Environmental Product Declaration according to ISO 14025 and EN 15804



This declaration is for:

Fibrofor Diamond

Provided by:

Contec Fiber AG





program operator
Stichting MRPI®
publisher
Stichting MRPI®
www.mrpi.nl

MRPI® registration

1.1.00121.2020

EPD registration

<EPD NUMBER>

date of first issue

10-04-2020

date of this issue

10-04-2020

expiry date

10-04-2025









PROGRAM OPERATOR

Stichting MRPI® Kingsfordweg 151 1043GR Amsterdam



COMPANY INFORMATION



Contec Fiber AG Via Innovativa 21 7013 Domat/Ems, Switzerland 0041 81 632 61 61 Mr. Bundi

https://www.contecfiber.com/en/



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





Fibrofor Diamond

MRPI® REGISTRATION

1.1.00121.2020

EPD REGISTRATION <EPD NUMBER>

DATE OF ISSUE

10-04-2020

EXPIRY DATE

10-04-2025

DECLARED UNIT/FUNCTIONAL UNIT

1 kg



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 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 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								USE STAGE EN						F LIFE		BENEFITS AND			
								STA	GE		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			
A1	A2	А3	A4	A 5	B1	B2	В3	B4	B5	B6	B7	C1	C2	C3	C4	D			
х	х	х	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA			

