Environmental Product Declaration

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

Ready-mix concrete

from

General Beton Romania

Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
EPD registration number:	S-P-01146
Publication date:	2017-12-13
Date of revision	2023-04-01
Valid until:	2028-01-09

An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com

This EPD covers multiple products

General information

Programme information

Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
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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)
Product Category Rules (PCR): PCR 2019:14 Construction products (EN 15804:A2) , version 1.2.5 c-PCR-003, Concrete and concrete elements (EN 16757) version 2019-12-20, UN CPC 375
PCR review was conducted by: The Technical Committee of the International EPD® System. See www.environdec.com/TC for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/contact.
Life Cycle Assessment (LCA)
LCA accountability: ISO ENGINEERING SRL Address: via Terraglio, 73 | 31022 | Preganziol (TV) | Italy. Contact person: Nicola OCCARI, info@isoengineering.it Web address: www.isoengineering.it
Third-party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: ☒ EPD verification by accredited certification body Third-party verification: SGS Italia S.p.A, via Caldera, 21, 20153 – Milano is an approved certification body accountable for the third-party verification The certification body is accredited by: Accredia, certificate n.006H
Procedure for follow-up of data during EPD validity involves third party verifier: ☒ Yes ☐ No

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

EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

Company information

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Tonon Group

Tonon Group has been operating since 1955 in the general construction sector. Over the years it has developed its activities as a general construction company and manufacturer of building products such as concrete, bituminous conglomerates, membranes for waterproofing and acoustic insulation. Through the companies of the Group, it operates in the construction sector in different European and non-European countries. A range of products made in Italy is marketed all over the world.
All details on www.gruppotonon.it

General Beton Romania Srl

General Beton Romania is owned by Tonon Group. General Beton Romania set up the first concrete plant in Timisoara in 1998, an ecological station, a novelty for this area at that time. Two years later, based on an increase in investments in the western area of Romania, General Beton set up the second concrete plant in Romania in Arad. Nowadays it manages eight plants.
All details on www.generalbeton.ro

General Beton Romania Srl

General Beton Romania started with the production of concrete for general purpose and subsequently completed its offer by producing mortars and special types of concrete, thus allowing all builders to manage their sites with high efficiency and economic sustainability. Concrete and mortar are created according to their purpose of use as well as through continuous interaction with professionals. The choice of raw materials and the characteristics of the concrete is made on the basis of cooperation between the technology department, the site manager and the customer, taking into account the specific conditions of the environment in which the concrete will be used. General Beton owns its certified technical laboratories, provided with the latest and most modern equipment, in order to offer viable solutions to customers for each phase of concrete production.
Right from the beginning, General Beton's main goal has been quality control, in order to provide the customer with a real guarantee of reliability of its products. Thanks to the high control level and process optimization and flexibility, the quality system of General Beton Romania has been certified SR EN ISO 9001:2015. Therefore General Beton ensures the constant checking of raw material quality, the development of competitive networks and the quality check of products before delivery. The company also cares about sustainable development; for this reason in its Romanian plants an environmental management system is maintained and continuously improved, in accordance with the standard SR EN ISO 14001:2015.

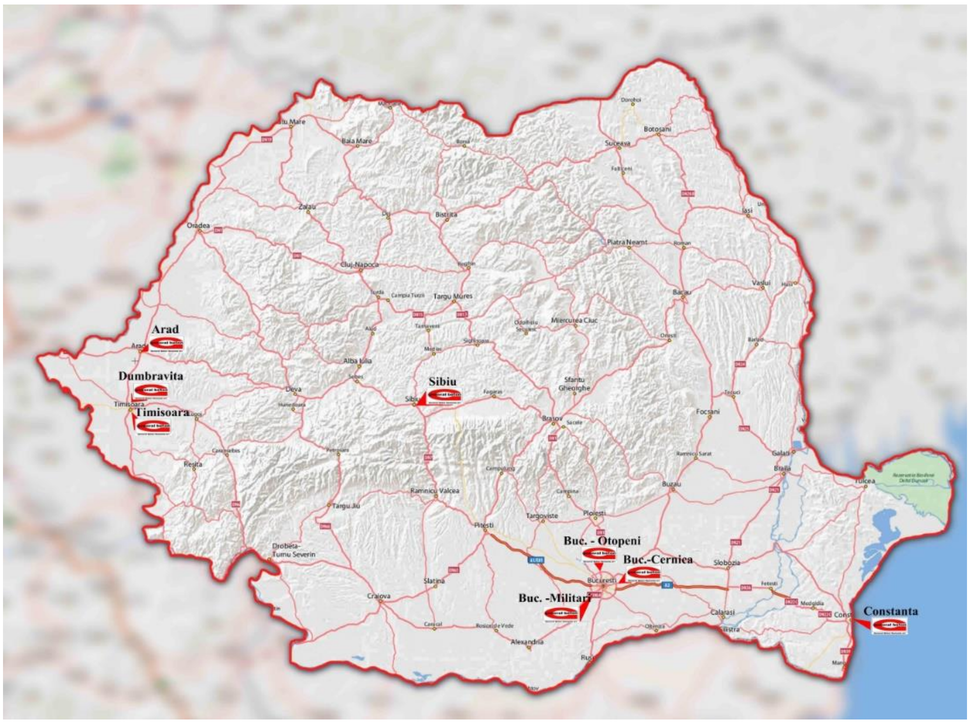
The ready-mix concrete is currently manufactured in the plants listed here below.

	Plant	Address
1.	*Bucuresti - Cernica*	Drumul Intre Tarlale, 15A, Judet Ilfov, Cernica
2.	*Bucuresti - Militari*	Str. Preciziei, 64, Sector 6, zona Militari, Bucuresti
3.	*Bucuresti - Otopeni*	Str. Garii Otopeni, 4B, Judet Ilfov, Bucuresti
4.	*Constanta*	Zona CFR Palas, Constanta
5.	*Timisoara - Sagului*	Calea Sagului D.N. 59, km 9+500, Timisoara
6.	*Timisoara - Dumbravita*	Drum spre Covaci, Dumbravita, Judet Timis
7.	*Arad*	Calea Aurel Vlaicu nr. 259, Arad
8.	*Sibiu*	Sat Cristian, D.J. 106 B, Sibiu

All these plants are fully owned and operated by General Beton Romania. The ready-mix concrete is manufactured according to the following standards and norms:

- EN 206:2013+A1:2016 Concrete - Part 1: Specification, performance, production and Conformity, transposed into Romanian Standard SR EN 206-1: 2014
- CP NE 012/1-2007: Code of practice for the production of concrete, concrete and prefabricated concrete
- NE 014-2002: Normative for the execution of cement concrete pavements in fixed and in sliding formwork systems.

The plant layout and the manufacturing process are the same in every plant since the applied technologies and the working procedures of General Beton Romania are standardised and well consolidated. Therefore all the eight Romanian plants owned by General Beton Romania are involved in this LCA study.



Product information

Product name: Concrete ready mix

Product description:

Concrete should be defined as a material formed by mixing cement, coarse and fine aggregates and water, with or without the incorporation of admixtures, additions or fibres, which develops its properties by hydration. Concrete conglomerate, like all stone materials, has good compressive strength, that is it behaves quite well when subjected to compression efforts. Concrete elements are usually casted with an embedded steel grid (that absorb flexural forces), and this composite material is notoriously indicated by the name of reinforced concrete.

Concrete has been present in our lives for centuries, so much that it is often considered a traditional material, not subject to innovations or changes. This is not true nowadays, since for more than forty years it has been subject to significant as continuous changes, so modern concrete can be fully considered part of high tech materials.

However, the market too often requires and uses standard low-grade concrete in the misguided belief that all product are the same. Fortunately, in the face of this still widespread belief, manufacturers continue to develop a wide range of products in terms of required performance and for several years technical institutions have regularly produced updates to standards for the classification of this material, trying to define its typologies and characteristics, thus providing all operators with precise directions for a proper use.

Use of concrete

Ready-mix concrete is manufactured in plastic state in the batching plant, and subsequently delivered on construction site by truck to create building elements (that could have structural or non-structural functions) or infrastructure elements (i.e. roads, bridges etc.). The fluid consistency of the concrete is lost after a few hours. After a few days it assumes a resistance so that it can be released from the forms that determines its shape. For the expected mechanical performances it is defined to wait 28 days from casting.

At the end of life, concrete can be demolished by crushing. Demolished concrete is a non-hazardous inert waste. Concrete blocks can be subjected to a further recovery process consisting of grinding at different size for further uses, such as stabilized sublayer of constructions or roads or secondary raw material for the production of further concrete. Even in the case of reuse, concrete remains a non-hazardous material, as the tests carried out on leaching test confirm.

Technical specifications

Concrete, as the other building products, is subject to strict EC directives, due to its impacts on health, safety and environment. Concrete is subject to the Factory Production Control (FPC) instead of CE marking. A specific concrete mix is usually defined by mechanical strength, exposure class, consistency and maximum diameter of aggregate. The EPD is representative of all the different types of ready-mix concrete produced by General Beton Romania listed in table 2.1. These products are sold without a specific commercial name nor code, but identified by compressive strength class, environmental exposure class, slump class and type of cement. This characterisation is in accordance to SR EN 206-1: 2014.

