

Environmental Product Declaration



In accordance with ISO 14025:2006 and PCR 2022:04 Version 1.0.1.

Avertic® Dura

from

Engtex AB



Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
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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



General information

Programme information

Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
E-mail:	info@environdec.com

Accountabilities for PCR, LCA and independent, third-party verification
Product Category Rules (PCR)
Product Category Rules (PCR): Product Category Rules for Fabrics PCR 2022:04 Version 1.0.1.
PCR review was conducted by: <i>The Technical Committee of the International EPD® System. A full list of members available on www.environdec.com. Review chair: Gorka Benito. The review panel may be contacted via info@environdec.com</i>
Life Cycle Assessment (LCA)
LCA accountability: Katrin Molina-Besch, <i>Miljögraff AB</i>
Third-party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: <input checked="" type="checkbox"/> EPD verification by individual verifier
Third-party verifier: <i>Martyna Mikusinska, SWECO AB, and signature of the third-party verifier</i> >
Approved by: The International EPD® System
Procedure for follow-up of data during EPD validity involves third party verifier: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but registered in different EPD 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 declared/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. For further information about comparability, see ISO 14025.

Company information

Owner of the EPD: Engtex AB

Contact: Malin Andén, malin.anden@engtex.se

Description of the organisation:

The future of technical textiles

Functional textiles for specific purposes

Engtex is a leading developer and manufacturer of highly advanced technical textiles. In our brand-new production plant in Ulricehamn, Sweden we have one of the most modern machine parks in the industry. Every textile we manufacture has a functional purpose for products used in the automotive, military, building and infrastructure industry and more.

Our History

Engtex has a long history of textile production that started in the 1930:s.

Since then we have gone through being a normal textile producer to one of the market-leading manufacturer of warp-knitted technical textiles in Europe. Our worldwide reputation about our high-quality technical textiles spans over several different market sectors and enable us to deliver technical textiles globally. This we can do because of our most valuable asset; our employees. They have over the decades collected know-how and experience and shared it with next coming generations. We believe in treating all people fair and are always open for new ideas. No matter if it's an employee, supplier or a customer. This is the Engtex way.

The production process is certified according to :

ISO 9001, ISO 14001,



Name and location of production site(s): Engtex AB, Industrivägen 32, SE-523 90 Ulricehamn, Sweden

Product information

Product name: Avertic® Dura

Product description:

Avertic® textiles are used in protective work wear for chainsaw operators. The main function of Avertic® is to protect workers from injuries by chainsaw accidents. Another important function of the product is to provide comfort to workers combining reliable protection with breathability and freedom to move.

Figure 1 shows a picture of Avertic® Dura. Figure 2 below shows how Avertic fabrics are used in protective garments.

