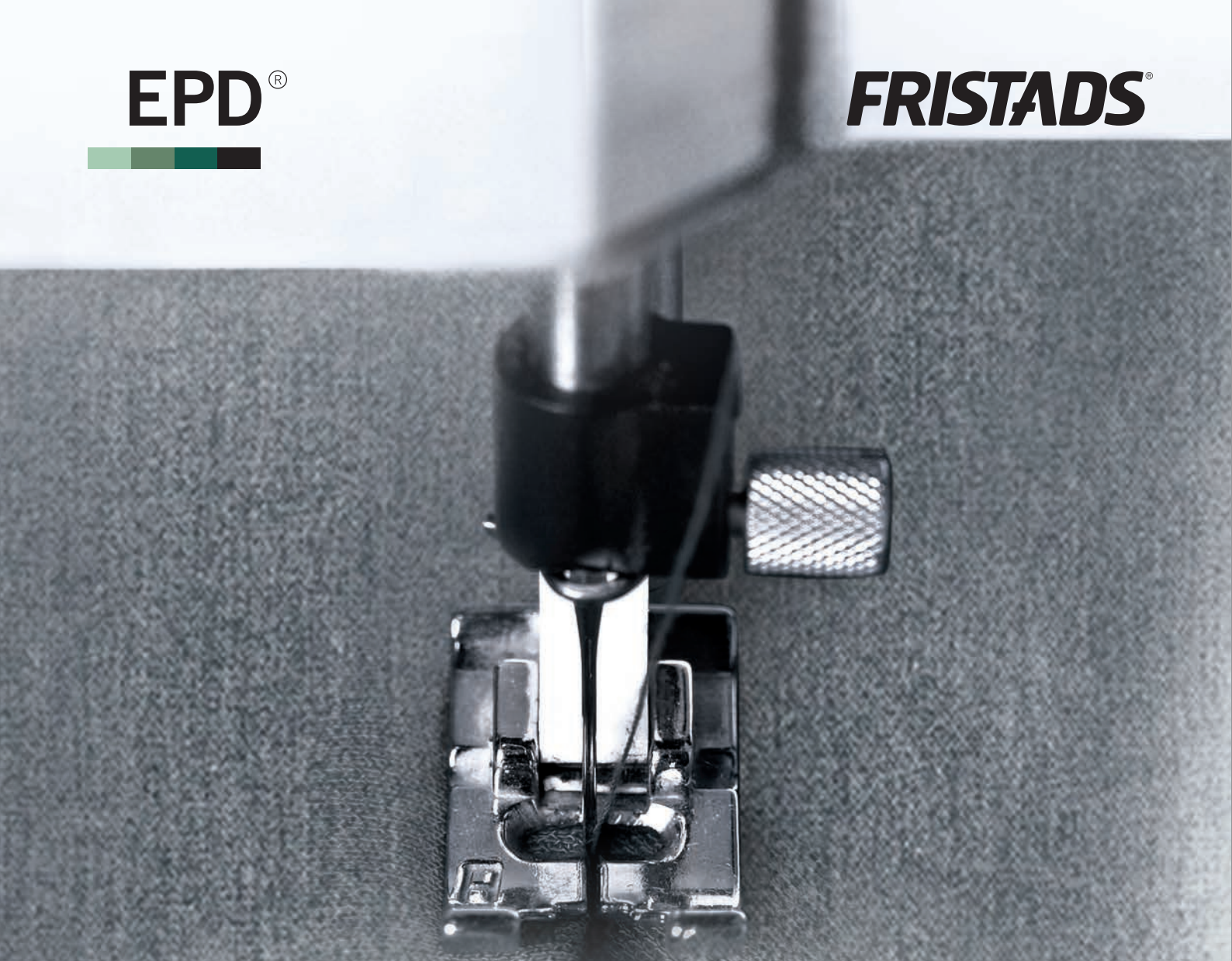
EPD®

FRISTADS®



EPD – ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH ISO 14025 FOR:
GREEN CRAFTSMAN JACKET 4538 GRN AND JACKET 4555 STFP

