

# EPD – Environmental Product Declaration.

In accordance with ISO 14025 for: High Vis Green trousers class 1 2649/2652 GPLU and High Vis stretch trousers class 2 2712 PLU

## General information

### Owner of the EPD:

Fristads AB Prognosgatan 24, 501 11 Borås, Sweden  
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www.fristads.com

### Location of production site:

Laos and Ukraine

|                          |   |
|--------------------------|---|
| Programme:               | The international EPD® system<br>www.environdec.com |
| Programme operator:      | EPD international AB                                |
| EPD registration number: | S-P-03881   |
| Publication date:        | 2021-09-01  |
| Validity date:           | 2026-07-02  |

Geographical scope: Global  
Prepared with the assistance of Rise AB.



# Committed to sustainability.

In 2019 Fristads became the first clothing producer in the world to introduce a new standard for measuring the total environmental impact of a garment – from choice of material to delivery of the finished garment.

The world's first environmentally declared high-visibility garments.

# A green revolution.

Fristads Green is a concept of workwear where the entire manufacturing chain is characterized by environmental awareness and innovation to minimize the footprint on the environment.

With three own factories in Europe and sales in more than 20 countries, there are many people around the world working for us – and we care for each and every one of them. These are fine words of course, and we stand firmly behind them. Injustices, unreasonable working hours, low wages, corruption – these are all issues that we resist, where we are constantly on our guard. We work hard to exert our influence wherever our products are made.

We have set high requirements for the companies that want to be our suppliers, at all stages. We give consideration to all the details in the chain, from human rights to environmental impact. It's our duty.

Our work with sustainability is based on the 10 principles in the UN's Global Compact, which forms the basis for our Code of Conduct. We respect and promote human rights according to the United Nations Declaration of Human rights and the Core Conventions of the International Labour Organisation. As a member of amfori BSCI (Business Social Compliance Initiative), we pursue a constructive and open dialogue among our business partners and stakeholders to reinforce the principles of a socially responsible business.

We are certified according to ISO 14001 and work constantly to improve our environmental performance. We monitor the use of chemicals in our products throughout our supply chain. Our Restricted Substance List, shared among all suppliers, reflects the latest EU harmonized legislation which includes REACH, pops regulation, Biocide Regulation and Product Safety Regulation, and is updated regularly based on the guidance of our partner RISE, the Swedish Chemical Group. Furthermore, most of our products are OEKO-TEX® certified.

These efforts are rarely visible from the outside. But, we know they make a difference. For this reason, they are extremely important for us as we strive to make a better world to live in, a world we can proudly leave for the generations that follow us.

Read more at [fristads.com](http://fristads.com).



Human rights, labour, environment, anti-corruption



Social compliance



Environment



Chemical regulations

"It is easy to say that a product is produced in a sustainable way, but without objective, verifiable data, the claim falls flat".



Fristads aims to contribute to positive change and greater transparency when it comes to environmental impact.

# Garments with care for the future.

# EPD

## Environmental Product Declaration

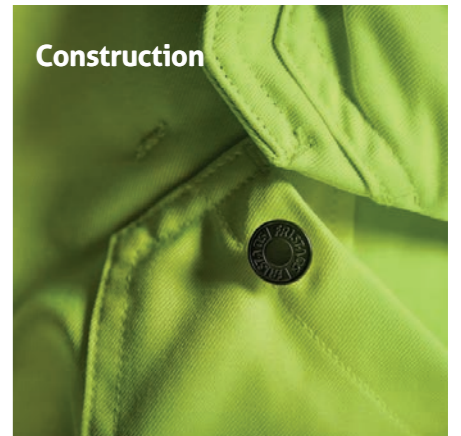
"A long-term, sustainable and transparent measuring tool for environmental impact".

- Fristads is the first clothing producer in the world to introduce a new standard for measuring the total environmental impact of a garment – from choice of material to delivery of the finished garment
- A standard can be used throughout the textile industry
- The EPD measures the impact in four main areas: material, construction, production and delivery

An Environmental Product Declaration (EPD) is an independently verified and registered document that communicates transparent and comparable information about the life cycle environmental impact of products. The relevant standard for Environmental Product Declarations is ISO 14025, where they are referred to as "Type III environmental declarations". A Type III environmental declaration is created and registered in the framework of a programme, such as the International EPD® System.

The International EPD® System has, as a main objective, the ambition to enable and support organisations in any country to communicate quantified environmental information on the life cycle of their products in a credible, comparable, and understandable way. All EPDs registered in the International EPD® System are publically available and free to download on this website: [www.environdec.com](http://www.environdec.com).

All EPDs are based on Product Category Rules providing rules, requirements, and guidelines for a defined product category. The overall goal of an EPD is to provide relevant and verified information to meet the communication needs in the various applications: procurement, ecodesign or environmental management systems. An important aspect of EPD is to provide the basis of a fair comparison of products and services by its environmental performance. EPDs can reflect the continuous environmental improvement of products and services over time and are able to communicate and add up relevant environmental information along a product's supply chain.



