Environmental Product Declaration

In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for:

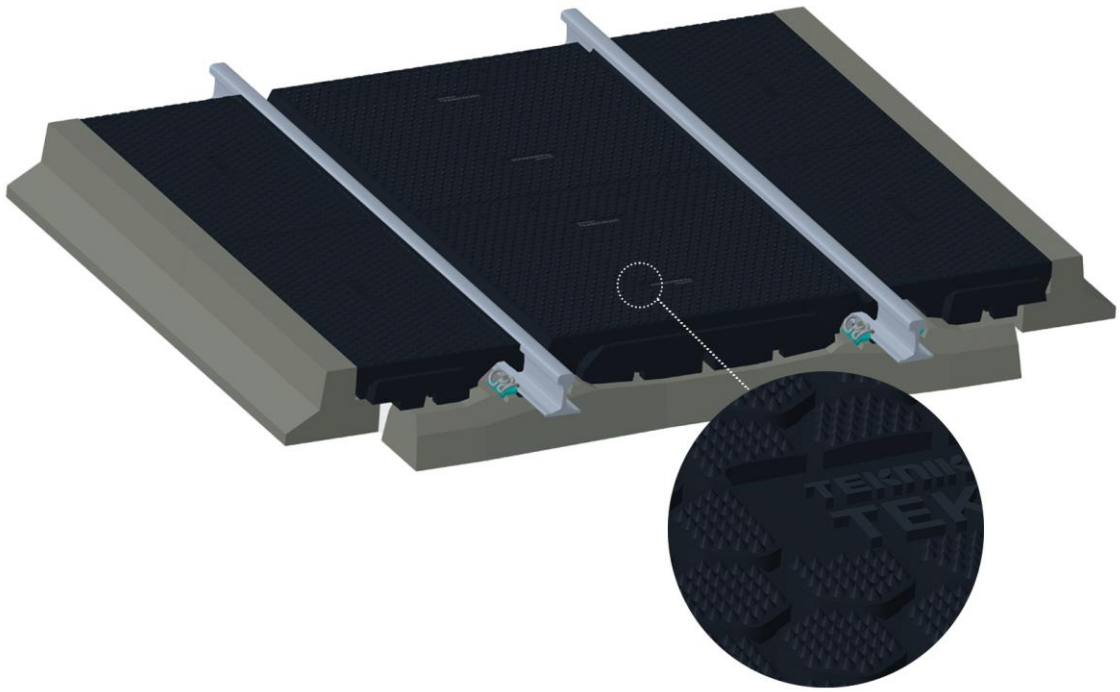
TEKNICROSS® Rubber level crossing

from

Teknikum Group Ltd

EPD of multiple products, based on the average results of the product group.

Programme:	The International EPD System, www.environdec.com
Programme operator:	EPD International AB
Type of EPD:	EPD of a single product from a manufacturer/service provider
EPD registration number:	EPD-IES-0004394:002 (S-P-04394)
Version date:	2026-05-13
Validity date:	2031-05-12
	An EPD may be updated or depublished if conditions change. To find the latest version of the EPD and to confirm its validity, see www.environdec.com



GENERAL INFORMATION

Programme Information	
Programme:	The International EPD System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
E-mail:	support@environdec.com

Product Category Rules (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR): PCR 2019:14 Construction products (EN 15804:A2). Version 2.0.1. UN CPC code: 4014
PCR review was conducted by: *PCR review was conducted by: The Technical Committee of the International EPD System. Chair of the PCR review: Rob Rouwette (chair), Noa Meron (co-chair). The review panel may be contacted via support@environdec.com.*

Third-party Verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: ☒ **Individual EPD verification without a pre-verified LCA/EPD tool** Third-party verifier: *Mari Kirss, Meetripuu OÜ* Approved by: International EPD System
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 published in different EPD programmes, may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR (including the same first-digit version number) or be based on fully aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have identical scope in terms of included life-cycle stages (unless the excluded life-cycle stage is demonstrated to be insignificant); apply identical impact assessment methods (including the same version of characterisation factors); and be valid at the time of comparison.
For further information about comparability, see EN 15804 and ISO 14025.

