**Environmental**
**Product**
**Declaration**

According to ISO14025+EN15804+A2

This declaration is for:
**INTELLO X PLUS**

Provided by:
**pro clima / MOLL bauökologische Produkte GmbH**


MRPI® registration:
**1.1.01078.2026**

Program operator:
**Stichting MRPI®**
Publisher:
**Stichting MRPI®**
**www.mrpi.nl**

Date of first issue:
**28-4-2026**
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**28-4-2031**

## COMPANY INFORMATION

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## PRODUCT

INTELLO X PLUS

## DECLARED UNIT / FUNCTIONAL UNIT

1 Area (m2)

## DESCRIPTION OF PRODUCT

Reinforced all-round hydrosafe® high-performance vapour control membrane

## MRPI® REGISTRATION

1.1.01078.2026

## DATE OF THIS ISSUE

28-4-2026

## VISUAL PRODUCT


## EXPIRY DATE

28-4-2031

## SCOPE OF DECLARATION

This MRPI®-EPD certificate is verified by Dr.-Ing. Nikolay Minkov, greentability Ltd.. The LCA study has been done by Antonia Willich & María Díaz Cáceres, brands & values GmbH. The certificate is based on an LCA-dossier according to ISO14025+EN15804+A2. It is verified according to the 'Verification protocol for MRPI LCA project report & EPD 21th of May 2025, V. 5.2'. EPDs 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

## MORE INFORMATION

https://proclima.com/products/internal-sealing/intello-x-plus

| **Ing. L. L. Oosterveen MSc. MBA**<br>**Managing Director MRPI** | DEMONSTRATION OF VERIFICATION |
|---|---|
| | CEN standard EN15804 serves as the core PCR [1] |
| | Independent verification of the declaration and data according to ISO14025+EN15804+A2<br>Internal: External: X |
| | Third party verifier: Dr.-Ing. Nikolay Minkov, greentability Ltd. |
| | [1] PCR = Product Category Rules |

## DETAILED PRODUCT DESCRIPTION

INTELLO X PLUS has the following components:
Protective and covering fleece: polypropylene; functional film: polyethylene copolymer; reinforcement: polypropylene non-woven fabric.
Reference service life: 50 years
Applications
Vapour control (alternate terms: vapour check or retarder) membrane for use on the inside of insulation installed between rafters or wall framework, or directly on top of a hard subsurface underneath exterior insulation in combination with all fibrous insulation materials – including blown-in insulation materials.

| Product components | Weight, kg | Post-consumer material, weight-% | Biogenic material, weight-% and kg C/kg |
|---|---|---|---|
| Non-woven and scrim (PP) | 0,132 | 0.0% | 0 %- 0 kg C/kg |
| Additives and adhesives | 0,022 | 0.0% | 0 %- 0 kg C/kg |
| Printing ink | 0,0015 | 0.0% | 0 %- 0 kg C/kg |
| Total product | 0,1555 | 0.0% | 0 %- 0 kg C/kg |

Description of the manufacturing processes The INTELLO X PLUS reinforced all-round hydrosafe® high-performance vapour check membrane is produced by bonding and laminating the fleece layer, the reinforcement and the functional film to create large rolls. These rolls are printed and then cut into smaller rolls, which are the sales units. These rolls are then packaged and sent for storage and distribution, first to the central warehouse in Germany, and then all over the world for further sale.

| Packaging materials | Weight, kg | Weight-% (relative to the product) | Weight biogenic carbon, [kg C/kg] |
|---|---|---|---|
| Film (PE) | 0,002 | 1,30% | 0 kg C/kg |
| Cardboard | 0,0056 | 3% | 0,002 kg C/kg |
| Pallet | 0,017 | 9,30% | 0,009 kg C/kg |
| Total packaging | 0,025 | 13,60% | 0,011 kg C/kg |
| TOTAL Product with packaging | 0,18 | | 0,011 kg C/kg |

| Biogenic carbon content | Unit (expressed per functional unit) |
|---|---|
| Biogenic carbon content in product | 0 kg C/kg |
| Biogenic carbon content in accompanying packaging | 0,011 kg C/kg |

