



**Environmental
Product
Declaration**

According to ISO14025 and EN15804+A2
(+indicators A1)



This declaration is for:
Adfil Strux DC05

Provided by:
Adfil N.V.



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

MRPI® registration
1.1.00735.2024
date of first issue
28-1-2025
date of this issue
28-1-2025
expiry date
28-1-2030



COMPANY INFORMATION



Adfil N.V.
Industriestraat 39, zone 2
9240 ZELE, BELGIUM
Saeid Ghorbani
<https://adfil.com>

PRODUCT

Adfil Strux DC05

DECLARED UNIT/FUNCTIONAL UNIT

1 kg

DESCRIPTION OF PRODUCT

Adfil Strux DC05 is a synthetic macrofiber designed to provide efficient reinforcement for concrete and mortar applications. This fiber is primarily made from high-quality polymers such as polypropylene (PP) and high-density polyethylene (HDPE).

MRPI® REGISTRATION

1.1.00735.2024

DATE OF ISSUE

28-1-2025

EXPIRY DATE

28-1-2030

VISUAL PRODUCT



SCOPE OF DECLARATION

This MRPI®-EPD certificate is verified by Roel van Oosterhout, EcoReview B.V. The LCA study has been done by Anne Kees Jeeninga, Advieslab VOF. 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.

MORE INFORMATION

<https://adfil.com/synthetic-macro-fibres>

PROGRAM OPERATOR

Stichting MRPI®
Kingsfordweg 151
1043 GR
Amsterdam

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

DEMONSTRATION OF VERIFICATION

CEN standard EN15804 serves as the core PCR(a)

Independent verification of the declaration an data according to

ISO14025 and EN15804+A2 (+indicators A1)

internal:

external: x

Third party verifier: Anne Kees Jeeninga, Advieslab VOF

[a] PCR = Product Category Rules

DETAILED PRODUCT DESCRIPTION

Adfil Strux DC05 is a synthetic macrofiber designed to provide efficient reinforcement for concrete and mortar applications. This fiber is primarily made from high-quality polymers such as polypropylene (PP) and high-density polyethylene (HDPE), sourced from various suppliers and recyclers. The production process involves an extrusion technique, where the raw materials are combined, drawn, and cut into precise lengths.

Strux s DC05 ynthetic fibres are designed with dimensions of 32mm x 1,35mm x 0,1mm (94% macro) + 18mm x 0,022mm diameter (6% micro), featuring a density of 0.914 kg/m³. These fibres are EN 14889-2 certified, ensuring compliance with industry standards for quality and performance.

Strux DC05 is packaged in pre-measured quantities to ensure ease of use on construction sites. It is manufactured at Adfil's production facility in Zele, Belgium, adhering to strict quality control standards to minimize defects and environmental impact.

| Component (> 1%) | (kg / %) |
|------------------|------------|
| Polyolefins | 0,99717019 |
| | 0,00282981 |

SCOPE AND TYPE

The type of this EPD is Cradle-to-Gate. All major steps from the extraction of natural resources to the factory gate are included in the environmental performance of the manufacturing phase, except those that are not relevant to the environmental performance of the product.