INFORMATION ABOUT EPD OWNER

Owner of the EPD: Teknikum Group Ltd
Nokiankatu 1,
FI-38210 Sastamala, Finland
https://teknikum.com/fi/

Contact: Esko Mäntyharju

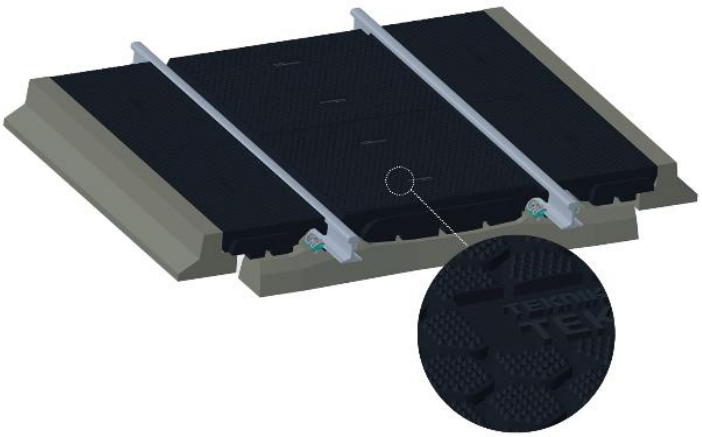
LCA practitioner: Ecobio Oy
Runeberginkatu 5
00100 Helsinki,
Finland
info@ecobio.fi

Description of the organisation:
Teknikum Group is a corporation with Finnish origin, specializing in design, manufacturing and services relating to demanding rubber, plastic and technical foam products. Teknikum Group serves various demanding industries internationally, such as industrial plants and OEMs.

Product-related or management system-related certifications:
Quality management system certification ISO 9001:2015
Environmental management system certifications ISO 14001:2015

PRODUCT INFORMATION

Product name:
TEKNICROSS® Rubber level crossing



Product identification:
TEKNICROSS® is scalable, customizable rubber level crossings solution meeting European rail industry standards. The proven element system is in use around Europe, from light pedestrian to heavy vehicle traffic.

This EPD is an EPD of multiple products, based on the average results of the product group. The content declaration and environmental performance are presented for the average product

UN CPC code:
Group 362 – Other rubber products, 4014– Articles of vulcanized rubber n.e.c.; hard rubber;

Product description:
TEKNICROSS® Rubber level crossing consist of inner and outer elements, both equipped with a male/female tongue and groove, and fitting plates to be installed on top of the sleeper.
TEKNICROSS® is suitable for the most common rail gauges, rail types and fastening systems.
TEKNICROSS® is suitable for pedestrian and heavy traffic depending on the type of supporting

Product lifespan:
If properly installed and maintained, the lifespan of the product is 15 years.

Name and location of production site:
Teknikum Oy Vammala
Nokiankatu 1,
FI-38210 Sastamala, Finland

CONTENT DECLARATION

The following content information considers 1 kg of TEKNICROSS® Rubber level crossing Type B with 599,51 kg/m. There are other product variations depending on the width of the rail gauge and type of the product (A or B). The product contains rubber, steel and adhesive.

Product content	Mass, kg	Post-consumer recycled material, mass-% of product	Biogenic material, mass-% of product	Biogenic material, kg C/declared unit
Rubber	0,950	0	0,3 %	0,003
Steel	0,049	0	0	0
Adhesive	0,001	0	0	0
TOTAL	**1,000**	**0**	0,3 %	0,003

Packaging materials	Mass, kg	Mass-% (versus the product)	Biogenic material, kg C/declared unit
EUR-pallet	0,03300	3,34	0,022
Steel straps	0,00250	0,25	0
Plastic film (Polyethylene)	0,00013	0,01	0
TOTAL	**0,03600**	**3,60**	**0,022**

1 kg biogenic carbon in the product/packaging is equivalent to the uptake of 44/12 kg of CO_2.

The following table includes information about the different product variations and factors (Weight/meter) that can be used to multiply the results from declared unit of 1 kg to 1 m of the final product.

Product	Gauge, mm	Type	Weight/meter, kg/m	Rubber, kg	Steel, kg	Adhesive, kg
TEKNICROSS®	1524	A	519,51	491,07	28,12	0,32
TEKNICROSS®	1524	B	599,51	571,07	28,12	0,32
TEKNICROSS®	1524	A without flange groove	528,75	500,31	28,12	0,32
TEKNICROSS®	1524	B without flange groove	608,75	580,31	28,12	0,32
TEKNICROSS®	1435	A	479,51	451,07	28,12	0,32
TEKNICROSS®	1435	B	534,51	506,07	28,12	0,32
TEKNICROSS®	1435	A without flange groove	488,75	460,31	28,12	0,32
TEKNICROSS®	1435	B without flange groove	543,75	515,31	28,12	0,32

The share of rubber (m-%) varies between the different product variations while the share of steel and adhesive remain constant. The environmental impacts stated in this EPD represent average production of TEKNICROSS® Rubber level crossing. The variation in the share of rubber (m-%) and its effect on the environmental impacts has been studied. The difference in environmental impacts is within the +-10 % (PCR 2019:14 Construction products, 4.6.2) range for all of the product variations and therefore the results apply for all of them.

