



Environmental Product Declaration

According to EN15804+A2 (+indicators A1)



This declaration is for:
PXA Nederland B.V.

Provided by:
Isobooster 160 roof insulation



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

MRPI® registration
1.1.00526.2024
date of first issue
14-6-2024
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COMPANY INFORMATION



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MRPI® REGISTRATION

1.1.00526.2024

DATE OF ISSUE

14-6-2024

EXPIRY DATE

14-6-2029

SCOPE OF DECLARATION

This MRPI®-EPD certificate is verified by Anne Kees Jeeninga, Advieslab V.O.F. The LCA study has been done by Olga van der Velde, NIBE B.V. The certificate is based on an LCA-dossier according to EN15804+A2 (+indicators A1). It is verified according to the 'MRPI®-EPD verification protocol November 2020.v4.0'. EPD's of construction products may not be comparable if they do not comply with EN15804+A2. 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
1043 GR
Amsterdam

Ing. L. L. Oosterveen MSc. MBA
Managing Director MRPI

PRODUCT

Isobooster 160 roof insulation

DECLARED UNIT/FUNCTIONAL UNIT

1 m2 of insulation material, that is non-vapour permeable, applied in a roof construction, including fasteners.

DESCRIPTION OF PRODUCT

Isobooster 160 consist of 16 layers of bubble foil and 15 layers of aluminized PET foil. It insulates by thermal reflection.

VISUAL PRODUCT



MORE INFORMATION

<https://www.isobooster.nl>

DEMONSTRATION OF VERIFICATION	
CEN standard EN15804 serves as the core PCR(a)	
Independent verification of the declaration an data according to EN15804+A2 (+indicators A1)	
internal:	external: x
Third party verifier: Anne Kees Jeeninga, Advieslab V.O.F.	
[a] PCR = Product Category Rules	

DETAILED PRODUCT DESCRIPTION

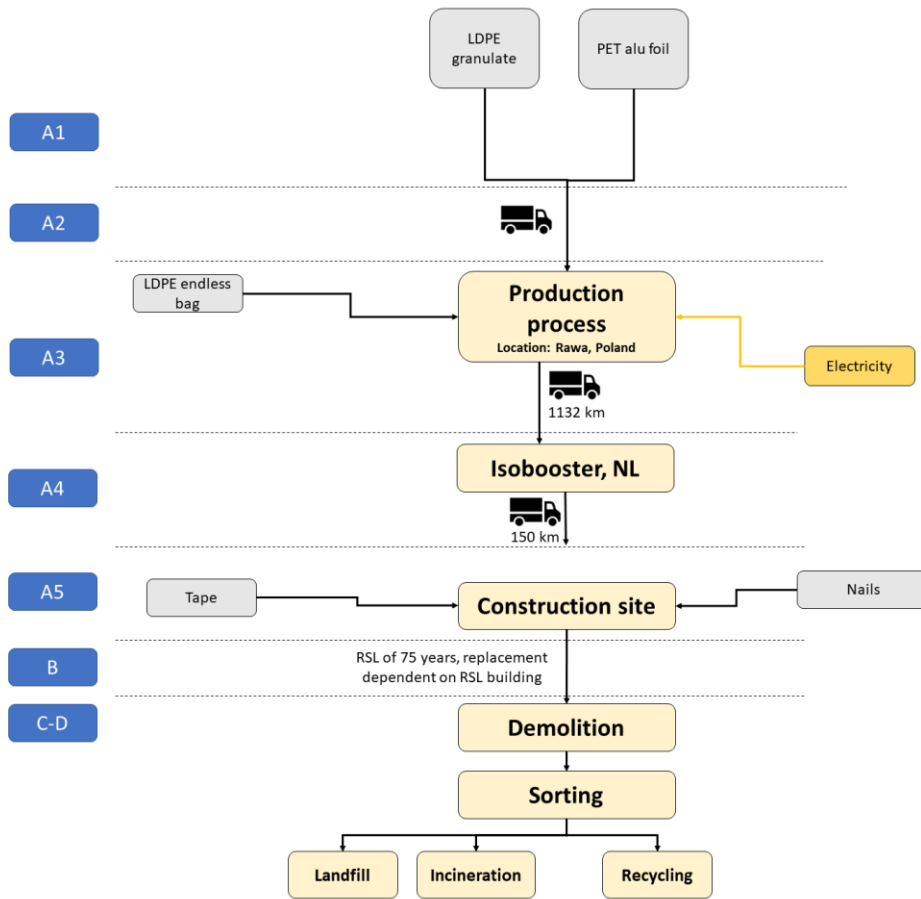
Isobooster 160 consist of 16 layers of bubble foil of 10mm thick alternated with 15 layers of aluminium foil. The insulating capability is based on thermal reflection. Rolls of Isobooster are produced in widths 1.20m and 0.6m. LDPE granulate is heated and converted in bubble foil. This bubble foil is then combined with the PET foil by a machine in alternating layers. The reference service life is 75 years.

