

# Environmental Product Declaration

*according to ISO 14025 and EN 15804*



This declaration is for:

**SolidScreen Niche - 123,5**

Provided by:

**Smits Rolluiken & Zonwering B.V.**



program operator

**Stichting MRPI®**

publisher

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### COMPANY INFORMATION



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### PRODUCT

SolidScreen Niche - 123,5

### DECLARED UNIT/FUNCTIONAL UNIT

Assembly of 3300 mm wide x 1500 mm high, calculated back to 1m<sup>2</sup>.

### DESCRIPTION OF PRODUCT

The SolidScreen Niche is a wind resistant vertical awning from which the headbox integrated in either the reveal or cavity wall, this renders it invisible from the exterior. The façade therefore maintains its sharp lines in any configuration.

### VISUAL PRODUCT



### MORE INFORMATION

SolidScreen Niche XS (avz.nl)

### MRPI® REGISTRATION

1.1.00342.2022

### DATE OF ISSUE

23-09-2022

### EXPIRY DATE

23-09-2027

### SCOPE OF DECLARATION

This MRPI®-EPD certificate is verified by **Kamiel Jansen, Aveco de Bondt**.

The LCA study has been done by **Atakan Larcin / Sabine Welman, NIBE / AVZ-Group**.

The certificate is based on an LCA-dossier according to ISO14025 and EN15804+A2/Bepalingsmethode. It is verified according to the 'MRPI®-EPD verification protocol November 2020.v4.0'. EPDs of construction products may not be comparable if they do not comply with EN15804+A2/Bepalingsmethode. 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®  
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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, Aveco de Bondt

[a] PCR = Product Category Rules

## DETAILED PRODUCT DESCRIPTION

The main advantage of the SolidScreen Niche is that the headbox is integrated into the facade and thus hidden from sight. The bottom slat is out of sight when the screen is rolled up. Thanks to the additional funnel side guide, the bottom slat runs smoothly into the headbox. With the SolidScreen Niche, the facade retains a sleek look, whether the screen is open or closed. The SolidScreen Niche can also withstand wind speeds up to 145 km/h (12 Beaufort). Repair or replacement of the SolidScreen Niche can be done quickly and easily. The side guide consists of 3 profiles and is easy to disassemble, giving convenient access from the underside to the roller and fabric.

The SolidScreen Niche is often used in projects. In addition to the SolidScreen Niche, AVZ has also developed the SolidScreen Niche XS. This screen has narrow side guides of only 4.3 cm

Dimensions:

The SolidScreen Niche 123,5 has a maximum fabric surface of 12 m<sup>2</sup>

The SolidScreen Niche 123,5 has a maximum width of 5,0 m and a maximum height of 3,5 m

### Fabric

The SolidScreen Niche is always made with Tibelly screenfabric with zipper. A zipped screen fabric is provided with an upper and lower hem of 3.5 cm for the cord. These are thermally welded. The sides of a zipped screen fabric are provided with zippers attached by means high frequency welding. Hylas applies the SLIM-ZIPP as standard. The zipper of the innovative SLIM-ZIPP is considerably thinner than the band previously used. This allows us to weld the zipper completely into the screen fabric during the manufacturing process. This results in a thinner roll diameter which results in a nicer hanging appearance.

COMPONENT >1% of total mass	[kg / %]
Aluminium profiles and components	3,47 kg
Steel components and reinforcement staff	2,66 kg
Screen fabric (41,5% PVC and 58,5% glass fibre) + zipper	0,584 kg
Motor	0,43 kg
Cardboard (packaging)	0,48 kg

(\*) > 1% of total mass

## SCOPE AND TYPE

The purpose of this LCA is to compile environmental data of materials and products used in the built environment. So that the environmental data can be used in calculations of buildings.

