epddanmark

ECO PLATFORM EPD VERIFIED

Owner: KRS ApS
No.: MD-24020-EN
Issued: 18-06-2024
Valid to: 18-06-2029

3rd PARTY **VERIFIED**

EPD

VERIFIED ENVIRONMENTAL PRODUCT DECLARATION | **ISO 14025 & EN 15804**

Owner of declaration
KRS ApS
Mandal Alle 9 A
5500 Middelfart, Denmark
CVR: 31871336

Programme
EPD Danmark
www.epddanmark.dk

☐ Industry EPD
☒ Product EPD

Declared product(s)

Number of declared datasets/product variations: 2

Production site
Mandal Alle 9 A
5500 Middelfart, Denmark

Use of Guarantees of Origin
☒ No certificates used
☐ Electricity covered by GoO
☐ Biogas covered by GoO

Product(s) use
Both Boracol 10_3Bd and Boracol 15 are used as treatment and protection against wood-destroying fungi (including dry rot fungus) and insects in indoor/covered wooden constructions by brushing or impregnation via drill holes.

Declared/ functional unit
1 L Boracol

Year of production site data (A3)
2023

EPD version
First version

Issued: 18-06-2024
Valid to: 18-06-2029

Basis of calculation
This EPD is developed in accordance with the European standard EN 15804+A2.

Comparability
EPDs of construction products may not be comparable if they do not comply with the requirements in EN 15804. EPD data may not be comparable if the datasets used are not developed in accordance with EN 15804 and if the background systems are not based on the same database.

Validity
This EPD has been verified in accordance with ISO 14025 and is valid for 5 years from the date of issue.

Use
The intended use of an EPD is to communicate scientifically based environmental information for construction products, for the purpose of assessing the environmental performance of buildings.

EPD type
☐Cradle-to-gate with modules C1-C4 and D
☐Cradle-to-gate with options, modules C1-C4 and D
☒Cradle-to-grave and module D
☐Cradle-to-gate
☐Cradle-to-gate with options

CEN standard EN 15804 serves as the core PCR

Independent verification of the declaration and data, according to EN ISO 14025

☐ internal ☒ external

Third party verifier:

Linda Høibye, Life Cycle Assessment Consulting

Martha Katrine Sørensen
EPD Danmark

Life cycle stages and modules (MND = module not declared)																
Product			Construction process		Use							End of life				Beyond the system boundary
Raw material supply	Transport	Manufacturing	Transport	Installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Re-use, recovery and recycling 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

Product information

Product description

The main product components are shown in the table below.

Material	Weight-% of declared product	
	Boracol 10_3Bd	Boracol 15
Alcohol	12,1	60
Boric acid	5,4	16,5
Fungicide	4,9	N/A
Stabiliser	0,9	4,4
Water	76,1	19,1
Surfactant	0,6	N/A
Total	100	100

Both Boracol 10_3Bd and Boracol 15 are boron-based wood preservatives used as treatment and protection against wood-destroying fungi (including dry rot fungus) and insects in indoor/covered wooden constructions by brushing or impregnation via drill holes. Specifically in the case of dry rot fungus, the products can be applied to brickwork by brushing to prevent the growth of the fungus inside adjacent wood.

Boracol may only be used by professionals. Boracol 15 differs from Boracol 10_3Bd regarding its applicability to treat insect infestations, for which Boracol 15 is better suited than Boracol 10_3Bd due to it higher content of boric acid. Boracol 10_3Bd is better applicable for treating infestations of mold and tree-decaying fungi.

Product packaging:

The composition of the sales- and transport packaging of the product is shown in the table below.

Material	Weight-% of packaging	
	Boracol 10_3Bd	Boracol 15
IBC	15,9	15,9
HDPE-container	41,3	41,3
EUR pallet	12,9	12,9
Cardboard	27,8	27,8
Tape	0,2	0,2
LLDPE-foil	2	2
Total	100	100

Representativity

The declared unit is 1 L Boracol sold in different places in Europe.

This declaration, including data collection and the modeled foreground system including results, represents the production of 1 L Boracol on the production site located in Middelfart. Product specific data are based on average values collected in the period of 2023. Background data are based on the LCA for experts 2023.2 database and Ecoinvent v.3.9.1 and are less than 10 years old. Generally, the used background datasets are of high quality, and the majority of the datasets are only a couple of years old.

