

# Environmental Product Declaration

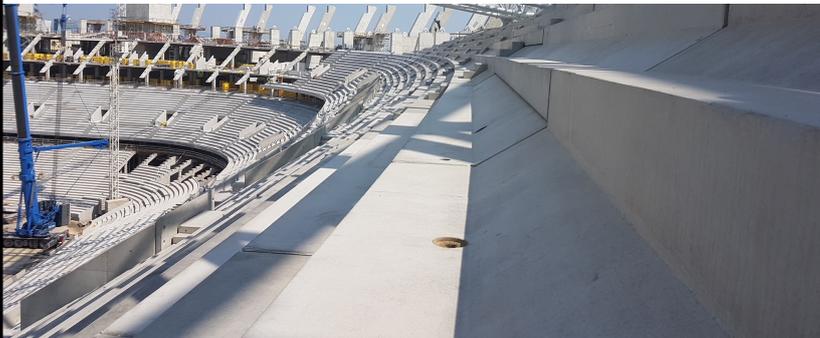
*according to ISO 14025 and EN 15804*



This declaration is for:  
**Concix ES**

Provided by:  
**Contec Fiber AG**

**Concix**<sup>®</sup>



program operator

**Stichting MRPI<sup>®</sup>**

publisher

**Stichting MRPI<sup>®</sup>**

**www.mrpi.nl**

MRPI<sup>®</sup> registration

**1.1.00438.2023**

date of first issue

**22-12-2017 (2.1.00024.2017)**

date of this issue

**13-04-2023**

expiry date

**13-04-2028**





### COMPANY INFORMATION



Contec Fiber AG  
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### PRODUCT

Concrix ES

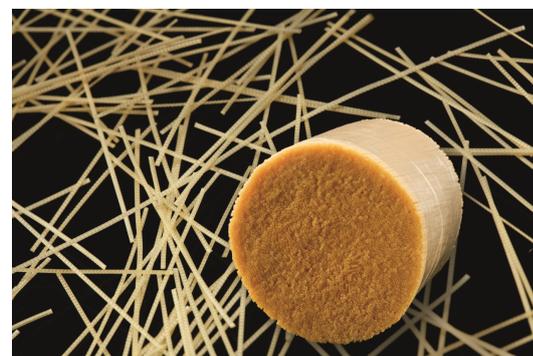
### DECLARED UNIT/FUNCTIONAL UNIT

1 kg

### DESCRIPTION OF PRODUCT

Concrix ES is a bi-component Macrofiber serving as a structural concrete reinforcement. The enhanced technical parameters of the concrete can be used for structural design purposes conditions.

### VISUAL PRODUCT



### MRPI® REGISTRATION

1.1.00438.2023

### DATE OF ISSUE

13-04-2023

### EXPIRY DATE

13-04-2028

### MORE INFORMATION

<https://contecfiber.com/en/products/concrix-es>

### SCOPE OF DECLARATION

This MRPI®-EPD certificate is verified by **Anne Kees Jeeninga, Advieslab VOF**.

The LCA study has been done by **Ruben van Gaalen, EcoReview B.V.** .

The certificate is based on an LCA-dossier according to ISO14025 and EN15804+A2/Bepalingsmethode. It is verified according to the 'MRPI®-EPD verification protocol November 2020.v4.0'. EPDs of construction products may not be comparable if they do not comply with EN15804+A2/Bepalingsmethode. Declaration of SVHC that are listed on the 'Candidate List of Substances of Very High Concern for authorisation' when content exceeds the limits for registration with ECHA.

### PROGRAM OPERATOR

Stichting MRPI®  
Kingsfordweg 151  
1043GR  
Amsterdam



ir. J-P den Hollander, Managing director MRPI®

### DEMONSTRATION OF VERIFICATION

CEN standard EN15804 serves as the core PCR[a]

Independent verification of the declaration and data,  
according to EN ISO 14025:2010:  
internal:                      external: X

Third party verifier:



Anne Kees Jeeninga, Advieslab VOF

[a] PCR = Product Category Rules



### DETAILED PRODUCT DESCRIPTION

Concix is used in tunnelling (shotcrete), prefabrication applications, slabs and concrete walls, industrial floors, outside standings, for concrete repair works, concrete piles, special foundation works and different special applications. On the basis of Eurocode 2 and the Fibre Concrete Guidelines it is possible to prove the adequate structural strength of slabs, concrete fields, foundations, walls and other structures and eliminate the steel reinforcement partially or completely. The recommended approximate dosage for Concix as a structural reinforcement is 2.0 to 7.5 kg/m<sup>3</sup> of concrete. The product is available in the standard length of 50mm.

