Environmental Product Declaration

according to ISO 14025 and EN 15804

This declaration is for:

SolidScreen Standard 125

Provided by:

Smits Rolluiken & Zonwering B.V.

program operator

Stichting MRPI®

publisher

Stichting MRPI®

www.mrpi.nl

MRPI® registration

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COMPANY INFORMATION

Smits Rolluiken & Zonwering B.V.
De Hork 11
5431NS
Cuijk, the Netherlands
0031485744200
verkoop@smitsrolluiken.nl
www.smitsrolluiken.nl

MRPI® REGISTRATION

1.1.00346.2022

DATE OF ISSUE

23-09-2022

EXPIRY DATE

23-09-2027

PRODUCT

SolidScreen Standard 125

DECLARED UNIT/FUNCTIONAL UNIT

Assembly of 3300 mm wide x 1500 mm high, calculated back to 1m².

DESCRIPTION OF PRODUCT

The SolidScreen Standard forms the basis of the entire SolidScreen line up. The SolidScreen is a wind resistant vertical zipper screen which is effectively blocking solar heat and offers visual comfort by admitting diffused light without blocking the view to the outside.

VISUAL PRODUCT

MORE INFORMATION

SolidScreen Standard (smitsrolluiken.nl)

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®
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, Aveco de Bondt
[a] PCR = Product Category Rules

DETAILED PRODUCT DESCRIPTION

The SolidScreen is a very popular zip screen. Besides effectively blocking solar heat (thermal comfort), the SolidScreen offers visual comfort by allowing diffuse light without blocking the external view. The system has been successfully tested at wind speeds up to 145 km/h (12 Beaufort) and has achieved the highest class in TÜV tests on lifespan and wind load. This makes the SolidScreen extremely suitable for high-rise use.

The SolidScreen is manufactured from durable materials and is extra stable, for example, due to double bearings in various bungs and a special cover support for large widths. The optional rollers with recessed fabric groove significantly reduce the fabric markings. All SolidScreens have mounting plates, which makes it easy to slide the roller into and out of the top cover, and various guides allow the motor cable to be routed completely out of sight. There is also a side guide for use under a terrace roof or Cubola. All this makes SolidScreen the ideal screen for both home and project use.
The SolidScreen 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. At the top edge both corners are cut diagonally (angle of 3.0 x 3.0 cm). 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	3,13 kg
Steel components and reinforcement staff	2,66 kg
Screen fabric (41,5% PVC and 58,5% glass fibre) + zipper	0,574 kg
Motor	0,43 kg
PA6 30% reinforced and PA6	0,11 kg
Cardboard (packaging)	0,48 kg

