Environmental Product Declaration

according to ISO 14025 and EN 15804

Owner of declaration:	HEVADEX Group
Publisher:	Kiwa-Ecobility Experts
Program operator:	Kiwa-Ecobility Experts
Declaration number:	EPD-Hevadex-222-EN
Issue date:	29.11.2022
Valid until:	29.11.2027

Blowerproof® Liquid

This Environmental Product Declaration (EPD) is based on the Life Cycle Assessment (LCA) of the airtight membrane and intelligent vapour control Blowerproof® Liquid by HEVADEX Group.

1. General information

HEVADEX Group

Program operator:
Kiwa-Ecobility Experts
Voltastr. 5
13355 Berlin
Germany

Declaration numbe
EPD-Hevadex-222-EN

Product category rules
PCR A: Kiwa-Ecobility Experts (Kiwa-EE) – General Product Category Rules, Version 2.1, 2022-02-04
PCR B: Requirements for Environmental Product Declarations for coatings, Edition 2022-03-07 (draft)

Issue date
29.11.2022

Valid until
29.11.2027

Blowerproof® Liquid

Owner of declaration:
HEVADEX Group
Spinnerlaan 6
9160 Lokeren
Belgium

Declared product / declared unit
1 m^2

Scope
The declaration is valid for 1 m^2 of the airtight membrane and intelligent vapour control "Blowerproof® Liquid" produced by HEVADEX Group in Lokeren, Belgium. The indicative consumption is 0.7 kg/m^2. The used geographical area is Belgium.
The owner of the declaration shall be liable for the underlying information and evidence. Kiwa-Ecobility Experts shall not be liable with respect to manufacturer information, lifecycle assessment data and evidence. The EPD was created according to the specifications. EPD of construction products may not be comparable if they do not comply with EN 15804.

Verification:
The CEN standard EN 15804:2012+A2:2019 serves as the core PCR.
Independent verification of the declaration and data according to ISO 14025:2010.
☐internal ☒external

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2. Product details

2.1 Product description

Blowerproof® Liquid, which is shown in Figure 1, dries to form a flexible airtight membrane and intelligent vapour control with strong adhesion to the substrate. Blowerproof® Liquid is spray, roller or brush applied. Suitable substrates include concrete, masonry, bricks, blocks, plaster/render, engineered wooden boards, tapes, membranes, aluminium, steel and PVC. Blowerproof® Liquid is a water-based dispersion without organic solvents. Dried material can be disposed of as non-hazardous waste. It is produced at the production site by HEVADEX in Lokeren, Belgium.

Figure 1: Blowerproof® Liquid

2.2 Application

Blowerproof® Liquid is applied for the permanent airtightness in the following applications:

- floor/wall, wall/wall and wall/ceiling connections or complete walls
- walls and floors, curtain walls, Wall/roof connections (steel deck)
- Insulation materials such as Rockwool

Blowerproof® Liquid also functions as an intelligent vapour control, and is also suitable to be applied directly onto insulation materials. A detailed Sd and G value table is available for condensation risk analysis. Blowerproof Liquid is applied (in substructures) as radon barrier.

2.3 Technical data

In Table 1 the technical data of Blowerproof® Liquid are listed.

Table 1: Technical specifications

Parameter	Value	Unit
Indicative consumption	0.7	kg/m^2
Density	1.2	kg/L

2.4 Application & Placing on the market

Preparation:

- Standing water, dust and loose particles should be removed with a vacuum cleaner.
- Fill holes and gaps bigger than 5 mm with non-shrink mortar or non-shrink polyurethane foam. When using polyurethane foam, cut off excess after hardening. Fill gaps and holes < 5mm with Blowerproof® Liquid Brush which is the thixotropic variant of Blowerproof® Liquid.
- Apply Primer 43 on those mineral surfaces which are highly absorbent, or which have low water resistance; on new plasterboards, on dusty surfaces or when applying in temperatures > 25°C.