The products do not contain substances which exceed the limits for registration with the European Chemicals Agency regarding the “Candidate List of Substances of Very High Concern for authorization”.

LCA INFORMATION

Declared unit:
1 kg of TEKNICROSS® Rubber level crossing

Time representativeness:
The production data is collected from year 2025. Data used for calculation of the allocation factor Nokian Renkaat Ltd’s rubber is also from year 2024. Tire manufacturing LCI data is from year 2019. Generic data used from databases is from 2024-2025.

Geographical scope:
Raw materials are acquired from Finland and Poland. Manufacturing site is located in Finland. End-of-life scenario represents the conditions in Europe.

Database(s) and LCA software used:
System model *ecoinvent 3.10 – allocation, cut-off, EN15804* and method *EN 15804 +A2 LCIA & LCI indicators* (version EF 3.1, July 2022) with LCA software *SimaPro* (release 10.3).

Description of system boundaries:
Cradle to gate with modules C1–C4 and module D (A1–A3 + C + D) (option b).

Excluded life cycle stages:
Modules A4, A5 and B1-B5 are not assessed. B6 and B7 are not relevant. In B1-B5, only minimal maintenance is required.

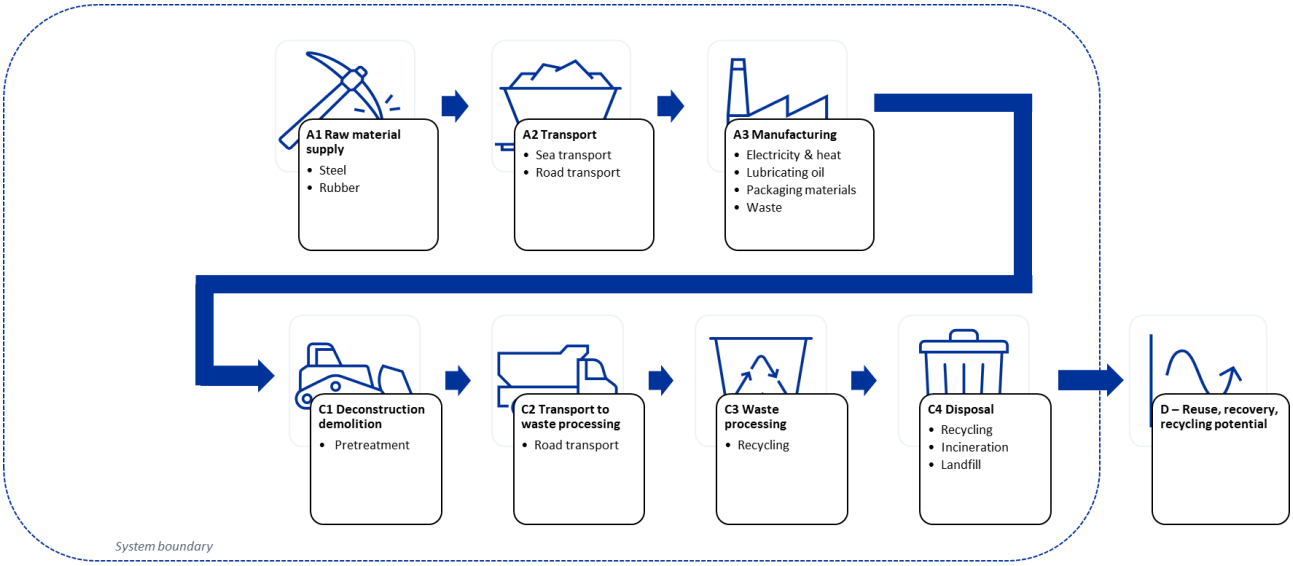
Infrastructure/capital goods:
Infrastructure/capital goods are excluded from the data collection of product manufacturing and processes owned by Teknikum. Infrastructure/capital goods are included in generic LCI datasets if generic LCI dataset includes infrastructure/capital goods, since it is not possible, within reasonable effort, to subtract the data on infrastructure/capital goods from all generic LCI datasets used in the LCA study.

Cut-off rule:
1% cut-off rule was applied for input flows in the inventory. The material used is as up-to-date as possible and at most five years old for producer specific data and at most ten years old for generic data.

Electricity modelling:
Manufacturing process consumes electricity that is supplied by Keravan Energia, but Teknikum does not have a guarantee of origin for the purchased electricity, so residual mix of Finland region's electricity is used in the modelling. The emission factor of electricity is 659 g CO2-eq./kWh.

