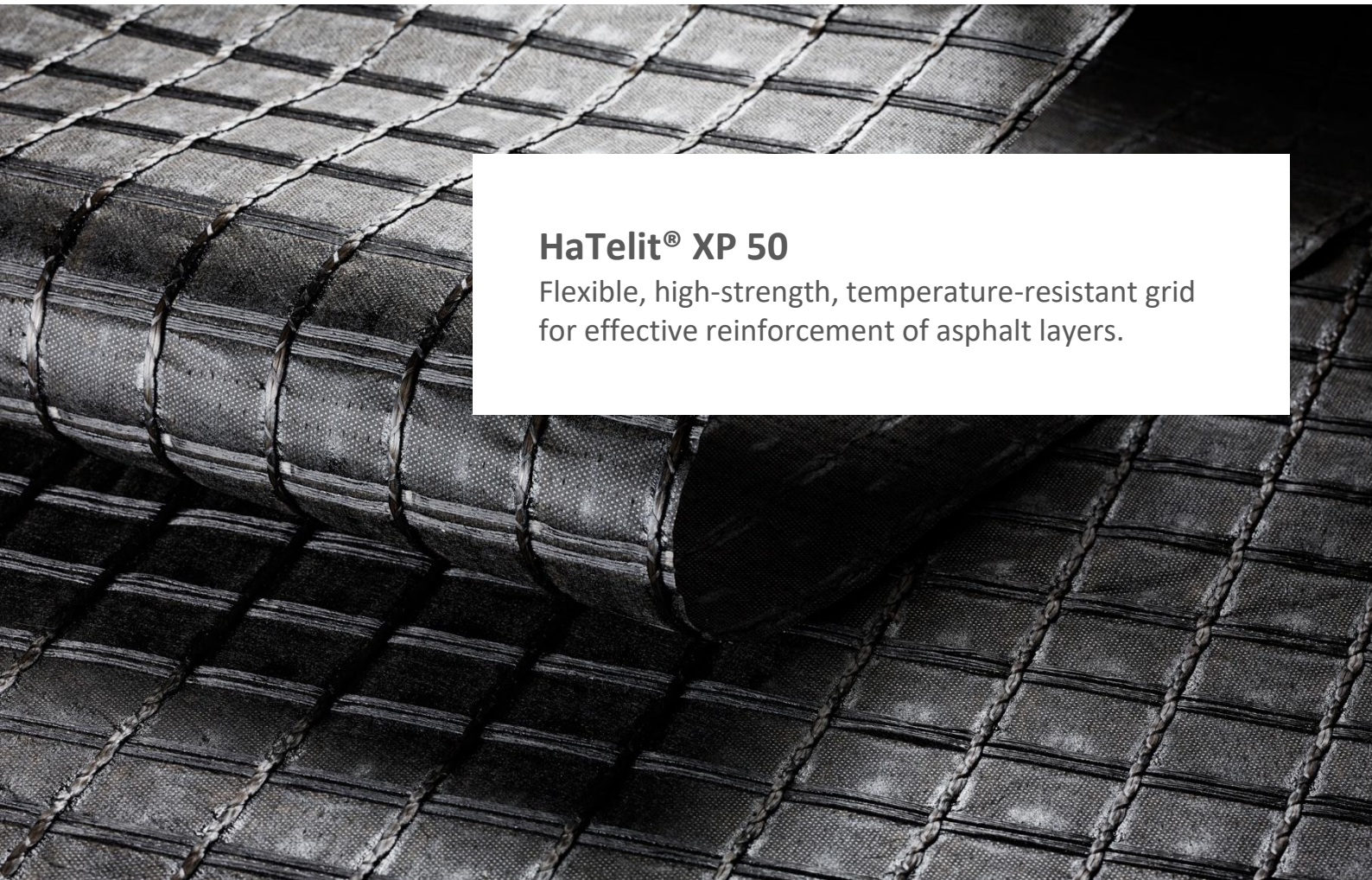
Environmental Product Declaration

as per ISO 14025 and EN 15804

Owner of the declaration:	HUESKER Synthetic GmbH
Publisher:	Kiwa GmbH - Ecobility Experts
Programme holder:	Kiwa GmbH - Ecobility Experts
Declaration number:	EPD-HUESKER-136-EN
Issue date:	02.07.2021
Valid to:	01.07.2026



HaTelit® XP 50

Flexible, high-strength, temperature-resistant grid for effective reinforcement of asphalt layers.

