



## FIBRILLATED MICROFIBER

ENVIRONMENTAL PRODUCT  
DECLARATION CRADLE-TO-GATE  
MASTER BUILDERS SOLUTIONS



## General information

<b>Manufacturer Name:</b>	Master Builder Solutions Admixtures US, LLC 23700 Chagrin Blvd, Beachwood, OH 44122
<b>Program Operator:</b>	ASTM International 100 Barr Harbor Drive West Conshohocken, PA 19428-2959, USA
<b>Declaration Number:</b>	EPD 731
<b>Reference PCR:</b>	ISO 21930: 2017
<b>Date of Issuance:</b>	June 27, 2024
<b>End of Validity:</b>	June 27, 2029
<b>Product Name:</b>	Fibrillated Microfibers
<b>EPD Owner:</b>	Master Builder Solutions Admixtures US, LLC
<b>Declared Unit:</b>	1 kg of Fibrillated Microfibers
<b>EPD Scope:</b>	Cradle-to-gate (A1, A2, and A3)
<b>Prepared By:</b>	WAP Sustainability Consulting
<b>Verification:</b>	ISO 21930 serves as the core PCR. Independent verification of the declaration according to ISO 14025 and ISO 21930.  <input type="checkbox"/> internal <input checked="" type="checkbox"/> external
<b>LCA Reviewer and EPD Verifier:</b>	Thomas Gloria

## Company information

Master Builders Solutions offers advanced chemical solutions for new concrete construction and underground construction in the U.S. and Canada. Their brand is built on more than 100 years of experience in the construction industry. Their comprehensive portfolio encompasses concrete admixtures, cement additives, macro- and microfiber reinforcement for concrete, and chemical solutions for underground construction. To solve their customers' specific construction challenges from conception through to completion of a project, Master Builders Solutions draws on specialist know-how, regional expertise, and the experience gained in countless construction projects worldwide. They leverage global technologies and in-depth knowledge of local building needs to develop innovations that help make our customers more successful and drive sustainable construction.

## Product information

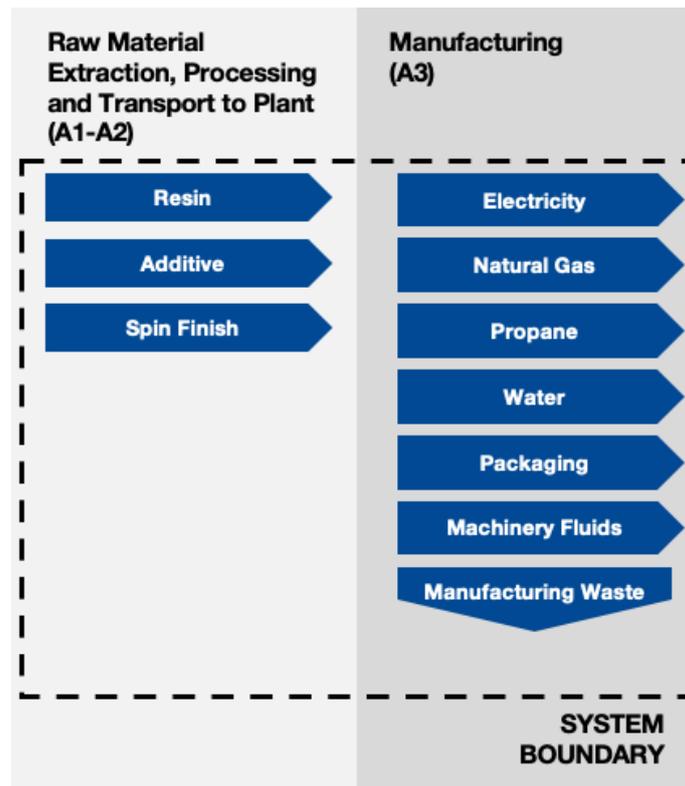
Fibrillated polypropylene fibers are a unique technology that creates additional microfibrils that are attached to the principle fibrillated network. These additional anchorage sites provide increased bonding between the mortar matrix and the fiber network and enhance the performance of fibrillated microfibers as a shrinkage and temperature (secondary) reinforcement.

Parameter	Monofilament Microfibers	Fibrillated Microfibers	Macrofiber
<b>Specific Application</b>	Early age crack control	Moderate crack control	Secondary reinforcements
<b>Product SKUs</b>	Masterfiber M70 Masterfiber M35 Masterfiber M100	Masterfiber F70 Masterfiber F100	Masterfiber MAC100 Masterfiber MAC100 Plus Masterfiber MAC2200 CB Masterfiber MAC MATRIX

