

The allocation is made in accordance with the provisions of EN 15804. Incoming energy and water and waste production in-house is allocated equally among all products through mass allocation. Effects of primary production of recycled materials is allocated to the main product in which the material was used. The recycling process and transportation of the material is allocated to this analysis.

Data quality:

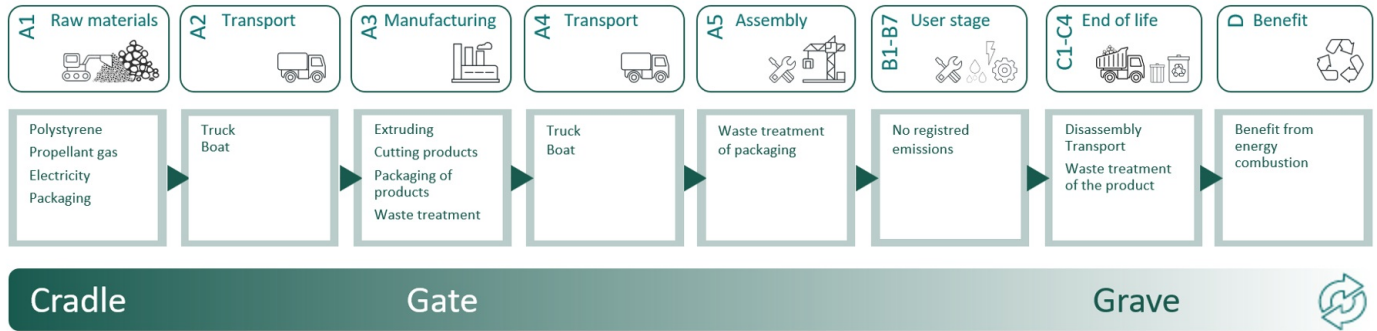
Specific data for the product composition are provided by the manufacturer. The data represent the production of the declared product and were collected for EPD development in the year of study. Background data is based on EPDs according to EN 15804 and different LCA databases. The data quality of the raw materials in A1 is presented in the table below.

Materials	Source	Data quality	Year
Chemical	ecoinvent 3.6	Database	2019
Packaging - Plastic	ecoinvent 3.6	Database	2019
Expansion gas	ecoinvent 3.6	Database	2020
Packaging - EPS	Plastics Europe + ecoinvent 3.6	European average.	2019
Plastic - Polystyrene expandable (EPS)	Plastics Europe + ecoinvent 3.6	European average.	2019

System boundaries (X=included, MND=module not declared, MNR=module not relevant)

Product stage			Construction installation stage		Use stage								End of life stage				Beyond the system boundaries
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential	
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	
X	X	X	X	X	MND	MND	MND	MND	MND	MND	MND	X	X	X	X	X	

System boundary:



Kvalitet	34 mm	50 mm	70 mm	100 mm	150 mm	Kubikk m3
250	1,00	1,47	2,06	2,94	4,41	29,41
200	0,96	1,42	1,98	2,83	4,25	28,35
300	1,09	1,61	2,25	3,21	4,82	32,12
400	1,28	1,88	2,63	3,75	5,63	37,52

Additional technical information:

LCA: Results

The LCA results are presented below for the declared unit defined on page 2 of the EPD document.