1. General information

HUESKER Synthetic GmbH

Programme holder
Kiwa GmbH – Ecobility Experts
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13355 Berlin
Germany

Declaration number
EPD-HUESKER-136-EN

This declaration is based on the Product Category Rules
PCR B - Technical textiles (draft) 2020-10-01

Issue date
02.07.2021

Valid to
01.07.2021

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(President of Kiwa GmbH - Ecobility Experts)

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HaTelit® XP 50

Owner of the declaration
HUESKER Synthetic GmbH
Fabrikstraße 13-15
48712 Gescher
Germany

Declared product / declared unit
1 m^2 technical geotextile

Scope
HaTelit® is an asphalt reinforcement grid made of high-modulus polyvinyl alcohol (PVA) yarns. The product is manufactured in Gescher and Dülmen, Germany. The product has a unit weight of 240 g/m^2 and a tensile strength of ≥ 50 kN/m. EPD type: Cradle to grave.
Kiwa GmbH – Ecobility Experts shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

Verification
The European standard EN 15804+A2:2019 serves as the core PCR

Independent verification of the declaration and data according to ISO 14025:2011-10

☐internally ☒externally

PhD Niels Jonkers
(External verifier – PLUK sustainability)

2. Product

2.1 Product description

Asphalt reinforcement grid, made of high-modulus polyvinyl alcohol (PVA) yarns and an installation aid incorporated on one side consisting of an ultra-light non-woven fabric (≤20 g/m^2) made of polypropylene. The entire product has a polymer modified bituminous coating to ensure a good bond of the product to the asphalt.

2.2 Application

HaTelit® is installed in asphalt pavements and prevents or significantly delays reflective cracking.

2.3 Technical data

Figure 1: Asphalt pavement with HaTelit® (second top layer)

Characteristic	Unit	Value
Unit weight (DIN EN ISO 9864)	g/m^2	240
Tensile Strength (DIN EN ISO 10319) MD	kN/m	≥ 50
Tensile Strength (DIN EN ISO 10319) CMD	kN/m	≥ 50
Strain at Nominal Tensile Strength (DIN EN ISO 10319) MD	%	≤ 6
Strain at Nominal Tensile Strength (DIN EN ISO 10319) CMD	%	≤ 6
Mesh size (approx.)	mm	40 x 40
Water permeability (EN ISO 11058)	Velocity Index (VIH50) ms^{-1}	n.a.*
Chemical Resistance (EN ISO 13438 and EN 14030)	-	n.a.*
Alkali resistance (EN 14030 method B)	%	100
Bitumen content of the coating	%	≥ 65
Residual strength after installation damage test (DIN EN 10722:2020)	%	≥ 80

* Parameter is not relevant for asphalt reinforcement

2.4 Placing on the market/ Application rules

The products are supplied to site in rolls and installed acc. to the manufacturers installation guideline. To ensure a good bond of the reinforcement to the surrounding asphalt, the composite must be completely coated with a bituminous coating (bitumen content ≥65%). The tensile strength and installation damage must be tested on the finished product in accordance with EN 15381 and Working Paper FGSV No. 770. The results are to be proven by a test certificate from an accredited testing institute with the tender submission.

The grids should be allowed to be installed on a milled surface. The millability of the asphalt reinforced with the grid must be verified by an independent institute. The mechanical properties of the asphalt

reinforcement must be verified by in-house and external monitoring in accordance with DIN 18200. Each delivered roll shall be marked with at least one roll label according to ISO 10320. The Quality management certificate of the manufacturer acc. to EN ISO 9001:2015 has to cover the development, production, assessment, sale and application technology of geosynthetics and technical textiles.

2.5 Base materials / Ancillary materials

PVA fibres are used as raw materials in MD and CMD while PET fibres are used for the binding chains.

Raw material	Unit	Value
PVA	m%	63
Polyester fibre (PET)	m%	4
PP nonwoven fabric	m%	8
Bitumen	m%	25

There is no biogenic carbon in the products.