## LCA information

<b>Declared unit</b>	1 kg of Fibrillated Microfibers
<b>Reference service life</b>	Not declared as use phase is not included in the study
<b>Description of the system boundaries</b>	Cradle to Gate
<b>Geographical representativeness</b>	A1-A3: United States
<b>Time representativeness</b>	Primary data collected for calendar year 2022
<b>Cut-off rules</b>	All flows for which data were provided are included in the assessment, accounting for at least 99% of the energy or mass flows and at least 99% of the environmental impacts from the product system. Production of capital equipment is excluded from this assessment.
<b>Database and LCA software used</b>	SimaPro v9.1 Ecoinvent V3.9.1
<b>LCA Report</b>	LCA of Master Builders Solutions Admixtures, April 2024
<b>Scenario Description: A2</b>	Primary data of transportation from suppliers: 800 km by rail, 0-1050 km by truck
<b>Scenario Description: A3</b>	Electricity Source: NERC region specific grid mix

### System diagram:



Modules declared and geographical scope:

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Geography	US			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

## Content information

Product components	Percent Composition %	Post-consumer material, weight-%	Biogenic material, weight-% and kg C/kg
Polypropylene	93.0%	0%	0%
Polyethylene	6.35%		
Spin Finish	0.350%	0%	0%
TOTAL	100%	0%	0%

No substances in the product are on the Candidate List of Substances of Very High Concern (SVHC) which exceed the limits for registration with the Conservation and Recovery Act (RCRA), Subtitle 3.

## Results of the environmental performance indicators

The results presented here are for 1 declared unit, which is 1 kg of Fibrillated Microfiber

Impact Category	A1-A3	A1	A2	A3
<b>IPCC AR5</b>				
GWP [kg CO <sub>2</sub> eq]	3.35E+00	2.39E+00	7.30E-02	8.88E-01
<b>TRACI LCIA Impacts (North America)</b>				
AP [kg SO <sub>2</sub> eq]	1.08E-02	8.04E-03	7.29E-04	2.05E-03
EP [kg N eq]	3.37E-03	5.77E-04	7.91E-05	2.71E-03
ODP [kg CFC 11 eq]	3.65E-08	1.15E-08	1.04E-08	1.46E-08
SFP [kg O <sub>3</sub> eq]	1.59E-01	1.10E-01	2.19E-02	2.74E-02
<b>CML LCIA Impacts (Europe, Rest of World)</b>				
ADPF [MJ]	8.94E+01	7.72E+01	9.64E-01	1.12E+01
<b>Resource Use Indicators</b>				
RPR <sub>E</sub> [MJ]	2.68E+00	7.51E-01	1.10E-02	1.91E+00
RPR <sub>M</sub> [MJ]	2.16E+00	0.00E+00	4.46E-03	2.15E+00
NRPR <sub>E</sub> [MJ]	1.03E+02	8.57E+01	1.00E+00	1.65E+01
NRPR <sub>M</sub> [MJ]	4.63E+01	4.63E+01	0.00E+00	3.57E-03
SM [kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF [MJ]	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
RE [MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW [m <sup>3</sup> ]	2.67E+00	2.59E+00	7.08E-02	1.30E-02
<b>Output Flows and Waste Categories</b>				
HWD [kg]	7.73E-04	0.00E+00	2.91E-04	4.82E-04
NHWD [kg]	6.02E-03	0.00E+00	6.02E-03	0.00E+00
HLRW [kg]	7.36E-10	6.21E-10	2.25E-11	9.26E-11
ILLRW [kg]	4.04E-09	3.49E-09	1.07E-10	4.40E-10
CRU [kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MR [kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MER [kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE [MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00
<b>Carbon Emissions and Uptake</b>				
BCRP [kg CO <sub>2</sub> ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEP [kg CO <sub>2</sub> ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCRK [kg CO <sub>2</sub> ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEK [kg CO <sub>2</sub> ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEW [kg CO <sub>2</sub> ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CCE [kg CO <sub>2</sub> ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CCR [kg CO <sub>2</sub> ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CWNR [kg CO <sub>2</sub> ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks. The results of modules A1-A3 shouldn't be used without considering the results of module C. A1-A3 results include the "balancing-out reporting" of biogenic CO<sub>2</sub> of packaging, traditionally released in A5.

## Additional environmental information

No additional environmental, social, or economic information is declared in this EPD.

## References

- ASTM 2020 - ASTM Program Operator for Product Category Rules (PCR) and Environmental Product Declarations (EPDs) General Program Instructions v8, April 29<sup>th</sup>.
- WAP Sustainability Consulting: 2024 – A Cradle-to-Gate Life Cycle Assessment of Master Builders Concrete Fibers
- ISO 21930: 2017 Building construction – Sustainability in building construction – Environmental declaration of building products.
- ISO 14025: 2006 Environmental labeling and declarations - Type III environmental declarations - Principles and procedures.
- ISO 14044:2006/AMD 1:2017/ AMD 2:2020 - Environmental management - Life cycle assessment - Requirements and guidelines.
- 14040:2006/AMD 1:2020 - Environmental management - Life cycle assessment - Principles and framework.



