



AKU ———— EPD

ENVIRONMENTAL
PRODUCT DECLARATION

product

BELLAMONT PLUS



AKU

trekking & outdoor footwear

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Program

The International EPD® System

Program operator

EPD International AB

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August 24th, 2017

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03

Product Grouping Classification

UN CPC 2933

Geographical Coverage

Global

COMPANY

— AKU is an Italian industrial company of artisanal origin, specialised for over thirty years in the design and manufacturing of high quality mountain footwear.

Research related to new technology, design and production of high-end models from the AKU collection are concentrated in the manufacturing headquarters in Montebelluna, in the province of Treviso. A second location entirely dedicated to manufacturing is active in Cluj Napoca, in Romania, where parts of the AKU models are made.

— AKU's manufacturing methods are articulated in two different models: manual assembly of the soles and the shoe uppers, according to the traditional, artisanal footwear technique; sole and shoe upper assembly through direct injection of expanded polyurethane by a specific mechanised system.

— The production range is articulated in 7 lines that identify just as many usage and user functions: mountaineering, backpacking, trekking, multi-terrain, hunting, hiking footwear for children, and city wear. All categories of AKU products are distributed worldwide in over 30 markets.



SOCIAL AND ENVIRONMENTAL INITIATIVES

— RESTORATION OF GRAZING AND PASTURE LAND

(Partner: Laboratorio Sagron Mis, TN - IT).

Environmental protection for the restoration of a grazing and pasture land damaged by a landslide in the area of Sagron Mis, in the dolomites territory. The project was carried out in the light of a special day organised by the community association Laboratorio Sagron Mis, with the involvement of the local community.

— TRAIL ADOPTION: LAGHETTI DI COLBRICON

(Partner: Paneveggio Pale Nature Park of San Martino, TN - IT).

Environmental protection carried out in cooperation with the Paneveggio Pale Nature Park of San Martino for the maintenance of a hiking trail threatened by erosion and a massive amount of tourists.

— PROTECTING ICE MEMORY (Partner: IDPA CNR Venice University)

Support for a scientific research project for the safeguarding of the information contained in the ice, endangered due to melting. The project is made up of: the collection of glacial ice cap samples in the Alps and other sites suffering from global warming; storage of the samples in a subglacial deposit in the Antarctic for future analysis activity.

— HIKING WITH DONKEYS FOR CHILDREN AND FAMILIES

(Partner: Cammina con i Gufi, BL - IT)

A social awareness and cultural promotion project, for activities connected to nature. The project is made up of the organization of daily excursions for families in a mountain valley, accompanied by a couple of donkeys to stimulate contact between the child and the animal for education and recreation.



Questo sentiero è stato adottato da
AKU trekking&outdoor footwear
che contribuisce al suo mantenimento.



THE PLUS COLLECTION

— The PLUS line was born from AKU's dedication to research and development of new product solutions. The line is made up of a group of high quality models for light trekking, travel and urban use, inspired by traditional mountain footwear and made with materials and a classic artisanal technique directed towards minimizing the manufacturing cycle's environmental impact.

— **The Bellamont Plus model**, object of the EPD single product study, belongs to this line of products and is made in the manufacturing site in Cluj Napoca, Romania.



BELLAMONT PLUS

— An exclusive and high quality shoe, suitable for urban or active free time use. The leather tanning is carried out without the use of chromium. The leather in the internal lining - Zero Impact® - is tanned without the use of heavy metals, the outsole and midsole contain recycled material from rubber, the laces are in natural cotton, and the insole is made of coconut fibre and bamboo.

— The origin of the materials used in the making of the footwear is for the most part European. The upper and the sole are made in the AKU factory in Cluj Napoca in Romania. The manufacturing characteristics of the BELLAMONT PLUS, offered in a low-cut model, are to be found in the outdoor inspired daily wear category.

— DECLARED UNIT (U.D.): The results declared refer to 1 pair of shoes, the Bellamont Plus low cut model, including primary packaging.