2.6 Manufacture

A part of the yarn is delivered to the Dülmen plant and prepared for further processing in Gescher by means of a twisting process. The yarn that has already been processed is then transported to Gescher, where it is further processed using the Warp knitting process together with the remaining yarn, which is delivered directly there. Warp knitting is a process in which a net structure is created by intermeshing a binding thread around a longitudinal warp direction (machine direction) and a transversal weft direction (cross machine direction). In the warp knitting process, a textile fabric is produced by combining several thread systems (e.g. warp, weft and binding thread) by stitch formation on the ultra-light nonwoven fabric. It is possible to produce structures with very low elongation. After the yarn has been processed into a synthetic grid, the entire product is dip coated with a bitumen. After drying, the asphalt reinforcement mesh is rolled up on cardboard rolls, packed and stored until delivery.

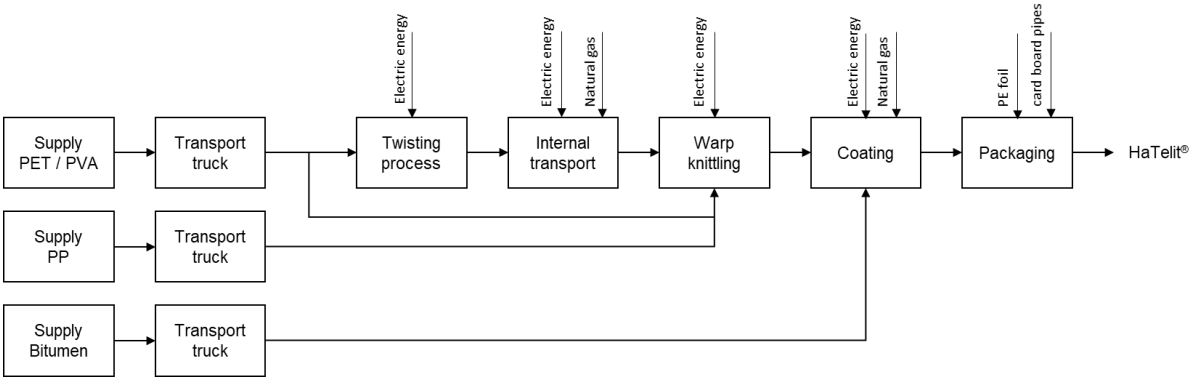

Figure 2: Simplified process flow chart of the production of HaTelit®

2.7 Packaging

Packaging is carried out by rolling the product onto board pipes and then wrapping it in PE foil.

2.8 Reference Service Life (RSL)

The service life of the reinforcement grid depends on the service life of the entire asphalt pavement. This is dependent on both the exact pavement structure and the intensity of use.

An average service life of 20 years is assumed as RSL, which is also used as a standard value in a study on the quality and service life of asphalt wearing courses by Rosauer (2010).

3. LCA: Calculation rules

3.1 Declared unit

In accordance with the PCR B 1 m^2 technical textile is chosen as the declared unit.

Product	Unit	Value
Declared Unit	m^2 technical textile	1
Unit weight	g/m^2	240
Conversion factor to 1 kg	-	4,167

3.2 System boundary

The Environmental Product Declaration is a complete life cycle with a functional unit. It considers all potential environmental impacts of the product from the cradle to the end of life. Table 4 provides an overview of the information modules or product life cycle phases under consideration and of the product life cycle phases that were not considered in the LCA.
The manufacturing phase includes the production or extraction of the source materials, the transport to the respective production plant and the production of the geotextiles. All inputs (raw materials, precursors, energy and auxiliary materials) as well as the by-products and waste are considered for all life cycle phases. Furthermore, only production-related energy consumption (excluding administration and social rooms) is considered.

It was assumed that no activities for maintenance, repair, transport and replacement, refurbishment or other material and energy flows take place during the useful life of 20 years (RSL). Modules B1 to B3 are therefore assumed to be zero. Product replacement (B4) and renovation (B5) only apply when the product is considered in a lifespan (of a building, work, etc.). Operational water and energy use are not considered.