Component > 1% of total mass	(%)
LDPE bubble foil	85%
Aluminised PET foil	15%

SCOPE AND TYPE

The product specific EPD for Isobooster 160 roof insulation is a Cradle-to-Grave with options EPD. The product is produced in Rawa Mazowiecka, Poland. To perform the LCA the software Simapro 9.1, NIBE's R<THiNK application and the Ecoinvent 3.6 database were used. The target groups of this LCA study are users of EPD's (business to business) in accordance with the EN15804+A2. The LCA is intended for publication at MRPI and NMD. The input data are representative for Isobooster 160 roof insulation, a product of PXA Nederland B.V. The data are representative for the European market.

PRODUCT STAGE		CONSTRUCTION PROCESS STAGE			USER STAGE								END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Rawmaterial 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																	



REPRESENTATIVENESS

All data (materials, production amount and total energy) is collected in 2023 and relate to the year 2023. The amounts of electricity use for production were measured on site. There is one production location.

ENVIRONMENT IMPACT per functional unit or declared unit (core indicators A1)

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
ADPE	kg Sb eq.	4,47 E-05	1,51 E-06	5,35 E-05	9,97 E-05	1,14 E-05	1,45 E-05	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	8,71 E-07	5,13 E-06	2,38 E-08	-9,49 E-06
ADPF	MJ	1,31 E+02	9,01 E-01	4,63 E+01	1,78 E+02	7,56 E+00	3,04 E+00	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	5,21 E-01	3,43 E+00	5,32 E-02	-5,34 E+01
GWP	kg CO2 eq.	3,97 E+00	5,89 E-02	2,89 E+00	6,93 E+00	5,15 E-01	3,01 E-01	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	3,41 E-02	4,10 E+00	2,56 E-02	-2,73 E+00
ODP	Kg CFC11 eq.	1,42 E-07	1,05 E-08	3,27 E-07	4,79 E-07	8,26 E-08	1,45 E-08	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	6,05 E-09	1,25 E-07	5,50 E-10	-3,04 E-07
POCP	Kg ethene eq.	5,01 E-03	3,56 E-05	1,31 E-03	6,35 E-03	4,76 E-04	1,15 E-04	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	2,06 E-05	1,41 E-04	5,87 E-06	-4,79 E-04
AP	kg SO2 eq.	1,35 E-02	2,59 E-04	1,14 E-02	2,52 E-02	2,29 E-03	6,20 E-04	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	1,50 E-04	1,42 E-03	1,48 E-05	-2,06 E-03
EP	kg (PO4) 3- eq.	1,40 E-03	5,09 E-05	1,46 E-03	2,91 E-03	3,88 E-04	8,99 E-05	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	2,95 E-05	2,31 E-04	6,37 E-06	-2,86 E-04

Toxicity indicators for Dutch market

HTP	kg DCB-Eq	8,64 E-01	2,48 E-02	9,29 E-01	1,82 E+00	1,87 E-01	5,21 E-02	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	1,44 E-02	2,88 E-01	2,06 E-03	-1,55 E-01
FAETP	kg DCB-Eq	1,92 E-02	7,24 E-04	2,47 E-02	4,46 E-02	4,66 E-03	2,17 E-03	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	4,19 E-04	1,53 E-02	1,96 E-03	-1,73 E-03
MAETP	kg DCB-Eq	6,34 E+01	2,61 E+00	1,06 E+02	1,72 E+02	1,62 E+01	5,44 E+00	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	1,51 E+00	4,45 E+01	1,97 E+00	-7,25 E+00
TETP	kg DCB-Eq	4,04 E-03	8,77 E-05	7,82 E-03	1,19 E-02	8,80 E-04	6,74 E-04	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	5,07 E-05	7,31 E-04	3,97 E-06	-1,83 E-04
ECI	euro	3,70 E-01	7,10 E-03	3,05 E-01	6,83 E-01	5,86 E-02	2,41 E-02	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	4,11 E-03	2,44 E-01	1,86 E-03	-1,67 E-01
ADPF	kg Sb eq.	6,28 E-02	4,33 E-04	2,23 E-02	8,55 E-02	3,64 E-03	1,46 E-03	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	2,51 E-04	1,65 E-03	2,56 E-05	-2,57 E-02

- 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.]

