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ECO PLATFORM EPD EN 15804 VERIFIED

Owner: Adfil
No.: MD-20010-EN

Issued: 11-06-2020
Valid to: 11-06-2025

3rd PARTY **VERIFIED**

EPD

VERIFIED ENVIRONMENTAL PRODUCT DECLARATION | **ISO 14025 & EN 15804**

Owner of declaration
Adfil
Industriestraat 39
9240 Zele
Belgium
BE0726.870.587

Programme
EPD Danmark
www.epddanmark.dk

☐ Industry EPD
☒ Product EPD

Declared product
1 kg Durus EasyFinish

Number of declared datasets/product variations: 1

Production site
Industriestraat 39
9240 Zele
Belgium

Product use
Durus EasyFinish is used as secondary reinforcement in concrete matrices and is added in a rate of 2-6kg/m³ of concrete depending on the application. Typical application areas are foundations, floor slabs and precast concrete elements. The EasyFinish packaging is designed to be dosed as such in the concrete batching plant or the concrete mixing truck. Reinforcement of ready-mix, precast or sprayed concrete.

Declared unit
1 kg construction fibres

Year of data
2019

Issued: 11-06-2020
Valid to: 11-06-2025

Basis of calculation
This EPD is developed in accordance with the European standard EN 15804+A2.

Comparability
EPDs of construction products may not be comparable if they do not comply with the requirements in EN 15804. EPD data may not be comparable if the datasets used are not developed in accordance with EN 15804 and if the background systems are not based on the same database.

Validity
This EPD has been verified in accordance with ISO 14025 and is valid for 5 years from the date of issue.

Use
The intended use of an EPD is to communicate scientifically based environmental information for construction products, for the purpose of assessing the environmental performance of buildings.

EPD type
☐Cradle-to-gate with modules C1-C4 and D
☐Cradle-to-gate with options, modules C1-C4 and D
☒Cradle-to-grave and module D
☐Cradle-to-gate
☐Cradle-to-gate with options

CEN standard EN 15804 serves as the core PCR

Independent verification of the declaration and data, according to EN ISO 14025

☐ internal ☒ external

Third party verifier:

David Althoff Palm, Ramboll

Henrik Fred Larsen
EPD Danmark

Life cycle stages and modules (MNR = module not relevant)																
Product			Construction process		Use							End of life				Beyond the system boundary
Raw material supply	Transport	Manufacturing	Transport	Installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Re-use, recovery and recycling potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	MNR	MNR	MNR	MNR	MNR	MNR	MNR	X	X	X	X	X

Product information

Product description

The main product components are shown in the table below.

Material	Weight-% of declared product
Polypropylene	95.5%
Additives	4.5%

Representativity

This declaration, including data collection and the modeled foreground system including results, represents the production of Durus EasyFinish on the production site located in Belgium. Product specific data are based on average values collected in the period January 2019 until December 2019. Background data are based on GaBi professional 2019 and EcoInvent 3.6 databases and are less than 10 years old as regards the main part of the data representing 99% of the total environmental impacts and 96% of the weight of Durus EasyFinish. Generally, the used background datasets are of high quality and have a high degree of representativeness.

Hazardous substances

Durus EasyFinish does not contain substances listed in the ”Candidate List of Substances of Very High Concern for authorisation”.

(http://echa.europa.eu/candidate-list-table)

Essential characteristics (CE)

Further technical information can be obtained by contacting the manufacturer or on the manufacturer website:

https://www.adfil.com/home

Reference Service Life (RSL)

RSL of Durus EasyFinish is the same as the concrete structure it is embedded in.

Picture of product(s)

LCA background

Declared unit

The LCI and LCIA results in this EPD relates to impacts caused by the production of 1 kg of Durus EasyFinish.

Name	Value	Unit
Declared unit	1	kg
Density	912	kg/m^3
Conversion factor to 1 kg.	1	-

