

ENVIRONMENTAL PRODUCT DECLARATION



ENVIRONMENTAL PRODUCT DECLARATIONS



In accordance with ISO14025 and EN15804 for

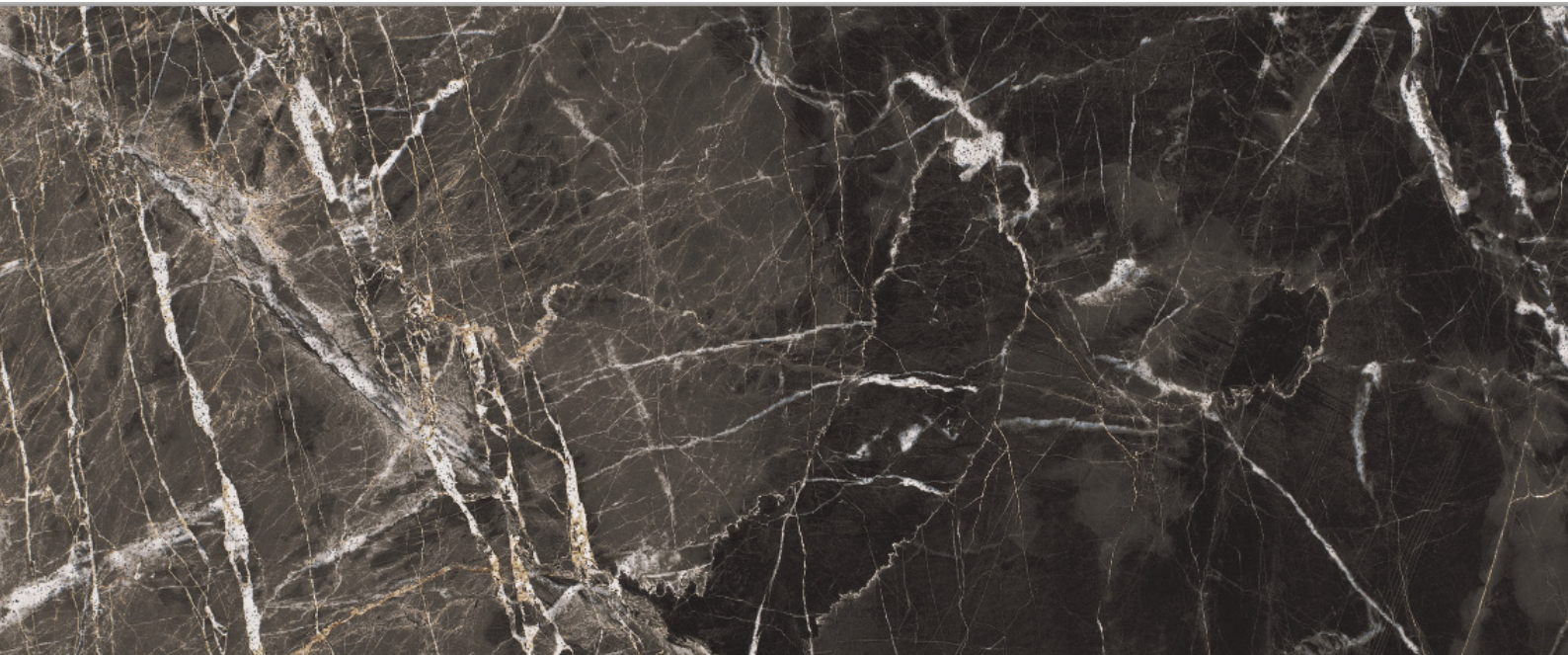
Kalesinterflex® Porcelain Ceramic Slab

from

Kaleseramik Çanakkale Kalebodur Seramik Sanayi A.Ş.

Programme :	The International EPD® System	EPD Turkey, fully aligned regional programme
Programme Operator :	EPD Turkey www.epdturkey.org	EPD International AB www.environdec.com
EPD Registration Number:	S-P-01128	
ECO Platform Reg. Number:	ECO-00000718	
Publication Date:	28.05.2018	
Validity Date :	14.05.2023	
Geographical Scope:	Global	

 **Kale**



The LCA for this EPD is conducted according to the guidelines of ISO 14040/44 and the requirements given in the Product Category Rules (PCR) document for Construction Products and Construction Services (2012:01, Version 2.2) and SUB-PCR-D bricks, blocks, tiles, flagstone of clay and siliceous earths (construction product) with reference to EN 15804 and the general program guidelines by The International EPD System in accordance with ISO 14025 standards.

The inventory for the LCA study is based on the 2016 production figures for Kalesinterflex® manufactured by Kaleseramik Çanakkale Kalebodur Seramik Sanayi A.Ş. in their Çan production plant located in Çanakkale, Turkey.

The LCA was modelled with SimaPro 8.4 LCA software using the impact factors and the Ecoinvent database (V3.2) for secondary data and Turkish Life Cycle Inventory Database (TLCID) developed by Turkish Centre for Sustainable Production Research and Design (SÜRATAM) for local data.

