BLÜCHER®

A WATTS Brand

SMART EPD

BLÜCHER® Channels

Environmental Product Declaration

In accordance with ISO 14025 and EN 15804+A2:2019/AC2021

Program Operator:
Smart EPD®
www.smartepd.com

SmartEPD-2025-100-0670-01.4

Date of Issue	Expiration Date	Last Updated
Dec 02, 2025	Dec 02, 2030	Apr 06, 2026

Refer to the EPD Library at www.smartepd.com for the latest EPD listing information

General Information

BLÜCHER

Pugdalvej 1, 7480 Vildbjerg, Denmark

(978) 688-1811

vasanth.gnanadoss@wattswater.com

https://www.blucher.com/

Product Name:	BLÜCHER® Channels
Declared Unit:	1 kg of product plus packaging
Declaration Number:	SmartEPD-2025-100-0670-01.4
Date of Issue:	December 02, 2025
Expiration:	December 02, 2030
Last updated:	April 06, 2026
EPD Scope:	Cradle to grave A1 - A3, A4, A5, B1 - B7, C1 - C4, D
Market(s) of Applicability:	Europe

General Organization Information

BLÜCHER® A/S is among the global leaders in sustainable stainless-steel drainage solutions. Based in Vildbjerg, Denmark, with around 400 employees located at 18 different locations across the world, our products are made from 95 % recycled materials, crafted into fully recyclable stainless steel. As part of Watts Water Technologies (USA), we benefit from shared values in quality, responsibility, and efficiency.
Since 1991, BLÜCHER® A/S has maintained ISO 9001 quality certification, and since 2014, we've been certified to ISO 14001 for environmental management, reflecting our dedication to both product excellence and ecological stewardship.

🤝 Watts Water Technologies: Commitment to People & Community
As BLÜCHER® A/S's parent company, Watts Water Technologies brings a strong foundation in corporate social responsibility and global citizenship:
🌍 Human Rights & Ethical Governance
Watts has implemented a formal Human Rights Policy, aligned with the UN Global Compact and the Universal Declaration of Human Rights, ensuring fair labor practices and ethical treatment across its global workforce
👥 Diversity, Equity & Inclusion (DEI)
Committed to a diverse, inclusive workplace, Watts supports multiple Employee Resource Groups—like Black Matters, Women of Watts, Pride Matters, Vet Matters, LAW Matters, and Tech Matters—to foster belonging, awareness, and career advancement .
It actively enhances DEI through targeted recruiting (including partnerships with HBCUs), mentorship programs, bias training, and inclusive hiring standards.
🏢 Employee Safety & Well-Being
Watts places zero-harm employee safety at the forefront, with extensive safety training, near-miss reporting systems, and certified health & safety programs (e.g., ISO 45001 at some sites)
Additional benefits include regular pay equity reviews, expanded parental leave, family-planning support, and global mental health resources via an Employee Assistance Program
🎓 Professional Growth & Engagement
Watts supports talent development through structured programs like iLead, One Watts Performance System, LinkedIn Learning, coaching, and internships
Employees engage in regular surveys (with high participation rates), CEO communications, and transparent goal-setting processes to inform organizational strategy and culture.

Community Impact & Social Stewardship
Watts invests in global water access projects (e.g., partnership with Planet Water Foundation providing clean water to thousands in Cambodia, India, Mexico, the Philippines, and Indonesia)
Additional community efforts include support for Ukraine relief, disaster aid (e.g., Hurricane Ida), STEM education initiatives, robotics mentorship, and educational partnerships targeting under-resourced students—including scholarships and support for Historically Black Colleges & Universities .
Environmental & Governance Leadership
Watts has achieved recognition as one of America's Most Responsible Companies for six years in a row, including "All-Time Champion" status for 2025
It also became the first to earn WAVE Water Stewardship verification, reduces global water use intensity (11%), uses 100% certified renewable energy credits at key sites, integrates ESG into supply chains, and holds strong sustainability scores (e.g. MSCI AA)
Why This Matters for BLÜCHER® A/S
As a part of this ecosystem, BLÜCHER® A/S not only benefits from robust environmental and quality systems but also shares a deep commitment to human rights, employee safety, diversity, and societal contribution. Together, we deliver sustainable, responsible, and innovative stainless-steel solutions—backed by corporate citizenship and global impact.

Further information can be found at: https://www.blucher.com/

Limitations, Liability and Ownership

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

Environmental declarations from different programs (ISO 14025) may not be comparable. Comparison of the environmental performance of products using EPD information shall be based on the product's use and impacts at the building or construction works level, and therefore EPDs may not be used for comparability purposes when not considering the whole building life cycle. EPD comparability is only possible when all stages of a life cycle have been considered. However, variations and deviations are possible. Example of variations: Different LCA software and background LCI datasets may lead to differences in results upstream or downstream of the life cycle stages declared.