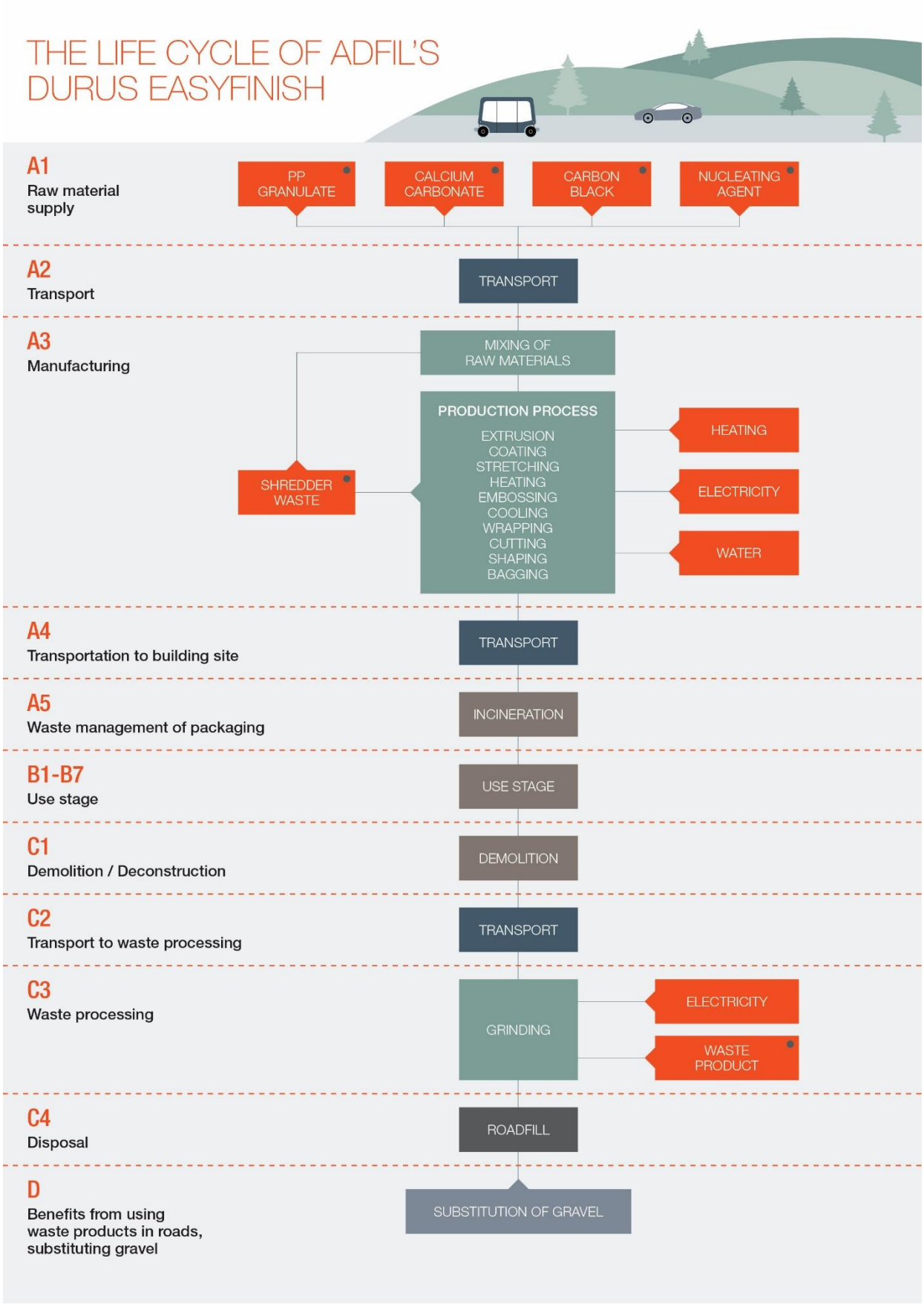
Functional Unit

Not defined

PCR

This EPD is developed according to the core rules for the product category of construction products in EN 15804+A2.

Flowdiagram


THE LIFE CYCLE OF ADFIL'S DURUS EASYFINISH
A1
Raw material supply
PP GRANULATE
CALCIUM CARBONATE
CARBON BLACK
NUCLEATING AGENT
A2
Transport
TRANSPORT
A3
Manufacturing
MIXING OF RAW MATERIALS
PRODUCTION PROCESS
EXTRUSION
COATING
STRETCHING
HEATING
EMBOSSING
COOLING
WRAPPING
CUTTING
SHAPING
BAGGING
HEATING
ELECTRICITY
WATER
SHREDDER WASTE
A4
Transportation to building site
TRANSPORT
A5
Waste management of packaging
INCINERATION
B1-B7
Use stage
USE STAGE
C1
Demolition / Deconstruction
DEMOLITION
C2
Transport to waste processing
TRANSPORT
C3
Waste processing
GRINDING
ELECTRICITY
WASTE PRODUCT
C4
Disposal
ROADFILL
D
Benefits from using waste products in roads, substituting gravel
SUBSTITUTION OF GRAVEL

System boundary

This EPD is based on a cradle-to-grave LCA.

