AkzoNobel
Wood Adhesives and Resins

Environmental
Product
Declaration

According to ISO14025+EN15804+A2

This declaration is for:
GripPro X A800

Provided by:
AkzoNobel Adhesives AB

MRPI® registration:
1.1.01228.2026

Program operator:
Stichting MRPI®
Publisher:
Stichting MRPI®
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20-5-2026
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20-5-2031

AkzoNobel
Wood Adhesives and Resins

COMPANY INFORMATION

AkzoNobel Adhesives AB

Fiskartorpsvägen 1

681 54

Kristinehamn

Sweden

https://woodadhesives.akzonobel.com/en

PRODUCT

GripPro X A800

DECLARED UNIT / FUNCTIONAL UNIT

1 Mass (kg)

DESCRIPTION OF PRODUCT

One component polyurethane adhesive.

MRPI® REGISTRATION

1.1.01228.2026

DATE OF THIS ISSUE

20-5-2026

EXPIRY DATE

20-5-2031

VISUAL PRODUCT

SCOPE OF DECLARATION

This MRPI®-EPD certificate is verified by Gert-Jan Vroege, Eco-intelligence. The LCA study has been done by Gudo Wisselo & Brienne Wiersema, Ecomatters B.V.. The certificate is based on an LCA-dossier according to ISO14025+EN15804+A2. It is verified according to the 'Verification protocol for MRPI LCA project report & EPD 21th of May 2025, V. 5.2'. EPDs of construction products may not be comparable if they do not comply with EN15804+A2. Declaration of SVHC that are listed on the 'Candidate list of Substances of Very High Concern for authorisation' when content exceeds the limits for registration with ECHA.

PROGRAM OPERATOR

Stichting MRPI®

Kingsfordweg 151

1043 GR

Amsterdam

MORE INFORMATION

https://woodadhesives.akzonobel.com/en

Ing. L. L. Oosterveen MSc. MBA Managing Director MRPI	DEMONSTRATION OF VERIFICATION CEN standard EN15804 serves as the core PCR [1]
	Independent verification of the declaration and data according to ISO14025+EN15804+A2 Internal: External: X
	Third party verifier: Gert-Jan Vroege, Eco-intelligence
	[1] PCR = Product Category Rules

DETAILED PRODUCT DESCRIPTION

GripPro X A800 adhesive line contains products which are low foaming, fibre free, moisture curing one-component polyurethane adhesive without addition of abrasive fillers, to be used for load-bearing timber constructions, such as cross laminated timber, structural beams or finger joints.

Typical Use:
GripPro X A800 adhesive line is primarily developed for the woodworking industry where requirements are made for a light-coloured adhesive joint with high water and weather resistance.

Service life:
A RSL of 100 years for wooden beams and construction panels is assumed to apply on the adhesive that is used in these construction materials.

Application:
Applied as an adhesive for load-bearing timber constructions by vertical and horizontal nozzle application methods.

Packaging:
The coating is delivered in an IBC of 1000L. Packaging is cut-off from the system boundary.

Production process and conditions of delivery:
First step of production is synthesis of the polymer, where required raw materials are weighed in, then added to the reactor. Quality control is performed during the course of the synthesis. After finishing polymer synthesis, remaining raw materials are weighed in then blended with the polymer under vacuum, using dispersing equipment. Once the finished product has gone through final quality control, it is filled into appropriate packaging containers. The packaged products are then shipped directly from the production site to customers.

Adhesive characteristics		Unit
Waterborne / Solventborne	Solvent-free	value
Weight per declared unit	1	kg
Lifetime	100	years
Density	1,2	kg/L
Coverage	N/A	m2/L
Number of layers	1	value
VOC content	0	g/L

Biogenic carbon:
Raw materials and paint packaging can contain biogenic carbon. Biogenic carbon is considered not relevant if the mass of biogenic carbon containing ingredients or packaging contribute less than 5% to the total mass. If the mass exceeds 5%, the biogenic carbon content at factory gate is listed in the table below.

Biogenic carbon content	kg C
Biogenic carbon content in product	0
Biogenic carbon content in accompanying packaging	0
Note: 1 kg biogenic carbon (kg C) is equivalent to 44/12 kg of CO2.	

