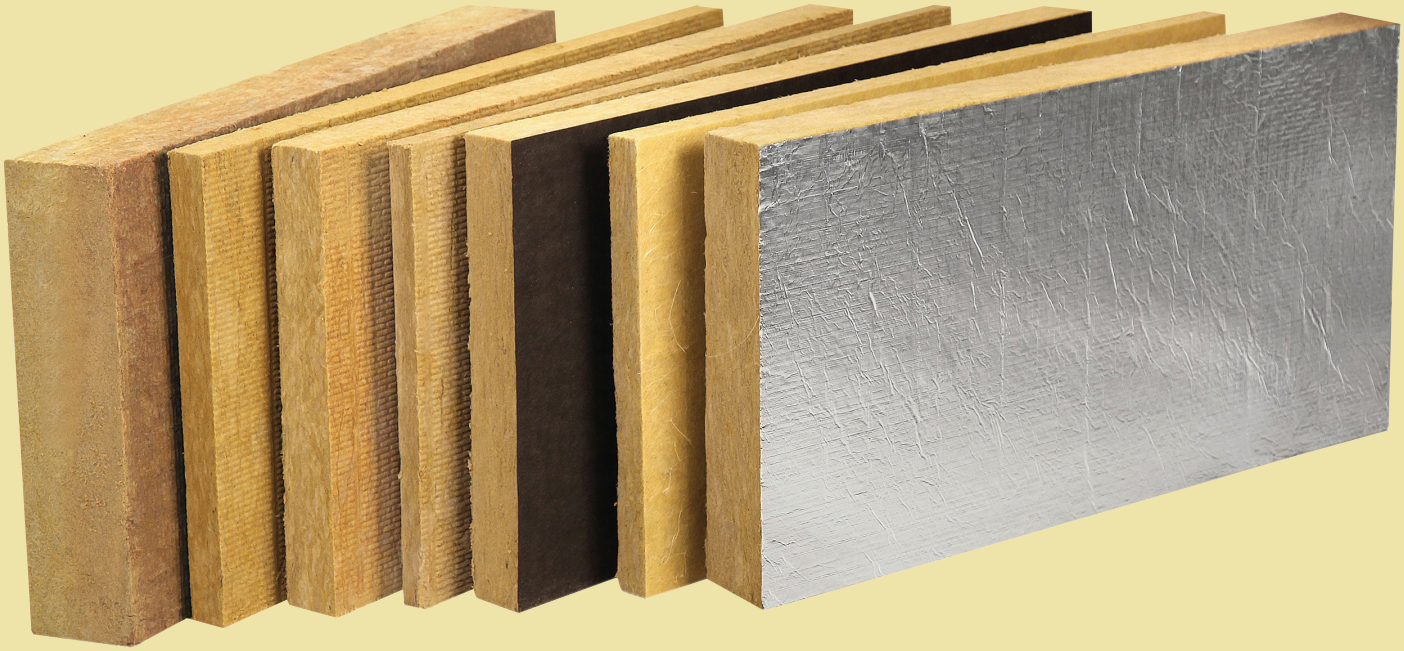

ENVIRONMENTAL PRODUCT DECLARATION

In accordance with ISO 14025 and EN 15804 for:
Stone Wool from **BONUS**

Programme:	The International EPD® System www.environdec.com
Programme operator:	EPD International AB
EPD registration number:	S-P-06765
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An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com

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BONUS BETTER INSULATION

EPD TURKIYE THE INTERNATIONAL EPD® SYSTEM

EPD® THE INTERNATIONAL EPD® SYSTEM

ECO PLATFORM EPD VERIFIED

BONUS YALITIMIN İYİSİ

Programme Information

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ISO standard ISO 21930 and CEN standard EN 15804 serves as the core Product Category Rules (PCR) Product Category Rules (PCR): 2019:14 Version 1.2.5, Construction Products and, EN 15804:2012 + A2:2019/AC:2021 Sustainability of Construction Works, c-PCR005 Thermal insulation products (EN 16783: 2017)

Technical Committee of the International EPD® System. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/contact.