GENERAL INFORMATION

OWNER OF THE EPD:
Fristads AB Norra Däckvägen 2, 501 11 Borås, Sweden
Contact person: Lene Jul, Product Management Director,
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www.fristads.com

NAME AND LOCATION OF PRODUCTION SITE:
Laos

PROGRAMME:	The International EPD® System www.environdec.com
PROGRAMME OPERATOR:	EPD International AB
EPD REGISTRATION NUMBER:	S-P-01534
PUBLICATION DATE:	2019-03-18
VALIDITY DATE:	2024-03-15
REVISION DATE:	2019-06-11 Layout and textile detail information updates.
GEOGRAPHICAL SCOPE:	Global

Prepared with the assistance of RISE IVF AB.

FRISTADS®

A FIRST STEP IN REDUCING THE ENVIRONMENTAL FOOTPRINT

Fristads is now 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 the Amfori, we pursue, through the BSCI (Business Social Compliance Initiative) a constructive and open dialogue among our business partners and stakeholders to reinforce the principles of a socially responsible business.

Moreover, since 2011, we have been collaborating with the Fair Wear Foundation to further guarantee that the working conditions in our factories meet and exceed international and local requirements.

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.

HUMAN RIGHTS, LABOUR, ENVIRONMENT, ANTI-CORRUPTION

SOCIAL COMPLIANCE

ENVIRONMENT

CHEMICAL REGULATIONS

EPD

ENVIRONMENTAL PRODUCT DECLARATION

By developing an EPD, Fristads aims to contribute to positive change and greater transparency when it comes to environmental impact.

The Fristads Green concept presents the first EPD certified garments in the world. First up is a collection for craftsmen.

THE WORLD'S FIRST EPD FOR CLOTHING

The Fristads objective is to contribute a long-term, sustainable and transparent measuring tool for environmental impact – a standard that can be used throughout the textile industry.

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.

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.

EPD®

REDUCES WATER CONSUMPTION BY 75%

e.dye® – THE WATERLESS COLOURING SYSTEM

e.dye is a solution dyed polyester color system with over 2,500 colors and a sophisticated color-matching process for textiles. Solution dyeing means putting color inside the masterbatch chips, melt spun and extruded into yarn in color, instead of extruding raw white yarn that is later dyed in traditional water dye process.

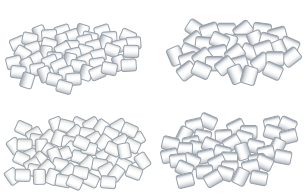
With over 20 years of experience, e.dye Ltd has the R&D and knowhow to offer customers a wide range of support and value added services that provide a competitive edge.

By controlling the entire supply chain, they make their own recipe by producing their masterbatch 100% in-house. This is then sent throughout the supply chain with clear instructions for the best end result on fabric ready for Gmt production. They ensure that quality meets the highest standards. e.dye® Waterless Color System™ offers an environmentally sustainable process for dyeing fabrics. Using the solution dyed polyester process, e.dye® requires no water to dye synthetics. By adding the color before the polymers are extruded, the color is inside the yarn,resulting in superior color performance. e.dye is a solution dyed polyester color system with over 2,500 colors and a sophisticated color-matching process for garment textiles.

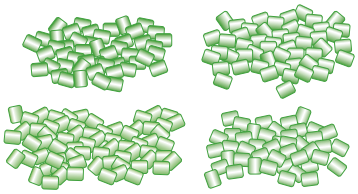
e.dye is a paradigm shift in textile dyeing, because e.dye actually puts the color inside the yarn.

THIS IS THE e.dye TECHNIQUE

WHAT IS e.dye?

