

# ENVIRONMENTAL PRODUCT DECLARATION

## NG Kütahya Seramik (20 mm)

In accordance with: ISO 14025:2006, EN 15804:2012+A2:2019/AC:2021

EPD Owner: NG Kütahya Seramik A.Ş.

Programme: International EPD System, [www.environdec.com](http://www.environdec.com)

Programme Operator: EPD International AB

Licensee: EPD Türkiye

Type of the EPD: EPD of multiple products, based on worst-case results

EPD Registration Number: EPD-IES-0025738

Version Date: 2025-11-30

Validity Date: 2030-11-29

NG | KÜTAHYA  
SERAMİK



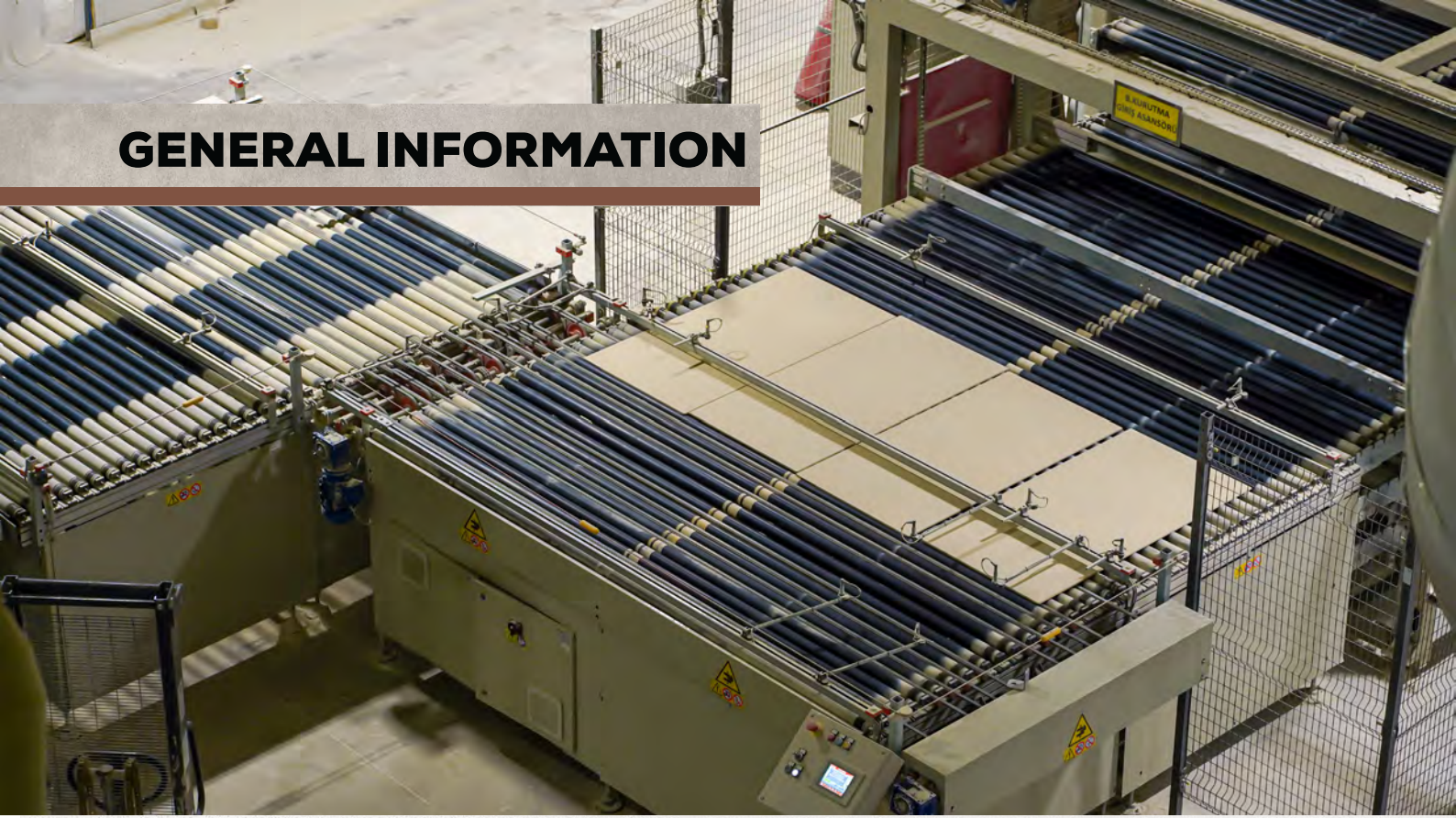
An EPD may be updated or depublished if conditions change. To find the latest version of the EPD and to confirm its validity, see [www.environdec.com](http://www.environdec.com)

NG | KÜTAHYA  
SERAMİK

EPD TÜRKİYE EPD  
INTERNATIONAL EPD SYSTEM INTERNATIONAL EPD SYSTEM



# GENERAL INFORMATION



## Programme Information

Programme: The International EPD System

Address: EPD International AB Box 210 60 SE-100 31 Stockholm Sweden

Website: [www.environdec.com](http://www.environdec.com)

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## Product Category Rules (PCR)

CEN standard EN 15804 serves as the Core Product Category Rules (PCR)

Product Category Rules (PCR) PCR 2019:14 Construction products (EN 15804+A2) (2.0.1)

PCR review was conducted by The Technical Committee of the International EPD System. See [www.environdec.com](http://www.environdec.com) for a list of members. Review chair: Rob Rouwette (chair), Noa Meron (co-chair). The review panel may be contacted via the Secretariat [www.environdec.com/support](http://www.environdec.com/support).