Independent third-party verification of the declaration and data. according to ISO 14025:2006:

EPD process certification EPD verification **X**

Third party verifier: Prof. Ing. Vladimír Kočí, Ph.D., MBA LCA Studio Šárecká 5,16000 Prague 6- Czech Republic

Approved by: The International EPD® System Technical Committee supported by the Secretariat

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Procedure for follow-up of data during EPD validity involves third party verifier:

Yes No **X**

Life Cycle Assessment (LCA)
LCA accountability: Metsims Sustainability Consulting

About the Company

Eryap Group works on production of siding systems, heat, water, noise and fire insulation materials and polymer door – window systems in its 3 production facilities exceeding a total of 150.000 m2 area, since 2001.

Eryap Group, which brought the American Siding brand to the sector by making the product of first polymer siding in its first facility in Gaziantep, has begun the production of Bonus | Pan brand XPS Extrude Polystyrene Heat Insulation Panel in 2005, in its second facility based in Silivri, İstanbul. Eryap Group, which expanded its product portfolio for a healthier, more durable and safer living spaces, has also taken its place within water insulation products sector by commencing Bonus | Focus Membrane brand Bitumen Waterproofing Sheets in the last quarter of 2007 in its facility in Silivri, İstanbul. It preserves its leadership in the sector by gaining Bonus | Jacketing Heat Insulation System in the end of 2009, Winer brand Polymer Door and Window Systems in 2010, Bonus | Focus Shingle Roof Covering Material in 2011 and finally Bonus | Wooler brand nature-friendly Stone Wool in 2012 to the sector.

Eryap Group provides services with its extensive distributor network in 81 provinces of Turkey; and exports its products to overseas with the strong partnerships it created in more than 25 countries.

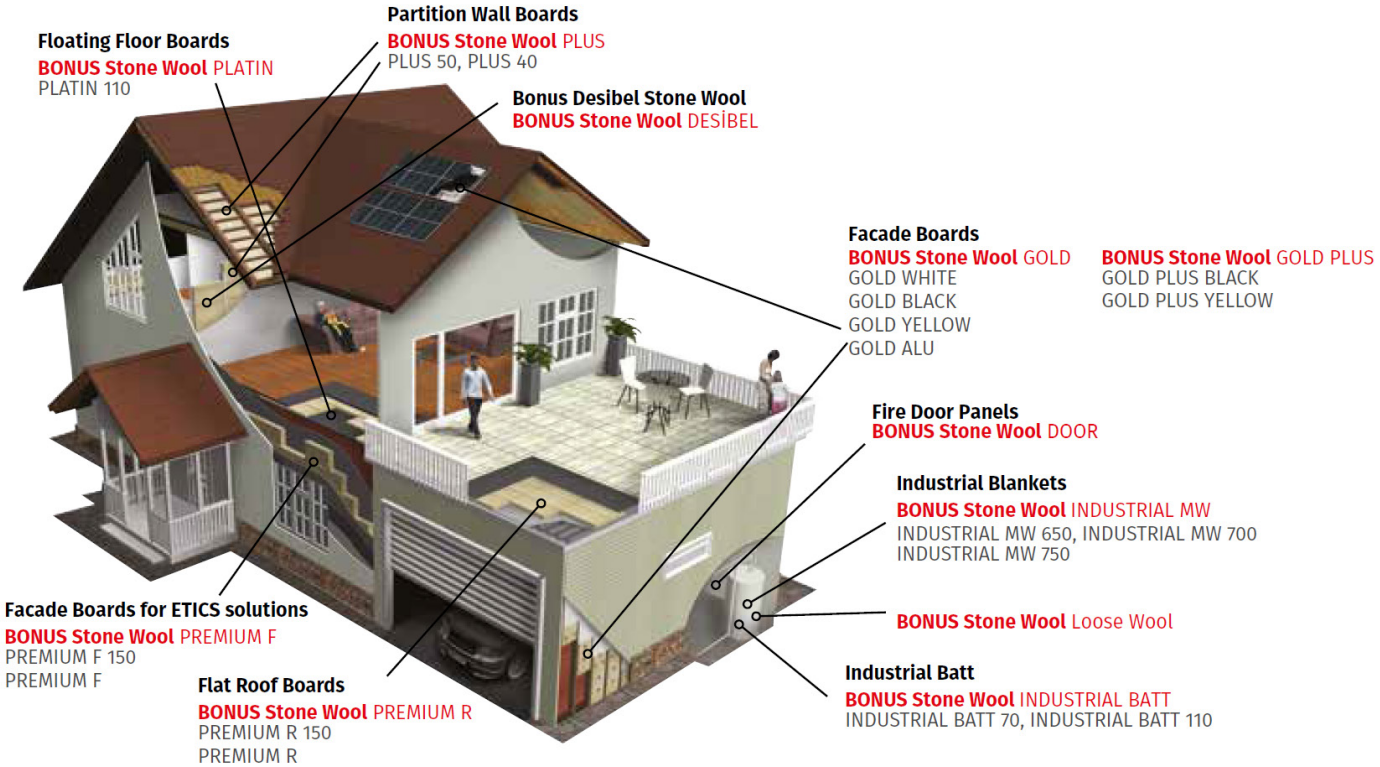
Eryap Group, that develops high quality products in line with the developing market expectations and standards, resolutely works to advance the strategic model that projects the correct use of energy sources, that looks out for the environmental risk factors and that is nature-friendly, within the scope of the product-service-life cycle in all the sectors it operates. Eryap Group which is a constantly developing organization with its approximately about 500 personnel in its three facilities in total, has a Human Resources approach that pays attention to the development of their staff to be able to catch up with the changes in contemporary world. To increase the employment and to contribute to the sustainable development of our country, it sustains its leadership in the sector by closely tracking the technological developments and making new investment, with the mission of producing quality items and services.

