Environmental Product Declaration

According to EN15804+A2 (+indicators A1)

This declaration is for:

Isobooster 80 floor insulation

Provided by:

PXA Nederland B.V.

program operator

Stichting MRPI®

publisher

Stichting MRPI®

www.mrpi.nl

MRPI® registration

1.1.00524.2024

date of first issue

14-6-2024

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14-6-2029

COMPANY INFORMATION

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MRPI® REGISTRATION

1.1.00524.2024

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 80 facade insulation

DECLARED UNIT/FUNCTIONAL UNIT

1 m2 of insulation material, that is non-vapour permeable, applied in a facade construction, including fasteners. Thickness of 80 mm and Rd value of 4 m2K/W.

DESCRIPTION OF PRODUCT

Isobooster 80 consist of 8 layers of bubble foil and 7 layers of aluminised PET foil. It insulates by thermal reflection. Isobooster is produced in widths 1.20m and 0.6m.

VISUAL PRODUCT

MORE INFORMATION

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

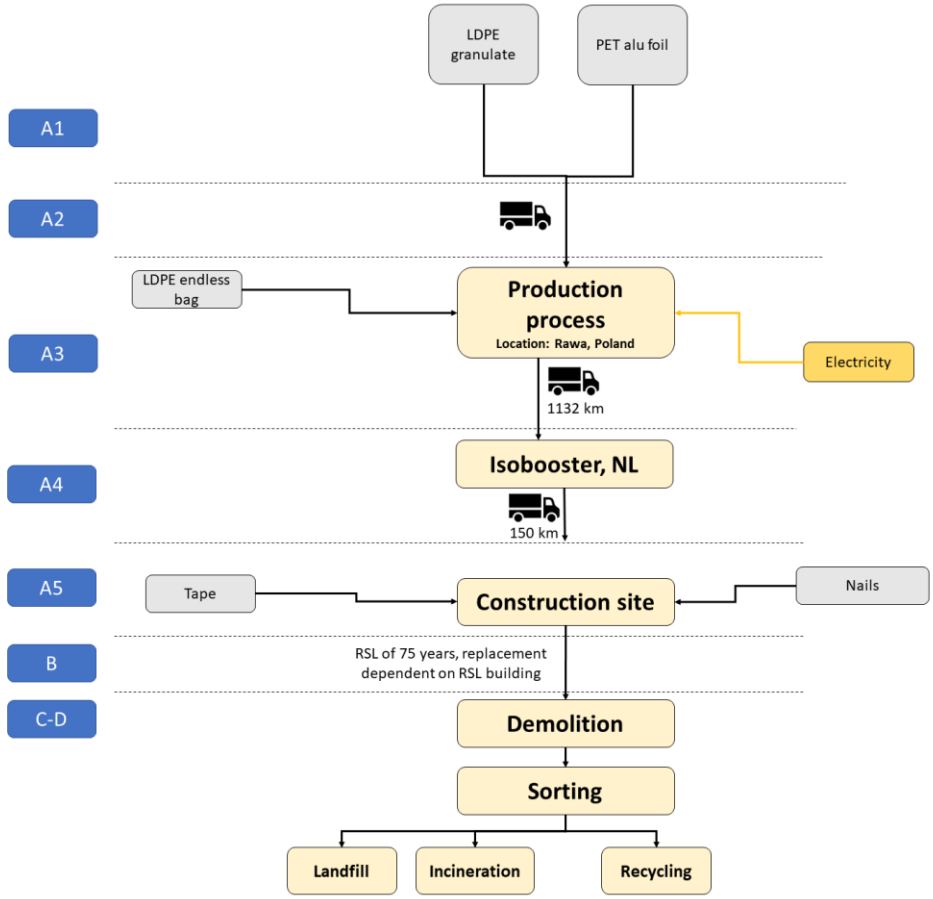
Isobooster 80 consist of 8 layers of bubble foil of 10mm thick alternated with 7 layers of aluminium foil. The insulating capability is based on thermal reflection. Rolls of Isobooster are produced in widths 1.20m and 0.6m. LDPE granulate is heated and converted in bubble foil. This bubble foil is then 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	86%
Aluminised PET foil	14%