# High-visibility trousers with an EPD.

# The sustainable choice

High Vis Green trousers class 1 2649/2652 GPLU.

| Garment name                                     | Art no | Description             |                       |
|--|--------|-------------------------|-----------------------|
| High vis Green trousers class 1 2649 GPLU        | 134238 | Green collection        | See below             |
| High Vis Green trousers woman class 1 2652 GPLU  | 131983 | Green collection        | See below             |
| High vis stretch trousers class 2 2712 PLU       | 130164 | Conventional collection | See below             |
| High vis Green trousers class 2 2651 GPLU        | 131982 | Green collection        | Appendix, see page 17 |
| High Vis Green trousers woman class 2 2642 GPLU  | 131973 | Green collection        | Appendix, see page 17 |
| High Vis Green trousers class 1 2668 GPLU        | 134271 | Green collection        | Appendix, see page 17 |
| High Vis stretch trousers class 1 2705 PLU       | 127731 | Conventional collection | Appendix, see page 17 |
| High Vis stretch trousers woman class 1 2708 PLU | 127735 | Conventional collection | Appendix, see page 17 |

The High Vis Green trousers 2649 GPLU including the corresponding women's model and the High Vis stretch trousers 2712 PLU are both constructed from a main fabric made of polyester and cotton.

- Fabric made of recycled polyester and organic cotton
- All zippers are made of 100% recycled polyester, with the exception of the zip pullers
- The design utilises that the front zipper can be easily replaced if it breaks in order to prolong the life of the garment
- Tool holders and loops are made of 100% recycled polyester
- Product label and inside size label are made of 100% recycled polyester
- Pin for hangtag and norm books is made of 100% PBS (biodegradable polybutylene succinate). Norm books and hangtag are printed on sustainable paper made of FSC (The Forest Stewardship Council™) certified/recycled wood
- Packed in plastic bags made from 100% LDPE (low density polyethylene)
- All surplus material from production is utilised on site and turned into new products like e.g. mattressfilling
- OEKO-TEX® Standard 100 certified at garment level



**HIGH VIS GREEN TROUSERS CLASS 1 2649 GPLU**  
Article no 134238

**HIGH VIS GREEN TROUSERS WOMAN CLASS 1 2652 GPLU**  
Article no 131983

Part of Fristads Green collection / Sustainable / Rib-knit stretch panels at waist / Concealed front button / 2 front pockets / 2 back pockets / Double reinforced crotch seam / Hammer loop / CORDURA®-reinforced folding rule pocket with tool pocket, pen pocket, button and loop for sheath knife / Leg pocket with snap fastening, pocket with flap and velcro fastening, D-ring / CORDURA®-reinforced knee pockets with inside opening / Height adjustment for knee pads in knee pocket / CORDURA®-reinforced leg end / Leg length can be lengthened by 5 cm or shortened by 2-4 cm, depending on size range / Approved according to EN ISO 20471 class 1, EN 14404 together with kneepads 124292 and EN 13758-2 UPF 40+ Solar UV Protective Properties. Approved after 50 washes / Leasing-laundry tested according to ISO 15797 / With EPD (Environmental Product Declaration) / OEKO-TEX® certified.

**MATERIAL** 70% recycled polyester, 30% organic cotton. **WEIGHT** 240 g/m². **COLOUR** 171 Hi-Vis Yellow/ Navy, 196 Hi-Vis Yellow/ Black, 271 Hi-Vis Orange/ Navy, 286 Hi-Vis Orange/Grey, **SIZE** C44-C66, C146-C156, D84-D120. 286 Hi-Vis Orange/Grey: C44-C70, C146-C160, D84-D136.



**HIGH VIS STRETCH TROUSERS CLASS 2 2712 PLU**  
Article no 130164

Stretch panels at sides, yoke and crotch / 2 side pockets / D-ring / 2 back pockets with zip / Double reinforced crotch seam / Large bellowed leg pocket with folding rule pocket and document pocket with velcro fastening / Multifunction leg pocket with zip pocket, phone pocket, ID card pocket and folding rule pocket / CORDURA®-reinforced knee pockets with inside opening / Height adjustment for knee pads in knee pocket / CORDURA®-reinforced leg end / Approved according to EN 14404 together with kneepads 124292 and EN ISO 20471 class 2 / Approved after 25 washes / With EPD (Environmental Product Declaration) / OEKO-TEX® certified.

**MATERIAL** 80% polyester, 20% cotton, dirt, oil and water-repellent. Other material in 65% polyester, 35% cotton. Stretch fabric 91% nylon, 9% elastane. **WEIGHT** 300 g/m². Stretch fabric 250 g/m². **COLOUR** 171 Hi-Vis Yellow/Navy, 196 Hi-Vis Yellow/Black, 271 Hi-Vis Orange/Navy, 396 Hi-Vis Red/Black. **SIZE** C44-C66, C146-C156, D84-D120.