(c-PCR) PCR 2019:14-c-PCR-002 - Ceramic tiles (EN 17160) (c-PCR to PCR 2019:14) (1.0.0) Version: 1.0.0

c-PCR review was conducted by The Technical Committee of the International EPD System

# GENERAL INFORMATION



## Third-party Verification

Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:

Individual EPD verification without a pre-verified LCA/EPD tool

Third-party verifier                      Dr. Rajesh Kumar Singh

Approved by                                  International EPD System

Procedure for follow-up of data during EPD validity involves third party verifier:

Yes               No

Life Cycle Assessment (LCA)              Yıldırım Yılmaz, Metsims Sustainability Consulting, info@metsims.com

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but published in different EPD programmes, may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR (including the same first-digit version number) or be based on fully aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have identical scope in terms of included life-cycle stages (unless the excluded life-cycle stage is demonstrated to be insignificant); apply identical impact assessment methods (including the same version of characterisation factors); and be valid at the time of comparison.

For further information about comparability, see EN 15804 and ISO 14025.

# INFORMATION ABOUT EPD OWNER



EPD Owner	NG Kütahya Seramik A.Ş.
Contact person name	Büşra Adıgüzel, Quality Management Systems Manager
Contact person e-mail	busraadiguzel@ngkutahyaseramik.com.tr
Company information	Çalca Mahallesi, 43001, Kütahya, Türkiye +90 274 225 12 00, info@ngkutahyaseramik.com.tr

## Description of the organisation of the EPD Owner

NG Kütahya Seramik sets the trends in its sector with its firsts, innovations and distinctive designs. Ceramics of 120x240 cm, 120x120 cm and 30x240 cm sizes are produced by NG Kütahya Seramik for the first time in Turkey. NG Kütahya Seramik, which adds a unique, contemporary and luxurious look to living spaces by equipping its innovative sized collections with architectural and aesthetic touches, reflects the plain beauty of nature to spaces with its high technology. NG Kütahya Seramik, the owner of many international design awards, won the "IF Product Design 2011" award with its Versatile collection in 2011. NG Kütahya Seramik was also the first and only ceramic brand in the world which was awarded the "Red Dot Design Award Best" award within the same year.

With its three-dimensional series Nexus, it received an award in the product design category at the "Red Dot Design Award. NG Kütahya Seramik, which brings the world's most modern and advanced technologies to the Turkish ceramic industry, won the Best Industrial Building Award twice in the "Sign of the City Awards" contest. In Super brands 2016-2017; it was selected as Turkey's Super Brand with its innovative dimensions, modern technology, distinctive designs and international awards. NG Kütahya Seramik, which has always been a pioneer in the industry, became "Turkey's Most Respected Ceramic Brand" in the ceramic category of the 2019 Turkey Reputation Index Survey. It has been selected as the "Diamond Brand of Turkey" for two years in a row in the 2019-2020 Economic Benefit Index (EFE), which was carried out jointly by the Turkish Reputation Academy and Yıldız Technical University.

## PRODUCT INFORMATION



Product name	*NG Kütahya Seramik Porcelain Tile (20 mm)
Product identification	NG Kütahya Seramik Porcelain Tile - 20 mm Porcelain Tile for Multi-Surface Applications
Included products	NG Kütahya Seramik Porcelain Tile (20 mm) with glazing & without glazing
Product description	NG Kütahya Seramik Porcelain Tile 20 mm is designed for high-performance outdoor flooring, ideal for terraces, pool areas, pathways, and commercial spaces. With its anti-slip surface and versatile installation methods (gravel, sand, grass, raised systems), it ensures safety and flexibility. Frost resistance, high load capacity, and abrasion resistance guarantee year-round durability, while its refined look adds elegance to modern outdoor designs.
Multiple product explanation	This EPD has been developed as a multiple product EPD, since the NG Kütahya Seramik (20 mm) tiles are manufactured in both glazed and unglazed versions. In line with EN 15804 requirements, the glazed product has been selected as the declared product, representing the worst-case scenario in terms of environmental impacts.
Technical purpose of product	NG Kütahya Seramik 20 mm is designed for high-performance outdoor flooring in both residential and commercial settings, combining superior strength, anti-slip safety, and all-season durability. Its robust structure and versatile installation options make it ideal for pathways, terraces, pool areas, and other heavily used outdoor spaces.
Manufacturing or service provision description	NG Kütahya Seramik 20 mm porcelain pavers are manufactured from a carefully selected blend of natural raw materials such as clay, feldspar, and silica. The mixture is pressed into thick, high-density tiles under extreme pressure, then dried and fired at elevated temperatures to achieve exceptional load-bearing capacity, frost resistance, and surface durability. A specialized anti-slip finish is applied to ensure safety and maintain aesthetic appeal in diverse outdoor environments.
Material properties	Area density, dry (kg/m <sup>2</sup> ), 44.00, Thickness (m), 0.022
Manufacturing site	Çalca Mahallesi, 43001, Kütahya, Türkiye
UN CPC code	37310 - Bricks, blocks, tiles and other ceramic goods of siliceous earths
Geographical scope(s)	A1: Global, A2: Global, A3: Republic of Türkiye, A4: Global, A5: Global, B Modules: Global, C1-C4 & D: Global
Hazardous and toxic substances	The product does not contain any substances from the SVHC candidate list in concentrations exceeding 0.1% of its weight.