In this EPD the production and packaging are considered. Packaging material is included.

This EPD is valid for the following 5 similar products;

- Concix ES
- Concris HS 25
- Concris HS 35
- Concix M507
- Concix SuperFloor

COMPONENT > 1% of total mass	[%]
Plastic Fibres	100%
Packaging	2%

### SCOPE AND TYPE

The type of this EPD is Cradle-to-Gate. All major steps from the extraction of natural resources to the factory gate are included in the environmental performance of the manufacturing phase, except those that are not relevant to the environmental performance of the product.

The software SimaPro is used to perform the LCA. The background databases used are:

- Ecoinvent (v3.6)

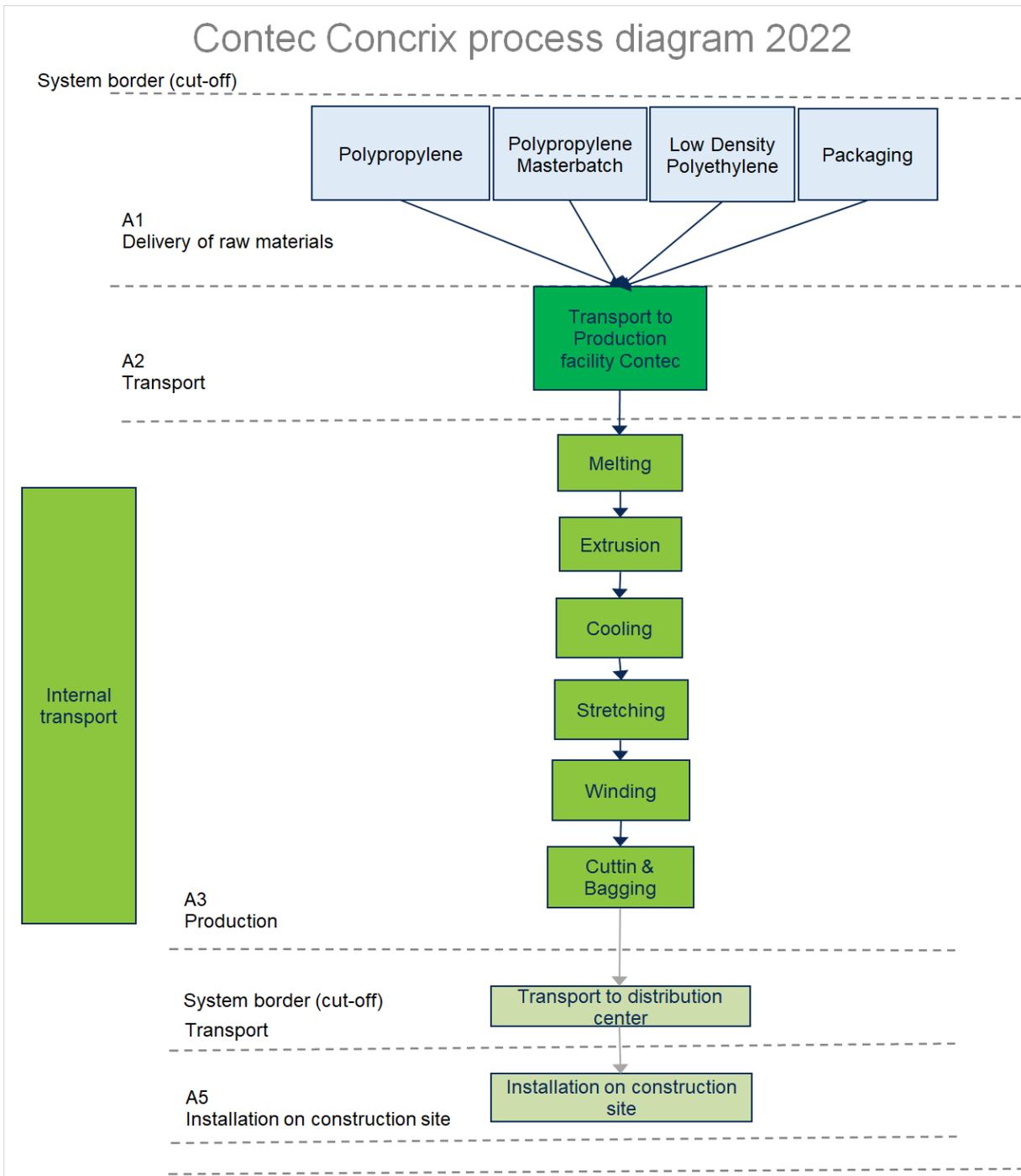
It is not determined as to how the Concix ES are to be processed at the end of life (after 50 years). Therefore, this module is not considered in this LCA study. As new and improved systems for the recycling of building products are developed over time, these can be determined and then applied to a future LCA study. Concrete produced with Concix ES can however be broken into aggregates which in turn can be used to produce new concrete. It is economically unfeasible to retrieve the Concix ES from the cement structure.

