

Owner of the declaration:	Dr. Schutz GmbH
Publisher:	Kiwa-Ecobility Experts
Programme operator:	Kiwa-Ecobility Experts
Registration number:	EPD-Dr. Schutz-281-EN
Issue date:	16.01.2023
Valid to:	16.01.2028



Dr. Schutz® PU Sealer

Water-based 2part polyurethane sealer with long-term durability and protection / Wasserbasierter 2K-Polyurethansiegel mit permanenter Oberflächenvergütung und hoher Abriebbeständigkeit

1. General information**Dr. Schutz GmbH**

Programme operator
Kiwa-Ecobility Experts
Voltastr. 5
13355 Berlin
Germany

Registration number
EPD-Dr. Schutz-281-EN

This declaration is based on the Product Category Rules

EN 16810: 2017 - Resilient, textile and laminate floor coverings - Environmental product declarations - Product category rules issue 2017-08

Issue date
16.01.2023

Valid to
16.01.2028



Frank Huppertz
(Head of Kiwa-Ecobility Experts)



Prof. Dr. Frank Heimbecher
(Chairman of the independent expert committee –
Kiwa-Ecobility Experts)

Dr. Schutz® PU Sealer

Owner of the declaration
Dr. Schutz GmbH
Holbeinstraße 17
53175 Bonn
Germany

Declared product / declared unit
1 m² floor sealer

Scope

Dr. Schutz® PU Sealer is a water-based 2part-polyurethane-sealer with long-term durability and protection designed for professional use. It is produced and distributed by Dr. Schutz GmbH, located in Bonn (Germany). The EPD refers to the specific product.

EPD type: Cradle to gate with modules A4, A5, C and module D.

Kiwa-Ecobility Experts shall not be liable with respect to manufacturer information, life cycle assessment data and evidence.

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

internal

external



Elisabet Amat - Greenize Projects S.L.U.
(Third party verifier)

2. Product

2.1 Product description

Dr. Schutz® PU Sealer is a water based 2 part polyurethane transparent sealer with outstanding durability and long term protection. It reduces dirt adhesion and the time needed for day-to-day maintenance. The hardwearing sealer film has an excellent elasticity and good resistance against chemicals. Easy and safe to apply with excellent adhesion.

2.2 Application

Before application, the floor needs to be cleaned and roughened. First a wet cleaning using a detergent is carried out, followed by a neutralisation/post-cleaning with clear water. Final, roughening of the surface is necessary, to ensure a good adhesion of the sealing. The PU Sealer lacquer is mixed on site with the crosslinker in a ratio of 10:1. The mixture is then applied to the properly prepared surface, with a coverage of 50 ml/m² (80-100 ml/m² in case of wood, cork or decorative screed floors). The application of two layers is recommended, for highly absorbent surfaces the consumption can be higher. The detailed application instructions can be found online (https://www.dr-schutz.com/wp-content/uploads/PI_EN_PU_Sealer_Waxnomor_170523.pdf)

2.3 Technical data

Name	Value		Unit
	PU Sealer (lacquer)	Crosslinker	
Physical state	Fluid	Fluid	-
Colour	Whitish	Colourless	-
Melting point	Undetermined	Undetermined	°C
Boiling point	Undetermined	Undetermined	°C
Flash point	>100	65	°C
Auto-ignition temperature	Product is not selfigniting	165	°C
pH (at 20°C)	8.5	Not determined	
Kinematic viscosity (at 20°C)	90	26	s (DIN 53211/4)
Solubility water	Fully miscible	Not miscible or difficult to mix	
Vapour pressure (at 20°C)	23	Not determined	hPa
Density at (20°C)	1.042	1.075	g/cm ³
Organic solvents	4.5	29.9	%
VOC	4.5	29.9	%

2.3 Placing on the market/ Application rules

The product is captured under the Giscode W3DD+ / 2004/42/IIA(j)(140)140 (product group water seal with isocyanate hardener, solvent content up to 15%). It is defined as a good not dangerous by transport regulations by the ADR/RID (Agreement concerning the International Carriage of Dangerous Goods by Road/Convention concerning International Carriage by Rail). It is tested according to EN 14904, and therefore suitable for sports floors (satin).

