

ENVIRONMENTAL PRODUCT DECLARATION

according to the standards EN ISO 14025:2010 and EN 15804:2012+A2:2019/AC:2021

Organization	FRISSBETON Kft.
Programme holder	CENIA, Czech Environmental Information Agency, executive function of the Agency NPEZ
Declaration number	3015-EPD-030065101
Issue date	2023-11-06
Valid to	2028-11-06 according to EN 15804:2012+A2:2019/AC:2021

FRISSBETON

Ready-mixed concrete



General information

Programme information

Programme:	'National programme of environmental labelling' – CZ (NPEZ) CENIA, Czech Environmental Information Agency executive function of the Agency NPEZ
Address:	CENIA, Czech Environmental Information Agency Moskevská 1523/63 101 00 Praha 10 CZ
Website:	www.cenia.cz

Accountabilities for PCR, LCA and independent, third-party verification

Product Category Rules (PCR)

CEN standard EN 15804 serves as the Core Product Category Rules (PCR), EN 16757:2017

Life Cycle Assessment (LCA)

Product: **Ready-mixed concrete**

Declared unit:

1 m3 of average concrete mix for the given group of concretes

LCA accountability: Technický a zkušební ústav stavební Praha, s.p. - branch office Ostrava

Third-party verification

Independent third-party verification of the declaration and data, according to ČSN ISO 14025:2010

The ČSN EN 15804+A2 standard prepared by CEN serves as the basic PCR

internal

external

Third party verifier ^b:

Technický a zkušební ústav stavební Praha, s.p.
Prosecká 811/76a, Praha 9, 190 00
Czech Republic

Ing. Lenka Vrbová
Lead assessor of the certification body

Vrbová



Certification body for EPD, accredited by ČIA, Czech Accreditation Institute under No. 3015

^a Product Category Rules

^b Optional for business-to-business communications, mandatory for business-to-consumer communications (see ISO 14025:2010, clause 9.4).

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

EPDs within the same product category but from different programs 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.

Company information

Owner of the EPD:

FRISSBETON Kft.

Gábor Dénes utca 2. INFOPARK D. épület
H-1117 Budapest, Hungary

Contact:

Anna Průchová, anna.prucha@strabag.com, Kačírkova 982/4, 158 00 Praha 5 - Jinonice, CZ

Description of the organisation:

The company is part of the STRABAG SE construction group, operates an extensive network of concrete plants and is one of the largest concrete producers on the Hungarian market.

FRISSBETON produces concrete mixes in plants all over Hungary.

The basis of the product range is the production of structural and non-structural concrete according to MSZ 4798:2016 or e-ÚT 06.03.53:2018. Structural concretes are produced according to the scope of certification in classes **C 8/10 to C 80/95** for various degrees of environmental influence, in consistencies S1- S4 or S5. The company provides transport by truck mixers and concrete pumping. The products are intended for civil, civil engineering and transport structures, site-mixed concrete and precast structural components.

In addition to a wide range of quality products, as already mentioned, the company also provides its customers with technical solutions that create added value for product users, making it a reliable support for the construction industry in Hungary.

Concrete is produced in accordance with the standard **EN 206:2013+A2:2021 Concrete - Specification, performance, production and conformity**. Concretes can be designed for different classes of exposure.

The present EPD provides quantified environmental information on a construction product on harmonized and scientifically reasoned basis. It is also intended to provide basic information on the product regarding assessment of life cycle of buildings and other structures and contribute to identification of products with a lower impact on the environment.

To enable comparison of products in the building life cycle assessment process based on their EPD which is made by determination of their contribution to the environmental properties of the building, the EPD for the concerned construction products must be drawn up in accordance with the requirements of **EN 15804:2012+A2:2019/AC:2021 Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products**.

Product-related or management system-related certifications:

The quality of the products is ensured by an effective quality management system according to EN ISO 9001 and at selected operations by an environmental management system according to EN ISO 14001 in accordance with the technical regulations regarding the type of product.

Name and location of production site(s):

FRISSBETON Kft.

The LCA considers the production of concrete in the following concrete plants:

Concrete plant	Address
Békéscsaba	5600 Békéscsaba, Ipari út 4.
Pécs	7628 Pécs, Eperfás út 6.
Székesfehérvár	8000 Székesfehérvár, Farkasvermi út HRSZ.:5033/7
Pápa	8500 Pápa, Kopja utca 10.
Győr	9171 Győrújfalú, Keverőtelep
Tata	2890 Tata, Szomódi út 6.
Szombathely	9700 Szombathely, Sárdi-ér utca 1.
Sopron	9400 Sopron, Lófuttató utca 16.
Debrecen	4002 Debrecen, Balmazújvárosi út 8/a

Concrete plant	Address
Mezőtúr	5400 Mezőtúr, Északi összekötő út 30.
Nyíregyháza	4400 Nyíregyháza, Tünde út 1.
Kisvárd	4600 Kisvárd, Árpád út 135
Miskolc	3527 Miskolc, Sajószigeti út 2
Berettyóújfalu	4100 Berettyóújfalu, külterület hrsz: 0746/10
Szeged	6728 Szeged, Ikarusz köz 3/A
Veszprém	8200 Veszprém, Tüzér út 69.
Kecskemét	6000 Kecskemét, Mindszenti krt.71. hrsz:8364/9
Kaposvár	7400 Kaposvár, Raktár u. 13.
Szolnok	5000 Szolnok, Nagysándor József út 35/a
Budapest, Illatos út	1097 Budapest, Illatos út 8.
Budapest, Öv utca	1141 Budapest, Öv utca 23-25.
Gyál	2360 Gyál, Bem József u. 25.
Salgotarján	3104 Salgotarján, Budapesti út 74
Fehérgyarmat	4900 Fehérgyarmat, Mezei u. 1.
Berente	3704 Berente, Esze Tamás u. 25.

Product information

Product name:

Ready-mixed concrete

Product identification:

Concretes are produced according to the currently valid standards of the national and international standard **EN 206:2013+A2:2021 Concrete - Specification, performance, production and conformity**.

For the production of concrete in these concrete plants, the following groups of concrete are considered:

- C 8/10
- C 12/15
- C 16/20
- C 20/25
- C 25/30
- C 30/37
- C 35/45
- C 40/50
- UP C 45/55
- CP
- CKT

These specific types of concrete have a wide range of applications and are primarily used in civil engineering and residential and commercial construction.

Product description:

Concretes are produced according to the currently valid standards of the national and international standard **EN 206:2013+A2:2021 Concrete - Specification, performance, production and conformity**.

These specific types of concrete have a wide range of applications and are primarily used in civil engineering and residential and commercial construction.

The production process is fully automated to ensure superior quality products, conforming to the national and European concrete standards. The raw materials (cement, aggregates, water, admixtures etc.) are accurately weighed according to the proprietary mix designs to produce ready-mixed concrete with specific characteristics (strength, durability, finish ability, pumpability etc.). Once manufactured, the fresh concrete is transported with concrete trucks to the construction sites.

The production process is fully automated to ensure superior quality products, conforming to the national and European concrete standards. The raw materials (cement, aggregates, water, admixtures etc.) are accurately weighed according to the proprietary mix designs to produce ready-mixed concrete with specific characteristics (strength, durability, finish ability, pumpability etc.). Once manufactured, the fresh concrete is transported with concrete trucks to the construction sites.

Table 1 Representation of material components in 1 m3 of product

Material specification	% composition
Cement	10-18
Coarse aggregate	40-50
Fine aggregate (0/4)	30-40
Chemical additives	< 0,2
Water	3-6

Finished product - does not contain any harmful substances that are listed in the "Candidate List of substances of very high concern for Authorisation".

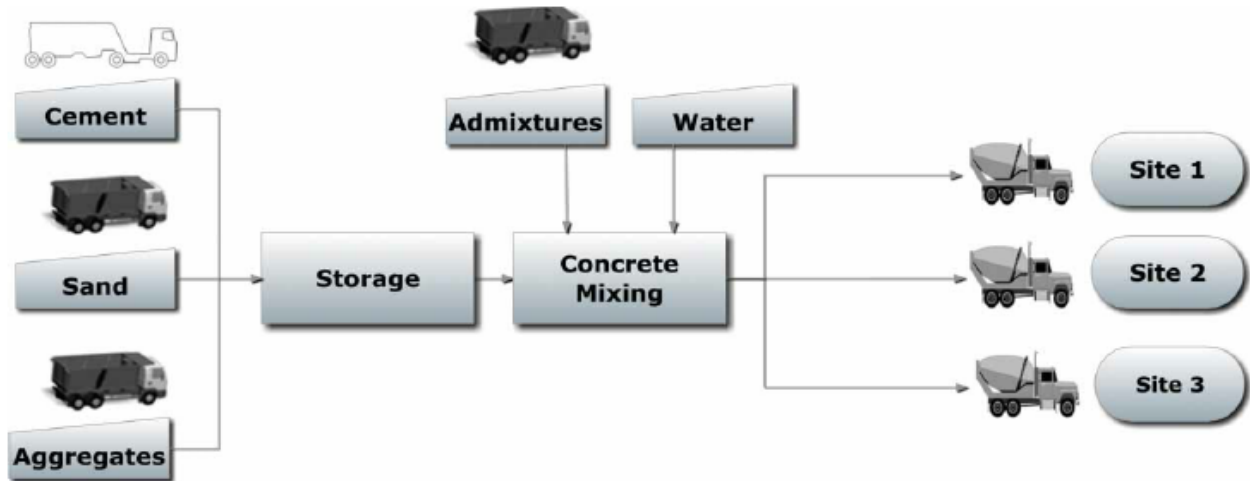


Figure 1 Production scheme

Product packaging:

The concrete is delivered to the place of storage by means of transport (truck mixers).