The general rules for the exclusion of inputs and outputs follows the requirements in EN 15804, 6.3.5, where the total of neglected input flows per module shall be a maximum of 5 % of energy usage and mass and 1 % of energy usage and mass for unit processes.

Product stage (A1-A3) includes:

A1 – Extraction and processing of raw materials

A2 – Transport to the production site

A3 – Manufacturing processes

The product stage comprises the acquisition of all raw materials, products and energy, transport to the production site and packaging. The LCA results are declared in aggregated form for the product stage, which means, that the sub-modules A1, A2 and A3 are declared as one module A1-A3.

Durus EasyFinish production:

PP granulates and additives are gravimetrically dosed and mixed in the extruder feeder hopper. This mixture is molten and blended in an extruder to a homogeneous polymer melt. After filtration and metering, the liquid polymers are extruded trough a die plate where the filaments are created. In order to increase the mechanical strength of the filaments, they are drawn and annealed in multiple steps. These high strength filaments undergo a surface deformation step in a consecutive step. In the next step the filaments are simultaneously wound into bundles, wrapped with water soluble film and cut to length to form pucks. Edge trim waste is regrinded and re-fed to the extruder. In the last process step, the pucks are stacked and packed in paper bags of 2-4 kg/ per piece. After pallet stacking of the bags, the pallet is wrapped with PE stretch film and provided by a cover.

Construction process stage (A4-A5) includes:

A4 – Transportation from the Adfil factory in Belgium to a construction site in Europe.

A5 – Accounts for the environmental impacts related to the incineration of the packaging waste handled at the construction site. No impacts are associated with adding Durus EasyFinish to the concrete mix.

Use stage (B1-B7) includes:

Modules are not relevant for this product.

End of Life (C1-C4) includes:

C1 – Deconstructing the concrete structure using a mechanical demolition hammer.

C2 – Transportation of the demolished concrete parts to a waste processing site.

C3 – The concrete with Durus EasyFinish embedded is grinded to smaller pieces at the size of gravel and used as road fill using a mechanical grinding machine.

C4 – All disposal processes are handled in C1-C3, and no disposal emissions occur in this module, as the entire product is assumed recycled and used as road fill.

Re-use, recovery and recycling potential (D) includes:

D – Durus EasyFinish is used as road fill and credited the amount of replaced gravel. Energy credits from incineration of the packaging are also accounted for in this module.

LCA results

ENVIRONMENTAL IMPACTS PER DECLARED UNIT (1 KG)																
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	kg CO_2 eq.	1.95E+00	8.54E-02	4.69E-02	MNR	MNR	MNR	MNR	MNR	MNR	MNR	7.89E-06	8.51E-03	2.53E-04	0	2.08E-02
GWP-fossil	kg CO_2 eq.	2.03E+00	8.48E-02	3.88E-03	MNR	MNR	MNR	MNR	MNR	MNR	MNR	7.85E-06	8.46E-03	2.52E-04	0	-1.85E-02
GWP-biogenic	kg CO_2 eq.	-7.37E-02	-1.43E-04	4.30E-02	MNR	MNR	MNR	MNR	MNR	MNR	MNR	2.62E-08	-1.42E-05	8.39E-07	0	3.92E-02
GWP-luluc	kg CO_2 eq.	1.05E-03	6.88E-04	5.83E-07	MNR	MNR	MNR	MNR	MNR	MNR	MNR	1.14E-08	6.86E-05	3.65E-07	0	-7.20E-06
ODP	kg CFC 11 eq.	1.12E-09	1.56E-17	6.69E-18	MNR	MNR	MNR	MNR	MNR	MNR	MNR	1.73E-19	1.56E-18	5.53E-18	0	-1.47E-09
AP	mol H^+ eq.	4.10E-03	1.04E-04	7.73E-06	MNR	MNR	MNR	MNR	MNR	MNR	MNR	1.73E-08	1.04E-05	5.55E-07	0	-1.45E-04
EP-freshwater	kg PO_4 eq.	5.49E-06	2.59E-07	1.08E-09	MNR	MNR	MNR	MNR	MNR	MNR	MNR	2.10E-11	2.58E-08	6.72E-10	0	-8.22E-09
EP-marine	kg N eq.	1.09E-03	3.30E-05	2.57E-06	MNR	MNR	MNR	MNR	MNR	MNR	MNR	3.85E-09	3.29E-06	1.23E-07	0	-1.64E-05
EP-terrestrial	mol N eq.	1.16E-02	3.90E-04	3.59E-05	MNR	MNR	MNR	MNR	MNR	MNR	MNR	4.04E-08	3.89E-05	1.30E-06	0	-1.70E-04
POCP	kg NMVOC eq.	4.52E-03	8.69E-05	6.95E-06	MNR	MNR	MNR	MNR	MNR	MNR	MNR	1.05E-08	8.67E-06	3.38E-07	0	-5.22E-05
ADPm[1]	kg Sb eq.	7.29E-07	6.87E-09	1.05E-10	MNR	MNR	MNR	MNR	MNR	MNR	MNR	2.27E-12	6.86E-10	7.28E-11	0	-2.56E-10
ADPf[1]	MJ	7.77E+01	1.13E+00	1.14E-02	MNR	MNR	MNR	MNR	MNR	MNR	MNR	1.38E-04	1.13E-01	4.42E-03	0	-3.12E-01
WDP[1]	m^3	3.44E-01	8.29E-04	5.00E-03	MNR	MNR	MNR	MNR	MNR	MNR	MNR	1.71E-06	8.27E-05	5.48E-05	0	3.46E-03
Caption	GWP-total = Globale 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 = Ozone Depletion; AP = Acidifcation; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water use															
Disclaimer	[1] The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.															

