

Environmental Product Declaration

In accordance with ISO 14025 and EN 15804:2012+A2:2019 for:

Puzzle mat 1000x1000

Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
EPD registration number:	S-P-09629
Publication date:	01. 07. 2023
Valid until:	01. 07. 2028

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



Programme-related information and verification

Programme:	The International EPD® System EPD International AB Box 210 60 SE-100 31 Stockholm Sweden www.environdec.com info@environdec.com
EPD registration number:	S-P-09629
Published:	01. 07. 2023
Valid until:	01. 07. 2028
EPD owner:	Regutec a.s. Němčičky 92 664 66, Czech Republic
Contact:	Ing. Petr Vacek, Ph.D., e-mail: petr.vacek@regutec.com

CEN standard EN 15804+A2:2019 serves as the Core Product Category Rules (PCR)

Product category rules (PCR): 2019:14 Construction products (version 1.3.0)

PCR review was conducted by: Technical Committee of the International EPD® System. A full list of members available on www.environdec.com. The review panel may be contacted via info@environdec.com.

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

☐ EPD process certification ☒ EPD verification

Third party verifier:

Technický a zkušební ústav stavební Praha, s.p.
Prosecká 811/76a, Praha 9, 190 00, Czech Republic
Certification Body for EPD, accredited by AI - Czech Accreditation Institute, under No. 95/2023



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

☒ Yes ☐ No

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but from different software may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804. For further information about comparability, see EN 15804 and ISO 14025.

General information

Company information

Owner of the EPD: Regutec a.s.

Contact: Ing. Petr Vacek, Ph.D., tel. +420 722 973 302, e-mail: petr.vacek@regutec.com

Description of the organisation:

Manufacturer of elastic floor coverings made of rubber granules such as fall protection mats, stable mats, floor protection mats, fitness floors, rubber tiles, interlocking paving made of rubber granules and much more.

Product-related or management system-related certifications:

The Quality Management System of Regutec a.s. is certified acc. to ISO 9001.

Name and location of production site(s):

Regutec a.s.
Němčičky 92
664 66
Czech Republic

Product information

Product name:

Puzzle mat 18, Puzzle mat 30, Puzzle mat 40, Puzzle mat with hidden lock 30, Puzzle mat with hidden lock 40, Puzzle mat with hidden lock 50

Product description:

Made from recycled rubber, the rubber playground board is a great choice for any playground. These boards are durable, safe and have a non-slip layer that reduces the risk of injuries. Boards are available in a variety of colors and thicknesses to suit your needs. The rubber boards are easily connected using plastic pins or puzzle joints, which simplifies installation and maintenance. Since they are made from recycled rubber, they are also environmentally friendly.

UN CPC code: 36220 Unvulcanised compounded rubber, in primary forms in plates

Product name	length [mm]	width [mm]	thickness [mm]	weight [kg/pc]	Multiplication coefficient for results in all modules except B2 (where it is 1.00)
Puzzle mat 18	1000	1000	18	15,30	1,00
Puzzle mat 30	1000	1000	30	22,28	1,46
Puzzle mat 40	1000	1000	40	30,28	1,98
Puzzle mat with hidden lock 30	1000	1000	30	24,50	1,60
Puzzle mat with hidden lock 40	1000	1000	40	34,03	2,22
Puzzle mat with hidden lock 50	1000	1000	50	43,33	2,83

