

ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804+A2

Owner of the Declaration	BOSTIK GmbH
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-BST-20240579-IBA1-EN
Issue date	04.03.2025
Valid to	03.03.2030

Bostik biobased hybrid multipurpose sealant & adhesive BOSTIK GmbH

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1. General Information

BOSTIK GmbH

Programme holder

IBU – Institut Bauen und Umwelt e.V.
Hegelplatz 1
10117 Berlin
Germany

Declaration number

EPD-BST-20240579-IBA1-EN

This declaration is based on the product category rules:

Reaction resin products, 01.08.2021
(PCR checked and approved by the SVR)

Issue date

04.03.2025

Valid to

03.03.2030



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Bostik biobased hybrid multipurpose sealant & adhesive

Owner of the declaration

BOSTIK GmbH
Postfach 11 54
33825 Borgholzhausen
Germany

Declared product / declared unit

1kg of Bostik biobased hybrid multipurpose sealant & adhesive produced only in the sites of Avelin (France) and Giessen (Netherlands). The same product produced in other sites are excluded

Scope:

The Environmental Product Declaration refers to Bostik biobased hybrid multipurpose sealant & adhesive. Data and calculation values refer to the BOSTIK plants located in Avelin in France and Giessen in The Netherlands. It is based on data from 2022/2023 which complies with the annual average.

The owner of the declaration shall be liable for the underlying information and evidence; the IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

The EPD was created according to the specifications of EN 15804+A2. In the following, the standard will be simplified as *EN 15804*.

Verification

The standard EN 15804 serves as the core PCR	
Independent verification of the declaration and data according to ISO 14025:2011	
<input type="checkbox"/>	internally
<input checked="" type="checkbox"/>	externally



Vito D'Incognito,
(Independent verifier)

2. Product

2.1 Product description/Product definition

Bostik biobased hybrid multipurpose sealant & adhesive is a new generation multi-functional sealant and adhesive based on biobased hybrid technology. Its unique formulation, based on cutting-edge technology, contains a substantial amount of biobased materials, meaning organic and renewable raw materials derived from biomass. In that respect, this new product can claim a 46% biobased carbon content, according to *EN 16640:2017* standard, which allows to significantly reduce its carbon footprint compared to an equivalent product from our range. In terms of application, its versatility allows to seal, bond and fill gaps on a wide range of building materials and substrates. Bostik biobased hybrid multipurpose sealant & adhesive is especially designed to provide a long-lasting and paintable elastic sealing for non-structural joints such as perimeter joints, door and window joints, as well as a strong construction adhesive suitable for indoor and outdoor bonding. It is resistant to UV, moisture and weather conditions. With regards to certification and other health benefits, Bostik biobased hybrid multipurpose sealant & adhesive offers very low VOC emissions, complying with EC1 Plus, M1 and A+ requirements. It is also tin-free and equipped with an *ISEGA certification* (Forschungs- und Untersuchungsgesellschaft mbH).

Bostik biobased hybrid multipurpose sealant & adhesive is available on different colours (white, black, grey, anthracite, beige and brown).

For the placing on the market of the product in the European Union/European Free Trade Association (EU/EFTA) (with the exception of Switzerland) *Regulation (EU) No. 305/2011* (CPR) applies.

The product requires a declaration of performance considering the standard *EN 15651-1: 2012* "Sealants for non-structural use in joints in buildings and pedestrian walkways - Part 1: Sealants for facade elements", F-EXT-INT-CC (Class 20HM) and the CE-marking. For the application and use the respective national provisions apply.

2.2 Application

Bostik biobased hybrid multipurpose sealant & adhesive is specially formulated as a universal sealant and adhesive. It provides a long-lasting elastic and durable seal for non-structural joints, such as perimeter, window and door joints. It is also a versatile construction adhesive suitable for interior and exterior bonding. It is compatible with a wide range of materials (stone, concrete, glass, plasterboard, PU, PVC, hard plastics, enamel, ceramic, copper, lead, zinc, aluminum, metals, alloys, stainless steel, wood and various paint systems).

It should be applied at temperatures between +5 °C and +40 °C and, once cured, will withstand temperatures from -40 °C to +90 °C. Curing time is 24 hours for beads of 2 to 3 mm.