The product is packed as a set, consisting of a 5kg PP-bucket with PU color lacquer and a 550 ml HDPE-bottle with crosslinker, both packed in a corrugated cardboard box.

The main market area is Germany (approx. 50%), followed by neighboring countries (35%), other European countries (12%) and overseas (3%).

2.4 Base materials / Ancillary materials

Dr. Schutz® PU Sealer is a water-based 2part-polymer-sealer, consisting of a PU Sealer lacquer and a crosslinker mixed on site. The main ingredients of the lacquer are water, colorants, and different polymers, while the crosslinker is a mixture of isocyanates and glycol ethers. The ingredients divided according to substance class are shown separately for the PU Sealer lacquer and the crosslinker below.

PU Sealer lacquer	
Substance class	Total value (in %)
Water	15-25
Polymer dispersion	70-80
Film forming aids	3-6
Additives (antifoaming agents, thickener, levelling agents etc.)	1-3

Crosslinker	
Substance class	Total value (in %)
Isocyanate	70
Glycol ether	30

The total mass of biogenic carbon containing materials is less than 5 % of the total mass of the product and associated packaging (only the corrugated board box packaging contains biogenic carbon, having a mass share of approx. 4% on each product), therefore the biogenic carbon content may be omitted. The product does not contain substances included in the “Candidate list of substances of very high concern for authorisation” (SVHC).

2.5 Manufacturing

The manufacturing is located at Dr. Schutz GmbH, Steinbrinksweg 30, 31840 Hesisch Oldendorf, Germany. The raw materials are added together and mixed according to the recipe. For this purpose, a stirring device, pumps, stackers, etc. are required, powered by electricity and gas.

The finished lacquer is drawn onto IBC's by free fall or pump and filled from the IBC's into canisters by a filling machine.

The crosslinker is produced according to the recipe at a third-party filler and filled by machine in bottles delivered to the manufacturing site on pallets.

The manufacturing process is shown in the following figure:

