ENVIRONMENTAL PRODUCT DECLARATION

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

Squat Toilet (Alaturka Toilet)

from EGE VİTRİFİYE SAĞLIK GEREÇLERİ SAN. VE TİC. A.Ş.

Programme: The International EPD System
www.environdec.com
Programme Operator: EPD International AB
Licensee: EPD Türkiye
EPD Registration Number: EPD-IES-0025430
Version Date: 2025-09-10
Revision Date: 2026-04-06
Validity Date: 2030-09-09
Type of EPD: EPD of multiple products from a company
"EPD of multiple products, based on a representative product, weight from 16.60 kilograms to 16.82 kilograms with representative weight of 16.66 kilograms "

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
E-mail :support@environdec.com

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, version 2.0.1., Construction EN 15804:2012+A2:2019/AC:2021 Sustainability of Construction Works, UN CPC code is 37210

PCR review was conducted by: The Technical Committee of the International EPD System. See 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/contact.

Life Cycle Assessment (LCA)
LCA accountability: Furkan Can Akalın & Yıldıray Yılmaz - Metsims Sustainability Consulting
info@metsims.com

Third-party Verification

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

x Individual EPD verification without a pre-verified LCA/EPD tool
Third-party verifier: Vijay Thakur
Approved by: International EPD System

Procedure for follow-up of data during EPD validity involves third party verifier:
Yes No **X**

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

Owner of the EPD: Ege Vitrifiye Sağlık Gereçleri San. Ve Tic. A.Ş.
Address: Kemalpaşa OSB Mahallesi 513 Sokak Dış Kapı No:291, İç Kapı No:1 Kemalpaşa / İZMİR

Ege Vitrifiye Sağlık Gereçleri San. ve Tic. A.Ş., was founded in 1994 in İzmir and has been manufacturing sanitary ware products (washbasin, wc pan, squatting pan, bidet, cistern, urinal, pedestal) Our factory is one of the few modern facilities in theworld operating on an area of 59.000 m² in total, 41.600 m² of which is closed area. The production capacity is 1,400,000 pes/ year and it serves with full capacity. 86% of its production is realized with "high pressure casting technique" which is the most advanced point reached in sanitaryware business, in molds made of resin . The Product portfolio and designs are constantly updated in line with the trends that dominate the world markets and new product studies are made with both the design team in the factory and the designers from abroad. Ege Vitrifiye products are sold in domestic market with 120 authorized dealers and 2 different construction markets, and in exports it reaches a total of 120 customers in 70 countries.

It has the relevant standard conformity certificates of the countries that it exports . Ege Vitrifiye has ISO 9001 Quality Management System. ISO 14001 Environmental Management System. ISO 10002 Customer Satisfaction Management System. ISO 27001 Information Security Management System. ISO 50001 Energy Management System, Global Security Verification GSV, Double Star Quality certificates and Authorised Consignee Status are available at Ege Vitrifiye. Due to its compliance with European and global standards, in addition to the TSE certificate, it also has France's NF, Germany's TÜVRheinland LGA, the Netherlands' KIWA, Australia - New Zealand's Global-Mark and United States - Canada's ASME standard certificates.

