Environmental Product Declaration

Kitchen faucets

In accordance with
ISO 14021
EN 15804+A2:2019

Roca

Summary

Published: 1 October 2024
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General information

Manufacturer

Manufacturer	Roca
Address	Avinguda Diagonal, 513, 08029 Barcelona Spain
Contact details	roca@roca.com
Website	www.roca.com

EPD standards, scope and verification

Reference standard	EN 15804+A2:2019 and ISO 14025
Sector	Construction product
Category of EPD	Self-declared EPD
EPD author	Sustainability Department, Roca Group
EPD Verification	Independent verification of this EPD and data, according to ISO 14025: ☒ Internal verification ☐ External verification
EPD verifier	Roca Group's Sustainability Department

Product

Product name	Kitchen faucets
Additional labels	-
Product reference	-
Place of production	India, Portugal, Egypt, Turkey, Spain, China
Period for data	Calendar year 2023
Averaging in EPD	Multiple products and multiple factories
Variation in GWP-fossil for A1-A3	-15% and 12%

Environmental data summary

Declared unit	1 kg faucets
Declared unit mass	1 kg
GWP-fossil, A1-A3 ($kgCO_2e$)	8,14E+00
GWP-total, A1-A3 ($kgCO_2e$)	8,34E+00
Secondary material, inputs (%)	18.6
Secondary material, outputs (%)	75.2
Total energy use, A1-A3 (kWh)	36.5
Net freshwater use, A1-A3 (m^3)	0.16

Product and manufacturer

About the manufacturer

Roca Group 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. Roca Group's corporate project, faithful to the entrepreneurial spirit of the family business, is characterised by a long-term strategy based on growth. The group'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://rocagroup.com/sustainability/

Product description

This faucet EPD includes kitchen faucets. These products are made of a mixture of metals (brass and zinc alloy) and fossil materials (PPA, EPDM, POM and ABS), being brass the main component. After the casting process, the faucet body is machined, filed, polished, surface treated (chrome plating, PVD) and assembled. To calculate the environmental impact, a representative average faucet product has been considered based on the total volume manufactured in 2023.

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

Product raw material main composition

Raw material category	Amount, mass- %	Material origin
Metals	80	Africa, Asia, Europe
Minerals	0	-
Fossil materials	20	Africa, Asia, Europe
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	0.0019

Functional unit and service life

Declared unit	1kg of faucets
Mass per declared unit	1 kg
Functional unit	-
Reference service life	Up to 15 years

Substances, reach - Very high concern

Substances of very high concern	EC	CAS
Lead	231-100-4	7439-92-1

Product life-cycle

System boundary

This EPD 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	Deconstruction/ demolition	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.

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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.

Product use and maintenance (B1-B7)

Module not declared.

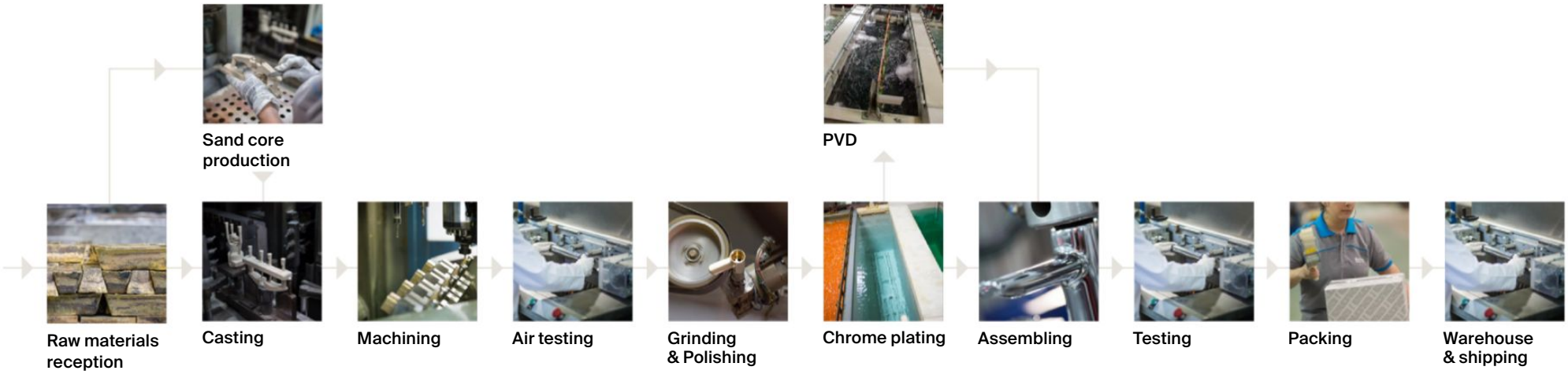
Air, soil, and water impacts during the use phase have not been studied.

