epd square .

Environmental Product Declaration

Average EPD

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

Transportconcrete C20/25, C20/25 ash

PREFA invest, a.s.

Programme
EPD Square | www.epdsquare.com

Programme operator
EPD Square, s.r.o.

EPD Registration number
SQ 00-047

Publication date
04.11.2025

Valid until
03.11.2030

epd square .

General information

Product
Transportconcrete C20/25, C20/25 ash

Program operator
EPD Square, s.r.o.
Lermontovova 3, 811 05 Bratislava, Slovakia
Email: info@epdsquare.com

Registration number
SQ 00-047

Publication date
04.11.2025

Valid until date
03.11.2030

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Manufacturer
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Place of production
Prefa invest, a.s.
Podhradská cesta 2, 038 52 Sučany, Slovakia

Prefa invest, a.s.
038 41 Košťany nad Turcom, Slovakia

Product Category Rules (PCR)
EPD Square PCR v1.0, 2024

Declared/Functional unit
1 m^3

Mass per DU
2300 kg

UN CPC code
375 - Articles of concrete, cement and plaster

Geographical scope
Slovakia, Europe

Year of study
2024

Comparability
EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in the context of the building.

EPD author
Želmíra Blichová, Silvia Vilčeková, EPD Clarity s.r.o.

Verification type
Independent verification of the declaration and data, according to ISO14025:2006
Internal: ☐
External: ☒

Verified by
Daniel Satola, Daniel Satola Consulting

Satola Daniel

The owner of the declaration shall be liable for the underlying information and evidence.
EPD Square shall not be liable with respect to manufacturer, life cycle assessment data and evidence.

System boundaries

This EPD is based on system boundary cradle to gate (A1-A3) with modules C1-C4, module D and optional modules A4 and A5.

Modules declared and geographical scope

	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	MND	MND	MND	MND	MND	MND	MND	x	x	x	x	x
Geography	EU	EU	SK	SK	SK	-	-	-	-	-	-	-	SK	SK	SK	SK	SK

MND = Modules not declared.

Description of Organization

Prefa invest, a.s. is a young dynamic company that builds on the traditional foundations of concrete production in the Sučany factory. Since 1948, it has been producing prefabricated products for the construction of industrial buildings, shopping centres, administrative buildings and housing. The company's present-day operations date back to 2012. The production part of PREFA invest, a.s. can be divided into the following basic segments:

- Prefabricated building structures,

- Sewerage program,

- Concrete pavements and blocks,

- Mining and processing of aggregates,

- Demolition works, and

- Transportconcrete.

Product information

Product name
Transportconcrete

Additional label(s)
C20/25, C20/25 ash

Product description
PREFA invest offers its customers fresh concrete mixes according to the required concrete mix classes as a priority. The ready-mixed concrete, which is produced in the mixing plant according to the customer's specific requirements (concrete class), is delivered to the construction site ready for use. For transportation we use our own special mixing equipment and our own transport.

Product application
It is used for on-site concrete structures, monolithic structures and prefabricated structural parts of civil and civil engineering structures. CBIII - intended for roads II. and III. Class, local roads of functional class A2, special purpose roads, parking and parking areas.
The transportconcrete have been issued with a Certificate of Conformity of the Production Control System SK04-ZSV-2227, SK04-ZSV-2915, SK04-ZSV-2917, SK04-ZSV-2914, SK04-ZSV-2182, SK04-ZSV-2916 by the Building Testing and Research Institute, NPO, Bratislava.

Product standards
STN EN 206, STN EN 73 6123, STN EN 13 369, STN EN 14227-1

Geographical scope
Slovakia, Europe

Product contents information

Transport concrete C20/25

Product components	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%
Aggregates	1849.08	-	-
Cement II - B/S - 42,5N	223.42	-	-
Cement II - A/S - 42,5R	74.47	-	-
Additives	1.94	-	-
Water	151.08	-	-
TOTAL	2300	-	-
Packaging materials	**Weight, kg**	**Weight-% (versus the product)**	
-	-	-	
TOTAL	-	-	

