

ENVIRONMENTAL PRODUCT DECLARATION

Sanitaryware



Standard References

EN 15804+A2:2019

ISO 14021

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GENERAL INFORMATION

MANUFACTURER

Manufacturer	Fábrica de Sanitários de Anadia, S.A.
Address	Apartado 45 - 3781-909 Anadia (Portugal)
Contact details	assistencia.sanitana@sanitana.pt
Website	https://www.sanitana.com

STANDARDS, SCOPE AND VERIFICATION

Reference standard	EN 15804+A2:2019+AC:2021 ISO 14021
Sector	Construction product
Category of EPD	Self-verified EPD
EPD Author	Sustainability Department
EPD Verification	Independent verification of this carbon footprint and data, according to ISO 14021: <input checked="" type="checkbox"/> Internal certification <input type="checkbox"/> External verification
EPD verifier	Sustainability Department, Roca Group

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PRODUCT

Product name	Sanitaryware
Additional labels	-
Product reference	-
Place of production	Sanitana, Anadia (PT)
Period for data	Calendar year 2022
Averaging	Multiple products
Variation in GWP-fossil for A1-A3	-

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 kg sanitary ceramic
Declared unit mass	1 kg
GWP-fossil, A1-A3 (kgCO ₂ e)	1.92E+00
GWP-total, A1-A3 (kgCO ₂ e)	1.03E+00
Secondary material, inputs (%)	0.03
Secondary material, outputs (%)	2.84
Total energy use, A1-A3 (kWh)	10.4
Total water use, A1-A3 (m ³ e)	0.01

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PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Sanitana is a global enterprise dedicated to the production and sale of solutions that cover all the needs of the bathroom space with the aim of improving people's quality of life. Sanitana project, faithful to the entrepreneurial spirit of the family business, is characterised by a long-term strategy based on growth. Sanitana's Mission and Vision establish an approach based on creating shared value with the aim of producing a threefold positive impact in the areas of People, Planet and Prosperity. Our commitment to the promotion of sustainable development is spread throughout our organisation. It finds itself on a strategic level, as well as embedded within specific actions and initiatives that ensure our daily tasks contribute to the improvement of our impact in a tangible way. Learn more at: <https://www.sanitana.com>

PRODUCT DESCRIPTION

Sanitaryware appliances mainly include basins, bidets, WCs, urinals, cisterns and shower trays. These products are made of materials such as clay, kaolin, quartz and feldspar. After the preparation of the slip, the mixture is cast, dried, glazed and then finished to obtain sanitaryware. To calculate the environmental impact, a representative average sanitaryware product based on the total volume manufactured in 2022 has been considered.

The products are available in different sizes, designs, and weights. In the following table are listed the sanitary products and their average weights.

Product	Weight (in kg)
Basins	16,0
Bidets	24,5
WC	38,0
Urinals	37,0
Cisterns	11,0
Shower trays	36,5

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PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	0	-
Minerals	100	Europe
Fossil materials	0	-
Bio-based materials	0	-

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate	
Biogenic carbon content in product, kg C	0
Biogenic carbon content in packaging, kg C	-0.245

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 kg sanitary ceramic
Mass per declared unit	1 kg
Functional unit	-
Reference service life	Up to 40 years

REACH – SUBSTANCES OF VERY HIGH CONCERN (SVHC)

The product does not contain any REACH SVHC substances in amounts greater than 0.1 % (1,000 ppm).

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PRODUCT LIFE-CYCLE

SYSTEM BOUNDARY

This carbon footprint covers the life-cycle modules listed in the following table.

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D		
x	x	x	MND	MND	MND	MND	MND	MND	MND	MND	MND	x	x	x	x	x	x	x
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstr./demol.	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Modules not declared = MND. Modules not relevant = MNR.

MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials and other ancillary materials. Also, fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission.