SCOPE AND TYPE

The product specific EPD for Isobooster 80 facade 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 to EN15804+A2 (+indicators A1). The LCA is intended for publication at MRPI and NMD. The input data are representative for Isobooster 80 facade 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.	2,18 E-05	7,44 E-07	2,87 E-05	5,12 E-05	5,66 E-06	1,38 E-05	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	4,31 E-07	2,54 E-06	1,17 E-08	-8,66 E-06
ADPF	MJ	6,45 E+01	4,45 E-01	2,32 E+01	8,81 E+01	3,75 E+00	2,04 E+00	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	2,58 E-01	1,70 E+00	2,61 E-02	-2,68 E+01
GWP	kg CO2 eq.	1,95 E+00	2,91 E-02	1,45 E+00	3,43 E+00	2,55 E-01	1,95 E-01	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	1,69 E-02	2,03 E+00	1,26 E-02	-1,37 E+00
ODP	Kg CFC11 eq.	6,90 E-08	5,17 E-09	1,62 E-07	2,36 E-07	4,09 E-08	9,50 E-09	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	2,99 E-09	6,20 E-08	2,70 E-10	-1,51 E-07
POCP	Kg ethene eq.	2,48 E-03	1,76 E-05	6,56 E-04	3,16 E-03	2,36 E-04	7,84 E-05	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	1,02 E-05	7,00 E-05	2,88 E-06	-2,46 E-04
AP	kg SO2 eq.	6,63 E-03	1,28 E-04	5,74 E-03	1,25 E-02	1,13 E-03	4,56 E-04	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	7,41 E-05	7,02 E-04	7,25 E-06	-1,06 E-03
EP	kg (PO4) 3- eq.	6,89 E-04	2,52 E-05	7,31 E-04	1,44 E-03	1,92 E-04	6,89 E-05	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	1,46 E-05	1,14 E-04	3,11 E-06	-1,49 E-04

