



LCA SUPPORT



ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025 / ISO 21930

WHITE AND GREY EPS INSULATION PRODUCTS

ESTPLAST TOOTMINE OÜ



GENERAL INFORMATION

MANUFACTURER INFORMATION

Manufacturer	Estplast Tootmine OÜ
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Website	www.estplast.ee

The Building Information Foundation RTS sr

EPDs within the same product category but from different programmes may not be comparable.




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RTS EPD Committee Secretary



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Managing Director

EPD INFORMATION

The EPD owner has the sole ownership, liability, and responsibility for the EPD. Construction products EPDs may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

EPD program operator	The Building Information Foundation RTS sr
EPD standards	This EPD is in accordance with EN 15804+A2 and ISO 14025 standards.
Product category rules	The CEN standard EN 15804 serves as the core PCR. In addition, the RTS PCR (English version, 26.8.2020) and EN 16783 is used.
EPD author	Mari Kirss and Anni Oviir Rangi Maja OÜ www.lcasupport.com
EPD verification	Independent verification of this EPD and data, according to ISO 14025:2010: <input type="checkbox"/> Internal certification <input checked="" type="checkbox"/> External verification
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PRODUCT INFORMATION

Product name	White EPS insulation products: EPS 60 EPS 80 EPS 100 EPS 120 Perimeeter Pluss EPS 150 Perimeeter Pluss EPS 200 Perimeeter Pluss Grey EPS insulation products: EPS 60 Silver EPS 100 Silver
Place(s) of production	Estonia

PRODUCT DESCRIPTION AND APPLICATION

White EPS insulation products:

- EPS 60 is suitable for use as thermal insulation for walls and ceilings, as well as in various supplementary thermal insulation applications.
- EPS 80 is suitable for use as thermal insulation for floors, walls, and ceiling, as well as in various supplementary thermal insulation applications.
- EPS 100 is suitable for use as thermal insulation for floors, walls, and ceiling, as well as in various supplementary thermal insulation applications.

- EPS 120 Perimeeter Pluss panels are intended specifically for insulation of exterior vertical and horizontal sides of foundation. The panels can be installed directly into the ground and do not require any additional hydro-isolation. The panels have a tongue and groove profile on all sides.
- EPS 150 Perimeeter Pluss panels are intended for foundation and flat roofs. The panels can be installed directly into the ground and do not require any additional hydro-isolation. The panels have a tongue and groove profile on all sides.
- EPS 200 Perimeeter Pluss panels are intended specifically for insulation of foundations, cellar walls, terraces, parking lots, yards, footpaths and technical constructions. The panels can be installed directly into the ground and do not require any additional hydro-isolation. The panels have a tongue and groove profile on all sides.

Grey EPS insulation products:

- EPS 60 Silver contains graphite, and its declared thermal conductivity λ_D is 0.032W/mK, which is significantly lower than that of the traditional white EPS. Material is suitable for use as thermal insulation for walls and ceilings, as well as in various supplementary thermal insulation applications.
- EPS 100 Silver contains graphite, and its declared thermal conductivity λ_D is 0.031W/mK, which is significantly lower than that of the traditional white EPS. Material is suitable for use as thermal insulation for floors, walls, and ceiling, as well as in various supplementary thermal insulation applications.

PRODUCT STANDARDS

EN 13163:2012+A2:2016

PHYSICAL PROPERTIES AND ADDITIONAL TECHNICAL INFORMATION

	EPS 60	EPS 60 Silver	EPS 80	EPS 100	EPS 100 Silver	EPS 120 Perimeter Pluss	EPS 150 Perimeter Pluss	EPS 200 Perimeter Pluss
Product	White EPS	Grey EPS	White EPS	White EPS	Grey EPS	White EPS	White EPS	White EPS
Thickness value for R=1 (mm)	40.0	32.3	38.5	37.0	31.3	35.7	34.5	33.3
Density (kg/m³)	13.5	13.5	15-16 (average 15.5)	18-19 (average 18.5)	18-19 (average 18.5)	20	25	30