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). The product is suitable for reuse and recycling. The benefits and loads of recycling of packaging waste are included in Module D.

Manufacturing process

Production 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.

The raw materials supplied are mainly stored in pallets in the warehouses of our facilities.
Very few raw materials are delivered in big bags, sacks or drums.
The production activity of the faucet plant is based on the following operations: unloading of raw materials, sand core manufacturing, casting, machining process, grinding, polishing and surface treatment process, assembly, inspection and storage.

Unloading of raw materials 1

The reception of raw and auxiliary materials used in the manufacturing process is carried out in a warehouse located in the faucet manufacturing facilities.

Sand core manufacturing 2

The production line starts with the manufacturing of the sand core by pressing silica sand into steel master moulds, depending on the type of piece to be manufactured.

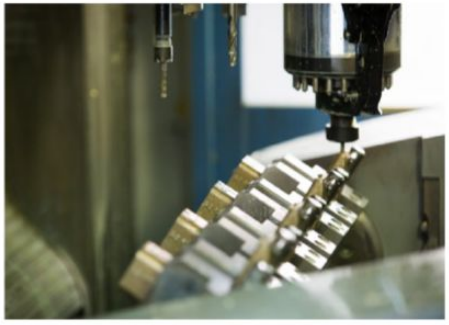
These sand cores are the inside part of the faucet.

Casting 3

The sand cores continue to the casting line, where they are placed inside the moulds. Once the mould containing the sand core is closed, the casting of molten brass takes place, occupying the space between the sand core and the walls of the mould.

Demoulding is carried out after the piece has cooled down. The unrefined pieces, with the remains of the sand core, undergo a vibration process to remove the remains of these casting sands.
Some pieces are produced in pairs and the joint between them must be cut off (casting cut).

Machining process 4

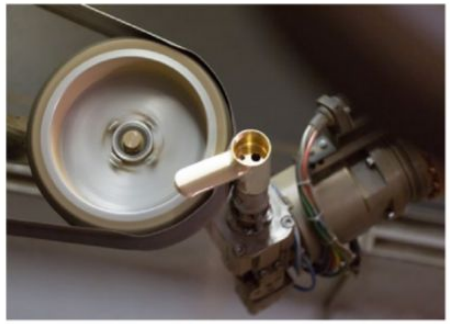


The pieces continue to the machining line, a process in which cutting oil is used.

The pieces undergo a degreasing process to remove any oil they might contain.

Learn more at: https://www.roca.com/about-roca/design-innovation/manufacturing-processes

Grinding, polishing and surface treatment process 5



The degreased pieces continue to the grinding and polishing line, operations that are carried out before the chemical surface treatment.

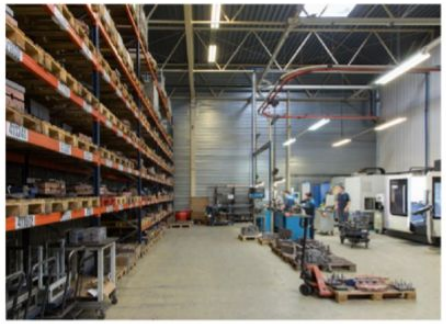
During the surface treatment, commonly known as chrome plating, the pieces undergo another degreasing process and then a nickel and chrome plating process, by dipping the pieces into various electrolytic tanks and lending them the desired surface finish.