Component (> 1%)	(kg / %)
Polyol	Confidential
Isocyanate	Confidential

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SCOPE AND TYPE

This LCA is a Cradle-to-Gate with options, including modules C and D. All steps, from the extraction of natural resources to the final disposal of the product, are included in the scope of the study, except for module A5 (application). The life cycle stages included are A1-A4, C1-C4 and D. All impacts associated with mining activities, the upstream production of materials and energy, and downstream waste treatment, are included in the product system. The emissions and resource extractions derived from these processes are considered elementary exchanges between the product systems and the environment.

This EPD is representative for products produced in Kristinehamn, Sweden and the application market is customers in EMEA. Likewise, for the end-of-life, the fate of the adhesive product is described within a EMEA context.

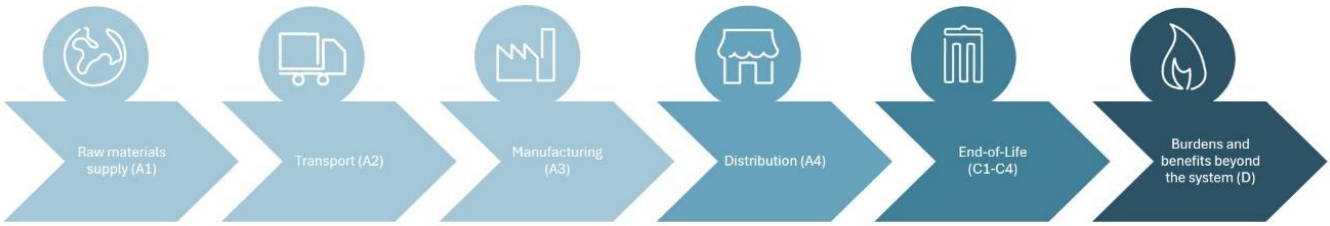
The software LCA for Experts 10.9.3.0 is used to perform the LCA. The background database used in the model is Ecoinvent 3.11 (published 20-11-2024), with method 'cut-off by classification'. The version of characterisation factors used is EF 3.1.

This study is a specific dataset EPD. The validity of this EPD is in correspondence with the specifications of the LCA project report.

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport gate to 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	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

X = Modules Assessed

ND = Not Declared



REPRESENTATIVENESS

This EPD is representative of the following adhesives:
1. GripPro X A800-0406
2. GripPro X A800-70105

To group the two adhesives within the EPD, a representative adhesive product is constructed based on the production volume percentage of the adhesives. The representative adhesive product encompasses the characteristics of the individual adhesives that constitute it.

The deviation of the individual products from the weighted average is assessed for the EF 3.1 Climate change – total impact category. The deviation appeared to be < 0,2% for both adhesives. This approach ensures that the reported results appropriately reflect the two products in this EPD. The relative variability of other environmental indicators can be incidentally higher, which is primarily caused by small variations in indicators with a low absolute impact.

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ENVIRONMENTAL IMPACT per functional unit or declared unit (core indicators A2)