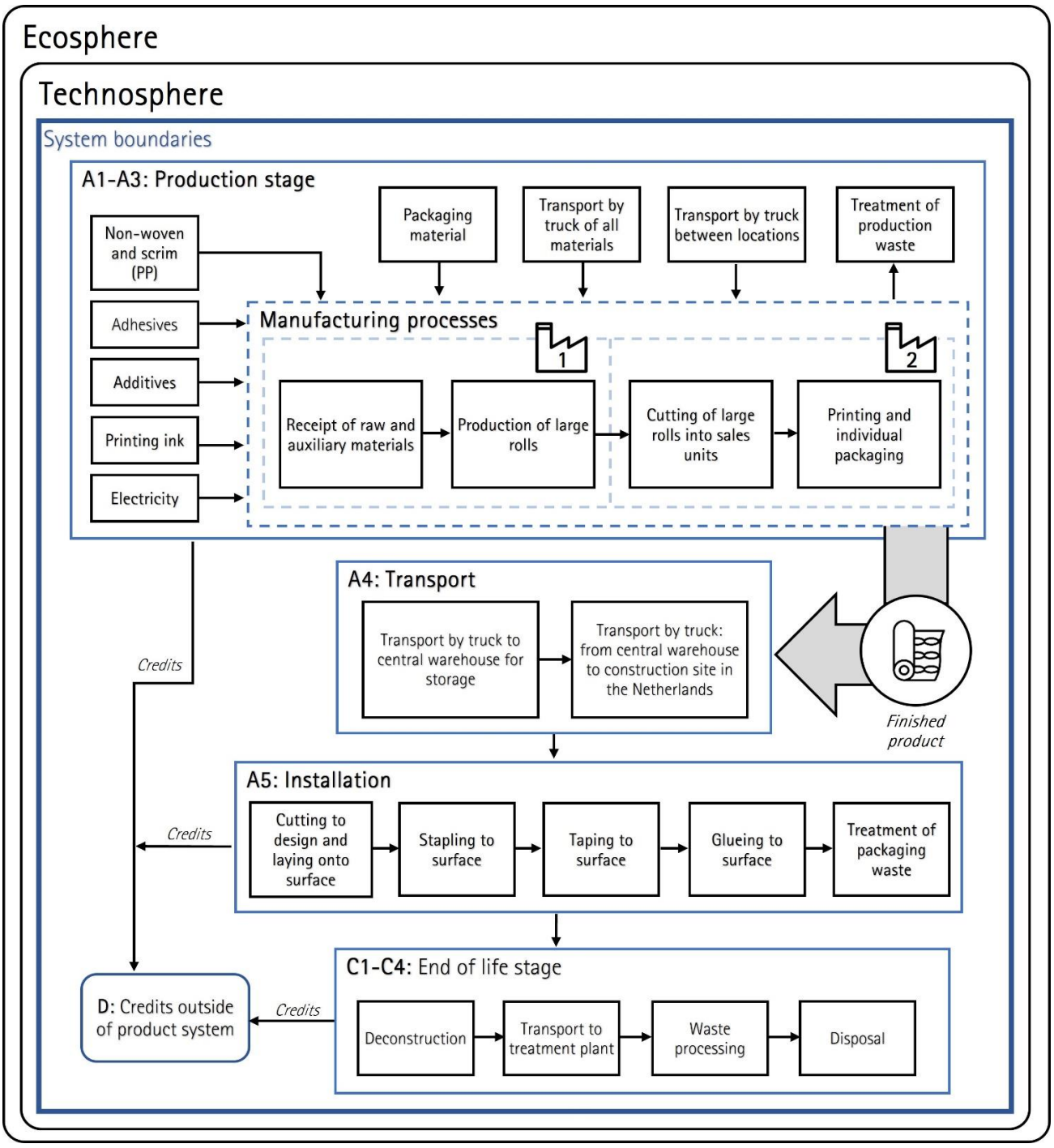
## SCOPE AND TYPE

Geographical Scope: Netherlands
The product is manufactured in Germany and subsequently transported to the Netherlands for sale.
End-of-life processes are modelled according to conditions and scenarios applicable to the Netherlands.The software system LCA for Experts (GaBi) version 10.9 was used for the creation of the LCA model. Background datasets from the ecoinvent database (Service Pack 3.9.1, 2022) were applied within the LCA software.
Type of EPD: Specific

| 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 | ND | ND | ND | ND | ND | ND | ND | x | x | x | x | x |

