EPD®

FRISTADS®

EPD – Environmental Product Declaration.

In accordance with ISO 14025 for:
Trofta, High vis winter jacket woman cl 3 4683 GLPS

Main fabric GLPS: Mechanical 4-way stretch, 2-layer material with membrane. 100% recycled polyester.

General information

Owner of the EPD:
Fristads AB Prognosgatan 24, 504 64 Borås, Sweden
Contact person: Lisa Rosengren, Sustainability & Raw Material Manager
lisa.rosengren@fristads.com
www.fristads.com

Location of production site:
Antananarivo, Madagascar

Programme:	The International EPD® system www.environdec.com
Programme operator:	EPD International AB
EPD registration number:	EPD-IES-0006058
Publication date:	2025-03-21
Validity date:	2030-03-21
Geographical scope:	Global

An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com.

Product information

Description of the organization

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. 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

HIGH VIS WINTER JACKET WOMAN CL 3 4683 GLPS

Article no: 301358

Partly recycled material / Outer fabric with mechanical 4-way stretch / Waterproof, windproof and breathable / Taped seams / Quilted lining / Detachable and adjustable hood with reinforced peak / Fleece-lined collar / Full-length water-repellent two-way front zip with inside placket / Chest pocket with concealed vertical zip and inside loop for id-card holder / Fleece-lined front pockets with zip / Inside mesh pocket with elastic edge / Pre-shaped sleeves / Adjustable sleeve end with rounded upper side / Elastic inner cuff with thumb grip / Ventilating lining in armhole and sleeve end / Adjustable drawstring at bottom / Extended back / Zip in lining for transfer / Waterpillar 13,000 mm / Breathability outer fabric RET <15 / Approved according to EN ISO 20471 class 3, EN 342 and EN 343 class 4/1, outer fabric approved according to EN 343 class 4/4. Colour 230 is approved according to RIS-3279-TOM issue 2 UK Railway Standard / Approved after 20 washes / OEKO-TEX® certified.

MATERIAL: Outer fabric: Mechanical 4-way stretch, 2-layer material with membrane. 100% recycled polyester. Lining 100% polyester quilted padding. **WEIGHT:** Outer fabric 185 g/m². Lining 195 g/m², sleeves 145 g/m²
COLOUR: 130 High vis Yellow, 230 High vis Orange. **SIZE:** XS-3XL.

The garment is developed and intended for professional use, meeting the requirements of E**N ISO 20471 for high visibility clothing which is capable of visually signaling the user's presence.** The garment is developed for domestic wash and during its lifetime it is estimated to be used **400 times.**

Geographical scope

The garments are developed for use in Europe, the user phase and the end-of-life scenario has been calculated for Europe. Production have been calculated for China and Bangladesh.

Hazardous properties and chemical substances

Our garments are OEKO-TEX® certified at garment level and we have a well-established program to monitor chemical safety compliance. Fristads does not allow products to contain substances of very high concern (SVHC) and all our products follows the European legislation REACH concerning Registration, Evaluation, Authorisation, and Restriction of chemicals.

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 14040 and 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' **High vis winter jacket woman cl 3 4683 GLPS,** to create this Environmental Product Declaration (EPD), to be used for communicating environmental performance to customers[2]. The study and this EPD follows the Product Category Rules (PCR) PCR 2024:03 Apparel, except fur and leather apparel[3].

Scope of the study

The scope of the study is cradle to grave and includes all processes up and until the end-of-life of the garment, see Figure 1. All material and resource consumption are tracked back to the point of raw material extraction, mainly by using cradle-to-gate data[4] from the Ecoinvent database[5].

Functional unit

The functional unit is defined as one use of one garment in a specific size, of a specific weight in the PCR. One use is defined as a 24-hour period, regardless how many hours the apparel item is worn within this 24-hour period. **In this EPD the functional unit is defined as one use of one jacket, in size L, with a weight of 1,12 kg (packaging weight excluded).** Size L is chosen as it is in the middle of the men's size range and one of the most sold sizes of Fristads garments.