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	kg CO2 eq.	3,71E+00	3,45E-01	4,55E-02	4,10E+00	1,71E-01	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,61E-02	0,00E+00	2,28E+00	-2,73E-01
GWP-fossil	kg CO2 eq.	3,89E+00	3,45E-01	2,59E-02	4,26E+00	1,71E-01	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,61E-02	0,00E+00	2,28E+00	-2,72E-01
GWP-biogenic	kg CO2 eq.	-1,97E-01	3,26E-05	1,96E-02	-1,77E-01	1,03E-04	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,05E-06	0,00E+00	1,97E-01	-1,15E-03
GWP-luluc	kg CO2 eq.	1,61E-02	1,73E-04	3,73E-05	1,63E-02	6,18E-05	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	7,44E-06	0,00E+00	8,23E-06	-3,97E-04
ODP	kg CFC11 eq.	2,04E-07	4,74E-09	3,92E-10	2,09E-07	3,72E-09	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,14E-10	0,00E+00	2,03E-10	-3,41E-09
AP	mol H+ eq.	1,67E-02	6,15E-03	1,38E-04	2,30E-02	6,33E-04	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	7,38E-05	0,00E+00	2,04E-04	-9,99E-04
EP-fresh water	kg P eq.	1,25E-03	2,44E-05	5,93E-05	1,33E-03	1,20E-05	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,78E-06	0,00E+00	4,30E-06	-9,05E-05
EP-marine	kg N eq.	6,46E-03	1,62E-03	7,19E-04	8,80E-03	2,10E-04	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,73E-05	0,00E+00	9,30E-05	-2,17E-04
EP-terrestrial	mol N eq.	4,12E-02	1,79E-02	3,21E-04	5,94E-02	2,27E-03	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,96E-04	0,00E+00	1,02E-03	-2,18E-03
POCP	kg NMVOC eq.	1,51E-02	5,08E-03	1,28E-04	2,03E-02	9,41E-04	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,02E-04	0,00E+00	2,62E-04	-7,50E-04
ADP-minerals & metals	kg Sb eq.	4,37E-05	7,00E-07	1,83E-07	4,45E-05	4,76E-07	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	5,16E-08	0,00E+00	5,44E-08	-2,23E-07
ADP-fossil	MJ, net calorific value	8,76E+01	4,57E+00	3,85E-01	9,25E+01	2,51E+00	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,33E-01	0,00E+00	2,14E-01	-4,38E+00
WDP	m3 world eq. Deprived	2,12E+00	2,11E-02	3,63E-02	2,17E+00	1,49E-02	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,41E-03	0,00E+00	1,11E-02	-5,23E-02

GWP-total	=	Global Warming Potential total
GWP-fossil	=	Global Warming Potential fossil fuels
GWP-biogenic	=	Global Warming Potential biogenictotal
GWP-luluc	=	Global Warming Potential land use and land use change
ODP	=	Depletion potential of the stratospheric ozone layer
AP	=	Acidification Potential, Accumulated Exceedence
EP-freshwater	=	Eutrophication Potential, fraction of nutrients reaching freshwater end compartment
EP-marine	=	Eutrophication Potential, fraction of nutrients reaching marine end compartment
EP-terrestrial	=	Eutrophication Potential, Accumulated Exceedence
POCP	=	Formation potential of tropospheric ozone photochemical oxidants
ADP-minerals & metals	=	Abiotic Depletion Potential for non-fossil resources [1]
ADP-fossil	=	Abiotic Depletion for fossil resources potential [1]
WDP	=	Water (user) deprivation potential, deprivation-weighted water consumption [1]

Disclaimer [1]:

- 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.

ENVIRONMENTAL IMPACT per functional unit or declared unit (additional indicators A2)

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM	Disease inci-dence	1,12E-07	1,77E-08	9,88E-10	1,30E-07	1,32E-08	ND	ND	ND	ND	ND	ND	ND	ND	ND	1,24E-09	0,00E+00	1,82E-09	-8,56E-09
IRP	kBq U235 eq.	4,13E-01	2,89E-03	7,40E-03	4,23E-01	2,78E-03	ND	ND	ND	ND	ND	ND	ND	ND	ND	1,92E-04	0,00E+00	2,55E-04	-2,63E-02
ETP-fw	CTUe	1,92E+02	5,63E-01	1,84E+00	1,95E+02	2,89E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	4,09E-02	0,00E+00	7,68E-01	-4,49E-01
HTP-c	CTUh	1,05E-08	8,13E-11	3,07E-11	1,06E-08	2,99E-11	ND	ND	ND	ND	ND	ND	ND	ND	ND	4,07E-12	0,00E+00	2,91E-09	-3,11E-11
HTP-nc	CTUh	5,93E-08	1,92E-09	2,77E-09	6,40E-08	1,36E-09	ND	ND	ND	ND	ND	ND	ND	ND	ND	1,36E-10	0,00E+00	8,69E-09	-1,18E-09
SQP	-	1,82E+01	1,83E+00	1,11E-01	2,01E+01	2,48E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	1,67E-01	0,00E+00	1,08E-01	-3,81E-01

PM = Potential incidence of disease due to PM emissions
IRP = Potential Human exposure efficiency relative to U235 [1]
ETP-fw = Potential Comparative Toxic Unit for ecosystems [2]
HTP-c = Potential Comparative Toxic Unit for humans, cancer [2]
HTP-nc = Potential Comparative Toxic Unit for humans, non-cancer [2]
SQP = Potential soil quality index [2]

Disclaimer [1]:

- 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.