ADHESIVE assembly :

The adhesive should be applied in vertical strips spaced 10 to 20 cm apart. Caution: for optimum adhesion, the adhesive should not be applied in dotted lines!

SEALANT assembly :

In order to absorb movement between building materials, the joint must have the correct dimensions and respect these assembly rules: the ratio between the depth and width of the joint is 1:1 for joint widths of up to 10 mm, with a minimum of 5 mm in width and depth. For joints wider than 10 mm, the depth is equal to the width divided by 3 plus 6 mm.

2.3 Technical Data

Bostik biobased hybrid multipurpose sealant & adhesive complies with the requirements of the standards: *EN 53504 S2*, *EN 7389*, *EN7390* and *EN 10563*.

Constructional data

Name	Value	Unit
Density	1.5	kg/m ³
Tensile shear strength acc. to DIN 53504 S2	1.7 - 1.8	N/mm ²
Elastic recovery acc. to EN ISO 7389 (at elongation of 60 %)	70 %	
Resistance to flow acc. to EN ISO 7390	≤3 mm	
Loss of volume acc. to EN ISO 10563	≤ 10 %	

Performance data of the product in accordance with the declaration of performance with respect to its essential characteristics according to *EN 15651* "Sealants for non-structural use in joints in buildings and pedestrian walkways - Part 1: Sealants for facade elements", F-EXT-INT-CC (Class 20HM) and the CE-marking.

2.4 Delivery status

Bostik biobased hybrid multipurpose sealant & adhesive is delivered in 290 ml high density polyethylene (HDPE) cartridge made from 40 % PCR HDPE.

2.5 Base materials/Ancillary materials

The Bostik biobased hybrid multipurpose sealant & adhesive sealant are a formulation of silyl-modified polymers (SMP) (< 80 %) with mineral fillers (< 70 %), plasticizer (< 25 %) and various additives including moisture scavengers, adhesion promoters, catalysts, and rheology modifiers (< 30 %).

This formulation contains 46 % of biobased carbon content as a fraction of total carbon contained (Cf. *Eurofins* Report n°392-2023-00450902A_FP_EN of the 03rd November of 2023).

The Bostik biobased hybrid multipurpose sealant & adhesive is a low volatile organic compounds (VOC) emission product. It contributes to preserving the indoor air quality of the buildings. It's classified: EC 1 PLUS EMICODE for Installation Products, Adhesives and Building materials; A+ French labelling statements and M1 Emission classification of building materials. Cf. for EMICODE: Licence n°18061/24.04.13 (Date: 29.01.2024) ; for RTS: 12.12.2023 – 4276. (Date: 12.12.2023) and for French regulation the internal certificate dated the 01.12.2023.

REACH regulation:

1. This product contains substances listed in the candidate list (date: 15.11.2024) exceeding 0.1 percentage by mass: yes. The substances are adhesion promotor CAS n°2768-02-7 (from 1 to 3 %), pigment CAS n°13463-67-7 (from 0.1 to 1 %) and catalyst CAS n°93-69-6 (from 0.1 to 1 %).
2. This product contains other carcinogenic, mutagenic, reprotoxic (CMR) substances in categories 1A or 1B which are not on the candidate list, exceeding 0.1 percentage by mass: no.
3. Biocide products were added to this construction product or it has been treated with biocide products (this then concerns a treated product as defined by the (EU) *Ordinance on Biocide Products No. 528/2012*): no.

The Bostik biobased hybrid multipurpose sealant & adhesive sealant does not contain candidate substances of very high concern at a concentration $\geq 0.1\%$ (Regulation(EC) No. 1907/2006 (REACH), Article 59)

The safety data sheets that can be consulted at:

https://bostiksdsh.thewerco.com/MyDocuments/DownloadSingleFile?ontent=B3232701-D672-440C-A2DB-082019D40DC8_PDF&Auth=PDF&excel=true

2.6 Manufacture

The Bostik biobased hybrid multipurpose sealant & adhesive is produced through non-reactive mixing without heating, in batch process, in the Avelin (France) and/or in Giessen (Netherlands) plants. Packaging is automated and identical on both production sites. Cartridges with their accessories (plunger and nozzle) are placed in cardboard boxes, then stacked on a wooden pallet which is fitted with a sheet of cardboard and a LDPE cover. The pallet is then wrapped in a LDPE film and stored in the finished product warehouse.