The year 2020 represents the time reference. Due to the production locations and the main economic connections, Germany and The Netherlands are considered as the geographical reference area. However, environmental effects such as the greenhouse effect can occur with a strong spatial and temporal offset.

The following production steps are considered during the manufacturing phase:

- Production of the synthetic yarn
- Preparation of the coating paste
- Transports between the Dülmen and Gescher plants
- Production of the geotextile (twisting process, warp-knitting production, coating)
- Packaging of the reinforcement grid
- Transport to the place of use
- Installation and removal of the reinforcement grids
- Disposal of packaging
- End-of-life (including transport)

Secondary fuels are not included in the production process and are therefore not considered. The waste materials and quantities produced are included in the respective modules.

3.3 Estimates and assumptions

It was possible to record the transport distances for all raw materials used (raw materials, operating materials, packaging). A payload factor of 50 percent was used for all truck transports (suppliers, disposal transports and internal transports), which in fact corresponds to a full delivery and empty return trip. A data set for a non-specific truck was used.

Due to the bitumen coating of the finished product, which does not allow the components to be sorted into a pure PVA, PET or PP fraction, no mechanical recycling is possible. In relation to the total production quantity, about 3 to 4 percent of waste of coated grid is generated. Other waste accounts for less than 1 percent by mass of the final product and is not included in the balance due to its small volume.

The electricity mix was chosen according to the geographical reference area (Germany) and time reference. As only the conventional electricity mix is used, no other energy sources were considered. No CO_2 certificates were considered. An average transport distance between the production site to the customer is assumed to be 250 km (truck). This distance covers a large part of the customer base (such as the Netherlands and North Rhine-Westphalia).

3.4 Cut-off criteria

For the process modules A1 to A3 all process-specific data was collected. Nearly all flows could be assigned potential environmental impacts through the Ecoinvent database. All flows that contribute to more than 1 percent of the total mass, energy or environmental impact of the system were considered in the LCA. It can be assumed that the neglected processes would have contributed less than 5 percent to the impact categories considered.

3.5 Period under review

All process-specific data was collected for the operating year 2020.

3.6 Data quality

All process-specific data was collected for the 2020 operating year and is therefore up-to-date. The data is based on the annual average. In order to ensure comparability of the results, only consistent background data of the Ecoinvent database V3.5 was used in the LCA (e.g., records on energy, transportation, supplies and supplies), which refers to reference year 2018. The database is regularly reviewed and thus complies with the requirements of EN 15804 (background data not older than 10 years). All consistent datasets contained in the Ecoinvent database are documented and can be viewed in the online Ecoinvent documentation. The primary data were provided by HUESKER. The life cycle was modelled with the Nibe EPD App. Geographical reference space of the background data is Germany. The overall representativeness and the precision for all datasets were determinate with the DQR formula, a ranking method based on the PEF approach.

3.7 Allocation

Allocations were avoided in the LCA, so there are no by-products and multi-input processes. Allocation with regarding to reuse, recycling and recovery were considered in the waste scenarios.

3.8 Comparability

In principle, a comparison or evaluation of EPD data is only possible if all data sets to be compared have been created in accordance with EN 15804 and the building context or the product-specific performance characteristics have been taken into account.

4. LCA: Scenarios and additional technical information

When installing asphalt reinforcement grid, a site vehicle is used to roll out the product onto the road structure. Apart from rolling out, no further installation measures are necessary, which would otherwise be required during road construction. A reject or unused portion of 5 percent of the asphalt reinforcement is assumed.

At the end of the service life of an asphalt reinforcement, the asphalt including the asphalt pavement is milled off. As a rule, 100 percent of the milled material is recycled and reused. During processing, approx. 20 percent by mass of the asphalt reinforcement is screened off and sent for thermal recycling. The remaining 80 M-% remains in the milled material and is reused, for example, as base course material or in the production of new asphalt mix. Since the proportion of asphalt reinforcement in the reused milled material is max. 0,2 percent by mass, the milling process does not allocate the asphalt reinforcement.