Environmental impact												
Indicator	Unit	A1	A2	A3	A4	A5	C1	C2	C3	C4	D	
GWP-total	kg CO ₂ -eq	2,23E+00	1,17E-01	2,02E-01	4,92E-02	2,71E-03	0,00E+00	1,75E-03	3,09E+00	1,51E-04	-1,76E-01	
GWP-fossil	kg CO ₂ -eq	2,22E+00	1,17E-01	1,91E-01	4,92E-02	2,71E-03	0,00E+00	1,75E-03	3,09E+00	1,51E-04	-1,70E-01	
GWP-biogenic	kg CO ₂ -eq	8,99E-03	4,99E-05	3,95E-03	2,03E-05	3,74E-07	0,00E+00	7,49E-07	2,13E-05	7,98E-08	-1,02E-04	
GWP-luluc	kg CO ₂ -eq	5,77E-04	3,56E-05	7,15E-03	1,75E-05	2,08E-07	0,00E+00	5,32E-07	3,37E-06	2,31E-08	-6,14E-03	
ODP	kg CFC11-eq	1,95E-08	2,81E-08	5,42E-08	1,11E-08	1,63E-10	0,00E+00	4,21E-10	2,22E-09	1,60E-11	-1,31E-02	
AP	mol H ⁺ -eq	4,22E-03	3,84E-04	7,27E-04	1,41E-04	3,34E-06	0,00E+00	5,63E-06	3,67E-04	5,30E-07	-1,40E-03	
EP-FreshWater	kg P -eq	1,30E-05	9,27E-07	7,50E-06	3,93E-07	5,57E-09	0,00E+00	1,39E-08	2,19E-07	2,03E-09	-1,52E-05	
EP-Marine	kg N -eq	1,08E-03	8,44E-05	1,28E-04	2,80E-05	3,05E-06	0,00E+00	1,23E-06	1,77E-04	1,65E-07	-4,75E-04	
EP-Terrestrial	mol N -eq	1,17E-02	9,41E-04	1,64E-03	3,13E-04	1,20E-05	0,00E+00	1,37E-05	1,89E-03	1,88E-06	-5,12E-03	
POCP	kg NMVOC-eq	5,12E-03	3,66E-04	5,67E-03	1,20E-04	3,94E-06	0,00E+00	5,40E-06	4,53E-04	5,20E-07	-1,41E-03	
ADP-minerals&metals ¹	kg Sb -eq	2,88E-06	2,07E-06	4,43E-06	1,36E-06	1,44E-08	0,00E+00	3,11E-08	9,54E-08	8,43E-10	-1,06E-06	
ADP-fossil ¹	MJ	7,52E+01	1,89E+00	1,29E+01	7,43E-01	1,12E-02	0,00E+00	2,84E-02	1,89E-01	1,37E-03	-2,43E+00	
WDP ¹	m ³	7,35E+00	1,45E+00	1,31E+03	7,19E-01	3,95E-02	0,00E+00	2,18E-02	4,20E-01	1,42E-02	-8,83E+00	

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 = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption

"Reading example: 9,0 E-03 = 9,0*10⁻³ = 0,009"

*INA Indicator Not Assessed

1. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator

Remarks to environmental impacts

Additional environmental impact indicators												
Indicator	Unit	A1	A2	A3	A4	A5	C1	C2	C3	C4	D	
PM	Disease incidence	3,18E-08	1,07E-08	5,26E-09	3,01E-09	6,00E-11	0,00E+00	1,61E-10	1,55E-09	7,00E-12	-8,90E-08	
IRP ²	kgBq U235 -eq	4,96E-02	8,27E-03	4,42E-01	3,25E-03	5,05E-05	0,00E+00	1,24E-04	3,17E-04	6,50E-06	-1,40E-02	
ETP-fw ¹	CTUe	3,44E+02	1,38E+00	6,87E+00	5,51E-01	1,07E-02	0,00E+00	2,08E-02	4,57E-01	2,52E-03	-1,33E+01	
HTP-c ¹	CTUh	8,70E-10	0,00E+00	1,99E-10	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,30E-10	0,00E+00	-2,28E-10	
HTP-nc ¹	CTUh	3,78E-08	1,34E-09	4,85E-09	6,02E-10	1,00E-11	0,00E+00	2,00E-11	5,13E-09	5,00E-12	-1,27E-08	
SQP ¹	dimensionless	2,55E+00	2,17E+00	5,72E+00	5,20E-01	1,95E-02	0,00E+00	3,25E-02	2,25E-02	3,78E-03	-1,71E+01	

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 = Potential Soil Quality Index (dimensionless)

"Reading example: 9,0 E-03 = $9,0 \cdot 10^{-3} = 0,009$ "