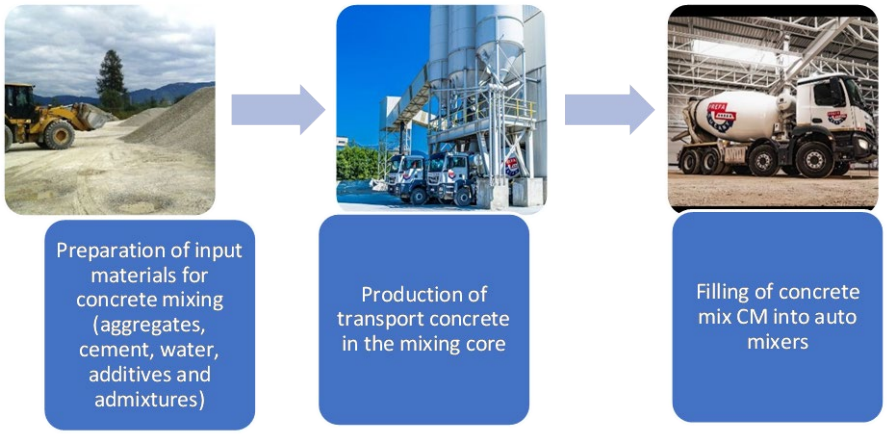
Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO_2.

Transport concrete C20/25 ash

Product components	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%
Aggregates	1849.08	-	-
Cement II - B/S - 42,5N	201.08	-	-
Cement II - A/S - 42,5R	67.03	-	-
Fly ash	29.79	-	-
Additives	1.94	-	-
Water	151.08	-	-
TOTAL	2300	-	-
Packaging materials	**Weight, kg**	**Weight-% (versus the product)**	
-	-	-	
TOTAL	-	-	

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO_2.

Manufacturing process



Production process of transport concrete

Life cycle assessment

Cut-off criteria

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw materials and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

Allocation, estimations, and assumptions

Allocation is based on annual production rate and made with high accuracy and precision. The values for 1 m^3 of the product which is used within this study are calculated by considering the total product weight per annual production from which 63% consists of concrete C20/25 and 37% consists of concrete C20/25 ash. Results are calculated based on weighted average. The product output is fixed to 1 m^3 and the corresponding amount of product is used in the calculations.
In the production plant Sučany, several kinds of products are produced; since the production processes of these products are similar, the annual production percentages are taken into consideration for allocation. According to the ratio of the annual production of the declared product to the total annual production at the plant, the annual total energy consumption and the generated waste per the declared product are allocated. Subsequently, the produced product output fixed to 1 m^3 and the corresponding amount of product is used in the calculations.

Share of ready-mix concrete production in 2024 was determined as 75 % in Košťany nad Turcom and 25 % in Sučany. Distance between production plants is 14,4 km.

Module A1: This stage considers the extraction and processing of all raw materials. Within the product stage accurate data has been used. In the case of absence in the database, it was modelled as close to reality as possible using proxy, representative datapoint. The data point that applied economic allocation to obtain the results was used for modelling of fly ash (factor = 0.043). This follows the economic allocation principle required for co-products.

Module A3: In the plant, electricity, LPG, and diesel are allocated on yearly consumption.

Module A2, A4 & C2: Vehicle capacity utilization volume factor is assumed to be 1 which means full load. It may vary but as the role of transportation emission in total results is small and so the variety in load is assumed to be negligible. Empty returns are considered.

Module A4: Transportation doesn't cause losses. Additionally, transportation distances and vehicle types are assumed according to the delivery in the last year. The distance is assumed to be 27.02 km and the transportation method assumed to be lorry.

Module A5: No additional construction activities are assumed.

Module C1: The impacts of the disassembly stage are assumed to take 25 kWh / m^3 of the product. The source of energy is diesel fuel used by work machines.

Module C2: All the end-of-life products are assumed to be sent to the closest facilities such as recycling and landfill. Transportation distance to the closest disposal area is estimated as 50 km and the transportation method is assumed as lorry which is the most common.

Module C3, C4: In the case of demolition of buildings, the product can be recovered and sent to companies specialized in recovery. It is assumed that 70% of the concrete waste will be recycled and 30% of the concrete waste will be taken to landfill for final disposal.

Module D: Gravel production is declared as benefit and loads of recycling are linked to its production.

Database(s) and LCA software

This EPD has been created using One Click LCA Pre-Verified EPD Generator. Ecoinvent v3.10.1 and One Click LCA databases were used as sources of environmental data and also EPDs were used for some materials as source of environmental data.

LCA Scenarios and additional technical information

A1 Raw material extraction

This module includes the extraction and processing of all raw materials and packaging which occur upstream to the manufacturing site. Especially raw material source for cement, fine and coarse aggregates, water, admixtures and additives.

