



Environmental Product Declaration

for **Darkness Dye** trousers
in accordance with ISO 14025

Programme:

The International EPD® System, www.environdec.com
EPD Turkey, www.epdturkey.org

Programme Operator:

EPD International AB & EPD Turkey

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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

EPD Registration Number: S-P-01800



THE INTERNATIONAL EPD® SYSTEM



ENVIRONMENTAL PRODUCT DECLARATIONS



EPD for 35-55% cotton & 10-15%
polyester & 35-55% viscose
jeans



01 PROGRAMME INFORMATION

Programme Operator

EPD International AB, Box 210 60, SE-100 31 Stockholm, Sweden
E-mail: info@environdec.com

Regional Office: EPD Turkey, Nef 09 B Blok 7/15 Kağıthane/ Istanbul, Turkey
www.epdturkey.org

Product Category Rules (PCR)

Trousers, shorts and slacks and similar garments
2019:06, version 1.01
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.
Chair of the PCR review: Hüdai Kara Contact via: info@environdec.com

Verification

Independent verification of the declaration and data, according to ISO 14025:2006:

☐ EPD process certification ☒ EPD verification

Third Party Verifier

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Accredited or approved by: The International EPD® System

Data Follow Up

Procedure for follow-up of data during EPD validity involves third party verifier:

☐ YES ☒ NO

LCA Study & EPD Design Conducted By

Semtrio Sustainability Consulting
AND Plaza No:10-12 Kozyatagi Istanbul/Turkey
www.semtrio.com

UN CPC Class: 2823

Owner of the Declaration: Martelli

Manufacturer: Sanko Tekstil İşletmeleri San. ve Tic. A.Ş. Martelli Şubesi
Organize Sanayi Bölgesi 3. Cadde No:13, İnegöl/Bursa, Turkey

Martelli has the sole ownership, liability and responsibility of this EPD. For further information about this EPD or its content, please contact Mr. Burak Can at bcan@martelli.com.tr

EPDs within the same product category but from different programmes may not be comparable.

A woman with blonde hair, wearing a black leather jacket, a grey sweater, blue jeans with rips, and brown boots, is walking on a sandy path. She has a brown backpack. To her left is a rustic wooden fence. In the background, the ocean and a cloudy sky are visible.

02

MARTELLI
WHERE COLLECTIONS
BECOME REALITY

DISCOVER MARTELLI

Martelli is an exclusive denim production, washing and finishing facility. Creating limited-edition sample runs for ISKO and exclusive collections for deluxe labels.

With a facility over 25 000 square meters and a team of over 300 research and development specialists, Martelli Turkey is capable to cover 30 000 pieces of denim in their laundry per month.

HISTORY

As a denim laundry with more than 50 years of experience, Martelli is known for its creativity and innovation in denim finishing and garment dyeing. In 2004 Martelli Turkey was established by a joint-venture between Martelli Group and ISKO. Over the years Martelli Turkey and Martelli Italy have worked closed and shared their knowledge to renovate and challenge itself to add value to the products and denim and the fashion world. Martelli Turkey is now operating as an exclusive denim laboratory for ISKO.





