Environmental Product Declaration

of multiple products, based on the average results of the product group.

In accordance with ISO 14025:2026 and EN 15804:2012+A2:2019/AC:2021 for:

Pipe Clamp Portfolio

from

MÜPRO Services GmbH

Programme:	The International EPD System, www.environdec.com
Programme operator:	EPD International AB
Type of EPD:	EPD of multiple products from a company
EPD registration number:	EPD-IES-0035540:001
Version date:	2026-11-09
Validity date:	2031-11-09

An EPD may be updated or depublished if conditions change. To find the latest version of the EPD and to confirm its validity, see www.environdec.com



A list of products included in the EPD can be found in the section "Product information" on page 3.

GENERAL INFORMATION

Programme Information	
Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
E-mail:	support@environdec.com

Product Category Rules (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR): PCR 2019:14 Construction products version 2.0.1 and UN CPC code: 412
PCR review was conducted by: The Technical Committee of the International EPD System. A full list of members is available on www.environdec.com. **Chair of the PCR review:** Rob Rouwette (chair), Noa Meron (co-chair). The review panel may be contacted via the Secretariat www.environdec.com/support.
c-PCR, if applicable: *not applicable*

LCA Accountability
LCA accountability: Franziska Heinz, DEKRA Assurance Services GmbH, Handwerkstraße 15, 70565 Stuttgart, Germany

Third-party Verification
Independent third-party verification of the declaration and data, according to ISO 14025:2026, via: ☒ **Individual EPD verification without a pre-verified LCA/EPD tool** Third-party verifier: Dr-Ing. Nikolay Minkov from Greentability Ltd. Approved by: International EPD System
Procedure for follow-up of data during EPD validity involves third party verifier: ☐ Yes ☒ No

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but published in different EPD programmes, may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR (including the same first-digit version number) or be based on fully aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have identical scope in terms of included life-cycle stages (unless the excluded life-cycle stage is demonstrated to be insignificant); apply identical impact assessment methods (including the same version of characterisation factors); and be valid at the time of comparison.
For further information about comparability, see EN 15804 and ISO 14025

INFORMATION ABOUT EPD OWNER

Owner of the EPD: MÜPRO Services GmbH
Address: Borsigstraße 14, DE-65205 Wiesbaden, Germany

Contact: Sabine Pohl, Mail: sabine.pohl@muepro.de

Address and contact information of the LCA practitioner commissioned by the EPD owner: DEKRA Assurance Services GmbH, Handwerkstraße 15, 70565 Stuttgart, Germany

Description of the organisation:
MÜPRO Services GmbH is an innovative company specializing in fixing technology, vibration control and fire protection technology with over 60 years of experience. Headquartered in Wiesbaden, Germany, and with a global network, MÜPRO Services GmbH offers high-quality products and services tailored to the needs of the construction and industrial sectors. The company is known for its customer-oriented approach, providing not only product delivery but also technical consulting, project management, and customized product solutions. With a strong commitment to quality and a global presence, MÜPRO Services GmbH ensures that its solutions are implemented efficiently and reliably worldwide. MÜPRO Services GmbH has built a reputation for innovation, reliability, and delivering advanced technical solutions across diverse industries.
For more information see https://www.muepro.de/.

Product-related or management system-related certifications:
MÜPRO Services GmbH is ISO 9001 certified

PRODUCT INFORMATION

Product name: Pipe clamp portfolio

Product identification: The declared unit for this EPD is 1 kg of an average pipe clamp. The pipe clamp portfolio is composed of the components listed in the following.

MÜPRO pipe clamps meet the relevant requirements for pipe fastening: Sound insulation inserts comply with DIN 4109 and VDI 4100; fire-tested versions are certified according to DIN 4102 and DIN EN 1363; and sprinkler pipe clamps have VdS and FM approval. They manufacture pipe clamps for heavy-duty applications in accordance with DIN 3567, among other standards.