(*) > 1% of total mass

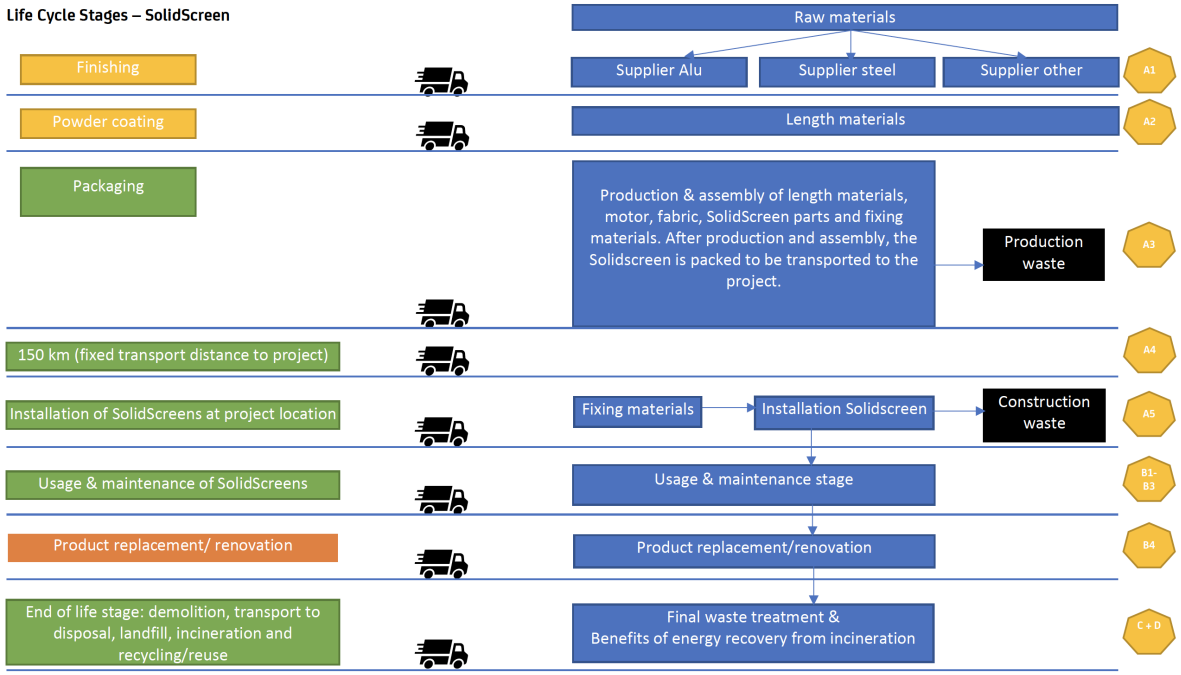
SCOPE AND TYPE

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 NMD Determination method Environmental performance Construction works v1.0 July 2020. 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 PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE 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 = Modules Assessed

ND = Not Declared



LCA process diagram according to EN 15804 (7.2.1)

REPRESENTATIVENESS

The product SolidScreen 125 was developed in the year 2013. 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 Standard 125 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	C1	C2	C3	C4	D
ADPE	kg Sb eq.	8.24 E-4	3.28 E-5	1.70 E-3	2.56 E-3	3.89 E-6	7.54 E-5	0.00	0.00	4.28 E-4	0.00	1.53 E-6	1.84 E-5	3.66 E-8	-4.01 E-4
ADPF	MJ	7.42 E+2	1.80 E+1	3.67 E+1	7.96 E+2	2.32 E+0	2.46 E+1	0.00	0.00	9.97 E+1	0.00	9.09 E-1	8.33 E+0	7.17 E-2	-6.05 E+2
GWP	kg CO2 eq.	7.00 E+1	1.18 E+0	2.35 E+0	7.35 E+1	1.52 E-1	2.45 E+0	0.00	0.00	8.69 E+0	0.00	5.97 E-2	3.03 E+0	9.37 E-3	-6.05 E+1
ODP	kg CFC11 eq.	3.10 E-6	2.16 E-7	2.57 E-7	3.57 E-6	2.70 E-8	1.17 E-7	0.00	0.00	6.61 E-7	0.00	1.06 E-8	1.23 E-7	5.53 E-10	-2.41 E-6
POCP	kg ethene eq.	3.58 E-2	5.87 E-4	1.10 E-3	3.74 E-2	9.20 E-5	1.17 E-3	0.00	0.00	5.08 E-3	0.00	3.60 E-5	3.41 E-4	3.98 E-6	-2.89 E-2
AP	kg SO2 eq.	3.88 E-1	2.80 E-3	8.57 E-3	4.00 E-1	6.70 E-4	1.23 E-2	0.00	0.00	3.33 E-2	0.00	2.63 E-4	3.93 E-3	2.54 E-5	-3.26 E-1
EP	kg (PO4)3- eq.	3.65 E-2	4.34 E-4	1.40 E-3	3.83 E-2	1.32 E-4	1.20 E-3	0.00	0.00	5.77 E-3	0.00	5.16 E-5	4.69 E-4	4.92 E-6	-2.75 E-2