The manufacturing plants of Bostik SA – Plant Avelin, France and Plant Giessen, Netherlands are certified according to ISO 14001 which defined international standards for sustainable environmental management.

This LCA study therefore includes the different production sites, with the worst-case scenario retained for the EPD declaration.

2.7 Environment and health during manufacturing

Apart from the customary measures concerning hygiene and safety in the workplace, no particular protective measures need to be observed during production.

2.8 Product processing/Installation

The Bostik biobased hybrid multipurpose sealant & adhesive in cartridges are applied using a manual extrusion gun (the LCA of extrusion gun is not included in this study). On average, the product is applied in bead of at least 5 mm diameter, representing a coverage of 0.029 kg/m^2 . The bead is then smoothed with a finger, previously wetted with a little water and left to air dry for 24 hours.

No additional energy or substance is required to assemble the product.

2.9 Packaging

The Bostik biobased hybrid multipurpose sealant & adhesive is packed in 290 ml cartridges and placed into cardboard boxes, on wood pallet with cardboard and PE protections and shrinked with a PE film.

Materials for packaging (for 1kg of product):

Packaging materials	Value	Unit
Wood	2,40E-03	kg/ kg of product
Cardboard	4,97E-02	kg/ kg of product
Plastic (LDPE)	7,43E-04	kg/ kg of product
Plastic (HDPE)	1,28E-01	kg/ kg of product

3. LCA: Calculation rules

3.1 Declared Unit

This EPD refers to the declared unit of 1 kg of Bostik biobased hybrid multipurpose sealant & adhesive, applied into the

2.10 Condition of use

No environmental impact is incurred by the product during use.

2.11 Environment and health during use

The Bostik biobased hybrid multipurpose sealant & adhesive is classified:

- EC 1 PLUS EMI CODE for Installation Products, Adhesives and Building materials,
- M1 Emission classification of building materials,
- A+ French labelling statements.

2.12 Reference service life

The Bostik biobased hybrid multipurpose sealant & adhesive can fulfil multiple functions in the construction or renovation of building structures. As such, the service life of the product depends on the specific exposure associated with the product (weather conditions, mechanical and chemical stresses).

No energy or specific cleaning is needed during the life of the product, and no replacement of the product is considered during the service life considered in this study.

2.13 Extraordinary effects

Fire

The product has not been tested for fire classification.

According to the EN 1873, the product is therefore classified as 'class F: Not tested', for reaction to fire by default.

Fire protection

Name	Value
Building material class	F

Water

The cured Bostik biobased hybrid multipurpose sealant & adhesive is chemically inert and insoluble in water. It therefore does not release any substances that are hazardous to water.

Mechanical destruction

Not relevant.

2.14 Re-use phase

The product cannot be reused.

2.15 Disposal

The deconstructed Bostik hybrid biobased multipurpose sealant & adhesive is considered non-hazardous waste and sent to landfill. The EWC waste code in accordance with the European Waste Catalogue/List of Waste Ordinance (AVV) is 08 04 16 (aqueous liquid sealant residue) and 08 04 10 (cured sealant waste).

2.16 Further information

<https://www.bostik.com/global/en/>

building in accordance with the IBU PCR Part B Requirements on the EPD for Reaction resin products - PCR 2023, Version 5.

The Bostik biobased hybrid multipurpose sealant & adhesive is

applied manually with an extrusion gun (not considered in this LCA study) in a bead over a linear meter to ensure the bonding or sealing of the substrate, as described in standard *EN 15651-1*. The functional unit of Bostik biobased hybrid multipurpose sealant & adhesive is 29 g per 1 linear meter (for 5 mm diameter bead).

Declared unit and mass reference

Name	Value	Unit
Declared unit	1	kg
Productiveness (functional value)	0.029	kg/m ²
Gross density	1.5	kg/m ³

3.2 System boundary

This LCA is published as a cradle-to-grave EPD, according to the *EN15804* and includes the modules A1-A3, A4, A5, C1, C2, C3, C4 and D:

- A1 Extraction/ production of raw materials, packaging and auxiliaries,
- A2 Transport of the raw materials to the plant,
- A3 Production, including energy, auxiliaries, packaging and waste treatment.