R-values								
Thickness (mm)	EPS 60	EPS 60 Silver	EPS 80	EPS 100	EPS 100 Silver	EPS 120 Perimeter Pluss	EPS 150 Perimeter Pluss	EPS 200 Perimeter Pluss
25	0.60	-	0.65	0.65	0.80	-	-	-
50	1.25	1.55	1.30	1.35	1.60	1.40	1.45	1.50
75	-	-	-	-	-	-	2.20	2.25
100	2.50	3.10	2.60	2.70	3.20	2.85	2.90	3.00
150	-	4.65	-	-	-	4.25	4.40	4.50
200	-	6.25	-	-	-	5.70	-	-
250	-	7.80	-	-	-	-	-	-

Further information can be found on estplast.ee

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	White EPS	Grey EPS
Polystyrene	100%, Europe	-
Polystyrene with graphite (partially from recycled polystyrene)	-	100%, Europe

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

Biogenic carbon content	kg C per declared unit
Biogenic carbon content in product	0
Biogenic carbon content in packaging	0

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

SUBSTANCES, REACH - VERY HIGH CONCERN

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

ABOUT THE MANUFACTURER

Estplast Tootmine OÜ is a company specializing in the production and distribution of polystyrene foam insulation boards since 2004. Since November 2018, the new owner of Estplast Tootmine OÜ is the Finnish concern Finnfoam OY. Nowadays Estplast Tootmine OÜ as a part of Finnfoam Group become one of the leading manufacturers of plastic-based thermal insulation solutions in Estonia.

It has always been Finnfoam's goal to provide cost-effective thermal insulation solutions to its customers. One of the key objectives in the development of our products has been prolonging their life cycle. Our innovative inventions have led to several patents and successful products, which also enable us to grow our operation internationally. It is our strong desire to contribute to the development of better construction practices and the improvement of public health.

PRODUCT LIFE-CYCLE AND LIFE-CYCLE ASSESSMENT

Period for data	2022
Declared unit	1 m ² of EPS with an R-value of 1
Mass per declared unit	White EPS insulation products – 0.69 kg Grey EPS insulation products – 0.44 kg
Thickness per declared unit	White EPS insulation products – 37 mm Grey EPS insulation products – 31.3 mm

As the densities of the included products vary, the declared unit has been based on most sold configurations (EPS 100 and EPS60 Silver). The annexes include conversions to R=1 values for other products and main results for other units.

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.

The data sources for the study is Ecoinvent 3.8 (2021). The LCA tools used in the study is One Click LCA and Open LCA.

SYSTEM BOUNDARY

The scope of the EPD is cradle to gate, modules C1–C4 and module D.

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	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.

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 is 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 the needs of other clients.

Fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. All fuel and energy use was allocated based on production volume. The electricity used in the plant is grid energy and this has been modelled based on Estonian residual mix for 2020-2021. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission. Co-product allocation has not been used.

The Products are packaged using plastic film. The mass of the packaging is 0.01 kg per declared unit (0.176 kg per m³).

The Products or the packaging does not contain biogenic carbon.

The recycled material content for grey EPS is 30%.

Scenario parameter	Value
Electricity data source and quality	Modelled electricity based on Estonian residual mix for 2020-2021
Electricity CO _{2e} / kWh	0.6

TRANSPORT AND INSTALLATION (A4-A5)

A4 and A5 have not been declared.

PRODUCT USE AND MAINTENANCE (B1-B7)

This EPD does not cover the use phase.

