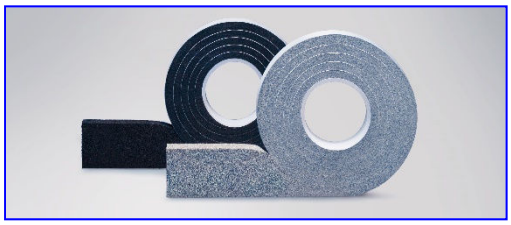
Environmental Product Declaration (EPD)

Declaration code EPD-ICB-GB-3.0



ISO-Chemie GmbH

Sealing systems

Sealing tapes

Basis:

DIN EN ISO 14025
EN 15804 + A2

Company EPD
Environmental
Product **D**eclaration

Publication date:
18.07.2023

Valid until:
18.07.2028

www.ift-rosenheim.de/
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Environmental Product Declaration (EPD)

Declaration code EPD-ICB-GB-3.0

Programme operator	ift Rosenheim GmbH Theodor-Gietl-Straße 7-9 83026 Rosenheim, Germany
Practitioner of the LCA	ift Rosenheim GmbH Theodor-Gietl-Straße 7-9 83026 Rosenheim, Germany
Declaration holder	ISO-Chemie GmbH Röntgenstraße 12 73431 Aalen www.iso-chemie.eu
Declaration code	EPD-ICB-GB-3.0
Designation of declared product	Sealing tapes
Scope	Sealing and thermal protection at building connection joints
Basis	This EPD was prepared on the basis of EN ISO 14025:2011 and DIN EN 15804:2012+A2:2019. In addition, the "Allgemeiner Leitfaden zur Erstellung von Typ III Umweltproduktdeklarationen" (General guideline for preparation of Type III Environmental Product Declarations) applies. The declaration is based on PCR documents "PCR Part A" PCR-A-0.2:2018 and "Wall connections and sealing systems" PCR BA-3.0: 2023
Validity	Publication date: 18.07.2023 / Last revision: 22.08.2023 / Valid until: 18.07.2028 This verified Company Environmental Product Declaration (company EPD) applies solely to the specified products and is valid for a period of five years from the date of publication in accordance with DIN EN 15804.
LCA Basis	The LCA was prepared in accordance with DIN EN ISO 14040 and DIN EN ISO 14044. The data collected from production plant of the company ISO-Chemie GmbH were used as a data basis, as well as generic data from the database “LCA for Experts 10". LCA calculations were carried out for the included “cradle to gate – with options” including all upstream chains (e.g. raw material extraction, etc.).
Notes	The ift-Guidance Sheet “Conditions and Guidance for the Use of ift Test Documents” applies. The declaration holder assumes full liability for the underlying data, certificates and verifications.

Christian Kehrer Head of Certification and Surveillance Body	Dr. Torsten Mielecke Chairman of Expert Committee ift-EPD and PCR	Benedikt Dellawalle Independent verifier

1 General Product Information

Product definition

The EPD relates to the product group “sealing systems” and applies to:

1 linear metre Sealing tapes of company ISO-Chemie GmbH

Product group	Designation	Declared unit	Length weight
Product group 1 ISO-BLOCO	ISO-BLOCO HYBRATEC ISO-BLOCO ONE ISO-BLOCO 600	1 linear metre	0.021 - 0.098 kg/linear metre

Table 1 Product groups

The functional unit is obtained by summing up:

Assessed product	Length weight	Density	Length, width, thickness
Sealing tapes	0.021 – 0.098 kg/ linear metre ± 10 %	50 - 160 kg/m³ ± 10 %	Depending on the product

Table 2 Functional unit per reference product

The average unit is declared as follows:
All inputs and outputs in the production were scaled to the declared unit in their entirety by means of linear meters produced since there is no typical functional unit due to the high number of variants. The reference period is the year 2020.

The validity of the EPD is restricted to the following series:

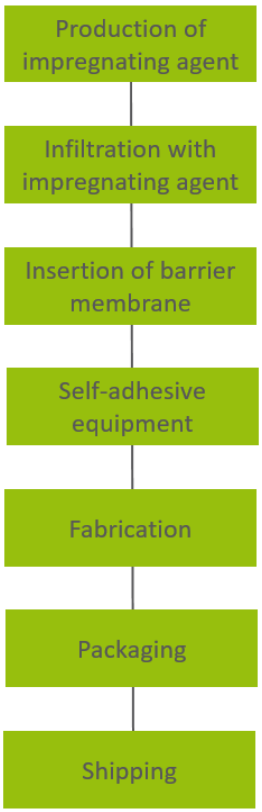
- ISO-BLOCO HYBRATEC
- ISO-BLOCO ONE
- ISO-BLOCO 600

Product description

Sealing and thermal protection at building connection joints.

For a detailed product description refer to the manufacturer specifications or the product specifications of the respective offer/quotation.