According to the *EN15804+A2*, modules A1, A2 and A3 are declared as an aggregated module A1-A3.

- A4 Transport of the product to the construction site,
- A5 Product installation into the building, with packaging waste disposal [waste incineration],
- C1 deconstruction, demolition, [manually]
- C2 Transport to waste processing,
- C3 waste processing for reuse, recovery and/or recycling, [not applicable in this study]
- C4 disposal [waste to landfill],
- D Credits (no credits considered in this study).

3.3 Estimates and assumptions

This LCA study includes the different production sites (Giessen-NL and Avelin-FR). The worst-case scenario has been retained for the EPD declaration. Production waste is considered to be disposed of by incineration with energy credits (module D), while assembly waste is considered without energy credits. For end-of-life disposal, landfill is considered the most representative scenario. Biogenic carbon emissions are still considered as specified in *EN15804*.

3.4 Cut-off criteria

All energy flows identified related to the Bostik manufacturing workshop and raw material manufacturing have been considered.

3.5 Background data

For the background dataset, the information about the documentation is available in Sphera documentation on-line: <https://sphera.com/product-sustainability-gabi-data-search/>

3.6 Data quality

Primary data of Bostik refer to the year 2023 and represent the complete annual production.

Transport, manufacturing utilities and raw materials data come from European and global databases, as well as supplier EPD for some raw materials. All datasets included have a temporary reference between 2020 and 2023. Therefore all datasets are not more than 10 years old according to *EN 15804+A2* data quality requirements.

The quality level of the datasets used in this EPD can be considered good to fair (according to *EN 15804*).

3.7 Period under review

Manufacturing data from the year 2023.

Split (ratio) of raw materials suppliers from the year 2023.

3.8 Geographic Representativeness

Land or region, in which the declared product system is manufactured, used or handled at the end of the product's lifespan: Europe

3.9 Allocation

The manufacturing of the Bostik biobased hybrid multipurpose sealant & adhesive doesn't generate co-products. All inputs and outputs are taken into account in this study. Electricity is measured at the entrance of the plant and allocated to each workshop and product following the distribution key established by the process experts and the accounting department.

Waste and emissions are measured at the exit of the plant and allocated to each workshop by process experts following the nature of the waste and the tonnage of each workshop. When specific wastes are identified for a specific workshop, no allocation is applied.

Bostik biobased hybrid multipurpose sealant & adhesive have no considerable benefits due to recycling or/and reuse. The incineration credits (electrical and thermal) of the A3 production waste are considered and included in the calculation.

3.10 Comparability

Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to *EN 15804* and the building context, respectively the product-specific characteristics of performance, are taken into account. The background database is used from *LCA for Experts® version 2024.2*.

4. LCA: Scenarios and additional technical information

Characteristic product properties of biogenic carbon

The Bostik biobased hybrid multipurpose sealant & adhesive contains 46 % of biobased carbon as a fraction of total carbon according to the *EN 16640* standard.

(Product tested by *Eurofins*, report n°392-2023-00450902A_FP_EN of the 03rd November 2023)

Information on describing the biogenic carbon content at factory gate

For 1kg of Bostik biobased hybrid multipurpose sealant & adhesive:

Name	Value	Unit
Biogenic carbon content in product as a fraction of total carbon	0.046	kg C
Biogenic carbon content in accompanying packaging	0.023	kg C

Note: 1 kg of biogenic carbon is equivalent to 44/12 kg of CO₂.

The biogenic carbon of the packaging comes from the wood pallet and the cardboard from boxes and the protection sheet. To calculate the biogenic content of wood and cardboard, the

EN 16449 standard has been used.

The use of packaging material is declared in the module A3. The amount of packaging materials as waste in step A5 was included and the "incineration" module was used to declare the disposal.

The emissions of biogenic carbon are manually added at the end of life of the product (step C4).

Transport to the building site (A4)

Name	Value	Unit
Transport distance	770	km
Gross density of products transported	1.5	kg/m ³

Installation into the building (A5)

The Bostik biobased hybrid multipurpose sealant & adhesive is applied by hand, using an extrusion gun (the LCA of the gun is not considered in this study). No energy or substances (water or solvents) are required for this step.