\*Manufacturer's product range consists of various design options; however, the material composition remains the same across all products. Therefore, average environmental impacts per m<sup>2</sup> have been presented as a representative value for the entire product range in addition with representing maximum and minimum boundaries as additional LCA results.

# CONTENT DECLARATION



## PRODUCT CONTENT

Content name	*Weight, %	Post-consumer recycled material, weight-% of product	Biogenic material, weight-% of product	Biogenic material <sup>1</sup> , kg C/declared unit
Clay	43 - 48	0	0	0
Kaolin	5 - 10	0	0	0
Na-Feldspar	25 - 30	0	0	0
K-Feldspar	5 - 10	0	0	0
Total	100	0	0	0
Note 1	1 kg biogenic carbon is equivalent to 44/12 kg of CO <sub>2</sub>			
*Wet weight				

\*Product composition is presented as percentages rather than specific weights to maintain confidentiality while transparently communicating the relative proportions of each component.

## PACKAGING MATERIALS

Material name	Weight, kg	Weight-% (versus the product)	Biogenic material <sup>1</sup> , kg C/declared unit
Plastic packaging (Nylon)	4.0E-03	0.01	0
Expanded Polystyrene	5.0E-03	0.01	0
Packaging film	1.2E-02	0.02	0
Board box	3.4E-01	0.77	0
Total	3.6E-01	0.82	0
Note 1	1 kg biogenic carbon is equivalent to 44/12 kg of CO <sub>2</sub>		

## LCA INFORMATION



Data period	01.01.2025 - 31.12.2025
Declared unit and reference flow	1 m <sup>2</sup> (weights 44 kg) of NG Kütahya Seramik Porcelain Tiles (20 mm)
Conversion factor to mass	0.022
Data sources used for this EPD	ecoinvent 3.11 database
LCA Software	SimaPro Craft 10.2
Version of the EN 15804 reference package	EF Reference Package 3.1
Allocation	Energy consumption and raw material transportation were weighted according to production figures in data period.
Cut-off Rules	The criteria for exclusion were set so that individual input flows of less than 1% of the total, with a cumulative limit of less than 5%, could be omitted. This was contingent upon confirming that these excluded flows did not significantly alter the reported data, with "significant" defined as affecting the total by less than 5%.
REACH	No substances included in the Candidate List of Substances of Very High Concern for authorization under the REACH regulations are present in this product either above the threshold for registration with the European Chemicals Agency or above 0.1% (wt/wt).
Scrap (recycled material) inputs contribution level	Less than 10% of the GWP-GHG results in modules A1-A3 come from scrap inputs
Infrastructure and capital goods	Excluded

# LCA INFORMATION

## Data Quality Assessment

Description of data quality assessment and reference years: The Life Cycle Assessment (LCA) for this Environmental Product Declaration (EPD) is based on both primary and secondary data. Primary data were collected directly from the manufacturer's production processes and site-specific operations for the reference year 2024. The quality and representativeness of all data used for the EPD have been evaluated in terms of time, geography, and technology according to the principles outlined in EN 15804:2012+A2:2019, Annex E, and the data quality requirements specified in EN 15941:2010 for life cycle data. All relevant datasets were reviewed for completeness, consistency, and reliability, and the assessment confirmed that no data were classified as "poor" or "very poor" in quality.

Process name	Source type	Source	Reference year	Data category	Share of primary data, of GWP-GHG results for A1- A3
Upstream Transport	Calculated Data	EPD Owner	2025	Primary	14.6%
Manufacturing	Calculated Data	EPD Owner	2025	Primary	49.6%
Other Processes	Databases	Ecoinvent 3.11	2025	Secondary	0%
Total share of primary data, of GWP-GHG results for A1-A3					64.2%
Note	The share of primary data is calculated based on GWP GHG results. It is a simplified indicator for data quality that supports the use of more primary data to increase the representativeness of and comparability between EPDs. Note that the indicator does not capture all relevant aspects of data quality and is not comparable across product categories.				