# LCA information – Life cycle assessment.

Life Cycle Assessment is a method for analysing the environmental impact of a product throughout its life-cycle, from the extraction of raw materials (the cradle) to handling the waste (the grave).

## Goal of the study

An LCA study has been conducted in accordance with ISO 14044 and the requirements stated in the General Programme Instructions by The International EPD® System<sup>1</sup>. The goal of the present LCA study has been to calculate environmental impact values for Fristads' High Vis Green trousers class 1 2649/2652 GPLU and High Vis stretch trousers class 2 2712 PLU to create this Environmental Product Declaration, to be used for communicating environmental performance to customers<sup>2</sup>.

## Scope of the study

The scope of the study is cradle to gate and includes all processes up until the jacket is manufactured and transported to Fristads' warehouse, see Figure 1. Retail, use and end-of-life processes are not included in this EPD. All material and resource consumption is tracked back to the point of raw material extraction, mainly by using cradle-to-gate data<sup>3</sup> from the Ecoinvent database<sup>4</sup>. The functional unit of the study is 1 (one) garment, in accordance with the Product Category Rules (PCR)<sup>5</sup>. The declared unit for trousers is one garment in size C50.

## Data collection

The inventory for the LCA study was carried out during 2021. The data for the textile processing was provided by the Fristads' suppliers. Data for confectioning was collected by Fristads' staff<sup>6, 7, 8, 9, 10, 11</sup>.

## Allocation

Whenever it has been necessary to partition the system inputs and outputs, mass criteria have been used in accordance with the PCR. Such situations have for example been when the share of energy and water consumption, or the wastewater treatment of an entire production plant has been allocated to the specific fabric based on the total production volume of the plant.

## Cut-off rules

The PCR states that life cycle inventory data for a minimum of 99 % of total inflows to the three life cycle stages (up-stream, core and downstream modules) shall be included and a cut-off rule of 1% regarding energy, mass and environmental relevance shall apply.

## Assumptions and limitations

Some general assumptions have been made around transport vehicles to enable use of database data from Ecoinvent to represent primary data. Transport distances are assumed based on Google Maps distances between locations given by Fristads' suppliers. It is assumed that similar vehicles are used throughout Asia and throughout Europe respectively. Country electricity mix datasets have been used for electricity based on the fact that production sites are using country electricity net.

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

## Data quality

The data quality has been considerably increased by the experience from making a similar study in the past<sup>12</sup>. Generic data, selected generic data and proxy data has been used. It has been investigated and secured in the study that proxy data does not contribute more than 10% to the total impact of each environmental impact category, in accordance with the PCRs.

## Additional information about the LCA study

### Time representativeness:

2021

### Database(s) and LCA software used:

SimaPro version 9.1.0.11<sup>13</sup>  
ecoinvent version 3.6<sup>14</sup>

## Calculation methods

Resource use values are calculated from Cumulative Energy Demand V1.11. Potential environmental impacts are calculated with the EPD (2018) v1.01 method as implemented in SimaPro: CML-IA baseline v3.05 for eutrophication, global warming, ozone depletion and abiotic resource depletion; CML-IA non baseline method for acidification; AWARE v1.02 for water scarcity and ReCiPe 2016 Midpoint (H) v1.1 for photochemical oxidation. For global warming potential, the default characterization factors are the IPCC (2013) factors as implemented in CML baseline method. However, the latter does not provide the same resolution in EPD (2018) V1.01 as is specified in the EPD template (fossil, bio-based respective land use and land transformation), wherefore instead the method Greenhouse Gas Protocol V1.02 is used.

## Description of system boundaries:

Cradle-to-gate

## LCA practitioner:

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## Third party reviewer:

Marcus Wendin, Miljögraff AB, Övre Hövik 25 B,  
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# System diagram.

The system boundaries of this EPD are decided by the Product Category Rules (PCR) and illustrated by Figure 1.

