

Owner: Kvadrat Really
No.: MD-23095-EN
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Valid to: 15-06-2028

3rd PARTY VERIFIED

EPD

VERIFIED ENVIRONMENTAL PRODUCT DECLARATION | ISO 14025 & EN 15804



Owner of declaration

Kvadrat Really
Lundbergsvej 10,
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CVR: 45998517



Issued:

23-06-2023

Valid to:

15-06-2028

Programme

EPD Danmark
www.epddanmark.dk



- Industry EPD
- Product EPD

Declared product(s)

Textile Board

Number of declared datasets/product variations: [1]

Production site

Production site located in Thisted, Denmark

The production is powered by green electricity and biogas, which is used in A3 (production)

Product(s) use

Textile Boards is a material for furniture and interior design

Declared/ functional unit

1m² of product

Year of production site data (A3)

2021-2023

EPD version

[1st version], [23-06-2023]: [change of product description]

Basis of calculation

This EPD is developed in accordance with the European standard EN 15804+A2.

Comparability

EPDs of construction products may not be comparable if they do not comply with the requirements in EN 15804. EPD data may not be comparable if the datasets used are not developed in accordance with EN 15804 and if the background systems are not based on the same database.

Validity

This EPD has been verified in accordance with ISO 14025 and is valid for 5 years from the date of issue.

Use

The intended use of an EPD is to communicate scientifically based environmental information for construction products, for the purpose of assessing the environmental performance of buildings.

EPD type

- Cradle-to-gate with modules C1-C4 and D
- Cradle-to-gate with options, modules C1-C4 and D
- Cradle-to-grave and module D
- Cradle-to-gate
- Cradle-to-gate with options

CEN standard EN 15804 serves as the core PCR

Independent verification of the declaration and data, according to EN ISO 14025

internal external

Third party verifier:

Kim Christiansen

Martha Katrine Sørensen
EPD Danmark

| Life cycle stages and modules (MND = module not declared) | | | | | | | | | | | | | | | | |
|---|-----------|---------------|----------------------|----------------------|----------|-------------|----------|-------------|---------------|------------------------|-----------------------|----------------------------|-----------|------------------|----------------------------|--|
| Product | | | Construction process | | Use | | | | | | | End of life | | | Beyond the system boundary | |
| Raw material supply | Transport | Manufacturing | Transport | Installation process | Use | Maintenance | Repair | Replacement | Refurbishment | Operational energy use | Operational water use | De-construction demolition | Transport | Waste processing | Disposal | Re-use, recovery and recycling potential |
| A1 | A2 | A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
| X | X | X | MND | MND | x | x | x | x | x | x | x | X | X | X | X | X |

Product information

Product description

Textile Board is a high-density material made from end-of-life textiles and cut-off from Kvadrat. The only constituents of the board are cotton or wool from waste streams mixed with a combination of a bio-based binder and second-generation production waste sourced binder, finished with a protective melamine layer on top and bottom.

Textile Board can be an alternative to a variety of existing materials depending on the application. In designing the board material, focus has been on making a composite that, through its properties, can replace or even bring additions to existing material offerings.

The main product components are shown in the table below.

| Material | Weight-% of declared product |
|----------------|------------------------------|
| Textile fibers | 69.5 % |
| Polyethylen | 16.9 % |
| Polypropylen | 9 % |
| Melamine | 4.6 % |
| | |

Product packaging

The composition of the sales- and transport packaging of the product is shown in the table below.

| Material | Weight-% of packaging |
|------------|-----------------------|
| Europallet | 96,5% |
| Foil | 3,2% |
| Cardboard | 0,3% |
| | |

Representativity

This declaration, including data collection and the modeled foreground system including results, represents the production of 1 m² product on the production site located in Thisted, Denmark. Product specific data (energy and material input) are based on average values collected in the period 2021-2023.

Background data are based on specific collected data from own production and supplier information, supplemented with dataset from Ecoinvent 3.8. Generally, the used generic background datasets are of high quality and less than 10 years old. The data were assessed bases on their quality and representativeness.

