

structo WALL  
SYSTEMS

# ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH  
EN 15804+A2 & ISO 14025

PORTAL WALLS



Structo Group OÜ



# GENERAL INFORMATION

## MANUFACTURER INFORMATION

<b>Manufacturer</b>	Structo Group OÜ
<b>Address</b>	Sära tee 11-6, Peetri, 75312, Estonia
<b>Contact details</b>	Heiko Saava +372 50 44 791 heiko@structo.ee
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## PRODUCT IDENTIFICATION

<b>Product name</b>	Portal Walls: PORTA-120 PORTA-R WALLEND-R ELZONE PORTA-92 ELZONE-92A
<b>Product number / reference</b>	-
<b>Place(s) of production</b>	Estonia

## EPD INFORMATION

EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

<b>EPD program operator</b>	The Building Information Foundation RTS sr/ Building Information Ltd Malminkatu 16 A,
<b>EPD standards</b>	This EPD is in accordance with EN 15804+A2 and ISO 14025 standards.
<b>Product category rules</b>	The CEN standard EN 15804 serves as the core PCR. In addition, the RTS PCR (English version, 26.8.2020) is used.
<b>EPD author</b>	Mari Kirss and Anni Oviir Rangi Maja OÜ Tondi 22-4, Tallinn Estonia www.lcasupport.com
<b>EPD verification</b>	Independent verification of this EPD and data, according to ISO 14025: <input type="checkbox"/> Internal certification <input checked="" type="checkbox"/> External verification
<b>Verification date</b>	18.6.2021
<b>EPD verifier</b>	Silvia Vilčeková, Silcert, s.r.o.
<b>EPD number</b>	RTS_130_21
<b>ECO Platform nr.</b>	-
<b>Publishing date</b>	23.6.2021
<b>EPD valid until</b>	18.6.2026

# PRODUCT INFORMATION

## PRODUCT DESCRIPTION

PORTA-120, PORTA-R and PORTA-92 are portals. Usually, a portal consists of a door, a wall element on top of the door and also wall elements on both sides of the door.

WALLEND-R, ELZONE and ELZONE-92A are portal wall elements.

## PRODUCT APPLICATION

Portal walls are interior elements that are mainly used in office buildings between corridor and cabinet or meeting room. They can be combined with different glass walls to create exciting and functional results.

## PHYSICAL PROPERTIES OF THE PRODUCT

Product properties can be found on the manufacturer website at [www.structo.ee](http://www.structo.ee)

## TECHNICAL SPECIFICATIONS

For this assessment one square meter of product shall be used. For WALLEND-R and ELZONE, the studied product is a weighted average of both products.

Product	Width, mm	Height, mm	Door frame width, mm	Door frame height, mm	Element thickness, mm
PORTA-120	1362	2513	990	2090	120
PORTA-R	1515	2530	990	2100	120
PORTA-92	1362	2513	990	2100	92
WALLEND-R	477	2458	-	-	120
ELZONE	281	2128	-	-	120
ELZONE-92A	293	2384	-	-	92

## ADDITIONAL TECHNICAL INFORMATION

Further information can be found at [www.structo.ee](http://www.structo.ee)

## SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1% (1000 ppm).

## PRODUCT RAW MATERIAL COMPOSITION

	Quantity, mass %					Usability			Origin of the raw materials
	PORTA-120	PORTA-92	PORTA-R	WALLEND-R, Elzone	ELZONE-92A	Re-newable	Non-renew-able	Recycled	
Aluminum	22	16	1	9	44		X		non-EU
Chipboard	36	38	30	-	-		X		EU
Finger Jointed pine	4	4	10	-	-	X			EU
Glass wool insulation	<1	1	1	1	1		X		EU
Glue (PVA)	1	1	1	-	-		X		EU
Gypsum board	15	15	19	22	25		X		EU
HDF	13	14	11	-	-	X			EU
MDF	18	21	38	82	43	X			EU
Oak	<1	<1	<1	-	-	X			EU
Polyurethane foam self-adhesive expansion seal	<1	<1	-	-	<1		X		non-EU
Powder Paint	<1	<1	-	-	1		X		EU
Stainless Steel	<1	<1	<1	-	-		X		EU
Steel	1	1	1	<1	<1		X		EU & non-EU
Primer Paint	-	-	<1	-	-		X		EU
Top Paint	2	2	1	1	1				EU

Raw material category	Amount, mass- %					Material origin
	PORTA-120	PORTA-92	PORTA-R	WAL-LEND-R, Elzone	ELZONE-92A	
Metals	20	15	2	8	38	EU & non-EU
Minerals	14	14	17	20	22	EU
Fossil materials	7	7	5	1	2	EU & non-EU
Bio-based materials	59	64	75	71	37	EU



# PRODUCT LIFE-CYCLE

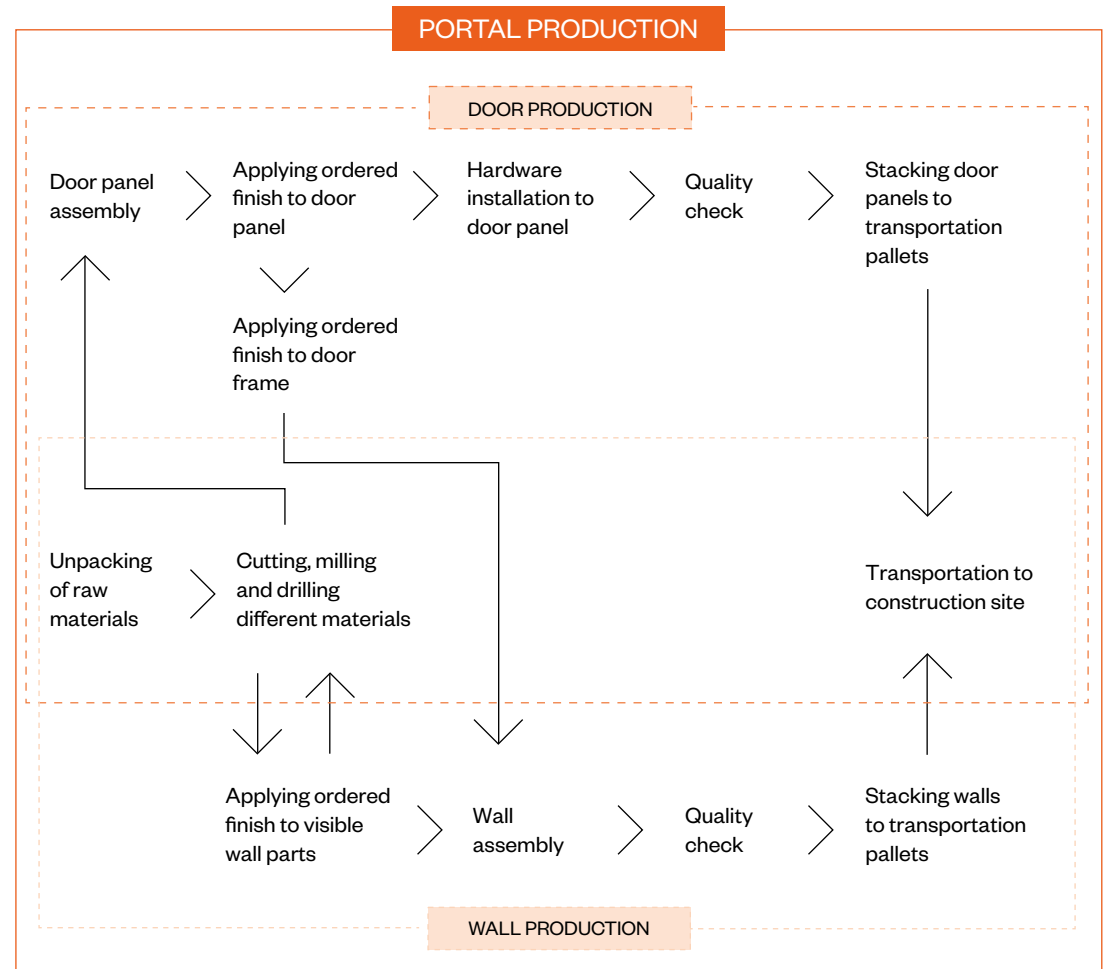
## MANUFACTURING AND PACKAGING (A1-A3)