Allocation:
No co-product allocation is applied for this study. The environmental impacts of rubber coming from tire manufacturing have been allocated based on mass-based allocation with information provided by Nokian Renkaat Ltd. Generic LCI data regarding tire manufacturing process is used together with the allocation factor to determine the environmental impacts of pre-consumer rubber used as raw material input for manufacturing of the TEKNICROSS® Rubber level crossing.

Process flow diagram:



Main processes of manufacturing:
The product manufacturing processes consist of the following phases: processing of rubber billets, pre-treatment of steel parts, vulcanisation of rubber in mold and finishing and packaging of the final product.

End-of-life scenario (module C):

Parameter		Unit
Demolition process		1,1 kWh diesel / ton of product
Transportation to treatment		80 km road
Recovery system	Steel	95% recycled
	Rubber	74,9% incineration with energy recovery & 25,1% recycling
Disposal		Steel: 5% to landfill

Recycling and reuse (module D):
The steel and rubber directed to recycling reaches the end-of-waste state when leaving module C3, their recycling benefits are considered in module D. The loads and benefits related to the export of secondary materials are calculated according to the formulae presented in EN 15804 Annex D.

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

	Product stage			Distribution/ installation stage		Use stage							End-of-life stage					Beyond product life cycle
	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	ND	ND	ND	ND	ND	ND	ND	ND	ND	x	x	x	x		x
Geography	EU27	EU27	EU27	ND	ND	ND	ND	ND	ND	ND	ND	ND	EU27	EU27	EU27	EU27		EU27

Process	Source type	Source	Reference year	Data category	Share of primary data, of GWP-GHG results for A1-A3*
Electricity consumed in the product manufacturing	Database	ecoinvent EN15804	2020–2025	Primary data	53,1 %
Steam consumed in the product production	Database	ecoinvent EN15804	2025	Primary data	14,7 %
Raw materials	Database	ecoinvent EN15804	2024	Secondary data	0,0 %
Steel raw materials	Database	Industry data 2.0	2025	Secondary data	0,0 %
Waste treatment of manufacturing	Database	ecoinvent EN15804	2024	Secondary data	0,0 %
Total share of primary data, of GWP-GHG results for A1-A3					**67,8 %**

*The share of primary data is calculated based on GWP-GHG results. It is a simplified indicator for data quality that supports the use of more primary data, to increase the representativeness of and comparability between EPDs. Note that the indicator does not capture all relevant aspects of data quality and is not comparable across product categories.

Data quality assessment:

Data quality assessment was carried out according to the requirements of EN 15941 and done using the data quality level and criteria schemes of UN Environment Global Guidance on LCA database development. Data quality assessment covered at least 80 % of the results of each of the declared core environmental impact indicators. In most of the impact categories the electricity used in the manufacturing process have the most impact on the A1-A3 results. A couple of impact categories also include raw materials, packaging materials and heat as a significant source. Geographical and technical coverage was assessed as good/fair and time-related coverage was very good.

ENVIRONMENTAL PERFORMANCE

LCA results of the products - main environmental performance results

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks. The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3). Biogenic carbon in the product leaving the product system has been balanced out in modules C3- and C4, and biogenic carbon in the product packaging leaving the product system has been balanced out in modules A1-A3.

Mandatory impact category indicators according to EN 15804

Results per declared unit							
Indicator	**Unit**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	kg CO_2 eq.	**3,75E+00**	**4,88E-04**	**2,23E-02**	**2,27E+00**	**8,72E-04**	**-8,62E-01**
GWP-fossil	kg CO_2 eq.	**3,75E+00**	4,88E-04	2,23E-02	2,26E+00	1,88E-05	-8,61E-01
GWP-biogenic	kg CO_2 eq.	**-1,58E-03**	4,24E-08	3,96E-06	2,58E-03	8,53E-04	3,30E-04
GWP-luluc	kg CO_2 eq.	**2,09E-03**	4,20E-08	7,30E-06	3,15E-05	9,74E-09	-6,58E-04
ODP	kg CFC 11 eq.	**1,08E-07**	7,39E-12	4,43E-10	7,88E-10	5,42E-13	2,76E-08
AP	mol H^+ eq.	**1,15E-02**	1,65E-06	6,98E-05	3,76E-04	1,33E-07	-3,18E-03
EP-freshwater	kg P eq.	**8,93E-04**	1,41E-08	1,49E-06	9,96E-06	1,56E-09	-5,79E-04
EP-marine	kg N eq.	**2,67E-03**	6,72E-07	2,35E-05	1,65E-04	5,06E-08	-9,52E-04
EP-terrestrial	mol N eq.	**2,81E-02**	7,36E-06	2,56E-04	1,56E-03	5,53E-07	-1,06E-02
POCP	kg NMVOC eq.	**1,10E-02**	2,61E-06	1,09E-04	4,13E-04	1,98E-07	1,93E-04
ADP-minerals&metals*	kg Sb eq.	**5,88E-06**	1,68E-10	7,12E-08	2,26E-07	2,92E-11	1,74E-06
ADP-fossil*	MJ	**4,76E+01**	6,32E-03	3,13E-01	4,43E-01	4,60E-04	1,01E+01
WDP*	m^3	**2,72E+00**	1,86E-05	1,74E-03	9,58E-02	2,05E-05	2,91E-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						