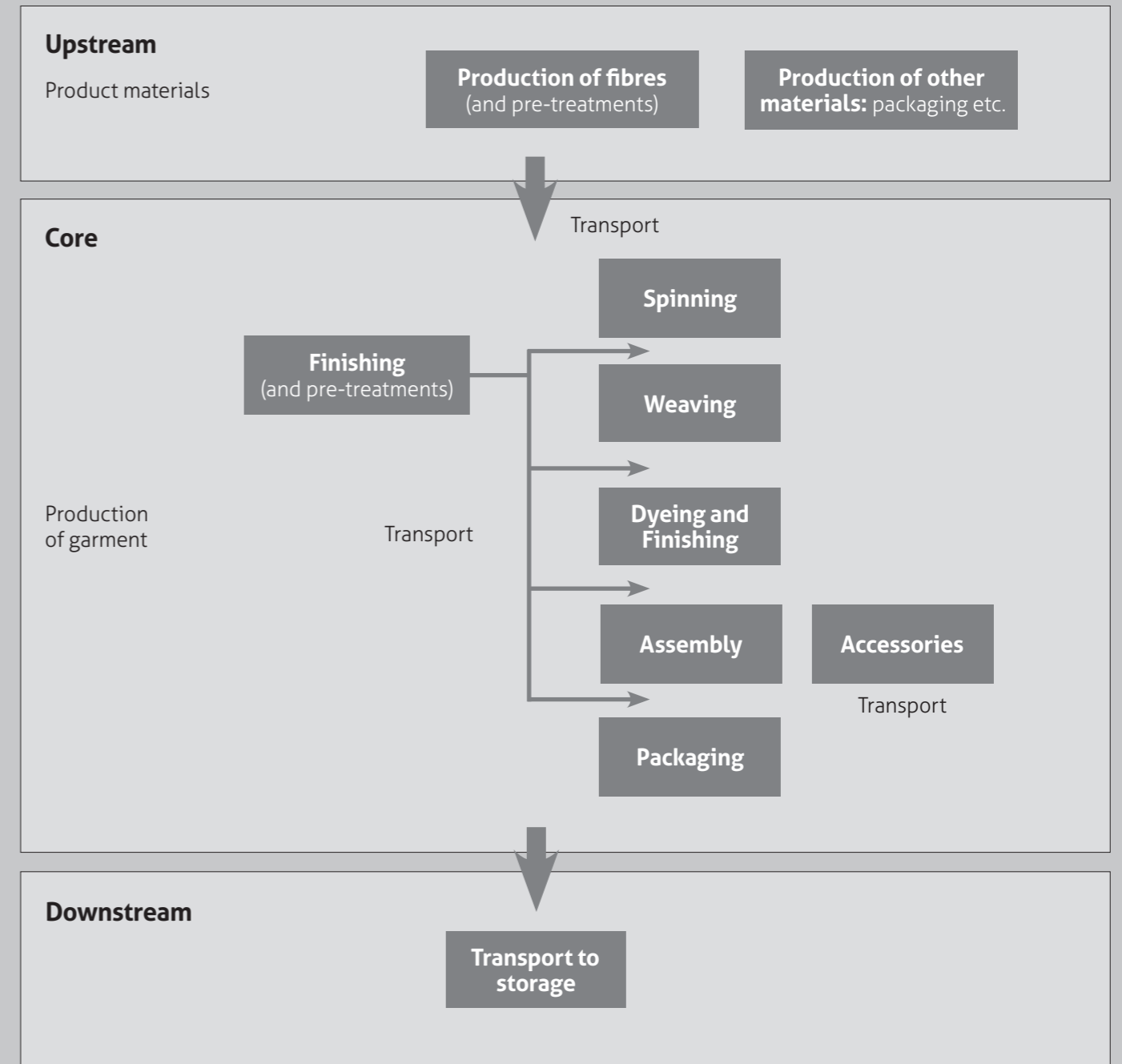


Figure 1. The system boundaries include upstream, core and downstream processes.

<sup>1</sup> EPD International, "General Programme Instructions for the International EPD® System Version 3.01" (Stockholm, Sweden, 2019), [www.environdec.com](http://www.environdec.com).

<sup>2</sup> Hildenbrand, J. & Rosengren, L. (2021), Life cycle assessment of Fristads workwear – Forth batch.

<sup>3</sup> Cradle-to-gate = all processes from cradle (mining site, forest etc.) to gate (until the goods is produced and ready for delivery at the factory gate).

<sup>4</sup> Ecoinvent, "Ecoinvent" (Zurich, Switzerland: Ecoinvent, 2019), <https://www.ecoinvent.org/database/database.html>.

<sup>5</sup> EPD International, "PCR 2019:06 Trousers, shorts, slacks and similar garments: UN CPC 282. Product Category Rules According to ISO 14025. Version 1.02" (2020).

<sup>6</sup> Anonymous. (2021a). Facility L for confectioning.

<sup>7</sup> Anonymous. (2021b). Facility U for confectioning.

<sup>8</sup> Anonymous. (2021c). Facility W for weaving, dyeing and finishing.

<sup>9</sup> Anonymous. (2021e). Facility S for weaving, dyeing and finishing.

<sup>10</sup> Anonymous. (2021d). Facility C for sew-on reflective tape.

<sup>11</sup> Anonymous. (2021e). Facility I for transfer reflective tape.

<sup>12</sup> EPD International, "EPD GREEN CRAFTSMAN JACKET 4538 GRN. EPD Registration Number S-P-01534." (2019) <<http://www.environdec.com/en/Detail/epd710#VVxIj2cw-M8>>.

<sup>13</sup> PRÉ Consultants, "SimaPro 9.1" (PRÉ Consultants, 2020), <http://www.pre-sustainability.com/simapro>.

<sup>14</sup> Ecoinvent, "Ecoinvent" <<https://www.ecoinvent.org/database/database.html>>.