The production of portals consists of wall and door production.

Door production begins with unpacking raw materials. After that, the materials are processed and assembled into door panels and frames. When the door panel is assembled, it will get the selected finish and will be left to dry. At the same time, the door frame will get the finish. When the finish has dried, the door panel and frame will get preparations for hardware and seals installation, after which the hardware and seals will be fixed to door panel and frame. Before packing and stacking door panels to the transportation pallets, final quality checks will be conducted, and the products will be ready for transportation to construction site.

Wall production begins with raw materials unpacking and processing in the same manner. Depending on the materials and their location, they will get the selected finish or will be used without finish if they are concealed. Some materials require additional processing after the finish has been applied. Wall will be assembled to the finished door frame. Before packing and stacking wall elements to transportation pallets, final quality checks will be concluded and the finished product will be sent to construction site.

## MANUFACTURING PROCESS:



## TRANSPORT (A4)

Transportation impacts occurred from final product's delivery to construction site cover direct exhaust emissions of fuel, environmental impacts of fuel production, as well as related infrastructure emissions.

## PRODUCT END OF LIFE (C1-C4, D)

At the end-of-life, in the demolition phase end-of-life product is collected as mixed waste (C1) and is assumed to be sent (C2) to recycling (C3). 7-10% is sent to the landfill (C4). Due to the recycling potential of aluminum, some of the end-of-life product is converted into recycled raw materials (D).



# LIFE-CYCLE ASSESSMENT

## LIFE-CYCLE ASSESSMENT INFORMATION

Period for data 2020

## DECLARED AND FUNCTIONAL UNIT

Declared unit 1 m<sup>2</sup>

Mass per declared unit 43 – 57 kg

## BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C 7.13 – 18.83

Biogenic carbon content in packaging, kg C 0.41 – 2.36

## SYSTEM BOUNDARY

This EPD covers the cradle to gate with options scope with following modules; A1 (Raw material supply), A2 (Transport) and A3 (Manufacturing), A4 (Transport), as well as C1 (Deconstruction), C2 (Transport at end-of-life), C3 (Waste processing) and C4 (Disposal). In addition, module D - benefits and loads beyond the system boundary is included.

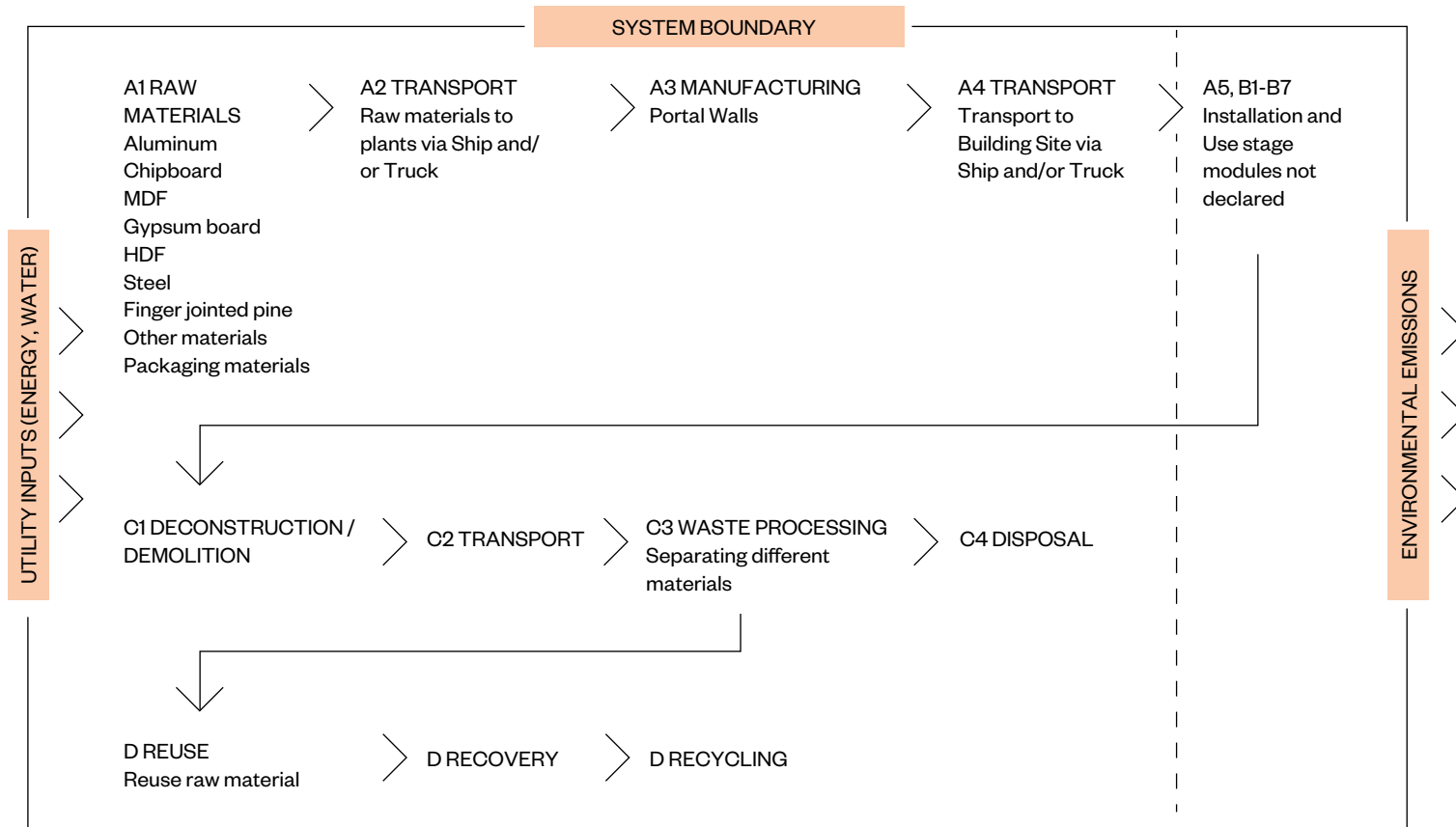
Product stage			Assembly stage			Use stage							End of life stage				Beyond the system boundaries		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	D	D	
x	x	x	x	x	MND	MND	MND	MND	MND	MND	MND	x	x	x	x	x	x	x	