	COMPRESSIVE / FLEXURAL STRENGTH CLASS	ENVIRONMENTAL EXPOSURE CLASS	CEMENT CONTENT RANGE (%)	DENSITY (kg/m³)
CONCRETE FOR GENERAL PURPOSE	C 8/10	X0	7÷8	2300
			9÷10	
	C 12/15	X0	9÷11	
			11÷13	
	C 16/20	X0, XC1, XC2	10÷12	
			13÷14	
	C 20/25	XC1, XC2, XC3	12÷15	
			15÷17	
	C 25/30	XC1, XC2, XC3, XC4, XF1, XF2, XF3, XA1	13÷15	
			15÷17	
	C 30/37	XC4, XM2, XF2, XF4, XA1, XD1	16÷18	
	C 35/45	XC4, XD3, XM3, XS3, XF4, XA1	18÷20	
	C 40/50	XC4, XD3, XM3, XS3, XF4, XA1	20÷21	
ROAD CONCRETE	BCR 3,5	/	16	2370
	BCR 4,0	/	16	
	BCR 4,5	/	16÷17	

Table 2.1 - Products included in the EPD

Product manufacturing

Regarding the manufacturing process, an automatic system of feed screws, conveyor belts and pumps, operates the extraction from silos (for cement), hoppers (for aggregates) and tanks (for admixtures). Each component is loaded in an electronic scale until the set quantity is reached. The dosage (in weight or volume) of the correct amount of each raw material used in the recipe of a specific concrete type, is carried out through an electronic control panel, monitored by an operator. Subsequently, the mixing of the concrete is made in a pre-mix or directly into the truck.

Content declaration

	COMPONENT	Cement	Gravel	Sand	Additives	Water
	UNIT	%	%	%	%	%
Compressive strenght class	C 8/10	7÷8	43÷46	38÷43	<0,1	6,5÷7,4
		8÷9	43÷44	39÷40	<0,1	7,1÷7,8
	C 12/15	9÷11	45÷52	32÷37	<0,1	7,3÷7,7
		11÷12	43÷44	37÷38	<0,1	7,6÷8,2
	C 16/20	11÷12	44÷50	32÷36	<0,1	7,1÷7,2
		13÷14	43÷45	34÷36	<0,1	7,1÷7,6
	C 20/25	12÷15	45÷50	31÷34	<0,1	7÷7,2
		14÷15	42÷45	33÷35	<0,2	7,3÷7,5
	C 25/30	13÷15	45÷49	30÷33	<0,2	6,7÷7,2
		15÷16	41÷43	33÷35	<0,2	7,7÷8,1
	C 30/37	15÷18	41÷48	29÷33	<0,2	7÷8
	C 35/45	18÷20	42÷49	25÷29	<0,2	7,8÷8,3
	C 40/50	20÷21	43÷48	24÷27	<0,2	7,8÷8,4
	BCR 3,5	16	50	27	<0,2	7
	BCR 4,0	16	50	27	<0,2	7
	BCR 4,5	16÷17	49÷50	26÷27	<0,2	6,8÷6,9

UN CPC code: 375 Concrete

Geographical scope: Romania

LCA information

Declared unit:

The declared unit is represented by 1 m3 of ready-mix concrete with a given compressive strength class and environmental exposure class (concrete for general use) or with a given flexural strength class (road concrete) as defined in table 2.1.

Time representativeness: 2021

Database(s) and LCA software used:

SimaPro v 9.3 and the Ecoinvent v3.8, database were used for the LCA model.

Description of system boundaries:

The system boundaries include the mandatory modules A1, A2, A3, C1, C2, C3, C4 and D required by Standard EN 15804 (CEN, 2019), according to a “from cradle to grave and module D” approach type application. It is emphasized that the construction, maintenance and decommissioning of infrastructures, understood as buildings, and the occupation of industrial land were not considered, since it is believed that their contribution to the environmental impact of the declared unit is negligible. It is also emphasized that the deployment, installation and maintenance phases are not included in the study.

Using terminology from EN 15804, the study is broken down into the following life cycle stages:

- A1, raw material extraction and processing, processing of secondary material input (e.g. recycling processes),
- A2, transport to the manufacturer,
- A3, manufacturing, including impacts from direct energy generation and waste disposal related to the manufacturing process.
- C1, includes deconstruction, including disassembly or demolition of the product and including selective collection of material from the construction site;
- C2, transport of the waste product as part of the waste treatment phase
- C3, waste treatment collection of waste fractions, deconstruction and treatment of waste destined for reuse, recycling or energy recovery;
- C4, waste disposal including physical treatment and management of the disposal site.

The *Upstream Processes* (A1) include:

- Extraction and processing of raw materials (e.g. mining processes), biomass production and processing (e.g. agricultural or forestry operations) used as input for manufacturing the product;
- Extraction and processing of primary fuels used as input for manufacturing the product;
- Processing of secondary materials used as input for manufacturing the product, but not including those processes that are part of the waste processing in the previous product system until it reaches the end-of-waste state;
- Generation of electricity, steam and heat used in the product manufacturing process, which have been generated offsite, also including their extraction, refining and transport;

* Processing up to the end-of-waste state and disposal of any final residues produced during any process stage included in A1;
* Any transport of raw materials within the upstream supply chain, apart from the delivery of materials to the studied manufacturing process.

The Core Processes (A2) include:

* Transportation up to the factory gate and internal transport.

The product stage A2 includes all transport processes upstream and during the manufacturing process, but excluding transport of waste from the manufacturing process.

The Core Processes (A3) include:

* Production of ancillary materials or pre-products;
* Manufacturing of products and co-products, including the combustion of any primary fuels used in the manufacturing process;
* Processing up to the end-of-waste state or disposal of final residues including any packaging not leaving the factory gate with the product.

The Downstream Processes (C1) include:

* Diesel consumption of the heavy vehicles during demolition process.The specific diesel consumption is taken as 7 MJ/kg concrete (Gervasio et al., 2018).

The Downstream Processes (C2) include:

* the transportation impact during the End of Life stage. A conservative assumption of 50 km by lorry 16-32 metric ton was used.

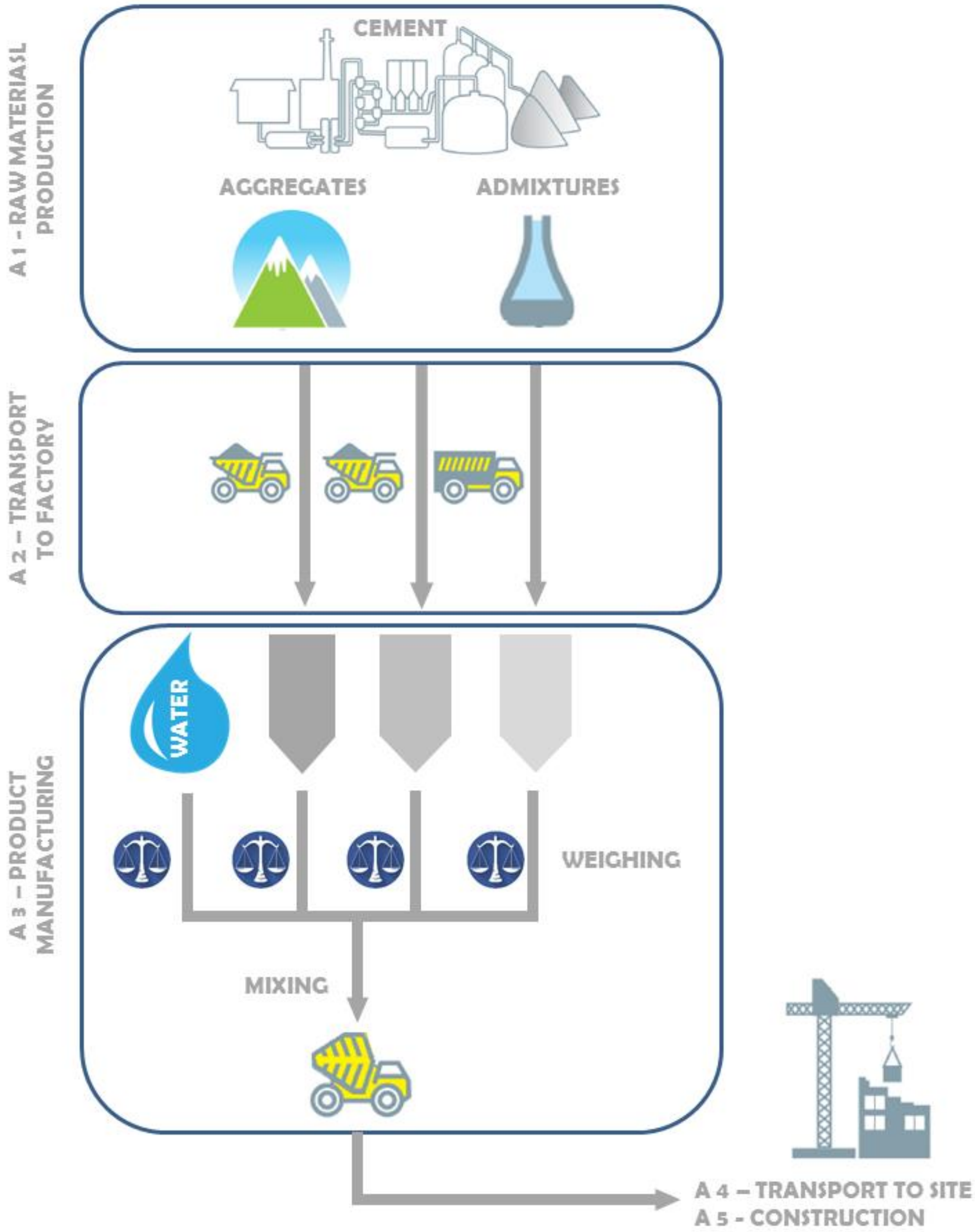
The Downstream Processes (C3) include:

* Involves the impact arising from the collection of waste fractions from the deconstruction site and the waste processing (e.g. sorting, crushing) of material flows intended for reuse, recycling and recovery. The sorting and crushing of concrete waste involves 3,7 kWh/ton concrete of electrical consumption, 0,51 m3/ ton concrete of excavation and 10-10 items of sorting facility construction according to Ecoinvent 3.8 (*treatment of waste concrete gravel, sorting plant*). After demolition, it is considered that the waste concrete is crushed into spherical particles. Carbonation may occur during the waste processing, while the product is stored and before it is been recycled. It has been quantified according to EN 16757. The time period for the C3 stage is 0,25 year, the exposed conditions is “outdoor- exposed to rain” and the recycling rate is 61% w/w.

