

# ENVIRONMENTAL PRODUCT DECLARATION

In accordance with ISO 14025 and EN15804+A2

C16/20 Readymix Concrete (0% GGBS Cement Replacement)



**Owner of the declaration:**

Irish Concrete Federation

**Product:**

C16/20 Readymix Concrete (0% GGBS Cement Replacement)

**Declared unit:**

1 m<sup>3</sup>

**This declaration is based on Product Category Rules:**

EN 15804:2012+A2:2019, EPD Ireland PCR Part A, Version 2.1, 2022  
I.S. EN 16757:2022, PCR for concrete and concrete elements.

**Program operator:**

EPD Ireland - Irish Green Building Council

**Declaration number:**

EPDIE-24-196

**Issue date:**

19.06.2025

**Valid to:**

18.06.2030

## General information

### Product

C16/20 Readymix Concrete (0% GGBS Cement Replacement)

### Program operator:

EPD Ireland - Irish Green Building Council  
19 Mountjoy Square, Dublin D01 E8P5  
Phone: +353 (01) 6815862  
web: <https://www.igbc.ie/epd-home/>

### Declaration number:

EPDIE-24-196

### This declaration is based on Product Category Rules:

EN 15804:2012+A2:2019, EPD Ireland PCR Part A, Version 2.1, 2022  
I.S. EN 16757:2022, PCR for concrete and concrete elements.

### Statement of liability:

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

### Type of EPD

Representative product EPD

### Declared unit:

1 m3 C16/20 Readymix Concrete (0% GGBS Cement Replacement)

### Scope of the EPD:

A1, A2, A3, A4, A5, B1, B2, B3, B4, B5, B6, B7, C1, C2, C3, C4, D

### Functional unit:

As per declared unit

### Verification:

Independent verification of the declaration and data, according to ISO14025:2010

Third party verifier:

Marcel Gómez Ferrer, Marcel Gómez Consultoria Ambiental

### Owner of the declaration:

Irish Concrete Federation  
Contact person: Conor Hayes  
Phone: +353 1 464 0082  
e-mail: [info@irishconcrete.ie](mailto:info@irishconcrete.ie)

### Manufacturer:

Irish Concrete Federation

### Place of production:

Irish Concrete Federation  
Unit 8 Newlands Business Park  
D22 R2F8 Dublin, Ireland

### Issue date:

19.06.2025

### Valid to:

18.06.2030

### Year of study:

2024

### Comparability:

Environmental Product Declarations from different programmes may not be directly comparable if not compliant with EN 15804:2012+A2:2019. Comparability is further dependent on the specific product category rules, system boundaries and allocations, and background data sources. See clause 5.3 of EN 15804:2012+A2:2019

LCA consultant or person responsible for LCA:  
EcoReview, Peter Seymour

### Approved:

SIGNATURE OF PROGRAMME OPERATOR



Pat Barry, CEO - Irish Green Building Council

## Product

### Product description:

Concrete is a material formed by mixing cement and/or other binders, coarse and fine aggregate and water, with or without the incorporation of admixtures and additions. Fresh concrete is manufactured at readymix batch plants and is delivered to the construction sites in a liquid state. Fresh concrete is placed, compacted and then hardens in the required shape via a chemical reaction. The mix proportions of a specific load of concrete vary significantly depending on element performance requirements, workability, method of placing, aggregate properties and aggregate grading. This ability to tailor a concrete mix is a key advantage of the product but it does mean that there are almost infinite possible mix permutations. This EPD is one of a suite of representative industry EPDs produced to cover a range of typical mixes produced by ICF members. It should be noted that the technical information provided here is indicative and any mix design decisions should be agreed with your concrete supplier.

The Irish Concrete Federation (ICF) is the national representative organisation for the Irish aggregates and concrete products industry. The Federation has 74 members and associate members operating at approximately 300 locations throughout the country. The membership is made up of both publicly listed and family owned businesses. ICF members are responsible for the manufacture and supply of the key building materials used in the construction of Ireland's built environment. The majority of ICF members manufacture aggregates (crushed rock, sand and gravel), ready mixed concrete and precast concrete products for supply to the Irish construction industry. In addition, some members manufacture agricultural lime which is used by farmers to improve soil fertility.

### Product specification:

Readymix concrete is manufactured in accordance with I.S. EN 206:2013+A2:2021 Concrete- Part1: Specification, performance, production and conformity.

