# Environmental Product Declaration

In accordance with ISO 14025 for:

## Karat

from

**AB Ludvig Svensson**

| | |
|---|---|
| Programme: | The International EPD® System, www.environdec.com |
| Programme operator: | EPD International AB |
| EPD registration number: | S-P-03359 |
| Publication date: | 2022-01-03 |
| Valid until: | 2022-12-20 |

## Programme information

| | |
|---|---|
| **Programme:** | The International EPD® System<br><br>EPD International AB<br>Box 210 60<br>SE-100 31 Stockholm<br>Sweden<br><br>www.environdec.com<br>info@environdec.com |

| |
|---|
| **Product category rules (PCR):** GPI ver. 3.01. has been used and with support and guidance from PCR (2012:14 ver. 2.13) Woven, knitted, or crocheted fabrics (of synthetic fibers). Pre-certified due to PCR 2012:14 ver. 2.13 is outdated and the new PCR for fabrics is still under development.<br><br>*UN CPC code(s)>267,281* |
| PCR review was conducted by: The Technical Committee of the International EPD® System. Review chair: Lars-Gunnar Lindfors Contact via info@environdec.com |
| Independent third-party verification of the declaration and data, according to ISO 14025:2006:<br><br>☐ EPD process certification ☒ EPD verification |
| **Third party verifier:**<br>Martyna Mikusinska, Sweco Sverige AB<br>martyna.mikusinska@sweco.se<br><br>*In case of recognised individual verifiers:*<br>Approved by: The International EPD® System |
| Procedure for follow-up of data during EPD validity involves third party verifier:<br><br>☒ Yes ☐ No |

The EPD owner has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programmes may not be comparable.

# Company information

## Owner of the EPD:

AB Ludvig Svensson, Bangatan 8 511 54 Kinna, Sweden, +46320209200, info@ludvigsvensson.com

## Description of the organisation:

AB Ludvig Svensson specializes in textile climate solutions giving plants better conditions to grow and people better places to work, travel, meet, recover and study. By sharing knowledge and being close to our customers, we are a business partner to trust. Our headquarter and production in Kinna, Sweden provides unique opportunities to influence, develop, control, and own the entire manufacturing process from the raw materials used to the finished product. Svensson was founded in 1887 and has operations in seven countries and 400 employees around the world.

## Product-related or management system-related certifications:

ISO 9001:2015, ISO 14001:2015, Oeko-tex 100 class IV

## Name and location of production site:

AB Ludvig Svensson, Kinna, Sweden.

# Product information

## Product:

Name: Karat and Karat RE
Product identification: 8500
Product description: Fabric for curtains, made from polyester, warranty times 5 years (exchange rate is probably longer).

Certified according to:
Oeko-tex 100 class IV[1], this ensures that Karat does not contain any harmful substances.

KARAT 300 | Hanging fabrics | Products | Svensson (ludvigsvensson.com)

## Recycled material:

The difference between Karat and Karat RE is that the polyester is 100% recycled in Karat RE.

## Other product information:

UN CPC code: 2674
(KN number 551219)