Toxicity indicators for Dutch market

HTP	kg DCB-Eq	4,19 E-01	1,23 E-02	4,87 E-01	9,18 E-01	9,27 E-02	3,71 E-02	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	7,10 E-03	1,43 E-01	1,02 E-03	-7,93 E-02
FAETP	kg DCB-Eq	9,31 E-03	3,58 E-04	1,23 E-02	2,20 E-02	2,31 E-03	1,63 E-03	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	2,07 E-04	7,55 E-03	9,68 E-04	-8,90 E-04
MAETP	kg DCB-Eq	3,07 E+01	1,29 E+00	5,28 E+01	8,48 E+01	8,02 E+00	3,71 E+00	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	7,46 E-01	2,20 E+01	9,73 E-01	-3,72 E+00
TETP	kg DCB-Eq	1,97 E-03	4,33 E-05	3,95 E-03	5,96 E-03	4,36 E-04	5,97 E-04	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	2,51 E-05	3,62 E-04	1,94 E-06	6,09 E-05
ECI	euro	1,82 E-01	3,51 E-03	1,55 E-01	3,40 E-01	2,90 E-02	1,63 E-02	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	2,03 E-03	1,21 E-01	9,13 E-04	-8,42 E-02
ADPF	kg Sb eq.	3,10 E-02	2,14 E-04	1,12 E-02	4,24 E-02	1,80 E-03	9,83 E-04	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	1,24 E-04	8,17 E-04	1,26 E-05	-1,29 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.	2,03 E+00	2,94 E-02	1,46 E+00	3,52 E+00	2,60 E-01	1,99 E-01	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	1,70 E-02	2,03 E+00	1,47 E-02	-1,39 E+00
GWP-fossil	kg CO2 eq.	2,03 E+00	2,94 E-02	1,46 E+00	3,52 E+00	2,59 E-01	1,98 E-01	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	1,70 E-02	2,03 E+00	1,47 E-02	-1,39 E+00
GWP-biogenic	kg CO2 eq.	3,05 E-03	1,36 E-05	9,20 E-04	3,98 E-03	2,94 E-04	7,35 E-05	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	7,85 E-06	3,19 E-04	1,16 E-05	0,00 E+00
GWP-luluc)	kg CO2 eq.	1,11 E-03	1,08 E-05	4,84 E-04	1,61 E-03	1,63 E-04	2,24 E-04	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	6,23 E-06	1,62 E-04	5,43 E-07	-4,53 E-05
ODP	kg CFC11 eq.	6,25 E-08	6,48 E-09	2,01 E-07	2,70 E-07	5,09 E-08	9,85 E-09	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	3,75 E-09	6,18 E-08	3,37 E-10	-1,71 E-07
AP	mol H+ eq.	7,96 E-03	1,70 E-04	6,81 E-03	1,49 E-02	1,46 E-03	5,76 E-04	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	9,86 E-05	9,01 E-04	9,54 E-06	-1,36 E-03
EP-freshwater	kg PO4 eq.	5,72 E-05	2,96 E-07	8,59 E-05	1,43 E-04	4,48 E-06	8,17 E-06	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	1,72 E-07	6,04 E-06	1,97 E-08	-4,65 E-06
EP-marine	kg N eq.	1,36 E-03	6,00 E-05	9,70 E-04	2,39 E-03	4,27 E-04	1,04 E-04	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	3,48 E-05	2,46 E-04	6,27 E-06	-3,74 E-04
EP-terrestrial	mol N eq.	1,50 E-02	6,62 E-04	1,11 E-02	2,68 E-02	4,78 E-03	1,23 E-03	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	3,83 E-04	2,74 E-03	3,50 E-05	-4,10 E-03
POCP	kg NMVOC eq.	8,10 E-03	1,89 E-04	3,72 E-03	1,20 E-02	1,54 E-03	3,93 E-04	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	1,09 E-04	7,35 E-04	1,33 E-05	-1,41 E-03
ADP-minerals & metals	kg Sb eq.	2,18 E-05	7,44 E-07	2,87 E-05	5,12 E-05	5,66 E-06	1,38 E-05	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	4,31 E-07	2,54 E-06	1,17 E-08	-8,66 E-06
ADP-fossil	MJ, net calorific value	6,59 E+01	4,43 E-01	2,06 E+01	8,69 E+01	3,72 E+00	1,82 E+00	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	2,56 E-01	1,53 E+00	2,58 E-02	-2,39 E+01
WDP	m3 world eq. Deprived	2,11 E+00	1,59 E-03	1,63 E-01	2,28 E+00	1,73 E-02	5,04 E-02	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	9,18 E-04	1,03 E-01	1,11 E-03	-1,41 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]

Disclamer [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	6,03 E-08	2,64 E-09	6,24 E-08	1,25 E-07	2,51 E-08	4,84 E-09	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	1,53 E-09	7,15 E-09	1,79 E-10	-5,27 E-09
IRP	kBq U235 eq.	7,70 E-02	1,86 E-03	6,35 E-02	1,42 E-01	1,57 E-02	4,03 E-03	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	1,07 E-03	6,32 E-03	1,01 E-04	-8,44 E-03
ETP-fw	CTUe	1,56 E+01	3,95 E-01	1,89 E+01	3,49 E+01	4,42 E+00	3,54 E+00	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	2,29 E-01	2,55 E+01	4,48 E-02	-2,67 E+00
HTP-c	CTUh	5,96 E-10	1,28 E-11	5,68 E-10	1,18 E-09	3,91 E-10	1,95 E-10	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	7,42 E-12	3,84 E-10	7,27 E-13	-1,55 E-10
HTP-nc	CTUh	1,51 E-08	4,32 E-10	2,04 E-08	3,60 E-08	5,18 E-09	3,17 E-09	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	2,50 E-10	8,00 E-09	2,09 E-11	-2,97 E-10
SQP	----	4,42 E+00	3,84 E-01	1,14 E+01	1,62 E+01	1,73 E+00	4,53 E-01	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	2,22 E-01	5,39 E-01	6,10 E-02	-4,08 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]

Disclamer [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.