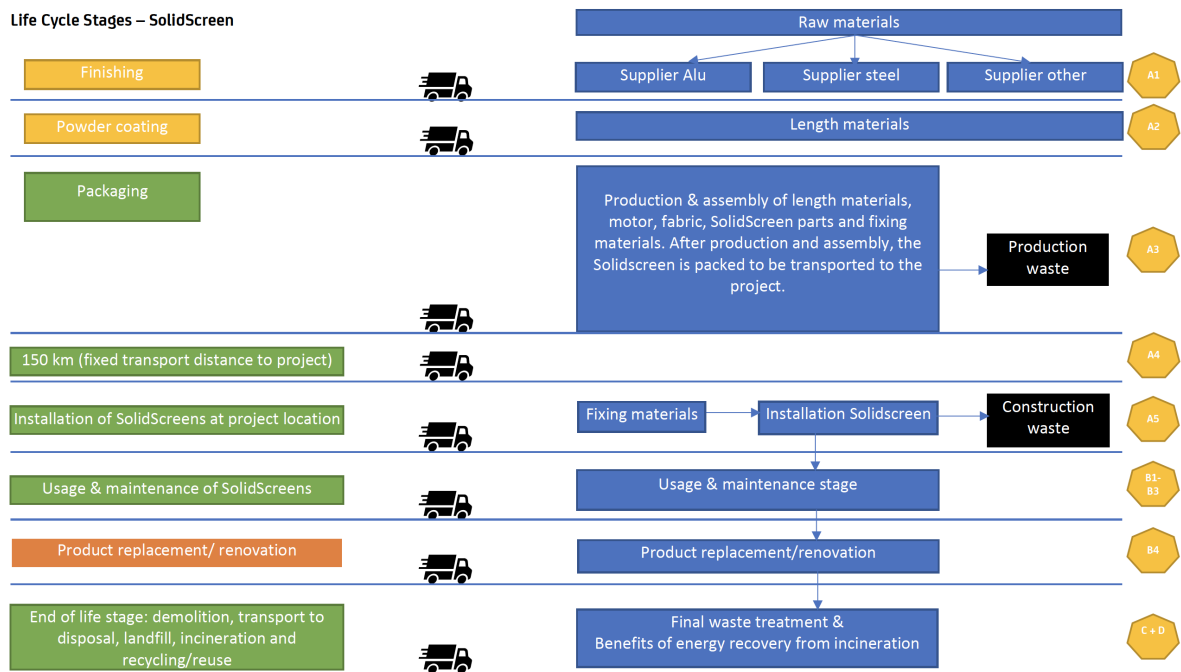
The purpose of this report is to draw up a review dossier with the results of 'set 1' and 'set 2' for the product as mentioned in the MRPI+ EPD methodology. This document defines a standardized method for a LCA in the Netherlands, of a product used in the build environment, in addition to EN 15084+A2. The review dossier is in accordance with EN15804+A2, ISO14040 and ISO14044. The target groups of this LCA study are: Users of the ECO Platform or programs that use this database, such as MRPI freetool and BREEAM.

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	x	x	x	x	x	ND	ND	ND	ND	x	x	x	x	x										x

X = Modules Assessed

ND = Not Declared

Life Cycle Stages – SolidScreen



LCA process diagram according to EN 15804 (7.2.1)

## REPRESENTATIVENESS

The product SolidScreen Niche - 123,5 was developed in the year 2014. The product composition is in accordance with the production method from the manual that was published in the year 2018. has been adjusted, because the reinforcement guidelines have been changed. The SolidScreen Niche - 123,5 has been produced on the production site in Cuijk, the Netherlands. For the consumption of energy we have assumed the year 2020.