Waste management

The waste generated during the production of the so-called residual concrete is disposed of in a recycling facility or taken as waste to a landfill. The recycled water goes into the sludge water tank, from where it is used again for the production of fresh concrete in accordance with EN 1008.

The possibility of recycling used products (after the end of their useful life)

After the end of the building's useful life, the given material can be sorted together with the other concrete parts of the building (in the amount corresponding to DJ) as part of the controlled demolition of the building. Furthermore, the material can be handled in the following way:

- Crush and use as aggregate for various purposes
- Dump unused material, waste type O (waste code 101103)

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

Geographical scope:

Module A1, A2, C, D: EU, Global

Module A3: EU, RO

LCA information

Functional unit / declared unit:

The declared unit is **1 m³ of average concrete mix** for the given group of concretes.

Designation	Unit	Value	Conversion factor to 1 kg
The declared unit	m³	1	-
Average bulk weight C 8/10	kg/m ³	2 343	0,000427
Average bulk weight C 12/15	kg/m ³	2 355	0,000425
Average bulk weight C 16/20	kg/m ³	2 357	0,000424
Average bulk weight C 20/25	kg/m ³	2 369	0,000422
Average bulk weight C 25/30	kg/m ³	2 377	0,000421
Average bulk weight C 30/37	kg/m ³	2 379	0,000420
Average bulk weight C 35/45	kg/m ³	2 251	0,000444
Average bulk weight C 40/50	kg/m ³	2 398	0,000417
Average bulk weight UP C 45/55	kg/m ³	2 343	0,000427
Average bulk weight CP	kg/m ³	2 370	0,000422
Average bulk weight CKT	kg/m ³	2 364	0,000423

Reference service life:

The reference service life (RSL) for concrete mixtures is declared in the technical specification and in the application standards. According to this standard, concrete mixtures have a service life (RSL) of 50 or 100 years.

Time representativeness:

Data input based on data related to the year **2022**. All generic data refer to the Ecoinvent v3.8 database

Database(s) and LCA software used: SimaPro 9.4, Ecoinvent 3.8

Description of system boundaries:

b) Cradle to gate with options, modules C1–C4, module D and with optional modules (A1–A3 + C + D and additional modules B1).

The production stage includes the following modules:

- **A1** – extraction and processing of raw materials and production of packaging from input raw materials
- **A2** – transport of input raw materials from supplier to manufacturer, waste collection
- **A3** – production of products, production of auxiliary materials and semi-finished products, energy consumption, including treatment of waste, up to reaching end-of-waste or after the last material residues have been removed during the production phase.

Data for the period **2022** provided by FRISSBETON Kft.is used.

The use phase includes the module:

- **B1** – Use of the installed product from the point of view of emissions and the environment, taking into account the effect of carbonation. The calculation of the effect of carbonation (the process in which CO₂ from the ambient air penetrates into concrete and reacts with concrete hydration

products) was carried out according to the procedure specified in Annex BB.3 of the EN standard 16757:2017.

The end-of-life stage includes modules:

- **C1**, deconstruction, demolition; of the product from the building, including its dismantling or demolition, including the initial classification of materials at the site of construction
- **C2**, transport to the waste treatment site; transport of the discarded product as part of the waste treatment, e.g., to the recycling site, and transport of the waste, e.g., to the final disposal site.
- **C3**, treatment of waste for re-use, recovery and/or recycling, e.g., collection of waste fractions from deconstruction, treatment of waste from material flows intended for re-use, recycling, and energy recovery.
- **C4**, disposal of waste, including its pre-treatment and management of the disposal site

The benefits and costs beyond the product system are set out in Module D.

Module D includes:

- **D**, potential for reuse, recovery and/or recycling, expressed in net impacts or benefits. In the module D scenario, the saving of primary raw material inputs in another product system compared to the process of crushing recycled aggregate is taken into account.

Information modules **A4 to A5** and module **B2-B7** have **not been included** in the LCA due to the difficult availability of input data and are therefore not declared.

Data on consumption or production of inputs / outputs (within the production phase) were collected as specific data directly from the production plant. Technological data is based on the actual consumption of input materials and product production.

Production emissions are not reported.

The time range of the required specific data provided by FRISSBETON Kft., for the purpose of this report was set as a representative period **2022**. For this period, all available data were provided by the organization for their further processing.

Description of the application of cut-off criteria and assumptions

The cut-off rules set for this project are the ones recommended by the document EN 15804:2012+A2:2019/AC:2021.

The boundaries of the product system are considered in such a way that they include only production processes, not administrative activities.

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	ND	ND	X	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	EU	EU	EU,RO										EU	EU	EU	EU	EU
Specific data used						-	-	-	-	-	-	-	-	-	-	-	-
Variation – products						-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites						-	-	-	-	-	-	-	-	-	-	-	-

Content information

Product components	Weight, kg	Post-consumer material, weight-%	Biogenic material, weight-% and kg C/kg
Cement	190-420	0	0
Aggregate	1800-2100	0	0
Chemical additives	< 4	0	0
Packaging materials	Weight, kg	Weight-% (versus the product)	Weight biogenic carbon, kg C/kg
-	-	-	0
Dangerous substances from the candidate list of SVHC for Authorisation	EC No.	CAS No.	Weight-% per functional or declared unit
-	-	-	-

The list of components does not include products included in the “Candidate List of Substances of Very High Concern for Authorizations” by European Chemicals Agency (ECHA).

Information on biogenic carbon content (all types of concrete)

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	0,00E+00

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

Results of the environmental performance indicators Group C 8/10

Mandatory impact category indicators according to EN 15804

Results per functional or declared unit								
Indicator	Unit	Tot.A1-A3	B1	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq.	1,52E+02	5,11E+00	6,68E+00	2,23E+00	3,34E+00	0,00E+00	-3,93E+00
GWP-fossil	kg CO ₂ eq.	1,49E+02	0,00E+00	6,68E+00	2,23E+00	3,34E+00	0,00E+00	-3,93E+00
GWP-biogenic	kg CO ₂ eq.	2,60E+00	0,00E+00	2,91E-03	7,87E-04	1,29E-03	0,00E+00	-9,91E-04
GWP-luluc	kg CO ₂ eq.	3,52E-02	0,00E+00	7,12E-04	2,23E-04	3,42E-04	0,00E+00	-1,82E-03
ODP	kg CFC 11 eq.	5,66E-06	0,00E+00	1,42E-06	4,77E-07	7,13E-07	0,00E+00	-7,24E-07
AP	mol H ⁺ eq.	3,99E-01	0,00E+00	6,93E-02	2,32E-02	3,47E-02	0,00E+00	-3,89E-02
EP-freshwater	kg P eq.	1,68E-02	0,00E+00	2,26E-04	6,91E-05	1,07E-04	0,00E+00	-5,59E-04
EP-marine	kg N eq.	1,06E-01	0,00E+00	3,07E-02	1,03E-02	1,53E-02	0,00E+00	-1,54E-02
EP-terrestrial	mol N eq.	1,21E+00	0,00E+00	3,36E-01	1,12E-01	1,68E-01	0,00E+00	-1,71E-01
POCP	kg NMVOC eq.	3,08E-01	0,00E+00	9,23E-02	3,09E-02	4,62E-02	0,00E+00	-4,74E-02
ADP-minerals&metals*	kg Sb eq.	3,72E-04	0,00E+00	3,56E-06	1,15E-06	1,74E-06	0,00E+00	-6,33E-05
ADP-fossil*	MJ	7,03E+02	0,00E+00	9,17E+01	3,06E+01	4,58E+01	0,00E+00	-5,19E+01
WDP	m ³	1,53E+01	0,00E+00	3,76E+00	4,79E-02	7,91E-01	0,00E+00	-4,72E+00
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 of these results are high or as there is limited experience with the indicator.