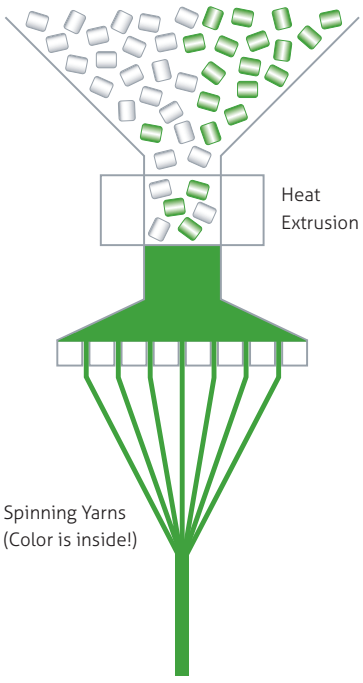


Raw stock PET or rPET
Lusters available: bright, semidull and full dull. Up to 95% recycled. GRS Certified.



Masterbatch Colors - in stock
Made in-house by e.dye, according to a recipe tied to 2,500 colors in the e.dye Color Bank.

Dosing Masterbatch and raw white PET

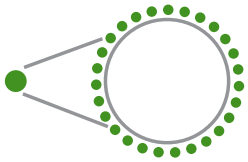


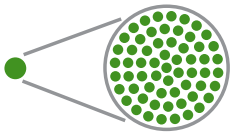
This process eliminates water consumption and reduces chemical use, energy comsumption and CO_2 emissions.

WHY IS e.dye BETTER?

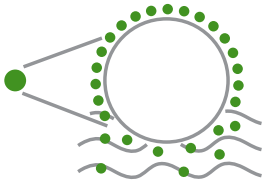
Traditional Piece Dye
Color is outside - of the surface of the yarn filament.

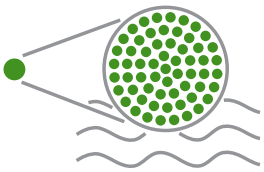
e.dye® Waterless Color System™
Color is inside - evenly dispersed throughout the entire yarn filament.

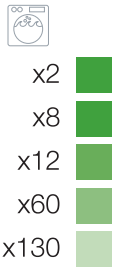


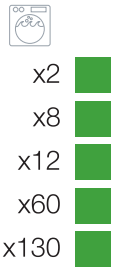


Wash Fastness

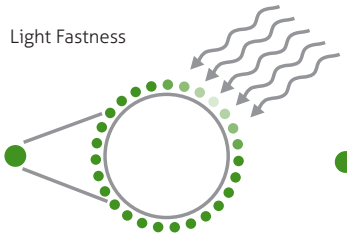


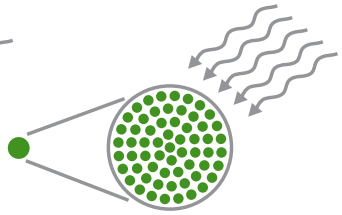


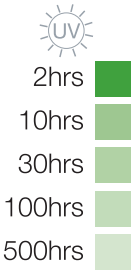


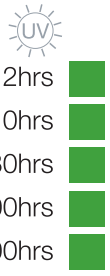


Light Fastness









THE WORLD'S FIRST JACKET WITH AN EPD

Buttons made of raw finished metal alloy, using a metal treatment method that cuts water consumption.

Most of the zipper is made of recycled polyester

Special design featuring advanced folding and fewer stitches – reduces sewing time, cuts usage of thread and avoids unnecessary waste. thread and avoids unnecessary waste

Made of recycled polyester and undyed cotton. The polyester is dyed using the e.dye® system which reduces water consumption by 75%

Clean design involving minimal details and smart solutions; saves energy in production and facilitates recycling of the material.

All surplus material from production is utilised on site and turned into "comfort pads" – a bonus product for elbows.

Outline logo embroidery made with few stitches to reduce sewing time and thread usage

GREEN CRAFTSMAN JACKET 4538 GRN

Article no 130513

Part of Fristads Green collection / Stand collar / Raglan sleeves / Full length front concealed zip / Contrast details on shoulders / 2 chest pockets with flap / 1 inner pocket with button fastening / 2 front pockets with flap / CORDURA® reinforced elbows and front lower part / Pocket at elbow for comfort pads / Comfort pads for elbows included / Zip in lining to make embroidery and transfer easier / Adjustable sleeve end / e.dye® / With EPD (Environmental Product Declaration) / OEKO-TEX® certified.

