EPD®

FRISTADS®

EPD – Environmental Product Declaration.

In accordance with ISO 14025 for:
Trousers 2930 GWM.

Main fabric GWM: 65% recycled polyester, 35% cotton

General information

Owner of the EPD:
Fristads AB Prognosgatan 24, 504 64 Borås, Sweden
Contact person: Lisa Rosengren, Head of R&D Raw Material
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www.fristads.com

Location of production site:
Vientiane, Laos

Programme:	The international EPD® system www.environdec.com
Programme operator:	EPD international AB
EPD registration number:	S-P-13205
Publication date:	2024-06-28
Validity date:	2029-06-28
Geographical scope:	Global

EPD®

TROUSERS 2930 GWM

Art. no 301026

Partly recycled material / Mechanical stretch / Rib-knit stretch panels at waist / Concealed front button / 2 front pockets / 2 back pockets / Folding rule pocket and tool pocket / Leg pocket with loop for id-card holder, flap with concealed snap fastening / Pre-shaped knees / Adjustable leg length with 5 cm hem allowance / Approved according to EN 13758-2 UPF 40+ UV protection / Leasing-laundry tested according to ISO 15797 / OEKO-TEX® certified.

MATERIAL 50% recycled polyester, 50% cotton. 15% of total content is closed loop material from used workwear.

WEIGHT 250 g/m².

COLOUR 544 Dark navy, 557 Dark navy/High vis Yellow, 587 Dark navy/Grey, 866 Grey/Red, 896 Grey/Black, 940 Black.

SIZE Regular: C44-C62 Short: 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[1].
The goal of the present LCA study has been to calculate environmental impact values for Fristads' Trousers 2930 GWM, to create this Environmental Product Declaration, to be used for communicating environmental performance to customers[2].

Scope of the study

The scope of the study is cradle to gate and includes all processes up and until finished garment is transported to customer, 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[3] from the Ecoinvent database[4].
The declared unit of the study is 1 (one) garment in size C52, in accordance with the Product Category Rules (PCR)[5].

Data collection

The inventory for the LCA study was carried out during 2023-2024. The data for the textile processing was provided by the Fristads' suppliers. Data for the production was collected by Fristads' staff [6, 7]. The collected data cover all steps of the system boundry.

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. For assembly, electricity consumption has been allocated by production time.

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 down-stream 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.

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[8,9]. 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:

2023

Database(s) and LCA software used:

SimaPro version 9.5.0.1[10]
ecoinvent version 3.9.1[4]

Calculation methods

The potential environmental impact for all impact categories have been calculated with the EN 15804+A2 method as implemented in SimaPro, based on EF 3.1. Use of resources are calculated with the method Cumulative Energy Demand v1.11.

Description of system boundaries:

Cradle-to-gate

LCA practitioner:

The LCA has been conducted by the Raw Material team at Fristads.

Third party reviewer:

Marcus Wendin, Miljögiraff AB,
Övre Hövik 25 B, SE-430 84 Göteborg, Sweden
(marcus@miljogiraff.se)

[1] EPD International. (2021a). General Programme Instructions for the International EPD® System version 4.0.
[2] Rosengren, L. and Lindström, F. (2024). Life cycle assessment report Fristads workwear – GWM collections Alnaryd & Forsbo.
[3] 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).
[4] Ecoinvent (2023). Ecoinvent (3.9.1). Ecoinvent. https://ecoinvent.org/the-ecoinvent-database/
[5] EPD International. (2024). *PCR 2019:06 Trousers, shorts and slacks and similar garments: UN CPC 282. Product Category Rules according to ISO 14025.* Version 1.0.5. Stockholm, Sweden.
[6] Anonymous. (2023a). Facility M for spinning, weaving, dyeing, and finishing.
[7] Anonymous. (2024b). Facility O for cut and sew.
[8] Rosengren, L., Lindström, F. (2023). Life cycle assessment of Fristads workwear – Craftsman stretch GCYD collection.
[9] Rosengren, L. and Steenari, M. (2023). Life cycle assessment report Fristads workwear – GS25 collection
[10] PRé Consultants. (2023). SimaPro 9.5.0.1. Retrieved from http://www.pre-sustainability.com/simapro.