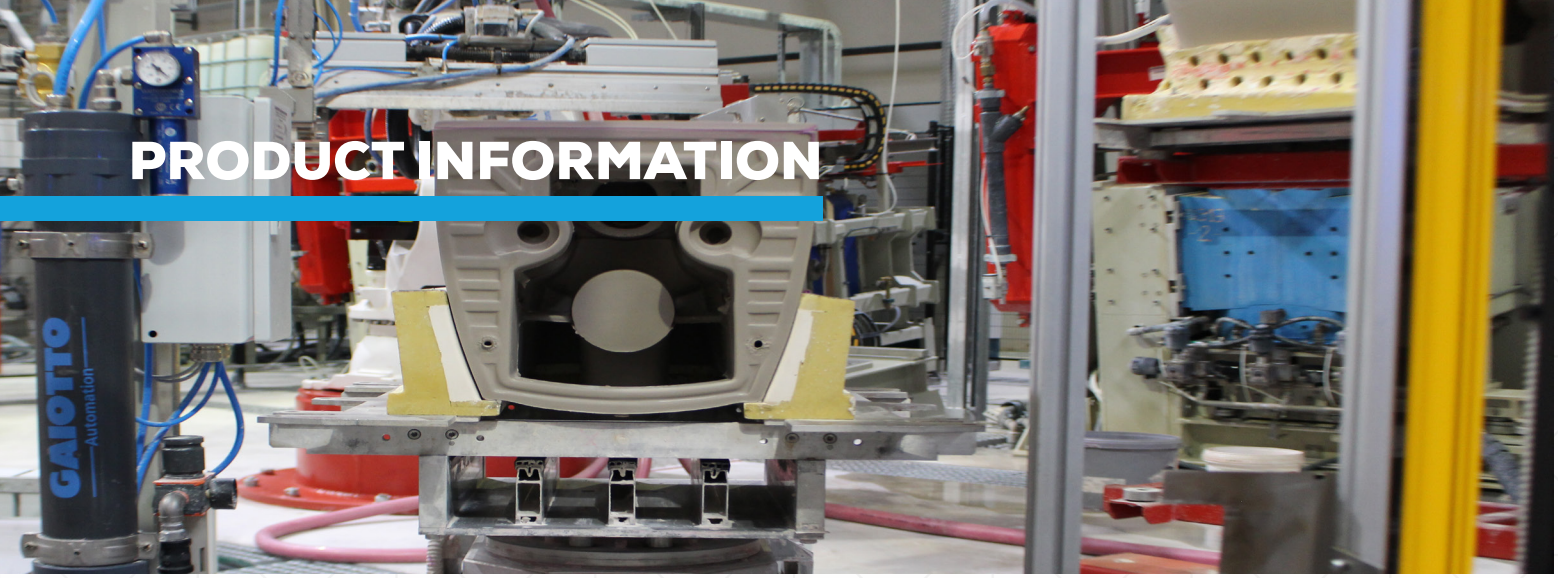
Our Vision

In the ceramic sanitary ware industry; to make a difference in terms of design and quality, to continuously increase our market share, brand recognition and profitability, to reach higher limits in total customer satisfaction, to produce environmentally friendly products with an environmental sustainability approach.

Our Mission

While producing ceramic sanitary ware in accordance with national and international standards; to use our resources in the most efficient way, to be respectful to nature, environment and people, to ensure the satisfaction of our customers, employees, stakeholders and shareholders at the highest possible level.

PRODUCT INFORMATION



Product name: Squat Toilet (Alaturka Toilet)

UN CPC code: 37210: Ceramic sinks, baths, water closet pans, flushing cisterns and similar sanitary fixtures

Production site: Kemalpaşa OSB Mahallesi 513 Sokak Dış Kapı No:291, İç Kapı No:1 Kemalpaşa / İZMİR

Definition: A classic toilet type used while standing or squatting, typically installed at floor level.

Area of Use: Preferred in public toilets, places of worship, train stations, etc. Also found in some residential buildings.

User Profile: Users with traditional usage habits.

Technical Specifications

Test / Feature	Test Description	Specification / Requirement
Connection and Dimensional Measurements	Dimensions such as clean water inlet diameter, siphon outlet diameter, and vertical distances are measured.	Clean water inlet Ø45 ±5 mm, siphon outlet Ø105 ±5 mm, etc. must comply with Table 1.
Water Seal Depth	For self-siphoned types, the depth of the water seal is measured.	Depth shall be ≥ 50 mm.
Toilet Paper Removal	Twelve pieces of toilet paper are crumpled and flushed one by one; removal performance is assessed over 5 test cycles.	In at least 4 out of 5 tests, all toilet paper must be completely removed.
Bowl Cleansing	The test is carried out with sawdust, and the uncleaned surface area is measured after flushing.	The arithmetic mean of the uncleansed area shall not exceed 50 cm^2.
Surface Hardness	The surface is subjected to abrasion using a mineral with Mohs hardness of 4.	Glazed surface shall not be scratched.
Water Splashing	Absorbent paper is placed around the pan, and flushing is performed; splashing beyond the pan is observed.	Flush water shall not splash over the rim or onto the floor. Only minor splashing (a few drops) is permitted.
Resistance to Chemicals and Staining Agents	Chemical solutions and staining agents are applied; permanent surface deterioration is checked after cleaning.	No permanent surface defect or stain shall remain.
Water Absorption	Specimens are weighed before and after being submerged and boiled in water to determine mass change.	The average water absorption rate (WA) shall not exceed 0.5% by mass.
Crazing Resistance of Glaze over Time	Samples are subjected to autoclave testing; post-test ink application is used to detect cracks in the glaze.	No crazing shall be visible on the glazed surface.
Water Ponding	Colored liquid is poured over the surface outside the foot area, and drainage into the bowl is observed.	All liquid must flow toward the bowl; no residual pooling shall occur on flat surfaces (except due to surface tension).
Solid Waste Removal	Four test masses simulating solid waste are flushed and checked for removal from the pan and siphon.	In at least 4 out of 5 tests, all solid matter shall be completely removed.
Removal of Colored Liquid	A colored solution is flushed; the remaining water is compared to a 6% reference solution.	The post-flush sample must be the same or lighter in color than the reference solution.
Flush Volume of the Cistern (Full & Reduced)	The flush volume of the cistern is measured in both full and reduced flush settings.	Full flush: 6 L (+0.4 / -0.5); Reduced flush: maximum of 4 L or no more than 2/3 of full flush volume.

LCA INFORMATION

A1 - Raw Material Supply

This stage includes raw materials extraction and pre-treatments before its use in manufacturing. The effects of raw materials such as kaolin, clay, feldspar etc. were evaluated at this stage.

A2 - Raw Material Transport

Transport information of the raw materials is provided by the manufacturer. The distances and routes are calculated accordingly.