MATERIAL 65% recycled polyester, 35% cotton. ***WEIGHT*** 360 g/m².
COLOUR 896 Grey/Black. ***SIZE*** XS-4XL.

GREEN CRAFTSMAN JACKET 4538 GRN AND JACKET 4555 STFP

Three types of 100 % polyester spun yarn fabrics have been studied in two versions: dope dye and piece dye, see Table 1.

GARMENT NAME	STYLE NO	DESCRIPTION
Green craftsman jacket 4538 GRN	130513	Jacket: Green collection, dope dyed
Jacket 4555 STFP	129481	Jacket: Comparison product

GREEN CRAFTSMAN JACKET 4538 GRN

Art no 130513

JACKET 4555 STFP

Art no 129481

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' Craftsman jacket GRN and Jacket 4555 STFP to create this Environmental Product Declaration, to be used for communicating environmental performance to customers.

SCOPE OF THE STUDY

The scope of this study is cradle to gate and includes all processes up until the pair of Jacket is manufactured, see Figure 1. All material and resource consumption is tracked back to the point of raw material extraction, mainly by using cradle-to-gate data[2] from the Ecoinvent database.
The functional unit of the study is 1 (one) garment, in accordance with the Product Category Rules (PCR)[3].

DATA COLLECTION

The inventory for the LCA study was carried out during 2018, collecting data for 2017 and 2018. The on-site visits covered all manufacturing processes:

- masterbatch production: Single pigment colour (SPC) or multipigment colour (MPC);
- polyester filament yarn manufacturing: melt spinning, drawing and texturizing;
- knitting/weaving; and
- fabric wet treatment (scouring, dyeing and finishing).

The data for confectioning was collected by Fristads' staff.

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 of an entire production plant has been allocated to the specific fabric based on the total production volume (mass) 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 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[4] to represent primary data. Country electricity mix datasets have been used for electricity when the site reports that they use the 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[5].

ADDITIONAL INFORMATION ABOUT THE LCA STUDY

TIME REPRESENTATIVENESS:

2017-2018

DATABASE(S) AND LCA SOFTWARE USED:

SimaPro version 8.5.0.0[6]
ecoinvent version 3.4[7]

DESCRIPTION OF SYSTEM BOUNDARIES:

cradle-to-gate

LCA PRACTITIONER:

Sandra Roos, RISE
PO Box 104, SE-431 22 Mölndal, Sweden

THIRD PARTY REVIEWER:

Marcus Wendin, Miljögiraff KB, Övre Hövik 25b,
SE-430 84 Göteborg, Sweden

[1] EPD International, 'General Programme Instructions for the International EPD® System Version 3.0' (2017) <www.environdec.com.>.
[2] 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).
[3] EPD International, 'PCR 2019:04 Jackets, Coats and Other Similar Outdoor Garments: UN CPC 282. Product Category Rules According to ISO 14025. Version 1.0' (2019).
[4] Ecoinvent, 'Ecoinvent' <https://www.ecoinvent.org/database/database.html>.
[5] EPD International, 'EPD WRSD Fabrics (Spun Dyed and Piece Dyed Versions). EPD Registration Number S-P-00710.' (2015) <http://www.environdec.com/en/Detail/epd710#.VVxlJ2cw-M8>.
[6] PRé Consultants, 'SimaPro 8.5' <http://www.pre-sustainability.com/simapro>.
[7] Ecoinvent (n 4).

SYSTEM DIAGRAM

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

Garment manufacturing, retail, use and end-of-life processes are not included. The only downstream process included in the system boundary, the transport to the customer, was found to give a negligible contribution to the environmental impact (<1% for all categories). Therefore, the downstream phase is not reported separately.