System diagram.

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

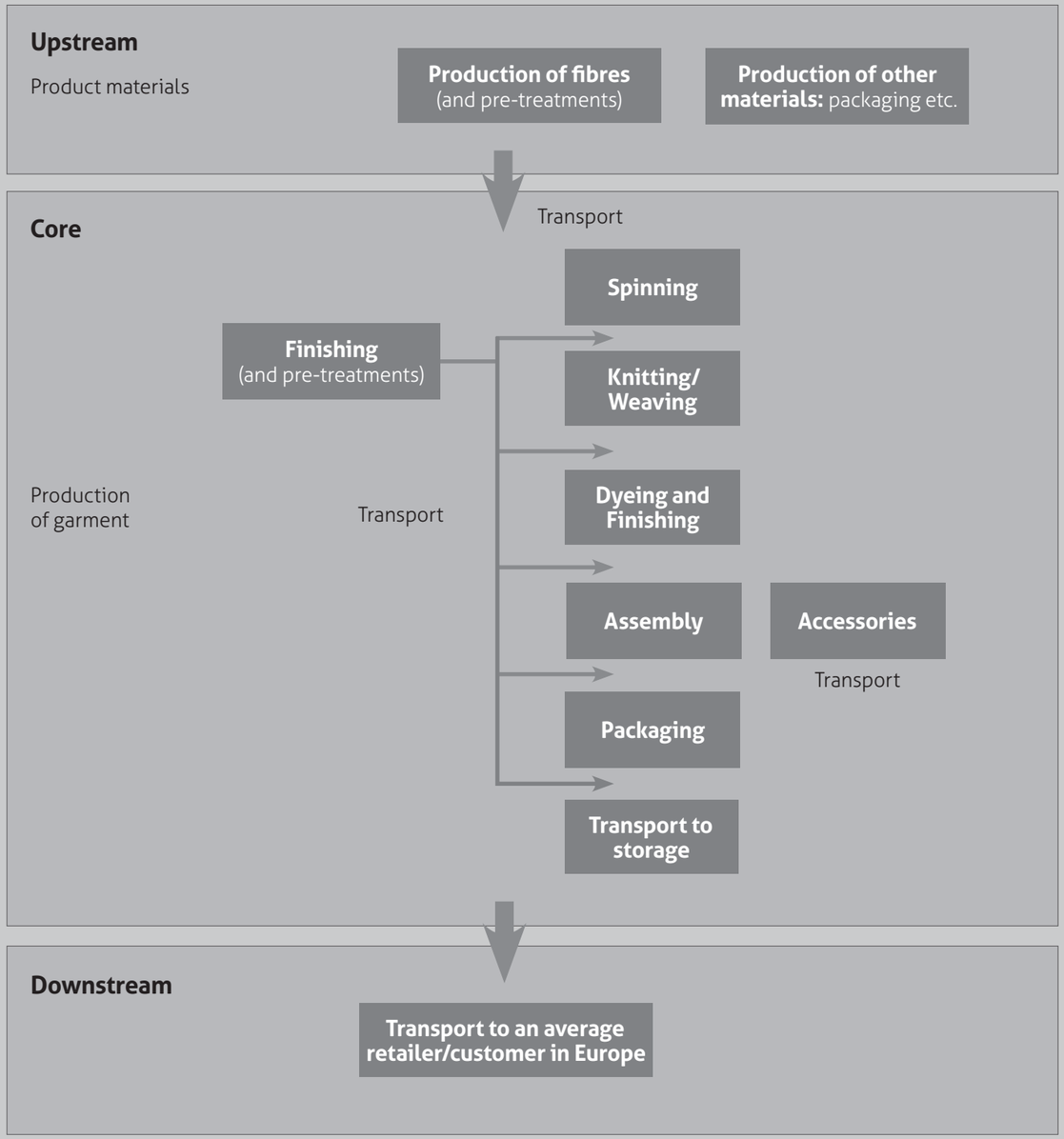

Figure 1. The system boundaries include upstream, core and downstream processes.

