Environmental Product Declaration

In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for:

„forster presto xs“ Doors

from

forster Profilsysteme AG

Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
EPD registration number:	S-P-11063
Publication date:	2024-04-09
Valid until:	2029-04-08
	An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com

Confidential

General information

Programme information

Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
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Accountabilities for PCR, LCA and independent, third-party verification

Product Category Rules (PCR):	CEN standard EN 15804 serves as the Core Product Category Rules (PCR) Product Category Rules (PCR): - *Construction Products; PCR 2019:14; Version 1.3.2* - *Windows and Doors; c-PCR-007; Version 2020-04-09; UN CPC code 4212* - *EN 17213:2020: Windows and doors - Environmental Product Declarations - Product category rules for windows and pedestrian doorsets* The PCR was developed within CEN standardisation and adopted as a c-PCR by the International EPD® System. There was thus no additional open consultation period and no additional review in addition to those within standardisation.
Life Cycle Assessment (LCA):	Ramboll Deutschland GmbH Jürgen-Töpfer-Straße 48 22763 Hamburg Germany LCA practitioners: - *Alexander Boeth (Ramboll Deutschland GmbH)* - *Francesco Castellani (Ramboll Deutschland GmbH)* - *Katharina Terörde (Ramboll Deutschland GmbH)*
Third-party verification:	Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: ☒ EPD verification by individual verifier Third-party verifier: *Angela Schindler* Approved by: The 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 registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same 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 equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-

off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

Company information

Owner of the EPD:	forster Profilsysteme AG
Contact:	Daniele Pileggi, Anna Luft
Website:	www.forster-profile.ch

Produced in Switzerland, sold worldwide: The headquarters of the forster Group, including development and production, is located in Romanshorn/Switzerland – a clear commitment to Switzerland as a business location. In Romanshorn, around 3 000 kilometers of forster steel profiles are produced annually, checked for quality, and shipped from here to numerous countries. Sales are carried out through our own subsidiaries in Germany, Austria, England, France and Portugal, branch offices in the Middle East and the USA, as well as a global network of sales partners. This enables us to guarantee proximity to our customers and competently support them on site.

forster knows the advantages of steel as a material for the construction industry and offers an energy-efficient, high-performance and durable product portfolio for indoor and outdoor applications in buildings of all kinds: From public buildings where long-term functionality and safety are paramount, to modern residential and office buildings that require transparency and energy efficiency, to historic buildings that need to be renovated as faithfully as possible with a narrow view – forster offers the right solutions with supplementary services.

Sustainable thinking – sustainable building Thanks to outstanding static values, less material is needed. Steel systems are also ideal for constructions subjected to high stress levels. Numerous older buildings impressively demonstrate the long durability. At the end of the product lifecycle, it can be recycled perfectly, since steel can be fully recycled nowadays.

Product-related or management system-related certifications:

- Minergie certification
- ISO 9001 and ISO 14001-certificates,
- ISO 45001 -, supply chain management and social responsibility
- Product classification according to EN 16034 and EN 14351-1

Name and location of production site(s):
forster Profilsysteme AG
Amriswilerstrasse 50
9320 Arbon
Switzerland

Product information: forster Presto XS Doors

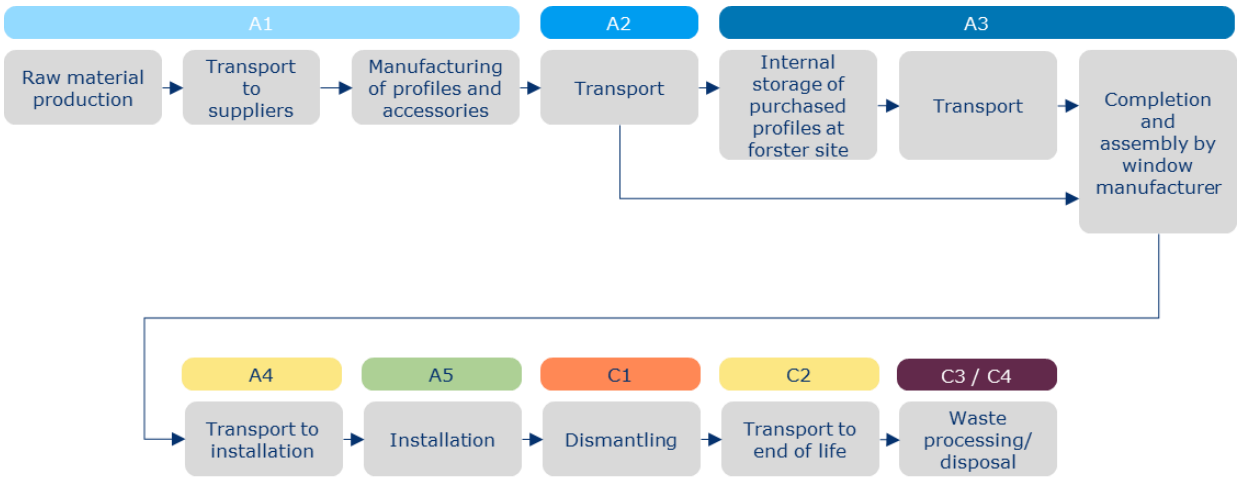
When extremely narrow views are required, the forster presto xs system is the ideal choice. Whether in listed buildings, in loft design or in upmarket residential buildings - the filigree profiles impress with their timeless aesthetics.
Available as single and double-leaf hinged or reversible doors and fixed glazing in the interior. The hinged door is available in flush and offset versions and optionally with a fire protection function.

