



ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

FF-PIR

Manufactured by Finnfoam Oy



EPD HUB, HUB-6611

Published on 08.06.2026, last updated on 08.06.2026, valid until 07.06.2031

Life Cycle Assessment study has been performed in accordance with the requirements of EN 15804, EPD Hub PCR version 1.2 (24 March 2025) and JRC characterization factors EF 3.1.



Created with One Click LCA



GENERAL INFORMATION

MANUFACTURER

Manufacturer	Finnfoam Oy
Address	Satamakatu 5, 24100 Salo, Finland
Contact details	finnfoam@finnfoam.fi
Website	www.finnfoam.fi

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804+A2:2019 and ISO 14025
PCR	EPD Hub Core PCR Version 1.2, 24 March 2025 c-PCR: EN 16783:2017 Thermal insulation products
Sector	Construction product
Category of EPD	Third party verified EPD
Parent EPD number	-
Scope of the EPD	Cradle to gate with options, A4-A5, and modules C1-C4, D
EPD author	Elisa Lindqvist, FF-FUTURE Oy
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☒ External verification
EPD verifier	Vera Durão, as an authorised verifier acting for EPD Hub Limited

This EPD is intended for business-to-business and/or business-to-consumer communication. The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. 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.

PRODUCT

Product name	FF-PIR
Additional labels	FF-PIR AL, FF-PIR PL, FF-PIR FR, FF-PIR BI, FF-PIR ALCL, FF-PIR CL, FF-PIR GT, FF-PIR GYL, FF-PIR k900, FF-PIR k600, FF-PIR SAUNA
Product reference	1 m ² of FF-PIR AL insulation material with aluminium laminate, thickness of 100 mm corresponding to R _D -value = 4,50 m ² K/W
Places(s) of raw material origin	Europe/Asia
Place of production	Salu, Finland
Place of installation and use	Europe
Period for data	1.1.--31.12.2025
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3 (%)	N/A
A1-A3 Specific data (%)	21,3

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 m ² of FF-PIR AL insulation material with aluminium laminate, thickness of 100 mm corresponding to R _D -value = 4,50 m ² K/W
Declared unit mass (kg)	3,47
Mass of packaging (kg)	0,057
GWP-fossil, A1-A3 (kgCO ₂ e)	9,81
GWP-total, A1-A3 (kgCO ₂ e)	9,57
Secondary material, inputs (%)	0,27
Total energy use, A1-A3 (kWh)	51,9
Net freshwater use, A1-A3 (m ³)	0,1

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Over forty years long history, Finnfoam has become one of the leading manufacturers of plastic-based thermal insulation solutions. The roots of Finnfoam's thermal insulation competence are embedded into the frozen Finnish soil. Today, the group is known for quality, product development, and reliability. Finnfoam's product range includes XPS, EPS and PIR thermal insulation and the Tulppa -wet room boards. The entire Finnfoam (XPS) thermal insulation product range is suitable for use as frost insulation and for insulating floors, ceilings, and walls, as well as for various types of supplementary thermal insulation. As frost and floor insulation, Finnfoam (XPS) is highly resistant to moisture, freezing, and load. FF-EPS is best suited for use as thermal insulation for walls and ceilings, where it provides a safe and highly cost-effective solution. It can also be used on floors that are not subjected to significant loads. The applications of FF-PIR polyurethane insulation products include the thermal insulation of walls and ceilings as well as saunas. FF-PIR insulation products have a very high thermal insulation capacity, which allows for lower structural thickness.

PRODUCT DESCRIPTION

FF-PIR thermal insulation products made of polyurethane are moisture-safe and efficient insulation solutions that enable reasonable structural thicknesses while meeting fire safety requirements. The product family includes solutions for common applications such as walls, roofs and saunas. FF-PIR is available in thicknesses 20 - 240 mm with different laminates:

- Aluminium laminate (FF-PIR AL, FF-PIR SAUNA, FF-PIR k900)
- Plastic laminate (FF-PIR PL, FF-PIR k600)
- Flame retardant laminate (FF-PIR FR)
- Bitumen laminate (FF-PIR BI)
- Aluminium-paper laminate (FF-PIR ALCL)

- Paper laminate (FF-PIR CL)
- Mineral laminate (FF-PIR GT)
- Gypsum laminate (FF-PIR GYL)

Declared unit of this EPD is 1 m² of FF-PIR AL insulation material with aluminium laminate, thickness of 100 mm corresponding to R_D -value = 4,50 m²K/W. Scaling factors for different product types per 1 m² and per R_D-value are presented in Annex 1.

PRODUCT STANDARD

EN 13165:2012 Thermal insulation products for buildings. Factory made rigid polyurethane foam (PUR) products.

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 MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	1,9	Europe
Minerals	0,2	Europe
Fossil materials	92,0	Europe/Asia
Bio-based materials	5,9	Europe

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate.