X = Modules Assessed

ND = Not Declared




## REPRESENTATIVENESS

The system boundary of the EPDs is: Cradle to gate with options, modules C1–C4, and module D (A1–A3 + C + D and additional modules A4 and A5)
Manufacturing of the reinforced all-round hydrosafe® high-performance vapour control membrane occurs in Germany.
Geographical Scope: Netherlands

## ENVIRONMENTAL 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. | 4,59E-01 | 2,49E-02 | 3,16E-02 | 5,16E-01 | 3,10E-05 | 7,20E-02 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 5,97E-03 | 3,60E-01 | 1,65E-03 | -1,38E-01 |
| GWP-fossil | kg CO2 eq. | 4,67E-01 | 2,49E-02 | 3,16E-02 | 5,24E-01 | 3,09E-05 | 5,91E-02 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 5,97E-03 | 3,60E-01 | 1,65E-03 | -1,38E-01 |
| GWP-biogenic | kg CO2 eq. | -1,10E-02 | 7,97E-06 | 4,48E-06 | -1,10E-02 | 9,85E-09 | 1,26E-02 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 1,91E-06 | 2,57E-05 | 1,74E-07 | -1,83E-04 |
| GWP-luluc | kg CO2 eq. | 3,11E-03 | 1,22E-05 | 2,45E-06 | 3,12E-03 | 1,50E-08 | 2,86E-04 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 2,92E-06 | 9,56E-06 | 3,64E-08 | -1,26E-05 |
| ODP | kg CFC11 eq. | 7,11E-09 | 5,45E-10 | 2,52E-10 | 7,91E-09 | 6,78E-13 | 7,93E-10 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 1,31E-10 | 1,80E-09 | 4,71E-12 | -8,17E-09 |
| AP | mol H+ eq. | 1,87E-03 | 1,03E-04 | 5,06E-05 | 2,02E-03 | 1,76E-07 | 1,97E-04 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 2,47E-05 | 8,74E-05 | 1,05E-06 | -1,68E-04 |
| EP-fresh water | kg P eq. | 9,39E-05 | 1,75E-06 | 8,10E-06 | 1,04E-04 | 2,17E-09 | 1,13E-05 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 4,21E-07 | 6,66E-06 | 1,10E-08 | -4,00E-06 |
| EP-marine | kg N eq. | 3,84E-04 | 3,94E-05 | 1,32E-05 | 4,37E-04 | 7,41E-08 | 4,50E-05 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 9,45E-06 | 3,50E-05 | 6,46E-06 | -4,63E-05 |
| EP-terrestrial | mol N eq. | 3,80E-03 | 4,20E-04 | 1,29E-04 | 4,35E-03 | 7,96E-07 | 4,37E-04 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 1,01E-04 | 3,35E-04 | 4,75E-06 | -4,89E-04 |
| POCP | kg NMVOC eq. | 1,63E-03 | 1,51E-04 | 3,92E-05 | 1,82E-03 | 2,58E-07 | 1,78E-04 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 3,62E-05 | 9,84E-05 | 2,20E-06 | -2,18E-04 |
| ADP-minerals & metals | kg Sb eq. | 2,61E-06 | 8,05E-08 | 1,86E-08 | 2,71E-06 | 9,93E-11 | 2,49E-07 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 1,93E-08 | 5,47E-08 | 3,19E-10 | -5,75E-07 |
| ADP-fossil | MJ, net calorific value | 1,40E+01 | 3,59E-01 | 3,86E-01 | 1,47E+01 | 4,46E-04 | 1,42E+00 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 8,60E-02 | 2,18E-01 | 3,72E-03 | -2,65E+00 |
| WDP | m3 world eq. Deprived | 1,97E-01 | 2,17E-03 | 9,36E-03 | 2,09E-01 | 2,69E-06 | 2,18E-02 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 5,21E-04 | 4,55E-02 | 1,95E-04 | -1,57E-02 |

| | | |
|---|---|---|
| GWP-total | = | Global Warming Potential total |
| GWP-fossil | = | Global Warming Potential fossil fuels |
| GWP-biogenic | = | Global Warming Potential biogenictotal |
| 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 [1] |
| ADP-fossil | = | Abiotic Depletion for fossil resources potential [1] |
| WDP | = | Water (user) deprivation potential, deprivation-weighted water consumption [1] |

Disclaimer [1]:

- 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 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PM | Disease inci-dence | 1,60E-08 | 1,66E-09 | 1,85E-10 | 1,79E-08 | 2,87E-12 | 1,80E-09 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 3,98E-10 | 6,51E-10 | 2,51E-11 | -1,16E-09 |
| IRP | kBq U235 eq. | 2,51E-02 | 4,76E-04 | 3,98E-03 | 2,96E-02 | 5,88E-07 | 3,63E-03 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 1,14E-04 | 1,01E-03 | 9,31E-06 | -1,26E-03 |
| ETP-fw | CTUe | 1,44E+00 | 1,73E-01 | 9,80E-02 | 1,71E+00 | 2,15E-04 | 2,10E-01 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 4,15E-02 | 2,11E+00 | 8,68E-03 | -6,05E-02 |
| HTP-c | CTUh | 2,04E-10 | 1,19E-11 | 4,92E-12 | 2,21E-10 | 2,14E-14 | 7,36E-11 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 2,86E-12 | 2,56E-11 | 1,13E-13 | -1,87E-11 |
| HTP-nc | CTUh | 3,70E-09 | 2,23E-10 | 2,17E-10 | 4,14E-09 | 3,53E-13 | 4,62E-10 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 5,35E-11 | 5,24E-10 | 3,30E-12 | -2,62E-10 |
| SQP | - | 1,45E+00 | 2,12E-01 | 2,57E-02 | 1,69E+00 | 2,61E-04 | 1,53E-01 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 5,07E-02 | 6,77E-02 | 9,11E-03 | -4,02E-02 |

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, cancer [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 experience with the indicator.

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

| | Unit | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HWD | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| NHWD | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| RWD | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| CRU | kg | 0,00E+00 | 0,00E+00 | 6,45E-03 | 6,45E-03 | 0,00E+00 | 0,00E+00 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| MFR | kg | 0,00E+00 | 0,00E+00 | 1,53E-03 | 1,53E-03 | 0,00E+00 | 6,55E-03 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 0,00E+00 | 8,64E-03 | 0,00E+00 | 0,00E+00 |
| MER | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 2,68E-03 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| EEE | MJ | 0,00E+00 | 0,00E+00 | 1,73E-02 | 1,73E-02 | 0,00E+00 | 1,56E-03 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 0,00E+00 | 8,05E-01 | 0,00E+00 | 1,55E-04 |
| ETE | MJ | 0,00E+00 | 0,00E+00 | 2,98E-02 | 2,98E-02 | 0,00E+00 | 3,62E-03 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 0,00E+00 | 1,39E+00 | 0,00E+00 | 2,67E-04 |

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

## RESOURCE USE per functional unit or declared unit (A1 and A2)

| | Unit | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PERE | MJ | 3,14E-01 | 5,52E-03 | 2,32E-03 | 3,22E-01 | 6,82E-06 | 1,57E-01 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 1,32E-03 | 1,56E-02 | 1,60E-04 | -1,95E-02 |
| PERM | MJ | 1,16E-01 | 0,00E+00 | 0,00E+00 | 1,16E-01 | 0,00E+00 | -1,16E-01 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| PERT | MJ | 4,31E-01 | 5,52E-03 | 2,32E-03 | 4,39E-01 | 6,82E-06 | 4,09E-02 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 1,32E-03 | 1,56E-02 | 1,60E-04 | -1,95E-02 |
| PENRE | MJ | 7,44E+00 | 3,59E-01 | 3,86E-01 | 8,18E+00 | 4,46E-04 | 1,53E+00 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 8,60E-02 | 6,03E+00 | 6,30E-01 | -2,65E+00 |
| PENRM | MJ | 6,54E+00 | 0,00E+00 | 0,00E+00 | 6,54E+00 | 0,00E+00 | -1,05E-01 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 0,00E+00 | -5,81E+00 | -6,26E-01 | 0,00E+00 |
| PENRT | MJ | 1,40E+01 | 3,59E-01 | 3,86E-01 | 1,47E+01 | 4,46E-04 | 1,42E+00 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 8,60E-02 | 2,18E-01 | 3,72E-03 | -2,65E+00 |
| SM | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| RSF | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| NSRF | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| FW | m3 | 4,59E-03 | 5,06E-05 | 2,18E-04 | 4,86E-03 | 6,26E-08 | 5,07E-04 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 1,21E-05 | 1,06E-03 | 4,54E-06 | -3,65E-04 |