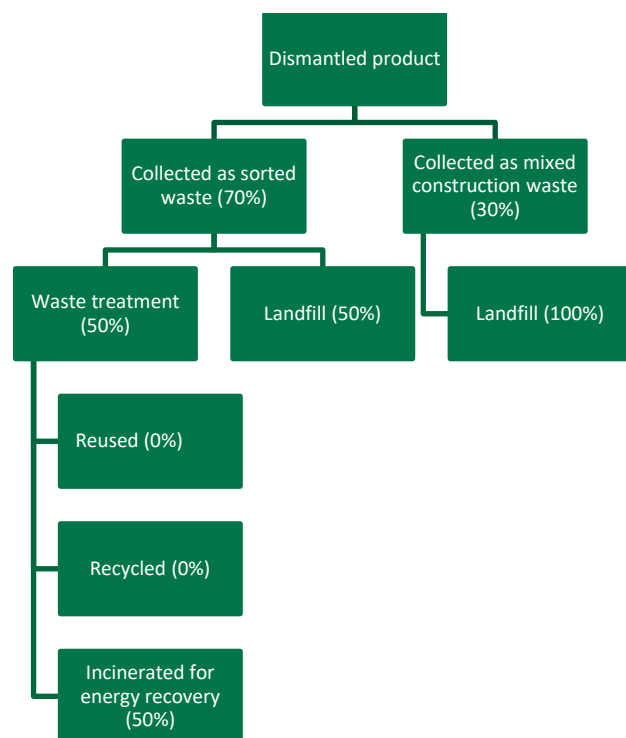
Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

The EOL scenario is applicable to Europe.

The EOL mass of the Products is slightly less than the mass at the gate. This is due to the fact that some of the blowing agent, pentane gets trapped in the Products and is released during the use stage (about 1.57% of the total mass).

It was assumed that 70% of the EOL product is collected as sorted EPS waste and sent to recycling facilities. It was assumed that demolition requires no energy. The remaining 30% is collected as mixed construction waste and sent to landfill.



The total distance to recycling facilities and landfill was assumed as 250 km, which is travelled by lorry.

It was assumed that out of the 70% that was sent for recycling, 50% is incinerated for energy recovery and 50% is sent to landfill without being recycled.

This means that 35% of the total Product is incinerated for energy recovery and 65% is sent to landfill.

Any material that left the product system in C3 has been considered in module D.

The heat and electricity produced as benefit when waste Product is incinerated in module C3 is considered. The efficiency rate for incineration is 73% (62% used to produce electricity and 11% to produce heat).

Only net benefits have been taken into account.

Waste packaging from A5 has not been considered.

Scenario parameter	White EPS insulation products	Grey EPS insulation products
Collection process – kg collected separately	0.47	0.30
Collection process – kg collected with mixed waste	0.20	0.13
Recovery process – kg for re-use	0.0	0.00
Recovery process – kg for recycling	0.00	0.00
Recovery process – kg for energy recovery	0.24	0.15
Disposal (total) – kg for final deposition	0.44	0.28
Total	0.67	0.43
Scenario assumptions e.g. transportation	Dismantled product is transported 250 km by lorry	

WHITE EPS INSULATION PRODUCTS

ENVIRONMENTAL IMPACTS – CORE INDICATORS, EN 15804+A2, PEF

Impact category	Unit	A1-A2	A3	A1-A3	C1	C2	C3	C4	D
Global warming potential – total	kg CO ₂ e	2.62E+0	1.74E-01	2.79E+0	0.00E+00	2.91E-02	7.39E-01	1.37E+00	-2.11E-01
Global warming potential – fossil	kg CO ₂ e	2.62E+0	1.74E-01	2.79E+0	0.00E+00	2.91E-02	7.39E-01	1.37E+00	-2.11E-01
Global warming potential – biogenic	kg CO ₂ e	0.00E+0	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Global warming potential – LULUC	kg CO ₂ e	3.15E-4	1.12E-04	4.27E-4	0.00E+00	1.11E-05	2.56E-06	1.38E-05	-9.24E-05
Ozone depletion pot.	kg CFC-11e	3.91E-8	2.75E-08	6.66E-8	0.00E+00	6.51E-09	6.04E-10	1.38E-09	-8.85E-08
Acidification potential	mol H ⁺ e	8.91E-3	9.98E-04	9.91E-3	0.00E+00	1.15E-04	9.29E-05	1.81E-04	-1.45E-03
Eutrophication potential - freshwater	kg Pe	4.52E-5	5.36E-06	5.06E-5	0.00E+00	2.06E-07	8.60E-08	1.77E-07	-1.46E-06
Eutrophication potential - marine	kg Ne	1.51E-3	1.41E-04	1.65E-3	0.00E+00	3.43E-05	4.41E-05	8.63E-05	-2.94E-04
Eutrophication potential - terrestrial	mol Ne	1.58E-2	1.52E-03	1.73E-2	0.00E+00	3.77E-04	4.65E-04	9.06E-04	-3.21E-03
Photochemical ozone formation (“smog”)	kg NMVOCe	8.22E-3	5.50E-04	8.77E-3	0.00E+00	1.16E-04	1.14E-04	2.20E-04	-1.13E-03
Abiotic depletion potential - minerals & metals	kg Sbe	5.14E-7	3.65E-07	8.79E-7	0.00E+00	1.01E-07	2.56E-08	5.18E-08	-4.14E-07
Abiotic depletion potential - fossil resources	MJ	5.69E+1	6.93E+00	6.38E+1	0.00E+00	4.23E-01	6.74E-02	1.47E-01	-1.47E+01
Water use	m ³ e depr.	1.93E+0	3.48E-02	1.96E+0	0.00E+00	1.88E-03	1.67E-02	3.15E-02	-6.05E-02