Biogenic carbon content in product, kg C	0,096
Biogenic carbon content in packaging, kg C	0

DECLARED / FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 m ² of FF-PIR AL insulation material with aluminium laminate, thickness of 100 mm corresponding to R _D -value = 4,50 m ² K/W
Mass per declared unit	3,47 kg
Functional unit	-
Reference service life	-

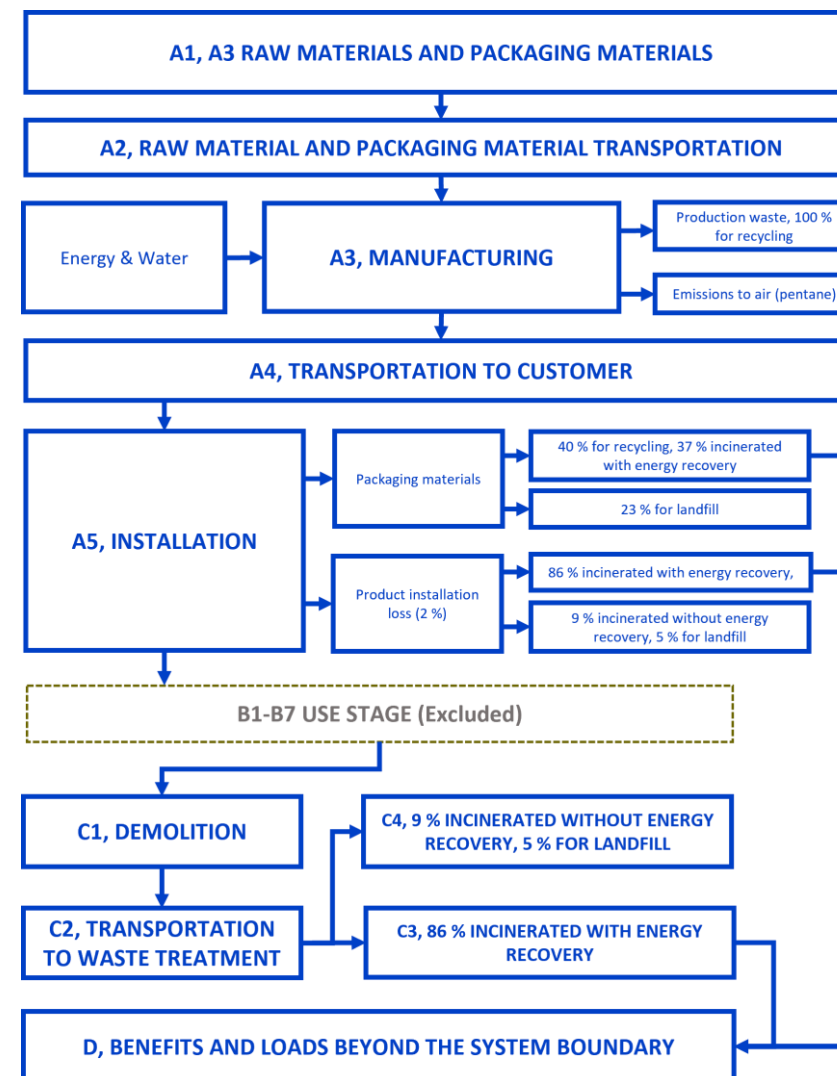
PRODUCT LIFE-CYCLE

SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table.

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D		
X	X	X	X	X	MND	MND	MND	MND	MND	MND	MND	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 product stage is subdivided into three modules: A1 (raw material supply), A2 (transportation of the raw materials) and A3 (manufacturing).

The environmental impacts considered for the product stage cover the manufacturing of materials used in production as well as packaging materials and other ancillary materials. Also, fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission.

Raw materials are transported to the manufacturing site mainly by road transport, using average transport distances based on actual procurement data. The main raw materials of FF-PIR insulation are MDI and polyol. Finnfoam has developed a unique cooperation model with their partners, in which difficult-to-recycle PET plastic process waste is processed into polyol. This former waste material, now recycled polyol, is utilized in the production as the second main raw material of FF-PIR insulation. The product also contains small amounts of flame retardants and colorants.

The raw materials are first mixed, after which the mass is evenly spread and expanded using pentane. The panel is then coated with a laminate. The finished product is trimmed, packed in low-density polyethylene (LDPE) film, and moved to storage, from where it can be shipped to customers. Most of the pentane used remains in the product. Some pentane is released into the atmosphere during the manufacturing process, and this is reported in stage A3.

Manufacturing energy used in module A3 consists of electricity. A market-based approach is applied in modelling the electricity mix used at the manufacturing site. The use of carbon-free electricity is demonstrated

through contractual instruments (e.g. guarantees of origin or equivalent), and its use is ensured throughout the validity period of this EPD.

Production off-cuts generated during the manufacturing of FF-PIR insulation boards are systematically collected and sold to our sister company Warmotech for use as raw material. As this material flow has an established market and is not treated as waste, it could be considered a co-product. Environmental impacts of the shared manufacturing processes (A1–A3), excluding packaging materials, could in principle be allocated between the main product and the co-product. However, as a conservative approach, no allocation is applied in this study.

TRANSPORT AND INSTALLATION (A4-A5)

The construction process is divided into two modules: A4 (transport to the building site) and A5 (installation in the building).

Transportation impacts that occurred from final product delivery to the construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions. The transportation distance is assumed to be 120 km, representing the distance from manufacturer to the capital of Finland. Transport is carried out by lorry (16–32 metric ton, EURO 6), and empty return trips are included. Transportation does not cause product losses, as the products are properly packaged. The volume capacity utilization factor is assumed to be 1 for nested packaged products.

Module A5 includes product installation losses, emissions from energy use during installation, and waste generation at the construction site. It is assumed that there are no significant environmental impacts (energy or water use) caused by the installation phase due to manual installation. At this

stage, installation waste processing (assumed to be 2%, as defined in EN 16783:2017) as well as packaging materials (LDPE) are considered.

