Environmental Product Declaration

ISKO™

for ISKO26621 and ISKO26622 Preliminary denim fabric

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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EPD® THE INTERNATIONAL EPD® SYSTEM

TURKEY EPD® ENVIRONMENTAL PRODUCT DECLARATIONS

Programme Information

This EPD covers the following product group: ISKO26621 Preliminary, ISKO26622 Preliminary in accordance with ISO 14025.

CPC Code: 26620, Woven fabrics of cotton, containing 85% or more by weight of cotton, weighing more than 200 g/m2

Owner of the Declaration: ISKO™

Manufacturer: ISKO Division, Sanko Tekstil Isletmeleri San. ve Tic. A.S. Organize Sanayi Bölgesi 3.Cadde 16400 Inegol / Bursa / Turkey

ISKO™ has the sole ownership, liability and responsibility of this EPD. For further information about this EPD or its content, please contact Mrs Ebru Ozkucuk Guler at sustainability@isko.com.tr.

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

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)	Woven Knitted and Crocheted Fabrics of Naturals Fibres (Except Silk), for Apparel Sector 2018:08, version 1.01 UN CPC 265 (except 2651), UN CPC 266, UN CPC 281
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: Barbara Nebel 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	Vladimír Kočí, PhD Šárecká 5, 16000 Prague 6, Czech Republic www.lcastudio.cz Approved by: The International EPD® System Technical Committee, supported by the Secretariat
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

ISKO: The Denim Language

THE WORLD'S LEADING INGREDIENT BRAND IN QUALITY DENIM MANUFACTURING; FROM PRODUCTION TO CONCEPT

ISKO™ is part of SANKO TEKSTIL, the textiles division of SANKO Group. The multinational corporation is active in a wide range of sectors, from construction and energy to packaging, financial services, health care and education. Privately owned by the Konukoglu family, SANKO Group is one of Turkey's largest conglomerates. SANKO Group is a major investor in renewable energy and environmental protection, including hydroelectric and wind power plants.

Woven into everything we do, this ethos has made ISKO™ the world's number one producer of premium quality denim. It's a philosophy that constantly drives us to bring innovative textile concepts to market, creating exciting possibilities at the cutting edge of fashion for customers worldwide. While we use sustainable materials as well as improve water and energy use, our primary focus is always people. We value our employees, ensuring equal opportunities for all. We also believe that a company only truly fulfills its mission if it improves the life of the communities it works in. We want our success to extend itself into the homes of thousands.

INNOVATION SINCE 1904

ISKO™'s route to textiles began in 1904 and in 1989 we opened our 300,000 m2 manufacturing plant, making ISKO™ the world's largest denim manufacturer under one roof. With 1,500 high-tech automated looms, global distribution of employees and production capacity of 250 million meters of fabric per year, our portfolio includes more than 25,000 products.

ISKO™ sales are rapidly expanding globally, including a strong presence in 30 countries and an international network of textile technologists, design experts and retail specialists. ISKO™ brands and fabrics deliver unbeatable value and competitive difference for our customers in every niche of the denim market, protecting our customers with our patents and trademarks.

ISKO™ Research&Development

Our team continually designs and develops exceptional innovations that have been patented worldwide to certify ISKO™ intellectual property. As a proven assurance of product integrity, ISKO™ patents and trademarks guarantee flawless quality and uncompromising performance every time.

From spinning to finishing, every stage of production is state of the art. With industry-leading expertise in complex fabrics, we offer infinite opportunities for fashion designers and our brand partners to stay a step ahead of the market, interpret upcoming trends and bring their creative visions to life.

ISKOTECA™, San Benedetto del Tronto, Italy – a specialist research resource with a complete product library including a display of every single one of the 25,000 ISKO™ concepts.

Advanced textile technology, tailored by experts

New product development at ISKO™ reflects a constant flow of inspiration and ideas that shape denim culture. This rich fusion of diverse influences is supported by our three dedicated think-tanks – strategic centres of design excellence focused on key aspects of denim lifestyle plus the latest trends, technologies and treatments from the world's fashion hotspots.

Product Innovation

ISKO Reform™ technology eliminates the need to frequently wash the jeans for shape retention reducing water and chemical detergent consumption during home laundry. ISKO POP™'s yarn process enables garment manufacturers to less use chemical softeners and to produce less environmental footprint. Regarding to the future for environmental sustainability, ISKO Cottonized™ employs regenerated cellulosic fibers such as Tencel® and Rayon to produce "cotton-less" denim fabric.