Application method:

- Mix Blowerproof® Liquid to a homogeneous consistency with a handheld paddle mixer at low speed.
- Apply Blowerproof® Liquid in two layers; total minimum consumption should be 0.5 kg/m² or about 500 microns to be verified with a thickness gauge; maximum thickness per layer: 2000 micron (2 mm). Blowerproof® Liquid can be applied both on dry and humid (damp) surfaces. Apply the second layer after the first has fully dried. To avoid risk of condensation, apply on the warm side of the insulation.
- Apply using an airless spray machine, long-haired roller suitable for water-based acrylic paints or flat synthetic bristle paintbrush. When using an airless spray machine, spray at 20 to 30 cm from the surface at a 90° angle to the surface to minimize overspray. Spray tip: 517 - 525; Pressure: 120 bar.
- During the drying process, Blowerproof® Liquid will change colour from blue to black (Blowerproof® Liquid is also available in white which does not show a colour change when drying), which means it has fully dried out and is ready to accept a finish: plasterboards with dot&dab or sprayplaster in combination with Primer 52; insulation boards fixed onto Blowerproof® Liquid membrane with glue or anchoring; timber battens fixed on and through Blowerproof® Liquid on concrete wall to accept plaster boards; metal studs anchored on Blowerproof® Liquid as used in SFS systems. As a floor build up on Blowerproof® Liquid: 4 cm of sand cement screed to be finished with tiles, or alternative (contact the manufacturer or importer for further specific advice on suitable finishes or anchors).

In Table 2 are the product certifications listed.

Table 2: Product certifications

Institute	Test	Standard	Value/Result
Passive House Institute	System certification: airtightness of building connections.	Passive House EN12114	PASS: COMPONENT A
Ghent University	Airtightness system with rockwool® panels anchored on/trough Blowerproof® Liquid membrane on blockwall.	EN12114	< 0,02 m³/h.m² - Class A
BBA	Product certification: Blowerproof® Liquid serving as permanent airtightness, vapour control and radon barrier.	BBA	PASS
	Durability: service life equal to that of the element onto which it is installed.		PASS
	Damp diffusion resistance factor (Sd) (Detailed Sd and G value table is available for the purpose of condensation risk analysis).	EN ISO 12572	µ-value: 76584 0,5 kg/m² - Sd: 22,9 - dry: 0,3mm(300 micron) 0,75kg/m² - Sd: 34,4 - dry:0,45mm(450 micron)
	Intelligent vapour control: damp resistance	BBA	Sd: 0,8 – 40 meter G: 4 – 200 M.N. s/g
	Radon resistance	K124/02/95	3,3 x 10-12
	Resistance to fatigue movement	EOTA TR008:2004	PASS
	Elongation after ageing	BS EN ISO 527-3	350,5%
	Adhesion of universal bonding compound on Blowerproof® Liquid (Siniat)	BS EN 14496: 2017	PASS
	Water tightness	EN 14891	PASS
	Adhesion on red brick (dry - moist)	ISO4624 (2002); Values after artificial ageing of sample membrane; Testing realised by BBRI and verified by BBA.	> 1 N/mm²
	Adhesion on concrete brick (dry - moist)		> 1 N/mm²
	Adhesion on calcium silicate stone (dry - moist)		Adhesion value exceeding substrate strength
	Adhesion on OSB and multiplex wood		Adhesion value exceeding substrate strength
	Adhesion on rockwool insulation		Adhesion value exceeding substrate strength
	Adhesion on steel		> 1 N/mm²
	Adhesion on EPDM (Tridex)		> 1 N/mm²
	Adhesion on roofing		Adhesion value exceeding substrate strength

	Adhesion of spray plaster (knauf MP75) on Blowerproof® Liquid		Adhesion value exceeding substrate strength
Exova Metech	Euroclass – reaction to fire	EN13501-1	C-S1-D0
VTT	Free from VOC, TVOC, carcinogenics, ammonia, formaldehyde	EN ISO 16000-9/6; EN 717-1; EN ISO 16000-28	M1
MECADI	Methane permeability	ISO 15105	62 – 75 cm^3 (STP)·mm·m-2·day-1·atm-1

2.5 Base materials / Ancillary materials

In Table 3 the main raw materials and their mass-percentages are listed.