Name	Value	Unit
Material loss	0.05	kg

Use or application of the installed product (B1) see section 2.12 "Use"

Name	Value	Unit
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No maintenance, use, repair or replacement is required.

The reference service life (RSL) cannot be declared according to EN ISO 15686.

The Bostik biobased hybrid multipurpose sealant & adhesive can fulfil multiple functions in the construction or renovation of building structures. As such, the service life of the product depends on the specific exposure associated with the product (weather conditions, mechanical and chemical stresses).

End of life (C1-C4)

The product is removed manually without energy or auxiliaries required, and it's considered as inert material to landfill.

Name	Value	Unit
Landfilling	0.95	kg

Reuse, recovery and/or recycling potentials (D), relevant scenario information

The Bostik biobased hybrid multipurpose sealant & adhesive is neither recycled or reused by itself.

Name	Value	Unit
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5. LCA: Results

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED; MNR = MODULE NOT RELEVANT)

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 the gate to the site	Assembly	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	MNR	MNR	MNR	MND	MND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 kg Bostik biobased hybrid multipurpose sealant & adhesive manufactured

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq	1.74E+00	7.81E-02	1.42E-01	0	1.7E-02	0	7.58E-01	-2.33E-02
GWP-fossil	kg CO ₂ eq	2.42E+00	7.75E-02	4.29E-02	0	1.69E-02	0	1.42E-02	-2.32E-02
GWP-biogenic	kg CO ₂ eq	-6.81E-01	-6.64E-04	9.86E-02	0	-1.46E-04	0	7.44E-01	-7.73E-05
GWP-luluc	kg CO ₂ eq	2.35E-03	1.31E-03	3.06E-04	0	2.87E-04	0	8.53E-05	-1.63E-06
ODP	kg CFC11 eq	3.68E-05	1E-14	2.32E-14	0	1.72E-15	0	3.83E-14	-1.76E-10
AP	mol H ⁺ eq	9.24E-03	4.81E-04	1.79E-04	0	1.26E-04	0	1.01E-04	-2.77E-05
EP-freshwater	kg P eq	4.44E-04	3.33E-07	8.38E-08	0	7.29E-08	0	3.23E-08	-1.27E-06
EP-marine	kg N eq	5.86E-03	2.36E-04	8.35E-05	0	6.25E-05	0	2.6E-05	-1.01E-05
EP-terrestrial	mol N eq	4.47E-02	2.62E-03	9.51E-04	0	6.92E-04	0	2.86E-04	-9.75E-05
POCP	kg NMVOC eq	1E-02	4.52E-04	1.72E-04	0	1.19E-04	0	7.95E-05	-2.96E-05
ADPE	kg Sb eq	9.54E-06	6.65E-09	1.66E-09	0	1.45E-09	0	9.21E-10	-2.05E-08
ADPF	MJ	4.85E+01	1.02E+00	2.84E-01	0	2.23E-01	0	1.87E-01	-7.13E-01
WDP	m ³ world eq deprived	1.51E+00	1.19E-03	1.75E-02	0	2.54E-04	0	1.63E-03	-4.88E-03

GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 kg Bostik biobased hybrid multipurpose sealant & adhesive manufactured

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	4.96E+00	8.75E-02	3.25E-02	0	1.88E-02	0	3.27E-02	-7.28E-03
PERM	MJ	0	0	0	0	0	0	0	0
PERT	MJ	3.97E+00	8.75E-02	3.25E-02	0	1.88E-02	0	3.27E-02	-7.28E-03
PENRE	MJ	5.59E+01	1.02E+00	2.84E-01	0	2.23E-01	0	1.87E-01	-7.13E-01
PENRM	MJ	0	0	0	0	0	0	0	0
PENRT	MJ	4.43E+01	1.02E+00	2.84E-01	0	2.23E-01	0	1.87E-01	-7.13E-01
SM	kg	ND	ND	ND	ND	ND	ND	ND	ND
RSF	MJ	-6.42E-12	0	0	0	0	0	0	0
NRSF	MJ	-9.42E-11	0	0	0	0	0	0	0
FW	m ³	2.78E-02	9.77E-05	4.28E-04	0	2.12E-05	0	4.97E-05	-1.15E-04