Reference Standards

Standard(s):	ISO 14025 and EN 15804+A2:2019/AC:2021
Core PCR:	Smart EPD® Part A Product Category Rules for Building and Construction Products and Services, 1000, v1.2
	Date of issue: March 14, 2025
	Valid until: March 14, 2030
Sub-category PCR review panel:	Contact Smart EPD for more information.
General Program Instructions:	Smart EPD General Program Instructions v.2.0, March 2025

Verification Information

LCA Author/Creator:	Vas Gnanadoss
	Watts Water
	vasanth.gnanadoss@wattswater.com
EPD Program Operator:	Smart EPD
	info@smartepd.com
	www.smartepd.com

Verification:

585 Grove St., Ste. 145, Herndon, VA 20170, USA

Independent critical review of the LCA and data, according to ISO 14044 and ISO 14071: External

Vijay Thakur | Individual Verifier | thakur.vijay3011@gmail.com

Independent external verification of EPD, according to ISO 14025 and reference PCR(s): External

Vijay Thakur | Individual Verifier | thakur.vijay3011@gmail.com

Product Information

Declared Unit: 1 kg of product plus packaging
Mass: 1 kg
Reference Service Life: 60 Years
Product Specificity: ✓ Product Average
✗ Product Specific
Variation in GWP Result (Products): 0% to 0%
Variation in GWP Result (Facilities): 0% to 0%

Product Description

BLÜCHER® channels are manufactured in accordance with EN 1253. In addition, they are approved through HACCP Food Safety Programme – Australia, HACCP Food Safety Programme – Europe, AUS - WMKT00204 – 24, and NO PS3079.

The range of BLÜCHER® channel options is made to discharge of large amounts of water in areas such as restaurants, supermarkets, shopping centers, the local butcher, fish shop, bakeries, and many other applications.

Further information can be found at: https://www.blucher.com/resources/product-selector/product-selector-floor-drains

Product Specifications

Product Classification Codes: Masterformat - 22 1000 Plumbing Piping and Pumps
UNSPSC - 70171800 Drainage Services

Material Composition

Material/Component Category	Origin	% Mass
Stainless Steel	Europe	100
None	None	None

Packaging Material	Origin	kg Mass
Cardboard	Europe	0.12

Packaging Material	Origin	kg Mass
PE Film	Europe	0.002
Pallet	Europe	0.17

Biogenic Carbon Content	kg C per kg
Biogenic carbon content in product	0None
Biogenic carbon content in accompanying packaging	0.145

Hazardous Materials
No regulated hazardous or dangerous substances are included in this product.

EPD Data Specificity

Primary Data Year: 2023

Manufacturing Specificity:

- ✗ Industry Average
- ✗ Manufacturer Average
- ✓ Facility Specific

Averaging:

Averaging was conducted by calculating the environmental impacts of the smallest and largest product of Channel at a per kg bases and then averaging the results from the two sizes. Then the GWP-total impact indicators, within each life cycle stage, of the smallest and largest product were compared to the average result. The products within each of the three product categories considered are made with the same materials, manufacturing processes, and in the same facility so the results were expected to be similar.

System Boundary

Production	A1	Raw material supply	✓
	A2	Transport	✓
	A3	Manufacturing	✓
Construction	A4	Transport to site	✓
	A5	Assembly / Install	✓

Use	B1	Use	✓
	B2	Maintenance	✓
	B3	Repair	✓
	B4	Replacement	✓
	B5	Refurbishment	✓
	B6	Operational Energy Use	✓
	B7	Operational Water Use	✓
End of Life	C1	Deconstruction	✓
	C2	Transport	✓
	C3	Waste Processing	✓
	C4	Disposal	✓
Benefits & Loads Beyond System Boundary	D	Recycling, Reuse Recovery Potential	✓