It is assumed that 86% of the product installation waste (foam) is incinerated with energy recovery, 9% of the waste (laminated) is incinerated without energy recovery, and 5% of the waste (originating from both foam and laminated) is landfilled. Additionally, 40% of the packaging material is assumed to be recycled, 37% incinerated with energy recovery, and 23% is landfilled. An average transport distance of 50 km by lorry (16–32 metric ton, EURO 5) is assumed for waste transport, representing typical regional waste treatment logistics. The scenarios applied reflect current practices and are representative of one of the most likely waste treatment scenarios in Europe. Packaging and installation waste generated in module A5 is assumed to be treated according to these waste management routes. The potential benefits from recycling and energy recovery of these flows are reported in Module D, where a substitution approach is applied.

In Finland, Finnfoam Oy has established the FF-Recycling Bag system, which is used to collect plastic-based insulation off-cut waste from both construction sites and hardware stores. The collected off-cuts are transported to Finnfoam's Salo production site, from where FF-PIR off-cuts are delivered for recycling to our sister company, Warmotech, for use as raw material.

PRODUCT USE AND MAINTENANCE (B1-B7)

Use stage is subdivided into seven modules: B1 (Use), B2 (Maintenance), B3 (Repair), B4 (Replacement), B5 (Refurbishment), B6 (Operational energy use) and B7 (Operational water use). This EPD does not cover use phase as it is assumed that the product will last in situ with no requirement for maintenance, repair, replacement or refurbishment throughout its service

life. Also, the product doesn't use energy or water during its lifetime. Air, soil and water impacts during the use phase have not been studied.

END OF LIFE (C1-C4, D)

The end-of-life stage is subdivided into four modules: C1 (demolition/deconstruction), C2 (transportation), C3 (waste processing) and C4 (disposal). Stage D describes benefits and loads beyond the system boundary.

Consumption of energy and natural resources in the demolition process is assumed to be negligible (C1). Transportation distance to the nearest waste treatment plant is assumed to be 50 km and the vehicle type is assumed to be a lorry (C2). It is assumed that 86% of the product end-of-life waste (foam) is incinerated with energy recovery (C3), 9% of the waste (laminated) is incinerated without energy recovery (C4), and 5% of the waste (originating from both foam and laminated) is landfilled (C4). The end-of-waste state is reached after the waste treatment processes (incineration or disposal), at which point the material flows are no longer considered waste but are converted into energy outputs or secondary raw materials.

Module D includes the potential net benefits beyond the system boundary from material recycling and energy recovery. Only the net output of secondary material flows is accounted for in the case of recycling, while no benefits are assigned to the recycled content already present in the product. The scenarios included are currently in use and are representative of typical European end-of-life conditions. In Module D, a substitution approach is applied. Energy recovered from incineration is modelled as electricity and district heat, which are assumed to substitute conventional electricity production (medium voltage) and district heat production, respectively. Recycled materials are assumed to substitute equivalent primary (virgin) material production.

LIFE-CYCLE ASSESSMENT

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw materials 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 that is 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 production of capital equipment, construction activities, and infrastructure, maintenance and operation of capital equipment, personnel-related activities, energy and water use related to company management and sales activities are excluded.

VALIDATION OF DATA

Data collection for production, transport, and packaging was conducted using time and site-specific information, as defined in the general information section on page 1 and 2. Upstream process calculations rely on generic data as defined in the Bibliography section. Manufacturer-provided specific and generic data were used for the product's manufacturing stage. The analysis was performed in One Click LCA EPD Generator, with the 'Cut-Off, EN 15804+A2' allocation method, and characterization factors according to EN 15804:2012+A2:2019/AC:2021 and JRC EF 3.1.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. The EPD Generator uses Ecoinvent v3.10.1/3.11 and One Click LCA databases as sources of environmental data. Allocation used in Ecoinvent 3.10.1/3.11 environmental data sources follow the methodology 'allocation,

Cutoff, EN 15804+A2'. EN 16783 Thermal insulation products have been used as a c-PCR. Additionally, Eurostat data has been used when modelling end-of-life scenarios.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are made according to the reference standards and the applied PCR. In this study, allocation has been done in the following ways:

Data type	Allocation
Raw materials	No allocation
Packaging material	Allocated by mass
Ancillary materials	No allocation
Manufacturing energy and waste	Allocated by mass

PRODUCT & MANUFACTURING SITES GROUPING

Type of grouping	No grouping
Grouping method	N/A
Variation in GWP-fossil for A1-A3 (%)	N/A

Products are produced at one location with the same manufacturing process. Declared unit is 1 m² of FF-PIR AL insulation material with aluminium laminate, thickness of 100 mm corresponding to R_D-value = 4,50 m²K/W. Scaling factors for different product types per 1 m² and per R_D-value are presented in Annex 1.

ENVIRONMENTAL IMPACT DATA

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding threshold values, safety margins or risks.

Note: Environmental performance results are presented per declared unit, defined as 1 m² of FF-PIR AL insulation material with aluminium laminate, thickness of 100 mm corresponding to R_d-value = 4,50 m²K/W. GWP-values per 1 m² and R_d-values of other products in the product group are presented in Annex 1.