Other environmental information

Average estimated life: *3.5 years*

Usage: *travel, free time in contact with nature*

Care and maintenance during use: *treatment with AKU waterproofing cream.*

Certifications: *ISO 9001 for the Cluj Napoca location – Romania.*

ISO 9001 and ISO 14001 for the Montebelluna location – Italy

Average distance travelled by product: *1,846 km from the factory to the point of sale.*

The composition of the materials found in the Bellamont Plus low cut model and its packaging is found in the chart hereunder.

DESCRIPTION	NET WEIGHT IN GRAMS/U.D.
Leather for shoe upper	169,6
External leather collar	25,2
Internal leather lining	74,8
Cloth foot lining	10,0
Polyester/polyamide reinforcement	20,0
Polyester padding	13,6
Leather tag	2,4
"Pre-Sewing" glue	13,8
Polyamide yarn	0,2
Internal reinforcement Point + Heel	24,0
Cotton laces	26,80
External rubber protection	57,60
Cushioning insert in microporous material (IMS)	14,00
Polypropylene inserts	84,40
Rubber outsole	206,8
Microporous midsoles	102
Footbed in natural fibre	114,80
Packaging in cardboard	293,60
Descriptive paper pendants	6,00
Assembly glue	36,0
TOTAL	1.295,80



The security threads and the stretch film used in the finishing phase, and the tape used in the cutting and sewing phase of the shoe have been excluded from the above because they are under the cut-off limit.

The degree to which the sum of the weight of the single components may vary for the finished product is due to the artisanal characteristics of the product.

The amount of polluting substances present in the products' leather is subject to study and reported in the following two charts:

CHROMIUM CONTENT [%]	ALUMINIUM CONTENT [%]	TITANIUM CONTENT [%]	ZIRCONIUM OXIDE CONTENT [%]	IRON CONTENT [%]	UoM
0,012	0,064	<0,010	<0,010	0,027	±14,1%
According to the regulation EN 15987:2015, leather devoid of chromium is defined as content in tanned leather less than or equal to 0.1% of the weight of dry leather. According to the regulation EN 15987:2015, leather devoid of heavy metals is defined as leather in which the metal content (Cr, Al, Ti, Zr, Fe) in tanned leather is less than or equal to 0.1% of the weight of dry leather.					

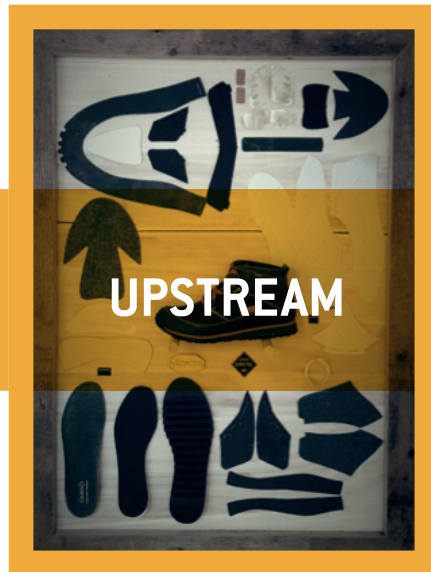
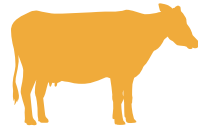
The determination of the content in PFOS and PFOA has been obtained by a SATRA method of calculation.