EPD Programme	The International EPD® System www.environdec.com
EPD Programme Operator	EPD Turkey, Istanbul - Turkey www.epdturkey.org
EPD Owner	Kaleseramik Çanakkale Kalebodur Seramik Sanayi A.Ş. www.kale.com.tr
Declared Unit	1 m² average Kalesinterflex® Porcelain Ceramic Slab
CPC Code	3731
EPD Based on Product Category Rules (PCR)	The CEN standard EN 15804 serves as the core PCR The International EPD® System's PCR 2012:01 Construction products and Construction services, Version 2.2, 2017-05-30 SUB-PCR-D bricks, blocks, tiles, flagstone of clay and siliceous earths
PCR Review Conducted by	The Technical Committee on the International EPD® System. Chair Massimo Marino. Contact via www.environdec.com info@environdec.com
Independent Verification and data, according to ISO 14025:2006	<input type="checkbox"/> Internal <input checked="" type="checkbox"/> External <input type="checkbox"/> EPD® Process Certification
System Boundaries	<input type="checkbox"/> Cradle to Gate <input type="checkbox"/> Cradle to Gate with Option <input checked="" type="checkbox"/> Cradle to Grave
Approved and Verified by	Vladimír Kočí, PhD
LCA Report and EPD Prepared by	Metsims Sustainability Consulting www.metsims.com

EPDs within the same product category but from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804 Norm.

The EPD certificate, its background data and the results will be used for business-to-business communications and is expected to be a reliable document for green building designers, architectures, manufacturers of construction products and the other stakeholders in the construction sector to understand the potential environmental impacts caused by porcelain ceramic slab.

For more information about this Environmental Product Declaration or its contents, please contact kaleseramik@kale.com.tr

Laying its foundation with Çanakkale Ceramic Factories Corporation in 1957, Kale Group pioneered the formation of the ceramics industry in Turkey, and has become an industry giant with its investments. It has grown over the course of time with investments in construction products, machinery and equipment manufacturing, defence, chemistry, electrical appliances, energy, IT, transportation, tourism and food industries. Kale Group is currently comprised of 17 companies, and is regarded as one of the most important industrial enterprises of Turkey with over 5000 employees, spanning over a geography across Çanakkale to several locations in Turkey to Italy and Russia. Today, Kale Group is Europe's 3rd and the world's 12th largest ceramics manufacturer. Kale Group provides its products to consumers in over 100 countries via more than 400 sales points.

Kaleseramik's sanitaryware products take place in market under Çanakkale Seramik, Kalebodur and Kale brand names.

Kaleseramik that aims for continuous development has received the following certifications within the scope of the system standards; TS EN ISO 9001:2015, ISO 10002:2006, TS EN ISO 14001:2015, ISO 50001:2011, ISO 27001 and OHSAS 18001:2014.



PRODUCT INFORMATION

Kalesinterflex® is a porcelain ceramic slab with has two option; with and without fibreglass backing. It is primarily made of clay, kaolin and feldspar but they also include other raw materials. The production technology of tiles is dry pressing. The required composition is blended with water to form slurry. This slurry then fed into spray driers to form uniform granules ready for compaction. These granules are then shaped to form the green body. This can then be glazed. The green ceramic body is fired at high temperatures, resulting in a hard body. Kalesinterflex® has two surface alternatives as glazed and polished. It can be used as is or with fibreglass laminated backing depending on the application. Kalesinterflex® can be cut in any sizes required by projects: 1000x3000mm, 1000x1000mm, 500x3000mm, 500x1500mm, 500x1000mm, 500x500mm, 200x1500mm and 50x1000mm.

Technical Specification	Kalesinterflex® Porcelain Ceramic Slab	Kalesinterflex® Porcelain Ceramic Slab with Fibreglass Backing	Related Standards
Water Absorption	< 0.1%		ISO 10545-3
Breaking Strength (N)	466 N		ISO 10545-4
Modules of rupture (N/mm2)	Min. 50		ISO 10545-4
Impact Resistance	Compliant		ISO 10545-5
Resistance to Deep Abrasion - Unglazed Tiles Only	Ave. 130 mm3		ISO 10545-6
Linear Thermal Expansion Coefficient	Compliant		ISO 10545-8
Resistance to Thermal Shock	Compliant		ISO 10545-9
Frost Resistance	Resistant		ISO 10545-12
Resistance To Low Concentrations Of Acids And Alkalis	ULA-ULB		ISO 10545-13
Resistance To High Concentrations Of Acids And Alkalis	Compliant		ISO 10545-13
Resistance To Household Chemicals And Swimming Pool Salts (Glazed&Unglazed)	min UB		ISO 10545-13
Resistance To Stain	min Class-2		ISO 10545-14

Areas of Use

Kalesinterflex® is a chemical resistant porcelain ceramic slab suitable for interior, exterior, facade, residential, countertops/bench tops, splash-backs, cladding, wet areas, light commercial floors and walls. Its dimensions make it a unique product. Product can be installed onto fibre cement sheets, concrete, brick, plaster and water proofing membrane. Floor surface must be level and can be achieved by using a self-levelling compound. It can also be installed on a facade using either bonded or mechanical system – via a hidden clip system.