### Technical data:

Readymix property	C16/20 (0% GGBS cement replacement)
Typical application	Blinding
Slump class	S1 (25mm slump)
Maximum aggregate size	D20
Exposure Class	XO
Constituents per m3	Constituents per m3 (kg/m3)
Cement: CEM II/A-L (kg)	190
Additions: GGBS (kg)	0
Coarse Aggregate: Crushed Rock or Gravel (kg)	1060
Fine Aggregate: Sand (kg)	525
Fine Aggregate: Crushed Rock Fines (kg)	525
Admixture; Various (kg)	1.1
Water (kg)	95
Total (kg)	2396

### Market/Geographical Area:

Readymix concrete supplied to the market in Republic of Ireland

### Reference service life, product

The intended working life of concrete manufactured to I.S. EN206-1:2013 is at least 50 years under the anticipated maintenance conditions.

### Reference service life, building or construction works

The intended working life of concrete designed to I.S. EN 1992 is at least 50 years under the anticipated maintenance conditions.

## LCA: Calculation rules

### Declared unit:

1 m3 C16/20 Readymix Concrete (0% GGBS Cement Replacement)

kg per Declared unit 2396

### Cut-off criteria:

All relevant inputs and outputs - like emissions, energy and materials - have been taken into account in this LCA, and in accordance with EN15804+A2:2019. The study covers at least 95% of the materials and energy per module and at least 99% of the total use of materials and energy of each unit process. Long term emissions have been excluded from the study.

### Allocation:

The measurement of environmental impacts in this EPD uses the LCIA methodologies recommended for PEF 3.0. In this EPD, the waste processes are allocated in the relevant module. In the case of the use of secondary materials or energy recovered from secondary fuels, the system boundary between the system under study and the previous system (providing the secondary materials) is set where outputs of the previous system, e.g. materials, products, building elements or energy, reach the end-of-waste state. The modularity and the polluter payer principles have been followed.

**Data quality:**

Geographical representativeness: Data is from the area under study (Ireland/Europe), where all the raw materials come from Ireland. The geographical representativeness is thus assumed to be 'very good'.

Technical representativeness: Data is from the processes and products under study. The same state of technology is used by all the readymix manufacturers in Ireland. The processes use electricity for mixing and diesel for internal transport. The electricity record is for electricity generated by a mix of renewables and fossil fuel resources, which is the average electricity mix for the island of Ireland. The records for cement and GGBS are those specifically used in the industry in Ireland and are the best possible sources for these representative readymix products. The reference for cement is from the average cement EPD published by Cement Manufacturers Ireland in 2022.

The technical representativeness is thus assumed to be 'very good'.

Time representativeness: The production year used in this LCA is 2023. The Ecoinvent version 3.9.1 database was used to represent energies and processes. This version of Ecoinvent was issued in March 2023. The main raw materials used CEM II/A-L cement and GGBS manufactured in Ireland are represented by EPDs which are for these exact specific products and were published in 2022 and 2024 respectively.