Geography, by two-letter ISO country code or regions. The International EPD System only.

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
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Modules not declared = MND

### LIFE CYCLE STAGES DIAGRAM:



## CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the EN 15804:2012+A2:2019 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

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation.

In this study, as per EN 15804, allocation is conducted in the following order;

1. Allocation should be avoided.
2. Allocation should be based on physical properties (e.g. mass, volume) when the difference in revenue is small.
3. Allocation should be based on economic values.

Allocation used in Ecoinvent 3.6 environmental data sources follows the methodology 'allocation, cut-off by classification'. This methodology is in line with the requirements of the EN 15804 -standard.

## ESTIMATES AND ASSUMPTIONS

This LCA study is conducted in accordance with all methodological considerations, such as performance, system boundaries, data quality, allocation procedures, and decision rules to evaluate inputs and outputs. All estimations and assumptions are given below:

**Module A4:** The transportation distance is defined according to RTS PCR. It was assumed that typical installation place is situated in Stockholm, Sweden. Average distance of transportation from production plant to building site is equal to 460 km. Transportation method is assumed to be ferry and lorry. The transportation doesn't cause losses as products are packaged properly. Also, volume capacity utilisation factor is assumed to be 1 for the nested packaged products.

**Module C1:** Energy consumption of demolition process is on the average 0 kWh/m<sup>2</sup>. It is assumed no machinery is needed for the process.

**Module C2:** It is estimated that there is no mass loss during the use of the product, therefore the end-of-life product is assumed that it has the same weight with the declared product. All of the end-of-life product is assumed to be sent to the closest facilities such as recycling and landfill. Transportation distance to the closest disposal area is estimated as 15 km and the transportation method is assumed as lorry which is the most common.

**Module A2, A4 & C2:** Vehicle capacity utilization volume factor is assumed to be 1 which means full load. In reality, it may vary but as role of transportation emission in total results is small and so the variety in load assumed to be negligible. Empty returns are not taken into account as it is assumed that return trip is used by transportation company to serve needs of other clients.

**Module C3:** It is assumed that 90-94% of total waste is recycled or incinerated for heat production. This assumption was based on information from industry associations. App. 95% of metals, 70% of gypsum board is recycled. 98% of other waste is incinerated for heat generation. The process losses of the waste treatment plant are assumed to be negligible.

**Module C4:** The remaining 7-10% of is assumed to be send to landfill.

**Module D:** The recycled end-of-life product is assumed to be converted into a raw material after recycling.

# ENVIRONMENTAL IMPACT DATA

Note: ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930 are presented in annex.

## CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

1) 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.

2) Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO4e.

### PORTA-120 - Core Environmental Impact Indicators – EN 15804+A2, PEF

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Climate change – total	kg CO2e	1.15E2	2.19E0	0E0	1.14E-1	4.53E1	3.06E-2	-5.45E1
Climate change – fossil	kg CO2e	1.28E2	2.2E0	0E0	1.14E-1	2.29E1	3.04E-2	-5.44E1
Climate change – biogenic	kg CO2e	-1.3E1	2.11E-4	0E0	6.06E-5	2.24E1	2.45E-4	1.2E-1
Climate change – LULUC	kg CO2e	4.4E-1	1.12E-3	0E0	4.03E-5	8.44E-3	1.46E-5	-1.64E-1
Ozone depletion	kg CFC11e	9.18E-6	4.68E-7	0E0	2.58E-8	7.31E-7	9.42E-9	-2.35E-6
Acidification	mol H+e	8.12E-1	5.1E-2	0E0	4.64E-4	1.84E-1	2.59E-4	-3.32E-1
Eutrophication. aquatic freshwater <sup>2)</sup>	kg Pe	7.43E-3	1.22E-5	0E0	9.51E-7	3.37E-4	5.31E-7	-2.36E-3
Eutrophication. aquatic marine	kg Ne	1.47E-1	1.29E-2	0E0	1.38E-4	1.11E-2	8.77E-5	-5.21E-2
Eutrophication. terrestrial	mol Ne	1.66E0	1.43E-1	0E0	1.52E-3	1.24E-1	9.66E-4	-5.83E-1
Photochemical ozone formation	kg NMVOCe	5.08E-1	3.76E-2	0E0	4.67E-4	4.11E-2	2.79E-4	-1.84E-1
Abiotic depletion. minerals & metals	kg Sbe	8.88E-2	2.24E-5	0E0	3.07E-6	3.31E-2	3.26E-7	7.83E-3
Abiotic depletion of fossil resources	MJ	1.59E3	3.02E1	0E0	1.71E0	9.02E1	7.13E-1	-5.9E2
Water use <sup>1)</sup>	m3e depr.	4.07E1	7.86E-2	0E0	5.52E-3	8.51E0	3.19E-2	-7.83E0

