

Environmental Product Declaration

According to ISO 14025 and EN 15804






URSA Glasswool



EPD number
EPD owner
EPD Program operator
Issue date
Valid until
This EPD replace

EPD-21/0003
URSA Slovenija d.o.o., Povhova ulica 2, 8000 Novo mesto
ZAG EPD
7. 2. 2024
29. 11. 2026
EPD-21/0003, valid from 30. 11. 2021 to 29. 11. 2026

General information	Commercial name URSA Glasswool Products: DF 39, DF 39 Na, SF 34, SF 32 Solarwool, FDP 2, AKP 2 Nb, FDP 3, FDP 5, AKP 5 Nb, FDP 5 Dvk-XL, AKP 5 VkaC-XL						
Program holder: Slovenian National Building And Civil Engineering Institute - ZAG Dimičeva 12 1000 Ljubljana http://www.zag.si	Owner of the Environmental Product Declaration: URSA SLOVENIJA d.o.o. Povhova ulica 2 8000 Novo mesto https://www.ursa.si/						
Number of the Environmental Product Declaration: EPD-21/0003	Declared unit: 1m ³ of glass wool						
This Environmental Product Declaration is based on the Product Category Rules (PCR): PCR by IBU: Part B: Mineral insulation materials; PCR code 2.22.2.1; ver. 05, 2014	Scope: A1-A3, A4, A5, C and D						
Issue date: 7. 2. 2024 Valid until: 29. 11. 2026	Verification: <table border="1" data-bbox="948 1245 1485 1518"> <tr> <td colspan="2">The CEN standard SIST EN 15804 serves as the core Product Category Rule (PCR)</td> </tr> <tr> <td colspan="2">Independent verification of the EPD according to EN ISO 14025</td> </tr> <tr> <td><input checked="" type="checkbox"/> external</td> <td><input type="checkbox"/> internal</td> </tr> </table>	The CEN standard SIST EN 15804 serves as the core Product Category Rule (PCR)		Independent verification of the EPD according to EN ISO 14025		<input checked="" type="checkbox"/> external	<input type="checkbox"/> internal
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Production plant: URSA SLOVENIJA, d.o.o. Povhova ulica 2 8000 Novo mesto	Title and the handwritten signature of verifier: Janez Turk, PhD  Slovenian National Building And Civil Engineering Institute – ZAG						
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1 Product

1.1 Product description

URSA products are insulating materials made of mineral and/or glass wool of different properties. This products have a form of felt panels that can be laminated with glass fibre reinforcing fleece. The products are divided into groups according to the thermal conductivity and resistance, density and purpose of use.

Product range: DF 39, DF 39 Na, SF 34, SF 32 Solarwool, FDP 2, AKP 2 Nb, FDP 3, FDP 5,

AKP 5 Nb, FDP 5 Dvk-XL, AKP 5 VkAc-XL (see Table 1 and Table 2).

1.2 Technical Data

The URSA glass wool product specifications are summarised in Table 1 and Table 2.

All products belong to the fire safety class **A1**.







Technical specifications for URSA glass wool insulating products are:


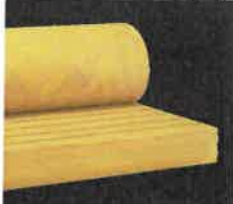







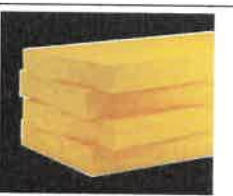



- /MW EN 13162/

Table 1: Review of URSA glass wool products and their properties

URSA GW	Thickness[mm]	Width [mm]	Length [mm]	Thermal conductivity λ [W/mK]	Thermal resistance Rd [m ² K/W]	Density [kg/m ³]	Reference services life [year] (*RSL)
DF 39	50-240	1200	3100-15000	0,039	1,25-6,15	13,5	50
DF 39 Na	50-240	1200	3100-15000	0,039	1,25-6,15	13,5	50
SF 34	50-240	1200	2300-11200	0,034	1,40-6,85	21	50
SF 32 solarwool	50-160	1200	2500-7600	0,032	1,40-6,85	30	50
FDP 2	50-240	600	1250	0,035	1,45-6,45	21,5	50
FDP 3/Vr	50-220	600	1400	0,034	1,55-5,00	24	50
AKP 2 Nb	50-120	600	1400	0,035	1,4-3,40	21,5	50
AKP 5 Nb	50-120	600	1250	0,032	1,55-3,75	35	50
FDP 5	50-120	600	1250	0,032	1,55-3,75	35	50
FDP 5 Dvk-XL	50-120	1200	2900	0,032	1,55-3,75	35	50
AKP 5 VkAc-XL	50-120	1200	2900	0,032	1,55-3,75	35	50

Table 1: Description of URSA glass wool products and their photo

URSA GW	Product Photo		Description
DF 39			Lightweight insulating felt made of mineral glass wool. Compressed packed in a ratio of 1: 5.
DF 39 Na			Lightweight insulating felt made of mineral glass wool, lined with soda paper, compressed and packed in a ratio of 1: 5.
SF 34			Clamping felt made of mineral glass wool, marked on one side with markings for easier cutting. Compressed packed in a ratio of 1: 4.

URSA GW	Product Photo		Description
SF 32 solarwool			Clamping felt made of mineral glass wool, marked on one side with markings for easier cutting. Compressed packed in a ratio of 1: 2.8.
FDP 2			Facade insulation board made of mineral glass, water-repellent wool. In packages.
FDP 3/Vr			Facade insulation board of mineral glass, water-repellent wool; laminated on one side with a black reinforced glass veil.
AKP 2 Nb			Acoustic insulation board made of mineral glass wool, laminated on one side with soda paper.
AKP 5 Nb			Acoustic insulation board made of mineral glass wool, laminated on one side with soda paper.
FDP 5			Facade insulation board made of mineral glass wool - water-repellent.
FDP 5 Dvk-XL			Facade insulation board made of mineral glass wool - water-repellent, laminated on both sides with a yellow reinforced glass veil.
AKP 5 VvkAc-XL			Acoustic insulation board made of mineral glass wool, laminated on one side with a yellow reinforced glass veil on the other side with ALU foil.

1.3 Base materials

The basic materials for the production of insulation products made of mineral glass wool are inorganic raw materials: processed waste glass, silica sand, soda (Na_2CO_3), dolomite, limestone, calcite and borax (as a source of B_2O_3).

All materials, except soda and borax are naturally occurring and are the source of various inorganic oxides.

All URSA Glasswool products contain more than 70% recycled raw materials, as stated in a self-declaration in accordance with EN ISO 14021 (Table 2). In the Italian market, the declaration has been verified by ICMQ. All URSA products are potentially recyclable.

Table 2: Recycled content according to EN ISO 14021 for URSA Glasswool

Recycled content according to EN ISO 14021 for URSA Glasswool		
Pre-customer [%]	Post-customer [%]	Total [%]
14	56	70

1.4 Manufacturing process

The production process that was included in the environmental footprint assessment for the EPD declaration begins with the acquisition of basic raw materials and transportation to the manufacturing plant. The production process begins with the preparation of the glass mixture and continues with the process of melt-blasting and liquid binder coating. The mixture is then formed into a raw mint. The process of hardening, cooling of the product and mechanical treatment then takes place. Certain products are glued with laminating materials. The finished product is packaged and stored and then transported to the customer.

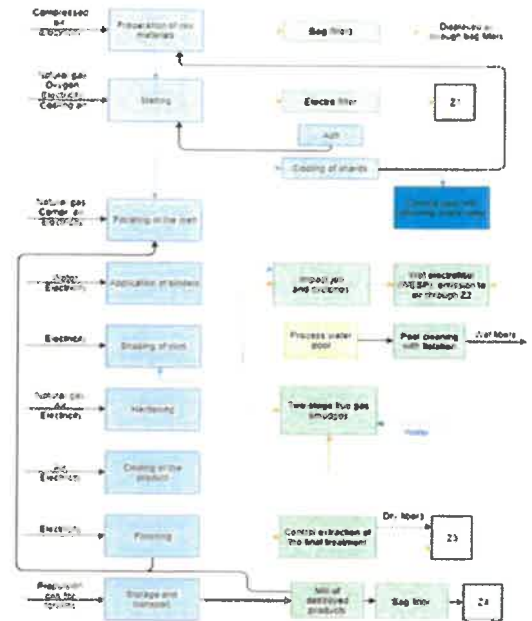


Figure 1: Schematic representation of the production process

1.5 Packaging

Auxiliary and packing materials used:

- Colour LDPE foil for primary packaging, supplied in rolls,
- Transparent LDPE foil for secondary packaging in modules and on a pallet (stretch), which is supplied in rolls,
- Wooden pallets: non-standard, supplied specifically for URSA Slovenia.

1.6 Further information

The owner of the declaration shall be liable for the underlying information and evidence. Further information about the URSA Glass wool insulation materials can be found online, on the manufacturer web page:

<https://www.ursa.si/>

2 Product

2.1 EPD classification

Type of EPD:

1a) Declaration of a specific product from a manufacturer's plant.

2.2 Declared unit

The declared unit was defined in accordance with the Product Category Rules (PCRs) Part B: Mineral insulation materials; PCR code 2.22.2.1; ver. 05, 2014, which are issued by the Institut Bauen und Umwelt e.V. (IBU). The following declared unit was applied:

1m³ of glass wool

2.3 Geographical scope

EPD and LCA report is valid for all URSA glass wool products, manufactured in Slovenia. Data used for calculations were gathered from that production site.

2.4 Reference service life (RSL)

The URSA glass wool insulation materials exhibit an estimated service life of 50 years depending on the use conditions.

2.5 System boundary

The system boundaries were defined in accordance with the modular principle described in the European standard for Environmental Product Declarations (EPD) EN 15804. This LCA analysis is based on the cradle to gate (A1–A3) with options: modules C1–C4, module D and additional modules A4 and A5. The LCA of the URSA glass wool insulation products covers the following life cycle stages:

A1: raw material extraction and processing, processing of secondary material input (e.g. recycling processes);

A2: transport to the manufacturer;

A3: manufacturing;

including the provision of all materials, products and related energy and water use.

A4: transport to the building site;

A5: installation into the buildings;

including the provision of all materials, products and related energy and water use.

C1: de-construction, demolition;

C2: transport to waste processing;

C3: waste processing for reuse, recovery and/or recycling;

C4: disposal;

including the provision of all materials, products and related energy and water use.

D: reuse, recovery and/or recycling potentials, expressed as net impacts and benefits.

The selection of the modules A1–A3, A4, A5, C1, C2, C3, C4 and D, and the exclusion of modules B1–B7 from this LCA analysis was based primarily on the availability, quality and reliability of the data. All data used for the modules A1–A3, A4, A5, C1, C2, C3, C4 and D are based on the measured quantities provided by the manufacturer.

The processing of glass wool insulation materials at the end-of-life stage (i.e. modules C) was described and conceptualised.

In addition, the selection of the modules A1–A3, A4, A5, C1, C2, C3, C4 and D is also in accordance with modules selected for the

association EPD that was prepared for member companies of the European Association and revised EN 15804 standard.

The manufacturer is a PPA–Europe member and has provided data for the development of the association EPD. Even though this PPA–Europe EPD is an average EPD that cannot be directly compared to the EPDs that will be issued based on this LCA analysis, it nonetheless provides general guidance on what type of LCA analysis is expected by the industry.

It should be noted that the excluded modules (i.e. modules B1–B7) could be calculated as well. However, the calculation of these modules would be based more on assumed and simplified data than on measured data. Further, there were no metric data available that would back up those processes and enable the calculation of environmental impacts by means of a LCA.

As the requirement is to prepare a scientifically solid LCA analysis and thus issue high-quality and representative EPDs, the modules B1–B7 were left out of this LCA analysis primarily due to the lack of reliable data.