## Electricity Used in the Manufacturing Process in A3

Type of electricity mix	Residual electricity mix on the market + Roof solar integration	
Energy sources	Imported coal	36.9%
	Natural gas	31.9%
	Lignite	20.1%
	Hard coal	1.68%
	Asphaltite	0.5%
	Solar	8.87%
Climate impact (GWP-GHG):	0.84 kg CO <sub>2</sub> eq./kWh	

Method used to calculate residual electricity mix	The market consumption data for Türkiye is modified to include all the renewable sources as there is no 'secondary data' on the residual market mix for Türkiye.
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# SYSTEM BOUNDARY

Description of the System boundary b) Cradle to gate with options, module C1-C4, module D and optional modules (B modules)

Excluded modules There are no excluded modules

	Product stage			Construction process stage		Use stage							End of life stage				Beyond product life cycle
	Raw material supply	Transport	Manufacturing	Transport to s	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Geography	Global		Türkiye	Global							Global						
Share of specific data	64.2%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - products	2%		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - sites	0%		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

# SYSTEM BOUNDARY

## A1 - Raw Material Supply

The raw material supply stage covers the extraction and provision of natural minerals such as clays, feldspars, kaolin, and quartz etc. These inputs form the basis of the ceramic body and are sourced from regional and national suppliers. The inclusion of recycled production waste reduces the demand for virgin raw materials and contributes to a more resource-efficient process.

## A2 - Raw Material Transport

The raw materials are transported to the NG Kütahya Seramik production facility both by road and sea. Transport distances vary depending on the origin of the suppliers, and related fuel consumption and emissions are accounted for in this stage.

## A3 - Manufacturing

At the manufacturing stage, the supplied materials undergo milling, spray drying, pressing, drying, and firing to produce the NG Kütahya Seramik (20 mm) ceramic tiles, followed by quality control and finishing operations such as cutting, surface treatment, and packaging. Energy consumption is primarily based on natural gas for kiln operations and electricity for machinery, while closed-loop systems allow for the recycling of process water and the reintegration of production residues. These measures ensure that waste is minimized and resources are efficiently utilized within the production cycle.

## A4 - Transport

The distribution of NG Kütahya Seramik (20 mm) tiles from the production facility to the customers is carried out exclusively by road transport. This stage covers the transportation of the finished products to the markets. Environmental impacts in this phase are mainly associated with fuel consumption and emissions from freight vehicles, which are modeled according to supplied transport distances and vehicle load capacities.

Module A4 information	Value	Unit
Distance	927	km
*Capacity utilization (including empty returns)	100	%

\*In accordance with EN 17160, for average transport distances exceeding 300 km, it is assumed that trucks return loaded with other goods. Therefore, the return trip is not included in the system inventory for the transport stage.

## A5 - Installation

Installation of NG Kütahya Seramik (20 mm) tiles is modeled according to EN 17160, Table 11, requiring 6 kg of mortar and 1.5 kg of water per 1 m<sup>2</sup> of product. Impacts mainly arise from mortar production. Packaging materials, considered in line with EN 17160, Table 12, are collected and managed through standard waste treatment routes at end of life.

# SYSTEM BOUNDARY

## B - Use Stages

The use stage has been evaluated in line with EN 17160. No environmental impacts are associated with modules B1, B3, B5, B6, and B7.

For B2 (Maintenance), cleaning requirements are modeled according to EN 17160, which specifies the use of 0.134 ml of detergent and 0.1 l of water per 1 m<sup>2</sup> of ceramic tiles once every three months. A Reference Service Life (RSL) of 50 years is applied, as recommended by the same standard.

For B4 (Refurbishment), no interventions are expected during the RSL; therefore, this module is assumed to be zero.

## C1 - De-construction/Demolition

In line with PCR 2019:14 v.2.0.1, deconstruction activities are modeled based on an assumed diesel consumption of 5 kWh per ton of ceramic product. For NG Kütahya Seramik (20 mm), with a declared mass of 15.77 kg per m<sup>2</sup>, this corresponds to approximately 0.22 kWh per m<sup>2</sup>. This represents the energy required for mechanical handling and removal of tiles at end of life.

## C2 - Transport

According to the conservative assumption defined in PCR 2019:14, v.2.0.1, end-of-life transport is modeled as 80 km by road using a Euro 5 truck. This accounts for the average distance to a waste treatment facility and the associated fuel consumption and emissions during the transport of ceramic waste.

## C3 - Waste Processing

In accordance with EN 17160, Table 17, end-of-life treatment of NG Kütahya Seramik (20 mm) tiles assumes 70% recycling and 30% landfilling. Recycling refers to the recovery of ceramic material as secondary raw input for construction applications.