Expected lifespan

The High vis winter jacket woman cl 3 4683 GLPS is tested and approved after 20 washes for EN ISO 20471, therefore 20 washes during the lifetime of the garment has been considered in the study. It has been estimated that one jacket is used on average twenty times per wash, hence the product is considered to be used minimum 400 uses during its lifetime.

Data collection and data quality

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 from the suppliers included in the supply chain of the studied garment[6,7,8]. The collected data cover all steps of the system boundary.

Specific data has been collected from the suppliers of fabric, reflective tape, and the garment producer in terms of energy and electricity consumption, water consumption, auxiliary chemicals usage, and waste generation.

For other ingoing trims (sewing thread, woven labels, hang tags, packaging material) selected generic data has been used, due to lack of specific data from these processes. The selected generic data have been assessed in terms of geographical, technological, and temporal representativeness and is considered to fulfill the requirements of the PCR. Selected generic data from Ecoinvent library Allocation, cut-off by classification have been used. Mass of all ingoing components is specific for each ingoing component.

Selected generic data has been for the upstream processes and accounts for 36,6% of the GWP-total. No proxy data have been used in the study.

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.

Allocation of waste follows the polluter pays principle in accordance with the PCR, which means that waste generation throughout the system boundary has been included for all steps.

Cut-off rules

In accordance with the PCR 99% of the total energy use, mass of product content, and environmental impact is accounted for in the study. All production processes for fabrics, trims, and garment are included in the calculations. All transportations between steps within the system boundary are included.

The below stated products/processes are excluded:

- Pallets used in transportation.
- Transportation of pallets used for transportation of goods.
- Processes in garment making without energy consumption or waste generation: Manual handling of garments/garment pieces between different steps in the assembly within the factory, folding, and packing finished goods.
- Production of the machinery used in production processes.

Assumptions and limitations

Some general assumptions have been made around transport vehicles and road transport distances to enable use of database data from Ecoinvent to represent primary data. Road transport distances are estimated 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.

The wash and care instructions for the garment is assumed to be representative for the user phase, in terms of washing and drying conditions. The number of uses per washing and drying cycle have been assumed based on the PEF-RP due to the limitation in available information from the actual end-users[9].

For the end-of-life scenario, an assumption on the scenario have been made. This assumption is that 53% of the discarded garments are incinerated and 47% end up in land fill.

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

Additional information

To calculate the impact of one garment the results presented in this EPD should be multiplied by the number of uses, **hence 400.**

Time representativeness:

2023-2024

Database(s) and LCA software used:

SimaPro version 9.6.0.1[10]
ecoinvent version 3.105[5]

Calculation methods

The potential environmental impact for all impact categories except GWP-GHG has been calculated with the EN 15804+A2 method as implemented in SimaPro, based on EF 3.1. GWP-GHG has been calculated using IPCC 2021 GWP100 (CO2 uptake excluded) method as implemented in SimaPro. Use of resources are calculated with the method Cumulative Energy Demand v1.12.

Description of system boundaries:

Cradle-to-grave

LCA practitioner:

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

Third party reviewer:

Daniel Böckin, Miljögiraff AB, Övre Hövik 25 B, SE-430 84 Göteborg, Sweden (daniel@miljogiraff.se)

1. *EPD International. (2024a). General Programme Instructions for the International EPD® System version 5.0.0.*
2. *Rosengren, L., Steenari, M., (2024) Life cycle assesment of Fristads Workwear - Trofta and Stiby High Visibility outerwear.*
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. (2024). Ecoinvent (3.10). Ecoinvent. https://ecoinvent.org/the-ecoinvent-database/*
5. *EPD International. (2024b). PCR 2024:03 Apparel, except fur and leather apparel: UN CPC 282. Product Category Rules according to ISO 14025. Version 1.0.0.*
6. *Anonymous. (2024a). Facility W for spinning, knitting, dyeing, and finishing*
7. *Anonymous. (2024b). Facility B for spinning, knitting, dyeing, and finishing*
8. *Anonymous. (2024c). Facility M for cut and sew*
9. *Quantis. (2024). Draft Product Environmental Footprint - Representative Product (PEF-RP) study report- Apparel and Footwear. Version 2.0*
10. *PRé Consultants. (2024). SimaPro 9.6.0.1. 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.