Product manufacture



Application

Sealing tapes for professional sealing of the connecting joint between building elements.

Management systems

The following management systems are held:

- Quality management system to DIN EN ISO 9001:2015
- Environmental management system as per DIN EN ISO 14001:2015

Additional information

For additional verifications of applicability or conformity refer to the CE marking and the documents accompanying the product, if applicable.

2 Materials used

Primary materials

The raw materials used can be found in Section 6.2 Inventory analysis (Inputs).
The primary materials used are listed in the LCA (see Section 7).

Declarable substances

The product contains no substances from the REACH candidate list (declaration dated 25.05.2023).

All relevant safety data sheets can be obtained from company ISO-Chemie GmbH.

3 Construction process stage

Processing recommendations, installation

Observe the instructions for assembly/installation, operation, maintenance and disassembly, provided by the manufacturer. For this, see www.iso-chemie.eu

4 Use stage

Emissions to the environment

No emissions to indoor air, water and soil are known. There may be VOC emissions. Sealing tapes are subject to class EC1 Plus according to GEV test method.

Reference service life (RSL)

The RSL information was provided by the manufacturer. The RSL must be established under specified reference conditions of use and relate to the declared technical and functional performance of the product within the building. It must be determined according to all specific rules given in European product standards or, if none are available, according to a c-PCR. It must also take into account ISO 15686-1, -2, -7 and -8. If there is guidance on deriving RSLs from European Product Standards or a c-PCR, then such guidance must take precedence.
If it is not possible to determine the service life as the RSL in accordance with ISO 15686, the BBSR table “Nutzungsdauer von Bauteilen zur Lebenszyklusanalyse nach BNB” (service life of building components for life cycle assessment in accordance with the sustainable construction evaluation system) can be used. For further information and explanations refer to www.nachhaltigesbauen.de.

For this EPD the following applies:
For an EPD "cradle to factory gate with options", with modules C1-C4 and module D (A1-A3 + C + D and one or more additional modules from A4 to B7), the specification of a reference service life (RSL) is only possible if the reference service life conditions are specified.
The service life of sealing tapes of company ISO-Chemie GmbH can be optionally specified as 12 years (sealants for external pedestrian doorsets and windows, Code No. 334.318) or 20 years (sealants for internal doors and windows, Code No. 334.622) according to the manufacturer.

The service life is dependent on the characteristics of the product and in-use conditions. The conditions and characteristics described in the EPD are applicable, in particular the characteristics listed below:

- Outdoor environment: Climatic influences may have a negative impact on the service life.
- Indoor environment: Certain influences (e.g. humidity, temperature) may have a negative impact on the service life.

The service life solely applies to the characteristics specified in this EPD or the corresponding references.
The reference service life (RSL) does not reflect the actual life span, which is usually determined by the service life and the refurbishment of a building. It does not give any information on the useful life, warranty referring to performance characteristics or guarantees.

5 End-of-life stage

Possible end-of-life stages

The sealing tapes are sent to central collection points. There the products are usually shredded and sorted into their constituents. The end-of-life stage depends on the site where the products are used and is therefore subject to the local regulations. Observe the locally applicable regulatory requirements.

In this EPD, the modules of after-use are presented according to the market situation.
Plastics are recycled to certain parts. Residual fractions are thermally recycled.

Disposal routes

The sealing tapes are recycled together with the construction elements, e.g. for windows, doors, facades, lightweight metal construction systems, ETICS, etc., and therefore do not have separate disposal routes.
The LCA includes the average disposal routes.

All life cycle scenarios are detailed in the Annex.

6 Life Cycle Assessment (LCA)

Environmental product declarations are based on life cycle assessments (LCAs) which use material and energy flows for the calculation and subsequent representation of environmental impacts.

As a basis for this, a life cycle assessment was prepared for sealing tapes. These LCAs are in conformity with the requirements set out in DIN EN 15804 and the international standards DIN EN ISO 14040, DIN EN ISO 14044, ISO 21930 and EN ISO 14025.

The LCA is representative of the products presented in the Declaration and the specified reference period.

6.1 Definition of goal and scope

Aim

The goal of the LCA is to demonstrate the environmental impacts of the products. In accordance with DIN EN 15804, the environmental impacts covered by this Environmental Product Declaration are presented for the entire product life cycle in the form of basic information. No other additional environmental impacts are specified.

Data quality, data availability and geographical and time-related system boundaries

The specific data originate exclusively from the 2020 fiscal year. They were collected on-site at the plant located in Aalen and originate in parts from company records and partly from values directly obtained by measurement. Validity of the data was checked by the ift Rosenheim.

The generic data originates from the professional database and building materials database software “LCA for Experts 10”. The last update of both databases was in 2023. Data from before this date originate also from these databases and are not more than ten years old. No other generic data were used for the calculation.

Generic data are selected as accurately as possible in terms of geographic reference. If no country-specific data sets are available or if the regional reference cannot be determined, European or globally valid data sets are used.

