ENVIRONMENTAL PRODUCT DECLARATION
No. 02-03/2024

Ready-mixed concrete LOW CARBON CONCRETE IIA, LOW CARBON CONCRETE IIB, LOW CARBON CONCRETE III

Declaration owner:	Warbud Beton sp. z.o.o.
Program Owner:	Łukasiewicz – Institute of Ceramics and Building Materials
	Environmental Engineering Department
Program Name	Environmental Product Declarations – B2B
Release Date:	**28.03.2024**
Declaration valid until:	**28.03.2029**

Łukasiewicz
Instytut Ceramiki
i Materiałów Budowlanych

ENVIRONMENTAL PRODUCT DECLARATION No. 02-03/2022

warbud BETON

1. OVERVIEW

<table>
<tr>
<td>Declaration owner:

Warbud Beton Sp. z o.o.</td>
<td>Products covered by the declaration:
Ready-mixed concrete
LCCIII – 904 C30/37; 905 C35/45
LCCIIA – 930 C12/15; 932 C30/37; 933 C35/45; 934 C40/50; 935 C45/55; 936 C50/60
LCCIIB – 990 C8/10; 903 C30/37; 904 C35/45; 906 C40/50</td>
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<tr>
<td>Program Owner:
Łukasiewicz Research Network – Institute of Ceramics and Building Materials, Centre for Environmental Engineering in Opole.
http://www.icimb.pl/opole/</td>
<td>Declaration owner:
Warbud Beton sp. z o.o.
Gniewkowska 44
01-253 Warsaw
Phone: +48 22 567 63 71
E-mail address: jacek.zychowicz@warbud.pl
https://www.warbud-beton.pl/</td>
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<td>Date of issue:

28.03.2024</td>
<td>Declared Unit:
1 m3 (1 cubic meter) of ready-mixed concrete.</td>
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<td>Declaration valid until:

28.03.2029</td>
<td rowspan="2">Scope:
The declaration covers three groups of ready-mixed concretes:
❖ Low Carbon Concrete III (LCCIII):
♦ LCCIII 904 – C35/45
♦ LCCIII 905 - C30/37
❖ Low Carbon Concrete IIA (LCCIIA):
♦ LCCIIA 930 – C12/15
♦ LCCIIA 932 - C30/37
♦ LCCIIA 933 – C35/45
♦ LCCIIA 934 - C40/50
♦ LCCIIA 935 - C45/55
♦ LCCIIA 936 - C50/60
❖ Low Carbon Concrete IIB (LCCIIB):
♦ LCCIIB 990 – C8/10
♦ LCCIIB 903 - C30/37
♦ LCCIIB 902 – C35/45
♦ LCCIIB 906 - C40/50
manufactured at the Warbud Beton sp. z.o.o. plant. in Warsaw.
It contains information on the environmental impact of the declared products.
All data on the production cycle were collected by Warbud Beton from 01.01.2023 to 31.12.2023 (12 months) and correspond to the production technology of the time. These are the average data for the total production of ready-mixed concrete Low Carbon Concrete III, Low Carbon Concrete IIA, Low Carbon Concrete IIB produced in the production plants of Warbud Beton Sp. z o.o.in Warsaw.
The Life Cycle Assessment has been developed in accordance with the requirements of PN-EN ISO 15804+A2:2020, PN-EN ISO 14025 and PN-EN ISO 14040. The rules for product categorization have been</td>
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	adopted in accordance with the PN-EN 15804 and PN-EN 16757 standards. The owner of the declaration is responsible for the underlying information and evidence. The Łukasiewicz Research Network - Institute of Ceramics and Building Materials of the Centre for Environmental Engineering is not responsible for the manufacturer's information as well as data and evidence regarding the life cycle assessment. Declarations that are the result of different programs or that are not made in accordance with the standard may not be comparable.
Product Categorization (PCR) Rules	According to the standards: PN-EN 15804+A2:2020-03 Sustainability of construction works. Environmental Product Declarations. Basic principles of categorization of construction products. PN-EN 16757:2017 Sustainability of construction works. Environmental Product Declarations. Product Categorization Rules for Concrete and Concrete Products .
Representativeness:	Polish product, year 2023
Declared durability:	50 years
Reasons for performing LCA:	B2B
Life Cycle Analysis (LCA):	The LCA analysis includes modules A1-A3, A4, A5, C1-C4 and D according to PN-EN 15804+A2 (cradle-to-gate with options)

The Łukasiewicz Institute of Ceramics and Building Materials, Environmental Engineering Department, provides access to the type III environmental declaration for ready-mixed concrete of Warbud Beton sp. z o.o. to interested parties.

Authors' team:
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Patryk Okoń, M.Sc.

Approved:

Joanna Poluszyńska, PhD
Director of the Center for Environmental Engineering

Ewa Głodek-Bucyk, Ph.D.
Leader of the Process Engineering Research Group

Review:

CEN standard PN-EN 15804+A2 serves as the main PCR document.
Independent verification of declarations and data according to EN ISO 14025:2010

☐ Internal ☒ External

Katarzyna Grzesik, PhD, DSc

2. MANUFACTURER & PRODUCT INFORMATION

Warbud-Beton sp. z o.o. manufactures concrete for various applications, from residential construction to specialized concrete. It offers concrete designed for individual and general construction. Contractor concrete isused for diaphragm walls and foundation piles, floor concrete for floors with increased abrasion resistance, thanks to the use of high-quality aggregates, fibers, and dispersed steel reinforcement. Architectural concrete, bridge and road concrete meeting the requirements of the regulations of the Minister of Transport and Maritime Economy, as well as concrete intended for massive structures. Warbud-Beton sp. z o.o. It provides professional advice on the use of various types of concrete mixes and how to care for them depending on weather conditions. Concrete intended for the execution of concrete structures in the strength classes specified in the construction design or Technical Specification. Manufactured in compressive strength classes from C8/10 to C70/85 according to PN-EN 206-1:2003.

The company has the following certificates:

- ISO Certificate (PCBC) - PN EN 9001:2015 and PN EN ISO 14001:2015, in the field of design, production and supply of concrete mixes, No. JS-191/3/2020,
- iQnet Certificate (PCBC) - PN EN 9001:2015 and PN EN ISO 14001:2015, in the field of design, production and supply of concrete mixes, No. JS-191/3/2020,
- ISO Certificate (PCBC) – PN ISO 45001:2018, in the field of design, production and supply of concrete mixes, No. B-97/1/2020
- iQnet Certificate (PCBC) – PN ISO 45001:2018, for the design, production and supply of concrete mixes, No. B-97/1/2020
- FPC Certificate (ITB) – PN EN 206+A2:2021-08+ PN B 06265:2022-08 – Ready-mixed concrete, No. 020-UWB-0762/Z
- FPC Certificate (ITB) – PN EN 14227-1:2013-10 Mixtures bound with hydraulic binders, mixtures bound with cement No. 020-UWB-0940/Z

Ready-mixed concretes manufactured by Warbud Beton sp. z o.o. are mainly:

- special concretes,
- architectural concretes, also colored in mass, with a smooth face, but also with visible aggregate,
- bridge concretes,
- structural and non-structural concretes,
- road concretes, in pavement layers,
- surface concrete, airport concrete.

LCCIII concretes are mainly used in massive reinforced concrete structures, poorly reinforced or concrete, e.g. foundation ceilings, retaining blocks, massive tides, strip foundations.
Concrete for structural applications in accordance with the requirements of PN EN 206:2021 on cement CEM III A42.5N LH HSR NA with the addition of fly ash produced according to the following recipes:

- LCCIII 904 – compressive strength class C35/45
- LCCIII 905 - compressive strength class C30/37

LCCIIA concrete is mainly used in reinforced concrete constructions of walls, columns, reinforced concrete ceilings, but also in massive reinforced concrete structures.

Concrete for structural applications in accordance with the requirements of PN EN 206:2021 on cement CEM II 52.5N A-M (S-LL) with the addition of fly ash, produced according to the following recipes:

- LCCIIA 930 – compressive strength class C12/15
- LCCIIA 932 - compressive strength class C30/37
- LCCIIA 933 – compressive strength class C35/45
- LCCIIA 934 - compressive strength class C40/50
- LCCIIA 935 - compressive strength class C45/55
- LCCIIA 936 - compressive strength class C50/60

LCCIIB concrete is used in reinforced concrete structures such as columns, ceilings, walls and in massive reinforced concrete structures.
Concrete for structural applications in accordance with the requirements of PN EN 206:2021 on cement CEM II 42.5N BM (SV) with the addition of fly ash, produced according to the following recipes:

- LCCIIB 990 - compressive strength class C8/10
- LCCIIB 903 - compressive strength class C30/37
- LCCIIB 902 - compressive strength class C35/45
- LCCIIB 906 - compressive strength class C40/50

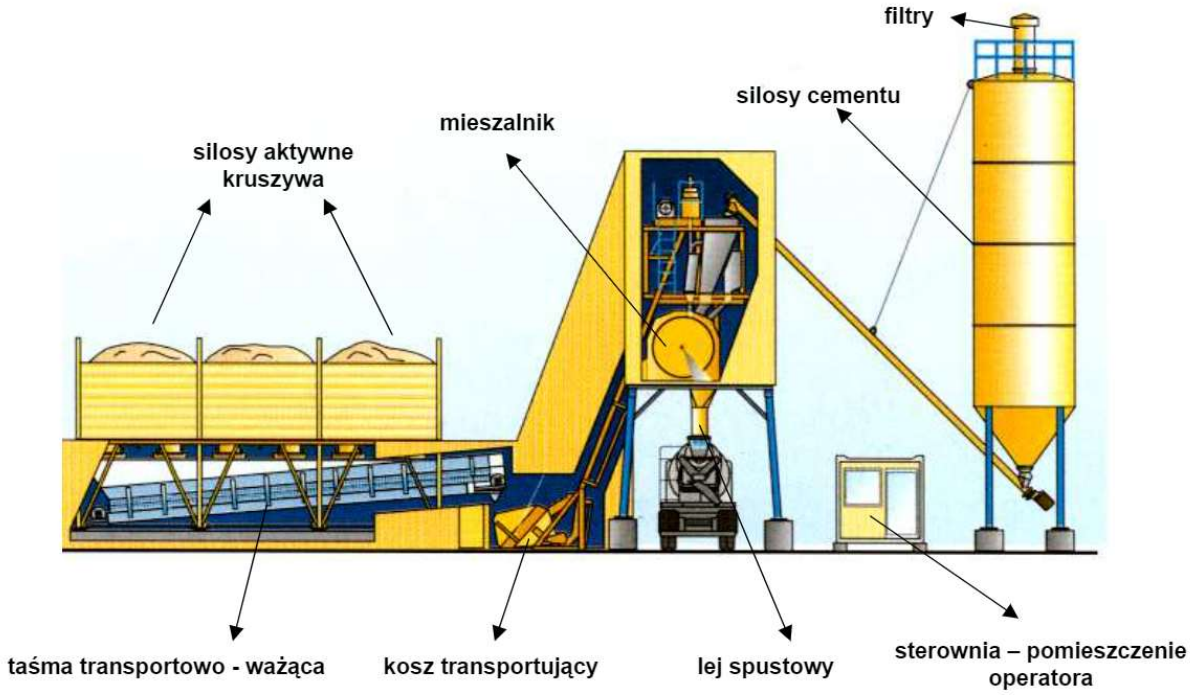


Figure 1: Diagram of the concrete production process at Warbud Beton sp. z o.o.

The main components of concrete are:

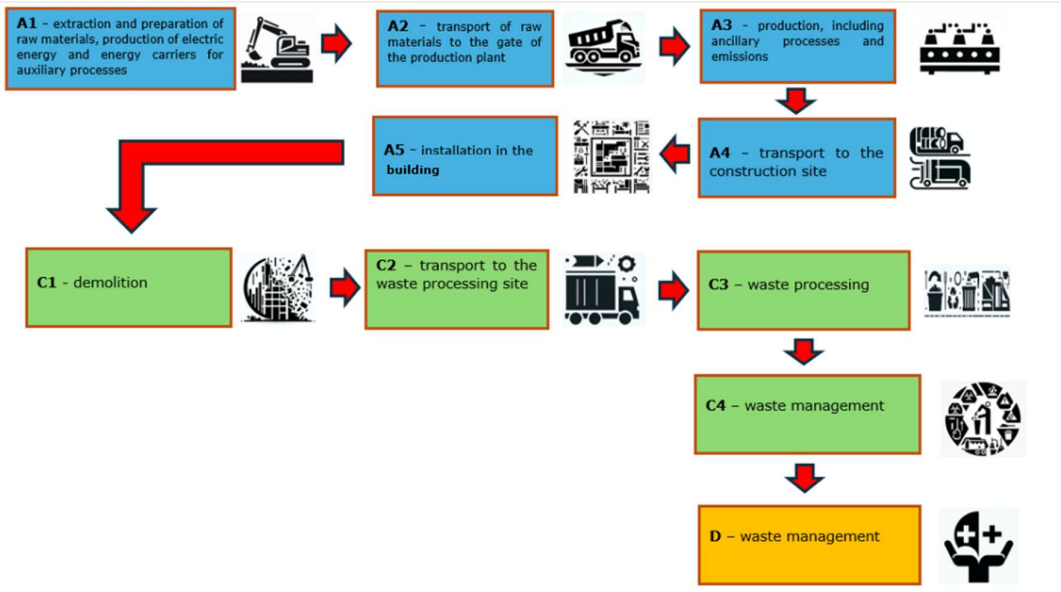
1. **Aggregate** – gravel that meets the requirements of PN-EN 12620, extracted from mines in Polish.
2. **Fine aggregate** - river sand that meets the requirements of the PN-EN 12620 standard.
3. **Binder** – Portland cements CEM II (for LCC II mixtures) or CEM III (for LCC III mixtures), meeting the requirements of the PN-EN 197-1 standard, containing fly ash or blast furnace slag.
4. **Additives** – fly ash that meets the requirements of the PN-EN 450 standard, which is a by-product of coal combustion in power plants.
5. **Admixtures** – substances improving the properties of concrete mixes, meeting the requirements of the PN-EN 934-2 standard.
6. **Water** – added to liquefy the concrete mix and enable the concrete setting process, meeting the requirements of the PN-EN 1008 standard.

