

ENVIRONMENTAL PRODUCT DECLARATION

in accordance with ISO 14025, ISO 21930 and EN 15804

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|--------------------------------|------------------------------|
| Owner of the declaration: | Flügger Norway AS |
| Program operator: | The Norwegian EPD Foundation |
| Publisher: | The Norwegian EPD Foundation |
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| Valid to: | 08.02.2026 |

Fiona Adhesive 270 Wallpaper™

Flügger Norway AS

Flügger

www.epd-norge.no



General information

Product:

Fiona Adhesive 270 Wallpaper™

Program operator:

The Norwegian EPD Foundation
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Declaration number:

NEPD-2666-1373-EN

ECO Platform reference number:
This declaration is based on PCR:

NS-EN 15804:2012+A1:2013 serves as core PCR.
 Product descriptions based on "IBU PCR Part B for coatings with organic binders". This also applies to products with inorganic binders.

Statement of liability:

The owner of the declaration shall be liable for the underlying information and evidence. EPD Norway shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

Declared unit:

1 kg Fiona Adhesive 270 Wallpaper delivered to market

Declared unit with option:
Functional unit:
Verification:

Independent verification of data, other environmental information and the declaration according to ISO14025:2010, § 8.1.3 and § 8.1.4

internal external

Third party verifier:

Erik Svanes, Senior Researcher
 (Independent verifier approved by EPD Norway)

Owner of the declaration:

Flügger Norway AS
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Manufacturer:

Flügger Denmark A/S

Place of production:

Vejlevej 150,
 6000 Kolding, Denmark

Management system:

ISO 14001:2015 (DK011198)
 ISO 9001:2015 (DK0012451)

Org. no.:

45240118

Issue date:

08.02.2021

Valid to:

08.02.2026

Year of study:

2019

Comparability:

EPD of construction products may not be comparable if they do not comply with NS-EN 15804 and seen in a building context.

Author of the Life Cycle Assessment:

Mafalda Silva
 NORSUS

Approved

Håkon Hauan
 Managing Director of EPD-Norway

Product

Product description:

Fiona Adhesive 270 Wallpaper is a ready-mixed, transparent, reinforced adhesive. For indoor use in a dry room for hanging sawdust wallpaper, paper wallpaper and non-woven wallpaper.

Fiona Adhesive 270 Wallpaper is ecolabelled with the Nordic Ecolabel.

For information on Green Building Standard credits and Ecolabels, see "Additional Information" on page 4.

Product specification:

The product is only made in one colour and has no variation in composition.

The material composition of the declared product:

| Materials | % |
|-----------|-------|
| Water | 85-90 |
| Binder | 1-3 |
| Extender | 5-10 |
| Solvent | 0 |
| Additive | 1-3 |
| Biocide | <0.5 |

| Packaging | kg |
|----------------------------|----------|
| Wooden packaging - pallet | 4,90E-02 |
| Plastic packaging - pallet | 1,71E-03 |
| Plastic packaging | 3,42E-02 |

Technical data:

Density: 1,03 kg/l
Solids by volume: 12,0%

Nominal spreading rate: 4-6 m²/l
Dilution: Water (should not normally be diluted)

The product packaging is based on an average sized plastic packaging and is reported in the A1-phase.

For information on technical data, application and use of the product, see the Technical Data Sheet and FDV (*Forvaltning, Drift og Vedlikehold*) for the declared product on www.flugger.no

For safety, health and environmental conditions, see the Safety Data Sheet for the declared product on www.flugger.no.

Market:

Scandinavia and Europe

Reference service life, product

The reference service life of the product is highly dependent on the conditions of use.

Estimated service life, object

The coated object is not declared.