Hazardous substances

Textile Board does not contain substances listed on the "Candidate List of Substances of Very High Concern for authorisation"

(<http://echa.europa.eu/candidate-list-table>)

Essential characteristics

Further technical information can be obtained by contacting the manufacturer or on the manufacturer's website:

<https://www.kvadrat.dk/en/really>

Reference Service Life (RSL)

No reference service life (RSL) is declared since the scope of this EPD is cradle-to-gate with modules C1-C4 and D, with the addition of module B1 as the only relevant part of the use phase (B1-B7). The product emits substances during its lifetime, which has been tested and accounted for in the background data.

Picture of product(s)



LCA background

Declared unit

The LCI and LCIA results in this EPD relates to 1 m² of the product.

| Name | Value | Unit |
|----------------------------|-------|-------------------|
| Declared unit | 1 | [m ²] |
| Density | 890 | kg/m ³ |
| Conversion factor to 1 kg. | 0,01 | - |

Functional unit

The production of 1 m² of Textile board

PCR

This EPD is developed according to the core rules for the product category type 3 of construction products in EN15804:2012+A2:2019, which serves as core PCR.

Guarantee of Origin – certificates

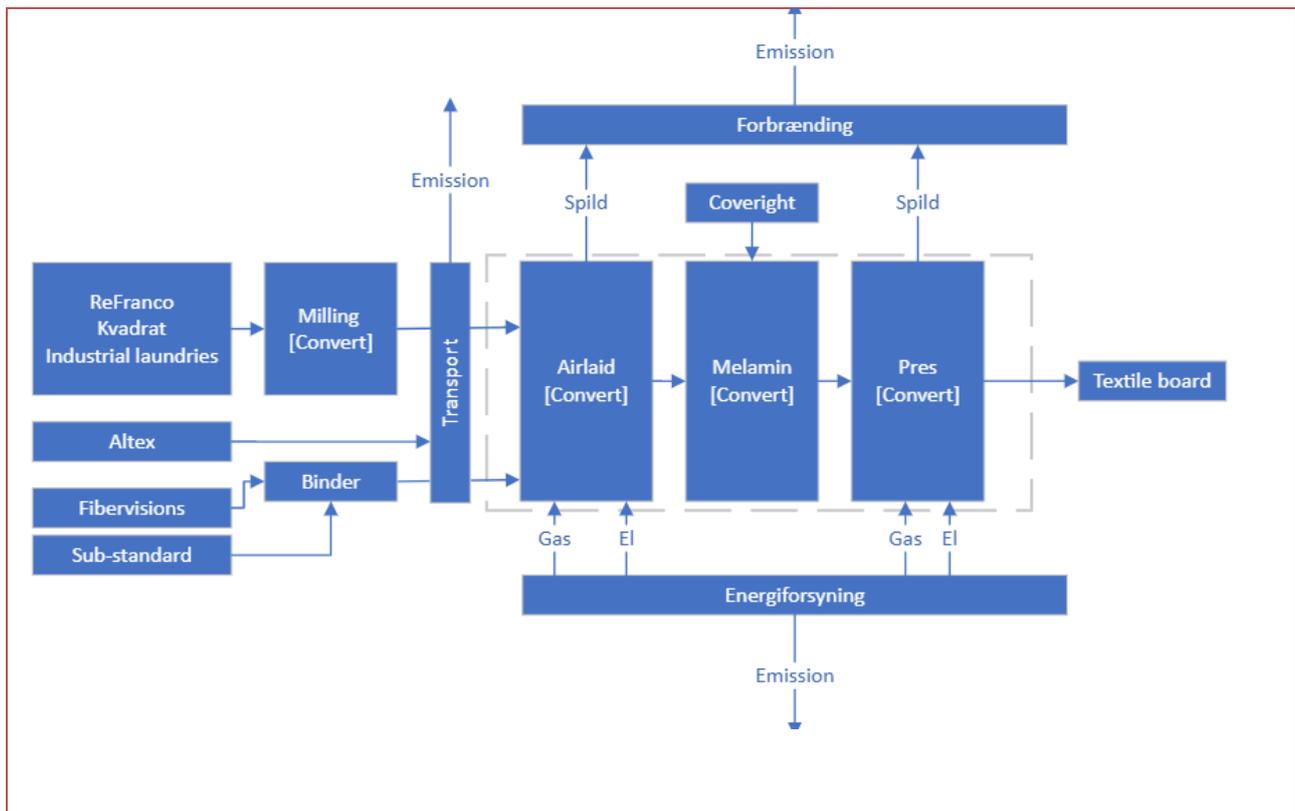
Foreground system:

The declared products are produced using certified green energy and biogas in the production site in Thisted, Denmark, covering A3.

Background system:

The database, ecoinvent 3.8. (Published in 09-2021) is utilized for the background system. As a result, both upstream- and downstream activities are based on average supply mixes for the specific country or region depending on the given dataset.

Flowdiagram



System boundary

This EPD is cradle-to-gate with options, modules C1-C4 and module 4 and covers the life cycle sub modules A1-A3, B1, C1-4 and D, in which 100% weight-% has been accounted for.

The general rules for the exclusion of inputs and outputs follows the requirements in EN 15804, 6.3.5, where the total of neglected input flows per module shall be a maximum of 5 % of energy usage and mass and 1 % of energy usage and mass for unit processes.

Product stage (A1-A3) includes:

A1 – Extraction and processing of raw materials

A2 – Transport to the production site

A3 – Manufacturing processes

The production stage comprises the acquisition of raw materials, products and energy, transport to the production site and the energy use of the production.

The acquisition of fiber comes from waste streams and is not accounted for in this LCA. The waste is delivered from Danish industrial laundries, European recyclers and processed in Denmark.

The acquisition of raw materials as well as the energy use in the production of the binder is included. The binder is delivered to the production site in Thisted, Denmark and transport is accounted for.

The production site mixes the fiber and binder in an airlaid process, where mats are formed under heat and pressure.

In the last step mats from the airlaid is pressed together to form the Textile Board under heat and pressure, including a melamine surface on top and bottom.

Use stage (B1-B7) includes:

Maintenance, repair, replacement, and refurbishment (B2-B5):

The installed products are not intended to need repair, nor maintenance, replacement, or refurbishment over the lifetime of the product. Therefore, the impacts of these modules are assumed to be zero.

Operational energy and water use (B6-B7):

There is no energy use or water use involved in the operation of the products i.e., zero.

Use(B1):

During the products lifetime, different emissions occur to the indoor environment. These emissions are included as additional information.

End of Life (C1-C4) includes:

The end-of-life processes: C1-C4 involves the handling of the products at the end-of-life stage from the end-customer. The end-customer disassembles the product and place it in the residual waste bin. Thereafter, it is handled by the municipal waste system, where it is assumed to be incinerated with heat recovery. The energy recovery will be stated as a benefit to the product life cycle since it will substitute primary energy production.

Re-use, recovery and recycling potential (D) includes:

It is Kvadrat Really's ambition to implement a well-functioning take-back system, so the products can be remanufacturing and undergo an additional life cycle. Since the analyzed products is still new to the market and have not reached the end-of-life phase yet, the tested remanufacturing and take back scheme is not implemented in scale. Therefore, the end-of-life phase is assessed following a conservative approach.