Disclaimer [2]:

- 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.

OUTPUT FLOWS AND WASTE CATEGORIES per functional unit or declared unit (A1 en A2)

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	1,60E-01	6,20E-03	2,92E-03	1,69E-01	2,58E-03	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,79E-04	0,00E+00	1,03E+00	-9,97E-03
NHWD	kg	6,75E+00	3,88E-02	3,97E+01	4,65E+01	2,40E-02	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,16E-03	0,00E+00	1,12E+00	-1,88E-02
RWD	kg	9,50E-10	0,00E+00	0,00E+00	9,50E-10	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	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	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	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	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	MJ	0,00E+00	0,00E+00	6,34E-03	6,34E-03	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	1,96E+00	0,00E+00
ETE	MJ	0,00E+00	0,00E+00	3,14E-02	3,14E-02	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	4,03E+00	0,00E+00

HWD = Hazardous Waste Disposed
NHWD = Non Hazardous Waste Disposed
RWD = Radioactive Waste Disposed
CRU = Components for reuse
MFR = Materials for recycling
MER = Materials for energy recovery
EEE = Exported Electrical Energy
ETE = Exported Thermal Energy

RESOURCE USE per functional unit or declared unit (A1 and A2)

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	7,27E+00	4,99E-02	6,63E-01	7,98E+00	3,84E-02	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,26E-03	0,00E+00	6,21E-03	-3,34E-01
PERM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	7,27E+00	4,99E-02	6,63E-01	7,98E+00	3,84E-02	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,26E-03	0,00E+00	6,21E-03	-3,34E-01
PENRE	MJ	8,76E+01	4,57E+00	3,85E-01	9,25E+01	2,51E+00	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,33E-01	0,00E+00	2,14E-01	-4,38E+00
PENRM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	8,76E+01	4,57E+00	3,85E-01	9,25E+01	2,51E+00	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,33E-01	0,00E+00	2,14E-01	-4,38E+00
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	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	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NSRF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m3	4,93E-02	4,92E-04	8,46E-04	5,06E-02	3,46E-04	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,29E-05	0,00E+00	2,58E-04	-1,22E-03

PERE = Use of renewable primary energy excluding renewable primary energy 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 resources excluding non-renewable 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 materials
RSF = Use of renewable secondary fuels
NSRF = Use of non-renewable secondary fuels
FW = Use of net fresh water

CALCULATION RULES

Cut off criteria:
Some cut-offs were applied in this study. During the manufacturing process, the packaging waste from raw materials was excluded from the system boundaries due to a lack of data on the composition of this waste. EUR-pallets and reconditioned IBCs were not modelled as a separate input in the manufacturing process, as these are generally reused over several years. Therefore, the materials used for the pallets and IBCs are cut-off, but inputs required for reconditioning the drums in the manufacturing site are included. No other cut-offs of outputs, raw materials, or other inputs were made at any life cycle stage.

Allocation procedure:
To allocate the emissions and inputs to the manufactured products, the decision-hierarchy in ISO 14044 is used (ISO 2006). It is not possible to sub-divide the site data into a more detailed level or find physical causalities between inputs and outputs. The environmental impact is expected to be related to the mass of the products, thus allocation is done based on mass, considering the annual production of adhesive product for the manufacturing site.

Data quality and data collection period:
Specific data was collected from AkzoNobel through a questionnaire, including inquiries about product characteristics and packaging, production information and end-of-life. The data collection period for specific data was the year 2024. This primarily covers stages A1 and A3, where the geographical, technical and temporal representativeness was assessed to be "Very good".

Data gaps (i.e. transport data, end of life scenarios) were covered with data generic values for transport as described in the Product Environmental Footprint Category Rules - Decorative Paints document version 1.0 published by CEPE and reviewed in April 2018 and the Product Environmental Footprint method (European Commission, 2021). The geographical, technical and temporal representativeness for the applicable life-cycle stages where the generic values were used was assessed as "Good".