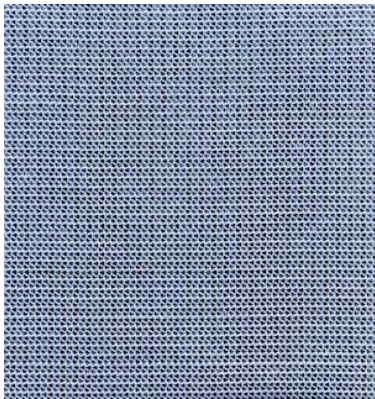


Figure 1: Picture of Avertic® Dura

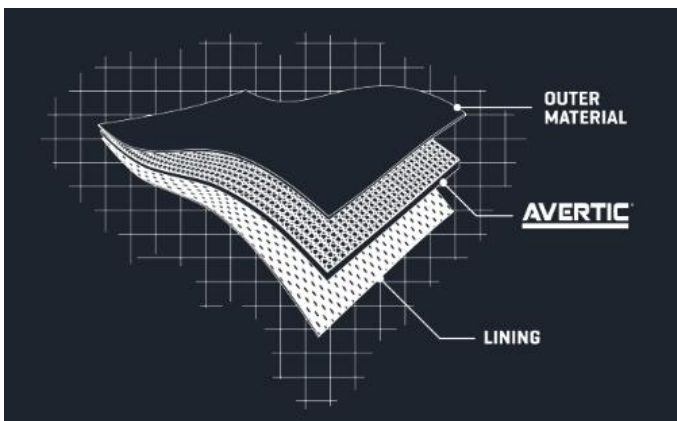
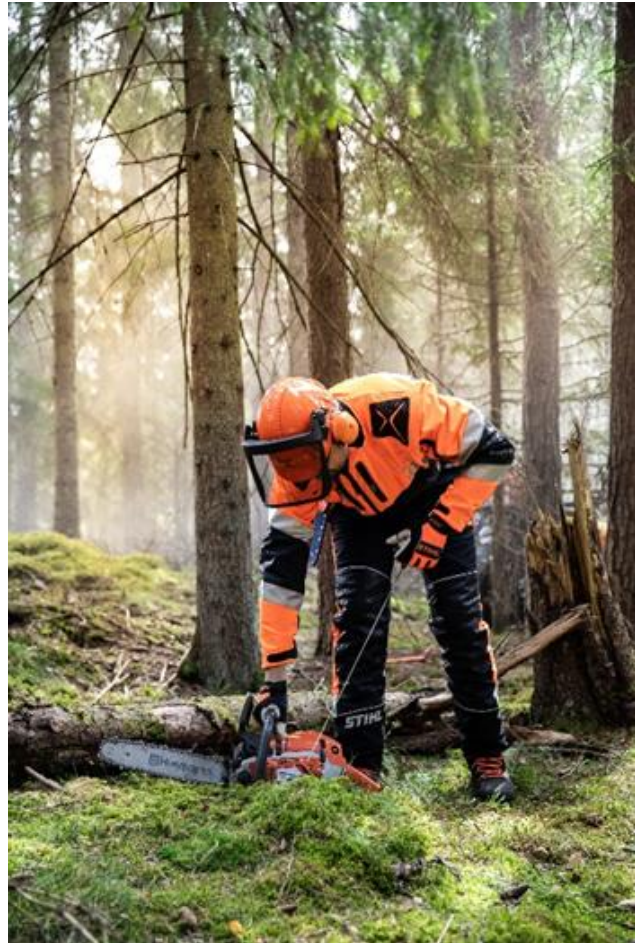


Figure 2: Avertic material as part of the structure in protective garments

The Avertic products are certified according to:

OEKO-TEX, standard 100, no 07-157,
Swerea IVF

OEKO-TEX®
CONFIDENCE IN TEXTILES
STANDARD 100
07-157 Swerea IVF

Tested for harmful substances.
www.oeko-tex.com/standard100

Product identification:

Avertic® Dura	
Construction:	Warp-knitted fabrics
End use:	Protective fabric for chainsaw operators
Technical Specifications	
Method:	ISO 11393/EN 381
Class:	1
Design:	A
Layers:	9*
Note:	*Number of layers is only a recommendation as other used materials and design of the garment has big influence on the test result. For best protection and comfort use our Avertic lining and outer fabric articles. Contact Engtex for more information.
Weight (g/m ²) ISO 3801	105+/-5
Threads/cm ISO 7211-2, warp	4,4
Threads/cm ISO 7211-2, weft	3,0
Thickness (mm) ISO 5084	0,7
Washing ISO 6330	60°C Drip dry
Shrinkage (%) ISO 5077	5%+/-1%, the construction of the garment can have influence on the shrinkage
Remark	If to be marked for tumble dry, the producers shall test the complete garment.
Product Certificate	Oeko-Tex
Process Certificate	Engtex management systems is certified according to ISO 9001 and ISO 14001