USE OF NATURAL RESOURCES

Impact category	Unit	A1-A2	A3	A1-A3	C1	C2	C3	C4	D
Renew. PER as energy	MJ	3.08E-1	8.20E-02	3.90E-1	0.00E+00	6.00E-03	1.67E-03	3.54E-03	-2.74E-02
Renew. PER as material	MJ	0.00E+0	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of renew. PER	MJ	3.08E-1	8.20E-02	3.90E-1	0.00E+00	6.00E-03	1.67E-03	3.54E-03	-2.74E-02
Non-re. PER as energy	MJ	3.04E+1	2.87E+00	3.33E+1	0.00E+00	4.23E-01	9.34E+00	1.47E-01	-1.47E+01
Non-re. PER as material	MJ	2.65E+1	4.41E+00	3.09E+1	0.00E+00	0.00E+00	-9.27E+00	-1.72E+01	0.00E+00
Total use of non-re. PER	MJ	5.69E+1	7.28E+00	6.42E+1	0.00E+00	4.23E-01	6.74E-02	-1.71E+01	-1.47E+01
Secondary materials	kg	4.25E-4	3.80E-04	8.05E-4	0.00E+00	1.42E-04	8.60E-05	1.68E-04	-1.28E-03
Renew. secondary fuels	MJ	3.84E-6	2.10E-04	2.14E-4	0.00E+00	1.56E-06	6.74E-07	1.34E-06	-1.23E-06
Non-ren. secondary fuels	MJ	0.00E+0	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m ³	4.45E-2	2.47E-03	4.70E-2	0.00E+00	5.31E-05	1.88E-04	3.54E-04	-1.59E-03

PER = Primary energy resources

END OF LIFE – WASTE

Impact category	Unit	A1-A2	A3	A1-A3	C1	C2	C3	C4	D
Hazardous waste	kg	4.04E-2	6.40E-03	4.68E-2	0.00E+00	4.80E-04	0.00E+00	1.08E-02	-6.54E-03
Non-hazardous waste	kg	6.78E-2	2.30E-01	2.98E-1	0.00E+00	8.39E-03	2.32E-01	4.23E-01	1.73E-01
Radioactive waste	kg	5.76E-6	1.14E-05	1.71E-5	0.00E+00	2.91E-06	0.00E+00	3.19E-07	-1.96E-06

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1-A2	A3	A1-A3	C1	C2	C3	C4	D
Components for re-use	kg	0.00E+0	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	0.00E+0	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy rec	kg	0.00E+0	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy	MJ	0.00E+0	0.00E+00	0.00E+0	0.00E+00	0.00E+00	1.35E+01	0.00E+00	0.00E+00