In addition to the chrome plating process, specific pieces undergo a physical vapor deposition (PVD) process. A vaporised material is condensed on the surface, forming a thin layer and providing the faucet with a coloured finish.

Assembly, inspection and storage 6

Finally, the finished pieces continue to the assembly line. After verifying the lack of leaks (hydraulic tests), the final product is boxed, palletised and sent to the warehouse for dispatch.

Production plants 7



The following ROCA Group production plants have been analysed in the drafting of this document:

- Bhiwadi (IN)
- Cantanhede (PT)
- El Cairo (EG)
- Eskisehir (TK)
- Gavà-Viladecans (SP)
- Suzhou (CN)

Learn more at: https://www.roca.com/about-roca/design-innovation/manufacturing-processes

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

Averages and variability

Type of average	Multiple products and multiple factories
Averaging method	Averaged by shares of total mass
Variation in GWP-fossil for A1-A3	-15% and 12%

Primary data represents the manufacturing sites of Bhiwadi (IN), Cantanhede (PT), El Cairo (EG), Eskisehir (TK), Gavà-Viladecans (SP) and Suzhou (CN). GWP Variation is caused by different share of kitchen faucets produced.

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. The EPD Generator uses Ecoinvent v3.8, Plastics Europe, Federal LCA Commons and One Click LCA databases as sources of environmental data.

Environmental impact data

Core environmental impact indicators EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP[1] total	kg CO_2e	5,02E+00	1,46E-01	3,18E+00	8,34E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,83E-02	3,26E-01	6,16E-03	-2,26E-01
GWP[1] fossil	kg CO_2e	5,01E+00	1,46E-01	2,98E+00	8,14E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,83E-02	3,29E-01	1,11E-02	-2,25E-01
GWP[1] biogenic	kg CO_2e	0,00E+00	0,00E+00	1,62E-01	1,62E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	-2,12E-03	-4,95E-03	-1,35E-03
GWP[1] LULUC[2]	kg CO_2e	8,80E-03	5,70E-05	3,36E-02	4,25E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	6,79E-06	1,66E-05	3,96E-06	-1,81E-04
Ozone depletion pot.	kg CFC_{-11}e	1,42E-06	3,37E-08	2,07E-07	1,66E-06	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	4,22E-09	9,66E-10	1,36E-09	-7,50E-09
Acidification potential	mol H^+e	2,87E-01	5,94E-04	2,06E-02	3,08E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	7,47E-05	1,13E-04	3,09E-05	-1,23E-03
EP[3] freshwater	kg Pe	1,27E-03	1,04E-06	1,36E-04	1,40E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,50E-07	5,98E-07	6,31E-08	-1,11E-05
EP[3] marine	kg Ne	1,50E-02	1,77E-04	3,52E-03	1,87E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,15E-05	4,06E-05	3,70E-05	-1,61E-04
EP[3] terrestrial	mol Ne	2,10E-01	1,95E-03	3,46E-02	2,47E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,37E-04	4,00E-04	1,02E-04	-1,83E-03
POCP[4]	kg NMVOCe	5,77E-02	6,00E-04	9,81E-03	6,81E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	7,74E-05	1,04E-04	3,69E-05	-6,27E-04
ADP[5] non fossil resources	kg Sbe	7,07E-03	5,05E-07	1,54E-05	7,09E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	4,31E-08	4,31E-07	1,03E-08	-6,91E-07
ADP[5] fossil resources	MJ	6,81E+01	2,17E+00	3,90E+01	1,09E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,76E-01	1,50E-01	9,84E-02	-5,42E+00
Water use[6]	m^3e depr.	3,85E+00	1,00E-02	9,90E-01	4,85E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,24E-03	1,36E-02	4,16E-04	-7,99E-02