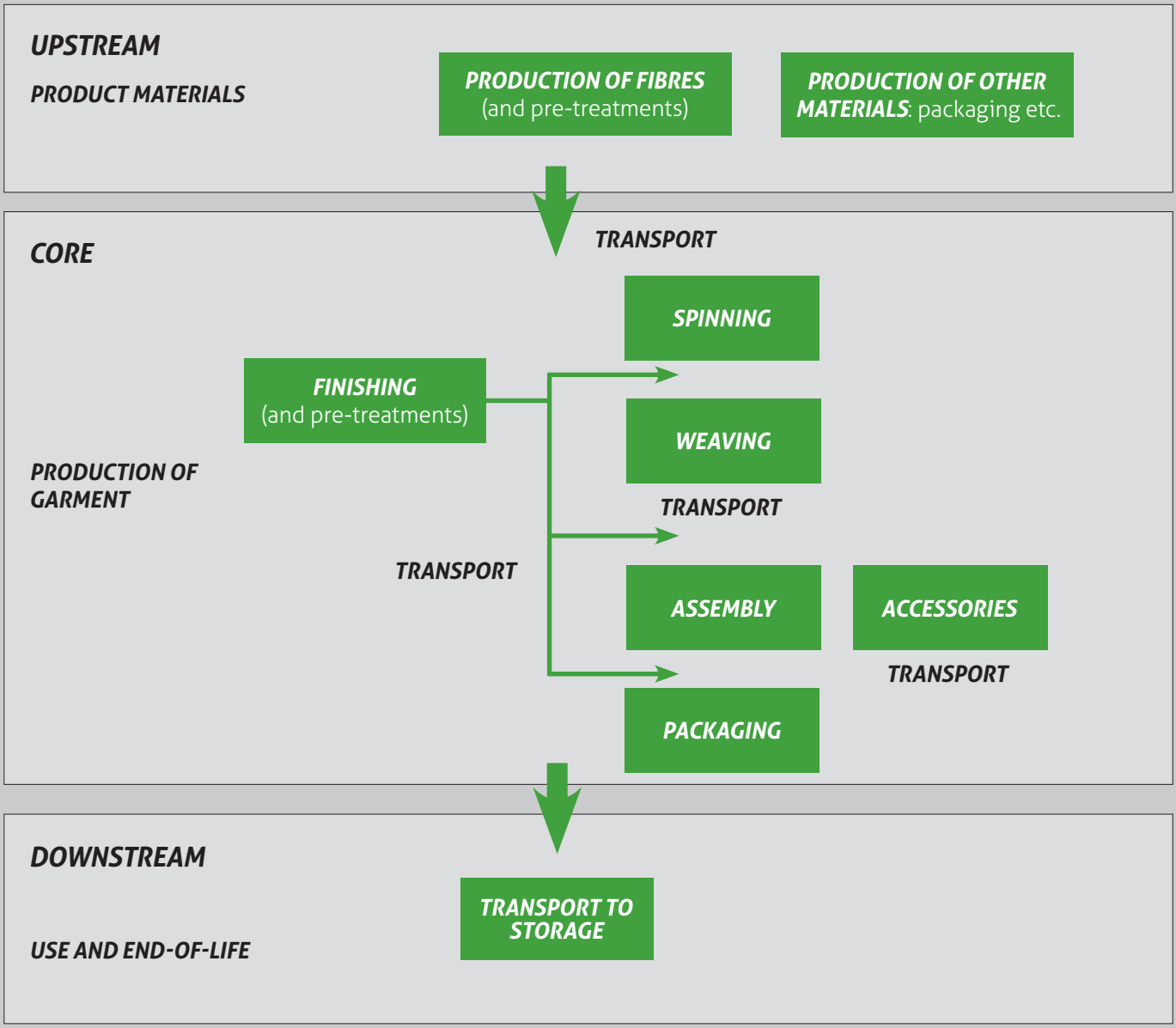


Figure 1. The system boundaries include upstream, core and downstream processes.