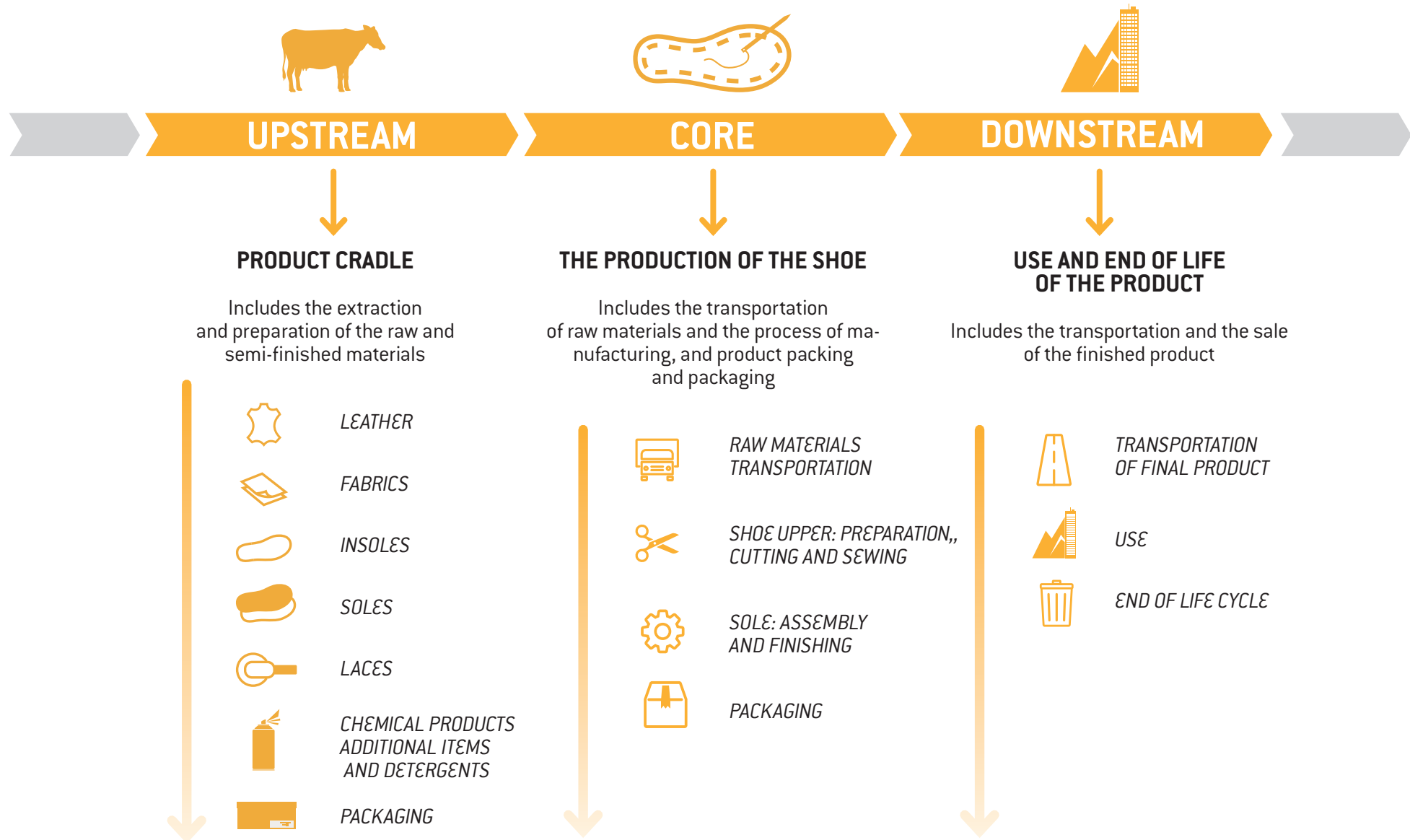
The product subject to this study does not present dangerous substances as per the REACH regulation.

	PFOS	PFOA	PASS/FAIL
Data identified	not detected (<1 µg/m ²)	2 µg/m ²	PASS
Limit	<1 µg/m ²	< 0,1% (1000 mg/kg) for the mass of the item	-

Laboratory analyses carried out by SATRA-UK

LIFE CYCLE





SHOE UPPER: PREPARATION, CUTTING AND SEWING

— This is the shoe upper preparation phase, meaning the upper part of the shoe, that which will then be joined to the sole.

Based on the type of shoe, the destination of use and the designer's intended style, the next step is the cutting, the preparation and the assembly of the shoe upper's materials, to its external and internal parts, taking care to create perfect compatibility with all elements. When considering mountaineering footwear, like for other sports, the cutting and sewing are particularly delicate phases of the construction process. This is due to the fact that the correct combination of the various elements of the shoe upper, like for example the leather and the fabric, are critical to the shoe being waterproof, breathable and its ability to regulate heat.



SOLE: ASSEMBLY AND FINISHING

— In the traditional artisanal construction method the assembly calls for manual assembly of the shoe upper and the sole through a gluing process. The finishing process consists of the potential milling of the sole to regulate its profile and the brushing of the shoe upper to remove potential glue residues deriving from the manufacturing phase.