The product is made of a mixture of minerals like clay, feldspar, kaolin and quartz. The materials are transported to the manufacturers production facility, where the manufacturing includes material preparation, shaping, drying, followed by glazing/decoration, firing, and finally, polishing. The manufacturing process requires electricity and fuels for the different equipment as well as heating. In addition, waste heat is recycled from various parts of the furnaces to ensure that the heat inside the furnace remains efficient. The product is finally packaged and sent to the warehouse. Certain ancillary materials like water and moulds are also included. Production waste before firing is recycled internally. The product does not contain VOC as is fired at temperatures above 1000°C. Production waste as wastewater, moulds, sludge and fired ceramics waste are included. Transport from suppliers is calculated according to the corresponding sales volumes.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

Module not declared.

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PRODUCT USE AND MAINTENANCE (B1-B7)

Air, soil, and water impacts during the use phase have not been studied.

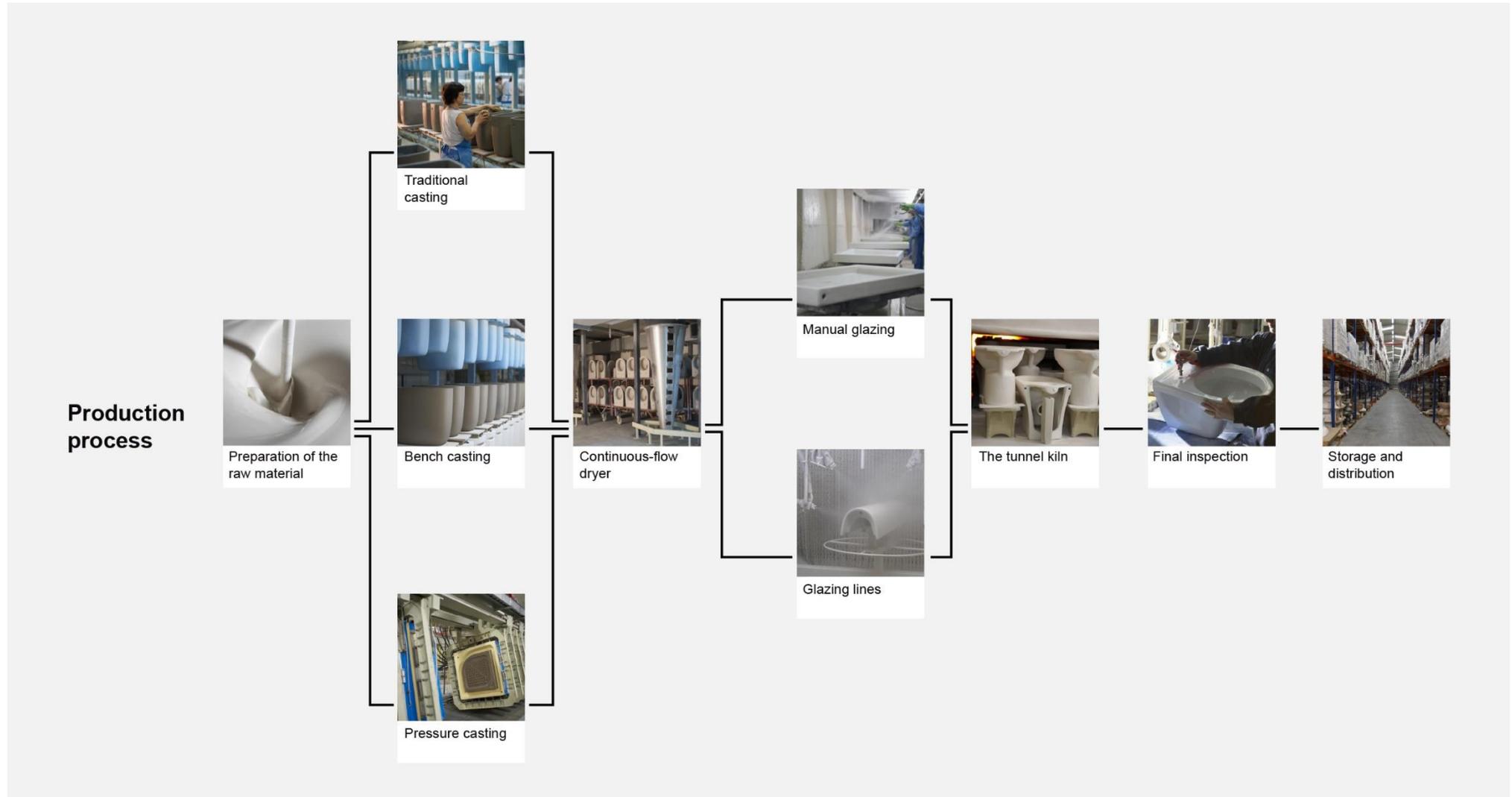
Module not declared.