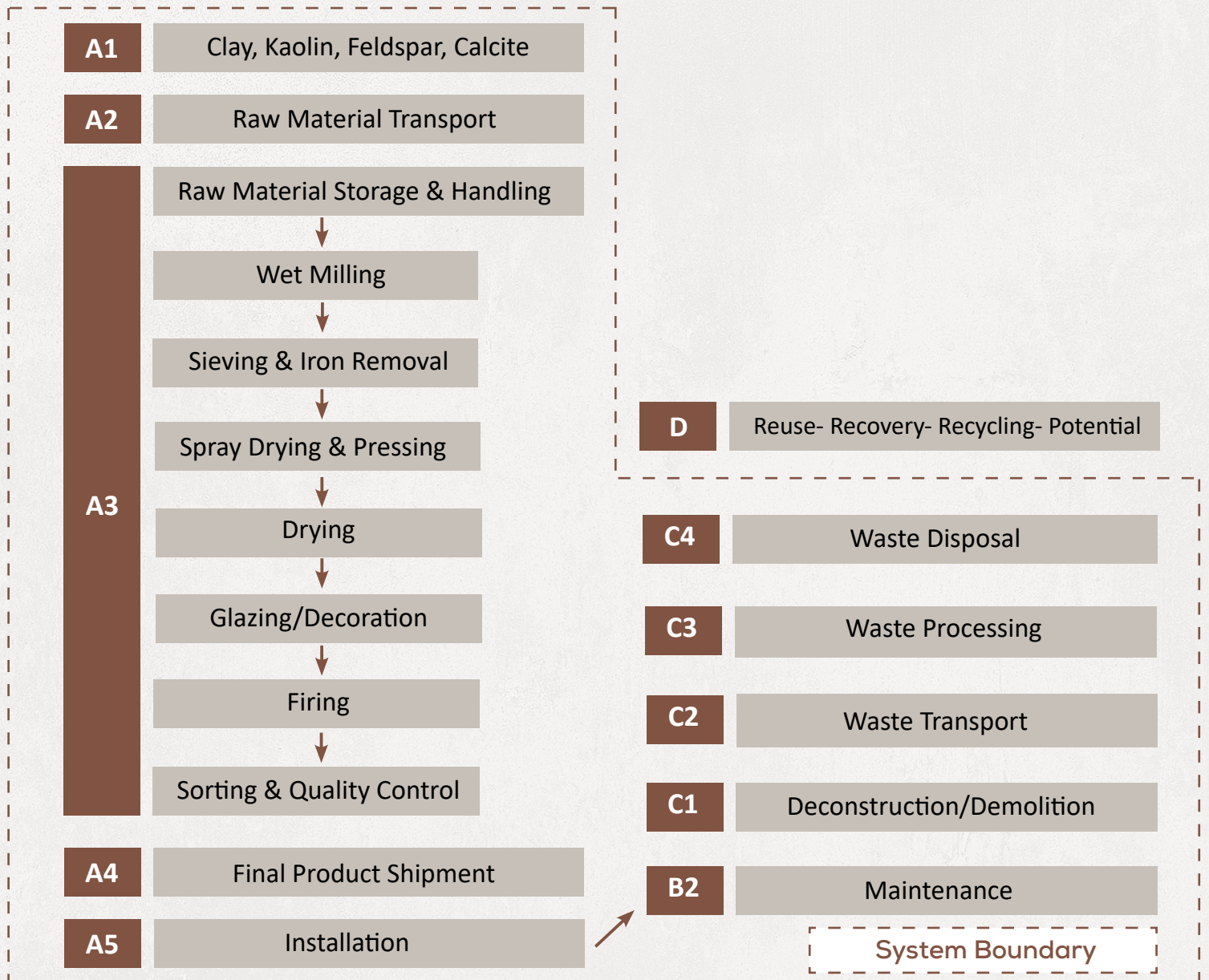
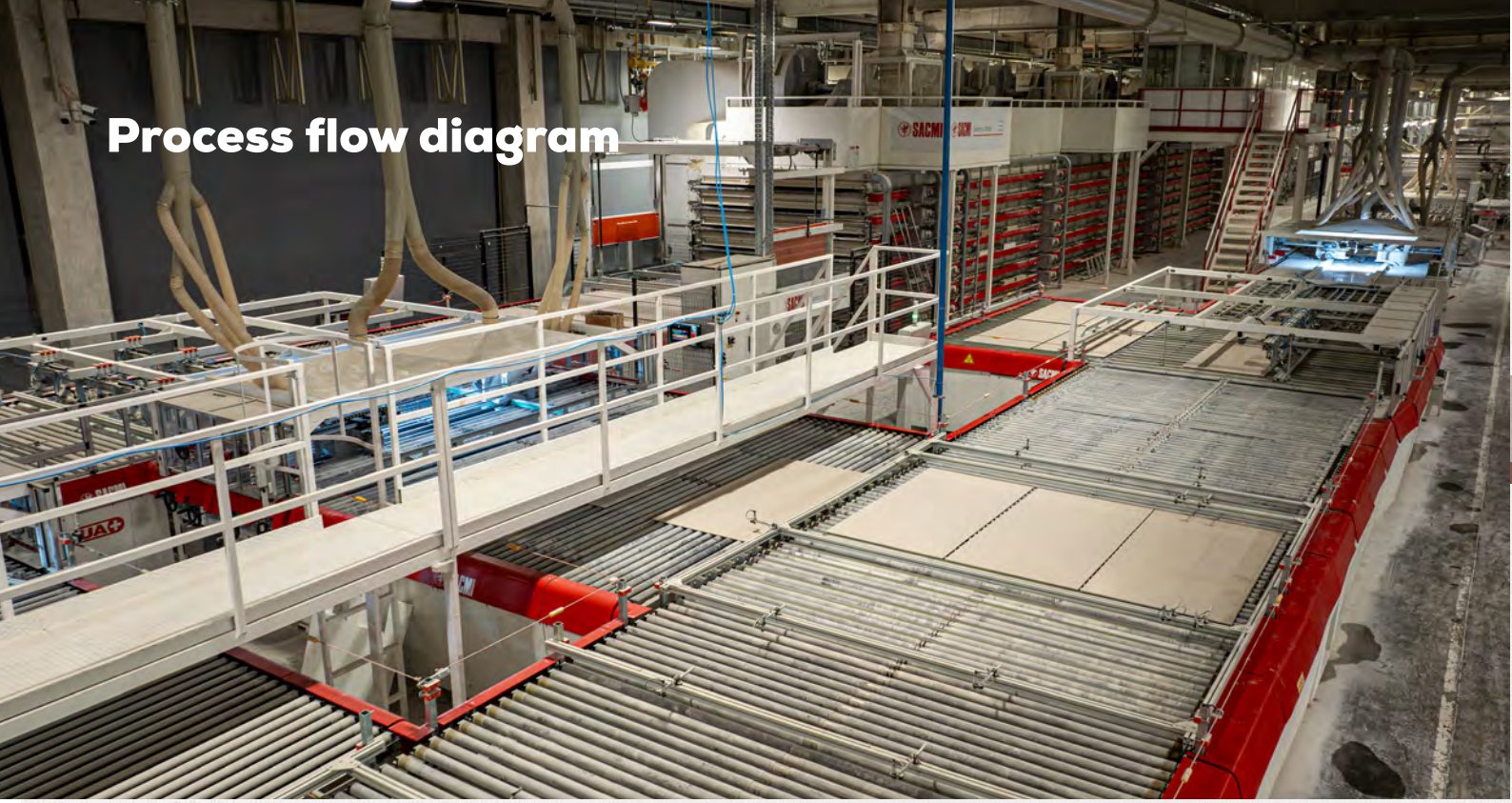
## C4 - Disposal