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

Impact category	Unit	A1-A2	A3	A1-A3	C1	C2	C3	C4	D
Global Warming Potential	kg CO ₂ e	2.44E+0	1.66E-01	2.61E+0	0.00E+00	2.74E-02	7.39E-01	1.37E+00	-1.52E-01
Ozone depletion Potential	kg CFC-11e	4.93E-8	2.24E-08	7.17E-8	0.00E+00	5.14E-09	5.34E-10	1.21E-09	-7.08E-08
Acidification	kg SO ₂ e	7.54E-3	8.33E-04	8.37E-3	0.00E+00	8.91E-05	6.51E-05	1.29E-04	-1.18E-03
Eutrophication	kg PO ₄ ³ e	9.59E-4	2.33E-04	1.19E-3	0.00E+00	2.06E-05	6.04E-05	1.12E-04	-1.24E-04
POCP ("smog")	kg C ₂ H ₄ e	4.66E-4	4.50E-05	5.11E-4	0.00E+00	3.60E-06	1.14E-06	2.33E-06	-1.06E-04
ADP-elements	kg Sbe	4.59E-7	3.62E-07	8.21E-7	0.00E+00	9.94E-08	2.07E-08	4.31E-08	-4.12E-07
ADP-fossil	MJ	5.69E+1	6.93E+00	6.38E+1	0.00E+00	4.23E-01	6.74E-02	1.47E-01	-1.47E+01

KEY INFORMATION PER KG OF PRODUCT

Impact category	Unit	A1-A2	A3	A1-A3	C1	C2	C3	C4	D
GWP – total	kg CO ₂ e	3.82E+0	2.53E-01	4.07E+0	0.00E+00	4.25E-02	1.08E+00	2.00E+00	-3.08E-01
GWP – fossil	kg CO ₂ e	3.82E+0	2.53E-01	4.07E+0	0.00E+00	4.25E-02	1.08E+00	2.00E+00	-3.07E-01
GWP – biogenic	kg CO ₂ e	0.00E+0	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ADP-minerals & metals	kg Sbe	7.50E-7	5.33E-07	1.28E-6	0.00E+00	1.48E-07	3.73E-08	7.56E-08	-6.05E-07
ADP-fossil	MJ	8.30E+1	1.01E+01	9.31E+1	0.00E+00	6.18E-01	9.83E-02	2.14E-01	-2.14E+01
Water use	m ³ e depr.	2.81E+0	5.07E-02	2.86E+0	0.00E+00	2.75E-03	2.44E-02	4.60E-02	-8.82E-02
Secondary materials	kg	6.20E-4	5.54E-04	1.17E-3	0.00E+00	2.08E-04	1.25E-04	2.46E-04	-1.87E-03
Biog. C in product (A3)	kg C	N/A	0.00E+00	N/A	N/A	N/A	N/A	N/A	N/A
Biog. C in packaging (A3)	kg C	N/A	0.00E+00	N/A	N/A	N/A	N/A	N/A	N/A