Content declaration

Trousers 2930 GWM.

Content Declaration	%	Environmental/Hazardous properties
Main fabric GWM	75,8	65% recycled polyester (post-consumer), 35% cotton
Detail fabric FBLA	14,2	65% polyester, 35% cotton
Smock GWM	6,1	50% recycled polyester (post-consumer), 27% cotton, 15% elastane, 5% polyamide, 2% polyester
Sewing thread	1,4	100% polyester
Paper trims	0,7	100% paper
Metal trims	0,7	100% brass
Zipper	0,4	100% recycled polyester (post-consumer)
Care and size labels	0,3	100% polyester
Plastic buttons	0,3	100% polyoxymethylene
Care and size labels recycled	0,1	100% recycled polyester (post-consumer)

Packaging

Distribution packaging: Cardboard box. Pallets are excluded from the calculations.

Environmental performance

Trousers 2930 GWM. Declared unit size C52.

Potential environmental impact

Parameter		Unit	Upstream	CORE	Downstream	Total
Global warming potential (GWP)	Fossil	kg CO_2 eq.	2,55	7,82	0,0915	10,5
	Biogenic	kg CO_2 eq.	-0,704	0,122	0,863	0,281
	Land use and land change	kg CO_2 eq.	0,147	0,00325	0,0000444	0,150
	Total	kg CO_2 eq.	1,99	7,95	0,955	10,9
Acidification potential (AP)		mol H+ eq.	0,0336	0,0365	0,000298	0,0704
Eutrophication potential (EP) - Fresh water		kg P eq.	0,00174	0,00120	0,00000640	0,00295
Eutrophication potential (EP) - Marine		kg N eq.	0,0396	0,00790	0,000103	0,0476
Eutrophication potential (EP) - Terrestrial		mol N eq.	0,115	0,0827	0,00108	0,199
Photochemical oxidant formation potential		kg NMVOC eq.	0,0116	0,0271	0,000446	0,0391
Abiotic depletion potential (ADP) for fossil resources		MJ	30,9	89,8	1,30	122
Abiotic depletion potential (ADP) for minerals/metals (non-fossil resources)		kg Sb eq.	0,0000648	0,00000411	0,000000294	0,0000692
Water deprivation potential (WDP)		m^3 depriv.	34,3	0,928	0,00529	35,2
Ozone depletion potential (ODP)		kg CFC 11 eq.	0,00000127	0,0000000788	0,00000000199	0,00000135
Particulate matter		Disease inc.	0,000000292	0,000000437	0,00000000728	0,000000736

Use of resources

Parameter		Unit	Upstream	CORE	Downstream	Total
Primary energy resources – Renewable	Use as energy carrier	MJ, net calorific value	33,1	96,3	1,38	131
	Used as raw materials	MJ, net calorific value	3,98	0	0	3,98
	Total	MJ, net calorific value	37,1	96,3	1,38	135
Primary energy resources – Non-renewable	Use as energy carrier	MJ, net calorific value	12,0	3,43	0,0201	15,5
	Used as raw materials	MJ, net calorific value	3,83	0	0	3,83
	Total	MJ, net calorific value	15,9	3,43	0,0201	19,3
Secondary material		kg	0,390	0	0	0,390
Renewable secondary fuels		MJ, net calorific value	0	0	0	0
Non-renewable secondary fuels		MJ, net calorific value	0	0	0	0
Net use of fresh water		m^3	3,57	0,0152	0	3,59