Table 3: Raw materials and proportions in mass percent

Raw material	Proportion [m%]
Polymer	ca. 70
Filler	ca. 20
Others (water, repellant etc.)	ca. 10

2.6 Manufacturing

The manufacturing takes place at the production site of HEVADEX Group in Lokeren, Belgium. The manufacturing process is dispersion mixing. Measured waste during production is 0.5 %. No emissions during production. A simple flow diagram can be seen in Figure 2.

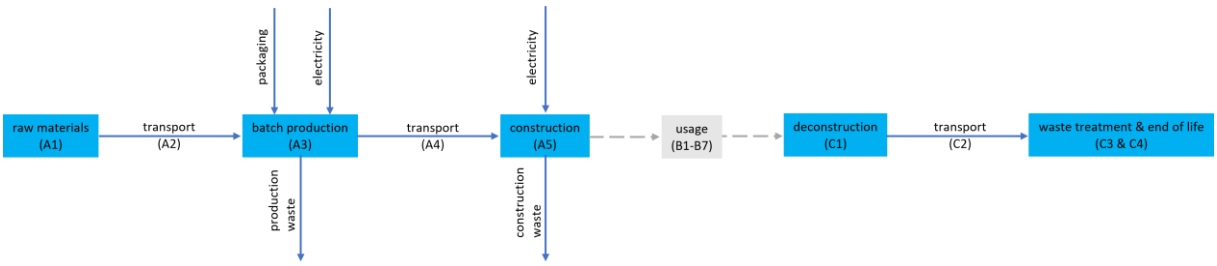

Figure 2: Simple flow diagram

2.7 Reference service life (RSL)

According to the manufacturer the reference service life (RSL) is 50 years. Since the use phase is not part of this EPD, the RSL is not considered.

2.8 Packaging

As can be seen in Figure 1, the packaging is a plastic bucket, which consists of 100 % recycled polypropylene.

3. LCA: Calculation rules

3.1 Declared unit

According to the PCR B "Requirements for Environmental Product Declarations for coatings, Edition 2022-03-07 (draft)" the declared unit is 1 m^2 coating.

Parameter	Value	Unit
Declared unit	1	m^2
Conversion factor to 1 kg	0.7	kg/m^2

3.2 System boundaries

This EPD was created in accordance with DIN EN 15804 and monitors the production, the construction and the end-of-life stage as well as the benefits and loads beyond the system boundary. According to DIN EN 15804 this corresponds to the product phases A1-A3, A4-A5, C1-C4 and D. Therefore, the type of the EPD is "cradle to gate with options".

The modules include:

- A1: Extraction and processing of the raw materials (Polymer etc.)
- A2: Transport of the raw materials to the production site by the suppliers
- A3: Manufacturing of the coating (dispersion mixing) including electricity
- A4: Average transport distance to the application location with a truck
- A5: Application with airless spray machine
- C1: For the deconstruction no electric tools are needed, only physical work
- C2: Transport to the waste treatment plants according to the NMD waste scenarios
- C3: Percentages of the waste treatments according to the NMD waste scenarios
- C4: Disposal of the coating at the end of life
- D: Loads and benefits due to incineration and recycling

3.3 Assumptions and estimates

For most input data, such as the raw materials and supplier information, the values were provided by the manufacturer HEVADEX.

The used production electricity amount per m^2 coating is based on the following estimation: production machine uses 37 KWh; a batch production of 900 kg lasts for about an hour (total machine working time); the machine is not at full force but working at 40 % capacity; so 37 KWh divided by 900 kg and multiplied by 0,7 kg/m² and 40 %.

HEVADEX uses 100 % green energy for the production, provided by Luminus with the contract "Luminus #BeGreen.pro Fix". It consists of 79.7 % wind power onshore, 8.6 % biogas, 5.8 % biomass, 5.4 % wind power offshore and 0.5 % hydropower [VREG, 2022].

