

**Environmental  
Product  
Declaration**

According to EN15804+A2 (+indicators A1)

This declaration is for:  
**MAPEPLAN M 18 BROOF (t1)-(t3)**

Provided by:  
**Polyglass SpA**



MRPI® registration:  
**1.1.00888.2025**

Program operator:  
**Stichting MRPI®**  
Publisher:  
**Stichting MRPI®**  
**[www.mrpi.nl](http://www.mrpi.nl)**

Date of first issue:  
**17-3-2025**  
Date of this issue:  
**17-3-2025**  
Expiry date:  
**17-3-2030**



## DETAILED PRODUCT DESCRIPTION (PART 1)

Mapeplan M 18 Broof T1-T3 is a synthetic roofing waterproofing membrane in PVC produced in one multiextrusion coating process, with high quality raw materials, reinforced with polyester net.

Mapeplan M 18 Broof T1-T3 is compliant with EN 13956 ("Flexible sheets for waterproofing – Plastic and rubber sheets for roof waterproofing – Definitions and characteristics").

Mapeplan M 18 Broof T1-T3 has an Mass per Unit of 2,2 kg/m<sup>2</sup>

Packaging materials include:

- Wooden pallet
- Cardboard
- LDPE used as wrapping material

The reference service life of the roofing membrane, according to Polyglass experience, is estimated at least 30 years, if professionally installed and properly used.

| Component (> 1%)         | (%)     |
|--------------------------|---------|
| Polyvinyl chloride (PVC) | 50%-70% |
| Plasticizers             | 30%-40% |
| Pigments                 | 0%-5%   |
| Reinforcing material     | 5%-15%  |
| Other additives          | 0%-1%   |

## SCOPE AND TYPE

Mapeplan M 18 Broof T1-T3 is manufactured for the Dutch market by Polyglass SpA (Italy), including packaging of the finished products.

End-of-life geography: Netherlands

Background database - ecoinvent 3.6

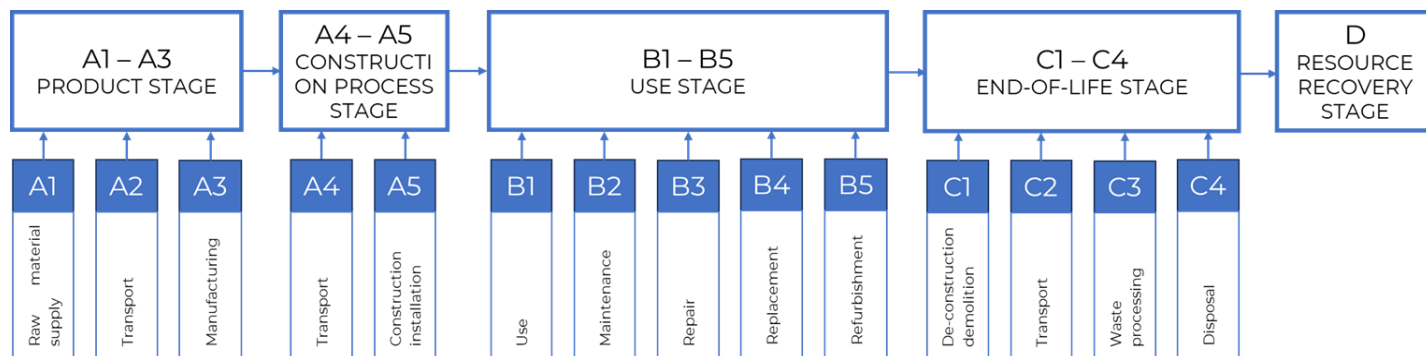
LCA software: LCA for Experts (Sphera)