GREY EPS INSULATION PRODUCTS

ENVIRONMENTAL IMPACTS – CORE INDICATORS, EN 15804+A2, PEF

Impact category	Unit	A1-A2	A3	A1-A3	C1	C2	C3	C4	D
Global warming potential – total	kg CO ₂ e	1.08E+0	1.15E-01	1.19E+0	0.00E+00	1.85E-02	4.70E-01	8.72E-01	-1.45E-02
Global warming potential – fossil	kg CO ₂ e	1.08E+0	1.15E-01	1.19E+0	0.00E+00	1.85E-02	4.70E-01	8.72E-01	-1.45E-02
Global warming potential – biogenic	kg CO ₂ e	0.00E+0	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Global warming potential – LULUC	kg CO ₂ e	1.79E-4	7.60E-05	2.55E-4	0.00E+00	7.08E-06	1.62E-06	8.78E-06	-6.68E-06
Ozone depletion pot.	kg CFC-11e	1.81E-8	1.77E-08	3.57E-8	0.00E+00	4.14E-09	3.84E-10	8.78E-10	-6.40E-09
Acidification potential	mol H ⁺ e	3.71E-3	6.56E-04	4.37E-3	0.00E+00	7.29E-05	5.91E-05	1.15E-04	-1.05E-04
Eutrophication potential - freshwater	kg Pe	1.86E-5	3.55E-06	2.21E-5	0.00E+00	1.31E-07	5.46E-08	1.12E-07	-1.05E-07
Eutrophication potential - marine	kg Ne	6.40E-4	9.39E-05	7.34E-4	0.00E+00	2.18E-05	2.81E-05	5.48E-05	-2.12E-05
Eutrophication potential - terrestrial	mol Ne	6.71E-3	1.01E-03	7.72E-3	0.00E+00	2.40E-04	2.95E-04	5.76E-04	-2.32E-04
Photochemical ozone formation (“smog”)	kg NMVOCe	3.43E-3	3.69E-04	3.80E-3	0.00E+00	7.40E-05	7.24E-05	1.40E-04	-8.19E-05
Abiotic depletion potential - minerals & metals	kg Sbe	2.81E-7	2.58E-07	5.39E-7	0.00E+00	6.42E-08	1.62E-08	3.29E-08	-2.99E-08
Abiotic depletion potential - fossil resources	MJ	2.33E+1	4.53E+00	2.78E+1	0.00E+00	2.69E-01	4.28E-02	9.32E-02	-1.06E+00
Water use	m ³ e depr.	7.84E-1	2.55E-02	8.10E-1	0.00E+00	1.20E-03	1.06E-02	2.00E-02	-4.36E-03

USE OF NATURAL RESOURCES

Impact category	Unit	A1-A2	A3	A1-A3	C1	C2	C3	C4	D
Renew. PER as energy	MJ	1.30E-1	5.76E-02	1.88E-1	0.00E+00	3.81E-03	1.06E-03	2.25E-03	-1.98E-03
Renew. PER as material	MJ	0.00E+0	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of renew. PER	MJ	1.30E-1	5.76E-02	1.88E-1	0.00E+00	3.81E-03	1.06E-03	2.25E-03	-1.98E-03
Non-re. PER as energy	MJ	7.48E+0	1.89E+00	9.37E+0	0.00E+00	2.69E-01	5.86E+00	9.32E-02	-1.06E+00
Non-re. PER as material	MJ	1.66E+1	2.87E+00	1.95E+1	0.00E+00	0.00E+00	-5.82E+00	-1.08E+01	0.00E+00
Total use of non-re. PER	MJ	2.41E+1	4.76E+00	2.89E+1	0.00E+00	2.69E-01	4.28E-02	-1.07E+01	-1.06E+00
Secondary materials	kg	1.31E-1	2.64E-04	1.31E-1	0.00E+00	9.04E-05	5.46E-05	1.07E-04	-9.25E-05
Renew. secondary fuels	MJ	2.41E-6	1.82E-04	1.85E-4	0.00E+00	9.91E-07	4.28E-07	8.50E-07	-8.81E-08
Non-ren. secondary fuels	MJ	0.00E+0	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m ³	1.81E-2	1.65E-03	1.98E-2	0.00E+00	3.38E-05	1.20E-04	2.25E-04	-1.15E-04

PER = Primary energy resources

END OF LIFE – WASTE

Impact category	Unit	A1-A2	A3	A1-A3	C1	C2	C3	C4	D
Hazardous waste	kg	1.69E-2	4.33E-03	2.12E-2	0.00E+00	3.05E-04	0.00E+00	6.86E-03	-4.73E-04
Non-hazardous waste	kg	3.50E-2	1.52E-01	1.87E-1	0.00E+00	5.33E-03	1.48E-01	2.69E-01	1.27E-02
Radioactive waste	kg	3.42E-6	7.36E-06	1.08E-5	0.00E+00	1.85E-06	0.00E+00	2.03E-07	-1.42E-07

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1-A2	A3	A1-A3	C1	C2	C3	C4	D
Components for re-use	kg	0.00E+0	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	0.00E+0	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy rec	kg	0.00E+0	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy	MJ	0.00E+0	0.00E+00	0.00E+0	0.00E+00	0.00E+00	8.49E+00	0.00E+00	0.00E+00