A2 Transport

The considered transportation impacts include exhaust emissions resulting from transportation of all raw materials from suppliers to production plant as well as the environmental impacts of production of the used fuel. The transportation distances and methods were provided by manufacturer. Module includes road transport (truck EURO6, 16-32 t, consumption 35 l / 100 km).

A3 Manufacturing

The environmental impacts considered for the production stage cover the manufacturing of the production materials and fuels used by machines. The environmental impacts of this stage have been calculated using the most recent data in regard to what applied in the factory. The data is based on production throughout the year 2024. The study considers the losses of main raw materials occurring during the manufacturing process. A mass-based allocation is applied to split the environmental burdens of the site among the finished products.

Manufacturing energy scenario

Electricity data source and quality	Electricity, medium voltage, residual mix	Ecoinvent 3.10.1
Electricity CO2e / kWh	0.25	
Electricity data source and quality	Electricity production, photovoltaic, 3kWp slanted-roof installation, multi-Si, panel, mounted (Reference product: electricity, low voltage)	Ecoinvent 3.10.1
Electricity kg CO2e / kWh	0.0819	
Natural gas source and quality	Natural gas	LCA inventory for heat production from natural gas (OneClickLCA 2023)
Natural gas kg CO2e / m3	2.42	
Diesel source and quality	Diesel, burned in building machine	Ecoinvent 3.10.1
Diesel combustion kg CO2e / MJ	0.1	

A4 Transport

Transportation impacts occurred from final products delivery to construction site cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions. The transportation distance is defined according to PCR. Average distance of transportation from production plant to building site is assumed as 27,02

km and the transportation method is assumed to be lorry with a capacity of 16-32t. The travelling distance is short due to the nature of the product. Freshly mixed concrete needs to be transported fast and only on short distances. Vehicle capacity utilization volume factor is assumed to be 1. Empty returns are considered.

Transportation scenario (A4)

Vehicle type used for transport	Transport, freight, lorry 16-32 metric ton, EURO6
Distance to the construction site	27.02
Capacity utilization	100
Capacity utilization factor	1

A5 Assembly

No energy is used in the assembly process. Auto mixers are filled with transportconcrete at the production plant, transported to the construction site, and poured into the specified structure.

C1 Disassembly

Energy consumption used by heavy machinery for deconstruction is estimated to be 25 kWh/m^3 and the fuel is diesel. It is assumed that 100% of waste is collected.

C2 Transport

Transportation distance to the closest disposal area is estimated as 50 km and the transportation method is assumed as lorry (16-32 tonne; EURO 6) which is the most common.

C3 Waste processing

70% of the concrete waste is assumed to be recycled according to JRC Technical report: Model for Life Cycle Assessment (LCA) of buildings, 2018.

C4 Disposal

It is assumed that 30% of concrete waste is taken to landfill for final disposal.

End of Life (C1, C3, C4)

	Value	Unit
Collected separately	2300	kg
Recycled	1610	kg
To landfill	690	kg

D Module

Module considers the benefits of recycling the concrete into crushed gravel. Crushing process which creates the gravel is considered as load.

Additional environmental information

Declared unit is 1 m^3 of the transportconcrete. If it is necessary to quantify the results to a product weight of 1 kg, the conversion factor is 0,000435.