CONTENT DECLARATION

GREEN CRAFTSMAN JACKET 4538 GRN

MATERIALS	UNIT	%	ENVIRONMENTAL / HAZARDOUS PROPERTIES
Main fabric 8615 mélange, dope dye		75%	65% recycled polyester, 35% cotton
Trims for pockets		11%	100% nylon
Trim fabric DMF002-2SDC		11%	100% polyester
Interlining		0.1%	100 % cotton
Thread polyester		0.2%	100% polyester
Care and size labels		2%	100% polyester
Paper trims		2%	100% paper

JACKET 4555 STFP

MATERIALS	UNIT	%	ENVIRONMENTAL / HAZARDOUS PROPERTIES
Main fabric		91%	65% polyester, 35% cotton
Trims for pockets		5%	100% nylon
Thread polyester		0.2%	100% polyester
Care and size labels		2%	100% polyester
Paper trims		2%	100% paper

PACKAGING

Distribution packaging: Cardboard box
Consumer packaging: Plastic bag (polyethylene)

RECYCLED MATERIAL

Provenience of recycled materials (pre-consumer or post-consumer) in the product:
The polyester in the GRN fabric is recycled post-consumer waste, certified via Global Recycle Standard (GRS).

ENVIRONMENTAL PERFORMANCE

The only downstream process included in the system boundary, the transport to the customer, was found to give a negligible contribution to the environmental impact (<1% for all categories). Therefore, the downstream phase is not reported separately.

POTENTIAL ENVIRONMENTAL IMPACT

PARAMETER		UNIT	JACKET	UPSTREAM	CORE	TOTAL
Global warming potential (GWP)	Fossil	kg CO_2 eq.	4538 GRN	6.41	10.58	17.37
			4555 STFP	4.61	9.03	13.91
	Biogenic	kg CO_2 eq.	4538 GRN	0.51	0.62	1.13
			4555 STFP	0.22	0.85	1.07
	Land use and land transformation	kg CO_2 eq.	4538 GRN	0.031	0.043	0.074
			4555 STFP	0.017	0.038	0.055
	TOTAL	kg CO_2 eq.	4538 GRN	6.95	11.24	18.57
			4555 STFP	4.85	9.92	15.03
Acidification potential (AP)		kg SO_2 eq.	4538 GRN	0.0266	0.0400	0.0723
			4555 STFP	0.0271	0.0342	0.0652
Eutrophication potential (EP)		kg PO_4^{3-} eq.	4538 GRN	0.0080	0.0209	0.0296
			4555 STFP	0.0094	0.0167	0.0266
Formation potential of tropospheric ozone (POCP)		kg C_2H_4 eq.	4538 GRN	0.0017	0.0015	0.0034
			4555 STFP	0.0010	0.0014	0.0025
Water scarcity potential		m^3 eq.	4538 GRN	3.01	4.35	7.40
			4555 STFP	38.36	4.26	42.65

USE OF RESOURCES

PARAMETER		UNIT	JACKET	UPSTREAM	CORE	TOTAL
Primary energy resources – Renewable	Use as energy carrier	MJ, net calorific value	4538 GRN	7.90	4.54	12.54
			4555 STFP	25.36	3.99	29.42
	Used as raw materials	MJ, net calorific value	4538 GRN	0	0	0
			4555 STFP	0	0	0
	TOTAL	MJ, net calorific value	4538 GRN	7.90	4.54	12.54
			4555 STFP	25.36	3.99	29.42
Primary energy resources – Non-renewable	Use as energy carrier	MJ, net calorific value	4538 GRN	110.08	176.68	292.61
			4555 STFP	92.36	142.02	238.48
	Used as raw materials	MJ, net calorific value	4538 GRN	9.94	0	9.94
			4555 STFP	27.37	0	27.37
	TOTAL	MJ, net calorific value	4538 GRN	135.81	185.76	327.64
			4555 STFP	170.45	150.00	324.69
Secondary material		kg	4538 GRN	0.81	0	0.81
			4555 STFP	0	0	0
Renewable secondary fuels		MJ, net calorific value	4538 GRN	0	0	0
			4555 STFP	0	0	0
Non-renewable secondary fuels		MJ, net calorific value	4538 GRN	0	0	0
			4555 STFP	0	0	0
Net use of fresh water		m^3	4538 GRN	0.080	0.057	0.137
			4555 STFP	35.86	0.068	35.93

PRODUCT CHARACTERISTICS

The product characteristics are presented in Table 2.