The transport distances of the waste are based on the standard waste scenarios of the NMD Determination Method (SBK 2019): incineration 150 km/ recycling 50 km / landfill 100 km; vehicle: truck, unspecific. For energy recovery, it is assumed that only fossil raw materials are substituted, considering the calorific values of the raw materials of the declared product and energy and thermal efficiencies of 18 percent and 32 percent. The scenario calculates for recycling that the material "polyethylene, HDPE, granulate" is substituted. According the EN 15804, loads are credited in A3 or C3 to C4 and benefits are credited in module D.

5. LCA: Results

The following tables show the results of the impact assessment indicators, resource use, waste and other output streams. The results presented here refer to the declared average product.

Disclaimer on ADP-e, ADP-f, WDP, ETP-fw, HTP-c, HTP-nc, SQP: The results of these environmental impact indicators must be used with caution, as the uncertainties in these results are high or as there is limited experience with the indicator.

Disclaimer on IR: This impact category mainly addresses the potential effect of low dose ionizing radiation on human health in the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents and occupational exposures, nor does it consider radioactive waste disposal in underground facilities. Potential ionizing radiation from soil, radon, and some building materials is also not measured by this indicator.

Description of the system boundary

Product stage			Construction process stage		Use stage							End of life stage				Benefits and loads beyond the system boundaries
Raw material supply	Transport	Manu-facturing	Transport from manu-facturer to place of use	Construction -installation process	Use	Main-tenance	Repair	Replacement	Refur-bishmen	Operational energy use	Operational water use	De-construction / demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	X	X	X	X	X	-	-	-	-	X	X	X	X	X

X=Module declared | MND=Module not declared

Results of the LCA – Environmental impact: 1 m² asphalt reinforcement HaTelit® XP 50

Parameter	Unit	A1	A2	A3	A4	A5	B1	B2	B3	C1	C2	C3	C4	D
Core environmental impact indicators (EN 15804)														
ADP-mm	kg Sb-eqv	1,70E-06	1,19E-08	1,02E-07	2,30E-08	1,15E-07	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,25E-09	1,87E-07	0,00E+00	-1,16E-08
ADP-f	MJ	1,45E+01	3,05E-01	2,72E+00	1,26E-01	1,47E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,43E-02	7,74E-01	0,00E+00	-8,47E-01
AP	mol H+ eqv.	2,20E-03	5,08E-04	5,68E-04	4,65E-05	5,75E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,26E-05	2,58E-04	0,00E+00	-2,63E-04
EP-fw	kg PO4 eqv.	2,77E-05	3,80E-07	9,29E-06	1,22E-07	2,35E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,32E-08	2,51E-06	0,00E+00	-5,05E-06
EP-m	kg N eqv.	3,42E-04	5,08E-05	7,69E-05	1,63E-05	1,98E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,44E-06	6,79E-05	0,00E+00	-2,80E-05
EP-t	mol N eqv.	4,26E-03	5,86E-04	1,83E-03	1,81E-04	2,26E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,91E-05	7,81E-04	0,00E+00	-9,80E-04
GWP-b	kg CO2 eqv.	7,48E-04	2,10E-05	3,84E-03	2,36E-06	8,04E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,42E-07	-2,85E-04	0,00E+00	-2,13E-03
GWP-f	kg CO2 eqv.	4,47E-01	2,10E-02	1,78E-01	8,14E-03	8,32E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,21E-03	1,94E-01	0,00E+00	-5,67E-02
GWP-luluc	kg CO2 eqv.	3,22E-04	9,48E-06	1,06E-04	2,42E-06	2,78E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,58E-07	4,11E-05	0,00E+00	-4,25E-05
GWP-total	kg CO2 eqv.	4,48E-01	2,10E-02	1,82E-01	8,14E-03	9,13E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,21E-03	1,94E-01	0,00E+00	-5,89E-02
ODP	kg CFC 11 eqv.	5,77E-08	4,18E-09	1,69E-08	1,89E-09	1,30E-08	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,15E-10	8,10E-09	0,00E+00	-4,66E-09
POCP	kg NMVOC eqv.	1,78E-03	1,70E-04	2,46E-04	5,14E-05	6,39E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,40E-05	2,34E-04	0,00E+00	-7,44E-05
WDP	m3 world eqv.	7,86E-01	2,07E-03	3,87E-02	8,98E-04	4,58E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,44E-04	2,02E-02	0,00E+00	-1,36E-02
Additional environmental impact indicators (EN 15804)														
ETP-fw	CTUe	6,76E+00	2,13E-01	1,76E+00	9,06E-02	8,77E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,46E-02	1,79E+00	0,00E+00	-4,15E-01
HTP-c	CTUh	1,52E-10	7,73E-12	2,81E-11	3,43E-12	4,62E-11	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,33E-13	9,41E-11	0,00E+00	-8,45E-12
HTP-nc	CTUh	5,61E-09	1,60E-10	8,00E-10	1,15E-10	6,88E-10	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,13E-11	1,34E-09	0,00E+00	-2,95E-10
IR	kBq U235 eqv.	3,15E-01	1,36E-03	1,40E-02	5,37E-04	1,90E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,46E-04	2,29E-03	0,00E+00	-1,85E-03
PM	disease in-cidence	1,53E-08	8,64E-10	3,46E-09	7,38E-10	1,15E-08	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,01E-10	3,93E-09	0,00E+00	-1,57E-09
SQP		1,75E+00	7,50E-02	4,97E-01	1,05E-01	2,23E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,86E-02	5,64E-01	0,00E+00	-5,26E-01