Nevertheless, there is no reliable data associated with the installation of the glass wool into the building (i.e. module A5) and the de-construction or demolition of the glass wool (i.e. module C1), since both (i.e. installation and demolition) are conducted manually.

The schematic representation of system boundaries can be seen in Figure 2.

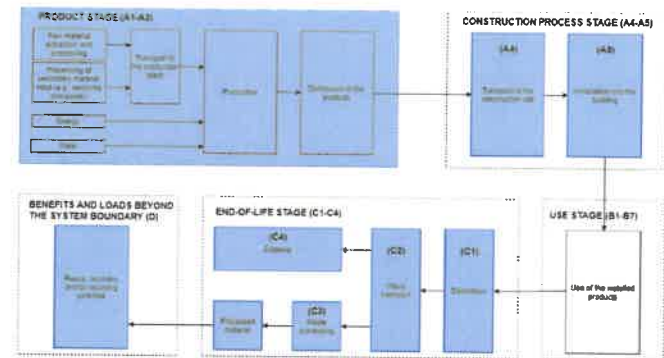


Figure 2: Schematic representation of the system boundaries, with the considered modules highlighted in blue.

2.6 Cut-off rules

The exclusion of inputs and outputs was conducted in accordance with the cut-off rules defined in the standard EN 15804:

- All inputs and outputs to the studied system were included in the calculation, for which data are available;
- In the case of insufficient input data or data gaps for a unit process, the cut-off criteria was 1% of the renewable and non-renewable primary energy usage and 1% of the total mass input of that unit process. The total of the neglected input flows per module was a maximum of 5% of the energy usage and the mass.

2.7 Background data

The LCA analysis was conducted with the GaBi ts (ver. 10.0.0.71) and Ecoinvent 3.5 modelling software. All processes were modelled based on the inventory data given in the GaBi Professional database and the Ecoinvent 3.5.

2.8 Data quality

The quality of the data used for calculations in the LCA analysis correspond to the requirements of EN 15804:

- Generic data were checked for plausibility;
- Data sets were complete according to the system boundary within the limits set by the criteria for the exclusion of inputs and outputs;
- Data were as current as possible. Data sets used for the calculations were valid for the current year and represent a reference year within 10 years for generic data and 5 years for producer specific data;
- The reference year refers to the year which the overall inventory best represents, considering the age/representativeness of the various specific and background data included, i.e. not automatically the year of modelling, calculation or publication year. Validity refers to the date to which the inventory is still judged sufficiently valid with the documented technological and geographical representativeness;
- All datasets were based on 1 year averaged data;
- The time period over which the inputs to and the outputs from the system has been accounted for is 100 years from the year for which the data set is deemed representative.

The data collection was based on a questionnaire prepared by the Slovenian National Building and Civil Engineering Institute (ZAG). Before of collection of the data, it was explained to the manufacturer that the LCA analysis will be as valid as the provided data.

The technological representativeness of any generic data was checked in the literature. The

geographical representativeness and the reference period of all considered datasets were also checked. The final mass balance was also checked.

2.9 Period under review

The reference year for the data collected for this LCA analysis is 2020.

2.10 Allocation

For the product stage (i.e., modules A1–A3), the total consumption of energy and water for the production of 1m³ of glass wool was provided by the manufacturer. The values of energy and water consumption in the production of 1m³ of glass wool were obtained by proportionally distributing the total consumption of energy and water based on the overall quantity of insulation products.

2.11 Comparability

EPD of glass wool insulation products may not be comparable, if they do not comply with EN 15804.

2.12 List of substances

The product does not contain any SVHCs (*Substances of Very High Concern*) /REACH/.

3 LCA: Scenarios and additional technical information

3.1 Characteristic product properties Biogenic Carbon

The content and quantities of biogenic carbon depend on products built from wood and biomass. In accordance with standard EN 16449 – Wood and wood-based products – Calculation of biogenic carbon content conversion of wood to carbon dioxide. When products are predominantly made of wood, they may contain large amounts of biogenic carbon (C), which are converted to carbon dioxide (CO₂) during natural decomposition processes.

Information on describing the biogenic Carbon Content at factory gate

Commercial name of the product	Biogenic carbon content of input materials and raw materials [kg C]	Biogenic Carbon Content in accompanying packaging [kg C]
DF 39	<5%	7,41E-01
DF 39 Na	<5%	8,43E-01
SF 34	<5%	1,25E+00
SF 32 solarwool	<5%	2,35E+00
FDP 2	<5%	1,99E+00
FDP 3/Vr	<5%	3,05E+00
AKP 2 Nb	<5%	3,48E+00
AKP 5 Nb	<5%	5,65E+00
FDP 5	<5%	5,06E+00
FDP 5 Dvk-XL	<5%	1,37E+01
AKP 5 Vka-XL	<5%	1,47E+01

4 LCA: Results

Table 4: Selected phases of the LCA

SYSTEM BOUNDARY																	
PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE								END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARYS
Raw material supply	Transport	Production	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction / demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling potential	D
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
The modules of the product lifecycle, which are included in EPD are marked by "X", modules not included are marked with a "MNA" = module not assessed, "MND" = module od indicator nor declared, "MNR" = module not relevant																	

4.1 Indicators of environmental impacts

The environmental impact assessment was calculated according to the standard EN 15804 impact assessment method. The environmental impacts are presented with thirteen indicators (see Table 5). The tabular representation of all the environmental impact indicators for different versions of the URSA glass wool are summarised from Table 6 to Table 16.

Table 5: Abbreviations and units of indicators of environmental impacts

Indicators of environmental impacts	Abbreviation	Unit
global warming potential total	GWP-total	kg CO ₂ equiv
global warming potential fossil fuels	GWP-fossil	kg CO ₂ equiv
global warming potential biogenic	GWP-biogenic	kg CO ₂ equiv
global warming potential land use and land use change	GWP-luluc	kg CO ₂ equiv
depletion potential of the stratospheric ozone layer	ODP	kg CFC 11 equiv
acidification potential, accumulated exceedance	AP	mol H ⁺ equiv
eutrophication potential, fraction of nutrients reaching freshwater end compartment	EP-freshwater	kg PO ₄ ⁻ equiv
eutrophication potential, fraction of nutrients reaching marine end compartment	EP-marine	kg N equiv
eutrophication potential, accumulated exceedance	EP-terrestrial	kg N equiv
formation potential of tropospheric ozone	POCP	kg NMVOC equiv
abiotic depletion potential for non-fossil resources	APD-minerals&metals	kg Sb equiv
abiotic depletion for fossil resources potential	APD-fossil	MJ, net calorific value
water (user)m deprivation potential, deprivation-weighted water consumption	WDP	m ³ world equiv deprived

Table 6: Indicators of the environmental impacts per 1 m³ of glass wool GW DF 39

		DF 39								
Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D	
GWP-total	[kg CO2 eq.]	1,54E+01	2,29E-01	0,00E+00	0,00E+00	1,36E-02	6,32E-04	1,94E-01	-5,55E+00	
GWP-fossil	[kg CO2 eq.]	1,61E+01	2,28E-01	0,00E+00	0,00E+00	1,35E-02	6,27E-04	2,11E-01	-5,54E+00	
GWP-biogenic	[kg CO2 eq.]	-7,23E-01	1,05E-04	0,00E+00	0,00E+00	6,23E-06	1,20E-06	-1,66E-02	-1,03E-02	
GWP-luluc	[kg CO2 eq.]	1,60E-02	9,51E-04	0,00E+00	0,00E+00	5,65E-05	2,31E-06	6,05E-04	-3,40E-04	
ODP	[kg CFC-11 eq.]	1,18E-06	7,73E-17	0,00E+00	0,00E+00	4,59E-18	2,68E-18	7,78E-16	-1,96E-13	
AP	[Mole of H+ eq.]	6,97E-02	7,21E-04	0,00E+00	0,00E+00	4,29E-05	5,91E-06	1,51E-03	-2,25E-03	
EP-freshwater	[kg P eq.]	2,10E-03	4,96E-07	0,00E+00	0,00E+00	2,95E-08	1,50E-09	3,61E-07	-6,12E-07	
EP-marine	[kg N eq.]	1,20E-02	3,31E-04	0,00E+00	0,00E+00	1,97E-05	2,91E-06	3,88E-04	-8,02E-04	
EP-terrestrial	[Mole of N eq.]	1,44E-01	3,71E-03	0,00E+00	0,00E+00	2,20E-04	3,20E-05	4,27E-03	-8,73E-03	
POCP	[kg NMVOC eq.]	4,45E-02	6,44E-04	0,00E+00	0,00E+00	3,83E-05	8,42E-06	1,17E-03	-2,93E-03	
ADP-m&m	[kg Sb eq.]	1,91E-05	1,96E-08	0,00E+00	0,00E+00	1,17E-09	6,91E-10	1,88E-08	-1,50E-06	
ADP-fossil	[MJ]	3,92E+02	3,01E+00	0,00E+00	0,00E+00	1,79E-01	1,18E-02	2,76E+00	-9,37E+01	
WDP	[m ³ world equiv.]	4,01E+00	9,79E-04	0,00E+00	0,00E+00	5,82E-05	1,06E-04	2,20E-02	6,25E-02	

Table 7: Indicators of the environmental impacts per 1 m³ of glass wool GW DF 39 Na

		DF 39 Na								
Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D	
GWP-total	[kg CO2 eq.]	1,55E+01	3,92E-01	0,00E+00	0,00E+00	1,39E-02	7,69E-04	1,98E-01	-5,60E+00	
GWP-fossil	[kg CO2 eq.]	1,64E+01	3,90E-01	0,00E+00	0,00E+00	1,39E-02	7,63E-04	2,16E-01	-5,58E+00	
GWP-biogenic	[kg CO2 eq.]	-8,27E-01	1,79E-04	0,00E+00	0,00E+00	6,38E-06	1,46E-06	-1,70E-02	-1,06E-02	
GWP-luluc	[kg CO2 eq.]	1,63E-02	1,63E-03	0,00E+00	0,00E+00	5,78E-05	2,81E-06	6,20E-04	-3,84E-04	
ODP	[kg CFC-11 eq.]	1,25E-06	1,32E-16	0,00E+00	0,00E+00	4,70E-18	3,26E-18	7,97E-16	-1,97E-13	
AP	[Mole of H+ eq.]	7,05E-02	1,23E-03	0,00E+00	0,00E+00	4,39E-05	7,19E-06	1,55E-03	-2,31E-03	
EP-freshwater	[kg P eq.]	2,12E-03	8,49E-07	0,00E+00	0,00E+00	3,02E-08	1,83E-09	3,70E-07	-7,04E-07	
EP-marine	[kg N eq.]	1,23E-02	5,66E-04	0,00E+00	0,00E+00	2,02E-05	3,54E-06	3,97E-04	-8,19E-04	
EP-terrestrial	[Mole of N eq.]	1,47E-01	6,34E-03	0,00E+00	0,00E+00	2,25E-04	3,90E-05	4,37E-03	-8,91E-03	
POCP	[kg NMVOC eq.]	4,52E-02	1,10E-03	0,00E+00	0,00E+00	3,92E-05	1,02E-05	1,20E-03	-2,98E-03	
ADP-m&m	[kg Sb eq.]	1,94E-05	3,35E-08	0,00E+00	0,00E+00	1,19E-09	8,41E-10	1,93E-08	-1,51E-06	
ADP-fossil	[MJ]	3,98E+02	5,15E+00	0,00E+00	0,00E+00	1,83E-01	1,44E-02	2,82E+00	-9,52E+01	
WDP	[m ³ world equiv.]	4,04E+00	1,67E-03	0,00E+00	0,00E+00	5,95E-05	1,29E-04	2,25E-02	6,22E-02	