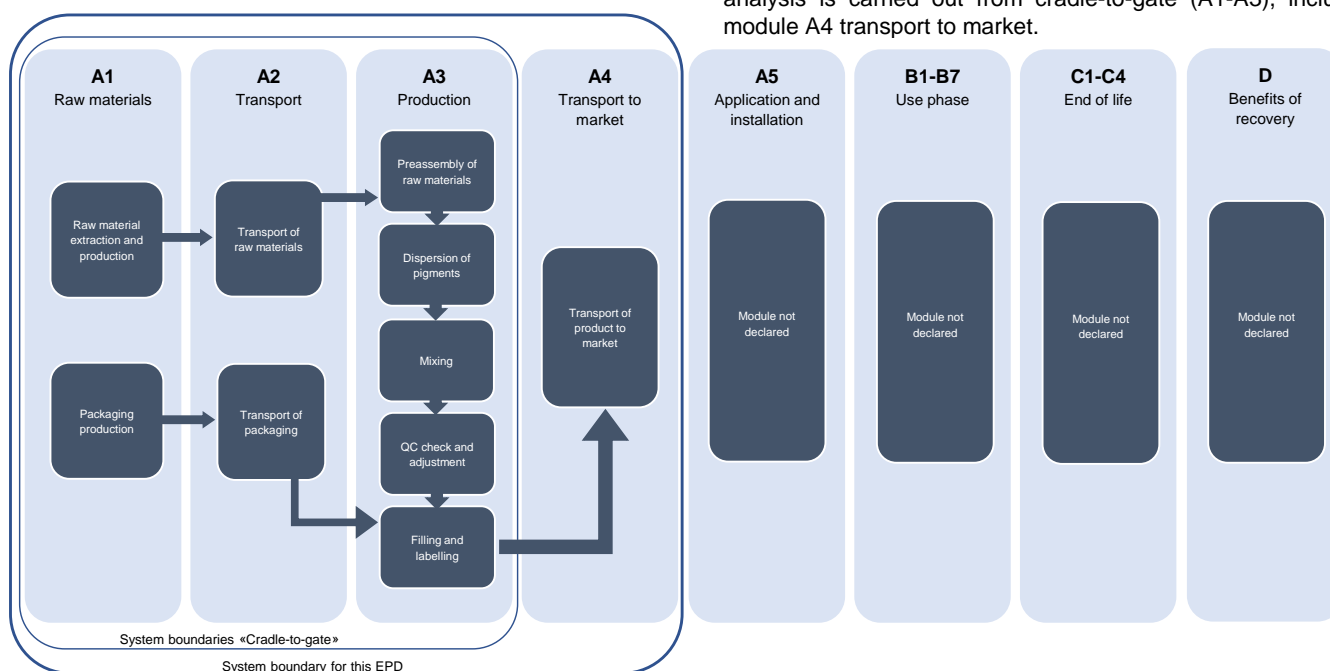
LCA: Calculation rules

Declared unit:

1 kg Fiona Adhesive 270 Wallpaper delivered to market

System boundary:

The flow chart below illustrates the system boundaries for the analysis according to the module principle in NS-EN 15804. The analysis is carried out from cradle-to-gate (A1-A3), including module A4 transport to market.



Data quality:

The CEPE database is used as basis for the raw material composition. Specific data for the product composition and raw material amounts has been provided by the manufacturer and represents the production of the declared product. Production site data was collected in 2020, with 2019 as reference year. Remaining data is based on Ecoinvent v3.6, but adjusted to improve representativeness. All energy consumption in the database is assumed not to be used as raw material.

Cut-off criteria:

All major raw materials and essential energy is included. The production process for raw materials and energy flows with very small amounts (<1%), such as consumables in production and administration and employee travel, are not included. These cut-off criteria do not apply for hazardous materials and substances.

Allocation:

The allocation is made in accordance with the provisions of NS-EN 15804. Incoming energy, water and waste production in-house is primarily allocated equally among all products through volume allocation. The recycling process and transportation of the material is allocated to this analysis.

Additional information:

The declared product contributes to Green Building Standard credits by meeting the following specific requirements:

- Nordic Swan Ecolabel (3097 0008)
- Properties criteria in BASTA (2020:A2)
- Accepted according to Byggsvarubedömningens Assessment Criteria 5.0 (2019)
- Class B according to SundaHus Material Data Assessment Criteria 6.1.5 (2019)

BREEAM®NOR (2016)

HEA 02: The VOC-Directive does not cover adhesives (EU Directive 2004/42/CE).

Mat 01: The product contains no substances on the Norwegian Technical Check List (A20), which exceeds the limit value for health and environment.

Additional certificates and approvals may be available on request.

LCA: Scenarios and additional technical information

The following information describe the scenarios in the different modules of the EPD.

The only declared module after the factory gate is A4 transport to market.

Transport from production place to user (A4)

| Type | Capacity utilisation incl. return [%] | Type of vehicle | Distance km | Fuel/Energy consumption | Unit |
|-------|---------------------------------------|-----------------|-------------|-------------------------|--------|
| Truck | 53 | >32t, EURO 6 | 537 | 1,92E-02 | kg/tkm |
| Truck | 53 | >32t, EURO 6 | 338 | 1,92E-02 | kg/tkm |
| Truck | 26 | 16-32t, EURO 6 | 30 | 4,80E-02 | kg/tkm |

Construction/Installation (A5)

| | Unit | Value |
|-------------------------|----------------|-------|
| Auxiliary | kg | |
| Water consumption | m ³ | |
| Electricity consumption | kWh | |
| Other energy carriers | MJ | |
| Material loss | kg | |
| Dust in the air | kg | |
| VOC emissions | kg | |