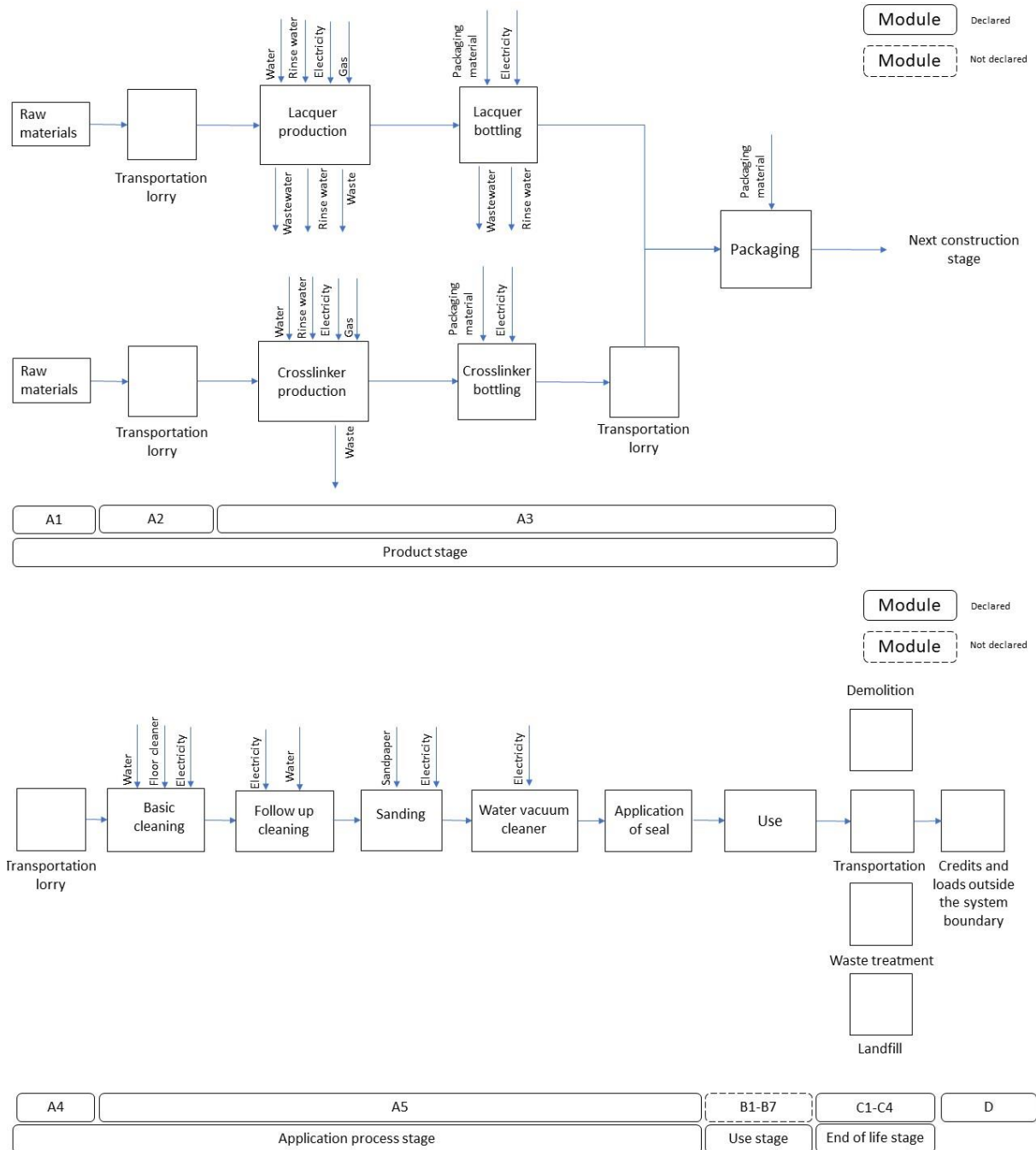


Figure 1: Process flow chart of the production of Dr. Schutz® PU Sealer

2.6 Packaging

The canisters and bottles get labelled and for a set, one canister lacquer and one bottle crosslinker are packed in corrugated board boxes and stacked onto pallets for further transport. The pallets are stretched with film.

2.7 Reference Service Life (RSL)

The producer recommends a renewal of the seal every 6 years. Therefore, the reference service life of the product is assumed to be 6 years.

2.8 Other Information

For further information on Dr. Schutz® products please visit the official webpage under the following link: <https://www.dr-schutz.com/>

3. LCA: Calculation rules

3.1 Declared unit

In accordance with the PCR B 1 m² of applied floor sealing is chosen as the declared unit. Although a unit of mass should be used for cradle-to-gate scopes, in this case, where the application can be unequivocally defined, the chosen unit is a functional unit of 1 m². The PCR is intended for complete floor coverings (such as resilient floors, textile floors etc.). There is no PCR available for floor sealers in particular, therefore EN 16810:2017 was chosen to be applicable for the calculated products, which after application can be considered to be part of the flooring. Furthermore, the declaration of m² as declared unit as specified by the PCR is necessary and reasonable, as the installation phase should be considered due to its high impact which is only possible in a declaration per m² and not per kg of sealer.

Product	Unit	Value
Declared Unit	m ² floor sealing	1
Unit weight	g/m ²	100

3.2 System boundary

The Environmental Product Declaration is a life cycle with a functional unit. It considers all potential environmental impacts of the product from the cradle to gate, distribution, installation and the end of life. The manufacturing phase includes the production or extraction of the source materials, the transport to the respective production plant and the production of the geogrids. All inputs (raw materials, pre-cursors, energy, and auxiliary materials) as well as the by-products and waste are considered for all life cycle phases. Finally, only production-related energy consumption (excluding administration and social rooms) is considered.

The use phase (modules B1 to B7) is not considered, as maintenance (e.g. floor cleaning or sweeping) is highly user dependent and varies.