Dimensions of the declared product:	Double-leaf door with the dimensions 2000 x 2180 mm
UN CPC code:	42120
Geographical scope:	The profiles are made in Switzerland and EU countries and assembled by metal companies in Switzerland. The installation and subsequent disposal takes place in various European countries.

LCA information

Declared unit:	1 m²
Weight per m² (incl. packaging):	31,57 kg/m²
Reference service life:	N.A.
Time representativeness:	2022
Database(s) used:	ecoinvent EN 15804 (2022) database, version 3.9.1.
LCA software used:	Umberto, version 11.11.1 (Rev. 0)
Description of system boundaries:	Cradle to gate with options (A1-A3, A4-A5, C1-C4, D)
System boundaries for infrastructure/capital goods and employees:	The production and end-of-life processes of infrastructure or capital goods used in the product system were excluded for all upstream, core and downstream processes. This also applies to personnel-related processes, such as transportation of employees to and from work. However, it is possible that this data on infrastructure/capital goods is contained in generic LCI datasets and cannot be removed with reasonable effort. Disclaimer: *The results of the impact categories abiotic depletion of minerals and metals, land use, human toxicity (cancer), human toxicity, non-cancer 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.*

System diagram:



Manufacturing process:	For forster presto xs, forster obtains the formed and machined profiles from suppliers. Activities at the forster site are limited to internal transportation and storage. The profiles are sent to window manufacturers where they undergo further processing, which includes cutting, welding, grinding, powder coating, and installation of glass and accessories (like handles and locks). Final products are packed using cardboard and plastic film before being dispatched. For electricity, the Swiss residual electricity grid mix from the ecoinvent database was used for electricity consumption during manufacturing phase (in accordance with EN 15804:2012+A2:2019). The climate impact of this energy source is 0,0125 kg CO_2-eq./kWh.

Scenario description

A4 – Transport to building site

Module A4 covers the transports from the window manufacturers to the construction site.

Scenario information	Value	Unit
Vehicle type	Lorry 16-32 metric ton, EURO6	
Fuel type	Diesel	
Distance	126,7	km
Load factor	5.79 t	t
Gross vehicle weight (GVW)	15.79 t	t

A5 – Installation

As the installation of the product is done manually, no relevant materials or energy are required for the installation. Packaging is separated from the product and sent to treatment.

Scenario information	Value	Unit
Vehicle type	Lorry 16-32 metric ton, EURO6	
Fuel type	Diesel	
Distance	50	km
Load factor	5.79 t	t
Gross vehicle weight (GVW)	15.79 t	t

Waste	Mass [kg]	Recycling [%]	Incineration [%]	Landfill [%]
Plastic film	0,020	0	95	5
Cardboard	0,033	100	0	0

C1 – Deconstruction and demolition

Hydraulic diggers are assumed for dismantling and loading the resulting post-consumer demolition waste to truck, for further transporting. A background data set relating to the volume of demolition waste was used for the modelling.

C2 – Transportation to waste processing or final disposal

Module C2 covers the transports to waste processing and disposal.

Scenario information	Value	Unit
Vehicle type	Lorry 16-32 metric ton, EURO6	
Fuel type	Diesel	
Distance	50	km
Load factor	5.79 t	t
Gross vehicle weight (GVW)	15.79 t	t

C3 – Waste processing for reuse, recovery and/or recycling

Module C3 contains the waste treatment processes at the end of the product life cycle. It includes sorting processes for all materials and the incineration of plastic parts. For metals, the waste property ends after sorting and shredding.

