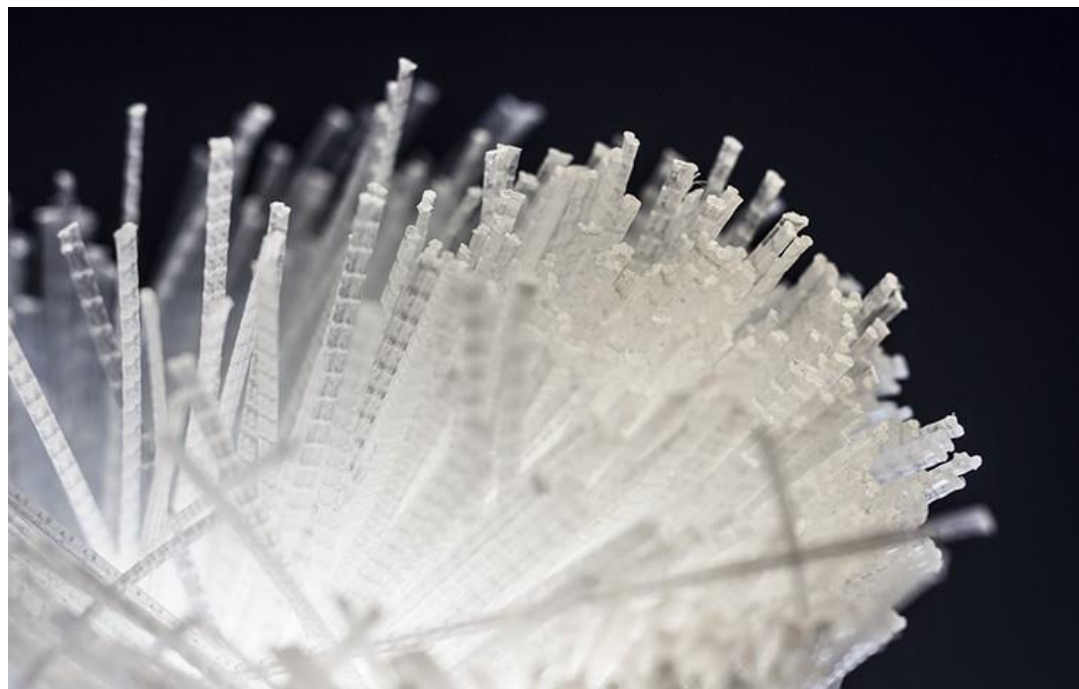


# ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025 / ISO 21930

**MasterFiber Macro Monofilament PP Fibers**  
Master Builders Solutions



**EPD HUB, HUB-0070**

Publishing date 01 July 2022, last updated date 20 November 2023, valid until 01 July 2027

## GENERAL INFORMATION

### MANUFACTURER

Manufacturer	Master Builders Solutions
Address	Dr.-Allbert-Frank-Str, 83308 Trostberg, Germany
Contact details	Sustainability-team@masterbuilders.com
Website	www.master-builders-solutions.com

### EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804+A2:2019 and ISO 14025
PCR	EPD Hub Core PCR version 1.0, 1 Feb 2022
Sector	Construction product
Category of EPD	Third party verified EPD
Scope of the EPD	Cradle to gate with options, A5, and modules C1-C4, D
EPD author	David Green
EPD verification	Independent verification of this EPD and data, according to ISO 14025: <input type="checkbox"/> Internal certification <input checked="" type="checkbox"/> External verification
EPD verifier	E.A as an authorized verifier acting for EPD Hub Limited

The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

### PRODUCT

Product name	MasterFiber Macro Monofilament PP Fibers
Place of production	Barcelona, Spain
Period for data	2021
Averaging in EPD	No averaging

### ENVIRONMENTAL DATA SUMMARY

Declared unit	1 kg
Declared unit mass	1 kg
GWP-fossil, A1-A3 (kgCO <sub>2</sub> e)	2.87
GWP-total, A1-A3 (kgCO <sub>2</sub> e)	2.79
Secondary material, inputs (%)	8.13E-1
Secondary material, outputs (%)	0.0
Total energy use, A1-A3 (kWh)	1.09E1
Total water use, A1-A3 (m <sup>3</sup> e)	8.14E-3

## PRODUCT AND MANUFACTURER

### ABOUT THE MANUFACTURER

The Master Builders Solutions brand brings all our expertise together to create chemical solutions for new construction, maintenance, repair, and renovation of structures. Master Builders Solutions is built on the experience gained from more than a century in the construction industry. The know-how and experience of a global community of construction experts form the core of Master Builders Solution. We combine the right elements from our portfolio to solve your specific construction challenges. We collaborate across areas of expertise and regions and draw on the experience gained from countless construction projects worldwide. We leverage global technologies, as well as our in-depth knowledge of local building needs, to develop innovations that help make you more successful and drive sustainable construction. The comprehensive portfolio under the Master Builders Solutions brand encompasses concrete admixtures, cement additives, solutions for underground construction, waterproofing solutions, sealants, concrete repair & protection solutions, performance grouts, performance flooring and solutions for on and offshore wind energy.