The year 2021 represents the time reference for raw materials and energy consumption. Due to the production location Germany is 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:

- Extraction and processing of the raw materials (chemicals)
- Transport to the production sites
- Processing of the lacquer and crosslinker
- Packaging (including packaging material)
- Installation (including transport)
- End-of-life (including transport)

The waste materials and quantities produced are included in the respective modules.

3.3 Estimates and assumptions

If available, datasets which refer to the EU as the geographic reference where chosen (approx. 50%), otherwise global datasets were used. In cases, where datasets for chemical dispersion were not available, market for datasets where used, to include transport of the raw materials to the suppliers.

Transport distances for all raw materials used (chemicals, packaging) could be recorded. A payload factor of 50% was used for all truck transports (suppliers, disposal transports and internal transports), which corresponds to a full delivery and empty return trip. A data set for a non-specific truck was used. Dr. Schutz GmbH purchases 100% renewable electricity. 2021 the share of renewable energy sources on the total renewable energy in Germany was as followed: Wind power: 53.6%; solar power 20.6%; biomass 18.5%; hydropower 7.3%. Based on this assumption an electricity data set was generated for the LCA calculation. No CO₂ certificates were considered.

For the third-party filler, no data on energy consumption was available, therefore it was assumed, that the energy consumption for crosslinker production is equally high as for the lacquer. As electricity source the German electricity mix was taken.

Concerning the waste water during processing, the water is collected and fed back into the process. According to the manufacturer, almost none processing waste occurs during production. Therefore, a generic value of 1% production waste was assumed, to cover low amounts of waste. Concerning construction waste, 15% was chosen, which is the recommendation of R<THiNK for product from the category “auxiliary and finishing materials”.

Concerning the transport from manufacturer to place of use (A4), an average was calculated based on the distance of production location to the countries supplied. The installation process was calculated based on the information material on preparation of floors (compare https://www.dr-schutz.com/wp-content/uploads/TI_EN_002_Preparation_of_resilient_floorings_200814.pdf; https://www.dr-schutz.com/wp-content/uploads/PI_EN_PU_Sealer_Waxnomor_170523.pdf). Based on the specific product information, two coating processes with 50 ml each were assumed. As the density of lacquer and crosslinker are almost 1g/ml, 100 g/m² for total process was taken for calculation.

For installation phase (A5), and module C and D, Germany was chosen as location, as it is the main market area (compare chapter 2.3).

3.4 Cut-off criteria

All flows which influence is higher than 1% on the total mass, energy or environmental impact are included in the LCA. It can be assumed that the neglected processes would have contributed less than 5% to the impact categories considered.

All process specific data could be determined and modelled by the use of generic data (EcoInvent 3.6; EcoInvent 3.8)

3.5 Perid under review

The production data have been collected for the year 2021.

3.6 Data quality

For all processes primary data was collected and provided by Dr. Schutz GmbH. The primary data refers to year 2021. For the data, which is not influenced by the manufacturer, generic data was used. The secondary data was taken from the database EcoInvent (version 3.6 and 3.8). The database is maintained on a regular basis and thus meets the requirements of EN 15804 (background data not older than 10 years). The power sources were chosen from data for Germany in 2021, in accordance with the geographical and time representativeness. The data quality is very good, because all process specific data could be documented and modelled by using the generic data.

RETHiNK EPD web application from the company NIBE was used to model the life cycle for the production and disposal of the declared product systems. To ensure that the results are comparable, consistent background data from the international database EcoInvent was used in the LCA (e.g. data

records on energy, transport, auxiliary materials, and supplies). Almost all consistent data sets contained in the Ecolnvent database are documented and can be viewed online.

3.7 Allocation

Allocations were avoided as far as possible. There are no coproducts or by-product in the manufacturing of the sealer. Based on energy consumption measurements, the energy demand was allocated to the individual products. Production waste is collected, recycled and reused internally for other stabilisation products.

3.8 Comparability

In principle, a comparison or assessment of the environmental impacts of different products is only possible if they have been prepared in accordance with EN 15804. For the evaluation of the comparability, the following aspects have to be considered in particular: PCR used, functional or declared unit, geographical reference, definition of the system boundary, declared modules, data selection (primary or secondary data, background database, data quality), scenarios used for use and disposal phases, and the life cycle inventory (data collection, calculation methods, allocations, validity period). For further guidance see EN 15804+A2 (5.3 Comparability of EPD for construction products).