**PORTA-92 - Core Environmental Impact Indicators – EN 15804+A2, PEF**

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Climate change – total	kg CO2e	9.01E1	2.1E0	0E0	1.09E-1	4.4E1	2.84E-2	-3.87E1
Climate change – fossil	kg CO2e	1.04E2	2.11E0	0E0	1.08E-1	2.11E1	2.81E-2	-3.87E1
Climate change – biogenic	kg CO2e	-1.39E1	2.02E-4	0E0	5.79E-5	2.29E1	2.27E-4	1.11E-1
Climate change – LULUC	kg CO2e	3.76E-1	1.08E-3	0E0	3.85E-5	6.02E-3	1.35E-5	-1.15E-1
Ozone depletion	kg CFC11e	7.91E-6	4.49E-7	0E0	2.46E-8	5.51E-7	8.73E-9	-1.67E-6
Acidification	mol H+e	6.5E-1	4.89E-2	0E0	4.43E-4	1.66E-1	2.4E-4	-2.36E-1
Eutrophication. aquatic freshwater <sup>2)</sup>	kg Pe	6.43E-3	1.17E-5	0E0	9.07E-7	2.42E-4	4.92E-7	-1.68E-3
Eutrophication. aquatic marine	kg Ne	1.18E-1	1.23E-2	0E0	1.32E-4	9.13E-3	8.13E-5	-3.7E-2
Eutrophication. terrestrial	mol Ne	1.35E0	1.37E-1	0E0	1.45E-3	1.01E-1	8.96E-4	-4.14E-1
Photochemical ozone formation	kg NMVOCe	4.06E-1	3.6E-2	0E0	4.45E-4	3.45E-2	2.59E-4	-1.31E-1
Abiotic depletion. minerals & metals	kg Sbe	7.45E-2	2.15E-5	0E0	2.93E-6	2.31E-2	3.02E-7	5.43E-3
Abiotic depletion of fossil resources	MJ	1.32E3	2.9E1	0E0	1.64E0	6.64E1	6.61E-1	-4.18E2
Water use <sup>1)</sup>	m3e depr.	3.45E1	7.54E-2	0E0	5.26E-3	6.33E0	2.96E-2	-5.6E0

**PORTA-R - Core Environmental Impact Indicators – EN 15804+A2, PEF**

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Climate change – total	kg CO2e	3.49E1	2.36E0	0E0	1.23E-1	5.02E1	3.5E-2	-6.31E0
Climate change – fossil	kg CO2e	5.87E1	2.37E0	0E0	1.23E-1	2.09E1	3.47E-2	-6.43E0
Climate change – biogenic	kg CO2e	-2.41E1	2.27E-4	0E0	6.55E-5	2.94E1	2.8E-4	1.41E-1
Climate change – LULUC	kg CO2e	2.39E-1	1.21E-3	0E0	4.35E-5	1.02E-3	1.66E-5	-1.36E-2
Ozone depletion	kg CFC11e	6.45E-6	5.05E-7	0E0	2.79E-8	2.06E-7	1.08E-8	-2.86E-7
Acidification	mol H+e	3.7E-1	5.49E-2	0E0	5.02E-4	1.99E-1	2.96E-4	-3.95E-2
Eutrophication. aquatic freshwater <sup>2)</sup>	kg Pe	4.61E-3	1.31E-5	0E0	1.03E-6	4.85E-5	6.07E-7	-2.87E-4
Eutrophication. aquatic marine	kg Ne	7.09E-2	1.39E-2	0E0	1.49E-4	6.11E-3	1E-4	-6.42E-3
Eutrophication. terrestrial	mol Ne	8.73E-1	1.54E-1	0E0	1.65E-3	6.39E-2	1.1E-3	-7.06E-2
Photochemical ozone formation	kg NMVOCe	2.65E-1	4.05E-2	0E0	5.04E-4	2.75E-2	3.19E-4	-2.27E-2
Abiotic depletion. minerals & metals	kg Sbe	4.43E-2	2.42E-5	0E0	3.32E-6	2.29E-3	3.73E-7	3.35E-4
Abiotic depletion of fossil resources	MJ	8.55E2	3.25E1	0E0	1.85E0	1.91E1	8.15E-1	-6.73E1
Water use <sup>1)</sup>	m3e depr.	3.78E1	8.47E-2	0E0	5.96E-3	2.07E0	3.65E-2	-1.12E0

### WALLEND-R/Elzone - Core Environmental Impact Indicators – EN 15804+A2, PEF

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Climate change – total	kg CO2e	6.22E1	2.94E0	0E0	1.43E-1	5.58E1	4.64E-2	-2.87E1
Climate change – fossil	kg CO2e	9.94E1	2.96E0	0E0	1.43E-1	2.5E1	4.6E-2	-2.88E1
Climate change – biogenic	kg CO2e	-3.74E1	2.83E-4	0E0	7.62E-5	3.08E1	3.71E-4	1.91E-1
Climate change – LULUC	kg CO2e	1.84E-1	1.51E-3	0E0	5.06E-5	4.49E-3	2.21E-5	-8.32E-2
Ozone depletion	kg CFC11e	9.87E-6	6.29E-7	0E0	3.24E-8	4.72E-7	1.43E-8	-1.27E-6
Acidification	mol H+e	6.55E-1	6.85E-2	0E0	5.83E-4	2.8E-1	3.92E-4	-1.78E-1
Eutrophication. aquatic freshwater <sup>2)</sup>	kg Pe	5.01E-3	1.64E-5	0E0	1.19E-6	1.85E-4	8.04E-7	-1.26E-3
Eutrophication. aquatic marine	kg Ne	1.19E-1	1.73E-2	0E0	1.73E-4	9.18E-3	1.33E-4	-2.8E-2
Eutrophication. terrestrial	mol Ne	1.6E0	1.92E-1	0E0	1.91E-3	9.97E-2	1.46E-3	-3.12E-1
Photochemical ozone formation	kg NMVOCe	4.54E-1	5.04E-2	0E0	5.86E-4	4.11E-2	4.23E-4	-9.66E-2
Abiotic depletion. minerals & metals	kg Sbe	5.75E-2	3.01E-5	0E0	3.86E-6	1.63E-2	4.94E-7	3.65E-3
Abiotic depletion of fossil resources	MJ	1.36E3	4.06E1	0E0	2.15E0	5.38E1	1.08E0	-3.12E2
Water use <sup>1)</sup>	m3e depr.	5.79E1	1.06E-1	0E0	6.93E-3	5.27E0	4.83E-2	-4.33E0