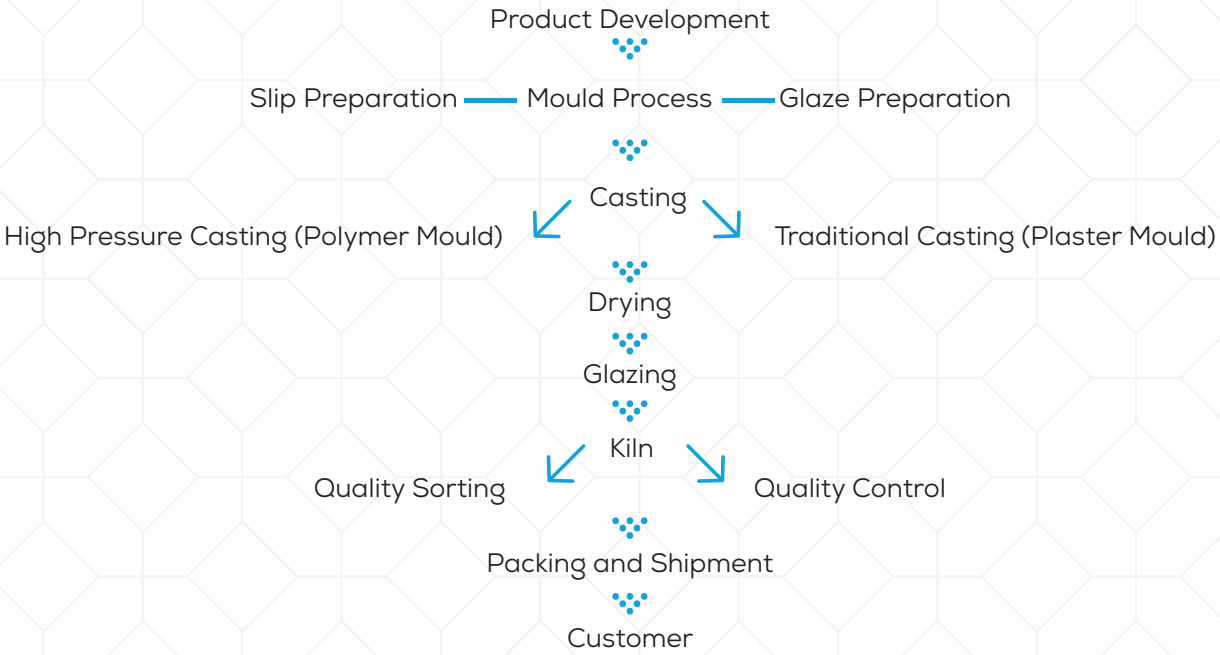
Transport Mode		Type
Road	Vehicle: Lorry Size Class: 16-32 metric ton Emission Standard: EURO6 Fuel Type: Diesel	Vehicle: Lorry Size Class: >32 metric ton Emission Standard: EURO6 Fuel Type: Diesel
Sea	Vehicle: Container Ship DWT (Load Capacity): 43000 tonnes Fuel Type: Heavy Fuel Oil	Vehicle: Bulk Carrier DWT (Load Capacity): 51000 tonnes Fuel Type: Heavy Fuel Oil

A3 - Manufacturing

This stage includes the production-related environmental impacts of the investigated product. All energy-related inputs are supplied by the manufacturer. The effects of packaging are also included in this stage. In addition, direct emissions from calcination processes and the impacts associated with the casting moulds used during production are also included in this stage. The manufacturing stage includes the following processes as shown in the production flow diagram below.

For vitreous products, the natural gas demand is relatively high due to the high-temperature firing processes required during production. The manufacturer holds an I-REC certificate and meets its electricity demand with renewable electricity certified via I-REC.

Ege Vitrifiye Production Process



Scenarios used are realistic and representative of one of the most probable alternatives and shall not include processes or procedures that are not in current use, or which have not been demonstrated to be practical. (For module A4, A5, B1-B7, C1-C4, & D)

LCA INFORMATION

A4 - Product Transport

Product transport from manufacturer to customer is considered in product material supply stage. The distances and routes are calculated accordingly. Depending the customer location, product is transported via trucks and other supplies come through seaway.

Transport Mode	Type
Road	Vehicle: Lorry Size Class: >32 metric ton Emission Standard: EURO6 Fuel Type: Diesel
Sea	Vehicle: Container Ship DWT (Load Capacity): 43000 tonnes Fuel Type: Heavy Fuel Oil

A5 - Installation

In the installation of the squat toilet (alaturka toilet), 8 kilograms mortar and a rubber gasket weighing 5 grams are used. These impacts are accounted for under the A5 stage of the life cycle assessment. In addition, the end-of-life treatment of the packaging waste associated with the product is also included in this stage.

B1 – Use

Squat toilet (alaturka toilet) products do not cause any environmental impacts during their use phase.

B2 – Maintenence

During the use phase of the squat toilet (alaturka toilet), regular maintenance in the form of surface cleaning is required to ensure hygiene and preserve functionality. Based on typical residential usage patterns, it is assumed that the product is cleaned twice per month over a technical lifespan of 20 years. Each cleaning activity involves approximately 50 mL of detergent and 2 liters of tap water for rinsing.

B3 – Repair

Squat toilets (alaturka toilet) do not require any repair under normal conditions of use. Therefore, there are no associated impacts in this stage.

B4 – Replacement

Squat toilets (alaturka toilet)are durable sanitary products and do not typically require replacement within their expected service life. Thus, no impacts are considered for this module.