List of products included in this EPD:

- OPTIMAL, galvanised
- Slide clamps, galvanised
- OPTIMAL Junior® Easy, galvanised
- OPTIMAL Junior®, galvanised
- Single bossed clamps JUNIOR, galvanised
- EURO-QUICK® type EXP, with DÄMMGULAST®, galvanised
- EURO-QUICK® type EXP, without lining, galvanized
- Duo, galvanized
- EASY clips, galvanized
- VARIO-Twin pipe clamps, galvanized

- Safety clips, galvanized
- Single bossed clamps, heavy-duty version, with DÄMMGULAST® yellow, galvanized
- Single bossed clamps, heavy-duty version, type 2G, with DÄMMGULAST® yellow, galvanized
- Single bossed clamps, heavy-duty version, with DÄMMGULAST® red, galvanized
- Single bossed clamps, heavy-duty version, without lining, galvanized
- Single bossed clamps, with DÄMMGULAST® yellow, galvanized
- Single bossed clamps, with DÄMMGULAST® blue, galvanized
- Single bossed clamps, with DÄMMGULAST® red, galvanized
- Single bossed clamps, without lining, galvanized
- Single bossed clamps, without lining, VdS/FM approval, galvanized
- Single bossed clamps, without lining, VdS approval, powder-coated
- Single bossed clamps, with connection socket, galvanized
- Pipe loops type EHS, galvanized
- STATO® Clamps, with DÄMMGULAST® yellow, galvanized
- STATO® Clamps, without lining, galvanized
- Duct clamps, without lining, galvanized
- Duct clamps type C, with DÄMMGULAST® black, galvanized
- Duct clamps type S, with DÄMMGULAST® black, galvanized
- Single bossed clamps, heavy-duty version, with DÄMMGULAST® yellow, hot-dip galvanized
- Single bossed clamps, heavy-duty version, without lining, hot-dip galvanized
- Single bossed clamps, with DÄMMGULAST® black, hot-dip galvanized
- Saddle Clamps, hot-dip galvanized
- Pipe clamps, DIN 3567


OPTIMAL, galvanised


Slide clamps, galvanised


OPTIMAL Junior® Easy, galvanised


OPTIMAL Junior®, galvanised


Single bossed clamps JUNIOR, galvanised


EURO-QUICK® type EXP,
with DÄMMGULAST®, galvanised


EURO-QUICK® type EXP,
without lining, galvanised


Duo, galvanised


EASY clips, galvanised


VARIO-Twin pipe clamps, galvanised


Safety clips, galvanised


Single bossed clamps, heavy-duty version,
with DÄMMGULAST® yellow, galvanised


Single bossed clamps, heavy-duty version,
type 2G, with DÄMMGULAST® yellow,
galvanised


Single bossed clamps, heavy-duty version,
with DÄMMGULAST® red, galvanised


Single bossed clamps, heavy-duty version,
without lining, galvanised


Single bossed clamps,
with DÄMMGULAST® yellow, galvanised


Single bossed clamps,
with DÄMMGULAST® blue, galvanised


Single bossed clamps,
with DÄMMGULAST® red, galvanised


Single bossed clamps, without lining,
galvanised


Single bossed clamps, without lining,
VdS/FM approval, galvanised


Single bossed clamps, without lining,
VdS approval, powder-coated


Single bossed clamps,
with connection socket, galvanised


Pipe loops type EHS, galvanised


STATO® Clamps,
with DÄMMGULAST® yellow, galvanised


STATO® Clamps,
without lining, galvanised


Duct clamps, without lining, galvanised


Duct clamps type C,
with DÄMMGULAST® black, galvanised


Duct clamps type S,
with DÄMMGULAST® black, galvanised


Single bossed clamps, heavy-duty version,
with DÄMMGULAST® yellow,
hot-dip galvanised


Single bossed clamps, heavy-duty version,
without lining, hot-dip galvanised


Single bossed clamps,
with DÄMMGULAST® black,
hot-dip galvanised


Saddle Clamps, hot-dip galvanised


Pipe clamps, DIN 3567

UN CPC code: 412 - Products of iron or steel

Product description:
The pipe clamp portfolio is designed for multiple purposes. An overview of the possible applications is provided in the following table.