Hazardous substances

The product contains boric acid at levels above 0,1%. Boric acid (CAS no: 10043-35-3) is on the "Candidate List of Substances of Very High Concern for authorization".

(http://echa.europa.eu/candidate-list-table)

Substance	Weight % of declared product	
	Boracol 10_3Bd	Boracol 15
Boric acid	5,4	16,5

Essential characteristics

Boracol has to comply with the biocide regulation EN 528/2012. Additionally, it follows the CLP-regulation EN 1272/2008 on classification, labelling and packaging. The efficacy of Boracol to treat fungi and mold is confirmed through EN839+EN73, ENV12404, EN152+EN73 and BS3900.

Further technical information can be obtained by contacting the manufacturer or on the manufacturers website:

https://krsis.dk/

Reference Service Life (RSL)

According to KRS, Boracol has a reference service life of 20 years based on its stability tests. However, the lifetime depends on the conditions where Boracol is applied. In soggy conditions, Boracol may be washed out and thus its

functionality might not be retained. KRS informs that Boracol may well stay for 50 years in the wooden structure if the area is kept dry.

Picture of product(s)

LCA background

Declared unit

The LCI and LCIA results in this EPD relates to the products Boracol 10_3Bd and Boracol 15 listed in the table below, with an indication of average density and a conversion factor from L to kg.

Name	Boracol 10_3Bd	Boracol 15	Unit
Declared unit	1	1	L
Density	1,03	1,16	kg/L
Conversion factor to 1 kg.	0,97	0,86	-

Functional unit

Not defined

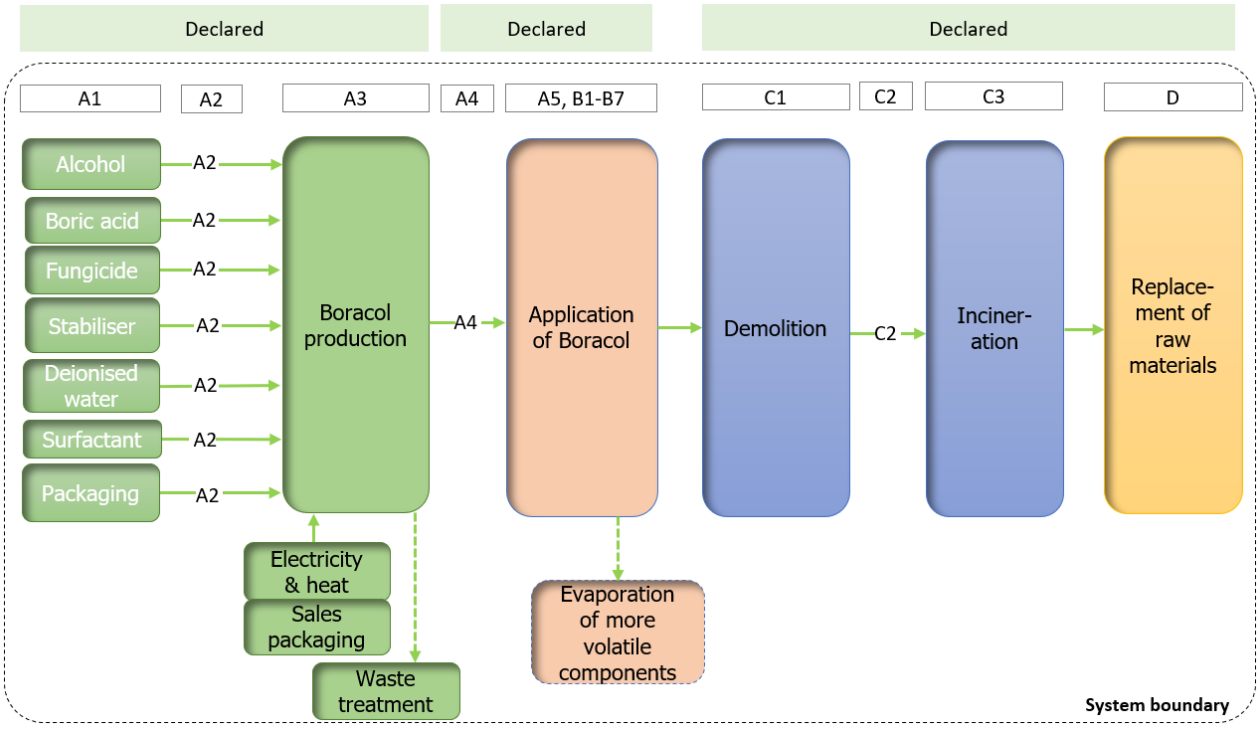
PCR

This EPD is developed according to the core rules for the product category of construction products in EN 15804 and PCR 2021:03, Basic Chemicals from EPD International.