Social Sustanability by ISKO™

Off to work: Through SANKO's support, young people of Gambia were given training workshops on entrepreneurship, planning, marketing, budgeting, sales techniques and brand creation.
Planting Hope: Through non-government organization Sen de Gel, SANKO initiated "Planting Hope" project, focusing on women in small farming communities in Gambia.
Giving Hope: Pumping systems of 11 wells that serve 7978 people in Gambia and Senegal were repaired and clean water access was established for the local community.

Product Information

ISKO26621 - ISKO26622 Preliminary

ISKO™ denim is the primary ingredient of jeans. The company offers a product range going from stretched fabrics to authentic denim constructions, but all with advanced technical features. In our top-notch denim mill, ISKO™ develops unique textile concepts applying scientific expertise and research to deliver high-performance denim fabrics.

ISKO™'s premium technology guarantees day long comfort and freedom of movement, extreme softness to the feel and touch, all thanks to a range of ISKO™ patents ensuring the highest quality standards and a close attention to responsible innovation.

Technical Specifcations*

Physical Parameter Evaluated	Test Method	UOM	Unit	Actual Value 26621	Actual Value 26622
Dimensional Stab. to Washing	BS EN ISO 6330	Warp	%	-3.5	-3.5
		Weft	%	-13.5	-13.5
Stretch	BS EN 14704-1	Warp	Tolerance %	-	-
		Weft	Tolerance %	33	33
CF to Crocking	BS EN ISO 105: X12	Dry	Rating	4	4
		Wet	Rating	1.5	1.5
pH	ISO 3071	-	-	6.67	6.67
CF to Light	BS EN ISO 105: B02	-	Rating	6	6
Pilling Resistance	ISO 12945-2	-	Rating	5	5
CF to Water	BS EN ISO 105 : E01	Cotton	Rating	4/5	4/5
CF to Washing	BS EN ISO 105: C06	Cotton	Rating	4	4

**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. Thermal insulation properties are not relevant to disclose and weigth per unit is a confidential business information.*