Industry	**Application**
Plumbing and Heating Installation	Mounting plastic, copper, and steel pipes to walls, ceilings, and rails—with sound insulation inserts in accordance with DIN 4109
Ventilation Technology	Ventilation clamps for spiral-seamed ducts and suspended ductwork
Sprinklers and Fire Protection	Sprinkler pipe clamps with VdS and FM certification, fire-tested fasteners
Industrial and Plant Engineering	Industrial pipe clamps and pipe clamps conforming to DIN 3567 for large nominal diameters, high loads, and high temperatures

The product consists of zinc coated steel, steel accessories from zinc coated steel and synthetic rubber in the form of EPDM/TPE. Some pipe clamps are produced by external suppliers and some by MÜPRO, while the final manual assembly and packaging are carried out by MÜPRO.

More information about the technical specifications can be found here: https://www.muepro.de/

Name and location of production site(s):
Production: Burgbernheim, Germany (UBB Umformtechnik GmbH)
Storage and packaging: Unna, Germany and Röthlein, Germany

CONTENT DECLARATION

Description of the main components and/or materials:
The product consists of mostly of zinc coated, unalloyed steel with small fractions of synthetic rubber. The post-consumer recycled material is not possible to collect based on primary data, therefore the share of recycled content from Ecoinvent was used as a reasonable assumption.

The content declaration represents the average product composition of the pipe clamp portfolio product group covered by this EPD.

Product content	Mass, kg	Post-consumer recycled material, mass-% of product	Biogenic material, mass-% of product	Biogenic material, kg C/product or declared unit
Zinc coated steel	0.878	18.4*	0	0
Synthetic rubber	0.122	0	0	0
TOTAL	1.00	18.4	0	0

*The value is based on the secondary material share from the dataset, as the exact post-consumer share is not specified.

Packaging materials	Mass, kg	Mass-% (versus the product)	Biogenic material, kg C/product or declared unit
Cardboard	0.0308	3.08	1.28E-02
TOTAL	0.0308	3.08	1.28E-02

1 kg biogenic carbon in the product/packaging is equivalent to the uptake of 44/12 kg of CO_2.

Information on the environmental and hazardous/toxic properties of a substances contained in the product:
None of the substances used during production are classified as persistent, bioaccumulative and toxic (PBT) or substances of very high concern (SVHC) according to Regulation No. 1907/2006 Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).

Hazardous substances from the candidate list of SVHC	EC No.	CAS No.	Mass-% per product or declared unit
N/A	N/A	N/A	N/A

LCA INFORMATION

Declared unit:
The declared unit for this EPD is 1 kg of pipe clamp portfolio.

The environmental impacts are determined for an average product. The EPD does depict multiple products of the same product group which are available in different sizes and have a different material composition. For the calculation of the average the production volumes of the included products are considered.

Reference service life: N/A

Time representativeness: The reference year of the study is the calendar year 2025, covering 12 months of data.