LCA results

Core environmental impact indicators

| ENVIRONMENTAL IMPACTS PER M ² TEXTILE BOARD | | | | | | | | | | |
|--|--|----------|----------|-----------|----------|----------|----------|----------|----------|-----------|
| Indicator | Unit | A1 | A2 | A3 | B1 | C1 | C2 | C3 | C4 | D |
| GWP-total | kg CO ₂ eq. | 5,22E+00 | 2,67E-01 | 2,86E+00 | 0,00E+00 | 0,00E+00 | 7,68E-02 | 1,21E+01 | 0,00E+00 | -1,87E+00 |
| GWP-fossil | kg CO ₂ eq. | 5,15E+00 | 2,67E-01 | 1,51E+00 | 0,00E+00 | 0,00E+00 | 7,67E-02 | 4,85E+00 | 0,00E+00 | -1,62E+00 |
| GWP-biogenic | kg CO ₂ eq. | 7,48E-02 | 4,75E-04 | 1,35E+00 | 0,00E+00 | 0,00E+00 | 1,36E-04 | 7,20E+00 | 0,00E+00 | -2,49E-01 |
| GWP-luluc | kg CO ₂ eq. | 2,19E-03 | 1,07E-04 | 1,31E-04 | 0,00E+00 | 0,00E+00 | 3,07E-05 | 1,41E-04 | 0,00E+00 | -2,10E-03 |
| ODP | kg CFC 11 eq. | 1,07E-07 | 6,19E-08 | 5,78E-08 | 0,00E+00 | 0,00E+00 | 1,78E-08 | 5,76E-08 | 0,00E+00 | -6,30E-08 |
| AP | mol H ⁺ eq. | 1,88E-02 | 7,57E-04 | 3,03E-03 | 0,00E+00 | 0,00E+00 | 2,18E-04 | 3,28E-03 | 0,00E+00 | -4,03E-03 |
| EP-freshwater | kg P eq. | 1,16E-03 | 1,76E-05 | 1,30E-04 | 0,00E+00 | 0,00E+00 | 5,06E-06 | 3,73E-04 | 0,00E+00 | -7,71E-04 |
| EP-marine | kg N eq. | 3,54E-03 | 1,54E-04 | 7,51E-04 | 0,00E+00 | 0,00E+00 | 4,43E-05 | 2,02E-03 | 0,00E+00 | -1,04E-03 |
| EP-terrestrial | mol N eq. | 3,65E-02 | 1,68E-03 | 6,83E-03 | 5,50E-07 | 0,00E+00 | 4,82E-04 | 1,45E-02 | 0,00E+00 | -1,14E-02 |
| POCP | kg NMVOC eq. | 1,61E-02 | 6,27E-04 | 2,03E-03 | 0,00E+00 | 0,00E+00 | 1,80E-04 | 3,72E-03 | 0,00E+00 | -2,62E-03 |
| ADPm ¹ | kg Sb eq. | 3,23E-05 | 9,09E-07 | 3,70E-05 | 0,00E+00 | 0,00E+00 | 2,61E-07 | 1,36E-06 | 0,00E+00 | -4,16E-06 |
| ADPF ¹ | MJ | 1,71E+01 | 3,09E-01 | -2,63E-01 | 0,00E+00 | 0,00E+00 | 8,87E-02 | 7,53E-01 | 0,00E+00 | -1,24E+01 |
| WDP ¹ | m ³ world eq. deprived | 2,34E+00 | 1,97E-02 | -5,53E-02 | 0,00E+00 | 0,00E+00 | 5,65E-03 | 4,64E-01 | 0,00E+00 | -1,70E+00 |
| Caption | <p>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 = Ozone Depletion; AP = Acidification;</p> <p>EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPF = Abiotic Depletion Potential – fossil fuels; WDP = water use</p> | | | | | | | | | |
| Disclaimer | ¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator. | | | | | | | | | |