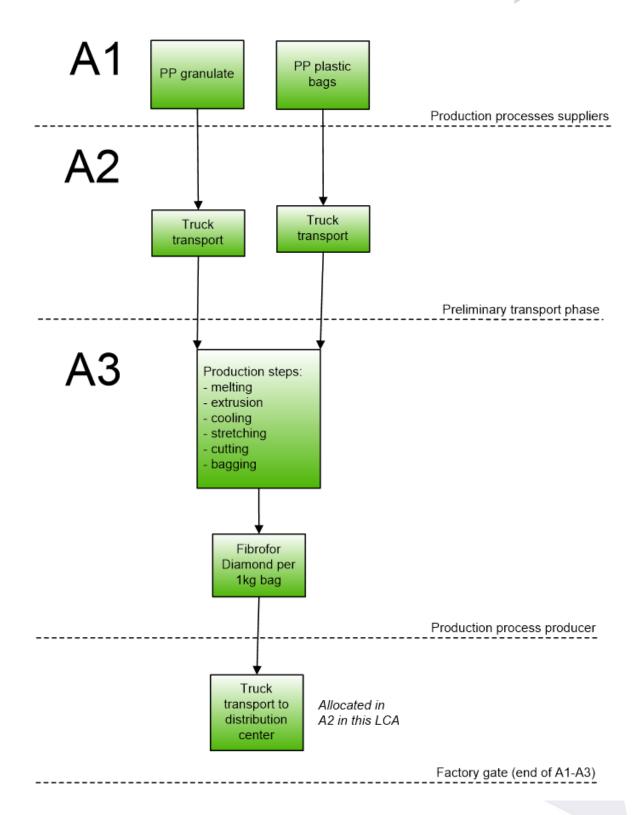
X = Module assessed

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	А3	A1-A3	A4	A5	B1	B2	В3	В4	B5	В6	В7	C1	C2	C3	C4	D
kg	3.24	2.95	1.70	3.24	INIA	INIA	INIA	INIA	ΙΝΙΔ	INIA	INA	INA	INIA	ΙΝΙΔ	ΙΝΙΔ	ΙΝΙΔ	INIA	INA
Sb-eq.	E -2	E -7	E -6	E -2		11 47 (11 47 1		11 47 1		11 47 (11 47 (11 47 (11 47 (11 17 1	11 47 (
MI	7.23	1.59	1.47	8.86	ΙΝΙΔ	ΙΝΙΔ	المال	ΙΝΙΔ	INA									
IVIO	E +1	E +0	E +1	E +1	ПАЛ	114/-1	IIVA	114/										114/-1
kg	2.05	1.04	9.13	3.07	INIA	INIA	INIA	INIA	INIA	INIA	INIA	INIA	INIA	INIA	INIA	INIA	INIA	INA
CO2-eq.	E +0	E -1	E -1	E +0	IINA	NA IINA IIN	IINA	IINA	IINA	IINA	IINA	IINA	IINA	IINA	IIVA	IINA	IINA	IINA
kg	1.97	1.92	2.16	4.27	INIA	INIA	INIA	INIA	INIA	INIA	INIA	INIA	INIA	INIA	INIA	INIA	INIA	INA
CFC11-eq.	E -9	E -8	E -8	E -8	IIIVA	INA INA IIV		IIIVA	IIIVA	IIIVA	IINA	IINA	IIVA	IIIVA	IINA	IINA	IINA	IIIVA
kg	4.84	6.13	1.07	6.53	INIA	INIA	INIA	INIA	INIA	INIA	INIA	INIA	INIA	INIA	INIA	INIA	INIA	INIA
ethene-eq.	E -4	E -5	E -4	E -4	IINA	INA INA	IINA	IINA	IINA	IINA	IINA	IINA	IINA	IINA	IINA	IINA	IINA	INA
kg	6.45	4.50	1.99	8.88	INIA	INIA	INIA	INIA	INIA	INIA	INIA	INIA	INIA	INIA	INIA	INIA	INIA	INIA
SO2-eq.	E -3	E -4	E -3	E -3	·3 IINA IINA	IINA	IINA	IINA	IINA	IINA	IINA	IINA	IINA	IINA	IINA	IINA	INA	
kg	6.05	8.98	3.58	1.05	INIA	INIA	INIA	INIA	1814	INIA	INIA	INA	INA	INIA	INIA	INA	INA	INIA
(PO4)3eq.	E -4	E -5	E -4	E -3	INA	INA	IINA	INA	INA	IINA	IINA			IINA	IINA			INA
indicators (Du	ıtch mar	ket)		,														
La DOD	3.57	4.16	9.70	1.74		INIA		18.1.4		18.1.4	INA	1810	INA	INA	INA	INA	INA	18.1.4
kg DCB-eq.	E -2	E -2	E -2	E -1	INA	INA	INA	INA	IINA	IINA		INA						INA
La DOD	2.46	1.22	2.22	5.89	18.10			18.1.4			18.14	INA	1810	18.10	18.1.4	1810		
kg DCB-eq.	E -3	E -3	E -3	E -3	IINA	IINA	IINA	IINA	IINA	IINA	INA		INA	IINA	INA	IINA	IINA	INA
La DOD and	6.76	4.40	1.34	8.54	18.1.0	18.1.4	18.10	18.1.4		18.1.4	INA	INA	1814	12.12	1814	1814	INA	18.1.4
kg DCB-eq.	E +1	E +0	E +1	E +1	INA	INA	INA	INA	INA	INA			INA	INA	INA	INA		INA
L. DOD	1.06	1.47	5.89	6.14	18.10	18.1.4	18.10	18.1.0		18.1.4			INA	INA	INA	INA	INA	INA
kg DCB-eq.	E -4	E -4	E -3	E -3	INA	INA	INA	INA	INA	INA	INA	INA						
mental Cost Ir	ndicator	(Dutch n	narket)															
F	1.50	1.20	6.90	2.31	18.1.6	INIA	1816	18.1.6		INA								
Euro	E -1	E -2	E -2	E -1	INA	INA	INA	INA	INA									