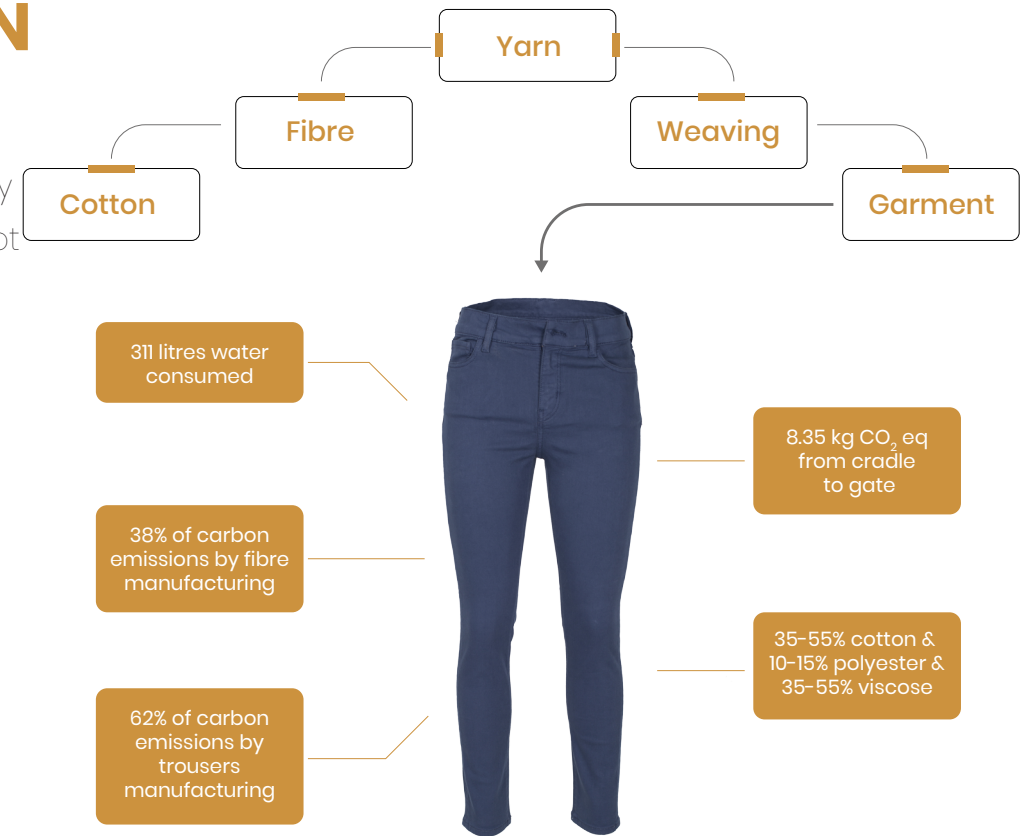
03 PRODUCT INFORMATION

PRODUCT INFORMATION

Darkness Dye is a darker dyeing prescription. This product group is the dyeing process of ready for dye (RFD) fabrics. Any desired color can be obtained. The dye chemicals used in the prescription comply with the standards. Chemicals do not contain formaldehyde, also not contain azo dyestuffs. Chemical and water consumption have been reduced.

Product Characteristics*	Test Method	Units
For woven materials: Abrasion Strength	EN ISO 12947-2	Over 20000 rubs
For woven materials: Tear Strength	ASTM D1424	Warp: 4158 kg Weft: 4470 kg
For woven materials: Tensile Strength	ASTM D5034	Warp: 40.6 kg Weft: 25.81 kg
Voluntary: For woven materials: Seam Slippage	ASTM D1683	7 kg (min)
pH of water extract	ISO 3071	7.2
Colour fastness to artificial light: Xenon arc fading lamp test	EN ISO 105 B02	6
Acid and Alkaline Perspiration	EN ISO 105 E04	4.5
Dry and Wet Rubbing	AATCC 8	Dry: 4.5 Wet: 2.0

Materials in the Product	% in the product	Material Composition	Compliance with REACH
Fabric	92.4%	35-55% Cotton 10-15% Polyester 35-55% Viscose	✓
Paper Labels	0.79%	100% Paper	✓
Metal Accessories	6.8%	100% Metal	✓



Chemicals used in Martelli manufacturing comply with the Regulation (EC) No 1907/2006 of the European parliament and of the council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).

Packaging: PE packaging film is used to cover the end products. Classified as Distribution Packaging: designed for the purposes of transport, handling and/or distribution.

**The functional unit does not take into account all technical, functional and aesthetic properties of the product. For comparability of products based on the same PCR, these aspects shall also be considered. Weave, Mass per unit area, Width are not disclosed due to being trade secrets.*



04 LIFE CYCLE ASSESSMENT

LIFE CYCLE ASSESSMENT

The International EPD® System has adopted an LCA calculations procedure, which is separated into three different life cycle stages:

- **Upstream module (from cradle-to-gate):** Harvesting of cotton, extraction of man-made fibres, production of yarns and production of fabric, extraction and production of the chemicals.
- **Core module, manufacturing processes (from gate-to-gate):** Transportation of raw materials to the core, manufacturing processes, impacts generated by fuel burned, impacts due to the electricity production and transport within the production plant.
- **Downstream Processes (from gate-to-grave):** Transportation from preparation to an average retailer. Use phase and end of life phase are excluded from the system boundary due to the aim of the EPD is to be used as B2B communication. The impacts of the downstream processes are negligible as being lower than 1% in the entire system boundary and not declared separately in the EPD.

