Environmental Product Declaration
according to ISO 14025 and EN 15804

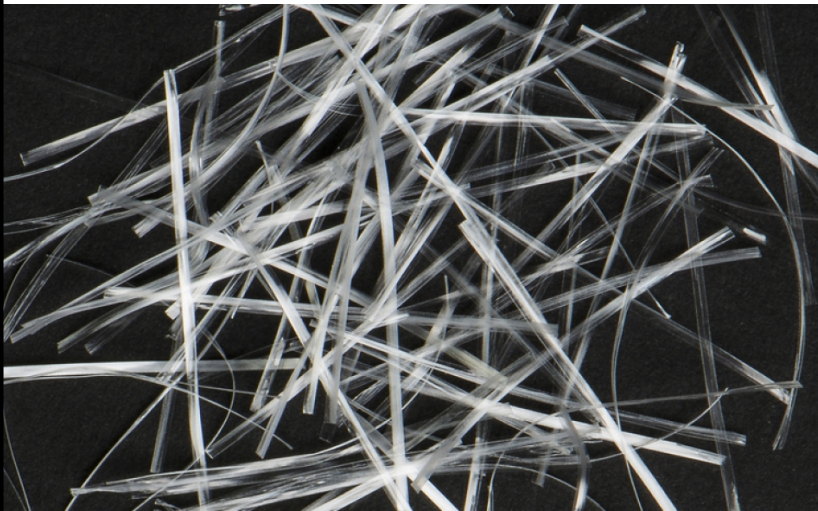**MRPI**
milieu relevante product informatie

This declaration is for:
Fibrofor Diamond

Provided by:
Contec Fiber AG

CONTEC FIBER

ECO PLATFORM
EPD
EN 15804 VERIFIED

PROGRAM OPERATOR

Stichting MRPI®
Kingsfordweg 151
1043GR
Amsterdam

COMPANY INFORMATION

CONTEC FIBER

Contec Fiber AG
Via Innovativa 21
7013
Domat/Ems, Switzerland
0041 81 632 61 61
Mr. Bundi
https://www.contecfiber.com/en/

PRODUCT

Fibrofor Diamond

MRPI® REGISTRATION

1.1.00121.2020

EPD REGISTRATION

00001229

DATE OF ISSUE

19-05-2020

EXPIRY DATE

19-05-2025

DECLARED UNIT/FUNCTIONAL UNIT

1 kg

SCOPE OF DECLARATION

This MRPI®-EPD certificate is verified by **Anne Kees Jeeninga, Advieslab VOF.**
The LCA study has been done by **Pieter Stadhouders, EcoReview.**
The certificate is based on an LCA-dossier according to ISO14025 and NEN-EN15804+A1. It is verified according to the 'EPD-MRPI® verification protocol May 2017.v3.1'. EPDs of construction products may not be comparable if they do not comply with NEN-EN15804+A1. 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.

VISUAL PRODUCT
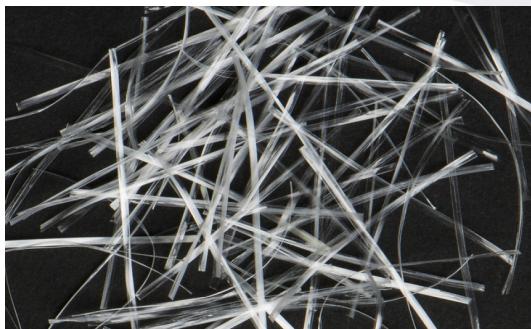
DESCRIPTION OF PRODUCT

Fibrofor Diamond is a high-performance monofiber for the primary concrete reinforcement. It distributes evenly in the concrete and provides a three dimensional reinforcement.

MORE INFORMATION

https://www.contecfiber.com/en/products/fibrofor-diamond/

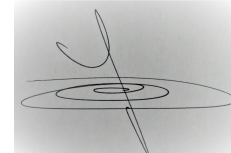| DEMONSTRATION OF VERIFICATION |
| --- |
| CEN standard EN15804 serves as the core PCR[a] |
| Independent verification of the declaration and data, according to EN ISO 14025:2010: |
| internal: external: X |
| (where appropriate[b]) Third party verifier: |
| Anne-Kees Jeeninga, Advieslab v.o.f. |
| [a] Product Category Rules [b] Optional for B-to-B communication, mandatory for B-to-C communication (see EN ISO 14025:2010, 9.4). |

DETAILED PRODUCT DESCRIPTION

To replace the conventional steel-reinforcement, or at least reduce it to a minimum even in floors with very high loads, Contec Fiber AG has developed Fibrofor Diamond.

Fibrofor Diamond is a high-performance monofiber for the primary concrete reinforcement. Its geometry and finishing guarantee a fast and even distribution in the concrete and the uniquely high number of fibers provide a three dimensional reinforcement.

