

**Environmental
Product
Declaration**

according to ISO 14025 and EN 15804



This declaration is for:
B&C DOBBELT-S

Provided by:
BMI Hersom



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

MRPI® registration
1.1.00165.2021
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COMPANY INFORMATION



BMI Hersom
 Teglgårdvej 11A
 9632
 Moldrup

wouterjan.vanden.berg@bmigroup.com
 www.bmigroup.com/nl

PRODUCT

B&C DOBBELT-S

DECLARED UNIT/FUNCTIONAL UNIT

m²

DESCRIPTION OF PRODUCT

A m² of concrete roofing tile, as produced (not attached to the roof, gradle to gate)

VISUAL PRODUCT



MRPI® REGISTRATION

1.1.00165.2021

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MORE INFORMATION

<https://www.monier.dk/tagprodukter/betontagsten/bc.html>

SCOPE OF DECLARATION

This MRPI®-EPD certificate is verified by **Kamiel Jansen, Primum**.

The LCA study has been done by **Wouter Jan van den Berg, BMI Group**.

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.

PROGRAM OPERATOR

Stichting MRPI®
 Kingsfordweg 151
 1043GR
 Amsterdam

ir. J-P den Hollander, Managing director MRPI®

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

Third party verifier:

Kamiel Jansen, Primum

[a] PCR = Product Category Rules

DETAILED PRODUCT DESCRIPTION

Concrete roof tiles are made from the natural raw materials: sand, cement and water. We color that mixture with natural iron oxide, so that the color is retained for a long time. Tiles are extruded using aluminium pallets. After curing, we finish the concrete roof tiles with an innovative top layer developed by our own research department. In recent decades, concrete roof tiles have developed enormously in terms of quality and offer aesthetic reliability for many years. For concrete roof tiles with a Glazuron finish, we apply a thin extra layer, which consists of fine sand, provided with coloring based on iron oxides.

In order to attach the tiles to the roof nails, hooks, battens and counterbattens are used (but n.a., grade to gate LCA)

The reference service life of the product parts / raw materials does not deviate from the product reference service life which is 60 years.

The concrete tiles are made out of cement, sand, pigments and coatings.

COMPONENT (> 1%)	[kg / %]
cement	confidential
sand	confidential
pigments	confidential
coatings	confidential

(*) > 1% of total mass

SCOPE AND TYPE

The concrete tiles are produced at the location of BMI Hersom and they are sold at the European market.

The background database is Eco Invent version 3.5. It is a specific EPD for a specific product and the type of this EPD is Cradle-to-Gate.

PRODUCT STAGE	CONSTRUCTION					USE STAGE							END OF LIFE			BENEFITS AND
	PROCESS												STAGE			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	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

LCA Processflow tile production

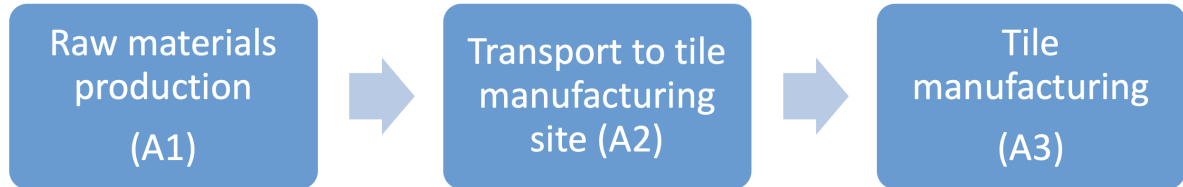


Figure: LCA process diagram according to EN 15804(7.2.1)

REPRESENTATIVENESS

The input data are representative for B&C DOBBELT-S, a product of BMI. The data are representative for the Netherlands.

ENVIRONMENTAL IMPACT per functional unit or declared unit

	UNIT	A1	A2	A3	A1-A3
ADPE	kg Sb-eq.	7.99E-6	2.59E-6	5.71E-6	1.63E-5
ADPF	MJ	2.72E+1	1.43E+1	1.86E+1	6.01E+1
GWP	kg CO ₂ -eq.	5.93E+0	9.21E-1	1.14E+0	7.99E+0
ODP	kg CFC11-eq.	2.36E-7	1.72E-7	8.73E-8	4.95E-7
POCP	kg ethene-eq.	1.44E-3	5.53E-4	4.08E-4	2.40E-3
AP	kg SO ₂ -eq.	1.00E-2	4.22E-3	3.18E-3	1.74E-2
EP	kg (PO ₄) ₃ --eq.	2.88E-3	8.19E-4	6.01E-4	4.30E-3

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

RESOURCE USE per functional unit or declared unit

	UNIT	A1	A2	A3	A1-A3
PERE	MJ	3.18E+0	0.00	6.67E-2	3.24E+0
PERM	MJ	0.00	0.00	0.00	0.00
PERT	MJ	2.24E+0	1.53E-1	3.40E+0	5.80E+0
PENRE	MJ	1.47E+1	0.00	3.10E-1	1.51E+1
PENRM	MJ	0.00	0.00	0.00	0.00
PENRT	MJ	3.34E+1	1.53E+1	1.87E+1	6.74E+1
SM	kg	1.93E+0	0.00	4.08E-2	1.97E+0
RSF	MJ	6.08E+0	0.00	1.28E-1	6.21E+0
NRSF	MJ	7.34E+0	0.00	1.54E-1	7.50E+0
FW	m ³	9.64E-2	2.44E-3	1.62E-2	1.15E-1

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
HWD	kg	2.07E-5	9.13E-6	2.72E-5	5.70E-5
NHWD	kg	3.21E+0	8.64E-1	1.73E-1	4.25E+0
RWD	kg	6.30E-5	9.67E-5	3.00E-5	1.90E-4
CRU	kg	0.00	0.00	0.00	0.00
MFR	kg	0.00	0.00	8.44E-1	8.44E-1
MER	kg	0.00	0.00	0.00	0.00
EEE	MJ	0.00	0.00	0.00	0.00
ETE	MJ	0.00	0.00	0.00	0.00

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

SCENARIOS AND ADDITIONAL TECHNICAL INFORMATION

In the Life cycle assessment the following is included in this study:

Product stage (A1-A3)

The production stage consists of the extraction of raw materials, transportation of the raw materials, processing the raw materials into materials and the production of the product. The required energy for production, external treatments, ancillary materials, packaging material and production emissions are included.

Transport Movement	Transport conveyance	Weight x distance [TKM]
Transport from suppliers and indirect suppliers to BMI	Multiple Transport Conveyances	8.16
Transport to external treatment	Multiple Transport Conveyances	0

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

ISO 14040

- DIN EN ISO 14040:2006-10, Environmental management - Life cycle assessment - Principles and framework; EN ISO 14040:2006

ISO 14044

- DIN EN ISO 14044:2006-10, Environmental management - Life cycle assessment - Requirements and guidelines; EN ISO 14040:2006

ISO 14025

- DIN EN ISO 14025:2011-10: Environmental labels and declarations — Type III environmental declarations — Principles and procedures

EN 15804

- EN 15804:2012-04+A1 2013: Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products

REMARKS

None