# Content declaration

## High Vis Green trousers class 1 2649 GPLU

| Materials            | %    | Environmental / Hazardous properties  |
|----------------------|------|---|
| Main fabric GPLU     | 51,9 | 70% recycled polyester, 30% organic cotton  |
| Fabric FBLA          | 19,3 | 65% polyester, 35% cotton   |
| Interlining cotton   | 0,1  | 100% cotton   |
| Smock GPLU           | 4,4  | 46,7% recycled polyester, 20,1% organic cotton, 16,2% elastane, 11,1% polyester, 6% polyamide |
| Trims for pockets    | 11,7 | 100% polyamide  |
| Sew-on reflective    | 6,8  | 34% polyurethane, 33% glass beads, 21,5% polyester, 11,5% cotton                              |
| Metal trims          | 1,3  | 100% brass  |
| Care and size labels | 2,1  | 100% polyester  |
| Paper trims          | 2,1  | 100% paper  |
| Thread polyester     | 0,3  | 100% polyester  |

### Recycled material

Provenience of recycled materials (pre-consumer or post-consumer) in the product: The polyester used in GPLU garments is recycled and made from recycled post-consumer waste, certified according to Global Recycled Standard (GRS).

### Organic cotton

The cotton used in GPLU garments is organic cotton, certified according to Global Organic Textile Standard (GOTS).

### Packaging

Distribution packaging: Plastic bags made from 100% recycled LDPE (low density polyethylene). Cardboard box. Pallets are excluded from the calculations.

## High Vis stretch trousers class 2 2712 PLU

| Materials            | %    | Environmental / Hazardous properties                             |
|----------------------|------|--|
| Main fabric PLU      | 60,4 | 80% polyester, 20% cotton  |
| Fabric FBLA          | 16,2 | 65% polyester, 35% cotton  |
| Interlining cotton   | 0,1  | 100% cotton  |
| Stretch fabric STS   | 5,7  | 91% polyamide, 9% elastane                                       |
| Trims for pockets    | 7,2  | 100% polyamide   |
| Transfer reflective  | 5,5  | 34% polyurethane, 33% glass beads, 21,5% polyester, 11,5% cotton |
| Metal trims          | 1,1  | 100% brass   |
| Care and size labels | 1,8  | 100% polyester   |
| Paper trims          | 1,8  | 100% paper   |
| Thread polyester     | 0,3  | 100% polyester   |

### Packaging

Distribution packaging: Plastic bags made from 100% LDPE (low density polyethylene). Cardboard box. Pallets are excluded from the calculations.

# Environmental performance

## Potential environmental impact

| Parameter                                  | Unit                                 | Trousers               | Upstream    | CORE       | Down-stream | Total      |        |
|--|--------------------------------------|------------------------|-------------|------------|-------------|------------|--------|
| Global warming potential (GWP)             | Fossil                               | kg CO <sub>2</sub> eq. | 2649 GPLU   | 6,93       | 5,4         | 0,355      | 12,7   |
|  |                                      | 2712 PLU               | 8,16        | 7,14       | 0,257       | 15,6       |        |
|  | Biogenic                             | kg CO <sub>2</sub> eq. | 2649 GPLU   | 0,655      | 0,112       | 0,00145    | 0,768  |
|  |                                      | 2712 PLU               | 0,619       | 0,303      | 0,000976    | 0,923      |        |
|  | Land use and Land change             | kg CO <sub>2</sub> eq. | 2649 GPLU   | 0,066      | 0,021       | 0,000181   | 0,0872 |
|  |                                      | 2712 PLU               | 0,123       | 0,0332     | 0,000149    | 0,156      |        |
| <b>Total</b>                               | kg CO <sub>2</sub> eq.               | 2649 GPLU              | 7,65        | 5,53       | 0,357       | 13,5       |        |
| 2712 PLU                                   | 8,90                                 | 7,48                   | 0,258       | 16,6       |             |            |        |
| Acidification potential (AP)               | kg SO <sub>2</sub> eq.               | 2649 GPLU              | 0,0370      | 0,0265     | 0,00448     | 0,0680     |        |
| 2712 PLU                                   | 0,0457                               | 0,0349                 | 0,00440     | 0,0850     |             |            |        |
| Eutrophication potential (EP)              | kg PO <sub>4</sub> <sup>3-</sup> eq. | 2649 GPLU              | 0,0249      | 0,00608    | 0,000582    | 0,0316     |        |
| 2712 PLU                                   | 0,0334                               | 0,0122                 | 0,000535    | 0,0461     |             |            |        |
| Photochemical oxidant formation potential  | kg NMVOC eq.                         | 2649 GPLU              | 0,0228      | 0,0183     | 0,00413     | 0,0452     |        |
| 2712 PLU                                   | 0,0274                               | 0,0239                 | 0,00396     | 0,0553     |             |            |        |
| Abiotic depletion potential – Fossil fuels | MJ, net calorific value              | 2649 GPLU              | 88          | 53,7       | 4,96        | 147        |        |
| 2712 PLU                                   | 116                                  | 128                    | 3,51        | 248        |             |            |        |
| Abiotic depletion potential – Elements     | kg Sb eq.                            | 2649 GPLU              | 0,000339    | 0,000036   | 0,00000795  | 0,000383   |        |
| 2712 PLU                                   | 0,000355                             | 0,0000340              | 0,00000527  | 0,000394   |             |            |        |
| Water Scarcity Footprint (WSF)             | m <sup>3</sup> H <sub>2</sub> O eq.  | 2649 GPLU              | 20,7        | 2,56       | 0,0144      | 23,3       |        |
| 2712 PLU                                   | 31,7                                 | 3,77                   | 0,00929     | 35,5       |             |            |        |
| Eutrophication – Fresh water               | kg P eq.                             | 2649 GPLU              | 0,00258     | 0,00106    | 0,0000273   | 0,004      |        |
| 2712 PLU                                   | 0,00309                              | 0,00258                | 0,0000172   | 0,006      |             |            |        |
| Eutrophication – Marine                    | kg N eq.                             | 2649 GPLU              | 0,0247      | 0,00622    | 0,00148     | 0,032      |        |
| 2712 PLU                                   | 0,0399                               | 0,00781                | 0,00136     | 0,049      |             |            |        |
| Particulate matter                         | Disease inc.                         | 2649 GPLU              | 0,000000412 | 0,00000039 | 0,000000023 | 0,00000083 |        |
| 2712 PLU                                   | 0,000000499                          | 0,000000375            | 0,000000015 | 0,00000089 |             |            |        |