Table 8: Indicators of the environmental impacts per 1 m³ of glass wool GW SF 34

SF 34									
Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	[kg CO2 eq.]	2,52E+01	1,64E-01	0,00E+00	0,00E+00	2,15E-02	9,13E-04	3,06E-01	-5,66E+00
GWP-fossil	[kg CO2 eq.]	2,64E+01	1,63E-01	0,00E+00	0,00E+00	2,14E-02	9,06E-04	3,32E-01	-5,84E+00
GWP-biogenic	[kg CO2 eq.]	-1,24E+00	7,49E-05	0,00E+00	0,00E+00	9,83E-06	1,73E-06	-2,62E-02	-1,10E-02
GWP-luluc	[kg CO2 eq.]	2,56E-02	6,79E-04	0,00E+00	0,00E+00	8,91E-05	3,34E-06	9,54E-04	-4,39E-04
ODP	[kg CFC-11 eq.]	2,49E-06	5,52E-17	0,00E+00	0,00E+00	7,24E-18	3,87E-18	1,23E-15	-1,97E-13
AP	[Mole of H+ eq.]	1,14E-01	5,15E-04	0,00E+00	0,00E+00	6,76E-05	8,53E-06	2,38E-03	-2,40E-03
EP-freshwater	[kg P eq.]	3,80E-03	3,54E-07	0,00E+00	0,00E+00	4,65E-08	2,17E-09	5,70E-07	-8,21E-07
EP-marine	[kg N eq.]	1,99E-02	2,37E-04	0,00E+00	0,00E+00	3,10E-05	4,20E-06	6,12E-04	-8,41E-04
EP-terrestrial	[Mole of N eq.]	2,36E-01	2,65E-03	0,00E+00	0,00E+00	3,47E-04	4,63E-05	6,73E-03	-9,14E-03
POCP	[kg NMVOC eq.]	7,55E-02	4,60E-04	0,00E+00	0,00E+00	6,03E-05	1,22E-05	1,85E-03	-3,05E-03
ADP-m&m	[kg Sb eq.]	3,47E-05	1,40E-08	0,00E+00	0,00E+00	1,84E-09	9,99E-10	2,97E-08	-1,52E-06
ADP-fossil	[MJ]	6,45E+02	2,15E+00	0,00E+00	0,00E+00	2,82E-01	1,71E-02	4,35E+00	-9,72E+01
WDP	[m ³ world equiv.]	7,04E+00	6,99E-04	0,00E+00	0,00E+00	9,17E-05	1,53E-04	3,47E-02	6,19E-02

Table 9: Indicators of the environmental impacts per 1 m³ of glass wool GW SF 32 solarwool

SF 32 solarwool									
Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	[kg CO2 eq.]	3,59E+01	2,17E-01	0,00E+00	0,00E+00	3,09E-02	1,56E-03	4,40E-01	-6,05E+00
GWP-fossil	[kg CO2 eq.]	3,83E+01	2,16E-01	0,00E+00	0,00E+00	3,08E-02	1,55E-03	4,78E-01	-6,03E+00
GWP-biogenic	[kg CO2 eq.]	-2,33E+00	9,92E-05	0,00E+00	0,00E+00	1,41E-05	2,97E-06	-3,77E-02	-1,36E-02
GWP-luluc	[kg CO2 eq.]	3,73E-02	8,99E-04	0,00E+00	0,00E+00	1,28E-04	5,72E-06	1,37E-03	-8,08E-04
ODP	[kg CFC-11 eq.]	3,25E-06	7,30E-17	0,00E+00	0,00E+00	1,04E-17	6,63E-18	1,77E-15	-2,02E-13
AP	[Mole of H+ eq.]	1,66E-01	6,82E-04	0,00E+00	0,00E+00	9,73E-05	1,46E-05	3,43E-03	-2,96E-03
EP-freshwater	[kg P eq.]	5,52E-03	4,69E-07	0,00E+00	0,00E+00	6,70E-08	3,72E-09	8,21E-07	-1,60E-06
EP-marine	[kg N eq.]	2,88E-02	3,13E-04	0,00E+00	0,00E+00	4,47E-05	7,19E-06	8,80E-04	-9,87E-04
EP-terrestrial	[Mole of N eq.]	3,42E-01	3,50E-03	0,00E+00	0,00E+00	5,00E-04	7,93E-05	9,68E-03	-1,07E-02
POCP	[kg NMVOC eq.]	1,10E-01	6,09E-04	0,00E+00	0,00E+00	8,69E-05	2,08E-05	2,67E-03	-3,52E-03
ADP-m&m	[kg Sb eq.]	5,06E-05	1,85E-08	0,00E+00	0,00E+00	2,65E-09	1,71E-09	4,28E-08	-1,80E-06
ADP-fossil	[MJ]	9,36E+02	2,85E+00	0,00E+00	0,00E+00	4,07E-01	2,93E-02	6,26E+00	-1,10E+02
WDP	[m ³ world equiv.]	9,97E+00	9,25E-04	0,00E+00	0,00E+00	1,32E-04	2,62E-04	5,00E-02	5,99E-02

Table 10: Indicators of the environmental impacts per 1 m³ of glass wool GW FDP 2

FDP 2									
Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	[kg CO2 eq.]	2,82E+01	3,38E-01	0,00E+00	0,00E+00	2,36E-02	2,33E-03	3,36E-01	-6,78E+00
GWP-fossil	[kg CO2 eq.]	3,02E+01	3,37E-01	0,00E+00	0,00E+00	2,34E-02	2,32E-03	3,64E-01	-6,76E+00
GWP-biogenic	[kg CO2 eq.]	-1,96E+00	1,55E-04	0,00E+00	0,00E+00	1,08E-05	4,43E-06	-2,88E-02	-1,85E-02
GWP-luluc	[kg CO2 eq.]	2,98E-02	1,40E-03	0,00E+00	0,00E+00	9,78E-05	8,54E-06	1,05E-03	-1,50E-03
ODP	[kg CFC-11 eq.]	4,56E-05	1,14E-16	0,00E+00	0,00E+00	7,94E-18	9,89E-18	1,35E-15	-2,10E-13
AP	[Mole of H+ eq.]	1,29E-01	1,07E-03	0,00E+00	0,00E+00	7,42E-05	2,18E-05	2,61E-03	-4,01E-03
EP-freshwater	[kg P eq.]	4,37E-03	7,33E-07	0,00E+00	0,00E+00	5,10E-08	5,56E-09	6,26E-07	-3,05E-06
EP-marine	[kg N eq.]	2,31E-02	4,89E-04	0,00E+00	0,00E+00	3,41E-05	1,07E-05	6,71E-04	-1,26E-03
EP-terrestrial	[Mole of N eq.]	2,72E-01	5,47E-03	0,00E+00	0,00E+00	3,81E-04	1,18E-04	7,38E-03	-1,35E-02
POCP	[kg NMVOC eq.]	8,66E-02	9,51E-04	0,00E+00	0,00E+00	6,62E-05	3,11E-05	2,03E-03	-4,39E-03
ADP-m&m	[kg Sb eq.]	3,99E-05	2,90E-08	0,00E+00	0,00E+00	2,02E-09	2,55E-09	3,26E-08	-1,76E-06
ADP-fossil	[MJ]	7,35E+02	4,45E+00	0,00E+00	0,00E+00	3,10E-01	4,38E-02	4,77E+00	-1,34E+02
WDP	[m ³ world equiv.]	7,80E+00	1,45E-03	0,00E+00	0,00E+00	1,01E-04	3,92E-04	3,81E-02	5,61E-02

Table 11: Indicators of the environmental impacts per 1 m³ of glass wool GW FDP 3/Vr

FDP 3/Vr									
Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	[kg CO2 eq.]	2,97E+01	3,46E-01	0,00E+00	0,00E+00	2,48E-02	2,51E-03	3,54E-01	-6,99E+00
GWP-fossil	[kg CO2 eq.]	3,26E+01	3,45E-01	0,00E+00	0,00E+00	2,47E-02	2,49E-03	3,84E-01	-6,98E+00
GWP-biogenic	[kg CO2 eq.]	-3,02E+00	1,59E-04	0,00E+00	0,00E+00	1,14E-05	4,77E-06	-3,03E-02	-1,99E-02
GWP-luluc	[kg CO2 eq.]	3,26E-02	1,44E-03	0,00E+00	0,00E+00	1,03E-04	9,19E-06	1,10E-03	-1,70E-03
ODP	[kg CFC-11 eq.]	4,98E-05	1,17E-16	0,00E+00	0,00E+00	8,38E-18	1,06E-17	1,42E-15	-2,12E-13
AP	[Mole of H+ eq.]	1,39E-01	1,09E-03	0,00E+00	0,00E+00	7,82E-05	2,35E-05	2,76E-03	-4,31E-03
EP-freshwater	[kg P eq.]	4,60E-03	7,50E-07	0,00E+00	0,00E+00	5,38E-08	5,98E-09	6,60E-07	-3,47E-06
EP-marine	[kg N eq.]	2,49E-02	5,01E-04	0,00E+00	0,00E+00	3,59E-05	1,16E-05	7,08E-04	-1,34E-03
EP-terrestrial	[Mole of N eq.]	2,94E-01	5,60E-03	0,00E+00	0,00E+00	4,02E-04	1,27E-04	7,79E-03	-1,43E-02
POCP	[kg NMVOC eq.]	9,32E-02	9,73E-04	0,00E+00	0,00E+00	6,98E-05	3,35E-05	2,14E-03	-4,64E-03
ADP-m&m	[kg Sb eq.]	4,22E-05	2,96E-08	0,00E+00	0,00E+00	2,13E-09	2,75E-09	3,44E-08	-1,81E-06
ADP-fossil	[MJ]	7,96E+02	4,55E+00	0,00E+00	0,00E+00	3,27E-01	4,71E-02	5,03E+00	-1,41E+02
WDP	[m ³ world equiv.]	8,34E+00	1,48E-03	0,00E+00	0,00E+00	1,06E-04	4,22E-04	4,02E-02	5,50E-02

Table 12: Indicators of the environmental impacts per 1 m³ of glass wool GW AKP 2 Nb

AKP 2 Nb									
Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	[kg CO2 eq.]	2,56E+01	6,57E-01	0,00E+00	0,00E+00	2,17E-02	2,61E-03	3,10E-01	-7,11E+00
GWP-fossil	[kg CO2 eq.]	2,90E+01	6,54E-01	0,00E+00	0,00E+00	2,16E-02	2,59E-03	3,36E-01	-7,08E+00
GWP-biogenic	[kg CO2 eq.]	-3,45E+00	3,01E-04	0,00E+00	0,00E+00	9,95E-06	4,95E-06	-2,65E-02	-2,07E-02
GWP-luluc	[kg CO2 eq.]	2,94E-02	2,73E-03	0,00E+00	0,00E+00	9,02E-05	9,54E-06	9,66E-04	-1,81E-03
ODP	[kg CFC-11 eq.]	2,67E-06	2,22E-16	0,00E+00	0,00E+00	7,33E-18	1,11E-17	1,24E-15	-2,13E-13
AP	[Mole of H+ eq.]	1,21E-01	2,07E-03	0,00E+00	0,00E+00	6,84E-05	2,44E-05	2,41E-03	-4,48E-03
EP-freshwater	[kg P eq.]	3,90E-03	1,42E-06	0,00E+00	0,00E+00	4,71E-08	6,21E-09	5,77E-07	-3,70E-06
EP-marine	[kg N eq.]	2,18E-02	9,51E-04	0,00E+00	0,00E+00	3,14E-05	1,20E-05	6,19E-04	-1,38E-03
EP-terrestrial	[Mole of N eq.]	2,56E-01	1,06E-02	0,00E+00	0,00E+00	3,52E-04	1,32E-04	6,81E-03	-1,48E-02
POCP	[kg NMVOC eq.]	8,30E-02	1,85E-03	0,00E+00	0,00E+00	6,11E-05	3,48E-05	1,88E-03	-4,78E-03
ADP-m&m	[kg Sb eq.]	3,78E-05	5,63E-08	0,00E+00	0,00E+00	1,86E-09	2,85E-09	3,01E-08	-1,83E-06
ADP-fossil	[MJ]	7,21E+02	8,65E+00	0,00E+00	0,00E+00	2,86E-01	4,89E-02	4,40E+00	-1,45E+02
WDP	[m ³ world equiv.]	7,41E+00	2,81E-03	0,00E+00	0,00E+00	9,29E-05	4,38E-04	3,52E-02	5,44E-02

