

ENVIRONMENTAL PRODUCT DECLARATION

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

MasterRoc MSL 345

Master Builders Solutions Italia SpA



EPD HUB, EPD number 0097

Publishing date 11 August 2022, last updated date 18 July 2023, valid until date 11 August 2027

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Master Builders Solutions Italia SpA
Address	Via Vicinale delle Corti 21, 31100 Treviso, Italia
Contact details	infomac@masterbuilders.com
Website	https://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 and D
EPD author	Diletta Traldi
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	N.C as an authorized verifier acting for EPD Hub

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	MasterRoc MSL 345
Place of production	Treviso, Italy
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 ₂ e)	1,98
GWP-total, A1-A3 (kgCO ₂ e)	1,98
Secondary material, inputs (%)	4,4
Secondary material, outputs (%)	0
Total energy use, A1-A3 (kWh)	6,62
Total water use, A1-A3 (m ³ e)	0,26

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Master Builders Solutions is one of the leading suppliers of concrete admixtures and underground construction solutions worldwide. With over a century of experience in the construction industry, we leverage cutting-edge technologies, a global community of experts at the core of our business, as well as in-depth knowledge of local building needs to provide innovative and sustainable solutions.

PRODUCT DESCRIPTION

MasterRoc MSL 345 is an ethylene vinyl acetate (EVA) polymer-based, sprayable membrane. It is a one component solution which is applied together with water by means of dry spraying (typical water addition 50% by weight).

MasterRoc MSL 345 is used for waterproofing underground concrete structures. It is spray-applied in a sandwich structure between two sprayed concrete/cast concrete layers, creating a double bonded composite shell lining. It is flexible and has very high bond strength properties on both sides of the membrane.

Further information can be found at <https://www.master-builders-solutions.com>

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	-	-
Minerals	30	EU
Fossil materials	70	EU
Bio-based materials	-	-

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	0,0137

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 kg
Mass per declared unit	1 kg

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	MNR	MNR	MNR	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.

Manufacture

For the production batch mixing of the needed ingredients is used. The raw materials are added into a pan mixer and transported after mixing to a filling station.

Environment and health during manufacturing

During production of MasterRoc MSL 345 the dust is extracted and collected via a filter in order to avoid contamination of the environment. Thus, any release of powder or dust to the environment is avoided. The

production process is completely dry so that no wastewater is generated. Equipment cleaning is also done without water. Empty bags of the raw materials are disposed of according to local regulations.

Product processing/Installation

An explosion protection concept is developed for the process and the manufacturing plant. Measures to avoid dust explosions in the manufacturing facility are implemented. The equipment for the manufacturing of MasterRoc MSL 345 is designed according to the requirements of the explosion protection concept.

Packaging

MasterRoc MSL 345 is available in 15 kg polyethylene plastic bags (928 kg of packaged product on an EUR flat pallet). The empty bags are disposed of according to local regulations.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to the construction site (A4) are not considered.

The treatment of packaging waste is covered in the A5 module.

Placing on the market / Application rules

MasterRoc MSL 345 is applied according to the rules specified in the /ITatech Guideline/ for spray-applied waterproofing membranes.

Condition of use

MasterRoc MSL 345 has a shelf life of 12 months if stored in original, unopened bags between +5 °C to +40°C. The product must be kept out of direct sunlight. The storage area must be kept dry. For the application of MasterRoc MSL 345 the ambient temperature should be above +5 °C.

PRODUCT USE AND MAINTENANCE (B1-B7)

This EPD does not cover the use phase.

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

Environment and health during use

During use normally no relationships between MasterRoc MSL 345 and the environment and health occur.

Reference service life

Reference service life is not relevant due to cradle-to-gate boundary conditions.

PRODUCT END OF LIFE (C1-C4, D)

Extraordinary effects

Fire

MasterRoc MSL 345 is located between two concrete layers and thus not directly exposed to fire. Therefore, it does not have specific fire protection properties. At high temperatures (above approx. 250 °C) it decomposes.

Water

After curing, the product water has no effect on it, because MasterRoc MSL 345 is a waterproofing membrane. Tests have shown that there is no leaching of substances from MasterRoc MSL 345 to water. It can also be used in direct contact with potable water.