ADP-f=Depletion of abiotic resources-fossil fuels | **ADP-mm**=Depletion of abiotic resources- minerals and metals| **AP**=Acidification of soil and water | **EP-fw** =Eutrophication, freshwater | **EP-m**=Eutrophication marine | **EP-T**=Eutrophication, terrestrial | **GWP-b**=Global warming potential - Biogenic | **GWP-f**=Global warming potential - Fossil | **GWP-luluc**=Global warming potential - Land use and land use change |**GWP-total**=Global warming potential |**ODP**=Ozone layer depletion |**POCP**=Photochemical oxidants creation | **WDP**=Water use | **ETP-fw**=Ecotoxicity, freshwater | **HTP-c**=Human toxicity, cancer | **HTP-nc**=Human toxicity, non-cancer | **IR**=Ionising radiation, human health | **PM**=Particulate Matter | **SQP**=Land use

Results of the LCA – Resource Use: 1 m² asphalt reinforcement HaTelit® XP 50														
Parameter	**Unit**	**A1**	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	3,61E-01	6,91E-03	6,35E-02	1,32E-03	2,74E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,59E-04	3,99E-02	0,00E+00	-1,36E-01
PERM	MJ	2,90E-02	0,00E+00	8,50E-02	0,00E+00	5,70E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	3,90E-01	6,91E-03	1,49E-01	1,32E-03	3,31E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,59E-04	3,99E-02	0,00E+00	-1,36E-01
PENRE	MJ	9,75E+00	3,24E-01	2,71E+00	1,34E-01	1,27E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,64E-02	8,24E-01	0,00E+00	-9,20E-01
PENRM	MJ	5,81E+00	0,00E+00	2,52E-01	0,00E+00	3,03E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	1,56E+01	3,24E-01	2,96E+00	1,34E-01	1,57E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,64E-02	8,24E-01	0,00E+00	-9,20E-01
SM	Kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	M3	1,91E-02	6,43E-05	1,10E-03	2,38E-05	1,12E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,47E-06	5,02E-04	0,00E+00	-4,11E-04
HWD	Kg	5,96E-05	1,94E-07	6,21E-06	8,02E-08	3,61E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,18E-08	7,80E-07	0,00E+00	-2,11E-06
NHWD	Kg	2,91E-02	2,85E-03	5,77E-03	7,68E-03	5,38E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,09E-03	3,51E-02	0,00E+00	-1,86E-03
RWD	Kg	2,77E-05	1,98E-06	5,50E-06	8,49E-07	5,73E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,31E-07	2,88E-06	0,00E+00	-2,38E-06
CRU	Kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	Kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,03E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,92E-01	0,00E+00	0,00E+00
MER	Kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,65E-02
EET	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,57E-02
EEE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,07E-02