LCA results

Core environmental impact indicators – EN 15804+A2, PEF

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	kg CO2 eq.	2,63E+02	1,18E+01	0,00E+00	9,01E+00	2,22E+01	6,30E+00	3,99E+00	-1,61E+01
GWP-fossil	kg CO2 eq.	2,62E+02	1,18E+01	0,00E+00	9,01E+00	2,22E+01	7,04E+00	4,31E+00	-1,61E+01
GWP-biogenic	kg CO2 eq.	1,07E+00	0,00E+00	0,00E+00	1,08E-19	-4,34E-19	-7,50E-01	-3,21E-01	0,00E+00
GWP-LULUC	kg CO2 eq.	4,13E-02	4,23E-03	0,00E+00	9,23E-04	7,86E-03	7,22E-04	2,46E-03	-1,46E-02
ODP	kg CFC11 eq.	8,54E-06	2,35E-07	0,00E+00	1,38E-07	4,42E-07	1,08E-07	1,25E-07	-1,26E-07
AP	mol H^+ eq.	8,68E-01	2,45E-02	0,00E+00	8,13E-02	6,95E-02	6,36E-02	3,05E-02	-9,84E-02
EP-freshwater	kg P eq.	5,10E-03	7,94E-04	0,00E+00	2,60E-04	1,47E-03	2,03E-04	3,54E-04	-4,91E-03
EP-marine	kg N eq.	1,89E-01	5,89E-03	0,00E+00	3,77E-02	2,35E-02	2,95E-02	1,16E-02	-2,33E-02
EP-terrestrial	mol N eq.	2,21E+00	6,36E-02	0,00E+00	4,13E-01	2,55E-01	3,23E-01	1,27E-01	-2,82E-01
POCP	kg NMVOC eq.	5,69E-01	4,08E-02	0,00E+00	1,23E-01	1,09E-01	9,63E-02	4,55E-02	-7,81E-02
ADP-M&M	kg Sb eq.	2,67E-03	3,93E-05	0,00E+00	3,23E-06	7,27E-05	2,53E-06	6,84E-06	-8,62E-05
ADP-fossil	MJ	1,54E+03	1,66E+02	0,00E+00	1,18E+02	3,12E+02	9,21E+01	1,06E+02	-1,93E+02
WDP	m^3	4,02E+01	8,25E-01	0,00E+00	2,94E-01	1,53E+00	2,30E-01	3,05E-01	-2,41E+01

GWP-total: Global Warming Potential; 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; See "additional requirements" for indicator given as PO4 eq. EP-marine: Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-terrestrial: Eutrophication potential, Accumulated Exceedance; POCP: Formation potential of tropospheric ozone; ADP-M&M: Abiotic depletion potential for non-fossil resources (minerals and metals); ADP-fossil: Abiotic depletion potential for fossil resources; WDP: Water deprivation potential, deprivation weighted water consumption

Additional (optional) environmental impact indicators – EN 15804+A2, PEF

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PM	Disease incidence	9,00E-06	8,69E-07	0,00E+00	2,31E-06	1,75E-06	1,38E-05	6,95E-07	-1,50E-06
IRP	kBq U235 eq.	1,60E+01	2,14E-01	0,00E+00	5,22E-02	3,98E-01	4,08E-02	6,64E-02	-1,36E+00
ETP-fw	CTUe	2,51E+03	2,21E+01	0,00E+00	6,49E+00	4,10E+01	5,07E+00	8,87E+00	-4,61E+01
HTP-c	CTUh	5,18E-08	1,98E-09	0,00E+00	9,27E-10	3,79E-09	7,24E-10	7,94E-10	-4,31E-09
HTP-nc	CTUh	1,73E-06	1,05E-07	0,00E+00	1,47E-08	1,96E-07	1,15E-08	1,82E-08	-1,26E-07
SQP	Dimensionless	6,90E+02	1,00E+02	0,00E+00	8,26E+00	1,86E+02	6,46E+00	2,08E+02	-1,81E+02

PM: Particulate matter emissions; IRP: Ionising radiation, human health; ETP-fw: Ecotoxicity (freshwater); ETP-c: Human toxicity, cancer effects; HTP-nc: Human toxicity, non-cancer effects; SQP: Land use related impacts / soil quality

Use of Natural Resources

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
RPEE	MJ	1,17E+02	2,90E+00	0,00E+00	7,47E-01	5,40E+00	5,84E-01	1,02E+00	-1,76E+01
RPEM	MJ	4,02E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-2,81E+01	-1,21E+01	0,00E+00
TPE	MJ	1,57E+02	2,90E+00	0,00E+00	7,47E-01	5,40E+00	-2,76E+01	-1,10E+01	-1,76E+01
NRPE	MJ	1,19E+03	1,66E+02	0,00E+00	1,18E+02	3,12E+02	9,22E+01	1,06E+02	-1,93E+02
NRPM	MJ	4,55E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-3,18E+02	-1,36E+02	0,00E+00
TRPE	MJ	1,65E+03	1,66E+02	0,00E+00	1,18E+02	3,12E+02	-2,26E+02	-3,07E+01	-1,93E+02
SM	kg	3,21E-01	7,70E-02	0,00E+00	4,90E-02	1,43E-01	3,83E-02	2,66E-02	-2,16E-01
RSF	MJ	3,08E-03	9,74E-04	0,00E+00	1,28E-04	1,81E-03	1,00E-04	5,50E-04	-1,49E-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
W	m^3	8,95E-01	2,26E-02	0,00E+00	7,79E-03	4,20E-02	6,09E-03	1,10E-01	-5,73E-01