B5 – Refurbishment

Squat toilets (alaturka toilet)do not require any refurbishment during the use phase. No impacts occur in this module.

B6 – Operational Energy Use

Squat toilets (alaturka toilet) do not consume energy during the use phase. Hence, there are no impacts related to operational energy use.

B7 – Operational Water Use

At this stage, the impacts related to water usage from flushing have been calculated. It is assumed that a family of four uses a 5-liter capacity toilet flush three times per person per day over a technical lifespan of 20-year period.

LCA INFORMATION

C1 - Demolition

The energy required for the demolition or deconstruction of the squat toilet is estimated at 5 kWh diesel per ton of product according to PCR 2019:14 v2.0.1 . Accordingly, for a reference product weight of 16.66 kg, a total of 0.0833 kWh of diesel is assumed to be consumed during demolition.

C2 - Waste Transport

This step includes the transport of materials after they reach their end-of-life. The average distance was assumed 80 km by truck from demolition site to a waste or recycling area with 50% load capacity based on the directives of PCR 2019:14 v.2.0.1

Transport Mode	Type
Vehicle Type	Vehicle: Lorry Size Class: 16-32 metric ton Emission Standard: EURO5 Fuel Type: Diesel
Distance	80 km
Utilization factor	50%

C3 - Waste Processing

Since all waste products are landfilled there is no impact related to waste processing.

C4 - Disposal

It is assumed that all squat toilet (alaturka toilet) products are disposed of as inert waste in landfill at the end of their life. Accordingly, the landfill impacts and the impacts related to the compaction of inert construction waste for landfill, as defined in PCR 2.0.1, are included in this stage.

D - Reuse, recovery, or recycling potential

Since all waste products are landfilled there is no benefit for squat toilet (alaturka toilet) products.

LCA INFORMATION

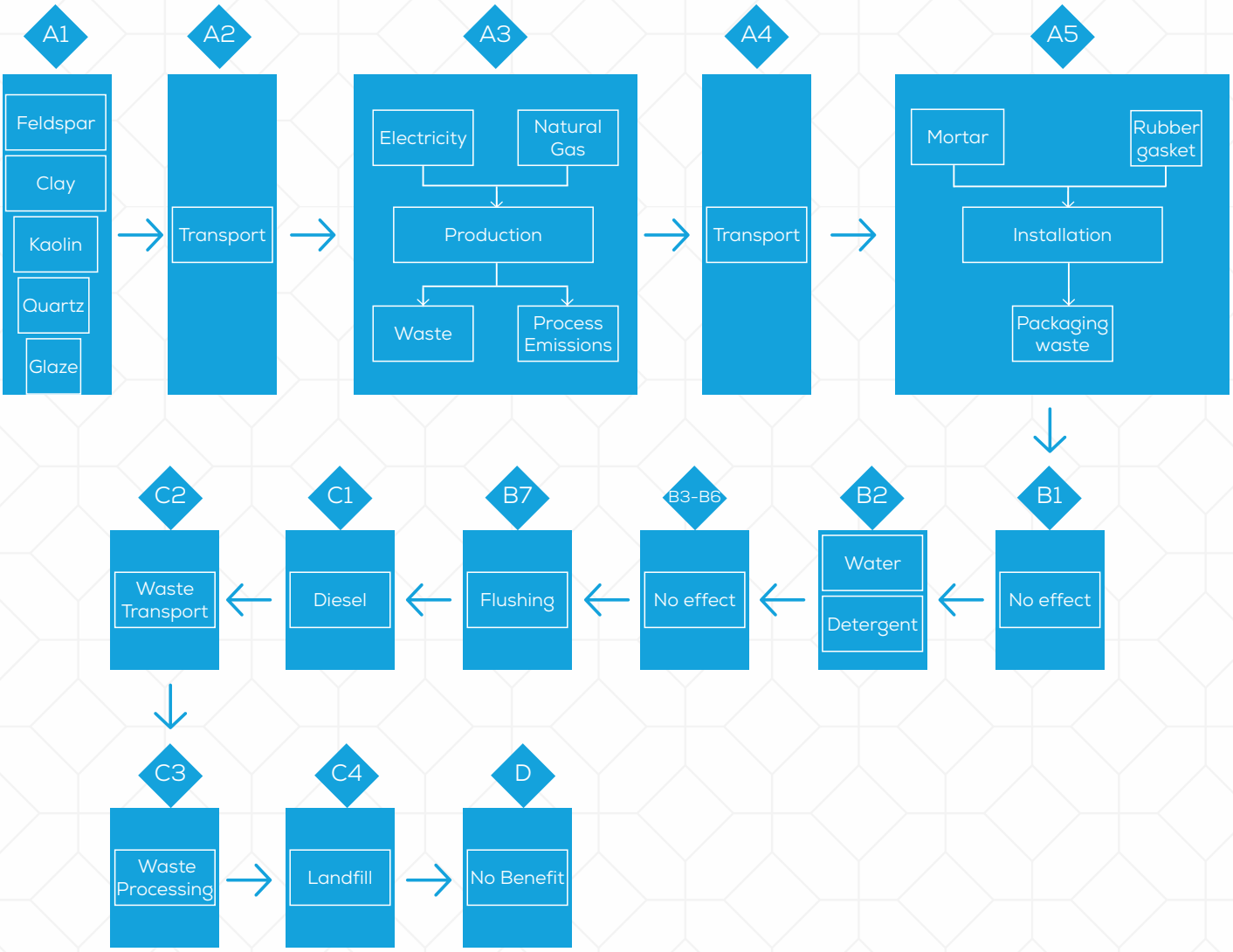
Declared unit: 20 years use of 1 piece of Squat Toilet (Alaturka Toilet) with a mass of 16.66 kg/piece
Conversion factor: 0.06
Technical lifespan of the product: 20 years
Time representativeness: Full year of 2024 (2024.01.01- 2024.12.31).
Geographical scope:
Module A1 and A2 Material suppliers are Global (European and Türkiye)
Module A3 production is located in Türkiye (TR)
Module A4 transport locations are Global (Türkiye, European, Asia)
Module A5, B, C and D scenarios are for Global
Database(s) and LCA software used: Ecoinvent 3.11 and SimaPro 10.2
Description of system boundaries: Cradle to gate with options, modules A4-A5, modules B, modules C1–C4, and module D