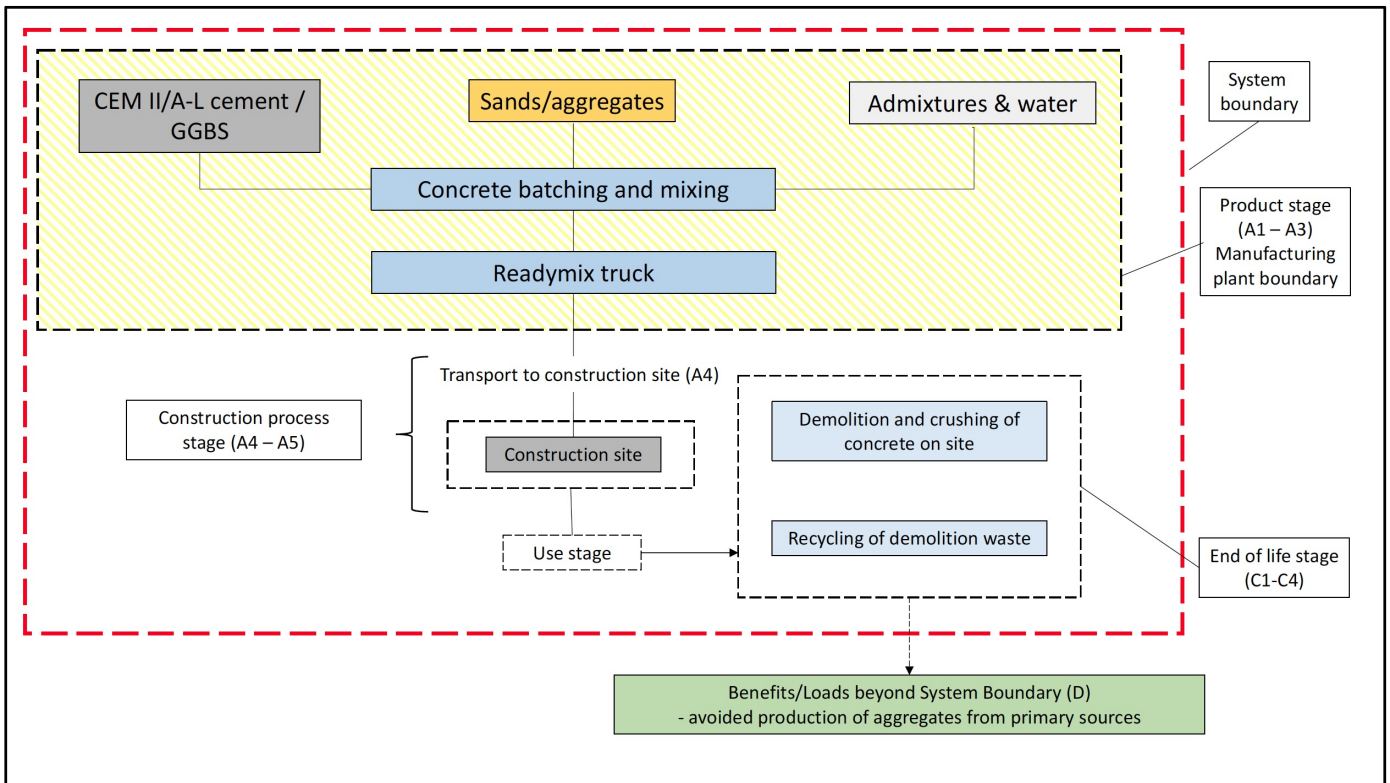
The time representativeness is thus assumed to be 'very good'.

**Scope and type of EPD (X = Module declared; ND = Module not declared)**

Product stage			Construction installation stage		Use stage							End of life stage				Beyond the system boundaries
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

**System boundary:**

This EPD covers cradle to gate with options, modules C1–C4, and module D. The options include A4, A5 (construction installation stage) and B (User stage). In the B stages B1 (Use) covers carbonation during the life of the concrete.



**Additional technical information:**

Electricity modelling

This LCA assumes that the reference for electricity used is the average mix for Ireland. The CO<sub>2</sub> intensity of the electricity is 0.388 kg CO<sub>2</sub> eq per kWh.

## LCA: Scenarios and additional technical information

The following information describe the scenarios in the different modules of the EPD.

### A4. Transport to customer

The transport to the customer phase (A4), modelled on delivery of the readymix from the mixing plant to the site is assumed to be a distance of 10 km, based on a return journey for a 9 m<sup>3</sup> readymix truck.

### A5. Installation

In the installation phase it is assumed that there are no additional materials or energies required, thus the installation impacts in this phase are assumed to be effectively zero. Installation losses are estimated to be 2.5%.

### B. Use Stage

In the use phase there are no direct use phase factors in modules B2 – B7. No specific maintenance, repair, replacement, refurbishment or operational energy and water is associated with the installed readymix concrete over the service life. However, module B1 is used to model how the concrete can absorb carbon dioxide from the atmosphere, during the life of the concrete, via carbonation of calcium oxide contained in the product. The guidance provided in the PCR for concrete and concrete products, EN 16757:2022 is followed, using the Simplified Method, section G.3.2. Carbonation uptake is highly dependent on the surface to volume ratio of the concrete, and can vary significantly.

### C1. De-construction demolition

At the end of life, it is assumed that the concrete element/structure is demolished on site, and the demolished concrete is partially crushed on site. The concrete is then sent off-site for recycling. It is assumed that 100% of the concrete material is sent to recycling.

### C2. Transport

Transport of waste materials from site to recycling processing is assumed to be 50km.