About the Product

BONUS STONE WOOL manufactured in the forms of blanket, board or loose in different size and with different technical properties, with different facing materials according to the intented use and the place of use. It is used for thermal insulation, sound insulation, acoustic comfort as well as fire safety. It is natural product is resistant to atmospheric factors, which guarantees maintaining its insulating properties and remaining intact during many years of its life. The use of natural raw materials makes the stone wool a natural and environmentally friendly product with excellent thermal, sound insulating and fire safety properties. It is your energy in nature. We offer The good insulation in every aspect of your life.

BONUS STONE WOOL is a fire-resistant, water-repellent heat and sound insulation material containing 97% natural fibers and produced by melting minerals and inorganic stones derived from volcanic rocks such as basalt, diabase and dolomite between 1400-1500 °C to form fibers.
Stone wool, which has a saturated structure and is obtained at the end of special procedures applied to all layers of its fibrous structure, prevents humidity from being absorbed in the building thanks to its steam permeability, while acting as a good water repellent. Buildings insulated with BONUS STONE WOOL become healthier and more comfortable. Thanks to its dimensional stability, stone wool is not affected by temperature changes. Its long fiber structure allows obtaining a product with smooth edges and surfaces during cutting and lamination.

The product UN CPC code is 37990 according to Central Product Classification (CPC) Version 2.1