	Product Stage			Construction Process Stage		Use Stage							End of Life Stage				Beyond product life cycle
	Raw Material Supply	Transport	Manufacturing	Transport	Construction Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational Energy Use	Operational Water Use	Deconstruction / 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	GLO	GLO	TR	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO
Share of Specific Data	90%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - Products	< -1% < +1%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - Sites	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-

(ND = Not declared, X = Module included)

LCA INFORMATION

Process flow diagram:



Electricity used in the manufacturing process in A3

Type of electricity mix	Certificated renewable electricity	
Energy sources	Hydro	100%
Climate impact (GWP-GHG)	0.00456 kgCO_2/kWh	

100% of the electricity used is purchased from energy company and has I-REC sertificate. This electricity is generated from hydroelectric power plant .

LCA INFORMATION

Allocation

Source of raw material, water consumption, energy consumption and raw material transportation were weighted according to 2024 production figures. In addition, hazardous and non-hazardous waste amounts were also allocated from the 2024 total waste generation.

Cut-Off Criteria

The criteria for exclusion were set so that individual input flows 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%.

Data Quality

The EPD is based on data collected by Ege Vitrifiye from one site over one year from January 2024. The EPD is representative of the production of squat toilet sanitaryware product. The use and end-of-life stage of the EPD covers mostly Europe. The EPD study is representative, with the selected product having a weight of 16.66 kg/piece. Within the relevant product group, weights range from a minimum of 16.60 kg/piece to a maximum of 16.82 kg/piece, with no changes to the product recipes. Due to the weight differences, the GWP and all other values vary between -<1% and +<1%. Background data was sourced from the Ecoinvent 3.11 database. No fair, poor or very poor data was found during the assessment of relevant data using EN 15804:2012+A2:2019, Annex E, only E.2.

Process	Source type	Source	Reference year	Data category	Share of primary data, of GWP-GHG results for A1-A3
Manufacturing processes	Collected data	EPD owner	2024	Primary data	77%
Process emissions	Collected data	EPD owner	2024	Primary data	0.23%
Transport of raw materials to manufacturing site	Database	Ecoinvent v3.11	2024	Primary data	6%
Production of raw materials	Collected data	EPD owner	2024	Primary data	6%
Production of packaging	Database	Ecoinvent v3.11	2024	Secondary data	0%
Total share of primary data, of GWP-GHG results for A1-A3					90.2%

CONTENT DECLARATON

Content Declaration

The content declaration is provided as intervals due to confidentiality reasons.

Content Name	Mass, kg	Post-consumer recycled material, mass-% of product	Biogenic material, mass-% of product	Biogenic material, kg C/product
Feldspar	25-30%	0	0	0
Clay	25-30%	0	0	0
Kaolin	20-25%	0	0	0
Quartz	15-20%	0	0	0
Glaze	5-10%	0	0	0
TOTAL	**16.66 kg**	**0**	**0**	**0**

The percentages are representative for the product with the lowest weight, 16.60 kg/p, and the product with the highest weight, 16.82 kg/p. Raw material ratios do not change as product weight changes. They increase or decrease proportionally.

Packaging Materials

Material Name	Mass, kg	Mass-% (versus the product)
Euro pallet	0.11	<1%
Plastic film	0.10	<1%
Plastic strap	0.006	<1%
TOTAL	**0.22**	**1%**

REACH Regulation

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).