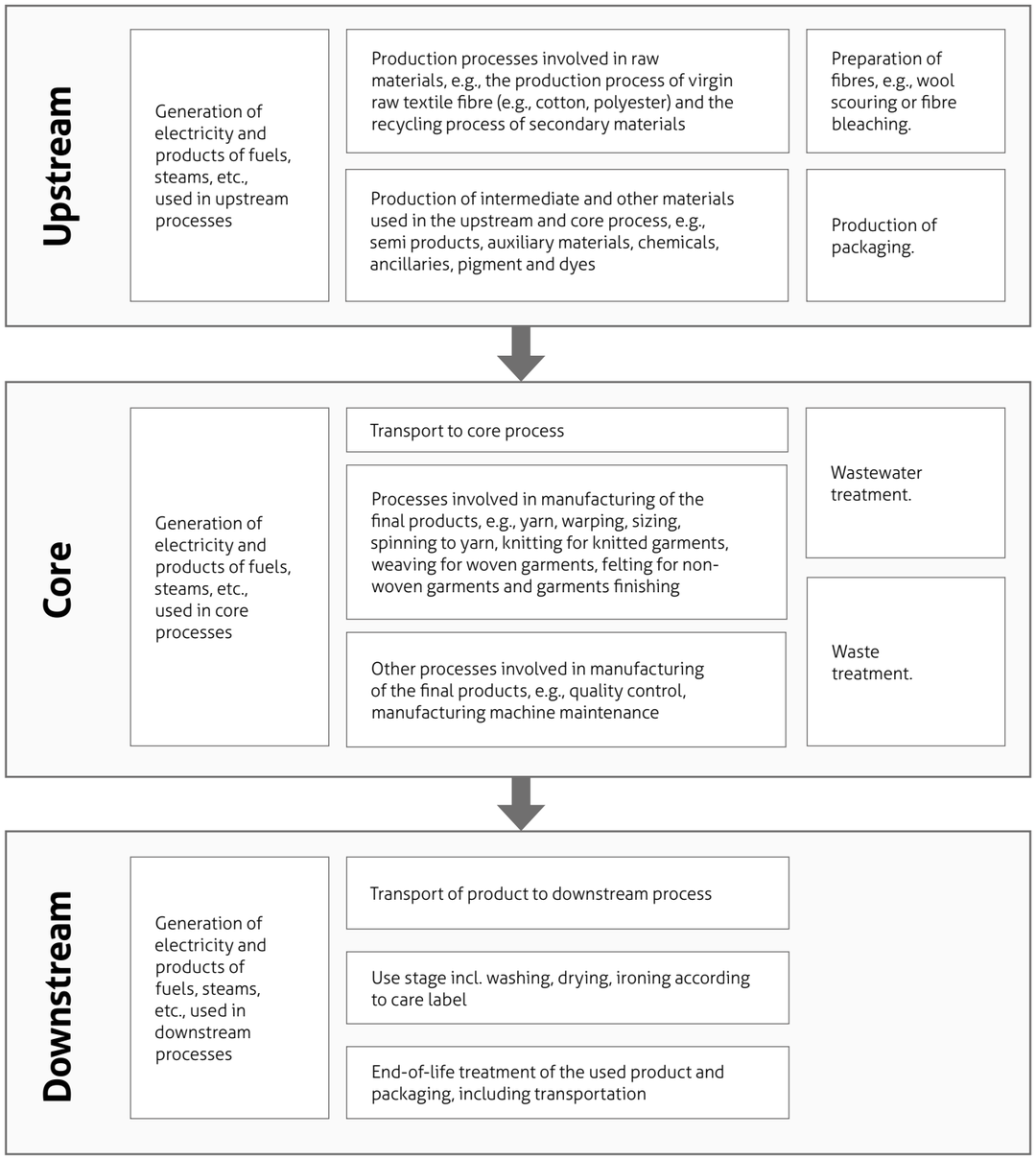

Figure 1. The system boundaries include upstream, core and downstream processes.