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; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA - WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 kg Bostik biobased hybrid multipurpose sealant & adhesive manufactured

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
HWD	kg	2.71E-01	3.58E-11	3.46E-11	0	7.21E-12	0	4.67E-11	0
NHWD	kg	1.01E-01	1.6E-04	8.14E-03	0	3.47E-05	0	9.51E-01	0
RWD	kg	1.44E-04	1.64E-06	2.61E-06	0	2.88E-07	0	1.97E-06	0
CRU	kg	ND	ND	ND	ND	ND	ND	ND	ND
MFR	kg	ND	ND	ND	ND	ND	ND	ND	ND
MER	kg	ND	ND	ND	ND	ND	ND	ND	ND
EEE	MJ	ND	ND	ND	ND	ND	ND	ND	ND
EET	MJ	ND	ND	ND	ND	ND	ND	ND	ND

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; EEE = Exported electrical energy; EET = Exported thermal energy

**RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional:
1 kg Bostik biobased hybrid multipurpose sealant & adhesive manufactured**

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PM	Disease incidence	1.28E-07	3.08E-09	1.17E-09	0	8.34E-10	0	1.27E-09	0
IR	kBq U235 eq	2.32E-01	2.37E-04	4.04E-04	0	4.02E-05	0	2.27E-04	0
ETP-fw	CTUe	4.07E+01	7.49E-01	1.96E-01	0	1.64E-01	0	1.08E-01	0
HTP-c	CTUh	1.33E-08	1.51E-11	5.18E-12	0	3.3E-12	0	2.55E-12	0
HTP-nc	CTUh	5.9E-08	6.7E-10	3.13E-10	0	1.47E-10	0	9.86E-11	0
SQP	SQP	6.83E+01	5.05E-01	1.3E-01	0	1.1E-01	0	5.16E-02	0

PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

Disclaimer 1 – for the indicator “Potential Human exposure efficiency relative to U235”. This impact category 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 or radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, radon and from some construction materials is also not measured by this indicator.

Disclaimer 2 – for the indicators “abiotic depletion potential for non-fossil resources”, “abiotic depletion potential for fossil resources”, “water (user) deprivation potential, deprivation-weighted water consumption”, “potential comparative toxic unit for ecosystems”, “potential comparative toxic unit for humans – cancerogenic”, “Potential comparative toxic unit for humans - not cancerogenic”, “potential soil quality index”. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high as there is limited experience with the indicator.

This EPD was created using a software tool.

6. LCA: Interpretation

Raw materials are the key contributors of "Climate change - total" as well as on all indicators, taken together 50-90 % of total life cycle impacts. To a lesser extent, the packaging of the final product contributes significantly to the impact of the process (A3) despite the usage of more than 40 % PCR-containing cartridges.

The Bostik biobased hybrid multipurpose sealant & adhesive has the specificity of using bio-based raw materials. Among raw materials, those biobased materials contribute significantly to the "Eutrophication, freshwater", "Particulate matter" and "Water use" indicators.

Although the product is inert, the end-of-life stage is a significant contributor (28%) of the total life cycle "Climate change - total" impact. Indeed all biogenic carbon emissions avoided in raw materials need to be considered at the end of life whatever the end-of-life scenario considered.

Despite the increase in end-of-life emissions, Bostik's biobased hybrid multipurpose sealant & adhesive presents a lower "Climate change - total" over the whole life cycle compared to the same performance standard fully fossil alternative, and in particular a nearly 30 % lower "Climate change - total" impact at product step A1-A3.

7. Requisite evidence

BIOGENIC CARBON Content

Test institute: *Eurofins Product Testing A/S*, 8464 Galten, Denmark

Measuring process: Biogenic carbon is measured according to the *EN 16640* standard.

Results: **The formulation contains 46 % of biobased carbon** as a fraction of total carbon contained.

Certificate: report n°392-2023-00450902A_FP_EN of the 03rd November of 2023.

The Bostik biobased hybrid multipurpose sealant & adhesive has been tested by Eurofins in accordance with the standards approved by the various EMICODE, RTS and French regulation protocols. The results comply with the requirements defined in each program.