Toxicity indicators for Dutch market

HTP	kg DCB eq.	6.50 E+1	4.73 E-1	7.85 E-1	6.63 E+1	6.42 E-2	2.04 E+0	0.00	0.00	7.40 E+0	0.00	2.52 E-2	5.28 E-1	1.92 E-3	-5.47 E+1
FAETP	kg DCB eq.	5.82 E-1	1.31 E-2	7.63 E-2	6.72 E-1	1.87 E-3	2.20 E-2	0.00	0.00	1.03 E-1	0.00	7.34 E-4	2.54 E-2	2.93 E-4	-3.84 E-1
MAETP	kg DCB eq.	3.30 E+3	5.00 E+1	8.38 E+1	3.44 E+3	6.74 E+0	1.11 E+2	0.00	0.00	3.40 E+2	0.00	2.64 E+0	6.00 E+1	3.72 E-1	-2.74 E+3
TETP	kg DCB eq.	2.03 E-1	1.68 E-3	9.77 E-3	2.14 E-1	2.27 E-4	6.55 E-3	0.00	0.00	1.52 E-2	0.00	8.89 E-5	1.73 E-3	8.52 E-6	1.45 E-2
ECI	Euro	1.17 E+1	1.25 E-1	2.52 E-1	1.21 E+1	1.84 E-2	3.83 E-1	0.00	0.00	1.34 E+0	0.00	7.20 E-3	2.27 E-1	8.48 E-4	-9.90 E+0
ADPF	kg Sb. eq.	4.50 E-1	8.52 E-3	1.80 E-2	4.77 E-1	1.12 E-3	1.47 E-2	0.00	0.00	5.09 E-2	0.00	4.39 E-4	4.08 E-3	3.78 E-5	-3.85 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	C1	C2	C3	C4	D
GWP-total	kg CO2 eq.	7.21 E+1	1.19 E+0	2.00 E+0	7.52 E+1	1.54 E-1	2.70 E+0	0.00	0.00	8.94 E+0	0.00	6.03 E-2	3.05 E+0	1.05 E-2	-6.19 E+1
GWP-fossil	kg CO2 eq.	7.21 E+1	1.19 E+0	2.39 E+0	7.56 E+1	1.54 E-1	2.51 E+0	0.00	0.00	8.97 E+0	0.00	6.02 E-2	3.04 E+0	1.01 E-2	-6.23 E+1
GWP-biogenic	kg CO2 eq.	-2.57 E-1	6.39 E-4	-4.00 E-1	-6.55 E-1	7.10 E-5	1.85 E-1	0.00	0.00	-2.84 E-2	0.00	2.78 E-5	7.45 E-3	4.38 E-4	6.12 E-1
GWP-luluc	kg CO2 eq.	2.55 E-1	4.23 E-4	6.78 E-3	2.63 E-1	5.63 E-5	7.91 E-3	0.00	0.00	5.59 E-3	0.00	2.21 E-5	6.27 E-4	3.85 E-6	-2.12 E-1
ODP	kg CFC11 eq.	3.31 E-6	2.70 E-7	2.61 E-7	3.84 E-6	3.39 E-8	1.27 E-7	0.00	0.00	6.67 E-7	0.00	1.33 E-8	1.29 E-7	6.74 E-10	-2.68 E-6
AP	mol H+ eq.	4.62 E-1	3.41 E-3	1.06 E-2	4.76 E-1	8.91 E-4	1.47 E-2	0.00	0.00	3.98 E-2	0.00	3.49 E-4	4.81 E-3	3.20 E-5	-3.86 E-1
EP-freshwater	kg PO4 eq.	1.96 E+3	1.45 E+1	6.31 E+1	2.03 E+3	2.07 E+0	6.51 E+1	0.00	0.00	2.96 E+2	0.00	8.10 E-1	4.99 E+1	5.89 E+1	-1.61 E+3
EP-marine	kg N eq.	6.98 E-2	6.76 E-4	1.83 E-3	7.23 E-2	3.14 E-4	2.29 E-3	0.00	0.00	5.70 E-3	0.00	1.23 E-4	9.14 E-4	1.07 E-5	-5.85 E-2
EP-terrestrial	mol N eq.	7.89 E-1	7.56 E-3	2.13 E-2	8.17 E-1	3.46 E-3	2.58 E-2	0.00	0.00	6.64 E-2	0.00	1.36 E-3	1.05 E-2	9.07 E-5	-6.53 E-1
POCP	kg NMVOC eq.	2.38 E-1	2.90 E-3	6.31 E-3	2.47 E-1	9.89 E-4	7.80 E-3	0.00	0.00	2.34 E-2	0.00	3.88 E-4	2.92 E-3	2.81 E-5	-2.00 E-1
ADP-minerals & metals	kg Sb eq.	8.24 E-4	3.28 E-5	1.70 E-3	2.56 E-3	3.89 E-6	7.54 E-5	0.00	0.00	4.28 E-4	0.00	1.53 E-6	1.84 E-5	3.66 E-8	-4.01 E-4
ADP-fossil	MJ, net calorific value	7.42 E+2	1.80 E+1	3.67 E+1	7.96 E+2	2.32 E+0	2.46 E+1	0.00	0.00	9.97 E+1	0.00	9.09 E-1	8.33 E+0	7.17 E-2	-6.05 E+2
WDP	m3 world eq. deprived	1.40 E+1	5.09 E-2	7.68 E-1	1.48 E+1	8.29 E-3	4.56 E-1	0.00	0.00	3.68 E+0	0.00	3.25 E-3	1.72 E-1	2.12 E-3	-8.36 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	C1	C2	C3	C4	D
PM	Disease incidence	5.30 E-6	7.57 E-8	7.46 E-8	5.45 E-6	1.38 E-8	1.69 E-7	0.00	0.00	3.12 E-7	0.00	5.42 E-9	5.52 E-8	4.70 E-10	-4.55 E-6
IRP	kBq U235 eq.	1.40 E+0	7.85 E-2	1.20 E-1	1.60 E+0	9.71 E-3	5.10 E-2	0.00	0.00	1.88 E-1	0.00	3.81 E-3	3.53 E-2	2.55 E-4	-7.84 E-1
ETP-fw	CTUe	1.96 E+3	1.45 E+1	6.31 E+1	2.03 E+3	2.07 E+0	6.51 E+1	0.00	0.00	2.96 E+2	0.00	8.10 E-1	4.99 E+1	5.89 E+1	-1.61 E+3