About the Product

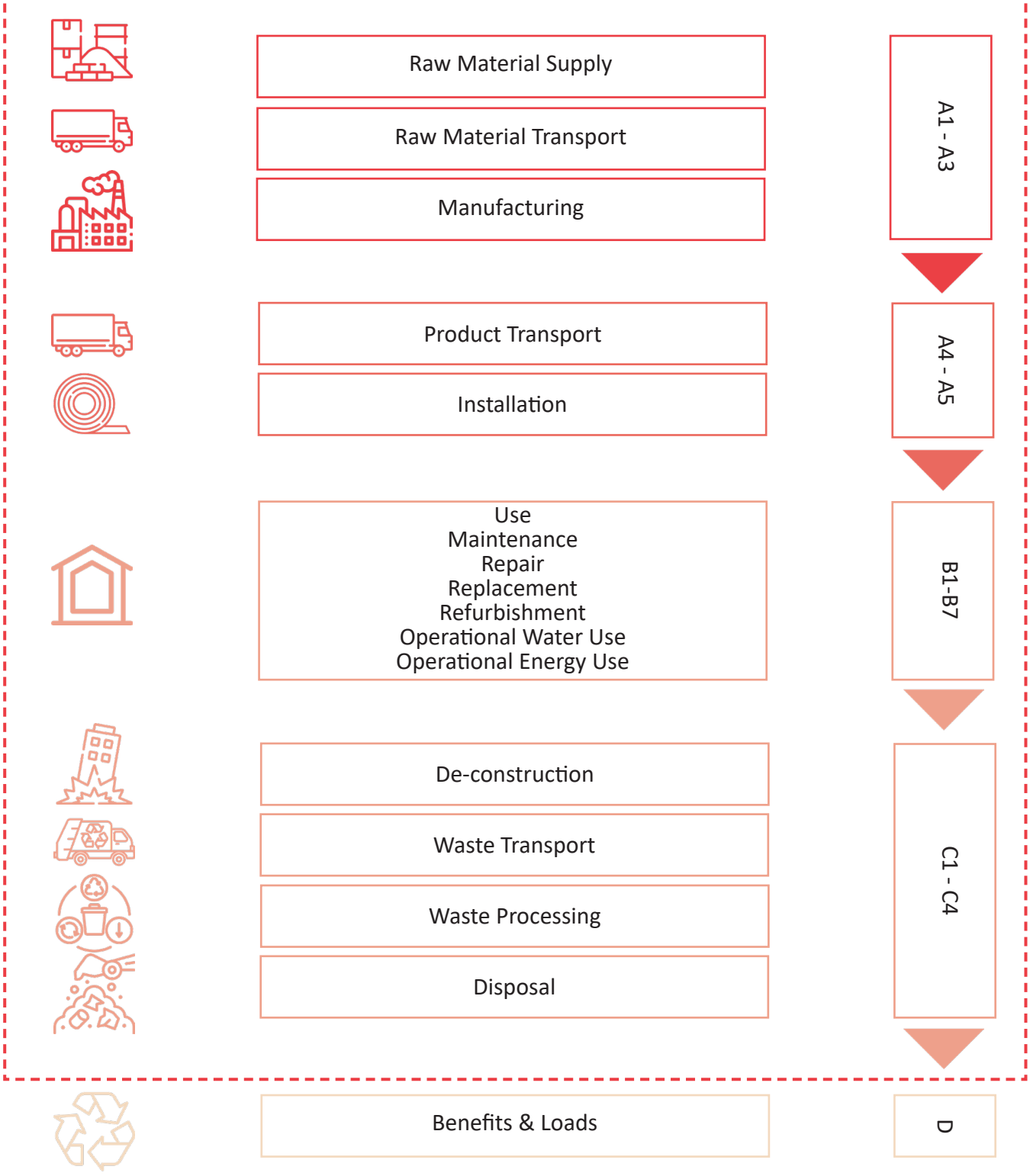
Feature	Description	Unit	Standard
Fire class	A1	-	EN 13501-1
Water vapor diffusion resistance	1	μ	EN 12086
Thermal conductivity	0.035-0.040	W/mK	EN 12667/12939
Density	40-200	kg/m^3	EN 1602
Thickness tolerance	T1-T5	mm%	EN 823
Short-term water immersion and water absorption	<1	kg/m^2	EN 1609
Long-term water immersion and water absorption	<3	kg/m^2	EN 12087
Melting point	>1000	°C	DIN 4102

BONUS STONE WOOL provides excellent thermal insulation with a low thermal conductivity value, by enabling better dispersion of the air trapped inside of it and its separation from external conditions, thanks to its long fiber structure produced through advanced production technology.

It creates a peaceful and healthy area of living by absorbing noise and vibration. With its resistance to temperatures above 1000 °C, it is described as a fully fireproof material of A1 class according to TS EN 13501-1 standard and ensures complete fire safety in buildings. Mattress and plate type products are manufactured in accordance with TS EN 13162 and TS EN 14303 standards.

Click here for more information.

System Boundaries



System Boundaries

A1 - RAW MATERIAL SUPPLY

Raw material extraction, processing and energy used in the production process are considered in raw material supply stage.

A2 - RAW MATERIAL TRANSPORT

Raw material transport from supplier to manufacturer is considered in raw material supply stage. The distances and routes are calculated accordingly. Depending the manufacturer, locally supplied materials are transported via trucks.

Transport Mode	Type
Road	Vehicle: Lorry
	Size Class: >32 metric ton
	Emission Standard: EURO5
	Fuel Type: Diesel

A3 - MANUFACTURING

Electricity, natural gas and coal are used throughout the manufacturing process. The Turkish electricity grid mix is used as electric energy. Manufacturing process is given as,
Mixing -> Melting -> Spinning -> Binding -> Curing -> Cutting -> Packaging

A4 -PRODUCT TRANSPORT

Product transport from manufacturer to customer is considered in product material supply stage. The distances and routes are calculated accordingly.

Transport Mode	Type
Road	Vehicle: Lorry
	Size Class: >32 metric ton
	Emission Standard: EURO5
	Fuel Type: Diesel

A5 - INSTALLATION

Installation requires no energy use, yet the treatment of the packaging waste after the installation of the product has been considered in installation stage.