Measuring process: GEV test method for determining the emissions of volatile organic compounds from building products according to *ISO 16000-11* in a test chamber.

Testing for CMR substances and TVOC/TSVOC after 3 and 28 days.

AgBB scheme

Health-related evaluation of emissions by volatile organic compounds (VOC and SVOC) from construction products. The requirements on emission performance according to AgBB are automatically regarded as satisfied for products availing of EMICODE EC 1 PLUS classification.

Total volatile organic compounds (TVOC) limit values EMICODE

Test institute: *Eurofins Product Testing A/S*, 8464 Galten, Denmark.

Parameter	EC 1 ^{PLUS}	EC 1	EC 2
	max. allowed concentration [$\mu\text{g}/\text{m}^3$]		
TVOC after 3 days	≤ 750	≤ 1000	≤ 3000
TVOC after 28 days	≤ 60	≤ 100	≤ 300
TSVOC after 28 days	≤ 40	≤ 50	≤ 100
R value based on German AgBB LCI (NIK) after 28 days	1	-	-
Sum of non-assessable VOC	≤ 40	-	-
Formaldehyde after 3 days	≤ 50	≤ 50	≤ 50
Acetaldehyde after 3 days	≤ 50	≤ 50	≤ 50
Sum of form- and acetaldehyde	≤ 0.05 ppm	≤ 0.05 ppm	≤ 0.05 ppm
Sum of volatile C1A/C1B after 3 days	≤ 10	≤ 10	≤ 10
Any volatile C1A/C1B after 28 days	≤ 1	≤ 1	≤ 1

RTS

The Bostik biobased hybrid multipurpose sealant & adhesive product emissions have been approved by 'The building Information Foundation RTS' (Finland).

Institute: *Rakennustieto Oy*, Malminkatu 16 A, FI-00100 Helsinki.

Classification decision: based on documents "Classification of Indoor Environment 2018", and "Emission Classification of Building Materials, General rules".

French regulation

Measuring process: quantitative measurements of Volatile Organic Compounds according to the French regulations defined in *decree n° 2011-321* of 25 March 2011 and the government order of April 19, 2011. Tests are in line with the *ISO 16000* standards.

The Bostik biobased hybrid multipurpose sealant & adhesive is classified:

- **EC 1 PLUS EMICODE** for Installation Products, Adhesives and Building materials,
- **M1** Emission classification of building materials,
- **A+ Indoor emissions** (French labelling statements).

Certificates/ Reports:

EMICODE: licence n°18061/24.04.13 of the 29.01.2024,

RTS: certificate n°12.12.2023 – 4276 of the 12.12.2023,
French regulation: internal certificate of the 01.12.2023.



AgBB overview of results (28 days [$\mu\text{g}/\text{m}^3$])

Name	Value	Unit
TVOC (C6 - C16)	≤ 1.000	$\mu\text{g}/\text{m}^3$
Sum SVOC (C16 - C22)	< 100	$\mu\text{g}/\text{m}^3$
Carcinogenic Substances	< 10	$\mu\text{g}/\text{m}^3$

8. References

Standards

EN 15804

EN 15804:2012+A1 2013, Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products.

EN 15804

EN 15804:2012+A2:2019 +AC:2021, Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products.

ISO 14025

EN ISO 14025:2011, Environmental labels and declarations — Type III environmental declarations — Principles and procedures.

ISO 14040

EN ISO 14040:2006, Environmental management – Life cycle assessment – Principles and framework.

ISO 14044

EN ISO 14044:2006, Environmental management – Life cycle assessment – Requirements and guidelines (ISO 14044:2006); German and English versions EN ISO 14044:2006.

Further References

EN 1873

EN 1873:2016, Prefabricated accessories for roofing - Individual rooflights of plastics - Product specification and test methods.

EN ISO 7389

EN ISO 7389:2003, Building construction - Jointing products - Determination of elastic recovery of sealants (ISO 7389:2002).

EN ISO 7390

EN ISO 7390:2003, Building construction - Jointing products - Determination of resistance to flow of sealants (ISO 7390:2003).

EN ISO 8339

ISO 8339:2005, Building construction — Sealants — Determination of tensile properties (Extension to break).