## ENVIRONMENTAL IMPACT per functional unit or declared unit (indicators A1)

	UNIT	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	C2	C3	C4	D
ADPE	kg Sb eq.	8.40 E-4	3.60 E-5	1.64 E-3	2.52 E-3	4.05 E-6	3.11 E-5	0.00	0.00	4.29 E-4	1.58 E-6	2.00 E-5	4.30 E-8	-1.86 E-3
ADPF	MJ	8.04 E+2	1.97 E+1	1.83 E+1	8.43 E+2	2.41 E+0	2.65 E+1	0.00	0.00	1.02 E+2	9.41 E-1	9.01 E+0	8.46 E-2	-6.63 E+2
GWP	kg CO2 eq.	7.62 E+1	1.29 E+0	2.35 E+0	7.99 E+1	1.58 E-1	2.60 E+0	0.00	0.00	8.84 E+0	6.19 E-2	3.03 E+0	1.27 E-2	-6.64 E+1
ODP	kg CFC11 eq.	3.35 E-6	2.37 E-7	1.91 E-7	3.78 E-6	2.81 E-8	1.26 E-7	0.00	0.00	6.73 E-7	1.10 E-8	1.28 E-7	6.66 E-10	-2.62 E-6
POCP	kg ethene eq.	3.83 E-2	6.44 E-4	1.02 E-3	4.00 E-2	9.56 E-5	1.27 E-3	0.00	0.00	5.16 E-3	3.73 E-5	3.68 E-4	4.94 E-6	-3.14 E-2
AP	kg SO2 eq.	4.24 E-1	3.07 E-3	9.41 E-3	4.36 E-1	6.97 E-4	1.36 E-2	0.00	0.00	3.37 E-2	2.72 E-4	4.25 E-3	2.95 E-5	-3.59 E-1
EP	kg (PO4)3- eq.	3.94 E-2	4.76 E-4	1.66 E-3	4.16 E-2	1.37 E-4	1.32 E-3	0.00	0.00	5.87 E-3	5.34 E-5	5.02 E-4	5.60 E-6	-3.02 E-2

Toxicity indicators for Dutch market

HTP	kg DCB eq.	7.09 E+1	5.19 E-1	1.09 E+0	7.26 E+1	6.67 E-2	2.27 E+0	0.00	0.00	7.50 E+0	2.60 E-2	5.63 E-1	2.23 E-3	-6.03 E+1
FAETP	kg DCB eq.	6.26 E-1	1.43 E-2	7.49 E-2	7.15 E-1	1.95 E-3	2.33 E-2	0.00	0.00	1.04 E-1	7.60 E-4	2.69 E-2	3.56 E-4	-4.28 E-1
MAETP	kg DCB eq.	3.61 E+3	5.49 E+1	1.51 E+2	3.81 E+3	7.01 E+0	1.23 E+2	0.00	0.00	3.44 E+2	2.73 E+0	6.27 E+1	4.67 E-1	-3.04 E+3
TETP	kg DCB eq.	2.15 E-1	1.85 E-3	1.55 E-2	2.32 E-1	2.36 E-4	7.17 E-3	0.00	0.00	1.54 E-2	9.20 E-5	1.85 E-3	9.90 E-6	3.57 E-3
ECI	Euro	1.28 E+1	1.37 E-1	2.92 E-1	1.32 E+1	1.91 E-2	4.19 E-1	0.00	0.00	1.36 E+0	7.45 E-3	2.33 E-1	1.08 E-3	-1.09 E+1
ADPF	kg Sb. eq.	4.90 E-1	9.35 E-3	1.85 E-2	5.17 E-1	1.17 E-3	1.62 E-2	0.00	0.00	5.18 E-2	4.55 E-4	4.41 E-3	4.44 E-5	-4.22 E-1

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

HTP = Human Toxicity Potential

FAETP = Fresh water aquatic ecotoxicity potential

MAETP = Marine aquatic ecotoxicity potential

TETP = Terrestrial ecotoxicity potential

ECI = Environmental Cost Indicator

ADPF = Abiotic Depletion Potential for fossil resources expressed in [kg Sb-eq.]