Additional mandatory and voluntary impact category indicators

Results per functional or declared unit								
Indicator	Unit	Tot.A1-A3	B1	C1	C2	C3	C4	D
PM	Occurrence of the disease	2,89E-06	0,00E+00	1,85E-06	6,21E-07	9,28E-07	0,00E+00	-9,50E-07
IRP	kBq U235 eq.	7,79E+00	0,00E+00	4,21E-01	1,38E-01	2,08E-01	0,00E+00	-2,41E-01
ETP-fw	CTUe	1,16E+03	0,00E+00	5,39E+01	1,79E+01	2,68E+01	0,00E+00	-6,27E+01
HTP-c	CTUh	1,16E-06	0,00E+00	4,04E-08	1,30E-08	1,97E-08	0,00E+00	-6,82E-08
HTP-nc	CTUh	3,22E-08	0,00E+00	2,18E-09	6,93E-10	1,06E-09	0,00E+00	-5,53E-09
SQP	dimensionless	3,10E+02	0,00E+00	1,17E+01	3,90E+00	5,84E+00	0,00E+00	-1,42E+02
Acronyms	PM =Potential occurrence of disease due to particulate matter emissions, IRP =Potential effect of human exposure to the isotope U235, ETP-fw =Potential comparative toxic unit for ecosystems, HTP-c =Potential comparative toxic unit for humans, HTP-nc =Potential comparative toxic unit for humans, SQP =Potential Soil Quality Index							

Resource use indicators

Results per functional or declared unit								
Indicator	Unit	Tot.A1-A3	B1	C1	C2	C3	C4	D
PERE	MJ	5,22E+01	0,00E+00	5,79E-01	1,72E-01	2,70E-01	0,00E+00	-1,40E+00
PERM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	5,22E+01	0,00E+00	5,79E-01	1,72E-01	2,70E-01	0,00E+00	-1,40E+00
PENRE	MJ	4,91E+02	0,00E+00	9,74E+01	3,25E+01	4,87E+01	0,00E+00	-5,51E+01
PENRM	MJ.	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	4,91E+02	0,00E+00	9,74E+01	3,25E+01	4,87E+01	0,00E+00	-5,51E+01
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m ³	1,20E-01	0,00E+00	8,40E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00
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 resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water							

Group C 12/15

Mandatory impact category indicators according to EN 15804

Results per functional or declared unit								
Indicator	Unit	Tot.A1-A3	B1	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq.	1,90E+02	6,16E+00	6,68E+00	2,23E+00	3,34E+00	0,00E+00	-3,93E+00
GWP-fossil	kg CO ₂ eq.	1,87E+02	0,00E+00	6,68E+00	2,23E+00	3,34E+00	0,00E+00	-3,93E+00
GWP-biogenic	kg CO ₂ eq.	3,22E+00	0,00E+00	2,91E-03	7,87E-04	1,29E-03	0,00E+00	-9,91E-04
GWP-luluc	kg CO ₂ eq.	3,68E-02	0,00E+00	7,12E-04	2,23E-04	3,42E-04	0,00E+00	-1,82E-03
ODP	kg CFC 11 eq.	7,42E-06	0,00E+00	1,42E-06	4,77E-07	7,13E-07	0,00E+00	-7,24E-07
AP	mol H ⁺ eq.	4,84E-01	0,00E+00	6,93E-02	2,32E-02	3,47E-02	0,00E+00	-3,89E-02
EP-freshwater	kg P eq.	1,96E-02	0,00E+00	2,26E-04	6,91E-05	1,07E-04	0,00E+00	-5,59E-04
EP-marine	kg N eq.	1,32E-01	0,00E+00	3,07E-02	1,03E-02	1,53E-02	0,00E+00	-1,54E-02
EP-terrestrial	mol N eq.	1,51E+00	0,00E+00	3,36E-01	1,12E-01	1,68E-01	0,00E+00	-1,71E-01
POCP	kg NMVOC eq.	3,84E-01	0,00E+00	9,23E-02	3,09E-02	4,62E-02	0,00E+00	-4,74E-02
ADP-minerals&metals*	kg Sb eq.	4,26E-04	0,00E+00	3,56E-06	1,15E-06	1,74E-06	0,00E+00	-6,33E-05
ADP-fossil*	MJ	8,67E+02	0,00E+00	9,17E+01	3,06E+01	4,58E+01	0,00E+00	-5,19E+01
WDP	m ³	1,67E+01	0,00E+00	3,76E+00	4,79E-02	7,91E-01	0,00E+00	-4,72E+00
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 of these results are high or as there is limited experience with the indicator.

Additional mandatory and voluntary impact category indicators

Results per functional or declared unit								
Indicator	Unit	Tot.A1-A3	B1	C1	C2	C3	C4	D
PM	Occurrence of the disease	3,62E-06	0,00E+00	1,85E-06	6,21E-07	9,28E-07	0,00E+00	-9,50E-07
IRP	kBq U235 eq.	9,21E+00	0,00E+00	4,21E-01	1,38E-01	2,08E-01	0,00E+00	-2,41E-01
ETP-fw	CTUe	1,34E+03	0,00E+00	5,39E+01	1,79E+01	2,68E+01	0,00E+00	-6,27E+01
HTP-c	CTUh	1,44E-06	0,00E+00	4,04E-08	1,30E-08	1,97E-08	0,00E+00	-6,82E-08
HTP-nc	CTUh	3,96E-08	0,00E+00	2,18E-09	6,93E-10	1,06E-09	0,00E+00	-5,53E-09
SQP	dimensionless	3,86E+02	0,00E+00	1,17E+01	3,90E+00	5,84E+00	0,00E+00	-1,42E+02
Acronyms	PM=Potential occurrence of disease due to particulate matter emissions, IRP=Potential effect of human exposure to the isotope U235, ETP-fw=Potential comparative toxic unit for ecosystems, HTP-c=Potential comparative toxic unit for humans, HTP-nc=Potential comparative toxic unit for humans, SQP=Potential Soil Quality Index							

Resource use indicators

Results per functional or declared unit								
Indicator	Unit	Tot.A1-A3	B1	C1	C2	C3	C4	D
PERE	MJ	7,39E+01	0,00E+00	5,79E-01	1,72E-01	2,70E-01	0,00E+00	-1,40E+00
PERM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	7,39E+01	0,00E+00	5,79E-01	1,72E-01	2,70E-01	0,00E+00	-1,40E+00
PENRE	MJ	9,16E+02	0,00E+00	9,74E+01	3,25E+01	4,87E+01	0,00E+00	-5,51E+01
PENRM	MJ.	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	9,16E+02	0,00E+00	9,74E+01	3,25E+01	4,87E+01	0,00E+00	-5,51E+01
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m ³	1,60E-01	0,00E+00	8,40E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00
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							

Group C 16/20

Mandatory impact category indicators according to EN 15804

Results per functional or declared unit								
Indicator	Unit	Tot.A1-A3	B1	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq.	2,10E+02	6,80E+00	6,68E+00	2,23E+00	3,34E+00	0,00E+00	-3,93E+00
GWP-fossil	kg CO ₂ eq.	2,06E+02	0,00E+00	6,68E+00	2,23E+00	3,34E+00	0,00E+00	-3,93E+00
GWP-biogenic	kg CO ₂ eq.	3,52E+00	0,00E+00	2,91E-03	7,87E-04	1,29E-03	0,00E+00	-9,91E-04
GWP-luluc	kg CO ₂ eq.	4,03E-02	0,00E+00	7,12E-04	2,23E-04	3,42E-04	0,00E+00	-1,82E-03
ODP	kg CFC 11 eq.	8,21E-06	0,00E+00	1,42E-06	4,77E-07	7,13E-07	0,00E+00	-7,24E-07
AP	mol H ⁺ eq.	5,30E-01	0,00E+00	6,93E-02	2,32E-02	3,47E-02	0,00E+00	-3,89E-02
EP-freshwater	kg P eq.	2,16E-02	0,00E+00	2,26E-04	6,91E-05	1,07E-04	0,00E+00	-5,59E-04
EP-marine	kg N eq.	1,44E-01	0,00E+00	3,07E-02	1,03E-02	1,53E-02	0,00E+00	-1,54E-02
EP-terrestrial	mol N eq.	1,65E+00	0,00E+00	3,36E-01	1,12E-01	1,68E-01	0,00E+00	-1,71E-01
POCP	kg NMVOC eq.	4,20E-01	0,00E+00	9,23E-02	3,09E-02	4,62E-02	0,00E+00	-4,74E-02
ADP-minerals&metals*	kg Sb eq.	4,57E-04	0,00E+00	3,56E-06	1,15E-06	1,74E-06	0,00E+00	-6,33E-05
ADP-fossil*	MJ	9,54E+02	0,00E+00	9,17E+01	3,06E+01	4,58E+01	0,00E+00	-5,19E+01
WDP	m ³	1,79E+01	0,00E+00	3,76E+00	4,79E-02	7,91E-01	0,00E+00	-4,72E+00
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 of these results are high or as there is limited experience with the indicator.