The remaining fraction not recovered in C3 is modeled as disposal. Accordingly, 30% of the product mass is directed to landfill.

## D - Reuse- Recovery- Recycling- potential

The fraction of material recycled in C3 (70% of the product mass) is assumed to be recovered as secondary raw input, typically used as filler material in construction applications. This substitution effect leads to an avoided burden by reducing the demand for equivalent amounts of virgin raw materials. The associated environmental benefits are credited to Module D.

# Process flow diagram



# ENVIRONMENTAL PERFORMANCE

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.

## Mandatory environmental performance indicators according to EN 15804

Module	Indicator	Unit	A1-A3	A4	A5	B2	C1	C2	C3	C4	D
Climate change - total	GWP-total	kg CO2 eq.	1.51E+01	5.44E+00	1.11E+00	3.09E-02	7.09E-02	5.40E-01	9.26E-02	1.55E-01	-2.45E-01
Climate change - fossil	GWP-fossil	kg CO2 eq.	1.51E+01	5.44E+00	1.02E+00	2.99E-02	7.05E-02	5.40E-01	9.25E-02	1.55E-01	-2.45E-01
Climate change - biogenic	GWP-biogenic	kg CO2 eq.	-7.13E-02	2.10E-04	9.45E-02	5.71E-05	1.64E-04	1.87E-05	7.52E-05	1.83E-04	-1.32E-04
Climate change - land use and land-use change	GWP-luluc	kg CO2 eq.	5.72E-02	1.31E-04	2.69E-04	9.88E-04	2.13E-04	8.53E-06	9.64E-05	1.93E-05	-2.26E-04
Ozone depletion	ODP	kg CFC-11 eq.	2.40E-07	1.06E-07	3.53E-09	4.12E-10	1.07E-09	1.23E-08	1.41E-09	5.08E-09	-1.78E-09
Acidification	AP	mol H+ eq.	5.26E-02	7.68E-02	3.08E-03	1.75E-04	3.39E-04	1.39E-03	7.17E-04	1.79E-03	-1.39E-03
Eutrophication aquatic freshwater	EP-freshwater	kg P eq.	7.43E-04	3.86E-06	1.03E-05	1.56E-06	7.04E-06	3.33E-07	3.16E-06	4.03E-06	-9.50E-06
Eutrophication aquatic marine	EP-marine	kg N eq.	9.62E-03	1.90E-02	9.35E-04	4.28E-05	4.47E-05	5.31E-04	2.87E-04	4.95E-04	-3.54E-04
Eutrophication terrestrial	EP-terrestrial	mol N eq.	1.02E-01	2.11E-01	1.05E-02	3.62E-04	5.02E-04	5.81E-03	3.15E-03	5.36E-03	-3.88E-03
Photochemical ozone formation	POCP	kg NMVOC eq.	4.22E-02	6.17E-02	2.92E-03	1.08E-04	1.62E-04	2.31E-03	9.46E-04	1.87E-03	-1.24E-03
Depletion of abiotic resources - minerals and metals	ADP- minerals & metals <sup>1</sup>	kg Sb eq.	5.35E-05	1.03E-07	1.70E-06	9.34E-08	4.67E-09	1.41E-08	4.21E-09	3.58E-08	-3.04E-08
Depletion of abiotic resources - fossil fuels	ADP-fossil <sup>1</sup>	MJ, net calorific value	2.11E+02	7.15E+01	5.05E+00	4.24E-01	1.67E+00	7.17E+00	1.54E+00	3.57E+00	-3.23E+00
Water use	WDP <sup>1</sup>	m <sup>3</sup> world eq. deprived	4.68E+00	5.57E-02	2.68E-01	8.68E-01	3.68E-02	5.69E-03	1.72E-02	-1.78E+00	-4.39E-01
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption										
General disclaimer	It is discouraged to use the results of modules A1-A3 without considering the results of module C.										
Disclaimer 1	The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator										