Generic data (i.e. upstream acquisition and production of raw materials, transport, waste treatment processes) was selected from the Ecoinvent 3.11. In the case of missing data, a relevant proxy was searched and adjusted to the corresponding unit process.

Data quality was assessed following the criteria of the UN Environment Global Guidance on LCA database development, as presented in Annex Table E.1 in the EN15804+A2 standard.

Power mix:
The electricity generation is modelled based on a market-based approach. The renewable electricity is modelled according to the relevant GoOs when available. For the manufacturing processes, the electricity generation takes place within the geographical scope of the country. The Ecoinvent dataset "electricity production, hydro, run-of-river" is used for electricity production. Electricity consumption in the manufacturing does not account for more than 30% of the total energy use in module A1-A3.

SCENARIOS AND ADDITIONAL TECHNICAL INFORMATION

A1. Raw materials supply
This module considers the extraction and processing of all raw materials and energy which occur upstream to the manufacturing process, as well as waste processing up to the end-of waste state. The emissions and resource extractions derived from these processes are considered elementary exchanges between the product systems and the environment.

A2. Transport of raw materials to manufacturer
This includes the transport distance of the raw materials to the manufacturing facility via road and sea. As no primary data was available for the transportation distances, the default values from the PEFCR Guidance document were used.

Transport of raw materials	Distance	Unit
Distance for raw materials - Ship, freight, sea, container ship	18000	km
Distance for raw materials - Lorry >32t	1000	km

A3. Manufacturing
This module covers manufacturing and includes all processes linked to production such as storing, synthesis, mixing, packing and internal transportation. Use of electricity, fuels and auxiliary materials in adhesive production is accounted for.

Data regarding the production was provided for the manufacturing site where the adhesives are produced in Kristinehamn, Sweden. Primary data and site-specific data was provided for the consumption of utilities.

For upstream (raw material processes) and downstream processes (waste processing) generic data is used when no specific data was available. The manufacture of production equipment and infrastructure is not included in the system boundary.

A4. Transport to the customer
The adhesive is transported from the production facility directly to the customer. Primary data for the transportation distances was provided by AkzoNobel.

Transport to customer	Distance	Unit
Factory to customer - Ship, freight, sea, ferry	21	km
Factory to customer - Lorry >32t	1595	km

C2. Transport to incineration
This module includes the transportation of the paint along with the substrates to the waste treatment facilities and end-of-life destination. As no primary data was available for the transportation distances, default values from the PEFCR Guidance document were used.

Transport of EoL waste	Distance	Unit
EoL adhesive to EoL - Lorry >32t	100	km

C3. Waste processing and C4. Disposal
The end of life stage is encompassed in these modules. Since the adhesives are used for load bearing timber constructions, the waste scenario for clean wood such as beams and planks from the Nationale Milieudatabase (NMD) is used for the end-of-life treatment of the adhesives (Stichting Nationale Milieudatabase, 2024). However, since the adhesive in wood is assumed to not be recycled but ends up in incineration in the end, the shares of recycling and reuse are added up to the incineration share. This results in 5% of the end-of-life adhesive is going to landfill, while the remaining 95% is incinerated. This corresponds to the polluted wood scenario of the NMD.

EoL		Unit
to Landfill	5	%
to Incineration with energy recovery	95	%

DECLARATION OF SVHC
None of the substances contained in the product are listed in the “Candidate List of Substances of Very High Concern for authorisation”, or they do not exceed the threshold with the European Chemicals Agency.

REFERENCES

• Alanya-Rosenbaum, S., & Bergman, R. D. (2020). Cradle-to-grave life-cycle assessment of wooden pallet production in the United States. Res. Pap. FPL-RP-707. Madison, WI: US Department of Agriculture, Forest Service, Forest Products Laboratory. 82 p., 707, 1-80.

• CEPE, Raw materials LCI database for the European Council of the Paint, Printing Ink and Artists' Colours Industry (CEPE), version 4.0, IVL Swedish Environmental Research Institute, 2024

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REMARKS

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