Guarantee of Origin – certificates

No guarantees of origin are used in this EPD.

Flowdiagram



System boundary

This EPD is based on a Cradle-to-grave and module D, in which 100 weight-% has been accounted for.

The general rules for the exclusion of inputs and outputs follows the requirements in EN 15804, 6.3.5, where the total of neglected input flows per module shall be a maximum of 5 % of energy usage and mass and 1 % of energy usage and mass for unit processes. Additionally, the cut-off criteria for the exclusion of 1% renewable and non-renewable primary energy usage was met.

The cut-off criteria for mass was applied for the packaging of the sales packaging and capital goods. Both account for a mass of <<1% and presumably for impacts <<1%, as well. Allocation was done on a mass basis and applied on electricity and heat consumption and sales packaging, which was allocated on a mass-based principle.

Product stage (A1-A3) includes:

A1 – Extraction and processing of raw materials

A2 – Transport to the production site

A3 – Manufacturing processes

The product stage comprises the acquisition of all raw materials, products and energy, transport to the production site, packaging and waste processing up to the ”end-of-waste” state or final disposal. The LCA results are declared in aggregated form for the product stage, which means, that the sub-modules A1, A2 and A3 are declared as one module A1-A3.

For the production of Boracol the raw materials are either directly tapped from their respective container into the reaction tank or poured directly into the tank, if a solid raw material is concerned. After its production Boracol is tapped into either HDPE container or IBC depending on the size of the order.

Electricity and heat consumption as well as sales packaging was allocated equally on both Boracol 10_3Bd and Boracol 15.

Construction process stage (A4-A5) includes:

Boracol is sold to customers in Germany, Estonia, the Netherlands, Norway, Denmark, Spain and Sweden. As it was not feasible to calculate the exact distance to each customer the distance in A4 was set to 1000 km based on *PCR 2021:03, Basic Chemicals.*

The construction installation phase (A5) covers the end-of life treatment of sales packaging and the application of Boracol in a building. During the application 2% Boracol is assumed to be wasted. The volatile fractions in waste and applied Boracol are assumed to evaporate during the application process and a few days after the application.

Boracol 10_3Bd and Boracol 15 are applied once on the infested area. 1 L of Boracol 10_3Bd is sufficient for treating 5 m^2, while 1 L of Boracol 15 can be used to treat 6 m^2 infested area.

Use stage (B1-B7) includes:

There are no impacts expected from the use phase as more volatile compounds in Boracol are assumed to evaporate in the course of the first days after application.

End of Life (C1-C4) includes:

After demolition Boracol or the wooden structure Boracol is imbedded in is transported to an incineration plant specialized in hazardous waste treatment. In this LCA report, 50 km has been used as the transportation distance from the demolition site to both incineration and waste treatment facilities.

Re-use, recovery and recycling potential (D) includes:

As described previously Boracol is incinerated and therefore, no impacts from re-use, recovery and recycling are assumed.