	kg Sb-eq. MJ kg CO2-eq. kg CFC11-eq. kg ethene-eq. kg SO2-eq. kg (PO4)3eq. indicators (Du kg DCB-eq. kg DCB-eq.	kg 3.24 Sb-eq. E -2 MJ 7.23 E +1 kg 2.05 CO2-eq. E +0 kg 1.97 CFC11-eq. E -9 kg 4.84 ethene-eq. E -4 kg 6.45 SO2-eq. E -3 kg 6.05 (PO4)3eq. E -4 indicators (Dutch mar kg DCB-eq. E -3 kg DCB-eq. E -3 kg DCB-eq. E -1 kg DCB-eq. E -1 kg DCB-eq. E -1 kg DCB-eq. E -4 mental Cost Indicator	kg 3.24 2.95 Sb-eq. E -2 E -7 MJ 7.23 1.59 E +1 E +0 kg 2.05 1.04 CO2-eq. E +0 E -1 kg 1.97 1.92 CFC11-eq. E -9 E -8 kg 4.84 6.13 ethene-eq. E -4 E -5 kg 6.45 4.50 SO2-eq. E -3 E -4 kg 6.05 8.98 (PO4)3eq. E -4 E -5 indicators (Dutch market) kg DCB-eq. 2.46 1.22 E -2 E -2 kg DCB-eq. E -1 E +0 kg DCB-eq. E -1 E +0 kg DCB-eq. E -1 E +0 kg DCB-eq. E -1 E -4 E -2 E -3 E -3 kg DCB-eq. E -1 E +0 kg DCB-eq. E -4 E -5	kg 3.24 2.95 1.70 Sb-eq. E -2 E -7 E -6 MJ 7.23 1.59 1.47 E +1 E +0 E +1 E +1 kg 2.05 1.04 9.13 CO2-eq. E +0 E -1 E -1 kg 1.97 1.92 2.16 CFC11-eq. E -9 E -8 E -8 kg 4.84 6.13 1.07 ethene-eq. E -4 E -5 E -4 kg 6.45 4.50 1.99 SO2-eq. E -3 E -4 E -3 kg 6.05 8.98 3.58 (PO4)3eq. E -4 E -5 E -4 indicators (Dutch market) E -2 E -2 E -2 kg DCB-eq. 2.46 1.22 2.22 kg DCB-eq. 6.76 4.40 1.34 kg DCB-eq. E +1 E +0 E +1 kg DCB-eq. E -4 E -3 E -4 E -3 <	kg 3.24 2.95 1.70 3.24 Sb-eq. E-2 E-7 E-6 E-2 MJ 7.23 1.59 1.47 8.86 E+1 E+0 E+1 E+1 E+1 kg 2.05 1.04 9.13 3.07 CO2-eq. E+0 E-1 E-1 E+0 kg 1.97 1.92 2.16 4.27 CFC11-eq. E-9 E-8 E-8 E-8 kg 4.84 6.13 1.07 6.53 ethene-eq. E-4 E-5 E-4 E-4 kg 6.45 4.50 1.99 8.88 SO2-eq. E-3 E-4 E-3 E-3 kg 6.05 8.98 3.58 1.05 (PO4)3eq. E-4 E-5 E-4 E-3 indicators (Dutch market) E-2 E-2 E-2 E-1 kg DCB-eq. 2.46 1.22 2.22	kg 3.24 2.95 1.70 3.24 INA Sb-eq. E-2 E-7 E-6 E-2 INA MJ 7.23 1.59 1.47 8.86 INA kg 2.05 1.04 9.13 3.07 INA kg 1.97 1.92 2.16 4.27 INA kg 1.97 1.92 2.16 4.27 INA kg 4.84 6.13 1.07 6.53 INA ethene-eq. E-4 E-5 E-4 E-4 INA kg 6.45 4.50 1.99 8.88 INA kg 6.05 8.98 3.58 1.05 INA kg 6.05 8.98 3.58 1.05 INA indicators (Dutch market) E-2 E-2 E-2 E-1 INA kg DCB-eq. E-3 E-3 E-3 E-3 INA kg DCB-eq. E-4	kg 3.24 2.95 1.70 3.24 INA INA MJ 7.23 1.59 1.47 8.86 INA INA kg 2.05 1.04 9.13 3.07 INA INA Kg 2.05 1.04 9.13 3.07 INA INA kg 1.97 1.92 2.16 4.27 INA INA kg 1.97 1.92 2.16 4.27 INA INA kg 4.84 6.13 1.07 6.53 INA INA ethene-eq. E-4 E-5 E-4 E-4 E-4 kg 6.45 4.50 1.99 8.88 INA INA SO2-eq. E-3 E-4 E-3 E-3 INA INA kg 6.05 8.98 3.58 1.05 INA INA kg DCB-eq. E-4 E-5 E-4 E-3 INA INA kg DCB-	kg 3.24 2.95 1.70 3.24 INA INA<	kg 3.24 2.95 1.70 3.24 INA INA<	kg 3.24 2.95 1.70 3.24 INA INA<	kg 3.24 2.95 1.70 3.24 INA INA<	kg 3.24 2.95 1.70 3.24 INA INA<	kg 3.24 2.95 1.70 3.24 INA INA<	kg 3.24 2.95 1.70 3.24 INA INA<	kg 3.24 2.95 1.70 3.24 INA INA<	kg 3.24 2.95 1.70 3.24 INA INA<	kg 3.24 2.95 1.70 3.24 INA INA<	kg 3.24 2.95 1.70 3.24 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