No substances included in the Candidate List of Substances of Very High Concern for authorisation under the REACH Regulations are present in the ceramic tiles manufactured by Kale, either above the threshold for registration with the European Chemicals Agency or above 0.1% (wt/wt).

SYSTEM BOUNDARY

PRODUCT STAGE

A1. Raw Material Supply includes raw material extraction and pre-treatment processes before production. In this report, production for each product starts with raw material acquisition.

A2. Transport is relevant for delivery of raw materials to the plant and involves forklift usage within the factory.

A3. Manufacturing stages include production of granules by spray drying, forming, drying, glazing, firing and packaging. Transport is only relevant for delivery of raw materials to the plant and forklift usage within the factory. For packaging particle boards are used.

CONSTRUCTION PROCESS STAGE

A4. Transport includes transportation of ceramic tiles to the construction site. Kaleseramik transport tiles by road haulage (89%), railway (8%) and seaway (3%) to the distribution centres. From there, local road transport of 50 km with Euro 5 class truck with capacity of 27 tones is assumed.

A5. Installation of the Product stage includes the adhesive mortar usage in the construction site in addition packaging waste transportation and disposal processing. For 1 m² ceramic tile installation; 3.3 kg mortar and 0.8 L water usage assumed. A 3% (in mass) wastage is assumed during the installation.

Packaging waste scenario is created separately depending on the geographic location of the installation process. Packaging waste is assumed to end up at packaging recycling streams due to the relevant national law in Turkey, which requires at least 54% of the packaging waste to be recovered in 2016. For Europe case; according to the Directive 94/62/EC of 20 December 1994 on packaging and packaging waste, 60% of the packaging waste is assumed to go to reuse, recovery, and recycling. Average distance from waste container to destination is assumed as 30 km.

USE STAGE

B1. Use stage concerns emissions into environment. Use phase is not relevant for this product.

B2. Maintenance includes cleaning facilities with water and detergent. Kaleseramik advices to use detergent containing stain remover or neutral low-

sulphate and rinse with tap water after cleaning. 0.2 mL detergent and 0.1 L water use is assumed to wash 1 m² Kalesinterflex® porcelain ceramic slab. Maintenance cycle of Kalesinterflex® is 4 times a year.

B3. Repair: Kaleseramik ceramic tiles require no repairing during the use phase and therefore no impacts should be declared in module B3.

B4. Replacement: Kaleseramik ceramic tiles require no replacement during the use phase and therefore no impacts should be declared in module B4.

B5. Refurbishment: Kaleseramik ceramic tiles require no refurbishment during the use phase and therefore no impacts should be declared in module B5.

B6. Operational Energy Use: Operational energy use is not relevant for this product.

B7. Operational Water Use: Operational water use is not relevant for this product.

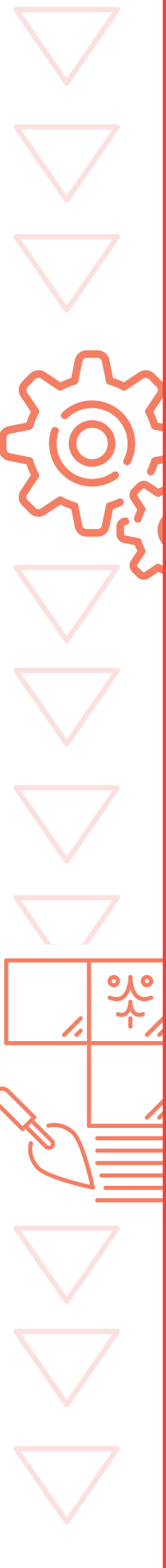
END OF LIFE STAGE

C1. De-construction, demolition at the end of RSL is usually conducted with a selective deconstruction/ demolition. The environmental impacts generated during the C1 phase are very low and therefore can be neglected.

C2. Transport (Waste) includes the transportation of the discarded tiles and adhesive mortar to final disposal. Average distance from waste container to final destination is assumed as 50 km.

C3. Waste Processing concerns crushing of discarded ceramic tiles before recycle or reuse. The environmental impacts generated during the C3 phase are very low and therefore can be neglected.

C4. Disposal construction and demolition waste scenario is created separately depending on the geographic location of the use phase. After domestic usage, ceramic tile products end up at construction and demolition waste landfills as their final fate and modelled as such in the LCA. For Europe's construction and demolition waste scenario, 50% of the waste is assumed to go to recycling according to EU Construction and Demolition Waste Protocol published on 09/11/2016.