Ingredients are delivered to the plant by rail and road by truck and stored in closed silos or entanglements. They are then dosed by scales and fed into the mixer. Mixing is an automatic process, carried out according to a developed recipe, taking into account the achievement of homogeneity, designed consistency, aeration and other designed properties. The concrete truck is loaded with concrete mix through a hopper. Transport to the place of delivery is carried out with continuous mixing.

3. LCA: CALCULATION RULES

System boundaries

The life cycle analysis of the tested products includes modules A1-A3, A4, A5, C1-C4 and D (Cradle to Gate whit options) in accordance with PN-EN 15804.



Data collection period	The data on the production process are from the year 2023 (period from 01.01.2023 to 31.12.23).
Declared Unit (DU)	**1 m3** of ready-mixed concrete.
Assumptions	**A1** – extraction and consumption of raw materials refers to specific mass shares in the production process, attributable to the declared unit of the product, **A2** – distances from the place of obtaining raw materials to the production plant individual for each raw material, means of transport differentiated due to the method of delivery of raw materials, **A3** – CO_2, NO_x, SO_2 and dust emission values from the production process obtained as a result of measurements carried out on the premises of the plant, the rest estimated on the basis of fuel consumption. **A4** - transport - the data used for the calculations are included in the developed scenario. **A5** - refers to energy consumption and covers all processes related to the placement and installation of concrete. The calculations are made on the basis of the developed scenario. **C1** - describes the handling of construction debris during dismantling/demolition. The calculations are made on the basis of the developed scenario. **C2** – refers to the transport of construction and demolition waste, to a recovery or disposal facility. The calculations are made on the basis of the developed scenario. **C3** – takes into account the environmental impact of the treatment of construction and demolition waste containing concrete in a waste recovery plant. The calculations are made on the basis of the developed scenario. **C4** – should take into account the impact of stored construction debris containing gypsum plasters. Landfill operations are not taken into account in the developed scenario because construction rubble is not worthless waste, it is recyclable and should not end up in municipal waste landfills. **D** – refers to the impact and effects of the use of secondary material. The calculations are made based on the developed scenario.

Cut-off criteria	99% of all bulk streams involved in the production process were taken into account. All the energy used in the process was taken into account in the environmental declaration.
General data	The data for the calculations come from Ecoinvent v. 3.9.2, KOBiZE, and the available Environmental Product Declarations. The emission factors for electricity were determined using the actual KOBiZE data. The applied emission factor of Polish electricity (Ecoinvent supplemented with current national data KOBiZE) is 0.685 kg CO_2/kWh. A detailed analysis of data quality was part of an external audit.
Allocation	All data on the components produced at the Warbud Beton sp. z o.o. plant in Warsaw were provided by the manufacturer, provided by the manufacturer and were referred to the declared unit of the product – **1 m3** of ready-mixed concrete. The allocation rules used in this EPD are based on the general principles of ICIMB-PCR A.

4. LCA: SCENARIOS AND ADDITIONAL TECHNICAL INFORMATION

For the life cycle analysis of the products covered by the environmental statement in the field of "cradle to gate with options", scenarios were developed for modules A4, A5 and C1-C4
and D:

Module A4 – *Transport to the construction site* **-** Transport is carried out by means of a concrete mixer with a capacity of 8.5 m3. The average distance from the plant to the customer is 10 km.

Transport to the construction site (A4)

Name	Value	Unit
Litres of fuel per m3 of concrete	7	diesel/100km
Transportation Distance	10	Miles
Used capacities (including empty runs)	50	%
Gross density of the transported product	2326	kg/m3

Module A5 – *Installation in a building* **–** installation of concrete. The table below shows the data used in modeling the installation of the product.

Installation in the building (A5)

Name	Value	Unit
Electricity (concrete vibrating)	0,16	kWh/m3
Other energy (pouring concrete)	0,6	l/ m3

Module C1 - *Demolition/demolition* – according to the current state of the art, the dismantling of concrete structures is carried out with the use of excavators equipped with a hammer.

Dismantling/Demolition (C1)

Name	Value	Unit
Diesel consumption (excavator with hammer)	30	l/m3
Diesel consumption (crusher)	15	l/m3

Module C2 – *Transport*- The transport of waste containing demolition concrete is directed to the recovery plant (recycling plant).
The following assumptions were made to calculate the impact of this module:

- 100% of the mass of waste is transported to the recovery plant as part of waste 17 01 01 or 17 01 02 (construction rubble),
- transport is carried out by means of self-unloading trucks with a load capacity of 16 – 32 tons, meeting the EURO 6 emission standards.
- The material is transported to a waste treatment site located 20 km from the demolition site.

Module C3 - *Waste treatment*, e.g. collection of waste fractions from demolition and treatment of material streams for reuse, recycling and energy recovery. On the basis of national experience, it is assumed that construction rubble is valuable waste and can be recycled.
Therefore, the following processes were assumed for the calculations: unloading (loader), crushing (crusher).

Waste treatment (C3)

Name	Value	Unit
Energy consumption	0,03	kWh/kg
Fuel	0,315	MJ/kg

Module C4 - Should take into account the impact of stored construction debris containing gypsum plasters. In the developed scenario, save operations are not taken into account. The fraction of construction rubble with code 17 01 01 or 17 01 02, which includes the products covered by the declaration, is not subject to storage in the light of Polish regulations.

Module D-Reuse Potential**-** Benefits and burdens beyond system boundaries are taken into account. It was assumed that the final product of the crushing process (crushed construction rubble) could be used as a building material for various purposes. Fragmented pieces of concrete can be used to create foundations, substrates for pavements or roads. It can also be used as a fill in the construction of roads or in the creation of new areas and will be used as ballast.

5. LCA: RESULTS

The table below shows the LCA modules taken into account in the calculation of the environmental impact categories for the products covered by the declaration.

DESCRIPTION OF SYSTEM BOUNDARIES (X – INCLUDED IN LCA, MND – UNDECLARED MODULE)																
Production Stage			**Construction phase**		**Stage of use**							**End of Life Stage**				**Benefits and flows beyond system boundaries**
Mining & Sourcing in raw materials	Transport	Production	Transport	Construction Process	Usufruct	Maintenance	Repair	Exchange	Renovation	Energy consumption	Water consumption	Demolition	Transport	Waste Treatment	Disposal	Potential for reuse
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C4**	**C4**	**D**
X	**X**	**X**	**X**	**X**	**MND**	**MND**	**MND**	**MND**	**MND**	**MND**	**MND**	**X**	**X**	**X**	**X**	**X**

The following tables present the results of the LCA analysis for ready-mixed concretes.

Explanations of the abbreviations used to describe the impact categories are given below:

GWP-total	Total Global Warming Potential
GWP-fossil	Greenhouse Potential: Fossil Fuels
GWP-biogenic	Global Warming Potential: Biogenic
GWP-luluc	Global Warming Potential: Land Use and Conversion
A:	Stratospheric ozone depletion potential
AP	Acidification potential
EP-freshwater	Eutrophication potential of freshwater environments
EP-marine	Eutrophication potential of saltwater environments
EP-terrestial	Potential for eutrophication of terrestrial environments
POCP	Tropospheric ozone formation potential
ADP-minerals&metals	Potential for abiotic depletion of non-fossil fuels
ADP-fossil	Potential for abiotic depletion of fossil fuel feedstocks
WDP	Water deprivation potential (user),
PM	Potential incidence of diseases caused by particulate emissions
IRP	Ionising radiation (potential human exposure efficacy to U235)
ETP-fw	Potential Comparison Unit of Ecosystem Toxicity
HTP-c	Potential comparative unit toxic to humans, neoplastic diseases
HTP-nc	Potential comparative human toxic unit, non-cancer diseases
SQP	Indicator of potential soil quality

PERE	Consumption of renewable energy resources, excluding renewable energy resources used as raw material
PERMIAN	Consumption of renewable energy resources used as raw material
PERT	Total consumption of renewable, primary energy resources
PEN-RE	Consumption of non-renewable primary energy resources, excluding non-renewable primary energy resources used as feedstock
RE	Consumption of non-renewable energy resources used as raw material
PENRT	Total consumption of non-renewable, primary energy resources
SM	Consumption of secondary materials
RSF	Consumption of renewable alternative fuels
NRSF	Consumption of non-renewable alternative fuels
FW	Fresh water consumption

Concrete LCCIII 904

MAIN IMPACT INDICATORS: 1 m3 Concrete LCCIII 904											
	Life Cycle Stage										
Indicator	**Unit**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	kg CO2 eq.	1.03E+02	3,27E+01	7.15E-03	4,69E+00	2,32E+00	1.64E+02	8,83E+00	1.32E+02	0,00E+00	-1.48E+01
GWP-fossil	kg CO2 eq.	1.20E+02	3,25E+01	6.82E-03	4,68E+00	2.31E+00	1.64E+02	8,82E+00	1.29E+02	0,00E+00	-1.47E+01
GWP-biogenic	kg CO2 eq.	1.07E+02	2.20E-01	3.19E-04	4.39E-03	6.64E-03	3.98E-02	8.26E-03	2,58E+00	0,00E+00	-8.96E-03
GWP-luluc	kg CO2 eq.	1.26E-02	3.60E-02	6.50E-06	2.27E-03	3.66E-04	1.81E-02	4.28E-03	6.03E-02	0,00E+00	-8.67E-03
A:	kg CFC11 eq.	1.74E-06	6.12E-07	9.92E-12	9.94E-08	3.41E-08	2.54E-06	1.87E-07	1.24E-06	0,00E+00	-4.09E-07
AP	mol H+ eq.	4.28E-01	1.10E-01	3.07E-05	9.98E-03	2.03E-02	1,48E+00	1.88E-02	9.20E-01	0,00E+00	-1.06E-01
EP-freshwater	kg PO4 eq.	2.04E-02	8.40E-03	8.69E-06	3.25E-04	2.32E-04	4.91E-03	6.11E-04	7.19E-02	0,00E+00	-1.18E-03
EP-marine	kg N eq.	5.03E-02	2.74E-02	5.46E-06	2.52E-03	9.26E-03	6.86E-01	4.74E-03	3.56E-01	0,00E+00	-4.09E-02
EP-terrestrial	mol N eq.	1,16E+00	2.78E-01	4.21E-05	2.56E-02	1.00E-01	7.46E+00	4.81E-02	3,73E+00	0,00E+00	-4.38E-01
POCP	kg NMVOC eq.	3.03E-01	1.21E-01	1.18E-05	1.55E-02	2.97E-02	2.21E+00	2.91E-02	1,10E+00	0,00E+00	-1.52E-01
ADP-minerals & metals	kg Sb eq.	1.57E-04	1.08E-04	6.40E-09	1.49E-05	8.66E-07	5.58E-05	2.81E-05	7.66E-05	0,00E+00	-1.96E-05
ADP-fossil	MJ	5,85E+02	4.81E+02	7.08E-02	6,48E+01	2,93E+01	2.09E+03	1.22E+02	1,52E+03	0,00E+00	-3.52E+02
WDP	WDP (m3) world. EKW	2.70E+01	3.51E+00	3.26E-04	2.71E-01	6.78E-02	4.62E+00	5.10E-01	4.71E+00	0,00E+00	-1.56E+01
ADDITIONAL IMPACT INDICATORS: 1 m3 Concrete LCCIII 904											
	Life Cycle Stage										
Indicator	**Unit**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PM	Disease incidency	1.90E-06	2.20E-06	5.79E-11	3.40E-07	0,00E+00	0,00E+00	6.40E-07	1.92E-05	0,00E+00	-2.33E-06
IRP	kBq U235 eq.	1,05E+00	4.21E+00	5.95E-05	8.78E-02	0,00E+00	0,00E+00	1.65E-01	9.28E-01	0,00E+00	-2.23E-01
ETP-fw	CTUe	2.47E-03	8.40E-03	8.69E-06	3.25E-04	0,00E+00	0,00E+00	6.11E-04	7.19E-02	0,00E+00	-1.18E-03
HTP-c	CTUh	1.39E-08	1.22E-08	2.41E-13	1.09E-09	0,00E+00	0,00E+00	2.05E-09	1.42E-08	0,00E+00	-3.33E-09
HTP-nc	CTUh	1.28E-07	1.39E-07	6.28E-12	1.68E-08	0,00E+00	0,00E+00	3.16E-08	4.11E-07	0,00E+00	-1.07E-07
SQP	-	1,78E+03	3,09E+02	1.22E-02	3,92E+01	0,00E+00	0,00E+00	7,37E+01	1,62E+02	0,00E+00	-6,99E+02