For the construction A5 an airless spray machine (220 V and 7.5 A) is used. On average 60 m² can be covered per hour. So 0.0275 kWh electrcitiy are used per declared unit (1 m^2). Here the average grid mix for Belgium was considered.

The best fitting waste scenarios were selected for the different materials. The waste scenarios are based on the "Nationale Milieudatabase" (NMD), the National Environmental Database of the Netherlands. Therefore, the Dutch electricity grid mix of 2019 is used for the energy recovery in module D. This is due the fact that the used EPD & LCA tool R<THiNK is developed by NIBE in the Netherlands. The used waste scenarios were adjusted for Belgium.

Due to privacy reasons, more details are only included in the background report of this EPD.

3.4 Period under review

All process-specific data was collected for the operating year 2021. The quantities of raw and auxiliary materials have been recorded and averaged over the entire operating year. The energy consumption was calculated with the help of the usage time, the capacity and electricity consumption details of the machines.

3.5 Cut-off criteria

For process modules A1 to A3, all process-specific data was collected. All flows could be assigned potential environmental impacts through the Ecoinvent database 3.6. Production, supply, disposal, maintenance and end-of-life treatment of HEVADEX capital goods are included, but in the used Ecoinvent database 3.6 infrastructure and capital goods are included. All flows that contribute more than 1% of the total mass, energy or environmental impact of the system have been included in the LCA. It can be assumed that the neglected processes contributed less than 5% to the impact categories considered. It is assumed that the contribution of capital goods to each individual environmental impact category of the module (A1-A3) is less than 5%.

3.6 Data quality

Overall, the quality of the data can be considered as good. In the operating data survey, all relevant process-specific data were collected by the manufacturer HEVADEX.

Secondary data were taken from the Ecoinvent database version 3.6 (2019). The database is regularly checked and thus complies with the requirements of DIN EN ISO 14044 (background data not older than 10 years). The background data meets the requirements of EN 15804. The quantities of raw materials, consumables and supplies used as well as the energy consumption have been recorded and averaged over the entire year of operation.

The general rule has been complied that specific data from specific production processes or average data derived from specific processes must be given priority when calculating an EPD or Life Cycle Assessment. Data for processes that the manufacturer cannot influence or choose, were backed up with generic data.

The selection of the best fitting data sets is based on research and the help of experts. The transport distances for the waste treatments as well as the used environmental profiles for loads and benefits are based on the data from the NMD.

3.7 Allocations

Specific information about allocations within the background data is included in the documentation of the Ecoinvent datasets. There are no allocations during the manufacturing phase at the plant.

3.8 Comparability

In principle, a comparison or assessment of the environmental impact of different products is only possible if they have been produced in accordance with EN 15804. For the assessment of comparability, the following aspects in particular must be taken into account: 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 the use and disposal phases, and the life cycle inventory (data collection, calculation methods, allocations, validity period).

4. LCA: scenarios and further technical information

No scenarios were analysed in this EPD.

5. LCA: Results

The following tables show the results of the life cycle assessment, more precisely for the environmental impact indicators, resource consumption, output flows and waste categories. The results presented here refer to the declared unit of 1 m^2.

The results of the environmental impact indicators ETPfw-, HTP-c, HTP-nc, SQP, ADP-f, ADP-mm and WDP must be used with caution, as the uncertainties in these results are high or there is limited experience with the indicator.

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

The mass of biogenic carbon containing materials in the product and the packaging is less than 5 % of the mass of the product and therefore the declaration can be omitted according to DIN EN 15804.

