program?	no	
Transport	All raw materials are sourced (extracted, manufactured, and purchased) within max 800 km	
Postconsumer recycled content	1 glass frits	%
Preconsumer recycled content	15	%

Building product disclosure and optimization – material ingredient

→ To reward the selection of products verified to minimize the use and generation of harmful substances based on an accepted methodology for chemical ingredient listing.

Product information

Type of reporting	Certification program (e.g. Green screen, cradle to cradle version/level, REACH)	Value/Comment
Option 1: material ingredient reporting	Health Product Declaration	no
	Manufacturer Inventory	no
	GreenScreen v1.2 Benchmark	no
	Cradle to Cradle Certified	no
Option 2: Material ingredient optimization	International Alternative Compliance Path – REACH Optimization	Yes, the tiles do not contain substances that meet REACH criteria for substances of very high concern.
	USGBC approved program	no
Option 3: Product Manufacturer Supply Chain Optimization		

SUSTAINABILITY CONTRIBUTION DECLARATION



Indoor Environmental Quality (IEQ)

Not relevant for ceramic tiles as they are made of products that are inherently non-emitting sources of VOCs.

General Information

Company name:	AGROB BUCHTAL GmbH
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Email:	thomas.limbeck@deutsche-steinzeug.de
Homepage:	www.agrob-buchtal.de
Date:	10.03.2023

Technical data

Following technical data at delivery state are relevant for the declared product:

Name	thickness [mm]	density [kg/m ³]	Surface weight [kg/m ²]
Ceramic tiles and panels	9	1.996	17.97

Average mass shares of main components:

Component	Mass share
Clay	ca. 45 - 60 %
Feldspar	ca. 25 %
Kaolin	ca. 7%
Limestone	ca. 3%
Sand	ca. 3%
Glaze	ca. 4%

SUSTAINABILITY CONTRIBUTION DECLARATION

Glossary

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 deprivation potential
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
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
EE	Exported energy per energy carrier

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