## Geographical scope:

Sweden

[1] STANDARD 100 by OEKO-TEX®

**Table 1. Product characteristics**

| PRODUCT CHARACTERISTICS | | |
|---|---|---|
| FABRICS | **1. Karat** | **2. Karat RE** |
| | | |
| CONSTRUCTIVE CHARACTERISTICS | | |
| Composition Regulation (EU) No 1007/2011 | 100 % polyester (PES) | 100 % recycled polyester (PES) |
| Weave | Woven fabrics ISO 3572:1976 | Woven fabrics ISO 3572:1976 |
| Mass per unit area [g/m2] ISO 3801 EN 12127 | 150 | 150 |
| Width [cm] | 300 | 300 |
| DYEING | | |
| Colour Index | 8500 (internal colour code) | |
| PERFORMANCE CHARACTERISTICS | | |
| Martindale Pilling test, UNI EN ISO 12945-2:2002 | N/A*** | N/A*** |
| pH of water extract EN ISO 3071/06 | 5,5 | 5,5 |
| Stretch properties | N/A*** | N/A*** |
| Dimensional change to washing UNI EN ISO 105 C06:2010 | 5 | 5 |
| COLOUR FASTNESS | | |
| Light Xenon test UNI EN ISO 105 B02/04 | 6 | 6 |
| Washing with mild detergent at 40°C ISO 105 C10:2006 | 5 | 5 |
| Water UNI EN ISO 105 E01/98 | 4-5 | 4-5 |
| Sea water UNI EN ISO 105 E02:2013 | N/A* | N/A* |
| Chlorine UNI EN ISO 105 E03:2010 | N/A** | N/A** |
| Acid and alkaline perspiration UNI EN ISO 105 E04:2013 | 5 | 5 |
| Dry and wet rubbing UNI EN ISO 105 X12/03 | DRY 5<br>WET 5 | DRY 5<br>WET 5 |

* Karat is not intended for outdoor use

** Karat's washing instructions[2] doesn't include washing with chlorine

*** Not applicable for curtain fabric

[2] KARAT 300 | Hanging fabrics | Products | Svensson (ludvigsvensson.com)

## LCA information

Functional unit / declared unit:
1m$^2$ Karat fabric

Time representativeness: Core data from 2021, upstream data from 2017, downstream is generic data (only transport to customer (2009-2020) and disposal).

Database(s) and LCA software used: SimaPro Eco invent 3.7, SimaPro Version 9.2.0.2

System diagram: see figure 1.

Description of system boundaries:
Cradle-to-grave

Excluded lifecycle stages: None

### More information

Some general assumptions have been made around transport vehicle to fit the database data from Ecoinvent 3.7 (compiled March 2021). Country electricity mix datasets have been used for electricity for the upstream processes when the sites reports that they use the country electricity net.

For the Core process used general data for Sweden has been used (wind power >3MW turbine). This shows a 0,025 kg CO2 eq. per kWh while our supplier states that is 0,010 kg CO2 eq.

Generally, the LCA data should be used with precaution if interpreted for any other purpose than this EPD.

Emissions from wastewater is from entire production site in Kinna, dyeing and finishing of textiles of wool and polyester yarn and fabrics.

Waste from core process is allocated from all production.

As the difference between Karat and Karat RE is that the polyester is 100% recycled in Karat RE. Therefore, the environmental impact only differs in the upstream process.

### LCA methodology

Cut-off rules: Less than 1% environmental relevance.

Allocation rules: In this assessment physical allocation is done as far as possible. When other allocations are used, it is expressed if it may be significant to the results.