PACKING

— The shoe packing consists of the use of a cardboard box and wrapping the product in tissue paper.



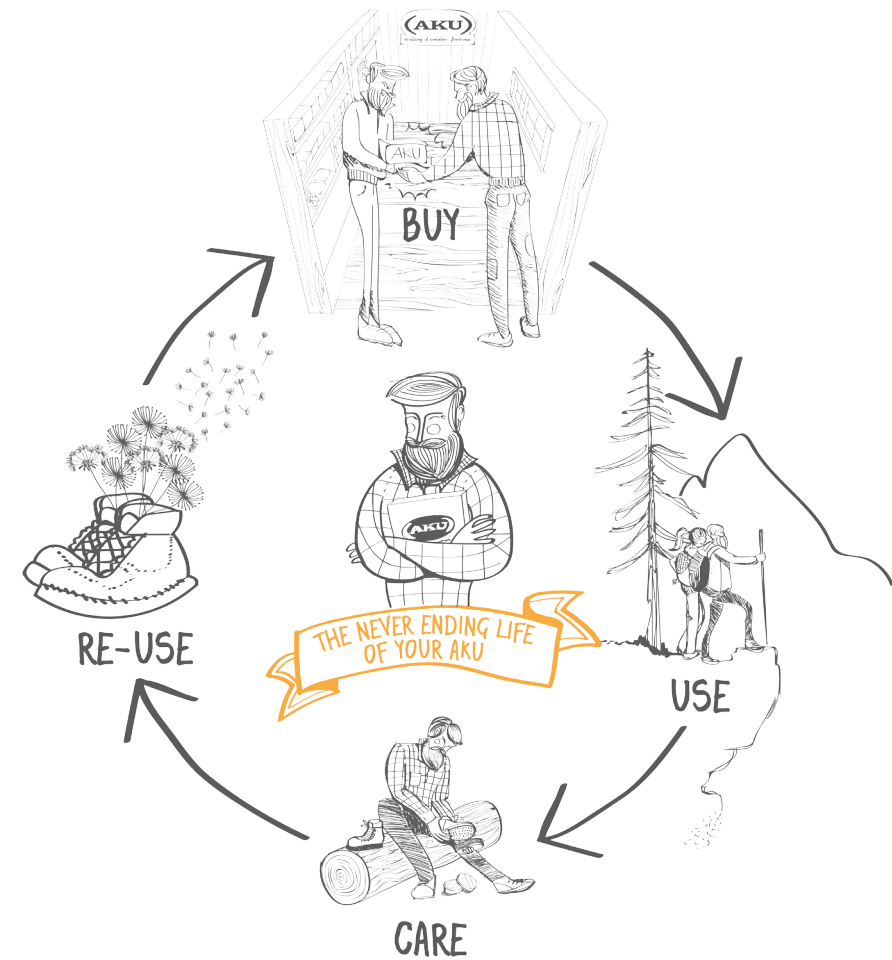
PRODUCT END-LIFE

— REUSING

Before throwing your shoes in the rubbish bin, consider using them for gardening activities, for small jobs in the bush or in all other situations where it's possible to use "worn out" shoes.

— DISPOSAL

Generally such shoes are to be disposed of in the dry solid waste section of the urban waste system. They must be disposed of in the designated spaces and with the procedure foreseen by local regulation.



DATA

— The quantification of the impact and the subsequent EPD communication have been developed in accordance with the regulation UNI EN ISO 14044:2006 on LCA, GPI 2,5 and at PCR for leather shoes PCR 2013:15, UN CPC 2933, “Leather footwear” of THE INTERNATIONAL EPD® SYSTEM.

— The Bellamont Plus model, size 42, including the packaging, has a total weight of 1.275kg, of which 0.932 kg is of the pair of shoes.

— This LCA study is a “cradle-to-grave” study and therefore considers all of the phases of the life cycle from the extraction of the necessary raw materials to the manufacturing and the disposal at the end of the product’s life cycle.

— As foreseen by the PCR, on which this study is based, the life cycle, and by consequence its parameters, are divided into three main modules: the upstream, the core and the downstream. The upstream module is composed of the processes related to the extraction of the raw materials used for the manufacturing of the various components of the pair of shoes and related packaging, including additional raw materials, and the raw materials making up the primary and secondary packaging of the incoming raw materials.