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total ¹⁾	kg CO ₂ e	8,62E+00	7,82E-01	1,72E-01	9,57E+00	8,19E-02	4,44E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,36E-02	8,12E+00	6,84E-01	-2,98E+00
GWP – fossil	kg CO ₂ e	8,85E+00	7,81E-01	1,76E-01	9,81E+00	8,19E-02	4,37E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,36E-02	8,04E+00	4,07E-01	-2,98E+00
GWP – biogenic	kg CO ₂ e	-3,40E-01	1,28E-04	-4,22E-03	-3,44E-01	1,62E-05	5,25E-03	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,31E-06	7,75E-02	2,78E-01	-2,81E-03
GWP – LULUC	kg CO ₂ e	1,03E-01	4,03E-04	2,31E-04	1,04E-01	2,89E-05	2,08E-03	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,19E-05	8,74E-05	8,10E-06	-4,49E-03
Ozone depletion pot.	kg CFC-11e	4,60E-08	1,24E-08	1,41E-09	5,98E-08	1,63E-09	1,43E-09	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,68E-10	7,29E-09	2,20E-10	-3,65E-08
Acidification potential	mol H ⁺ e	2,19E-02	1,70E-02	7,75E-04	3,98E-02	2,56E-04	9,60E-04	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,05E-04	6,89E-03	9,92E-04	-1,91E-02
EP-freshwater ²⁾	kg Pe	1,78E-03	3,53E-05	2,05E-05	1,84E-03	5,43E-06	3,83E-05	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,23E-06	4,02E-05	3,01E-06	-1,85E-03
EP-marine	kg Ne	5,51E-03	4,38E-03	2,72E-04	1,02E-02	8,64E-05	3,91E-04	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,54E-05	5,36E-03	2,88E-03	-2,75E-03
EP-terrestrial	mol Ne	5,62E-02	4,85E-02	1,71E-03	1,06E-01	9,39E-04	2,98E-03	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,85E-04	3,70E-02	6,34E-03	-2,71E-02
POCP (“smog”) ³⁾	kg NMVOCe	2,21E-02	1,35E-02	4,80E-03	4,04E-02	4,01E-04	1,02E-03	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,65E-04	9,05E-03	1,39E-03	-8,85E-03
ADP-minerals & metals ⁴⁾	kg Sbe	1,91E-05	1,26E-06	4,76E-07	2,08E-05	2,68E-07	4,60E-07	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,10E-07	8,97E-07	3,83E-08	-3,77E-06
ADP-fossil resources	MJ	2,08E+02	1,02E+01	3,22E+01	2,51E+02	1,15E+00	5,17E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,71E-01	4,56E+00	1,65E-01	-4,89E+01
Water use ⁵⁾	m ³ e depr.	3,95E+00	3,89E-02	3,07E-01	4,30E+00	5,65E-03	1,00E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,32E-03	5,79E-01	1,91E-02	-9,27E-01

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

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter	Incidence	1,68E-07	3,50E-08	6,99E-09	2,10E-07	6,44E-09	5,07E-09	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,64E-09	2,31E-08	7,13E-08	-1,56E-07
Ionizing radiation ⁶⁾	kBq 11235e	4,74E-01	1,81E-02	2,27E+00	2,76E+00	1,47E-03	5,55E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,01E-04	4,12E-03	1,77E-04	-9,14E-01
Ecotoxicity (freshwater)	CTUe	1,02E+02	9,70E-01	1,64E-01	1,03E+02	1,51E-01	2,53E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,19E-02	1,90E+01	2,96E+00	-5,77E+00
Human toxicity, cancer	CTUh	4,09E-09	1,56E-10	1,18E-11	4,26E-09	1,40E-11	1,04E-10	ND	ND	ND	ND	ND	ND	ND	0,00E+00	5,72E-12	6,87E-10	5,38E-10	-5,91E-10
Human tox. non-cancer	CTUh	7,78E-08	3,65E-09	8,75E-10	8,23E-08	7,22E-10	2,32E-09	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,96E-10	2,38E-08	3,33E-09	-2,50E-08
SQP ⁷⁾	-	4,53E+01	2,54E+00	8,83E-02	4,80E+01	6,85E-01	1,03E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,81E-01	6,34E-01	1,74E-01	-1,72E+01

6) EN 15804+A2 disclaimer for ionizing radiation, human health. 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; 7) SQP = Land use related impacts/soil quality.

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy ⁸⁾	MJ	1,26E+01	1,39E-01	1,49E-01	1,29E+01	1,99E-02	2,05E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	8,15E-03	9,59E-02	-2,86E+00	-1,01E+01
Renew. PER as material	MJ	2,78E+00	0,00E+00	4,61E-02	2,82E+00	0,00E+00	-4,61E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	-2,78E+00	0,00E+00
Total use of renew. PER	MJ	1,54E+01	1,39E-01	1,95E-01	1,57E+01	1,99E-02	1,59E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	8,15E-03	9,59E-02	-5,63E+00	-1,01E+01
Non-re. PER as energy	MJ	1,35E+02	1,02E+01	2,90E+01	1,74E+02	1,15E+00	-6,73E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,71E-01	-8,67E+01	-8,55E+00	-4,89E+01
Non-re. PER as material	MJ	7,35E+01	0,00E+00	3,01E+00	7,65E+01	0,00E+00	-3,20E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	-6,52E+01	-8,11E+00	9,60E-01
Total use of non-re. PER	MJ	2,08E+02	1,02E+01	3,20E+01	2,50E+02	1,15E+00	-3,87E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,71E-01	-1,52E+02	-1,67E+01	-4,80E+01
Secondary materials	kg	9,30E-03	4,81E-03	3,04E-04	1,44E-02	5,27E-04	4,39E-04	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,16E-04	1,81E-03	4,65E-04	1,91E-02
Renew. secondary fuels	MJ	6,21E-03	2,52E-05	1,31E-06	6,23E-03	6,65E-06	1,27E-04	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,73E-06	6,12E-05	2,06E-06	-2,43E-05
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m ³	7,28E-02	1,00E-03	7,32E-03	8,11E-02	1,55E-04	1,82E-03	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,35E-05	1,16E-02	1,65E-04	-3,68E-02

8) PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	2,24E-01	1,42E-02	1,15E-02	2,50E-01	1,65E-03	8,94E-03	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,77E-04	1,46E-01	1,03E-02	-2,20E-01
Non-hazardous waste	kg	7,20E+00	2,32E-01	9,40E-02	7,52E+00	3,48E-02	3,41E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,43E-02	3,48E+00	6,35E-01	-9,51E+00
Radioactive waste	kg	8,34E-05	4,88E-06	6,54E-04	7,42E-04	3,64E-07	1,49E-05	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,49E-07	1,03E-06	4,40E-08	-2,34E-04

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	0,00E+00	0,00E+00	3,47E-01	3,47E-01	0,00E+00	2,99E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy recovery	kg	0,00E+00	0,00E+00	6,55E-05	6,55E-05	0,00E+00	5,94E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	2,97E+00	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,03E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	3,46E+01	0,00E+00	0,00E+00
Exported energy – Electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,32E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	1,46E+01	0,00E+00	0,00E+00
Exported energy –	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,01E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	2,01E+01	0,00E+00	0,00E+00

SCENARIO DOCUMENTATION

MANUFACTURING ENERGY SCENARIO DOCUMENTATION (A3)

Scenario parameter	Value
Electricity data source and quality	Electricity production, nuclear, boiling water reactor, Finland, Ecoinvent, 0.0077 kgCO ₂ e/kWh

TRANSPORT SCENARIO DOCUMENTATION (A4)

Scenario parameter	Value
Scenario assumptions e.g. transportation	Transport, freight, lorry 16-32 metric ton, EURO5, 120 km
Average transport distance, km	120
Capacity utilization (including empty return) %	50
Bulk density of transported products kg/m ³	3,53E+01
Volume capacity utilization factor	1

INSTALLATION SCENARIO DOCUMENTATION (A5)

Scenario information	Value
Energy: type and consumption (MJ or kWh)	-
Water use (m ³)	-
Ancillary materials: type and mass (kg)	-

Output materials (specified by type) as result of waste processing at the building site / kg	Product installation waste: 0,0597 kg for energy recovery 0,0097 kg for disposal LDPE film: 0,0210 kg for energy recovery 0,0226 kg for recycling 0,0130 kg for disposal
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END OF LIFE SCENARIO DOCUMENTATION (C1-C4)

Scenario information	Value
Collection process: collected separately (kg)	3,47
Collection process: Mixed waste (kg)	0
Recovery: re-use (kg)	0
Recovery: recycling (kg)	0
Recovery: energy recovery (kg)	2,97
Disposal (kg)	0,5
Scenario assumptions e.g. transportation (mode, km) & other	50 km, lorry 16-32 metric ton, EURO5

THIRD-PARTY VERIFICATION STATEMENT

EPD Hub declares that this EPD is verified in accordance with ISO 14025 by an independent, third-party verifier. The project report on the Life Cycle Assessment and the report(s) on features of environmental relevance are filed at EPD Hub. EPD Hub PCR and ECO Platform verification checklist are used.

EPD Hub is not able to identify any unjustified deviations from the PCR and EN 15802+A2 in the Environmental Product Declaration and its project report.

EPD Hub maintains its independence as a third-party body; it was not involved in the execution of the LCA or in the development of the declaration and has no conflicts of interest regarding this verification.

The company-specific data and upstream and downstream data have been examined as regards plausibility and consistency. The publisher is responsible for ensuring the factual integrity and legal compliance of this declaration.

The software used in creation of this LCA and EPD is verified by EPD Hub to conform to the procedural and methodological requirements outlined in ISO 14025:2010, ISO 14040/14044, EN 15804+A2, and EPD Hub Core Product Category Rules and General Program Instructions.

Verified tools

Tool verifier: Magaly Gonzalez Vazquez

Tool verification validity: 27 March 2025 - 26 March 2028

Vera Durão, as an authorised verifier acting for EPD Hub Limited
07.06.2026

Vera Durão



ANNEX 1: GWP-VALUES PER 1m²

FF-PIR AL, FF-PIR SAUNA, FF-PIR K900

Product		FF-PIR AL	FF-PIR AL, FF-PIR SAUNA	FF-PIR AL	FF-PIR AL	FF-PIR AL	FF-PIR AL	FF-PIR AL	FF-PIR AL	FF-PIR AL / FF-PIR K900	FF-PIR AL	FF-PIR AL
Thickness (mm)		20	30	40	50	60	70	80	90	100	110	120
R _D -value (m ² K/W)		0,90	1,35	1,80	2,25	2,70	3,15	3,60	4,05	4,50	5,00	5,45
Impact category		A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3
EN 15804+A2, PEF	GWP-total	3,04E+00	3,70E+00	4,51E+00	5,38E+00	6,26E+00	6,91E+00	7,99E+00	8,72E+00	9,57E+00	1,05E+01	1,12E+01
	GWP-fossil	3,29E+00	3,95E+00	4,76E+00	5,63E+00	6,51E+00	7,16E+00	8,24E+00	8,97E+00	9,81E+00	1,08E+01	1,14E+01
	GWP-biogenic	-2,91E-01	-2,97E-01	-3,03E-01	-3,10E-01	-3,17E-01	-3,23E-01	-3,32E-01	-3,37E-01	-3,44E-01	-3,52E-01	-3,57E-01
	GWP-LULUC	3,63E-02	4,32E-02	5,15E-02	6,06E-02	6,96E-02	7,64E-02	8,76E-02	9,51E-02	1,04E-01	1,14E-01	1,20E-01

