

ENVIRONMENTAL PRODUCT DECLARATION

In accordance with ISO 14025 and EN 15804-A2:2019 for:

**Fine Fireclay
&
Vitreous China Ceramic Sanitaryware**

by **Matel Hammadde Sanayi ve Ticaret A.Ş.**



ENVIRONMENTAL PRODUCT DECLARATIONS



Programme :	EPD Turkey, a fully aligned regional programme www.epdturkey.org	The International EPD® System www.environdec.com
Programme Operator :	EPD Turkey: SÜRATAM – Turkish Centre for Sustainable Production Research & Design Nef 09 B Blok No:7/15 34415 Kagithane/Istanbul, TURKEY	EPD International AB Stockholm, Sweden
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ECO Platform Reg. Number:	ECO-00001344	
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Geographical Scope:	Global	

Programme Information

Programme	EPD Turkey, a fully aligned regional programme SÜRATAM – Turkish Centre for Sustainable Production Research & Design Nef 09 B Blok No:7/15 34415 Kagithane/Istanbul, TURKEY www.epdturkey.org info@epdturkey.org	The International EPD® System EPD International AB Box 210 60 SE-100 31 Stockholm Sweden www.environdec.com info@environdec.com
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Product Category Rules (PCR):

2019:14 Version 1.0, 2019-12-20, Construction Products and CPC 54 Construction Services

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

EPD process certification

EPD verification ☒

Third party verifier: Vladimír Kocí, PhD

Approved by: The International EPD® System

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

YES

NO ☒

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

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

Company Information

Performing production of ceramic sanitary ware with SEREL brand for 30 years, our company is affiliated to the ELGINKAN Holding. Not compromising on quality, SEREL is among the leading companies in the world that offers years of experience with savings, health, aesthetics and comfort featured products in world markets with professional management mentality.

Having a rigorous, innovative and leading approach in its product development activities, SEREL protects all details of user needs in its product development works and gives to life unique designs. With its wide product range, SEREL ranks among the brands to be supported by Turquality, which is the single state supported branding program of the world.

Creating human and environmental friendly products by ensuring water and energy saving while preventing overuse of the precious and limited resources in the world is one of the principles of SEREL.

SEREL continues its activities by applying TS EN ISO 9001 Quality Management System, TS EN ISO 14001 Environmental Management System, ISO 45001 Occupational Health and Safety Management System, 50001 Energy Management System and TS ISO 10002 Customer Satisfaction norms.

SEREL has become the first company to qualify for the TSE COVID-19 Safe Production Certificate in the Aegean Region and Ceramic Industry.

SEREL is adding new technologies every day to those that provide added value to ceramic sanitary ware in its product range. R&D works such as water saving water closets, Extraclean surface technology that prevents showing of dirt on surfaces, glaze technology preventing formation of bacteria on surface, anti-bacterial featured 'SEREL' toilet covers and 'Hands Free Cleansing System' integrated on the water closet are among works of SEREL that aims to offer the final user the best all the time.

SEREL will remain loyal to its word 'Together for Years' by preserving its sensitivity to the environment and life and with its contemporary and original designs, its sensitivity regarding water and energy saving, customer oriented thinking and acting, and its indispensable quality.

Please scan or click the QR code
to see all company and product certificates.



reddot design award



Product Information

Ceramic sanitary ware products are such products as washbasins, cisterns, bidets, squatting pans, urinals, and shower trays, which are composed of inorganic and non-metallic materials such as clay, kaolin, quartz and feldspar in definite ratios. /UNI 4543-1/ and /4543- 2/ standards also define the materials used to make sanitary ware items as the mix of the aforementioned raw materials. The mix is ground

until it takes on the consistency of a ceramic mass that is suitable for forming the body of the item. The body is glazed before it undergoes a single fire in a tunnel or an intermittent kiln, where it reaches the temperatures ranging from 1180°C to 1220°C for a fixed time. After the firing process, the ceramic mass becomes compact and white with a water absorption rate that is less than 12%.