INDICATORS DESCRIBING RESOURCE CONSUMPTION: 1 m3 Concrete LCCIII 904											
	Life Cycle Stage										
Indicator	**Unit**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	3.28E+01	3.34E+01	6.51E-03	1,02E+00	1.59E-01	1,20E+01	1,92E+00	5,76E+01	0,00E+00	-3.01E+00
PERMIAN	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	0,00E+00
PERT	MJ	3.28E+01	3.34E+01	6.51E-03	1,02E+00	1.59E-01	1,20E+01	1,92E+00	5,76E+01	0,00E+00	-3.01E+00
PEN-RE	MJ	5,98E+02	4,55E+02	9.55E-02	6.77E+01	2,93E+01	2.20E+03	1.27E+02	1.76E+03	0,00E+00	-3.70E+02
RE	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	0,00E+00
PENRT	MJ	5,98E+02	4,55E+02	9.55E-02	6.77E+01	2,93E+01	2.20E+03	1.27E+02	1.76E+03	0,00E+00	-3.70E+02
SM	Kg	0,00E+00	0,00E+00	1.56E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6.00E-01	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	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	0,00E+00
FW	m3	4.26E-02	7.11E-01	1.40E-04	1.03E-02	9.45E-04	7.35E-02	1.93E-02	1.15E+00	0,00E+00	-1.41E-02
INDICATORS DESCRIBING OUTPUT STREAMS AND WASTE: 1 m3 Concrete LCCIII 904											
	Life Cycle Stage										
Indicator	**Unit (referenced to DU)**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
Amount of hazardous waste	Kg	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Amount of non-hazardous waste	Kg	HV	HV	3.34E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Amount of radioactive waste	Kg	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Reusable components	Kg	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Recyclable Materials	Kg	HV	HV	1.56E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6.00E-01	0,00E+00	0,00E+00
Energy Recovery Materials	Kg	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ/energy carrier	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Concrete LCCIII 905

MAIN IMPACT INDICATORS: 1 m3 Concrete LCCIII 905											
	Life Cycle Stage										
Indicator	**Unit**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	kg CO2 eq.	9,84E+01	3.23E+01	7.15E-03	4,69E+00	2,32E+00	1.64E+02	8,84E+00	1.32E+02	0,00E+00	-1.48E+01
GWP-fossil	kg CO2 eq.	1,15E+02	3.20E+01	6.82E-03	4,68E+00	2.31E+00	1.64E+02	8,82E+00	1.29E+02	0,00E+00	-1.48E+01
GWP-biogenic	kg CO2 eq.	1.03E+02	2.22E-01	3.19E-04	4.39E-03	6.64E-03	3.98E-02	8.27E-03	2,58E+00	0,00E+00	-8.97E-03
GWP-luluc	kg CO2 eq.	1.19E-02	3.60E-02	6.50E-06	2.27E-03	3.66E-04	1.81E-02	4.28E-03	6.04E-02	0,00E+00	-8.68E-03
A:	kg CFC11 eq.	1.62E-06	6.01E-07	9.92E-12	9.94E-08	3.41E-08	2.54E-06	1.87E-07	1.24E-06	0,00E+00	-4.10E-07
AP	mol H+ eq.	4.12E-01	1.09E-01	3.07E-05	9.98E-03	2.03E-02	1,48E+00	1.88E-02	9.21E-01	0,00E+00	-1.07E-01
EP-freshwater	kg PO4 eq.	1.96E-02	8.42E-03	8.69E-06	3.25E-04	2.32E-04	4.91E-03	6.11E-04	7.20E-02	0,00E+00	-1.18E-03
EP-marine	kg N eq.	4.90E-02	2.72E-02	5.46E-06	2.52E-03	9.26E-03	6.86E-01	4.74E-03	3.56E-01	0,00E+00	-4.09E-02
EP-terrestrial	mol N eq.	1,12E+00	2.76E-01	4.21E-05	2.56E-02	1.00E-01	7.46E+00	4.82E-02	3,74E+00	0,00E+00	-4.38E-01
POCP	kg NMVOC eq.	2.93E-01	1.20E-01	1.18E-05	1.55E-02	2.97E-02	2.21E+00	2.92E-02	1,10E+00	0,00E+00	-1.52E-01
ADP-minerals & metals	kg Sb eq.	1.49E-04	1.07E-04	6.40E-09	1.49E-05	8.66E-07	5.58E-05	2.81E-05	7.67E-05	0,00E+00	-1.96E-05
ADP-fossil	MJ	5,49E+02	4,75E+02	7.08E-02	6,48E+01	2,93E+01	2.09E+03	1.22E+02	1,52E+03	0,00E+00	-3.52E+02
WDP	WDP (m3) world. EKW	2.61E+01	3,50E+00	3.26E-04	2.71E-01	6.78E-02	4.62E+00	5.11E-01	4,72E+00	0,00E+00	-1.56E+01
ADDITIONAL IMPACT INDICATORS: 1 m3 Concrete LCCIII 905											
	Life Cycle Stage										
Indicator	**Unit**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PM	Disease incidency	1.86E-06	2.16E-06	5.79E-11	3.40E-07	0,00E+00	0,00E+00	6.41E-07	1.93E-05	0,00E+00	-2.33E-06
IRP	kBq U235 eq.	1,02E+00	4.24E+00	5.95E-05	8.78E-02	0,00E+00	0,00E+00	1.65E-01	9.29E-01	0,00E+00	-2.23E-01
ETP-fw	CTUe	2.28E-03	8.42E-03	8.69E-06	3.25E-04	0,00E+00	0,00E+00	6.11E-04	7.20E-02	0,00E+00	-1.18E-03
HTP-c	CTUh	1.28E-08	1.21E-08	2.41E-13	1.09E-09	0,00E+00	0,00E+00	2.06E-09	1.42E-08	0,00E+00	-3.34E-09
HTP-nc	CTUh	1.20E-07	1.38E-07	6.28E-12	1.68E-08	0,00E+00	0,00E+00	3.16E-08	4.12E-07	0,00E+00	-1.07E-07
SQP	-	1,79E+03	3,06E+02	1.22E-02	3,92E+01	0,00E+00	0,00E+00	7,38E+01	1,62E+02	0,00E+00	-7.00E+02
INDICATORS DESCRIBING RESOURCE CONSUMPTION: 1 m3 Concrete LCCIII 905											
	Life Cycle Stage										
Indicator	**Unit**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	3,18E+01	3,36E+01	6.51E-03	1,02E+00	1.59E-01	1,20E+01	1,92E+00	5.77E+01	0,00E+00	-3.02E+00
PERMIAN	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	0,00E+00
PERT	MJ	3,18E+01	3,36E+01	6.51E-03	1,02E+00	1.59E-01	1,20E+01	1,92E+00	5.77E+01	0,00E+00	-3.02E+00
PEN-RE	MJ	5.61E+02	4,48E+02	9.55E-02	6.77E+01	2,93E+01	2.20E+03	1,28E+02	1.77E+03	0,00E+00	-3.71E+02
RE	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	0,00E+00
PENRT	MJ	5.61E+02	4,48E+02	9.55E-02	6.77E+01	2,93E+01	2.20E+03	1,28E+02	1.77E+03	0,00E+00	-3.71E+02
SM	Kg	0,00E+00	0,00E+00	1.56E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6.00E-01	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	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	0,00E+00
FW	m3	1.52E-01	7.16E-01	1.40E-04	1.03E-02	9.45E-04	7.35E-02	1.94E-02	1.15E+00	0,00E+00	-1.41E-02

INDICATORS DESCRIBING OUTPUT STREAMS AND WASTE: 1 m3 Concrete LCCIII 905											
	Life Cycle Stage										
Indicator	**Unit (referenced to DU)**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
Amount of hazardous waste	Kg	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Amount of non-hazardous waste	Kg	HV	HV	3.34E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Amount of radioactive waste	Kg	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Reusable components	Kg	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Recyclable Materials	Kg	HV	HV	1.56E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6.00E-01	0,00E+00	0,00E+00
Energy Recovery Materials	Kg	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ/energy carrier	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Concrete LCCIIA 930

KEY IMPACT INDICATORS: 1 m3 Concrete LCCIIA 930											
	Life Cycle Stage										
Indicator	**Unit**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	kg CO2 eq.	8,60E+01	3.04E+01	7.15E-03	4,69E+00	2,32E+00	1.64E+02	9.51E+00	1,42E+02	0,00E+00	-1.59E+01
GWP-fossil	kg CO2 eq.	1,05E+02	3.02E+01	6.82E-03	4,68E+00	2.31E+00	1.64E+02	9,50E+00	1.39E+02	0,00E+00	-1.59E+01
GWP-biogenic	kg CO2 eq.	1,00E+02	1.91E-01	3.19E-04	4.39E-03	6.64E-03	3.98E-02	8.90E-03	2,78E+00	0,00E+00	-9.65E-03
GWP-luluc	kg CO2 eq.	6.21E-03	3.25E-02	6.50E-06	2.27E-03	3.66E-04	1.81E-02	4.61E-03	6.50E-02	0,00E+00	-9.34E-03
A:	kg CFC11 eq.	5.88E-07	5.75E-07	9.92E-12	9.94E-08	3.41E-08	2.54E-06	2.02E-07	1.33E-06	0,00E+00	-4.41E-07
AP	mol H+ eq.	3.45E-01	9.88E-02	3.07E-05	9.98E-03	2.03E-02	1,48E+00	2.02E-02	9.91E-01	0,00E+00	-1.15E-01
EP-freshwater	kg PO4 eq.	1.16E-02	7.43E-03	8.69E-06	3.25E-04	2.32E-04	4.91E-03	6.58E-04	7.74E-02	0,00E+00	-1.27E-03
EP-marine	kg N eq.	3.70E-02	2.45E-02	5.46E-06	2.52E-03	9.26E-03	6.86E-01	5.10E-03	3.84E-01	0,00E+00	-4.40E-02
EP-terrestrial	mol N eq.	1,03E+00	2.48E-01	4.21E-05	2.56E-02	1.00E-01	7.46E+00	5.19E-02	4.02E+00	0,00E+00	-4.72E-01
POCP	kg NMVOC eq.	2.52E-01	1.10E-01	1.18E-05	1.55E-02	2.97E-02	2.21E+00	3.14E-02	1.18E+00	0,00E+00	-1.64E-01
ADP-minerals & metals	kg Sb eq.	5.91E-05	1.06E-04	6.40E-09	1.49E-05	8.66E-07	5.58E-05	3.03E-05	8.26E-05	0,00E+00	-2.11E-05
ADP-fossil	MJ	2,25E+02	4,45E+02	7.08E-02	6,48E+01	2,93E+01	2.09E+03	1.31E+02	1.64E+03	0,00E+00	-3.79E+02
WDP	WDP (m3) world. EKW	2.07E+01	3,15E+00	3.26E-04	2.71E-01	6.78E-02	4.62E+00	5.50E-01	5,08E+00	0,00E+00	-1.68E+01
ADDITIONAL IMPACT INDICATORS: 1 m3 Concrete LCCIIA 930											
	Life Cycle Stage										
Indicator	**Unit**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PM	Disease incidency	1.51E-06	1.95E-06	5.79E-11	3.40E-07	0,00E+00	0,00E+00	6.90E-07	2.07E-05	0,00E+00	-2.51E-06
IRP	kBq U235 eq.	6.09E-01	3,70E+00	5.95E-05	8.78E-02	0,00E+00	0,00E+00	1.78E-01	1,00E+00	0,00E+00	-2.40E-01
ETP-fw	CTUe	5.37E-04	7.43E-03	8.69E-06	3.25E-04	0,00E+00	0,00E+00	6.58E-04	7.74E-02	0,00E+00	-1.27E-03
HTP-c	CTUh	2.16E-09	1.11E-08	2.41E-13	1.09E-09	0,00E+00	0,00E+00	2.21E-09	1.53E-08	0,00E+00	-3.59E-09

HTP-nc	CTUh	4.01E-08	1.28E-07	6.28E-12	1.68E-08	0,00E+00	0,00E+00	3.40E-08	4.43E-07	0,00E+00	-1.15E-07
SQP	-	2,05E+03	2.71E+02	1.22E-02	3,92E+01	0,00E+00	0,00E+00	7,94E+01	1.74E+02	0,00E+00	-7,53E+02
INDICATORS DESCRIBING RESOURCE CONSUMPTION: 1 m3 Concrete LCCIIA 930											
	Life Cycle Stage										
Indicator	**Unit**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	2.09E+01	2,96E+01	6.51E-03	1,02E+00	1.59E-01	1,20E+01	2.07E+00	6.20E+01	0,00E+00	-5,10E+01
PERMIAN	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	0,00E+00
PERT	MJ	2.09E+01	2,96E+01	6.51E-03	1,02E+00	1.59E-01	1,20E+01	2.07E+00	6.20E+01	0,00E+00	-5,10E+01
PEN-RE	MJ	5.31E+02	4.23E+02	9.55E-02	6.77E+01	2,93E+01	2.20E+03	1,37E+02	1,90E+03	0,00E+00	-3.99E+02
RE	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	0,00E+00
PENRT	MJ	5.31E+02	4.23E+02	9.55E-02	6.77E+01	2,93E+01	2.20E+03	1,37E+02	1,90E+03	0,00E+00	-3.99E+02
SM	Kg	0,00E+00	0,00E+00	1.56E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6.00E-01	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	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	0,00E+00
FW	m3	5.55E-01	6.24E-01	1.40E-04	1.03E-02	9.45E-04	7.35E-02	2.08E-02	1,24E+00	0,00E+00	-1.52E-02
INDICATORS DESCRIBING OUTPUT STREAMS AND WASTE: 1 m3 Concrete LCCIIA 930											
	Life Cycle Stage										
Indicator	**Unit (referenced to DU)**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
Amount of hazardous waste	Kg	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Amount of non-hazardous waste	Kg	HV	HV	3.34E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Amount of radioactive waste	Kg	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Reusable components	Kg	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Recyclable Materials	Kg	HV	HV	1.56E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6.00E-01	0,00E+00	0,00E+00
Energy Recovery Materials	Kg	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ/energy carrier	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Concrete LCCIIA 932