PERE = Use of renewable primary energy excluding renewable primary energy used as raw materials
PERM = Use of renewable primary 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
NSRF = Use of non-renewable secondary fuels
FW = Use of net fresh water

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

| | Unit | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BBCpr | kg C | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| BCCpa | kg C | 0,00E+00 | 0,00E+00 | 0,00E+00 | -1,10E-02 | 0,00E+00 | 1,10E-02 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |

BCCpr = Biogenic carbon content in product
BCCpa = Biogenic carbon content in packaging

## CALCULATION RULES

The reference year of this study is 2023. The LCA was carried out in accordance with the requirements and guidelines of the NMD "Bepalingsmethode Milieuprestatie Bouwwerken" (Environmental Performance Assessment Method for Construction Works) (version 1.2, January 2025).

Cut-off criteria:
The impact associated with the disregarded mass shares is less than 5% of the impact categories per module. In addition, less than 1% of the total mass and the primary energy used is cut off. No substances or processes with high environmental relevance were cut off. Equipment and infrastructure required in production are not included in this LCA. An attempt was made to take into account all data collected in the operational data collection. Thus, material flows with a mass fraction of less than one percent were also balanced.

Data collection:
The software system LCA for Experts (GaBi) version 10.9 was used the LCA model. The entire manufacturing process was modelled as far as possible using the manufacturer-specific data. For the upstream and downstream processes, generic background data sets were used. Background datasets from the ecoinvent database (Service Pack 3.9.1, 2022) were applied within the LCA software.

Data quality: The data quality of the relevant datasets was assessed using EN 15804+A2, Annex E, Table E.2. The two datasets with the highest contribution to the core indicators are from ecoinvent 3.9.1: the RER fleece production, polyethylene, contributing between 41 % and 85 % to the core indicators, and the CH treatment of waste polypropylene, municipal incineration with fly ash extraction, contributing between 4 % and 43 % to the core indicators.
The dataset RER fleece production, polyethylene was assessed with a temporal representativeness of "good" , a technological representativeness of "very good" (identical technology), and a geographical representativeness of "good" (from a larger area). The overall data quality score is 1.7, corresponding to "good".
The dataset CH treatment of waste polypropylene, municipal incineration with fly ash extraction was assessed with a temporal representativeness of "good", a technological representativeness of "very good" (identical technology), and a geographical representativeness of "medium" (from a different area with similar production conditions). The overall data quality score is 2.0, corresponding to "good".

Approach Power Mix: The location-based approach was applied using the residual electricity mix. Electricity is the only energy carrier used in modules A1-A3. The ecoinvent 3.9.1 dataset "Electricity, medium voltage, residual mix, DE" with a reference year of 2022 was used. The residual mix represents the electricity mix of untracked consumption, i.e. electricity consumption not explicitly tracked through mechanisms such as Guarantees of Origin (GO), calculated based on statistics from AIB (2022) following the methodology of grexel (2020). The composition of the residual mix is 9.22 % renewable, 17.02 % nuclear and 73.76 % fossil. The GWP-total of the electricity dataset is 0.705 kg $CO_2$ eq./kWh.

## SCENARIOS AND ADDITIONAL TECHNICAL INFORMATION

Production, A1-A3
For the modelling of the raw material extraction up to the production of the precursors (A1), generic data sets are used, which already include the system boundaries (cradle to gate) for the input materials. Transports (A2) are covered by generic data sets, the system boundary for truck transports is on the input side for the upstream processes of the fuels and on the output side for the emissions caused (exhaust gases). The manufacturing phase (A3) is modelled with manufacturer-specific material and energy data, whereby the upstream chains of the energy flows are again modelled using generic data sets.