Additional environmental impact indicators

| ADDITIONAL ENVIRONMENTAL IMPACTS PER M ² TEXTILE BOARD | | | | | | | | | | |
|---|--|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
| Parameter | Unit | A1 | A2 | A3 | B1 | C1 | C2 | C3 | C4 | D |
| PM | [Disease incidence] | 1,55E-07 | 1,69E-08 | 3,94E-08 | 0,00E+00 | 0,00E+00 | 3,89E-02 | 2,76E-01 | 0,00E+00 | -1,05E-01 |
| IRP ² | [kBq U235 eq.] | 2,95E-01 | 2,08E-02 | 3,83E-03 | 0,00E+00 | 0,00E+00 | 2,47E-11 | 1,05E-09 | 0,00E+00 | -4,12E-10 |
| ETP-fw ¹ | [CTUe] | 4,47E-01 | 1,35E-01 | 5,39E-01 | 0,00E+00 | 0,00E+00 | 1,44E-09 | 2,25E-07 | 0,00E+00 | -5,90E-08 |
| HTP-c ¹ | [CTUh] | 1,23E-09 | 8,61E-11 | 1,81E-09 | 0,00E+00 | 0,00E+00 | 5,99E-03 | 1,86E-02 | 0,00E+00 | -2,57E-01 |
| HTP-nc ¹ | [CTUh] | 1,20E-07 | 5,02E-09 | 1,11E-07 | 0,00E+00 | 0,00E+00 | 9,86E-01 | 3,60E+00 | 0,00E+00 | -1,37E+00 |
| SQP ¹ | - | 2,99E+00 | 3,43E+00 | 3,20E+00 | 0,00E+00 | 0,00E+00 | 4,85E-09 | 3,30E-08 | 0,00E+00 | -2,17E-08 |
| Caption | PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Soil Quality | | | | | | | | | |
| Disclaimers | ¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator. ² 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 disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator. | | | | | | | | | |

Parameters describing resource use

| RESOURCE USE PER M ² TEXTILE BOARD | | | | | | | | | | |
|---|---|----------|----------|-----------|----------|----------|----------|----------|-----------|----------|
| Parameter | Unit | A1 | A2 | A3 | B1 | C1 | C2 | C3 | C4 | D |
| PERE | [MJ] | 2,53E+00 | 4,35E-02 | 2,80E+01 | 0,00E+00 | 1,25E-02 | 8,73E-02 | 0,00E+00 | -8,06E+00 | 1,25E-02 |
| PERM | [MJ] | 8,31E-01 | 1,43E-02 | -4,88E-01 | 0,00E+00 | 4,10E-03 | 3,07E-02 | 0,00E+00 | -3,92E+00 | 4,10E-03 |
| PERT | [MJ] | 3,36E+00 | 5,78E-02 | 2,75E+01 | 0,00E+00 | 1,66E-02 | 1,18E-01 | 0,00E+00 | -1,20E+01 | 1,66E-02 |
| PENRE | [MJ] | 2,58E+01 | 3,94E-01 | -5,83E-01 | 0,00E+00 | 1,13E-01 | 9,00E-01 | 0,00E+00 | -1,62E+01 | 1,13E-01 |
| PENRM | [MJ] | 1,52E+02 | 3,68E+00 | 1,57E+01 | 0,00E+00 | 1,06E+00 | 3,85E+00 | 0,00E+00 | -1,52E+01 | 1,06E+00 |
| PENRT | [MJ] | 1,78E+02 | 4,07E+00 | 1,52E+01 | 0,00E+00 | 1,17E+00 | 4,75E+00 | 0,00E+00 | -3,13E+01 | 1,17E+00 |
| SM | [kg] | 3,26E-01 | 4,15E-03 | 1,95E-01 | 0,00E+00 | 1,19E-03 | 1,92E-02 | 0,00E+00 | -4,24E-01 | 1,19E-03 |
| RSF | [MJ] | 1,70E-01 | 1,24E-03 | 8,24E+00 | 0,00E+00 | 3,55E-04 | 2,19E-03 | 0,00E+00 | -2,44E-01 | 3,55E-04 |
| NRSF | [MJ] | 6,23E-02 | 5,02E-03 | -1,51E-03 | 0,00E+00 | 1,44E-03 | 5,26E-03 | 0,00E+00 | -4,22E-02 | 1,44E-03 |
| FW | [m ³] | 5,47E-02 | 4,68E-04 | -1,21E-03 | 0,00E+00 | 1,35E-04 | 1,08E-02 | 0,00E+00 | -3,96E-02 | 1,35E-04 |
| Caption | PERE = Use of renewable primary energy excluding renewable primary energy resources 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 excluding non renewable primary 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 material; RSF = Use of renewable secondary fuels; NRSF = Use of non renewable secondary fuels; FW = Net use of fresh water | | | | | | | | | |