B1-B7 - THE USE STAGE

The use stage consist of seven stages as, B1: Use, B2: Maintenance, B3: Repair, B4: Replacement, B5: Refurbishment, B6: Operational Energy Use, B7: Operational Water Use. No material and energy or technical operations are required during the use stages until the end of life. Therefore, the stone wool board has no impact on this stage.

System Boundaries

C1 - DECONSTRUCTION / DEMOLITION

The common manual dismantling impact of stone wool board is considered as very small and can be neglected in C1. Given the scenario that is assumed, environmental impact of deconstruction process is not considered in this study.

C2 - WASTE TRANSPORT

Waste transport includes the transport of used product after they reach their end-of-life. The average distance was assumed 100 km by truck from demolition site to a waste or recycling area.

Parameter	Value
Vehicle Type	Vehicle: Lorry Size Class: 16-32 metric ton Emission Standard: EURO5 Fuel Type: Diesel
Distance	100 km

C3 - WASTE PROCESSING

It is assumed that no waste processing is needed after the product reaches its end-of-life. Recycling impact of the product has already been calculated in benfits & loads stage.

C4 - PRODUCT TRANSPORT

Stone wool board products are recyclable product, yet a collection system does not works. Therefore, the 100% landfill after the use phase is assummed.

D - BENEFITS

Stone wool products packaging recycling or incineration is considered in benefits.

LCA Information

Declared Unit: 1 m^2 of Stonewool Board with a thermal resistance of 1.39 $K.m^2.W^{-1}$
Time Representativeness: 2022
Database(s) and LCA Software: Ecoinvent 3.9.1 and SimaPro 9.5
System Boundaries: Cradle to grave

	PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS
	Raw Materials Supply	Transport	Manufacturing	Transport to the site	Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction	Transport	Waste processing	Disposal	Reuse-Recycling-Recovery
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules Declared	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Geography	GLO		TR	GLO													
Specific Data Used	>90%			-													
Variation - products	<10%			-													
Variation - sites	0%			-													

Description of the system boundary
(X = Included in LCA. MND= Module Not Declared. NR=Not Relevant)

ALLOCATION

Source of raw material, water consumption, energy consumption and raw material transportation were weighted according to 2022 production figures. In addition, hazardous and non-hazardous waste amounts were also allocated from the 2022 total waste generation.

CUT-OFF CRITERIA

1% cut-off is applied in LCA. Data for elementary flows to and from the product system contributing to a minimum of 99% of the declared environmental impacts have been included.

PRODUCT COMPOSITION

Basalt, dolomite and recycled materials are the main inputs of the process. Minor additives like resin and other chemicals are included in the assessment.

Product Component	Weight, %
Basalt	45-60
Dolomite	15-25
Recycled Content	15-20
Additives	2-5

PACKAGING

Stone wool is packed and shipped with cardboard boxes and plastic films, which are very low weights when it compared to product weight.

Packaging Composition	Weight-% (versus the product)	Weight biogenic carbon, kg C/kg
Cardboard Box	<1	17.5E-6
Plastic Film	<1	77.8E-6

LCA METHODOLOGY

While the Bonus Stone Wool product is produced according to different specifications, its environmental impacts vary depending on the product. LCA Results are given based on the reference product. Product specific environmental impacts are complied by applying the relevant scaling factor in the Product Specific Scaling Factor.

Product Name	Density, kg/m³	R, m²K/W	Scaling Factor
GOLD PLUS	40	0.86-5.71	0.80
GOLD PLUS	50	0.86-5.71	1.00
GOLD PLUS	70	0.86-5.71	1.40
GOLD PLUS	90	0.86-5.71	1.80
INDUSTRIAL BATT	70	0.63-5.00	1.60
INDUSTRIAL BATT	110	0.63-5.00	2.51
PANEL	100	0.75-5.00	2.29
PLATIN	110	0.56-5.56	2.26
PREMIUM F	100	1.11-2.50	2.06
PREMIUM F	100	2.70-5.41	2.11
PREMIUM F	120	1.35-2.43	2.54
PREMIUM F	120	0.83-1.11	2.47
PREMIUM F	120	2.63-5.26	2.61
PREMIUM F	150	0.56-0.83	3.09