Mechanical destruction

Not relevant, because MasterRoc MSL 345 is installed in a sandwich construction between two concrete layers.

Re-use phase

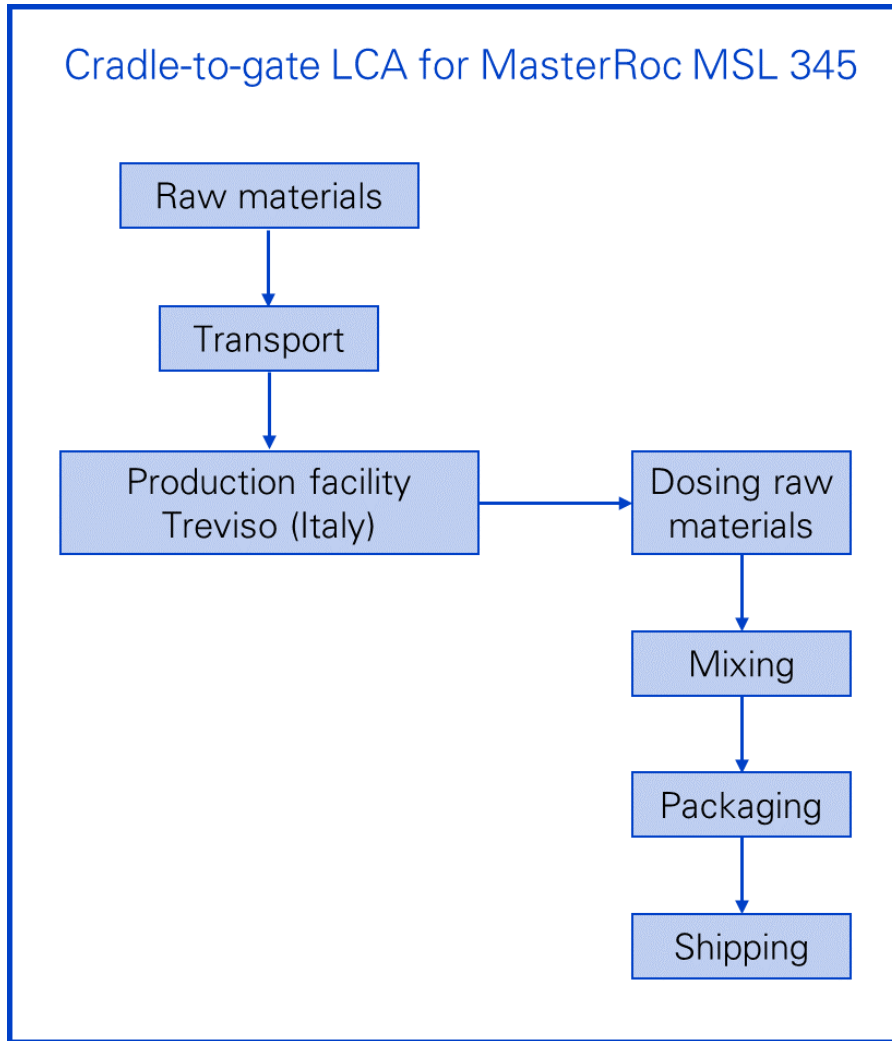
Not relevant, because it cannot be re-used.

Disposal

The end-of-life modules (C1-C3) are omitted from the EPD as the MasterRoc MSL 345 is permanently placed into tunnel structure and therefore becomes an integral part of the mountain. The placing of the product is simultaneously the final deposition and modelled as landfill in (C4).

The benefits and loads beyond the system boundary (D) are included.