Additional mandatory and voluntary impact category indicators

Results per functional or declared unit								
Indicator	Unit	Tot.A1-A3	B1	C1	C2	C3	C4	D
PM	Occurrence of the disease	3,90E-06	0,00E+00	1,85E-06	6,21E-07	9,28E-07	0,00E+00	-9,50E-07
IRP	kBq U235 eq.	9,99E+00	0,00E+00	4,21E-01	1,38E-01	2,08E-01	0,00E+00	-2,41E-01
ETP-fw	CTUe	1,47E+03	0,00E+00	5,39E+01	1,79E+01	2,68E+01	0,00E+00	-6,27E+01
HTP-c	CTUh	1,57E-06	0,00E+00	4,04E-08	1,30E-08	1,97E-08	0,00E+00	-6,82E-08
HTP-nc	CTUh	4,24E-08	0,00E+00	2,18E-09	6,93E-10	1,06E-09	0,00E+00	-5,53E-09
SQP	dimensionless	4,09E+02	0,00E+00	1,17E+01	3,90E+00	5,84E+00	0,00E+00	-1,42E+02
Acronyms	PM =Potential occurrence of disease due to particulate matter emissions, IRP =Potential effect of human exposure to the isotope U235, ETP-fw =Potential comparative toxic unit for ecosystems, HTP-c =Potential comparative toxic unit for humans, HTP-nc =Potential comparative toxic unit for humans, SQP =Potential Soil Quality Index							

Resource use indicators

Results per functional or declared unit								
Indicator	Unit	Tot.A1-A3	B1	C1	C2	C3	C4	D
PERE	MJ	7,81E+01	0,00E+00	5,79E-01	1,72E-01	2,70E-01	0,00E+00	-1,40E+00
PERM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	7,81E+01	0,00E+00	5,79E-01	1,72E-01	2,70E-01	0,00E+00	-1,40E+00
PENRE	MJ	1,01E+03	0,00E+00	9,74E+01	3,25E+01	4,87E+01	0,00E+00	-5,51E+01
PENRM	MJ.	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	1,01E+03	0,00E+00	9,74E+01	3,25E+01	4,87E+01	0,00E+00	-5,51E+01
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m ³	1,61E-01	0,00E+00	8,40E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00
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							

Group C 20/25

Mandatory impact category indicators according to EN 15804

Results per functional or declared unit								
Indicator	Unit	Tot.A1-A3	B1	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq.	2,27E+02	5,12E+00	6,68E+00	2,23E+00	3,34E+00	0,00E+00	-3,93E+00
GWP-fossil	kg CO ₂ eq.	2,24E+02	0,00E+00	6,68E+00	2,23E+00	3,34E+00	0,00E+00	-3,93E+00
GWP-biogenic	kg CO ₂ eq.	3,82E+00	0,00E+00	2,91E-03	7,87E-04	1,29E-03	0,00E+00	-9,91E-04
GWP-luluc	kg CO ₂ eq.	4,33E-02	0,00E+00	7,12E-04	2,23E-04	3,42E-04	0,00E+00	-1,82E-03
ODP	kg CFC 11 eq.	8,69E-06	0,00E+00	1,42E-06	4,77E-07	7,13E-07	0,00E+00	-7,24E-07
AP	mol H ⁺ eq.	5,70E-01	0,00E+00	6,93E-02	2,32E-02	3,47E-02	0,00E+00	-3,89E-02
EP-freshwater	kg P eq.	2,34E-02	0,00E+00	2,26E-04	6,91E-05	1,07E-04	0,00E+00	-5,59E-04
EP-marine	kg N eq.	1,55E-01	0,00E+00	3,07E-02	1,03E-02	1,53E-02	0,00E+00	-1,54E-02
EP-terrestrial	mol N eq.	1,77E+00	0,00E+00	3,36E-01	1,12E-01	1,68E-01	0,00E+00	-1,71E-01
POCP	kg NMVOC eq.	4,50E-01	0,00E+00	9,23E-02	3,09E-02	4,62E-02	0,00E+00	-4,74E-02
ADP-minerals&metals*	kg Sb eq.	4,92E-04	0,00E+00	3,56E-06	1,15E-06	1,74E-06	0,00E+00	-6,33E-05
ADP-fossil*	MJ	1,02E+03	0,00E+00	9,17E+01	3,06E+01	4,58E+01	0,00E+00	-5,19E+01
WDP	m ³	1,97E+01	0,00E+00	3,76E+00	4,79E-02	7,91E-01	0,00E+00	-4,72E+00
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 of these results are high or as there is limited experience with the indicator.

Additional mandatory and voluntary impact category indicators

Results per functional or declared unit								
Indicator	Unit	Tot.A1-A3	B1	C1	C2	C3	C4	D
PM	Occurrence of the disease	4,05E-06	0,00E+00	1,85E-06	6,21E-07	9,28E-07	0,00E+00	-9,50E-07
IRP	kBq U235 eq.	1,07E+01	0,00E+00	4,21E-01	1,38E-01	2,08E-01	0,00E+00	-2,41E-01
ETP-fw	CTUe	1,60E+03	0,00E+00	5,39E+01	1,79E+01	2,68E+01	0,00E+00	-6,27E+01
HTP-c	CTUh	1,70E-06	0,00E+00	4,04E-08	1,30E-08	1,97E-08	0,00E+00	-6,82E-08
HTP-nc	CTUh	4,51E-08	0,00E+00	2,18E-09	6,93E-10	1,06E-09	0,00E+00	-5,53E-09
SQP	dimensionless	4,16E+02	0,00E+00	1,17E+01	3,90E+00	5,84E+00	0,00E+00	-1,42E+02
Acronyms	PM=Potential occurrence of disease due to particulate matter emissions, IRP=Potential effect of human exposure to the isotope U235, ETP-fw=Potential comparative toxic unit for ecosystems, HTP-c=Potential comparative toxic unit for humans, HTP-nc=Potential comparative toxic unit for humans, SQP=Potential Soil Quality Index							

Resource use indicators

Results per functional or declared unit								
Indicator	Unit	Tot.A1-A3	B1	C1	C2	C3	C4	D
PERE	MJ	8,24E+01	0,00E+00	5,79E-01	1,72E-01	2,70E-01	0,00E+00	-1,40E+00
PERM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	8,24E+01	0,00E+00	5,79E-01	1,72E-01	2,70E-01	0,00E+00	-1,40E+00
PENRE	MJ	1,08E+03	0,00E+00	9,74E+01	3,25E+01	4,87E+01	0,00E+00	-5,51E+01
PENRM	MJ.	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	1,08E+03	0,00E+00	9,74E+01	3,25E+01	4,87E+01	0,00E+00	-5,51E+01
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m ³	1,64E-01	0,00E+00	8,40E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00
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							

Group C 25/30

Mandatory impact category indicators according to EN 15804

Results per functional or declared unit								
Indicator	Unit	Tot.A1-A3	B1	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq.	2,67E+02	5,89E+00	6,68E+00	2,23E+00	3,34E+00	0,00E+00	-3,93E+00
GWP-fossil	kg CO ₂ eq.	2,63E+02	0,00E+00	6,68E+00	2,23E+00	3,34E+00	0,00E+00	-3,93E+00
GWP-biogenic	kg CO ₂ eq.	4,38E+00	0,00E+00	2,91E-03	7,87E-04	1,29E-03	0,00E+00	-9,91E-04
GWP-luluc	kg CO ₂ eq.	5,22E-02	0,00E+00	7,12E-04	2,23E-04	3,42E-04	0,00E+00	-1,82E-03
ODP	kg CFC 11 eq.	1,13E-05	0,00E+00	1,42E-06	4,77E-07	7,13E-07	0,00E+00	-7,24E-07
AP	mol H ⁺ eq.	6,75E-01	0,00E+00	6,93E-02	2,32E-02	3,47E-02	0,00E+00	-3,89E-02
EP-freshwater	kg P eq.	2,75E-02	0,00E+00	2,26E-04	6,91E-05	1,07E-04	0,00E+00	-5,59E-04
EP-marine	kg N eq.	1,83E-01	0,00E+00	3,07E-02	1,03E-02	1,53E-02	0,00E+00	-1,54E-02
EP-terrestrial	mol N eq.	2,09E+00	0,00E+00	3,36E-01	1,12E-01	1,68E-01	0,00E+00	-1,71E-01
POCP	kg NMVOC eq.	5,35E-01	0,00E+00	9,23E-02	3,09E-02	4,62E-02	0,00E+00	-4,74E-02
ADP-minerals&metals*	kg Sb eq.	5,83E-04	0,00E+00	3,56E-06	1,15E-06	1,74E-06	0,00E+00	-6,33E-05
ADP-fossil*	MJ	1,27E+03	0,00E+00	9,17E+01	3,06E+01	4,58E+01	0,00E+00	-5,19E+01
WDP	m ³	2,25E+01	0,00E+00	3,76E+00	4,79E-02	7,91E-01	0,00E+00	-4,72E+00
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 of these results are high or as there is limited experience with the indicator.