### ENVIRONMENTAL IMPACT per functional unit or declared unit (core indicators A2)

	UNIT	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	C2	C3	C4	D
GWP-total	kg CO2 eq.	7.84 E+1	1.31 E+0	9.04 E-1	8.06 E+1	1.60 E-1	2.82 E+0	0.00	0.00	9.10 E+0	6.24 E-2	3.05 E+0	1.43 E-2	-6.80 E+1
GWP-fossil	kg CO2 eq.	7.84 E+1	1.30 E+0	1.30 E+0	8.11 E+1	1.60 E-1	2.63 E+0	0.00	0.00	9.12 E+0	6.24 E-2	3.04 E+0	1.39 E-2	-6.84 E+1
GWP-biogenic	kg CO2 eq.	-2.92 E-1	7.01 E-4	-4.05 E-1	-6.96 E-1	7.38 E-5	1.83 E-1	0.00	0.00	-2.94 E-2	2.88 E-5	7.40 E-3	4.46 E-4	6.31 E-1
GWP-luluc	kg CO2 eq.	2.79 E-1	4.64 E-4	6.28 E-3	2.86 E-1	5.85 E-5	8.78 E-3	0.00	0.00	5.66 E-3	2.29 E-5	6.73 E-4	4.36 E-6	-2.35 E-1
ODP	kg CFC11 eq.	3.58 E-6	2.97 E-7	1.30 E-7	4.01 E-6	3.53 E-8	1.34 E-7	0.00	0.00	6.80 E-7	1.38 E-8	1.35 E-7	8.14 E-10	-2.92 E-6
AP	mol H+ eq.	5.04 E-1	3.75 E-3	6.21 E-3	5.14 E-1	9.27 E-4	1.61 E-2	0.00	0.00	4.03 E-2	3.62 E-4	5.20 E-3	3.73 E-5	-4.26 E-1
EP-freshwater	kg PO4 eq.	2.95 E-3	1.04 E-5	8.11 E-5	3.04 E-3	1.61 E-6	9.42 E-5	0.00	0.00	2.83 E-4	6.29 E-7	3.46 E-5	1.64 E-7	-2.22 E-3
EP-marine	kg N eq.	7.60 E-2	7.42 E-4	1.28 E-3	7.80 E-2	3.27 E-4	2.50 E-3	0.00	0.00	5.78 E-3	1.27 E-4	9.77 E-4	1.20 E-5	-6.45 E-2
EP-terrestrial	mol N eq.	8.58 E-1	8.30 E-3	1.49 E-2	8.81 E-1	3.60 E-3	2.82 E-2	0.00	0.00	6.73 E-2	1.41 E-3	1.13 E-2	1.08 E-4	-7.19 E-1
POCP	kg NMVOC eq.	2.58 E-1	3.18 E-3	4.00 E-3	2.65 E-1	1.03 E-3	8.48 E-3	0.00	0.00	2.37 E-2	4.01 E-4	3.13 E-3	3.37 E-5	-2.20 E-1
ADP-minerals & metals	kg Sb eq.	8.40 E-4	3.60 E-5	1.64 E-3	2.52 E-3	4.05 E-6	3.10 E-5	0.00	0.00	4.29 E-4	1.58 E-6	2.00 E-5	4.30 E-8	-1.86 E-3
ADP-fossil	MJ, net calorific value	8.04 E+2	1.97 E+1	1.83 E+1	8.43 E+2	2.41 E+0	2.65 E+1	0.00	0.00	1.02 E+2	9.41 E-1	9.01 E+0	8.46 E-2	-6.63 E+2
WDP	m3 world eq. deprived	1.50 E+1	5.58 E-2	4.03 E-1	1.55 E+1	8.62 E-3	4.80 E-1	0.00	0.00	3.75 E+0	3.37 E-3	1.78 E-1	2.56 E-3	-9.22 E+0

GWP-total = Global Warming Potential total

GWP-fossil = Global Warming Potential fossil fuels

GWP-biogenic = Global Warming Potential biogenic

GWP-luluc = Global Warming Potential land use and land use change

ODP = Depletion potential of the stratospheric ozone layer

AP = Acidification Potential, Accumulated Exceedence

EP-freshwater = Eutrophication Potential, fraction of nutrients reaching freshwater end compartment

EP-marine = Eutrophication Potential, fraction of nutrients reaching marine end compartment

EP-terrestrial = Eutrophication Potential, Accumulated Exceedence

POCP = Formation potential of tropospheric ozone photochemical oxidants

ADP-minerals&metals = Abiotic Depletion Potential for non fossil resources [2]

ADP-fossil = Abiotic Depletion for fossil resources potential [2]

WDP = Water (user) deprivation potential, deprivation-weighted water consumption [2]

Disclaimer [2]