Data gaps were either filled with comparable data or conservative assumptions, or the data were cut off in compliance with the 1% rule.

The life cycle was modelled using the sustainability software tool “LCA for Experts” for the development of life cycle assessments.

Scope / system boundaries

The system boundaries refer to the supply of raw materials and purchased parts, manufacture/production, use and end-of-life stage of sealing tapes.
No additional data from pre-suppliers/subcontractors or other sites were taken into consideration.

Cut-off criteria

All company data collected, i.e. all commodities/input and raw materials used, the thermal energy and electricity consumption, were taken into consideration.

The boundaries cover only the product-relevant data. Building sections/parts of facilities that are not relevant to the manufacture of the products, were excluded.

The transport distances of the pre-products used were taken into consideration as a function of 100% of the mass of the product.
The transport mix is consisted as follows and is derived from the research project "EPDs for transparent components":

- Truck, 26 – 28 t total weight / 18.4 t payload, Euro 6, freight, 85% capacity used, 100 km,
- Truck-trailer, 28 – 34 t total weight / 22 t payload, Euro 6, 50% capacity used, 50 km,
- Freight train, electrical and diesel driven; D 60%, E 51% capacity used, 50 km,
- Seagoing vessel, consumption mix, 50 km.

The criteria for the exclusion of inputs and outputs as set out in DIN EN 15804 are fulfilled. From the data analysis it can be assumed that the total of negligible processes per life cycle stage does not exceed 1% of the mass/primary energy. This way the total of negligible processes does not exceed 5% of the energy and mass input. The life cycle calculation also includes material and energy flows that account for less than 1%.

6.2 Inventory analysis

Aim

All material and energy flows are described below. The processes covered are presented as input and output parameters and refer to the declared/functional units.

Life cycle stages

The complete life cycle of sealing tapes is shown in the annex. The product stage "A1 – A3", construction process stage "A4 – A5", use stage "B2, B3, B6, B7", end-of-life stage "C1 – C4" and the benefits and loads beyond the system boundaries "D" are considered.

Benefits

The below benefits have been defined as per DIN EN 15804:

- Benefits from recycling
- Benefits (thermal and electrical) from incineration

Allocation of co-products

No allocations occur during production.

Allocations for re-use, recycling and recovery

If the products are reused/recycled and recovered during the product stage (rejects), the elements are shredded, if necessary and then sorted into their constituents. This is done by various process plants, e.g. magnetic separators.
The system boundaries were set following their disposal, reaching the end-of-waste status.

Allocations beyond life cycle boundaries

The use of recycled materials in the manufacturing process was based on the current market-specific situation. In parallel to this, a recycling potential was taken into consideration that reflects the economic value of the product after recycling (recyclate).
The system boundary set for the recycled material refers to collection.

Secondary material

The use of secondary material by ISO-Chemie GmbH was not considered in Module A3. Secondary material is not used.

Inputs

The following manufacturing-related inputs were included in the LCA per 1 linear metre sealing tapes:

Energy
For the input material gas, "natural gas Germany" was assumed. For the electricity mix, the "Electricity Mix Germany" was assumed. Part of the energy consumed is provided by the self-production of electricity through a photovoltaic system.

A portion of the process heat is used for space heating. This can, however, not be quantified, hence a “worst case” figure was taken into account for the product.

Water
The water consumed by the individual process steps for the manufacture amounts to a total of 0.261 l per linear metre of the element.
The consumption of fresh water specified in Section 6.3 originates (among others) from the process chain of the pre-products and the process water for cooling.

Raw material / pre-products
The charts below show the share of raw materials/pre-products in percent.

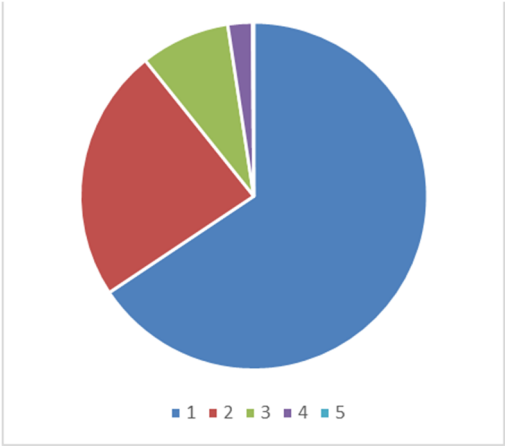


Illustration 1 Percentage of individual materials per declared unit

No.	Material	Mass in %
1	Polymers and additives	66
2	PUR foam	24
3	Film	8
4	Adhesive	2
5	PE foam	< 1

Table 3 Percentage of individual materials per declared unit

Ancillary materials and consumables
There are no ancillary materials and consumables used.