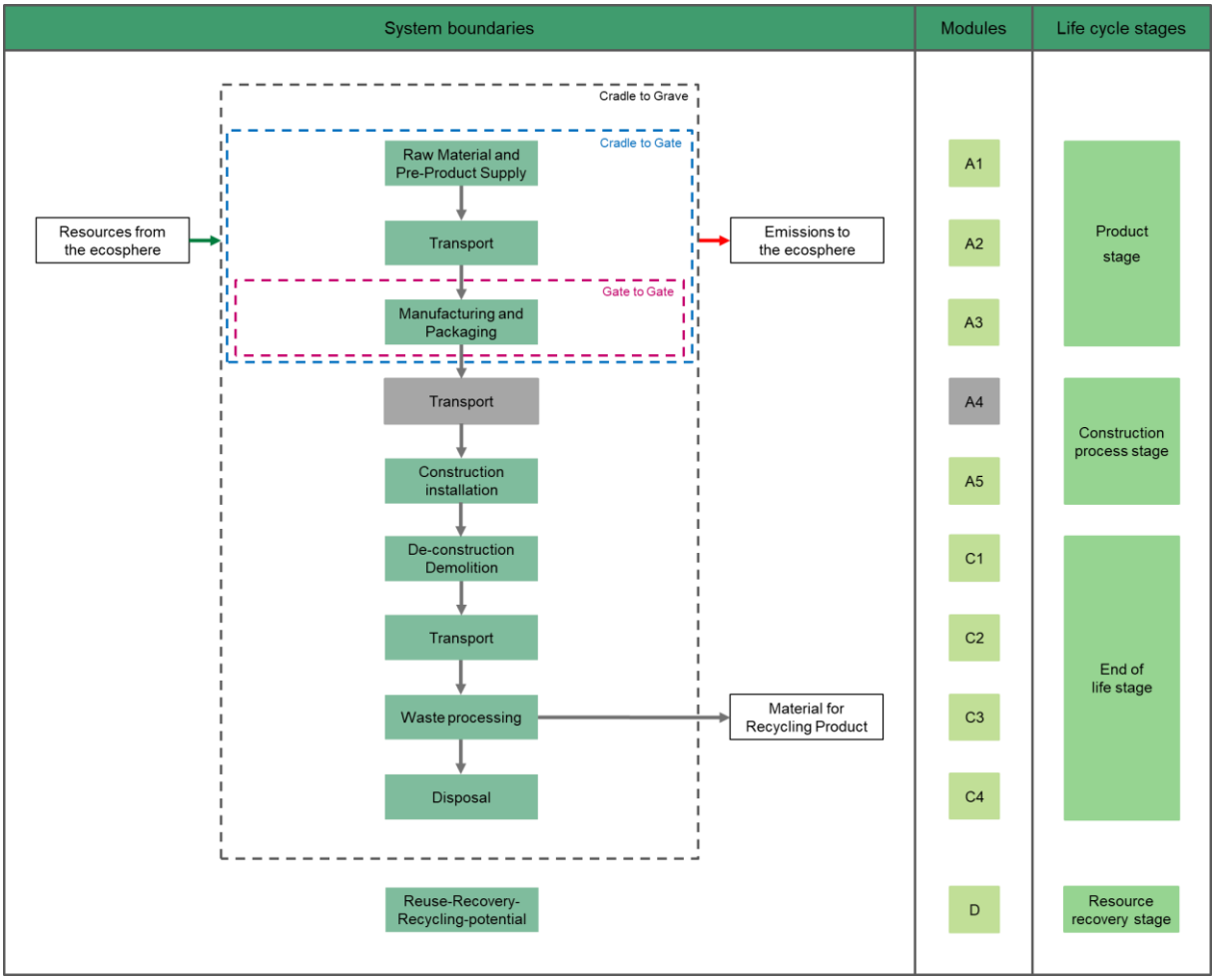
Geographical scope: The geographical scope is Europe.

Database(s) and LCA software used: The database used is ecoinvent v3.12 (Wernet et al. 2016 and ecoinvent 2025) with the EN15804 reference package based on Environmental Footprint (EF) 3.1. The LCA software used is Umberto 11.

EPD/LCA Tool used: N/A

Description of system boundaries:
The system boundary of this study is cradle-to-gate with options, modules C1-C4, module D and optional modules (Type b) in the PCR). This EPD includes the modules raw material supply, transport, manufacturing (A1-A3; product stage), the installation (A5), end of life (EOL; C) and benefits and loads beyond the system boundary (D). The study omits the modules distribution (A4) and use stage (B1-B7). The distribution and use stage (modules A4 and B) are not included because they are highly dependent on the particular application. In addition, the environmental impact of the use phase is considered negligible because it is a passive product that is not removed over an extended period.

Process flow diagram:



Product stage

Manufacturing of the Pipe clamp portfolio takes place at the production facility in Burgbernheim. The manufacturing process includes the following steps:

- Zinc coating of the steel (mostly external, sometimes before, sometimes after steel bending and welding)
- Stamping: Steel is bent into shape
- Optional: Resistance or CO2 welding: The nuts are welded to the clamp.
- For lined pipe clamps: Cutting the synthetic rubber to size
- Assembly
- Temporary packaging in reusable containers

In the storage facilities: Final packaging in cardboard

The modules A1-A3 include the production of raw and auxiliary materials that enter the production processes, as detailed below:

A1: Raw material supply

- Module A1 includes the extraction and processing of raw materials (zinc coated steel, synthetic rubber) and the manufacturing of the pre-products (pipe clamps from Czechia, Turkey and China)

that serve as input for the manufacturing process taking place at the production facility in Burgbernheim or one of the two facilities for packaging and storage in Unna and Röthlein.