The Downstream Processes (C4) include:

- It is the impact coming from the disposal (e.g. landfilling) of the non-recovered concrete waste. Since demolition waste includes different materials (e.g. concrete, steel and wood), an assumption has been taken that the fraction of disposed/recovered waste concrete is the same with the fraction of disposed/recovered demolition waste (disposed fraction is 39% w/w).

- In the case of landfill (module C4), carbonation of cement-based products may be considered when concrete is broken and the surface area of the material is exposed to air. However, the quantification of the area of exposed elements in a landfill of inert materials is extremely hard to estimate. Therefore, no carbonation is considered in this module.



System diagram:

Cut-off rules

The cut-off criteria applied in accordance with the reference PCR is based on the exclusion of the 1% of renewable and non-renewable primary energy usage and 1% of the total mass input of that unit process. The excluded flows are the packaging of the admixtures and some of the chemical substances in the admixtures composition since generic data for modelling were not available.

Allocation rules

Allocation methods applied in order to associate the elementary flows to the declared unit are based on physical relationships (mass criteria).

Data categories and sources

For the LCA study the following types of data were used:

Specific data: data related to the production processes of the ready-mix concrete at plant level. All the data refers to the year 2021. In particular, specific data refers to raw materials and maintenance materials quantities; energy and water consumption; waste production, etc.

Generic data: data taken from Ecoinvent v.3.8 database. It has been used for the extraction and processing of raw materials, for the production of admixtures, for the production of electricity and, in general, for all those processes in which the collection of specific data was not possible.

Proxy data: data coming from estimates based on similar processes, whose data is known from the literature. This type of data has been used when specific or generic data was not available. The environmental impacts associated to proxy data do not exceed 10% of the overall environmental impact from the product system.

Regarding electricity production in Romania, data coming from electricity mixes of Ecoinvent 3.8 database were considered.

Potential environmental impact

Below are the results for the worst product selected by dividing the impacts into the various modules analyzed (A, C and D).Data concerns the production of 1 m^3 of ready-mix concrete according to “worst case approach”. Module A1, A2, A3 are declared as one aggregated module A1-3.

In an EPD of multiple products based on the highest result of the included products (i.e., the results of a “worst-case product”), variations of more than 10% are allowed for the GHG GWP indicator calculated for modules A1-A3.This variation shall be reported in the EPD.

GHG-GWP indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide emissions and uptake and biogenic carbon stored in the product with characterization factors(CFs) based on IPCC(2013).

Eutrophication aquatic freshwater shall be given in both kgPO4 3- eq and kg P3 eq.

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

	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	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	EU 27	EU 27	RO										EU 27	EU 27	EU 27	EU 27	EU 27
Specific data used	> 90 %					-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	47%					-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	<10%					-	-	-	-	-	-	-	-	-	-	-	-

X: Modules declared **ND:** Not Declared

Content information

According to the PCR, a list of materials, components and chemicals included in the product identified as worst is proposed.

Product components	Wheight, kg	Post-consumer material, weight-%
Cement	490	0 %
Gravel	1000	0 %
Sand	630	0 %
Water	195	0 %
Admixture	0,43	0 %

The products do not contain any substances that are listed in the “Candidate List of Substances of Very High Concern (SVHC) for authorisation” by European Chemicals Agency.

The product contains 0kgC per m3 of concrete. The finished product has no packaging as it is ready-to-use concrete.

Environmental Information

Potential environmental impact – mandatory indicators according to EN 15804

Worst case product								
Indicator	**Unit**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**Total**	**D**
GWP-total	kg CO2 eq	4,37E+02	1,49E+01	1,91E+01	1,00E+00	4,76E+00	**4,77E+02**	-6,82E+00
GWP-fossil	kg CO2 eq	4,37E+02	1,49E+01	1,91E+01	9,93E-01	4,75E+00	**4,77E+02**	-6,79E+00
GWP-biogenic	kg CO2 eq	1,71E-01	2,44E-03	6,44E-03	6,30E-03	2,67E-03	**1,89E-01**	-1,70E-02
GWP-luluc	kg CO2 eq	6,48E-02	1,18E-03	6,48E-03	1,23E-03	1,29E-03	**7,50E-02**	-8,99E-03
GWP-GHG	kg CO2 eq	4,35E+02	1,47E+01	1,90E+01	9,85E-01	4,67E+00	**4,74E+02**	-6,65E+00
ODP	kg CFC11 eq	1,62E-05	3,21E-06	4,37E-06	1,15E-07	1,96E-06	**2,58E-05**	-3,79E-07
AP	mol H+ eq	1,10E+00	1,55E-01	9,57E-02	7,07E-03	4,49E-02	**1,41E+00**	-4,12E-02
EP-freshwater	kg P eq	5,86E-02	4,49E-04	1,29E-03	5,79E-04	4,44E-04	**6,14E-02**	-2,57E-03
EP-freshwater	kg PO43-eq	1,79E-01	1,38E-03	3,96E-03	1,77E-03	1,36E-03	**1,88E-01**	-7,87E-03
EP-marine	kg N eq	2,98E-01	6,88E-02	3,34E-02	2,37E-03	1,57E-02	**4,18E-01**	-9,17E-03
EP-terrestrial	mol N eq	3,35E+00	7,53E-01	3,65E-01	2,49E-02	1,71E-01	**4,67E+00**	-1,12E-01
POCP	kg NMVOC eq	8,56E-01	2,07E-01	1,04E-01	6,81E-03	4,97E-02	**1,22E+00**	-2,80E-02
ADP - e	kg Sb eq	8,20E-04	6,01E-06	6,94E-05	1,95E-05	1,06E-05	**9,26E-04**	-2,85E-05
ADP - f	MJ	2,00E+03	2,04E+02	2,91E+02	3,05E+01	1,33E+02	**2,66E+03**	-7,02E+01
WDP	m3 world eq. depriv.	8,66E+01	2,61E-01	7,95E-01	2,16E-01	5,95E+00	**9,38E+01**	-1,10E+01

GWP-total: Global Warming Potential total; **GWP-fossil**: Global Warming Potential fossil; **GWP-biogenic**: Global Warming Potential biogenic; **GWP-luluc**: Global Warming Potential land use and land use change; **GWP-GHG:** Global Warming Potential; **ODP**: Depletion potential of the stratospheric ozone layer; **AP**: Acidification potential, Accumulated Exceedence; **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 Exceedence; **POCP**: Formation potential of tropospheric ozone; **ADP-minerals&metals**: Abiotic depletion potential for non fossil resources*; **ADP-fossil**: Abiotic depletion for fossil sources potential*; **WDP**: Water (user) deprivation potential, deprivation-weighted water consumption*. **The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.*

** 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.*

Use of resources

Indicator	Unit	A1-A3	C1	C2	C3	C4	Total	D
Worst case product								
PERE	MJ	1,80E+03	1,93E+02	2,26E+02	2,94E+01	3,04E+01	**2,28E+03**	-7,38E+01
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	1,80E+03	1,93E+02	2,26E+02	2,94E+01	3,04E+01	**2,28E+03**	-7,38E+01
PENRE	MJ	8,60E+01	2,19E-01	2,37E-01	1,40E+01	4,98E-02	**1,01E+02**	1,75E+00
PENRM	MJ	1,43E+01	8,72E-02	9,61E-02	1,70E+00	7,65E-02	**1,62E+01**	0,00E+00
PENRT	MJ	1,00E+02	3,06E-01	3,33E-01	1,57E+01	1,26E-01	**1,17E+02**	1,75E+00
SM	kg	9,11E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	**9,11E+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	m3	2,43E+00	2,93E-03	3,40E-04	5,17E-02	5,78E-04	**2,48E+00**	-2,36E-01

PERE: Use of renewable primary energy excluding resources used as raw materials; **PERM**: Use of renewable primary energy resources used as raw materials; **PERT**: Total use of renewable primary energy; **PENRE**: Use of non-renewable primary energy excluding 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; **SM**: Secondary material; **RSF**: Renewable secondary fuels; **NRSF**: Non-renewable secondary fuels; **FW**: Net use of fresh water.

Waste production and output flows

Indicator	Unit	A1-A3	C1	C2	C3	C4	Total	D
Worst case product								
Hazardous Waste Disposed	*MJ*	1,09E-03	5,04E-04	6,00E-04	1,77E-05	7,64E-05	**2,29E-03**	-1,54E-04
Non hazardous waste disposed	*MJ*	6,79E+00	1,45E-02	1,19E-02	1,92E-02	9,02E+02	**9,09E+02**	-1,37E+00
Radioactive waste disposed	*MJ*	1,04E-02	1,39E-03	1,64E-03	3,23E-04	2,11E-04	**1,40E-02**	-4,16E-06
Components for re use	*MJ*	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	**0,00E+00**	0,00E+00
Materials for recycling	*MJ*	0,00E+00	0,00E+00	0,00E+00	1,39E+03	0,00E+00	**1,39E+03**	0,00E+00
Materials for energy recovery	*MJ*	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	**0,00E+00**	1,00E+00
Exported electricity energy	*kg*	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	**0,00E+00**	0,00E+00
Exported thermal energy	*kg*	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	**0,00E+00**	0,00E+00

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.