### C3. Waste processing

Waste processing is the treatment of the waste concrete that has been demolished and initially crushed on site, to obtain recycled aggregate. The impacts of this process are modelled from diesel and electricity consumed in the concrete recycling process. Carbonation of the crushed concrete, after demolition, is also covered, and allocated in the C3 phase. This carbonation calculation is based on the Simplified Method outlined in the Concrete PCR, EN 16757:2022, section G.4.2.

### C4. Disposal

No disposal occurs as 100% of materials are recovered and recycled.

### D. Reuse, Recovery, Recycling potential

Beyond the system, after the concrete has passed beyond the end-of-waste stage, it is assumed that 100% of the sand/aggregates replace the production of primary sand/aggregates.

The quantity of recycled sand/aggregates for the C 16/20 readymixed concrete is 2,110 kg per m<sup>3</sup>.

## LCA: Results

The LCA results are presented below for the declared unit defined on page 2 of the EPD document.

Environmental impact										
Indicator	Unit	A1	A2	A3	A4	A5	B1	B2	B3	
GWP-total	kg CO <sub>2</sub> -eq	1.45E+02	4.91E+00	5.19E+00	4.06E+00	4.44E+00	-1.17E+01	0.00E+00	0.00E+00	
GWP-fossil	kg CO <sub>2</sub> -eq	1.45E+02	4.91E+00	5.15E+00	4.06E+00	4.44E+00	-1.17E+01	0.00E+00	0.00E+00	
GWP-biogenic	kg CO <sub>2</sub> -eq	1.22E-01	4.87E-03	3.01E-02	1.06E-03	4.48E-03	0.00E+00	0.00E+00	0.00E+00	
GWP-luluc	kg CO <sub>2</sub> -eq	3.24E-02	2.38E-03	2.06E-03	4.49E-04	1.20E-03	0.00E+00	0.00E+00	0.00E+00	
ODP	kg CFC11 -eq	3.26E-06	1.04E-07	1.52E-07	6.31E-08	1.00E-07	0.00E+00	0.00E+00	0.00E+00	
AP	mol H+ -eq	4.04E-01	1.05E-02	3.76E-02	3.68E-02	1.25E-02	0.00E+00	0.00E+00	0.00E+00	
EP-FreshWater	kg P -eq	3.38E-03	3.88E-05	2.67E-05	1.43E-05	9.07E-05	0.00E+00	0.00E+00	0.00E+00	
EP-Marine	kg N -eq	1.24E-01	2.57E-03	1.60E-02	1.70E-02	3.87E-03	0.00E+00	0.00E+00	0.00E+00	
EP-Terrestrial	mol N -eq	1.51E+00	2.68E-02	1.75E-01	1.85E-01	4.59E-02	0.00E+00	0.00E+00	0.00E+00	
POCP	kg NMVOC -eq	3.61E-01	1.62E-02	5.19E-02	5.48E-02	1.26E-02	0.00E+00	0.00E+00	0.00E+00	
ADP-minerals&metals <sup>1</sup>	kg Sb-eq	1.04E-04	1.56E-05	1.70E-05	1.38E-06	5.24E-06	0.00E+00	0.00E+00	0.00E+00	
ADP-fossil <sup>1</sup>	MJ	5.59E+02	6.79E+01	6.93E+01	5.19E+01	2.53E+01	0.00E+00	0.00E+00	0.00E+00	
WDP <sup>1</sup>	m <sup>3</sup>	4.31E+01	2.81E-01	3.04E-01	1.13E-01	1.13E+00	0.00E+00	0.00E+00	0.00E+00	

Indicator	Unit	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	kg CO <sub>2</sub> -eq	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.25E+01	2.27E+01	6.84E+00	0.00E+00	-6.22E+00
GWP-fossil	kg CO <sub>2</sub> -eq	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.25E+01	2.27E+01	6.79E+00	0.00E+00	-6.23E+00
GWP-biogenic	kg CO <sub>2</sub> -eq	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.27E-03	2.25E-02	5.43E-02	0.00E+00	5.35E-03
GWP-luluc	kg CO <sub>2</sub> -eq	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.38E-03	1.10E-02	1.23E-03	0.00E+00	-2.72E-03
ODP	kg CFC11 -eq	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.95E-07	4.82E-07	3.24E-07	0.00E+00	-7.94E-08
AP	mol H+ -eq	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.13E-01	4.84E-02	8.07E-02	0.00E+00	-1.14E-01
EP-FreshWater	kg P -eq	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.42E-05	1.80E-04	2.03E-04	0.00E+00	-9.11E-05
EP-Marine	kg N -eq	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.25E-02	1.19E-02	2.62E-02	0.00E+00	-3.98E-02
EP-Terrestrial	mol N -eq	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.72E-01	1.24E-01	2.87E-01	0.00E+00	-5.54E-01
POCP	kg NMVOC -eq	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.69E-01	7.51E-02	8.55E-02	0.00E+00	-1.25E-01
ADP-minerals&metals <sup>1</sup>	kg Sb-eq	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.27E-06	7.24E-05	3.68E-05	0.00E+00	-1.42E-05
ADP-fossil <sup>1</sup>	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.60E+02	3.14E+02	1.46E+02	0.00E+00	-7.26E+01
WDP <sup>1</sup>	m <sup>3</sup>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.49E-01	1.30E+00	7.85E-01	0.00E+00	-6.63E+00