Disclamer [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	2,22 E-05	1,12 E-06	3,53 E-05	5,86 E-05	7,04 E-05	1,21 E-05	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	6,50 E-07	2,93 E-06	3,92 E-08	-2,79 E-05
NHWD	kg	9,48 E-02	2,81 E-02	6,62 E-01	7,85 E-01	1,09 E-01	2,67 E-02	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	1,63 E-02	3,64 E-02	1,03 E-01	-1,04 E-02
RWD	kg	6,56 E-05	2,91 E-06	9,30 E-05	1,62 E-04	2,35 E-05	4,56 E-06	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	1,68 E-06	5,49 E-06	1,53 E-07	-1,16 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	ND	ND	ND	ND	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	1,92 E-02	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	0,00 E+00	3,86 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	ND	ND	ND	ND	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	ND	ND	ND	ND	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	5,64 E+00
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	ND	ND	ND	ND	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	9,71 E+00

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	1,95 E+00	5,55 E-03	9,02 E-01	2,86 E+00	8,68 E-02	9,03 E-02	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	3,21 E-03	1,58 E-01	4,59 E-04	-7,78 E-02
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	ND	ND	ND	ND	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
PERT	MJ	1,95 E+00	5,55 E-03	9,02 E-01	2,86 E+00	8,68 E-02	9,03 E-02	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	3,21 E-03	1,58 E-01	4,59 E-04	-7,78 E-02
PENRE	MJ	3,49 E+01	4,70 E-01	2,11 E+01	5,64 E+01	3,95 E+00	1,63 E+00	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	2,72 E-01	1,63 E+00	2,75 E-02	-2,51 E+01
PENRM	MJ	3,57 E+01	0,00 E+00	9,34 E-01	3,67 E+01	0,00 E+00	3,67 E-01	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	-1,14 E+00
PENRT	MJ	7,06 E+01	4,70 E-01	2,20 E+01	9,31 E+01	3,95 E+00	2,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	2,72 E-01	1,63 E+00	2,75 E-02	-2,63 E+01
SM	kg	1,89 E-05	0,00 E+00	0,00 E+00	1,89 E-05	0,00 E+00	1,54 E-03	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	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	ND	ND	ND	ND	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	ND	ND	ND	ND	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
FW	m3	3,35 E-02	5,40 E-05	1,91 E-02	5,26 E-02	6,31 E-04	1,60 E-03	0,00 E+00	0,00 E+00	0,00 E+00	ND	ND	ND	ND	0,00 E+00	3,12 E-05	3,02 E-03	2,69 E-05	-1,91 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

BIOGEEN 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

BCCpr = 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 aluminised 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 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).

Data quality
A lot of the LCI was measured, both the weight as well as the energy consumption. Foreground data is from the year 2023 and background data is less than 10 years old.
Therefore the data quality is high.

Consistency
The consistency is guaranteed by only using one database, EcoInvent 3.6.

Reproducibility
The values on which this LCA is performed, can be found in the EPD report and the corresponding project file. The way on which the data are collected and where the information is based on, is included. As a result, the preformed LCA is reproducable.

SENARIOS 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 ±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	km
Transport distance for incineration (module C2)	150	km
Transport distance for recycling (module C2)	50	km
Landfill	10	%
Incineration	85	%
Recycling	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
Hischier R., Life Cycle Inventories of Packaging and Graphical Papers. ecoinvent report No. 11. Swiss Centre for Life Cycle Inventories, Dübendorf, 2007

REMARKS

None.