Additional environmental information

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

Information related to EPD

Worst case product approach

This EPD covers multiple products and the "worst case product" approach is used.

For each indicator, the highest result of the included products is declared. The results of the ”worst case product” are the results of two included products.

The results of product C 40/50 490 kg are used for all indicators except for "Water deprivation". The results of C 08/10 175 kg are used for “Water deprivation".

List of products covered by the EPD

Concrete 08/10

Code	Class	Code	Class
BC10L4P3<	X0-C 8/10-S3-IIA-LL 42.5R-Φ32	*BC10L4F3/<*	X0-C8/10-S2-II/A-LL42.5R-Φ16 ACC-FLUX
BC10L4P3/	X0-C 8/10-S3-IIA-LL 42.5R-Φ32	*BC10L4F3<*	X0-C8/10-S2-II/A-LL42.5R-Φ16 -FLUX
BC10L4P4<	X0-C 8/10-S3-IIA-LL 42.5R-Φ32	*BC10L4F4<*	X0-C8/10-S3-II/A-LL42.5R-Φ16-FLUX
BC10L4P4+	X0-C 8/10-S3-IIA-LL 42.5R-Φ32	*BC10L4F4/<*	X0-C8/10-S3-II/A-LL42.5R-Φ16 ACC-FLUX
BC10L4P4/	X0-C 8/10-S3-IIA-LL 42.5R-Φ32	*BC10L4F4<P*	X0-C8/10-S3-II/A-LL42.5R-Φ16-FLUX
BC10L4F4<	X0-C 8/10-S3-IIA-LL 42.5R-Φ16	*BC10L4F4<+P*	X0-C8/10-S3-II/A-LL42.5R-Φ16-FLUX-INT
BC10L4F5<	X0-C 8/10-S4-IIA-LL 42.5R-Φ16	*BC10L4P3<*	X0-C8/10-S2-II/A-LL42.5R-Φ32-FLUX
BC10L4F4+	X0-C 8/10-S3-IIA-LL 42.5R-Φ16	*BC10L4P3/<*	X0-C8/10-S2-II/A-LL42.5R-Φ32 ACC-FLUX
BC10L4F5/	X0-C 8/10-S4-IIA-LL 42.5R-Φ16	*BC10L4P4<*	X0-C8/10-S3-II/A-LL42.5R-Φ32 FLUX
BC10L4F2US	X0-C8/10-S1-II/A-LL42.5R-Φ16	*BC10L4P4/<*	X0-C8/10-S3-II/A-LL42.5R-Φ32 ACC-FLUX

Concrete 12/15

Code	Class	Code	Class
BC15L4P4<	X0-C 12/15-S3-IIA-LL 42.5R-Φ32	BC15L4F4/	X0-C 12/15-S3-IIA-LL 42.5R-Φ16
BC15L4P4/	X0-C 12/15-S3-IIA-LL 42.5R-Φ32	BC15L4F4</	X0-C 12/15-S3-IIA-LL 42.5R-Φ16
BC15L4P4+	X0-C 12/15-S3-IIA-LL 42.5R-Φ32	BC15L4F5<	X0-C 12/15-S4-IIA-LL 42.5R-Φ16
BC15L4P5<	X0-C 12/15-S3-IIA-LL 42.5R-Φ32	BC15L4F5<+	X0-C 12/15-S4-IIA-LL 42.5R-Φ16
BC15L4P5+	X0-C 12/15-S3-IIA-LL 42.5R-Φ32	BC15L4F408<	X0-C 12/15-S3-IIA-LL 42.5R-Φ8
BC15L4F3<	X0-C 12/15-S2-IIA-LL 42.5R-Φ16	BC15L4F408</	X0-C 12/15-S3-IIA-LL 42.5R-Φ8
BC15L4F3+	X0-C 12/15-S2-IIA-LL 42.5R-Φ16	BC15L4F408+	X0-C 12/15-S3-IIA-LL 42.5R-Φ8
BC15L4F3/	X0-C 12/15-S2-IIA-LL 42.5R-Φ16	BC15L4F408/	X0-C 12/15-S3-IIA-LL 42.5R-Φ8
BC15L4F4<	X0-C 12/15-S3-IIA-LL 42.5R-Φ16	BC15L4F3/<	X0-C12/15-S2-II/A-LL42.5R-Φ16 ACC-FLUX
BC15L4F4+	X0-C 12/15-S3-IIA-LL 42.5R-Φ16	BC15L4F3<	X0-C12/15-S2-II/A-LL42.5R-Φ16 FLUX
BC15L4F308<	X0-C12/15-S2-II/A-LL42.5R-Φ8 FLUX	BC15L4F408<	X0-C12/15-S3-II/A-LL42.5R-Φ8 FLUX
BC15L4F4/<	X0-C12/15-S3-II/A-LL42.5R-Φ16 ACC-FLUX	BC15L4F5<	X0-C12/15-S4-II/A-LL42.5R-Φ16 FLUX
BC15L4F4<	X0-C12/15-S3-II/A-LL42.5R-Φ16 FLUX	BC15L4P3/<	X0-C12/15-S2-II/A-LL42.5R-Φ32 ACC-FLUX

BC15L4F4<+	X0-C12/15-S3-II/A-LL42.5R-Φ16 FLUX-INT	BC15L4P3<	X0-C12/15-S2-II/A-LL42.5R-Φ32 FLUX
BC15L4F4<P	X0-C12/15-S3-II/A-LL42.5R-Φ16 FLUX	BC15L4P4<	X0-C12/15-S3-II/A-LL42.5R-Φ32 FLUX
BC15L4F4<+P	X0-C12/15-S3-II/A-LL42.5R-Φ16 FLUX-INT	BC15L4P4/<	X0-C12/15-S3-II/A-LL42.5R-Φ32 ACC-FLUX

Concrete 16/20

Code	Class	Code	Class
BC20L4P4<	X0-C 16/20-S3-IIA-LL 42.5R-Φ32	BC20L4F4+	X0-C 16/20-S3-IIA-LL 42.5R-Φ16
BC20L4P4>	X0-C 16/20-S3-IIA-LL 42.5R-Φ32	BC20L4F4</	X0-C 16/20-S3-IIA-LL 42.5R-Φ16
BC20L4P4+	X0-C 16/20-S3-IIA-LL 42.5R-Φ32	BC20L4F4/	X0-C 16/20-S3-IIA-LL 42.5R-Φ16
BC20L4P4/	X0-C 16/20-S3-IIA-LL 42.5R-Φ32	BC20L4F5>	X0-C 16/20-S4-IIA-LL 42.5R-Φ16
BC20L4P5<	X0-C 16/20-S4-IIA-LL 42.5R-Φ32	BC20L4F5>+	X0-C 16/20-S4-IIA-LL 42.5R-Φ16
BC20L4F4P4<	XC1-C 16/20-S3-IIA-LL42.5R-Φ16-P4/10	BC20L4F5<	X0-C 16/20-S4-IIA-LL 42.5R-Φ16
BC20L4F4P4+	XC1-C 16/20-S3-IIA-LL42.5R-Φ16-P4/10	BC20L4F5+<	X0-C 16/20-S4-IIA-LL 42.5R-Φ16
BC20L4F4P4/	XC1-C 16/20-S3-IIA-LL42.5R-Φ16-P4/10	BC20L4F5</	X0-C 16/20-S4-IIA-LL 42.5R-Φ16
BC20L4F6P4<	XC1-C 16/20-S5-IIA-LL42.5R-Φ16-P4/10	BC20L4F508<	XC1-C 16/20-S4-IIA-LL 42.5R-Φ8
BC20L4F3<	X0-C 16/20-S2-IIA-LL 42.5R-Φ16	BC20L4F508<+	XC1-C 16/20-S4-IIA-LL 42.5R-Φ8
BC20L4F3+	X0-C 16/20-S2-IIA-LL 42.5R-Φ16	BC20L4F508</	XC1-C 16/20-S4-IIA-LL 42.5R-Φ8
BC20L4F3/	X0-C 16/20-S2-IIA-LL 42.5R-Φ16	BC20L4F408<	XC1-C 16/20-S3-IIA-LL 42.5R-Φ8
BC20L4F4<	X0-C 16/20-S3-IIA-LL 42.5R-Φ16	BC20L4F408</	XC1-C 16/20-S3-IIA-LL 42.5R-Φ8
BC20L4F4<+	X0-C 16/20-S3-IIA-LL 42.5R-Φ16	BC20L4F408+	XC1-C 16/20-S3-IIA-LL 42.5R-Φ8
BC20L4F4>+	X0-C 16/20-S3-IIA-LL 42.5R-Φ16	BC20L4F408/	XC1-C 16/20-S3-IIA-LL 42.5R-Φ8
BC20L4F4>	X0-C 16/20-S3-IIA-LL 42.5R-Φ16	BC20L4F2US	XC2-C16/20-S1-II/A-LL42.5R-Φ16
BC20L4F3<	XC2-C16/20-S2-II/A-LL42.5R-Φ16 FLUX	BC20L4F5/<	XC2-C16/20-S4-II/A-LL42.5R-Φ16 FLUX-ACC
BC20L4F3<+	XC2-C16/20-S2-II/A-LL42.5R-Φ16 FLUX-INT	BC20L4F5<	XC2-C16/20-S4-II/A-LL42.5R-Φ16 FLUX
BC20L4F3/<	XC2-C16/20-S2-II/A-LL42.5R-Φ16 ACC-FLUX	BC20L4F5<+	XC2-C16/20-S4-II/A-LL42.5R-Φ16 FLUX-INT
BC20L4F308/<	XC2-C16/20-S2-II/A-LL42.5R-Φ8 FLUX-ACC	BC20L4F4P8<	XC2-C16/20-S3-II/A-LL42.5R-Φ16 FLUX-P8
BC20L4F308<	XC2-C16/20-S2-II/A-LL42.5R-Φ8 FLUX	BC20L4F508<	XC2-C16/20-S4-II/A-LL42.5R-Φ8 FLUX
BC20L4F4/<	XC2-C16/20-S3-II/A-LL42.5R-Φ16 ACC-FLUX	BC20L4P3/<	XC2-C16/20-S2-II/A-LL42.5RΦ32 ACC-FLUX
BC20L4F4<	XC2-C16/20-S3-II/A-LL42.5R-Φ16 FLUX	BC20L4P3<	XC2-C16/20-S2-II/A-LL42.5RΦ32 FLUX
BC20L4F4<+	XC2-C16/20-S3-II/A-LL42.5R-Φ16 FLUX-INT	BC20L4P3<+	XC2-C16/20-S2-II/A-LL42.5RΦ32 FLUX-INT
BC20L4F408<	XC2-C16/20-S3-II/A-LL42.5R-Φ8 FLUX	BC20L4P4<P	XC2-C16/20-S3-II/A-LL42.5R-Φ32 FLUX
BC20L4F408<+	XC2-C16/20-S3-II/A-LL42.5R-Φ8 FLUX-INT	BC20L4P4<	XC2-C16/20-S3-II/A-LL42.5RΦ32 FLUX
BC20L4F408/<	XC2-C16/20-S3-II/A-LL42.5R-Φ8 FLUX-ACC	BC20L4P4<+	XC2-C16/20-S3-II/A-LL42.5RΦ32 FLUX-INT
BC20L4F4P4<	XC2-C16/20-S3-II/A-LL42.5R-Φ16 FLUX-P4	BC20L4P4/<	XC2-C16/20-S-3II/A-LL42.5RΦ32 ACC-FLUX