The dosage goes from 2 – 3 kg per m³ concrete, depending on the application and the requirements, and is determined by means of a static calculation.

COMPONENT (> 1%)	[kg / %]
Polypropylene	100.00%

(*) > 1% of total mass

SCOPE AND TYPE

The type of this EPD is Cradle-to-Gate. All major steps from the extraction of naturalresources 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 EcoChain used to perform the LCA. The background databases used are:

• Ecoinvent (v3.4)

It is not determined as to how the Fibrofor Diamond Fibers 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 Fibrofor Diamond Fiber can however be broken into aggregates which in turn can be used to produce new concrete. It is economically unfeasible to retrieve the Fibrofor Diamond Fiber from the cement structure.

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE 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
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
x	x	x	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA

X = Module assessed

MNA = Module not assessed
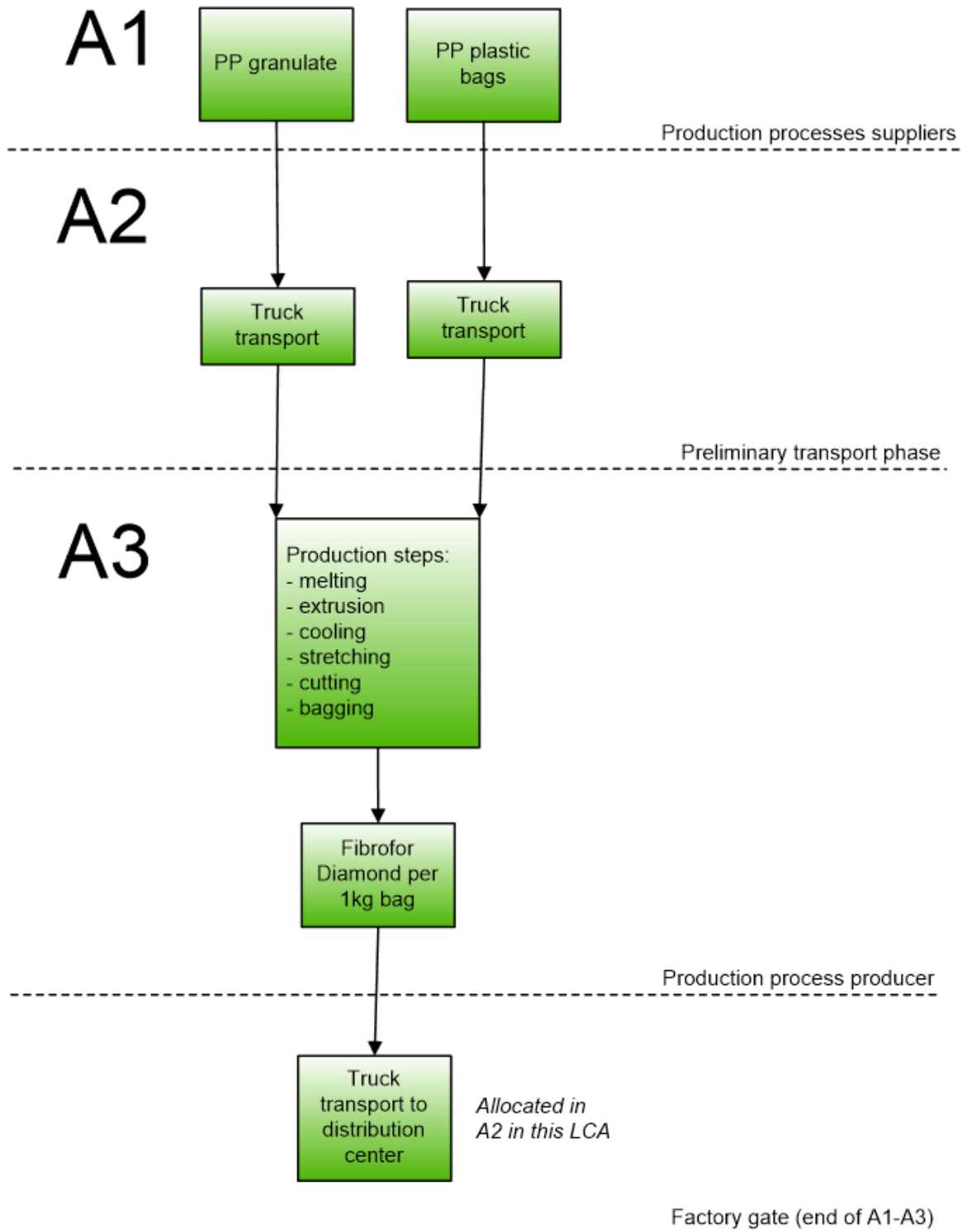
REPRESENTATIVENESS

Fibrofor Diamond is produced in Germany. This is the only production location for this product. It is stored and distributed from the Contec Fiber AG distribution center. It's address is: Via Innovativa 21, 7013 Domat/Ems, Switzerland.