Geographical scope of the EPD

Worldwide

Declared Unit

The declared unit is defined as 1 pair of trousers.

EPD Type (System Boundry)

Cradle-to-customer

Data Collection

Specific data (primary data) was used for the Core Module and gathered from the Martelli Manufacturing Plant. The only main material in the end product is fabric and LCA information has been provided by the fabric manufacturer and inserted into Simapro. Data represents the period from 1st January 2019 to 31st August 2019. For secondary data Ecoinvent v3.5 datasets were used. LCA was modelled in Simapro v9.0.0.31.

Allocation

No allocation conducted for input materials and energy consumption was collected specifically per declared unit.

Cut-Off Rules

Waste and wastewater generated from core presses have been excluded due to the cut-off rule. Impacts caused by treatment operations have been calculated lower than 1% environmental relevance. Transportation to core processes was found negligible <1% for all categories.

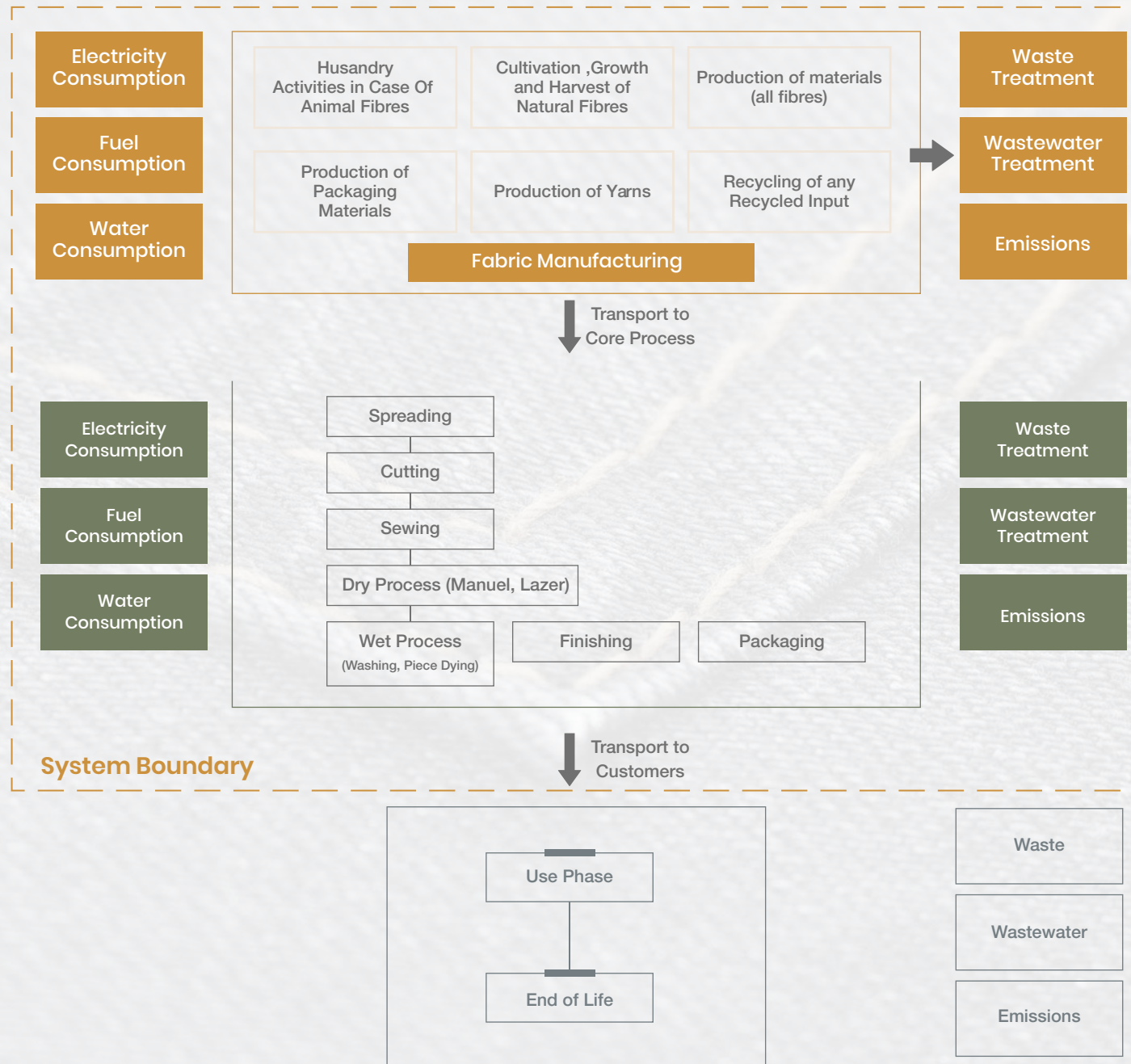
Calculation Methods

All resource use values are calculated from Cumulative Energy Demand V1.11 in Simapro outputs; net use of fresh water from Simapro Inventory results. Potential environmental impacts are calculated with the CML-IA baseline V 3.05, Acidification potential from CML non-baseline V 3.04, Formation potential of tropospheric ozone (POCP) from LOTOS-EUROS as applied in ReCiPe Midpoint (H) v 1.13 2008, methods in Simapro software.

UPSTREAM

CORE

DOWNSTREAM



A first-person perspective of a hiker's feet on a rocky trail. The hiker is wearing dark blue pants and light-colored sneakers. The trail is rocky and surrounded by dense green vegetation. A large white number '05' is overlaid on the left side, and the text 'ENVIRONMENTAL PERFORMANCE' is overlaid in white capital letters to its right.

05 ENVIRONMENTAL PERFORMANCE

Resource Use

Parameter		Unit	Upstream	Core	Total
Primary energy resources – Renewable	Use as energy carrier	MJ, net calorific value	16.31	4.60	20.91
	Used as raw materials	MJ, net calorific value	0.00	0.00	0.00
	TOTAL	MJ, net calorific value	16.31	4.60	20.91