Concrete 20/25

Code	Class	Code	Class
BC25L4P4P5>	XC2-C 20/25-S3-IIA-LL 42.5R-Φ32P5/10	BC25L4F6P8>	XC3-C 20/25-S5-IIA-LL 42.5R-Φ16P8/10
BC25L4P4P5>+	XC2-C 20/25-S3-IIA-LL 42.5R-Φ32P5/10	BC25L4F4P8>	XC3-C 20/25-S3-IIA-LL 42.5R-Φ16P8/10
BC25L4P4P5>/	XC2-C 20/25-S3-IIA-LL 42.5RΦ32P5/10	BC25L4F4P8>/	XC3-C 20/25-S3-IIA-LL 42.5R-Φ16P8/10
BC25L4P4P8>	XC3-C 20/25-S3-IIA-LL 42.5R-Φ32 P8/10	BC25L4F4P8>+	XC3-C 20/25-S3-IIA-LL 42.5R-Φ16P8/10
BC25L4P4P8>/	XC3-C 20/25-S3-IIA-LL 42.5R-Φ32 P8/10	BC25L4F4P12>	XC3-C 20/25-S3-IIA-LL 42.5R-Φ16P12/10
BC25L4P4P8>+	XC3-C 20/25-S3-IIA-LL 42.5R-Φ32	BC25L4F4P12>/	XC3-C 20/25-S3-IIA-LL 42.5R-Φ16P12/10

Code	Class	Code	Class
	P8/10		
BC25L4P4>	XC2-C 20/25-S3-IIA-LL 42.5R-Φ32	BC25L4F4P12</	XC3-C 20/25-S3-IIA-LL 42.5R-Φ16P12/10
BC25L4P4>/	XC2-C 20/25-S3-IIA-LL 42.5R-Φ32	BC25L4F4P12>+	XC3-C 20/25-S3-IIA-LL 42.5R-Φ16P12/10
BC25L4P4<	XC2-C 20/25-S3-IIA-LL 42.5R-Φ32	BC25L4F408P8>	XC3-C 20/25-S3-IIA-LL 42.5R-Φ8P8/10
BC25L4P4</	XC2-C 20/25-S3-IIA-LL 42.5R-Φ32	BC25L4F408P8>+	XC3-C 20/25-S3-IIA-LL 42.5R-Φ8P8/10
BC25L4P4>+	XC2-C 20/25-S3-IIA-LL 42.5R-Φ32	BC25L4F408P8>/	XC3-C 20/25-S3-IIA-LL 42.5R-Φ8P8/10
BC25L4P5>	XC2-C 20/25-S4-IIA-LL 42.5R-Φ32	BC25L4F408>	XC2-C 20/25-S3-IIA-LL 42.5R-Φ8
BC25L4P5>+	XC2-C 20/25-S4-IIA-LL 42.5R-Φ32	BC25L4F408>/	XC2-C 20/25-S3-IIA-LL 42.5R-Φ8
BC25L4P5>/	XC2-C 20/25-S4-IIA-LL 42.5R-Φ32	BC25L4F408>+	XC2-C 20/25-S3-IIA-LL 42.5R-Φ8
BC25L4F3>	XC2-C 20/25-S2-IIA-LL 42.5R-Φ16	BC25L4F508>	XC2-C 20/25-S4-IIA-LL 42.5R-Φ8
BC25L4F3>+	XC2-C 20/25-S2-IIA-LL 42.5R-Φ16	BC25L4F508>+	XC2-C 20/25-S4-IIA-LL 42.5R-Φ8
BC25L4F3>/	XC2-C 20/25-S2-IIA-LL 42.5R-Φ16	BC25L4F508>/	XC2-C 20/25-S4-IIA-LL 42.5R-Φ8
BC25L4F4	XC2-C 20/25-S3-IIA-LL 42.5R-Φ16	BC25L4F508P8>	XC3-C 20/25-S4-P8/10-IIA-LL 42.5R-Φ8
BC25L4F4>	XC2-C 20/25-S3-IIA-LL 42.5R-Φ16	BC25L4F2US	XC3-C20/25-S1-II/A-LL42.5R-Φ16
BC25L4F4>+	XC2-C 20/25-S3-IIA-LL 42.5R-Φ16	BC25L4F3>	XC3-C20/25-S2-II/A-LL42.5R-Φ16 SKY527
BC25L4F4>/	XC2-C 20/25-S3-IIA-LL 42.5R-Φ16	BC25L4F3>+	XC3-C20/25-S2-II/A-LL42.5R-Φ16 SKY527-INT
BC25L4F5>/	XC2-C 20/25-S4-IIA-LL 42.5R-Φ16	BC25L4F3/>	XC3-C20/25-S2-II/A-LL42.5R-Φ16 ACC-SKY527
BC25L4F5</	XC2-C 20/25-S4-IIA-LL 42.5R-Φ16	BC25L4F4>	XC3-C20/25-S3-II/A-LL42.5R-Φ16-SKY527
BC25L4F5>+	XC2-C 20/25-S4-IIA-LL 42.5R-Φ16	BC25L4F4>+	XC3-C20/25-S3-II/A-LL42.5R-Φ16-SKY527-INT
BC25L4F6>	XC2-C 20/25-S5-IIA-LL 42.5R-Φ16	BC25L4F4/>	XC3-C20/25-S3-II/A-LL42.5R-Φ16-SKY527-ACC
BC25L4F5P8>	XC3-C 20/25-S4-IIA-LL 42.5R-Φ16P8/10	BC25L4F4P4>	XC3-C20/25-S3-II/A-LL42.5R-Φ16 -P4
BC25L4F5P8>/	XC3-C 20/25-S4-IIA-LL 42.5R-Φ16P8/10	BC25L4F4P8<+	XC3-C20/25-S3-II/A-LL42.5R-Φ16 FLUX-INT-P8
BC25L4F5P8>+	XC3-C 20/25-S4-IIA-LL 42.5R-Φ16P8/10	BC25L4F4P8>	XC3-C20/25-S3-II/A-LL42.5R-Φ16 -SKY527-P8
BC25L4F4P8>+	XC3-C20/25-S3-II/A-LL42.5R-Φ16 -SKY527-INT-P8	BC25L4P3/>	XC3-C20/25-S2-II/A-LL42.5R-Φ32 ACC-SKY527
BC25L4F4P8/>	XC3-C20/25-S3-II/A-LL42.5R-Φ16 PLA-SKY527-P8	BC25L4P3>	XC3-C20/25-S2-II/A-LL42.5R-Φ32-SKY527
BC25L4F408P8>	XC3-C20/25-S3-II/A-LL42.5R-Φ8 SKY527-P8	BC25L4P3>+	XC3-C20/25-S2-II/A-LL42.5R-Φ32-SKY527-INT
BC25L4F408>	XC3-C20/25-S3-II/A-LL42.5R-Φ8 SKY527	BC25L4P4/>	XC3-C20/25-S3-II/A-LL42.5R-Φ32 ACC-SKY527
BC25L4F5/>	XC3-C20/25-S4-II/A-LL42.5R-Φ16 ACC-SKY527	BC25L4P4>	XC3-C20/25-S3-II/A-LL42.5R-Φ32 -SKY527
BC25L4F5>	XC3-C20/25-S4-II/A-LL42.5R-Φ16 -SKY527	BC25L4P4>+	XC3-C20/25-S3-II/A-LL42.5R-Φ32 -SKY527-INT
BC25L4F5>+	XC3-C20/25-S4-II/A-LL42.5R-Φ16 -SKY527-INT	BC25L4P4>P	XC3-C20/25-S3-II/A-LL42.5R-Φ32 SKY527
BC25L4F508>	XC3-C20/25-S4-II/A-LL42.5R-Φ8 SKY527	BC25L4P4/>P	XC3-C20/25-S3-II/A-LL42.5R-Φ32-SKY527-ACC
BC25L4F5P8>	XC3-C20/25-S4-II/A-LL42.5R-Φ16 SKY527-P8	BC25L4P5>	XC3-C20/25-S4-II/A-LL42.5R-Φ32 SKY527

