# **ENVIRONMENTAL PRODUCT DECLARATION**

as per ISO 14025 and EN 15804+A2

Owner of the Declaration	BOSTIK
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-BST-20210118-CBA1-EN
Issue date	11.02.2022
Valid to	10.02.2027

# STIX A330 LINO PROJECT BOSTIK



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# **General Information**

### BOSTIK

#### Programme holder

IBU – Institut Bauen und Umwelt e.V. Panoramastr. 1 10178 Berlin Germany

#### Declaration number EPD-BST-20210118-CBA1-EN

# This declaration is based on the product category rules:

Dispersion adhesives and primers for floor coverings, 07.2014

(PCR checked and approved by the SVR)

# Issue date

11.02.2022

# Valid to 10.02.2027

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Dipl. Ing. Hans Peters (chairman of Institut Bauen und Umwelt e.V.)

Hour Val

Dr. Alexander Röder (Managing Director Institut Bauen und Umwelt e.V.))

# **Product**

## Product description/Product definition

Adhesives for flooring are adhesives that are used on a load-bearing substrate in order to generate permanent bonding between the floor covering and the substrate (*EN ISO 22636*).

Dispersion adhesives are suitable for bonding practically all types of flooring available on the market.

For the use and application of the product, the respective national provisions at the place of use apply, in Germany for example the building codes of the federal states and the corresponding national specifications.

### Application

STIX A330 LINO PROJECT is a dispersion adhesive with high initial adhesive strength and odour free.

### **Technical Data**

STIX A330 LINO complies with all of the requirements of *EN ISO* 22636 on PVC and rubber flooring.

### **Constructional data**

Name	Value	Unit
Peel strength acc. to EN ISO	greater	N/mm
22631	than 1.2	IN/11111
Shear strength acc. to EN ISO	greater	N/mm <sup>2</sup>

## STIX A330 LINO

Owner of the declaration Bostik GmbH Postfach 11 54 Borgholzhausen, 33825 Germany

# Declared product / declared unit

# 1 kg STIX A330 LINO dispersion adhesive

## Scope:

The Environmental Product Declaration refers to STIX A330 LINO dispersion adhesive. Data and calculation values refer to the BOSTIK plant located in BORGHOLZHAUSEN in Germany. It is based on data from 2017 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

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externally

according to ISO 14025:2010

internally

Vito D'Incognito (Independent verifier)

22632	than 0.3	
Dimensional changes acc. to EN ISO 22633	less than 0.2	max. %

STIX A330 LINO is available ready for use in a 14 kg bucket.

Materials for packaging (for 1kg of product):

A330	For 1kg of product
Wood	0.04762 kg
Plastic	0.02871 kg
Steel	0 kg

Performance data of the product with respect to its characteristics in accordance with the relevant technical provision (no CE-marking).

### **Base materials/Ancillary materials**

Our STIX A330 LINO is a high tack, solvent-free dispersion adhesive initial particularly suitable for linoleum, cork linoleum and cork underlayments. It's primarily comprised binding agents based on natural and synthetic resins 40-50 %, fillers such as



chalk 20-30 %, water and a low percentage of auxiliaries (e.g. preservatives, defoaming agents).

Our product is a very low volatile organic compound (VOC) emission product. It contributes to preserveing indoor air quality of the buildings. It is certified EC1 Plus according to the *EMICODE protocol*.

### **REACH Regulation:**

1) Does the product contain materials from the ECHA list of materials which are especially problematic for approval: Substances of Very High Concern – SVHC) (Date 16/01/2020) above a mass percentage of 0.1: NO.

2) Does the product contain further Category 1A or 1B CMR materials, which are not on the candidate list at a mass % concentration of above 0.1 in at least one partial product: NO.

3) Biocide products were added to this construction product or it has been treated with biocide products: YES.