| Technical specifications for INTELLO X PLUS | Property | Regulation | Value |
|---|---|---|---|
| | Colour | N/A | Light grey |
| | Surface weight | EN 1849-2 | 170 g/m² ; 0.56 oz/ft² |
| | Thickness | EN 1849-2 | 0.6 mm ; 24 mils |
| | Water vapour resistance factor µ | EN 1931 | 23 300 |
| | sd value | EN 1931 | 14 m |
| | sd value, humidity-value | EN ISO 12572 | 0.25 - >25 m |
| | g value | N/A | 70 MN·s/g |
| | g value, humidity-variable | N/A | 1.25 - >125 MN·s/g |
| | Vapour permeance | ASTM E96-A | 0.23 perms |
| | Vapour permeance, humidity-variable | EN ISO 12572 | < 0.13 - 13 perms |
| | Hydrosafe value (sd) | DIN 68800-2 | 2 m |
| | Surface burning characteristics | ASTM E84 | Class A (Flame Spread 0; Smoke development index |
| | Fire class | EN 13501-1 | E |
| | Outdoor exposure | N/A | 2 months |
| | Outdoor exposure for refurbishment betw. 2 | N/A | 14 days ; 7 days at ≤10 °C (≤50 °F) |

Construction and Installation, A4-A5
Module A4 accounts for the environmental impacts of transportation from the production gate to the construction site. The system boundary for truck transports is on the input side for the upstream processes of the fuels and on the output side for the emissions caused (exhaust gases). In module A5, the packaging resulting from the product's installation on the construction site is sent for waste treatment. The transport expenses for disposal are also considered in module A5, and the credits from waste recycling are in module D.
The production of a 10% extra membrane with packaging is assigned to Module A5, 2% from which is treated as waste loss due to trimmings (Module A5) and 8% is installed as overlap, to ensure the building airtightness. The required overlap is treated as waste during the End-of-Life (Modules C1-C4).

| | UV resistance | N/A | Can be permanently exposed to diffuse UV light |
|---|---|---|---|
| | Watertightness to liquid water | EN 1928 | W1 |
| | Water column | EN ISO 811 | > 2 500 mm ; > 8‘ 2“ |
| | Tensile strength MD/CD | EN 12311-2 | 490 N/5 cm / 300 N/5 cm ; 56 lb/in / 34 lb/in |
| | Elongation MD/CD | EN 12311-2 | 20% / 20% |
| | Nail tear resistance MD/CD | EN 12310-1 | 280 N / 280 N ; 63 lbf / 63 lbf |
| | Durability after artificial ageing | EN 1296 | Passed |

End-of-life, C1-C4
In module C2, the transports to the disposal processes are considered. The system boundary for truck transports lies on the input side with the upstream processes of the fuels and on the output side with the emissions caused (exhaust gases).
Module C3 contains the necessary processes for waste treatment at the end of the product life cycle. The loads for waste treatment are mapped here until the end of the waste property is reached. Emissions are assigned to module C3. Resulting credits are assigned to module D. Module C4 describes the expenses for the disposal of the product or its components if material or energy recovery or reuse is not possible.
The End-of-Life (EoL) modelling for all material types – including plastics, metals (e.g. steel), and aluminium – was carried out in accordance with the Product Category Rules (PCR) applicable for the Netherlands (Nationale (Milieudatabase, 2025) These PCR specifications include a table outlining the percentage distribution of waste treatment routes for various material categories. The documented shares of incineration, landfill, and recycling were implemented into the life cycle model for each respective material.

## DECLARATION OF SVHC

None of the substances in the product are on the 'Candidate List of Substances of Very High Concern for Authorization' (SVHC) or exceed the threshold value of the European Chemicals Agency.

## REFERENCES

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[3] 'ISO 14025: Environmental labels and declarations - Type III environmental declarations - Principles and procedures, International Organization for Standardization', ISO14025:2006.
[4] 'DIN EN 17388-2 Flexible sheets for waterproofing – Environmental product declarations – Product category rules for reinforced bitumen, plastic and rubber flexible sheets for roof waterproofing – Part 2: Cradle to gate with options, modules C1C4 and module D; English version EN 173882: 2024, English translation of DIN EN 17388-2:2024-12
[5] 'Stichting National Environmental Database (2025): Environmental Performance Assessment Method for Construction Works. Version 1.2, January 2025. The Foundation for Sustainable Construction, Netherlands (PCR).
[6] 'NMD-Toetsingsprotocol opname data in de Nationale Milieudatabase, op basis van de Bepalingsmethode Milieuprestatie Bouwwerken', Stichting Nationale Milieudatabase, versie 1.1, maart 2022
[7] Nederlandse Milieu Database, Forfaitaire waarden voor verwerking-scenario's einde leven behorende bij: Bepalingsmethode Milieuprestatie Bouwwerken, versie mei 2025