Product characteristics

Product characteristics

Characteristic	Test method	Results GWM
Composition	Regulation EU No 1007/2011	65% polyester 35% cotton
Weave	ISO 3572	Twill 2/1
Mass per unit area	EN 12127	250 g/m²
Width	EN 1773	150 cm
Colour index		
Abrasion strength	ISO 12947-2	45000 rubs
Tear strength	ISO 13937-2	Warp: 30 N Weft: 30 N
Tensile strength	ISO 13934-1	Warp: 1600 N Weft: 700 N
Seam slippage	ISO 13936-2	Warp: 3 mm Weft: 3 mm
Pilling test (Martindale) after 5000 rubs	EN ISO 12945-2	4
Dimensional change to washing	EN ISO 6330 EN ISO 5077	Warp: ±3% Weft: ±3%
pH of water extract	EN ISO 3071	4-7,5
Colour fastness to artificial light: Xenon arc fading lamp test	EN ISO 105 B02	4
Colour fastness to washing	EN ISO 105 C06	Color change: 4 Color staining: Cotton 3-4 Polyester 3-4 Viscose 3-4
Acid and alkaline perspiration	EN ISO 105 E04	Alkaline and acid Color change: 4 Color staining: Cotton 4 Polyester 4
Dry and wet rubbing	EN ISO 105 X12	Dry : 4 Wet : 2–3

Waste production and output flows

Waste production

Parameter	Unit	Upstream	CORE	Downstream	Total
Hazardous waste disposed	kg	0	0	0	0
Non-hazardous waste disposed	kg	0,0228	0,132	0	0,155
Radioactive waste disposed	kg	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.

The results in this EPD is for the declared unit size C52, which is in the middle of Fristads' size range. Results may vary depending on the garment size within the size range.

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 EPD International AB Box 210 60 SE-100 31 Stockholm Sweden www.environdec.com info@environdec.com
EPD registration number:	S-P-13205
Published:	2024-06-28
Valid until:	2029-06-28
Product Category Rules:	PCR 2019:06 Trousers, shorts, slacks and similar garments. Version 1.0.5
Product group classification:	UN CPC 282
Reference year for data:	2023
Geographical scope:	Global

Product category rules (PCR): PCR 2019:06 Trousers, shorts and slacks and similar garments, Version 1.0.5, UN CPC 282.
PCR review was conducted by: The Technical Committee of the International EPD® System. A full list of members available on www.environdec.com. The review panel may be contacted via info@environdec.com. Chair of the PCR review: Hüdai Kara, Metsims Sustainability Consulting.
Independent third-party verification of the declaration and data, according to ISO 14025:2006: ☐ EPD process certification ☑ EPD verification
Third party verifier: Marcus Wendin, Miljögiraff AB, (marcus@miljogiraff.se) Approved by: The International EPD® System
Procedure for follow-up of data during EPD validity involves third party verifier: ☐ Yes ☑ No

Appendix

The products in the appendix have been modelled like the declared product and the difference in environmental impact between declared product and appendix products have been calculated. The difference between declared product and appendix products is less than 10% in all environmental impact categories. The declared product and the appendix product contain the same ingoing components and are produced using the same processes. The declared product is considered most representative and suitable as declared product because it has the higher impact of the included products.

Garment name	Art no	Description
Green trousers woman 2931 GWM	301236	

References

Anonymous. (2023a). Facility M for spinning, weaving, dyeing, and finishing.

Anonymous. (2024b). Facility O for cut and sew.

Ecoinvent (2023). Ecoinvent (3.9.1). Ecoinvent. https://ecoinvent.org/the-ecoinvent-database/

EPD International. (2024). *PCR 2019:06 Trousers, shorts and slacks and similar garments: UN CPC 282. Product Category Rules according to ISO 14025.* Version 1.0.5. Stockholm, Sweden.

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PRé Consultants. (2023). SimaPro 9.5.0.1. Retrieved from http://www.pre-sustainability.com/simapro.Rosengren, L., Lindström, F. (2023). *Life cycle assessment of Fristads workwear – Craftsman stretch GCYD collection.*

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Rosengren, L. and Steenari, M. (2023). Life cycle assessment report Fristads workwear – GS25 collection.

Contact information

Parameter	Unit
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