TABLE 2. PRODUCT CHARACTERISTICS

CHARACTERISTIC	TEST METHOD	RESULTS GRN	RESULTS STFP
COMPOSITION	Regulation EU No 1007/2011	65% polyester, 35% cotton	65% polyester, 35% cotton
WEAVE	ISO 3572	Panama	2/1 twill
MASS PER UNIT AREA	EN 12127	360 g/m^2	260 g/m^2
WIDTH	EN 1773	149 cm	145 cm
COLOUR INDEX			
ABRASION STRENGTH	ISO 12947-2	Over 50000 rubs	30000 rubs
TEAR STRENGTH	ISO 13937-2	Warp: 90 N Weft: 110 N	Warp: 35 N Weft: 30 N
TENSILE STRENGTH	ISO 13934-1	Warp: 1900 N Weft: 1600 N	Warp: 1200 N Weft: 650 N
SEAM SLIPPAGE	ISO 13936-2	Warp: 1% Weft: 1%	Warp: 2% Weft: 2%
PILLING TEST (MARTINDALE) AFTER 5000 RUBS	EN ISO 12945-2	2-3	3,5
DIMENSIONAL CHANGE TO WASHING	EN ISO 6330	Warp: -2,0% Weft: -1,0%	Warp: +/-2% Weft: +/-2%
	EN ISO 3759		
	EN ISO 5077		
PH OF WATER EXTRACT	EN ISO 3071	5,9	6
COLOUR FASTNESS TO ARTIFICIAL LIGHT: XENON ARC FADING LAMP TEST	EN ISO 105 B02	Above 4	4
COLOUR FASTNESS TO WASHING	EN ISO 105 C06	Color change: 4-5 Color staining: Acetate 4-5 Cotton 4-5 Nylon 4-5 Polyester 4-5 Acrylic 4-5 Viscose 4-5	Color change: 4 Color staining: Cotton 4 Nylon 2-3 Polyester 3
ACID AND ALKALINE PERSPIRATION	EN ISO 105 E04	Alkaline and Acidic Color change: 4-5 Color staining: Acetate 4-5 Cotton 4-5 Nylon 4-5 Polyester 4-5 Acrylic 4-5 Viscose 4-5	Alkaline and Acidic Color change: 4 Color staining: Cotton 4 Nylon 3 Polyester 4
DRY AND WET RUBBING	EN ISO 105 X12	Dry: 4-5 Wet: 4-5	Dry: 4 Wet: 2-3

WASTE PRODUCTION AND OUTPUT FLOWS

WASTE PRODUCTION

PARAMETER	UNIT	JACKET	UPSTREAM	CORE	TOTAL
Hazardous waste disposed	kg	4538 GRN	0	0	0
		4555 STFP	0	0	0
Non-hazardous waste disposed	kg	4538 GRN	0.069	0.329	0.398
		4555 STFP	0.026	0.207	0.233
Radioactive waste disposed	kg	4538 GRN	0	0	0
		4555 STFP	0	0	0

The result tables shall only contain values or the letters "INA" (Indicator Not Assessed). It is not possible to specify INA for mandatory indicators. INA shall only be used for voluntary parameters that are not quantified because no data is available.

ADDITIONAL INFORMATION

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

The water savings (Water Scarcity Footprint) in Craftsman jacket GRN compared to Jacket 4555 STFP stems mainly from substituting cotton fibres (Upstream processes) and using dope dye technology (Core processes) which is illustrated in Figure 2. The Global Warming Potential of Craftsman jacket GRN and Jacket 4555 STFP are shown in Figure 3. The weight of the jackets are very different, the Craftsman jacket GRN has a weight of 1.0 kg and the Jacket 4555 STFP has a weight of 0.7 kg. The GWP is therefore also expressed per kg of garment.