PRODUCT STAGE	CONSTRUCTION					USE STAGE							END OF LIFE			BENEFITS AND
	PROCESS												STAGE			LOADS BEYOND THE
	STAGE															SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport gate to site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
<b>A1</b>	<b>A2</b>	<b>A3</b>	<b>A4</b>	<b>A5</b>	<b>B1</b>	<b>B2</b>	<b>B3</b>	<b>B4</b>	<b>B5</b>	<b>B6</b>	<b>B7</b>	<b>C1</b>	<b>C2</b>	<b>C3</b>	<b>C4</b>	<b>D</b>
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

X = Modules Assessed

ND = Not Declared

## Contec Concrix process diagram 2022



LCA process diagram according to EN 15804 (7.2.1)

### REPRESENTATIVENESS

This EPD is representative for products produced and sold in the EU. The Concrix ES is produced and cut to demand at the production site of Contec Fiber AG.

## ENVIRONMENTAL IMPACT per functional unit or declared unit (indicators A1)

	UNIT	A1	A2	A3	A1-A3
ADPE	kg Sb eq.	1.81E-5	1.42E-6	7.73E-6	2.72E-5
ADPF	MJ	7.15E+1	1.30E+0	9.83E-1	7.38E+1
GWP	kg CO2 eq.	1.94E+0	8.38E-2	6.80E-2	2.09E+0
ODP	kg CFC11 eq.	3.81E-8	1.53E-8	6.29E-9	5.97E-8
POCP	kg ethene eq.	1.63E-3	5.18E-5	5.08E-5	1.73E-3
AP	kg SO2 eq.	6.02E-3	2.79E-4	4.44E-4	6.74E-3
EP	kg (PO4) <sup>3-</sup> eq.	5.66E-4	5.08E-5	4.89E-5	6.66E-4

Toxicity indicators for Dutch market

HTP	kg DCB eq.	2.83E-1	3.91E-2	5.90E-2	3.81E-1
FAETP	kg DCB eq.	1.07E-2	1.07E-3	1.18E-3	1.29E-2
MAETP	kg DCB eq.	1.82E+1	4.18E+0	5.58E+0	2.80E+1
TETP	kg DCB eq.	2.09E-3	1.25E-4	2.19E-4	2.43E-3
ECI	Euro	1.60E-1	1.00E-2	1.00E-2	1.80E-1
ADPF	kg Sb. eq.	3.44E-2	6.23E-4	4.73E-4	3.55E-2

ADPE = Abiotic Depletion Potential for non-fossil resources

ADPF = Abiotic Depletion Potential for fossil resources

GWP = Global Warming Potential

ODP = Depletion potential of the stratospheric ozone layer

POCP = Formation potential of tropospheric ozone photochemical oxidants

AP = Acidification Potential of land and water

EP = Eutrophication Potential

HTP = Human Toxicity Potential

FAETP = Fresh water aquatic ecotoxicity potential

MAETP = Marine aquatic ecotoxicity potential

TETP = Terrestrial ecotoxicity potential

ECI = Environmental Cost Indicator

ADPF = Abiotic Depletion Potential for fossil resources expressed in [kg Sb-eq.]