Product packaging
The amounts used for product packaging are as follows:

No.	Material	Mass in kg per linear metre
1	PE film	0.0123

Table 4 Weight in kg of packaging per declared unit

Biogenic carbon content
No biogenic carbon is produced, as there is no biogenic carbon in either the product or the packaging.

Outputs

The following manufacturing-related outputs were included in the LCA per 1 linear metre of polyurethane and polyethylene sealing tape:

Waste
Secondary raw materials were included in the benefits.
See Section 6.3 Impact assessment.

Waste water
The manufacture produces 0.261 l waste water.

6.3 Impact assessment

Aim

The impact assessment covers both inputs and outputs. The impact categories applied are stated below:

Core indicators

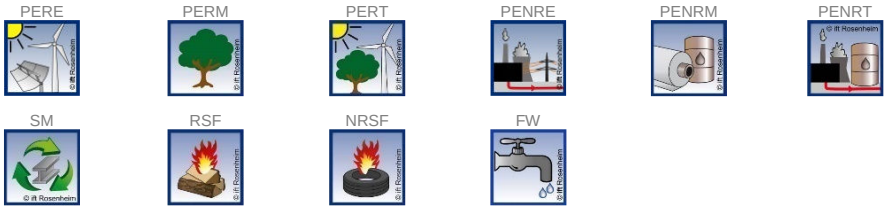
The models for impact assessment were applied as described in DIN EN 15804-A2.
The core indicators presented in the EPD are as follows:

- Climate change - total (GWP-t)
- Climate change - fossil (GWP-f)
- Climate change - biogenic (GWP-b)
- Climate change - land use & land use change (GWP-l)
- Ozone depletion (ODP)
- Acidification (AP)
- Eutrophication freshwater (EP-fw)
- Eutrophication salt water (EP-m)
- Eutrophication land (EP-t)
- Photochemical ozone creation (POCP)
- Depletion of abiotic resources - fossil fuels (ADPF)
- Depletion of abiotic resources - minerals and metals (ADPE)
- Water use (WDP)

Resource management

The models for impact assessment were applied as described in DIN EN 15804-A2.
The following resource use indicators are presented in the EPD:

- Renewable primary energy as energy source (PERE)
- Renewable primary energy for material use (PERM)
- Total use of renewable primary energy (PERT)
- Non-renewable primary energy as energy source (PENRE)
- Renewable primary energy for material use (PENRM)
- Total use of non-renewable primary energy (PENRT)
- Use of secondary materials (SM)
- Use of renewable secondary fuels (RSF)
- Use of non-renewable secondary fuels (NRSF)
- Net use of freshwater resources (FW)

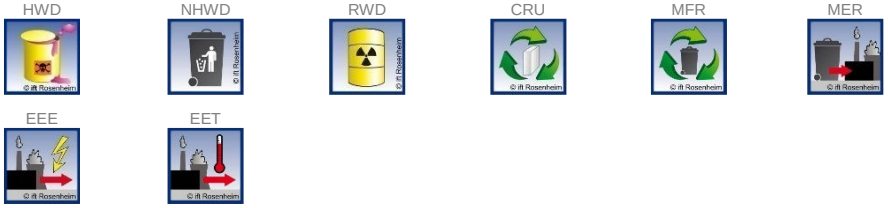


Waste

The waste generated during the production of 1 linear metre of polyurethane and polyethylene sealing tape is evaluated and shown separately for the fractions trade wastes, special wastes and radioactive wastes. Since waste handling is modelled within the system boundaries, the amounts shown refer to the deposited wastes. A portion of the waste indicated is generated during the manufacture of the pre-products.

The models for impact assessment were applied as described in DIN EN 15804-A2.
The following waste categories and indicators for output closures are presented in the EPD:

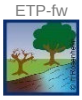
- Disposed hazardous waste (HWD)
- Non-hazardous waste disposed (NHWD)
- Radioactive waste disposed (RWD)
- Components for re-use (CRU)
- Materials for recycling (MFR)
- Materials for energy recovery (MER)
- Exported electrical energy (EEE)
- Exported thermal energy (EET)



Additional environmental impact indicators

The models for impact assessment were applied as described in DIN EN 15804-A2.
The additional impact categories presented in the EPD are as follows:

- Particulate matter emissions (PM)
- Ionizing radiation, human health (IRP)
- Ecotoxicity – freshwater (ETP-fw)
- Human toxicity, carcinogenic effects (HTP-c)
- Human toxicity, non-carcinogenic effects (HTP-nc)
- Impacts associated with land use/soil quality (SQP)