PRODUCT END OF LIFE (C1-C4, D)

Energy consumption and natural resources of the disassembling end-of-life product and the impacts of demolition process are assumed to be zero due to the negligible consumptions (C1). Concerning to the end-of-life product, it is assumed to be sent to the closest waste disposal facility by lorry, estimated to be 50km away (C2). Although the product, fully mineral material, is suitable for reuse and recycling, it is conservatively assumed to be disposed of in an inert landfill.

The benefits and loads of recycling of packaging waste are included in Module D.

MANUFACTURING PROCESS



The raw materials supplied are mainly stored in silos. A small percentage of the raw materials used is supplied in sacks and/or big-bags.

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The stages of the production process are as follow:

1. Unloading of raw materials



Mineral raw materials (clay, kaolin, feldspar and silica) are unloaded from trucks in the areas marked for this purpose.

2. Preparation of the slip



The raw materials are taken to the mixer, where they are blended with osmotic water. The resulting mixture is sieved and pumped into the storage tanks and kept in suspension with the help of agitators. The paste resulting from this operation is known as slip.

3. Casting



Once the quality of the desired mixture has been obtained and controlled by the laboratory, the slip is pumped into the overhead casting tanks. From there, it feeds the casting lines by gravity, where it is injected into hermetically sealed plaster moulds, moulds in which the piece is formed.

Other pieces are also produced using plastic moulds with medium pressure slip injection, although to a lesser extent. The plaster moulds used are produced in the same plant and are manufactured by filling a mixture of plaster and water into araldite master moulds. After setting, the master moulds are separated and the plaster moulds are removed and transported to the dryers for their first dehydration prior to their use.

4. Drying



Once the piece has achieved a mechanical consistency within the plaster mould, it is removed manually or automatically, depending on the line or its difficulty. These pieces are placed on trolleys and transported to the different dryers, where they are dried with hot air. Once dry, they are transported again by trolleys, this time to the polishing and enamelling line.

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5. Enamelling



The enamel applied is prepared in an adjoining room where the raw materials, which are stored in silos, are weighed before being dissolved with osmotic water. The product obtained is fed into ball mills that reduce the base particles and pigments to the desired fineness.

6. Firing



The enamelled pieces are then transported to the kiln area for their firing. The process of heating, firing, enamel vitrification and cooling takes place inside the kiln.

7. Inspection and control



The pieces leaving the kiln are sent to the inspection and control area, where the defective pieces are separated from the conforming ones. Those that pass the final inspection are packed up and palletised for their transport to the dispatch warehouse. The complete cycle for the manufacturing of sanitary ware lasts approximately two to three days.

Further information can be found at www.sanitana.com.

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LIFE-CYCLE ASSESSMENT

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are done as per the reference standards and the applied PCR. In this study, allocation has been done in the following ways:

Data type	Allocation
Raw materials	No allocation
Packaging materials	No allocation
Ancillary materials	No allocation
Manufacturing energy and waste	No allocation

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AVERAGES AND VARIABILITY

Type of average	Multiple products
Averaging method	Averaged by shares of total mass
Variation in GWP-fossil for A1-A3	-

Data used in this EPD to measure the average impact of sanitaryware (basins, bidets, WCs, urinals, cisterns, and shower trays) is gathered from Sanitana's production site located in Anadia (Portugal).

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. Ecoinvent v3.8 and One Click LCA databases were used as sources of environmental data.