Product		FF-PIR AL	FF-PIR AL	FF-PIR AL / FF- PIR K900	FF-PIR AL	FF-PIR AL	FF-PIR AL	FF-PIR AL	FF-PIR AL	FF-PIR AL	FF-PIR AL	FF-PIR AL	
Thickness (mm)		130	140	150	160	170	180	190	200	210	220	230	240
R _D -value (m²K/W)		5,90	6,35	6,80	7,25	7,70	8,15	8,60	9,05	9,50	10,00	10,45	10,90
Impact category		A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3
EN 15804+A2, PEF	GWP-total	1,22E+01	1,30E+01	1,38E+01	1,48E+01	1,55E+01	1,66E+01	1,73E+01	1,80E+01	1,90E+01	2,00E+01	2,09E+01	2,17E+01
	GWP-fossil	1,24E+01	1,32E+01	1,40E+01	1,50E+01	1,57E+01	1,69E+01	1,76E+01	1,83E+01	1,93E+01	2,03E+01	2,11E+01	2,19E+01
	GWP-biogenic	-3,65E-01	-3,72E-01	-3,79E-01	-3,87E-01	-3,92E-01	-4,02E-01	-4,07E-01	-4,13E-01	-4,21E-01	-4,29E-01	-4,36E-01	-4,43E-01
	GWP-LULUC	1,31E-01	1,39E-01	1,48E-01	1,58E-01	1,65E-01	1,77E-01	1,84E-01	1,92E-01	2,02E-01	2,12E-01	2,21E-01	2,30E-01

FF-PIR PL

Product		FF-PIR PL	FF-PIR PL	FF-PIR PL	FF-PIR PL	FF-PIR PL	FF-PIR PL	FF-PIR PL, FF-PIR k600	FF-PIR PL	FF-PIR PL	FF-PIR PL
Thickness (mm)		40	50	60	70	80	90	100	110	120	130
R _D -value (m ² K/W)		1,80	2,25	2,70	3,15	3,60	4,05	4,50	5,00	5,45	5,90
Impact category		A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3
EN 15804+A2, PEF	GWP-total	4,49E+00	5,37E+00	6,24E+00	6,89E+00	7,97E+00	8,70E+00	9,55E+00	1,05E+01	1,11E+01	1,21E+01
	GWP-fossil	4,48E+00	5,36E+00	6,23E+00	6,88E+00	7,96E+00	8,69E+00	9,53E+00	1,05E+01	1,11E+01	1,21E+01
	GWP-biogenic	-2,93E-02	-3,64E-02	-4,36E-02	-4,88E-02	-5,76E-02	-6,35E-02	-7,04E-02	-7,81E-02	-8,33E-02	-9,14E-02
	GWP-LULUC	3,89E-02	4,80E-02	5,70E-02	6,38E-02	7,50E-02	8,25E-02	9,13E-02	1,01E-01	1,08E-01	1,18E-01

Product		FF-PIR PL	FF-PIR PL, FF-PIR k600	FF-PIR PL	FF-PIR PL	FF-PIR PL	FF-PIR PL	FF-PIR PL	FF-PIR PL	FF-PIR PL	FF-PIR PL	FF-PIR PL
Thickness (mm)		140	150	160	170	180	190	200	210	220	230	240
R _D -value (m ² K/W)		6,35	6,80	7,25	7,70	8,15	8,60	9,05	9,50	10,00	10,45	10,90
Impact category		A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3
EN 15804+A2, PEF	GWP-total	1,29E+01	1,38E+01	1,48E+01	1,55E+01	1,66E+01	1,73E+01	1,80E+01	1,90E+01	2,00E+01	2,09E+01	2,17E+01
	GWP-fossil	1,29E+01	1,38E+01	1,47E+01	1,54E+01	1,66E+01	1,73E+01	1,80E+01	1,90E+01	2,00E+01	2,08E+01	2,17E+01
	GWP-biogenic	-9,79E-02	-1,05E-01	-1,13E-01	-1,18E-01	-1,28E-01	-1,34E-01	-1,39E-01	-1,47E-01	-1,55E-01	-1,62E-01	-1,69E-01
	GWP-LULUC	1,26E-01	1,35E-01	1,45E-01	1,53E-01	1,65E-01	1,72E-01	1,79E-01	1,89E-01	2,00E-01	2,08E-01	2,17E-01

FF-PIR FR

Product		FF-PIR FR	FF-PIR FR	FF-PIR FR	FF-PIR FR	FF-PIR FR	FF-PIR FR	FF-PIR FR	FF-PIR FR	FF-PIR FR	FF-PIR FR
Thickness (mm)		50	60	70	80	90	100	110	120	130	140
R _D value (m²K/W)		1,85	2,20	2,55	3,05	3,45	3,80	4,20	4,80	5,20	5,60
Impact category		A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3
EN 15804+A2, PEF	GWP-total	5,77E+00	6,64E+00	7,29E+00	8,37E+00	9,10E+00	9,95E+00	1,09E+01	1,15E+01	1,25E+01	1,33E+01
	GWP-fossil	5,79E+00	6,66E+00	7,31E+00	8,39E+00	9,12E+00	9,96E+00	1,09E+01	1,16E+01	1,26E+01	1,33E+01
	GWP-biogenic	-7,58E-02	-8,29E-02	-8,82E-02	-9,70E-02	-1,03E-01	-1,10E-01	-1,17E-01	-1,23E-01	-1,31E-01	-1,37E-01
	GWP-LULUC	5,71E-02	6,62E-02	7,29E-02	8,41E-02	9,17E-02	1,00E-01	1,10E-01	1,17E-01	1,27E-01	1,35E-01