Application

Ceramic sanitary ware is robust and amplified ceramic sanitary products used in wet rooms to serve for cleaning and self-cleaning needs of people. They are utilized in bathrooms, and toilets in glazed formation with a white or colored outer surface. Having a white coating most of the time, ceramic sanitary ware products make surfaces waterproof and hygienic.



Technical Properties

Name	Value	Unit
Maximum heat resistance temperature (if relevant)	220	°C
Maximum water absorption (if relevant) (EN 997)	0.5	Vol. %
Resistance to chemicals and staining (EN 14688, NFD 14-508)	PASS	-
Harkord-Cracking Test (TL 20)	210	°C
Crazing Test (AS 1976, TS 799)	8	bar
Resistance to Temperature Change (EN 14688, NFD 14-508)	0-210 (PASS)	°C

Main raw materials for Fine Fireclay (FFC) are as follows (by mass %) :

- Clay 25-35
- Kaolin 5-15
- Feldspar 0-5
- Quartz 15-25
- Chamotte 30-45
- FFC scraps 5-20

Main raw materials for Vitreous China Ceramic (VC) are as follows (by mass %) :

- Clay 25-35
- Kaolin 15-25
- Feldspar 25-35
- Quartz 15-25

Auxiliary substances/additives are rheological additives for glazes and slips, plaster for moulds, araldite and resin materials for moulds and pigments for coloured glazes.

UN CPC code for sanitaryware products is 37210.

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

Please scan or click the QR code to see all products and technical details.





A new future with the ECOLOGICAL products...

The new surface technology called SEREL Hygiene+ is an R&D work which has an innovative technology credited as being easy to clean, stain resistance, and antibacterial throughout its lifetime guaranteed. SEREL Hygiene+ products minimize the emission of toxic substances into the environment because, when cleaning, it does not need chemicals, which are harmful to health and used in detergents. By providing easy cleaning with less water, it contributes to the protection of natural water resources.

System Boundary

A1 : Raw Material

This stage includes raw material extraction and pre-treatment processes before production. For ceramic sanitaryware products, production starts with raw materials, mainly locally sourced but some transported from other parts of the world.

A2 : Transport

This stage is relevant for delivery of raw materials to the plant and forklift usage within the factory.

A3 : Manufacturing

The manufacturing process of ceramic sanitary ware starts with making a model and a model mould for the design shaped. When dried and ready for moulding, the working moulds are transferred to the shaping department, referred to as Foundry-Casting Shop. The next step is the preparation of slip and casting slip. After then, the semi-finished goods are shaped. The semi-finished goods are subjected to a drying process before glazing. When dried, they are glazed with state-of-the-art machines. The semi-finished goods are subjected to the preliminary drying process and kilned per pre-set firing regime to between 1180-1220 C°. The glaze that melts inside the kiln forms a hard, glassy and water-proof surface on the ware.

A4 : Transport to Construction Site

This stage involves transportation of ceramic sanitaryware products to the construction site. There is no loss of products during transportation as stated by the company.

A5 : Assembly

This stage includes the assembly of ceramic sanitaryware products using adhesive mortar and plastic auxiliary materials in the construction site. For an average FFC ceramic sanitaryware product; 3 kg mortar and for an average VC ceramic sanitaryware product 0.5 kg plastic auxiliary materials usage was assumed.

B1 : Use Stage

Use Stage is related to any impacts done during use of the product. Ceramic sanitaryware products are inert materials, so during the use stage, they do not cause any emissions.

B2 : Maintenance

This stage is related to any activities to maintain

the function of the product in its life time. It includes cleaning with water and detergent. Serel recommends to use detergent containing stain remover or neutral low-sulphate and rinse with tap water after cleaning. Monthly for about 50 years, 5 gr detergent and 0.1 L water use are assumed to clean the surfaces of ceramic sanitaryware products with average weight 15-20 kg.

B3 : Repair

No repair is necessary during their use.

B4 : Replacement

No replacement is necessary during their use.