Content Declaration

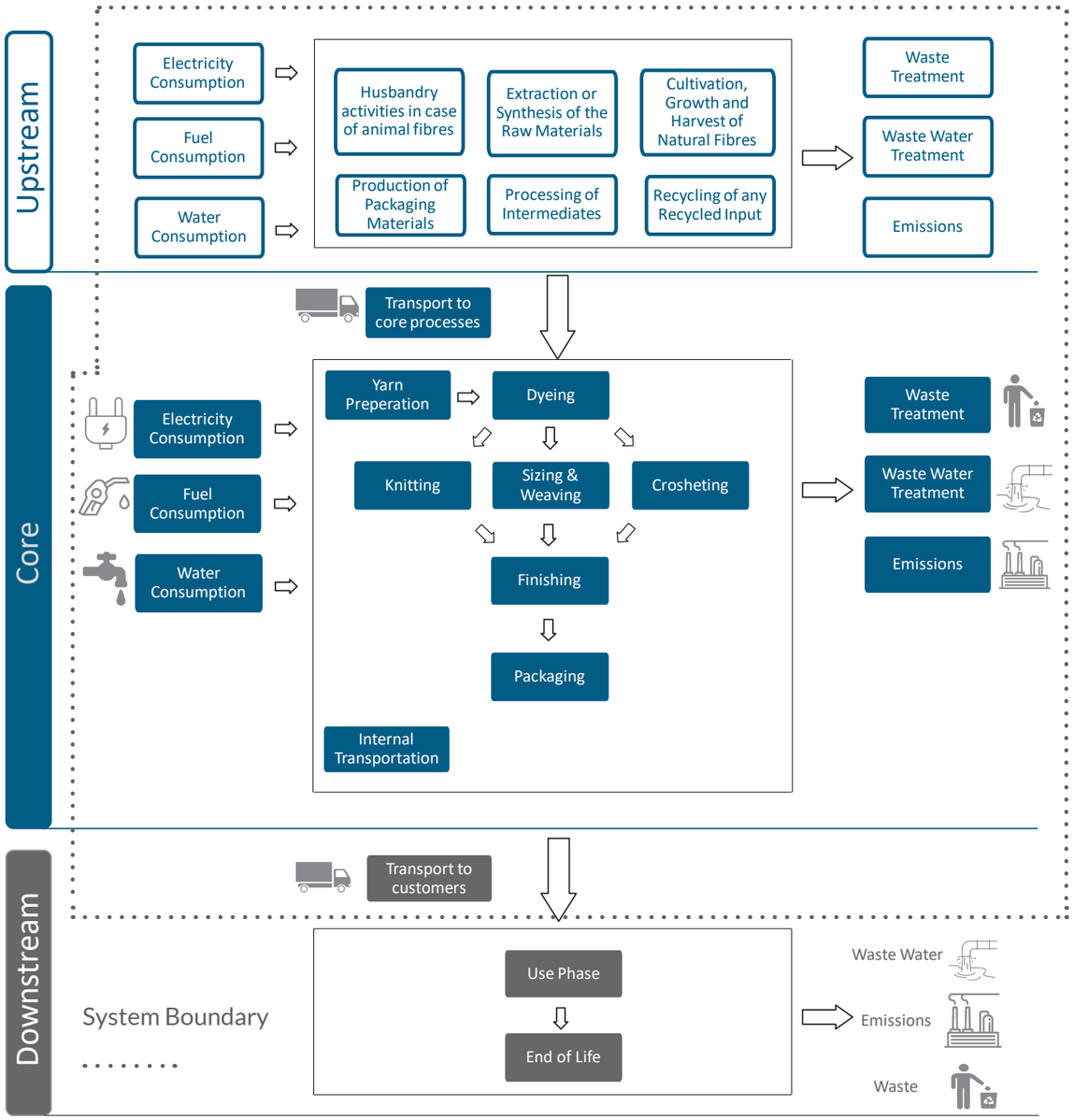
Concept	26621	26622
Materials	**Amount**	**Amount**
Cotton Fibre	> 85%	> 85%
Man-made Fibres	< 15%	< 15%
Chemicals	**Amount**	**Amount**
Sodium Hydroxide	35-50%	70-85%
Reducing Agent	< 10%	< 10%
Sizing Chemical	5-15%	< 10%
Other Organic Chemicals	10-20%	10-20%

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

Additional Information

- Chemicals used in ISKO™ 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).
- ISKO™'s products have been tested for harmful substances and are awarded to OEKO-TEX 100 Standard.
- ISKO™ is a member of SEDEX responsible sourcing over its supply chain.
- ISKO™ is the only denim mill in the world that was awarded with the prestigious Nordic SWAN Ecolabel and the EU Ecolabel for several articles within ISKO Earth Fit™ collection.
- ISKO™ achieved management systems of ISO14001, ISO 50001, ISO 9001 and OHSAS 18001.
- ISKO™ has been awarded to Organic Content Standard, Global Recycle Standard, and GOTS

System Diagram



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 man-made fibres, processing into warp and weft yarns, 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 with in the production plant.
- Downstream module (from gate-to-grave):Transportation from preparation to an average retailer.Use phase and end of life phase are excluded from the system boundary.

Geographical scope of the EPD	Worldwide
Functional Unit	1 square meter of denim fabric
EPD Type (System Boundary)	Cradle-to-gate with options (cradle-to-customer)
Data Collection	Specific data (primary data) was used for the Core Module and gathered from the ISKO™ Manufacturing Plant. The manufacturing data are monitored and recorded in ISKO data collection system specifically per unit of product. Data represents the period from 1st January 2018 to 31th October 2018. For secondary data Ecoinvent v3.4 datasets was used. LCA was modelled in SimaPro v8.5.2.
Allocation	No allocation conducted for input materials and energy consumption was collected specifically per functional unit.
Calculation Methods	Resource use values are calculated from Cumulative Energy Demand V1.10. Potential environmental impacts are calculated with the CML-IA baseline V 3.05, ReCiPe 2016 Midpoint (H) v 1.02, Greenhouse Gas Protocol V1.02 for GWP, USEtox 2 (recommended + interim) v.1.0; POCP from LOTOS-EUROS as applied in ReCiPe Midpoint (H) v 1.13, 2008 methods in SimaPro v 8.5.2.
Cut-off Rules	Cut-off rule of 1% regarding waste and wastewater treatment was applied. Regarding to material and chemical inputs, no cut-off rule has been applied.