** Disclaimer: 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 experienced with the indicator.*

Additional mandatory and voluntary impact category indicators

Results per functional or declared unit							
Indicator	**Unit**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG[1]	kg CO_2 eq.	**3,76E+00**	4,89E-04	2,24E-02	2,26E+00	1,89E-05	-8,90E-01
PM	disease inc.	**7,84E-08**	2,43E-11	1,75E-09	2,73E-09	3,02E-12	-7,38E-08
IRP**	kBq U-235 eq	**1,80E+00**	2,83E-06	4,02E-04	2,40E-03	2,93E-07	-4,00E-02
ETP-fw*	CTUe	**1,43E+01**	8,94E-04	8,41E-02	4,00E+00	6,29E-05	-1,12E+02
HTP-c*	CTUh	**7,21E-09**	2,05E-12	1,56E-10	7,10E-10	8,48E-14	-4,44E-07
HTTP-nc*	CTUh	**2,97E-08**	1,08E-12	2,01E-10	9,80E-10	8,26E-14	-1,51E-08
SQP*	dimensionless	**2,38E+01**	4,43E-04	1,86E-01	3,32E-01	9,05E-04	-1,49E+00

* 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 experienced with the indicator.
** 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.

[1] This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO_2 is set to zero.

Resource use indicators

Primary energy use indicators are calculated according to option B, according to Annex 3 of PCR Construction products, 2019:14, version 2.0.1. Renewable and non-renewable primary energy in the product packaging (PERM and PENRM) leaving the product system has been balanced out already in modules A1-A3.

Results per functional or declared unit							
Indicator	**Unit**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	**4,16E+00**	3,87E-05	5,31E-03	3,50E-02	4,26E-06	-1,06E+00
PERM	MJ	**7,44E-01**	0,00E+00	0,00E+00	-6,60E-01	0,00E+00	0,00E+00
PERT	**MJ**	**4,90E+00**	**3,87E-05**	**5,31E-03**	**-6,25E-01**	**4,26E-06**	**-1,06E+00**
PENRE	MJ	**4,59E+01**	6,32E-03	3,13E-01	4,43E-01	4,60E-04	1,01E+01
PENRM	MJ	**1,62E+00**	0,00E+00	0,00E+00	-1,44E+00	0,00E+00	0,00E+00
PENRT	**MJ**	**4,75E+01**	**6,32E-03**	**3,13E-01**	**-9,93E-01**	**4,60E-04**	**1,01E+01**
SM	kg	**1,20E-02**	2,63E-06	1,43E-04	1,12E-03	1,16E-07	-1,76E-01
RSF	MJ	**2,68E-02**	6,86E-09	1,81E-06	1,74E-05	2,39E-09	5,27E-03
NRSF	MJ	**0,00E+00**	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m^3	**7,69E-02**	4,53E-07	4,30E-05	2,25E-03	4,79E-07	5,27E-03
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 indicators

Results per functional or declared unit							
Indicator	**Unit**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	**2,69E-01**	7,06E-06	4,51E-04	7,14E-02	5,11E-07	-8,02E-01
Non-hazardous waste disposed	kg	**6,75E+00**	9,65E-05	9,52E-03	8,79E-01	1,17E-05	-2,09E+00
Radioactive waste disposed	kg	**1,14E-04**	6,94E-10	9,98E-08	5,89E-07	7,15E-11	-4,74E-06

Output flow indicators

Results per functional or declared unit							
Indicator	**Unit**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
Components for re-use	kg	**0,00E+00**	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	**0,00E+00**	0,00E+00	0,00E+00	2,14E-01	0,00E+00	0,00E+00
Materials for energy recovery	kg	**0,00E+00**	0,00E+00	0,00E+00	1,93E-08	9,01E-12	0,00E+00
Exported energy, electricity	MJ	**0,00E+00**	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	0,00E+00	0,00E+00	0,00E+00

Additional LCA results of the products – Other environmental performance results

End-of-life modelling of the product is based on scenario that 95% of the demolished steel will be recycled and 5% ends up in the landfill. In addition, 74,9% of the rubber demolished will be incinerated with energy recovery and 25,1% is recycled. The alternative scenarios are: 1) 100% of steel and rubber is recycled recycling and 2) 100% of steel is landfilled and 100% of rubber is incinerated.