B5 : Refurbishment

No refurbishment is necessary during their use.

B6 : Operational Energy Use

No energy is used in operation.

B7 : Operational Water Use

No water is used in operation.

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

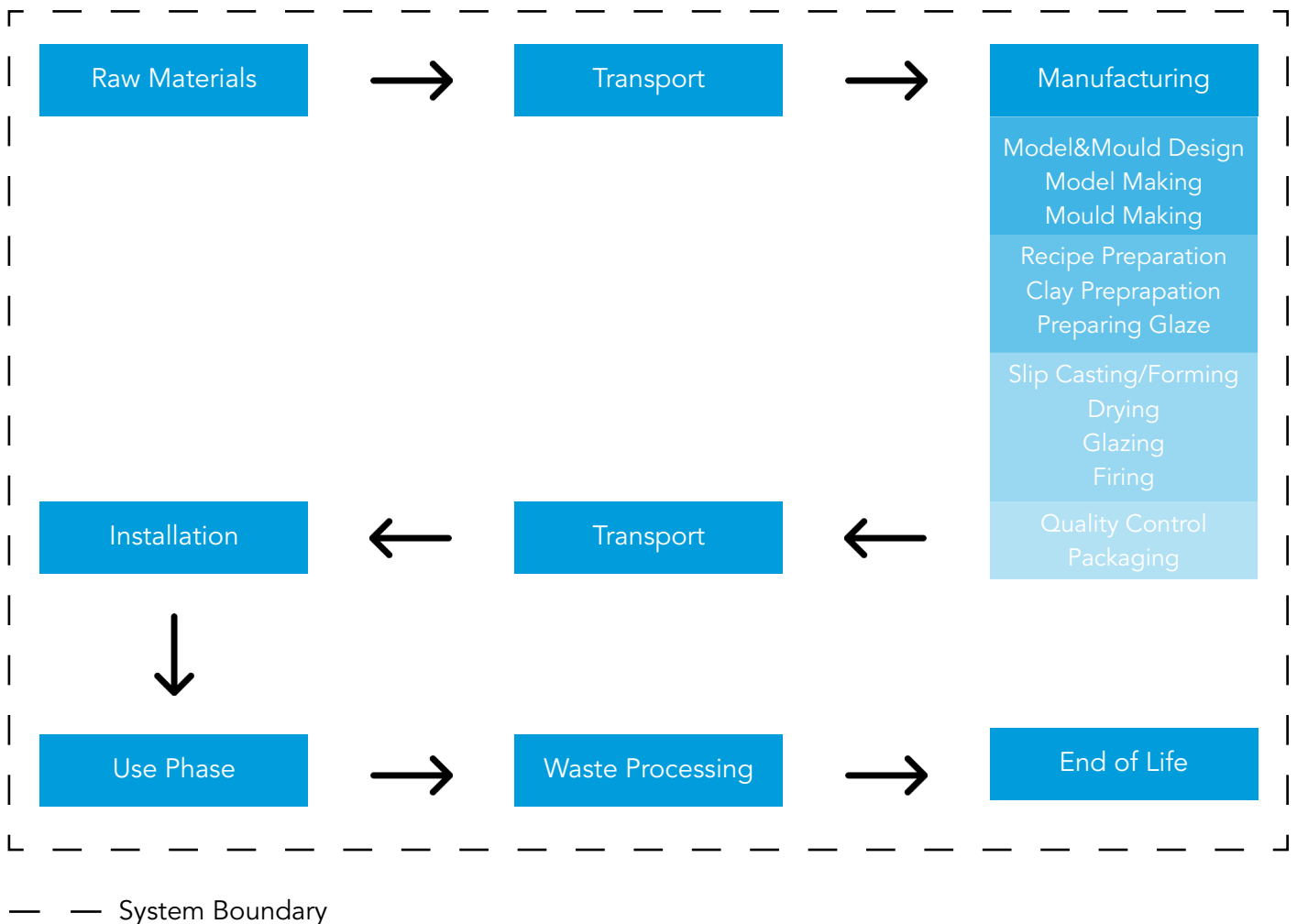
C2 : Transport (Waste) includes the transportation of the discarded products to final disposal. Average distance from demolition site to inert landfill site or area to be filled for final disposal is assumed to be 50 km.