LCA results

Boracol 10_3Bd

Boracol 10_3Bd

ENVIRONMENTAL IMPACTS PER L Boracol 10_3Bd									
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**B1-B7, C1**	**C2**	**C3**	**C4**	**D**
GWP-total	[kg CO_2 eq.]	7,11E-01	9,45E-02	1,00E-01	0,00E+00	8,69E-03	1,44E-01	0,00E+00	-3,95E-02
GWP-fossil	[kg CO_2 eq.]	7,39E-01	9,35E-02	9,81E-02	0,00E+00	8,59E-03	9,57E-02	0,00E+00	-3,89E-02
GWP-bio	[kg CO_2 eq.]	-2,85E-02	2,14E-04	1,89E-03	0,00E+00	1,97E-05	4,81E-02	0,00E+00	-5,86E-04
GWP-luluc	[kg CO_2 eq.]	7,14E-04	8,76E-04	3,95E-05	0,00E+00	8,05E-05	8,30E-06	0,00E+00	-6,25E-06
ODP	[kg CFC 11 eq.]	1,12E-08	1,23E-14	2,30E-10	0,00E+00	1,13E-15	1,05E-13	0,00E+00	-5,68E-13
AP	[mol H^+ eq.]	2,99E-03	1,39E-04	8,16E-05	0,00E+00	1,28E-05	1,62E-04	0,00E+00	-7,97E-05
EP-fw	[kg P eq.]	7,25E-05	3,46E-07	1,50E-06	0,00E+00	3,18E-08	3,00E-08	0,00E+00	-3,05E-07
EP-mar	[kg N eq.]	5,61E-04	5,06E-05	1,88E-05	0,00E+00	4,65E-06	7,72E-05	0,00E+00	-2,53E-05
EP-ter	[mol N eq.]	5,89E-03	5,99E-04	2,19E-04	0,00E+00	5,50E-05	8,77E-04	0,00E+00	-2,50E-04
POCP	[kg NMVOC eq.]	2,82E-03	1,22E-04	1,08E-01	0,00E+00	1,12E-05	1,99E-04	0,00E+00	-6,47E-05
ADPm[1]	[kg Sb eq.]	9,49E-05	6,27E-09	1,95E-06	0,00E+00	5,76E-10	8,82E-10	0,00E+00	-3,72E-09
ADPf[1]	[MJ]	1,95E+01	1,29E+00	4,74E-01	0,00E+00	1,18E-01	1,78E-01	0,00E+00	-5,43E-01
WDP[1]	[m^3]	1,38E-01	1,14E-03	1,09E-02	0,00E+00	1,05E-04	1,72E-02	0,00E+00	-1,86E-03
Caption	GWP-total = Global Warming Potential - total; 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 = Ozone Depletion; AP = Acidifcation; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water use								
Disclaimer	[1] The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.								
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: $1,95*10^2$ or 195, while 1,12E-11 is the same as $1,12*10^{-11}$ or 0,0000000000112.								

Boracol 10_3Bd

ADDITIONAL ENVIRONMENTAL IMPACTS PER L Boracol 10_3Bd									
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**B1-B7, C1**	**C2**	**C3**	**C4**	**D**
PM	[Disease incidence]	2,44E-08	1,20E-09	6,87E-10	0,00E+00	1,10E-10	8,80E-10	0,00E+00	-6,34E-10
IRP[2]	[kBq U235 eq.]	3,82E-02	3,61E-04	9,74E-04	0,00E+00	3,32E-05	6,52E-04	0,00E+00	-2,23E-03
ETP-fw[1]	[CTUe]	8,72E+00	9,23E-01	1,87E-01	0,00E+00	8,48E-02	5,83E-02	0,00E+00	-1,11E-01
HTTP-c[1]	[CTUh]	3,73E-10	1,87E-11	9,52E-12	0,00E+00	1,72E-12	4,38E-12	0,00E+00	-8,87E-12
HTTP-nc[1]	[CTUh]	1,13E-08	8,33E-10	4,19E-10	0,00E+00	7,66E-11	6,37E-10	0,00E+00	-2,67E-10
SQP[1]	-	6,35E+00	5,38E-01	1,55E-01	0,00E+00	4,95E-02	5,04E-02	0,00E+00	-1,11E+00
Caption	PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Soil Quality								
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: $1,95*10^2$ or 195, while 1,12E-11 is the same as $1,12*10^{-11}$ or 0,0000000000112.								
Disclaimers	[1] The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.								
	[2] This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.								