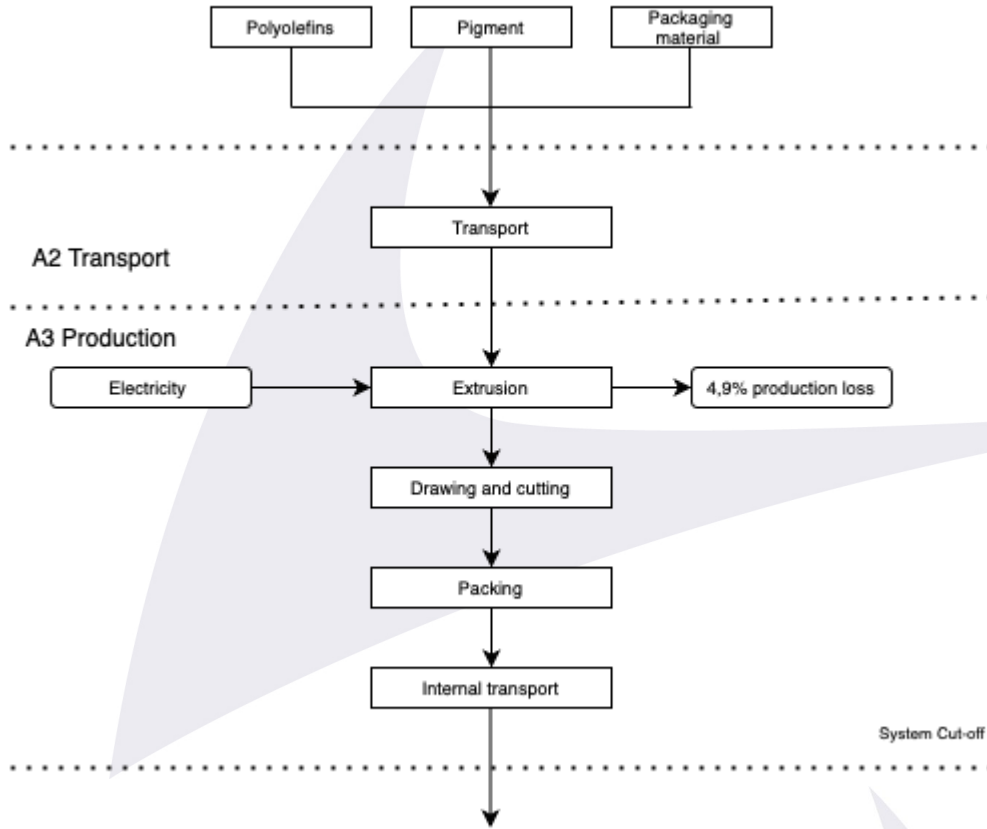
The software SimaPro is used to perform the LCA. The background databases used are:

- Ecoinvent (v3.6) . It is not determined as to how the synthetic fibers are to be processed at the end of life (after 50 years). Therefore, this module is not considered in this LCA study. As new and improved systems for the recycling of building products are developed over time, these can be determined and then applied to a future LCA study.

| PRODUCT STAGE | | | CONSTRUCTION PROCESS STAGE | | USER 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 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |

X= Modules Assessed
ND= Not Declared

A1 Materials



REPRESENTATIVENESS

This EPD is representative for products produced and sold in the EU. The synthetic fibers are produced and cut to demand at the production site of Adfil N.V.

ENVIRONMENTAL 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. | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| ADPF | MJ | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| GWP | kg CO2 eq. | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| ODP | Kg CFC11 eq. | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| POCP | Kg ethene eq. | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| AP | kg SO2 eq. | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| EP | kg (PO4) 3- eq. | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |

Toxicity indicators for Dutch market

| | | | | | | | | | | | | | | | | | | | |
|-------|-----------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| HTP | kg DCB-Eq | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| FAETP | kg DCB-Eq | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| MAETP | kg DCB-Eq | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| TETP | kg DCB-Eq | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| ECI | euro | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| ADPF | kg Sb eq. | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |

- ADPE = Abiotic Depletion Potential for non-fossil resources
- ADPF = Abiotic Depletion Potential for fossil resources
- GWP = Global Warming Potential
- ODP = Depletion potential of the stratospheric ozone layer
- POCP = Formation potential of tropospheric ozone photochemical oxidants
- AP = Acidification Potential of land and water
- EP = Eutrophication Potential
- HTP = Human Toxicity Potential
- FAETP = Fresh water aquatic ecotoxicity potential
- MAETP = Marine aquatic ecotoxicity potential
- TETP = Terrestrial ecotoxicity potential
- ECI = Environmental Cost Indicator
- ADPF = Abiotic Depletion Potential for fossil resources expressed in [kg Sb-eq.]