ENVIRONMENTAL IMPACT DATA

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Section	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	Total
Global Warming Potential total kg CO2e	5,63E-02	6,53E-02	9,08E-01	1,03E+00	MN D	0,00E+00	4,93E-03	2,75E-01	6,39E-01	-1,14E-02	1,95E+00								
Global Warming Potential fossil kg CO2e	5,62E-02	6,53E-02	1,80E+00	1,92E+00	MN D	0,00E+00	4,93E-03	5,72E-03	1,08E-02	-1,09E-02	1,94E+00								
Global Warming Potential biogenic kg CO2e	0,00E+00	0,00E+00	-8,97E-01	-8,97E-01	MN D	0,00E+00	0,00E+00	2,69E-01	6,28E-01	-5,38E-04	1,11E-16								
Global Warming Potential, LULUC kg CO2e	6,18E-05	2,47E-05	6,63E-03	6,72E-03	MN D	0,00E+00	1,82E-06	6,31E-07	1,09E-05	-3,40E-05	6,73E-03								
Depletion potential of the stratospheric ozone layer kg CFC11e	8,04E-09	1,50E-08	1,85E-07	2,08E-07	MN D	0,00E+00	1,14E-09	3,75E-11	3,25E-09	-5,96E-10	2,12E-07								
Acidification potential, Accumulated Exceedance mol H+ eq.	3,15E-04	3,20E-04	6,06E-03	6,70E-03	MN D	0,00E+00	2,07E-05	4,80E-06	9,04E-05	-7,62E-05	6,82E-03								
Eutrophication aquatic freshwater kg Pe	2,80E-06	5,28E-07	3,60E-05	3,94E-05	MN D	0,00E+00	4,04E-08	2,48E-08	1,68E-07	-5,33E-07	3,96E-05								
Eutrophication aquatic marine kg N eq.	4,89E-05	9,26E-05	1,23E-03	1,37E-03	MN D	0,00E+00	6,10E-06	1,80E-06	3,44E-05	-1,30E-05	1,41E-03								
Eutrophication terrestrial mol N eq.	5,62E-04	1,02E-03	1,25E-02	1,40E-02	MN D	0,00E+00	6,73E-05	1,85E-05	3,38E-04	-1,45E-04	1,45E-02								
Formation potential of tropospheric ozone kg NMVOC eq.	1,59E-04	3,19E-04	4,16E-03	4,63E-03	MN D	0,00E+00	2,16E-05	4,77E-06	9,88E-05	-4,33E-05	4,76E-03								
Abiotic depletion potential (ADP-elements) for non fossil resources (+A2) kg Sbe	7,50E-07	1,52E-07	2,75E-06	3,65E-06	MN D	0,00E+00	1,16E-08	7,18E-09	3,60E-08	-3,92E-08	3,70E-06								
Abiotic depletion potential (ADP-fossil fuels) for fossil resources (+A2) MJ	9,57E-01	9,77E-01	2,79E+01	2,99E+01	MN D	0,00E+00	7,42E-02	6,87E-03	2,47E-01	-2,10E-01	3,02E+01								
Water use m3 deprived	4,18E-02	4,34E-03	3,37E-01	3,84E-01	MN D	0,00E+00	3,32E-04	1,06E-03	1,44E-03	-6,23E-03	3,86E-01								

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO4e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