Product Manager 
IRP 
ETP-fw 
HTP-c 
HTP-nc 
SQP 

Results per 1 linear metre ISO-BLOCO															
	Unit	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Core indicators																
GWP-t	kg CO_2 equivalent	0.23	6.07E-03	3.86E-02	ND	0.00	0.00	ND	ND	0.00	0.00	0.00	2.67E-04	0.14	1.43E-04	-0.15
GWP-f	kg CO_2 equivalent	1.10	6.10E-03	3.86E-02	ND	0.00	0.00	ND	ND	0.00	0.00	0.00	2.69E-04	0.14	1.48E-04	-0.15
GWP-b	kg CO_2 equivalent	-0.87	-8.42E-05	2.39E-06	ND	0.00	0.00	ND	ND	0.00	0.00	0.00	-3.72E-06	5.71E-05	-4.91E-06	-7.81E-04
GWP-l	kg CO_2 equivalent	5.30E-05	5.55E-05	5.63E-08	ND	0.00	0.00	ND	ND	0.00	0.00	0.00	2.45E-06	1.20E-06	4.59E-07	-1.63E-05
ODP	kg CFC-11-eq.	9.74E-09	7.80E-16	3.34E-15	ND	0.00	0.00	ND	ND	0.00	0.00	0.00	3.45E-17	9.44E-14	3.76E-16	-1.48E-11
AP	mol H^+-eq.	4.35E-03	7.56E-06	5.88E-06	ND	0.00	0.00	ND	ND	0.00	0.00	0.00	3.09E-07	4.79E-05	1.05E-06	-2.25E-04
EP-fw	kg P-eq.	2.15E-04	2.19E-08	8.05E-10	ND	0.00	0.00	ND	ND	0.00	0.00	0.00	9.68E-10	2.07E-08	2.98E-10	-2.57E-07
EP-m	kg N-eq.	1.63E-03	2.64E-06	9.38E-07	ND	0.00	0.00	ND	ND	0.00	0.00	0.00	1.03E-07	1.42E-05	2.71E-07	-5.76E-05
EP-t	mol N-eq.	1.54E-02	3.09E-05	2.75E-05	ND	0.00	0.00	ND	ND	0.00	0.00	0.00	1.22E-06	2.10E-04	2.98E-06	-6.23E-04
POCP	kg NMVOC-eq.	2.78E-03	6.66E-06	2.54E-06	ND	0.00	0.00	ND	ND	0.00	0.00	0.00	2.69E-07	3.72E-05	8.17E-07	-1.96E-04
ADPF*²	MJ	20.77	8.17E-02	5.76E-03	ND	0.00	0.00	ND	ND	0.00	0.00	0.00	3.61E-03	0.12	1.97E-03	-3.07
ADPE*²	kg Sb equivalent	2.89E-08	3.95E-10	2.50E-11	ND	0.00	0.00	ND	ND	0.00	0.00	0.00	1.74E-11	7.74E-10	6.81E-12	-9.98E-09
WDP*²	m^3 world-eq. deprived	2.24	7.24E-05	3.54E-03	ND	0.00	0.00	ND	ND	0.00	0.00	0.00	3.20E-06	1.46E-02	1.62E-05	-8.45E-03
Resource management																
PERE	MJ	1.73	5.94E-03	1.63E-03	ND	0.00	0.00	ND	ND	0.00	0.00	0.00	2.62E-04	6.03E-02	3.21E-04	-0.52
PERM	MJ	0.00	0.00	0.00	ND	0.00	0.00	ND	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PERT	MJ	1.73	5.94E-03	1.63E-03	ND	0.00	0.00	ND	ND	0.00	0.00	0.00	2.62E-04	6.03E-02	3.21E-04	-0.52
PENRE	MJ	18.50	8.20E-02	0.26	ND	0.00	0.00	ND	ND	0.00	0.00	0.00	3.62E-03	1.93	0.20	-3.07
PENRM	MJ	2.27	0.00	-0.25	ND	0.00	0.00	ND	ND	0.00	0.00	0.00	0.00	-1.81	-0.20	0.00
PENRT	MJ	20.77	8.20E-02	5.77E-03	ND	0.00	0.00	ND	ND	0.00	0.00	0.00	3.62E-03	0.12	1.97E-03	-3.07
SM	kg	0.00	0.00	0.00	ND	0.00	0.00	ND	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RSF	MJ	1.97E-32	0.00	0.00	ND	0.00	0.00	ND	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NRSF	MJ	2.99E-31	0.00	0.00	ND	0.00	0.00	ND	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FW	m^3	5.34E-02	6.51E-06	8.30E-05	ND	0.00	0.00	ND	ND	0.00	0.00	0.00	2.87E-07	3.63E-04	4.97E-07	-5.63E-04
Categories of waste																
HWD	kg	8.09E-10	2.54E-13	8.46E-14	ND	0.00	0.00	ND	ND	0.00	0.00	0.00	1.12E-14	-5.98E-12	4.29E-14	-2.43E-10
NHWD	kg	4.75E-03	1.25E-05	1.56E-04	ND	0.00	0.00	ND	ND	0.00	0.00	0.00	5.52E-07	2.93E-03	9.85E-03	-1.64E-03
RWD	kg	1.09E-04	1.53E-07	1.69E-07	ND	0.00	0.00	ND	ND	0.00	0.00	0.00	6.78E-09	1.43E-05	2.25E-08	-1.08E-04
Output material flows																
CRU	kg	0.00	0.00	0.00	ND	0.00	0.00	ND	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MFR	kg	0.00	0.00	0.00	ND	0.00	0.00	ND	ND	0.00	0.00	0.00	0.00	3.01E-02	0.00	0.00
MER	kg	9.40E-03	0.00	0.00	ND	0.00	0.00	ND	ND	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EEE	MJ	3.62E-02	0.00	7.02E-02	ND	0.00	0.00	ND	ND	0.00	0.00	0.00	0.00	0.23	0.00	0.00
EET	MJ	8.31E-02	0.00	0.16	ND	0.00	0.00	ND	ND	0.00	0.00	0.00	0.00	0.52	0.00	0.00