Specification of the system boundaries (X = module declared; - = module not declared)																
PRODUCTION PHASE			**CONSTRUCTION PHASE**		**USE PHASE**							**DISPOSAL PHASE**				**Credits and loads outside the system boundaries**
Raw material supply	Transport	Production	Transport	Construction / Installation	Use	Maintenance	Repair	Replacement	Conversion / Renewal	Operational energy use	Operational water use	Demolition	Transport	Waste treatment	Landfill	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

Table 1: Results of the LCA – Environmental impact indicators: Blowerproof® Liquid (1 m^2)

Indicator (Impact category)	Unit	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
AP	mol H+ eqv.	8,18E-03	4,75E-05	3,41E-04	5,43E-05	1,37E-03	0,00E+00	5,75E-05	1,48E-05	5,69E-05	-1,38E-04
GWP-total	kg CO2 eqv.	2,38E+00	9,15E-03	8,03E-02	1,06E-02	5,20E-01	0,00E+00	9,93E-03	1,68E-01	7,53E-02	-1,14E-01
GWP-b	kg CO2 eqv.	1,56E-02	4,82E-06	1,64E-03	7,78E-06	2,71E-03	0,00E+00	4,58E-06	6,83E-06	5,47E-05	-6,51E-04
GWP-f	kg CO2 eqv.	2,37E+00	9,14E-03	7,85E-02	1,06E-02	5,17E-01	0,00E+00	9,92E-03	1,67E-01	7,52E-02	-1,14E-01
GWP-luluc	kg CO2 eqv.	1,44E-03	3,24E-06	9,99E-05	3,13E-06	2,57E-04	0,00E+00	3,63E-06	3,00E-07	3,04E-06	-1,03E-04
ETP-fw	CTUe	2,41E+01	1,13E-01	1,09E+00	1,33E-01	5,27E+00	0,00E+00	1,33E-01	4,52E-02	1,30E-01	-5,65E-01
PM	disease incidence	9,23E-08	6,86E-10	2,56E-09	9,89E-10	1,52E-08	0,00E+00	8,92E-10	1,18E-10	1,09E-09	-5,67E-10
EP-m	kg N eqv.	1,36E-03	1,63E-05	6,06E-05	1,84E-05	2,41E-04	0,00E+00	2,03E-05	6,58E-06	1,92E-05	-3,62E-05
EP-fw	kg PO4 eqv.	3,61E-05	7,53E-08	4,02E-06	8,17E-08	6,57E-06	0,00E+00	1,00E-07	1,86E-08	1,15E-07	-9,97E-07
EP-T	mol N eqv.	1,36E-02	1,79E-04	7,00E-04	2,03E-04	2,46E-03	0,00E+00	2,23E-04	7,28E-05	2,12E-04	-4,22E-04
HTP-c	CTUh	9,41E-10	3,25E-12	4,29E-11	3,27E-12	2,06E-10	0,00E+00	4,33E-12	2,15E-10	8,27E-12	-1,35E-11
HTP-nc	CTUh	2,13E-08	1,23E-10	8,49E-10	1,51E-10	3,98E-09	0,00E+00	1,46E-10	6,56E-10	1,11E-10	-2,51E-10
IR	kBq U235 eqv.	1,15E-02	6,03E-04	8,15E-03	7,28E-04	6,67E-03	0,00E+00	6,27E-04	3,02E-05	6,18E-04	-1,98E-02
SQP	Pt	1,22E+00	9,97E-02	6,91E-01	1,91E-01	4,93E-01	0,00E+00	1,30E-01	5,86E-03	3,74E-01	-4,28E-01
ODP	kg CFC 11 eqv.	5,98E-08	2,08E-09	8,65E-09	2,52E-09	1,60E-08	0,00E+00	2,19E-09	1,55E-10	2,06E-09	-1,91E-08
POCP	kg NMVOC eqv.	6,33E-03	5,12E-05	2,13E-04	6,07E-05	1,07E-03	0,00E+00	6,38E-05	1,80E-05	7,72E-05	-1,23E-04
ADP-f	MJ	4,54E+01	1,39E-01	1,48E+00	1,67E-01	7,46E+00	0,00E+00	1,50E-01	1,43E-02	1,57E-01	-2,86E+00
ADP-mm	kg Sb-eqv.	2,95E-06	2,46E-07	7,30E-07	1,83E-07	8,77E-07	0,00E+00	2,51E-07	1,30E-08	7,12E-08	-1,02E-07
WDP	m^3 world eqv.	1,20E+00	4,03E-04	2,59E-02	5,42E-04	1,92E-01	0,00E+00	5,35E-04	-6,96E-04	6,76E-03	-1,56E-02
AP = Acidification potential, Accumulated Exceedance (Acidification); GWP-total = Global warming potential total (Climate change total); GWP-b = Global warming poten-tial biogenic (Climate change biogenic); GWP-f = Global warming potential fossil (Climate change fossil); GWP-luluc = Global warming potential land use and land use change											