Content declaration

High vis winter jacket woman cl 3 4683 GLPS.

Product part	% of product weight	Content	% of bio-based material	% of recycled material	
				Pre-consumer recycled material	Post-consumer recycled material
Main fabric GLPS	39,6%	72% Recycled polyester, 28% Polyurethane	0%	0%	72% post-consumer recycled polyester
Lining	12,9%	100% Polyester	0%	0%	0%
Interlining	0,3%	100% Polypropylene	0%	0%	0%
Padding	16,1%	100% Polyester	0%	0%	0%
Fleece	0,6%	100% Polyester	0%	0%	0%
Cuffs	2,7%	90% Polyester, 10% Polyurethane	0%	0%	0%
Pocket lining	1,3%	100% Polyester	0%	0%	0%
Reflective	7,8%	35% Glass beads, 33,5% Polyester, 31,5% Polyurethane,	0%	0%	0%
Velcro	0,3%	100% Polyamide	0%	0%	0%
Reinforcement, Sticker	0,1%	60% Polyester, 40% Viscose	40%	0%	0%
Elastic cord	0,5%	65% Rubber, 35% Polyester	0%	0%	0%
Plastic buttons	0,4%	100% Polyamide	0%	0%	0%
Metal trims	1,7%	100% Brass	0%	0%	0%
Elastic ribbon	0,1%	86%Polyamide, 14% Polyurethane	0%	0%	0%
Seamsealing tape	2,6%	100% Polyurethane	0%	0%	0%
Thread	1,6%	100% Polyester	0%	0%	0%
Zipper rPES	2,9%	100% Recycled polyester	0%	0%	100% post-consumer recycled polyester
Coated zipper	3,1%	50% Polyester, 50% Polyurethane	0%	0%	0%
Transfer	0,2%	54% Polyurethane, 46% Glass beads	0%	0%	0%
Care and size labels rPES	0,1%	100% Recycled polyester	0%	0%	100% post-consumer recycled polyester
Care and size labels	0,1%	100% Polyester	0%	0%	0%
Paper trims	5,0%	100% Paper	100%	0%	0%
Total biobased/recycled content	**36,5%**		**5,1%**		**31,5%**

Packaging

Distribution packaging: Plastic bag and cardboard box. Plastic bag packaging made from recycled polyethylene from post-consumer resources. Weight of the plastic bag is 0,013 kg. **The average weight of cardboard box per product is 0,040 kg.**

Consumer packaging: Plastic bag packaging made from recycled polyethylene from post-consumer resources. Weight of the plastic bag is 0,013 kg.

Pallets are excluded from the study and the calculations.

Product characteristics

Product characteristics

Characteristic	Test method	Results GLPS
Composition	Regulation EU no 1007/2011	100% Polyester
Weave	ISO 3572	Plain
Mass per unit area	EN 12127	185 g/m2
Width	EN 1773	145 cm
Abrasion strength	ISO 12947-2	50 000 rubs
Tear strength	ISO 13937-2	Warp: 20 N Weft: 20 N
Tensile strength	ISO 13934-1	Warp: 800 N Weft: 500 N
Seam slippage	ISO 13936-2	Warp: 2 mm Weft: 2 mm
Pilling test (Martindale) after 5000 rubs	EN ISO 12945-2	4
Dimensional change to washing	EN ISO 6330 EN ISO 5077	Warp: ± 3% N Weft: ± 3%
pH of water Extrat	EN ISO 3071	4.0-7.5
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 4 Polyester 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: 4

Environmental performance

High vis winter jacket woman cl 3 4683 GLPS. Functional unit: one use of one jacket, size L.
Potential environmental impact.