ENVIRONMENT IMPACT per functional unit or declared unit (core indicators A2)

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	kg CO2 eq.	4,13 E+00	5,95 E-02	2,93 E+00	7,12 E+00	5,24 E-01	3,05 E-01	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	3,44 E-02	4,10 E+00	3,00 E-02	-2,76 E+00
GWP-fossil	kg CO2 eq.	4,12 E+00	5,94 E-02	2,93 E+00	7,11 E+00	5,23 E-01	3,05 E-01	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	3,44 E-02	4,10 E+00	3,00 E-02	-2,76 E+00
GWP-biogenic	kg CO2 eq.	4,65 E-03	2,74 E-05	1,87 E-03	6,55 E-03	5,93 E-04	1,13 E-04	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	1,59 E-05	6,45 E-04	2,35 E-05	0,00 E+00
GWP-luluc	kg CO2 eq.	2,27 E-03	2,18 E-05	9,61 E-04	3,26 E-03	3,29 E-04	2,48 E-04	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	1,26 E-05	3,27 E-04	1,11 E-06	-9,78 E-05
ODP	kg CFC11 eq.	1,29 E-07	1,31 E-08	4,04 E-07	5,46 E-07	1,03 E-07	1,53 E-08	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	7,59 E-09	1,25 E-07	6,87 E-10	-3,44 E-07
AP	mol H+ eq.	1,62 E-02	3,45 E-04	1,36 E-02	3,01 E-02	2,95 E-03	7,76 E-04	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	1,99 E-04	1,82 E-03	1,94 E-05	-2,63 E-03
EP-freshwater	kg PO4 eq.	1,17 E-04	6,00 E-07	1,71 E-04	2,88 E-04	9,05 E-06	9,87 E-06	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	3,47 E-07	1,22 E-05	4,01 E-08	-6,97 E-06
EP-marine	kg N eq.	2,77 E-03	1,21 E-04	1,93 E-03	4,82 E-03	8,63 E-04	1,42 E-04	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	7,03 E-05	4,97 E-04	1,28 E-05	-7,30 E-04
EP-terrestrial	mol N eq.	3,06 E-02	1,34 E-03	2,20 E-02	5,39 E-02	9,66 E-03	1,65 E-03	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	7,75 E-04	5,54 E-03	7,14 E-05	-8,02 E-03
POCP	kg NMVOC eq.	1,64 E-02	3,82 E-04	7,41 E-03	2,42 E-02	3,12 E-03	5,59 E-04	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	2,21 E-04	1,48 E-03	2,70 E-05	-2,77 E-03
ADP-minerals & metals	kg Sb eq.	4,47 E-05	1,51 E-06	5,35 E-05	9,97 E-05	1,14 E-05	1,45 E-05	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	8,71 E-07	5,13 E-06	2,38 E-08	-9,48 E-06
ADP-fossil	MJ, net calorific value	1,33 E+02	8,96 E-01	4,12 E+01	1,75 E+02	7,51 E+00	2,80 E+00	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	5,19 E-01	3,09 E+00	5,26 E-02	-4,79 E+01
WDP	m3 world eq. Deprived	4,27 E+00	3,21 E-03	3,20 E-01	4,59 E+00	3,49 E-02	7,72 E-02	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	1,86 E-03	2,08 E-01	2,25 E-03	-2,80 E-01

- 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 experienced with the indicator

ENVIRONMENT IMPACT per functional unit or declared unit (additional indicators A2)