## Use of resources

| Parameter                                | Unit                    | Trousers                | Upstream  | CORE   | Down-stream | Total  |      |
|--|-------------------------|-------------------------|-----------|--------|-------------|--------|------|
| Primary energy resources – Renewable     | Use as energy carrier   | MJ, net calorific value | 2649 GPLU | 105    | 59,8        | 5,65   | 170  |
|  |                         | 2712 PLU                | 136       | 141    | 3,77        | 281    |      |
|  | Used as raw materials   | MJ, net calorific value | 2649 GPLU | 0      | 0           | 0      | 0    |
|  |                         | 2712 PLU                | 0         | 0      | 0           | 0      |      |
|  | <b>Total</b>            | MJ, net calorific value | 2649 GPLU | 105    | 59,8        | 5,65   | 170  |
|  | 2712 PLU                | 136                     | 141       | 3,77   | 281         |        |      |
| Primary energy resources – Non-renewable | Use as energy carrier   | MJ, net calorific value | 2649 GPLU | 10,6   | 5,61        | 0,0547 | 16,3 |
|  |                         | 2712 PLU                | 14,6      | 8,87   | 0,0380      | 23,5   |      |
|  | Used as raw materials   | MJ, net calorific value | 2649 GPLU | 12,7   | 0           | 0      | 12,7 |
|  |                         | 2712 PLU                | 31,1      | 0      | 0           | 31,1   |      |
|  | <b>Total</b>            | MJ, net calorific value | 2649 GPLU | 23,4   | 5,61        | 0,0547 | 29,0 |
|  | 2712 PLU                | 45,7                    | 8,87      | 0,0380 | 54,6        |        |      |
| Secondary material                       | kg                      | 2649 GPLU               | 0,296     | 0      | 0           | 0,296  |      |
| 2712 PLU                                 | 0                       | 0                       | 0         | 0      |             |        |      |
| Renewable secondary fuels                | MJ, net calorific value | 2649 GPLU               | 0         | 0      | 0           | 0      |      |
| 2712 PLU                                 | 0                       | 0                       | 0         | 0      |             |        |      |
| Non-renewable secondary fuels            | MJ, net calorific value | 2649 GPLU               | 0         | 0      | 0           | 0      |      |
| 2712 PLU                                 | 0                       | 0                       | 0         | 0      |             |        |      |
| Net use of fresh water                   | m <sup>3</sup>          | 2649 GPLU               | 1,63      | 0,043  | 0           | 1,67   |      |
| 2712 PLU                                 | 2,97                    | 0,0580                  | 0         | 3,03   |             |        |      |