**ELZONE-92A - Core Environmental Impact Indicators – EN 15804+A2, PEF**

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Climate change – total	kg CO2e	1.94E2	2.65E0	0E0	1.28E-1	4.3E1	4.98E-2	-1.21E2
Climate change – fossil	kg CO2e	2.15E2	2.67E0	0E0	1.28E-1	2.75E1	4.93E-2	-1.21E2
Climate change – biogenic	kg CO2e	-2.24E1	2.55E-4	0E0	6.85E-5	1.55E1	3.99E-4	2.15E-1
Climate change – LULUC	kg CO2e	5.32E-1	1.36E-3	0E0	4.55E-5	1.86E-2	2.37E-5	-3.7E-1
Ozone depletion	kg CFC11e	1.39E-5	5.68E-7	0E0	2.91E-8	1.47E-6	1.53E-8	-5.26E-6
Acidification	mol H+e	1.44E0	6.18E-2	0E0	5.24E-4	3.4E-1	4.21E-4	-7.43E-1
Eutrophication. aquatic freshwater <sup>2)</sup>	kg Pe	9.21E-3	1.48E-5	0E0	1.07E-6	7.34E-4	8.63E-7	-5.25E-3
Eutrophication. aquatic marine	kg Ne	2.53E-1	1.56E-2	0E0	1.56E-4	1.83E-2	1.43E-4	-1.16E-1
Eutrophication. terrestrial	mol Ne	2.95E0	1.73E-1	0E0	1.72E-3	2.11E-1	1.57E-3	-1.3E0
Photochemical ozone formation	kg NMVOCe	8.71E-1	4.56E-2	0E0	5.27E-4	7.19E-2	4.54E-4	-4.07E-1
Abiotic depletion. minerals & metals	kg Sbe	1.18E-1	2.72E-5	0E0	3.47E-6	7.51E-2	5.3E-7	1.78E-2
Abiotic depletion of fossil resources	MJ	2.49E3	3.66E1	0E0	1.93E0	1.89E2	1.16E0	-1.32E3
Water use <sup>1)</sup>	m3e depr.	7.1E1	9.53E-2	0E0	6.23E-3	1.75E1	5.19E-2	-1.74E1

## USE OF NATURAL RESOURCES

3) PER abbreviation stands for primary energy resources.

### PORTA-120 - Use of Natural Resources

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Renewable PER used as energy <sup>4)</sup>	MJ	4.3E2	2.63E-1	0E0	2.42E-2	9.16E0	1.18E-2	-7.72E1
Renewable PER used as materials	MJ	1.41E2	0E0	0E0	0E0	0E0	0E0	0E0
Total use of renewable PER	MJ	5.7E2	2.63E-1	0E0	2.42E-2	9.16E0	1.18E-2	-7.72E1
Non-renew. PER used as energy	MJ	1.53E3	3.02E1	0E0	1.71E0	9.02E1	7.13E-1	-5.9E2
Non-renew. PER used as materials	MJ	2.92E1	0E0	0E0	0E0	0E0	0E0	0E0
Total use of non-renewable PER	MJ	1.56E3	3.02E1	0E0	1.71E0	9.02E1	7.13E-1	-5.9E2
Use of secondary materials	kg	8.49E0	0E0	0E0	0E0	0E0	0E0	-6.34E0
Use of renewable secondary fuels	MJ	0E0	0E0	0E0	0E0	0E0	0E0	0E0
Use of non-renew. secondary fuels	MJ	0E0	0E0	0E0	0E0	0E0	0E0	0E0
Use of net fresh water	m3	1.11E0	4.09E-3	0E0	2.93E-4	3.62E-1	8.06E-4	-1.57E-1

**PORTA-92 - Use of Natural Resources**

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Renewable PER used as energy <sup>4)</sup>	MJ	3.9E2	2.52E-1	0E0	2.31E-2	6.5E0	1.09E-2	-5.5E1
Renewable PER used as materials	MJ	1.45E2	0E0	0E0	0E0	0E0	0E0	0E0
Total use of renewable PER	MJ	5.35E2	2.52E-1	0E0	2.31E-2	6.5E0	1.09E-2	-5.5E1
Non-renew. PER used as energy	MJ	1.27E3	2.9E1	0E0	1.64E0	6.64E1	6.61E-1	-4.18E2
Non-renew. PER used as materials	MJ	2.76E1	0E0	0E0	0E0	0E0	0E0	0E0
Total use of non-renewable PER	MJ	1.3E3	2.9E1	0E0	1.64E0	6.64E1	6.61E-1	-4.18E2
Use of secondary materials	kg	6.1E0	0E0	0E0	0E0	0E0	0E0	-4.36E0
Use of renewable secondary fuels	MJ	0E0	0E0	0E0	0E0	0E0	0E0	0E0
Use of non-renew. secondary fuels	MJ	0E0	0E0	0E0	0E0	0E0	0E0	0E0
Use of net fresh water	m3	8.9E-1	3.93E-3	0E0	2.79E-4	2.69E-1	7.47E-4	-1.16E-1

**PORTA-R - Use of Natural Resources**

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Renewable PER used as energy <sup>4)</sup>	MJ	4.94E2	2.83E-1	0E0	2.61E-2	1.04E0	1.34E-2	-1.06E1
Renewable PER used as materials	MJ	1.89E2	0E0	0E0	0E0	0E0	0E0	0E0
Total use of renewable PER	MJ	6.83E2	2.83E-1	0E0	2.61E-2	1.04E0	1.34E-2	-1.06E1
Non-renew. PER used as energy	MJ	8.12E2	3.25E1	0E0	1.85E0	1.91E1	8.15E-1	-6.73E1
Non-renew. PER used as materials	MJ	2.18E1	0E0	0E0	0E0	0E0	0E0	0E0
Total use of non-renewable PER	MJ	8.34E2	3.25E1	0E0	1.85E0	1.91E1	8.15E-1	-6.73E1
Use of secondary materials	kg	1.13E0	0E0	0E0	0E0	0E0	0E0	-3.15E-1
Use of renewable secondary fuels	MJ	4.01E-3	0E0	0E0	0E0	0E0	0E0	0E0
Use of non-renew. secondary fuels	MJ	2.02E-3	0E0	0E0	0E0	0E0	0E0	0E0
Use of net fresh water	m3	5.52E-1	4.41E-3	0E0	3.16E-4	8.57E-2	9.21E-4	-3.82E-2

**WALLEND-R/Elzone - Use of Natural Resources**

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Renewable PER used as energy <sup>4)</sup>	MJ	8.24E2	3.53E-1	0E0	3.04E-2	4.82E0	1.78E-2	-4.37E1
Renewable PER used as materials	MJ	9.96E1	0E0	0E0	0E0	0E0	0E0	0E0
Total use of renewable PER	MJ	9.24E2	3.53E-1	0E0	3.04E-2	4.82E0	1.78E-2	-4.37E1
Non-renew. PER used as energy	MJ	1.32E3	4.06E1	0E0	2.15E0	5.38E1	1.08E0	-3.12E2
Non-renew. PER used as materials	MJ	1.2E1	0E0	0E0	0E0	0E0	0E0	0E0
Total use of non-renewable PER	MJ	1.34E3	4.06E1	0E0	2.15E0	5.38E1	1.08E0	-3.12E2
Use of secondary materials	kg	4.45E0	0E0	0E0	0E0	0E0	0E0	-3.41E0
Use of renewable secondary fuels	MJ	0E0	0E0	0E0	0E0	0E0	0E0	0E0
Use of non-renew. secondary fuels	MJ	0E0	0E0	0E0	0E0	0E0	0E0	0E0
Use of net fresh water	m3	5.5E-1	5.5E-3	0E0	3.68E-4	2.22E-1	1.22E-3	-1E-1