4. LCA: Scenarios and additional technical information

According to the preparation guideline (https://www.dr-schutz.com/wp-content/uploads/TI_EN_002_Preparation_of_resilient_floorings_200814.pdf), a two-stage cleaning (first with a cleanser, second only water) is assumed. For the cleanser, a generic dataset from the ecoinvent database is taken (Cleaning consumables, without water, in 13.6% solution state (GLO)| market for), mixed in the ratio 1:5 and applied with an amount of 200 ml/per m². An overflow or unused portion of 15% of the prepared sealer is assumed during the installation process.

As the floor covering is disposed as part of the flooring system, the demolition process is not considered as a load for the calculated system. Therefore, C1 is considered to be zero.

For the production process waste, the EcoInvent scenario Spent solvent mixture {Europe without Switzerland}| treatment of spent solvent mixture, hazardous waste incineration | Cut-off, U was chosen, which assumes 100% incineration. For the plastic containers and bottles the NMD scenario plastics, via residue (NMD ID 43) was chosen, which assumes that 80% are incinerated, while 20% are landfilled. For the sealer itself, 100% incineration was assumed as waste scenario, which fits the waste treatment of PVC floor covering. The incineration loads were calculated using an EcoInvent dataset for waste paint.

Note: 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, unspecified.

For energy recovery, only benefits for plastics were included, as the lower heating value of the chemicals was not available. According the EN 15804, loads are credited in A3 or C3 to C4 and benefits are credited in module D.

For all transports, the environmental profile of a non-specific truck transport was used (conservative assumption): The vehicle operates with diesel, and it provides a fleet average that includes different lorry classes as well as EURO classes. This environmental profile contains data for transport, which is calculated for an average load factor, including empty return trips (EcoInvent 3.6).

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 specific 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 IRP: 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	Manufacturing	Transport from manufacturer to place of use	Construction-in-stallation process	Use	Maintenance	Repair	Replacement	Refurbishment	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	MND	MND	MND	MND	MND	MND	MND	X	X	X	X	X
DE	DE	DE	EU	DE	-	-	-	-	-	-	-	DE	DE	DE	DE	DE