C3 : Waste Processing involves the breaking down of discarded ceramic sanitaryware products. 2.19 kWh electricity consumption was assumed for per ton of breaking down ceramic sanitaryware waste.

C4 : Disposal is the final stage of product life. Ceramic sanitaryware products end up at construction and demolition inert waste landfills or area to be filled.

D : Benefit

Disposed sanitary ceramic waste without any loss during disassembly/disposal stage, the recycling rate as the inert filler was assumed to be 99%.



Life Cycle Assessment (LCA)

Information & Results

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw Materials Supply	Transport	Manufacturing	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
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

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

Declared Unit	1 tonne of Fine Fireclay (FFC) and Vitrous China (VC) Ceramic Sanitaryware. (The FFC & VC products weights per piece range from 7 kg to 55 kg. The average mass per piece of product is 18.1 kg.)
Time Representativeness	2018
Reference Service Life (RSL)	Unless there is a fracture or a glaze crack, a product can be used for more than 50 years without losing its hygienic and functional properties.
Database(s) and LCA Software used	Ecoinvent 3.5 and SimaPro 9.0
Description of system boundaries	Cradle to grave
Cut Off Rules	All raw materials that are constituent of the paint products are included in this study. Therefore, cut-off criteria were not applied.
Data Quality	Raw materials, energy and water consumption, waste, material and product transport data is primary data collected from Serel.
Allocations	No allocation was performed for this EPD. There are no coproducts in the production of eramic sanitary. Hence, there is no need for co-product allocation. Transport is allocated according to tonnages for raw materials bought by Serel. Similarly, water consumption and energy consumption are also allocated according to the production figures.