A2: Transport to manufacturer

Module A2 includes the transportation of the raw materials, i.e., to Burgbernheim. The pre-products are delivered to one of the two storage facilities. The components are delivered by multiple suppliers via truck. The distances for the different suppliers were provided by Müpro.

A3: Manufacturing

- Module A3 includes all the process steps, material, and energy inputs to produce the Pipe clamp portfolio. The pipe clamp is then transported to the storage facility in Unna or Röthlein.
- The product is packaged prior to delivery in the storage facility using cardboard in order to ensure protection during transportation and handling.
- During the production a co-product in the form of steel scrap is generated, therefore allocation needs to be considered.

Construction process stage

Module A5 covers the manual installation of the product, with no material losses taken into account. The disposal of packaging and installation materials is assumed to occur via thermal waste treatment.

End of life stage

C1: Demolition

- This module covers the dismantling of the product. It is assumed, that 100% of the product can be recovered during dismantling.

C2: Transport

- Module C2 covers the transport to the waste processing facility. The distance is estimated to be 77 km and the transport is assumed to be done via truck.

C3: Waste processing

- Waste processing contains the product flows that are leaving the system to either Module C4 or Module D and the sorting process for the steel to reach the end of waste state.

C4: Disposal

- This module covers the disposal of the 12.2 % synthetic rubber of the product.

Resource recovery stage

In Module D credits were given for the avoidance of the primary production of steel and loads for the production process.

Estimation and assumptions:

The scrap amount for the steel is derived from the secondary material value provided in the datasets and amounts to 21% for unalloyed steel. The scrap enters the system boundary burden-free.
For the production in Turkey and China, no primary data was available, so primary data from Czechia and Germany was extrapolated and combined with global datasets to fill the data gap.

Cut-off rules:

The selection of the cut-off criteria is in line with the standard EN 15804:2012+A2:2019/AC:2021 and the PCR 2019:14 v2.0.1 and includes a minimum of 95% of the total inflows and 100% completeness.

The packaging of the pre-products was excluded, due to the very small amount per declared unit and the lack of reliable information.

Infrastructure/ capital goods were not available as primary data in the core processes. However, they are implicitly accounted for through generic datasets from the LCI database used to model upstream and downstream processes. These datasets include infrastructure and capital goods within their system boundaries, and disaggregating or removing this data is not feasible without disproportionate effort. The results of the environmental performance indicators were issued with a disclaimer.

Personnel-related processes, such as business travel and commuting to and from work, were excluded from the system boundaries in accordance with the PCR.

Allocation:
Steel leaving the product system in C3 is allocated as waste and categorized as “Material for Recycling”. To ensure consistency and avoid double counting a net scrap calculation is performed which accounts for both the input of recycled material and the output of recyclable scrap.

The manufacturing of the average product generates steel scrap as a co-product which has a commercial application in recycling. In accordance with the requirements of EN 15804 and PCR 2019:14 v2.0.1, material losses are treated as co-products if all co-product criteria are met, and the environmental impacts of the manufacturing process (excluding packaging) are allocated to the main product and the co-product based on an economic allocation. If one co-product criteria is not met, the material losses are treated according to the waste allocation procedure.

Electricity mix (A1-A3):
In 2025, 100% electricity was purchased externally for product manufacturing without guarantees of origin, therefore the residual grid mix for Germany was considered. The emission factor for the GWP-GHG indicator is 0.807 kg CO2eq/kWh for the purchased electricity.