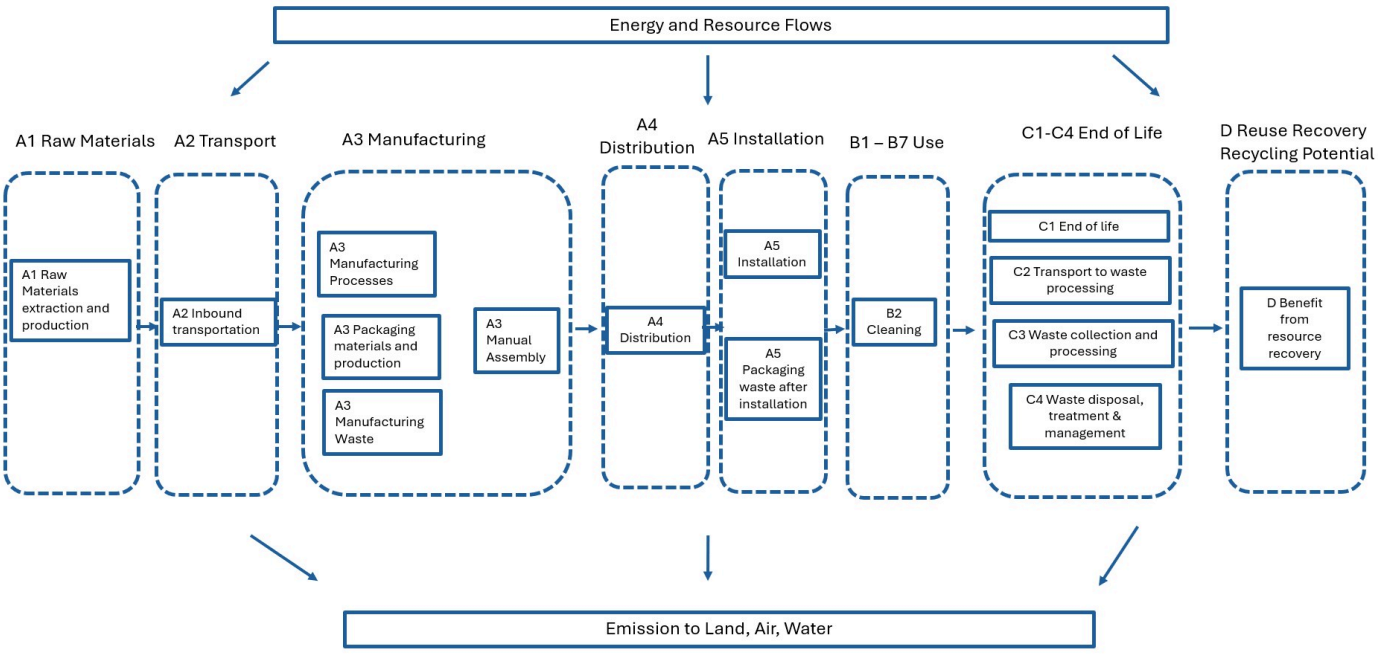
Note:

ND = Module not declared

Plants

BLÜCHER A/S Pugdalvej 1, 7480 Vildbjerg, Denmark

Product Flow Diagram



Software And Database

LCA Software:	SimaPro v. 9.5		
LCI Foreground Database(s):	Ecoinvent v. 3.9.1	ReR	Cut-Off by Classification
LCI Background Database(s):	Ecoinvent v. 3.9.1	ReR	Cut-Off by Classification

A foreground LCI database is the database used to model the primary, site-specific data collected for this EPD. A background LCI database is the database used to model generic or non-specific data.

Data Quality

Completeness Check

Detailed information on the inputs and outputs of the products were gathered with every effort made to perform a comprehensive analysis. An attempt was made to include as much detail as possible, even for processes that were found to be largely negligible in the environmental impact assessment. Processes were mass balanced before allocation to ensure all waste and emissions were captured. This was done to ensure completeness. Furthermore, all energy consumption for the comparison was included. For quality purposes, each material process used in the model is marked with a grade in table 4.5.5. For older processes, each is labeled with an “F” for “Fair” to ensure transparency about older data sets. These data sets were selected because they fit our material description and needs the best and was the best option available on Ecoinvent. The data quality was high as we either used data direct from a supplier EPD or were able to find SimaPro unit processes that well represented the material or process used by BLÜCHER. The one process where this was not the case was the pickling liquid so for this we looked at the SDS of the product, found the chemical breakdown by percentage, and created a SimaPro process with unit processes representing the chemicals found in the picking fluid at the corresponding percentages.

Consistency Check

The products were modeled in a consistent manner. System boundaries for all products were defined in a similar manner. Therefore, any differences in overall potential environmental impacts should not be due to inconsistent modeling or data.

Sensitivity Check

The SimaPro software used allows the calculation of life cycle inventories and impact assessment, contribution analysis, parameterization, and related sensitivity analysis.

Data Sources

Material/Process Category	Module	Material/Process Name	Inventory Dataset Name	Dataset Geographic Region	Reporting Period/Year Dataset Represents	Reference	Amount (if relevant)	Unit
Raw Material	A1	Stainless Steel	EPD Based	Finland	2023	https://www.outokumpu.com/en/sustainability/sustainable-stainless-steel/environmental-product-declarations	ND	ND
Material	D	Steel	Steel, unalloyed {GLO}| market for steel, unalloyed | Cut-off, U	Global	2023	https://v391.ecoquery.ecoinvent.org/Details/PDF/56b1b7e3-81a1-40f4-8bc7-1f98844bceec/290c1f85-4cc4-4fa1-b0c8-2cb7f4276dce	ND	ND
Packaging	A3	Cardboard	Corrugated board box {RER}| corrugated board box production | Cut-off, U	Europe	2022	https://v391.ecoquery.ecoinvent.org/Details/PDF/748ef7a6-3396-4112-bece-d9fc5e0b16ac/290c1f85-4cc4-4fa1-b0c8-2cb7f4276dce	ND	ND
Packaging	A3	Pallet Wood	Sawnwood, board, softwood, raw, dried (u=20%) {Europe without Switzerland}| market for	Europe	2023	https://v391.ecoquery.ecoinvent.org/Details/PDF/fc43e370-e87f-42ba-b89c-031994c7bcf2/290c1f85-	ND	ND