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM	Disease incidence	1,23 E-07	5,35 E-09	1,25 E-07	2,53 E-07	5,07 E-08	6,66 E-09	0,00 E+00	0,00 E+00	0,00 E+00	N D	N D	N D	N D	0,00 E+00	3,09 E-09	1,44 E-08	3,66 E-10	-9,89 E-09
IRP	kBq U235 eq.	1,56 E-01	3,76 E-03	1,28 E-01	2,88 E-01	3,18 E-02	5,89 E-03	0,00 E+00	0,00 E+00	0,00 E+00	N D	N D	N D	N D	0,00 E+00	2,17 E-03	1,28 E-02	2,06 E-04	-1,68 E-02
ETP-fw	CTUe	3,21 E+01	7,99 E-01	3,77 E+01	7,06 E+01	8,92 E+00	4,79 E+00	0,00 E+00	0,00 E+00	0,00 E+00	N D	N D	N D	N D	0,00 E+00	4,62 E-01	5,16 E+01	9,33 E-02	-4,24 E+00
HTP-c	CTUh	1,23 E-09	2,59 E-11	1,08 E-09	2,33 E-09	7,90 E-10	2,24 E-10	0,00 E+00	0,00 E+00	0,00 E+00	N D	N D	N D	N D	0,00 E+00	1,50 E-11	7,75 E-10	1,48 E-12	-2,52 E-10
HTP-nc	CTUh	3,09 E-08	8,74 E-10	4,06 E-08	7,24 E-08	1,05 E-08	3,86 E-09	0,00 E+00	0,00 E+00	0,00 E+00	N D	N D	N D	N D	0,00 E+00	5,06 E-10	1,62 E-08	4,29 E-11	-1,79 E-09
SQP	----	9,16 E+00	7,77 E-01	2,27 E+01	3,26 E+01	3,49 E+00	6,63 E-01	0,00 E+00	0,00 E+00	0,00 E+00	N D	N D	N D	N D	0,00 E+00	4,50 E-01	1,09 E+00	1,24 E-01	-7,87 E-01

- 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.

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 experienced with the indicator.

OUTPUT FLOWS AND WASTE CATEGORIES per functional unit or declared unit (A1 / A2)

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	4,68 E-05	2,27 E-06	7,04 E-05	1,20 E-04	1,42 E-04	1,35 E-05	0,00 E+00	0,00 E+00	0,00 E+00	N D	N D	N D	N D	0,00 E+00	1,31 E-06	5,93 E-06	7,99 E-08	-5,60 E-05
NHWD	kg	1,95 E-01	5,69 E-02	1,33 E+00	1,58 E+00	2,20 E-01	4,06 E-02	0,00 E+00	0,00 E+00	0,00 E+00	N D	N D	N D	N D	0,00 E+00	3,29 E-02	7,34 E-02	2,10 E-01	-2,09 E-02
RWD	kg	1,34 E-04	5,89 E-06	1,87 E-04	3,27 E-04	4,75 E-05	6,70 E-06	0,00 E+00	0,00 E+00	0,00 E+00	N D	N D	N D	N D	0,00 E+00	3,41 E-06	1,11 E-05	3,13 E-07	-2,32 E-05
CRU	kg	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	N D	N D	N D	N D	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
MFR	kg	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	2,06 E-02	0,00 E+00	0,00 E+00	0,00 E+00	N D	N D	N D	N D	0,00 E+00	0,00 E+00	7,73 E-02	0,00 E+00	0,00 E+00
MER	kg	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	N D	N D	N D	N D	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
EEE	MJ	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	N D	N D	N D	N D	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	1,13 E+01
ETE	MJ	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	N D	N D	N D	N D	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	1,95 E+01

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

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

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	3,98 E+00	1,12 E-02	1,79 E+00	5,78 E+00	1,75 E-01	1,26 E-01	0,00 E+00	0,00 E+00	0,00 E+00	N D	N D	N D	N D	0,00 E+00	6,49 E-03	3,19 E-01	9,37 E-04	-1,56 E-01
PERM	MJ	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	N D	N D	N D	N D	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
PERT	MJ	3,98 E+00	1,12 E-02	1,79 E+00	5,78 E+00	1,75 E-01	1,26 E-01	0,00 E+00	0,00 E+00	0,00 E+00	N D	N D	N D	N D	0,00 E+00	6,49 E-03	3,19 E-01	9,37 E-04	-1,56 E-01
PENRE	MJ	7,10 E+01	9,52 E-01	4,22 E+01	1,14 E+02	7,97 E+00	2,31 E+00	0,00 E+00	0,00 E+00	0,00 E+00	N D	N D	N D	N D	0,00 E+00	5,51 E-01	3,28 E+00	5,59 E-02	-5,05 E+01
PENRM	MJ	7,19 E+01	0,00 E+00	1,78 E+00	7,37 E+01	0,00 E+00	7,37 E-01	0,00 E+00	0,00 E+00	0,00 E+00	N D	N D	N D	N D	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	-2,28 E+00
PENRT	MJ	1,43 E+02	9,52 E-01	4,39 E+01	1,88 E+02	7,97 E+00	3,05 E+00	0,00 E+00	0,00 E+00	0,00 E+00	N D	N D	N D	N D	0,00 E+00	5,51 E-01	3,28 E+00	5,59 E-02	-5,27 E+01
SM	kg	4,04 E-05	0,00 E+00	0,00 E+00	4,04 E-05	0,00 E+00	1,54 E-03	0,00 E+00	0,00 E+00	0,00 E+00	N D	N D	N D	N D	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
RSF	MJ	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	N D	N D	N D	N D	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
NRSF	MJ	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	N D	N D	N D	N D	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
FW	m3	6,82 E-02	1,09 E-04	3,80 E-02	1,06 E-01	1,27 E-03	2,24 E-03	0,00 E+00	0,00 E+00	0,00 E+00	N D	N D	N D	N D	0,00 E+00	6,32 E-05	6,10 E-03	5,49 E-05	-3,83 E-03