Additional mandatory and voluntary impact category indicators

Results per functional or declared unit								
Indicator	Unit	Tot.A1-A3	B1	C1	C2	C3	C4	D
PM	Occurrence of the disease	5,05E-06	0,00E+00	1,85E-06	6,21E-07	9,28E-07	0,00E+00	-9,50E-07
IRP	kBq U235 eq.	1,26E+01	0,00E+00	4,21E-01	1,38E-01	2,08E-01	0,00E+00	-2,41E-01
ETP-fw	CTUe	1,89E+03	0,00E+00	5,39E+01	1,79E+01	2,68E+01	0,00E+00	-6,27E+01
HTP-c	CTUh	2,02E-06	0,00E+00	4,04E-08	1,30E-08	1,97E-08	0,00E+00	-6,82E-08
HTP-nc	CTUh	5,33E-08	0,00E+00	2,18E-09	6,93E-10	1,06E-09	0,00E+00	-5,53E-09
SQP	dimensionless	5,15E+02	0,00E+00	1,17E+01	3,90E+00	5,84E+00	0,00E+00	-1,42E+02
Acronyms	PM =Potential occurrence of disease due to particulate matter emissions, IRP =Potential effect of human exposure to the isotope U235, ETP-fw =Potential comparative toxic unit for ecosystems, HTP-c =Potential comparative toxic unit for humans, HTP-nc =Potential comparative toxic unit for humans, SQP =Potential Soil Quality Index							

Resource use indicators

Results per functional or declared unit								
Indicator	Unit	Tot.A1-A3	B1	C1	C2	C3	C4	D
PERE	MJ	9,30E+01	0,00E+00	5,79E-01	1,72E-01	2,70E-01	0,00E+00	-1,40E+00
PERM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	9,30E+01	0,00E+00	5,79E-01	1,72E-01	2,70E-01	0,00E+00	-1,40E+00
PENRE	MJ	1,34E+03	0,00E+00	9,74E+01	3,25E+01	4,87E+01	0,00E+00	-5,51E+01
PENRM	MJ.	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	1,34E+03	0,00E+00	9,74E+01	3,25E+01	4,87E+01	0,00E+00	-5,51E+01
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m ³	1,65E-01	0,00E+00	8,40E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00
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							

Group C 30/37

Mandatory impact category indicators according to EN 15804

Results per functional or declared unit								
Indicator	Unit	Tot.A1-A3	B1	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq.	3,03E+02	4,27E+00	6,68E+00	2,23E+00	3,34E+00	0,00E+00	-3,93E+00
GWP-fossil	kg CO ₂ eq.	2,98E+02	0,00E+00	6,68E+00	2,23E+00	3,34E+00	0,00E+00	-3,93E+00
GWP-biogenic	kg CO ₂ eq.	4,78E+00	0,00E+00	2,91E-03	7,87E-04	1,29E-03	0,00E+00	-9,91E-04
GWP-luluc	kg CO ₂ eq.	6,11E-02	0,00E+00	7,12E-04	2,23E-04	3,42E-04	0,00E+00	-1,82E-03
ODP	kg CFC 11 eq.	1,48E-05	0,00E+00	1,42E-06	4,77E-07	7,13E-07	0,00E+00	-7,24E-07
AP	mol H ⁺ eq.	7,80E-01	0,00E+00	6,93E-02	2,32E-02	3,47E-02	0,00E+00	-3,89E-02
EP-freshwater	kg P eq.	3,09E-02	0,00E+00	2,26E-04	6,91E-05	1,07E-04	0,00E+00	-5,59E-04
EP-marine	kg N eq.	2,13E-01	0,00E+00	3,07E-02	1,03E-02	1,53E-02	0,00E+00	-1,54E-02
EP-terrestrial	mol N eq.	2,42E+00	0,00E+00	3,36E-01	1,12E-01	1,68E-01	0,00E+00	-1,71E-01
POCP	kg NMVOC eq.	6,28E-01	0,00E+00	9,23E-02	3,09E-02	4,62E-02	0,00E+00	-4,74E-02
ADP-minerals&metals*	kg Sb eq.	6,54E-04	0,00E+00	3,56E-06	1,15E-06	1,74E-06	0,00E+00	-6,33E-05
ADP-fossil*	MJ	1,55E+03	0,00E+00	9,17E+01	3,06E+01	4,58E+01	0,00E+00	-5,19E+01
WDP	m ³	2,40E+01	0,00E+00	3,76E+00	4,79E-02	7,91E-01	0,00E+00	-4,72E+00
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 of these results are high or as there is limited experience with the indicator.

Additional mandatory and voluntary impact category indicators

Results per functional or declared unit								
Indicator	Unit	Tot.A1-A3	B1	C1	C2	C3	C4	D
PM	Occurrence of the disease	6,48E-06	0,00E+00	1,85E-06	6,21E-07	9,28E-07	0,00E+00	-9,50E-07
IRP	kBq U235 eq.	1,47E+01	0,00E+00	4,21E-01	1,38E-01	2,08E-01	0,00E+00	-2,41E-01
ETP-fw	CTUe	2,17E+03	0,00E+00	5,39E+01	1,79E+01	2,68E+01	0,00E+00	-6,27E+01
HTP-c	CTUh	2,33E-06	0,00E+00	4,04E-08	1,30E-08	1,97E-08	0,00E+00	-6,82E-08
HTP-nc	CTUh	6,10E-08	0,00E+00	2,18E-09	6,93E-10	1,06E-09	0,00E+00	-5,53E-09
SQP	dimensionless	6,63E+02	0,00E+00	1,17E+01	3,90E+00	5,84E+00	0,00E+00	-1,42E+02
Acronyms	PM=Potential occurrence of disease due to particulate matter emissions, IRP=Potential effect of human exposure to the isotope U235, ETP-fw=Potential comparative toxic unit for ecosystems, HTP-c=Potential comparative toxic unit for humans, HTP-nc=Potential comparative toxic unit for humans, SQP=Potential Soil Quality Index							

Resource use indicators

Results per functional or declared unit								
Indicator	Unit	Tot.A1-A3	B1	C1	C2	C3	C4	D
PERE	MJ	1,01E+02	0,00E+00	5,79E-01	1,72E-01	2,70E-01	0,00E+00	-1,40E+00
PERM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	1,01E+02	0,00E+00	5,79E-01	1,72E-01	2,70E-01	0,00E+00	-1,40E+00
PENRE	MJ	1,64E+03	0,00E+00	9,74E+01	3,25E+01	4,87E+01	0,00E+00	-5,51E+01
PENRM	MJ.	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	1,64E+03	0,00E+00	9,74E+01	3,25E+01	4,87E+01	0,00E+00	-5,51E+01
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m ³	1,63E-01	0,00E+00	8,40E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00
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							

Group C 35/45

Mandatory impact category indicators according to EN 15804

Results per functional or declared unit								
Indicator	Unit	Tot.A1-A3	B1	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq.	3,06E+02	4,63E+00	6,68E+00	2,23E+00	3,34E+00	0,00E+00	-3,93E+00
GWP-fossil	kg CO ₂ eq.	3,01E+02	0,00E+00	6,68E+00	2,23E+00	3,34E+00	0,00E+00	-3,93E+00
GWP-biogenic	kg CO ₂ eq.	5,14E+00	0,00E+00	2,91E-03	7,87E-04	1,29E-03	0,00E+00	-9,91E-04
GWP-luluc	kg CO ₂ eq.	5,65E-02	0,00E+00	7,12E-04	2,23E-04	3,42E-04	0,00E+00	-1,82E-03
ODP	kg CFC 11 eq.	1,09E-05	0,00E+00	1,42E-06	4,77E-07	7,13E-07	0,00E+00	-7,24E-07
AP	mol H ⁺ eq.	7,48E-01	0,00E+00	6,93E-02	2,32E-02	3,47E-02	0,00E+00	-3,89E-02
EP-freshwater	kg P eq.	3,13E-02	0,00E+00	2,26E-04	6,91E-05	1,07E-04	0,00E+00	-5,59E-04
EP-marine	kg N eq.	2,02E-01	0,00E+00	3,07E-02	1,03E-02	1,53E-02	0,00E+00	-1,54E-02
EP-terrestrial	mol N eq.	2,30E+00	0,00E+00	3,36E-01	1,12E-01	1,68E-01	0,00E+00	-1,71E-01
POCP	kg NMVOC eq.	5,83E-01	0,00E+00	9,23E-02	3,09E-02	4,62E-02	0,00E+00	-4,74E-02
ADP-minerals&metals*	kg Sb eq.	6,22E-04	0,00E+00	3,56E-06	1,15E-06	1,74E-06	0,00E+00	-6,33E-05
ADP-fossil*	MJ	1,32E+03	0,00E+00	9,17E+01	3,06E+01	4,58E+01	0,00E+00	-5,19E+01
WDP	m ³	2,45E+01	0,00E+00	3,76E+00	4,79E-02	7,91E-01	0,00E+00	-4,72E+00
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 of these results are high or as there is limited experience with the indicator.