# ENVIRONMENTAL PERFORMANCE

## Additional mandatory environmental performance indicators

Module	Indicator	Unit	A1-A3	A4	A5	B2	C1	C2	C3	C4	D
Climate change - GWP-GHG	GWP-GHG1	kg CO <sub>2</sub> eq.	1.51E+01	5.44E+00	1.11E+00	3.09E-02	7.09E-02	5.40E-01	9.26E-02	1.55E-01	-2.45E-01
Acronyms	GWP-GHG = Global warming potential greenhouse gas.										
General disclaimer	It is discouraged to use the results of modules A1-A3 without considering the results of module C.										
Disclaimer 1	The GWP-GHG indicator is termed GWP-IOBC/GHG in the ILCD+EPD+ data format. The indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO2 is set to zero.										

## Resource use indicators according to EN 15804

Module	Unit	A1-A3	A4	A5	B2	C1	C2	C3	C4	D	
PERE	MJ, net calorific value	2.51E+01	1.61E-01	9.36E+00	4.26E-01	1.67E+00	7.17E+00	1.54E+00	5.17E-02	-3.11E-01	
PERM	MJ, net calorific value	4.31E+00	0.00E+00	-4.31E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
PERT	MJ, net calorific value	2.94E+01	1.61E-01	5.05E+00	4.26E-01	1.67E+00	7.17E+00	1.54E+00	5.17E-02	-3.11E-01	
PENRE	MJ, net calorific value	2.10E+02	7.15E+01	8.27E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.57E+00	-3.23E+00	
PENRM	MJ, net calorific value	8.27E-01	0.00E+00	-8.27E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
PENRT	MJ, net calorific value	2.11E+02	7.15E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.57E+00	-3.23E+00	
SM	kg	4.50E+00	4.22E-05	1.46E-04	2.37E-05	5.60E-06	3.70E-06	4.08E-06	1.57E-04	-6.10E-04	
RSF	MJ, net calorific value	3.16E-02	2.30E-06	2.07E-04	1.38E-06	8.59E-08	3.07E-07	3.18E-07	1.53E-05	-2.59E-06	
NRSF	MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
FW	m <sup>3</sup>	1.17E-01	1.36E-03	6.36E-03	2.02E-02	9.96E-04	1.39E-04	4.63E-04	-4.14E-02	-1.04E-02	
Acronyms	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 re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water.										
General disclaimer	It is discouraged to use the results of modules A1-A3 without considering the results of module C.										

# ENVIRONMENTAL PERFORMANCE

## Waste indicators according to EN 15804

Module	Unit	A1-A3	A4	A5	B2	C1	C2	C3	C4	D
HWD	kg	4.80E-01	4.38E-03	2.22E-02	3.00E-03	3.12E-03	2.73E-04	1.46E-03	2.60E-03	-2.02E-02
NHWD	kg	4.48E+01	2.30E-01	1.42E+00	4.77E-01	3.22E-01	2.32E-02	1.44E-01	4.87E+01	-4.25E-01
RWD	kg	9.88E-05	3.75E-06	2.41E-06	5.97E-07	1.23E-05	4.33E-07	5.43E-06	8.75E-07	-6.88E-06
Acronyms	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed.									
General disclaimer	It is discouraged to use the results of modules A1-A3 without considering the results of module C.									

## Output flow indicators according to EN 15804

Module	Unit	A1-A3	A4	A5	B2	C1	C2	C3	C4	D
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.07E+01	0.00E+00	0.00E+00
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EET	MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Acronyms	CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy.									
General disclaimer	It is discouraged to use the results of modules A1-A3 without considering the results of module C.									

# Abbreviations



Abbreviation	Definition
EN	European Norm (Standard)
EPD	Environmental Product Declaration
EF	Environmental Footprint
GPI	General Programme Instructions
ISO	International Organization for Standardization
CEN	European Committee for Standardization
CPC	Central product classification

## Version History

Original version of the EPD, 2025-11-30.

## REFERENCES



**CEN (2019) EN 17160** Product category rules for ceramic tiles.

**EN 15804:2012+A2:2019+AC:2021** Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products

**PCR 2019:14** (ver. 2.0.1) Construction products (EN 15804:A2)

**ISO 14040:2021** "Environmental management - Life cycle assessment - Principles and framework".

**ISO 14044:2018** "Environmental management - Life cycle assessment - Requirements and guidelines".

**ISO 14025:2006** "Environmental labels and declarations - Type III environmental declarations - Principles and procedures".

**General Program Instructions** of International EPD System, (Ver. 5.0.1) 2025-02-27 "General Programme Instructions for the International EPD® System".

**Ecoinvent** database (v3.11) - [www.ecoinvent.org](http://www.ecoinvent.org)

**NG Kütahya Seramik** [www.ngkutihyaseramik.com.tr](http://www.ngkutihyaseramik.com.tr)

**Metsims** [www.metsims.com](http://www.metsims.com)

# ADDITIONAL LCA RESULTS

## Additional LCA Results (other environmental performance results) of the product

This EPD is an average EPD based on worst-case results of the product group. The included products in the group are NG Kütahya Seramik (20 mm) tile with glazed and unglazed versions. Environmental performance of the glazed version is accounted in the main analysis. Below table shows the ratio of mandatory indicator results relative to the glazed product (worst-case scenario). For instance, a value of -35% indicates that for the relevant indicator the impact result is 35% less than the main scenario.