Key:
GWP-t – global warming potential - total **GWP-f** – global warming potential fossil fuels **GWP-b** – global warming potential - biogenic **GWP-l** – global warming potential - land use and land use change **ODP** – ozone depletion potential **AP** - acidification potential **EP-fw** - eutrophication potential - aquatic freshwater **EP-m** - eutrophication potential - aquatic marine **EP-t** - feutrophication potential - terrestrial **POCP** - photochemical ozone formation potential **ADPF*²** - abiotic depletion potential – fossil resources **ADPE*²** - abiotic depletion potential – minerals&metals **WDP*²** – Water (user) deprivation potential **PERE** - Use of renewable primary energy **PERM** - use of renewable primary energy resources **PERT** - total use of renewable primary energy resources **PENRE** - use of non-renewable primary energy **PENRM** - use of non-renewable primary energy resources **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** - net use of 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 **EEE** - exported electrical energy **EET** - exported thermal energy

	Results per 1 linear metre ISO-BLOCO														
	Unit	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Additional environmental impact indicators																
PM	Disease incidence	1.59E-08	5.28E-11	3.67E-11	ND	0.00	0.00	ND	ND	0.00	0.00	0.00	2.25E-12	2.87E-10	1.29E-11	-1.71E-09
IRP*[1]	kBq U235-eq.	0.47	2.29E-05	1.78E-05	ND	0.00	0.00	ND	ND	0.00	0.00	0.00	1.01E-06	2.32E-03	2.59E-06	-1.68E-02
ETP-fw*[2]	CTUe	63.05	5.80E-02	2.21E-03	ND	0.00	0.00	ND	ND	0.00	0.00	0.00	2.56E-03	4.95E-02	1.07E-03	-0.94
HTP-c*[2]	CTUh	4.16E-09	1.19E-12	2.59E-13	ND	0.00	0.00	ND	ND	0.00	0.00	0.00	5.24E-14	2.65E-12	1.65E-13	-4.64E-11
HTP-nc*[2]	CTUh	3.66E-07	6.35E-11	7.72E-12	ND	0.00	0.00	ND	ND	0.00	0.00	0.00	2.79E-12	1.15E-10	1.82E-11	-2.83E-09
SQP*[2]	dimensionless	0.75	3.41E-02	1.76E-03	ND	0.00	0.00	ND	ND	0.00	0.00	0.00	1.51E-03	4.34E-02	4.78E-04	-0.36

Key:
PM – particulate matter emissions potential **IRP*[1]** – ionizing radiation potential – human health **ETP-fw*[2]** - Eco-toxicity potential – freshwater **HTP-c*[2]** - Human toxicity potential – cancer effects **HTP-nc*[2]** - Human toxicity potential – non-cancer effects **SQP*[2]** – soil quality potential

Disclaimers:

*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 disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

*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.

6.4 Interpretation, LCA presentation and critical review

Evaluation

The main environmental impacts of the sealing tapes arise from the manufacture of the pre-products and the recycling of the sealing tapes in the disposal phase.
In the area of production, the environmental impact mainly results from the use of PUR foam and polymers or their respective upstream chains. Furthermore, packaging with PE film plays an important role in terms of environmental impact. Further influences arise from the use of the self-adhesive film and its upstream chains.
In Module C3, the energy used is dominated by waste treatment and the subsequent thermal recycling of the sealing tapes.

In scenario C4, only marginal expenditures for the physical pretreatment and the landfill operation are to be expected. Allocation to individual products is almost impossible for site disposal.
When recycling the products, plastic can be credited with around 4% of the environmental impacts occurring in the life cycle in scenario D.

The charts below show the allocation of the main environmental impacts.

The values obtained from the LCA calculation are suitable for the certification of buildings.