Primary energy resources – Non-renewable	Use as energy carrier	MJ, net calorific value	49.0	73.8	122.8
	Used as raw materials	MJ, net calorific value	0	0	0
	TOTAL	MJ, net calorific value	48.98	73.8	122.8
Secondary material		kg	0	0	0
Renewable secondary fuels		MJ, net calorific value	0	0	0
Non-renewable secondary fuels		MJ, net calorific value	0	0	0
Net use of fresh water		m ³	0.622	0.311	0.933

Output Flows

Parameter	Unit	Upstream	Core	Total
Components for reuse	kg	-	0	-
Material for recycling	kg	-	0.042	0.042
Materials for energy recovery	kg	-	0	-
Exported energy, electricity	MJ	-	0	-
Exported energy, thermal	MJ	-	0	-

Environmental Impacts

Parameter	Unit	Upstream	Core	Total	
Global warming Potential (GWP100a)	Fossil	kg CO ₂ eq	3.20	5.15	8.35
	Biogenic	kg CO ₂ eq	0.280	0.189	0.469
	Land use and land transformation	kg CO ₂ eq	0.021	0.011	0.032
	Total	kg CO ₂ eq	3.50	5.35	8.9
Abiotic depletion (elements)		kg Sb eq	1.43E-05	1.76E-06	1.60E-05
Abiotic depletion (fossil fuels)		MJ	41.3	64.2	105
Photochemical oxidation		kg NMVOC eq	0.010	0.010	0.020
Acidification		kg SO ₂ eq	0.025	0.019	0.044
Eutrophication		kg PO ₄ ³⁻ eq	0.005	0.002	0.007
Water scarcity		m³ eq	21.5	6.615	28.1

Waste Production

Parameter	Unit	Upstream	Core	Total
Hazardous waste	kg	-	0.006	0.006
Non-hazardous waste	kg	-	0.008	0.008
Radioactive waste	kg	-	0.00	0.00

- ISO 14040: 2006 Environmental management | Life cycle assessment | Principles and framework
- ISO 14044: 2006 Environmental management | Life cycle assessment | Requirements and guidelines
- ISO 14025: 2006 Environmental labels and declarations | Type III environmental declarations | Principles and procedures
- The International EPD® System | www.environdec.com
- The International EPD® System | The General Programme Instructions v3.01
- The International EPD® System | Trousers, shorts and slacks and similar garments. 2019:06, version 1.01
- **Ecoinvent 3.5** | <http://www.ecoinvent.org>
- **SimaPro LCA Software** | <https://simapro.com>
- **Martelli Denim** | www.martellidenim.com
- **LCA Report for Martelli Denim**

Third Party Verifier

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