GWP-total = Global Warming Potential total; 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

"Reading example: 9,0 E-03 = 9,0\*10<sup>-3</sup> = 0,009"

\*INA Indicator Not Assessed







1. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator







### Remarks to environmental impacts

The input LCA dataset for the cement that is used to calculate the GWP values for the readymix concrete is that from the EPD issued by EPD Ireland in 2022 (EPDIE-21-35) for CEM II/A-L Portland limestone cement from Cement Manufacturers Ireland, and represents the net value of GWPt of 698.26 kg CO<sub>2</sub>-eq per tonne of cement. The gross value is 742 kg CO<sub>2</sub>-eq, which includes CO<sub>2</sub> emissions from combustion of wastes.

In determining the carbonation impact (B1, C3), the guidance provided in the PCR for concrete and concrete products, I.S. EN 16757:2022, is followed, using the Simplified Method set out in Appendix G.

### Additional environmental impact indicators

Indicator	Unit	A1	A2	A3	A4	A5	B1	B2	B3
 PM	Disease incidence	3.36E-06	3.55E-07	9.38E-07	1.02E-06	1.58E-07	0.00E+00	0.00E+00	0.00E+00
 IRP <sup>2</sup>	kgBq U235 -eq	2.15E+00	3.44E-02	5.40E-02	1.06E-02	5.99E-02	0.00E+00	0.00E+00	0.00E+00
 ETP-fw <sup>1</sup>	CTUe	3.74E+03	6.62E+01	5.53E+01	4.44E+01	1.04E+02	0.00E+00	0.00E+00	0.00E+00
 HTP-c <sup>1</sup>	CTUh	9.59E-09	2.19E-09	1.62E-09	1.22E-09	5.88E-10	0.00E+00	0.00E+00	0.00E+00
 HTP-nc <sup>1</sup>	CTUh	2.04E-07	6.14E-08	4.50E-08	2.68E-08	1.49E-08	0.00E+00	0.00E+00	0.00E+00
 SQP <sup>1</sup>	dimensionless	4.95E+02	4.13E+01	7.55E+00	3.55E+00	1.84E+01	0.00E+00	0.00E+00	0.00E+00

Indicator	Unit	B4	B5	B6	B7	C1	C2	C3	C4	D
 PM	Disease incidence	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.16E-06	1.64E-06	1.44E-06	0.00E+00	-1.76E-06
 IRP <sup>2</sup>	kgBq U235 -eq	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.28E-02	1.59E-01	2.91E-02	0.00E+00	-4.75E-02
 ETP-fw <sup>1</sup>	CTUe	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.37E+02	3.06E+02	1.39E+02	0.00E+00	-4.53E+03
 HTP-c <sup>1</sup>	CTUh	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.76E-09	1.01E-08	3.24E-09	0.00E+00	-2.98E-09
 HTP-nc <sup>1</sup>	CTUh	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.26E-08	2.84E-07	1.11E-07	0.00E+00	-1.10E-07
 SQP <sup>1</sup>	dimensionless	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.09E+01	1.91E+02	1.55E+01	0.00E+00	-2.17E+02











PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Potential Soil Quality Index (dimensionless)

"Reading example: 9,0 E-03 = 9,0\*10<sup>-3</sup> = 0,009"

\*INA Indicator Not Assessed

1. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator
2. This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