Table 13: Indicators of the environmental impacts per 1 m³ of glass wool GW AKP 5 Nb

AKP 5 Nb									
Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	[kg CO2 eq.]	4,70E+01	1,26E+00	0,00E+00	0,00E+00	4,24E-02	4,12E-03	6,04E-01	-9,58E+00
GWP-fossil	[kg CO2 eq.]	5,26E+01	1,25E+00	0,00E+00	0,00E+00	4,22E-02	4,09E-03	6,56E-01	-9,53E+00
GWP-biogenic	[kg CO2 eq.]	-5,62E+00	5,75E-04	0,00E+00	0,00E+00	1,94E-05	7,82E-06	-5,18E-02	-3,74E-02
GWP-luluc	[kg CO2 eq.]	5,22E-02	5,21E-03	0,00E+00	0,00E+00	1,76E-04	1,51E-05	1,89E-03	-4,14E-03
ODP	[kg CFC-11 eq.]	5,67E-06	4,24E-16	0,00E+00	0,00E+00	1,43E-17	1,75E-17	2,42E-15	-2,40E-13
AP	[Mole of H+ eq.]	2,24E-01	3,95E-03	0,00E+00	0,00E+00	1,33E-04	3,85E-05	4,70E-03	-8,02E-03
EP-freshwater	[kg P eq.]	7,83E-03	2,72E-06	0,00E+00	0,00E+00	9,19E-08	9,80E-09	1,13E-06	-8,61E-06
EP-marine	[kg N eq.]	4,12E-02	1,82E-03	0,00E+00	0,00E+00	6,13E-05	1,89E-05	1,21E-03	-2,30E-03
EP-terrestrial	[Mole of N eq.]	4,82E-01	2,03E-02	0,00E+00	0,00E+00	6,86E-04	2,09E-04	1,33E-02	-2,44E-02
POCP	[kg NMVOC eq.]	1,60E-01	3,53E-03	0,00E+00	0,00E+00	1,19E-04	5,49E-05	3,66E-03	-7,73E-03
ADP-m&m	[kg Sb eq.]	7,75E-05	1,08E-07	0,00E+00	0,00E+00	3,63E-09	4,51E-09	5,87E-08	-2,36E-06
ADP-fossil	[MJ]	1,30E+03	1,65E+01	0,00E+00	0,00E+00	5,58E-01	7,72E-02	8,59E+00	-2,26E+02
WDP	[m ³ world equiv.]	1,40E+01	5,37E-03	0,00E+00	0,00E+00	1,81E-04	6,91E-04	6,86E-02	4,15E-02

Table 14: Indicators of the environmental impacts per 1 m³ of glass wool GW FDP 5

FDP 5									
Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	[kg CO2 eq.]	4,66E+01	1,26E+00	0,00E+00	0,00E+00	3,80E-02	1,91E-02	5,41E-01	-7,97E+00
GWP-fossil	[kg CO2 eq.]	5,16E+01	1,25E+00	0,00E+00	0,00E+00	3,78E-02	1,90E-02	5,87E-01	-7,93E+00
GWP-biogenic	[kg CO2 eq.]	-5,04E+00	5,76E-04	0,00E+00	0,00E+00	1,74E-05	3,63E-05	-4,64E-02	-2,65E-02
GWP-luluc	[kg CO2 eq.]	5,01E-02	5,22E-03	0,00E+00	0,00E+00	1,58E-04	7,00E-05	1,69E-03	-2,62E-03
ODP	[kg CFC-11 eq.]	9,89E-05	4,24E-16	0,00E+00	0,00E+00	1,28E-17	8,11E-17	2,17E-15	-2,22E-13
AP	[Mole of H+ eq.]	2,22E-01	3,96E-03	0,00E+00	0,00E+00	1,20E-04	1,79E-04	4,21E-03	-5,71E-03
EP-freshwater	[kg P eq.]	8,17E-03	2,72E-06	0,00E+00	0,00E+00	8,23E-08	4,56E-08	1,01E-06	-5,41E-06
EP-marine	[kg N eq.]	4,04E-02	1,82E-03	0,00E+00	0,00E+00	5,49E-05	8,81E-05	1,08E-03	-1,70E-03
EP-terrestrial	[Mole of N eq.]	4,68E-01	2,03E-02	0,00E+00	0,00E+00	6,14E-04	9,71E-04	1,19E-02	-1,81E-02
POCP	[kg NMVOC eq.]	1,54E-01	3,53E-03	0,00E+00	0,00E+00	1,07E-04	2,55E-04	3,28E-03	-5,81E-03
ADP-m&m	[kg Sb eq.]	7,48E-05	1,08E-07	0,00E+00	0,00E+00	3,25E-09	2,09E-08	5,25E-08	-2,02E-06
ADP-fossil	[MJ]	1,26E+03	1,65E+01	0,00E+00	0,00E+00	5,00E-01	3,59E-01	7,69E+00	-1,73E+02
WDP	[m ³ world equiv.]	1,43E+01	5,37E-03	0,00E+00	0,00E+00	1,62E-04	3,21E-03	6,14E-02	4,99E-02

Table 15: Indicators of the environmental impacts per 1 m³ of glass wool GW FDP 5 Dvk-XL

FDP 5 Dvk-XL									
Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	[kg CO2 eq.]	3,90E+01	1,33E+00	0,00E+00	0,00E+00	4,11E-02	1,34E-03	5,86E-01	-5,89E+00
GWP-fossil	[kg CO2 eq.]	5,26E+01	1,32E+00	0,00E+00	0,00E+00	4,09E-02	1,33E-03	6,36E-01	-5,87E+00
GWP-biogenic	[kg CO2 eq.]	-1,36E+01	6,07E-04	0,00E+00	0,00E+00	1,88E-05	2,55E-06	-5,02E-02	-1,25E-02
GWP-luluc	[kg CO2 eq.]	5,22E-02	5,50E-03	0,00E+00	0,00E+00	1,71E-04	4,91E-06	1,83E-03	-6,61E-04
ODP	[kg CFC-11 eq.]	1,00E-04	4,47E-16	0,00E+00	0,00E+00	1,39E-17	5,69E-18	2,35E-15	-2,00E-13
AP	[Mole of H+ eq.]	2,36E-01	4,17E-03	0,00E+00	0,00E+00	1,29E-04	1,25E-05	4,56E-03	-2,73E-03
EP-freshwater	[kg P eq.]	8,71E-03	2,87E-06	0,00E+00	0,00E+00	8,91E-08	3,19E-09	1,09E-06	-1,29E-06
EP-marine	[kg N eq.]	4,39E-02	1,92E-03	0,00E+00	0,00E+00	5,95E-05	6,17E-06	1,17E-03	-9,29E-04
EP-terrestrial	[Mole of N eq.]	5,15E-01	2,15E-02	0,00E+00	0,00E+00	6,65E-04	6,81E-05	1,29E-02	-1,01E-02
POCP	[kg NMVOC eq.]	1,67E-01	3,73E-03	0,00E+00	0,00E+00	1,16E-04	1,79E-05	3,55E-03	-3,33E-03
ADP-m&m	[kg Sb eq.]	7,91E-05	1,14E-07	0,00E+00	0,00E+00	3,52E-09	1,47E-09	5,69E-08	-1,57E-06
ADP-fossil	[MJ]	1,25E+03	1,74E+01	0,00E+00	0,00E+00	5,41E-01	2,52E-02	8,33E+00	-1,05E+02
WDP	[m ³ world equiv.]	1,49E+01	5,67E-03	0,00E+00	0,00E+00	1,76E-04	2,25E-04	6,65E-02	6,07E-02

Table 16: Indicators of the environmental impacts per 1 m³ of glass wool GW AKP 5 VkaC-XL

Abbreviation	Unit	AKP 5 VkaC-XL							
		A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	[kg CO2 eq.]	4,57E+01	1,74E+00	0,00E+00	0,00E+00	5,59E-02	1,08E-03	7,97E-01	-5,74E+00
GWP-fossil	[kg CO2 eq.]	6,04E+01	1,73E+00	0,00E+00	0,00E+00	5,57E-02	1,07E-03	8,65E-01	-5,72E+00
GWP-biogenic	[kg CO2 eq.]	-1,47E+01	7,95E-04	0,00E+00	0,00E+00	2,56E-05	2,05E-06	-6,83E-02	-1,15E-02
GWP-luluc	[kg CO2 eq.]	5,88E-02	7,20E-03	0,00E+00	0,00E+00	2,32E-04	3,96E-06	2,49E-03	-5,16E-04
ODP	[kg CFC-11 eq.]	8,63E-06	5,85E-16	0,00E+00	0,00E+00	1,89E-17	4,58E-18	3,20E-15	-1,98E-13
AP	[Mole of H+ eq.]	2,74E-01	5,46E-03	0,00E+00	0,00E+00	1,76E-04	1,01E-05	6,20E-03	-2,51E-03
EP-freshwater	[kg P eq.]	1,11E-02	3,76E-06	0,00E+00	0,00E+00	1,21E-07	2,57E-09	1,49E-06	-9,84E-07
EP-marine	[kg N eq.]	5,24E-02	2,51E-03	0,00E+00	0,00E+00	8,09E-05	4,98E-06	1,59E-03	-8,72E-04
EP-terrestrial	[Mole of N eq.]	6,16E-01	2,81E-02	0,00E+00	0,00E+00	9,05E-04	5,49E-05	1,75E-02	-9,46E-03
POCP	[kg NMVOC eq.]	2,04E-01	4,88E-03	0,00E+00	0,00E+00	1,57E-04	1,44E-05	4,83E-03	-3,15E-03
ADP-m&m	[kg Sb eq.]	1,00E-04	1,49E-07	0,00E+00	0,00E+00	4,79E-09	1,18E-09	7,74E-08	-1,54E-06
ADP-fossil	[MJ]	1,44E+03	2,28E+01	0,00E+00	0,00E+00	7,36E-01	2,03E-02	1,13E+01	-9,99E+01
WDP	[m ³ world equiv.]	1,82E+01	7,42E-03	0,00E+00	0,00E+00	2,39E-04	1,82E-04	9,05E-02	6,15E-02

4.2 Indicators of raw material use

The results of raw materials use are presented with ten indicators in accordance with the standard EN 15804 (see Table 17). Indicators include the use of renewable and non-renewable energy, the use of renewable and non-renewable material resources and the use of water.

Table 17: Abbreviations and units of indicators of raw material use

Indicators of raw material use	Abbreviation	Unit
use of renewable primary energy excluding renewable primary energy resources used as raw materials	PERE	MJ, net calorific value
use of renewable primary energy resources used as raw materials	PERM	MJ, net calorific value
total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	PERT	MJ, net calorific value
use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	PENRE	MJ, net calorific value
use of non-renewable primary energy sources used as raw materials	PENRM	MJ, net calorific value
total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)	PENRT	MJ, net calorific value
use of secondary materials	SM	kg
use of renewable secondary fuels	RSF	MJ, net calorific value
use of non-renewable secondary fuels	NRSF	MJ, net calorific value
net use fresh water	FW	m ³

The tabular representation of all raw materials for different versions of the URSA glass wool are summarised from Table 18 Table 28.