- The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

## ENVIRONMENTAL IMPACT per functional unit or declared unit (additional indicators A2)

	UNIT	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	C2	C3	C4	D
PM	Disease incidence	5.79 E-6	8.30 E-8	5.95 E-8	5.93 E-6	1.44 E-8	1.87 E-7	0.00	0.00	3.17 E-7	5.61 E-9	6.00 E-8	5.57 E-10	-5.02 E-6
IRP	kBq U235 eq.	1.52 E+0	8.62 E-2	6.16 E-2	1.67 E+0	1.01 E-2	5.37 E-2	0.00	0.00	1.92 E-1	3.94 E-3	3.82 E-2	3.03 E-4	-8.75 E-1
ETP-fw	CTUe	2.12 E+3	1.59 E+1	4.98 E+1	2.19 E+3	2.15 E+0	7.11 E+1	0.00	0.00	2.99 E+2	8.39 E-1	5.21 E+1	6.51 E+1	-1.77 E+3
HTP-c	CTUh	1.31 E-7	4.42 E-10	1.40 E-9	1.33 E-7	6.97 E-11	4.14 E-9	0.00	0.00	8.74 E-9	2.72 E-11	9.87 E-10	4.56 E-12	-9.16 E-8
HTP-nc	CTUh	2.38 E-6	1.67 E-8	3.41 E-8	2.43 E-6	2.35 E-9	7.55 E-8	0.00	0.00	3.11 E-7	9.18 E-10	3.31 E-8	1.35 E-10	-1.18 E-6
SQP	---	1.93 E+2	1.38 E+1	7.70 E+1	2.84 E+2	2.09 E+0	9.06 E+0	0.00	0.00	2.24 E+1	8.16 E-1	7.77 E+0	1.33 E-1	-1.39 E+2

PM = Potential incidence of disease due to PM emissions

IRP = Potential Human exposure efficiency relative to U235 [1]

ETP-fw = Potential Comparative Toxic Unit for ecosystems [2]

HTP-c = Potential Comparative Toxic Unit for humans [2]

HTP-nc = Potential Comparative Toxic Unit for humans, non-cancer [2]

SQP = Potential soil quality index [2]

Disclaimer [1]

- This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

Disclaimer [2]

- The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

**RESOURCE USE per functional unit or declared unit (A1 / A2)**

	UNIT	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	C2	C3	C4	D
PERE	MJ	9.69 E+1	2.82 E-1	1.63 E+1	1.13 E+2	3.02 E-2	3.50 E+0	0.00	0.00	6.02 E+0	1.18 E-2	9.75 E-1	3.95 E-3	-7.66 E+1
PERM	MJ	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-4.51 E+0
PERT	MJ	9.69 E+1	2.82 E-1	1.63 E+1	1.13 E+2	3.02 E-2	3.50 E+0	0.00	0.00	6.02 E+0	1.18 E-2	9.75 E-1	3.95 E-3	-8.11 E+1
PENRE	MJ	8.25 E+2	2.09 E+1	3.84 E+1	8.84 E+2	2.56 E+0	2.78 E+1	0.00	0.00	7.19 E+1	9.99 E-1	9.63 E+0	9.00 E-2	-7.05 E+2
PENRM	MJ	3.04 E+1	0.00	1.85 E+0	3.23 E+1	0.00	9.79 E-1	0.00	0.00	3.70 E+1	0.00	0.00	0.00	-1.21 E+0
PENRT	MJ	8.55 E+2	2.09 E+1	4.02 E+1	9.17 E+2	2.56 E+0	2.88 E+1	0.00	0.00	1.09 E+2	9.99 E-1	9.63 E+0	9.00 E-2	-7.06 E+2
SM	kg	1.44 E+0	0.00	0.00	1.44 E+0	0.00	4.32 E-2	0.00	0.00	1.50 E-1	0.00	0.00	0.00	0.00
RSF	MJ	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NRSF	MJ	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FW	m3	6.27 E-1	2.11 E-3	1.21 E+0	1.84 E+0	2.94 E-4	5.58 E-2	0.00	0.00	9.89 E-2	1.15 E-4	7.11 E-3	7.16 E-5	-4.42 E-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 (A1 / A2)**