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

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

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
BBCpr	Kg C	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
BCCpa	kg C	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00

BBCpr = Biogenic carbon content in product

BCCpa = Biogenic carbon content in packaging

CALCULATION RULES

ALLOCATION

Allocation has not been applied in this LCA.

CUT-OFF CRITERIA

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.

The bubble foil and aluminized PET foil are connected to each other with plastic tags. Due to a lack of data these plastic tags were omitted from the LCA. We estimate the weight will be lower than 1%. As these tags are made of plastic, just like the rest of the product, it is highly unlikely we missed high environmental impacts by omitting the plastic tags from the LCA.

There is no waste in the production process. The mass balance is closed.

Construction process stage (A4-A5)

This stage consists of 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. This will include preventative and regular maintenance activities.

Product replacement (B4) and renovation (B5) only apply when the product is considered in a lifespan (of a building, work, etc.). Operational water and energy use are not considered.

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. The default end-of-life scenarios of the annex (November 2020) to the NMD Determination method v1.1 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-wastepoint 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. The amount of avoided energy is based on the Lower Heating Values of the materials and the efficiencies of the incinerators as mentioned in the NMD Determination method v1.1 or Ecoinvent 3.6 (2019).

SCENARIOS AND ADDITIONAL TECHNICAL INFORMATION

Technical information

- λ : measured: 0.01672 / according to NTA 8800: 0.020
- Emissivity aluminium: 0,03
- Fire class: EN 13501-1: Euro class B -s1 -d0 in combination with 9,5 mm plaster board
- Reflection aluminised sides/Tobias densitometer 3,5
- Quality assurance ISO 9001 (registered)
- The average, indicative, acoustic insulation value is $\pm 20,4$ dB (A).

Scenarios

End-of-life stage (C2-C4)

At the end-of-life stage scenarios are used for waste processing. The scenarios on which the LCA is based are outlined in more detail below.

Polyolefines (i.a. pe,pp) (i.a. pipes, foils) (NMD ID 57)	Value	Unit
Transport distance for landfill (module C2)	100	100
Transport distance for incineration (module C2)	150	150
Transport distance for recycling (module C2)	50	50
Landfill	10	10
Incineration	85	85
Recycling	5	5

Plastics, via residue (NMD ID 43)	Value	Unit
Transport distance for landfill (module C2)	100	Km
Transport distance for incineration (module C2)	150	Km
Landfill	20	%
Incineration	80	%

Finishes (adhered to wood, plastic, metal) (NMD ID 2)	Value	Unit
Transport distance for incineration (module C2)	150	Km
Incineration	100	%

DECLARATION OF SVHC

No substances that are listed in the latest "Candidate List of Substances of Very High Concern for authorisation" are included in the product that exceeds the limit for registration.

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

NMD-verification protocol

NMD-verification protocol version 1.0, July 2020, foundation NMD

NMD Determination method

NMD Determination method Environmental performance Construction works v1.1 March 2022, foundation NMD

Veroudering noppen folie, TNO

Veroudering noppenfolie, september 2009, TNO Quality Services B.V.

Part II Plastics

Hischer R., Life Cycle Inventories of Packaging and Graphical Papers. Ecoinvent report No. 11. Swiss Centre for Life Cycle Inventories, Dübendorf, 2007

REMARKS

None.