Data quality:
The EPD is based on data collected by UBB from one site over one year starting January 2025 and represents the current technology. Additionally, one supplier was able to provide data for some of the pre-products. The EPD is representative of the production of the pipe clamp portfolio at the storage in Unna, Germany and Röthlein, Germany. The distribution, installation and end-of-life stage of the EPD covers Europe, since the pipe clamps are mostly sold in Europe. The composition varies between the configurations sold, causing up to 25.5 % variation from the mean for GWP per kg pipe clamp portfolio.
The EPD uses background data from the ecoinvent database v3.12, 2025. For one of the suppliers primary data for the specific input materials was available.
The quality of the relevant data used for the EPD in terms of its time, geography and technology representativeness using EN 15804:2012+A2:2019, Annex E, Table E.2 is mostly good for foreground data and good for background data. The relevant data assessed included no poor or very poor data.

Process	Source Type	Source	Reference year	Data category	Share of primary data, of GWP-GHG results for A1-A3
Energy used in manufacturing of pre-product	Supplier, Database	Supplier, Ecoinvent v3.12	2025	Primary data, Representative secondary data	1.18 %

Energy used in manufacturing of product	EPD Owner, Database	EPD Owner, Ecoinvent v3.12	2025	Primary data, Representative secondary data	0.26 %
Transportation of raw materials and pre-products	EPD Owner, Database	EPD Owner, Ecoinvent v3.12	2025	Primary data, Representative secondary data	5.84 %
Production of steel	EPD Owner, Database	EPD Owner, Ecoinvent v3.12	2025	Primary data, Representative secondary data	0 %
Production of synthetic rubber	EPD Owner, Database	EPD Owner, Ecoinvent v3.12	2025	Primary data, Representative secondary data	0 %

The share of primary data is calculated based on GWP-GHG results. It is a simplified indicator for data quality that supports the use of more primary data to increase the representativeness of and comparability between EPDs. Note that the indicator does not capture all relevant aspects of data quality and is not comparable across product categories.

Averages and variability

The variation in GWP-GHG was computed in relation to the average product. The variation in the results is related to the share of the raw materials and pre-products used.

Modules declared, geographical scope, share of primary data (in GWP-GHG results) and data variation (in GWP-GHG results):

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	**A1**	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Modules declared	X	X	X	ND	X	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	GLO	GLO	DE	-	EU	-	-	-	-	-	-	-	EU	EU	EU	EU	EU
Primary data used	7.28 %			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	-14.5 % / +25.5 %			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	-0.4 % / +0.4 %			-	-	-	-	-	-	-	-	-	-	-	-	-	-

ENVIRONMENTAL PERFORMANCE

LCA results of the product(s) - main environmental performance results

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.
As module C is included in the EPD, the use of the results of modules A1-A3, and A5 is discouraged without considering the results of module C.

Mandatory impact category indicators according to EN 15804

Results per functional or declared unit								
Indicator	**Unit**	**A1-A3**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	kg CO_2 eq.	3.21E+00	4.80E-02	0.00E+00	1.16E-02	1.99E-02	3.85E-01	-1.06E+00
GWP-fossil	kg CO_2 eq.	3.24E+00	1.02E-03	0.00E+00	1.16E-02	1.98E-02	3.85E-01	-1.06E+00
GWP-biogenic	kg CO_2 eq.	-3.37E-02	4.70E-02	0.00E+00	2.51E-06	4.58E-05	2.18E-05	1.80E-04
GWP-luluc	kg CO_2 eq.	3.52E-03	3.13E-07	0.00E+00	3.93E-06	2.18E-05	2.88E-06	5.23E-05
ODP	kg CFC 11 eq.	5.24E-08	1.43E-11	0.00E+00	2.64E-10	2.80E-10	1.09E-10	-3.94E-09
AP	mol H^+ eq.	3.27E-02	8.47E-06	0.00E+00	5.24E-05	2.34E-04	5.70E-05	-2.90E-03
EP-freshwater	kg P eq.	1.34E-03	1.33E-07	0.00E+00	8.33E-07	1.35E-05	1.25E-06	-4.56E-04
EP-marine	kg N eq.	3.80E-03	4.39E-06	0.00E+00	2.10E-05	5.24E-05	2.22E-05	-8.45E-04
EP-terrestrial	mol N eq.	1.25E-01	3.83E-05	0.00E+00	2.29E-04	5.91E-04	2.40E-04	-9.25E-03
POCP	kg NMVOC eq.	1.25E-02	9.67E-06	0.00E+00	8.12E-05	1.75E-04	6.15E-05	-3.29E-03
ADP-minerals&metals*	kg Sb eq.	9.11E-05	2.76E-09	0.00E+00	3.92E-08	1.40E-06	2.63E-08	-9.31E-08
ADP-fossil*	MJ	4.35E+01	7.31E-03	0.00E+00	1.66E-01	2.63E-01	5.26E-02	-9.61E+00
WDP*	m^3	1.42E+00	2.28E-03	0.00E+00	9.14E-04	5.04E-03	2.03E-02	-1.40E-01
Acronyms	GWP-total = Total Global Warming Potential; GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; 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 Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption							