Additional mandatory and voluntary impact category indicators

Results per functional or declared unit								
Indicator	Unit	Tot.A1-A3	B1	C1	C2	C3	C4	D
PM	Occurrence of the disease	4,83E-06	0,00E+00	1,85E-06	6,21E-07	9,28E-07	0,00E+00	-9,50E-07
IRP	kBq U235 eq.	1,37E+01	0,00E+00	4,21E-01	1,38E-01	2,08E-01	0,00E+00	-2,41E-01
ETP-fw	CTUe	2,07E+03	0,00E+00	5,39E+01	1,79E+01	2,68E+01	0,00E+00	-6,27E+01
HTP-c	CTUh	2,25E-06	0,00E+00	4,04E-08	1,30E-08	1,97E-08	0,00E+00	-6,82E-08
HTP-nc	CTUh	5,67E-08	0,00E+00	2,18E-09	6,93E-10	1,06E-09	0,00E+00	-5,53E-09
SQP	dimensionless	4,74E+02	0,00E+00	1,17E+01	3,90E+00	5,84E+00	0,00E+00	-1,42E+02
Acronyms	PM =Potential occurrence of disease due to particulate matter emissions, IRP =Potential effect of human exposure to the isotope U235, ETP-fw =Potential comparative toxic unit for ecosystems, HTP-c =Potential comparative toxic unit for humans, HTP-nc =Potential comparative toxic unit for humans, SQP =Potential Soil Quality Index							

Resource use indicators

Results per functional or declared unit								
Indicator	Unit	Tot.A1-A3	B1	C1	C2	C3	C4	D
PERE	MJ	1,01E+02	0,00E+00	5,79E-01	1,72E-01	2,70E-01	0,00E+00	-1,40E+00
PERM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	1,01E+02	0,00E+00	5,79E-01	1,72E-01	2,70E-01	0,00E+00	-1,40E+00
PENRE	MJ	1,40E+03	0,00E+00	9,74E+01	3,25E+01	4,87E+01	0,00E+00	-5,51E+01
PENRM	MJ.	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	1,40E+03	0,00E+00	9,74E+01	3,25E+01	4,87E+01	0,00E+00	-5,51E+01
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m ³	1,61E-01	0,00E+00	8,40E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00
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							

Group C 40/50

Mandatory impact category indicators according to EN 15804

Results per functional or declared unit								
Indicator	Unit	Tot.A1-A3	B1	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq.	3,20E+02	2,92E+00	6,68E+00	2,23E+00	3,34E+00	0,00E+00	-3,93E+00
GWP-fossil	kg CO ₂ eq.	3,14E+02	0,00E+00	6,68E+00	2,23E+00	3,34E+00	0,00E+00	-3,93E+00
GWP-biogenic	kg CO ₂ eq.	5,39E+00	0,00E+00	2,91E-03	7,87E-04	1,29E-03	0,00E+00	-9,91E-04
GWP-luluc	kg CO ₂ eq.	5,88E-02	0,00E+00	7,12E-04	2,23E-04	3,42E-04	0,00E+00	-1,82E-03
ODP	kg CFC 11 eq.	1,10E-05	0,00E+00	1,42E-06	4,77E-07	7,13E-07	0,00E+00	-7,24E-07
AP	mol H ⁺ eq.	7,77E-01	0,00E+00	6,93E-02	2,32E-02	3,47E-02	0,00E+00	-3,89E-02
EP-freshwater	kg P eq.	3,28E-02	0,00E+00	2,26E-04	6,91E-05	1,07E-04	0,00E+00	-5,59E-04
EP-marine	kg N eq.	2,08E-01	0,00E+00	3,07E-02	1,03E-02	1,53E-02	0,00E+00	-1,54E-02
EP-terrestrial	mol N eq.	2,38E+00	0,00E+00	3,36E-01	1,12E-01	1,68E-01	0,00E+00	-1,71E-01
POCP	kg NMVOC eq.	6,02E-01	0,00E+00	9,23E-02	3,09E-02	4,62E-02	0,00E+00	-4,74E-02
ADP-minerals&metals*	kg Sb eq.	6,57E-04	0,00E+00	3,56E-06	1,15E-06	1,74E-06	0,00E+00	-6,33E-05
ADP-fossil*	MJ	1,37E+03	0,00E+00	9,17E+01	3,06E+01	4,58E+01	0,00E+00	-5,19E+01
WDP	m ³	2,56E+01	0,00E+00	3,76E+00	4,79E-02	7,91E-01	0,00E+00	-4,72E+00
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 of these results are high or as there is limited experience with the indicator.

Additional mandatory and voluntary impact category indicators

Results per functional or declared unit								
Indicator	Unit	Tot.A1-A3	B1	C1	C2	C3	C4	D
PM	Occurrence of the disease	4,82E-06	0,00E+00	1,85E-06	6,21E-07	9,28E-07	0,00E+00	-9,50E-07
IRP	kBq U235 eq.	1,41E+01	0,00E+00	4,21E-01	1,38E-01	2,08E-01	0,00E+00	-2,41E-01
ETP-fw	CTUe	2,16E+03	0,00E+00	5,39E+01	1,79E+01	2,68E+01	0,00E+00	-6,27E+01
HTP-c	CTUh	2,33E-06	0,00E+00	4,04E-08	1,30E-08	1,97E-08	0,00E+00	-6,82E-08
HTP-nc	CTUh	5,89E-08	0,00E+00	2,18E-09	6,93E-10	1,06E-09	0,00E+00	-5,53E-09
SQP	dimensionless	4,66E+02	0,00E+00	1,17E+01	3,90E+00	5,84E+00	0,00E+00	-1,42E+02
Acronyms	PM =Potential occurrence of disease due to particulate matter emissions, IRP =Potential effect of human exposure to the isotope U235, ETP-fw =Potential comparative toxic unit for ecosystems, HTP-c =Potential comparative toxic unit for humans, HTP-nc =Potential comparative toxic unit for humans, SQP =Potential Soil Quality Index							

Resource use indicators

Results per functional or declared unit								
Indicator	Unit	Tot.A1-A3	B1	C1	C2	C3	C4	D
PERE	MJ	1,05E+02	0,00E+00	5,79E-01	1,72E-01	2,70E-01	0,00E+00	-1,40E+00
PERM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	1,05E+02	0,00E+00	5,79E-01	1,72E-01	2,70E-01	0,00E+00	-1,40E+00
PENRE	MJ	1,44E+03	0,00E+00	9,74E+01	3,25E+01	4,87E+01	0,00E+00	-5,51E+01
PENRM	MJ.	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	1,44E+03	0,00E+00	9,74E+01	3,25E+01	4,87E+01	0,00E+00	-5,51E+01
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m ³	1,58E-01	0,00E+00	8,40E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00
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							

Group UP C 45/55

Mandatory impact category indicators according to EN 15804

Results per functional or declared unit								
Indicator	Unit	Tot.A1-A3	B1	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq.	3,48E+02	3,18E+00	6,68E+00	2,23E+00	3,34E+00	0,00E+00	-3,93E+00
GWP-fossil	kg CO ₂ eq.	3,42E+02	0,00E+00	6,68E+00	2,23E+00	3,34E+00	0,00E+00	-3,93E+00
GWP-biogenic	kg CO ₂ eq.	5,85E+00	0,00E+00	2,91E-03	7,87E-04	1,29E-03	0,00E+00	-9,91E-04
GWP-luluc	kg CO ₂ eq.	6,37E-02	0,00E+00	7,12E-04	2,23E-04	3,42E-04	0,00E+00	-1,82E-03
ODP	kg CFC 11 eq.	1,18E-05	0,00E+00	1,42E-06	4,77E-07	7,13E-07	0,00E+00	-7,24E-07
AP	mol H ⁺ eq.	8,40E-01	0,00E+00	6,93E-02	2,32E-02	3,47E-02	0,00E+00	-3,89E-02
EP-freshwater	kg P eq.	3,58E-02	0,00E+00	2,26E-04	6,91E-05	1,07E-04	0,00E+00	-5,59E-04
EP-marine	kg N eq.	2,25E-01	0,00E+00	3,07E-02	1,03E-02	1,53E-02	0,00E+00	-1,54E-02
EP-terrestrial	mol N eq.	2,56E+00	0,00E+00	3,36E-01	1,12E-01	1,68E-01	0,00E+00	-1,71E-01
POCP	kg NMVOC eq.	6,49E-01	0,00E+00	9,23E-02	3,09E-02	4,62E-02	0,00E+00	-4,74E-02
ADP-minerals&metals*	kg Sb eq.	7,17E-04	0,00E+00	3,56E-06	1,15E-06	1,74E-06	0,00E+00	-6,33E-05
ADP-fossil*	MJ	1,48E+03	0,00E+00	9,17E+01	3,06E+01	4,58E+01	0,00E+00	-5,19E+01
WDP	m ³	2,80E+01	0,00E+00	3,76E+00	4,79E-02	7,91E-01	0,00E+00	-4,72E+00
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 of these results are high or as there is limited experience with the indicator.