Material/Process Category	Module	Material/Process Name	Inventory Dataset Name	Dataset Geographic Region	Reporting Period/Year Dataset Represents	Reference	Amount (if relevant)	Unit
			sawnwood, board, softwood, raw, dried (u=20%) | Cut-off, U			4cc4-4fa1-b0c8-2cb7f4276dce		
Manufacturing	A3	Danish Residual Electricity	Electricity, medium voltage {DK}| electricity, medium voltage, residual mix | Cut-off, U	Denmark	2022	https://v391.ecoquery.ecoinvent.org/Details/PDF/13bc387c-afcd-48aa-800f-fd2cfde21a0f/290c1f85-4cc4-4fa1-b0c8-2cb7f4276dce	ND	ND
Manufacturing	A3	Natural Gas	Heat, district or industrial, natural gas {DK}| heat and power co-generation, natural gas, conventional power plant, 100MW electrical | Cut-off, U	Denmark	2023	https://v391.ecoquery.ecoinvent.org/Details/PDF/8cf803a8-2f03-4529-bbc3-8728bae3621a/290c1f85-4cc4-4fa1-b0c8-2cb7f4276dce	ND	ND
Manufacturing	A3	Propane	Propane {GLO}| market for propane | Cut-off, U	Global	2023	https://v391.ecoquery.ecoinvent.org/Details/PDF/13bc387c-afcd-48aa-800f-fd2cfde21a0f/290c1f85-4cc4-4fa1-b0c8-2cb7f4276dce	ND	ND
Manufacturing Waste	A3	Waste Water	Wastewater, average {Europe without Switzerland}| market for wastewater, average | Cut-off, U	Europe	2022	https://v391.ecoquery.ecoinvent.org/Details/PDF/13bc387c-afcd-48aa-800f-fd2cfde21a0f/290c1f85-4cc4-4fa1-b0c8-2cb7f4276dce	ND	ND

Material/Process Category	Module	Material/Process Name	Inventory Dataset Name	Dataset Geographic Region	Reporting Period/Year Dataset Represents	Reference	Amount (if relevant)	Unit
Manufacturing Waste	A3	Hazardous Waste	Hazardous waste, for incineration {Europe without Switzerland}| market for hazardous waste, for incineration | Cut-off, U	RoW	2023	https://v391.ecoquery.ecoinvent.org/Details/PDF/13bc387c-afcd-48aa-800f-fd2cfde21a0f/290c1f85-4cc4-4fa1-b0c8-2cb7f4276dce	ND	ND
Manufacturing Waste	A3	Non Hazardous Waste	Inert waste, for final disposal {RoW}| treatment of inert waste, inert material landfill | Cut-off, U	RoW	2023	https://v391.ecoquery.ecoinvent.org/Details/PDF/13bc387c-afcd-48aa-800f-fd2cfde21a0f/290c1f85-4cc4-4fa1-b0c8-2cb7f4276dce	ND	ND
Cleaning	B2	Cleaning Solution	Cleaning consumables, without water, in 13.6% solution state {GLO}| cleaning consumables, without water, in 13.6% solution state | Cut-off, U	Global	2022	https://v391.ecoquery.ecoinvent.org/Details/PDF/13bc387c-afcd-48aa-800f-fd2cfde21a0f/290c1f85-4cc4-4fa1-b0c8-2cb7f4276dce	ND	ND
Cleaning	B2	Tap Water	Tap water {Europe without Switzerland}| tap water production, conventional treatment | Cut-off, U	Europe	2022	https://v391.ecoquery.ecoinvent.org/Details/PDF/13bc387c-afcd-48aa-800f-fd2cfde21a0f/290c1f85-4cc4-4fa1-b0c8-2cb7f4276dce	ND	ND
Waste Processing	C2	Sortation and treatment for metal recycling	Iron scrap, sorted, pressed {Europe without	Europe	2019	https://v391.ecoquery.ecoinvent.org/Details/PDF/13bc387c-afcd-48aa-	ND	ND

Material/Process Category	Module	Material/Process Name	Inventory Dataset Name	Dataset Geographic Region	Reporting Period/Year Dataset Represents	Reference	Amount (if relevant)	Unit
			Switzerland}| treatment of metal scrap, mixed, for recycling, unsorted, sorting | Cut-off, U			800f-fd2cfde21a0f/290c1f85-4cc4-4fa1-b0c8-2cb7f4276dce		
Waste Processing	D	Recycling Processing and Remelting	Steel, low-alloyed {Europe without Switzerland and Austria}| steel production, electric, low-alloyed | Cut-off, U	Europe	2023	https://v391.ecoquery.ecoinvent.org/Details/PDF/e367de35-b09f-490c-a8f4-e9b653bb1010/290c1f85-4cc4-4fa1-b0c8-2cb7f4276dce	ND	ND
Waste	C4	Landfilling	Inert waste, for final disposal {RoW}| treatment of inert waste, inert material landfill | Cut-off, U	RoW	2023	https://v391.ecoquery.ecoinvent.org/Details/PDF/13bc387c-afcd-48aa-800f-fd2cfde21a0f/290c1f85-4cc4-4fa1-b0c8-2cb7f4276dce	ND	ND
Transport	Various	Truck Transport	Transport, freight, lorry 16-32 metric ton, EURO6 {RER}| transport, freight, lorry 16-32 metric ton, EURO6 | Cut-off, U	Europe	2022	https://v391.ecoquery.ecoinvent.org/Details/PDF/13bc387c-afcd-48aa-800f-fd2cfde21a0f/290c1f85-4cc4-4fa1-b0c8-2cb7f4276dce	ND	ND