Parameter		Unit	Upstream	CORE	Downstream	Total
Global warming potential (GWP)	Fossil	kg CO_2 eq.	0,0180	0,0232	0,00517	0,0463
	Biogenic	kg CO_2 eq.	0,000208	0,000735	0,00339	0,00433
	Land use and land change	kg CO_2 eq.	0,0000437	0,0000143	0,000288	0,000346
	Total	**kg CO_2 eq.**	**0,0182**	**0,0239**	**0,00884**	**0,0510**
Global warming potential – GWP-GHG		kg CO_2 eq.	0,0184	0,0234	0,00698	0,0487
Acidification potential		mol H+ eq.	0,000107	0,000153	0,0000347	0,000295
Eutrophication - Fresh water		kg P eq	0,00000642	0,00000544	0,00000215	0,0000140
Eutrophication - Marine		kg N eq	0,0000195	0,0000309	0,0000198	0,0000702
Eutrophication - Terrestrial		mol N eq.	0,000204	0,000325	0,000101	0,000631
Photochemical oxidant formation potential		kg NMVOC eq	0,0000856	0,000100	0,0000246	0,000210
Abiotic depletion potential – Fossil resources		MJ	0,281	0,296	0,0623	0,640
Abiotic depletion potential – minerals & metals		kg Sb eq.	0,000000430	0,0000000251	0,0000000649	0,000000520
Water deprivation potential		m^3 depriv.	0,00507	0,00282	0,00459	0,0125
Ozone depletion potential		kg CFC 11 eq.	0,0000000202	0,000000000285	0,000000000138	0,0000000206

Use of resources

Parameter		Unit	Upstream	CORE	Downstream	Total
Primary energy resources – Renewable	Use as energy carrier	MJ, net calorific value	0,0212	0,0259	0,0429	0,0901
	Used as raw materials	MJ, net calorific value	0,00459	0,000256	0	0,00484
	Total	**MJ, net calorific value**	**0,0258**	**0,0262**	**0,0429**	**0,0949**
Primary energy resources – Non-renewable	Use as energy carrier	MJ, net calorific value	0,301	0,319	0,0671	0,687
	Used as raw materials	MJ, net calorific value	0,0819	0	0	0,0819
	Total	**MJ, net calorific value**	**0,383**	**0,319**	**0,0671**	**0,769**
Secondary material		kg	0,00105	0	0	0,00105
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	0,0000425	0,000159	0,000356	0,000557

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	0	0	0
Radioactive waste disposed	kg	0	0	0	0

Programme information

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.

EPDs within the same product category but from different programmes may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison.

Programme:	The International EPD® System EPD International AB Box 210 60 SE-100 31 Stockholm Sweden www.environdec.com info@environdec.com
Product Category Rules:	PCR 2024:03 Apparel, except fur and leather apparel. Version 1.0.0
Product group classification:	UN CPC 282
Reference year for data:	2023-2024
Geographical scope:	Global

Product category rules (PCR): PCR 2024:03 Apparel, except fur and leather apparel, Version 1.0.0, 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: Daniel Böckin, Miljögiraff AB, (daniel@miljogiraff.se) Approved by: The International EPD® System
Procedure for follow-up of data during EPD validity involves third party verifier: ☐ Yes ☑ No

References

Anonymous. (2024a). *Facility W for spinning, knitting, dyeing, and finishing*

Anonymous. (2024b). *Facility B for spinning, knitting, dyeing, and finishing*

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Contact information

Parameter	Unit
EPD owner:	**Fristads AB** Prognosgatan 24 , 504 64 Borås Sweden **Contact person:** Lisa Rosengren lisa.rosengren@fristads.com www.fristads.com
LCA authors:	**Fristads AB** Prognosgatan 24, 504 64 Borås Sweden **Contact persons:** Lisa Rosengren Martin Steenari lisa.rosengren@fristads.com
Programme operator:	EPD International AB info@environdec.com

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