Additional environmental impacts, as declared in the project report of this EPD, are declared in this EPD:

ADDITIONAL ENVIRONMENTAL IMPACTS PER DECLARED UNIT (1 KG)																
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
PM	Disease incidence	3.91E-08	6.68E-10	4.38E-11	MNR	MNR	MNR	MNR	MNR	MNR	MNR	1.45E-13	6.66E-11	4.66E-12	0	-1.83E-09
IRP[2]	kBq U235 eq.	4.38E-01	3.10E-04	9.62E-05	MNR	MNR	MNR	MNR	MNR	MNR	MNR	3.44E-06	3.09E-05	1.10E-04	0	-6.18E-04
ETP-fw[1]	CTUe	4.01E+01	8.49E-01	5.41E-03	MNR	MNR	MNR	MNR	MNR	MNR	MNR	5.90E-05	8.46E-02	1.89E-03	0	-6.96E-02
HTP-c[1]	CTUh	8.82E-10	1.75E-11	3.32E-13	MNR	MNR	MNR	MNR	MNR	MNR	MNR	1.63E-15	1.75E-12	5.23E-14	0	-2.24E-12
HTP-nc[1]	CTUh	3.67E-08	8.94E-10	1.56E-11	MNR	MNR	MNR	MNR	MNR	MNR	MNR	6.01E-14	8.91E-11	1.93E-12	0	-1.48E-10
SQP[1]	pt	1.93E+01	3.98E-01	3.10E-03	MNR	MNR	MNR	MNR	MNR	MNR	MNR	4.40E-05	3.97E-02	1.41E-03	0	-6.05E-03
Caption	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 = Soil Quality (dimensionless)															
Disclaimers	[1] The results of this environmental 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 PER DECLARED UNIT (1 KG)															
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	[MJ	4.74E+00	6.56E-02	2.13E-03	MNR	MNR	MNR	MNR	MNR	MNR	MNR	6.12E-05	6.54E-03	1.96E-03	0	-3.32E-02
PERM	MJ	7.81E-01	0	0	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0	0	0	0	0
PERT	MJ	5.52E+00	6.56E-02	2.13E-03	MNR	MNR	MNR	MNR	MNR	MNR	MNR	6.12E-05	6.54E-03	1.96E-03	0	-3.32E-02
PENRE	MJ	7.78E+01	1.14E+00	1.14E-02	MNR	MNR	MNR	MNR	MNR	MNR	MNR	1.38E-04	1.14E-01	4.42E-03	0	-3.12E-01
PENRM	MJ	4.32E+01	0	0	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0	0	0	0	0
PENRT	MJ	1.21E+02	1.14E+00	1.14E-02	MNR	MNR	MNR	MNR	MNR	MNR	MNR	1.38E-04	1.14E-01	4.42E-03	0	-3.12E-01
SM	kg	1.98E-02	0	0	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0	0	0	0	0
RSF	MJ	0	0	4.83E-01	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0	0	0	0	0
NRSF	MJ	0	0	0	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0	0	0	0	0
FW	m^3	1.15E-02	7.64E-05	1.18E-04	MNR	MNR	MNR	MNR	MNR	MNR	MNR	7.07E-08	7.62E-06	2.27E-06	0	7.76E-05
Caption	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 = Net use of fresh water														