**ENVIRONMENTAL IMPACT per functional unit or declared unit (core indicators A2)**

	UNIT	A1	A2	A3	A1-A3
GWP-total	kg CO2 eq.	2.00E+0	8.46E-2	6.98E-2	2.15E+0
GWP-fossil	kg CO2 eq.	2.02E+0	8.46E-2	6.92E-2	2.17E+0
GWP-biogenic	kg CO2 eq.	-2.12E-2	4.73E-5	4.66E-4	-2.07E-2
GWP-luluc	kg CO2 eq.	1.15E-3	2.53E-5	1.20E-4	1.30E-3
ODP	kg CFC11 eq.	3.54E-8	1.92E-8	6.12E-9	6.07E-8
AP	mol H+ eq.	7.23E-3	3.60E-4	5.28E-4	8.12E-3
EP-freshwater	kg PO4 eq.	3.49E-5	7.55E-7	5.34E-6	4.10E-5
EP-marine	kg N eq.	1.23E-3	1.07E-4	7.67E-5	1.41E-3
EP-terrestrial	mol N eq.	1.35E-2	1.18E-3	8.49E-4	1.55E-2
POCP	kg NMVOC eq.	6.25E-3	3.77E-4	2.75E-4	6.90E-3
ADP-minerals & metals	kg Sb eq.	1.81E-5	1.42E-6	7.73E-6	2.72E-5
ADP-fossil	MJ, net calorific value	7.23E+1	1.29E+0	8.53E-1	7.44E+1
WDP	m3 world eq. deprived	1.45E+0	4.71E-3	9.95E-2	1.55E+0

GWP-total = Global Warming Potential total

GWP-fossil = Global Warming Potential fossil fuels

GWP-biogenic = Global Warming Potential biogenic

GWP-luluc = Global Warming Potential land use and land use change

ODP = Depletion potential of the stratospheric ozone layer

AP = Acidification Potential, Accumulated 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 photochemical oxidants

ADP-minerals&metals = Abiotic Depletion Potential for non fossil resources [2]

ADP-fossil = Abiotic Depletion for fossil resources potential [2]

WDP = Water (user) deprivation potential, deprivation-weighted water consumption [2]

Disclaimer [2]

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

**ENVIRONMENTAL IMPACT per functional unit or declared unit (additional indicators A2)**

	UNIT	A1	A2	A3	A1-A3
PM	Disease incidence	6.25E-8	7.50E-9	4.20E-9	7.42E-8
IRP	kBq U235 eq.	3.78E-2	5.45E-3	2.77E-3	4.60E-2
ETP-fw	CTUe	1.07E+1	1.11E+0	3.52E+0	1.53E+1
HTP-c	CTUh	4.18E-10	2.56E-11	8.03E-11	5.24E-10
HTP-nc	CTUh	1.25E-8	1.18E-9	3.73E-9	1.74E-8
SQP	---	3.85E+0	1.46E+0	2.34E-1	5.54E+0

PM = Potential incidence of disease due to PM emissions  
 IRP = Potential Human exposure efficiency relative to U235 [1]  
 ETP-fw = Potential Comparative Toxic Unit for ecosystems [2]  
 HTP-c = Potential Comparative Toxic Unit for humans [2]  
 HTP-nc = Potential Comparative Toxic Unit for humans, non-cancer [2]  
 SQP = Potential soil quality index [2]

Disclaimer [1]

- This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

Disclaimer [2]

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

**RESOURCE USE per functional unit or declared unit (A1 / A2)**

	UNIT	A1	A2	A3	A1-A3
PERE	MJ	1.45E+0	1.39E-2	3.87E+0	5.33E+0
PERM	MJ	0.00	0.00	0.00	0.00
PERT	MJ	1.45E+0	1.39E-2	3.87E+0	5.33E+0
PENRE	MJ	7.76E+1	1.37E+0	9.09E-1	7.99E+1
PENRM	MJ	0.00	0.00	0.00	0.00
PENRT	MJ	7.76E+1	1.37E+0	9.09E-1	7.99E+1
SM	kg	0.00	0.00	0.00	0.00
RSF	MJ	0.00	0.00	0.00	0.00
NRSF	MJ	0.00	0.00	0.00	0.00
FW	m3	2.24E-2	1.57E-4	1.24E-2	3.50E-2