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 impact category indicators according to EN 15804

Results per declared unit

Impact category	indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Climate change - total	GWP-total	kg CO_2 eq.	1.48E+01	8.19E-01	2.44E+00	0.00E+00	1.21E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.66E+02	3.02E-02	5.39E-01	0.00E+00	1.18E-01	0.00E+00
Climate change - fossil	GWP-fossil	kg CO_2 eq.	1.49E+01	8.18E-01	2.24E+00	0.00E+00	1.21E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.65E+02	3.02E-02	5.39E-01	0.00E+00	1.17E-01	0.00E+00
Climate change - biogenic	GWP-biogenic	kg CO_2 eq.	-1.60E-01	2.19E-04	2.03E-01	0.00E+00	2.25E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.00E-01	3.32E-06	1.34E-04	0.00E+00	3.13E-04	0.00E+00
Climate change - land use and land-use change	GWP-luluc	kg CO_2 eq.	4.95E-03	3.86E-04	1.38E-03	0.00E+00	1.64E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.02E-01	3.09E-06	2.42E-04	0.00E+00	6.61E-05	0.00E+00
Ozone depletion	ODP	kg CFC 11 eq.	2.52E-07	1.21E-08	1.17E-08	0.00E+00	1.34E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.51E-05	4.48E-10	6.83E-09	0.00E+00	2.76E-09	0.00E+00
Acidification	AP	mol H+ eq.	2.75E-02	2.29E-03	8.36E-03	0.00E+00	7.40E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.96E+00	2.70E-04	1.84E-03	0.00E+00	1.25E-03	0.00E+00
Eutrophication aquatic freshwater	EP-freshwater	kg P eq.	1.28E-04	1.02E-05	3.41E-05	0.00E+00	5.12E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.79E-02	1.05E-07	6.70E-06	0.00E+00	5.97E-06	0.00E+00
Eutrophication aquatic marine	EP-marine	kg N eq.	7.23E-03	5.55E-04	2.33E-03	0.00E+00	1.19E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.61E-01	1.25E-04	5.72E-04	0.00E+00	3.27E-04	0.00E+00
Eutrophication terrestrial	EP-terrestrial	mol N eq.	7.92E-02	6.20E-03	2.61E-02	0.00E+00	1.33E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.02E+00	1.37E-03	6.34E-03	0.00E+00	3.58E-03	0.00E+00
Photochemical ozone formation	POCP	kg NMVOC eq.	4.37E-02	3.25E-03	7.74E-03	0.00E+00	4.57E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.23E+00	4.11E-04	2.49E-03	0.00E+00	1.25E-03	0.00E+00
Depletion of abiotic resources - minerals and metals	ADP-minerals &metals*	kg Sb eq.	1.96E-05	2.33E-06	6.23E-06	0.00E+00	8.15E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.69E-03	1.05E-08	1.76E-06	0.00E+00	2.03E-07	0.00E+00
Depletion of abiotic resources - fossil fuels	ADP-fossil*	MJ, net calorific value	2.37E+02	1.21E+01	1.55E+01	0.00E+00	2.35E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.81E+03	3.93E-01	7.45E+00	0.00E+00	2.53E+00	0.00E+00
Water use	WDP*	m^3	2.62E+00	7.69E-02	4.36E-01	0.00E+00	4.23E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.88E+04	1.14E-03	4.23E-02	0.00E+00	-1.57E+00	0.00E+00
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 and voluntary impact category indicators

Results per declaredunit

Impact Category	indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Climate Change -GWP-GHG	GWP-GHG	kg CO_2 eq.	1.49E+01	8.19E-01	2.28E+00	0.00E+00	1.21E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.66E+02	3.02E-02	5.39E-01	0.00E+00	1.18E-01	0.00E+00
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

Results per declared unit

indicators	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ, net calorific value	5.67E+00	1.67E-01	3.02E+00	0.00E+00	1.56E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.64E+02	2.47E-03	1.04E-01	0.00E+00	7.89E-04	0.00E+00
PERM	MJ, net calorific value	1.43E+00	0.00E+00	-1.43E+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	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ, net calorific value	7.10E+00	1.67E-01	1.59E+00	0.00E+00	1.56E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.64E+02	2.47E-03	1.04E-01	0.00E+00	7.89E-04	0.00E+00
PENRE	MJ, net calorific value	2.33E+02	1.21E+01	2.00E+01	0.00E+00	2.35E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.81E+03	3.93E-01	7.45E+00	0.00E+00	1.26E-01	0.00E+00
PENRM	MJ, net calorific value	4.53E+00	0.00E+00	-4.53E+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	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ, net calorific value	2.37E+02	1.21E+01	1.54E+01	0.00E+00	2.35E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.81E+03	3.93E-01	7.45E+00	0.00E+00	1.26E-01	0.00E+00
SM	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	6.27E-02	1.87E-03	1.05E-02	0.00E+00	9.85E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.38E+02	2.78E-05	1.03E-03	0.00E+00	-3.66E-02	0.00E+00
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

Results per declared or declared unit

indicators	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	2.44E-01	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NHWD	kg	2.55E+01	0.00E+00	1.06E-01	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	0.00E+00	2.47E+01	0.00E+00
RWD	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
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

Results per declared unit

indicators	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	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	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	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
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	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	3.97E-01	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	0.00E+00	0.00E+00	0.00E+00
EET	MJ, net calorific value	0.00E+00	0.00E+00	5.96E-01	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	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.															

VERSION HISTORY

Version History

Original version of the EPD, 2025-09-10.

2025-04-06

The EPD has been updated to reflect a refinement in the calculation methodology for packaging and end-of-life impacts, ensuring improved alignment with current standards and modelling practices. Additionally, all indicators have been incorporated to account for changes in waste scenarios and product variations.