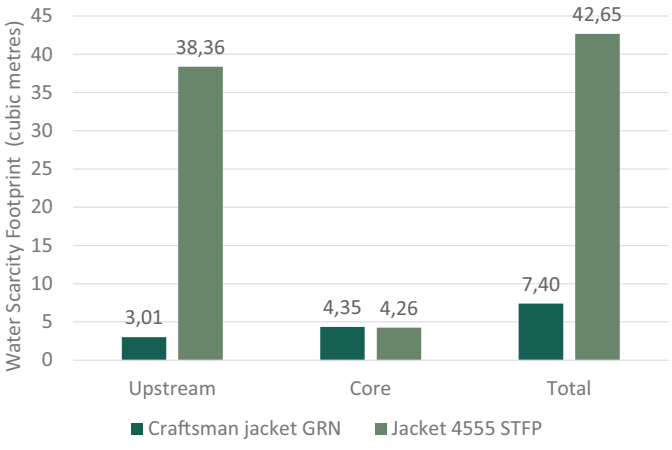


Figure 2. The Water Scarcity Footprint of Craftsman jacket GRN and Jacket 4555 STFP. Figures for one jacket.

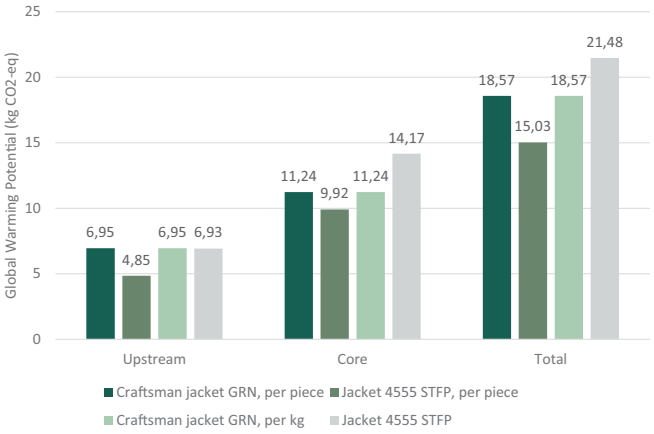


Figure 3. The Global Warming Potential of Craftsman jacket GRN and Jacket 4555 STFP. Figures per jacket and per kg of jacket.

FRISTADS GREEN COLLECTION

GARMENTS WITH CARE FOR THE FUTURE

Fristads Green is a new concept where the entire manufacturing chain is characterised by environmental awareness and innovative solutions to minimise the environmental footprint. First up is a collection for craftsmen.

The materials are recycled polyester and undyed cotton. The polyester is dyed using the e.dye® system where the colour is added to the raw material before it becomes yarn. This reduces water consumption by 75 % compared with traditional dyeing.

The garments are specially designed, featuring advanced folding that reduces sewing time and avoids unnecessary waste.

The garments have a clean design involving minimal details and smart solutions, which saves energy in production and facilitates recycling of the material.

We employ a "zero waste" approach – which means that we reuse all waste material from production. All surplus material is utilised on site and turned into "comfort pads" – a bonus product for elbows and knees.

In order to avoid the use of plastic bags, garments are folded using a special folding technique. This also means they take up less space, allowing us to make optimum use of transport capacity.

All transport is by sea and road, which has significantly less environmental impact than air transport.

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
EPD registration number:	S-P-01537
Published:	2019-03-18
Valid until:	2024-03-15
Product Category Rules:	PCR 2019:04. Jackets, Coats and Other Similar Outdoor Garments. Version 1.0
Product group classification:	UN CPC 282
Reference year for data:	2017-18
Geographical scope:	Global

Product category rules (PCR): Jackets, coats and other similar outdoor garments, PCR 2019:04, Version 1.0, 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: Marcus Wendin Miljögiraff AB Approved by: The International EPD® System
Procedure for follow-up of data during EPD validity involves third party verifier: ☐ Yes ☑ No

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