The core module is composed of the transportation of the raw materials to the AKU factory, the energy and water consumption of the building, the waste produced and the emissions released in the air.

The downstream module is composed of the transportation of the finished product from the manufacturing site to the distribution centers, the actual use of the shoes and their maintenance, and the end of life cycle phase of the pair of shoes including its primary and secondary packaging.

— As per the PCR cut-off rule, the following have been omitted:

- various types of tape used in the cutting and sewing phases of the shoe, the security threads and the extendable film used in the finishing phase of the shoe (making up a total of 0.01% of the incoming flow of materials);
- the factory’s additional consumable materials (making up a total of 0.6% of the incoming flow of materials).

— Other than the inclusion of the listed inputs and outputs, the following assumptions relate to the core module:

- the building of the manufacturing machines, structures and other tools used are not included.
- the following were not included: the various employee business trips, employee transfers in order to reach the place of work and the research and development activities.

— In this study two different end of life cycle scenarios were considered for the shoes and the packaging.

For the first, it is difficult to develop a scenario that applies worldwide, as the differences related to shoe disposal are wide-ranging. Nonetheless, given the characteristics of the product, all options related to reuse were excluded. Instead the German situation was used as a reference scenario, since Germany is the main market for this shoe (approximately 60%). Eurostat data indicates that approximately 60% of the solid urban waste disposed of in Germany is sent to waste centers, while the rest is incinerated.

For the primary and secondary packaging the scenario chosen is for global disposal/reuse, in coherence with the market of distribution.

Specifically, it was discovered that the rate of international paper and cardboard recycling is 57%, according to a Pulp & Paper International (PPI) article based on the RISI data from 2012.

The article foresaw that from 2012 to 2016 there would have surely been an increase in the rate of recycling, however to be cautious we chose to keep the figures indicated in the article.

— With regards to the data and requirements for quality the following specific data were collected:

- quantity of raw materials for the Bellamont Plus product, the primary and secondary packaging, as well as the additional materials;
- distance travelled by the manufacturers of the raw materials to the AKU factory;
- water and electric consumption;
- amount of waste generated;
- distance travelled from AKU to the distribution platforms;

- quantity of cream to be used in the phase of use and maintenance of the product.

— The study and the related data refer to 2015 in its entirety. The selected generic data and the unselected generic data from the database refer to the last 5 years. The limit permitted by the PCR to be used in the study, a maximum 10% generic data (not selected), has been respected for all of the categories of impact. The Ecoinvent database, version 3.3 “Allocation recycled content”, found in the software for LCA, SIMAPRO 8.3.0.0 was used, which is the version most in line with the PCR principles, as well as the Agrifootprint version 2.0.

POTENTIAL ENVIRONMENTAL IMPACT

— The data related to the potential environmental impact are reported in the following chart by declared unit and divided between upstream, core and downstream modules.

U.D.: one pair of Bellamont Plus low cut, primary packaging included.

Chart: Quantification of environmental impact

IMPACT CATEGORY	TOTAL	UPSTREAM	CORE	DOWNSTREAM
Acidification (kg SO ₂ eq.)	3,69E-01	3,48E-01	1,79E-02	3,53E-03
Eutrophication (kg PO ₄ ³⁻ eq.)	1,61E-01	1,45E-01	1,51E-02	8,16E-04
Greenhouse effect-GWP ₁₀₀ (kg CO ₂ eq.)	28,86	24,39	3,85	0,63
Photochemical oxidation (kg C ₂ H ₄ eq.)	7,63E-03	6,73E-03	7,68E-04	1,33E-04
Ozone layer depletion (kg CFC-11 eq.)	4,31E-06	3,85E-06	3,58E-07	1,05E-07

RESOURCE USE

— Material and energy resource consumption, as well as that of electricity and hydro power are reported in the chart by declared unit, and divided into upstream, core and downstream modules.

U.D.: one pair of Bellamont Plus low cut, primary packaging included.