Product Name	Density, kg/m³	R, m²K/W	Scaling Factor
PREMIUM F	150	1.08	3.17
PREMIUM F	150	1.32	3.26
PREMIUM F	150	2.00-4.00	3.43
PREMIUM F	150	1.54-1.79	3.34
PREMIUM R	100	1.11-2.50	2.06
PREMIUM R	100	2.70-5.41	2.11
PREMIUM R	120	1.35-2.43	2.54
PREMIUM R	120	0.83-1.11	2.47
PREMIUM R	120	2.63-5.26	2.61
PREMIUM R	150	0.56-0.83	3.09
PREMIUM R	150	1.08	3.17
PREMIUM R	150	1.32	3.26
PREMIUM R	150	2.00-4.00	3.43
PREMIUM R	150	1.54-1.79	3.34

LCA Results

CORE ENVIRONMENTAL IMPACT INDICATORS

Parameter	Unit	A1-3	A4	A5	B1-7	C1	C2	C3	C4	D
Global warming potential - fossil fuels (GWP-fossil)	kg CO_2 eq.	2.81	92.4E-6	1.13E-3	0	0	0.046	0	0.201	0.028
Global warming potential - biogenic (GWP-biogenic)	kg CO_2 eq.	0.005	84.6E-9	374E-6	0	0	42.3E-6	0	0.003	166E-6
Global warming potential - land use and land use change (GWP-luluc)	kg CO_2 eq.	0.005	45.6E-9	22.1E-9	0	0	22.8E-6	0	130E-6	8.35E-6
Global warming potential - total (GWP-total)	kg CO_2 eq.	2.82	92.5E-6	1.51E-3	0	0	0.046	0	0.204	0.028
Depletion potential of the stratospheric ozone layer (ODP)	kg CFC-^{11} eq	69.9E-9	2.01E-12	2.77E-12	0	0	1.01E-9	0	4.92E-9	271E-12
Acidification potential. accumulated exceedance (AP)	mol H+ eq.	0.018	202E-9	641E-9	0	0	101E-6	0	0.001	102E-6
Eutrophication potential - freshwater (EP-freshwater)	kg P eq.	1.07E-3	6.57E-9	7.31E-9	0	0	3.28E-6	0	52.9E-6	3.66E-6
Eutrophication potential - marine (EP-marine)	kg N eq.	0.003	50.9E-9	4.63E-6	0	0	25.5E-6	0	169E-6	18.6E-6
Eutrophication potential - terrestrial (EP-terrestrial)	mol N eq.	0.027	518E-9	2.83E-6	0	0	259E-6	0	2.02E-3	199E-6
Photochemical ozone creation potential (POCP)	kg NMVOC eq.	0.013	313E-9	1.43E-6	0	0	157E-6	0	701E-6	96.09E-6
Abiotic depletion potential - non-fossil resources (ADPE)	kg Sb eq.	4.67E-6	302E-12	196E-12	0	0	151E-9	0	1.31E-6	138E-9
Abiotic depletion potential - fossil resources (ADPF)	MJ. net cal	30.6	1.31E-3	2.16E-3	0	0	0.656	0	2.979	1.03
Water (user) deprivation potential (WDP)	m^3 world eq.	0.633	5.41E-6	10.2E-6	0	0	2.70E-3	0	0.144	0.066
Legend	A1: Raw Material Supply. A2: Transport. A3: Manufacturing. A1-A3: Sum of A1. A2. and A3. A4: Transport to Site. C1: De-Construction. C2: Waste Transport. C3: Waste Processing. C4: Disposal. D: Benefits and Loads Beyond the System Boundary.									

*Disclamier-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: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

ADDITIONAL MANDATORY ENVIRONMENTAL IMPACT INDICATORS

Parameter	Unit	A1-3	A4	A5	B1-7	C1	C2	C3	C4	D
GWP - GHG	kg CO_2 eq.	2.83	92.6E-6	1.40E-3	0	0	0.046	0	0.201	0.028

GWP-GHG = Global Warming Potential total excl. biogenic carbon following IPCC AR5 methodology