LCA information

Functional unit / declared unit: 1 piece

Reference service life: 1 year

Time representativeness: 2021 production

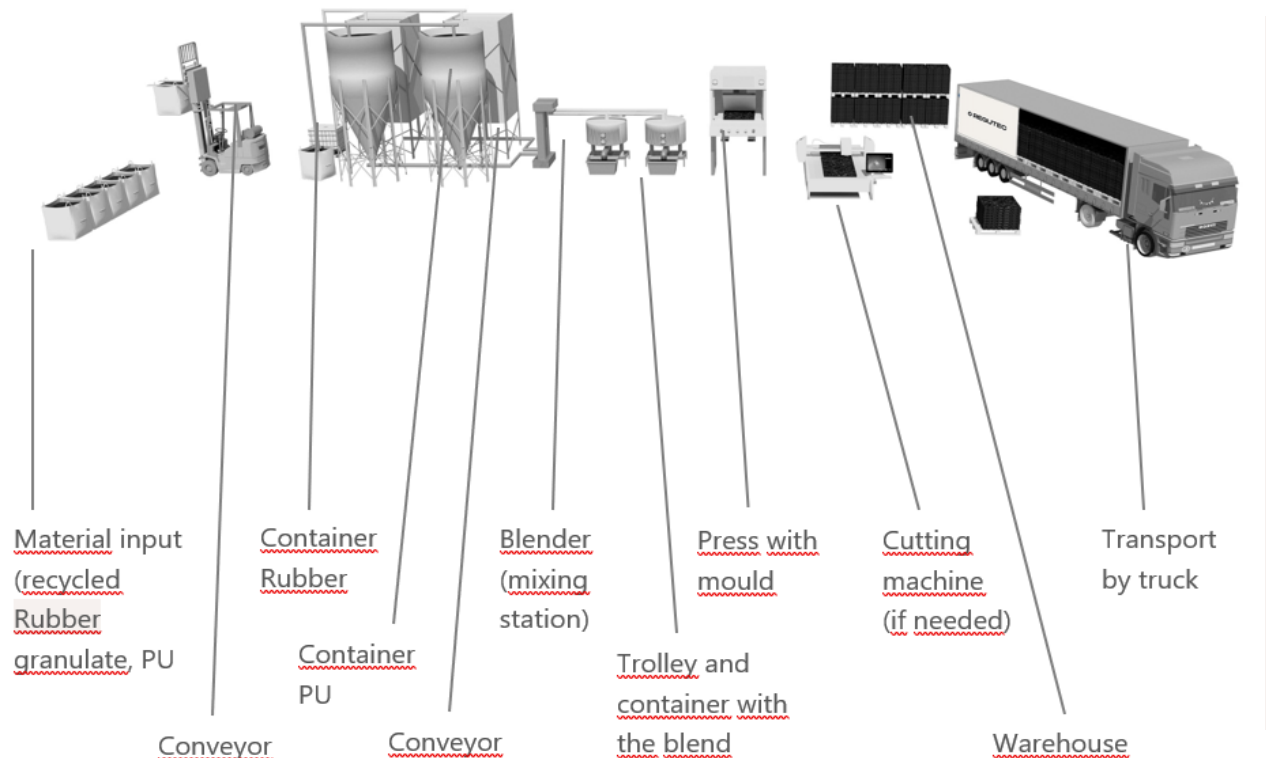
Database(s) and LCA software used:

Professional Database, Extension database XIV: Construction materials and ecoinvent 3.6 installed in GaBi ts (Service Pack 40)

Description of system boundaries:

Cradle-to-grave with modules A1–A5, B2, C1-C4 and D

System diagram:



Cut-off criteria:

Life cycle inventory complies with requirements of PCRs and standards listed in References. As such it includes all identified energy and material flows necessary for:

- Production and packaging (modules A1-A3) of the flooring product,
- transport of the product to average consumer in Europe (module A4),
- manual installation of the product and construction waste disposal (module A5) according to EU waste management statistics,
- maintenance of the product (module B2) comprising weekly wet cleaning with water and detergent,
- end-of-life (modules C1-C4) of the product comprising energy recovery, recycling and landfilling according to waste management in Germany.
- Benefits beyond the system boundaries (module D) comprising energy gains from incineration and avoided production of raw materials (incl. packaging) due to waste recycling.

Allocation: Production mass allocation has been applied for the input materials and energies.