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

The results of the impact categories abiotic depletion of minerals and metals, and ecotoxicity (freshwater) may be highly uncertain in LCAs that include capital goods/infrastructure in generic datasets in case infrastructure/capital goods contribute greatly to the total results. This is because the LCI data of infrastructure/capital goods used to quantify these indicators in currently available generic datasets sometimes lack temporal, technological and geographical representativeness. Caution should be exercised when using the results of these indicators for decision-making purposes.

Additional mandatory and voluntary impact category indicators

Results per functional or declared unit								
Indicator	**Unit**	**A1-A3**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG[1]	kg CO_2 eq.	3.25E+00	1.02E-03	0.00E+00	1.16E-02	1.99E-02	3.85E-01	-1.06E+00

Resource use indicators

Results per functional or declared unit								
Indicator	**Unit**	**A1-A3**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	2.72E+00	3.94E-01	0.00E+00	2.80E-03	4.93E-02	2.70E-03	2.90E-01
PERM	MJ	3.94E-01	-3.94E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	3.12E+00	3.05E-04	0.00E+00	2.80E-03	4.93E-02	2.70E-03	2.90E-01
PENRE	MJ	4.03E+01	8.31E-03	0.00E+00	1.66E-01	2.63E-01	3.27E+00	-9.61E+00
PENRM	MJ	3.22E+00	-1.00E-03	0.00E+00	0.00E+00	0.00E+00	-3.22E+00	0.00E+00
PENRT	MJ	4.36E+01	7.31E-03	0.00E+00	1.66E-01	2.63E-01	5.26E-02	-9.61E+00
SM	kg	2.12E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	3.09E-02	3.56E-05	0.00E+00	2.09E-05	1.15E-04	3.70E-04	-1.68E-03
Acronyms	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 re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water							

[1] This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO_2 is set to zero.

Waste indicators

Results per functional or declared unit								
Indicator	**Unit**	**A1-A3**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	1.18E+00	6.54E-04	0.00E+00	9.93E-04	4.00E-02	8.77E-03	-6.59E-02
Non-hazardous waste disposed	kg	1.00E+01	3.28E-02	0.00E+00	1.58E-02	7.63E-02	1.38E-01	-2.63E+00
Radioactive waste disposed	kg	4.96E-05	3.28E-09	0.00E+00	4.77E-08	5.29E-07	2.70E-08	1.27E-05

Output flow indicators

Results per functional or declared unit								
Indicator	**Unit**	**A1-A3**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.78E-01	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Additional LCA results (other environmental performance results) of the product(s)

Core environmental indicator variation A-C		
Indicator	**Variation of best case compared to weighted average**	**Variation of worst case compared to weighted average**
GWP-total	-12.73%	22.76%
GWP-fossil	-12.58%	22.50%
GWP- biogenic	-61.31%	73.12%
GWP-luluc	-14.49%	17.70%
ODP	-52.43%	6.49%
AP	-110.81%	22.35%
EP-freshwater	-7.27%	4.28%
EP- marine	-42.57%	48.37%
EP-terrestrial	-131.88%	20.76%
POCP	-30.38%	44.59%
ADP-minerals&metals*	-173.13%	8.09%
ADP-fossil*	-28.32%	17.52%
WDP*	-23.40%	5.08%

The variation between the best- and worst-case results is mostly due to the raw materials, as well as the transportation distance. Higher deviations in ADP minerals&metals, EP-terrestrial and acidifcation are caused by only a small fraction (< 2%) of pipe clamps of the overall pipe clamp portfolio.