Use (B1)

| | Unit | Value |
|-------------------------------|------|-------|
| Relevant emissions during use | kg | |

Maintenance (B2)/Repair (B3)

| | Unit | Value |
|-------------------------|----------------|-------|
| Maintenance cycle* | | |
| Auxiliary | kg | |
| Other resources | kg | |
| Water consumption | m ³ | |
| Electricity consumption | kWh | |
| Other energy carriers | MJ | |
| Material loss | kg | |
| VOC emissions | kg | |

Replacement (B4)/Refurbishment (B5)

| | Unit | Value |
|---------------------------|------|-------|
| Replacement cycle* | pcs | |
| Electricity consumption | kWh | |
| Replacement of worn parts | 0 | |

* Value or reference shelf-life

Operational energy (B6) and water consumption (B7)

| | Unit | Value |
|---------------------------|----------------|-------|
| Water consumption | m ³ | |
| Electricity consumption | kWh | |
| Other energy carriers | MJ | |
| Power output of equipment | kW | |

End of life (C1, C3, C4)

| | Unit | Value |
|---------------------------------------|------|-------|
| Hazardous waste disposed | kg | |
| Collected as mixed construction waste | kg | |
| Reuse | kg | |
| Recycling | kg | |
| Energy recovery | kg | |
| For landfill | kg | |

Transport to waste processing (C2)

| Type | Capacity utilisation (incl. return) % | Type of vehicle | Distance km | Fuel/Energy consumption | Unit | Value (l/t) |
|---------|---------------------------------------|-----------------|-------------|-------------------------|------|-------------|
| Truck | | | | | | |
| Railway | | | | | | |
| Boat | | | | | | |
| Other | | | | | | |

LCA: Results

System boundaries (X=included, MND=module not declared, MNR=module not relevant)

| Product stage | | | Construction/ installation stage | | User stage | | | | | | | End of life stage | | | | Beyond the system boundaries | |
|---------------|-----------|---------------|----------------------------------|----------------------------------|------------|-------------|--------|-------------|---------------|------------------------|-----------------------|----------------------------|-----------|------------------|----------------|------------------------------------|-----|
| Raw materials | Transport | Manufacturing | Transport | Construction/ installation stage | Use | Maintenance | Repair | Replacement | Refurbishment | Operational energy use | Operational water use | Deconstruction/ demolition | Transport | Waste processing | Waste 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 | MND | MND | MND | MND | MND | MND | MND | MND | MND | MND | MND | MND | MND | MND |

Environmental impact

| Parameter | Unit | A1 | A2 | A3 | A4 |
|-----------|---------------------------------------|----------|----------|----------|----------|
| GWP | kg CO ₂ -eq. | 3,54E-01 | 8,42E-03 | 1,53E-01 | 8,03E-02 |
| ODP | kg CFC11-eq. | 5,78E-08 | 1,56E-09 | 1,02E-08 | 1,58E-08 |
| POCP | kg C ₂ H ₄ -eq. | 1,34E-04 | 1,14E-06 | 6,92E-05 | 1,01E-05 |
| AP | kg SO ₂ -eq. | 1,85E-03 | 2,73E-05 | 1,40E-03 | 2,10E-04 |
| EP | kg PO ₄ ³⁻ -eq. | 3,92E-04 | 4,42E-06 | 1,35E-04 | 2,82E-05 |
| ADPM | kg Sb -eq. | 3,38E-06 | 2,12E-07 | 3,50E-05 | 1,49E-06 |
| ADPE | MJ | 8,86E+00 | 1,27E-01 | 1,53E+00 | 1,29E+00 |

GWP Global warming potential; ODP Depletion potential of the stratospheric ozone layer; POCP Formation potential of tropospheric photochemical oxidants; AP Acidification potential of land and water; EP Eutrophication potential; ADPM Abiotic depletion potential for non fossil resources; ADPE Abiotic depletion potential for fossil resources

Resource use

| Parameter | Unit | A1 | A2 | A3 | A4 |
|-----------|----------------|----------|----------|----------|----------|
| RPEE | MJ | 2,77E+00 | 1,85E-03 | 7,77E-01 | 1,67E-02 |
| RPEM | MJ | 0,00E+00 | 0,00E+00 | 3,25E-02 | 0,00E+00 |
| TPE | MJ | 2,77E+00 | 1,85E-03 | 8,09E-01 | 1,67E-02 |
| NRPE | MJ | 3,02E+00 | 1,30E-01 | 1,94E+00 | 1,31E+00 |
| NRPM | MJ | 6,61E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| TRPE | MJ | 9,63E+00 | 1,30E-01 | 1,94E+00 | 1,31E+00 |
| SM | kg | 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 |
| NRSF | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| W | m ³ | 7,76E-03 | 2,46E-05 | 1,90E-03 | 2,70E-04 |