Boracol 10_3Bd

RESSOURCE CONSUMPTION PER L Boracol 10_3Bd									
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**B1-B7, C1**	**C2**	**C3**	**C4**	**D**
PERE	[MJ]	1,39E+00	9,38E-02	3,69E-02	0,00E+00	8,62E-03	5,75E-02	0,00E+00	-3,79E-01
PERM	[MJ]	3,37E-01	0,00E+00	6,91E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	1,72E+00	9,38E-02	4,38E-02	0,00E+00	8,62E-03	5,75E-02	0,00E+00	-3,79E-01
PENRE	[MJ]	1,41E+01	1,29E+00	3,52E-01	0,00E+00	1,19E-01	1,78E-01	0,00E+00	-5,44E-01
PENRM	[MJ]	5,96E+00	0,00E+00	1,22E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	2,00E+01	1,29E+00	4,74E-01	0,00E+00	1,19E-01	1,78E-01	0,00E+00	-5,44E-01
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
RSF	[MJ]	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]	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]	5,33E-03	1,03E-04	3,04E-04	0,00E+00	9,44E-06	4,26E-04	0,00E+00	-1,46E-04
Caption	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 resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non renewable secondary fuels; FW = Net use of fresh water								
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: $1,95*10^2$ or 195, while 1,12E-11 is the same as $1,12*10^{-11}$ or 0,0000000000112.								

Boracol 10_3Bd

WASTE CATEGORIES AND OUTPUT FLOWS PER L Boracol 10_3Bd									
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**B1-B7, C1**	**C2**	**C3**	**C4**	**D**
HWD	[kg]	5,57E-09	4,00E-12	1,14E-10	0,00E+00	3,68E-13	4,48E-09	0,00E+00	-4,75E-12
NHWD	[kg]	8,25E-03	1,97E-04	9,21E-03	0,00E+00	1,81E-05	3,95E-02	0,00E+00	-5,85E-04
RWD	[kg]	1,89E-04	2,42E-06	5,28E-06	0,00E+00	2,22E-07	6,06E-06	0,00E+00	-1,91E-05
CRU	[kg]	5,24E-04	0,00E+00	1,07E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	[kg]	0,00E+00	0,00E+00	1,96E-02	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
EEE	[MJ]	0,00E+00	0,00E+00	1,44E-01	0,00E+00	0,00E+00	1,23E-01	0,00E+00	0,00E+00
EET	[MJ]	9,02E-02	0,00E+00	2,72E-01	0,00E+00	0,00E+00	5,58E-01	0,00E+00	0,00E+00
Caption	HWD = Hazardous waste disposed; NHWD = Non hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy								
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: $1,95*10^{2}$ or 195, while 1,12E-11 is the same as $1,12*10^{-11}$ or 0,0000000000112.								

Boracol 10_3Bd

BIOGENIC CARBON CONTENT PER L Boracol 10_3Bd		
Parameter	**Unit**	**At gate**
Biogenic carbon content in product	kg C	0,00E+00
Biogenic carbon content in sales packaging	kg C	0,01

Boracol 15

Boracol 15

ENVIRONMENTAL IMPACTS PER L Boracol 15									
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**B1-B7, C1**	**C2**	**C3**	**C4**	**D**
GWP-total	[kg CO_2 eq.]	1,85E+00	1,07E-01	1,10E-01	0,00E+00	2,06E-02	3,41E-01	0,00E+00	-9,36E-02
GWP-fossil	[kg CO_2 eq.]	1,87E+00	1,05E-01	1,06E-01	0,00E+00	2,04E-02	2,27E-01	0,00E+00	-9,22E-02
GWP-bio	[kg CO_2 eq.]	-2,72E-02	2,41E-04	4,53E-03	0,00E+00	4,66E-05	1,14E-01	0,00E+00	-1,39E-03
GWP-luluc	[kg CO_2 eq.]	1,17E-03	9,88E-04	4,78E-05	0,00E+00	1,91E-04	1,97E-05	0,00E+00	-1,48E-05
ODP	[kg CFC 11 eq.]	1,42E-09	1,39E-14	2,54E-10	0,00E+00	2,68E-15	2,50E-13	0,00E+00	-1,35E-12
AP	[mol H^+ eq.]	3,82E-03	1,57E-04	9,81E-05	0,00E+00	3,04E-05	3,84E-04	0,00E+00	-1,89E-04
EP-fw	[kg P eq.]	5,24E-05	3,90E-07	1,66E-06	0,00E+00	7,54E-08	7,12E-08	0,00E+00	-7,24E-07
EP-mar	[kg N eq.]	8,39E-04	5,70E-05	2,47E-05	0,00E+00	1,10E-05	1,83E-04	0,00E+00	-6,01E-05
EP-ter	[mol N eq.]	9,15E-03	6,75E-04	2,85E-04	0,00E+00	1,31E-04	2,08E-03	0,00E+00	-5,93E-04
POCP	[kg NMVOC eq.]	5,53E-03	1,38E-04	5,54E-01	0,00E+00	2,66E-05	4,72E-04	0,00E+00	-1,53E-04
ADPm[1]	[kg Sb eq.]	9,22E-05	7,07E-09	2,15E-06	0,00E+00	1,37E-09	2,09E-09	0,00E+00	-8,82E-09
ADPf[1]	[MJ]	4,74E+01	1,45E+00	5,34E-01	0,00E+00	2,81E-01	4,22E-01	0,00E+00	-1,29E+00
WDP[1]	[m^3]	1,14E-01	1,29E-03	1,22E-02	0,00E+00	2,49E-04	4,09E-02	0,00E+00	-4,42E-03
Caption	GWP-total = Global Warming Potential - total; 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 = Ozone Depletion; AP = Acidifcation; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water use								
Disclaimer	[1] The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.								
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: $1,95*10^2$ or 195, while 1,12E-11 is the same as $1,12*10^{-11}$ or 0,0000000000112.								