Table 18: Indicators of raw material use per 1m³ of glass wool GW DF 39

Abbreviation	Unit	DF 39							
		A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	[MJ]	5,70E+01	1,80E-01	0,00E+00	0,00E+00	1,07E-02	9,97E-04	3,61E-01	-8,32E-01
PERM	[MJ]	8,12E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	5,70E+01	1,80E-01	0,00E+00	0,00E+00	1,07E-02	9,97E-04	3,61E-01	-8,32E-01
PENRE	[MJ]	3,92E+02	3,01E+00	0,00E+00	0,00E+00	1,79E-01	1,18E-02	2,76E+00	-9,37E+01
PENRM	[MJ]	1,08E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	3,92E+02	3,01E+00	0,00E+00	0,00E+00	1,79E-01	1,18E-02	2,76E+00	-9,37E+01
SM	[kg]	6,94E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	[m ³]	1,37E-01	1,59E-04	0,00E+00	0,00E+00	9,47E-06	3,10E-06	6,95E-04	5,42E-04

Table 19: Indicators of raw material use per 1m³ of glass wool GW DF 39 Na

DF 39 Na									
Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	[MJ]	5,85E+01	3,08E-01	0,00E+00	0,00E+00	1,10E-02	1,21E-03	3,70E-01	-9,52E-01
PERM	[MJ]	9,27E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	5,85E+01	3,08E-01	0,00E+00	0,00E+00	1,10E-02	1,21E-03	3,70E-01	-9,52E-01
PENRE	[MJ]	3,98E+02	5,15E+00	0,00E+00	0,00E+00	1,83E-01	1,44E-02	2,82E+00	-9,52E+01
PENRM	[MJ]	1,31E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	3,98E+02	5,15E+00	0,00E+00	0,00E+00	1,83E-01	1,44E-02	2,82E+00	-9,52E+01
SM	[kg]	6,49E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	[m ³]	1,39E-01	2,73E-04	0,00E+00	0,00E+00	9,70E-06	3,77E-06	7,12E-04	3,45E-04

Table 20: Indicators of raw material use per 1m³ of glass wool GW SF 34

SF 34									
Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	[MJ]	9,06E+01	1,29E-01	0,00E+00	0,00E+00	1,69E-02	1,44E-03	5,69E-01	-1,10E+00
PERM	[MJ]	1,37E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	9,06E+01	1,29E-01	0,00E+00	0,00E+00	1,69E-02	1,44E-03	5,69E-01	-1,10E+00
PENRE	[MJ]	6,45E+02	2,15E+00	0,00E+00	0,00E+00	2,82E-01	1,71E-02	4,35E+00	-9,72E+01
PENRM	[MJ]	1,55E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	6,45E+02	2,15E+00	0,00E+00	0,00E+00	2,82E-01	1,71E-02	4,35E+00	-9,72E+01
SM	[kg]	6,02E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	[m ³]	2,32E-01	1,14E-04	0,00E+00	0,00E+00	1,49E-05	4,48E-06	1,10E-03	9,56E-05

Table 21: Indicators of raw material use per 1m³ of glass wool GW SF 32 solarwool

SF 32 solarwool									
Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	[MJ]	1,36E+02	1,70E-01	0,00E+00	0,00E+00	2,43E-02	2,47E-03	8,20E-01	-2,11E+00
PERM	[MJ]	2,58E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	1,36E+02	1,70E-01	0,00E+00	0,00E+00	2,43E-02	2,47E-03	8,20E-01	-2,11E+00
PENRE	[MJ]	9,36E+02	2,85E+00	0,00E+00	0,00E+00	4,07E-01	2,93E-02	6,26E+00	-1,10E+02
PENRM	[MJ]	2,66E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	9,36E+02	2,85E+00	0,00E+00	0,00E+00	4,07E-01	2,93E-02	6,26E+00	-1,10E+02
SM	[kg]	3,90E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	[m ³]	3,31E-01	1,51E-04	0,00E+00	0,00E+00	2,15E-05	7,67E-06	1,58E-03	-1,56E-03

Table 22: Indicators of raw material use per 1m³ of glass wool GW FDP 2

FDP 2									
Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	[MJ]	1,06E+02	2,66E-01	0,00E+00	0,00E+00	1,85E-02	3,68E-03	6,25E-01	-3,99E+00
PERM	[MJ]	2,17E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	1,06E+02	2,66E-01	0,00E+00	0,00E+00	1,85E-02	3,68E-03	6,25E-01	-3,99E+00
PENRE	[MJ]	7,35E+02	4,45E+00	0,00E+00	0,00E+00	3,10E-01	4,38E-02	4,77E+00	-1,34E+02
PENRM	[MJ]	3,97E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	7,35E+02	4,45E+00	0,00E+00	0,00E+00	3,10E-01	4,38E-02	4,77E+00	-1,34E+02
SM	[kg]	1,39E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	[m ³]	2,57E-01	2,35E-04	0,00E+00	0,00E+00	1,64E-05	1,15E-05	1,20E-03	-4,65E-03

Table 23: Indicators of raw material use per 1m³ of glass wool GW FDP 3Vr

FDP 3Vr									
Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	[MJ]	1,26E+02	2,72E-01	0,00E+00	0,00E+00	1,95E-02	3,96E-03	6,59E-01	-4,53E+00
PERM	[MJ]	3,34E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	1,26E+02	2,72E-01	0,00E+00	0,00E+00	1,95E-02	3,96E-03	6,59E-01	-4,53E+00
PENRE	[MJ]	7,96E+02	4,55E+00	0,00E+00	0,00E+00	3,27E-01	4,71E-02	5,03E+00	-1,41E+02
PENRM	[MJ]	4,28E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	7,96E+02	4,55E+00	0,00E+00	0,00E+00	3,27E-01	4,71E-02	5,03E+00	-1,41E+02
SM	[kg]	8,09E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	[m ³]	2,78E-01	2,41E-04	0,00E+00	0,00E+00	1,73E-05	1,23E-05	1,27E-03	-5,54E-03

Table 24: Indicators of raw material use per 1m³ of glass wool GW AKP 2 Nb

AKP 2 Nb									
Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	[MJ]	1,21E+02	5,17E-01	0,00E+00	0,00E+00	1,71E-02	4,11E-03	5,77E-01	-4,83E+00
PERM	[MJ]	3,80E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	1,21E+02	5,17E-01	0,00E+00	0,00E+00	1,71E-02	4,11E-03	5,77E-01	-4,83E+00
PENRE	[MJ]	7,21E+02	8,65E+00	0,00E+00	0,00E+00	2,86E-01	4,89E-02	4,40E+00	-1,45E+02
PENRM	[MJ]	4,44E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	7,21E+02	8,65E+00	0,00E+00	0,00E+00	2,86E-01	4,89E-02	4,40E+00	-1,45E+02
SM	[kg]	4,97E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	[m ³]	2,50E-01	4,58E-04	0,00E+00	0,00E+00	1,51E-05	1,28E-05	1,11E-03	-6,04E-03

Table 25: Indicators of raw material use per 1m³ of glass wool GW AKP 5 Nb

AKP 5 Nb									
Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	[MJ]	1,99E+02	9,87E-01	0,00E+00	0,00E+00	3,33E-02	6,50E-03	1,12E+00	-1,12E+01
PERM	[MJ]	6,20E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	1,99E+02	9,87E-01	0,00E+00	0,00E+00	3,33E-02	6,50E-03	1,12E+00	-1,12E+01
PENRE	[MJ]	1,30E+03	1,65E+01	0,00E+00	0,00E+00	5,58E-01	7,72E-02	8,59E+00	-2,26E+02
PENRM	[MJ]	7,01E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	1,30E+03	1,65E+01	0,00E+00	0,00E+00	5,58E-01	7,72E-02	8,59E+00	-2,26E+02
SM	[kg]	4,43E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	[m ³]	4,61E-01	8,74E-04	0,00E+00	0,00E+00	2,95E-05	2,02E-05	2,17E-03	-1,65E-02

Table 26: Indicators of raw material use per 1m³ of glass wool GW FDP 5

FDP 5									
Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	[MJ]	1,94E+02	9,88E-01	0,00E+00	0,00E+00	2,98E-02	3,02E-02	1,01E+00	-7,04E+00
PERM	[MJ]	5,55E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	1,94E+02	9,88E-01	0,00E+00	0,00E+00	2,98E-02	3,02E-02	1,01E+00	-7,04E+00
PENRE	[MJ]	1,26E+03	1,65E+01	0,00E+00	0,00E+00	5,00E-01	3,59E-01	7,69E+00	-1,73E+02
PENRM	[MJ]	3,26E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	1,26E+03	1,65E+01	0,00E+00	0,00E+00	5,00E-01	3,59E-01	7,69E+00	-1,73E+02
SM	[kg]	5,34E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	[m ³]	4,53E-01	8,75E-04	0,00E+00	0,00E+00	2,64E-05	9,39E-05	1,94E-03	-9,67E-03

Table 27: Indicators of raw material use per 1m³ of glass wool GW FDP 5 Dvk-XL

FDP 5 Dvk-XL									
Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	[MJ]	2,85E+02	1,04E+00	0,00E+00	0,00E+00	3,23E-02	2,12E-03	1,09E+00	-1,71E+00
PERM	[MJ]	1,49E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	2,85E+02	1,04E+00	0,00E+00	0,00E+00	3,23E-02	2,12E-03	1,09E+00	-1,71E+00
PENRE	[MJ]	1,25E+03	1,74E+01	0,00E+00	0,00E+00	5,41E-01	2,52E-02	8,33E+00	-1,05E+02
PENRM	[MJ]	2,28E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	1,25E+03	1,74E+01	0,00E+00	0,00E+00	5,41E-01	2,52E-02	8,33E+00	-1,05E+02
SM	[kg]	4,62E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	[m ³]	4,68E-01	9,23E-04	0,00E+00	0,00E+00	2,86E-05	6,59E-06	2,10E-03	-8,99E-04

Table 28: Indicators of raw material use per 1m³ of glass wool GW AKP 5 VkaC-XL

AKP 5 VkaC-XL									
Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	[MJ]	3,01E+02	1,36E+00	0,00E+00	0,00E+00	4,40E-02	1,71E-03	1,48E+00	-1,31E+00
PERM	[MJ]	1,61E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	3,01E+02	1,36E+00	0,00E+00	0,00E+00	4,40E-02	1,71E-03	1,48E+00	-1,31E+00
PENRE	[MJ]	1,44E+03	2,28E+01	0,00E+00	0,00E+00	7,36E-01	2,03E-02	1,13E+01	-9,99E+01
PENRM	[MJ]	1,84E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	1,44E+03	2,28E+01	0,00E+00	0,00E+00	7,36E-01	2,03E-02	1,13E+01	-9,99E+01
SM	[kg]	5,47E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	[m ³]	5,59E-01	1,21E-03	0,00E+00	0,00E+00	3,89E-05	5,31E-06	2,86E-03	-2,50E-04

4.3 Other indicators of environmental impacts

The results for other environmental information describing waste categories (i.e., waste disposal data) are presented with three indicators in accordance with the standard EN 15804. (see Table 29).

Table 29: Abbreviations and units of other indicators of environmental impacts

Indicators for other environmental information	Abbreviation	Units
hazardous waste disposal	HWD	kg
non-hazardous waste disposal	NHWD	kg
radioactive waste disposal	RWD	kg
Output flow indicators	Abbreviation	Units
components for re-use	CRU	kg
material for recycling	MFR	kg
materials for energy recovery	MER	kg
exported energy	EE	MJ on the energy carrier

The tabular representation of other environmental information for different versions of the URSA glass wool are summarised from Table 30 to Table 40.