USE OF NATURAL RESOURCES

Section	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	total
Use of renewable primary energy resources as energy MJ	9,49E-02	1,09E-02	7,91E+00	8,02E+00	MND	0,00E+00	8,36E-04	7,27E-04	4,31E-03	-1,22E-01	8,02E+00								
Use of renewable primary energy resources as raw materials MJ	0,00E+00	0,00E+00	7,86E+00	7,86E+00	MND	0,00E+00	0,00E+00	2,36E+00	5,50E+00	4,74E-03	-8,88E-16								
Total use of renewable primary energy MJ	9,49E-02	1,09E-02	1,58E+01	1,59E+01	MND	0,00E+00	8,36E-04	2,36E+00	5,50E+00	-1,17E-01	8,02E+00								
Use of non renewable primary energy as energy MJ	9,56E-01	9,77E-01	2,72E+01	2,92E+01	MND	0,00E+00	7,42E-02	6,87E-03	2,47E-01	-1,55E-01	2,95E+01								
Use of non renewable primary energy as raw materials MJ	0,00E+00	0,00E+00	5,19E-01	5,19E-01	MND	0,00E+00	0,00E+00	-1,56E-01	-3,63E-01	5,41E-02	0,00E+00								
Total use of non renewable primary energy MJ	9,56E-01	9,77E-01	2,78E+01	2,97E+01	MND	0,00E+00	7,42E-02	-1,49E-01	-1,16E-01	-1,01E-01	2,95E+01								
Use of secondary materials kg	2,59E-04	2,75E-04	3,15E-02	3,20E-02	MND	0,00E+00	2,06E-05	1,66E-05	8,88E-05	1,35E-03	3,21E-02								
Use of renewable secondary fuels MJ	1,60E-06	2,71E-06	2,65E-01	2,65E-01	MND	0,00E+00	2,08E-07	8,29E-08	3,41E-06	-1,92E-05	2,65E-01								
Use of non renewable secondary fuels MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00								
Use of net fresh water m3	1,82E-03	1,25E-04	1,04E-02	1,23E-02	MND	0,00E+00	9,61E-06	2,88E-06	2,66E-04	-1,75E-04	1,26E-02								

END-OF-LIFE – WASTE

Section	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	TOTAL
Hazardous waste disposed kg	3,22E-03	1,30E-03	5,87E-02	6,32E-02	MND	0,00E+00	9,84E-05	1,09E-04	2,34E-06	-7,06E-04	6,35E-02								
Non hazardous waste disposed kg	1,37E-01	2,11E-02	7,94E+00	8,10E+00	MND	0,00E+00	1,62E-03	1,31E-02	1,01E+00	-2,69E-02	9,13E+00								
Radioactive waste disposed kg	4,34E-06	6,55E-06	2,74E-05	3,83E-05	MND	0,00E+00	4,97E-07	2,74E-08	2,82E-09	-4,98E-07	3,89E-05								

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

Section	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	Total
Global warming kg CO2e	5,54E-02	6,47E-02	1,77E+00	1,89E+00	MN D	0,00E+00	4,88E-03	5,81E-03	1,29E-02	-1,06E-02	1,91E+00								
Ozone Depletion kg CFC11e	7,24E-09	1,19E-08	1,50E-07	1,69E-07	MN D	0,00E+00	8,99E-10	3,26E-11	2,58E-09	-5,02E-10	1,73E-07								
Acidification kg SO2e	2,63E-04	2,50E-04	5,01E-03	5,52E-03	MN D	0,00E+00	1,61E-05	3,57E-06	6,85E-05	-6,32E-05	5,61E-03								
Eutrophication kg PO4e	1,08E-04	5,22E-05	1,33E-03	1,49E-03	MN D	0,00E+00	3,66E-06	4,54E-06	7,45E-05	-2,06E-05	1,57E-03								
Formation of ozone of lower atmosphere kg Ethenee	1,13E-05	9,22E-06	3,22E-04	3,42E-04	MN D	0,00E+00	6,32E-07	2,26E-07	3,30E-06	-3,81E-06	3,46E-04								
Abiotic depletion potential (ADP-elements) for non fossil resources kg Sbe	3,00E-07	1,47E-07	2,71E-06	3,15E-06	MN D	0,00E+00	1,12E-08	7,03E-09	3,47E-08	-3,90E-08	3,21E-06								
Abiotic depletion potential (ADP-fossil fuels) for fossil resources MJ	9,56E-01	9,77E-01	2,79E+01	2,99E+01	MN D	0,00E+00	7,42E-02	6,86E-03	2,47E-01	-2,10E-01	3,02E+01								

VERIFICATION PROCESS FOR THIS EPD

This EPD has been self-verified by the Sustainability Department of Roca Group following ISO 14021 reference standard.