Boracol 15

ADDITIONAL ENVIRONMENTAL IMPACTS PER L Boracol 15									
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**B1-B7, C1**	**C2**	**C3**	**C4**	**D**
PM	[Disease incidence]	2,82E-08	1,36E-09	7,97E-10	0,00E+00	2,62E-10	2,09E-09	0,00E+00	-1,50E-09
IRP[2]	[kBq U235 eq.]	5,46E-02	4,07E-04	1,09E-03	0,00E+00	7,87E-05	1,55E-03	0,00E+00	-5,29E-03
ETP-fw[1]	[CTUe]	2,22E+01	1,04E+00	2,46E-02	0,00E+00	2,01E-01	1,38E-01	0,00E+00	-2,63E-01
HTTP-c[1]	[CTUh]	7,89E-10	2,11E-11	1,07E-11	0,00E+00	4,08E-12	1,04E-11	0,00E+00	-2,10E-11
HTTP-nc[1]	[CTUh]	2,33E-08	9,40E-10	4,46E-10	0,00E+00	1,82E-10	1,51E-09	0,00E+00	-6,33E-10
SQP[1]	-	8,10E+00	6,07E-01	1,75E-01	0,00E+00	1,17E-01	1,19E-01	0,00E+00	-2,64E+00
Caption	PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Soil Quality								
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: $1,95*10^2$ or 195, while 1,12E-11 is the same as $1,12*10^{-11}$ or 0,0000000000112.								
Disclaimers	[1] The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.								
	[2] This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.								

Boracol 15

RESSOURCE CONSUMPTION PER L Boracol 15									
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**B1-B7, C1**	**C2**	**C3**	**C4**	**D**
PERE	[MJ]	2,80E+00	1,06E-01	4,35E-02	0,00E+00	2,04E-02	1,36E-01	0,00E+00	-9,00E-01
PERM	[MJ]	3,39E-01	0,00E+00	7,63E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	3,14E+00	1,06E-01	5,11E-02	0,00E+00	2,04E-02	1,36E-01	0,00E+00	-9,00E-01
PENRE	[MJ]	3,11E+01	1,46E+00	3,99E-01	0,00E+00	2,82E-01	4,23E-01	0,00E+00	-1,29E+00
PENRM	[MJ]	1,70E+01	0,00E+00	1,35E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	4,81E+01	1,46E+00	5,34E-01	0,00E+00	2,82E-01	4,23E-01	0,00E+00	-1,29E+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
RSF	[MJ]	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]	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]	8,60E-03	1,16E-04	3,40E-04	0,00E+00	2,24E-05	1,01E-03	0,00E+00	-3,47E-04
Caption	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 resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non renewable secondary fuels; FW = Net use of fresh water								
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: $1,95*10^2$ or 195, while 1,12E-11 is the same as $1,12*10^{-11}$ or 0,0000000000112.								