	UNIT	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	C2	C3	C4	D
HWD	kg	6.30 E-3	5.17 E-5	1.41 E+0	1.42 E+0	6.11 E-6	4.31 E-2	0.00	0.00	2.93 E-4	2.38 E-6	2.17 E-2	9.60 E-8	-8.08 E-4
NHWD	kg	1.43 E+1	9.59 E-1	2.30 E-1	1.55 E+1	1.53 E-1	5.11 E-1	0.00	0.00	7.20 E-1	5.97 E-2	3.06 E-1	2.21 E-1	-1.23 E+1
RWD	kg	1.55 E-3	1.34 E-4	6.17 E-5	1.75 E-3	1.58 E-5	5.72 E-5	0.00	0.00	1.76 E-4	6.18 E-6	4.06 E-5	3.90 E-7	-1.01 E-3
CRU	kg	0.00	0.00	0.00	0.00	0.00	4.34 E-3	0.00	0.00	7.83 E-3	0.00	1.45 E-1	0.00	0.00
MFR	kg	0.00	0.00	1.06 E-1	1.06 E-1	0.00	5.59 E-1	0.00	0.00	2.11 E-1	0.00	6.15 E+0	0.00	0.00
MER	kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EEE	MJ	0.00	0.00	1.49 E-1	1.49 E-1	0.00	2.03 E-4	0.00	0.00	0.00	0.00	0.00	0.00	1.17 E+1
ETE	MJ	0.00	0.00	2.56 E-1	2.56 E-1	0.00	3.50 E-4	0.00	0.00	0.00	0.00	0.00	0.00	2.02 E+1

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



## BIOGENIC CARBON CONTENT per functional unit or declared unit (A1 / A2)

	UNIT	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	C2	C3	C4	D
BCCpr	kg C	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BCCpa	kg C	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

BCCpr = Biogenic carbon content in product

BCCpa = Biogenic carbon content in packaging

## CALCULATION RULES

### Allocation

The net input covers more than 99.99%. Rethink automatically causes the mass balance is in equilibrium. The input asks for a net materialization and a percentage of production waste, which are automatically settled in such a way that the gross input in balance with the output. The allocation for energy consumption: this is divided by the number of products produced (65200 pieces) because every product at Smits has a different m<sup>2</sup>, the energy consumption is therefore per product cannot be calculated in m<sup>2</sup>

### 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.

### Construction process stage (A4-A5)

This stage consists the transport of the product from production plant to the construction site. It also includes the loss of material during construction. The additional needed production, transport and end-of-life of the lost material during construction is included. The end-of-life of packaging material up to the end-of-waste state or disposal of final residues is also included. The installation of the product including manufacture, transportation and end-of-life of ancillary materials and any energy or water use required for installation or operation of the construction site are taken into account.

### Use stage (B1-B3)

This stage consists of the impacts arising from components of the building and construction works during their use. The stage also covers the combination of all planned technical and associated administrative maintenance actions during the service life to maintain the product installed in a building, in a construction works or its parts in a state in which it can perform its required functional and technical performance, as well as preserve the aesthetic qualities of the product.

### End of life stage (C1-C4)

When the end of the life stage of the building is reached, the de-construction/demolition begins. This EPD includes de-construction/demolition (C1), the necessary transport (C2) from the demolition site to the sorting location and distance to final disposal. The end of life stage includes the final disposal to landfill (C4), incineration (C3) and needed recycling processes up to the end-of-waste point (C3). Loads and benefits of recycling, re-use and exported energy are part of module D.

### Benefits and loads beyond the system boundary (D)

This stage contains the potential loads and benefits of recycling and re-use of raw materials/products. The loads contain the needed recycling processes from end-of-waste point up to the point-of-equivalence of the substituted primary raw material and a load for secondary material that will be lost at the end-of-life stage. The loads and benefits of recycling and reuse are included in this module. The benefits are calculated based on the primary content and the primary equivalent. In addition, the benefits of energy recovery are granted at this stage.