MAIN IMPACT INDICATORS: 1 m3 Concrete LCCIIA 932											
	Life Cycle Stage										
Indicator	**Unit**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	kg CO2 eq.	1,65E+02	3,39E+01	7.15E-03	4,69E+00	2,32E+00	1.64E+02	8,69E+00	1.30E+02	0,00E+00	-1.45E+01
GWP-fossil	kg CO2 eq.	2.01E+02	3,36E+01	6.82E-03	4,68E+00	2.31E+00	1.64E+02	8,68E+00	1.27E+02	0,00E+00	-1.45E+01
GWP-biogenic	kg CO2 eq.	1.91E+02	2.10E-01	3.19E-04	4.39E-03	6.64E-03	3.98E-02	8.13E-03	2,54E+00	0,00E+00	-8.82E-03
GWP-luluc	kg CO2 eq.	1.33E-02	3.53E-02	6.50E-06	2.27E-03	3.66E-04	1.81E-02	4.21E-03	5.94E-02	0,00E+00	-8.53E-03
A:	kg CFC11 eq.	1.63E-06	6.41E-07	9.92E-12	9.94E-08	3.41E-08	2.54E-06	1.84E-07	1.22E-06	0,00E+00	-4.03E-07
AP	mol H+ eq.	6.34E-01	1.10E-01	3.07E-05	9.98E-03	2.03E-02	1,48E+00	1.85E-02	9.06E-01	0,00E+00	-1.05E-01
EP-freshwater	kg PO4 eq.	2.29E-02	8.10E-03	8.69E-06	3.25E-04	2.32E-04	4.91E-03	6.01E-04	7.08E-02	0,00E+00	-1.16E-03
EP-marine	kg N eq.	5.30E-02	2.74E-02	5.46E-06	2.52E-03	9.26E-03	6.86E-01	4.66E-03	3.50E-01	0,00E+00	-4.02E-02
EP-terrestrial	mol N eq.	1.76E+00	2.78E-01	4.21E-05	2.56E-02	1.00E-01	7.46E+00	4.74E-02	3,67E+00	0,00E+00	-4.31E-01
POCP	kg NMVOC eq.	4.32E-01	1.24E-01	1.18E-05	1.55E-02	2.97E-02	2.21E+00	2.87E-02	1,08E+00	0,00E+00	-1.50E-01
ADP-minerals & metals	kg Sb eq.	1.39E-04	1.12E-04	6.40E-09	1.49E-05	8.66E-07	5.58E-05	2.76E-05	7.55E-05	0,00E+00	-1.93E-05
ADP-fossil	MJ	5,40E+02	4,95E+02	7.08E-02	6,48E+01	2,93E+01	2.09E+03	1.20E+02	1,50E+03	0,00E+00	-3.47E+02
WDP	WDP (m3) world. EKW	2.67E+01	3,48E+00	3.26E-04	2.71E-01	6.78E-02	4.62E+00	5.02E-01	4.64E+00	0,00E+00	-1.53E+01
ADDITIONAL IMPACT INDICATORS: 1 m3 Concrete LCCIIA 932											
	Life Cycle Stage										
Indicator	**Unit**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PM	Disease incidency	1.80E-06	2.29E-06	5.79E-11	3.40E-07	0,00E+00	0,00E+00	6.30E-07	1.89E-05	0,00E+00	-2.29E-06
IRP	kBq U235 eq.	8.92E-01	4.01E+00	5.95E-05	8.78E-02	0,00E+00	0,00E+00	1.63E-01	9.14E-01	0,00E+00	-2.20E-01
ETP-fw	CTUe	1.81E-03	8.10E-03	8.69E-06	3.25E-04	0,00E+00	0,00E+00	6.01E-04	7.08E-02	0,00E+00	-1.16E-03
HTP-c	CTUh	9.93E-09	1.22E-08	2.41E-13	1.09E-09	0,00E+00	0,00E+00	2.02E-09	1.40E-08	0,00E+00	-3.28E-09
HTP-nc	CTUh	9.89E-08	1.42E-07	6.28E-12	1.68E-08	0,00E+00	0,00E+00	3.11E-08	4.05E-07	0,00E+00	-1.05E-07
SQP	-	1.94E+03	3.16E+02	1.22E-02	3,92E+01	0,00E+00	0,00E+00	7.25E+01	1,59E+02	0,00E+00	-6.88E+02
INDICATORS DESCRIBING RESOURCE CONSUMPTION: 1 m3 Concrete LCCIIA 932											
	Life Cycle Stage										
Indicator	**Unit**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	3,40E+01	3.21E+01	6.51E-03	1,02E+00	1.59E-01	1,20E+01	1,89E+00	5,67E+01	0,00E+00	-2.97E+00
PERMIAN	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	0,00E+00
PERT	MJ	3,40E+01	3.21E+01	6.51E-03	1,02E+00	1.59E-01	1,20E+01	1,89E+00	5,67E+01	0,00E+00	-2.97E+00
PEN-RE	MJ	5,49E+02	4.73E+02	9.55E-02	6.77E+01	2,93E+01	2.20E+03	1,25E+02	1,74E+03	0,00E+00	-3.65E+02
RE	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	0,00E+00
PENRT	MJ	5,49E+02	4.73E+02	9.55E-02	6.77E+01	2,93E+01	2.20E+03	1,25E+02	1,74E+03	0,00E+00	-3.65E+02
SM	Kg	0,00E+00	0,00E+00	1.56E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6.00E-01	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	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	0,00E+00
FW	m3	1.91E-01	6.74E-01	1.40E-04	1.03E-02	9.45E-04	7.35E-02	1.90E-02	1,13E+00	0,00E+00	-1.39E-02

INDICATORS DESCRIBING OUTPUT STREAMS AND WASTE: 1 m3 Concrete LCCIIA 932											
	Life Cycle Stage										
Indicator	**Unit (referenced to DU)**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
Amount of hazardous waste	Kg	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Amount of non-hazardous waste	Kg	HV	HV	3.34E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Amount of radioactive waste	Kg	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Reusable components	Kg	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Recyclable Materials	Kg	HV	HV	1.56E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6.00E-01	0,00E+00	0,00E+00
Energy Recovery Materials	Kg	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ/energy carrier	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Concrete LCCII A 933

MAIN IMPACT INDICATORS: 1 m3 Concrete LCCIIA 933											
	Life Cycle Stage										
Indicator	**Unit**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	kg CO2 eq.	1,84E+02	3.64E+01	7.15E-03	4,69E+00	2,32E+00	1.64E+02	8,82E+00	1.32E+02	0,00E+00	-1.47E+01
GWP-fossil	kg CO2 eq.	2.26E+02	3,62E+01	6.82E-03	4,68E+00	2.31E+00	1.64E+02	8.81E+00	1.29E+02	0,00E+00	-1.47E+01
GWP-biogenic	kg CO2 eq.	2.16E+02	2.17E-01	3.19E-04	4.39E-03	6.64E-03	3.98E-02	8.25E-03	2.57E+00	0,00E+00	-8.95E-03
GWP-luluc	kg CO2 eq.	1.42E-02	3.71E-02	6.50E-06	2.27E-03	3.66E-04	1.81E-02	4.27E-03	6.03E-02	0,00E+00	-8.66E-03
A:	kg CFC11 eq.	1.73E-06	6.93E-07	9.92E-12	9.94E-08	3.41E-08	2.54E-06	1.87E-07	1.23E-06	0,00E+00	-4.09E-07
AP	mol H+ eq.	7.03E-01	1.16E-01	3.07E-05	9.98E-03	2.03E-02	1,48E+00	1.88E-02	9.19E-01	0,00E+00	-1.06E-01
EP-freshwater	kg PO4 eq.	2.56E-02	8.44E-03	8.69E-06	3.25E-04	2.32E-04	4.91E-03	6.10E-04	7.18E-02	0,00E+00	-1.18E-03
EP-marine	kg N eq.	5.47E-02	2.90E-02	5.46E-06	2.52E-03	9.26E-03	6.86E-01	4.73E-03	3.56E-01	0,00E+00	-4.08E-02
EP-terrestrial	mol N eq.	1,93E+00	2.95E-01	4.21E-05	2.56E-02	1.00E-01	7.46E+00	4.81E-02	3,73E+00	0,00E+00	-4.38E-01
POCP	kg NMVOC eq.	4.70E-01	1.33E-01	1.18E-05	1.55E-02	2.97E-02	2.21E+00	2.91E-02	1,10E+00	0,00E+00	-1.52E-01
ADP-minerals & metals	kg Sb eq.	1.47E-04	1.20E-04	6.40E-09	1.49E-05	8.66E-07	5.58E-05	2.81E-05	7.66E-05	0,00E+00	-1.96E-05
ADP-fossil	MJ	5.64E+02	5.31E+02	7.08E-02	6,48E+01	2,93E+01	2.09E+03	1.22E+02	1,52E+03	0,00E+00	-3.52E+02
WDP	WDP (m3) world. EKW	2,82E+01	3,67E+00	3.26E-04	2.71E-01	6.78E-02	4.62E+00	5.10E-01	4.71E+00	0,00E+00	-1.56E+01
ADDITIONAL IMPACT INDICATORS: 1 m3 Concrete LCCIIA 933											
	Life Cycle Stage										
Indicator	**Unit**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PM	Disease incidency	1.71E-06	2.47E-06	5.79E-11	3.40E-07	0,00E+00	0,00E+00	6.40E-07	1.92E-05	0,00E+00	-2.33E-06
IRP	kBq U235 eq.	9.01E-01	4,15E+00	5.95E-05	8.78E-02	0,00E+00	0,00E+00	1.65E-01	9.28E-01	0,00E+00	-2.23E-01
ETP-fw	CTUe	1.77E-03	8.44E-03	8.69E-06	3.25E-04	0,00E+00	0,00E+00	6.10E-04	7.18E-02	0,00E+00	-1.18E-03

HTP-c	CTUh	9.66E-09	1.29E-08	2.41E-13	1.09E-09	0,00E+00	0,00E+00	2.05E-09	1.42E-08	0,00E+00	-3.33E-09
HTP-nc	CTUh	9.58E-08	1.52E-07	6.28E-12	1.68E-08	0,00E+00	0,00E+00	3.16E-08	4.11E-07	0,00E+00	-1.07E-07
SQP	-	1.77E+03	3,39E+02	1.22E-02	3,92E+01	0,00E+00	0,00E+00	7,36E+01	1,62E+02	0,00E+00	-6.98E+02
INDICATORS DESCRIBING RESOURCE CONSUMPTION: 1 m Beton3 LCCIIA 933											
	Life Cycle Stage										
Indicator	**Unit**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	2,29E+01	3,33E+01	6.51E-03	1,02E+00	1.59E-01	1,20E+01	1,92E+00	5,75E+01	0,00E+00	-3.01E+00
PERMIAN	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	0,00E+00
PERT	MJ	2,29E+01	3,33E+01	6.51E-03	1,02E+00	1.59E-01	1,20E+01	1,92E+00	5,75E+01	0,00E+00	-3.01E+00
PEN-RE	MJ	5.73E+02	5.09E+02	9.55E-02	6.77E+01	2,93E+01	2.20E+03	1.27E+02	1.76E+03	0,00E+00	-3.70E+02
RE	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	0,00E+00
PENRT	MJ	5.73E+02	5.09E+02	9.55E-02	6.77E+01	2,93E+01	2.20E+03	1.27E+02	1.76E+03	0,00E+00	-3.70E+02
SM	Kg	0,00E+00	0,00E+00	1.56E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6.00E-01	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	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	0,00E+00
FW	m3	2.12E-01	6.96E-01	1.40E-04	1.03E-02	9.45E-04	7.35E-02	1.93E-02	1.15E+00	0,00E+00	-1.41E-02
INDICATORS DESCRIBING OUTPUT STREAMS AND WASTE: 1 m3 Concrete LCCIIA 933											
	Life Cycle Stage										
Indicator	**Unit (referenced to DU)**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
Amount of hazardous waste	Kg	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Amount of non-hazardous waste	Kg	HV	HV	3.34E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Amount of radioactive waste	Kg	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Reusable components	Kg	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Recyclable Materials	Kg	HV	HV	1.56E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6.00E-01	0,00E+00	0,00E+00
Energy Recovery Materials	Kg	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ/energy carrier	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Concrete LCCII A 934