RPEE: Renewable primary energy resources used as energy carrier; RPEM: Renewable primary energy resources used as raw materials; TPE: Total use of renewable primary energy resources; NRPE: Non-renewable primary energy resources used as energy carrier; NRPM: Non-renewable primary energy resources used as materials; TRPE: Total use of non-renewable primary energy resources; SM: Use of secondary materials; RSF: Use of renewable secondary fuels; NRSF: Use of non-renewable secondary fuels; W: Use of net fresh water

End of life – Waste

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
HW	KG	5,18E+00	2,41E-01	0,00E+00	1,31E-01	4,48E-01	1,03E-01	1,17E-01	-1,51E+00
NHW	KG	1,61E+02	5,09E+00	0,00E+00	1,79E+00	9,46E+00	1,40E+00	2,67E+00	-2,69E+01
RW	KG	9,96E-03	5,32E-05	0,00E+00	1,28E-05	9,90E-05	1,00E-05	1,62E-05	-3,28E-04

HW: Hazardous waste disposed; NHW: Non-hazardous waste disposed; RW: Radioactive waste disposed

End of life – Output flows

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
CR	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
MR	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,61E+03	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	0,00E+00
EEE	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
ETE	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

CR: Components for reuse; MR: Materials for recycling; MER: Materials for energy recovery; EEE: Exported electric energy; ETE: Exported thermal energy

Information describing biogenic carbon content at factory gate

Biogenic carbon content	Value	Unit
Biogenic carbon content in product	0,00E+00	kg C
Biogenic carbon content in the accompanying packaging	0,00E+00	kg C

Specific data (GWP-GHG) and data variation for A1-A3

Specific data and data variation	Value-%
Specific data	96.67%
Variation - product	4.05%
Variation - site	2%

Hazardous substances

☒ The product does not contain any REACH SVHC substances in amounts greater than 0.1 %.

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Bibliography

ISO 14020:2000
Environmental labels and declarations – General principles

ISO 14025:2010
Environmental labels and declarations - Type III environmental declarations - Principles and procedures

ISO 14040:2006
Environmental management. Life cycle assessment. Principles and frameworks.

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

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

EPD Square PCR v.1.0, 2024

EPD Square, General Programme Instructions v.1, 2024

Ecoinvent database v3.10.1 (2024) and One Click LCA database

EPD Concrete admixtures – Plasticizer and superplasticizer, 1000-1600 kg/m^3 (European Federation of Concrete Admixtures Associations a.i.s.b.l. (EFCA))

EPD Concrete admixtures - Plasticisers and Superplastics, EU average, 1.6 kg/l (EFCA)

EPD Concrete admixtures – Air entrainers, 1000-1600 kg/m^3 (European Federation of Concrete Admixtures Associations a.i.s.b.l. (EFCA))

EPD Concrete admixture - air entrainers, 1-1.6 g/ml (EFCA)

Annex

Environmental impacts – EN 15804+A1, CML/ISO 21930

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP	kg CO2 eq.	2,61E+02	1,17E+01	0,00E+00	8,96E+00	2,21E+01	7,01E+00	4,27E+00	-1,60E+01
ODP	kg CFC11 eq.	6,84E-06	1,87E-07	0,00E+00	1,09E-07	3,52E-07	8,55E-08	9,91E-08	-1,06E-07
AP	kg SO_2 eq.	6,86E-01	1,97E-02	0,00E+00	5,72E-02	5,29E-02	4,47E-02	2,26E-02	-7,64E-02
EP	kg PO_4 eq.	1,66E-01	4,98E-03	0,00E+00	1,34E-02	1,34E-02	1,04E-02	7,18E-03	-1,48E-02
POCP	kg C_2H_4 eq.	2,84E-02	2,09E-03	0,00E+00	4,29E-03	5,04E-03	3,35E-03	2,14E-03	-6,74E-03
ADP-M&M	kg Sb eq.	2,77E-03	3,84E-05	0,00E+00	3,14E-06	7,11E-05	2,46E-06	6,71E-06	-8,49E-05
ADP-fossil	MJ	1,71E+03	1,62E+02	0,00E+00	1,17E+02	3,06E+02	9,15E+01	1,05E+02	-1,72E+02

Environmental impacts – GWP-GHG

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP - GHG	kg CO2e	2,62E+02	1,18E+01	0,00E+00	9,01E+00	2,22E+01	7,05E+00	4,31E+00	-1,61E+01

GWP- GHG: Global Warming Potential, greenhouse gases