More information regarding to ISKO™ and its products is available on www.isko.com.tr.

Environmental Performance

Resource Use for 1 sqm of ISKO26621 Preliminary

Resource Use						
Parameter		Unit	Upstream	Core	Downstream	Total
Primary energy resources – Renewable	Use as energy carrier	MJ, net calorific value	13.8	0.449	0.002	14.3
	Used as raw materials	MJ, net calorific value	0	0	0	0
	TOTAL	MJ, net calorific value	13.8	0.449	0.002	14.3
Primary energy resources – Nonrenewable	Use as energy carrier	MJ, net calorific value	20.9	7.9	0.131	29.0
	Used as raw materials	MJ, net calorific value	0	0	0	0
	TOTAL	MJ, net calorific value	20.90	7.9	0.131	29.0
Secondary material		kg	0	0	0	0
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	0.594	0.025	2.34E-05	0.619

Output Flows for 1 sqm of ISKO26621 Preliminary

Output Flows					
Parameter	Unit	Upstream	Core	Downstream	Total
Components for reuse	kg	-	0	-	0
Material for recycling	kg	-	0.009	-	0.009
Materials for energy recovery	kg	-	0	-	0
Exported energy, electricity	MJ	-	0	-	0
Exported energy, thermal	MJ	-	0	-	0

Potential Environmental Impacts for 1 sqm of ISKO26621 Preliminary

Environmental Impacts						
Parameter		Unit	Upstream	Core	Downstream	Total
Global warming Potential (GWP100a)	Fossil	kg CO_2 eq	1.55	0.574	0.008	2.13
	Biogenic	kg CO_2 eq	0.227	0.003	5.26E-05	0.230
	Land use and land transformation	kg CO_2 eq	0.007	0.002	3.29E-06	0.008
	Total	kg CO_2 eq	1.78	0.579	0.008	2.37
Ozone layer depletion (ODP)		kg CFC^{-11} eq	2.06E-07	3.58E-08	1.46E-09	2.43E-07
Abiotic depletion		kg Sb eq	5.93E-06	3.20E-07	2.96E-08	6.28E-06
Abiotic depletion (fossil fuels)		MJ	17.9	7.10	0.121	25.2
Photochemical oxidation		kg C_2H_4 eq	5.50E-03	1.55E-03	1.83E-05	0.007
Acidification		kg SO_2 eq	0.010	0.002	2.01E-05	0.012
Eutrophication		kg PO_4^{3-} eq	0.005	0.002	4.44E-06	0.007
Land use		m^2a crop eq	2.50	0.004	2.96E-04	2.50
Human toxicity, cancer		cases	8.66E-08	3.91E-08	2.82E-10	1.26E-07
Human toxicity, non-cancer		cases	4.25E-07	9.90E-08	1.16E-09	5.25E-07
Freshwater ecotoxicity		PAF.m^3.day	10172	3197	13.24	13382
Water Scarcity		m^3	0.413	0.011	1.05E-05	0.424
Carbon Uptake		kg CO^2 eq	1.283	0.002	5.62E-05	1.285

Waste Production for 1 sqm of ISKO26621 Preliminary

Waste Production					
Parameter	Unit	Upstream	Core	Downstream	Total
Hazardous waste	kg	-	2.38E-04	-	2.38E-04
Non-hazardous waste	kg	-	0.002	-	0.002
Radioactive waste	kg	-	0	-	0

Environmental Performance

Resource Use for 1 sqm of ISKO26622 Preliminary

Resource Use						
Parameter		Unit	Upstream	Core	Downstream	Total
Primary energy resources – Renewable	Use as energy carrier	MJ, net calorific value	20.3	1.209	0.003	21.5
	Used as raw materials	MJ, net calorific value	0	0	0	0
	TOTAL	MJ, net calorific value	20.3	1.209	0.003	21.5
Primary energy resources – Nonrenewable	Use as energy carrier	MJ, net calorific value	34.7	16.8	0.215	51.8
	Used as raw materials	MJ, net calorific value	0	0	0	0
	TOTAL	MJ, net calorific value	34.71	16.8	0.215	51.8
Secondary material		kg	0	0	0	0
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	0.866	0.030	3.84E-05	0.896