MAIN IMPACT INDICATORS: 1 m3 Concrete LCCIIA 934											
	Life Cycle Stage										
Indicator	**Unit**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	kg CO2 eq.	2.15E+02	3,97E+01	7.15E-03	4,69E+00	2,32E+00	1.64E+02	8,78E+00	1.31E+02	0,00E+00	-1.47E+01
GWP-fossil	kg CO2 eq.	2.63E+02	3,94E+01	6.82E-03	4,68E+00	2.31E+00	1.64E+02	8.77E+00	1,28E+02	0,00E+00	-1.47E+01
GWP-biogenic	kg CO2 eq.	2,51E+02	2.20E-01	3.19E-04	4.39E-03	6.64E-03	3.98E-02	8.22E-03	2,56E+00	0,00E+00	-8.91E-03
GWP-luluc	kg CO2 eq.	1.73E-02	3.87E-02	6.50E-06	2.27E-03	3.66E-04	1.81E-02	4.25E-03	6.00E-02	0,00E+00	-8.62E-03
A:	kg CFC11 eq.	2.21E-06	7.63E-07	9.92E-12	9.94E-08	3.41E-08	2.54E-06	1.86E-07	1.23E-06	0,00E+00	-4.07E-07
AP	mol H+ eq.	8.14E-01	1.23E-01	3.07E-05	9.98E-03	2.03E-02	1,48E+00	1.87E-02	9.15E-01	0,00E+00	-1.06E-01
EP-freshwater	kg PO4 eq.	3.01E-02	8.67E-03	8.69E-06	3.25E-04	2.32E-04	4.91E-03	6.07E-04	7.15E-02	0,00E+00	-1.17E-03
EP-marine	kg N eq.	6.04E-02	3.08E-02	5.46E-06	2.52E-03	9.26E-03	6.86E-01	4.71E-03	3.54E-01	0,00E+00	-4.07E-02
EP-terrestrial	mol N eq.	2.21E+00	3.13E-01	4.21E-05	2.56E-02	1.00E-01	7.46E+00	4.79E-02	3.71E+00	0,00E+00	-4.36E-01
POCP	kg NMVOC eq.	5.38E-01	1.44E-01	1.18E-05	1.55E-02	2.97E-02	2.21E+00	2.90E-02	1,09E+00	0,00E+00	-1.52E-01
ADP-minerals & metals	kg Sb eq.	1.84E-04	1.31E-04	6.40E-09	1.49E-05	8.66E-07	5.58E-05	2.79E-05	7.62E-05	0,00E+00	-1.95E-05
ADP-fossil	MJ	7,08E+02	5,77E+02	7.08E-02	6,48E+01	2,93E+01	2.09E+03	1.21E+02	1.51E+03	0,00E+00	-3.50E+02
WDP	WDP (m3) world. EKW	3.08E+01	3,86E+00	3.26E-04	2.71E-01	6.78E-02	4.62E+00	5.07E-01	4,69E+00	0,00E+00	-1.55E+01
ADDITIONAL IMPACT INDICATORS: 1 m3 Concrete LCCIIA 934											
	Life Cycle Stage										
Indicator	**Unit**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PM	Disease incidency	1.79E-06	2.71E-06	5.79E-11	3.40E-07	0,00E+00	0,00E+00	6.37E-07	1.91E-05	0,00E+00	-2.32E-06
IRP	kBq U235 eq.	1,03E+00	4.22E+00	5.95E-05	8.78E-02	0,00E+00	0,00E+00	1.64E-01	9.24E-01	0,00E+00	-2.22E-01
ETP-fw	CTUe	2.43E-03	8.67E-03	8.69E-06	3.25E-04	0,00E+00	0,00E+00	6.07E-04	7.15E-02	0,00E+00	-1.17E-03
HTP-c	CTUh	1.37E-08	1.37E-08	2.41E-13	1.09E-09	0,00E+00	0,00E+00	2.04E-09	1.41E-08	0,00E+00	-3.32E-09
HTP-nc	CTUh	1.25E-07	1.64E-07	6.28E-12	1.68E-08	0,00E+00	0,00E+00	3.14E-08	4.09E-07	0,00E+00	-1.06E-07
SQP	-	1,60E+03	3.66E+02	1.22E-02	3,92E+01	0,00E+00	0,00E+00	7,33E+01	1,61E+02	0,00E+00	-6,95E+02
INDICATORS DESCRIBING RESOURCE CONSUMPTION: 1 m3 Concrete LCCIIA 934											
	Life Cycle Stage										
Indicator	**Unit**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	4.19E+01	3,40E+01	6.51E-03	1,02E+00	1.59E-01	1,20E+01	1.91E+00	5,73E+01	0,00E+00	-3,00E+00
PERMIAN	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	0,00E+00
PERT	MJ	4.19E+01	3,40E+01	6.51E-03	1,02E+00	1.59E-01	1,20E+01	1.91E+00	5,73E+01	0,00E+00	-3,00E+00
PEN-RE	MJ	7.24E+02	5.57E+02	9.55E-02	6.77E+01	2,93E+01	2.20E+03	1.27E+02	1,75E+03	0,00E+00	-3.68E+02
RE	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	0,00E+00
PENRT	MJ	7.24E+02	5.57E+02	9.55E-02	6.77E+01	2,93E+01	2.20E+03	1.27E+02	1,75E+03	0,00E+00	-3.68E+02
SM	Kg	0,00E+00	0,00E+00	1.56E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6.00E-01	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	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	0,00E+00
FW	m3	2.52E-01	7.04E-01	1.40E-04	1.03E-02	9.45E-04	7.35E-02	1.92E-02	1,14E+00	0,00E+00	-1.40E-02

INDICATORS DESCRIBING OUTPUT STREAMS AND WASTE: 1 m3 Concrete LCCIIA 934											
	Life Cycle Stage										
Indicator	**Unit (referenced to DU)**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
Amount of hazardous waste	Kg	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Amount of non-hazardous waste	Kg	HV	HV	3.34E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Amount of radioactive waste	Kg	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Reusable components	Kg	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Recyclable Materials	Kg	HV	HV	1.56E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6.00E-01	0,00E+00	0,00E+00
Energy Recovery Materials	Kg	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ/energy carrier	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Concrete LCCII A 935

MAIN IMPACT INDICATORS: 1 m3 Concrete LCCIIA 935											
	Life Cycle Stage										
Indicator	**Unit**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	kg CO2 eq.	2,27E+02	4.09E+01	7.15E-03	4,69E+00	2,32E+00	1.64E+02	8.79E+00	1.31E+02	0,00E+00	-1.47E+01
GWP-fossil	kg CO2 eq.	2.77E+02	4.06E+01	6.82E-03	4,68E+00	2.31E+00	1.64E+02	8,78E+00	1.29E+02	0,00E+00	-1.47E+01
GWP-biogenic	kg CO2 eq.	2,60E+02	2.24E-01	3.19E-04	4.39E-03	6.64E-03	3.98E-02	8.23E-03	2.57E+00	0,00E+00	-8.93E-03
GWP-luluc	kg CO2 eq.	1.98E-02	3.95E-02	6.50E-06	2.27E-03	3.66E-04	1.81E-02	4.26E-03	6.01E-02	0,00E+00	-8.63E-03
A:	kg CFC11 eq.	2.66E-06	7.86E-07	9.92E-12	9.94E-08	3.41E-08	2.54E-06	1.86E-07	1.23E-06	0,00E+00	-4.08E-07
AP	mol H+ eq.	8.61E-01	1.26E-01	3.07E-05	9.98E-03	2.03E-02	1,48E+00	1.87E-02	9.17E-01	0,00E+00	-1.06E-01
EP-freshwater	kg PO4 eq.	3.20E-02	8.83E-03	8.69E-06	3.25E-04	2.32E-04	4.91E-03	6.08E-04	7.16E-02	0,00E+00	-1.17E-03
EP-marine	kg N eq.	6.47E-02	3.15E-02	5.46E-06	2.52E-03	9.26E-03	6.86E-01	4.72E-03	3.55E-01	0,00E+00	-4.07E-02
EP-terrestrial	mol N eq.	2.31E+00	3.20E-01	4.21E-05	2.56E-02	1.00E-01	7.46E+00	4.80E-02	3,72E+00	0,00E+00	-4.36E-01
POCP	kg NMVOC eq.	5.70E-01	1.48E-01	1.18E-05	1.55E-02	2.97E-02	2.21E+00	2.90E-02	1,10E+00	0,00E+00	-1.52E-01
ADP-minerals & metals	kg Sb eq.	2.18E-04	1.35E-04	6.40E-09	1.49E-05	8.66E-07	5.58E-05	2.80E-05	7.64E-05	0,00E+00	-1.95E-05
ADP-fossil	MJ	8.52E+02	5.93E+02	7.08E-02	6,48E+01	2,93E+01	2.09E+03	1.22E+02	1.51E+03	0,00E+00	-3.51E+02
WDP	WDP (m3) world. EKW	3.43E+01	3,95E+00	3.26E-04	2.71E-01	6.78E-02	4.62E+00	5.08E-01	4,70E+00	0,00E+00	-1.55E+01
ADDITIONAL IMPACT INDICATORS: 1 m3 Concrete LCCIIA 935											
	Life Cycle Stage										
Indicator	**Unit**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PM	Disease incidency	1.98E-06	2.78E-06	5.79E-11	3.40E-07	0,00E+00	0,00E+00	6.38E-07	1.92E-05	0,00E+00	-2.32E-06
IRP	kBq U235 eq.	1,19E+00	4,29E+00	5.95E-05	8.78E-02	0,00E+00	0,00E+00	1.65E-01	9.25E-01	0,00E+00	-2.22E-01
ETP-fw	CTUe	3.29E-03	8.83E-03	8.69E-06	3.25E-04	0,00E+00	0,00E+00	6.08E-04	7.16E-02	0,00E+00	-1.17E-03
HTP-c	CTUh	1.90E-08	1.40E-08	2.41E-13	1.09E-09	0,00E+00	0,00E+00	2.05E-09	1.41E-08	0,00E+00	-3.32E-09

HTP-nc	CTUh	1.65E-07	1.68E-07	6.28E-12	1.68E-08	0,00E+00	0,00E+00	3.15E-08	4.10E-07	0,00E+00	-1.07E-07
SQP	-	1,56E+03	3,76E+02	1.22E-02	3,92E+01	0,00E+00	0,00E+00	7,34E+01	1,61E+02	0,00E+00	-6.96E+02
INDICATORS DESCRIBING RESOURCE CONSUMPTION: 1 m3 Concrete LCCIIA 935											
	Life Cycle Stage										
Indicator	**Unit**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	4,50E+01	3.46E+01	6.51E-03	1,02E+00	1.59E-01	1,20E+01	1.91E+00	5,74E+01	0,00E+00	-3,00E+00
PERMIAN	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	0,00E+00
PERT	MJ	4,50E+01	3.46E+01	6.51E-03	1,02E+00	1.59E-01	1,20E+01	1.91E+00	5,74E+01	0,00E+00	-3,00E+00
PEN-RE	MJ	8,75E+02	5.73E+02	9.55E-02	6.77E+01	2,93E+01	2.20E+03	1.27E+02	1.76E+03	0,00E+00	-3.69E+02
RE	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	0,00E+00
PENRT	MJ	8,75E+02	5.73E+02	9.55E-02	6.77E+01	2,93E+01	2.20E+03	1.27E+02	1.76E+03	0,00E+00	-3.69E+02
SM	Kg	0,00E+00	0,00E+00	1.56E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6.00E-01	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	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	0,00E+00
FW	m3	2.74E-01	7.15E-01	1.40E-04	1.03E-02	9.45E-04	7.35E-02	1.93E-02	1.15E+00	0,00E+00	-1.40E-02
INDICATORS DESCRIBING OUTPUT STREAMS AND WASTE: 1 m3 Concrete LCCIIA 935											
	Life Cycle Stage										
Indicator	**Unit (referenced to DU)**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
Amount of hazardous waste	Kg	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Amount of non-hazardous waste	Kg	HV	HV	3.34E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Amount of radioactive waste	Kg	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Reusable components	Kg	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Recyclable Materials	Kg	HV	HV	1.56E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6.00E-01	0,00E+00	0,00E+00
Energy Recovery Materials	Kg	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ/energy carrier	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Concrete LCCII A 936

MAIN IMPACT INDICATORS: 1 m3 Concrete LCCIIA 936											
	Life Cycle Stage										
Indicator	**Unit**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	kg CO2 eq.	2,18E+02	3,36E+01	7.15E-03	4,69E+00	2,32E+00	1.64E+02	8.79E+00	1.31E+02	0,00E+00	-1.47E+01
GWP-fossil	kg CO2 eq.	2,68E+02	3.34E+01	6.82E-03	4,68E+00	2.31E+00	1.64E+02	8,78E+00	1.29E+02	0,00E+00	-1.47E+01
GWP-biogenic	kg CO2 eq.	2,60E+02	1.05E-01	3.19E-04	4.39E-03	6.64E-03	3.98E-02	8.23E-03	2.57E+00	0,00E+00	-8.92E-03
GWP-luluc	kg CO2 eq.	1.58E-02	2.41E-02	6.50E-06	2.27E-03	3.66E-04	1.81E-02	4.26E-03	6.01E-02	0,00E+00	-8.63E-03
A:	kg CFC11 eq.	1.94E-06	6.80E-07	9.92E-12	9.94E-08	3.41E-08	2.54E-06	1.86E-07	1.23E-06	0,00E+00	-4.07E-07
AP	mol H+ eq.	8.18E-01	8.70E-02	3.07E-05	9.98E-03	2.03E-02	1,48E+00	1.87E-02	9.16E-01	0,00E+00	-1.06E-01
EP-freshwater	kg PO4 eq.	3.04E-02	4.71E-03	8.69E-06	3.25E-04	2.32E-04	4.91E-03	6.08E-04	7.16E-02	0,00E+00	-1.17E-03
EP-marine	kg N eq.	5.58E-02	2.18E-02	5.46E-06	2.52E-03	9.26E-03	6.86E-01	4.72E-03	3.55E-01	0,00E+00	-4.07E-02
EP-terrestrial	mol N eq.	2.21E+00	2.22E-01	4.21E-05	2.56E-02	1.00E-01	7.46E+00	4.79E-02	3,72E+00	0,00E+00	-4.36E-01
POCP	kg NMVOC eq.	5.31E-01	1.16E-01	1.18E-05	1.55E-02	2.97E-02	2.21E+00	2.90E-02	1,10E+00	0,00E+00	-1.52E-01
ADP-minerals & metals	kg Sb eq.	1.53E-04	1.09E-04	6.40E-09	1.49E-05	8.66E-07	5.58E-05	2.80E-05	7.63E-05	0,00E+00	-1.95E-05
ADP-fossil	MJ	6.11E+02	4,75E+02	7.08E-02	6,48E+01	2,93E+01	2.09E+03	1.22E+02	1.51E+03	0,00E+00	-3.51E+02
WDP	WDP (m3) world. EKW	5.27E+01	2.57E+00	3.26E-04	2.71E-01	6.78E-02	4.62E+00	5.08E-01	4,70E+00	0,00E+00	-1.55E+01
ADDITIONAL IMPACT INDICATORS: 1 m3 Concrete LCCIIA 936											
	Life Cycle Stage										
Indicator	**Unit**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PM	Disease incidency	1.41E-06	2.37E-06	5.79E-11	3.40E-07	0,00E+00	0,00E+00	6.38E-07	1.92E-05	0,00E+00	-2.32E-06
IRP	kBq U235 eq.	6.09E-01	2,03E+00	5.95E-05	8.78E-02	0,00E+00	0,00E+00	1.64E-01	9.25E-01	0,00E+00	-2.22E-01
ETP-fw	CTUe	1.72E-03	4.71E-03	8.69E-06	3.25E-04	0,00E+00	0,00E+00	6.08E-04	7.16E-02	0,00E+00	-1.17E-03
HTP-c	CTUh	9.36E-09	9.60E-09	2.41E-13	1.09E-09	0,00E+00	0,00E+00	2.05E-09	1.41E-08	0,00E+00	-3.32E-09
HTP-nc	CTUh	8.68E-08	1.29E-07	6.28E-12	1.68E-08	0,00E+00	0,00E+00	3.15E-08	4.10E-07	0,00E+00	-1.07E-07
SQP	-	1,70E+03	2,94E+02	1.22E-02	3,92E+01	0,00E+00	0,00E+00	7,34E+01	1,61E+02	0,00E+00	-6.96E+02
INDICATORS DESCRIBING RESOURCE CONSUMPTION: 1 m3 Concrete LCCIIA 936											
	Life Cycle Stage										
Indicator	**Unit**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	3,50E+01	1,75E+01	6.51E-03	1,02E+00	1.59E-01	1,20E+01	1.91E+00	5,73E+01	0,00E+00	-3,00E+00
PERMIAN	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	0,00E+00
PERT	MJ	3,50E+01	1,75E+01	6.51E-03	1,02E+00	1.59E-01	1,20E+01	1.91E+00	5,73E+01	0,00E+00	-3,00E+00
PEN-RE	MJ	6,24E+02	4,78E+02	9.55E-02	6.77E+01	2,93E+01	2.20E+03	1.27E+02	1.76E+03	0,00E+00	-3.69E+02
RE	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	0,00E+00
PENRT	MJ	6,24E+02	4,78E+02	9.55E-02	6.77E+01	2,93E+01	2.20E+03	1.27E+02	1.76E+03	0,00E+00	-3.69E+02
SM	Kg	0,00E+00	0,00E+00	1.56E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6.00E-01	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	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	0,00E+00
FW	m3	2.59E-01	3.22E-01	1.40E-04	1.03E-02	9.45E-04	7.35E-02	1.93E-02	1.15E+00	0,00E+00	-1.40E-02