**ELZONE-92A - Use of Natural Resources**

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Renewable PER used as energy <sup>4)</sup>	MJ	6.09E2	3.19E-1	0E0	2.73E-2	2.03E1	1.91E-2	-1.73E2
Renewable PER used as materials	MJ	9.64E1	0E0	0E0	0E0	0E0	0E0	0E0
Total use of renewable PER	MJ	7.06E2	3.19E-1	0E0	2.73E-2	2.03E1	1.91E-2	-1.73E2
Non-renew. PER used as energy	MJ	2.47E3	3.66E1	0E0	1.93E0	1.89E2	1.16E0	-1.32E3
Non-renew. PER used as materials	MJ	9.7E0	0E0	0E0	0E0	0E0	0E0	0E0
Total use of non-renewable PER	MJ	2.48E3	3.66E1	0E0	1.93E0	1.89E2	1.16E0	-1.32E3
Use of secondary materials	kg	1.85E1	0E0	0E0	0E0	0E0	0E0	-1.51E1
Use of renewable secondary fuels	MJ	0E0	0E0	0E0	0E0	0E0	0E0	0E0
Use of non-renew. secondary fuels	MJ	0E0	0E0	0E0	0E0	0E0	0E0	0E0
Use of net fresh water	m3	1.56E0	4.97E-3	0E0	3.31E-4	7.44E-1	1.31E-3	-3.37E-1

## END OF LIFE – WASTE

### PORTA-120 - End of Life – waste

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Hazardous waste	Kg	1.7E1	3.14E-2	0E0	1.74E-3	0E0	1.25E-3	-1.04E1
Non-hazardous waste	Kg	2.4E2	1.5E0	0E0	1.19E-1	0E0	2.88E0	-9.92E1
Radioactive waste	Kg	4.56E-3	2.11E-4	0E0	1.17E-5	0E0	4.29E-6	-1.46E-3

### PORTA-92 - End of Life – waste

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Hazardous waste	Kg	1.28E1	3.02E-2	0E0	1.66E-3	0E0	1.16E-3	-7.34E0
Non-hazardous waste	Kg	1.96E2	1.43E0	0E0	1.14E-1	0E0	2.67E0	-7.02E1
Radioactive waste	Kg	3.96E-3	2.02E-4	0E0	1.12E-5	0E0	3.98E-6	-1.03E-3

### PORTA-R - End of Life – waste

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Hazardous waste	Kg	3.87E0	3.39E-2	0E0	1.88E-3	0E0	1.43E-3	-9.1E-1
Non-hazardous waste	Kg	1.12E2	1.61E0	0E0	1.29E-1	0E0	3.29E0	-1.09E1
Radioactive waste	Kg	3.14E-3	2.27E-4	0E0	1.27E-5	0E0	4.9E-6	-1.47E-4

### WALLEND-R/Elzone - End of Life – waste

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Hazardous waste	Kg	9.81E0	4.22E-2	0E0	2.19E-3	0E0	1.89E-3	-5.24E0
Non-hazardous waste	Kg	1.73E2	2.01E0	0E0	1.5E-1	0E0	4.36E0	-5.2E1
Radioactive waste	Kg	4.25E-3	2.83E-4	0E0	1.48E-5	0E0	6.49E-6	-7.73E-4

**ELZONE-92A - End of Life – waste**

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Hazardous waste	Kg	3.35E1	3.81E-2	0E0	1.96E-3	0E0	2.03E-3	-2.34E1
Non-hazardous waste	Kg	3.88E2	1.81E0	0E0	1.35E-1	0E0	4.68E0	-2.22E2
Radioactive waste	Kg	6.37E-3	2.55E-4	0E0	1.33E-5	0E0	6.97E-6	-3.3E-3

**END OF LIFE – OUTPUT FLOWS**

**PORTA-120 - End of Life – Output Flows**

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Components for reuse	Kg	0E0	0E0	0E0	0E0	0E0	0E0	0E0
Materials for recycling	Kg	1.3E0	0E0	0E0	0E0	1.3E1	0E0	0E0
Materials for energy recovery	Kg	5.15E0	0E0	0E0	0E0	2.96E1	0E0	0E0
Exported energy	MJ	0E0	0E0	0E0	0E0	0E0	0E0	0E0

**PORTA-92 - End of Life – Output Flows**

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Components for reuse	Kg	0E0	0E0	0E0	0E0	0E0	0E0	0E0
Materials for recycling	Kg	1E-2	0E0	0E0	0E0	1.03E1	0E0	0E0
Materials for energy recovery	Kg	6.13E0	0E0	0E0	0E0	3.04E1	0E0	0E0
Exported energy	MJ	0E0	0E0	0E0	0E0	0E0	0E0	0E0

**PORTA-R - End of Life – Output Flows**

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Components for reuse	Kg	0E0	0E0	0E0	0E0	0E0	0E0	0E0
Materials for recycling	Kg	9.28E-2	0E0	0E0	0E0	6.75E0	0E0	0E0
Materials for energy recovery	Kg	6.94E0	0E0	0E0	0E0	3.91E1	0E0	0E0
Exported energy	MJ	0E0	0E0	0E0	0E0	0E0	0E0	0E0

**WALLEND-R/Elzone - End of Life – Output Flows**

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Components for reuse	Kg	0E0	0E0	0E0	0E0	0E0	0E0	0E0
Materials for recycling	Kg	2E-3	0E0	0E0	0E0	1.19E1	0E0	0E0
Materials for energy recovery	Kg	8.55E0	0E0	0E0	0E0	4.09E1	0E0	0E0
Exported energy	MJ	0E0	0E0	0E0	0E0	0E0	0E0	0E0

**ELZONE-92A - End of Life – Output Flows**

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Components for reuse	Kg	0E0	0E0	0E0	0E0	0E0	0E0	0E0
Materials for recycling	Kg	2.91E0	0E0	0E0	0E0	2.64E1	0E0	0E0
Materials for energy recovery	Kg	4.59E0	0E0	0E0	0E0	2.02E1	0E0	0E0
Exported energy	MJ	0E0	0E0	0E0	0E0	0E0	0E0	0E0

## KEY INFORMATION TABLE (RTS) – KEY INFORMATION PER KG OF PRODUCT

### PORTA-120 - Key Information Table

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Climate change – total	kg CO2e	2,51E0	4,81E-2	0E0	2,48E-3	9,89E-1	6,68E-4	-1,19E0
Abiotic depletion, minerals & metals	kg Sbe	1,94E-3	4,89E-7	0E0	6,71E-8	7,22E-4	7,12E-9	1,71E-4
Abiotic depletion of fossil resources	MJ	3,46E1	6,59E-1	0E0	3,74E-2	1,97E0	1,56E-2	-1,29E1
Water use	m3e depr.	8,87E-1	1,71E-3	0E0	1,2E-4	1,86E-1	6,97E-4	-1,71E-1
Use of secondary materials	kg	1,85E-1	0E0	0E0	0E0	0E0	0E0	-1,38E-1
Biogenic carbon content in product	kg C	7.13	N/A	N/A	N/A	N/A	N/A	N/A
Biogenic carbon content in packaging	kg C	0.41	N/A	N/A	N/A	N/A	N/A	N/A