### LCA practitioner

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## System diagram

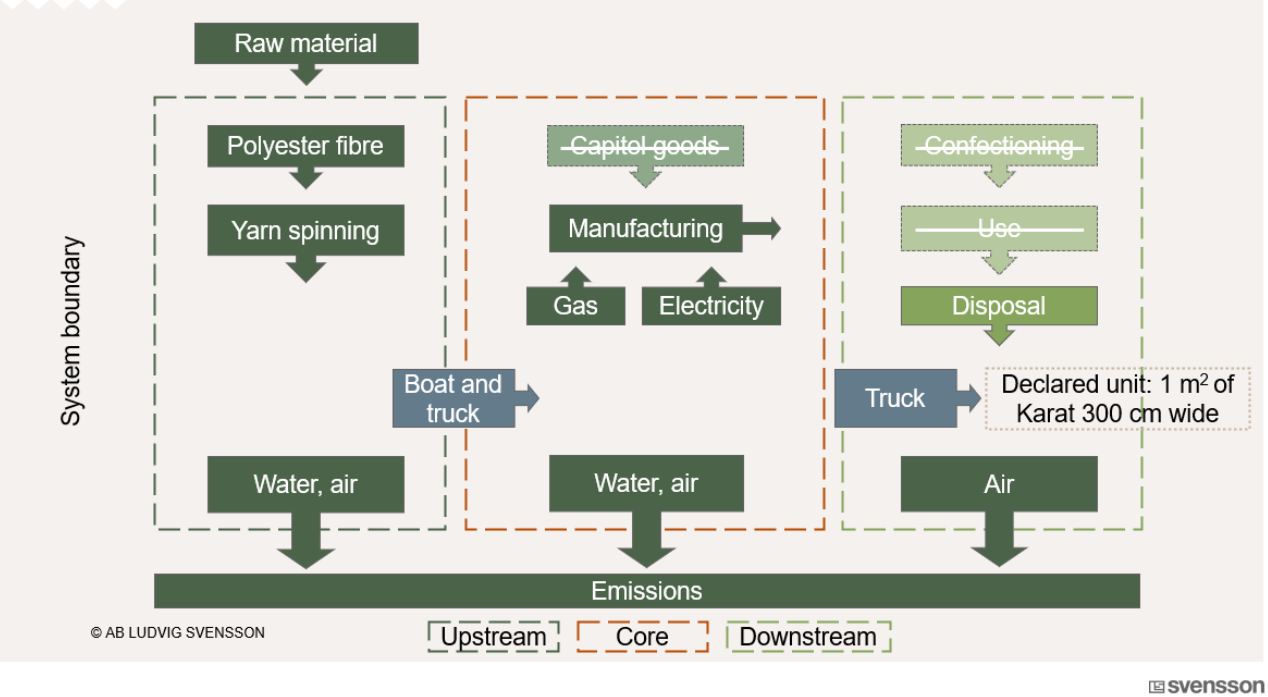


**Figure 1. System diagram of Karat and Karat RE**

# Content declaration

## Product

The raw materials and packaging does not contain substances that are regulated in the Reach legislation and SVHC and the Candidate List of SVHC.

**Table 2. Product components for Karat and Karat RE.**

| Product components | Weight (kg) | Post-consumer material (weight-%) | Renewable material (weight-%) |
|---|---|---|---|
| Polyester yarn | 0,1495 | 0% for Karat<br>100% for Karat RE | 0 |
| Dye stuff | 0,00075 | 0 | 0 |

| Packaging materials | Weight (kg) | Weight-% (versus the product) | Renewable material (weight-%) |
|---|---|---|---|
| Cardboard box | 0,057 | 100 | 100 |
| Plastic wrapping (Polyethylene) | 0,004 | 10 | 0 |
| Paper tubes | 0,005 | Reuse 3 times | 100 |

## Packaging

Distribution packaging: The finished fabric is either folded or rolled. 70% folding, folded into a cardboard box, 30% on paper roll with plastic wrapping.
Consumer packaging: N/A

## Recycled material

Provenience of recycled materials (pre-consumer or post-consumer) in the product: In Karat RE, 100% is pre consumer recycled. 100% of the cardboard is recycled. 10% of the plastic wrapping comes from recycled source. Paper tubes are reused three times with Svensson customer.

# Environmental performance

## Potential environmental impact

Below is the environmental impact for the Karat and Karat RE per functional unit and per life cycle stage.