INDICATORS DESCRIBING OUTPUT STREAMS AND WASTE: 1 m3 Concrete LCCIIA 936											
	Life Cycle Stage										
Indicator	**Unit (referenced to DU)**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
Amount of hazardous waste	Kg	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Amount of non-hazardous waste	Kg	HV	HV	3.34E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Amount of radioactive waste	Kg	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Reusable components	Kg	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Recyclable Materials	Kg	HV	HV	1.56E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6.00E-01	0,00E+00	0,00E+00
Energy Recovery Materials	Kg	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ/energy carrier	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Concrete LCCII B 990

KEY IMPACT INDICATORS: 1 m3 Concrete LCCIIB 990											
	Life Cycle Stage										
Indicator	**Unit**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	kg CO2 eq.	7,69E+01	2,55E+01	7.15E-03	4,69E+00	2,32E+00	1.64E+02	8,43E+00	1,26E+02	0,00E+00	-1.41E+01
GWP-fossil	kg CO2 eq.	9,35E+01	2,53E+01	6.82E-03	4,68E+00	2.31E+00	1.64E+02	8,42E+00	1.23E+02	0,00E+00	-1.41E+01
GWP-biogenic	kg CO2 eq.	8,85E+01	1.86E-01	3.19E-04	4.39E-03	6.64E-03	3.98E-02	7.89E-03	2.46E+00	0,00E+00	-8.56E-03
GWP-luluc	kg CO2 eq.	6.00E-03	2.95E-02	6.50E-06	2.27E-03	3.66E-04	1.81E-02	4.08E-03	5.76E-02	0,00E+00	-8.28E-03
A:	kg CFC11 eq.	6.08E-07	4.71E-07	9.92E-12	9.94E-08	3.41E-08	2.54E-06	1.79E-07	1.18E-06	0,00E+00	-3.91E-07
AP	mol H+ eq.	3.16E-01	8.85E-02	3.07E-05	9.98E-03	2.03E-02	1,48E+00	1.79E-02	8.79E-01	0,00E+00	-1.02E-01
EP-freshwater	kg PO4 eq.	1.12E-02	7.00E-03	8.69E-06	3.25E-04	2.32E-04	4.91E-03	5.83E-04	6.86E-02	0,00E+00	-1.12E-03
EP-marine	kg N eq.	3.75E-02	2.21E-02	5.46E-06	2.52E-03	9.26E-03	6.86E-01	4.52E-03	3.40E-01	0,00E+00	-3.90E-02
EP-terrestrial	mol N eq.	9.49E-01	2.24E-01	4.21E-05	2.56E-02	1.00E-01	7.46E+00	4.60E-02	3,56E+00	0,00E+00	-4.18E-01
POCP	kg NMVOC eq.	2.36E-01	9.55E-02	1.18E-05	1.55E-02	2.97E-02	2.21E+00	2.78E-02	1,05E+00	0,00E+00	-1.45E-01
ADP-minerals & metals	kg Sb eq.	5.78E-05	8.49E-05	6.40E-09	1.49E-05	8.66E-07	5.58E-05	2.68E-05	7.32E-05	0,00E+00	-1.87E-05
ADP-fossil	MJ	2,27E+02	3,77E+02	7.08E-02	6,48E+01	2,93E+01	2.09E+03	1.17E+02	1,45E+03	0,00E+00	-3.36E+02
WDP	WDP (m3) world. EKW	2.09E+01	2.86E+00	3.26E-04	2.71E-01	6.78E-02	4.62E+00	4.87E-01	4,50E+00	0,00E+00	-1.49E+01
ADDITIONAL IMPACT INDICATORS: 1 m3 Concrete LCCIIB 990											
	Life Cycle Stage										
Indicator	**Unit**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PM	Disease incidency	1.54E-06	1.70E-06	5.79E-11	3.40E-07	0,00E+00	0,00E+00	6.11E-07	1.84E-05	0,00E+00	-2.23E-06
IRP	kBq U235 eq.	6.08E-01	3,55E+00	5.95E-05	8.78E-02	0,00E+00	0,00E+00	1.58E-01	8.87E-01	0,00E+00	-2.13E-01
ETP-fw	CTUe	5.42E-04	7.00E-03	8.69E-06	3.25E-04	0,00E+00	0,00E+00	5.83E-04	6.86E-02	0,00E+00	-1.12E-03
HTP-c	CTUh	2.18E-09	9.86E-09	2.41E-13	1.09E-09	0,00E+00	0,00E+00	1.96E-09	1.35E-08	0,00E+00	-3.18E-09

HTP-nc	CTUh	4.07E-08	1.10E-07	6.28E-12	1.68E-08	0,00E+00	0,00E+00	3.02E-08	3.93E-07	0,00E+00	-1.02E-07
SQP	-	2.12E+03	2,44E+02	1.22E-02	3,92E+01	0,00E+00	0,00E+00	7.04E+01	1,54E+02	0,00E+00	-6.67E+02
INDICATORS DESCRIBING RESOURCE CONSUMPTION: 1 m3 Concrete LCCIIB 990											
	Life Cycle Stage										
Indicator	**Unit**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	2.05E+01	2,80E+01	6.51E-03	1,02E+00	1.59E-01	1,20E+01	1,83E+00	5,50E+01	0,00E+00	-2.88E+00
PERMIAN	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	0,00E+00
PERT	MJ	2.05E+01	2,80E+01	6.51E-03	1,02E+00	1.59E-01	1,20E+01	1,83E+00	5,50E+01	0,00E+00	-2.88E+00
PEN-RE	MJ	2.23E+02	3,54E+02	9.55E-02	6.77E+01	2,93E+01	2.20E+03	1.22E+02	1,68E+03	0,00E+00	-3.54E+02
RE	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	0,00E+00
PENRT	MJ	2.23E+02	3,54E+02	9.55E-02	6.77E+01	2,93E+01	2.20E+03	1.22E+02	1,68E+03	0,00E+00	-3.54E+02
SM	Kg	0,00E+00	0,00E+00	1.56E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6.00E-01	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	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	0,00E+00
FW	m3	9.33E-02	6.01E-01	1.40E-04	1.03E-02	9.45E-04	7.35E-02	1.85E-02	1,10E+00	0,00E+00	-1.34E-02
INDICATORS DESCRIBING OUTPUT STREAMS AND WASTE: 1 m3 Concrete LCCIIB 990											
	Life Cycle Stage										
Indicator	**Unit (referenced to DU)**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
Amount of hazardous waste	Kg	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Amount of non-hazardous waste	Kg	HV	HV	3.34E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Amount of radioactive waste	Kg	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Reusable components	Kg	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Recyclable Materials	Kg	HV	HV	1.56E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6.00E-01	0,00E+00	0,00E+00
Energy Recovery Materials	Kg	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ/energy carrier	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Concrete LCCII B 903

IMPACT INDICATORS: 1 m3 Concrete LCCIIB 903											
	Life Cycle Stage										
Indicator	**Unit**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	kg CO2 eq.	1,41E+02	3,50E+01	1,04E+00	4.42E+00	2,32E+00	1.64E+02	8.81E+00	1.31E+02	0,00E+00	-1.47E+01
GWP-fossil	kg CO2 eq.	1.71E+02	3.48E+01	1,04E+00	4.41E+00	2.31E+00	1.64E+02	8.79E+00	1.29E+02	0,00E+00	-1.47E+01
GWP-biogenic	kg CO2 eq.	1,59E+02	2.17E-01	8.40E-04	4.13E-03	6.64E-03	3.98E-02	8.24E-03	2.57E+00	0,00E+00	-8.94E-03
GWP-luluc	kg CO2 eq.	1.32E-02	3.66E-02	1.08E-04	2.14E-03	3.66E-04	1.81E-02	4.26E-03	6.02E-02	0,00E+00	-8.65E-03
A:	kg CFC11 eq.	1.76E-06	6.63E-07	2.12E-08	9.36E-08	3.41E-08	2.54E-06	1.87E-07	1.23E-06	0,00E+00	-4.08E-07
AP	mol H+ eq.	5.54E-01	1.14E-01	1.93E-03	9.40E-03	2.03E-02	1,48E+00	1.87E-02	9.18E-01	0,00E+00	-1.06E-01
EP-freshwater	kg PO4 eq.	2.13E-02	8.40E-03	3.13E-05	3.05E-04	2.32E-04	4.91E-03	6.09E-04	7.17E-02	0,00E+00	-1.17E-03
EP-marine	kg N eq.	5.18E-02	2.84E-02	3.26E-04	2.37E-03	9.26E-03	6.86E-01	4.73E-03	3.55E-01	0,00E+00	-4.08E-02
EP-terrestrial	mol N eq.	1,53E+00	2.88E-01	3.12E-03	2.41E-02	1.00E-01	7.46E+00	4.80E-02	3,72E+00	0,00E+00	-4.37E-01
POCP	kg NMVOC eq.	3.84E-01	1.28E-01	2.33E-03	1.46E-02	2.97E-02	2.21E+00	2.91E-02	1,10E+00	0,00E+00	-1.52E-01
ADP-minerals & metals	kg Sb eq.	1.45E-04	1.16E-04	6.84E-07	1.40E-05	8.66E-07	5.58E-05	2.80E-05	7.65E-05	0,00E+00	-1.96E-05
ADP-fossil	MJ	5.72E+02	5.12E+02	1,32E+01	6.10E+01	2,93E+01	2.09E+03	1.22E+02	1,52E+03	0,00E+00	-3.51E+02
WDP	WDP (m3) world. EKW	2,69E+01	3.61E+00	1.11E-02	2.55E-01	6.78E-02	4.62E+00	5.09E-01	4,70E+00	0,00E+00	-1.55E+01
ADDITIONAL IMPACT INDICATORS: 1 m3 LCCIIB 903 Concrete											
	Life Cycle Stage										
Indicator	**Unit**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PM	Disease incidency	1.80E-06	2.37E-06	1.39E-08	3.20E-07	0,00E+00	0,00E+00	6.39E-07	1.92E-05	0,00E+00	-2.33E-06
IRP	kBq U235 eq.	9.74E-01	4.16E+00	9.95E-03	8.26E-02	0,00E+00	0,00E+00	1.65E-01	9.26E-01	0,00E+00	-2.22E-01
ETP-fw	CTUe	2.14E-03	8.40E-03	3.13E-05	3.05E-04	0,00E+00	0,00E+00	6.09E-04	7.17E-02	0,00E+00	-1.17E-03
HTP-c	CTUh	1.19E-08	1.26E-08	4.90E-11	1.03E-09	0,00E+00	0,00E+00	2.05E-09	1.41E-08	0,00E+00	-3.32E-09
HTP-nc	CTUh	1.13E-07	1.47E-07	1.58E-09	1.58E-08	0,00E+00	0,00E+00	3.15E-08	4.10E-07	0,00E+00	-1.07E-07
SQP	-	1.77E+03	3,28E+02	7.42E-01	3,69E+01	0,00E+00	0,00E+00	7,35E+01	1,61E+02	0,00E+00	-6.97E+02
INDICATORS DESCRIBING RESOURCE CONSUMPTION: 1 m3 Concrete LCCIIB 903											
	Life Cycle Stage										
Indicator	**Unit**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	3,33E+01	3,32E+01	8.88E-02	9.61E-01	1.59E-01	1,20E+01	1,92E+00	5,74E+01	0,00E+00	-3,00E+00
PERMIAN	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	0,00E+00
PERT	MJ	3,33E+01	3,32E+01	8.88E-02	9.61E-01	1.59E-01	1,20E+01	1,92E+00	5,74E+01	0,00E+00	-3,00E+00
PEN-RE	MJ	5.82E+02	4.89E+02	1.37E+01	6.37E+01	2,93E+01	2.20E+03	1.27E+02	1.76E+03	0,00E+00	-3.69E+02
RE	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	0,00E+00
PENRT	MJ	5.82E+02	4.89E+02	1.37E+01	6.37E+01	2,93E+01	2.20E+03	1.27E+02	1.76E+03	0,00E+00	-3.69E+02
SM	Kg	0,00E+00	0,00E+00	1.56E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6.00E-01	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	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	0,00E+00
FW	m3	1.84E-01	6.99E-01	1.62E-03	9.68E-03	9.45E-04	7.35E-02	1.93E-02	1.15E+00	0,00E+00	-1.40E-02