### PRODUCT DESCRIPTION

MasterFiber synthetic macrofibers are made from extruded polypropylene. Mixed into the fresh concrete, the fibers form an internal network and add superior tensile properties to the concrete elements. The result is improved crack control and stronger concrete. The fibers interact to create a three-dimensional fiber network reducing the drying shrinkage cracking of concrete.

Further information can be found at [www.master-builders-solutions.com/nl-be](http://www.master-builders-solutions.com/nl-be).

### PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	0	-
Minerals	0	-
Fossil materials	100	Belgium
Bio-based materials	0	-

### BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0
Biogenic carbon content in packaging, kg C	0.0241

### FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 kilogram
Mass per declared unit	1 kg
Functional unit	
Reference service life	

### SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

# PRODUCT LIFE-CYCLE

## SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table.

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D		
x	x	x	MND	x	MND	MND	MND	MND	MND	MND	MND	x	x	x	x	x		
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstr./demol.	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Modules not declared = MND. Modules not relevant = MNR.

### MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials and other ancillary materials. Also, fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission.

### TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

The A4 stage is not included in this analysis.

The A5 stage accounts for the environmental impacts related to the treatment and recycling/disposal of the packaging waste managed at the construction site. There are no calculated impacts associated with the addition of the MasterFiber product to the concrete mixture.

### PRODUCT USE AND MAINTENANCE (B1-B7)

These modules are not relevant for this family of products.

Air, soil, and water impacts during the use phase have not been studied.

### PRODUCT END OF LIFE (C1-C4, D)

C1 - includes the deconstruction of concrete components using

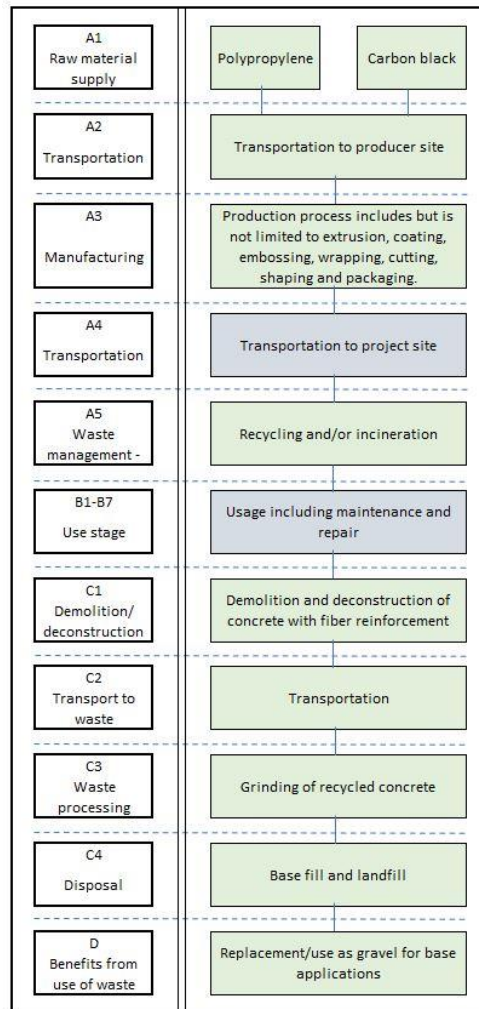
C2 - includes the transportation of the demolished concrete with fiber reinforcement to a waste processing site.

C3 - includes the mechanical grinding of the concrete to sizes appropriate for use as base fill.

C4 - Only the component of fiber reinforcement associated with the concrete which is not recyclable is included.

D - the MasterFiber product is a component of the ground concrete aggregate and used as base fill as a replacement for gravel. Energy credits from the end-of-life management of any packaging materials are also accounted for in this module.

# MANUFACTURING PROCESS



stage included in LCA  
stage not included in LCA

## LIFE-CYCLE ASSESSMENT

### CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

### ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. In this study, as per the reference standard, allocation is conducted in the following order;

1. Allocation should be avoided.
2. Allocation should be based on physical properties (e.g., mass, volume) when the difference in revenue is small.
3. Allocation should be based on economic values.