Additional mandatory and voluntary impact category indicators

Results per functional or declared unit								
Indicator	Unit	Tot.A1-A3	B1	C1	C2	C3	C4	D
PM	Occurrence of the disease	5,04E-06	0,00E+00	1,85E-06	6,21E-07	9,28E-07	0,00E+00	-9,50E-07
IRP	kBq U235 eq.	1,52E+01	0,00E+00	4,21E-01	1,38E-01	2,08E-01	0,00E+00	-2,41E-01
ETP-fw	CTUe	2,38E+03	0,00E+00	5,39E+01	1,79E+01	2,68E+01	0,00E+00	-6,27E+01
HTP-c	CTUh	2,53E-06	0,00E+00	4,04E-08	1,30E-08	1,97E-08	0,00E+00	-6,82E-08
HTP-nc	CTUh	6,33E-08	0,00E+00	2,18E-09	6,93E-10	1,06E-09	0,00E+00	-5,53E-09
SQP	dimensionless	4,76E+02	0,00E+00	1,17E+01	3,90E+00	5,84E+00	0,00E+00	-1,42E+02
Acronyms	PM=Potential occurrence of disease due to particulate matter emissions, IRP=Potential effect of human exposure to the isotope U235, ETP-fw=Potential comparative toxic unit for ecosystems, HTP-c=Potential comparative toxic unit for humans, HTP-nc=Potential comparative toxic unit for humans, SQP=Potential Soil Quality Index							

Resource use indicators

Results per functional or declared unit								
Indicator	Unit	Tot.A1-A3	B1	C1	C2	C3	C4	D
PERE	MJ	1,12E+02	0,00E+00	5,79E-01	1,72E-01	2,70E-01	0,00E+00	-1,40E+00
PERM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	1,12E+02	0,00E+00	5,79E-01	1,72E-01	2,70E-01	0,00E+00	-1,40E+00
PENRE	MJ	1,57E+03	0,00E+00	9,74E+01	3,25E+01	4,87E+01	0,00E+00	-5,51E+01
PENRM	MJ.	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	1,57E+03	0,00E+00	9,74E+01	3,25E+01	4,87E+01	0,00E+00	-5,51E+01
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m ³	1,60E-01	0,00E+00	8,40E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00
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 resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water							

Group CP

Mandatory impact category indicators according to EN 15804

Results per functional or declared unit								
Indicator	Unit	Tot.A1-A3	B1	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq.	3,05E+02	2,77E+00	6,68E+00	2,23E+00	3,34E+00	0,00E+00	-3,93E+00
GWP-fossil	kg CO ₂ eq.	3,00E+02	0,00E+00	6,68E+00	2,23E+00	3,34E+00	0,00E+00	-3,93E+00
GWP-biogenic	kg CO ₂ eq.	5,14E+00	0,00E+00	2,91E-03	7,87E-04	1,29E-03	0,00E+00	-9,91E-04
GWP-luluc	kg CO ₂ eq.	5,69E-02	0,00E+00	7,12E-04	2,23E-04	3,42E-04	0,00E+00	-1,82E-03
ODP	kg CFC 11 eq.	1,08E-05	0,00E+00	1,42E-06	4,77E-07	7,13E-07	0,00E+00	-7,24E-07
AP	mol H ⁺ eq.	7,47E-01	0,00E+00	6,93E-02	2,32E-02	3,47E-02	0,00E+00	-3,89E-02
EP-freshwater	kg P eq.	3,15E-02	0,00E+00	2,26E-04	6,91E-05	1,07E-04	0,00E+00	-5,59E-04
EP-marine	kg N eq.	2,00E-01	0,00E+00	3,07E-02	1,03E-02	1,53E-02	0,00E+00	-1,54E-02
EP-terrestrial	mol N eq.	2,29E+00	0,00E+00	3,36E-01	1,12E-01	1,68E-01	0,00E+00	-1,71E-01
POCP	kg NMVOC eq.	5,80E-01	0,00E+00	9,23E-02	3,09E-02	4,62E-02	0,00E+00	-4,74E-02
ADP-minerals&metals*	kg Sb eq.	6,48E-04	0,00E+00	3,56E-06	1,15E-06	1,74E-06	0,00E+00	-6,33E-05
ADP-fossil*	MJ	1,33E+03	0,00E+00	9,17E+01	3,06E+01	4,58E+01	0,00E+00	-5,19E+01
WDP	m ³	2,52E+01	0,00E+00	3,76E+00	4,79E-02	7,91E-01	0,00E+00	-4,72E+00
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 of these results are high or as there is limited experience with the indicator.

Additional mandatory and voluntary impact category indicators

Results per functional or declared unit								
Indicator	Unit	Tot.A1-A3	B1	C1	C2	C3	C4	D
PM	Occurrence of the disease	4,75E-06	0,00E+00	1,85E-06	6,21E-07	9,28E-07	0,00E+00	-9,50E-07
IRP	kBq U235 eq.	1,37E+01	0,00E+00	4,21E-01	1,38E-01	2,08E-01	0,00E+00	-2,41E-01
ETP-fw	CTUe	2,08E+03	0,00E+00	5,39E+01	1,79E+01	2,68E+01	0,00E+00	-6,27E+01
HTP-c	CTUh	2,25E-06	0,00E+00	4,04E-08	1,30E-08	1,97E-08	0,00E+00	-6,82E-08
HTP-nc	CTUh	5,79E-08	0,00E+00	2,18E-09	6,93E-10	1,06E-09	0,00E+00	-5,53E-09
SQP	dimensionless	4,68E+02	0,00E+00	1,17E+01	3,90E+00	5,84E+00	0,00E+00	-1,42E+02
Acronyms	PM=Potential occurrence of disease due to particulate matter emissions, IRP=Potential effect of human exposure to the isotope U235, ETP-fw=Potential comparative toxic unit for ecosystems, HTP-c=Potential comparative toxic unit for humans, HTP-nc=Potential comparative toxic unit for humans, SQP=Potential Soil Quality Index							

Resource use indicators

Results per functional or declared unit								
Indicator	Unit	Tot.A1-A3	B1	C1	C2	C3	C4	D
PERE	MJ	1,03E+02	0,00E+00	5,79E-01	1,72E-01	2,70E-01	0,00E+00	-1,40E+00
PERM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	1,03E+02	0,00E+00	5,79E-01	1,72E-01	2,70E-01	0,00E+00	-1,40E+00
PENRE	MJ	1,40E+03	0,00E+00	9,74E+01	3,25E+01	4,87E+01	0,00E+00	-5,51E+01
PENRM	MJ.	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	1,40E+03	0,00E+00	9,74E+01	3,25E+01	4,87E+01	0,00E+00	-5,51E+01
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m ³	1,52E-01	0,00E+00	8,40E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00
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							

Group CKT

Mandatory impact category indicators according to EN 15804

Results per functional or declared unit								
Indicator	Unit	Tot.A1-A3	B1	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq.	7,43E+01	1,92E+00	6,68E+00	2,23E+00	3,34E+00	0,00E+00	-3,93E+00
GWP-fossil	kg CO ₂ eq.	7,30E+01	0,00E+00	6,68E+00	2,23E+00	3,34E+00	0,00E+00	-3,93E+00
GWP-biogenic	kg CO ₂ eq.	1,28E+00	0,00E+00	2,91E-03	7,87E-04	1,29E-03	0,00E+00	-9,91E-04
GWP-luluc	kg CO ₂ eq.	1,92E-02	0,00E+00	7,12E-04	2,23E-04	3,42E-04	0,00E+00	-1,82E-03
ODP	kg CFC 11 eq.	4,64E-06	0,00E+00	1,42E-06	4,77E-07	7,13E-07	0,00E+00	-7,24E-07
AP	mol H ⁺ eq.	2,33E-01	0,00E+00	6,93E-02	2,32E-02	3,47E-02	0,00E+00	-3,89E-02
EP-freshwater	kg P eq.	8,24E-03	0,00E+00	2,26E-04	6,91E-05	1,07E-04	0,00E+00	-5,59E-04
EP-marine	kg N eq.	6,49E-02	0,00E+00	3,07E-02	1,03E-02	1,53E-02	0,00E+00	-1,54E-02
EP-terrestrial	mol N eq.	7,69E-01	0,00E+00	3,36E-01	1,12E-01	1,68E-01	0,00E+00	-1,71E-01
POCP	kg NMVOC eq.	1,95E-01	0,00E+00	9,23E-02	3,09E-02	4,62E-02	0,00E+00	-4,74E-02
ADP-minerals&metals*	kg Sb eq.	2,73E-04	0,00E+00	3,56E-06	1,15E-06	1,74E-06	0,00E+00	-6,33E-05
ADP-fossil*	MJ	4,64E+02	0,00E+00	9,17E+01	3,06E+01	4,58E+01	0,00E+00	-5,19E+01
WDP	m ³	7,47E+00	0,00E+00	3,76E+00	4,79E-02	7,91E-01	0,00E+00	-4,72E+00
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 of these results are high or as there is limited experience with the indicator.