Concrete 25/30

Code	Class	Code	Class
BC30L4P4>	XC2-C25/30-S3-IIA-LL 42.5R-Φ32	BC30L4F5P8>/	XC3+XF1+XA1-C25/30-S4-IIA-LL 42.5R-Φ16P8/10
BC30L4P4<	XC2-C25/30-S3-IIA-LL 42.5R-Φ32	BC30L4F6P8>	XC3+XF1+XA1-C25/30-S5-IIA-LL 42.5R-Φ16P8/10
BC30L4P4>+	XC2-C25/30-S3-IIA-LL 42.5R-Φ32	BC30L4F6>	XC3+XF1+XA1-C25/30-S5-IIA-LL 42.5R-Φ16
BC30L4P4>/	XC2-C25/30-S3-IIA-LL 42.5R-Φ32	BC30L4P5>	XC2-C25/30-S4-IIA-LL 42.5R-Φ32
BC30L4P5P8>	XC4-C25/30-S4-P8/10-IIA-LL 42.5R-Φ32	BC30L4F3>	XC4-C25/30-S2-II/A-LL42.5R-Φ16-SKY527

Code	Class	Code	Class
BC30L4P5P8>+	XC4-C25/30-S4-P8/10-IIA-LL 42.5R-Φ32	BC30L4F3>+	XC4-C25/30-S2-II/A-LL42.5R-Φ16-SKY527-INT
BC30L4P4P8>	XC3-C25/30-S3-P8/10-IIA-LL 42.5R-Φ32	BC30L4F3/>	XC4-C25/30-S2-II/A-LL42.5R-Φ16 ACC-SKY527
BC30L4P4P8>+	XC4-C25/30-S3-P8/10-IIA-LL 42.5R-Φ32	BC30L4F308>	XC4-C25/30-S2-II/A-LL42.5R-Φ8 SKY527
BC30L4F3>	XC2-C25/30-S2-IIA-LL 42.5R-Φ16	BC30L4F4>	XC4-C25/30-S3-II/A-LL42.5R-Φ16-SKY527
BC30L4F3>+	XC2-C25/30-S2-IIA-LL 42.5R-Φ16	BC30L4F4>+	XC4-C25/30-S3-II/A-LL42.5R-Φ16-SKY527-INT
BC30L4F3>/	XC2-C25/30-S2-IIA-LL 42.5R-Φ16	BC30L4F4/>	XC4-C25/30-S3-II/A-LL42.5R-Φ16 ACC-SKY527
BC30L4F4>	XC3-C25/30-S3-IIA-LL 42.5R-Φ16	BC30L4F4P8/>	XC4-XF1-C25/30-S3-II/A-LL42.5R-Φ16 P8 SKY527-ACC
BC30L4F4>+	XC2-C25/30-S3-IIA-LL 42.5R-Φ16	BC30L4F4P8>	XC4-XF1-C25/30-S3-II/A-LL42.5R-Φ16 P8 -SKY527
BC30L4F4>/	XC2-C25/30-S3-IIA-LL 42.5R-Φ16	BC30L4F4P8>+	XC4-XF1-C25/30-S3-II/A-LL42.5R-Φ16 P8 -SKY527-INT
BC30L4F5>	XC2-C25/30-S4-IIA-LL 42.5R-Φ16	BC30L4F4P12>	XC4-C25/30-S3-II/A-LL42.5R-Φ16 P12 -SKY527
BC30L4F5>+	XC2-C25/30-S4-IIA-LL 42.5R-Φ16	BC30L4F408>	XC4-C25/30-S3-II/A-LL42.5R-Φ8 SKY527
BC30L4F5>/	XC2-C25/30-S4-IIA-LL 42.5R-Φ16	BC30L4F408/>	XC4-C25/30-S3-II/A-LL42.5R-Φ8 SKY527
BC30L4F4P8>	XC3-C25/30-S3-IIA-LL 42.5R-Φ16P8/10	BC30L4F4P808>	XC4-C25/30-S3-II/A-LL42.5R-Φ8-P8-SKY527
BC30L4F4P8>+	XC3-C25/30-S3-IIA-LL 42.5R-Φ16P8/10	BC30L4F5>	XC4-C25/30-S4-II/A-LL42.5R-Φ16-SKY527
BC30L4F4P8>/	XC3-C25/30-S3-IIA-LL 42.5R-Φ16P8/10	BC30L4F5>+	XC4-C25/30-S4-II/A-LL42.5R-Φ16-SKY527-INT
BC30L4F4P12>	XC4+XF1+XA1-C25/30-S3-IIA-LL 42.5R-Φ16P12/10	BC30L4F5/>	XC4-C25/30-S4-II/A-LL42.5R-Φ16 SKY527-ACC
BC30L4F4P12>/	XC4+XF1+XA1-C25/30-S3-IIA-LL 42.5R-Φ16P12/10	BC30L4F5G>	XC4-C25/30-S4-II/A-LL42.5R-Φ16-SKY527-aparent
BC30L4F4P12>+	XC4+XF1+XA1-C25/30-S3-IIA-LL 42.5R-Φ16P12/10	BC30L4F5G<	XC4-C25/30-S4-II/A-LL42.5R-Φ16-FLUX-aparent
BC30L4F408>/	XC2-C25/30-S3-IIA-LL 42.5R-Φ8	BC30L4F5P8>	XC4-C25/30-S4-II/A-LL42.5R-Φ16 SKY527
BC30L4F408>	XC2-C25/30-S3-IIA-LL 42.5R-Φ8	BC30L4F5P8>+	XC4-C25/30-S4-II/A-LL42.5R-Φ16 SKY527-INT
BC30L4F408>+	XC2-C25/30-S3-IIA-LL 42.5R-Φ8	BC30L4F5P12>	XC4-C25/30-S4-II/A-LL42.5R-Φ16 SKY527-P12
BC30L4F508>/	XC2-C25/30-S4-IIA-LL 42.5R-Φ8	BC30L4F508>	XC4-C25/30-S4-II/A-LL42.5R-Φ8 SKY527
BC30L4F508>	XC2-C25/30-S4-IIA-LL 42.5R-Φ8	BC30L4F5>PI	XC4-XF1-XA1-C25/30-S4-II/A-LL42.5R-Φ16 SKY527-PI
BC30L4F508>+	XC2-C25/30-S4-IIA-LL 42.5R-Φ8	BC30L4F608>	XC4-C25/30-S5-II/A-LL42.5R-Φ8 SKY527
BC30L4F508P8>/	XC3+XF1-C25/30-S4-IIA-LL 42.5R-Φ8 P8/10	BC30L4F608>+	XC4-C25/30-S5-II/A-LL42.5R-Φ8 SKY527 -INT
BC30L4F508P8>	XC3+XF1-C25/30-S4-IIA-LL 42.5R-Φ8 P8/10	BC30L4F6>	XC4-C25/30-S5-II/A-LL42.5R-Φ16 SKY527
BC30L4F508P8>+	XC3+XF1-C25/30-S4-IIA-LL 42.5R-Φ8 P8/10	BC30L4F6>+	XC4-C25/30-S5-II/A-LL42.5R-Φ16 SKY527-INT
BC30L4F408P8>	XC3+XF1+A1-C25/30-S3-IIA-LL 42.5R-Φ8P8/10	BC30L4P3>	XC4-C25/30-S2-II/A-LL42.5R-Φ32-SKY527
BC30L4F408P8>+	XC3+XF1+XA1-C25/30-S3-IIA-LL 42.5R-Φ8P8/10	BC30L4P3>+	XC4-C25/30-S2-II/A-LL42.5R-Φ32-SKY527-INT
BC30L4F408P8>/	XC3+XF1+XA1-C25/30-S3-IIA-LL 42.5R-Φ8P8/10	BC30L4P3/>	XC4-C25/30-S2-II/A-LL42.5R-Φ32 ACC-SKY527
BC30L4F5P8>	XC3+XF1+XA1-C25/30-S4-IIA-LL 42.5R-Φ16P8/10	BC30L4P4>	XC4-C25/30-S3-II/A-LL42.5R-Φ32-SKY527
BC30L4F5P8>+	XC3+XF1+XA1-C25/30-S4-IIA-LL 42.5R-Φ16P8/10	BC30L4P4>+	XC4-C25/30-S3-II/A-LL42.5R-Φ32-SKY527-INT
BC30L4P4/>	XC4-C25/30-S3-II/A-LL42.5R-Φ32 ACC-SKY527	BC30L4P4P12>	XC4-C25/30-S3-II/A-LL42.5R-Φ32 SKY527-P12
BC30L4P4>P	XC4-C25/30-S3-II/A-LL42.5R-Φ32-SKY527	BC30L4P5>	XC4-C25/30-S4-II/A-LL42.5R-Φ32 SKY527
BC30L4P4>+P	XC4-C25/30-S3-II/A-LL42.5R-Φ32-SKY527-INT	BC30L4P5>P	XC4-C25/30-S4-II/A-LL42.5R-Φ32-SKY527
BC30L4P4P8>	XC4-C25/30-S3-II/A-LL42.5R-Φ32 SKY527-P8	BC30L4P5P12>	XC4-C25/30-S4-II/A-LL42.5R-Φ32 SKY527-P12