The biocides included in this product and their functions are:

• 2-methyl-4-isothiazolin-3-one (In-can)

# LCA: Calculation rules

## **Declared Unit**

This declaration refers to 1 kg "STIX A330 LINO" dispersion adhesive manufactured by BOSTIK at its plant in BORGHOLZHAUSEN.

### **Declared unit**

Name	Value	Unit
Declared unit	1	kg
Productiveness	0.4	kg/m <sup>2</sup>
Conversion factor to 1 kg	1	-

The data quality can be regarded as being good. Plantspecific data is from 2017. The remaining data originates from the data bases referred to above, the content of which is examined for topicality on a regular basis. Accordingly, the data used for the LCA is representative. The data sets are complete and correspond with the system boundaries and their cut off criteria for inputs and outputs.

The data quality, therefore complies with the requirements of the *PCR*, *Part A*.

## System boundary

The LCA on which it is based addresses all of the product's life cycle stages: cradle to grave (A, B, C and D). Even if no environmental impact is incurred in some stages (B1-7; C3), the EPD is published as a cradle-to-grave EPD, according to *EN 15804*.

- Module A1 takes into consideration the production of raw materials, packaging and auxiliaries.
- Module A2 comprises transport of the raw materials, packaging and auxiliaries to the plant.

- 1,2-benzisothiazoline-3-one (In-can)
- bronopol (In-can)
- 5-chloro-2-méthyl-2H-isothiazol-3-one (In-can)
- 2-methyl-2H-isothiazol-3-one (In-can)

Information on hazardous substances (if any) contained in this product can be found in the product specific Safety Data Sheet. The latest version is available at the Bostik Website:

https://www.bostik.com/global/en/safety-data-sheets/

### **Reference service life**

The reference service life (RSL) cannot be declared according to *EN ISO 15686*. The service life of dispersion adhesives is based on the floor covering's service life. The service life of floor coverings made of PVC and rubber is 20 years.

The service life is based on the Federal office for building and regional planning (*BBSR*: Bundesinstitut für Bau-, Stadt- und Raumforschung; table "Service lives of components for life cycle assessment according to BNB").

• Module A3 considers production in the plant.

According to the *EN 15804+A2*, modules A1, A2 and A3 are declared as aggregated module A1-3.

- Module A4 comprises transport of the product to the construction site.
- Apart from installation of the product in the building, incl. drying, the emissions and loads associated with the disposal of the product are allocated to Module A5.

Modules C1 to C4:

- C1, involves product deconstruction, demolition, in all cases with concrete support;
- C2 involves transport to disposal;
- C4 involves product landfilling.

The product is not reused, valued or recycled, it is landfilled with the soft flooring or the leveling compound. No fees and credits can be assigned in Module D.

### 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 *Team software*, version 5.4.

# LCA: Scenarios and additional technical information



# Characteristic product properties Information on biogenic Carbon

The biogenic carbon content quantifies the amount of biogenic carbon in a construction product leaving the factory gate, and it shall be separately declared for the product and for any accompanying packaging. If the total mass of biogenic carbon containing materials is less than 5 % of the total mass of the product and accompanying packaging, the declaration of biogenic carbon content may be omitted. The mass of packaging containing biogenic carbon shall always be declared.

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

Information on describing the biogenic Carbon Content at factory gate

Name	Value	Unit
Biogenic carbon content in product around	0.078	kg C
Biogenic carbon content in accompanying packaging around	0.0085	kg C

The following technical information forms the basis for the declared modules:

The use of packaging material is declared in this EPD in Module A3.

Module A5 declares the disposal of the packaging material on the construction site, the amounts of packaging materials included in the LCA calculations are declared as technical scenario information for Module A5.