Alternative end-of-life scenario for the mandatory impact category indicators

Results per declared unit														
Indicator	**Unit**	**All scenarios**	**100% recycling**				**100% incineration**				**100% landfilling**			
		C1	**C2**	**C3**	**C4**	**D**	**C2**	**C3**	**C4**	**D**	**C2**	**C3**	**C4**	**D**
GWP-total	**kg CO2 eq**	4,88E-04	1,55E-02	1,58E-01	0,00E+00	-2,25E+00	2,52E-02	2,97E+00	0,00E+00	1,54E+00	1,55E-02	0,00E+00	3,75E-04	1,56E+00
GWP-fossil	kg CO2 eq	4,88E-04	1,55E-02	1,58E-01	0,00E+00	-2,24E+00	2,52E-02	2,97E+00	0,00E+00	1,55E+00	1,55E-02	0,00E+00	3,75E-04	1,58E+00
GWP-biogenic	kg CO2 eq	5,22E-08	1,03E-05	-1,60E-05	0,00E+00	-1,26E-03	1,68E-05	3,61E-04	0,00E+00	-1,36E-02	1,03E-05	0,00E+00	4,83E-08	-1,32E-02
GWP-luluc	kg CO2 eq	4,20E-08	5,07E-06	8,42E-05	0,00E+00	-8,26E-04	8,24E-06	1,28E-05	0,00E+00	1,11E-04	5,07E-06	0,00E+00	1,95E-07	6,36E-04
ODP	kg CFC11 eq	7,39E-12	3,08E-10	4,32E-10	0,00E+00	-1,61E-08	5,00E-10	8,94E-10	0,00E+00	5,24E-08	3,08E-10	0,00E+00	1,08E-11	5,29E-08
AP	mol H+ eq	1,65E-06	4,84E-05	2,54E-04	0,00E+00	-8,96E-03	7,87E-05	4,11E-04	0,00E+00	6,51E-03	4,84E-05	0,00E+00	2,66E-06	6,61E-03
EP-freshwater	kg P eq	1,41E-08	1,03E-06	1,62E-05	0,00E+00	-9,87E-04	1,68E-06	7,70E-06	0,00E+00	4,38E-04	1,03E-06	0,00E+00	3,11E-08	4,46E-04
EP-marine	kg N eq	6,72E-07	1,63E-05	1,59E-04	0,00E+00	-1,94E-03	2,65E-05	1,64E-04	0,00E+00	1,09E-03	1,63E-05	0,00E+00	1,01E-06	1,11E-03
EP-terrestrial	mol N eq	7,36E-06	1,78E-04	8,05E-04	0,00E+00	-2,09E-02	2,89E-04	1,78E-03	0,00E+00	1,13E-02	1,78E-04	0,00E+00	1,11E-05	1,16E-02
POCP	kg NMVOC eq	2,61E-06	7,59E-05	2,43E-04	0,00E+00	-7,55E-03	1,23E-04	4,61E-04	0,00E+00	9,00E-03	7,59E-05	0,00E+00	3,96E-06	9,07E-03
ADP-minerals&metals*	kg Sb eq	1,68E-10	4,94E-08	5,54E-07	0,00E+00	-1,91E-05	8,03E-08	1,16E-07	0,00E+00	2,43E-05	4,94E-08	0,00E+00	5,83E-10	2,45E-05
ADP-fossil*	MJ	6,32E-03	2,17E-01	4,76E-01	0,00E+00	-2,58E+01	3,53E-01	4,32E-01	0,00E+00	4,22E+01	2,17E-01	0,00E+00	9,20E-03	4,34E+01
WDP*	m3 depriv.	1,86E-05	1,21E-03	1,68E-02	0,00E+00	-5,59E-01	1,97E-03	1,22E-01	0,00E+00	1,00E+00	1,21E-03	0,00E+00	4,10E-04	1,04E+00

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

* 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 experienced with the indicator.