PRODUCT STAGE

- A1. Raw Material Supply
- A2. Raw Material Transport
- A3. Manufacturing
 - Green ceramic body preparation
 - Forming
 - Drying
 - Glaze preparation
 - Glazing
 - Firing
- Packaging &Storage

CONSTRUCTION PROCESS STAGE

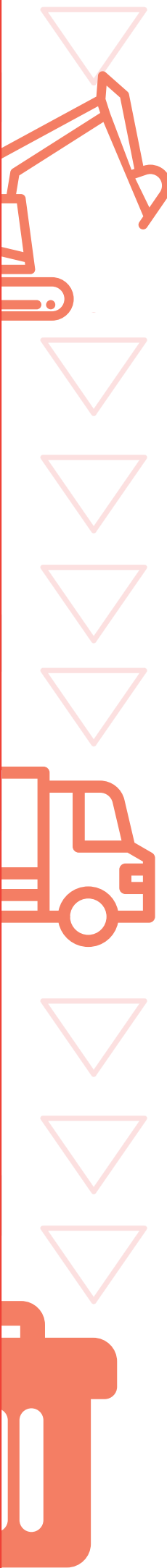
- A4. Transport to construction site
- A5. Installation of the Product

USE STAGE

- B1. Use
- B2. Maintenance
- B3. Repair
- B4. Replacement
- B5. Refurbishment
- B6. Operational Energy Use
- B7. Operational Water Use

END OF LIFE STAGE

- C1. Deconstruction and Demolition
- C2. Transport
- C3. Reuse, Recovery and Recycling
- C4. Disposal



**ENVIRONMENTAL PERFORMANCE
RELATED INFORMATION**

Functional Unit/ Declared Unit	The declared unit is the production of 1 m ² average Kalesinterflex® Porcelain Ceramic Slab (7.86 kg)
Goal and Scope	Evaluation of environmental impacts for 1 m ² average Kalesinterflex® Porcelain Ceramic Slab from cradle to grave.
System Boundary	The system boundary covers A1 - A3 product stages referred as 'Raw material supply', 'Transport' and ' Manufacturing', A4 - A5 'Construction', B1 - B7 'Use' and C1 – C4 'End of life' stages.
Cut-Off Rules	For this LCA study, no cut-off criteria was applied.
Background Data	For local data specific for Turkey, TLCID (V1.01) developed by SÜRATAM was used. For any other background data the Ecoinvent database (V3.2) was used.
Data Quality	Raw materials, energy and water consumption, waste and material and product transport data is collected from Kaleseramik.
Period Under Review	All primary data collected from Kaleseramik is for the period year of 2016.
Allocations	There are no co-products in the production of ceramic tile manufactured by Kaleseramik. Hence, there was no need for co-product allocation. Kaleseramik sources raw materials from different locations across Turkey and other parts of the world and by different means of transport (truck and ship). For this reason, transport was allocated according to tonnages for almost all raw materials bought by Kaleseramik. Kaleseramik manufactures various ceramic tiles in the Company's Çanakkale plant in Turkey. Electricity and combined heat power (CHP) powered by natural gas are used. Raw materials, transport, packaging, waste, and energy consumption data were allocated for each product using related production tonnages from Kaleseramik's Çanakkale plant for the average product.

Description of the system boundary (X = Included in LCA, MNA= Module Not Declared, NR=Not Relevant)

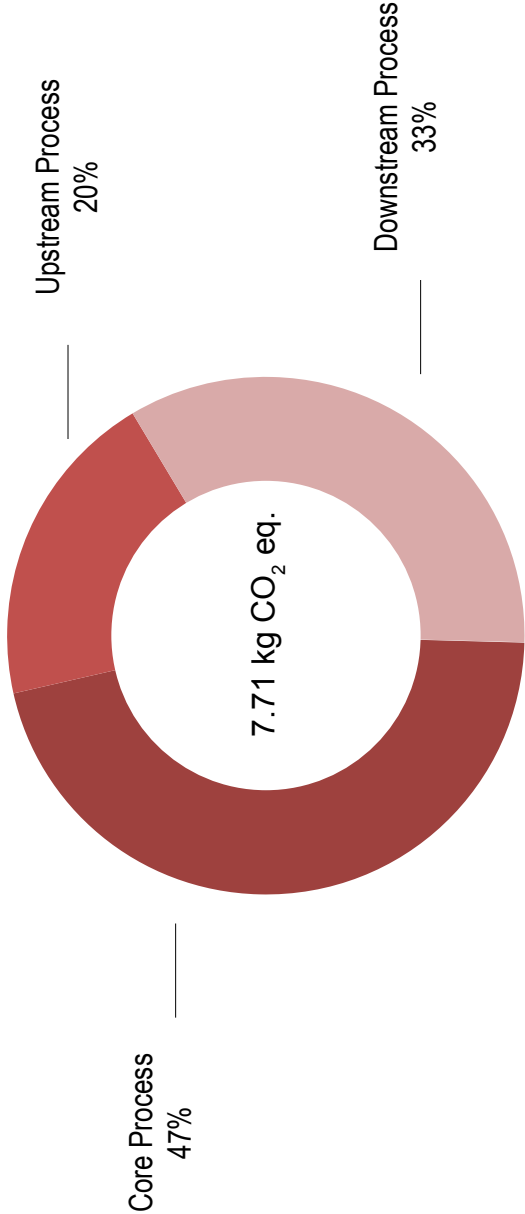
The results of the LCA with the indicators as per EPD requirement are given in the following tables for product product stage (A1 - A3), construction process (A4, A5), use stage (B1 - B7), and end of life (C1 - C4). The system boundaries in tabular form for all modules are shown in the table above.