(Climate change land use and land use change); ETP-fw = Potential Comparative Toxic Unit for ecosystems (Ecotoxicity freshwater); PM = Potential incidence of disease due to PM emissions (Particulate Matter emissions); EP-m = Eutrophication potential, fraction of nutrients reaching marine end compartment (Eutrophication aquat-ic marine); EP-fw = Eutrophication potential, fraction of nutrients reaching freshwater end compartment (Eutrophication aquatic freshwater); EP-T = Eutrophication potential, Accumulated Exceedance (Eutrophication terrestrial); HTP-c = Potential Comparative Toxic Unit for humans (Human toxicity, cancer effects); HTP-nc = Potential Compara-tive Toxic Unit for humans (Human toxicity, non-cancer effects); IR = Potential Human exposure efficiency relative to U235 (Ionising radiation, human health); SQP = Poten-tial soil quality index (Land use related impacts/Soil quality); ODP = Depletion potential of the stratospheric ozone layer (Ozone depletion); POCP = Formation potential of tropospheric ozone (Photochemical ozone formation); ADP-f = Abiotic depletion for fossil resources potential (Depletion of abiotic resources, fossils); ADP-mm = Abiotic depletion potential for non-fossil resources (Depletion of abiotic resources, minerals and metals); WDP = Water deprivation potential, deprivation-weighted water consump-tion (Water use)

Table 2: Results of the LCA – Resource consumption, output streams & waste categories: Blowerproof® Liquid (1 m^2)

Parameter	Unit	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	3,70E-01	1,93E-03	2,18E-01	2,10E-03	1,97E-01	0,00E+00	1,87E-03	5,56E-04	5,15E-01	-1,50E-01
PERM	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
PERT	MJ	3,70E-01	1,93E-03	2,18E-01	2,10E-03	1,28E-01	0,00E+00	1,87E-03	4,04E-04	2,72E-03	-1,50E-01
PENRE	MJ	3,26E+01	1,47E-01	9,82E-02	1,77E-01	5,91E+00	0,00E+00	1,59E-01	1,02E-02	4,40E+00	-3,03E+00
PENRM	MJ	1,64E+01	0,00E+00	1,47E+00	0,00E+00	2,68E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	4,90E+01	1,47E-01	1,57E+00	1,77E-01	8,03E+00	0,00E+00	1,59E-01	1,55E-02	1,67E-01	-3,03E+00
SM	kg	0,00E+00	0,00E+00	3,70E-02	0,00E+00	5,54E-03	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	m^3	2,82E-02	1,50E-05	1,01E-03	1,90E-05	4,65E-03	0,00E+00	1,82E-05	1,29E-05	1,65E-04	-4,94E-04
HWD	kg	7,97E-06	3,62E-07	2,41E-06	4,04E-07	2,14E-06	0,00E+00	3,79E-07	2,31E-07	2,41E-07	-2,08E-06
NHWD	kg	1,68E-01	6,99E-03	1,59E-02	1,45E-02	1,29E-01	0,00E+00	9,49E-03	2,80E-03	6,32E-01	-3,07E-03
RWD	kg	1,47E-05	9,41E-07	7,47E-06	1,14E-06	6,75E-06	0,00E+00	9,82E-07	4,00E-08	9,40E-07	-1,72E-05
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	4,25E-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
EE-total	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	-1,63E+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	-1,03E+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	-5,99E-01

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-total = Exported energy, total; EET = Exported energy thermic; EEE = Exported energy electric

6. LCA: Interpretation

For an easier understanding, the results are processed graphically, in order to recognize relationships and connections between the data more clearly.

The following figure shows the percentage of the product phases in the environmental impact categories.