Table 30: Other indicators of environmental impacts per 1m³ of glass wool GW DF 39

		DF 39								
Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D	
HWD	[kg]	4,46E-07	1,12E-07	0,00E+00	0,00E+00	6,65E-09	2,49E-10	4,20E-08	-1,94E-08	
NHWD	[kg]	1,76E-01	5,38E-04	0,00E+00	0,00E+00	3,20E-05	3,57E-06	1,39E+01	-1,49E-02	
RWD	[kg]	1,43E-02	3,99E-06	0,00E+00	0,00E+00	2,37E-07	9,51E-08	3,14E-05	-1,57E-04	
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	
MFR	[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	
MER	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,06E-01	
EE	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,51E-01	0,00E+00	4,51E-01	

Table 31: Other indicators of environmental impacts per 1m³ of glass wool GW DF 39 Na

		DF 39 Na								
Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D	
HWD	[kg]	4,70E-07	1,91E-07	0,00E+00	0,00E+00	6,81E-09	3,03E-10	4,30E-08	-1,98E-08	
NHWD	[kg]	1,78E-01	9,21E-04	0,00E+00	0,00E+00	3,28E-05	4,34E-06	1,42E+01	-1,52E-02	
RWD	[kg]	1,43E-02	6,81E-06	0,00E+00	0,00E+00	2,42E-07	1,16E-07	3,21E-05	-1,74E-04	
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	
MFR	[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	
MER	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,51E-01	0,00E+00	2,51E-01	
EE	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,15E-01	0,00E+00	5,15E-01	

Table 32: Other indicators of environmental impacts per 1m³ of glass wool GW SF 34

		SF 34								
Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D	
HWD	[kg]	6,98E-07	7,99E-08	0,00E+00	0,00E+00	1,05E-08	3,60E-10	6,63E-08	-2,04E-08	
NHWD	[kg]	2,73E-01	3,84E-04	0,00E+00	0,00E+00	5,05E-05	5,15E-06	2,19E+01	-1,57E-02	
RWD	[kg]	2,22E-02	2,85E-06	0,00E+00	0,00E+00	3,73E-07	1,37E-07	4,95E-05	-1,96E-04	
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	
MFR	[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	
MER	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	7,63E-01	0,00E+00	7,63E-01	
EE	[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	

Table 33: Other indicators of environmental impacts per 1m³ of glass wool GW SF 32 solarwool

		SF 32 solarwool								
Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D	
HWD	[kg]	1,04E-06	1,06E-07	0,00E+00	0,00E+00	1,51E-08	6,17E-10	9,54E-08	-2,42E-08	
NHWD	[kg]	3,91E-01	5,09E-04	0,00E+00	0,00E+00	7,26E-05	8,82E-06	3,15E+01	-1,90E-02	
RWD	[kg]	3,18E-02	3,77E-06	0,00E+00	0,00E+00	5,38E-07	2,35E-07	7,12E-05	-3,44E-04	
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	
MFR	[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	
MER	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,10E-01	0,00E+00	5,10E-01	
EE	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,44E+00	0,00E+00	1,44E+00	

Table 34: Other indicators of environmental impacts per 1m³ of glass wool GW FDP 2

		FDP 2								
Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D	
HWD	[kg]	8,82E-07	1,65E-07	0,00E+00	0,00E+00	1,15E-08	9,22E-10	7,27E-08	-3,13E-08	
NHWD	[kg]	3,04E-01	7,95E-04	0,00E+00	0,00E+00	5,54E-05	1,32E-05	2,40E+01	-2,51E-02	
RWD	[kg]	2,32E-02	5,89E-06	0,00E+00	0,00E+00	4,10E-07	3,51E-07	5,43E-05	-6,18E-04	
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	
MFR	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	7,61E-01	0,00E+00	7,61E-01	
MER	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,22E+00	0,00E+00	1,22E+00	
EE	[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	

Table 35: Other indicators of environmental impacts per 1m³ of glass wool GW FDP 3/Vr

		FDP 3/Vr								
Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D	
HWD	[kg]	9,70E-07	1,69E-07	0,00E+00	0,00E+00	1,21E-08	9,92E-10	7,67E-08	-3,33E-08	
NHWD	[kg]	3,25E-01	8,14E-04	0,00E+00	0,00E+00	5,84E-05	1,42E-05	2,53E+01	-2,68E-02	
RWD	[kg]	2,59E-02	6,02E-06	0,00E+00	0,00E+00	4,32E-07	3,78E-07	5,73E-05	-6,97E-04	
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	
MFR	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	8,19E-01	0,00E+00	8,19E-01	
MER	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,86E+00	0,00E+00	1,86E+00	
EE	[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	

Table 36: Other indicators of environmental impacts per 1m³ of glass wool GW AKP 2 Nb

		AKP 2 Nb								
Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D	
HWD	[kg]	9,25E-07	3,21E-07	0,00E+00	0,00E+00	1,06E-08	1,03E-09	6,71E-08	-3,45E-08	
NHWD	[kg]	2,97E-01	1,55E-03	0,00E+00	0,00E+00	5,11E-05	1,47E-05	2,21E+01	-2,78E-02	
RWD	[kg]	2,34E-02	1,14E-05	0,00E+00	0,00E+00	3,78E-07	3,93E-07	5,01E-05	-7,42E-04	
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	
MFR	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	8,50E-01	0,00E+00	8,50E-01	
MER	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,12E+00	0,00E+00	2,12E+00	
EE	[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	

Table 37: Other indicators of environmental impacts per 1m³ of glass wool GW AKP 5 Nb

		AKP 5 Nb								
Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D	
HWD	[kg]	1,74E-06	6,13E-07	0,00E+00	0,00E+00	2,07E-08	1,63E-09	1,31E-07	-5,84E-08	
NHWD	[kg]	5,54E-01	2,95E-03	0,00E+00	0,00E+00	9,96E-05	2,32E-05	4,32E+01	-4,83E-02	
RWD	[kg]	3,81E-02	2,19E-05	0,00E+00	0,00E+00	7,38E-07	6,20E-07	9,77E-05	-1,67E-03	
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	
MFR	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,34E+00	0,00E+00	1,34E+00	
MER	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,44E+00	0,00E+00	3,44E+00	
EE	[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	

Table 38: Other indicators of environmental impacts per 1m³ of glass wool GW FDP 5

		FDP 5								
Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D	
HWD	[kg]	1,45E-06	6,14E-07	0,00E+00	0,00E+00	1,85E-08	7,56E-09	1,17E-07	-4,28E-08	
NHWD	[kg]	4,78E-01	2,95E-03	0,00E+00	0,00E+00	8,92E-05	1,08E-04	3,87E+01	-3,49E-02	
RWD	[kg]	3,78E-02	2,19E-05	0,00E+00	0,00E+00	6,61E-07	2,88E-06	8,75E-05	-1,06E-03	
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	
MFR	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,24E+00	0,00E+00	6,24E+00	
MER	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,09E+00	0,00E+00	3,09E+00	
EE	[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	

Table 39: Other indicators of environmental impacts per 1m³ of glass wool GW FDP 5 Dvk-XL

		FDP 5 Dvk-XL								
Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D	
HWD	[kg]	1,58E-06	6,48E-07	0,00E+00	0,00E+00	2,01E-08	5,30E-10	1,27E-07	-2,27E-08	
NHWD	[kg]	5,11E-01	3,12E-03	0,00E+00	0,00E+00	9,67E-05	7,57E-06	4,19E+01	-1,77E-02	
RWD	[kg]	3,78E-02	2,31E-05	0,00E+00	0,00E+00	7,16E-07	2,02E-07	9,48E-05	-2,85E-04	
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	
MFR	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,38E-01	0,00E+00	4,38E-01	
MER	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	8,31E+00	0,00E+00	8,31E+00	
EE	[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	

Table 40: Other indicators of environmental impacts per 1m³ of glass wool GW AKP 5 VkAc-XL

		AKP 5 VkAc-XL								
Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D	
HWD	[kg]	1,91E-06	8,48E-07	0,00E+00	0,00E+00	2,73E-08	4,27E-10	1,73E-07	-2,12E-08	
NHWD	[kg]	5,87E-01	4,08E-03	0,00E+00	0,00E+00	1,31E-04	6,10E-06	5,70E+01	-1,64E-02	
RWD	[kg]	3,78E-02	3,02E-05	0,00E+00	0,00E+00	9,73E-07	1,63E-07	1,29E-04	-2,27E-04	
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	
MFR	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,53E-01	0,00E+00	3,53E-01	
MER	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	8,95E+00	0,00E+00	8,95E+00	
EE	[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	

4.4 Additional impact categories and indicators

The results of the additional environmental impact indicators are presented with six indicators in accordance with the standard EN 15804. (see Table 41).

Table 41: Abbreviations and units of additional impact categories and indicators

Indicators for additional impact	Abbreviation	Unit
potential incidence of disease due to PM emissions	PM	disease incidence
potential human exposure efficiency relative to U235	IRP	kBq U235 equiv
potential comparative toxic unit for ecosystems	ETP-fw	CTUe
potential comparative toxic unit for humans-cancerogenic	HTP-c	CTUh
potential comparative toxic unit for humans-non-cancerogenic	HTP-nc	CTUh
potential soil quality index	SQP	-

The tabular representation of the additional environmental information for different versions of the URSA glass wool are summarised from Table 42 to Table 52.

Table 42: Additional indicators of environmental impacts per 1m³ of glass wool GW DF 39

		DF 39								
Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D	
PM	incidenca bolezni	7,40E-07	5,08E-09	0,00E+00	0,00E+00	3,02E-10	1,36E-10	1,87E-08	-2,27E-08	
IRP	kBq ²³⁵ U eq.	1,52E+00	3,95E-04	0,00E+00	0,00E+00	2,35E-05	8,60E-06	3,23E-03	-2,21E-02	
ETP-fw	CTUe	4,14E+02	2,42E+00	0,00E+00	0,00E+00	1,44E-01	9,33E-03	1,57E+00	-2,69E+00	
HTP-c	CTUh	2,58E-08	5,84E-11	0,00E+00	0,00E+00	3,47E-12	2,22E-13	2,33E-10	-2,51E-09	
HTP-nc	CTUh	1,82E-07	2,95E-09	0,00E+00	0,00E+00	1,76E-10	1,20E-11	2,57E-08	-3,15E-08	
SQP	brez dimenzije	1,51E+02	9,44E-01	0,00E+00	0,00E+00	5,61E-02	2,62E-03	5,75E-01	-6,54E-01	

Table 43: Additional indicators of environmental impacts per 1m³ of glass wool GW DF 39 Na

		DF 39 Na								
Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D	
PM	incidenca bolezni	7,60E-07	8,68E-09	0,00E+00	0,00E+00	3,09E-10	1,65E-10	1,91E-08	-2,32E-08	
IRP	kBq ²³⁵ U eq.	1,53E+00	6,75E-04	0,00E+00	0,00E+00	2,40E-05	1,05E-05	3,31E-03	-2,37E-02	
ETP-fw	CTUe	4,22E+02	4,13E+00	0,00E+00	0,00E+00	1,47E-01	1,13E-02	1,61E+00	-3,45E+00	
HTP-c	CTUh	2,62E-08	9,99E-11	0,00E+00	0,00E+00	3,55E-12	2,70E-13	2,39E-10	-2,53E-09	
HTP-nc	CTUh	1,86E-07	5,05E-09	0,00E+00	0,00E+00	1,80E-10	1,46E-11	2,63E-08	-3,23E-08	
SQP	brez dimenzije	1,67E+02	1,61E+00	0,00E+00	0,00E+00	5,74E-02	3,19E-03	5,88E-01	-7,60E-01	

Table 44: Additional indicators of environmental impacts per 1m³ of glass wool GW SF 34