*INA Indicator Not Assessed




1. The results of this environmental impact 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.

Resource use												
Indicator	Unit	A1	A2	A3	A4	A5	C1	C2	C3	C4	D	
PERE	MJ	5,50E-01	2,38E-02	6,20E+00	1,06E-02	2,82E-04	0,00E+00	3,57E-04	5,45E-03	7,98E-05	-1,41E+01	
PERM	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	0,00E+00	0,00E+00	
PERT	MJ	5,50E-01	2,38E-02	6,20E+00	1,06E-02	2,82E-04	0,00E+00	3,57E-04	5,45E-03	7,98E-05	-1,41E+01	
PENRE	MJ	4,96E+01	1,89E+00	1,30E+01	7,43E-01	1,12E-02	0,00E+00	2,84E-02	1,89E-01	1,37E-03	-2,43E+00	
PENRM	MJ	3,04E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
PENRT	MJ	8,00E+01	1,89E+00	1,30E+01	7,43E-01	1,12E-02	0,00E+00	2,84E-02	1,89E-01	1,37E-03	-2,43E+00	
SM	kg	8,26E-04	0,00E+00	1,58E-04	0,00E+00	4,15E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
RSF	MJ	1,15E-02	8,32E-04	2,41E-02	3,81E-04	7,40E-06	0,00E+00	1,25E-05	1,52E-04	1,98E-06	-1,43E-03	
NRSF	MJ	1,17E-03	2,79E-03	7,61E-02	1,36E-03	1,94E-05	0,00E+00	4,19E-05	0,00E+00	3,16E-04	-9,36E-01	
FW	m ³	6,14E-02	2,15E-04	1,53E-02	7,95E-05	5,91E-06	0,00E+00	3,23E-06	5,35E-04	1,26E-06	-6,25E-03	

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 materials; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Net use of fresh water

*Reading example: 9,0 E-03 = 9,0*10⁻³ = 0,009"






*INA Indicator Not Assessed

End of life - Waste												
Indicator	Unit	A1	A2	A3	A4	A5	C1	C2	C3	C4	D	
	HWD	kg	3,09E-03	1,04E-04	3,79E-03	3,83E-05	3,43E-06	0,00E+00	1,55E-06	0,00E+00	2,50E-03	-3,54E-05
	NHWD	kg	5,35E-02	1,64E-01	4,60E-02	3,61E-02	2,08E-02	0,00E+00	2,47E-03	0,00E+00	1,24E-03	-5,04E-02
	RWD	kg	5,33E-06	1,29E-05	1,95E-04	5,06E-06	5,84E-08	0,00E+00	1,94E-07	0,00E+00	8,26E-09	-1,22E-05

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed

*Reading example: 9,0 E-03 = $9,0 \cdot 10^{-3} = 0,009$

*INA Indicator Not Assessed

End of life - Output flow												
Indicator	Unit	A1	A2	A3	A4	A5	C1	C2	C3	C4	D	
	CRU	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	0,00E+00	0,00E+00
	MFR	kg	3,85E-04	0,00E+00	1,02E-02	0,00E+00	1,75E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
	MER	kg	1,12E-04	0,00E+00	1,11E-07	0,00E+00	4,41E-07	0,00E+00	0,00E+00	9,69E-01	0,00E+00	0,00E+00
	EEE	MJ	7,24E-04	0,00E+00	1,17E-02	0,00E+00	1,68E-04	0,00E+00	0,00E+00	1,71E+00	0,00E+00	0,00E+00
	EET	MJ	1,10E-02	0,00E+00	1,77E-01	0,00E+00	2,54E-03	0,00E+00	0,00E+00	2,58E+01	0,00E+00	0,00E+00

CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported energy electrical; EET = Exported energy thermal

*Reading example: 9,0 E-03 = $9,0 \cdot 10^{-3} = 0,009$

*INA Indicator Not Assessed

Biogenic Carbon Content		
Indicator	Unit	At the factory gate
Biogenic carbon content in product	kg C	0,00E+00
Biogenic carbon content in accompanying packaging	kg C	0,00E+00

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO₂

Additional requirements

Greenhouse gas emissions from the use of electricity in the manufacturing phase

National production mix from import, low voltage (production of transmission lines, in addition to direct emissions and losses in grid) of applied electricity for the manufacturing process (A3).

Electricity mix	Data source	Amount	Unit
Electricity, Sweden (kWh)	ecoinvent 3.6	54,94	g CO ₂ -eq/kWh

Dangerous substances

The product contains no substances given by the REACH Candidate list or the Norwegian priority list.

Indoor environment

Additional Environmental Information

Additional environmental impact indicators required in NPCR Part A for construction products											
Indicator	Unit	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
GWPIOBC	kg CO ₂ -eq	1,40E-01	1,17E-01	1,20E-01	4,92E-02	0,00E+00	0,00E+00	1,75E-03	3,09E+00	1,56E-04	-1,73E-01

GWPI-IOBC: Global warming potential calculated according to the principle of instantaneous oxidation. In order to increase the transparency of biogenic carbon contribution to climate impact, the indicator GWP-IOBC is required as it declares climate impacts calculated according to the principle of instantaneous oxidation. GWP-IOBC is also referred to as GWP-GHG in context to Swedish public procurement legislation.

Bibliography

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