Output Flows for 1 sqm of ISKO26622 Preliminary

Output Flows					
Parameter	Unit	Upstream	Core	Downstream	Total
Components for reuse	kg	-	0	-	0
Material for recycling	kg	-	0.013	-	0.013
Materials for energy recovery	kg	-	0	-	0
Exported energy, electricity	MJ	-	0	-	0
Exported energy, thermal	MJ	-	0	-	0

Potential Environmental Impacts for 1 sqm of ISKO26622 Preliminary

Environmental Impacts						
Parameter		Unit	Upstream	Core	Downstream	Total
Global warming Potential (GWP100a)	Fossil	kg CO_2 eq	2.61	1.226	0.014	3.85
	Biogenic	kg CO_2 eq	0.334	0.008	8.63E-05	0.341
	Land use and land transformation	kg CO_2 eq	0.011	0.004	5.41E-06	0.015
	Total	kg CO_2 eq	2.95	1.238	0.014	4.20
Ozone layer depletion (ODP)		kg CFC^{-11} eq	3.89E-07	6.92E-08	2.40E-09	4.61E-07
Abiotic depletion		kg Sb eq	9.12E-06	5.37E-07	4.86E-08	9.71E-06
Abiotic depletion (fossil fuels)		MJ	29.8	15.05	0.199	45.0
Photochemical oxidation		kg C_2H_4 eq	8.81E-03	3.20E-03	3.01E-05	0.012
Acidification		kg SO_2 eq	0.017	0.005	3.30E-05	0.022
Eutrophication		kg PO_4^{3-} eq	0.009	0.003	7.28E-06	0.012
Land use		m^2a crop eq	3.60	0.008	4.86E-04	3.61
Human toxicity, cancer		cases	1.52E-07	8.14E-08	4.62E-10	2.34E-07
Human toxicity, non-cancer		cases	6.75E-07	2.02E-07	1.91E-09	8.79E-07
Freshwater ecotoxicity		PAF.m^3.day	18013	7540	21.72	25575
Water Scarcity		m^3	0.602	0.015	1.73E-05	0.617
Carbon Uptake		kg CO^2 eq	1.839	0.005	9.22E-05	1.844

Waste Production for 1 sqm of ISKO26622 Preliminary

Waste Production					
Parameter	Unit	Upstream	Core	Downstream	Total
Hazardous waste	kg	-	3.39E-04	-	3.39E-04
Non-hazardous waste	kg	-	0.003	-	0.003
Radioactive waste	kg	-	0	-	0

References

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 / http://www.environdec.com/tr/The-International-EPD-System/General-Programme-Instructions/

The International EPD® System / Woven Knitted and Crocheted Fabrics of Naturals Fibres (Except Silk), for Apparel Sector 2018:08, version 1.01

Ecoinvent 3.4 / http://www.ecoinvent.org/

SimaPro LCA Software / https://simapro.com/

ISKO™ / http://www.isko.com.tr/

LCA Report for ISKO™ Denim Fabrics

Van der Velden, N.M., Patel, M.T., Vogtlander, J.G., 2014 / LCA benchmarking study on textiles made of cotton, polyester, nylon, acryl, or elastane. / International Journal of Life Cycle Assessment 19, 331 - 356.

Environmental Improvement Potential of textiles (IMPRO Textiles) / https://publications.europa.eu/en/publication-detail/-/publication/f8d0def8-4fd5-4d84-a308-1dfa5cf2e823/language-en

Contact

Third party verifier:

Vladimír Kočí, PhD
Šárecká 5, 16000 Prague 6,
Czech Republic
www.lcastudio.cz

Accredited or approved by: The International EPD® System

Owner of the Declaration

ISKO Division
Sanko Tekstil Isletmeleri San. ve Tic. A.S.
Organize Sanayi Bölgesi 3.Cadde
16400 Inegol / Bursa / Turkey

LCA Author & EPD Design

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

More information about ISKO™'s approach to sustainability and its corporate social resposibility initiatives available via the CSR Team at sustainability@isko.com.tr

ISKO™

HEAD OFFICE
ISKO Division
Sanko Tekstil Isletmeleri San. ve Tic. A.S.
Organize Sanayi Bölgesi 3.Cadde
16400 Inegol / Bursa / Turkey

T: +90 224 280 77 00
F: +90 224 714 80 19
E: sustainability@isko.com.tr
E: eozkucuk@isko.com.tr