All energy calculations were obtained using Cumulative Energy Demand V1.09 methodology, while environmental impacts are calculated with the CML-IA baseline V4.2 within SimaPro LCA Software. The net fresh water use reflect the water consumption during manufacturing processes.

PRODUCT STAGE	Raw Materials Supply			CONSTRUCTION PROCESS STAGE	USE STAGE								END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES	
	A1	A2	A3		A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3		C4
	X	X	X	X	X	NR	X	X	X	X	NR	NR	X	X	X	X	MND	D
				Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction	Transport	Waste processing	Disposal	Reuse-Recycling-Recovery Potential	

LCA RESULTS

ENVIRONMENTAL IMPACTS FOR 1 m² Kalesinterflex® Porcelain Ceramic Slab																
	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	TOTAL
GWP	Fossil	[kg CO ₂ eq.]	4.99	0.605	0.982	NR	0.028	0.000	0.000	NR	NR	0.000	0.484	0.000	0.056	7.14
	Biogenic	[kg CO ₂ eq.]	3.79x10 ⁻³	204x10 ⁻⁶	218x10 ⁻³	NR	491x10 ⁻⁶	0.000	0.000	NR	NR	0.000	29.6x10 ⁻⁹	0.000	241x10 ⁻⁶	222x10 ⁻³
	Land Use & Transformation	[kg CO ₂ eq.]	1.48x10 ⁻³	213x10 ⁻⁶	554x10 ⁻⁶	NR	125x10 ⁻³	0.000	0.000	NR	NR	0.000	21.6x10 ⁻⁹	0.000	34.1x10 ⁻⁶	127x10 ⁻³
	Total		5.14	0.613	1.20	NR	0.210	0.000	0.000	NR	NR	0.000	0.490	0.000	0.057	7.71
ODP		[kg CFC11 eq.]	420x10 ⁻⁹	104x10 ⁻⁹	41.8x10 ⁻⁹	NR	5.85x10 ⁻⁹	0.000	0.000	NR	NR	0.000	90.2x10 ⁻⁹	0.000	10.3x10 ⁻⁹	672x10 ⁻⁹
POCP		[kg C ₂ H ₄ eq.]	1.04x10 ⁻³	141x10 ⁻⁶	188x10 ⁻⁶	NR	103x10 ⁻⁶	0.000	0.000	NR	NR	0.000	88.2x10 ⁻⁶	0.000	16.3x10 ⁻⁶	1.57x10 ⁻³
AP		[kg SO ₂ eq.]	17.2x10 ⁻³	4.15x10 ⁻³	3.09x10 ⁻³	NR	413x10 ⁻⁶	0.000	0.000	NR	NR	0.000	2.30x10 ⁻³	0.000	418x10 ⁻⁶	27.6x10 ⁻³
EP		[kg PO ₄ ³⁻ eq.]	29.7x10 ⁻³	1.96x10 ⁻³	2.03x10 ⁻³	NR	560x10 ⁻⁶	0.000	0.000	NR	NR	0.000	472x10 ⁻⁶	0.000	145x10 ⁻⁶	34.9x10 ⁻³
ADPE		[kg Sb eq.]	1.39x10 ⁻⁶	10.6x10 ⁻⁹	59.9x10 ⁻⁹	NR	51.0x10 ⁻⁹	0.000	0.000	NR	NR	0.000	1.41x10 ⁻⁹	0.000	9.72x10 ⁻⁹	1.53x10 ⁻⁶
ADPF		[MJ]	78.1	8.92	5.67	NR	0.489	0.000	0.000	NR	NR	0.000	7.43	0.000	0.938	102
Legend	GWP: Global Warming Potential, ODP: Ozone Depletion Potential, POCP: Formation Potential of Tropospheric Ozone Photochemical Oxidants, AP: Acidification Potential, EP: Eutrophication Potential, ADPE: Abiotic Depletion Potential for Non-fossil Resources, ADPF: Abiotic Depletion Potential for Fossil Resources, NR: Not Relevant															