Alternative end-of-life scenario for the additional mandatory impact category indicators

Results per declared unit														
Indicator	Unit	All scenarios	100% recycling				100% incineration				100% landfilling			
		C1	C2	C3	C4	D	C2	C3	C4	D	C2	C3	C4	D
GWP-GHG	kg CO2 eq	4,89E-04	1,55E-02	1,58E-01	0,00E+00	-2,28E+00	2,53E-02	2,97E+00	0,00E+00	1,55E+00	1,55E-02	0,00E+00	3,78E-04	1,58E+00
PM	disease inc.	2,43E-11	1,22E-09	4,16E-09	0,00E+00	-1,65E-07	1,98E-09	2,09E-09	0,00E+00	1,02E-07	0,00E+00	0,00E+00	0,00E+00	0,00E+00
IRP**	kBq U-235 eq	2,83E-06	2,79E-04	4,23E-03	0,00E+00	-7,89E-02	4,53E-04	1,66E-03	0,00E+00	3,70E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ETP-fw*	CTUe	8,94E-04	5,84E-02	1,06E+00	0,00E+00	-1,28E+02	9,49E-02	4,98E+00	0,00E+00	1,18E+01	5,84E-02	0,00E+00	1,26E-03	1,19E+01
HTP-c*	CTUh	2,05E-12	1,08E-10	1,93E-09	0,00E+00	-4,72E-07	1,76E-10	3,02E-10	0,00E+00	6,30E-09	1,08E-10	0,00E+00	1,70E-12	6,40E-09
HTTP-nc*	CTUh	1,08E-12	1,40E-10	1,33E-09	0,00E+00	-2,93E-08	2,27E-10	8,61E-10	0,00E+00	1,56E-08	1,40E-10	0,00E+00	1,65E-12	1,59E-08
SQP*	Pt	4,43E-04	1,29E-01	8,98E-01	0,00E+00	-7,17E+00	2,10E-01	1,42E-01	0,00E+00	6,48E+00	1,29E-01	0,00E+00	1,81E-02	6,86E+00

* 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 experienced with the indicator.
** 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.

Alternative end-of-life scenario for resource use indicators

Results per declared unit														
Indicator	Unit	All scenarios	100% recycling				100% incineration				100% landfilling			
		C1	C2	C3	C4	D	C2	C3	C4	D	C2	C3	C4	D
PERE	MJ	3,87E-05	3,69E-03	6,35E-02	0,00E+00	-2,34E+00	5,99E-03	2,44E-02	0,00E+00	1,39E+00	3,69E-03	0,00E+00	8,53E-05	1,81E+00
PERM	MJ	0,00E+00	0,00E+00	-4,16E+00	0,00E+00	0,00E+00	0,00E+00	-3,54E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	**MJ**	**3,87E-05**	**3,69E-03**	**-4,10E+00**	**0,00E+00**	**-2,34E+00**	**5,99E-03**	**-3,51E+00**	**0,00E+00**	**1,39E+00**	**3,69E-03**	**0,00E+00**	**8,53E-05**	**1,81E+00**
PENRE	MJ	6,32E-03	2,17E-01	4,76E-01	0,00E+00	-2,58E+01	3,53E-01	4,32E-01	0,00E+00	4,22E+01	2,17E-01	0,00E+00	9,20E-03	4,34E+01
PENRM	MJ	0,00E+00	0,00E+00	-4,59E+01	0,00E+00	0,00E+00	0,00E+00	-3,90E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	**MJ**	**6,32E-03**	**2,17E-01**	**-4,54E+01**	**0,00E+00**	**-2,58E+01**	**3,53E-01**	**-3,86E+01**	**0,00E+00**	**4,22E+01**	**2,17E-01**	**0,00E+00**	**9,20E-03**	**4,34E+01**
SM	kg	2,63E-06	9,95E-05	3,13E-03	0,00E+00	-1,93E-01	1,62E-04	4,53E-04	0,00E+00	9,00E-03	9,95E-05	0,00E+00	2,31E-06	9,13E-03
RSF	MJ	6,86E-09	1,26E-06	2,54E-05	0,00E+00	-9,81E-04	2,04E-06	1,47E-05	0,00E+00	7,58E-03	1,26E-06	0,00E+00	4,78E-08	7,58E-03
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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m3	4,53E-07	2,98E-05	4,17E-04	0,00E+00	-1,47E-02	4,85E-05	2,86E-03	0,00E+00	2,35E-02	2,98E-05	0,00E+00	9,58E-06	2,45E-02

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

Alternative end-of-life scenario for the waste indicators

Results per declared unit														
Inventory parameter	Unit	All scenarios	100% recycling				100% incineration				100% landfilling			
		C1	C2	C3	C4	D	C2	C3	C4	D	C2	C3	C4	D
Hazardous waste disposed	kg	7,06E-06	3,13E-04	9,93E-03	0,00E+00	-9,11E-01	5,09E-04	9,20E-02	0,00E+00	7,66E-02	3,13E-04	0,00E+00	1,02E-05	7,82E-02
Non-hazardous waste disposed	kg	9,65E-05	6,61E-03	3,07E-01	0,00E+00	-5,65E+00	1,07E-02	1,07E+00	0,00E+00	4,00E+00	6,61E-03	0,00E+00	2,34E-04	4,03E+00
Radioactive waste disposed	kg	6,94E-10	6,93E-08	1,05E-06	0,00E+00	-2,04E-05	1,13E-07	4,35E-07	0,00E+00	1,67E-05	6,93E-08	0,00E+00	1,43E-09	3,14E-05