X=Module declared | MND=Module not declared

Results of the LCA – Environmental impact: 1 m ² PU Sealer sealing											
Parameter	Unit	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
Core environmental impact indicators (EN 15804+A2/NMD set 2)											
ADP-mm	kg Sb-eqv.	3,03E-06	6,67E-08	5,35E-07	2,12E-07	5,29E-06	0,00E+00	4,27E-08	1,55E-08	0,00E+00	-2,92E-08
ADP-f	MJ	3,26E+00	3,97E-02	1,96E+00	1,26E-01	3,47E+00	0,00E+00	2,54E-02	1,71E-02	0,00E+00	-2,33E-01
AP	mol H ⁺ eqv.	9,43E-04	1,53E-05	2,91E-04	4,86E-05	1,23E-03	0,00E+00	9,78E-06	1,76E-05	0,00E+00	-4,03E-05
EP-fw	kg PO ₄ eqv.	9,31E-06	2,65E-08	2,94E-06	8,46E-08	1,81E-05	0,00E+00	1,70E-08	2,21E-08	0,00E+00	-1,30E-06
EP-m	kg N eqv.	2,34E-04	5,38E-06	7,27E-05	1,71E-05	3,22E-04	0,00E+00	3,45E-06	7,83E-06	0,00E+00	-1,04E-05
EP-t	mol N eqv.	1,81E-03	5,93E-05	6,63E-04	1,89E-04	2,77E-03	0,00E+00	3,80E-05	8,67E-05	0,00E+00	-1,09E-04
GWP-b	kg CO ₂ eqv.	2,07E-03	1,22E-06	-7,31E-03	3,87E-06	-1,39E-02	0,00E+00	7,79E-07	8,13E-06	0,00E+00	5,95E-03
GWP-f	kg CO ₂ eqv.	1,74E-01	2,63E-03	1,23E-01	8,38E-03	3,28E-01	0,00E+00	1,69E-03	1,99E-01	0,00E+00	-1,63E-02
GWP-luluc	kg CO ₂ eqv.	1,37E-04	9,64E-07	7,52E-05	3,07E-06	7,85E-03	0,00E+00	6,18E-07	3,56E-07	0,00E+00	-4,49E-05
GWP-total	kg CO ₂ eqv.	1,77E-01	2,63E-03	1,15E-01	8,39E-03	3,22E-01	0,00E+00	1,69E-03	1,99E-01	0,00E+00	-1,04E-02
ODP	kg CFC 11 eqv.	7,99E-07	5,81E-10	2,02E-08	1,85E-09	1,44E-07	0,00E+00	3,72E-10	1,85E-10	0,00E+00	-1,38E-09
POCP	kg NMVOC eqv.	5,31E-04	1,69E-05	2,14E-04	5,39E-05	7,14E-04	0,00E+00	1,08E-05	2,14E-05	0,00E+00	-2,51E-05
WDP	m ³ world eqv.	1,34E-01	1,42E-04	3,27E-02	4,52E-04	1,68E-01	0,00E+00	9,10E-05	-8,28E-04	0,00E+00	-9,76E-04
Additional environmental impact indicators (EN 15804+A2/NMD set 2)											
ETP-fw	CTUe	1,36E+01	3,54E-02	1,23E+00	1,13E-01	7,96E+00	0,00E+00	2,27E-02	5,38E-02	0,00E+00	-2,93E-01
HTP-c	CTUh	1,28E-09	1,15E-12	3,54E-11	3,66E-12	3,62E-10	0,00E+00	7,36E-13	2,56E-10	0,00E+00	-3,60E-12
HTP-nc	CTUh	1,77E-08	3,87E-11	3,73E-09	1,23E-10	7,30E-09	0,00E+00	2,48E-11	7,80E-10	0,00E+00	-1,03E-10
IRP	kBq U235 eqv.	5,26E-03	1,66E-04	2,56E-03	5,30E-04	7,77E-03	0,00E+00	1,07E-04	3,60E-05	0,00E+00	-4,47E-04
PM	disease incidence	1,12E-08	2,37E-10	2,37E-09	7,54E-10	1,13E-08	0,00E+00	1,52E-10	1,41E-10	0,00E+00	-2,61E-10
SQP		4,47E-01	3,44E-02	3,70E-01	1,10E-01	1,90E+00	0,00E+00	2,21E-02	6,98E-03	0,00E+00	-1,81E-01
ADP-mm =Depletion of abiotic resources-minerals and metals ADP-f =Depletion of abiotic resources-fossil fuels 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 IRP =Ionising radiation, human health PM =Particulate Matter SQP =Land use											

Results of the LCA – Resource consumption, output streams & waste categories: 1 m² PU Sealer sealing

Parameter	Unit	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	1,74E-01	4,97E-04	2,72E-02	1,58E-03	8,32E-02	0,00E+00	3,18E-04	4,81E-04	0,00E+00	1,77E-02
PERM	MJ	0,00E+00	0,00E+00	7,24E-02	0,00E+00	5,36E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-6,24E-02
PERT	MJ	1,74E-01	4,97E-04	9,96E-02	1,58E-03	6,19E-01	0,00E+00	3,18E-04	4,81E-04	0,00E+00	-4,47E-02
PENRE	MJ	3,50E+00	4,21E-02	1,90E+00	1,34E-01	3,70E+00	0,00E+00	2,70E-02	1,85E-02	0,00E+00	-2,53E-01
PENRM	MJ	0,00E+00	0,00E+00	2,25E-01	0,00E+00	3,37E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	3,50E+00	4,21E-02	2,12E+00	1,34E-01	3,74E+00	0,00E+00	2,70E-02	1,85E-02	0,00E+00	-2,53E-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
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
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
FW	M3	3,36E-03	4,84E-06	8,17E-04	1,54E-05	5,20E-03	0,00E+00	3,10E-06	1,53E-05	0,00E+00	-6,68E-05
HWD	Kg	2,29E-06	1,01E-07	1,44E-06	3,20E-07	3,89E-06	0,00E+00	6,45E-08	2,74E-07	0,00E+00	-2,04E-07
NHWD	Kg	2,01E-02	2,52E-03	7,73E-03	8,02E-03	3,63E-02	0,00E+00	1,61E-03	3,33E-03	0,00E+00	-1,11E-03
RWD	Kg	5,02E-06	2,61E-07	2,58E-06	8,30E-07	8,64E-06	0,00E+00	1,67E-07	4,76E-08	0,00E+00	-5,57E-07
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
MFR	Kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,92E-03	0,00E+00	0,00E+00	0,00E+00	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
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
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