INDICATORS DESCRIBING OUTPUT STREAMS AND WASTE: 1 m3 Concrete LCCIIB 903											
	Life Cycle Stage										
Indicator	**Unit (referenced to DU)**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
Amount of hazardous waste	Kg	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Amount of non-hazardous waste	Kg	HV	HV	3.34E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Amount of radioactive waste	Kg	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Reusable components	Kg	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Recyclable Materials	Kg	HV	HV	1.56E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6.00E-01	0,00E+00	0,00E+00
Energy Recovery Materials	Kg	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ/energy carrier	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Concrete LCCII B 904

MAIN IMPACT INDICATORS: 1 m3 Concrete LCCIIB 904											
	Life Cycle Stage										
Indicator	**Unit**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	kg CO2 eq.	1.49E+02	3,58E+01	7.15E-03	4,69E+00	2,32E+00	1.64E+02	8.80E+00	1.31E+02	0,00E+00	-1.47E+01
GWP-fossil	kg CO2 eq.	1,80E+02	3,56E+01	6.82E-03	4,68E+00	2.31E+00	1.64E+02	8,78E+00	1.29E+02	0,00E+00	-1.47E+01
GWP-biogenic	kg CO2 eq.	1.66E+02	2.16E-01	3.19E-04	4.39E-03	6.64E-03	3.98E-02	8.23E-03	2.57E+00	0,00E+00	-8.93E-03
GWP-luluc	kg CO2 eq.	1.42E-02	3.68E-02	6.50E-06	2.27E-03	3.66E-04	1.81E-02	4.26E-03	6.01E-02	0,00E+00	-8.64E-03
A:	kg CFC11 eq.	1.95E-06	6.80E-07	9.92E-12	9.94E-08	3.41E-08	2.54E-06	1.86E-07	1.23E-06	0,00E+00	-4.08E-07
AP	mol H+ eq.	5.84E-01	1.15E-01	3.07E-05	9.98E-03	2.03E-02	1,48E+00	1.87E-02	9.17E-01	0,00E+00	-1.06E-01
EP-freshwater	kg PO4 eq.	2.26E-02	8.40E-03	8.69E-06	3.25E-04	2.32E-04	4.91E-03	6.09E-04	7.16E-02	0,00E+00	-1.17E-03
EP-marine	kg N eq.	5.38E-02	2.87E-02	5.46E-06	2.52E-03	9.26E-03	6.86E-01	4.72E-03	3.55E-01	0,00E+00	-4.07E-02
EP-terrestrial	mol N eq.	1.60E+00	2.91E-01	4.21E-05	2.56E-02	1.00E-01	7.46E+00	4.80E-02	3,72E+00	0,00E+00	-4.36E-01
POCP	kg NMVOC eq.	4.02E-01	1.31E-01	1.18E-05	1.55E-02	2.97E-02	2.21E+00	2.90E-02	1,10E+00	0,00E+00	-1.52E-01
ADP-minerals & metals	kg Sb eq.	1.59E-04	1.18E-04	6.40E-09	1.49E-05	8.66E-07	5.58E-05	2.80E-05	7.64E-05	0,00E+00	-1.96E-05
ADP-fossil	MJ	6.29E+02	5.23E+02	7.08E-02	6,48E+01	2,93E+01	2.09E+03	1.22E+02	1.51E+03	0,00E+00	-3.51E+02
WDP	WDP (m3) world. EKW	2,83E+01	3,64E+00	3.26E-04	2.71E-01	6.78E-02	4.62E+00	5.08E-01	4,70E+00	0,00E+00	-1.55E+01
ADDITIONAL IMPACT INDICATORS: 1 m3 LCCIIB 904 Concrete											
	Life Cycle Stage										
Indicator	**Unit**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PM	Disease incidency	1.86E-06	2.43E-06	5.79E-11	3.40E-07	0,00E+00	0,00E+00	6.38E-07	1.92E-05	0,00E+00	-2.32E-06
IRP	kBq U235 eq.	1,03E+00	4,14E+00	5.95E-05	8.78E-02	0,00E+00	0,00E+00	1.65E-01	9.25E-01	0,00E+00	-2.22E-01
ETP-fw	CTUe	2.44E-03	8.40E-03	8.69E-06	3.25E-04	0,00E+00	0,00E+00	6.09E-04	7.16E-02	0,00E+00	-1.17E-03
HTP-c	CTUh	1.37E-08	1.28E-08	2.41E-13	1.09E-09	0,00E+00	0,00E+00	2.05E-09	1.41E-08	0,00E+00	-3.32E-09

HTP-nc	CTUh	1.26E-07	1.50E-07	6.28E-12	1.68E-08	0,00E+00	0,00E+00	3.15E-08	4.10E-07	0,00E+00	-1.07E-07
SQP	-	1,75E+03	3.34E+02	1.22E-02	3,92E+01	0,00E+00	0,00E+00	7,34E+01	1,61E+02	0,00E+00	-6.96E+02
INDICATORS DESCRIBING RESOURCE CONSUMPTION: 1 m3 Concrete LCCIIB 904											
	Life Cycle Stage										
Indicator	**Unit**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	3,47E+01	3,32E+01	6.51E-03	1,02E+00	1.59E-01	1,20E+01	1.91E+00	5,74E+01	0,00E+00	-3,00E+00
PERMIAN	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	0,00E+00
PERT	MJ	3,47E+01	3,32E+01	6.51E-03	1,02E+00	1.59E-01	1,20E+01	1.91E+00	5,74E+01	0,00E+00	-3,00E+00
PEN-RE	MJ	6.42E+02	5,00E+02	9.55E-02	6.77E+01	2,93E+01	2.20E+03	1.27E+02	1.76E+03	0,00E+00	-3.69E+02
RE	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	0,00E+00
PENRT	MJ	6.42E+02	5,00E+02	9.55E-02	6.77E+01	2,93E+01	2.20E+03	1.27E+02	1.76E+03	0,00E+00	-3.69E+02
SM	Kg	0,00E+00	0,00E+00	1.56E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6.00E-01	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	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	0,00E+00
FW	m3	1.96E-01	6.95E-01	1.40E-04	1.03E-02	9.45E-04	7.35E-02	1.95E-02	1,16E+00	0,00E+00	-1.40E-02
INDICATORS DESCRIBING OUTPUT STREAMS AND WASTE: 1 m3 Concrete LCCIIB 904											
	Life Cycle Stage										
Indicator	**Unit (referenced to DU)**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
Amount of hazardous waste	Kg	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Amount of non-hazardous waste	Kg	HV	HV	3.34E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Amount of radioactive waste	Kg	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Reusable components	Kg	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Recyclable Materials	Kg	HV	HV	1.56E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6.00E-01	0,00E+00	0,00E+00
Energy Recovery Materials	Kg	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ/energy carrier	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Concrete LCCII B 906

MAIN IMPACT INDICATORS: 1 m3 Concrete LCCIIB 906											
	Life Cycle Stage										
Indicator	**Unit**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	kg CO2 eq.	1,61E+02	3.77E+01	7.15E-03	4,69E+00	2,32E+00	1.64E+02	8,89E+00	1,33E+02	0,00E+00	-1.49E+01
GWP-fossil	kg CO2 eq.	1,95E+02	3.74E+01	6.82E-03	4,68E+00	2.31E+00	1.64E+02	8,87E+00	1.30E+02	0,00E+00	-1.48E+01
GWP-biogenic	kg CO2 eq.	1,82E+02	2.20E-01	3.19E-04	4.39E-03	6.64E-03	3.98E-02	8.32E-03	2,59E+00	0,00E+00	-9.02E-03
GWP-luluc	kg CO2 eq.	1.51E-02	3.79E-02	6.50E-06	2.27E-03	3.66E-04	1.81E-02	4.30E-03	6.07E-02	0,00E+00	-8.72E-03
A:	kg CFC11 eq.	2.07E-06	7.19E-07	9.92E-12	9.94E-08	3.41E-08	2.54E-06	1.88E-07	1.24E-06	0,00E+00	-4.12E-07
AP	mol H+ eq.	6.30E-01	1.19E-01	3.07E-05	9.98E-03	2.03E-02	1,48E+00	1.89E-02	9.26E-01	0,00E+00	-1.07E-01
EP-freshwater	kg PO4 eq.	2.45E-02	8.58E-03	8.69E-06	3.25E-04	2.32E-04	4.91E-03	6.15E-04	7.24E-02	0,00E+00	-1.18E-03
EP-marine	kg N eq.	5.60E-02	2.98E-02	5.46E-06	2.52E-03	9.26E-03	6.86E-01	4.77E-03	3.58E-01	0,00E+00	-4.11E-02
EP-terrestrial	mol N eq.	1.72E+00	3.02E-01	4.21E-05	2.56E-02	1.00E-01	7.46E+00	4.85E-02	3,76E+00	0,00E+00	-4.41E-01
POCP	kg NMVOC eq.	4.30E-01	1.37E-01	1.18E-05	1.55E-02	2.97E-02	2.21E+00	2.93E-02	1.11E+00	0,00E+00	-1.53E-01
ADP-minerals & metals	kg Sb eq.	1.68E-04	1.24E-04	6.40E-09	1.49E-05	8.66E-07	5.58E-05	2.83E-05	7.71E-05	0,00E+00	-1.97E-05
ADP-fossil	MJ	6.63E+02	5,49E+02	7.08E-02	6,48E+01	2,93E+01	2.09E+03	1.23E+02	1,53E+03	0,00E+00	-3.54E+02
WDP	WDP (m3) world. EKW	2,92E+01	3,76E+00	3.26E-04	2.71E-01	6.78E-02	4.62E+00	5.13E-01	4,75E+00	0,00E+00	-1.57E+01
ADDITIONAL IMPACT INDICATORS: 1 m3 Concrete LCCIIB 906											
	Life Cycle Stage										
Indicator	**Unit**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PM	Disease incidency	1.86E-06	2.56E-06	5.79E-11	3.40E-07	0,00E+00	0,00E+00	6.44E-07	1.94E-05	0,00E+00	-2.35E-06
IRP	kBq U235 eq.	1,04E+00	4.21E+00	5.95E-05	8.78E-02	0,00E+00	0,00E+00	1.66E-01	9.35E-01	0,00E+00	-2.24E-01
ETP-fw	CTUe	2.51E-03	8.58E-03	8.69E-06	3.25E-04	0,00E+00	0,00E+00	6.15E-04	7.24E-02	0,00E+00	-1.18E-03
HTP-c	CTUh	1.42E-08	1.32E-08	2.41E-13	1.09E-09	0,00E+00	0,00E+00	2.07E-09	1.43E-08	0,00E+00	-3.36E-09
HTP-nc	CTUh	1.30E-07	1.56E-07	6.28E-12	1.68E-08	0,00E+00	0,00E+00	3.18E-08	4.14E-07	0,00E+00	-1.08E-07
SQP	-	1,70E+03	3.50E+02	1.22E-02	3,92E+01	0,00E+00	0,00E+00	7.42E+01	1.63E+02	0,00E+00	-7.03E+02
INDICATORS DESCRIBING RESOURCE CONSUMPTION: 1 m3 Concrete LCCIIB 906											
	Life Cycle Stage										
Indicator	**Unit**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	1,66E+01	5,40E+01	6.51E-03	1,02E+00	1.59E-01	1,20E+01	1,93E+00	5.80E+01	0,00E+00	-3,00E+00
PERMIAN	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	0,00E+00
PERT	MJ	1,66E+01	5,40E+01	6.51E-03	1,02E+00	1.59E-01	1,20E+01	1,93E+00	5.80E+01	0,00E+00	-3,00E+00
PEN-RE	MJ	3,99E+02	8.06E+02	9.55E-02	6.77E+01	2,93E+01	2.20E+03	1,28E+02	1,78E+03	0,00E+00	-3.69E+02
RE	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	0,00E+00
PENRT	MJ	3,99E+02	8.06E+02	9.55E-02	6.77E+01	2,93E+01	2.20E+03	1,28E+02	1,78E+03	0,00E+00	-3.69E+02
SM	Kg	0,00E+00	0,00E+00	1.56E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6.00E-01	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	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	0,00E+00
FW	m3	4.35E-02	8.73E-01	1.40E-04	1.03E-02	9.45E-04	7.35E-02	1.95E-02	1,16E+00	0,00E+00	-1.40E-02