Alternative end-of-life scenario for the output flow

Results per declared unit														
Inventory parameter	Unit	All scenarios	100% recycling				100% incineration				100% landfilling			
		C1	C2	C3	C4	D	C2	C3	C4	D	C2	C3	C4	D
Components for reuse	kg	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
Materials for recycling	kg	0,0E+00	0,0E+00	9,4E-01	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
Materials for energy recovery	kg	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	9,4E-01	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
Exported energy, electricity	MJ	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
Exported energy, thermal	MJ	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00

ABBREVIATIONS

Abbreviation	Definition
General abbreviations	
EN	European Norm (Standard)
EF	Environmental Footprint
EPD	Environmental Product Declaration
GPI	General Programme Instructions
IES	International EPD System
ISO	International Organization for Standardization
CEN	European Committee for Standardization
CPC	Central product classification
GRI	Global Reporting Initiative
LCA	Life Cycle Assessment
ND	Not Declared
PCR	Product Category Rules
Life cycle modules	
A1	Raw material supply
A2	Transport
A3	Manufacturing
A4	Transport to site
A5	Construction/Installation
B	Use
C1	Deconstruction/Demolition
C2	Transport to waste processing
C3	Waste processing
C4	Disposal
D	Reuse-Recovery-Recycling potential

REFERENCES

- Dong, Y. et al. 2021. Life cycle assessment of vehicle tires: A systematic re-view. [Article] Available: https://www.sciencedirect.com/science/article/pii/S2666789421000258
- Ecoinvent database. Version EN15804.
- Energy Industry. District heating statistics 2024. Available: https://energia.fi/files/5385/Vuositaulukot_19_FI.xlsx.
- EN ISO 14040:2006. Environmental management. Life cycle assessment. Principles and framework. Helsinki: Finnish Standards Association (SFS). 48 pages.
- EN ISO 14044:2006 Environmental management. Life cycle assessment. Requirements and guidelines. Helsinki: Finnish Standards Association (SFS). 96 pages.
- EN 14025:2006. Environmental labels and declarations. Type III envi-ronmental declarations. Principles and procedures. Helsinki: Finnish Stand-ards Association (SFS). 28 pages.
- EN 15804:2019. Sustainability of construction works – environmental product declarations – core rules for the product category of construction products. Helsinki: Finnish Standards Association (SFS). 64 pages.
- EN 15941:2024. Sustainability of construction works - Data quality for environmental assessment of products and construction work - Selection and use of data.
- Eurostat. Treatment of waste by waste category, hazardousness and waste management operations. Data browser available at: https://ec.europa.eu/eurostat/databrowser/view/ENV_WASTRT__custom_885098/default/table?lang=en
- EPD International (2025) General Programme Instructions for the International EPD System. Version 5.0.1. www.environdec.com
- EPD International (2025). PCR 2019:14 Construction products (EN 15804:A2). Version 2.0.1.
- Merlin, C. 2020. Life cycle assessment of waste tyre treatments: Material recycling vs. coincineration in cement kilns. 93 pages.
- Piotrowska, K., Kruszelnicka, W., Bałdowska-Witos, P., Kasner, R., Rudnicki, J., Tomporowski, A., Flizikowski, J., Opielak, M. 2019. Assessment of the Environmental Impact of a Car Tire throughout Its Lifecycle Using the LCA Method. 25 pages. Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6947500/pdf/materials-12-04177.pdf
- SimaPro Life Cycle Modelling software. Version 10.3.0.1. Developed by Pré.
- Ecoinvent database. Version EN15804.
- European Commission, Joint Research Centre. (2013). Best Available Tech-niques (BAT) Reference Document for Iron and Steel Production (JRC69967). Publications Office of the European Union. https://publications.jrc.ec.europa.eu/repository/handle/JRC69967

VERSION HISTORY

Original Version of the EPD, 2021-09-10

Revision 1, 2026-05-13,
Differences versus the previously published version: Data gathered from 2025. PCR 2019:14 Construction products (EN 15804:A2). Version 2.0.1. applied.

EPD
INTERNATIONAL EPD SYSTEM
www.environdec.com