UN CPC code: Class 2819 - Other knitted or crocheted fabrics

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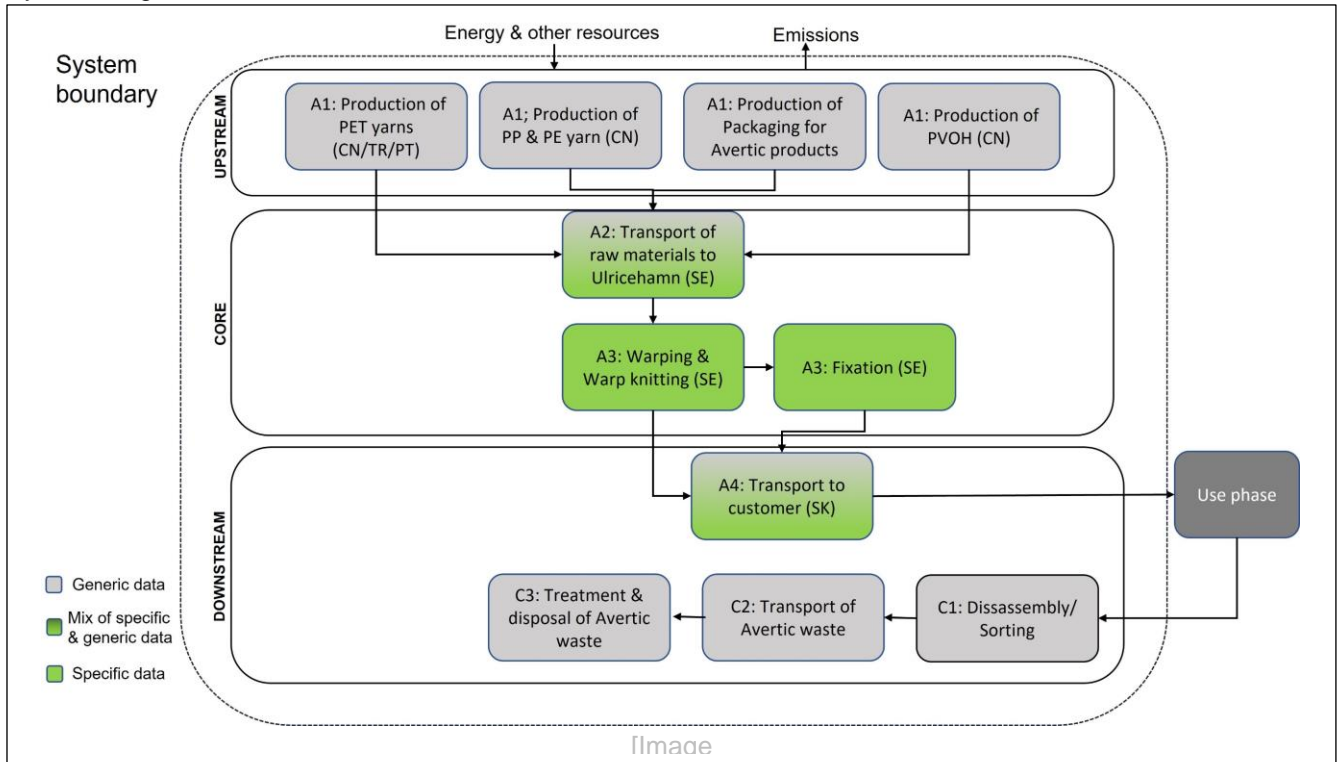
Geographical scope: A1 & A2: Global; A3: Sweden; A4, C1-C3: Global

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LCA information

Declared Unit	1 m² of Avertic® Dura
Reference service life	Since the use phase is not included, no reference service life has been defined.
Function	The main function of Avertic® Dura is to protect workers from injuries by chainsaw accidents. Another important function of the textiles is to provide comfort to workers.
Goal	The study's goal is to find metrics for the environmental impact of Avertic® textiles from a life cycle perspective.
Audience	The intended audience of the LCA is management and other employees of Engtex as well as existing and potential customers of the company.
Description of system boundaries	Cradle to gate with module C1–3 and optional modules (A1–3 + C1–3 and A4).
Manufacturing Site	Engtex AB, Ulricehamn, Sweden
Geographical Scope	A1 & A2: Global; A3: Sweden; C1-C3: Global
Scenario for module A4	The final products are transported by road (truck size 16-32 metric ton) to the main customer in Slovakia. The transport distance is 1467 km.
Product packaging	Production of product packaging is included in module A1 and end-of-life of product packaging is included in module A3.
Compliant with	This EPD follows the “Book-keeping“ LCA approach which is defined as attributional LCA in the ISO 14040 standard. In accordance with ISO14025, ISO 14040 – ISO 14044 and PCR 2022:04. This EPD follows the Product Category Rules PCR 2022:04 Version 1.0.1.
Cut-Off Rules	The following procedure is followed for the exclusion of inputs and output: - Data for elementary flows to and from the product system contributing to a minimum of 99% of the declared environmental impacts shall be included A screening and expert judgement showed that the following aspects contribute less than 1% and could be cut-off: -Packaging for PP and PE yarn (A1)
Background data	The data quality is considered fair. All site-specific data for raw materials, energy and waste from the manufacturing process are from 2021 and have been represented with Ecoinvent datasets. All other environmental aspects have been represented by generic Ecoinvent data. Ecoinvent is the world's biggest LCI (Life cycle inventory) data library and the latest and most updated version was used. Ecoinvent contains data for the specific geographical regions relevant for this study. The background data from Ecoinvent 3.8 are from 2003-2021.
Foreground data – primary	Weight and composition of Avertic® Dura, suppliers' location for transports and to regionalize generic raw material production data. Raw material packaging, product packaging, energy consumption (electricity & heat) and waste of manufacturing processes (A3). Location and transport mode of biggest customer.
Data quality declaration	- Time period for specific data in Core: August 2021 to July 2022 - System model of generic data: Allocation, cut-off by classification (Ecoinvent 3.8) - Percentage of specific data in upstream (GWP-GHG result): 28% - Percentage of selected generic data in upstream (GWP-GHG result): 72%
Electricity data	Electricity consumption in the A3 module is represented by Swedish residual mix (Grexel, 2021) modelled with data for national production in Ecoinvent 3.8 regionalized for Sweden.
Allocations	Polluter Pays / Allocation Cut-off by Classification One allocation rule is applied: electricity use and waste of manufacturing is allocated between all warp-knitted products based on product weight (kg).
Impact Assessment methods	Potential environmental impacts are calculated with Environmental Footprint 3.0 method as implemented in SimaPro 9.3. Resource use values are calculated from Cumulative Energy Demand V1.11.
Based on LCA Report	Miljögiraff LCA Report 1142b - (Miljögiraff, 2023)
Software	SimaPro 9.3