INDICATORS DESCRIBING OUTPUT STREAMS AND WASTE: 1 m3 Concrete LCCIIB 906											
	Life Cycle Stage										
Indicator	**Unit (referenced to DU)**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
Amount of hazardous waste	Kg	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Amount of non-hazardous waste	Kg	HV	HV	3.34E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Amount of radioactive waste	Kg	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Reusable components	Kg	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Recyclable Materials	Kg	HV	HV	1.56E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6.00E-01	0,00E+00	0,00E+00
Energy Recovery Materials	Kg	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ/energy carrier	HV	HV	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

6. INTERPRETATION OF RESULTS

Figures 2-13 show graphs of the contributions of individual life cycle modules to the basic impact categories for ready-mixed concrete – LCCIII 904, LCCIII 905, LCCIIA 930, LCCIIA 932, LCCIIA 933, LCCIIA 934, LCCIIA 935, LCCIIA 936, LCCIIB 990, LCCIIB 903, LCCIIB 904, LCCIIB 905, LCCIIB 906:

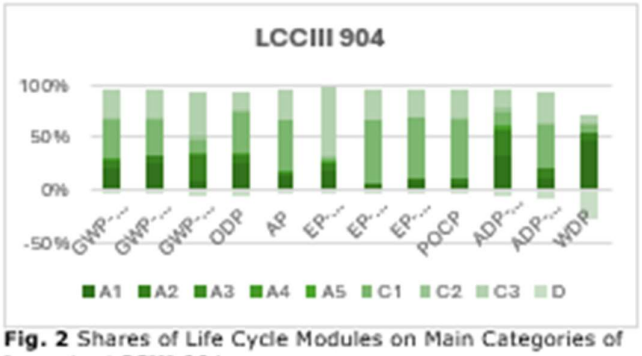


Fig. 2 Shares of Life Cycle Modules on Main Categories of Impacts- LCCIII 904

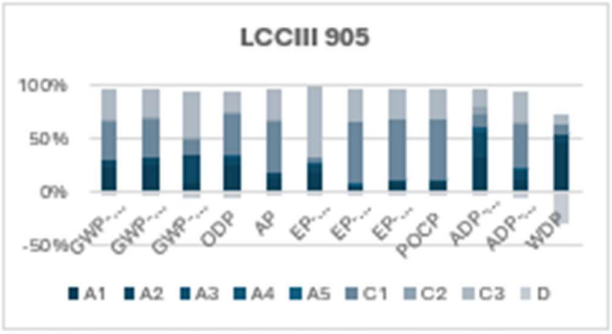


Fig. 3 Shares of Life Cycle Modules on the Main Categories of Impacts- LCCIII 905

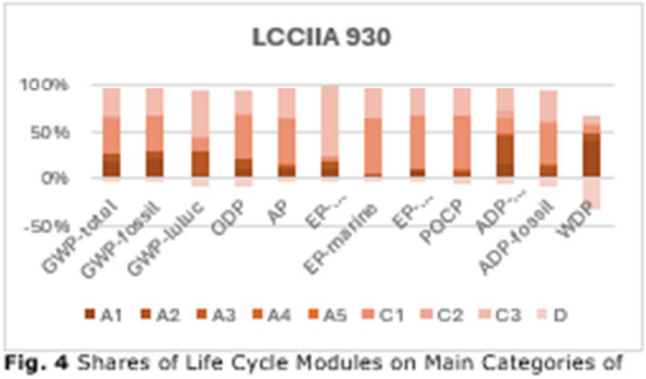


Fig. 4 Shares of Life Cycle Modules on Main Categories of Impacts – LCCIIA 930

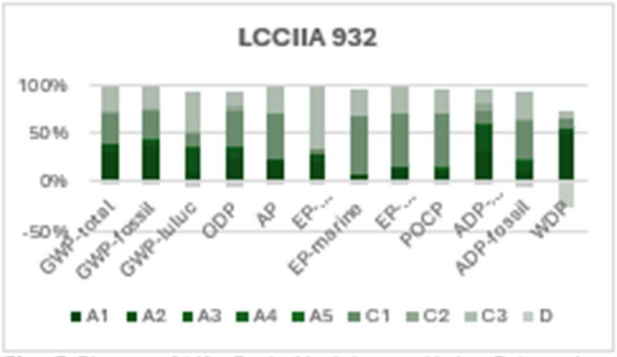


Fig. 5 Shares of Life Cycle Modules on Major Categories of Influences – LCCIIA 932

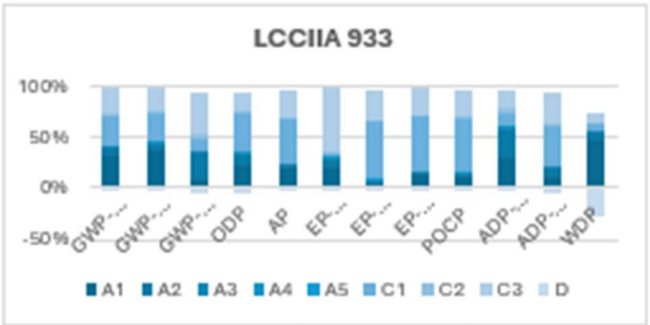


Fig. 6 Shares of Life Cycle Modules on the Main Categories of Influences- LCCIIA 933

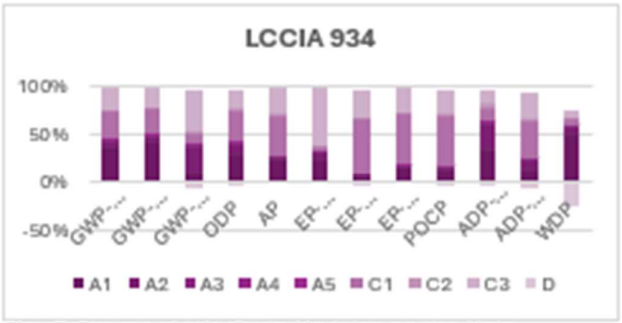


Fig. 7 Shares of Life Cycle Modules on the Main Categories of Impacts – LCCIIA 934

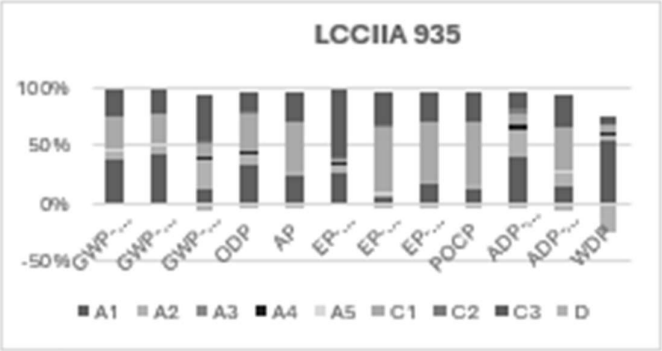


Fig. 8 Shares of Life Cycle Modules on Main Categories of Impacts- LCCIIA 935

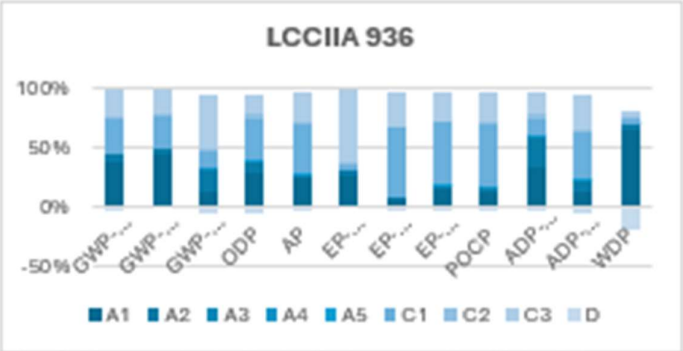


Fig. 9 Shares of Life Cycle Modules on the Main Categories of Impacts- LCCIIA 936

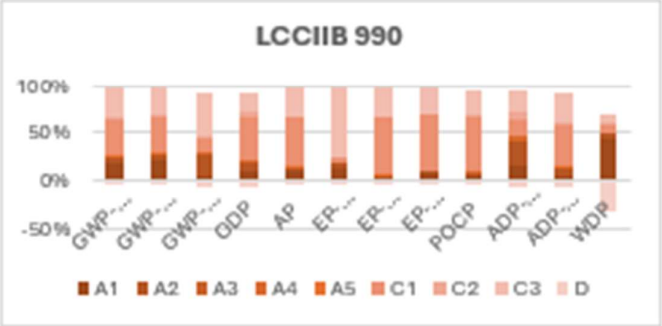


Fig. 10 Shares of Life Cycle Modules on the Main Categories of Influences – LCCIIB 990

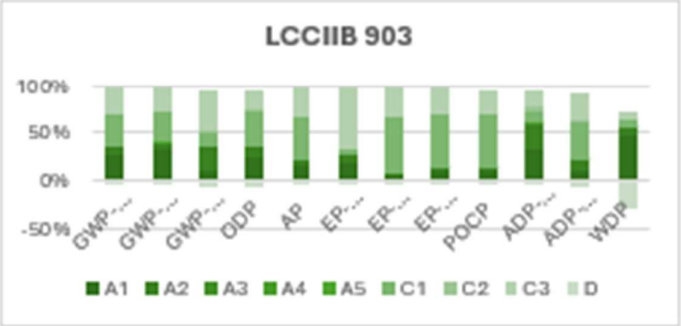


Fig. 11 Shares of Life Cycle Modules on the Main Categories of Influences – LCCIIB 903

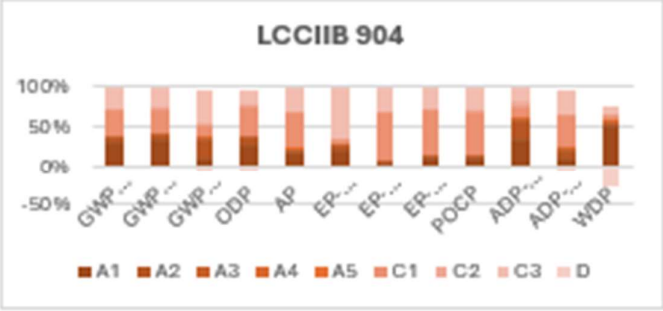


Fig. 12 Shares of Life Cycle Modules on the Main Categories of Impacts – LCCIIB 904

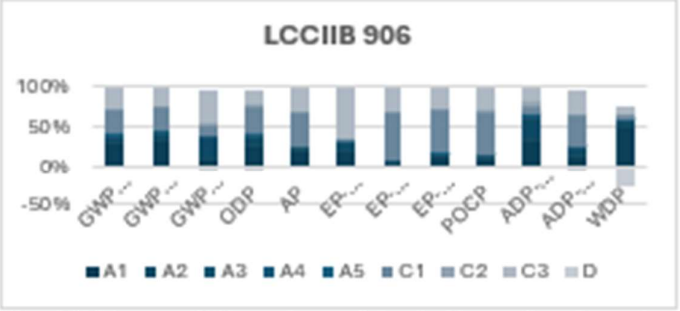


Fig. 13 Shares of life cycle modules in the main categories of influences – LCCIIB 906

The LCA analysis proved that the processes related to the extraction of raw materials and semi-finished products (A1) have the greatest impact on the value of environmental impact indicators. The process that has the greatest impact on the values of the impact category is the production of cement, and in particular clinker, which is a component of cement. The quantities of other concrete components are at a very similar level, which, in combination with the same production technology, gives similar values of the impact category in module A1.

The impact of transport to the plant (A2) varies for different types of concrete. This is due to the different allocation of the material supplied to the plant for the different types of concrete analyzed. Materials are delivered to the plant from the Polish area, which means that the delivery distances are relatively small, which results in a relatively small impact on the values of the impact category.

Due to the nature of the manufacturing process, which consists mainly of mixing ingredients, the impact rates in the A3 module are the lowest in all the products analyzed. The client does not have much influence on the values of the environmental impact indicators, as it depends on external entities.

LITERATURE

- ✓ PN-EN ISO 14025:2014-04, Environmental labels and declarations -- Type III environmental declarations -- Rules and procedures.
- ✓ PN-EN 15804+A2:2020, Sustainability of buildings -- Environmental product declarations -Basic principles for the categorization of construction products.
- ✓ PN-EN 16757:2017, Sustainability of construction works. Environmental Product Declarations. Product Categorization Rules for Concrete and Concrete Products.
- ✓ PN-EN ISO 14040:2009 Environmental Management. Life Cycle Assessment. Rules and structure.
- ✓ PN-EN ISO 14044:2009, Environmental management. Life Cycle Assessment. Requirements and guidelines.
- ✓ EN 15942:2012, Sustainability of construction works – Environmental product declarations – Communication format business-to-business.
- ✓ Data from the company's website: www.warbud-beton.pl

Explanatory materials can be obtained by contacting directly a representative of Warbud Beton sp. z o.o.

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PROCESS ENGINEERING RESEARCH GROUP

TYPE III ENVIRONMENTAL DECLARATION CERTIFICATE

no. 02-03/2024

Products:

Ready-mixed concrete LOW CARBON CONCRETE IIA, LOW CARBON CONCRETE IIB, LOW CARBON CONCRETE III

Owner:

Warbud Beton Sp. z o.o.

44 Gniewkowska
01-253 Warszawa

The declaration was developed in accordance with the requirements of the standard:

PN-EN 15804+A2: 2020-03

Sustainability of construction works
Environmental product declarations
Core rules for the product category of construction products

The declaration was verified in accordance with the requirements of the standard:

PN-EN ISO 14025:2010

Environmental labels and declarations
Type III environmental declarations. Principles and procedures

The certificate was issued for the first time on **March,28 2024** and is valid for 5 years or until the said EPD is amended.

Process Engineering Research Group Leader

Ewa Głodek-Bucyk

Ewa Głodek-Bucyk, PhD Eng.

Director of Center of Environmental Engineering

Joanna Poluszyńska

Joanna Poluszyńska, PhD

Opole, March 2024