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

X = Modules Assessed

ND = Not Declared



## ENVIRONMENTAL IMPACT per functional unit or declared unit (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.      | 7,61E-03 | 2,58E-06 | 1,78E-06 | 7,62E-03 | 1,07E-05 | 8,97E-08 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | 0,00E+00 | 1,02E-06 | 1,92E-05 | 4,83E-08 | -5,10E-07 |
| ADPF | MJ             | 4,66E+01 | 2,32E+00 | 1,94E+00 | 5,09E+01 | 6,40E+00 | 2,14E-01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | 0,00E+00 | 6,09E-01 | 5,83E+00 | 1,07E-01 | -2,67E+01 |
| GWP  | kg CO2 eq.     | 2,90E+00 | 1,50E-01 | 1,22E-01 | 3,18E+00 | 4,20E-01 | 3,90E-02 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | 0,00E+00 | 4,00E-02 | 3,60E+00 | 3,10E-02 | -1,55E+00 |
| ODP  | kg CFC11 eq.   | 6,12E-07 | 2,84E-08 | 1,41E-07 | 7,81E-07 | 7,45E-08 | 2,04E-09 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | 0,00E+00 | 7,09E-09 | 1,11E-07 | 1,12E-09 | -1,81E-07 |
| POCP | kg ethene eq.  | 1,85E-03 | 1,08E-04 | 9,95E-05 | 2,06E-03 | 3,16E-04 | 1,07E-05 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | 0,00E+00 | 3,00E-05 | 2,72E-04 | 9,44E-06 | -2,61E-04 |
| AP   | kg SO2 eq.     | 1,23E-02 | 4,93E-04 | 4,67E-04 | 1,33E-02 | 1,85E-03 | 7,33E-05 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | 0,00E+00 | 1,76E-04 | 2,19E-03 | 3,02E-05 | -1,13E-03 |
| EP   | kg (PO4) 3 eq. | 2,30E-03 | 9,17E-05 | 1,37E-04 | 2,53E-03 | 3,66E-04 | 2,12E-05 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | 0,00E+00 | 3,48E-05 | 4,42E-04 | 1,04E-05 | -1,90E-04 |

### Toxicity indicators and ECI (Dutch market)

|       |            |          |          |          |          |          |          |          |          |          |          |          |    |    |          |          |          |          |           |
|-------|------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----|----|----------|----------|----------|----------|-----------|
| HTP   | kg DCB eq. | 2,12E+00 | 7,00E-02 | 6,62E-02 | 2,26E+00 | 1,76E-01 | 8,66E-03 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | 0,00E+00 | 1,68E-02 | 5,36E-01 | 3,11E-03 | -9,62E-02 |
| FAETP | kg DCB eq. | 7,14E-02 | 2,61E-03 | 4,21E-03 | 7,83E-02 | 6,91E-03 | 6,80E-04 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | 0,00E+00 | 6,58E-04 | 4,10E-02 | 8,14E-04 | -1,20E-03 |
| MAETP | kg DCB eq. | 1,58E+02 | 1,03E+01 | 5,93E+00 | 1,74E+02 | 2,55E+01 | 4,02E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | 0,00E+00 | 2,43E+00 | 1,00E-02 | 1,07E+00 | -4,32E+00 |
| TETP  | kg DCB eq. | 3,60E-02 | 6,55E-04 | 1,19E-03 | 3,78E-02 | 1,79E-03 | 2,03E-04 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | 0,00E+00 | 1,71E-04 | 1,28E-02 | 5,04E-05 | -1,39E-03 |
| ECI   | euro       | 4,34E-01 | 1,82E-02 | 1,63E-02 | 4,69E-01 | 5,16E-02 | 3,69E-03 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | 0,00E+00 | 4,91E-03 | 2,44E-01 | 2,21E-03 | -9,55E-02 |
| ADPF  | kg Sb eq.  | 2,24E-02 | 1,12E-03 | 9,36E-04 | 2,45E-02 | 3,08E-03 | 1,03E-04 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | 0,00E+00 | 2,93E-04 | 2,80E-03 | 5,14E-05 | -1,29E-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                 |