### PORTA-92 - Key Information Table

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Climate change – total	kg CO2e	2,08E0	4,87E-2	0E0	2,5E-3	1,01E0	6,55E-4	-8,92E-1
Abiotic depletion, minerals & metals	kg Sbe	1,72E-3	4,96E-7	0E0	6,76E-8	5,34E-4	6,97E-9	1,25E-4
Abiotic depletion of fossil resources	MJ	3,05E1	6,68E-1	0E0	3,77E-2	1,53E0	1,52E-2	-9,64E0
Water use	m3e depr.	7,95E-1	1,74E-3	0E0	1,21E-4	1,46E-1	6,83E-4	-1,29E-1
Use of secondary materials	kg	1,41E-1	0E0	0E0	0E0	0E0	0E0	-1E-1
Biogenic carbon content in product	kg C	7.52	N/A	N/A	N/A	N/A	N/A	N/A
Biogenic carbon content in packaging	kg C	0.50	N/A	N/A	N/A	N/A	N/A	N/A

**PORTA-R - Key Information Table**

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Climate change – total	kg CO2e	7,1E-1	4,83E-2	0E0	2,5E-3	1,02E0	7,12E-4	-1,28E-1
Abiotic depletion, minerals & metals	kg Sbe	9,02E-4	4,92E-7	0E0	6,76E-8	4,65E-5	7,59E-9	6,83E-6
Abiotic depletion of fossil resources	MJ	1,74E1	6,63E-1	0E0	3,77E-2	3,89E-1	1,66E-2	-1,37E0
Water use	m3e depr.	7,71E-1	1,72E-3	0E0	1,21E-4	4,21E-2	7,43E-4	-2,27E-2
Use of secondary materials	kg	2,29E-2	0E0	0E0	0E0	0E0	0E0	-6,42E-3
Biogenic carbon content in product	kg C	12.49	N/A	N/A	N/A	N/A	N/A	N/A
Biogenic carbon content in packaging	kg C	0.43	N/A	N/A	N/A	N/A	N/A	N/A

**WALLEND-/ELZONE - Key Information Table**

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Climate change – total	kg CO2e	1,09E0	5,18E-2	0E0	2,5E-3	9,76E-1	8,12E-4	-5,02E-1
Abiotic depletion, minerals & metals	kg Sbe	1,01E-3	5,27E-7	0E0	6,76E-8	2,86E-4	8,65E-9	6,39E-5
Abiotic depletion of fossil resources	MJ	2,37E1	7,1E-1	0E0	3,77E-2	9,42E-1	1,89E-2	-5,47E0
Water use	m3e depr.	1,01E0	1,85E-3	0E0	1,21E-4	9,23E-2	8,47E-4	-7,59E-2
Use of secondary materials	kg	7,8E-2	0E0	0E0	0E0	0E0	0E0	-5,98E-2
Biogenic carbon content in product	kg C	18.83	N/A	N/A	N/A	N/A	N/A	N/A
Biogenic carbon content in packaging	kg C	2.36	N/A	N/A	N/A	N/A	N/A	N/A

**ELZONE-92A - Key Information Table**

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Climate change – total	kg CO2e	3,77E0	5,21E-2	0E0	2,5E-3	8,38E-1	9,7E-4	-2,36E0
Abiotic depletion, minerals & metals	kg Sbe	2,3E-3	5,3E-7	0E0	6,76E-8	1,46E-3	1,03E-8	3,47E-4
Abiotic depletion of fossil resources	MJ	4,86E1	7,14E-1	0E0	3,77E-2	3,69E0	2,26E-2	-2,57E1
Water use	m3e depr.	1,38E0	1,86E-3	0E0	1,21E-4	3,41E-1	1,01E-3	-3,38E-1
Use of secondary materials	kg	3,61E-1	0E0	0E0	0E0	0E0	0E0	-2,93E-1
Biogenic carbon content in product	kg C	8.89	N/A	N/A	N/A	N/A	N/A	N/A
Biogenic carbon content in packaging	kg C	2.28	N/A	N/A	N/A	N/A	N/A	N/A

## SCENARIO DOCUMENTATION

### Manufacturing energy scenario documentation

Scenario parameter	Value
Electricity data source and quality	Market for electricity, high voltage (Reference product: electricity, high voltage ) Estonia, Ecoinvent 3,6, year: 2020
Electricity CO2e / kWh	0.84 kg CO2/kWh
Heating data source and quality (firewood)	Heat production, mixed logs, at wood heater 6kw, state-of-the-art 2014 (Reference product: heat, central or small-scale, other than natural gas ) Global, Ecoinvent 3,6, year: 2020
Heating (firewood) CO2e / kWh	0.0184 kg CO2/MJ
Heating data source and quality (gas)	Heat production, natural gas, at industrial furnace >100kw (Reference product: heat, district or industrial, natural gas) Europe, Ecoinvent 3,6, year: 2020
Heating (gas) CO2e / kWh	0.0687 kg CO2/kWh

### Transport scenario documentation (A4)

Scenario parameter	Value
A4 specific transport CO2e emissions, kg CO2e / tkm, lorry	0.090
A4 specific transport CO2e emissions, kg CO2e / tkm, ferry	0.011
A4 average transport distance, lorry, km	175
A4 average transport distance, ferry, km	285
A4 Capacity utilization (including empty return) %	75
A4 Bulk density of transported products, kg/m <sup>2</sup>	44 – 63
A4 Volume capacity utilization factor	1



End of life scenario documentation

Scenario parameter	PORTA-120	PORTA-92	PORTA-R	WAL-LEND-R, Elzone	ELZONE-92A
Collection process – kg collected separately	45.46	43.37	49.11	57.10	51.32
Collection process – kg collected with mixed waste	0.00	0.00	0.00	0.00	0.00
Recovery process – kg for re-use	0.00	0.00	0.00	0.00	0.00
Recovery process – kg for recycling	12.97	10.29	6.75	11.88	26.40
Recovery process – kg for energy recovery	29.62	30.41	39.06	40.86	20.23
Disposal (total) – kg for final deposition	2.88	2.67	3.29	4.36	4.68

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## ABOUT THE MANUFACTURER

All our products are manufactured according to the customer's individual requirements. As a result, our products fit perfectly in the designated interior space and comply with all requirements of the building. Structo's products are practical, of high quality and stylish.