Waste	Recycling [%]	Incineration [%]	Landfill [%]
Glass	30	0	70
Steel	95	0	5
Plastics	0	95	5
Aluminium	95	0	5

C4 – Disposal

This module includes burdens associated to the transportation and final disposal of waste. A generic background data set was used for the modelling

D – Reuse, recovery and/or recycling potentials

The energy resulting from the thermal and material utilisation of the waste (thermal energy and electricity) and the resulting recycling material are credited in this module as follows:

Scenario information	Value	Unit
Net flow secondary glass	5,30	kg
Net flow secondary steel	8,09	kg
Net flow secondary aluminium	1,49	kg
Exported electric energy	3,11	MJ
Exportetd thermal energy	6,06	MJ

More information:

Assumptions:	For the transportation of the profiles between forster and the window manufacturers, an average distance of 120 km with a large sized truck was estimated based on the distance to three main window manufacturers. Based on a survey among the main window manufacturers, an average scrap factor of 12,5 % was applied for their production steps.
Allocations:	The steel scrap generated during production is considered a co-product, meaning that a co-product allocation is applied here. However, it can be assumed with a probability bordering on certainty that the revenue generated with the scrap corresponds to less than 1% of the revenue generated with the main product. All loads are therefore allocated to the main product. Other than that, no multi-output allocation is applied for the systems assessed. The product systems have one single output. For the end-of-life allocation a credit approach is chosen in Module D.
Cut-off Criteria for the Exclusion of Inputs and Outputs:	In compliance with the rules in EN 15804:2012+A2:2019, 6.3.6, the cut-off criteria are 1 % of renewable and non-renewable primary energy usage and 1 % of the total mass input of a unit process. All known inputs and outputs were included. Data gaps were filled with conservative assumptions and generic data. The neglected input flows are each below 1% of the total mass or the total impact of primary energy. In total, they constitute less than 5% of the overall mass or 5% of the total energy.
Use of external EPDs:	For some parts, i.e. accessories and fittings, existing EPDs in accordance with EN 15804+A2 were used. The declared results for module A1-A3 were added to the other LCA results coming from the LCA software. For reasons of consistency, the modules for installation (A5) and waste treatment (C3/C4) and potentials beyond the system boundary (D) have also been adopted. Transports (A4/C2), on the other hand, are covered in the LCA model. EPDs used are listed in the following table:

EPD Name	Registration number	EPD owner	Program operator
Mortise Lock - DL Series 9xxx / 7xxx	EPD-DOR-20220206-CBA3-EN	dormakaba International Holding GmbH	IBU – Institut Bauen und Umwelt e.V.
Lever handles	S-P-09168	d line A/S	EPD International AB

Validity of data:	Completeness: All relevant process steps are included in the study with respect to the goal and scope. Consistency: All primary data was collected at the same level of detail from the same data source. All background data was taken from the ecoinvent database. Reliability: Data were collected with respect to the used technology in close exchange with the manufacturer. Data received from the manufacturer was checked for completeness and quality. Background data was taken from ecoinvent database. Reproducibility: The information contained in the background report makes it possible to reproduce the result, provided that the same database is used in the same version, as well as software version and impact assessment method.

Modules declared, geographical scope and share of specific data (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	X	X	ND	ND	ND	ND	ND	ND	ND	X	X	X	X		X
Geography	RER	RER	CH	RER	RER								RER	RER	RER	RER		RER
Specific data used	>90 %	>90 %	>90 %	-	-	-	-	-	-	-	-	-	-	-	-	-		-

As the product is representative and forster manufactures exclusively at one location, no variance is provided either between product variants or production sites.

Content information

Product component	Weight [kg]	Post-consumer material, weight-%[1]	Biogenic material, weight- % and kg C/product or declared unit
Raw materials			
Glass	17,68	0% *	0 resp. 0
Steel	10,76	21,2%*	0 resp. 0
Aluminium	1,57	0% *	0 resp. 0
Plastics	0,81	0% *	0 resp. 0
Stainless steel	0,40	0-100% *	0 resp. 0
Steel, galvanized	0,25	0-40% *	0 resp. 0
Other	0,04	0 % *	0 resp. 0
Packaging			
Cardboard	0,03	88% *	45% resp. 0,02
Plastics	0,02	0% *	0 resp. 0
Grand Total	31,57		

The Product does not contain substances listed in the “Candidate List of Substances of Very High Concern for authorisation” (http://echa.europa.eu/candidate-list-table). Last accessed: 30.11.2023.