Resource use										
Indicator	Unit	A1	A2	A3	A4	A5	B1	B2	B3	
 PERE	MJ	3.83E+01	1.07E+00	7.52E+00	2.95E-01	1.14E+00	0.00E+00	0.00E+00	0.00E+00	
 PERM	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	
 PERT	MJ	3.83E+01	1.07E+00	7.52E+00	2.95E-01	1.14E+00	0.00E+00	0.00E+00	0.00E+00	
 PENRE	MJ	5.70E+02	7.22E+01	7.39E+01	5.52E+01	2.43E+01	0.00E+00	0.00E+00	0.00E+00	
 PENRM	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	
 PENRT	MJ	5.70E+02	7.22E+01	7.39E+01	5.52E+01	2.43E+01	0.00E+00	0.00E+00	0.00E+00	
 SM	kg	2.58E+00	0.00E+00	0.00E+00	0.00E+00	6.46E-02	0.00E+00	0.00E+00	0.00E+00	
 RSF	MJ	6.48E+01	0.00E+00	0.00E+00	0.00E+00	1.62E+00	0.00E+00	0.00E+00	0.00E+00	
 NRSF	MJ	9.77E+01	0.00E+00	0.00E+00	0.00E+00	2.44E+00	0.00E+00	0.00E+00	0.00E+00	
 FW	m <sup>3</sup>	1.02E+00	9.12E-03	6.59E-03	3.65E-03	2.69E-02	0.00E+00	0.00E+00	0.00E+00	

Indicator	Unit	B4	B5	B6	B7	C1	C2	C3	C4	D
 PERE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.12E-01	4.94E+00	7.32E+00	0.00E+00	-4.69E+00
 PERM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
 PERT	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.12E-01	4.94E+00	7.32E+00	0.00E+00	-4.69E+00
 PENRE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.70E+02	3.34E+02	1.56E+02	0.00E+00	-7.72E+01
 PENRM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
 PENRT	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.70E+02	3.34E+02	1.56E+02	0.00E+00	-7.72E+01
 SM	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	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	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	0.00E+00	0.00E+00
 FW	m <sup>3</sup>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.13E-02	4.22E-02	1.55E-02	0.00E+00	-1.57E-01

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 materials; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Net use of fresh water

\*Reading example: 9,0 E-03 = 9,0\*10<sup>-3</sup> = 0,009"

\*INA Indicator Not Assessed

### End of life - Waste

Indicator		Unit	A1	A2	A3	A4	A5	B1	B2	B3
	HWD	kg	4.31E-04	4.32E-04	3.99E-04	3.49E-04	8.16E-05	0.00E+00	0.00E+00	0.00E+00
	NHWD	kg	6.43E-01	3.37E+00	1.68E-01	7.43E-02	4.96E-01	0.00E+00	0.00E+00	0.00E+00
	RWD	kg	7.91E-05	2.23E-05	2.55E-05	5.69E-06	5.76E-06	0.00E+00	0.00E+00	0.00E+00

Indicator		Unit	B4	B5	B6	B7	C1	C2	C3	C4	D
	HWD	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.08E-03	2.00E-03	6.85E-04	0.00E+00	-4.29E-04
	NHWD	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.29E-01	1.56E+01	4.49E-01	0.00E+00	-3.94E-01
	RWD	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.76E-05	1.03E-04	1.62E-05	0.00E+00	-2.91E-05

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed

\*Reading example: 9,0 E-03 = 9,0\*10<sup>-3</sup> = 0,009"

\*INA Indicator Not Assessed

### End of life - Output flow

Indicator		Unit	A1	A2	A3	A4	A5	B1	B2	B3
	CRU	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
	MFR	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
	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
	EET	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

Indicator		Unit	B4	B5	B6	B7	C1	C2	C3	C4	D
	CRU	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	0.00E+00
	MFR	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.11E+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	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	0.00E+00
	EET	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported energy electrical; EET = Exported energy thermal

\*Reading example: 9,0 E-03 = 9,0\*10<sup>-3</sup> = 0,009"

\*INA Indicator Not Assessed

### Biogenic Carbon Content

Indicator	Unit	At the factory gate
Biogenic carbon content in product	kg C	0.00E+00
Biogenic carbon content in accompanying packaging	kg C	0.00E+00

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO<sub>2</sub>

## Additional requirements

### Dangerous substances

None of the substances contained in the product are listed in the "Candidate List of Substances of Very High Concern for authorisation", or they do not exceed the limit for registration with the European Chemicals Agency.

**Mandatory additional information on release of dangerous substances to indoor air, soil and water.**

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