Additional mandatory and voluntary impact category indicators

Results per functional or declared unit								
Indicator	Unit	Tot.A1-A3	B1	C1	C2	C3	C4	D
PM	Occurrence of the disease	2,82E-06	0,00E+00	1,85E-06	6,21E-07	9,28E-07	0,00E+00	-9,50E-07
IRP	kBq U235 eq.	5,21E+00	0,00E+00	4,21E-01	1,38E-01	2,08E-01	0,00E+00	-2,41E-01
ETP-fw	CTUe	6,32E+02	0,00E+00	5,39E+01	1,79E+01	2,68E+01	0,00E+00	-6,27E+01
HTP-c	CTUh	6,70E-07	0,00E+00	4,04E-08	1,30E-08	1,97E-08	0,00E+00	-6,82E-08
HTP-nc	CTUh	2,66E-08	0,00E+00	2,18E-09	6,93E-10	1,06E-09	0,00E+00	-5,53E-09
SQP	dimensionless	3,64E+02	0,00E+00	1,17E+01	3,90E+00	5,84E+00	0,00E+00	-1,42E+02
Acronyms	PM=Potential occurrence of disease due to particulate matter emissions, IRP=Potential effect of human exposure to the isotope U235, ETP-fw=Potential comparative toxic unit for ecosystems, HTP-c=Potential comparative toxic unit for humans, HTP-nc=Potential comparative toxic unit for humans, SQP=Potential Soil Quality Index							

Resource use indicators

Results per functional or declared unit								
Indicator	Unit	Tot.A1-A3	B1	C1	C2	C3	C4	D
PERE	MJ	1,03E+02	0,00E+00	5,79E-01	1,72E-01	2,70E-01	0,00E+00	-1,40E+00
PERM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	1,03E+02	0,00E+00	5,79E-01	1,72E-01	2,70E-01	0,00E+00	-1,40E+00
PENRE	MJ	1,40E+03	0,00E+00	9,74E+01	3,25E+01	4,87E+01	0,00E+00	-5,51E+01
PENRM	MJ.	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	1,40E+03	0,00E+00	9,74E+01	3,25E+01	4,87E+01	0,00E+00	-5,51E+01
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m ³	1,52E-01	0,00E+00	8,40E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00
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							

LIFE CYCLE INTERPRETATION

The content and environmental "quality" of the cement used has a significant influence on the basic impact indicators. Other inputs have a relatively small effect on the overall indicators of the given group. The energy consumption is also relatively small and therefore not significant for the environmental impact. Other material inputs (aggregates) and the transport of raw materials to the given concrete plant also have a greater influence.

For the possibility of comparing these effects, the **analysis of the share of information modules A-D** on the basic impact indicators for group C 25/30, which is the most common type of concrete, is presented below.

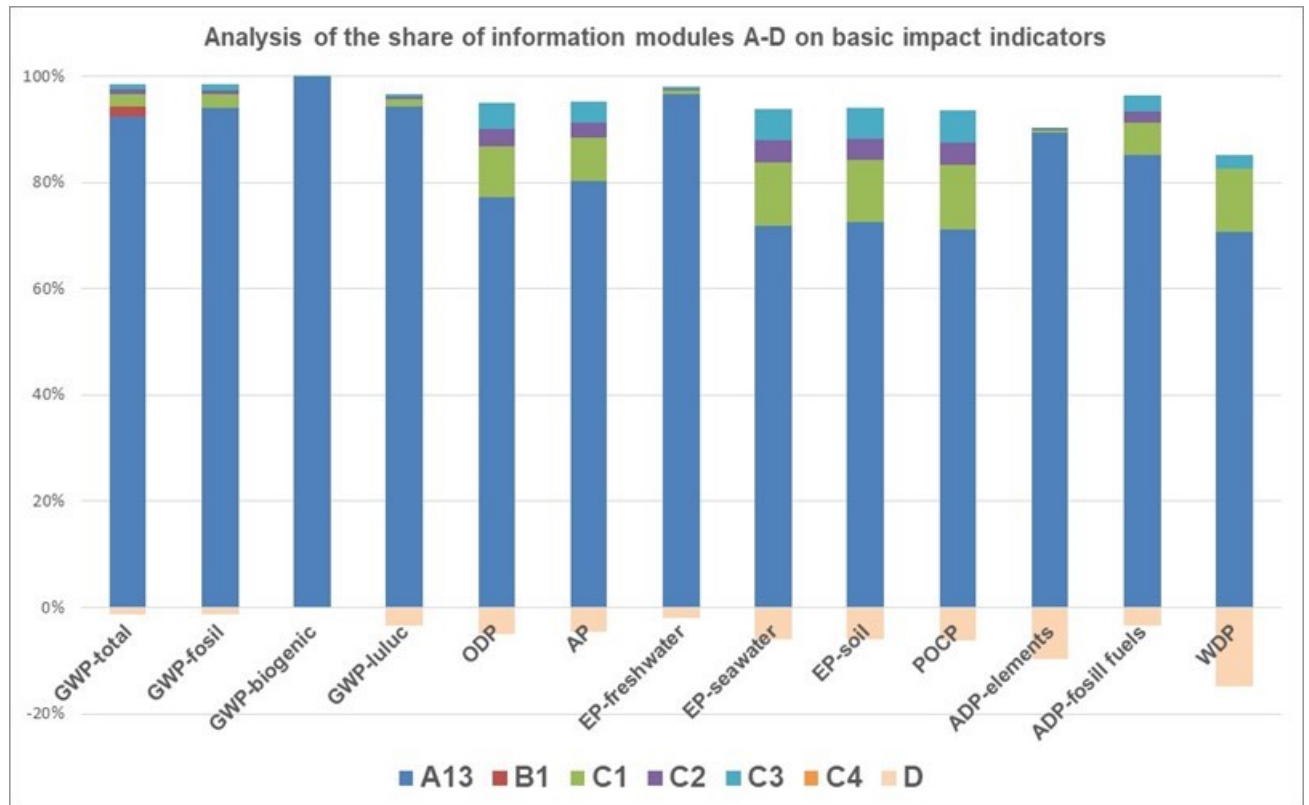


Figure 2 Analysis of the share of information modules A-D on basic impact indicators

Other environmental performance indicators

The quality of the products is ensured by an effective quality management system according to EN ISO 9001 and at selected operations by an environmental management system according to EN ISO 14001 in accordance with the technical regulations regarding the type of product.

References

'National programme of environmental labelling' – CZ (NPEZ)

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

EN 15804:2012+A2:2019/AC:2021 Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products

EN ISO 14040:2006 Environmental management - Life Cycle Assessment - Principles and Framework

EN ISO 14044:2006 Environmental management - Life Cycle Assessment – Requirements and guidelines

EN 15643-2:2011 Sustainability of construction works - Assessment of buildings - Part 2: Framework for the assessment of environmental performance

TNI CEN/TR 15941:2012 Sustainability of construction works - Environmental product declarations - Methodology for selection and use of generic data


Act No. 541/2020 Coll., as amended (Waste Act)

Decree No. 8/2021 Coll. Waste catalogue – Waste catalogue

Regulation (EC) No 1907/2006 of the European Parliament concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) and establishing a European Chemicals Agency - REACH (Registration, Evaluation and Authorisation of Chemicals)

SimaPro LCA Package, Pré Consultants, the Netherlands, www.pre-sustainability.com

Ecoinvent Centre, www.Ecoinvent.org

	Organization: FRISSBETON Kft. Gábor Dénes utca 2. INFOPARK D. épület H-1117 Budapest Hungary	Tel.: +36 1 358-5325 https://www.frissbeton.hu/frissbeton@strabag.com
	CENIA, Czech Environmental Information Agency, executive function of the NPEZ Agency, Moskevská 1523/63, 101 00 Praha 10, CZ www.cenia.cz	Tel: +420 267 225 226 Fax: - Email: info@cenia.cz Web: www.cenia.cz
	The LCA study TZÚS Praha, s.p. branch office Ostrava U Studia 14 700 30 Ostrava, CZ	Tel. : +420 734 432 137 +420 602 185 785 moler@tzus.cz trinner@tzus.cz