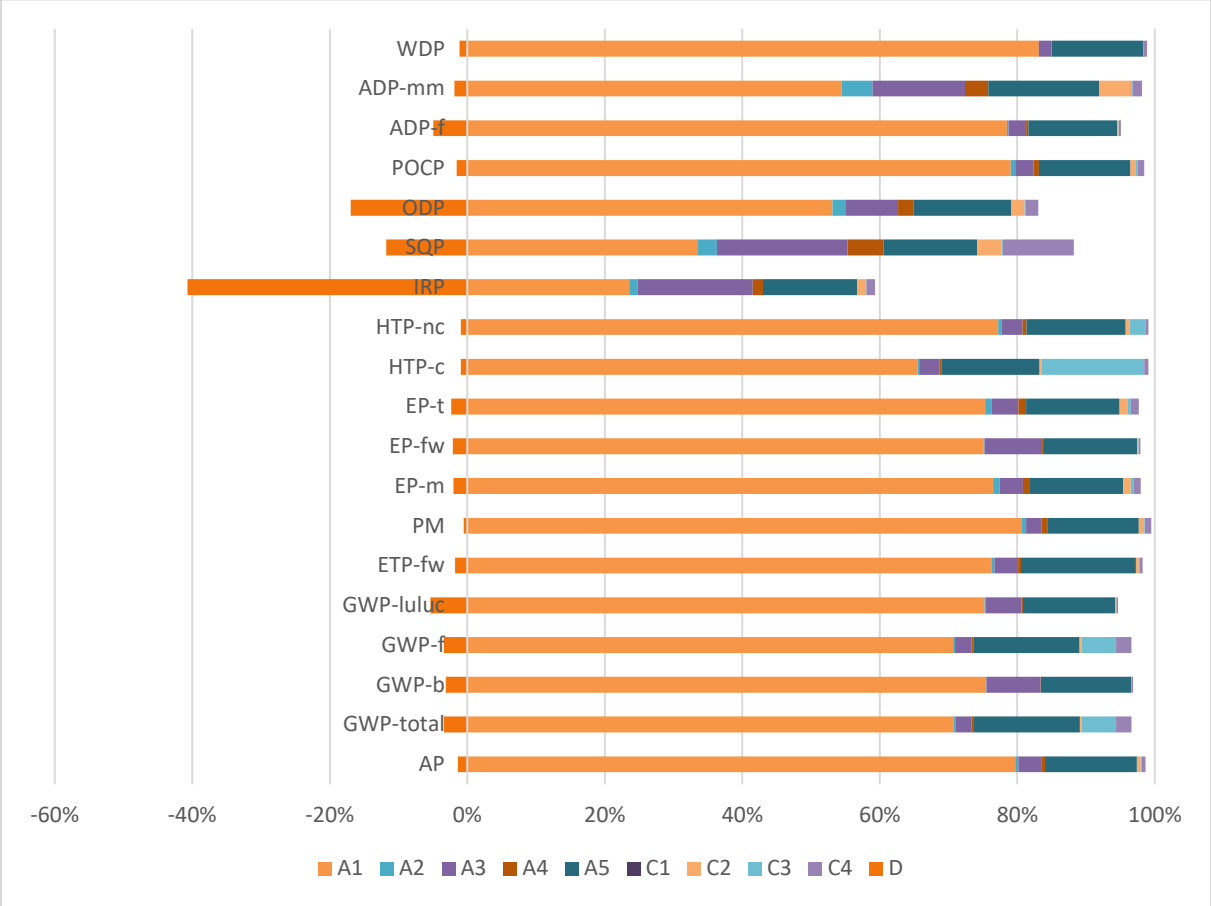

Figure 3: Percentage of the product phases in the environmental impact categories of Blowerproof® Liquid

The figure shows that for most of the environmental impact categories the raw material supply A1 during the production phase has the highest percentages. Followed by the installation A5, where the energy consumption of the airless spray machine and the packaging waste is considered. It can also be seen that the benefits in D predominate, represented by the negative percentage values of D.

7. References

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