Life Cycle Module Description

A1: The raw material extraction and processing of secondary material (e.g. recycling processing). In this assessment the raw materials include stainless steel sourced from our supplier in Finland with 70% post-consumer recycled content, as shown in the Stainless Steel Supplier EPD linked in References and primary EPDM sourced from Denmark.

A2: The transportation distances were determined based on the distance from the material supplier to the facility in Vildbjerg, DK. Our stainless steel is sourced from a supplier in Finland and the EPDM components were sourced from a local supplier in Denmark.

A3: All impacts associated with manufacturing at the Vildbjerg facility. Various metal working processes occur at the Vildbjerg facility along with manual assembly using hand tools and manual placement of product into packaging. The utilities included in A3 are electricity, natural gas, propane, water, wastewater, hazardous waste/incineration, non-hazardous waste, as well as all packaging. A3 also includes all production aids, such as degreasing agents and pickling liquids.

A4: Transportation to construction sites across Europe from the Vildbjerg, Demark facility via truck transport.

A5: Installation process, which is manual using hand tools that don't consume energy. Therefore, only products' packaging waste is included in this module.

B1: There are no additional impacts associated with Use (B1) as this product does not use electricity, water, materials, or any other utilities to operate during the use phase.

B2: The products are assumed to be cleaned yearly using 0,325 kg of water and 0,00955 kg of soap or detergent per declared unit of 1kg product.

B3: There are no impacts associated with Repair (B3).

B4: The products referenced in this EPD do not need to be replaced as they have a 60 year RSL while buildings are assumed to have a 50 year ESL/RSP (Reference Study Period)

B5: There are no impacts associated with Refurbishment (B5).

B6-B7: There are no impacts associated with energy and water consumption (B6 + B7) as the products do not require energy or water to function.

C1: No impacts from demolition (C1) are included as deconstruction is done manually.

C2: Transportation of the products to the end-of-life facility.

C3: Product being sorted and then recycled at a waste management facility.

C4: Products are assumed to have a 90% recycling rate and 10% landfill rate. Therefore the C4 phase takes into account the impacts from the 10% of the product that is being landfilled.

D: Includes credits for the substitution of 30% virgin stainless steel production by recycled stainless steel scrap in future product systems as well as the processing and remelting needed for the recycling

LCA Discussion

Allocation Procedure

Economic allocation was chosen as the allocation method for A3 due to the difference in economic revenue per declared unit being more than 25%.

Economic allocation of plant overhead utility consumption, resources used, and waste generation was applied for Vildbjerg facility, where all products in this study are manufactured. Operational manufacturing energy and water inputs and waste stream at the Vildbjerg plant are allocated based on BLÜCHER's®

revenue of product output per product category based on earned hours, then to the declared unit of 1 kilogram of product. Product manufacturing scrap is determined based on the scrap rate provided by the Vildbjerg plant.

Cut-off Procedure

For the processes within the system boundary, this study includes 100% of the products' raw material flows. Results from manufacturing are limited to the primary data obtained from product throughput and annual reports showing all utilities used at the Vildbjerg facility, including electricity, natural gas, propane, water, wastewater, hazardous waste, and non-hazardous waste. Production aides, which are substances or materials that are used in production but will not be part of the final product shipped to the customer, were included in the data collection and calculated in A3, Manufacturing. All upstream and downstream activities are included using a combination of primary and secondary data.

Renewable Electricity

Energy Attribute Certificates (EACs) such as Renewable Energy Certificates (RECs) or Power Purchase Agreements (PPAs) are included in the baseline reported results:	✕ No

Scenarios

Transport to the building/construction site (A4)

A4 Module

Fuel Type:	Diesel
Vehicle Type:	16-32 metric ton, EURO6 Truck
Transport Distance:	1000 km
Capacity Utilization:	37 %
Packaging Mass:	0.292 kg
Assumptions for scenario development:	All products were produced in the Vildbjerg, Denmark facility and transported to construction sites across Europe via truck transport. The distance used is based on an average transport distance from the manufacturing plant in Vildbjerg to the construction site.