ABBREVIATIONS

Abbreviation	Definition
General Abbreviations	
EN	European Norm (Standard)
EPD	Environmental Product Declaration
EF	Environmental Footprint
GPI	General Programme Instructions
ISO	International Organization for Standardization
LCA	Life Cycle Assessment
PCR	Product Category Rules
c-PCR	Complementary Product Category Rules
CEN	European Committee for Standardization
CPC	Central product classification
Environmental Impact Indicators (EN 15804)	
GHG	Greenhouse gas
GWP	Global Warming Potential (kg CO_2 eq.)
GWP-fossil	Global Warming Potential from fossil sources (kg CO_2 eq.)
GWP-biogenic	Global Warming Potential from biogenic sources (kg CO_2 eq.)
GWP-luluc	Global Warming Potential from land use and land use change (kg CO_2 eq.)
GWP-total	Total Global Warming Potential (kg CO_2 eq.)
GWP-GHG	Global Warming Potential for greenhouse gases (kg CO_2 eq.)
ODP	Ozone Depletion Potential (kg CFC-11 eq.)
AP	Acidification Potential (mol H^+ eq.)
EP	Eutrophication Potential
EP-freshwater	Freshwater eutrophication potential (kg P eq.)
EP-marine	Marine eutrophication potential (kg N eq.)
EP-terrestrial	Terrestrial eutrophication potential (mol N eq.)
POCP	Photochemical Ozone Creation Potential (kg NMVOC eq.)
ADP	Abiotic Depletion Potential
ADP-minerals&metals	Abiotic depletion potential for non-fossil resources (kg Sb eq.)
ADP-fossil	Abiotic depletion potential for fossil resources (MJ)
WDP	Water Deprivation Potential (m^3)
Resource Use Indicators	
PERE	Use of renewable primary energy excluding renewable primary energy resources used as raw materials (MJ)
PERM	Use of renewable primary energy resources used as raw materials (MJ)
PERT	Total use of renewable primary energy resources (MJ)
PENRE	Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials (MJ)
PENRM	Use of non-renewable primary energy resources used as raw materials (MJ)
PENRT	Total use of non-renewable primary energy resources (MJ)
SM	Use of secondary material (kg)
RSF	Use of renewable secondary fuels (MJ)
NRSF	Use of non-renewable secondary fuels (MJ)
FW	Use of net fresh water (m^3)
Waste Indicators	
HW	Hazardous Waste (disposed) (kg)
NHW	Non-Hazardous Waste (disposed) (kg)
RW	Radioactive Waste (disposed) (kg)
Output Flow Indicators	
CFR	Components for Reuse (kg)
MR	Material for Recycling (kg)
MER	Materials for Energy Recovery (kg)
EEE	Exported Energy, Electricity (MJ)

EET	Exported Energy, Thermal (MJ)
Lifecycle Stages / Modules	
A1	Raw material supply
A2	Transport
A3	Manufacturing
A4	Transport to site
A5	Construction/Installation
B1	Use
B2	Maintenance
B3	Repair
B4	Replacement
B5	Refurbishment
B6	Operational energy use
B7	Operational water use
C1	Deconstruction/Demolition
C2	Transport to waste processing
C3	Waste processing
C4	Disposal
D	Reuse-Recovery-Recycling potential
Other Relevant Terms	
SVHC	Substances of Very High Concern
EC No.	European Community Number
CAS No.	Chemical Abstracts Service Number
MJ	Megajoule
kg	Kilogram
m^3	Cubic Meter
NMVOC	Non-Methane Volatile Organic Compounds
Sb eq.	Antimony Equivalents
P eq.	Phosphorus Equivalents
N eq.	Nitrogen Equivalents
CFC-11 eq.	Chlorofluorocarbon-11 Equivalents
CO_2 eq.	Carbon Dioxide Equivalents
kg C	Kilograms of Carbon
kg CO_2 eq.	Kilograms of Carbon Dioxide Equivalent
ND	Not Declared

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VERSION HISTORY

Original Version of the EPD, 2026-11-09

EPD
INTERNATIONAL EPD SYSTEM
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