PERE=renewable primary energy ex. raw materials | **PERM**=renewable primary energy used as raw materials | **PERT**=renewable primary energy total | **PENRE**=non-renewable primary energy ex. raw materials | **PENRM**=non-renewable primary energy used as raw materials | **PENRT**=non-renewable primary energy total | **SM**=use of secondary material | **RSF**=use of renewable secondary fuels | **NRSF**=use of non-renewable secondary fuels | **FW**=use of net fresh water | **HWD**=hazardous waste disposed | **NHWD**=non-hazardous waste disposed | **RWD**=radioactive waste disposed | **CRU**=Components for re-use | **MFR**=Materials for recycling | **MER**=Materials for energy recovery | **EE**=Exported energy | **EET**=Exported Energy Thermic | **EEE**=Exported Energy Electric

6. LCA: Interpretation

As shown in figure below, the raw material (A1) has the greatest influence on the life cycle of HaTelit® XP 50. Manufacturing (A3) and the installation process (A5) have similarly high values in most categories. A5 is very dependent on the assumption (here 5 % products reject and diesel consumption construction site vehicle) and can therefore deviate greatly from the actual result. All transports (A2, A4, C2) have only a minor impact.

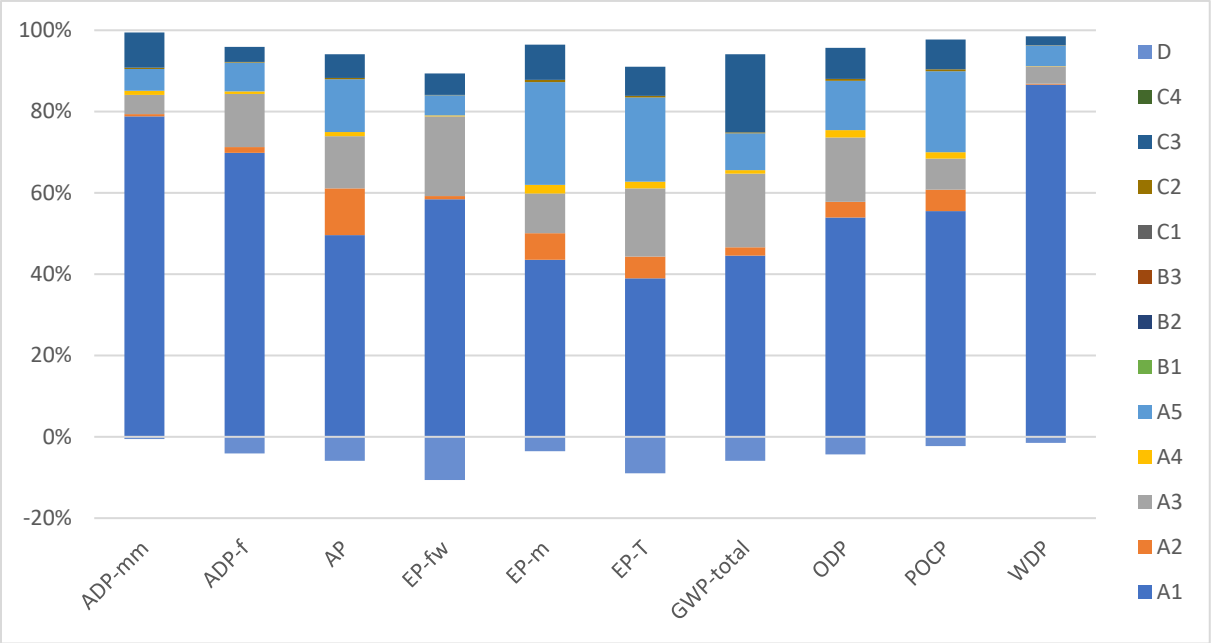

Figure 3: HaTelit® XP 50 - Impact of the individual modules on the environmental core indicator

The data quality can be classified as good overall. All relevant process-specific data could be collected in the operational data collection. Consistent data sets from the Ecoinvent database were available for almost all inputs and outputs. The background data meet the requirements of EN 15804, and the production data were recorded for the 2020 operating year. The quantities of raw materials and supplies used as well as energy consumption were recorded for the entire operating year. The life cycle assessment was carried out for all the product items listed.

Data quality was calculated using the Data Quality Rating method according to the PEF approach. The DQRs range from 1,75 to 2,0 for the most abundant inputs in terms of mass, and from 1,75 to 2,00 for smaller inputs.

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EN 15804:2012+A2:2019 Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products

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