## Transport to the building site (A4)

Name	, Value	Unit
Litres of fuel	38	l/100km
Transport distance	355	km
Capacity utilisation (including empty runs)	65	%
Gross density of products transported	1320	kg/m³
Capacity utilisation volume factor - less than	1	-

### Installation into the building (A5)

Name	Value	Unit
Auxiliary	-	kg
Water consumption	1E-05	m <sup>3</sup>
Other resources	-	kg
Electricity consumption	-	kWh
Other energy carriers	-	MJ
Material loss	0.02	kg
Output substances following waste treatment on site	0	kg
Dust in the air	-	kg
VOC in the air	-	kg

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

The product is not have direct contact with the outside.

Name

Value Unit

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

## End of life (C1-C4)

Name	Value	Unit
Collected separately waste type	0	kg
Collected as mixed construction waste	0.4	kg
Reuse	0	kg
Recycling	0	kg
Energy recovery	0	kg
Landfilling	0.4	kg

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

Name	Value	Unit

The product is not re-used, recovered or recycled, it is landfilled with the resilient flooring or the patching compound. Therefore, no fees or credits can be assigned in Module D.

Under the conservative assumption, biogenic carbon is accounted for as fossil carbon, which maximizes carbon dioxide emissions.



# LCA: Results

In Table 1 "Description of the system boundary", all declared modules shall be indicated with an "X"; all modules that are not declared shall be indicated with "MND" (As default the modules B3, B4, B5 are marked as MNR – module not relevant). In the following tables, columns can be deleted for modules that are not declared. Indicator values should be declared with three valid digits (eventually using exponential form (e.g. 1,23E-5 = 0,0000123). A uniform format should be used for all values of one indicator.

If several modules are not declared and therefore have been deleted from the table, the abbreviations for the indicators can be replaced by the complete names, while the readability and clear arrangement should be maintained; the legends can then be deleted.

If due to relevant data gaps, an indicator cannot be declared in a robust way, then the abbreviation "IND" (indicator not declared) should be used for this indicator.

- 0 calculated value is 0
- 0 value falls under the cut-off
- 0 assumption which exclude any flows (e.g. exported electricity A1-A3)
- IND in cases where the inventory does not support the methodological approach or the calculation of the specific indicator IND shall be used.

If no reference service life is declared (see chapter 2.13 "Reference Service Life"), the LCA results of the modules B1-B2 and B6-B7 shall refer to a period of one year. This shall then be indicated as an explanatory text below the tables. In addition, the formula for the quantification of such B-modules over the total life cycle shall be provided.

Disclaimer:

EP-freshwater: This indicator has been calculated as "kg P eq" as required in the characterization model (EUTREND model, Struijs et al., 2009b, as implemented in ReCiPe; <u>http://eplca.jrc.ec.europa.eu/LCDN/developerEF.xhtml</u>).