ENVIRONMENTAL IMPACT per functional unit or declared unit

	UNIT	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
ADPE	kg Sb-eq.	3.24 E -2	2.95 E -7	1.70 E -6	3.24 E -2	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
ADPF	MJ	7.23 E +1	1.59 E +0	1.47 E +1	8.86 E +1	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
GWP	kg CO2-eq.	2.05 E +0	1.04 E -1	9.13 E -1	3.07 E +0	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
ODP	kg CFC11-eq.	1.97 E -9	1.92 E -8	2.16 E -8	4.27 E -8	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
POCP	kg ethene-eq.	4.84 E -4	6.13 E -5	1.07 E -4	6.53 E -4	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
AP	kg SO2-eq.	6.45 E -3	4.50 E -4	1.99 E -3	8.88 E -3	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
EP	kg (PO4)3--eq.	6.05 E -4	8.98 E -5	3.58 E -4	1.05 E -3	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
Toxicity indicators (Dutch market)																			
HTP	kg DCB-eq.	3.57 E -2	4.16 E -2	9.70 E -2	1.74 E -1	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
FAETP	kg DCB-eq.	2.46 E -3	1.22 E -3	2.22 E -3	5.89 E -3	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
MAETP	kg DCB-eq.	6.76 E +1	4.40 E +0	1.34 E +1	8.54 E +1	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
TETP	kg DCB-eq.	1.06 E -4	1.47 E -4	5.89 E -3	6.14 E -3	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
Environmental Cost Indicator (Dutch market)																			
ECI	Euro	1.50 E -1	1.20 E -2	6.90 E -2	2.31 E -1	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA

INA = Indicator Not Assessed

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

RESOURCE USE per functional unit or declared unit

	UNIT	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	5.43 E -1	2.19 E -2	1.95 E +0	2.51 E +0	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
PERM	MJ	0.00	0.00	0.00	0.00	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
PERT	MJ	5.43 E -1	2.19 E -2	1.95 E +0	2.51 E +0	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
PENRE	MJ	7.68 E +1	1.71 E +0	1.22 E +1	9.07 E +1	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
PENRM	MJ	0.00	0.00	0.00	0.00	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
PENRT	MJ	7.68 E +1	1.71 E +0	1.22 E +1	9.07 E +1	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
SM	kg	0.00	0.00	0.00	0.00	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
RSF	MJ	0.00	0.00	0.00	0.00	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
NRSF	MJ	0.00	0.00	0.00	0.00	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
FW	m3	1.17 E -3	3.07 E -4	3.06 E -3	4.53 E -3	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA

INA = Indicator Not Assessed
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

	UNIT	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	1.52 E -6	1.18 E -5	8.98 E -5	1.03 E -4	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
NHWD	kg	2.32 E -2	9.83 E -2	3.73 E -2	1.59 E -1	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
RWD	kg	1.08 E -6	1.08 E -5	2.89 E -5	4.08 E -5	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
CRU	kg	0.00	0.00	0.00	0.00	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
MFR	kg	0.00	0.00	0.00	0.00	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
MER	kg	0.00	0.00	0.00	0.00	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
EEE	MJ	0.00	0.00	0.00	0.00	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
ETE	MJ	0.00	0.00	0.00	0.00	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA

INA = Indicator Not Assessed
HWD = Hazardous Waste Disposed   NHWD = Non Hazardous Waste Disposed
RWD = Radioactive Waste Disposed   CRU = Components for reuse
MFR = Materials for recycling   MER = Materials for energy recovery
EEE = Exported Electrical Energy   ETE = Exported Thermal Energy

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 2019.

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 which can be accessed via the EcoChain tool. This data portfolio contains a summary of all the data used in this LCA, and correspondingly, in the Contec Fiber AG EcoChain account.

SCENARIOS AND ADDITIONAL TECHNICAL INFORMATION

A1. Raw materials supply

This module considers all input materials. Relevant records for all materials were available in the Ecoinvent database. Only two materials are relevant in this analysis. PP granulate for the fibers and PP film for the packaging.

A2. Transport of raw materials to manufacturer

This includes all transport distances of the raw materials to the manufacturing facility. Also transport of the fibers to the Contec Fiber AG storage and distribution facility in Switzerland has been taken into account.

A3. Manufacturing

This module covers the manufacturing of the Fibrofor Diamond. All processes (melting, extrusion, stretching, cutting and bagging) taking place at the production site have been included in the analysis.

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

• EN 15804:2012+A1:2013 Sustainability of construction works. Environmental product declarations. Core rules for the product category of construction products, of 11/2013.
• ISO 14040/14044 on Life Cycle Assessments.
• ISO 14025: Environmental labels and declarations -- Type III environmental declarations --
• 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
• EcoChain, 2020, web: http://app.ecochain.com.

REMARKS

None