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

Impact category	Unit	A1-A2	A3	A1-A3	C1	C2	C3	C4	D
Global Warming Potential	kg CO ₂ e	1.00E+0	1.10E-01	1.11E+0	0.00E+00	1.74E-02	4.70E-01	8.72E-01	-1.03E-02
Ozone depletion Potential	kg CFC-11e	2.18E-8	1.43E-08	3.61E-8	0.00E+00	3.27E-09	3.40E-10	7.68E-10	-5.12E-09
Acidification	kg SO ₂ e	3.13E-3	5.48E-04	3.68E-3	0.00E+00	5.66E-05	4.13E-05	8.23E-05	-8.54E-05
Eutrophication	kg PO ₄ ³ e	4.06E-4	1.54E-04	5.60E-4	0.00E+00	1.31E-05	3.84E-05	7.13E-05	-8.89E-06
POCP ("smog")	kg C ₂ H ₄ e	1.92E-4	3.09E-05	2.23E-4	0.00E+00	2.29E-06	7.24E-07	1.48E-06	-7.65E-06
ADP-elements	kg Sbe	2.59E-7	2.56E-07	5.15E-7	0.00E+00	6.31E-08	1.31E-08	2.74E-08	-2.98E-08
ADP-fossil	MJ	2.33E+1	4.53E+00	2.78E+1	0.00E+00	2.69E-01	4.28E-02	9.32E-02	-1.06E+00

KEY INFORMATION PER KG OF PRODUCT

Impact category	Unit	A1-A2	A3	A1-A3	C1	C2	C3	C4	D
GWP – total	kg CO ₂ e	2.47E+0	2.65E-01	2.74E+0	0.00E+00	4.25E-02	1.08E+00	2.00E+00	-3.34E-02
GWP – fossil	kg CO ₂ e	2.47E+0	2.65E-01	2.74E+0	0.00E+00	4.25E-02	1.08E+00	2.00E+00	-3.34E-02
GWP – biogenic	kg CO ₂ e	0.00E+0	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ADP-minerals & metals	kg Sbe	6.45E-7	5.93E-07	1.24E-6	0.00E+00	1.48E-07	3.73E-08	7.56E-08	-6.87E-08
ADP-fossil	MJ	5.35E+1	1.04E+01	6.39E+1	0.00E+00	6.18E-01	9.83E-02	2.14E-01	-2.43E+00
Water use	m ³ e depr.	1.80E+0	5.86E-02	1.86E+0	0.00E+00	2.75E-03	2.44E-02	4.60E-02	-1.00E-02
Secondary materials	kg	3.00E-1	6.07E-04	3.01E-1	0.00E+00	2.08E-04	1.25E-04	2.46E-04	-2.12E-04
Biog. C in product (A3)	kg C	N/A	0.00E+00	N/A	N/A	N/A	N/A	N/A	N/A
Biog. C in packaging (A3)	kg C	N/A	0.00E+00	N/A	N/A	N/A	N/A	N/A	N/A

BIBLIOGRAPHY

ISO 14025:2010 Environmental labels and declarations – Type III environmental declarations. Principles and procedures.

ISO 14040:2006 Environmental management. Life cycle assessment. Principles and frameworks.

ISO 14044:2006 Environmental management. Life cycle assessment. Requirements and guidelines.

ISO 21930:2017 Sustainability in buildings and civil engineering works — Core rules for environmental product declarations of construction products and services

Ecoinvent database v3.8 (2021) and One Click LCA database.

EN 15804:2012+A2:2019 Sustainability in construction works – Environmental product declarations – Core rules for the product category of construction products.

EN 16783:2017. Thermal insulation products - Product category rules (PCR) for factory made and in-situ formed products for preparing environmental product declarations

RTS PCR in line with EN 15804+A2. Published by the Building Information Foundation RTS 26.8.2020.