### SCENARIOS AND ADDITIONAL TECHNICAL INFORMATION

The LCA includes the following phases of the SolidScreen Niche 123,5 life cycle:

- Extraction of raw materials (A1)
- Transportation to the production locations (A2)
- Production of SolidScreens at production location Smits in Cuijk (A3)
- The transportation of the SolidScreens to the construction sites (A4)
- Construction proces of mounting SolidScreens to the facade (A5)
- Using phase of the SolidScreens (B1)
- Preventative and regular maintenance activities (B2-5).
- End of life stage (C1-C4)
- Benefits and loads beyond the system boundary (D)

When the end of the life stage of the building is reached, the de-construction/demolition begins. This EPD includes de-construction/demolition (C1), the necessary transport (C2) from the demolition site to the sorting location and distance to final disposal. The end of life stage includes the final disposal to landfill (C4), incineration (C3) and needed recycling processes up to the end-of-waste point (C3). Loads and benefits of recycling, re-use and exported energy are part of module D. The default end-of-life scenarios of the annex (november 2020) to the NMD Determination method v1.0 have been used for the various materials in the product. Benefits and loads beyond the system boundary (D) This stage contains the potential loads and benefits of recycling and re-use of raw materials/products. The loads contain the needed recycling processes from end-of-waste point up to the point-of-equivalence of the substituted primary raw material and a load for secondary material that will be lost at the end-of-life stage. The loads and benefits of recycling and reuse are included in this module. The benefits are calculated based on the primary content and the primary equivalent. In addition, the benefits of energy recovery are granted at this stage.

Aluminium for buildings (i.a. profiles, sheets, pipes)	Value	Unit
Transport distance for recycling (Module C2)	50.00	km
Transport distance for landfill (Module C2)	100.00	km
Transport distance for incineration (Module C2)	150.00	km
Recycling	94.00	%
Landfill	3.00	%
Incineration	3.00	%
Re-use	0.00	%

Metals, others (i.a. fasteners, fittings)	Value	Unit
Transport distance for recycling (Module C2)	50.00	km
Transport distance for landfill (Module C2)	100.00	km
Transport distance for incineration (Module C2)	150.00	km
Recycling	90.00	%
Landfill	5.00	%
Incineration	5.00	%
Re-use	0.00	%

Plastics, (via residue)	Value	Unit
Transport distance for recycling (Module C2)	50.00	km
Transport distance for landfill (Module C2)	100.00	km
Transport distance for incineration (Module C2)	150.00	km
Recycling	0.00	%
Landfill	20.00	%
Incineration	80.00	%
Re-use	0.00	%

Steel, construction profiles	Value	Unit
Transport distance for recycling (Module C2)	50.00	km
Transport distance for landfill (Module C2)	100.00	km
Transport distance for incineration (Module C2)	150.00	km
Recycling	94.00	%
Landfill	1.00	%
Incineration	0.00	%
Re-use	5.00	%

PVC, pipes	Value	Unit
Transport distance for recycling (Module C2)	50.00	km
Transport distance for landfill (Module C2)	100.00	km
Transport distance for incineration (Module C2)	150.00	km
Recycling	70.00	%
Landfill	10.00	%
Incineration	20.00	%
Re-use	0.00	%

Elastomeres (i.a. epdm) (i.a. roofing, foils)	Value	Unit
Transport distance for recycling (Module C2)	50.00	km
Transport distance for landfill (Module C2)	100.00	km
Transport distance for incineration (Module C2)	150.00	km
Recycling	5.00	%
Landfill	10.00	%
Incineration	85.00	%
Re-use	0.00	%

Organic material, other (i.a. insulation)	Value	Unit
Transport distance for recycling (Module C2)	50.00	km
Transport distance for landfill (Module C2)	100.00	km
Transport distance for incineration (Module C2)	150.00	km
Recycling	0.00	%
Landfill	5.00	%
Incineration	95.00	%
Re-use	0.00	%

Plastics, reinforced (i.a. profiles, sheets, pipes)	Value	Unit
Transport distance for recycling (Module C2)	50.00	km
Transport distance for landfill (Module C2)	100.00	km
Transport distance for incineration (Module C2)	150.00	km
Recycling	0.00	%
Landfill	0.00	%
Incineration	100.00	%
Re-use	0.00	%