Product		FF-PIR FR	FF-PIR FR	FF-PIR FR	FF-PIR FR	FF-PIR FR	FF-PIR FR	FF-PIR FR	FF-PIR FR	FF-PIR FR	FF-PIR FR
Thickness (mm)		150	160	170	180	190	200	210	220	230	240
R _D value (m ² K/W)		6,00	6,40	6,80	7,20	7,60	8,00	8,40	8,80	9,20	9,60
Impact category		A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3
EN 15804+A2, PEF	GWP-total	1,42E+01	1,52E+01	1,59E+01	1,70E+01	1,77E+01	1,84E+01	1,94E+01	2,04E+01	2,13E+01	2,21E+01
	GWP-fossil	1,42E+01	1,52E+01	1,59E+01	1,70E+01	1,77E+01	1,84E+01	1,94E+01	2,04E+01	2,13E+01	2,21E+01
	GWP-biogenic	-1,44E-01	-1,52E-01	-1,58E-01	-1,67E-01	-1,73E-01	-1,79E-01	-1,87E-01	-1,95E-01	-2,02E-01	-2,08E-01
	GWP-LULUC	1,44E-01	1,54E-01	1,62E-01	1,74E-01	1,81E-01	1,88E-01	1,98E-01	2,09E-01	2,17E-01	2,26E-01

FF-PIR BI

Product		FF-PIR BI	FF-PIR BI	FF-PIR BI	FF-PIR BI	FF-PIR BI	FF-PIR BI	FF-PIR BI
Thickness (mm)		30	40	50	60	70	80	90
R _D -value (m ² K/W)		1,10	1,45	1,85	2,20	2,55	3,05	3,45
Impact category		A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3
EN 15804+A2, PEF	GWP-total	3,98E+00	4,78E+00	5,66E+00	6,53E+00	7,18E+00	8,26E+00	8,99E+00
	GWP-fossil	3,97E+00	4,78E+00	5,65E+00	6,53E+00	7,17E+00	8,25E+00	8,98E+00
	GWP-biogenic	-2,34E-02	-3,00E-02	-3,71E-02	-4,42E-02	-4,95E-02	-5,83E-02	-6,42E-02
	GWP-LULUC	3,04E-02	3,88E-02	4,79E-02	5,69E-02	6,36E-02	7,49E-02	8,24E-02

Product		FF-PIR BI	FF-PIR BI	FF-PIR BI	FF-PIR BI	FF-PIR BI	FF-PIR BI
Thickness (mm)		100	110	120	130	140	150
R _D -value (m ² K/W)		3,80	4,20	4,80	5,20	5,60	6,00
Impact category		A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3
EN 15804+A2, PEF	GWP-total	9,84E+00	1,08E+01	1,14E+01	1,24E+01	1,32E+01	1,41E+01
	GWP-fossil	9,83E+00	1,08E+01	1,14E+01	1,24E+01	1,32E+01	1,41E+01
	GWP-biogenic	-7,11E-02	-7,87E-02	-8,40E-02	-9,21E-02	-9,86E-02	-1,06E-01
	GWP-LULUC	9,12E-02	1,01E-01	1,08E-01	1,18E-01	1,26E-01	1,35E-01

FF-PIR ALCL

Product		FF-PIR ALCL	FF-PIR ALCL	FF-PIR ALCL	FF-PIR ALCL	FF-PIR ALCL	FF-PIR ALCL	FF-PIR ALCL	FF-PIR ALCL	FF-PIR ALCL
Thickness (mm)		30	40	50	60	70	80	90	100	110
R _D value (m²K/W)		1,35	1,80	2,25	2,70	3,15	3,60	4,05	4,50	5,00
Impact category		A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3
EN 15804+A2, PEF	GWP-total	3,59E+00	4,40E+00	5,27E+00	6,15E+00	6,80E+00	7,88E+00	8,61E+00	9,45E+00	1,04E+01
	GWP-fossil	3,81E+00	4,62E+00	5,49E+00	6,37E+00	7,01E+00	8,09E+00	8,82E+00	9,67E+00	1,06E+01
	GWP-biogenic	-2,61E-01	-2,67E-01	-2,74E-01	-2,81E-01	-2,87E-01	-2,95E-01	-3,01E-01	-3,08E-01	-3,16E-01
	GWP-LULUC	4,03E-02	4,86E-02	5,77E-02	6,67E-02	7,35E-02	8,47E-02	9,22E-02	1,01E-01	1,11E-01

Product		FF-PIR ALCL	FF-PIR ALCL	FF-PIR ALCL	FF-PIR ALCL	FF-PIR ALCL	FF-PIR ALCL	FF-PIR ALCL	FF-PIR ALCL	FF-PIR ALCL
Thickness (mm)		120	130	140	150	160	170	180	190	200
R _D value (m ² K/W)		5,45	5,90	6,35	6,80	7,25	7,70	8,15	8,60	9,05
Impact category		A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3
EN 15804+A2, PEF	GWP-total	1,10E+01	1,20E+01	1,28E+01	1,37E+01	1,47E+01	1,54E+01	1,65E+01	1,72E+01	1,79E+01
	GWP-fossil	1,13E+01	1,23E+01	1,30E+01	1,39E+01	1,49E+01	1,56E+01	1,67E+01	1,74E+01	1,81E+01
	GWP-biogenic	-3,21E-01	-3,29E-01	-3,36E-01	-3,43E-01	-3,51E-01	-3,56E-01	-3,66E-01	-3,71E-01	-3,77E-01
	GWP-LULUC	1,17E-01	1,28E-01	1,36E-01	1,45E-01	1,55E-01	1,62E-01	1,74E-01	1,82E-01	1,89E-01