HTP-c	CTUh	1.22 E-7	4.03 E-10	3.26 E-9	1.26 E-7	6.70 E-11	4.00 E-9	0.00	0.00	8.66 E-9	0.00	2.63 E-11	1.04 E-9	3.80 E-12	-8.27 E-8
HTP-nc	CTUh	2.22 E-6	1.53 E-8	4.74 E-8	2.28 E-6	2.26 E-9	7.04 E-8	0.00	0.00	3.08 E-7	0.00	8.86 E-10	3.11 E-8	1.19 E-10	-1.03 E-6
SQP	---	1.79 E+2	1.26 E+1	8.00 E+1	2.72 E+2	2.01 E+0	8.62 E+0	0.00	0.00	2.20 E+1	0.00	7.88 E-1	7.10 E+0	1.08 E-1	-1.28 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	C1	C2	C3	C4	D
PERE	MJ	8.83 E+1	2.57 E-1	1.68 E+1	1.05 E+2	2.90 E-2	3.20 E+0	0.00	0.00	5.91 E+0	0.00	1.14 E-2	9.00 E-1	3.48 E-3	-6.91 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	0.00	-4.51 E+0
PERT	MJ	8.83 E+1	2.57 E-1	1.68 E+1	1.05 E+2	2.90 E-2	3.20 E+0	0.00	0.00	5.91 E+0	0.00	1.14 E-2	9.00 E-1	3.48 E-3	-7.36 E+1
PENRE	MJ	7.58 E+2	1.91 E+1	3.66 E+1	8.14 E+2	2.46 E+0	2.52 E+1	0.00	0.00	7.05 E+1	0.00	9.65 E-1	8.90 E+0	7.63 E-2	-6.43 E+2
PENRM	MJ	3.06 E+1	0.00	2.87 E+0	3.35 E+1	0.00	1.02 E+0	0.00	0.00	3.64 E+1	0.00	0.00	0.00	0.00	-1.18 E+0
PENRT	MJ	7.89 E+2	1.91 E+1	3.94 E+1	8.47 E+2	2.46 E+0	2.62 E+1	0.00	0.00	1.07 E+2	0.00	9.65 E-1	8.90 E+0	7.63 E-2	-6.45 E+2
SM	kg	1.44 E+0	0.00	0.00	1.44 E+0	0.00	4.31 E-2	0.00	0.00	1.50 E-1	0.00	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	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	0.00
FW	m3	5.79 E-1	1.92 E-3	2.75 E-2	6.08 E-1	2.82 E-4	1.87 E-2	0.00	0.00	9.69 E-2	0.00	1.11 E-4	6.76 E-3	5.97 E-5	-3.99 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	C1	C2	C3	C4	D
HWD	kg	5.73 E-3	4.71 E-5	2.55 E-4	6.03 E-3	5.87 E-6	7.71 E-4	0.00	0.00	2.92 E-4	0.00	2.30 E-6	1.96 E-2	7.93 E-8	-5.89 E-4
NHWD	kg	1.31 E+1	8.74 E-1	2.70 E-1	1.42 E+1	1.47 E-1	4.63 E-1	0.00	0.00	7.12 E-1	0.00	5.76 E-2	2.83 E-1	1.82 E-1	-1.11 E+1
RWD	kg	1.43 E-3	1.22 E-4	1.12 E-4	1.66 E-3	1.52 E-5	5.39 E-5	0.00	0.00	1.73 E-4	0.00	5.97 E-6	3.74 E-5	3.24 E-7	-9.12 E-4
CRU	kg	0.00	0.00	0.00	0.00	0.00	4.33 E-3	0.00	0.00	7.83 E-3	0.00	0.00	1.44 E-1	0.00	0.00
MFR	kg	0.00	0.00	2.51 E-2	2.51 E-2	0.00	5.47 E-1	0.00	0.00	2.11 E-1	0.00	0.00	5.83 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	0.00
EEE	MJ	0.00	0.00	4.01 E-1	4.01 E-1	0.00	5.53 E-3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.24 E+1
ETE	MJ	0.00	0.00	1.47 E-1	1.47 E-1	0.00	2.03 E-3	0.00	0.00	0.00	0.00	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

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

	UNIT	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	C1	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	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	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 m², the energy consumption is therefore per product cannot be calculated in m²

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 Standard 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	%

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	%

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 layer coil | Steel federation NL	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	%

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	%

DECLARATION OF SVHC

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

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 € 4,19362 per 1m² SolidScreen.