[1] The declared share of recycled materials is based on the actual share of biobased/recycled material in the product. In other words, the share of recycled materials of, for example, global average production of the constituent materials, for example as stated in generic LCI datasets, is not used as the basis for the declaration of recycled content. As such, the declared content information may be different from the product content as stated in the LCA model (as this is partly based on generic LCI data).
* Based on background datasets. Ranges are indicated because material groups are summarized and the recycled content of individual parts may vary.

Results of the environmental performance indicators

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. The results of modules A1-A3 should not be used without considering the results of module C.

Mandatory impact category indicators according to EN 15804

For the characterization factors (CF) to be used, EN 15804 refers to the “EN 15804 reference package” available at the JRC webpage. In February 2023, this reference package was updated to be based on the EF 3.1 package for CFs to be used in the PEF framework. For this EPD, the EN 15804 reference package based on EF 3.1 is being used.

Results per declared unit (1 m^2)									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	kg CO_2 eq.	1,22E+02	7,40E-01	6,63E-02	6,40E-02	6,69E-01	2,46E+00	5,66E-01	-2,32E+01
GWP-fossil	kg CO_2 eq.	1,18E+02	7,39E-01	2,21E-03	6,40E-02	6,68E-01	2,46E+00	5,65E-01	-2,30E+01
GWP-biogenic	kg CO_2 eq.	3,21E+00	6,43E-04	6,39E-02	2,79E-05	5,81E-04	-3,20E-03	6,35E-04	-4,53E-02
GWP-luluc	kg CO_2 eq.	4,16E-01	3,65E-04	8,03E-07	8,05E-06	3,30E-04	5,36E-04	2,54E-04	-2,00E-01
ODP	kg CFC 11 eq.	4,58E-06	1,61E-08	1,34E-10	1,34E-09	1,45E-08	1,01E-08	1,31E-08	-5,80E-07
AP	mol H^+ eq.	6,99E-01	1,61E-03	7,88E-06	5,66E-04	1,46E-03	4,53E-03	1,54E-03	-1,34E-01
EP-freshwater	kg P eq.	4,51E-02	5,25E-05	2,66E-08	2,99E-06	4,75E-05	2,54E-04	3,78E-05	-9,07E-03
EP-marine	kg N eq.	1,31E-01	4,07E-04	3,38E-06	2,63E-04	3,68E-04	1,17E-03	4,92E-04	-2,46E-02
EP-terrestrial	mol N eq.	1,34E+00	4,14E-03	2,97E-05	2,85E-03	3,74E-03	1,16E-02	4,94E-03	-2,63E-01
POCP	kg NMVOC eq.	4,96E-01	2,51E-03	9,40E-06	8,59E-04	2,27E-03	3,44E-03	2,52E-03	-1,11E-01
ADP-minerals&metals*	kg Sb eq.	1,02E-03	2,47E-06	1,43E-08	2,82E-08	2,23E-06	2,39E-05	1,69E-06	-1,96E-04
ADP-fossil*	MJ	1,62E+03	1,06E+01	1,59E-02	8,36E-01	9,56E+00	5,99E+00	8,79E+00	-2,68E+02
WDP*	m^3	6,11E+01	5,25E-02	8,80E-04	2,98E-03	4,75E-02	2,39E-01	4,11E-02	-1,96E+01
Acronyms	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.*

Additional mandatory impact category indicators

Results per declared unit (1 m^2)									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-GHG[2]	kg CO_2 eq.	1,22E+02	7,40E-01	7,69E-03	6,40E-02	6,69E-01	2,46E+00	5,66E-01	-2,32E+01

[2] 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.