## 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.              | 2,97E+00 | 1,52E-01 | 9,12E-03  | 3,13E+00  | 4,24E-01 | 1,38E-01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | 0,00E+00 | 4,03E-02 | 3,60E+00 | 3,60E-02 | -1,57E+00 |
| GWP-fossil            | kg CO2 eq.              | 2,95E+00 | 1,51E-01 | 1,23E-01  | 3,22E+00  | 4,24E-01 | 2,44E-02 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | 0,00E+00 | 4,03E-02 | 3,60E+00 | 3,60E-02 | -1,57E+00 |
| GWP-biogenic          | kg CO2 eq.              | 0,00E+00 | 0,00E+00 | -1,14E-01 | -1,14E-01 | 0,00E+00 | 1,14E-01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00  |
| GWP-luluc             | kg CO2 eq.              | 1,84E-02 | 4,60E-05 | 4,54E-04  | 1,89E-02  | 1,62E-04 | 3,31E-06 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | 0,00E+00 | 1,54E-05 | 3,92E-04 | 2,35E-06 | -1,22E-04 |
| ODP                   | kg CFC11 eq.            | 6,03E-07 | 3,56E-08 | 1,19E-07  | 7,57E-07  | 9,35E-08 | 2,30E-09 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | 0,00E+00 | 8,90E-09 | 1,20E-07 | 1,40E-09 | -2,05E-07 |
| AP                    | mol H+ eq.              | 1,52E-02 | 6,37E-04 | 6,13E-04  | 1,64E-02  | 2,46E-03 | 9,37E-05 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | 0,00E+00 | 2,34E-04 | 2,75E-03 | 3,97E-05 | -1,49E-03 |
| EP-fresh water        | kg PO4 eq.              | 4,92E-03 | 3,29E-05 | 1,23E-04  | 5,08E-03  | 1,19E-04 | 1,09E-05 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | 0,00E+00 | 1,13E-05 | 5,09E-04 | 2,25E-06 | -5,41E-05 |
| EP-marine             | kg N eq.                | 3,17E-03 | 1,94E-04 | 2,00E-04  | 3,56E-03  | 8,74E-04 | 4,46E-05 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | 0,00E+00 | 8,31E-05 | 7,94E-04 | 1,69E-04 | -4,50E-04 |
| EP-terrestrial        | mol N eq.               | 3,34E-02 | 2,12E-03 | 1,89E-03  | 3,74E-02  | 9,55E-03 | 2,68E-04 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | 0,00E+00 | 9,08E-04 | 7,33E-03 | 1,45E-04 | -5,23E-03 |
| POCP                  | kg NMVOC eq.            | 9,86E-03 | 6,81E-04 | 5,37E-04  | 1,11E-02  | 2,73E-03 | 7,22E-05 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | 0,00E+00 | 2,59E-04 | 2,02E-03 | 4,91E-05 | -1,58E-03 |
| ADP-minerals & metals | kg Sb eq.               | 7,61E-03 | 2,58E-06 | 1,78E-06  | 7,62E-03  | 1,07E-05 | 8,97E-08 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | 0,00E+00 | 1,02E-06 | 1,92E-05 | 4,83E-08 | -5,10E-07 |
| ADP-fossil            | MJ, net calorific value | 5,61E+01 | 2,37E+00 | 2,11E+00  | 6,05E+01  | 6,50E+00 | 2,38E-01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | 0,00E+00 | 6,19E-01 | 6,24E+00 | 1,09E-01 | -2,68E+01 |
| WDP                   | m3 world eq. Deprived   | 2,13E+00 | 1,15E-02 | 5,27E-02  | 2,19E+00  | 3,34E-02 | 1,03E-02 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | 0,00E+00 | 3,18E-03 | 6,81E+00 | 4,79E-03 | -6,48E-02 |