**Table 3. Impact categories according to PCR on Karat**

| PARAMETER | | UNIT | Upstream | Core | Downstream | TOTAL |
|---|---|---|---|---|---|---|
| Global warming potential (GWP) | Fossil | kg $CO_2$ eq. | 1,21E+00 | 2,47E-01 | 3,91E-01 | 1,85E+00 |
| | Biogenic | kg $CO_2$ eq. | 8,73E-03 | 3,23E-03 | 7,37E-06 | 1,20E-02 |
| | Land use and land transformation | kg $CO_2$ eq. | 5,00E-04 | 4,38E-04 | 5,55E-06 | 9,44E-04 |
| | **TOTAL** | kg $CO_2$ eq. | 1,22E+00 | 2,51E-01 | 3,91E-01 | **1,87E+00** |
| Acidification potential (AP) | | kg $SO_2$ eq. | 4,06E-03 | 1,67E-03 | 9,27E-05 | 5,81E-03 |
| Eutrophication potential (EP) | | kg $PO_4^{3-}$ eq. | 1,66E-03 | 5,91E-04 | 9,30E-05 | 2,35E-03 |
| Formation potential of tropospheric ozone (POCP) | | kg $C_2H_4$ eq. | 2,20E-04 | 9,26E-05 | 3,30E-06 | 3,16E-04 |
| Ozon-depletion potential | | kg CFC11 equivalents | 1,81E-06 | 1,38E-07 | 2,83E-09 | 1,95E-06 |
| Abiotic depletion potential – Elements | | kg Sb eq. | 7,35E-06 | 9,98E-06 | 6,08E-08 | 1,74E-05 |
| Abiotic depletion potential - Fossil fuels | | MJ, net calorific value | 2,03E+01 | 1,17E+01 | 2,33E-01 | 3,22E+01 |
| Water scarcity potential | | $m^3$ eq. | 4,64E-01 | 1,02E-01 | 3,96E-03 | 5,70E-01 |

**Table 4. Impact categories according to PCR on Karat RE**

| PARAMETER | | UNIT | Upstream | Core | Downstream | TOTAL |
|---|---|---|---|---|---|---|
| Global warming potential (GWP) | Fossil | kg $CO_2$ eq. | 8,66E-01 | 2,47E-01 | 3,91E-01 | 1,50E+00 |
| | Biogenic | kg $CO_2$ eq. | 3,29E-02 | 3,22E-03 | 7,37E-06 | 3,61E-02 |
| | Land use and land transformation | kg $CO_2$ eq. | 4,39E-04 | 4,36E-04 | 5,55E-06 | 8,80E-04 |
| | **TOTAL** | kg $CO_2$ eq. | 9,00E-01 | 2,51E-01 | 3,91E-01 | **1,54E+00** |
| Acidification potential (AP) | | kg $SO_2$ eq. | 2,90E-03 | 1,67E-03 | 9,27E-05 | 4,66E-03 |
| Eutrophication potential (EP) | | kg $PO_4^{3-}$ eq. | 1,62E-03 | 5,91E-04 | 9,30E-05 | 2,31E-03 |
| Formation potential of tropospheric ozone (POCP) | | kg $C_2H_4$ eq. | 1,47E-04 | 9,26E-05 | 3,30E-06 | 2,43E-04 |
| Ozon-depletion potential | | kg CFC11 equivalents | 9,12E-08 | 1,38E-07 | 2,83E-09 | 2,32E-07 |
| Abiotic depletion potential – Elements | | kg Sb eq. | 2,04E-06 | 9,98E-06 | 6,08E-08 | 1,21E-05 |
| Abiotic depletion potential - Fossil fuels | | MJ, net calorific value | 1,10E+01 | 1,17E+01 | 2,33E-01 | 2,29E+01 |
| Water scarcity potential | | $m^3$ eq. | 2,49E-01 | 1,05E-01 | 5,92E-04 | 3,55E-01 |

The environmental impact of polyester fabric in a lifecycle perspective, comes mostly from the production of raw material. The difference between Karat and Karat RE is that the polyester is 100% recycled in Karat RE. Therefore, the largest environmental impact is in the upstream process.

## Use of resources

The indicators below are declared for each life cycle state for Karat and Karat RE.