		SF 34								
Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D	
PM	incidenca bolezni	1,22E-06	3,62E-09	0,00E+00	0,00E+00	4,76E-10	1,96E-10	2,94E-08	-2,38E-08	
IRP	kBq ²³⁵ U eq.	2,46E+00	2,82E-04	0,00E+00	0,00E+00	3,70E-05	1,24E-05	5,09E-03	-2,57E-02	
ETP-fw	CTUe	6,81E+02	1,73E+00	0,00E+00	0,00E+00	2,26E-01	1,35E-02	2,48E+00	-4,40E+00	
HTP-c	CTUh	4,81E-08	4,17E-11	0,00E+00	0,00E+00	5,47E-12	3,21E-13	3,68E-10	-2,55E-09	
HTP-nc	CTUh	2,96E-07	2,11E-09	0,00E+00	0,00E+00	2,77E-10	1,73E-11	4,05E-08	-3,33E-08	
SQP	brez dimenzije	2,52E+02	6,74E-01	0,00E+00	0,00E+00	8,85E-02	3,79E-03	9,06E-01	-8,95E-01	

Table 45: Additional indicators of environmental impacts per 1m³ of glass wool GW SF 32 solarwool

		SF 32 solarwool								
Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D	
PM	incidenca bolezní	1,83E-06	4,80E-09	0,00E+00	0,00E+00	6,85E-10	3,36E-10	4,24E-08	-2,81E-08	
IRP	kBq ²³⁵ U eq.	3,55E+00	3,73E-04	0,00E+00	0,00E+00	5,33E-05	2,13E-05	7,33E-03	-3,89E-02	
ETP-fw	CTUe	9,85E+02	2,28E+00	0,00E+00	0,00E+00	3,26E-01	2,31E-02	3,58E+00	-1,07E+01	
HTP-c	CTUh	6,99E-08	5,52E-11	0,00E+00	0,00E+00	7,88E-12	5,50E-13	5,30E-10	-2,71E-09	
HTP-nc	CTUh	4,30E-07	2,79E-09	0,00E+00	0,00E+00	3,98E-10	2,97E-11	5,84E-08	-4,03E-08	
SQP	brez dimenzije	4,45E+02	8,92E-01	0,00E+00	0,00E+00	1,27E-01	6,49E-03	1,30E+00	-1,79E+00	

Table 46: Additional indicators of environmental impacts per 1m³ of glass wool GW FDP 2

		FDP 2								
Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D	
PM	incidenca bolezní	1,45E-06	7,50E-09	0,00E+00	0,00E+00	5,22E-10	5,02E-10	3,23E-08	-3,62E-08	
IRP	kBq ²³⁵ U eq.	2,68E+00	5,83E-04	0,00E+00	0,00E+00	4,06E-05	3,18E-05	5,59E-03	-6,36E-02	
ETP-fw	CTUe	8,86E+02	3,57E+00	0,00E+00	0,00E+00	2,48E-01	3,45E-02	2,73E+00	-2,25E+01	
HTP-c	CTUh	5,40E-08	8,63E-11	0,00E+00	0,00E+00	6,01E-12	8,21E-13	4,04E-10	-3,00E-09	
HTP-nc	CTUh	3,53E-07	4,36E-09	0,00E+00	0,00E+00	3,04E-10	4,43E-11	4,45E-08	-5,33E-08	
SQP	brez dimenzije	3,71E+02	1,39E+00	0,00E+00	0,00E+00	9,71E-02	9,69E-03	9,94E-01	-3,46E+00	

Table 47: Additional indicators of environmental impacts per 1m³ of glass wool GW FDP 3/Vr

		FDP 3/Vr								
Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D	
PM	incidenca bolezní	1,68E-06	7,67E-09	0,00E+00	0,00E+00	5,51E-10	5,40E-10	3,41E-08	-3,85E-08	
IRP	kBq ²³⁵ U eq.	2,93E+00	5,97E-04	0,00E+00	0,00E+00	4,28E-05	3,42E-05	5,89E-03	-7,07E-02	
ETP-fw	CTUe	9,43E+02	3,65E+00	0,00E+00	0,00E+00	2,62E-01	3,71E-02	2,87E+00	-2,59E+01	
HTP-c	CTUh	5,66E-08	8,83E-11	0,00E+00	0,00E+00	6,33E-12	8,84E-13	4,26E-10	-3,08E-09	
HTP-nc	CTUh	3,81E-07	4,47E-09	0,00E+00	0,00E+00	3,20E-10	4,77E-11	4,69E-08	-5,71E-08	
SQP	brez dimenzije	5,33E+02	1,43E+00	0,00E+00	0,00E+00	1,02E-01	1,04E-02	1,05E+00	-3,93E+00	

Table 48: Additional indicators of environmental impacts per 1m³ of glass wool GW AKP 2 Nb

		AKP 2 Nb								
Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D	
PM	incidenca bolezní	1,54E-06	1,46E-08	0,00E+00	0,00E+00	4,82E-10	5,61E-10	2,98E-08	-3,98E-08	
IRP	kBq ²³⁵ U eq.	2,50E+00	1,13E-03	0,00E+00	0,00E+00	3,75E-05	3,55E-05	5,16E-03	-7,48E-02	
ETP-fw	CTUe	7,53E+02	6,93E+00	0,00E+00	0,00E+00	2,29E-01	3,85E-02	2,51E+00	-2,78E+01	
HTP-c	CTUh	5,35E-08	1,68E-10	0,00E+00	0,00E+00	5,54E-12	9,18E-13	3,73E-10	-3,13E-09	
HTP-nc	CTUh	3,41E-07	8,48E-09	0,00E+00	0,00E+00	2,80E-10	4,95E-11	4,11E-08	-5,92E-08	
SQP	brez dimenzije	5,82E+02	2,71E+00	0,00E+00	0,00E+00	8,96E-02	1,08E-02	9,18E-01	-4,21E+00	

Table 49: Additional indicators of environmental impacts per 1m³ of glass wool GW AKP 5 Nb

		AKP 5 Nb								
Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D	
PM	incidenca bolezní	2,75E-06	2,78E-08	0,00E+00	0,00E+00	9,40E-10	8,86E-10	5,81E-08	-6,69E-08	
IRP	kBq ²³⁵ U eq.	4,26E+00	2,17E-03	0,00E+00	0,00E+00	7,31E-05	5,60E-05	1,01E-02	-1,58E-01	
ETP-fw	CTUe	1,52E+03	1,32E+01	0,00E+00	0,00E+00	4,47E-01	6,08E-02	4,91E+00	-6,78E+01	
HTP-c	CTUh	1,13E-07	3,20E-10	0,00E+00	0,00E+00	1,08E-11	1,45E-12	7,27E-10	-4,10E-09	
HTP-nc	CTUh	6,31E-07	1,62E-08	0,00E+00	0,00E+00	5,47E-10	7,81E-11	8,01E-08	-1,03E-07	
SQP	brez dimenzije	9,55E+02	5,18E+00	0,00E+00	0,00E+00	1,75E-01	1,71E-02	1,79E+00	-9,84E+00	

Table 50: Additional indicators of environmental impacts per 1m³ of glass wool GW FDP 5

		FDP 5								
Abbreviation	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D	
PM	incidenca bolezní	2,71E-06	2,79E-08	0,00E+00	0,00E+00	8,41E-10	4,12E-09	5,20E-08	-4,92E-08	
IRP	kBq ²³⁵ U eq.	4,57E+00	2,17E-03	0,00E+00	0,00E+00	6,55E-05	2,80E-04	9,01E-03	-1,04E-01	
ETP-fw	CTUe	1,55E+03	1,33E+01	0,00E+00	0,00E+00	4,00E-01	2,83E-01	4,39E+00	-4,17E+01	
HTP-c	CTUh	1,02E-07	3,21E-10	0,00E+00	0,00E+00	9,68E-12	6,74E-12	6,51E-10	-3,47E-09	
HTP-nc	CTUh	5,96E-07	1,62E-08	0,00E+00	0,00E+00	4,90E-10	3,63E-10	7,17E-08	-7,44E-08	
SQP	brez dimenzije	8,79E+02	5,18E+00	0,00E+00	0,00E+00	1,56E-01	7,94E-02	1,60E+00	-6,16E+00	

Table 51: Additional indicators of environmental impacts per 1m³ of glass wool GW FDP 5 Dvk-XL

		FDP 5 Dvk-XL								
Okrajšava	Enota	A1-A3	A4	A5	C1	C2	C3	C4	D	
PM	incidenca bolezní	3,94E-06	2,94E-08	0,00E+00	0,00E+00	9,11E-10	2,89E-10	5,64E-08	-2,64E-08	
IRP	kBq ²³⁵ U eq.	4,70E+00	2,29E-03	0,00E+00	0,00E+00	7,09E-05	1,83E-05	9,76E-03	-3,36E-02	
ETP-fw	CTUe	1,64E+03	1,40E+01	0,00E+00	0,00E+00	4,34E-01	1,98E-02	4,76E+00	-8,20E+00	
HTP-c	CTUh	1,08E-07	3,38E-10	0,00E+00	0,00E+00	1,05E-11	4,72E-13	7,05E-10	-2,65E-09	
HTP-nc	CTUh	6,03E-07	1,71E-08	0,00E+00	0,00E+00	5,30E-10	2,55E-11	7,77E-08	-3,75E-08	
SQP	brez dimenzije	2,13E+03	5,46E+00	0,00E+00	0,00E+00	1,69E-01	5,57E-03	1,74E+00	-1,43E+00	

Table 52: Additional indicators of environmental impacts per 1m³ of glass wool GW AKP VkaC-XL

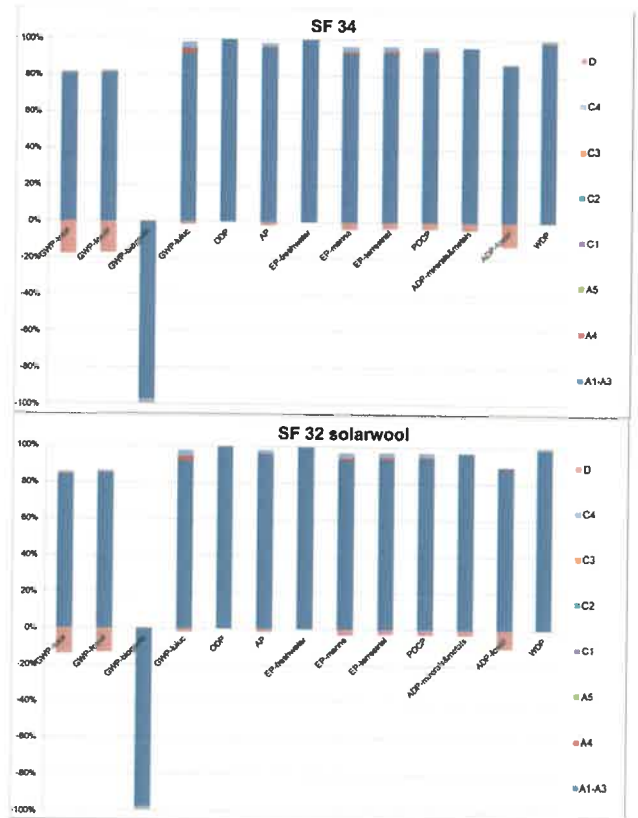
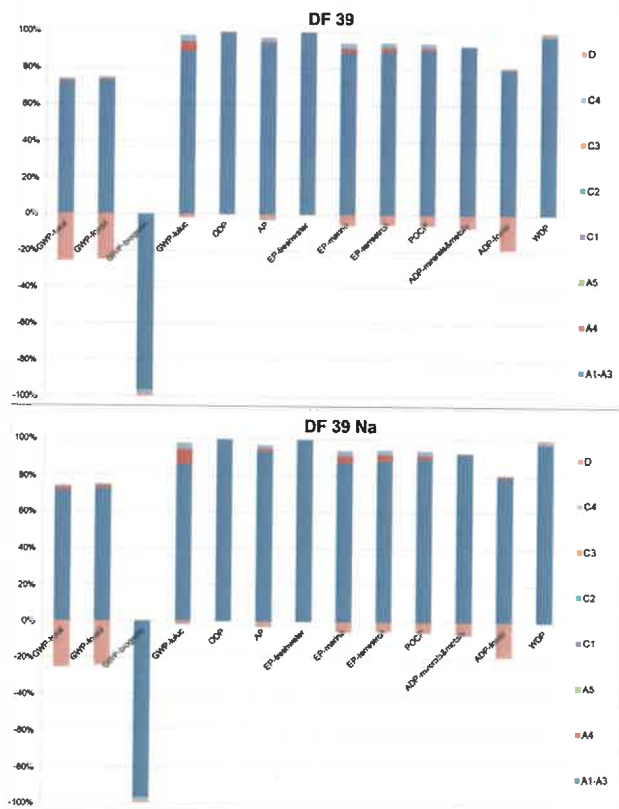
Okrajšava	Enota	AKP VkaC-XL							
		A1-A3	A4	A5	C1	C2	C3	C4	D
PM	incidenca bolezni	4,46E-06	3,85E-08	0,00E+00	0,00E+00	1,24E-09	2,33E-10	7,67E-08	-2,47E-08
IRP	kBq ²³⁸ U eq.	5,24E+00	2,99E-03	0,00E+00	0,00E+00	9,65E-05	1,47E-05	1,33E-02	-2,84E-02
ETP-fw	CTUe	1,77E+03	1,83E+01	0,00E+00	0,00E+00	5,90E-01	1,60E-02	6,47E+00	-5,72E+00
HTP-c	CTUh	1,43E-07	4,42E-10	0,00E+00	0,00E+00	1,43E-11	3,81E-13	9,59E-10	-2,59E-09
HTP-nc	CTUh	6,84E-07	2,24E-08	0,00E+00	0,00E+00	7,21E-10	2,05E-11	1,06E-07	-3,48E-08
SQP	brez dimenzije	2,29E+03	7,15E+00	0,00E+00	0,00E+00	2,31E-01	4,49E-03	2,36E+00	-1,08E+00