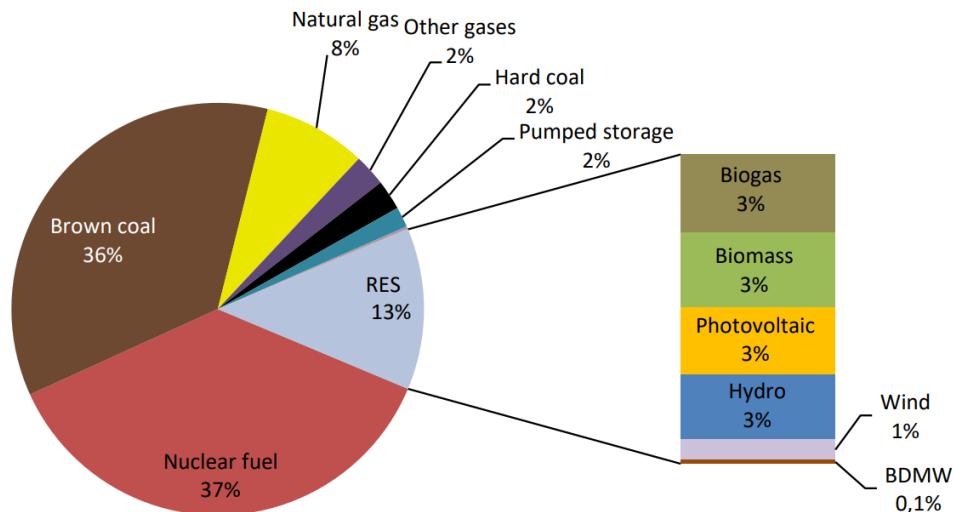
Transport scenarios:

Transport of raw materials, final product and wastes in modules A2 and A4 is modelled using real-life distances representing the state in 2021. Transport of raw materials in A2 considers 291 km distance from various SBR granulate suppliers and 1137 km distance from various PU adhesive suppliers to Regutec a.s. manufacturing sites. Transport of final product in A4 considers distance in perimeter of 1000 km from Regutec a.s. Transport of waste in C2 considers 50 km distance to a hypothetical disposal site. 22 t trucks (Euro 1-6 fleet average) are considered as vehicles for transport of materials and wastes respectively.

Energy mix:

The production takes place in the Czech Republic. Therefore, Czech energy mix is considered. The chart below shows gross electricity generation mix of the Czech Republic according to Yearly Report on the Operation of the Czech Electricity Grid for 2020 published by Energy Regulatory Office. The power plants represented by this mix supplied 81.4 TWh of electricity to Czech consumers in 2020. This amount was supplemented by additional 13.4 TWh imported from surrounding countries (Austria, Germany, Poland, Slovakia). Abbreviation BDMW in the chart equals to Biologically Degradable Municipal Waste.

Fuels and technologies used in gross electricity generation in 2020



Additional information

Website: Further details regarding the certified product are available at the company website <https://www.regutec.com/>

LCA Practitioner: Ing. Karel Struhala, Ph.D.; Brno University of Technology, Faculty of Civil Engineering; struhala.k@fce.vutbr.cz

Modules declared, geographical scope, share of specific data (in GWP-GHG indicator) and data variation:

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling potential
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	ND	x	ND	ND	ND	ND	ND	x	x	x	x	x
Geography	CZ / EU27	EU27	CZ / EU27	EU27	EU27		EU27						EU27	EU27	EU27	EU27	EU27
Specific data used																	
Variation – products																	
Variation – sites																	
Acronyms: x = module is declared; ND = module is not declared; CZ = data representing situation in Czech Republic; EU27 = data representing situation in the European Union.																	

Content information

Product

All products are made of mixture of recycled SBR rubber (mainly from old tyres), PU binder (with constant share in all products), water and separator. Detailed percentage is included in full LCA study.

All products contain 89,6 % post-consumer recycled content and 0% renewable material.

Products are packed into PE foil in average rate 0,005 kg.m⁻² and stored on wooden pallets. Detail are included in LCA study.

Products are compliant with REACH regulation (EC) 1907/2006 Substances of Very High Concern (SVHC) meaning content of SVHC $\leq 0,1$ % w/w)

Environmental Information

Potential environmental impact per DU of Puzzle mat 18 – mandatory indicators according to EN 15804