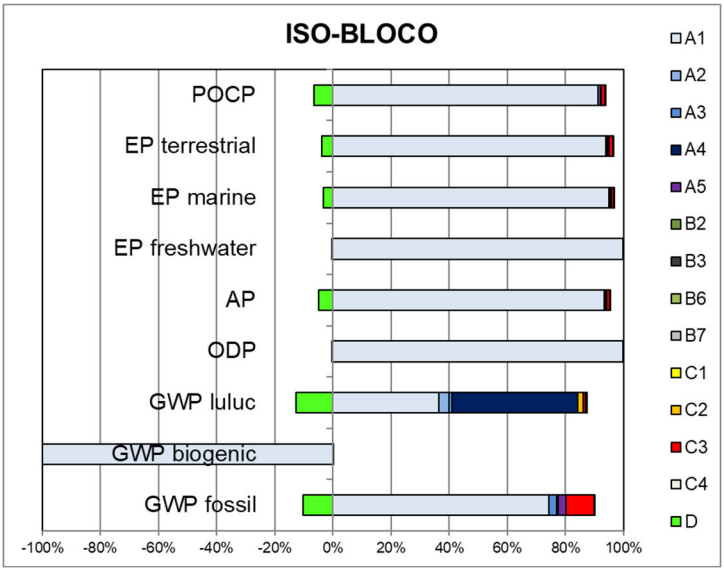


Illustration 2 Percentage of the modules in selected environmental impact indicators

Report

The LCA report underlying this EPD was developed according to the requirements of DIN EN ISO 14040 and DIN EN ISO 14044 as well as DIN EN 15804 and DIN EN ISO 14025. It is deposited with ift Rosenheim. The results and conclusions reported to the target group are complete, correct, without bias and transparent. The results of the study are not designed to be used for comparative statements intended for publication.

Critical review

The critical review of the life cycle assessment was carried out by the independent ift auditor Benedikt Dellawalle MSc.

7 General information regarding the EPD

Comparability

This EPD was prepared in accordance with DIN EN 15804 and is therefore only comparable to those EPDs that also comply with the requirements set out in DIN EN 15804.
Any comparison must refer to the building context and the same boundary conditions of the various life cycle stages.
For comparing EPDs of construction products, the rules set out in DIN EN 15804, Clause 5.3, apply.

Communication

The communications format of this EPD meets the requirements of EN 15942:2012 and is therefore the basis for B2B communication. Only the nomenclature has been changed according to DIN EN 15804.

Verification

Verification of the Environmental Product Declaration is documented in accordance with the ift "Richtlinie zur Erstellung von Typ III Umweltproduktdeklarationen" (Guidance on preparing Type III Environmental Product Declarations) in accordance with the requirements set out in DIN EN ISO 14025.

This declaration is based on PCR documents "PCR Part A" PCR-A-0.2:2018 and "Wall connections and sealing systems" PCR BA-3.0: 2023

The European standard EN 15804 serves as the core PCR [a)]
Independent verification of the Declaration and statement according to EN ISO 14025:2010
Independent third party verifier: [b)] Benedikt Dellawalle
[a)] Product category rules [b)] Optional for business-to-business communication Mandatory for business-to-consumer communication (see EN ISO 14025:2010, 9.4).

Revisions of this document

No.	Date	Note	Person in charge	Testing personnel
1	18.07.2023	Internal test	Dumproff	Dellawalle

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9 Annex

Description of life cycle scenarios for sealing tapes

Product stage			Con-struction process stage		Use stage*							End-of-life stage				Benefits and loads beyond system boundaries
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Raw material supply	Transport	production	Transport	Construction/installation process	Use	maintenance	Repair	replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction/demolition	Transport	Waste processing	Disposal	Reuse Recovery Recycling potential
✓	✓	✓	✓	✓	—	✓	✓	—	—	✓	✓	✓	✓	✓	✓	✓

* For declared B-modules, the calculation of the results is performed taking into account the specified RSL related to one year

Table 5 Overview of applied life cycle stages

The scenarios were based on information provided by the manufacturer. The scenarios were furthermore based on the research project "EPDs for transparent building components" (1).

Note: The standard scenarios selected are presented in bold type. They were also used for calculating the indicators in the summary table.

✓ Included in the LCA
— Not included in the LCA

A4 Transport to construction site

No.	Scenario	Description
A4	Direct delivery to construction site/branch	40 t truck (Euro 0-6 mix), diesel, 27 t payload, 85 % capacity utilization, approx. 310 km to construction site and back with 10 % capacity utilization

A4 Transport to construction site	Transport weight [kg/linear metre]	Density [kg/m³]
PG1	0.11	50 - 160 kg/m³ ± 10 %

Since this is a single scenario, the results are shown in the relevant summary table.

A5 Construction/Installation

No.	Scenario	Description
A5	Manual	According to the manufacturer, the products are installed without additional lifting and auxiliary devices

In case of deviating consumption during installation/assembly of the products which forms part of the site management, they are covered at the building level.

Ancillary materials, consumables, use of energy and water, other resource use, material losses, direct emissions as well as waste during construction / installation are negligible.