MANUFACTURING PROCESS



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 ₂ e	1,86E0	9,36E-2	2,16E-2	1,98E0	MND	7,92E-3	MND	MND	MND	MND	MND	MND	MND	MNR	MNR	MNR	1,15E-1	0E0
GWP – fossil	kg CO ₂ e	1,86E0	9,35E-2	2,58E-2	1,98E0	MND	2,92E-3	MND	MND	MND	MND	MND	MND	MND	MNR	MNR	MNR	1,15E-1	-1,21E-2
GWP – biogenic	kg CO ₂ e	2,81E-4	6,79E-5	-4,25E-3	-3,9E-3	MND	5E-3	MND	MND	MND	MND	MND	MND	MND	MNR	MNR	MNR	0E0	0E0
GWP – LULUC	kg CO ₂ e	8,23E-4	2,81E-5	4,84E-6	8,56E-4	MND	1,73E-6	MND	MND	MND	MND	MND	MND	MND	MNR	MNR	MNR	6,56E-6	8,46E-7
Ozone depletion pot.	kg CFC-11e	9,13E-8	2,2E-8	6,39E-9	1,2E-7	MND	2,14E-10	MND	MND	MND	MND	MND	MND	MND	MNR	MNR	MNR	3,3E-9	-3,27E-10
Acidification potential	mol H ⁺ e	6,95E-3	3,93E-4	9,52E-5	7,43E-3	MND	8,45E-6	MND	MND	MND	MND	MND	MND	MND	MNR	MNR	MNR	9,71E-5	-3,8E-5
EP-freshwater	kg Pe	5,04E-5	7,61E-7	7,67E-7	5,19E-5	MND	5,07E-8	MND	MND	MND	MND	MND	MND	MND	MNR	MNR	MNR	2,2E-7	-2,35E-8
EP-marine	kg Ne	1,22E-3	1,18E-4	1,91E-5	1,36E-3	MND	2,32E-6	MND	MND	MND	MND	MND	MND	MND	MNR	MNR	MNR	1,5E-4	-5,71E-6
EP-terrestrial	mol Ne	1,4E-2	1,31E-3	2,17E-4	1,55E-2	MND	2,53E-5	MND	MND	MND	MND	MND	MND	MND	MNR	MNR	MNR	3,5E-4	-6,58E-5
POCP (“smog”)	kg NMVOCe	5,85E-3	4,2E-4	7,84E-5	6,35E-3	MND	8,19E-6	MND	MND	MND	MND	MND	MND	MND	MNR	MNR	MNR	1,24E-4	-4,03E-5
ADP-minerals & metals	kg Sbe	2,64E-5	1,6E-6	4,13E-8	2,81E-5	MND	3,56E-8	MND	MND	MND	MND	MND	MND	MND	MNR	MNR	MNR	1,15E-7	-7,42E-8
ADP-fossil resources	MJ	5,92E1	1,45E0	7,26E-1	6,14E1	MND	2,9E-2	MND	MND	MND	MND	MND	MND	MND	MNR	MNR	MNR	2,56E-1	-5,08E-1
Water use	m ³ e depr.	1,13E0	5,41E-3	1,73E-2	1,16E0	MND	6,14E-4	MND	MND	MND	MND	MND	MND	MND	MNR	MNR	MNR	1,12E-2	-9,92E-3

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
Renew. PER as energy ⁶⁾	MJ	1,2E0	1,83E-2	5,09E-2	1,27E0	MND	1,49E-3	MND	MND	MND	MND	MND	MND	MND	MNR	MNR	MNR	5,05E-3	-1,27E-3
Renew. PER as material	MJ	0E0	0E0	4,82E-2	4,82E-2	MND	0E0	MND	MND	MND	MND	MND	MND	MND	MNR	MNR	MNR	0E0	0E0
Total use of renew. PER	MJ	1,2E0	1,83E-2	9,91E-2	1,32E0	MND	1,49E-3	MND	MND	MND	MND	MND	MND	MND	MNR	MNR	MNR	5,05E-3	-1,27E-3
Non-re. PER as energy	MJ	2,07E1	1,45E0	3,53E-1	2,26E1	MND	2,9E-2	MND	MND	MND	MND	MND	MND	MND	MNR	MNR	MNR	2,56E-1	-1,35E-1
Non-re. PER as material	MJ	3,86E1	0E0	3,73E-1	3,89E1	MND	0E0	MND	MND	MND	MND	MND	MND	MND	MNR	MNR	MNR	0E0	-3,73E-1
Total use of non-re. PER	MJ	5,93E1	1,45E0	7,26E-1	6,15E1	MND	2,9E-2	MND	MND	MND	MND	MND	MND	MND	MNR	MNR	MNR	2,56E-1	-5,08E-1
Secondary materials	kg	4,4E-2	0E0	3,12E-6	4,4E-2	MND	0E0	MND	MND	MND	MND	MND	MND	MND	MNR	MNR	MNR	0E0	7,77E-3
Renew. secondary fuels	MJ	0E0	0E0	0E0	0E0	MND	0E0	MND	MND	MND	MND	MND	MND	MND	MNR	MNR	MNR	0E0	0E0
Non-ren. secondary fuels	MJ	0E0	0E0	0E0	0E0	MND	0E0	MND	MND	MND	MND	MND	MND	MND	MNR	MNR	MNR	0E0	0E0
Use of net fresh water	m ³	1,87E-2	3,03E-4	2,42E-1	2,61E-1	MND	8,69E-6	MND	MND	MND	MND	MND	MND	MND	MNR	MNR	MNR	2,83E-4	-2,03E-5