LCA Results for FFC Sanitaryware

Environmentals Impacts for 1 tonne of Serel FFC Sanitaryware																
Impact Category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP - Fossil	kg CO ₂ eq	1772	62.6	54.8	0	3.34	0	0	0	0	0	0	4.53	1.29	28.3	-38.6
GWP - Biogenic	kg CO ₂ eq	2.79	0.024	0.138	0	0.030	0	0	0	0	0	0	0.002	0.003	0.225	-0.027
GWP - Luluc	kg CO ₂ eq	4.40	0.019	0.001	0	4.28	0	0	0	0	0	0	0.001	0.011	0.012	-0.019
GWP - Total	kg CO ₂ eq	1.779	62.6	54.9	0	7.65	0	0	0	0	0	0	4.53	1.30	28.5	-38.6
ODP	kg CFC-11 eq	166E-6	11.5E-6	368E-9	0	494E-9	0	0	0	0	0	0	863E-9	44.5E-9	7.56E-6	-6.27E-6
AP	mol H+ eq	6.34	0.520	0.210	0	0.042	0	0	0	0	0	0	0.019	0.008	0.247	-0.348
EP - Freshwater	kg PO ₄ eq	1.71	0.017	0.003	0	0.005	0	0	0	0	0	0	0.001	0.004	0.027	-0.019
EP - Marine	kg N eq	1.27	0.123	0.037	0	0.041	0	0	0	0	0	0	0.006	0.001	0.081	-0.096
EP - Terrestrial	mol N eq	13.2	1.37	0.401	0	0.150	0	0	0	0	0	0	0.062	0.012	0.888	-1.06
POCP	kg NMVOC	3.81	0.400	0.231	0	0.020	0	0	0	0	0	0	0.020	0.003	0.257	-0.298
ADPE	kg Sb eq	12.7E-3	96.4E-6	5.61E-6	0	24.6E-6	0	0	0	0	0	0	8.41E-6	134E-9	36.4E-6	-110E-6
ADPF	MJ	25688	973	1807	0	37.1	0	0	0	0	0	0	71.8	14.6	710.2	-568
WDP	m³ depriv.	420	7.06	13.5	0	10.9	0	0	0	0	0	0	0.533	0.546	30.6	-62.0
PM	disease inc.	36.6E-6	4.92E-6	2.10E-6	0	620E-9	0	0	0	0	0	0	409E-9	29.9E-9	4.67E-6	-3.33E-6
IR	kBq U-235 eq	62.8	5.04	0.169	0	0.227	0	0	0	0	0	0	0.355	0.012	3.36	-3.18
ETP - FW	CTUe	597	171	26.7	0	42.2	0	0	0	0	0	0	15.1	0.375	17.2	-57.7
HTTP - C	CTUh	8.29E-6	409E-9	402E-9	0	105E-9	0	0	0	0	0	0	30.2E-9	8.62E-9	421E-9	-450E-9
HTTP - NC	CTUh	145E-6	9.70E-6	582E-9	0	2.04E-6	0	0	0	0	0	0	827E-9	88.1E-9	1.98E-6	-4.63E-6
SQP	Pt	14776	1400	35.6	0	784	0	0	0	0	0	0	124	0.888	2374	-580
Acronyms	GWP-total: Climate change, GWP-fossil: Climate change- fossil, GWP-biogenic: Climate change - biogenic, GWP-luluc: Climate change - land use and transformation, ODP: Ozone layer depletion, AP: Acidification terrestrial and freshwater, EP-freshwater: Eutrophication freshwater, EP-marine: Eutrophication marine, EP-terrestrial: Eutrophication terrestrial, POCP: Photochemical oxidation, ADPE: Abiotic depletion - elements, ADPF: Abiotic depletion - fossil resources, WDP: Water scarcity, PM: Respiratory inorganics - particulate matter, IR: Ionising radiation, ETP-FW: Ecotoxicity freshwater, HTP-c: Cancer human health effects, HTP-nc: Non-cancer human health effects, SQP: Land use related impacts/Soil quality.															
Legend	A1: Raw Material Supply, A2: Transport, A3: Manufacturing, A1-A3: Sum of A1, A2, and A3, A4: Transport to Site, A5: Installation, B1: Use, B2: Maintenance, B3: Repair, B4: Replacement, B5: Refurbishment, B6: Operational Energy Use, B7: Operational Water Use, C1: De-Construction, C2: Waste Transport, C3: Waste Processing, C4: Disposal, D: Benefits and Loads Beyond the System Boundary.															

Resource Use for 1 tonne of Serel FFC Sanitaryware																
Impact Category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	2115	12.4	23.0	0	61.7	0	0	0	0	0	0	0.760	0	10.9	-12.4
PERM	MJ	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PERT	MJ	2115	12.4	23.0	0	61.7	0	0	0	0	0	0	0.760	0	10.9	-12.4
PENRE	MJ	25688	973	1807	0	43.3	0	0	0	0	0	0	71.8	0	710	-568
PENRM	MJ	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PENRT	MJ	25688	973	1807	0	43.3	0	0	0	0	0	0	71.8	0	710	-568
SM	kg	85.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RSF	MJ	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRSF	MJ	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FW	m³	13.7	0.193	0.089	0	0.869	0	0	0	0	0	0	0.015	0	0.713	-1.50
Waste&Output for 1 tonne of Serel FFC Sanitaryware																
Impact Category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	1.31	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NHWD	kg	32.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RWD	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CRU	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MFR	kg	32.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MER	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EE (Electrical)	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EE (Thermal)	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Acronyms	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, 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, SM: Secondary material, RSF: Renewable secondary fuels, NRSF: Non-renewable secondary fuels, FW: Net use of fresh water, HWD: Hazardous waste disposed, NHWD: Non-hazardous waste disposed, RWD: Radioactive waste disposed, CRU: Components for reuse, MFR: Material for recycling, MER: Materials for energy recovery, EE [Electrical]: Exported energy electrical, EE [Thermal]: Exported energy, Thermal.															
Legend	A1: Raw Material Supply, A2: Transport, A3: Manufacturing, A1-A3: Sum of A1, A2, and A3. A4: Transport to Site, A5: Installation, B1: Use, B2: Maintenance, B3: Repair, B4: Replacement, B5: Refurbishment, B6: Operational Energy Use, B7: Operational Water Use, C1: De-Construction, C2: Waste Transport, C3: Waste Processing, C4: Disposal, D: Benefits and Loads Beyond the System Boundary.															