Resource use indicators

Results per declared unit (1 m^2)									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	2,11E+02	1,65E-01	7,45E-02	7,48E-03	1,49E-01	9,06E-01	1,44E-01	-5,97E+01
PERM	MJ	5,93E-01	0,00E+00	-5,93E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	2,12E+02	1,65E-01	-5,19E-01	7,48E-03	1,49E-01	9,06E-01	1,44E-01	-5,97E+01
PENRE	MJ	1,60E+03	1,06E+01	9,01E-01	8,36E-01	9,56E+00	2,63E+01	8,79E+00	-2,68E+02
PENRM	MJ	2,24E+01	0,00E+00	-8,85E-01	0,00E+00	0,00E+00	-2,03E+01	0,00E+00	0,00E+00
PENRT	MJ	1,62E+03	1,06E+01	1,59E-02	8,36E-01	9,56E+00	5,99E+00	8,79E+00	-2,68E+02
SM	kg	3,02E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,50E+01
RSF	MJ	0,00E+00	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	0,00E+00
FW	m^3	1,25E+00	1,28E-03	2,19E-05	4,63E-05	1,15E-03	5,47E-03	2,98E-03	-3,91E-01
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								

For the calculation of the primary energy indicators, option A according to PCR 2019:14 was chosen. In option A, the energy used as raw material is declared as an input to the module where it enters the product system (in module A1-A3) and as an equally large output from the product system where it exits the product system (i.e., module A5 for packaging content and module C3 and/or C4 for product content) for use in another product system or as waste.
Outputs in the form of waste were, in the module where the loss occurs, reported as an input in the indicator for energy used as energy carriers (even if the energy is not used in the product system).
The rationale behind this option is that the indicator for energy used as raw materials shall reflect the input of energy that becomes part of the product and packaging, and the output of this energy from the product system regardless of when and how it exits the product system. That is, this indicator shows how much energy that is stored in the product or packaging at any given time. At the end of module C, energy is no longer stored in the product, and the energy used as raw materials will therefore be zero over the product life cycle.

Waste indicators

Results per declared unit (1 m^2)									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	8,65E+00	7,19E-03	3,78E-05	6,15E-04	6,50E-03	4,91E-02	5,32E-03	-2,44E+00
Non-hazardous waste disposed	kg	1,89E+02	2,18E-01	3,00E-03	1,18E-02	1,98E-01	2,04E+00	2,14E-01	-3,47E+01
Radioactive waste disposed	kg	4,40E-03	3,45E-06	1,71E-07	1,64E-07	3,12E-06	1,39E-05	2,67E-06	-5,55E-04

Output flow indicators

Results per functional or declared unit (1 m²)									
Indicator	**Unit**	**A1-A3**	**A4**	**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	0,00E+00
Material for recycling	kg	1,78E+00	0,00E+00	2,15E-02	0,00E+00	0,00E+00	1,76E+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	0,00E+00
Exported energy, electricity	MJ	1,71E-05	0,00E+00	8,61E-02	0,00E+00	0,00E+00	3,02E+00	0,00E+00	0,00E+00
Exported energy, thermal	MJ	3,11E-05	0,00E+00	1,65E-01	0,00E+00	0,00E+00	5,90E+00	0,00E+00	0,00E+00

Additional environmental information

Carbon storage

The biogenic carbon content quantifies the amount of biogenic carbon in a product leaving the factory gate, and is separately declared for the product and for any accompanying packaging (see following table).

Parameter	**Unit**	**Product**
Biogenic carbon content in product	kg C	0
Biogenic carbon content in accompanying packaging	kg C	0,015

Note: 1 kg biogenic carbon is equivalent to 44/12 kg of CO_2

Product properties

The main structural components of the forster profile systems, namely the profiles themselves, are made of 100% steel and are only connected to accessory components of the same material. All other accessories, which belong to other material groups, are only attached to the structure with detachable connections. When an element reaches the end of its life cycle, the existing structure makes it easy to separate the basic materials, which significantly simplifies the recycling process and has a positive impact on the recycling rate.

Due to the use of steel as a material, forster door, window and façade systems are stronger and more rigid than other materials, which has a positive effect on the durability of the products. The joining technique used, welding, ensures a non-detachable connection of the construction elements, which optimally combines the given requirements and material properties and guarantees durability in use.

Management systems

forster's Integrated Management System (IMS) ensures that the effects of our activities on product quality, efficiency, the environment and the health and safety of our employees are planned, monitored and controlled on an ongoing basis. We are therefore committed to always acting in accordance with the requirements of our customers and the ISO 9001 and 14001 standards. These standards apply throughout the forster Group.

Further information on our sustainability activities can be found on our homepage: https://www.forstersystems.com

References

EPD International (2019), “GENERAL PROGRAMME INSTRUCTIONS FOR THE INTERNATIONAL EPD® SYSTEM” Version 4.0, 2021-03-19.

EPD International (2019), “Construction Products PCR 2019:14” Version 1.3.2.

EPD International (2020), “Windows and doors (EN 17213:2020) C-PCR-007 (to PCR 2019:14)”, Version 2020-04-09.

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