REFERENCES

Ecoinvent 3.11 / Ecoinvent Centre, www.ecoinvent.org

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

GPI / General Programme Instructions for the International EPD® System. Version 5.0.1. www.environdec.com.

ISO 14020:2000/ Environmental Labels and Declarations – General principles

ISO 14040/44 / DIN EN ISO 14040: 2006-10 / Environmental management - Life cycle assessment- Principles and framework (ISO14040:2006) and Requirements and guidelines (ISO 14044:2006)

ISO 14025 / DIN EN ISO 14025:2009-11 / Environmental labels and declarations - Type III environmental declarations - Principles and procedures

ISO 5001:2018 / Energy Management System

ISO 9001:2015 / Quality Management System

PCR for Construction Products and Construction Services / PCR 2019:14 Construction products (EN 15804:A2). Version 2.0.1. www.environdec.com.

The International EPD® System / The International EPD System is a programme for type III environmental declarations, maintaining a system to verify and register EPDs as well as keeping a library of EPD®s and PCRs in accordance with ISO 14025. www.environdec.com

SimaPro 10.2 / SimaPro LCA Software, Pré Consultants, the Netherlands, www.pre-sustainability.com

Ege Vitrifiye / www.egevitrifiye.com

Metsims / www.metsims.com

ADDITIONAL LCA RESULTS

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

The table below shows the ratio of mandatory indicator results for the selected density to the minimum and maximum weight values. For example, a value of 100.9% indicates that it is 1.009 times the representative value, while a value of 99.6% indicates it is 0.996 times the representative value for GWP-Fossil indicator.

Core environmental impact indicators (Mandatory)	Unit	Min (16.60 kg/p)	Representative (16.66 kg/p)	Max (16.82 kg/p)
GWP-Total	kg CO_2 eq	99,6%	1.48E+01	100,9%
GWP-Fossil	kg CO_2 eq	99,7%	1.49E+01	100,9%
GWP-Biogenic	kg CO_2 eq	100,0%	-1.60E-01	100,0%
GWP-Luluc	kg CO_2 eq	99,7%	4.95E-03	100,9%
ODP	kgCFC11eq	99,7%	2.52E-07	100,9%
AP	mol H+ eq	99,7%	2.75E-02	100,9%
EP – Freshwater	kg P eq	99,7%	1.28E-04	100,9%
EP – Marine	kg N eq	99,7%	7.23E-03	100,9%
EP – Terrestrial	mol N eq	99,7%	7.92E-02	100,9%
POCP	kg NMVOC eq	99,7%	4.37E-02	100,9%
*ADPE	kg SB eq.	99,7%	1.96E-05	100,9%
*ADPF	MJ	99,7%	2.37E+02	100,9%
*WDP	m^3 depriv.	99,7%	2.62E+00	100,9%
Additional environmental impact indicators (Mandatory)	Unit	Min (16.60 kg/p)	Representative (16.66 kg/p)	Max (16.82 kg/p)
**GWP-GHG	kg CO_2 eq.	99,7%	1,49E+01	100,9%
Core environmental impact indicators (Mandatory)	Unit	Min (16.60 kg/p)	Representative (16.66 kg/p)	Max (16.82 kg/p)
PERE	MJ	99,8%	5,67E+00	100,7%
PERM	MJ	100,0%	1,43E+00	100,0%
PERT	MJ	99,8%	7,10E+00	100,5%
PENRE	MJ	99,6%	2,33E+02	100,9%
PENRM	MJ	100,0%	4,53E+00	100,0%
PENRT	MJ	99,7%	2,37E+02	100,9%
SM	kg	0%	0.00E+00	0%
RSF	MJ	0%	0.00E+00	0%
NRSF	MJ	0%	0.00E+00	0%
FW	m^3	99,7%	6,27E-02	100,9%
Waste & Output indicators	Unit	Min (16.60 kg/p)	Representative (16.66 kg/p)	Max (16.82 kg/p)
Hazardous Waste	kg	99.6%	2.44E-01	101.0%
Non-Hazardous Waste	kg	99.6%	2.55E+01	101.0%
Radioactive waste	kg	0%	0.00E+00	0%
Components for reuse	kg	0%	0.00E+00	0%
Material for recycling	kg	0%	0.00E+00	0%
Materials for energy recovery	kg	0%	0.00E+00	0%
Exported energy. electricity	MJ	0%	0.00E+00	0%
Exported energy. thermal	MJ	0%	0.00E+00	0%

ADDITIONAL LCA RESULTS

In compliance with the PCR requirements, 100% recycling scenario 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.