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 | EET=Exported energy thermic | EEE=Exported energy electric

6. LCA: Interpretation

As shown in the figure below, raw material supply (A1) and / or installation process (A5) dominates in all environmental core indicators. The high influence of the installation phase is due to the use of cleanser in the preparation of the sealer application, as the amount of cleanser needed is quite high (200 ml).

In some environmental core indicators the manufacturing phase (A3), has a great impact, which can be traced back to the gas consumption needed during production. Concerning the Global Warming Potential, waste processing has a high influence as well, due to the waste treatment process being incineration.

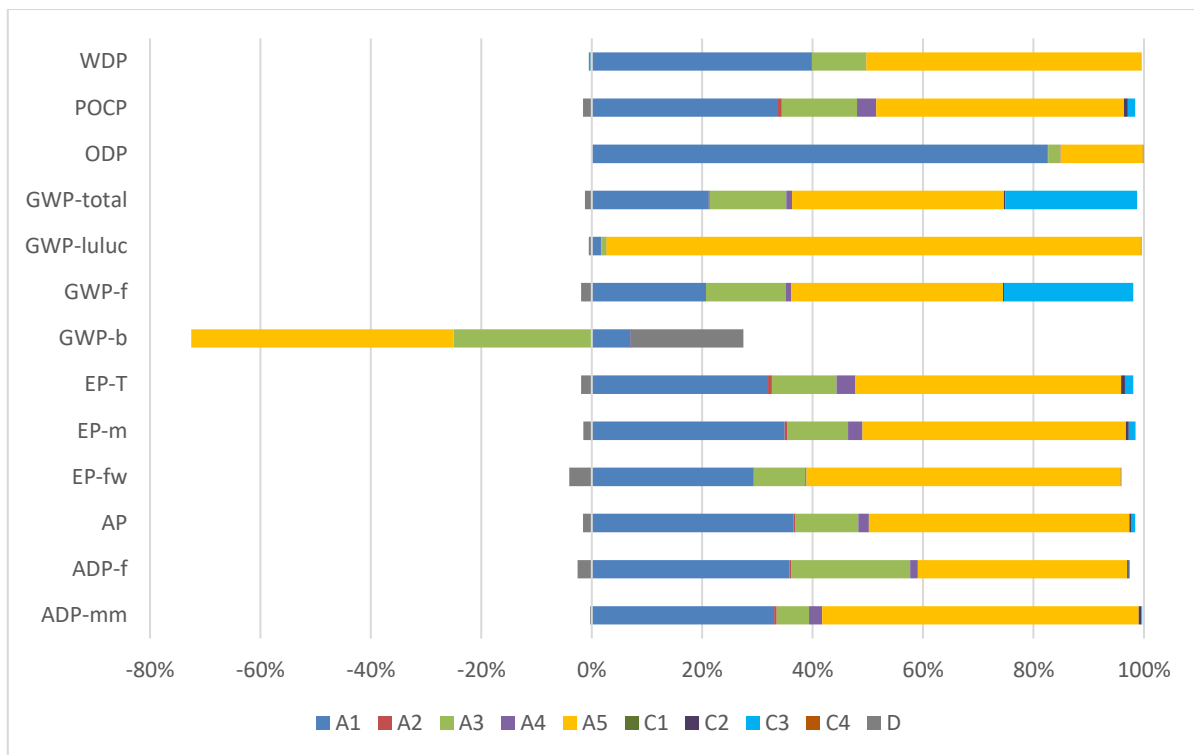


Figure 1: Dr. Schutz® PU Sealer - Impact of the individual modules on the environmental core indicators

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 year 2021. The quantities of raw materials and supplies used as well as energy consumption were recorded for the entire operating year.