**Table 5. Values from CED method 1.11, water from AWARE v1.04 for Karat**

| PARAMETER | | UNIT | Upstream | Core | Downstream | TOTAL |
|---|---|---|---|---|---|---|
| Primary energy resources – Renewable | Use as energy carrier | MJ, net calorific value | 2,32E+00 | 6,46E+00 | 4,17E-03 | 8,79E+00 |
| | Used as raw materials | MJ, net calorific value | 0 | 0 | 0 | 0 |
| | TOTAL | MJ, net calorific value | 2,32E+00 | 6,46E+00 | 4,17E-03 | 8,79E+00 |
| Primary energy resources – Non-renewable | Use as energy carrier | MJ, net calorific value | 3,41E+01 | 3,35E+00 | 2,55E-01 | 3,77E+01 |
| | Used as raw materials | MJ, net calorific value | 0 | 0 | 0 | 0 |
| | TOTAL | MJ, net calorific value | 3,41E+01 | 3,35E+00 | 2,55E-01 | 3,77E+01 |
| Secondary material | | kg | - | - | - | - |
| Renewable secondary fuels | | MJ, net calorific value | - | - | - | - |
| Non-renewable secondary fuels | | MJ, net calorific value | - | - | - | - |
| Net use of fresh water | | $m^3$ | 4,64E-01 | 1,62E-01 | 3,96E-03 | 6,30E-01 |

**Table 6. Values from CED method 1.11, water from AWARE v1.04 for Karat RE**

| PARAMETER | | UNIT | Upstream | Core | Downstream | TOTAL |
|---|---|---|---|---|---|---|
| Primary energy resources – Renewable | Use as energy carrier | MJ, net calorific value | 2,06E+00 | 4,15E+00 | 4,17E-03 | 6,21E+00 |
| | Used as raw materials | MJ, net calorific value | 0 | 0 | 0 | 0 |
| | TOTAL | MJ, net calorific value | 2,06E+00 | 4,15E+00 | 4,17E-03 | 6,21E+00 |
| Primary energy resources – Non-renewable | Use as energy carrier | MJ, net calorific value | 1,41E+01 | 1,25E+01 | 2,55E-01 | 2,68E+01 |
| | Used as raw materials | MJ, net calorific value | 0 | 0 | 0 | 0 |
| | TOTAL | MJ, net calorific value | 1,41E+01 | 1,25E+01 | 2,55E-01 | 2,68E+01 |
| Secondary material | | kg | - | - | - | - |
| Renewable secondary fuels | | MJ, net calorific value | - | - | - | - |
| Non-renewable secondary fuels | | MJ, net calorific value | - | - | - | - |
| Net use of fresh water | | $m^3$ | 2,49E-01 | 1,05E-01 | 5,92E-04 | 3,55E-01 |

## Waste production and output flows

Waste is included in the LCA model. There are no waste output flows outside the boundary system. That's why the values are zero.

**Table 7. Waste production**

| PARAMETER | UNIT | Upstream | Core | Downstream | TOTAL |
|---|---|---|---|---|---|
| Hazardous waste disposed | kg | 0 | 0 | 0 | 0 |
| Non-hazardous waste disposed | kg | 0 | 0 | 0 | 0 |
| Radioactive waste disposed | kg | 0 | 0 | 0 | 0 |

**Table 8. Output flows**

| PARAMETER | UNIT | Upstream | Core | Downstream | TOTAL |
|---|---|---|---|---|---|
| Components for reuse | kg | 0 | 0 | 0 | 0 |
| Material for recycling | kg | 0 | 0 | 0 | 0 |
| Materials for energy recovery | kg | 0 | 0 | 0 | 0 |
| Exported energy, electricity | MJ | 0 | 0 | 0 | 0 |
| Exported energy, thermal | MJ | 0 | 0 | 0 | 0 |

# References


- General Programme Instructions of the International EPD® System. Version 3.01 2019-09:18.
- PCR 2012:14 Woven, knitted or crocheted fabrics (of synthetic fibres) Version 2.13
- ISO 14025:2010 Miljömärkning och miljödeklarationer - Typ III miljödeklarationer - Principer och procedurer (ISO 14025:2006)
- Life cycle assessment of Karat by Ludvig Svensson AB, 2021-12-17
- Marcus Wendin, LCA expert Miljögiraff

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