End-of-life (waste categories and output flows)

| WASTE CATEGORIES AND OUTPUT FLOWS PER M ² TEXTILE BOARD | | | | | | | | | | |
|--|------|----------|----------|-----------|----------|----------|----------|----------|----------|-----------|
| Parameter | Unit | A1 | A2 | A3 | B1 | C1 | C2 | C3 | C4 | D |
| HWD | [kg] | 5,87E+00 | 9,08E-02 | 7,30E-01 | 0,00E+00 | 0,00E+00 | 2,61E-02 | 4,14E-01 | 0,00E+00 | -3,77E+00 |
| NHWD | [kg] | 2,37E-01 | 2,10E-01 | 2,08E+00 | 0,00E+00 | 0,00E+00 | 6,03E-02 | 9,56E+00 | 0,00E+00 | -8,83E-02 |
| RWD | [kg] | 3,10E-03 | 8,12E-05 | -2,08E-04 | 0,00E+00 | 0,00E+00 | 2,33E-05 | 1,08E-04 | 0,00E+00 | -2,33E-03 |

| | | | | | | | | | | |
|---------|--|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
| CRU | [kg] | 0,00E+00 |
| MFR | [kg] | 2,89E-01 | 3,45E-03 | 1,93E-01 | 0,00E+00 | 0,00E+00 | 9,90E-04 | 1,09E-01 | 0,00E+00 | -4,05E-01 |
| MER | [kg] | 4,74E-03 | 9,48E-04 | 9,83E-03 | 0,00E+00 | 0,00E+00 | 2,72E-04 | 3,10E-03 | 0,00E+00 | -2,80E-03 |
| EEE | [MJ] | 0,00E+00 |
| EET | [MJ] | 0,00E+00 |
| Caption | HWD = Hazardous waste disposed; NHWD = Non hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Eksporteret elektrisk energi; EET = Eksporteret termisk energi | | | | | | | | | |

Biogenic carbon content at factory gate

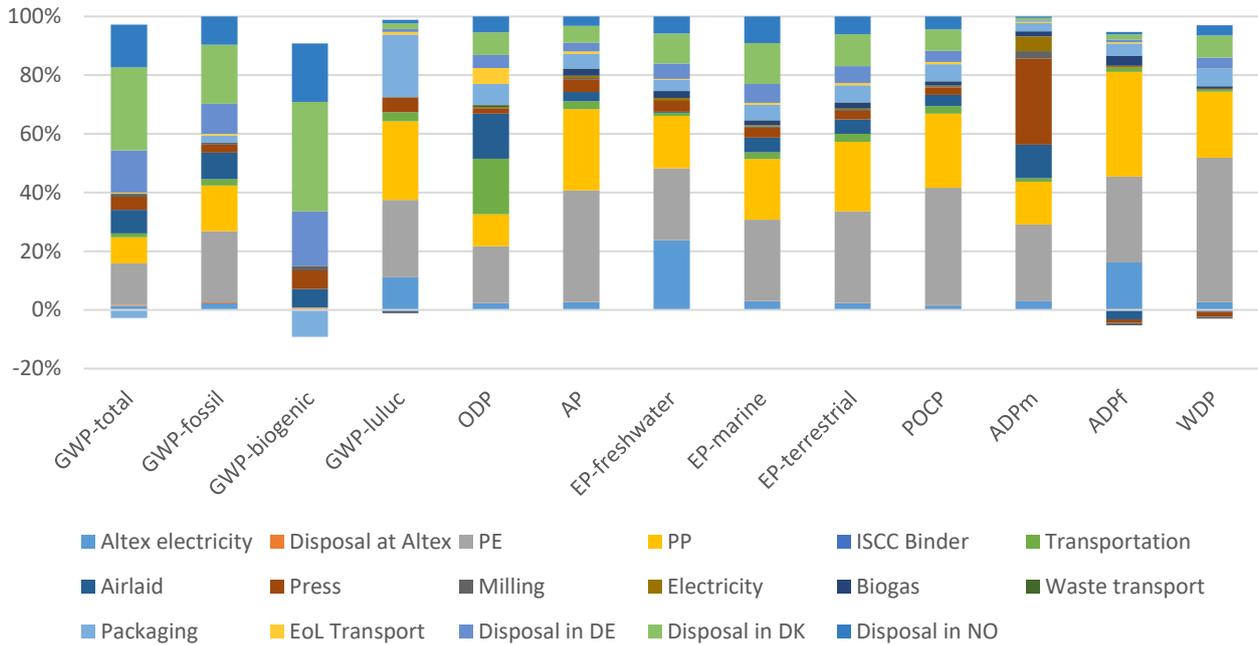
| BIOGENIC CARBON CONTENT PER M ² | | |
|---|---|---------------------|
| Parameter | Unit | At the factory gate |
| Biogenic carbon content in product | [kg C] | 0 |
| Biogenic carbon content in accompanying packaging | [kg C] | 0.0004 |
| Note | 1 kg biogenic carbon is equivalent to 44/12 kg of CO ₂ | |