LCA Results for VC Sanitaryware

Environmentals Impacts for 1 tonne of Serel VC Sanitaryware																
Impact Category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP - Total	kg CO ₂ eq	1638	62.6	239	0	3.34	0	0	0	0	0	0	4.53	1.29	29.0	-38.6
GWP - Fossil	kg CO ₂ eq	2.53	0.024	1.630	0	0.030	0	0	0	0	0	0	0.002	0.003	0.231	-0.027
GWP - Biogenic	kg CO ₂ eq	4.31	0.019	0.176	0	4.28	0	0	0	0	0	0	0.001	0.011	0.012	-0.019
GWP - Luluc	kg CO ₂ eq	1638	62.6	240	0	7.65	0	0	0	0	0	0	4.53	1.30	29.3	-38.6
ODP	kg CFC-11 eq	147E-6	11.5E-6	20.2E-6	0	494E-9	0	0	0	0	0	0	862.8E-9	44.5E-9	7.76E-6	-6.27E-6
AP	mol H+ eq	5.96	0.520	1.49	0	0.042	0	0	0	0	0	0	0.019	0.008	0.253	-0.348
EP - Freshwater	kg PO ₄ eq	1.59	0.017	0.271	0	0.005	0	0	0	0	0	0	0.001	0.004	0.027	-0.019
EP - Marine	kg N eq	1.23	0.123	0.243	0	0.041	0	0	0	0	0	0	0.006	0.001	0.083	-0.096
EP - Terrestrial	mol N eq	12.5	1.37	2.52	0	0.150	0	0	0	0	0	0	0.062	0.012	0.912	-1.06
POCP	kg NMVOC	3.69	0.400	0.846	0	0.020	0	0	0	0	0	0	0.020	0.003	0.264	-0.298
ADPE	kg Sb eq	12.3E-3	96.4E-6	1.24E-3	0	24.6E-6	0	0	0	0	0	0	8.41E-6	134E-9	37.4E-6	-110E-6
ADPF	MJ	23.3E+3	973	3.35E+3	0	37.1	0	0	0	0	0	0	71.8	14.6	729	-568
WDP	m ³ depriv.	403	7.06	138	0	10.9	0	0	0	0	0	0	0.533	0.546	31.4	-62.0
PM	disease inc.	36.7E-6	4.92E-6	13.4E-6	0	620E-9	0	0	0	0	0	0	409E-9	29.9E-9	4.80E-6	-3.33E-6
IR	kBq U-235 eq	40.7	5.04	15.0	0	0.227	0	0	0	0	0	0	0.355	0.012	3.45	-3.18
ETP - FW	CTUe	585	171	620	0	42.2	0	0	0	0	0	0	15.1	0.375	17.7	-57.7
HTTP - C	CTUh	7.86E-6	409E-9	16.9E-6	0	105E-9	0	0	0	0	0	0	30.2E-9	8.62E-9	432E-9	-450E-9
HTTP - NC	CTUh	136E-6	9.70E-6	30.0E-6	0	2.04E-6	0	0	0	0	0	0	827E-9	88.1E-9	2.04E-6	-4.63E-6
SQP	Pt	14326	1400	1688	0	784	0	0	0	0	0	0	124	0.89	2438	-580
Acronyms	GWP-total: Climate change, GWP-fossil: Climate change- fossil, GWP-biogenic: Climate change - biogenic, GWP-luluc: Climate change - land use and transformation, ODP: Ozone layer depletion, AP: Acidification terrestrial and freshwater, EP-freshwater: Eutrophication freshwater, EP-marine: Eutrophication marine, EP-terrestrial: Eutrophication terrestrial, POCP: Photochemical oxidation, ADPE: Abiotic depletion - elements, ADPF: Abiotic depletion - fossil resources, WDP: Water scarcity, PM: Respiratory inorganics - particulate matter, IR: Ionising radiation, ETP-FW: Ecotoxicity freshwater, HTP-c: Cancer human health effects, HTP-nc: Non-cancer human health effects, SQP: Land use related impacts/Soil quality															
Legend	A1: Raw Material Supply, A2: Transport, A3: Manufacturing, A1-A3: Sum of A1, A2, and A3, A4: Transport to Site, A5: Installation, B1: Use, B2: Maintenance, B3: Repair, B4: Replacement, B5: Refurbishment, B6: Operational Energy Use, B7: Operational Water Use, C1: De-Construction, C2: Waste Transport, C3: Waste Processing, C4: Disposal, D: Benefits and Loads Beyond the System Boundary.															
* Eutrophication-freshwater is also provided in P as additional information.																