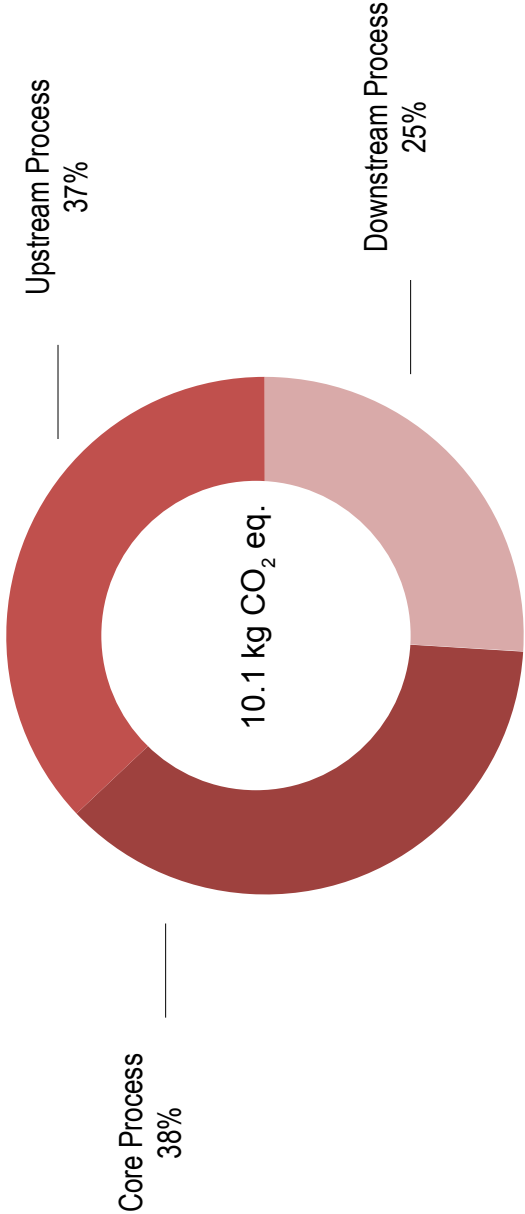


LCA RESULTS

OUTPUT FLOWS AND WASTE CATEGORIES FOR 1 m² Kalesinterflex® Porcelain Ceramic Slab																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	TOTAL
HWD	[kg]	1.35	0.000	0.000	NR	0.000	0.000	0.000	0.000	NR	NR	0.000	0.000	0.000	-	1.35
NHWD	[kg]	0.367	0.000	0.604	NR	0.000	0.000	0.000	0.000	NR	NR	0.000	0.000	0.000	7.86	8.83
RWD	[kg]	-	0.000	0.000	NR	0.000	0.000	0.000	0.000	NR	NR	0.000	0.000	0.000	-	-
Legend	HWD: Hazardous Waste Disposed, NHWD: Non-Hazardous Waste Disposed, RWD: Radioactive Waste Disposed, NR: Not Relevant															
RESOURCE USE FOR 1 m² Kalesinterflex® Porcelain Ceramic Slab																
PERE	[MJ]	10.5	0.340	0.771	NR	1.01	0.000	0.000	0.000	NR	NR	0.000	0.013	0.000	0.021	12.7
PERM	[MJ]	0.000	0.000	0.000	NR	0.000	0.000	0.000	0.000	NR	NR	0.000	0.000	0.000	0.000	0.000
PERT	[MJ]	10.5	0.340	0.771	NR	1.01	0.000	0.000	0.000	NR	NR	0.000	0.013	0.000	0.021	12.7
PENRE	[MJ]	78.1	8.92	5.67	NR	0.489	0.000	0.000	0.000	NR	NR	0.000	7.43	0.000	0.938	102
PENRM	[MJ]	0.000	0.000	0.000	NR	0.000	0.000	0.000	0.000	NR	NR	0.000	0.000	0.000	0.000	0.000
PENRT	[MJ]	78.1	8.92	5.67	NR	0.489	0.000	0.000	0.000	NR	NR	0.000	7.43	0.000	0.938	102
SM	[kg]	0.000	0.000	0.000	NR	0.000	0.000	0.000	0.000	NR	NR	0.000	0.000	0.000	0.000	0.000
RSF	[MJ]	0.000	0.000	0.000	NR	0.000	0.000	0.000	0.000	NR	NR	0.000	0.000	0.000	0.000	0.000
NRSF	[MJ]	0.000	0.000	0.000	NR	0.000	0.000	0.000	0.000	NR	NR	0.000	0.000	0.000	0.000	0.000
FW	[m³]	0.028	-	0.008	NR	0.020	0.000	0.000	0.000	NR	NR	0.000	0.000	-	-	0.056
WSI	[m³]	6.31	81.3x10 ⁻³	294x10 ⁻³	NR	165x10 ⁻³	0.000	0.000	0.000	NR	NR	0.000	29.0x10 ⁻³	0.000	15.0x10 ⁻³	6.31
Legend	PERE: Use of renewable primary energy excluding 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 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, WSI: Water Scarcity Index, NR: Not Relevant															