System diagram:



Modules declared, geographical scope and type of data used:

	Up-stream	Core		Downstream						
	Raw material supply	Transport	Manufacturing	Transportation of the fabric to customer	Further processing of the fabric	Transportation of the fabric to the use phase	Use of the fabric by the consumer	Disassembling / sorting	Transport to recovery/disposal	Final disposal
Module	A1	A2	A3	A4	A5	B1	B2	C1	C2	C3
Modules declared	X	X	X	X	ND	ND	ND	X	X	X
Geographic scope	GLO	GLO	SE	EU				GLO	GLO	GLO
Type of data used	G/S	G/S	S	G/S		-	-	G	G	G

Modules declared: (X = included; ND = not declared), geographical scope) EPD modules included (G = generic data, S = Specific data)

Content information

Product components	Weight
PET yarn	22%
PET yarn, texturized	23%
PP yarn	55%
TOTAL [kg/m ²]	0,105
Packaging materials (Distribution packaging)	Weight, kg/kg
Cardboard	0,015
Plastic film	0,003
Wooden pallet	0,040
TOTAL	0,059 kg

The product does not contain any dangerous substances from the candidate list of SVHC for Authorisation, in quantities that exceed the limits for registration with the European Chemicals Agency.

The cardboard part of the distribution packaging is made from 100% post-consumer material.

Environmental Information

Potential environmental impact – mandatory indicators according to PCR

Indicator	Unit	Results per declared unit [1 m ²]								Down-stream (A4-C3)
		Upstream A1	A2	A3	Core (A2-A3)	A4	C1	C2	C3	
GWP-fossil	kg CO ₂ eq.	4,66E-01	3,05E-02	1,86E-02	4,92E-02	2,64E-02	0	2,67E-03	9,44E-02	1,23E-01
GWP-biogenic	kg CO ₂ eq.	-9,08E-03	1,16E-05	1,38E-02	1,38E-02	2,27E-05	0	1,42E-06	6,25E-06	3,04E-05
GWP-luluc	kg CO ₂ eq.	6,56E-04	1,70E-05	2,77E-06	1,98E-05	1,04E-05	0	1,09E-06	7,68E-07	1,23E-05
GWP-total	kg CO ₂ eq.	4,58E-01	3,06E-02	3,05E-02	6,10E-02	2,64E-02	0	2,67E-03	9,45E-02	1,24E-01
ODP	kg CFC 11 eq.	3,71E-07	6,58E-09	2,73E-09	9,30E-09	6,15E-09	0	5,95E-10	2,07E-10	6,96E-09
AP	mol H ⁺ eq.	2,23E-03	5,47E-04	6,27E-05	6,10E-04	1,34E-04	0	1,81E-05	1,77E-05	1,70E-04
EP-freshwater	kg P eq.	1,53E-04	1,50E-06	1,15E-06	2,65E-06	1,71E-06	0	2,02E-07	1,90E-07	2,11E-06
EP-marine	kg N eq.	4,39E-04	1,38E-04	1,94E-05	1,58E-04	4,60E-05	0	6,95E-06	5,59E-05	1,09E-04
EP-terrestrial	mol N eq.	4,05E-03	1,53E-03	1,56E-04	1,69E-03	5,03E-04	0	7,60E-05	8,62E-05	6,65E-04
POCP	kg NMVOC eq.	1,94E-03	4,06E-04	4,34E-05	4,50E-04	1,44E-04	0	2,09E-05	2,24E-05	1,87E-04
ADP minerals & metals*	kg Sb eq.	2,10E-06	7,48E-08	3,38E-08	1,09E-07	9,25E-08	0	9,12E-09	4,32E-09	1,06E-07
ADP-fossil*	MJ	9,64E+00	4,27E-01	1,60E+00	2,03E+00	4,02E-01	0	3,97E-02	1,98E-02	4,62E-01
WDP*	m ³	1,45E-01	1,04E-03	1,81E-02	1,91E-02	1,20E-03	0	1,37E-04	4,06E-04	1,75E-03
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals & metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption									

**Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.*

Potential environmental impact – additional voluntary indicators

		Results per declared unit [1 m ²]								
Indicator	Unit	Upstream A1	A2	A3	Core (A2-A3)	A4	C1	C2	C3	Downstream (A4-C3)
PM	Disease incidence	2,24E-08	1,81E-09	8,69E-10	2,68E-09	2,35E-09	0	3,10E-10	1,46E-10	2,81E-09
IRP	kBq U235 eq.	1,43E-02	2,08E-03	1,05E-01	1,07E-01	2,07E-03	0	1,81E-04	6,49E-05	2,31E-03
ETP-FW	CTUe	7,90E+00	3,01E-01	3,20E-01	6,22E-01	3,14E-01	0	3,45E-02	3,74E-02	3,86E-01
HTP-C	CTUh	2,02E-10	1,49E-11	6,75E-12	2,17E-11	1,02E-11	0	2,32E-02	3,89E-12	2,32E-02
HTP-NC	CTUh	4,54E-09	2,69E-10	1,19E-10	3,88E-10	3,29E-10	0	4,02E-11	1,82E-10	5,52E-10
Land use	Pt	1,78E+00	1,88E-01	3,23E-02	2,21E-01	2,76E-01	0	2,68E-02	2,57E-02	3,29E-01
Acronyms	PM: Particulate Matter, IRP: Ionizing Radiation - Human Health, ETP-FW: Ecotoxicity Potential – Freshwater, HTP-C: Human Toxicity Potential – Cancer, HTP-NC: Human Toxicity Potential – Non-Cancer, Land use - SQP: Soil Quality Potential Index									

Disclaimers: The results of the environmental impact indicators for ETP-FW, HTP-C, and HTP-NC shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator. The impact category for IR deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

Use of resources

		Results per declared unit [1 m ²]								
Indicator	Unit	Upstream A1	A2	A3	Core (A2-A3)	A4	C1	C2	C3	Downstream (A4-C3)
PERE	MJ	4,57E-01	4,62E-03	2,49E-03	7,11E-03	5,67E-03	0	4,55E-04	4,00E-04	6,52E-03
PERM	MJ	1,09E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	5,66E-01	4,62E-03	2,49E-03	7,11E-03	5,67E-03	0	4,55E-04	4,00E-04	6,52E-03
PENRE	MJ	1,03E+01	4,54E-01	1,62E+00	2,07E+00	4,27E-01	0	4,22E-02	2,13E-02	4,90E-01
PENRM	MJ	3,26E+00	0,00E+00	1,36E-02	1,36E-02	0,00E+00	0	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	1,35E+01	4,54E-01	1,63E+00	2,09E+00	4,27E-01	0	4,22E-02	2,13E-02	4,90E-01
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources									

References

EPD International. (2022). PRODUCT CATEGORY RULES (PCR) FABRICS, PRODUCT CATEGORY CLASSIFICATION: UN CPC 265, 266, 267, 268, 2791, 27911, 27912, 27921, 27922, 27994, 27996 27997, 281, 3625PCR 2022:04, VERSION 1.0.1, valid until 2026-08-23

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