Results per declared unit																
INDICATOR	UNIT	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-fossil	kg CO2 eq.	2,89E+00	9,97E-01	1,44E-02	ND	1,07E-02	ND	ND	ND	ND	ND	0,00E+00	5,97E-02	8,55E-01	1,27E-01	-3,59E+01
GWP-biogenic	kg CO2 eq.	-1,45E+00	1,68E-02	8,83E-01	ND	5,36E-05	ND	ND	ND	ND	ND	0,00E+00	1,00E-03	7,38E-03	-1,32E-03	-6,78E-01
GWP-luluc	kg CO2 eq.	2,00E-02	8,38E-03	1,98E-05	ND	2,62E-03	ND	ND	ND	ND	ND	0,00E+00	5,01E-04	1,53E-03	1,06E-04	-1,41E-02
GWP-total	kg CO2 eq.	1,46E+00	1,02E+00	8,98E-01	ND	1,34E-02	ND	ND	ND	ND	ND	0,00E+00	6,12E-02	8,64E-01	1,26E-01	-3,66E+01
ODP	kg CFC 11 eq.	2,70E-08	1,31E-16	1,33E-16	ND	3,86E-10	ND	ND	ND	ND	ND	0,00E+00	7,82E-18	2,05E-14	3,06E-16	-1,66E-10
AP	mol H+ eq.	1,14E-02	6,06E-03	6,45E-05	ND	6,02E-05	ND	ND	ND	ND	ND	0,00E+00	3,63E-04	9,01E-04	3,81E-04	-4,48E-02
EP-freshwater	kg PO43- eq.	1,29E-04	3,04E-06	8,68E-09	ND	5,85E-06	ND	ND	ND	ND	ND	0,00E+00	1,82E-07	2,51E-06	2,34E-05	-6,71E-05
EP-marine	kg N eq.	3,49E-03	2,97E-03	3,07E-05	ND	5,23E-05	ND	ND	ND	ND	ND	0,00E+00	1,78E-04	2,85E-04	8,63E-05	-1,46E-02
EP-terrestrial	mol N eq.	3,60E-02	3,29E-02	3,40E-04	ND	1,76E-04	ND	ND	ND	ND	ND	0,00E+00	1,97E-03	3,07E-03	9,46E-04	-1,57E-01
POCP	kg NMVOC eq.	1,02E-02	5,61E-03	7,91E-05	ND	5,33E-05	ND	ND	ND	ND	ND	0,00E+00	3,36E-04	7,09E-04	2,76E-04	-5,20E-02
ADP-minerals&metals	kg Sb eq.	5,01E-06	7,79E-08	3,26E-10	ND	1,89E-07	ND	ND	ND	ND	ND	0,00E+00	4,66E-09	2,47E-07	8,73E-09	-5,66E-06
ADP-fossil*	MJ	7,33E+01	1,36E+01	1,06E-01	ND	1,94E-01	ND	ND	ND	ND	ND	0,00E+00	8,15E-01	7,68E+00	1,84E+00	-1,08E+03
WDP	m3	1,53E+00	8,88E-03	7,33E-04	ND	-1,96E-01	ND	ND	ND	ND	ND	0,00E+00	5,32E-04	3,92E-02	-1,56E-03	-5,63E-01
ACRONYMS	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals & metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption															

Potential environmental impact – additional mandatory and voluntary indicators according to EN 15804

Results per declared unit																
INDICATOR	UNIT	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter	Disease incidences	1,02E-07	3,51E-08	1,26E-09	ND	5,95E-10	ND	ND	ND	ND	ND	0,00E+00	2,10E-09	7,39E-09	3,72E-09	-3,23E-07
Ionising radiation, human health	kBq U ₂₃₅ eq.	1,70E-01	2,36E-03	2,34E-05	ND	8,19E-04	ND	ND	ND	ND	ND	0,00E+00	1,41E-04	5,63E-02	3,08E-03	-4,46E-01
Ecotoxicity, freshwater	CTUe	4,66E+01	9,84E+00	4,65E-02	ND	5,13E-01	ND	ND	ND	ND	ND	0,00E+00	5,89E-01	2,90E+00	1,76E+00	-4,24E+02
Human toxicity, cancer	CTUh	1,44E-09	1,99E-10	4,22E-12	ND	2,50E-11	ND	ND	ND	ND	ND	0,00E+00	1,19E-11	1,18E-10	7,88E-11	-2,54E-08
Human toxicity, non-cancer	CTUh	4,32E-08	1,17E-08	6,17E-11	ND	3,14E-10	ND	ND	ND	ND	ND	0,00E+00	7,02E-10	4,93E-09	6,61E-09	-2,19E-06
Land Use	Pt	1,20E+02	4,68E+00	1,23E-02	ND	3,19E-01	ND	ND	ND	ND	ND	0,00E+00	2,80E-01	3,89E+00	1,26E-01	-5,06E+01