EN ISO 8340

ISO 8340:2005, Building construction — Sealants —

Determination of tensile properties at maintained extension.

DIN EN ISO 9001

DIN EN ISO 9001:2015, Quality management systems – Requirements.

EN ISO 9047

EN ISO 9047:2003, Building construction - Jointing products - Determination of adhesion/cohesion properties of sealants at variable temperatures.

EN ISO 10563

EN ISO 10563:2023, Building and civil engineering sealants - Determination of change in mass and volume.

EN ISO 10590

EN ISO 10590:2005, Building construction - Sealants - Determination of tensile properties of sealants at maintained extension after immersion in water.

EN 15651

EN 15651-1:2017, Sealants for non-structural use in joints in buildings and pedestrian walkways - Part 1: Sealants for facade elements.

EN 15651-2:2017, Sealants for non-structural use in joints in buildings and pedestrian walkways - Part 2: Sealants for glazing.

EN 15651-3:2017, Sealants for non-structural use in joints in buildings and pedestrian walkways - Part 3: Sealants for sanitary joints.

EN 15651-4:2017, Sealants for non-structural use in joints in buildings and pedestrian walkways - Part 4: Sealants for pedestrian walkways.

EN 15651-5:2017, Sealants for non-structural use in joints in buildings and pedestrian walkways - Part 5: Assessment and verification of constancy of performance, marking and labelling.

DIN EN ISO 16000-11

DIN EN ISO 16000-11:2006-06, Indoor air – Part 11: Determination of the emission of volatile organic compounds from building products and furnishings – Sampling, storage of samples and preparation of test specimens.

DIN 53504 S2

DIN EN 53504 S2:2017, Testing of rubber - Determination of tensile strength at break, tensile stress at yield, elongation at break and stress values in a tensile test.

AgBB

AgBB: German Committee for Health-Related Evaluation of Construction Products Health-related evaluation of emissions by volatile organic compounds (VOC and SVOC) from construction products; valid as of June 2012. www.umweltbundesamt.de/produkte/bauprodukte/agbb.htm

ecoinvent

ecoinvent Life Cycle Inventory Database (Life Cycle Inventory Data), Version 3.10.

EFTA

Europe Free Trade Association.

Eurofins

Eurofins Product Testing A/S in Denmark; Denomination test: Determination of radiocarbon content according to ASTM D6866.

www.eurofins.dk/dk/product-testin

European Waste Code (EWC)

European Waste Catalog established by Commission decision 2000/532/EC.

<http://www.environment-agency.gov.uk/>

Sphera documentation

Sphera documentation is available on the website:

<https://sphera.com/product-sustainability-gabi-data-search/>

GEV/EMICODE

GEV – Gemeinschaft Emissionskontrollierte Verlegewerkstoffe, Klebstoffe und Bauprodukte e. V., Düsseldorf; www.emicode.de/

IBU 2021

General Instructions for the EPD programme of Institut Bauen und Umwelt e.V. Version 2.0, Berlin: Institut Bauen und Umwelt e.V., 2021. www.ibu-epd.com. www.ibu-epd.com

IBU PCR Part A

Requirements on the EPD for the EPD for Reaction resin products - PCR 2023-06-20, Version 5.

IBU PCR Part B

Requirements on the EPD for Dispersion adhesives and primers for floor coverings - PCR 2023-06-20, Version 5.

ISEGA

ISEGA Forschungs- und Untersuchungsgesellschaft mbH: Research and material testing institute in the field of paper, board and food packaging.

LCA for expert® Software

Software of Sphera, version 2024.2, Professional and Ecoinvent 3.10 databases.

Leinfelden-Echterdingen: Sphera Solutions GmbH.

Regulation No 528/2012

Regulation No 528/2012 of 22 May 2012 concerning the making available on the market and use of biocidal products (OJ 22 May 2012).

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REACH Regulation

Regulation (EC) No. 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No. 793/93, Commission Regulation (EC) No. 1488/94

as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC, 2006-12.

The literature referred to in the Environmental Product Declaration must be listed in full. Standards already fully quoted in the EPD do not need to be listed here again.

The current version of PCR Part A and PCR Part B of the PCR document on which they are based must be referenced.



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