Boracol 15

WASTE CATEGORIES AND OUTPUT FLOWS PER L Boracol 15									
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**B1-B7, C1**	**C2**	**C3**	**C4**	**D**
HWD	[kg]	7,49E-09	4,52E-12	1,26E-10	0,00E+00	8,73E-13	1,06E-08	0,00E+00	-1,13E-11
NHWD	[kg]	1,73E-02	2,22E-04	1,15E-02	0,00E+00	4,30E-05	9,38E-02	0,00E+00	-1,39E-03
RWD	[kg]	3,69E-04	2,73E-06	6,00E-06	0,00E+00	5,28E-07	1,44E-05	0,00E+00	-4,54E-05
CRU	[kg]	0,00E+00	0,00E+00	1,19E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	[kg]	0,00E+00	0,00E+00	1,96E-02	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
EEE	[MJ]	0,00E+00	0,00E+00	1,44E-01	0,00E+00	0,00E+00	2,92E-01	0,00E+00	0,00E+00
EET	[MJ]	1,27E-01	0,00E+00	2,73E-01	0,00E+00	0,00E+00	1,32E+00	0,00E+00	0,00E+00
Caption	HWD = Hazardous waste disposed; NHWD = Non hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy								
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: $1,95*10^{2}$ or 195, while 1,12E-11 is the same as $1,12*10^{-11}$ or 0,0000000000112.								

Boracol 15

BIOGENIC CARBON CONTENT PER L Boracol 15		
Parameter	**Unit**	**At gate**
Biogenic carbon content in product	kg C	0,00E+00
Biogenic carbon content in sales packaging	kg C	0,01

Additional information

LCA interpretation

The production of raw materials used in the production of Boracol is responsible for most impacts in the respective impact categories. Propane-1,2-diol and boric acid alone are the strongest contributors in 9 out of 13 assessed impact categories with contributions between 27% and 95%. The evaporation of components in Boracol during its application is main contributor to the creation of photochemical ozone.

Technical information on scenarios

Transport to the building site (A4)

Scenario information	Value	Unit
Fuel type	Diesel	-
Vehicle type	Truck, Euro 6 A-C, 28 - 32t gross weight / 22t payload capacity	-
Transport distance	1000	km
Capacity utilisation (including empty runs)	61	%
Gross density of products transported	1030-1160	kg/m^3
Capacity utilisation volume factor	Default	-

Installation of the product in the building (A5)

Scenario information	Value		Unit
	Boracol 10_3Bd	Boracol 15	
Ancillary materials	-	-	kg
Water use	-	-	m^3
Other resource use	-	-	kg
Energy type and consumption	-	-	kWh
Waste materials	0,02	0,02	kg
Output materials	0,12	0,24	kg
Direct emissions to air, soil or water	0,95	0,92	kg

Reference service life

RSL information		Unit
Reference service Life	20	Years
Declared product properties	-	As appropriate
Design application parameters	-	As appropriate
Assumed quality of work	-	As appropriate
Outdoor environment	Not to be applied	As appropriate
Indoor environment	Dry	As appropriate
Usage conditions	Dry	As appropriate
Maintenance	-	As appropriate

End of life (C1-C4)

Scenario information	Value		Unit
	Boracol 10_3Bd	Boracol 15	
Collected separately	0,1	0,25	kg
Collected with mixed waste	0	0	kg
For reuse	0	0	kg
For recycling	0	0	kg
For energy recovery	0,1	0,25	kg
For final disposal	0	0	kg
Assumptions for scenario development	-	-	As appropriate

Re-use, recovery and recycling potential (D)

Scenario information/Materiel	Value		Unit
	Boracol 10_3Bd	Boracol 15	
Displaced material	-	-	kg
Energy recovery from waste incineration	0,68	1,61	MJ

Indoor air

The EPD does not give information on release of dangerous substances to indoor air because the horizontal standards on the relevant measurements are not available. Read more in EN15804+A1 chapter 7.4.1.

Soil and water

The EPD does not give information on release of dangerous substances to soil and water because the horizontal standards on the relevant measurements are not available. Read more in EN15804+A1 chapter 7.4.2.

References

Publisher	www.epddanmark.dk Template version 2023.1
Programme operator	Danish Technological Institute Buildings & Environment Gregersensvej DK-2630 Taastrup www.teknologisk.dk
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LCA software /background data	Sphera LCA for experts version 10.7.1.28, 2023 including databases v.2023.2 https://sphera.com/ Ecoinvent v3.9.1 Life-Cycle Assessment database https://ecoinvent.org/database-login/ *EN 15804 reference package 3.1*
3rd party verifier	*Linda Høibye* *Life Cycle Assessment Consulting*

General programme instructions
General Programme Instructions, version 2.0, spring 2020
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