LCA RESULTS

ENVIRONMENTAL IMPACTS FOR 1 m² Kalesinterflex® Porcelain Ceramic Slab with Fibreglass Backing																
	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	TOTAL
GWP	Fossil	[kg CO ₂ eq.]	7.37	0.605	0.982	NR	0.028	NR	0.000	NR	NR	0.000	0.484	0.000	0.060	9.53
	Biogenic	[kg CO ₂ eq.]	0.009	204x10 ⁻⁹	0.218	NR	491x10 ⁻⁶	NR	0.000	NR	NR	0.000	29.6x10 ⁻⁶	0.000	259x10 ⁻⁶	0.228
	Land Use & Transformation	[kg CO ₂ eq.]	0.002	213x10 ⁻⁹	554x10 ⁻⁶	NR	0.125	NR	0.000	NR	NR	0.000	21.6x10 ⁻⁶	0.000	36.6x10 ⁻⁶	0.128
	Total	[kg CO ₂ eq.]	7.56	0.613	1.20	NR	0.210	NR	0.000	NR	NR	0.000	0.490	0.000	0.061	10.1
ODP		[kg CFC11 eq.]	503x10 ⁻⁹	104x10 ⁻⁹	41.8x10 ⁻⁹	NR	5.85x10 ⁻⁹	NR	0.000	NR	NR	0.000	90.2x10 ⁻⁹	0.000	11.0x10 ⁻⁹	756x10 ⁻⁹
POCP		[kg C ₂ H ₄ eq.]	1.65x10 ⁻³	141x10 ⁻⁶	188x10 ⁻⁶	NR	103x10 ⁻⁶	NR	0.000	NR	NR	0.000	88.2x10 ⁻⁶	0.000	17.5x10 ⁻⁶	2.18x10 ⁻³
AP		[kg SO ₂ eq.]	32.2x10 ⁻³	4.15x10 ⁻³	3.09x10 ⁻³	NR	413x10 ⁻⁶	NR	0.000	NR	NR	0.000	2.30x10 ⁻³	0.000	449x10 ⁻⁶	42.6x10 ⁻³
EP		[kg PO ₄ ³⁻ eq.]	46.9x10 ⁻³	1.96x10 ⁻³	2.03x10 ⁻³	NR	560x10 ⁻⁶	NR	0.000	NR	NR	0.000	472x10 ⁻⁶	0.000	156x10 ⁻⁶	52.1x10 ⁻³
ADPE		[kg Sb eq.]	2.99x10 ⁻⁶	10.6x10 ⁻⁹	59.9x10 ⁻⁹	NR	51.0x10 ⁻⁹	NR	0.000	NR	NR	0.000	1.41x10 ⁻⁹	0.000	10.5x10 ⁻⁹	3.13x10 ⁻⁶
ADPF		[MJ]	119	8.92	5.67	NR	0.489	NR	0.0	NR	NR	0.000	7.43	0.000	1.01	143
Legend	GWP: Global Warming Potential, ODP: Ozone Depletion Potential, POCP: Formation Potential of Tropospheric Ozone Photochemical Oxidants, AP: Acidification Potential, EP: Eutrophication Potential, ADPE: Abiotic Depletion Potential for Non-fossil Resources, ADPF: Abiotic Depletion Potential for Fossil Resources, NR: Not Relevant															