# Product characteristics

## Product characteristics

| Characteristic   | Test method                               | Results GPLU  | Results PLU   |
|--|---|---|---|
| <b>Composition</b>   | Regulation EU No 1007/2011                | 70% polyester, 30% cotton   | 80% polyester, 20% cotton   |
| <b>Fabric</b>  | ISO 3572                                  | 3/1 twill   | 4/1 satin   |
| <b>Mass per unit area</b>  | EN 12127                                  | 240 g/m <sup>2</sup>  | 300 g/m <sup>2</sup>  |
| <b>Width</b>   | EN 1773                                   | 148 cm  | 150 cm  |
| <b>Colour index</b>  |   |   |   |
| <b>Abrasion strength</b>   | ISO 12947-2                               | 70.000 rubs   | 45.000 rubs   |
| <b>Tear strength</b>   | ISO 13937-2                               | Warp: 35 N<br>Weft: 30 N  | Warp: 40 N<br>Weft: 40 N  |
| <b>Tensile strength</b>  | ISO 13934-1                               | Warp: 1200 N<br>Weft: 1000 N  | Warp: 1600 N<br>Weft: 1000 N                                      |
| <b>Seam slippage</b>   | ISO 13936-2                               | Warp: 2 mm<br>Weft: 2 mm  | Warp: 2 mm<br>Weft: 2 mm  |
| <b>Pilling test (Martindale) after 5000 rubs</b>                           | EN ISO 12945-2                            | 4-5   | 4   |
| <b>Dimensional change to washing</b>                                       | EN ISO 6330<br>EN ISO 3759<br>EN ISO 5077 | Warp: +/-3%<br>Weft: +/-3%  | Warp: +/-3%<br>Weft: +/-3%  |
| <b>pH of water extract</b>   | EN ISO 3071                               | 7,4   | 7,5   |
| <b>Colour fastness to artificial light:<br/>Xenon arc fading lamp test</b> | EN ISO 105 B02                            | 4   | 4   |
| <b>Colour fastness to washing</b>  | EN ISO 105 C06                            | Color change: 4-5<br><br>Color staining:<br>Cotton 4<br>Polyester 4 | Color change: 4<br><br>Color staining:<br>Cotton 4<br>Polyester 4 |
| <b>Acid and alkaline perspiration</b>                                      | EN ISO 105 E04                            | Color change: 4<br><br>Color staining:<br>Cotton 4<br>Polyester 4   | Color change: 4<br><br>Color staining:<br>Cotton 4<br>Polyester 4 |
| <b>Dry and wet rubbing</b>   | EN ISO 105 X12                            | Dry : 4<br>Wet : 4  | Dry : 4<br>Wet : 3-4  |

# Waste production and output flows

## Waste production

| Parameter                    | Unit | Trousers  | Upstream | CORE  | Downstream | Total |
|------------------------------|------|-----------|----------|-------|------------|-------|
| Hazardous waste disposed     | kg   | 2649 GPLU | 0        | 0     | 0          | 0     |
|                              |      | 2712 PLU  | 0        | 0     | 0          | 0     |
| Non-hazardous waste disposed | kg   | 2649 GPLU | 0,412    | 0,067 | 0          | 0,479 |
|                              |      | 2712 PLU  | 0,432    | 0,146 | 0          | 0,578 |
| Radioactive waste disposed   | kg   | 2649 GPLU | 0        | 0     | 0          | 0     |
|                              |      | 2712 PLU  | 0        | 0     | 0          | 0     |

## Additional information

Our garments are OEKO-TEX® certified at garment level and we have a well-established programme to monitor chemical safety compliance.

Water Scarcity Footprint in High Vis Green trousers class 1 2649/2652 GPLU and High Vis stretch trousers class 2 2712 PLU is illustrated in Figure 1.

The Global Warming Potential (GWP) of High Vis Green trousers class 1 2649/2652 GPLU and High Vis stretch trousers class 2 2712 PLU are shown in Figure 2.

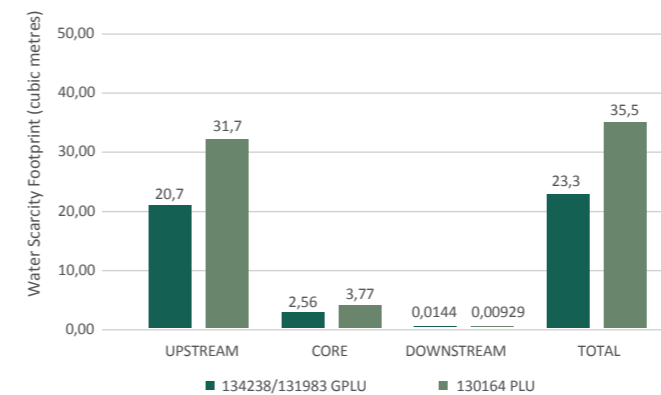


Figure 1. The Water Scarcity Footprint of High Vis Green trousers class 1 2649/2652 GPLU and High Vis stretch trousers class 2 2712 PLU. Figures for one pair of trousers.

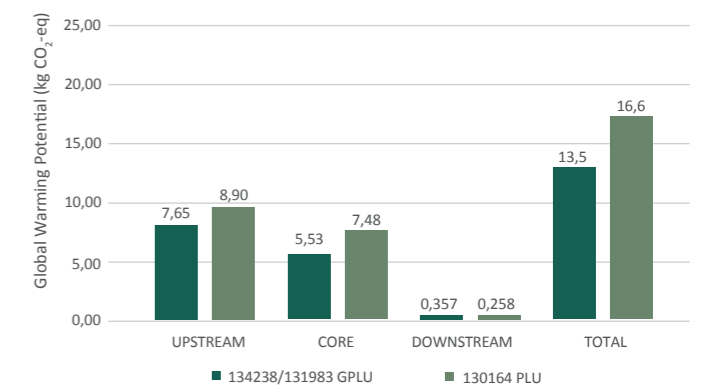


Figure 2. The Global Warming Potential of High Vis Green trousers class 1 2649/2652 GPLU and High Vis stretch trousers class 2 2712 PLU. Figures for one pair of trousers.