Allocation used in environmental data sources is aligned with the above.

### AVERAGES AND VARIABILITY

This EPD is product and factory specific and does not contain average calculations.

### LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. Ecoinvent and One Click LCA databases were used as sources of environmental data.

# ENVIRONMENTAL IMPACT DATA

## CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total	kg CO <sub>2</sub> e	1.65E0	2.54E-1	3.61E-1	2.27E0	0E0	9.14E-2	MND	MND	MND	MND	MND	MND	MND	2.21E0	3.04E0	6.94E0	2.97E-2	-4.58E0
GWP – fossil	kg CO <sub>2</sub> e	1.65E0	2.53E-1	4.36E-1	2.34E0	0E0	2.88E-3	MND	MND	MND	MND	MND	MND	MND	2.21E0	3.03E0	6.93E0	2.97E-2	-4.6E0
GWP – biogenic	kg CO <sub>2</sub> e	7.4E-5	1.52E-4	-7.54E-2	-7.52E-2	0E0	8.85E-2	MND	MND	MND	MND	MND	MND	MND	6.14E-4	2.2E-3	6.08E-3	2.28E-5	1.9E-2
GWP – LULUC	kg CO <sub>2</sub> e	3.45E-6	8.26E-5	1.02E-3	1.11E-3	0E0	2.38E-6	MND	MND	MND	MND	MND	MND	MND	1.87E-4	9.13E-4	2.15E-3	1.13E-6	-6.1E-3
Ozone depletion pot.	kg CFC-11e	5.5E-7	5.82E-8	3.67E-8	6.45E-7	0E0	2.58E-10	MND	MND	MND	MND	MND	MND	MND	4.77E-7	7.13E-7	1.99E-6	6.56E-10	-4.18E-7
Acidification potential	mol H <sup>+</sup> e	5.12E-3	1.45E-3	2.42E-3	8.99E-3	0E0	9.87E-6	MND	MND	MND	MND	MND	MND	MND	2.31E-2	1.27E-2	6.07E-2	1.85E-5	-2.98E-2
EP-freshwater <sup>3)</sup>	kg Pe	5.04E-5	2.15E-6	4.55E-5	9.81E-5	0E0	8.69E-8	MND	MND	MND	MND	MND	MND	MND	8.93E-6	2.47E-5	7.15E-5	3.97E-8	-3.01E-4
EP-marine	kg Ne	1.12E-3	4.09E-4	3.3E-4	1.86E-3	0E0	2.39E-6	MND	MND	MND	MND	MND	MND	MND	1.02E-2	3.84E-3	2.32E-2	1.13E-5	-6.21E-3
EP-terrestrial	mol Ne	1.25E-2	4.53E-3	4.02E-3	2.11E-2	0E0	2.66E-5	MND	MND	MND	MND	MND	MND	MND	1.12E-1	4.24E-2	2.55E-1	6.8E-5	-8.17E-2
POCP (“smog”)	kg NMVOCe	5.51E-3	1.38E-3	1.06E-3	7.95E-3	0E0	8.33E-6	MND	MND	MND	MND	MND	MND	MND	3.08E-2	1.36E-2	7.2E-2	2.6E-5	-2.07E-2
ADP-minerals & metals	kg Sbe	1.42E-7	4.17E-6	1.59E-6	5.9E-6	0E0	3.27E-8	MND	MND	MND	MND	MND	MND	MND	3.37E-6	5.18E-5	7.01E-5	2.28E-8	-4.87E-4
ADP-fossil resources	MJ	7.07E1	3.87E0	8.95E0	8.35E1	0E0	3.47E-2	MND	MND	MND	MND	MND	MND	MND	3.04E1	4.72E1	1.36E2	5.02E-2	-6.69E1
Water use <sup>2)</sup>	m <sup>3</sup> e depr.	1.27E0	1.5E-2	1.21E-1	1.41E0	0E0	5.85E-4	MND	MND	MND	MND	MND	MND	MND	5.67E-2	1.76E-1	3.89E0	2.23E-3	-7.93E0

## ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter	Incidence	7.41E-8	2.19E-8	7.85E-9	1.04E-7	0E0	1.38E-10	MND	MND	MND	MND	MND	MND	MND	6.12E-7	2.74E-7	3.4E-6	3.49E-10	-3.39E-7
Ionizing radiation <sup>5)</sup>	kBq U235e	4.9E-2	1.67E-2	7.48E-2	1.4E-1	0E0	1.63E-4	MND	MND	MND	MND	MND	MND	MND	1.3E-1	2.06E-1	5.61E-1	1.96E-4	-4.31E-1
Ecotoxicity (freshwater)	CTUe	1.21E1	3.04E0	5.1E0	2.02E1	0E0	3.11E-2	MND	MND	MND	MND	MND	MND	MND	1.78E1	3.61E1	9.32E1	5.22E-2	-7.89E1
Human toxicity, cancer	CTUh	8.66E-11	8.02E-11	1.5E-10	3.16E-10	0E0	2.56E-12	MND	MND	MND	MND	MND	MND	MND	6.39E-10	9.23E-10	2.97E-9	1.4E-12	-4.04E-9
Human tox. non-cancer	CTUh	3.12E-9	3.45E-9	4.27E-9	1.08E-8	0E0	4.06E-11	MND	MND	MND	MND	MND	MND	MND	1.57E-8	4.27E-8	8.12E-8	3.47E-11	-9.59E-8
SQP	-	1.5E-4	5.57E0	3.81E-1	5.95E0	0E0	1.95E-2	MND	MND	MND	MND	MND	MND	MND	7.8E-1	7.13E1	1.62E2	1.77E-1	-4.39E1

## USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
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Renew. PER as energy	MJ	7.5E-1	4.47E-2	1.65E0	2.45E0	0E0	2.69E-3	MND	MND	MND	MND	MND	MND	MND	1.64E-1	5.94E-1	1.41E0	8.88E-4	-5.96E0
Renew. PER as material	MJ	0E0	0E0	8.51E-1	8.51E-1	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Total use of renew. PER	MJ	7.5E-1	4.47E-2	2.5E0	3.3E0	0E0	2.69E-3	MND	MND	MND	MND	MND	MND	MND	1.64E-1	5.94E-1	1.41E0	8.88E-4	-5.96E0
Non-re. PER as energy	MJ	2.33E1	3.87E0	8.86E0	3.6E1	0E0	3.47E-2	MND	MND	MND	MND	MND	MND	MND	3.04E1	4.72E1	1.36E2	5.02E-2	-6.69E1
Non-re. PER as material	MJ	4.74E1	0E0	8.6E-2	4.75E1	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Total use of non-re. PER	MJ	7.07E1	3.87E0	8.95E0	8.35E1	0E0	3.47E-2	MND	MND	MND	MND	MND	MND	MND	3.04E1	4.72E1	1.36E2	5.02E-2	-6.69E1
Secondary materials	kg	5.55E-7	0E0	4.03E-3	4.03E-3	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Renew. secondary fuels	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Non-ren. secondary fuels	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Use of net fresh water	m³	2.76E1	7.88E-4	3.24E-3	2.76E1	0E0	1.02E-5	MND	MND	MND	MND	MND	MND	MND	2.68E-3	9.83E-3	9.48E-2	5.62E-5	-6.31E-1

6) PER = Primary energy resources

### END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	2.28E-3	4.19E-3	2.97E-2	3.62E-2	0E0	1.54E-4	MND	MND	MND	MND	MND	MND	MND	3.27E-2	4.59E-2	0E0	9.16E-5	-3.41E-1
Non-hazardous waste	kg	1.9E-3	4.04E-1	2.02E0	2.42E0	0E0	5.55E-3	MND	MND	MND	MND	MND	MND	MND	3.5E-1	5.07E0	0E0	2E-1	-1.42E1
Radioactive waste	kg	5.39E-8	2.63E-5	5.65E-5	8.28E-5	0E0	1.69E-7	MND	MND	MND	MND	MND	MND	MND	2.13E-4	3.24E-4	0E0	2.99E-7	-3.13E-4

### END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Materials for recycling	kg	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	5.35E2	0E0	0E0
Materials for energy rec	kg	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Exported energy	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0



### ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO <sub>2</sub> e	1.62E0	2.51E-1	4.29E-1	2.29E0	0E0	2.82E-3	MND	MND	MND	MND	MND	MND	MND	2.19E0	3.01E0	6.84E0	2.09E-2	-4.5E0
Ozone depletion Pot.	kg CFC <sub>11</sub> e	4.19E-8	4.62E-8	4.28E-8	1.31E-7	0E0	2.26E-10	MND	MND	MND	MND	MND	MND	MND	3.78E-7	5.67E-7	1.58E-6	5.23E-10	-3.84E-7
Acidification	kg SO <sub>2</sub> e	4.19E-3	9.37E-4	2.08E-3	7.21E-3	0E0	6.67E-6	MND	MND	MND	MND	MND	MND	MND	3.26E-3	6.17E-3	2.23E-2	2E-5	-1.85E-2
Eutrophication	kg PO <sub>4</sub> <sup>3</sup> e	1.16E-3	1.66E-4	1.43E-3	2.76E-3	0E0	6.11E-6	MND	MND	MND	MND	MND	MND	MND	5.74E-4	1.25E-3	5.26E-3	1.04E-3	-1.01E-2
POCP ("smog")	kg C <sub>2</sub> H <sub>4</sub> e	3.62E-4	3.99E-5	8.48E-5	4.87E-4	0E0	4.92E-7	MND	MND	MND	MND	MND	MND	MND	3.36E-4	3.91E-4	1.45E-3	4.36E-6	-1.48E-3
ADP-elements	kg Sbe	1.42E-7	4.17E-6	1.59E-6	5.9E-6	0E0	3.27E-8	MND	MND	MND	MND	MND	MND	MND	3.37E-6	5.18E-5	7.01E-5	2.28E-8	-4.87E-4
ADP-fossil	MJ	7.07E1	3.87E0	8.95E0	8.35E1	0E0	3.47E-2	MND	MND	MND	MND	MND	MND	MND	3.04E1	4.72E1	1.36E2	5.02E-2	-6.69E1

### ENVIRONMENTAL IMPACTS – TRACI 2.1. / ISO 21930

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO <sub>2</sub> e	1.62E0	2.51E-1	4.3E-1	2.3E0	0E0	2.83E-3	MND	MND	MND	MND	MND	MND	MND	2.18E0	3E0	6.81E0	2.22E-2	-4.47E0
Ozone Depletion	kg CFC <sub>11</sub> e	4.43E-8	6.16E-8	5.37E-8	1.6E-7	0E0	2.95E-10	MND	MND	MND	MND	MND	MND	MND	5.03E-7	7.56E-7	2.1E-6	6.97E-10	-5.07E-7
Acidification	kg SO <sub>2</sub> e	4.32E-3	1.25E-3	1.98E-3	7.56E-3	0E0	8.54E-6	MND	MND	MND	MND	MND	MND	MND	2.12E-2	1.11E-2	5.46E-2	1.65E-5	-2.51E-2
Eutrophication	kg Ne	3.35E-3	1.4E-4	3.85E-4	3.87E-3	0E0	1.29E-6	MND	MND	MND	MND	MND	MND	MND	1.87E-3	1.56E-3	5.83E-3	9.09E-6	-3.39E-3
POCP (“smog”)	kg O <sub>3</sub> e	7.32E-2	2.6E-2	2.04E-2	1.2E-1	0E0	1.48E-4	MND	MND	MND	MND	MND	MND	MND	6.49E-1	2.43E-1	1.47E0	3.91E-4	-3.85E-1
ADP-fossil	MJ	1.05E1	5.52E-1	3.73E-1	1.14E1	0E0	3.56E-3	MND	MND	MND	MND	MND	MND	MND	4.5E0	6.76E0	1.94E1	6.88E-3	-4.98E0

## VERIFICATION STATEMENT

### VERIFICATION PROCESS FOR THIS EPD

This EPD has been verified in accordance with ISO 14025 by an independent, third-party verifier by reviewing results, documents and compliancy with reference standard, ISO 14025 and ISO 14040/14044, following the process and checklists of the program operator for:

- This Environmental Product Declaration
- The Life-Cycle Assessment used in this EPD
- The digital background data for this EPD

Why does verification transparency matter? Read more online  
This EPD has been generated by One Click LCA EPD generator, which has been verified and approved by the EPD Hub.

### THIRD-PARTY VERIFICATION STATEMENT

I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of the data collected and used in the LCA calculations, the way the LCA-based calculations have been carried out, the presentation of environmental data in the EPD, and other additional environmental information, as present with respect to the procedural and methodological requirements in ISO 14025:2010 and reference standard.

I confirm that the company-specific data has been examined as regards plausibility and consistency; the declaration owner is responsible for its factual integrity and legal compliance.

I confirm that I have sufficient knowledge and experience of construction products, this specific product category, the construction industry, relevant standards, and the geographical area of the EPD to carry out this verification.

I confirm my independence in my role as verifier; I have not been involved in the execution of the LCA or in the development of the declaration and have no conflicts of interest regarding this verification.

Elma Avdyli as an authorized verifier acting for EPD Hub Limited  
01.07.2022