Impact category	Indicator	Unit	Relative change (%)
Climate change - total	GWP-total	kg CO <sub>2</sub> eq.	-2
Climate change - fossil	GWP-fossil	kg CO <sub>2</sub> eq.	-3
Climate change - biogenic	GWP-biogenic	kg CO <sub>2</sub> eq.	-1
Climate change - land use and land-use change	GWP-luluc	kg CO <sub>2</sub> eq.	-1
Ozone depletion	ODP	kg CFC-11 eq.	-10
Acidification	AP	mol H <sup>+</sup> eq.	-7
Eutrophication aquatic freshwater	EP-freshwater	kg P eq.	-4
Eutrophication aquatic marine	EP- marine	kg N eq.	-7
Eutrophication terrestrial	EP-terrestrial	mol N eq.	-7
Photochemical ozone formation	POCP	kg NMVOC eq.	-5
Depletion of abiotic resources- minerals and metals	ADP - minerals & metals	kg Sb eq.	-12
Depletion of abiotic resources- fossil fuels	ADP-fossil	MJ, net calorific value	-3
Water use	WDP	m <sup>3</sup> world eq. deprived	-11

# ADDITIONAL LCA RESULTS

In compliance with the PCR requirements, 100% end-of-life scenarios have been modelled for the product. Tables below present the results for modules C3, C4 and D, based on these scenarios, covering all mandatory impact indicators as specified in EN 15804.

100% recycling scenario

Impact category	Indicator	Unit	C3	C4	D
Climate change - total	GWP-total	kg CO <sub>2</sub> eq.	9.26E-02	0.00E+00	-3.51E-01
Climate change - fossil	GWP-fossil	kg CO <sub>2</sub> eq.	9.25E-02	0.00E+00	-3.50E-01
Climate change - biogenic	GWP-biogenic	kg CO <sub>2</sub> eq.	7.52E-05	0.00E+00	-1.89E-04
Climate change - land use and land-use change	GWP-luluc	kg CO <sub>2</sub> eq.	9.64E-05	0.00E+00	-3.23E-04
Ozone depletion	ODP	kg CFC-11 eq.	1.41E-09	0.00E+00	-2.54E-09
Acidification	AP	mol H <sup>+</sup> eq.	7.17E-04	0.00E+00	-1.99E-03
Eutrophication aquatic freshwater	EP-freshwater	kg P eq.	3.16E-06	0.00E+00	-1.36E-05
Eutrophication aquatic marine	EP- marine	kg N eq.	2.87E-04	0.00E+00	-5.05E-04
Eutrophication terrestrial	EP-terrestrial	mol N eq.	3.15E-03	0.00E+00	-5.55E-03
Photochemical ozone formation	POCP	kg NMVOC eq.	9.46E-04	0.00E+00	-1.77E-03
Depletion of abiotic resources- minerals and metals	ADP - minerals & metals	kg Sb eq.	4.21E-09	0.00E+00	-4.34E-08
Depletion of abiotic resources- fossil fuels	ADP-fossil	MJ, net calorific value	1.54E+00	0.00E+00	-4.61E+00
Water use	WDP	m <sup>3</sup> world eq. deprived	1.72E-02	0.00E+00	-6.27E-01

100% disposal scenario

Impact category	Indicator	Unit	C3	C4	D
Climate change - total	GWP-total	kg CO <sub>2</sub> eq.	9.26E-02	4.63E-01	0.00E+00
Climate change - fossil	GWP-fossil	kg CO <sub>2</sub> eq.	9.25E-02	4.61E-01	0.00E+00
Climate change - biogenic	GWP-biogenic	kg CO <sub>2</sub> eq.	7.52E-05	2.31E-03	0.00E+00
Climate change - land use and land-use change	GWP-luluc	kg CO <sub>2</sub> eq.	9.64E-05	6.19E-05	0.00E+00
Ozone depletion	ODP	kg CFC-11 eq.	1.41E-09	1.61E-08	0.00E+00
Acidification	AP	mol H <sup>+</sup> eq.	7.17E-04	5.45E-03	0.00E+00
Eutrophication aquatic freshwater	EP-freshwater	kg P eq.	3.16E-06	1.34E-05	0.00E+00
Eutrophication aquatic marine	EP- marine	kg N eq.	2.87E-04	1.41E-03	0.00E+00
Eutrophication terrestrial	EP-terrestrial	mol N eq.	3.15E-03	1.52E-02	0.00E+00
Photochemical ozone formation	POCP	kg NMVOC eq.	9.46E-04	5.44E-03	0.00E+00
Depletion of abiotic resources- minerals and metals	ADP - minerals & metals	kg Sb eq.	4.21E-09	1.18E-07	0.00E+00
Depletion of abiotic resources- fossil fuels	ADP-fossil	MJ, net calorific value	1.54E+00	1.12E+01	0.00E+00
Water use	WDP	m <sup>3</sup> world eq. deprived	1.72E-02	-5.93E+00	0.00E+00

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