Disclaimer 1 – 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.

Disclaimer 2 – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP
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 experience with the indicator.

5 Interpretation of results

URSA glass wool



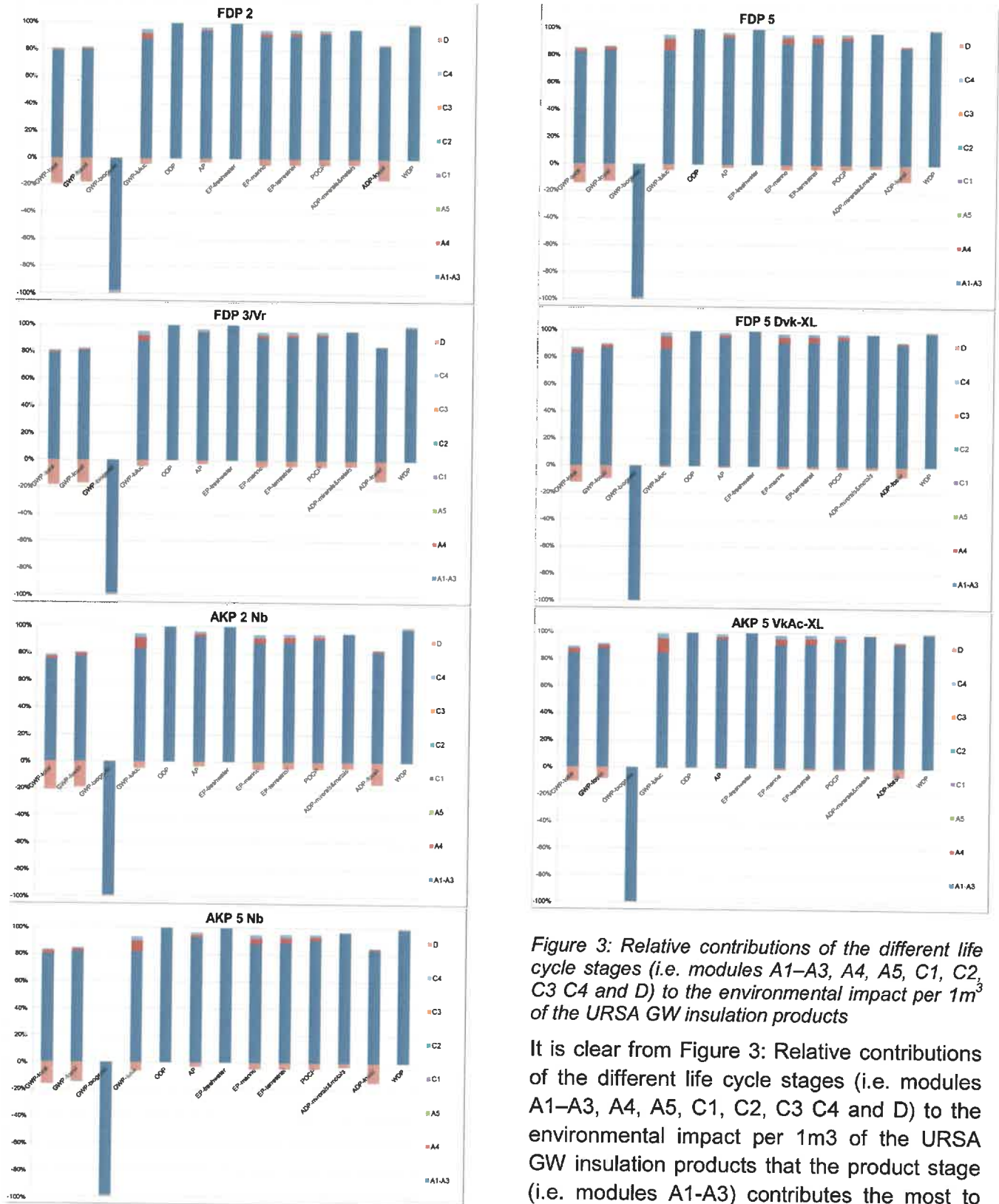


Figure 3: Relative contributions of the different life cycle stages (i.e. modules A1–A3, A4, A5, C1, C2, C3 C4 and D) to the environmental impact per 1m³ of the URSA GW insulation products

It is clear from Figure 3: Relative contributions of the different life cycle stages (i.e. modules A1–A3, A4, A5, C1, C2, C3 C4 and D) to the environmental impact per 1m³ of the URSA GW insulation products that the product stage (i.e. modules A1-A3) contributes the most to the environmental impact of the URSA glass wool products. For example, the product stage represents on average 79,39% of the total environmental impact in terms of GWP–total (sum of GWP–fossil, GWP–biogenic and

GWP–luluc), 100% of the total environmental impact in terms of ODP, 94,32% of the total environmental impact in terms of AP, 99,91% of the total environmental impact in terms of EP–freshwater, 90% of the total environmental impact in terms of EP–marine and 90,64% of the total environmental impact in terms of EP–terrestrial, on average 92,14% of the total environmental impact in terms of POCP, 95,84% of the total environmental impact in terms of ADP–minerals & metals, 85,07% of the total environmental impact in terms of ADP–fos., and 98,76% of the total environmental impact in terms of WDP.

The other life cycle stage that has a more significant impact on the environmental burden associated with the life cycle of the URSA glass wool products is the construction stage (i.e. module A4).

For example, module A4 represents on average 1,65% of the total environmental impact in terms of GWP–total (sum of GWP–fossil, GWP–biogenic and GWP–luluc), 1,22% of the total environmental impact in terms of AP, 0,03% of the total environmental impact in terms of EP–freshwater, 2,95% of the total environmental impact in terms of EP–marine and 2,82% of the total environmental impact in terms of EP–terrestrial.

Figure 3: Relative contributions of the different life cycle stages (i.e. modules A1–A3, A4, A5, C1, C2, C3 C4 and D) to the environmental impact per 1m³ of the URSA GW insulation products also shows that module A4 has a positive environmental impact in terms of POCP, where it presents 1,55% of the total impact in terms of the photochemical ozone creation potential (POCP).

The photochemical ozone (i.e., POCP) is generated by the sunlight-initiated oxidation of volatile organic compounds (VOCs) and carbon monoxide (CO) in the presence of nitrogen oxides (NO_x). The VOCs react differently with different oxidants (e.g. ozone,

NO₂) and therefore can either have negative or positive effects on the ozone formation. The value of the transport (i.e., A4 and C2) in terms of the POCP is related to the separation of the NO_x emissions into the NO₂ and NO emissions, with NO and O₃ (ozone) reacting to form NO₂ and O₂ during the night time and thus leading to a reduction of the POCP.

Furthermore, module A4 represents on average 0,11% of the total environmental impact in terms of ADP–minerals & metals, 0,83% of the total environmental impact in terms of ADP–fos., and 0,03% of the total environmental impact in terms of WDP (see Figure 3: Relative contributions of the different life cycle stages (i.e. modules A1–A3, A4, A5, C1, C2, C3 C4 and D) to the environmental impact per 1m³ of the URSA GW insulation products).

On the other hand, it clear from Figure 3: Relative contributions of the different life cycle stages (i.e. modules A1–A3, A4, A5, C1, C2, C3 C4 and D) to the environmental impact per 1m³ of the URSA GW insulation products that modules C2, C3 and C4 exert a negligible low or no (i.e. modules A5 and C1) environmental burden in terms of the considered environmental impact categories. Moreover, the installation of the URSA glass wool products into the building (i.e. module A5) and the de–construction or demolition of the products (i.e. module C1) are conducted manually.

A potential environmental benefit was calculated for benefits and loads beyond the system boundary stage (i.e. module D) for all the considered environmental impact categories. It is clear from Figure 3: Relative contributions of the different life cycle stages (i.e. modules A1–A3, A4, A5, C1, C2, C3 C4 and D) to the environmental impact per 1m³ of the URSA GW insulation products that there is a potential benefit from the:

- Incineration processes of wooden pallets, labels and mineral oils for heat recovery after use,
- PE foils used for recycling.

A potential environmental benefit can be seen in terms of the following impact categories: negligibly low 0,69% of the total impact in terms of GWP–biogenic and 17,85% of the total impact in terms of GWP–total, 2,44% of the total impact in terms of AP, 0,05% of the total environmental impact in terms of EP–freshwater, 4,21% of the total environmental impact in terms of EP–marine and 3,87% of

the total environmental impact in terms of EP–terrestrial, 4,03% of the total environmental impact in terms of POCP and 13,49% of the total environmental impact in terms of ADP–fos. (see Figure 3: Relative contributions of the different life cycle stages (i.e. modules A1–A3, A4, A5, C1, C2, C3 C4 and D) to the environmental impact per 1m³ of the URSA GW insulation products).

**The results of relative contributions for different life cycle stages are given according to the average values in terms of the total considered parameters.*

6 References

1. GaBi ts (version 10.0.0.71) modelling software
2. Ecoinvent 3.5 databases
3. EN 15804:2012+A2:2019 Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products
4. EN ISO 14040:2006 Environmental management - Life cycle assessment - Principles and framework
5. EN ISO 14044:2006 Environmental management - Life cycle assessment - Requirements and guidelines
6. EN ISO 14025:2010 Environmental labels and declarations - Type III environmental
7. Part B: Requirements on the EPD for Double skin metal faced sandwich panels. Institut Bauen und Umwelt e.V. (IBU). <http://www.epd-online.com> (Accessed: 18/06/2020)
8. Report No. 198/22-520-1, issued 31. 3. 2022

The data specified in the EPD are calculated on the basis of the data provided by the manufacturer. In the event that the manufacturer's information is incorrect, calculations do not apply.