Elering. Residual mix. 2022 [<https://elering.ee/en/residual-mix>]

Association of Issuing Bodies. 2020. 2021 [<https://www.aib-net.org/facts/european-residual-mix/2020>]

Association of Issuing Bodies. European Residual Mix. 2022 [<https://www.aib-net.org/facts/european-residual-mix/>]

Wind Europe. Wind energy in Europe. 2021 Statistics and the outlook for 2022-2026. February 2022 [<https://windeurope.org/intelligence-platform/product/wind-energy-in-europe-2021-statistics-and-the-outlook-for-2022-2026/>]

Elering. Electricity consumption and production. [<https://elering.ee/en/electricity-consumption-and-production>]

European Commission. Polystyrene Loop. 2022 [https://webgate.ec.europa.eu/life/publicWebsite/index.cfm?fuseaction=search.dspPage&n_proj_id=6263]

ANNEX 1 – CONVERSIONS BETWEEN DIFFERENT PRODUCTS AND UNITS

	EPS 60	EPS 60 Silver	EPS 80	EPS 100	EPS 100 Silver	EPS 120 Perimeter Plus	EPS 150 Perimeter Plus	EPS 200 Perimeter Plus
Product	White EPS	Grey EPS	White EPS	White EPS	Grey EPS	White EPS	White EPS	White EPS
Thickness value for R=1 (mm)	40.0	32.3	38.5	37.0	31.3	35.7	34.5	33.3
Density (kg/m ³)	13.5	13.5	15-16 (average 15.5)	18-19 (average 18.5)	18-19 (average 18.5)	20	25	30
R=1 volume (m ³)	0.04	0.03	0.04	0.04	0.03	0.04	0.03	0.03
R=1 mass (kg)	0.54	0.44	0.60	0.69	0.58	0.71	0.86	1.00
Conversion factor to 1 m ² (R=1)	0.79	1.00	0.87	1.00	1.33	1.04	1.26	1.46
Conversion factor to 1 kg	1.85	2.30	1.68	1.46	1.73	1.40	1.16	1.00
Conversion factor to 1 m ³	25	31	26	27	32	28	29	30

ANNEX 2 – KEY RESULTS PER 1 KG AND PER 1 M3

	EPS 60	EPS 60 Silver	EPS 80	EPS 100	EPS 100 Silver	EPS 120 Perimeeter Pluss	EPS 150 Perimeeter Pluss	EPS 200 Perimeeter Pluss
Key results per 1 m2 (R=1)								
GWP – total	2.20	1.19	2.43	2.79	1.58	2.91	3.51	4.07
GWP – fossil	2.20	1.19	2.43	2.79	1.58	2.91	3.51	4.07
GWP – biogenic	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ADP-fossil	50.30	27.85	55.53	63.82	36.97	66.54	80.30	93.15
Water use	1.54	0.81	1.71	1.96	1.08	2.04	2.47	2.86
Secondary materials	0.00	0.13	0.00	0.00	0.17	0.00	0.00	0.00
Key results per 1 kg								
GWP – total	4.07	2.74	4.07	4.07	2.74	4.07	4.07	4.07
GWP – fossil	4.07	2.74	4.07	4.07	2.74	4.07	4.07	4.07
GWP – biogenic	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ADP-fossil	93.15	63.94	93.15	93.15	63.94	93.15	93.15	93.15
Water use	2.86	1.86	2.86	2.86	1.86	2.86	2.86	2.86
Secondary materials	0.00	0.30	0.00	0.00	0.30	0.00	0.00	0.00
Key results per 1 m3								
GWP – total	55.00	36.96	63.15	75.37	50.64	81.48	101.85	122.22
GWP – fossil	54.99	36.95	63.14	75.36	50.63	81.47	101.83	122.20
GWP – biogenic	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ADP-fossil	1257.52	863.23	1443.82	1723.26	1182.95	1862.99	2328.73	2794.48
Water use	38.62	25.11	44.34	52.92	34.41	57.21	71.52	85.82
Secondary materials	0.02	4.06	0.02	0.02	5.57	0.02	0.03	0.04