7. References

CML-IA April 2013 – Charakterisierungsfaktoren entwickelt durch Institut of Environmental Sciences (CML): Universität Leiden, Niederlande - <http://www.cml.leiden.edu/software/data-cmlia.html>

Donndorf, R., Kahle H., Müller, G., Philipp H-J., Taschow, H-J., Wolf, O. (1973): Werkstoffeinsatz und Korrosionsschutz in der chemischen Industrie. VEB Deutscher Verlag für Grundstoffindustrie Leipzig.

European Commission Joint Research Centre Institute for Prospective Technological Studies (JCR 2014): End-of-waste criteria for waste plastic for conversion, Seville, 2014, doi:10.2791/13033

Klöpffer, W., Grahl B.: Ökobilanz (LCA) – Ein Leitfaden für die Ausbildung und Beruf, Wiley-VCH Verlag, Weinheim, 2007

Rosauer, V. (2010): Abschätzung der herstellungsbedingten Qualität und Lebensdauer von Asphaltdeckschichten mit Hilfe der Risikoanalyse (Estimation of the production-related quality and service life of asphalt wearing courses with the aid of risk analysis). Technischen Universität Darmstadt, 2010

Stichting Bouwkwaliiteit (SBK) – Foundation for Building Quality; “Determination Method: Environmental Performance of Buildings and Civil Engineering Works”

Stichting Nationale Milieudatabase; Bepalingsmethode Milieuprestatie Bouwwerken; Version 1.0; July 2020; Berekeningswijze voor het bepalen van de milieuprestatie van bouwwerken gedurende hun gehele levensduur, gebaseerd op de EN 15804.

Windbranche.de – Das Branchenportal rund um die Windenergie. Wind power and electricity generation in Great Britain: <https://www.windbranche.de/wind/windstrom/windenergie-grossbritannien>, last accessed 19 July 2021.

Standards and laws

ISO 14040:2021-02, Environmental management - Life cycle assessment - Principles and framework

ISO 14044:2020-02, Environmental management - Life cycle assessment - Requirements and guidelines

ISO 14025:2011-10: Environmental labels and declarations — Type III environmental declarations — Principles and procedures EN 13249

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

PCR A: General Program Category Rules for Construction Products from the EPD program Kiwa-Ecology Experts, R.O_2021-07-16

PCR B Resilient, textile and laminate floor coverings - Environmental product declarations – Product category rules; EN 16810:2017

	<p>Publisher Kiwa - Ecobility Experts Kiwa GmbH Voltastr.5, 13355 Berlin Germany</p>	<p>Mail Web</p>	<p>DE.Ecobility.Experts@kiwa.com https://www.kiwa.com/de/de/uber-kiwa/ecobility-experts/</p>
	<p>Programme operator Kiwa - Ecobility Experts Kiwa GmbH Voltastr.5, 13355 Berlin Germany</p>	<p>Mail Web</p>	<p>DE.Ecobility.Experts@kiwa.com https://www.kiwa.com/de/de/uber-kiwa/ecobility-experts/</p>
	<p>LCA Practitioner Kiwa GmbH Voltastr.5 13355 Berlin Germany</p>	<p>Tel. Fax. Mail Web</p>	<p>+49 (0) 30 467761-43 +49 (0) 30 467761-10 DE.Nachhaltigkeit@kiwa.com https://www.kiwa.com/</p>
	<p>Owner of the declaration Dr. Schutz GmbH Holbeinstraße 17 53175 Bonn Germany</p>	<p>Tel. Fax. Mail Web</p>	<p>0228-95352-0 0228-95352-29 info@dr.schutz.com www.dr-schutz.com</p>

Kiwa-Ecobility Experts -
 established member of