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

PROE	DUCT S	TAGE	CONST ON PRO STA	DCESS		USE STAGE END OF LIFE STAGE							USE STAGE END OF LIFE STAGE BEYON SYST			BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES		
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement		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	В5	35 B6 B7		C1	C2	C3	C4	D		
X	X	Х	X	Х	Х	ND	MNR	MNR	MNF	R ND	ND	X	X	ND	X	X		
RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: declared unit and product   Core Indicator Unit A1-A3 A4 A5 B1 C1 C2 C4 D																		
GW	P-total	[ka C	:O <sub>2</sub> -Eq.]	1.38	E+0	2.06E-	2	5.15E-2		0.00E+0	2.02	E-11	3.17E-	3	1.13E-2	0.00E+0		
GWF	P-fossil	[kg C	:O <sub>2</sub> -Eq.]	1.00		2.06E-		2.95E-2		0.00E+0	2.02		3.17E-		1.10E-2	0.00E+0		
GWP-	biogenic		:0 <sub>2</sub> -Eq.]	3.74	E-1	0.00E+	+0	2.20E-2		0.00E+0	4.82	E-15	0.00E+	0	3.17E-4	0.00E+0		
GWF			:O <sub>2</sub> -Eq.]			0.00E+	+0	0.00E+0		0.00E+0	0.00	E+0	0.00E+	0	0.00E+0	0.00E+0		
	DP			6.40E-8 1.86E-8			2.27E-9		0.00E+0		9.04E-19 2.85E-9			3.36E-9	0.00E+0			
	λΡ		H⁺-Eq.]	4.03		9.30E-5		8.14E-5		0.00E+0	1.61		1.43E-		7.09E-5	0.00E+0		
	shwater		P-Eq.]	4.36		2.46E-	-	1.04E-6	E-6 0.00E+0		0.00E+0 2.26E-		3.78E-10		1.09E-6	0.00E+0		
	narine		N-Eq.]	5.44		1.90E-		1.10E-3		0.00E+0							7.54E-5	0.00E+0
	rrestrial		IN-Eq.]	1.13					0.00E+0 2.23E-13				3.31E-4	0.00E+0				
	DCP		IVOC-Eq.]							0.00E+0 6.49E-14						9.62E-5	0.00E+0	
	DPE		Sb-Eq.]	5.52		1.84E-				0.00E+0	8.36		2.82E-		1.17E-8	0.00E+0		
ADPF WDP		[m <sup>3</sup> v		2.60 9.79		2.59E- 3.36E-		4.77E-1 1.90E+1		0.00E+0 0.00E+0	4.53 7.17		3.99E- 5.16E-		2.57E-1 3.10E+1	0.00E+0 0.00E+0		
WDP   [m³ world-Eq deprived]   9.79E+2   3.36E-2   1.90E+1   0.00E+0   7.17E-10   5.16E-3   3.10E+1   0.00E+0     GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non- fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential   0.00E+0   7.17E-10   5.16E-3   3.10E+1   0.00E+0												oxidants;	ADPE = r (user) d	Abiotic c eprivatio	depletion n potenti			

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: declared unit and product



Indicator	Unit	A1-A3	A4	A5	B1	C1	C2	C4	D
PERE	[MJ]	6.50E+0	1.27E-4	1.03E-1	0.00E+0	5.88E-11	1.95E-5	7.53E-3	0.00E+0
PERM	[MJ]	9.14E-1	0.00E+0	1.82E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PERT	[MJ]	7.41E+0	1.27E-4	1.21E-1	0.00E+0	5.88E-11	1.95E-5	7.53E-3	0.00E+0
PENRE	[MJ]	1.80E+1	2.61E-1	5.52E-1	0.00E+0	3.82E-10	4.01E-2	2.57E-1	0.00E+0
PENRM	[MJ]	8.54E+0	0.00E+0	-4.74E-2	0.00E+0	3.84E-12	0.00E+0	0.00E+0	0.00E+0
PENRT	[MJ]	2.70E+1	2.61E-1	5.04E-1	0.00E+0	3.86E-10	4.01E-2	2.57E-1	0.00E+0
SM	[kg]	1.53E-5	0.00E+0	3.06E-7	0.00E+0	3.27E-16	0.00E+0	0.00E+0	0.00E+0
RSF	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
NRSF	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
FW	[m <sup>3</sup> ]	1.40E-2	2.48E-5	3.09E-4	0.00E+0	1.09E-13	3.81E-6	2.78E-4	0.00E+0
PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials: PERM = Use of									

Caption Captio

#### RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: declared unit and product

Indicator	Unit	A1-A3	A4	A5	B1	C1	C2	C4	D
HWD	[kg]	3.74E-2	7.92E-6	5.99E-3	0.00E+0	4.19E-13	1.22E-6	2.74E-4	0.00E+0
NHWD	[kg]	2.94E-1	3.37E-5	6.22E-3	0.00E+0	5.79E-12	5.18E-6	1.00E+0	0.00E+0
RWD	[kg]	3.14E-5	4.17E-6	8.62E-7	0.00E+0	1.57E-15	6.41E-7	1.53E-6	0.00E+0
CRU	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
MFR	[kg]	1.48E-2	1.09E-7	7.81E-2	0.00E+0	2.80E-14	1.67E-8	0.00E+0	0.00E+0
MER	[kg]	5.76E-1	0.00E+0	1.05E-2	0.00E+0	6.13E-17	0.00E+0	0.00E+0	0.00E+0
EEE	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
EET	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0