Organic cotton requires a higher standard for cotton cultivation. It includes the health of soils, surrounding ecosystems and usage of natural processes as well as eliminating the usage of toxic fertilizers, pesticides and GMOs (Genetically Modified Organisms).

The organic cotton Fristads use is certified and can always be tracked back to the point of raw material extraction.

# Organic cotton.

Recycled polyester is made from an already produced resource instead of using virgin fossil resources and it has the same qualities as synthetically made polyester fibre.

Recycled polyester can be produced in several ways, either mechanically from PET bottles or chemically from various waste materials, for example production waste from the textile industry. Fristads Green High vis collection is made of recycled polyester from PET bottles.

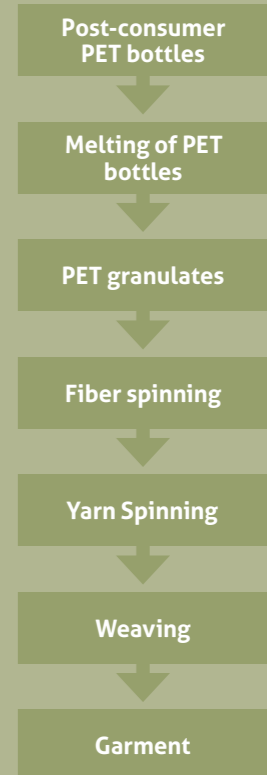
When using recycled materials it is important to secure traceability throughout the supply chain. Fristads work with transparent suppliers who can provide certificates for traceability.



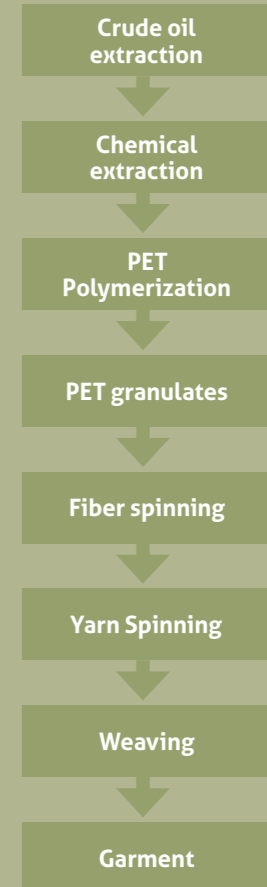
Used PET bottles turn into a great workwear.

# Recycled polyester.

## Mechanical recycled polyester:



## Virgin polyester:





## Programme-related information and verification

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

|                               |   |
|-------------------------------|---|
| 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 |
| EPD registration number:      | S-P-03881   |
| Published:                    | 2021-09-01  |
| Valid until:                  | 2026-07-02  |
| Product Category Rules:       | PCR 2019:06 Trousers, shorts, slacks and similar garments. Version 1.02   |
| Product group classification: | UN CPC 282  |
| Reference year for data:      | 2021  |
| Geographical scope:           | Global  |

|   |
|---|
| Product category rules (PCR):<br>Trousers, shorts, slacks and similar garments. PCR 2019:06, Version 1.02, UN CPC 282.  |
| PCR review was conducted by:<br>The Technical Committee of the International EPD® System. A full list of members available on <a href="http://www.environdec.com">www.environdec.com</a> . The review panel may be contacted via <a href="mailto:info@environdec.com">info@environdec.com</a> .<br>Chair of the PCR review:<br>Hüdai Kara, Metsims Sustainability Consulting. |
| Independent third-party verification of the declaration and data, according to ISO 14025:2006:<br><br><input type="checkbox"/> EPD process certification <input checked="" type="checkbox"/> EPD verification   |
| Third party verifier:<br><br>Marcus Wendin<br>Miljögiraff AB  |
| Approved by: The International EPD® System  |
| Procedure for follow-up of data during EPD validity involves third party verifier:<br><br><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No   |

## Appendix

The products in the appendix have been calculated concerning material consumption and the difference is below 10% compared to the declared GPLU products.

| Garment name                                     | Art no | Description             |
|--|--------|-------------------------|
| High vis Green trousers class 2 2651 GPLU        | 131982 | Green collection        |
| High Vis Green trousers woman class 2 2642 GPLU  | 131973 | Green collection        |
| High Vis Green trousers class 1 2668 GPLU        | 134271 | Green collection        |
| High Vis stretch trousers class 1 2705 PLU       | 127731 | Conventional collection |
| High Vis stretch trousers woman class 1 2708 PLU | 127735 | Conventional collection |



Article no 131982

Article no 131973

Article no 134271

Article no 127731

Article no 127735

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