Coatings (coatings) in civil constructions	Value	Unit
Transport distance for recycling (Module C2)	50.00	km
Transport distance for landfill (Module C2)	100.00	km
Transport distance for incineration (Module C2)	150.00	km
Recycling	0.00	%
Landfill	90.00	%
Incineration	10.00	%
Re-use	0.00	%

Corrugated board / Core board (PEF scenario)	Value	Unit
Transport distance for recycling (Module C2)	50.00	km
Transport distance for landfill (Module C2)	100.00	km
Transport distance for incineration (Module C2)	150.00	km
Recycling	75.00	%
Landfill	0.00	%
Incineration	25.00	%
Re-use	0.00	%

Zinc/galvanised steel (i.a. profiles, sheets, zinc coating)	Value	Unit
Transport distance for recycling (Module C2)	50.00	km
Transport distance for landfill (Module C2)	100.00	km
Transport distance for incineration (Module C2)	150.00	km
Recycling	95.00	%
Landfill	5.00	%
Incineration	0.00	%
Re-use	0.00	%

Finishes (adhered to wood, plastic, metal)	Value	Unit
Transport distance for recycling (Module C2)	50.00	km
Transport distance for landfill (Module C2)	100.00	km
Transport distance for incineration (Module C2)	150.00	km
Recycling	0.00	%
Landfill	0.00	%
Incineration	100.00	%
Re-use	0.00	%

Polyolefines (i.a. pe,pp) (i.a. pipes, foils)	Value	Unit
Transport distance for recycling (Module C2)	50.00	km
Transport distance for landfill (Module C2)	100.00	km
Transport distance for incineration (Module C2)	150.00	km
Recycling	5.00	%
Landfill	10.00	%
Incineration	85.00	%
Re-use	0.00	%

Copper, mixed (electricity cables)	Value	Unit
Transport distance for recycling (Module C2)	50.00	km
Transport distance for landfill (Module C2)	100.00	km
Transport distance for incineration (Module C2)	150.00	km
Recycling	85.00	%
Landfill	5.00	%
Incineration	10.00	%
Re-use	0.00	%

Organic material, via residue	Value	Unit
Transport distance for recycling (Module C2)	50.00	km
Transport distance for landfill (Module C2)	100.00	km
Transport distance for incineration (Module C2)	150.00	km
Recycling	0.00	%
Landfill	85.00	%
Incineration	15.00	%
Re-use	0.00	%

PVC, frame profiles	Value	Unit
Transport distance for recycling (Module C2)	50.00	km
Transport distance for landfill (Module C2)	100.00	km
Transport distance for incineration (Module C2)	150.00	km
Recycling	80.00	%
Landfill	10.00	%
Incineration	10.00	%
Re-use	0.00	%

Steel, fasteners	Value	Unit
Transport distance for recycling (Module C2)	50.00	km
Transport distance for landfill (Module C2)	100.00	km
Transport distance for incineration (Module C2)	150.00	km
Recycling	99.00	%
Landfill	1.00	%
Incineration	0.00	%
Re-use	0.00	%

### DECLARATION OF SVHC

None of the substances contained in the product are listed in the "Candidate List of Substances of Very High Concern for authorization",

### REFERENCES

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

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

EN ISO 14040:2006 ISO 14025 ISO 14025:2011-10: Environmental labels and declarations – Type III environmental declarations – Principles and procedures

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

EN 15804+A2 EN 15804+A2: 2019: Sustainability of construction works – Environmental Product Declarations – Core rules for the product category of construction products

SBK-verification protocol SBK-verification protocol – inclusion data in the Dutch environmental database, Final Version 3.0, January 2019,

SBK NMD Determination method NMD Determination method Environmental performance Construction works v1.0 July 2020, foundation NMD

### REMARKS

The value of the Dutch environment cost indicator (MKI) over the entire life cycle analysis (A to D) is €4,36 per 1m<sup>2</sup> SolidScreen Niche - 123,5.