Additional LCA results for 100% recycling scenario

Core environmental impact indicators (Mandatory)	Unit	C3	C4	D
GWP-Total	kg CO_2 eq	9,06E-03	0,00E+00	-7,04E-02
GWP-Fossil	kg CO_2 eq	9,05E-03	0,00E+00	-7,02E-02
GWP-Biogenic	kg CO_2 eq	9,95E-07	0,00E+00	-1,21E-04
GWP-Luluc	kg CO_2 eq	9,27E-07	0,00E+00	-8,24E-05
ODP	kgCFC11eq	1,34E-10	0,00E+00	-6,68E-10
AP	mol H+ eq	8,09E-05	0,00E+00	-4,79E-04
EP – Freshwater	kg P eq	3,16E-08	0,00E+00	-2,33E-06
EP – Marine	kg N eq	3,76E-05	0,00E+00	-1,44E-04
EP – Terrestrial	mol N eq	4,12E-04	0,00E+00	-1,66E-03
POCP	kg NMVOC eq	1,23E-04	0,00E+00	-4,96E-04
*ADPE	kg SB eq.	3,16E-09	0,00E+00	-3,64E-07
*ADPF	MJ	1,18E-01	0,00E+00	-8,80E-01
*WDP	m^3 depriv.	3,42E-04	0,00E+00	-1,01E+00
Additional environmental impact indicators (Mandatory)	Unit	C3	C4	D
**GWP-GHG	kg CO_2 eq.	9,05E-03	0,00E+00	-7,19E-02
Core environmental impact indicators (Mandatory)	Unit	C3	C4	D
PERE	MJ	0,00E+00	0,00E+00	-7,04E-02
PERM	MJ	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	7,40E-04	0,00E+00	-7,04E-02
PENRE	MJ	0,00E+00	0,00E+00	-8,80E-01
PENRM	MJ	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	1,18E-01	0,00E+00	-8,80E-01
SM	kg	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00
FW	m^3	8,33E-06	0,00E+00	-2,35E-02
Waste & Output indicators	Unit	C3	C4	D
Hazardous Waste	kg	0.00E+00	0.00E+00	0.00E+00
Non-Hazardous Waste	kg	0.00E+00	0,00E+00	0.00E+00
Radioactive waste	kg	0.00E+00	0.00E+00	0.00E+00
Components for reuse	kg	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	2.47E+01	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00
Exported energy, electricity	MJ	0.00E+00	0.00E+00	0.00E+00
Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00

ABBREVIATIONS

Abbreviation	Definition
ADP	Abiotic depletion potential
ADP-fossil	Abiotic depletion potential for non-fossil resources (MJ)
ADP-minerals&metals	Abiotic depletion potential for minerals & metals (kg Sb eq.)
AP	Acidification Potential (mol H+ eq.)
CAS No.	Chemical Abstracts Service Number
CEN	European Committee for Standardization
CFC-11 eq.	Chlorofluorocarbon-11 Equivalents
CFR	Components for Reuse (kg)
CLC	Co-location centre
CO_2 eq.	Carbon Dioxide Equivalents
CPC	Central product classification
EC No.	European Community Number
EEE	Exported Energy, Electricity (MJ)
EET	Exported Energy, Thermal (MJ)
EF	Environmental Footprint
EN	European Norm (Standard)
EP	Eutrophication Potential
EP-freshwater	Freshwater eutrophication potential (kg P eq.)
EP-marine	Marine eutrophication potential (kg N eq.)
EP-terrestrial	Terrestrial eutrophication potential (mol N eq.)
FW	Use of net fresh water (m^3)
GHG	Greenhouse gas
GHS	Globally harmonized system of classification and labelling of chemicals
GLO	Global
GPI	General Programme Instructions
GRI	Global Reporting Initiative
GWP	Global Warming Potential (kg CO_2 eq.)
GWP-biogenic	Global Warming Potential from biogenic sources (kg CO_2 eq.)
GWP-fossil	Global Warming Potential from fossil sources (kg CO_2 eq.)
GWP-GHG	Global Warming Potential for greenhouse gases (kg CO_2 eq.)
GWP-luluc	Global Warming Potential from land use and land use change (kg CO_2 eq.)

ABBREVIATIONS

GWP-total	Total Global Warming Potential (kg CO_2 eq.)
HW	Hazardous Waste (disposed) (kg)
ISO	International Organization for Standardization
kg	Kilogram
kg C	Kilograms of Carbon
kg CO_2 eq.	Kilograms of Carbon Dioxide Equivalent
m^3	Cubic Meter
MER	Materials for Energy Recovery (kg)
MJ	Megajoule
MR	Material for Recycling (kg)
N eq.	Nitrogen Equivalents
ND	Not Declared
NHW	Non-Hazardous Waste (disposed) (kg)
NMVOC	Non-Methane Volatile Organic Compounds
NRSF	Use of non-renewable secondary fuels (MJ)
ODP	Ozone Depletion Potential (kg CFC-11 eq.)
P eq.	Phosphorus Equivalents
PENRE	Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials (MJ)
PENRM	Use of non-renewable primary energy resources used as raw materials (MJ)
PENRT	Total use of non-renewable primary energy resources (MJ)
PERE	Use of renewable primary energy excluding renewable primary energy resources used as raw materials (MJ)
PERM	Use of renewable primary energy resources used as raw materials (MJ)
PERT	Total use of renewable primary energy resources (MJ)
POCP	Photochemical Ozone Creation Potential (kg NMVOC eq.)
RSF	Use of renewable secondary fuels (MJ)
RW	Radioactive Waste (disposed) (kg)
Sb eq.	Antimony Equivalents
SM	Use of secondary material (kg)
SVHC	Substances of Very High Concern
TR	Türkiye
WC	Water Closet
WDP	Water Deprivation Potential (m^3)

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