PERE = Use of renewable energy excluding renewable primary energy resources

PERM = Use of renewable energy resources used as raw materials

PERT = Total use of renewable primary energy resources

PENRE = Use of non-renewable primary energy resources excluding non-renewable energy resources used as raw materials

PENRM = Use of non-renewable primary energy resources used as raw materials

PENRT = Total use of non-renewable primary energy resources

SM = Use of secondary materials

RSF = Use of renewable secondary fuels

NRSF = Use of non renewable secondary fuels

FW = Use of net fresh water

**OUTPUT FLOWS AND WASTE CATEGORIES per functional unit or declared unit (A1 / A2)**

	UNIT	A1	A2	A3	A1-A3
HWD	kg	7.43E-6	3.16E-6	3.08E-5	4.14E-5
NHWD	kg	6.55E-2	1.11E-1	1.48E-2	1.91E-1
RWD	kg	3.28E-5	8.59E-6	2.32E-6	4.37E-5
CRU	kg	0.00	0.00	0.00	0.00
MFR	kg	0.00	0.00	0.00	0.00
MER	kg	0.00	0.00	0.00	0.00
EEE	MJ	0.00	0.00	0.00	0.00
ETE	MJ	0.00	0.00	0.00	0.00

HWD = Hazardous Waste Disposed

RWD = Radioactive Waste Disposed

MFR = Materials for recycling

EEE = Exported Electrical Energy

NHWD = Non Hazardous Waste Disposed

CRU = Components for reuse

MER = Materials for energy recovery

ETE = Exported Thermal Energy

## BIOGENIC CARBON CONTENT per functional unit or declared unit (A1 / A2)

	UNIT	A1	A2	A3	A1-A3
BCCpr	kg C	0.00	0.00	0.00	0.00
BCCpa	kg C	0.00	0.00	0.00	0.00

BCCpr = Biogenic carbon content in product

BCCpa = Biogenic carbon content in packaging

## CALCULATION RULES

### *Data quality*

Data flows have been modeled as realistically as possible. Data quality assessment is based on the principle that the primary data used for processes occurring at the production site is selected in the first instance. Where this is not available, other reference data is selected from appropriate sources.

### *Data collection period*

The dataset is representative for the production processes used in 2023.

### *Methodology and reproducibility*

The process descriptions and quantities in this study are reproducible in accordance to the reference standards that have been used. The references of all sources, both primary and public sources and literature, have been documented. In addition, to facilitate the reproducibility of this LCA, a full set of data records has been generated.

## SCENARIOS AND ADDITIONAL TECHNICAL INFORMATION

### *A1. Raw materials supply*

All materials needed for production as well as packaging is taken into account.

### *A2. Transport of raw materials to manufacturer*

The transportation of the suppliers to Contec Fiber AG is done by truck.

### *A3. Manufacturing*

The production starts with the melting of the raw material. It is then extruded by an extrusion machine. After extrusion the material is cooled through water and span on spindles in order to stretch it into the required thickness. A winding machine assembles a bundle of strings onto a bobbin. Afterwards the cutting to the correct size and bagging in paper packaging takes place. Use of electricity is taken into account.

### DECLARATION OF SVHC

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

### REFERENCES

- *CEN/TC 51 PCR for cement and building lime, 2015*
- CML - Department of Industrial Ecology, CML-IA Characterisation Factors, Dated August 2016, Leiden University, Leiden, Netherlands Available at: <https://www.universiteitleiden.nl/en/research/research-output/science/cml-ia-characterisation-factors>
- Simapro 9.1.1.1
- EN 15804: Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products', I.S. EN 15804:2012+A1:2013 and EN 15804:2019+A2.
- ISO 14040: Environmental management - Life cycle assessment – Principles and Framework', International Organization for Standardization, ISO14040:2006.
- ISO 14044: Environmental management - Life cycle assessment - Requirements and guidelines', International Organization for Standardization, ISO14044:2006.
- ISO 14025: Environmental labels and declarations -- Type III environmental declarations -- Principles and procedures', International Organization for Standardization, ISO14025:2006.
- NMD Bepalingsmethode Milieuprestatie Bouwwerken versie 1.1 (maart 2022)

### REMARKS

EPD of construction products may not be comparable if they do not comply with EN15804