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	4,9E-2	1,41E-3	5,44E-4	5,1E-2	MND	1,57E-4	MND	MND	MND	MND	MND	MND	MND	MNR	MNR	MNR	4,91E-4	-3,5E-5
Non-hazardous waste	kg	1,57E0	1,56E-1	2,58E-2	1,75E0	MND	4,04E-3	MND	MND	MND	MND	MND	MND	MND	MNR	MNR	MNR	1E0	3,93E-3
Radioactive waste	kg	4,75E-5	9,99E-6	4,78E-7	5,8E-5	MND	1,11E-7	MND	MND	MND	MND	MND	MND	MND	MNR	MNR	MNR	1,51E-6	2,96E-8

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	MND	0E0	MND	MND	MND	MND	MND	MND	MND	MNR	MNR	MNR	0E0	0E0
Materials for recycling	kg	0E0	0E0	0E0	0E0	MND	0E0	MND	MND	MND	MND	MND	MND	MND	MNR	MNR	MNR	0E0	0E0
Materials for energy rec	kg	0E0	0E0	0E0	0E0	MND	4,44E-3	MND	MND	MND	MND	MND	MND	MND	MNR	MNR	MNR	0E0	0E0
Exported energy	MJ	0E0	0E0	0E0	0E0	MND	0E0	MND	MND	MND	MND	MND	MND	MND	MNR	MNR	MNR	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 ₂ e	1,71E0	9,27E-2	2,49E-2	1,83E0	MND	2,85E-3	MND	MND	MND	MND	MND	MND	MND	MNR	MNR	MNR	8,2E-2	-1,08E-2
Ozone depletion Pot.	kg CFC-11e	7,56E-8	1,75E-8	6,1E-9	9,92E-8	MND	1,79E-10	MND	MND	MND	MND	MND	MND	MND	MNR	MNR	MNR	2,63E-9	-2,54E-10
Acidification	kg SO ₂ e	5,7E-3	1,9E-4	7,95E-5	5,97E-3	MND	5,35E-6	MND	MND	MND	MND	MND	MND	MND	MNR	MNR	MNR	2,52E-4	-3,36E-5
Eutrophication	kg PO ₄ ³ e	1,68E-3	3,84E-5	6,78E-5	1,79E-3	MND	6,08E-6	MND	MND	MND	MND	MND	MND	MND	MNR	MNR	MNR	4,68E-3	2,25E-6
POCP (“smog”)	kg C ₂ H ₄ e	5,56E-4	1,21E-5	7,27E-6	5,75E-4	MND	4,98E-7	MND	MND	MND	MND	MND	MND	MND	MNR	MNR	MNR	1,72E-5	-3,92E-6
ADP-elements	kg Sbe	2,64E-5	1,6E-6	4,13E-8	2,81E-5	MND	3,56E-8	MND	MND	MND	MND	MND	MND	MND	MNR	MNR	MNR	1,15E-7	-7,42E-8
ADP-fossil	MJ	5,92E1	1,45E0	7,26E-1	6,14E1	MND	2,9E-2	MND	MND	MND	MND	MND	MND	MND	MNR	MNR	MNR	2,56E-1	-5,08E-1

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.

Neena Chandramathy as an authorized verifier acting for EPD Hub Limited
11.08.2022