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

| | Unit | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|-----------------------|-------------------------|-----------|-----------|-----------|-----------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| GWP-total | kg CO2 eq. | 2,16 E+00 | 5,61 E-02 | 3,99 E-01 | 2,62 E+00 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| GWP-fossil | kg CO2 eq. | 2,16 E+00 | 5,60 E-02 | 3,98 E-01 | 2,61 E+00 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| GWP-biogenic | kg CO2 eq. | 0,00 E+00 | 0,00 E+00 | 0,00 E+00 | 0,00 E+00 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| GWP-luluc | kg CO2 eq. | 2,58 E-03 | 2,05 E-05 | 8,55 E-04 | 3,45 E-03 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| ODP | kg CFC11 eq. | 4,36 E-08 | 1,24 E-08 | 6,72 E-08 | 1,23 E-07 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| AP | mol H+ eq. | 7,91 E-03 | 3,25 E-04 | 7,42 E-04 | 8,98 E-03 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| EP-freshwater | kg PO4 eq. | 4,86 E-05 | 5,65 E-07 | 8,16 E-06 | 5,73 E-05 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| EP-marine | kg N eq. | 1,42 E-03 | 1,15 E-04 | 1,83 E-04 | 1,72 E-03 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| EP-terrestrial | mol N eq. | 1,53 E-02 | 1,26 E-03 | 2,31 E-03 | 1,89 E-02 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| POCP | kg NMVOC eq. | 6,68 E-03 | 3,60 E-04 | 5,74 E-04 | 7,61 E-03 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| ADP-minerals & metals | kg Sb eq. | 1,83 E-05 | 1,42 E-06 | 5,18 E-06 | 2,49 E-05 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| ADP-fossil | MJ, net calorific value | 7,57 E+01 | 8,45 E-01 | 1,30 E+01 | 8,96 E+01 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| WDP | m3 world eq. Deprived | 1,55 E+00 | 3,02 E-03 | 4,50 E-01 | 2,00 E+00 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |

- GWP-total = Global Warming Potential total
- GWP-fossil = Global Warming Potential fossil fuels
- GWP-biogenic = Global Warming Potential biogenic
- GWP-luluc = Global Warming Potential land use and land use change
- ODP = Depletion potential of the stratospheric ozone layer
- AP = Acidification Potential, Accumulated Exceedence
- EP-freshwater = Eutrophication Potential, fraction of nutrients reaching freshwater end compartment
- EP-marine = Eutrophication Potential, fraction of nutrients reaching marine end compartment
- EP-terrestrial = Eutrophication Potential, Accumulated Exceedence
- POCP = Formation potential of tropospheric ozone photochemical oxidants
- ADP-minerals&metals = Abiotic Depletion Potential for non-fossil resources [2]
- ADP-fossil = Abiotic Depletion for fossil resources potential [2]
- WDP = Water (user) deprivation potential, deprivation-weighted water consumption [2]

Disclaimer [2]

- The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

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

| | Unit | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|--------|-------------------|--------------|--------------|--------------|--------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| PM | Disease incidence | 6,73 E-08 | 5,03 E-09 | 5,20 E-09 | 7,75 E-08 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| IRP | kBq U235 eq. | 4,74 E-02 | 3,54 E-03 | 1,58 E-01 | 2,09 E-01 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| ETP-fw | CTUe | 1,48 E+01 | 7,54 E-01 | 4,65 E+00 | 2,02 E+01 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| HTP-c | CTUh | 5,26 E-10 | 2,45 E-11 | 1,69 E-10 | 7,20 E-10 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| HTP-nc | CTUh | 1,56 E-08 | 8,24 E-10 | 2,40 E-09 | 1,88 E-08 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| SQP | ---- | 8,10 E+00 | 7,33 E-01 | 8,28 E+00 | 1,71 E+01 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |

- 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 experience 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 | 9,15 E-06 | 2,14 E-06 | 5,19 E-06 | 1,65 E-05 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| NHWD | kg | 7,20 E-02 | 5,36 E-02 | 3,74 E-02 | 1,63 E-01 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| RWD | kg | 8,06 E-05 | 5,55 E-06 | 1,35 E-04 | 2,21 E-04 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| CRU | kg | 0,00 E+00 | 0,00 E+00 | 0,00 E+00 | 0,00 E+00 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| MFR | kg | 0,00 E+00 | 0,00 E+00 | 0,00 E+00 | 0,00 E+00 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| MER | kg | 5,78 E-04 | 0,00 E+00 | 0,00 E+00 | 5,78 E-04 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| EEE | MJ | 0,00 E+00 | 0,00 E+00 | 0,00 E+00 | 0,00 E+00 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| ETE | MJ | 0,00 E+00 | 0,00 E+00 | 0,00 E+00 | 0,00 E+00 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |

- 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 / A2)

| | Unit | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|-------|------|--------------|--------------|--------------|--------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| PERE | MJ | 2,02 E-01 | 0,00 E+00 | 0,00 E+00 | 2,02 E-01 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| PERM | MJ | 1,07 E-03 | 0,00 E+00 | 0,00 E+00 | 1,07 E-03 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| PERT | MJ | 2,57 E+00 | 1,06 E-02 | 1,89 E+00 | 4,46 E+00 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| PENRE | MJ | 4,10 E+00 | 0,00 E+00 | 0,00 E+00 | 4,10 E+00 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| PENRM | MJ | 2,54 E+00 | 0,00 E+00 | 0,00 E+00 | 2,54 E+00 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| PENRT | MJ | 8,10 E+01 | 8,97 E-01 | 1,33 E+01 | 9,52 E+01 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| SM | kg | 0,00 E+00 | 0,00 E+00 | 0,00 E+00 | 0,00 E+00 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| RSF | MJ | 0,00 E+00 | 0,00 E+00 | 0,00 E+00 | 0,00 E+00 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| NRSF | MJ | 0,00 E+00 | 0,00 E+00 | 0,00 E+00 | 0,00 E+00 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| FW | m3 | 2,58 E-02 | 1,03 E-04 | 1,16 E-02 | 3,74 E-02 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |

- 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

BIOGENIC 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 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| BCCpa | kg C | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |

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

CALCULATION RULES

Data quality

Data flows have been modeled as realistically as possible. Data quality assessment is based on the principle that the primary data used for processes occurring at the production site is selected in the first instance. Where this is not available, other reference data is selected from appropriate sources.

Data collection period

The dataset is representative for the production processes used in 2023.

Methodology and reproducibility

The process descriptions and quantities in this study are reproducible in accordance to the reference standards that have been used. The references of all sources, both primary and public sources and literature, have been documented. In addition, to facilitate the reproducibility of this LCA, a full set of data records has been generated."

Cut Off

In this study, all inputs and outputs - such as emissions, energy and material inputs - are included in the calculation according to the Determination Method (5). The contribution to each impact category by the capital goods is calculated to be no more than 5%.

SCENARIOS AND ADDITIONAL TECHNICAL INFORMATION

A1. Raw materials supply

All materials needed for production as well as packaging is taken into account.

A2. Transport of raw materials to manufacturer

The transportation of the suppliers to Adfil N.V. is done by truck.

A3. Manufacturing

The production process begins with extrusion, during which the required plastics are combined and processed. After extrusion, the hardened material is cut to the desired dimensions. The products then undergo a quality control process to check for production defects. After production, the various products are packaged in foil and paper bags. Throughout the entire manufacturing process, only electricity is used as the energy source. The process results in a production loss of 4.49%. During production, only electricity consumption occurs. The specified electricity consumption covers the electricity usage of all machines and equipment. For electricity purposes the following reference was selected: Electricity, high voltage {BE} market for with 0,244 kg GWP per KWh

DECLARATION OF SVHC

None of the substances contained in the product are listed in the "Candidate List of Substances of Very High Concern for authorisation", or they do not exceed the threshold with the European Chemicals Agency.

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REMARKS

EPD of construction products may not be comparable if they do not comply with EN15804.