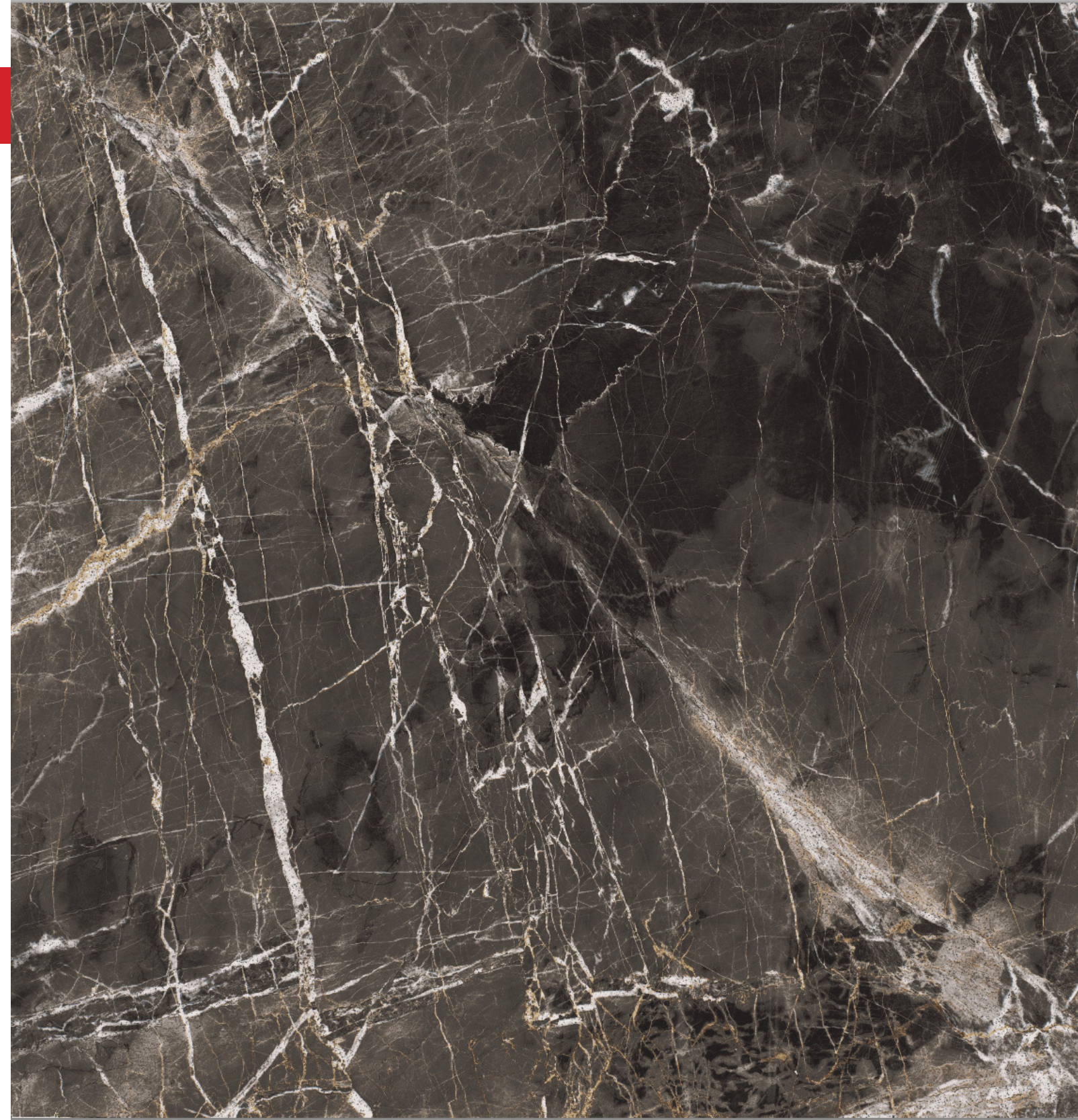
OUTPUT FLOWS AND WASTE CATEGORIES FOR 1 m² Kalesinterflex® Porcelain Ceramic Slab with Fibreglass Backing																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	TOTAL
HWD	[kg]	1.35	0.000	0.000	NR	0.000	0.000	0.000	0.000	NR	NR	0.000	0.000	0.000	-	1.35
NHWD	[kg]	0.367	0.000	0.964	NR	0.000	0.000	0.000	0.000	NR	NR	0.000	0.000	0.000	7.86	9.19
RWD	[kg]	-	-	-	NR	-	-	-	-	NR	NR	-	-	-	-	-
Legend	HWD: Hazardous Waste Disposed, NHWD: Non-Hazardous Waste Disposed, RWD: Radioactive Waste Disposed, NR: Not Relevant															
RESOURCE USE FOR 1 m² Kalesinterflex® Porcelain Ceramic Slab with Fibreglass Backing																
PERE	[MJ]	16.0	0.340	0.771	NR	1.01	0.000	0.000	0.000	NR	NR	0.000	0.013	0.00	0.022	18.2
PERM	[MJ]	0.000	0.000	0.000	NR	0.000	0.000	0.000	0.000	NR	NR	0.000	0.000	0.000	0.000	0.000
PERT	[MJ]	16.0	0.340	0.771	NR	1.01	0.000	0.000	0.000	NR	NR	0.000	0.013	0.000	0.011	18.2
PENRE	[MJ]	119	8.92	5.67	NR	0.489	0.000	0.000	0.000	NR	NR	0.000	7.43	0.000	0.000	142
PENRM	[MJ]	0.000	0.000	0.000	NR	0.000	0.000	0.000	0.000	NR	NR	0.000	0.000	0.000	0.000	0.000
PENRT	[MJ]	119	8.92	5.67	NR	0.489	0.000	0.000	0.000	NR	NR	0.000	7.43	0.000	0.000	142
SM	[kg]	0.000	0.000	0.000	NR	0.000	0.000	0.000	0.000	NR	NR	0.000	0.000	0.000	0.000	0.000
RSF	[MJ]	0.000	0.000	0.000	NR	0.000	0.000	0.000	0.000	NR	NR	0.000	0.000	0.000	0.000	0.000
NRSF	[MJ]	0.000	0.000	0.000	NR	0.000	0.000	0.000	0.000	NR	NR	0.000	0.000	0.000	0.000	0.000
FW	[m³]	0.028	-	0.008	NR	0.020	0.000	0.000	0.000	NR	NR	-	-	-	-	0.056
WSI	[m³]	7.87	0.081	0.294	NR	0.165	0.000	0.000	0.000	NR	NR	0.000	0.029	0.000	0.016	8.46
Legend	PERE: Use of renewable primary energy excluding 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 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, WSI: Water Scarcity Index, NR: Not Relevant															

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/ISO 10545-9/ Ceramic tiles - Part 9: Determination of resistance to thermal shock
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VERIFICATION & REGISTRATION

Programme	The International EPD System www.environdec.com EPD registered through the fully aligned regional programme: EPD Turkey www.epdturkey.org	
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