Code	Class	Code	Class
BC30L4P4P8/>	XC4-C25/30-S3-II/A-LL42.5R-Φ32 ACC-SKY527-P8	BC30L4P6>	XC4-C25/30-S5-II/A-LL42.5R-Φ32 SKY527

Concrete 30/37

Code	Class	Code	Class
BC37L4F3$	XC4+XD2+XF2+XS1+XA1-C30/37-S3-IIA-LL 42.5R-Φ16	BC37L4F408$+	XC4+XD2+XF2+XS1+XA1-C30/37-S3-IIA-LL 42.5R-Φ8
BC37L4F3/$	XC4+XD2+XF2+XS1+XA1-C30/37-S3-IIA-LL 42.5R-Φ16	BC37L4F408/$	XC4+XD2+XF2+XS1+XA1-C30/37-S3-IIA-LL 42.5R-Φ8
BC37L4F3$+	XC4+XD2+XF2+XS1+XA1-C30/37-S3-IIA-LL 42.5R-Φ16	BC37L4F508$	XC4+XD2+XF2+XS1+XA1-C30/37-S4-IIA-LL 42.5R-Φ8
BC37L4F4$	XC4+XD2+XF2+XS1+XA1-C30/37-S3-IIA-LL 42.5R-Φ16	BC37L4F508$+	XC4+XD2+XF2+XS1+XA1-C30/37-S4-IIA-LL 42.5R-Φ8
BC37L4F4&	XC4+XD2+XF2+XS1+XA1-C30/37-S3-IIA-LL 42.5R-Φ16	BC37L4F508$/	XC4+XD2+XF2+XS1+XA1-C30/37-S4-IIA-LL 42.5R-Φ8
BC37L4F4$+	XC4+XD2+XF2+XS1+XA1-C30/37-S3-IIA-LL 42.5R-Φ16	BC37L4F608$	XC4+XD2+XF2+XS1+XA1-C30/37-S5-IIA-LL 42.5R-Φ8
BC37L4F4$"	XC4+XD2+XF4+XS1+XA1-C30/37-S3-IIA-LL 42.5R-Φ16	BC37L4F5$	XC4+XD2+XF2+XS1+XA1-C30/37-S4-IIA-LL 42.5R-Φ16
BC37L4F4/$	XC4+XD2+XF2+XS1+XA1-C30/37-S3-IIA-LL 42.5R-Φ16	BC37L4F5$+	XC4+XD2+XF2+XS1+XA1-C30/37-S4-IIA-LL 42.5R-Φ16
BC37L4F408$	XC4+XD2+XF2+XS1+XA1-C30/37-S3-IIA-LL 42.5R-Φ8	BC37L4F5P8/$	XC4+XD2+XF2+XS1+XA1-C30/37-S4-P8/10-IIA-LL 42.5R-Φ16
BC37L4F408	XC4+XD2+XF2+XS1+XA1-C30/37-S3-IIA-LL 42.5R-Φ8	BC37L4F5/$	XC4+XD2+XF2+XS1+XA1-C30/37-S4-IIA-LL 42.5R-Φ16
BC37L4F6$	XC4+XD2+XF2+XS1+XA1-C30/37-S5-II A-LL 42.5R-Φ16	BC37L4F3/$	XD1-XM2-C30/37-S2-II/A-LL42.5R-Φ16 SKY580-ACC
BC37L4F6$+	XC4+XD2+XF2+XS1+XA1-C30/37-S5-II A-LL 42.5R-Φ16	BC37L4F4$	XD1-XM2-C30/37-S3-II/A-LL42.5R-Φ16-SKY580
BC37L4P4$	XC4+XD2+XF2+XS1+XA1-C30/37-S3-IIA-LL 42.5R-Φ32	BC37L4F4$+	XD1-XM2-C30/37-S3-II/A-LL42.5R-Φ16-SKY580-INT
BC37L4P4$"	XC4+XD2+XF4+XS1+XA1-C30/37-S3-IIA-LL 42.5R-Φ32	BC37L4F4/$	XD1-XM2-C30/37-S3-II/A-LL42.5R-Φ16 SKY580-ACC
BC37L4P4$+	XC4+XD2+XF2+XS1+XA1-C30/37-S3-IIA-LL 42.5R-Φ32	BC37L4F5$	XD1-XM2-C30/37-S4-II/A-LL42.5R-Φ16-SKY580
BC37L4P4/$	XC4+XD2+XF2+XS1+XA1-C30/37-S3-IIA-LL 42.5R-Φ32	BC37L4F5$+	XD1-XM2-C30/37-S4-II/A-LL42.5R-Φ16-SKY580-INT
BC37L4P5"$	XC4+XD2+XF2+XS1+XA1-C30/37-S4-IIA-LL 42.5R-Φ32	BC37L4F5/$	XD1-XM2-C30/37-S4-II/A-LL42.5R-Φ16-ACC-SKY580
BC37L4P5$+	XC4+XD2+XF2+XS1+XA1-C30/37-S4-IIA-LL 42.5R-Φ32	BC37L4F6$	XD1-XM2-C30/37-S5-II/A-LL42.5R-Φ16 -SKY580
BC37L4P5>	XC4+XD2+XF2+XS1+XA1-C30/37-S4-IIA-LL 42.5R-Φ32	BC37L4F408$	XD1-XM2-C30/37-S3-II/A-LL42.5R-Φ8-SKY580
BC37L4P5$	XC4+XD2+XF2+XS1+XA1-C30/37-S4-IIA-LL 42.5R-Φ32	BC37L4F508$	XD1-XM2-C30/37-S4-II/A-LL42.5R-Φ8-SKY580
BC37L4F3$	XD1-XM2-C30/37-S2-II/A-LL42.5R-Φ16- SKY580	BC37L4F608$	XD1-XM2-C30/37-S5-II/A-LL42.5R-Φ8 SKY580
BC37L4F3$+	XD1-XM2-C30/37-S2-II/A-LL42.5R-Φ16- SKY580-INT	BC37L4F3/$	XD1-XM2-C30/37-S2-II/A-LL42.5R-Φ16 SKY580-ACC
BC37L4P4$P	XD1-XM2-C30/37-S3-II/A-LL42.5R-Φ32 - SKY580	BC37L4F4$	XD1-XM2-C30/37-S3-II/A-LL42.5R-Φ16-SKY580
BC37L4P4$	XD1-XM2-C30/37-S3-II/A-LL42.5R-Φ32 - SKY580	BC37L4P5$	XD1-XM2-C30/37-S4-II/A-LL42.5R-Φ32-SKY580
BC37L4P4$+	XD1-XM2-C30/37-S3-II/A-LL42.5R-Φ32 - SKY580-INT	BC37L4P5$+	XD1-XM2-C30/37-S4-II/A-LL42.5R-Φ32-SKY580-INT
BC37L4P4/$	XD1-XM2-C30/37-S3-II/A-LL42.5R-Φ32 SKY580-ACC		

Concrete 35/45

Code	Class	Code	Class
BC45L4F4$	XC4+XD3+XS3+XF4+XA1-C 35/45-S3-IIA-LL 42.5R-Φ16	BC45L4P4"$IM	XC4+XD3+XS3+XF4+XA1-C 35/45-S3-IIA-LL 42.5R-Φ32
BC45L4F4$+	XC4+XD3+XS3+XF4+XA1-C 35/45-S3-IIA-LL 42.5R-Φ16	BC45L4P4/$IM	XC4+XD3+XS3+XF4+XA1-C 35/45-S3-IIA-LL 42.5R-Φ32
BC45L4F4$”	XC4+XD3+XS3+XF4+XA1-C 35/45-S3-IIA-LL 42.5R-Φ16	BC45L4P4$IM	XC4+XD3+XS3+XF4+XA1-C 35/45-S3-IIA-LL 42.5R-Φ32
BC45L4F4/$	XC4+XD3+XS3+XF4+XA1-C 35/45-S3-IIA-LL 42.5R-Φ16	BC45L4P5$	XC4+XD3+XS3+XF4+XA1-C 35/45-S4-IIA-LL 42.5R-Φ32