FF-PIR CL

Product		FF-PIR CL	FF-PIR CL	FF-PIR CL	FF-PIR CL	FF-PIR CL	FF-PIR CL	FF-PIR CL	FF-PIR CL	FF-PIR CL
Thickness (mm)		30	40	50	60	70	80	90	100	110
R _D -value (m ² K/W)		1,35	1,80	2,25	2,70	3,15	3,60	4,05	4,50	5,00
Impact category		A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3
EN 15804+A2, PEF	GWP-total	3,48E+00	4,28E+00	5,16E+00	6,03E+00	6,68E+00	7,76E+00	8,49E+00	9,34E+00	1,03E+01
	GWP-fossil	3,67E+00	4,47E+00	5,35E+00	6,22E+00	6,87E+00	7,95E+00	8,68E+00	9,52E+00	1,05E+01
	GWP-biogenic	-2,25E-01	-2,31E-01	-2,38E-01	-2,45E-01	-2,51E-01	-2,59E-01	-2,65E-01	-2,72E-01	-2,80E-01
	GWP-LULUC	3,73E-02	4,57E-02	5,48E-02	6,38E-02	7,05E-02	8,18E-02	8,93E-02	9,81E-02	1,08E-01

Product		FF-PIR CL	FF-PIR CL	FF-PIR CL	FF-PIR CL	FF-PIR CL	FF-PIR CL	FF-PIR CL	FF-PIR CL	FF-PIR CL
Thickness (mm)		120	130	140	150	160	170	180	190	200
R _D -value (m ² K/W)		5,45	5,90	6,35	6,80	7,25	7,70	8,15	8,60	9,05
Impact category		A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3
EN 15804+A2, PEF	GWP-total	1,09E+01	1,19E+01	1,27E+01	1,36E+01	1,45E+01	1,53E+01	1,64E+01	1,71E+01	1,78E+01
	GWP-fossil	1,11E+01	1,21E+01	1,29E+01	1,38E+01	1,47E+01	1,54E+01	1,66E+01	1,73E+01	1,80E+01
	GWP-biogenic	-2,85E-01	-2,93E-01	-3,00E-01	-3,07E-01	-3,15E-01	-3,20E-01	-3,30E-01	-3,35E-01	-3,41E-01
	GWP-LULUC	1,15E-01	1,25E-01	1,33E-01	1,42E-01	1,52E-01	1,59E-01	1,71E-01	1,79E-01	1,86E-01

FF-PIR GT

Product		FF-PIR GT	FF-PIR GT	FF-PIR GT	FF-PIR GT	FF-PIR GT	FF-PIR GT	FF-PIR GT	FF-PIR GT	FF-PIR GT
Thickness (mm)		50	60	70	80	90	100	110	120	130
R _D -value (m ² K/W)		1,85	2,20	2,55	2,95	3,30	3,70	4,05	4,40	4,80
Impact category		A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3
EN 15804+A2, PEF	GWP-total	5,90E+00	6,78E+00	7,42E+00	8,51E+00	9,24E+00	1,01E+01	1,10E+01	1,17E+01	1,27E+01
	GWP-fossil	5,95E+00	6,83E+00	7,48E+00	8,56E+00	9,29E+00	1,01E+01	1,11E+01	1,17E+01	1,27E+01
	GWP-biogenic	-1,13E-01	-1,21E-01	-1,26E-01	-1,35E-01	-1,41E-01	-1,47E-01	-1,55E-01	-1,60E-01	-1,68E-01
	GWP-LULUC	6,23E-02	7,14E-02	7,81E-02	8,93E-02	9,69E-02	1,06E-01	1,15E-01	1,22E-01	1,32E-01

Product		FF-PIR GT	FF-PIR GT	FF-PIR GT	FF-PIR GT	FF-PIR GT	FF-PIR GT	FF-PIR GT	FF-PIR GT	FF-PIR GT
Thickness (mm)		140	150	160	170	180	190	200	210	220
R _D .value (m ² K/W)		5,15	5,55	5,90	6,25	6,65	7,00	7,40	7,75	8,10
Impact category		A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3
EN 15804+A2, PEF	GWP-total	1,35E+01	1,43E+01	1,53E+01	1,60E+01	1,72E+01	1,79E+01	1,86E+01	1,95E+01	2,05E+01
	GWP-fossil	1,35E+01	1,44E+01	1,53E+01	1,60E+01	1,72E+01	1,79E+01	1,86E+01	1,96E+01	2,06E+01
	GWP-biogenic	-1,75E-01	-1,82E-01	-1,90E-01	-1,95E-01	-2,05E-01	-2,11E-01	-2,16E-01	-2,24E-01	-2,32E-01
	GWP-LULUC	1,41E-01	1,50E-01	1,60E-01	1,67E-01	1,79E-01	1,86E-01	1,93E-01	2,04E-01	2,14E-01

FF-PIR GYL

Product		FF-PIR GYL	FF-PIR GYL	FF-PIR GYL
Thickness (mm)		30	40	70
R _D -value (m ² K/W)		0,90	1,35	2,75
Impact category		A1-A3	A1-A3	A1-A3
EN 15804+A2, PEF	GWP-total	5,70E+00	6,48E+00	8,82E+00
	GWP-fossil	7,31E+00	8,11E+00	1,05E+01
	GWP-biogenic	-1,66E+00	-1,69E+00	-1,79E+00
	GWP-LULUC	5,25E-02	6,08E-02	8,58E-02