Use of resources

Results per declared unit																
INDICATOR	UNIT	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	2,06E+01	7,60E-01	4,57E-03	ND	8,74E-02	ND	ND	ND	ND	ND	0,00E+00	4,55E-02	4,96E+00	1,34E-01	-4,12E+01
PERM	MJ	0,00E+00	0,00E+00	0,00E+00	ND	0,00E+00	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	2,06E+01	7,60E-01	4,57E-03	ND	8,74E-02	ND	ND	ND	ND	ND	0,00E+00	4,55E-02	4,96E+00	1,34E-01	-4,12E+01
PENRE	MJ	7,34E+01	1,36E+01	1,06E-01	ND	1,94E-01	ND	ND	ND	ND	ND	0,00E+00	8,16E-01	7,68E+00	1,84E+00	-1,08E+03
PENRM	MJ.	0,00E+00	0,00E+00	0,00E+00	ND	0,00E+00	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	7,34E+01	1,36E+01	1,06E-01	ND	1,99E-01	ND	ND	ND	ND	ND	0,00E+00	8,16E-01	7,68E+00	1,84E+00	-1,08E+03
SM	kg	0,00E+00	0,00E+00	0,00E+00	ND	0,00E+00	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,41E-01
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	ND	0,00E+00	ND	ND	ND	ND	ND	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	ND	0,00E+00	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m ³	3,75E-02	8,70E-04	1,90E-05	ND	4,95E-04	ND	ND	ND	ND	ND	0,00E+00	5,21E-05	2,95E-03	1,71E-05	-1,21E-01
ACRONYMS	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water															

Waste production and output flows

Waste production

Results per functional or declared unit																
INDICATOR	UNIT	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste disposed	kg	7,12E-06	6,87E-10	1,21E-10	ND	6,01E-12	ND	ND	ND	ND	ND	0,00E+00	4,11E-11	2,77E-09	3,33E-10	-1,74E-07
Non-hazardous waste disposed	kg	1,87E-01	2,03E-03	6,84E-04	ND	5,48E-03	ND	ND	ND	ND	ND	0,00E+00	1,21E-04	3,25E-02	1,76E+00	-4,83E-01
Radioactive waste disposed	kg	1,36E-03	1,65E-05	2,31E-07	ND	2,02E-06	ND	ND	ND	ND	ND	0,00E+00	9,87E-07	6,10E-04	2,14E-05	-4,67E-03

Output flows

Results per functional or declared unit																
INDICATOR	UNIT	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	ND	0,00E+00	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	0,00E+00	0,00E+00	5,37E-01	ND	0,00E+00	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	1,25E+01	0,00E+00	0,00E+00
Materials for energy recovery	kg	8,59E-03	0,00E+00	2,55E-03	ND	0,00E+00	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	1,01E-01	0,00E+00	0,00E+00
Exported energy, electricity	MJ	0,00E+00	0,00E+00	0,00E+00	ND	0,00E+00	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00	0,00E+00	ND	0,00E+00	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