Resource Use for 1 tonne of Serel VC Sanitaryware																
Impact Category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	1966	12.4	203	0	61.7	0	0	0	0	0	0	0.760	0	11.2	-12.4
PERM	MJ	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PERT	MJ	1966	12.4	203	0	61.7	0	0	0	0	0	0	0.760	0	11.2	-12.4
PENRE	MJ	23256	973	3.35E+3	0	43.3	0	0	0	0	0	0	71.8	0	729	-568
PENRM	MJ	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PENRT	MJ	23256	973	3.35E+3	0	43.3	0	0	0	0	0	0	71.8	0	729	-568
SM	kg	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RSF	MJ	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRSF	MJ	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FW	m³	11.6	0.193	2.47	0	0.869	0	0	0	0	0	0	0.015	0	0.733	-1.50
Waste&Output for 1 tonne of Serel FFC Sanitaryware																
Impact Category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	1.31	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NHWD	kg	32.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RWD	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CRU	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MFR	kg	32.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MER	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EE (Electrical)	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EE (Thermal)	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Acronyms	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, 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, SM: Secondary material, RSF: Renewable secondary fuels, NRSF: Non-renewable secondary fuels, FW: Net use of fresh water, HWD: Hazardous waste disposed, NHWD: Non-hazardous waste disposed, RWD: Radioactive waste disposed, CRU: Components for reuse, MFR: Material for recycling, MER: Materials for energy recovery, EE (Electrical): Exported energy electrical, EE (Thermal): Exported energy, Thermal.															
Legend	A1: Raw Material Supply, A2: Transport, A3: Manufacturing, A1-A3: Sum of A1, A2, and A3. A4: Transport to Site, A5: Installation, B1: Use, B2: Maintenance, B3: Repair, B4: Replacement, B5: Refurbishment, B6: Operational Energy Use, B7: Operational Water Use, C1: De-Construction, C2: Waste Transport, C3: Waste Processing, C4: Disposal, D: Benefits and Loads Beyond the System Boundary.															

A new future with Serel...

As E.C.A., we work every day with unique designs, developed functions, and solutions providing water and energy saving complying with the purpose of sustainability in order to live next generations a more liveable world, and include also you in being a part of sustainable life.



References

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- /ISO 9001/ Quality management systems – Requirements
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- /ISO 14020:2000/ Environmental labels and declarations — General principles
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- /ISO 14040-44/ ISO 14040:2006-10, Environmental management - Life cycle assessment - Principles and framework (ISO 14040:2006) and Requirements and guidelines (ISO 14044:2006)
- /ISO 45001/ Occupational Health & Safety Management System Certification - Requirements
- /ISO 50001/ Energy Management System - Requirements
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- /Ecoinvent/ Ecoinvent Centre, www.ecoinvent.org
- /SimaPro/ SimaPro LCA Package, Pré Consultants, the Netherlands, www.pre-sustainability.com

Contact Information

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