 $\label{eq:ode} \mathsf{ODP} = \mathsf{Depletion} \ \mathsf{potential} \ \mathsf{of} \ \mathsf{the} \ \mathsf{stratospheric} \ \mathsf{ozone} \ \mathsf{layer}$

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	А3	A1-A3	A4	A5	B1	B2	ВЗ	В4	В5	В6	В7	C1	C2	C3	C4	D
PERE	MJ	5.43 E -1	2.19 E -2	1.95 E +0	2.51 E +0	INA													
PERM	MJ	0.00	0.00	0.00	0.00	INA													
PERT	MJ	5.43 E -1	2.19 E -2	1.95 E +0	2.51 E +0	INA													
PENRE	MJ	7.68 E +1	1.71 E +0	1.22 E +1	9.07 E +1	INA													
PENRM	MJ	0.00	0.00	0.00	0.00	INA													
PENRT	MJ	7.68 E +1	1.71 E +0	1.22 E +1	9.07 E +1	INA													
SM	kg	0.00	0.00	0.00	0.00	INA													
RSF	MJ	0.00	0.00	0.00	0.00	INA													
NRSF	MJ	0.00	0.00	0.00	0.00	INA													
FW	m3	1.17 E -3	3.07 E -4	3.06 E -3	4.53 E -3	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	А3	A1-A3	A4	A5	B1	B2	ВЗ	B4	В5	В6	В7	C1	C2	СЗ	C4	D
HWD	kg	1.52	1.18	8.98	1.03	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
		E -6	E -5	E -5	E -4	\vdash													
NHWD	kg	2.32	9.83	3.73	1.59	INA	INA	INA	INA	INA	INA	INA	ΙΝΙΔ	ΙΝΙΔ	INA	INA	ΙΝΙΔ	INA	ΙΝΙΔ
INITIVID	29	E -2	E -2	E -2	E -1	IIIA	IINA	IIV	III	IIVC	li VA	11.474	IINA	IINA	IINA	IIVA	IINA	IIVA	IINA
RWD	ka	1.08	1.08	2.89	4.08	INA	INA	INA	INIA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INIA
KWD	kg	E -6	E -5	E -5	E -5	IINA	INA		IINA	IINA	IINA	IINA							IINA
CRU	kg	0.00	0.00	0.00	0.00	INA	INA	INA	INA	INA	INA	INA	ΙΝΙΔ	INA	INA	INA	INIA	INA	ΙΝΙΔ
CICO	29	0.00	0.00	0.00	0.00	IIVA	IIVA	IINA	IIVA	IIVA	III	IIVA	IIIA	IIVA	IIVA	IIIA	IIVA	шид	IIVA
MFR	kg	0.00	0.00	0.00	0.00	INA	INA	INA	INA	INA	INA	INA	ΙΝΙΔ	INA	INA	INA	ΙΝΙΔ	INA	ΙΝΙΔ
IVII IX	Ng .	0.00	0.00	0.00	0.00	114/7	114/1	IIVA	114/	IIVA	ПАА	ПУА	ПУЛ	114/-1	IIVA	ПУА	ш	ПУА	IIVA
MER	kg	0.00	0.00	0.00	0.00	INA	INA	ΙΝΙΔ	INA	INA	INA	INA	ΙΝΙΔ	INA	INA	INA	ΙΝΙΔ	INA	ΙΝΙΔ
IVILIX	29	0.00	0.00	0.00	0.00	114/7	11 1/1	IIVA	П	ш	111/7	П	ш	11 4/4	П	ш	ш	шид	IIVA
EEE	MJ	0.00	0.00	0.00	0.00	INA	INA	ΙΝΙΔ	INA	INA	INA	INA	ΙΝΙΔ	ΙΝΙΔ	INA	INA	ΙΝΙΔ	INA	ΙΝΙΔ
	IVIO	0.00	0.00	0.00	0.00	" 1	11.4/	11.4/	11.1/	111/	1111/	11.4/	1117	11.4/	11.4/	111/	17	111/	114/
ETE	MJ	0.00	0.00	0.00	0.00	INA	INA	INIA	INA	INIA	INA	INA	ΙΝΙΔ	INA	INA	INA	INA	INA	ΙΝΙΔ
	IVIJ	0.00	0.00	0.00	0.00	""\A	IINA	IINA	IINA	IINA	IIIVA	IINA	IINA	IINA	IINA	IINA	IINA	IINA	IINA

INA = Indicator Not Assessed

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









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