RPEE Renewable primary energy resources used as energy carrier; RPEM Renewable primary energy resources used as raw materials; TPE Total use of renewable primary energy resources; NRPE Non renewable primary energy resources used as energy carrier; NRPM Non renewable primary energy resources used as materials; TRPE 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; W Use of net fresh water

End of life - Waste

| Parameter | Unit | A1 | A2 | A3 | A4 |
|-----------|------|----------|----------|----------|----------|
| HW | kg | 8,37E-06 | 3,31E-07 | 4,67E-04 | 3,20E-06 |
| NHW | kg | 1,12E-01 | 9,03E-03 | 2,32E-01 | 1,18E-01 |
| RW | kg | 2,62E-05 | 8,83E-07 | 7,69E-06 | 8,96E-06 |

HW Hazardous waste disposed; NHW Non hazardous waste disposed; RW Radioactive waste disposed

End of life - Output flow

| Parameter | Unit | A1 | A2 | A3 | A4 |
|-----------|------|----------|----------|----------|----------|
| CR | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| MR | kg | 0,00E+00 | 0,00E+00 | 9,18E-03 | 0,00E+00 |
| MER | kg | 0,00E+00 | 0,00E+00 | 4,38E-05 | 0,00E+00 |
| EEE | MJ | 0,00E+00 | 0,00E+00 | 3,11E-03 | 0,00E+00 |
| ETE | MJ | 0,00E+00 | 0,00E+00 | 3,33E-02 | 0,00E+00 |

CR Components for reuse; MR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy

Reading example: 9,0 E-03 = $9,0 \cdot 10^{-3} = 0,009$

Additional requirements

Greenhouse gas emissions from the use of electricity in the manufacturing phase

National production mix from import, low voltage (production of transmission lines, in addition to direct emissions and losses in grid) of applied electricity for the manufacturing process (A3). Background data is presented in the table below. Characterisation factors from NS-EN 15804:2012+A1:2013 is used.

| Electricity mix | Data source | Value | Unit |
|----------------------------|---------------|-------|----------------------------|
| Electricity, Denmark (kWh) | ecoinvent 3.6 | 329 | g CO ₂ -eq./kWh |

Dangerous substances




- The product contains no substances given by the REACH Candidate list or the Norwegian priority list
- The product contains substances given by the REACH Candidate list <0,1 weight%
- The product contains substances given by the REACH Candidate list or the Norwegian priority list, see table above
- The product contains no substances given by the REACH Candidate list or the Norwegian priority list. The product is characterised as hazardous waste (acc. to the Waste Directive, Appendix III), see table above.

Indoor environment

The declared product is emission tested according to the ISO-16000 series (2006).

Bibliography

| | |
|---|---|
| BASTA (2020) | Properties criteria - BASTA - in accordance with Regulation (EC) No 1272/2008 (CLP), ed. A2 |
| BREEAM@NOR (2016) | BREEAM-NOR for new constructions 2016, SD5075NOR, version 1.1. The Norwegian Green Building Council |
| Byggvarubedømmingen (2019) | Assessment criteria for chemical content and lifecycle aspects, version 5.0 |
| CEPE (2016) | Raw materials LCI database for the European coatings and printing ink industries, v3.0 |
| Ecoinvent (2019) | Ecoinvent version 3.6, Swiss Centre of Life Cycle Inventories, Dübendorf, Switzerland |
| EU Directive 2004/42/CE | The limitation of emissions of volatile organic compounds due to the use of organic solvents in certain paints and varnishes and vehicle refinishing products |
| IBU PCR Part B | Requirements on the EPD for Coatings with organic binders. v1.7, January 2019 |
| ISO 14025:2010 | Environmental labels and declarations - Type III environmental declarations - Principles and procedures |
| ISO 16000-series | Indoor air standards for VOCs sampling and determination, i.e. 9 (2006) |
| ISO 21930:2017 | Sustainability in buildings and civil engineering works - Core rules for environmental product declarations of construction products and services |
| NS-EN 15804:2012+A1:2013 | Environmental product declaration - Core rules for the product category of construction products |
| REACH Candidate List (2018) | Candidate List of substances of very high concern for Authorisation IAW Article 59(10) of the REACH Regulation |
| SundaHus (2019) | Material Data Assessment Criteria, version 6.1.5 |
| Nordic Ecolabel | 3097 0008 - Fiona Adhesive 270 Wallpaper. |
| Technical Check List (A20) and Norwegian Priority List (2018) | Miljøgiftlisten, The Norwegian Environment Agency |

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