Code	Class	Code	Class
BC45L4F408$	XC4+XD3+XS3+XF4+XA1-C 35/45-S3-IIA-LL 42.5R-Φ08	BC45L4P5$+	XC4+XD3+XS3+XF4+XA1-C 35/45-S4-IIA-LL 42.5R-Φ32
BC45L4F408$+	XC4+XD3+XS3+XF4+XA1-C 35/45-S3-IIA-LL 42.5R-Φ08	BC45L4P5"$	XC4+XD3+XS3+XF4+XA1-C 35/45-S4-IIA-LL 42.5R-Φ32
BC45L4F408/$	XC4+XD3+XS3+XF4+XA1-C 35/45-S3-IIA-LL 42.5R-Φ08	BC45L4F5$	XC4+XD3+XS3+XF4+XA1-C 35/45-S4-IIA-LL 42.5R-Φ16
BC45L4F508$	XC4+XD3+XS3+XF4+XA1-C 35/45-S4-IIA-LL 42.5R-Φ08	BC45L4P5$IM	XC4+XD3+XS3+XF4+XA2-C 35/45-S4-IIA-LL 42.5-Φ32
BC45L4F508/$	XC4+XD3+XS3+XF4+XA1-C 35/45-S4-IIA-LL 42.5R-Φ08	BC45L4P5$/IM	XC4+XD3+XS3+XF4+XA2-C 35/45-S4-IIA-LL 42.5-Φ32
BC45L4F508$+	XC4+XD3+XS3+XF4+XA1-C 35/45-S4-IIA-LL 42.5R-Φ08	BC45L4F5$+	XC4+XD3+XS3+XF4+XA1-C 35/45-S4-IIA-LL 42.5R-Φ16
BC45L4F3$	XC4+XD3+XS3+XF4+XA1-C 35/45-S2-IIA-LL 42.5R-Φ16	BC45L4F5$/	XC4+XD3+XS3+XF4+XA1-C 35/45-S4-IIA-LL 42.5R-Φ16
BC45L4F3$+	XC4+XD3+XS3+XF4+XA1-C 35/45-S2-IIA-LL 42.5R-Φ16	BC45L4F6$	XC4+XD3+XS3+XF4+XA1-C 35/45-S5-IIA-LL 42.5R-Φ16
BC45L4F3/$	XC4+XD3+XS3+XF4+XA1-C 35/45-S2-IIA-LL 42.5R-Φ16	BC45L4F6$+	XC4+XD3+XS3+XF4+XA1-C 35/45-S5-IIA-LL 42.5R-Φ16
BC45L4P3$	XC4+XD3+XS3+XF4+XA1-C 35/45-S2-IIA-LL 42.5R-Φ32	BC45L4F6$/	XC4+XD3+XS3+XF4+XA1-C 35/45-S5-IIA-LL 42.5R-Φ16
BC45L4P3$+	XC4+XD3+XS3+XF4+XA1-C 35/45-S2-IIA-LL 42.5R-Φ32	BC45L4F3/$	XD3-XM3-XF3-C35/45-S2-II/A-LL42.5R-Φ16 SKY580-ACC
BC45L4P3/$	XC4+XD3+XS3+XF4+XA1-C 35/45-S2-IIA-LL 42.5R-Φ32	BC45L4F3$	XD3-XM3-XF3-C35/45-S2-II/A-LL42.5R-Φ16 - SKY580
BC45L4P4$	XC4+XD3+XS3+XF4+XA1-C 35/45-S3-IIA-LL 42.5R-Φ32	BC45L4F3$+	XD3-XM3-XF3-C35/45-S2-II/A-LL42.5R-Φ16 - SKY580-INT
BC45L4P4$+	XC4+XD3+XS3+XF4+XA1-C 35/45-S3-IIA-LL 42.5R-Φ32	BC45L4F4$	XD3-XM3-C35/45-S3-II/A-LL42.5R-Φ16-SKY580
BC45L4P4$"	XC4+XD3+XS3+XF4+XA1-C 35/45-S3-IIA-LL 42.5R-Φ32	BC45L4F4$+	XD3-XM3-C35/45-S3-II/A-LL42.5R-Φ16-SKY580-INT
BC45L4P4$+IM	XC4+XD3+XS3+XF4+XA1-C 35/45-S3-IIA-LL 42.5R-Φ32	BC45L4F4/$	XD3-XM3-C35/45-S3-II/A-LL42.5R-Φ16 SKY580-ACC
BC45L4F5/$	XD3-XM3-C35/45-S4-II/A-LL42.5R-Φ16 SKY580-ACC	BC45L4P4$	XD3-XM3-C35/45-S3-II/A-LL42.5R-Φ32-SKY580
BC45L4F5$	XD3-XM3-C35/45-S4-II/A-LL42.5R-Φ16- SKY580	BC45L4P4$+	XD3-XM3-C35/45-S3-II/A-LL42.5R-Φ32-SKY580-INT
BC45L4F5$+	XD3-XM3-C35/45-S4-II/A-LL42.5R-Φ16- SKY580-INT	BC45L4P4/$	XD3-XM3-C35/45-S3-II/A-LL42.5R-Φ32-SKY580-ACC
BC45L4F6$	XD3-XM3-C35/45-S5-II/A-LL42.5R-Φ16-SKY580	BC45L4P4$P	XD3-XM3-C35/45-S3-II/A-LL42.5R-Φ32-SKY580
BC45L4F408$	XD3-XM3-C35/45-S3-II/A-LL42.5R-Φ8-SKY580	BC45L4P4$+P	XD3-XM3-C35/45-S3-II/A-LL42.5R-Φ32-SKY580-INT

Concrete 40/50

Code	Class	Code	Class
BC50L4P4$	XC4+XD3+XS3+XF4+XA1-C 40/50-S3-IIA-LL 42.5R-Φ32	BC50L4F408$	XC4+XD3+XS3+XF4+XA1-C40/50-S3-IIALL42,5R-Φ8
BC50L4P4$+	XC4+XD3+XS3+XF4+XA1-C 40/50-S3-IIA-LL 42.5R-Φ32	BC50L4F408$+	XC4+XD3+XS3+XF4+XA1-C40/50-S3-IIALL42,5R-Φ8
BC50L4P4$/	XC4+XD3+XS3+XF4+XA1-C 40/50-S3-IIA-LL 42.5R-Φ32	BC50L4F408$/	XC4+XD3+XS3+XF4+XA1-C40/50-S3-IIALL42,5R-Φ8
BC50L4F4$	XC4+XD3+XS3+XF4+XA1-C 40/50-S3-IIA-LL 42.5R-Φ16	BC50L4F5$	XC4+XD3+XS3+XF4+XA1-C 40/50-S4-IIA-LL 42.5R-Φ16
BC50L4F4$/	XC4+XD3+XS3+XF4+XA1-C 40/50-S3-IIA-LL 42.5R-Φ16	BC50L4F5$+	XC4+XD3+XS3+XF4+XA1-C 40/50-S4-IIA-LL 42.5R-Φ16
BC50L4F4$+	XC4+XD3+XS3+XF4+XA1-C 40/50-S3-IIA-LL 42.5R-Φ16	BC50L4F5/$	XC4+XD3+XS3+XF4+XA1-C 40/50-S4-IIA-LL 42.5R-Φ16
BC50L4F508$	XC4+XD3+XS3+XF4+XA1-C40/50-S4-IIALL42,5R-Φ8	BC50L4F4$	XD3-XM3-C40/50-S3-II/A-LL42.5R-Φ16-SKY580
BC50L4F508$+	XC4+XD3+XS3+XF4+XA1-C40/50-S4-IIALL42,5R-Φ8	BC50L4F4$+	XD3-XM3-C40/50-S3-II/A-LL42.5R-Φ16-SKY580-INT
BC50L4F508$/	XC4+XD3+XS3+XF4+XA1-C40/50-S4-IIALL42,5R-Φ8	BC50L4P3$	XD3-XM3-C40/50-S2-II/A-LL42.5R-Φ32-SKY580
BC50L4P4$	XD3-XM3-C40/50-S3-II/A-LL42.5R-Φ32- SKY580		

BCR 3.5

Code	Code

BCR3,5S1I42,5R Φ 32/ "	BCR3,5S1I42,5R Φ 32" *
BCR3,5S1I42,5R Φ 32< "	BCR3,5S1I42,5R Φ 32" +
BCR3,5S1I42,5R Φ 32">	BCR3,5I42,5RS1 Φ 25”<

BCR 4

Code	Code
BCR4-I42,5RS1 Φ25” >	BCR4-I42,5R S1 Φ 32"/C
BCR4 -I42,5R-S1 Φ 32”>	BCR4-I42,5R S1 Φ 32" *
BCR4-I42,5R- S1 Φ 32"<	BCR4-I42,5R S1 Φ 32" +
BCR4-I42,5R S1 Φ 32"/	BCR4- I42,5R-S1 Φ 32<"c

BCR 4.5

Code	Code
BCR4,5-I42,5RS1 Φ25">	BCR4,5-I42,5RS1 Φ25" *
BCR4,5-I42,5RS1 Φ25">	BCR4,5-I42,5RS1 Φ25" +
BCR4,5-I42,5RS1 Φ 32c">	BCR4,5-I42,5RS1 Φ 32”>
BCR4,5-I42,5RS1 Φ 32c" *	BCR4,5-I42,5RS1 Φ 32c"<
BCR4,5-I42,5RS1 Φ 32c" +	BCR4,5-I42,5RS1 Φ 32" *
BCR4,5-I42,5RS1 Φ 32c"/	BCR4,5-I42,5RS1 Φ 32" +
BCR4,5-I42,5RS1 Φ 32”<	BCR4,5-I42,5RS1 Φ 32”/<
BCR4,5-I42,5RS1 Φ 32"/	

Differences versus previous versions

Since the first publication of the EPD (26-09-2017), a new version has been created with the following main changes:

- Compliance with EN 15804:2012+A2:2019/AC:2021 standard
- Compliance with GPI 4.0
- Changed the system boundaries having also included modules C and D in the study

References

ISO 14040:2006/Amd 1:2020 Environmental management — Life cycle assessment — Principles and framework — Amendment 1

ISO 14044:2006/Amd 2:2020 Environmental management — Life cycle assessment — Requirements and guidelines — Amendment 2

ISO 14025:2006 Environmental labels and declarations — Type III environmental declarations — Principles and procedures

Gervasio, 2018. JRC Technical Reports. Model for Life Cycle Assessment (LCA) of buildings

General Programme Instructions for the International EPD® System. The International EPD Cooperation. Document version 4.0, dated 2021-03-29, www.environdec.com.

PCR 2019:14 – Construction Products. Version 1.2.5. Valid until 2024-12-20;

c-PCR-003 (to PCR 2019:14) Concrete and concrete elements (EN 16757) . Version 2019-12-20, www.environdec.com.

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

EN 16757:2017 Sustainability of construction works – Environmental product declarations - Product Category Rules for concrete and concrete elements

Database Ecoinvent 3.8.

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