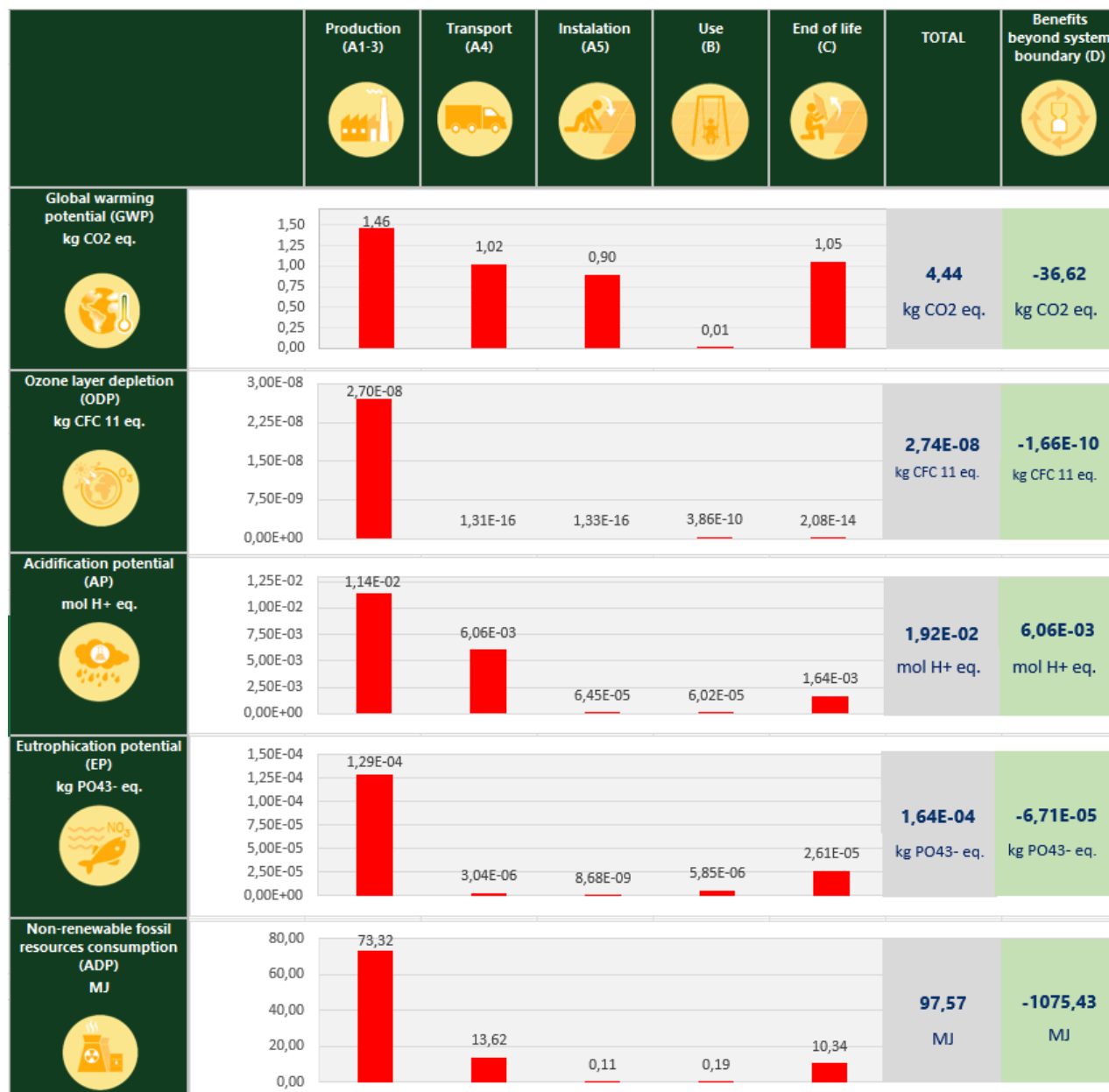
Information on biogenic carbon content

Results per functional or declared unit		
BIOGENIC CARBON CONTENT	UNIT	QUANTITY
Biogenic carbon content in product	kg C	0,00E+00
Biogenic carbon content in packaging	kg C	5,76E-02

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

Additional information

Red columns in the graphs (product phases A-C) indicate summarized environmental impacts during the product life cycle. Green numbers in the graph enumerate potential savings due to using recycled raw materials and also possibilities of further product reuse and recycling.



References

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

PCR 2019:14 Construction products (EN 15804: A2) (1.30)

General Programme Instructions of the International EPD® System. Version 3.01.

ISO 9001:2015 Quality management systems – Requirements

ISO 14020: 2000 Environmental labels and declarations - General principles

ISO 14025:2006 Environmental labels and declarations — Type III environmental declarations — Principles and procedures

ISO 14040:2006 Environmental management – Life cycle assessment – Principles and framework

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

Energy Regulatory Office: Yearly Report on the Operation of the Czech Electricity Grid for 2020

EN 16449:2014 Wood and wood-based products – Calculation of the biogenic carbon content of wood and conversion to carbon dioxide



 **REGUTEC**