It is assumed that the packaging material in the Module construction / installation is sent to waste handling. Waste is only thermally recycled in line with the conservative approach:
Benefits from A5 are specified in module D. Benefits from waste incineration: Benefits from waste incineration: electricity replaces electricity mix (RER); thermal energy replaces thermal energy from European natural gas (RER).
Transport to the recycling plants is not taken into account.

Since this is a single scenario, the results are shown in the relevant summary table.

B2 Inspection, maintenance, cleaning - not relevant

B2.1 Cleaning and B2.2 Maintenance

According to the manufacturer, there is no cleaning and maintenance of the products.

Ancillary materials, consumables, use of energy and water, material losses and waste as well as transport distances during cleaning and maintenance are negligible.

Since this is the single scenario, the results are shown in the relevant summary table.

B3 Repair - not relevant

According to the manufacturer, there is no repair of the products.

For updated information refer to the relevant instructions for assembly/installation, operation and maintenance issued by company ISO-Chemie GmbH

Ancillary materials, consumables, use of energy and water, waste, material losses and transport distances during repair are negligible.

B6 Operational energy use - not relevant

There is no energy used during normal use.

There is no transport consumption for energy use in buildings. Ancillary materials, consumables and water, waste materials and other scenarios are negligible.

Since this is a single scenario, the results are shown in the relevant summary table.

B7 Operational water use - not relevant

No water consumption when used as intended. Water consumption for cleaning is specified in Module B2.1.

There is no transport consumption for water use in buildings. Ancillary materials, consumables, waste materials and other scenarios are negligible.

Since this is a single scenario, the results are shown in the relevant summary table.

C1 Deconstruction

No.	Scenario	Description
C1	**Deconstruction**	**90 % deconstruction;** **Further deconstruction rates are possible, give adequate reasons.**

No relevant inputs or outputs apply to the scenario selected. The energy consumed for deconstruction is negligible. Any arising consumption is marginal.

Since this is a single scenario, the results are shown in the relevant summary table.

In case of deviating consumption the removal of the products forms part of site management and is covered at the building level.

C2 Transport

No.	Scenario	Description
C2	Transport	**Transport to collection point with 40 t truck (Euro 0-6 Mix), diesel, 27 t payload, 85 % capacity used, 50 km**

Since this is a single scenario, the results are shown in the summary table.

C3 Waste management

No.	Scenario	Description
C3	Current market situation	**Share for recirculation of materials:** • **Plastics 66 % thermal recycling in incineration plants** (Zukunft Bauen, 2017) • **Plastics 34 % recycled** (Zukunft Bauen, 2017)

Electricity consumption of recycling plant: 0.5 MJ/linear metre

As the products are placed on the European market, the disposal scenario is based on average European data sets.
The below table presents the disposal processes and their percentage by mass/weight. The calculation is based on the above mentioned shares in percent related to the declared unit of the product system.

C3 Disposal	Unit	C3
Collection process, collected separately	kg	0.0886
Collection process, collected as mixed construction waste	kg	0.00984
Recovery system, for re-use	kg	0.00
Recovery system, for recycling	kg	0.0301
Recovery system, for energy recovery	kg	0.0584
Disposal	kg	0.00984

The 100% scenarios differ from the average current recovery (D3.1). The evaluation of each scenario is described in the background report.

Since this is a single scenario, the results are shown in the summary table.

C4 Disposal

No.	Scenario	Description
C4	Disposal	The non-recordable amounts and losses within the re-use/recycling chain (C1 and C3) are modelled as “disposed” (RER).

The 100% scenarios differ from the current average recovery shown here (in background report C4.1). The evaluation of each scenario is described in the background report.

The consumption in scenario C4 results from physical pre-treatment, waste recycling and management of the disposal site. The benefits obtained here from the substitution of primary material production are allocated to Module D, e.g. electricity and heat from waste incineration.

Since this is a single scenario, the results are shown in the summary table.

D Benefits and loads from beyond the system boundaries

No.	Scenario	Description
D	Recycling potential	PUR recyclate and PMMA recyclate from C3 excluding the plastics used in A3 replaces 60% of PU foam and PMMA granules; Benefits from incineration plant: Benefits from waste incineration: electricity replaces electricity mix (RER); thermal energy replaces thermal energy from European natural gas (RER).

The values in Module D result from recycling of the packaging material in Module A5 and from deconstruction at the end of service life.

The 100% scenarios differ from the average current recovery (D.1). The evaluation of each scenario is described in the background report.

Since this is a single scenario, the results are shown in the summary table.

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Notes
This EPD is mainly based on the work and findings of Institut für Fenstertechnik e.V., Rosenheim (ift Rosenheim) and specifically on ift-Guideline NA-01/3 “Allgemeiner Leitfaden zur Erstellung von Typ III Umweltproduktdeklarationen” (Guidance on preparing Type III Environmental Product Declarations).

Layout
ift Rosenheim GmbH – 2021

Photographs (front page)
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