GWP-total = Global Warming Potential total

GWP-fossil = Global Warming Potential fossil fuels

GWP-biogenic = Global Warming Potential biogenic total

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 incidence | 1,09E-07 | 1,37E-08 | 1,10E-08 | 1,34E-07 | 3,81E-08 | 6,99E-10 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | 0,00E+00 | 3,63E-09 | 2,05E-08 | 7,50E-10 | -6,56E-09 |
| IRP    | kBq U235 eq.      | 5,70E-01 | 1,20E-02 | 1,20E-02 | 5,94E-01 | 3,07E-02 | 1,57E-03 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | 0,00E+00 | 2,92E-03 | 3,83E-02 | 5,07E-04 | -1,20E-02 |
| ETP-fw | CTUe              | 1,25E+02 | 1,96E+00 | 9,41E+00 | 1,36E+02 | 5,95E+00 | 3,12E-01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | 0,00E+00 | 5,66E-01 | 2,02E+02 | 1,65E+00 | -3,74E+00 |
| HTP-c  | CTUh              | 2,69E-09 | 4,64E-11 | 9,87E-11 | 2,84E-09 | 1,86E-10 | 1,05E-11 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | 0,00E+00 | 1,77E-11 | 7,07E-10 | 3,17E-12 | -1,24E-10 |
| HTP-nc | CTUh              | 6,73E-08 | 1,86E-09 | 1,73E-09 | 7,09E-08 | 5,66E-09 | 4,32E-10 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | 0,00E+00 | 5,38E-10 | 5,60E-08 | 3,43E-10 | -2,12E-09 |
| SQP    | -                 | 1,35E+01 | 2,69E+00 | 1,35E+01 | 2,97E+01 | 5,53E+00 | 1,26E-01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | 0,00E+00 | 5,26E-01 | 3,25E+00 | 2,53E-01 | -8,97E+00 |

- 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 | 2,84E-03 | 2,84E-03 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 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 | 3,21E-03 | 3,21E-03 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 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 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 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 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 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 | 1,82E-01 | 1,82E-01 | 0,00E+00 | 3,12E-03 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| MER  | kg   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 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 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 3,05E-01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | 0,00E+00 | 0,00E+00 | 6,61E+00 | 0,00E+00 | 0,00E+00 |
| ETE  | MJ   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 5,38E-01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | 0,00E+00 | 0,00E+00 | 1,18E+01 | 0,00E+00 | 0,00E+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



## 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   | 7,49E+00 | 2,97E-02 | 9,19E-01 | 8,44E+00 | 8,01E-02 | 3,81E-02 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | 0,00E+00 | 7,63E-03 | 5,10E-01 | 1,84E-03 | -1,76E+00 |
| PERM  | MJ   | 0,00E+00 | 0,00E+00 | 1,05E+00 | 1,05E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00  |
| PERT  | MJ   | 7,49E+00 | 2,97E-02 | 1,96E+00 | 9,48E+00 | 8,01E-02 | 3,81E-02 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | 0,00E+00 | 7,63E-03 | 5,10E-01 | 1,84E-03 | -1,76E+00 |
| PENRE | MJ   | 5,61E+01 | 2,37E+00 | 1,96E+00 | 6,04E+01 | 6,50E+00 | 2,38E-01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | 0,00E+00 | 6,19E-01 | 6,24E+00 | 1,09E-01 | -2,68E+01 |
| PENRM | MJ   | 0,00E+00 | 0,00E+00 | 1,48E-01 | 1,48E-01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00  |
| PENRT | MJ   | 5,61E+01 | 2,37E+00 | 2,11E+00 | 6,06E+01 | 6,51E+00 | 2,38E-01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | 0,00E+00 | 6,19E-01 | 6,24E+00 | 1,09E-01 | -2,68E+01 |
| SM    | kg   | 1,47E+00 | 0,00E+00 | 0,00E+00 | 1,47E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 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 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 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 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00  |
| FW    | m3   | 4,96E-02 | 2,68E-04 | 1,23E-03 | 5,11E-02 | 7,78E-04 | 2,41E-04 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | 0,00E+00 | 7,41E-05 | 1,59E-01 | 1,12E-04 | -1,51E-03 |

|       |   |                                                                                                              |
|-------|---|--------------------------------------------------------------------------------------------------------------|
| 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 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 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 | 2,64E-02 | 2,64E-02 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 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 (PART 1)