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; EEE = Exported thermal energy

# RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: [declared unit and product]

Indicator	Unit	A1-A3	A4	A5	B1	C1	C2	C4	D
PM	[Disease Incidence]	5.35E-5	1.16E-6	1.03E-6	0.00E+0	1.35E-15	1.78E-7	2.76E-6	0.00E+0
IRP	[kBq U235- Eq.]	3.31E-5	8.75E-9	7.35E-7	0.00E+0	5.68E-15	1.34E-9	1.23E-6	0.00E+0
ETP-fw	[CTUe]	3.40E+1	7.91E-2	7.47E-1	0.00E+0	2.46E-11	1.22E-2	1.70E+1	0.00E+0
HTP-c	[CTUh]	6.16E-10	7.23E-13	2.32E-11	0.00E+0	2.19E-21	1.11E-13	1.79E-10	0.00E+0
HTP-nc	[CTUh]	1.07E-8	7.83E-11	3.55E-10	0.00E+0	6.84E-20	1.20E-11	5.18E-9	0.00E+0
SQP	-	1.00E+1	0.00E+0	2.85E-2	0.00E+0	1.37E-11	0.00E+0	6.96E-1	0.00E+0
PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential Caption comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential									

omparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Poten comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

## Disclaimer 1 - for the indicator IRP

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 nor (due to) radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

### Disclaimer 2 - for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP

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

## References

## PCR 2020, Part A

Institut Bauen und Umwelt e.V., Berlin (pub.): Product Category Rule for Construction Products from the range of Environmental Product Declarations of Institute Bauen und Umwelt (IBU), Part A: Calculation rules for the Life Cycle Assessment and requirements on the project report according to EN 15804+A2. Version 2020-07. www.ibu-epd.com

### PCR 2013, Part B: 2013-07

Product Category Rules for Construction Products, Part B: Requirements on the EPD for dispersion adhesives and primers for floor coverings.

### DIN EN ISO 14025

DIN EN ISO 14025:2011-10, Environmental labels and declarations - Type III environmental declarations - Principles and procedures.

### DIN EN ISO 14040

DIN EN ISO 14040: 2006, Environmental management - Life cycle assessment - Principles and framework (ISO 14040:2006); German and English versions EN ISO 14040:2006.

**DIN EN ISO 14044** 



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

### EN 15804

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

### **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 EN ISO 15686

DIN EN ISO 15686:2017, Buildings and constructed assets - Service life planning.

## DIN EN ISO 22631

DIN EN ISO 22631:2019, Adhesives - Test method for adhesives for floor and wall coverings - Peel test.

### **DIN EN ISO 22632**

DIN EN ISO 22632:2019, Adhesives - Test method for adhesives for floor and wall coverings - Shear test.

### **DIN EN ISO 22633**

DIN EN ISO 22632:2019, Adhesives - Test methods for adhesives for floor coverings and wall coverings -Determination of dimensional changes of a linoleum floor covering in contact with an adhesive.

### **DIN ISO 22636**

DIN ISO 22636:2021, Adhesives - Adhesives for floor coverings - Requirements for mechanical and electrical performance.

### **Further References**

#### Software TEAM

version 5.4.2006.22. DEAM database and Ecoinvent.

### 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

## **GEV/EMICODE**

Association for the Control of Emission from Products for Flooring Installation, Adhesives and Building Materials. GEV – Gemeinschaft Emissionskontrollierte

Verlegewerkstoffe, Klebstoffe und Bauprodukte e. V., Düsseldorf; www.emicode.de/

## **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.

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