Installation in to the building/construction site (A5)

A5 Module

Installation Scrap Rate Assumed:	0 %
Mass of Packaging Waste Specified by Type:	0.292 kg
Biogenic Carbon Contained in Packaging (kg C):	0.145 kg
Assumptions for scenario development:	The installation process is manual using hand tools that don't consume energy. Therefore, only product packaging waste is included in this module.

Maintenance (B2)

B2 Module

Maintenance Cycle:	60 Cycles/RSL
	60 Cycles/ESL
Net Fresh Water Consumption Specified by Water Source and Fate:	0.325 m3
Other Resources:	.00955 kg detergent per cycle kg
Waste Materials from Maintenance:	0.3345 kg
Maintenance Process Information:	The products are assumed to be cleaned yearly using 0.325 kg of water and 0.00955 kg of soap or detergent per declared unit of 1kg product.

End of Life (C1 - C4)

C1 - C4 Modules

Collection Process

Collected with Mixed Construction Waste:	1 kg

Recovery

Recycling:	.90 kg
Landfill:	.10 kg

Disposal

Product or Material for Final Disposal:	.10 kg

Assumptions for scenario development:

Channels are assumed to have a 90% recycling rate and 10% landfill rate

Results

Environmental Impact Assessment Results

EF3.1

per 1 kg of product of product plus packaging.

LCIA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks.

Impact Category	Unit	Method	A1 - A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP- total	kg CO2 eq	EF3.1	5.13e+0	2.39e-1	8.11e-2	0	7.73e-1	0	0	0	0	0	0	1.85e-2	6.43e-2	3.04e-4	-6.94e-1
GWP- fossil	kg CO2 eq	EF3.1	5.13e+0	2.39e-1	7.25e-3	0	7.62e-1	0	0	0	0	0	0	1.85e-2	3.17e-2	3.04e-4	-6.92e-1
GWP-biogenic	kg CO2 eq	EF3.1	-6.35e-3	2.19e-4	7.39e-2	0	9.54e-3	0	0	0	0	0	0	1.69e-5	3.26e-2	1.74e-7	-1.07e-3
GWP-luluc	kg CO2 eq	EF3.1	5.22e-3	1.18e-4	3.62e-6	0	9.06e-4	0	0	0	0	0	0	9.12e-6	2.27e-5	1.83e-7	-4.72e-4
ODP	kg CFC11 eq	EF3.1	2.25e-5	5.20e-9	1.39e-10	0	8.52e-8	0	0	0	0	0	0	4.02e-10	4.13e-10	8.79e-12	-1.31e-8
AP	mol H+ eq	EF3.1	1.54e-2	5.22e-4	2.21e-5	0	3.88e-3	0	0	0	0	0	0	4.04e-5	1.46e-4	2.29e-6	-2.75e-3
PM	disease incidence	EF3.1	8.86e-8	1.77e-8	4.96e-10	0	3.40e-8	0	0	0	0	0	0	1.37e-9	2.59e-9	5.01e-11	-5.74e-8
IRP	kBq U235 eq	EF3.1	1.34e-1	1.72e-3	5.99e-5	0	2.73e-2	0	0	0	0	0	0	1.33e-4	8.90e-4	2.00e-6	-1.74e-2
POCP	kg NMVOC eq	EF3.1	1.17e-2	8.10e-4	4.32e-5	0	2.74e-3	0	0	0	0	0	0	6.27e-5	1.48e-4	3.28e-6	-3.18e-3
EP-fw	kg P eq	EF3.1	6.77e-4	1.94e-6	6.75e-8	0	7.68e-5	0	0	0	0	0	0	1.50e-7	9.20e-7	2.96e-9	-3.21e-5
EP-marine	kg N eq	EF3.1	3.16e-3	1.28e-4	5.56e-5	0	8.99e-4	0	0	0	0	0	0	9.94e-6	5.75e-5	8.74e-7	-5.93e-4
EP-terrestrial	mol N eq	EF3.1	3.35e-2	1.34e-3	5.83e-5	0	7.35e-3	0	0	0	0	0	0	1.04e-4	4.61e-4	9.42e-6	-6.77e-3
SQI	dimensionless	EF3.1	1.43e+1	2.05e+0	6.63e-2	0	2.35e+0	0	0	0	0	0	0	1.59e-1	9.44e-1	1.50e-2	-1.41e+0
WDP	m3 world eq deprived	EF3.1	1.26e+0	1.40e-2	9.94e-4	0	5.10e-1	0	0	0	0	0	0	1.08e-3	3.51e-3	3.34e-4	-1.62e-1
ADP-fossil	MJ, net calorific value	EF3.1	5.66e+1	3.39e+0	9.05e-2	0	1.40e+1	0	0	0	0	0	0	2.62e-1	3.07e-1	7.57e-3	-7.61e+0
ADP-minerals&metals	kg Sb eq	EF3.1	4.82e-5	7.80e-7	2.05e-8	0	7.74e-6	0	0	0	0	0	0	6.04e-8	4.15e-7	4.22e-10	-8.64e-7
ETP-fwio	CTUe	EF3.1	4.18e+1	1.62e+0	1.88e-1	0	1.37e+1	0	0	0	0	0	0	1.25e-1	2.71e-1	3.35e-3	-3.31e+0
HTP-cio	CTUh	EF3.1	9.27e-8	1.09e-10	3.81e-12	0	4.36e-10	0	0	0	0	0	0	8.42e-12	4.08e-11	1.29e-13	-1.14e-8
HTP-ncio	CTUh	EF3.1	2.22e-8	2.41e-9	1.85e-10	0	1.17e-8	0	0	0	0	0	0	1.86e-10	7.56e-10	1.62e-12	-6.65e-9