The results show the environmental impacts of the products considered in accordance with the requirements of EN15804:2012+A2:2019/AC:2021. The characterization factors are based on the EF 3.0 package. The results refer to the declared unit (see § 2.2). The estimated impacts do not indicate endpoints of the impact categories, nor the exceeding of reference values or risk margins. Allocation rules: In A1 module, the whole annual plant electricity consumption and waste coming from production stage, have been allocated by mass of the product and referred to the declared unit (1sqm of Mapeplan).

Cut-off rules: The following procedure is followed for the exclusion of inputs and outputs:

- All inputs and outputs to a unit process are included in the calculation, for which data are available.
- Less than 1 % of the total mass inputs / outputs of the unit process A1 and A3, are cut off (see table 2). Input flows are covered for over 99% of the formula.

Data quality: All data included in the study refer to a period between 2019 and 2021; the most relevant ones are specific from supplier, while the others (i.e. transport and minor contribution dataset), come from ecoinvent 3.6. All dataset are not more than 10 years old according to EN 15804 §6.3.8.2 "Data quality requirements". Primary data concern the year 2021 and represent the whole annual production. The Quality level concerning datasets used in the EPD can be considered as "very good" or "good" according to Annex E of the EN 15804 (current version).

## SCENARIOS AND ADDITIONAL TECHNICAL INFORMATION (PART 1)

The approach is "cradle to gate" (A1–A3) with modules C1-C4 and module D and optional modules (A1-A3 + A4-A5 + C + D):

- A1, A2, A3 (Product stage): extraction and processing of raw materials (A1), transportation up to the factory gate (A2), manufacturing of the finished product and packaging (A3).
- A4-A5 (Construction process stage): transport distance of the finished product to final customers is assumed to be 1350 km (Truck distance from Polyglass SpA to Utrecht, Netherlands). The packaging is collected and sent to treatment.
- B1, B2, B3, B4, B5 (Use Stage): no environmental impact take place during use and no regular maintenance or repair is considered in the given RSL.
- C1, C2, C3, C4 (End of Life stage): the demolition phase (C1) includes the electricity for demolition. With a collection rate of 100% as C&D waste, transports are carried out by lorry over 150 km (C2). An energy recovery ratio (C3) of 80% is considered in accordance with the default NMD EoL scenario. The remaining 20% is landfilled (C4).
- D (Resource recovery stage): contains credits from the incineration of the fraction of product in module C3, at the end of life. This module also contains the credit from the incineration of a fraction of packaging waste (A5).

## DECLARATION OF SVHC

The formulation contains no hazardous substances. This product contains no substances of very high concern (SVHC) on the REACH Candidate List/ published by the European Chemicals Agency in a concentration exceeding 0.1 % (by unit weight).

## REFERENCES

EN 15804: SUSTAINABILITY OF CONSTRUCTION WORKS - ENVIRONMENTAL PRODUCT DECLARATIONS - CORE RULES FOR THE PRODUCT CATEGORY OF CONSTRUCTION PRODUCTS

ISO 14025 ENVIRONMENTAL LABELS AND DECLARATIONS - TYPE III ENVIRONMENTAL DECLARATIONS - PRINCIPLES AND PROCEDURES

ISO 14044 ENVIRONMENTAL MANAGEMENT – LIFE CYCLE ASSESSMENT – REQUIREMENTS AND GUIDELINES

NMD, ENVIRONMENTAL PERFORMANCE ASSESSMENT METHOD FOR CONSTRUCTION WORKS V.1.1

NMD, FORFAITAIRE WAARDEN VOOR VERWERKING-SCENARIO'S EINDE LEVEN BEHORENDE BIJ: BEPALINGSMETHODE MILIEUPRESTATIE BOUWWERKEN