*The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013

ADDITIONAL VOLUNTARY ENVIRONMENTAL IMPACT INDICATORS

Parameter	Unit	A1-3	A4	A5	B1-7	C1	C2	C3	C4	D
Particulate matter emissions (PM)	Disease inci	249E-9	6.89E-12	15.0E-12	0	0	3.44E-9	0	14.7E-9	1.07E-9
Ionizing radiation, human health (IRP)	kBq U^{235} eq.	0.086	1.78E-6	5.85E-6	0	0	888E-6	0	0.026	0.002
Eco-toxicity - freshwater (ETP-fw)	CTUe	7.31	649E-6	0.002	0	0	0.324	0	0.580	0.039
Human toxicity, cancer (HTP-c)	CTUh	14.1E-9	42.1E-15	64.0E-15	0	0	21.1E-12	0	1.36E-9	7.79E-12
Human toxicity, non-cancer (HTP-nc)	CTUh	22.1E-9	931E-15	2.91E-12	0	0	466E-12	0	2.02E-9	156E-12
Land use related impacts (SQP)	dimensionles	11.1	793E-6	0.005	0	0	0.397	0	2.72	0.028

INDICATORS DESCRIBING RESOURCE USE

Parameter	Unit	A1-3	A4	A5	B1-7	C1	C2	C3	C4	D
Use of renewable primary energy as energy carrier (PERE)	MJ	2.05	20.6E-6	100E-6	0	0	0.010	0	0.215	0.017
Use of renewable primary energy resources used as raw materials (PERM)	MJ	0	0	0	0	0	0	0	0	0
Total use of renewable primary energy (PERT)	MJ	2.05	20.6E-6	100E-6	0	0	0.010	0	0.215	0.017
Use of non renewable primary energy as energy carrier (PENRE)	MJ	30.6	1.31E-3	0.002	0	0	0.656	0	2.98	1.03
Use of non renewable primary energy resources used as raw materials (PENRM)	MJ	0	0	0	0	0	0	0	0	0
Total use of non renewable primary energy resource (PENRT)	MJ	30.6	1.31E-3	0.002	0	0	0.656	0	2.98	1.03
Use of secondary material (SM)	kg	0.650	0	0	0	0	0	0	0	0
Use of renewable secondary fuels (RSF)	MJ	0	0	0	0	0	0	0	0	0
Use of non-renewable secondary fuels (NRSF)	MJ	0	0	0	0	0	0	0	0	0
Net use of fresh water (FW)	m^3	0.007	215E-9	2.45E-6	0	0	108E-6	0	1.02E-3	75.7E-6

ENVIRONMENTAL INFORMATION DESCRIBING WASTE & OUTPUT FLOWS

Parameter	Unit	A1-3	A4	A5	B1-7	C1	C2	C3	C4	D
Hazardous waste disposed (HWD)	kg	13.2	0	0.005	0	0	0	0	0	0
Non-harzardous waste disposed (NHWD)	kg	0	0	0	0	0	0	0	2.50	0
Radioactive waste disposed (RWD)	kg	0	0	0	0	0	0	0	0	0
Components for re-use (CRU)	kg	0	0	0	0	0	0	0	0	0
Materials for recycling (MFR)	kg	0	0	0	0	0	0	0	0	0
Materials for energy recovery (MER)	kg	0	0	0	0	0	0	0	0	0
Exported electrical energy (EEE)	MJ	0	0	0	0	0	0	0	0	0
Exported thermal energy (EET)	MJ	0	0	0	0	0	0	0	0	0

References

GPI/ General Programme Instructions of the International EPD® System. Version 4.0. EN ISO 9001/ Quality Management Systems- Requirements EN ISO 14001/ Environmental Management Systems- Requirements

EN ISO 50001/ Energy Management Systems- Requirements ISO 14020:2000/ Environmental Labels and Declarations — General principles

EN 15804:2012+A2:2019/ Sustainability of construction works- Environmental Product Declarations — Core rules for the product category of construction products

ISO 14025/ DIN EN ISO 14025:2009-11: Environmental labels and declarations- Type III environmental declarations — Principles and procedures

ISO 14040/44/ DIN EN ISO 14040:2006-10, Environmental management- Life cycle assessment- Principles and framework (ISO14040:2006) and Requirements and guidelines (ISO 14044:2006) PCR 2019:14 Construction products (EN 15804:A2) (1.2.5) prepared by IVL Swedish Environmental Research Institute, EPD International Secretariat, date 2022-11-01.

The International EPD® System/ The International EPD® System is a programme for type III environmental declarations, maintaining a system to verify and register EPD®s as well as keeping a library of EPD®s and PCRs in accordance with ISO 14025. www.environdec.com

Ecoinvent / Ecoinvent Centre, www.ecoinvent.org

SimaPro/ SimaPro LCA Software, Pré Consultants, the Netherlands, www.pre-sustainability.com
Metsims/ www.metsims.com.

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