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

GWP = Global Warming Potential, 100 years (may also be denoted as GWP-total, GWP-fossil (fossil fuels), GWP-biogenic (biogenic sources), GWP-luluc (land use and land use change)), ODP = Ozone Depletion Potential, AP = Acidification Potential, EP = Eutrophication Potential, SFP = Smog Formation Potential, POCP = Photochemical oxidant creation potential, ADP-Fossil = Abiotic depletion potential for fossil resources, ADP-Minerals&Metals = Abiotic depletion potential for non-fossil resources, WDP = Water deprivation potential, PM = Particular Matter Emissions, IRP = Ionizing radiation, human health, ETP-fw = Eco-toxicity (freshwater), HTP-c = Human toxicity (cancer), HTP-nc = Human toxicity (non-cancer), SQP = Soil quality index.

Comparisons cannot be made between product-specific or industry average EPDs at the design stage of a project, before a building has been specified. Comparisons may be made between product-specific or industry average EPDs at the time of product purchase when product performance and specifications have been established and serve as a functional unit for comparison. Environmental impact results shall be converted to a functional unit basis before any comparison is attempted. Any comparison of EPDs shall be subject to the requirements of ISO 21930 or EN 15804. EPDs are not comparative assertions and are either not comparable or have limited comparability when they have different system boundaries. EPDs are not comparative assertions and are either not comparable or have limited comparability when they have different system boundaries, are based on different product category rules or are missing relevant environmental impacts. Such comparison can be inaccurate, and could lead to erroneous selection of materials or products which are higher-impact, at least in some impact categories.

Resource Use Indicator

per 1 kg of product of product plus packaging.

Indicator	Unit	A1 - A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	1.19e+0	1.31e-2	2.69e+0	0	2.48e-1	0	0	0	0	0	0	1.02e-3	1.18e-2	1.89e-5	-1.12e-1
PERM	MJ	2.69e+0	0	-2.69e+0	0	0	0	0	0	0	0	0	0	2.69e+0	0	0
PERT	MJ	3.88e+0	1.31e-2	0	0	2.48e-1	0	0	0	0	0	0	1.02e-3	2.70e+0	1.89e-5	-1.12e-1
PENRE	MJ	5.66e+1	3.39e+0	9.05e-2	0	1.40e+1	0	0	0	0	0	0	2.62e-1	3.06e-1	7.57e-3	-7.61e+0
PENRM	MJ	2.90e-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PENRT	MJ	5.66e+1	3.39e+0	9.05e-2	0	1.40e+1	0	0	0	0	0	0	2.62e-1	3.06e-1	7.57e-3	-7.61e+0
SM	kg	7.05e-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FW	m3	2.28e-1	4.88e-4	3.13e-5	0	1.34e-2	0	0	0	0	0	0	3.78e-5	1.50e-4	8.04e-6	-5.05e-3

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

RPRE or PERE = Renewable primary resources used as energy carrier (fuel), RPRM or PERM = Renewable primary resources with energy content used as material, RPRT or PERT = Total use of renewable primary resources with energy content, NRPRE or PENRE = Non-renewable primary resources used as an energy carrier (fuel), NRPRM or PENRM = Non-renewable primary resources with energy content used as material, NRPRT or PENRT = Total non-renewable primary resources with energy content, SM = Secondary materials, RSF = Renewable secondary fuels, NRSF = Non-renewable secondary fuels, RE = Recovered energy, ADPF = Abiotic depletion potential, FW = Use of net freshwater resources, VOCs = Volatile Organic Compounds.

Waste and Output Flow Indicators

per 1 kg of product of product plus packaging.

Indicator	Unit	A1 - A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	7.66e-1	8.49e-5	8.42e-5	0	4.40e-4	0	0	0	0	0	0	6.57e-6	4.49e-3	9.32e-8	-1.85e-4
NHWD	kg	1.59e+0	1.68e-1	3.28e-1	0	8.66e-2	0	0	0	0	0	0	1.30e-2	2.57e-2	5.00e-2	-2.32e-1
RWD	kg	1.48e-4	1.11e-6	3.86e-8	0	1.93e-5	0	0	0	0	0	0	8.63e-8	6.93e-7	1.12e-9	-1.33e-5
CRU	kg	1.63e-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MFR	kg	8.40e-3	0	1.20e-1	0	0	0	0	0	0	0	0	0	9.50e-1	0	0
MER	kg	6.76e-8	0	2.00e-3	0	0	0	0	0	0	0	0	0	0	0	0
EEE	MJ	1.62e-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EET	MJ	2.18e-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

HWD = Hazardous waste disposed, NHWD = Non-hazardous waste disposed, RWD = Radioactive waste disposed, HLRW = High-level radioactive waste, ILLRW = Intermediate- and low-level radioactive waste, CRU = Components for re-use, MFR or MR = Materials for recycling, MER = Materials for energy recovery, MNER = Materials for incineration, no energy recovery, EE or EEE = Recovered energy exported from the product system, EET = Exported thermal energy.