Chart: Consumption of material and energy resources

ENVIRONMENTAL INDICATOR		UNIT	TOTAL	UPSTREAM	CORE	DOWNSTREAM
NON RENEWABLE RESOURCES	MATERIALS (of which)	kg	5,55	4,49	0,59	0,48
	Inert Rock	kg	1,74	1,74	0,00	0,00
	Gravel	kg	1,68	0,74	0,50	0,44
	Phosphorus	kg	0,64	0,64	9,20E-06	7,06E-05
	Calcium carbonate	kg	0,31	0,31	0,00	0,00
	Sodium chloride	kg	0,34	0,34	9,40E-04	1,93E-03
	Calcite	kg	0,15	0,09	0,04	0,01
	Petroleum (feedstock)	kg	0,03	0,03	0,00	0,00
	Other	kg	0,69	0,62	0,04	0,03
	ENERGY (of which)	kg	7,39	4,55	2,63	0,22
	Petrol	kg	2,26	1,76	0,32	0,18
	Natural Gas	kg	1,67	1,33	0,33	0,00
	Coal	kg	3,40	1,38	1,98	0,04
	Peat	kg	0,08	7,56E-02	5,96E-04	1,02E-04
	Uranium	kg	6,26E-05	3,90E-05	2,34E-05	3,00E-07

U.D.: one pair of Bellamont Plus low cut, primary packaging included. Chart: Consumption of material and energy resources

ENVIRONMENTAL INDICATOR		UNIT	TOTAL	UPSTREAM	CORE	DOWNSTREAM
RENEWABLE RESOURCE	MATERIALS (of which)	kg	0,94	0,90	0,03	0,01
	Wood	kg	0,94	0,90	0,03	0,01
	ENERGY (of which)	MJ	9,42	5,43	3,92	0,07
	Hydro	MJ	6,96	3,73	3,17	0,06
	Biomass	MJ	8,53E-08	8,53E-08	0,00E+00	0,00E+00
	Wind Power	MJ	1,42	0,68	0,74	0,01
	Geothermal	MJ	0,97	0,97	4,18E-03	1,35E-03
	Solar	MJ	0,06	0,06	1,40E-03	2,82E-04
HYDRO CONSUMPTION	TOTAL	l	1.202,88	896,42	294,76	11,70
	(of which directed to CORE)	l	-	-	0,01	-
SECONDARY RESOURCES	MATERIALS (of which)	kg	125,86	125,86	-	-
	Recycled rubber/microporous material (pre-consumption)	kg	125,86	125,86	-	-
	Energy	kg	0	-	-	-
ENERGY FLOW RECOVERED		MJ	0	-	-	-

OTHER INDICATORS

— The waste production, divided into nonhazardous, hazardous and radioactive, is reported in the charts by unit declared, and divided into upstream, core and downstream modules.

WASTE PRODUCTION

ENVIRONMENTAL INDICATOR		UNIT	TOTAL	UPSTREAM	CORE	DOWNSTREAM
WASTE	Hazardous (of which in core)	kg	2,115	2,111	0,004	-
	CER 150110	kg	-	-	0,004	-
	CER 130110	kg	-	-	0,0003	-
	Unhazardous	kg	3,893	1,969	0,555	1,369
	Radioactive	kg	0,00	-	-	-
	TOTAL	kg	6,009	4,080	0,559	1,369
	Of which recycled	kg	3,348	3,050	0,049	0,249

OTHER ENVIRONMENTAL INDICATORS

ENVIRONMENTAL INDICATOR	UNIT	TOTAL	UPSTREAM	CORE	DOWNSTREAM
Chromium*	g	0,05	0,05	-	-
Formaldehyde	g	0,40	0,37	0,02	0,01
Atmospheric emissions NOx	g	0,29	0,29	-	-

NOTE

* According to the regulation EN 15987:2015, leather free of chromium is defined as chromium content in tanned leather of less than or equal to 0.1% of the weight of the dry leather.

ADDITIONAL INFORMATION

Declaration owner



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PCR 2013:15 "Leather footwear", UN CPC 2933,
version 2.0 del 27/07/2017

PCR review conducted by:

The Technical Committee of the International EPD[®] System. Contact information: info@environdec.com

Chair of the review:

Claudia Pena

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

- EPD process certification (Internal)
 EPD verification (External)

Third part verification



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

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