[1] GWP = Global Warming Potential
[2] LULUC = Land Use and Land Use Change
[3] EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO4e
[4] POCP = Photochemical ozone formation
[5] ADP = Abiotic depletion potential
[6] 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

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
RPER[1] as energy	MJ	1,37E+01	3,06E-02	1,35E+01	2,72E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	3,11E-03	1,88E-02	1,31E-03	-4,16E-01
RPER[1] as material	MJ	2,64E-03	0,00E+00	0,00E+00	2,64E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	-2,64E-03	0,00E+00	2,04E-02
Total use of RPER[1]	MJ	1,37E+01	3,06E-02	1,35E+01	2,72E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	3,11E-03	1,61E-02	1,31E-03	-3,96E-01
NRPER[2] as energy	MJ	6,34E+01	2,17E+00	3,88E+01	1,04E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,76E-01	1,50E-01	9,84E-02	-3,83E+00
NRPER[2] as material	MJ	5,50E+00	0,00E+00	0,00E+00	5,50E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	-5,50E+00	0,00E+00	5,23E-01
Total use as NRPER[2]	MJ	6,89E+01	2,17E+00	3,88E+01	1,10E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,76E-01	-5,35E+00	9,84E-02	-3,31E+00
Secondary materials	kg	1,86E-01	7,18E-04	9,87E-03	1,97E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	7,67E-05	4,05E-04	2,07E-05	5,00E-02
Renewable secondary fuels	MJ	2,36E-03	7,87E-06	5,56E-04	2,93E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	7,74E-07	1,34E-05	8,64E-07	-9,96E-05
Non-renewable secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m^3	1,31E-01	2,73E-04	2,59E-02	1,57E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	3,58E-05	1,33E-04	1,14E-04	-2,66E-03

[1] RPER = Renewable Primary Energy Resources
[2] NRPER = Non-Renewable Primary Energy Resources

End-of-life – waste

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	1,25E+00	2,46E-03	2,57E-01	1,51E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	3,66E-04	2,02E-03	3,20E-01	-1,23E-02
Non-hazardous waste	kg	8,10E+01	4,35E-02	4,54E+00	8,56E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	6,01E-03	1,41E-01	5,58E-02	-6,07E-01
Radioactive waste	kg	2,44E-04	1,49E-05	8,08E-05	3,40E-04	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,85E-06	6,49E-07	2,26E-08	-1,34E-05

Environmental impacts EN 15804+A1, CML / ISO 21930

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming	kg CO_2e	4,89E+00	1,44E-01	3,38E+00	8,42E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,81E-02	3,32E-01	2,19E-02	-2,17E-01
Ozone depletion	kg CFC_{-11}e	1,21E-06	2,67E-08	1,75E-07	1,41E-06	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	3,34E-09	8,25E-10	1,08E-09	-6,32E-09
Acidification	kg SO_2e	2,52E-01	4,61E-04	1,73E-02	2,69E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	5,83E-05	8,58E-05	2,39E-05	-1,05E-03
Eutrophication	kg PO_4^3e	7,69E-02	1,05E-04	8,00E-03	8,50E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,32E-05	1,06E-04	4,18E-04	-3,97E-04
POCP[1]	kg C_2H_4e	9,58E-03	1,88E-05	9,57E-04	1,06E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,33E-06	5,10E-06	5,06E-06	-5,08E-05
ADP[2] non fossil resources	kg Sbe	7,06E-03	4,93E-07	1,53E-05	7,08E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	4,17E-08	4,27E-07	1,01E-08	-6,87E-07
ADP[2] fossil resources	MJ	6,72E+01	2,17E+00	3,90E+01	1,08E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,76E-01	1,50E-01	9,84E-02	-5,41E+00

[1] POCP = Photochemical ozone formation
[2] ADP = Abiotic depletion potential

Verification statement

Verification process for this EPD

This EPD has been self-verified following standard ISO 14021 by Roca Group's Sustainability Department.

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