Interpretation

The analysis of BLÜCHER® products provides useful insights regarding the cradle-to-grave environmental impacts. The LCA results also identify where substantial impacts are occurring to allow further process and materials improvements to be implemented by BLÜCHER.

The cradle-to-grave impacts for Channels had the largest contributions from A1 Raw Materials Extraction and Processing and A3 Manufacturing, and B3 Maintenance. For GWP-total, A3 has the largest percent contribution for Channels at 43.4%.

For all other impact categories the A1 or A3 phase had the largest contribution. This is to be expected as the Use Phase has minimal activities and we expected the Raw Materials and Manufacturing to have the largest contribution to the environmental impacts.

Environmental Activities and Certifications

Certification
REACH and Substances of Very High Concern (SVHC), regulation (EC) No. 1907/2006

References

- EN 15804 Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products; English version EN 15804:2012+A2:2019, English translation of DIN EN 15804:2022-03
- DS/EN 15942:2011 – "Bæredygtighed inden for byggeri og anlæg - Miljøvaredeklarationer (EPD) - Kommunikationsformat: business-to-business (B2B)"
- DS/EN ISO 14025:2010 – "Miljømærker og -deklarationer - Type III-miljøvaredeklarationer - Principper og procedurer
- DS/EN ISO 14040:2008 – "Miljøledelse – Livscyklusvurdering – Principper og struktur"
- DS/EN ISO 14044:2008 – "Miljøledelse – Livscyklusvurdering – Krav og vejledning"
- Ecoinvent 3.9.1 Database: https://v391.ecoquery.ecoinvent.org/Details/PDF/35a47f80-2ae1-4acf-a3da-198fc393c8f5/290c1f85-4cc4-4fa1-b0c8-2cb7f4276dce
- Emissions Factors for Denmark: https://ens.dk/en/our-services/statistics-data-key-figures-and-energy-maps/key-figures
- Stainless Steel Supplier EPD: https://www.outokumpu.com/en/sustainability/sustainable-stainless-steel/environmental-product-declarations
- FEFCO Study: https://www.fefco.org/sites/default/files/files/Corrugated_cradle-%20to-%20grave.pdf
- IPCC: https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/0_Overview/V0_1_Overview.pdf
- 178.070.056.20 SHOWER CHANNEL WATERLINE 700 Product Spec: https://www.blucherpipe.com/products/drainage-solutions/floor-drains-channels-trench/drains-upper-parts-with-rectangular-top-channels/shower-channel-no-membrane/shower-channel-waterline-700-17807005620
- 670DK015-00BA CHANNEL 200x1500 END OUTLET Product Spec: https://www.blucherpipe.com/products/drainage-solutions/floor-drains-channels-trench/drains-upper-parts-with-rectangular-top-channels/channel-no-membrane/channel-200x1500-end-outlet-670dk015-00ba
- BLÜCHER Drains Cleaning Test: https://www.youtube.com/watch?v=-4N8CoWXO_U
- European Environment Agency (EEA) Metal Reycling Factsheet: https://circulareconomy.europa.eu/platform/sites/default/files/euric_metal_recycling_factsheet.pdf
- Eurostat Recycling Rates for Packaging Waste: https://ec.europa.eu/eurostat/databrowser/view/ten00063/default/table?lang=en
- WRAP (2014). Reducing Construction Waste – Guidance for Site Managers. Waste and Resources Action Programme, UK. https://wrap.org.uk/resources/guide/reducing-construction-waste-site
- Ecofys (2012). Methodology for Environmental Product Declarations for Building Products. European Commission. https://ec.europa.eu/environment/eussd/pdf/footprint/Products_Methodology.pdf
- European Commission (2018). Construction and Demolition Waste Management Protocol. Publications Office of the EU. https://single-market-economy.ec.europa.eu/news/eu-construction-and-demolition-waste-protocol-2018-09-18_en
- EN Annex 1 Product Environemtal Footprint Method: https://environment.ec.europa.eu/system/files/2021-12/Annexes%201%20to%202.pdf
- Smart EPD Part A Product Category Rules for Building and Construction Products and Services, Standard 1000. Version 1.2. March 2025. www.smartepd.com.
- EN 15978:2011 "Sustainability of construction works – Assessment of environmental performance of buildings – Calculation method"