Additional information

LCA interpretation

The following figure displays a contribution analysis for the Textile Board. The different colors represent distinctive life cycle processes and the size of certain color in a bar expresses the impact on the environmental impact category from that process. The figures are 100 % stacked diagram and does not reveal the size of impact on each environmental impact category, but only the percentage of which each process is responsible for the impact.

Contribution analysis - Textile Board



Technical information on scenarios

End of life (C1-C4)

| Scenario information | Value | Unit |
|--------------------------------------|-------|----------------|
| Collected separately | 100 | % |
| Collected with mixed waste | 0 | % |
| For reuse | 0 | % |
| For recycling | 0 | % |
| For energy recovery | 0 | % |
| For final disposal | 0 | % |
| Assumptions for scenario development | N/A | As appropriate |

Re-use, recovery and recycling potential (D)

| Scenario information/Materiel | Value | Unit |
|--|----------|--------|
| Displaced electricity, modelled as the Danish electrical grid. | -1.39 MJ | Per kg |
| Displaced heating energy, modelled as natural gas. | -2.85 MJ | Per kg |
| | | |

Indoor air

The EPD does not give information on release of dangerous substances to indoor air because the horizontal standards on the relevant measurements are not available.

Relevant information on material emissions is available on <https://www.kvadrat.dk/en/really>

Supporting documentation is available on request.

Soil and water

The EPD does not give information on release of dangerous substances to soil and water because the horizontal standards on the relevant measurements are not available. Read more in EN15804+A1 chapter 7.4.2.

References

| | |
|---------------------------------------|---|
| Publisher |  epddanmark www.epddanmark.dk <small>Template version 2022.2</small> |
| Programme operator | Danish Technological Institute Buildings & Environment Gregersensvej DK-2630 Taastrup www.teknologisk.dk |
| LCA-practitioner | <i>The LCA has been conducted by an internal LCA practitioner, Oskar Lasse Lilleøre, Troels Theilby and supported by external LCA practitioner Tomas Sander Poulsen, and Matias Lund Pedersen, Provice.</i> |
| LCA software / background data | <i>The LCA has been in continuous development since June 2021 and was completed and verified during the spring of 2023. All energy data is calculated from Ecoinvent 3.8 and OpenLCA 1.11.0.</i> |
| 3rd party verifier | <i>Kim Christiansen</i> |

General programme instructions

General Programme Instructions, version 2.0, spring 2020
www.epddanmark.dk

EN 15804

DS/EN 15804 + A2:2019 - "Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products"

EN 15942

DS/EN 15942:2011 – " Sustainability of construction works – Environmental product declarations – Communication format business-to-business"

ISO 14025

DS/EN ISO 14025:2010 – " Environmental labels and declarations – Type III environmental declarations – Principles and procedures"

ISO 14040

DS/EN ISO 14040:2008 – " Environmental management – Life cycle assessment – Principles and framework"

ISO 14044

DS/EN ISO 14044:2008 – " Environmental management – Life cycle assessment – Requirements and guidelines"