Not only do we manufacture products that look good, we also make them practical, long lasting and easy to handle. It is our greatest aim to provide all present and future customers with the satisfaction that can be guaranteed by our extensive experience and professional expertise.

Structo's products are characterised by innovative ideas and immaculate workmanship. Our constant product development makes sure you will get the best solutions for even your most complicated requirements.

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<b>EPD program</b>	The Building Information Foundation RTS sr
<b>Background data</b>	This EPD is based on Ecoinvent 3.6 and One Click LCA databases.
<b>LCA software</b>	One Click LCA



Structo Group OÜ

## ANNEX 1 : ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

### PORTA-120 - Annex 1: Environmental Impacts – EN 15804+A1, CML / ISO 21930

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Global warming potential	kg CO2e	1.24E2	2.19E0	0E0	1.13E-1	2.28E1	2.98E-2	-5.2E1
Depletion of stratospheric ozone	kg CFC11e	8.3E-6	3.71E-7	0E0	2.05E-8	6.4E-7	7.5E-9	-2.32E-6
Acidification	kg SO2e	6.51E-1	3.97E-2	0E0	2.28E-4	2.34E-1	2.06E-3	-2.56E-1
Eutrophication	kg PO4 3e	2.2E-1	4.6E-3	0E0	4.68E-5	2.28E-2	4.2E-5	-9.41E-2
Photochemical ozone formation	kg C2H4e	3.81E-2	1.08E-3	0E0	1.5E-5	6.56E-3	7.77E-6	-1.72E-2
Abiotic depletion of non-fossil res.	kg Sbe	8.88E-2	2.24E-5	0E0	3.07E-6	3.31E-2	3.26E-7	7.83E-3
Abiotic depletion of fossil resources	MJ	1.59E3	3.02E1	0E0	1.71E0	9.02E1	7.13E-1	-5.9E2

### PORTA-92 - Annex 1: Environmental Impacts – EN 15804+A1, CML / ISO 21930

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Global warming potential	kg CO2e	1.01E2	2.1E0	0E0	1.08E-1	2.1E1	2.76E-2	-3.69E1
Depletion of stratospheric ozone	kg CFC11e	7.12E-6	3.56E-7	0E0	1.96E-8	4.87E-7	6.96E-9	-1.65E-6
Acidification	kg SO2e	5.19E-1	3.81E-2	0E0	2.17E-4	2.13E-1	1.91E-3	-1.82E-1
Eutrophication	kg PO4 3e	1.79E-1	4.42E-3	0E0	4.47E-5	1.87E-2	3.89E-5	-6.68E-2
Photochemical ozone formation	kg C2H4e	3.1E-2	1.03E-3	0E0	1.43E-5	5.89E-3	7.2E-6	-1.23E-2
Abiotic depletion of non-fossil res.	kg Sbe	7.45E-2	2.15E-5	0E0	2.93E-6	2.31E-2	3.02E-7	5.43E-3
Abiotic depletion of fossil resources	MJ	1.32E3	2.9E1	0E0	1.64E0	6.64E1	6.61E-1	-4.18E2

**PORTA-R - Annex 1: Environmental Impacts - EN 15804+A1, CML / ISO 21930**

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Global warming potential	kg CO2e	5.8E1	2.36E0	0E0	1.22E-1	2.08E1	3.4E-2	-6.17E0
Depletion of stratospheric ozone	kg CFC11e	5.6E-6	4E-7	0E0	2.22E-8	1.97E-7	8.57E-9	-2.67E-7
Acidification	kg SO2e	2.88E-1	4.28E-2	0E0	2.46E-4	2.63E-1	2.35E-3	-3.16E-2
Eutrophication	kg PO4 3e	1.02E-1	4.96E-3	0E0	5.06E-5	1.24E-2	4.8E-5	-1.06E-2
Photochemical ozone formation	kg C2H4e	1.89E-2	1.16E-3	0E0	1.62E-5	7.06E-3	8.87E-6	-2.2E-3
Abiotic depletion of non-fossil res.	kg Sbe	4.43E-2	2.42E-5	0E0	3.32E-6	2.29E-3	3.73E-7	3.35E-4
Abiotic depletion of fossil resources	MJ	8.55E2	3.25E1	0E0	1.85E0	1.91E1	8.15E-1	-6.73E1

**WALLEND-R/Elzone: Environmental Impacts - EN 15804+A1, CML / ISO 21930**

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Global warming potential	kg CO2e	9.66E1	2.94E0	0E0	1.42E-1	2.49E1	4.51E-2	-2.75E1
Depletion of stratospheric ozone	kg CFC11e	8.33E-6	4.99E-7	0E0	2.58E-8	4.25E-7	1.14E-8	-1.24E-6
Acidification	kg SO2e	4.96E-1	5.33E-2	0E0	2.86E-4	3.7E-1	3.12E-3	-1.38E-1
Eutrophication	kg PO4 3e	1.58E-1	6.18E-3	0E0	5.88E-5	1.89E-2	6.36E-5	-4.93E-2
Photochemical ozone formation	kg C2H4e	3.44E-2	1.45E-3	0E0	1.88E-5	1E-2	1.18E-5	-8.83E-3
Abiotic depletion of non-fossil res.	kg Sbe	5.75E-2	3.01E-5	0E0	3.86E-6	1.63E-2	4.94E-7	3.65E-3
Abiotic depletion of fossil resources	MJ	1.36E3	4.06E1	0E0	2.15E0	5.38E1	1.08E0	-3.12E2

**ELZONE-92A: Environmental Impacts – EN 15804+A1, CML / ISO 21930**

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Global warming potential	kg CO2e	2.07E2	2.65E0	0E0	1.27E-1	2.73E1	4.84E-2	-1.16E2
Depletion of stratospheric ozone	kg CFC11e	1.25E-5	4.5E-7	0E0	2.32E-8	1.27E-6	1.22E-8	-5.2E-6
Acidification	kg SO2e	1.14E0	4.82E-2	0E0	2.57E-4	4.36E-1	3.35E-3	-5.71E-1
Eutrophication	kg PO4 3e	3.57E-1	5.58E-3	0E0	5.29E-5	3.8E-2	6.83E-5	-2.1E-1
Photochemical ozone formation	kg C2H4e	6.7E-2	1.31E-3	0E0	1.69E-5	1.23E-2	1.26E-5	-3.75E-2
Abiotic depletion of non-fossil res.	kg Sbe	1.18E-1	2.72E-5	0E0	3.47E-6	7.51E-2	5.3E-7	1.78E-2
Abiotic depletion of fossil resources	MJ	2.49E3	3.66E1	0E0	1.93E0	1.89E2	1.16E0	-1.32E3

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