WASTE CATEGORIES AND OUTPUT FLOWS PER DECLARED UNIT (1 KG)																
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
HWD	kg	3.09E-08	5.27E-08	1.31E-11	MNR	MNR	MNR	MNR	MNR	MNR	MNR	5.71E-14	5.25E-09	1.83E-12	0	-4.02E-10
NHWD	kg	2.11E-02	1.81E-04	8.03E-04	MNR	MNR	MNR	MNR	MNR	MNR	MNR	9.79E-08	1.80E-05	3.14E-06	0	-2.92E-02
RWD	kg	3.08E-03	2.10E-06	6.21E-07	MNR	MNR	MNR	MNR	MNR	MNR	MNR	2.09E-08	2.09E-07	6.71E-07	0	-2.52E-05
CRU	kg	0	0	0	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0	0	0	0	0
MFR	kg	0	0	0	MNR	MNR	MNR	MNR	MNR	MNR	MNR	1.0E+00	0	0	0	0
MER	kg	0	0	2.7E-02	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0	0	0	0	0
EE	MJ	0	0	0	MNR	MNR	MNR	MNR	MNR	MNR	MNR	0	0	0	0	0
Caption	HWD = Hazardous waste disposed; NHWD = Non hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EE = Exported energy															

BIOGENIC CARBON CONTENT PER DECLARED UNIT (1 KG)		
Parameter	**Unit**	**At the factory gate**
Biogenic carbon content in product	kg C	0
Biogenic carbon content in accompanying packagaing	kg C	0.17

Additional information

Technical information on scenarios

Transport to the building site (A4)

Scenario information	Value	Unit
Fuel type and consumption	Diesel 0.016 L	L
Transport distance	1,000	km
Capacity utilisation (including empty runs)	50	%
Gross density of products transported	920	kg/m^3
Capacity utilisation volume factor	0.55	-

Installation of the product in the building (A5)

Scenario information	Value	Unit
Ancillary materials	0	kg
Water use	0	m^3
Other resource use	0	kg
Energy type and consumption	0	kWh
Waste materials	0.05	kg
Output materials	0	kg
Direct emissions to air, soil or water	0.05	kg

Reference service life

RSL information	Unit
Reference service Life	Based on concrete structure
Declared product properties	Reinforcement of concrete structures

Use (B1-B7)

Modules not relevant

End of life (C1-C4)

Scenario information	Value	Unit
Collected separately	0	kg
Collected with mixed waste	1	kg
For reuse	0	kg
For recycling	1	kg
For energy recovery	0	kg
For final disposal	0	kg

Re-use, recovery and recycling potential (D)

Scenario information/Materiel	Value	Unit
Recycled content as road fill	1	kg

Indoor air

The EPD does not give information on release of dangerous substances to indoor air because the horizontal standards on measurement of release of regulated dangerous substances from construction products using harmonised test methods according to the provisions of the respective technical committees for European product standards are not available.

Soil and water

The EPD does not give information on release of dangerous substances to soil and water because the horizontal standards on measurement of release of regulated dangerous substances from construction products using harmonised test methods according to the provisions of the respective technical committees for European product standards are not available.

References

Publisher	www.epddanmark.dk
Programme operator	Danish Technological Institute Buildings & Environment Gregersensvej DK-2630 Taastrup www.teknologisk.dk
LCA-practitioner	Michael Reymann, Julie Rønholt and Linda Høibye COWI A/S Parallelvej 2 2800 Kgs. Lyngby
LCA software /background data	GaBi Professional 2019 and EcoInvent 3.6
3rd party verifier	David Althoff Palm - Lead Consultant Ramboll Sweden AB

General programme instructions
Version 2.0
www.epddanmark.dk

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

EN 15942
DS/EN 15942:2011 – " Sustainability of construction works – Environmental product declarations – Communication format business-to-business"

ISO 14025
DS/EN ISO 14025:2010 – " Environmental labels and declarations – Type III environmental declarations – Principles and procedures"

ISO 14040
DS/EN ISO 14040:2008 – " Environmental management – Life cycle assessment – Principles and framework"

ISO 14044
DS/EN ISO 14044:2008 – " Environmental management – Life cycle assessment – Requirements and guidelines"