

Statement of Verification

BREG EN EPD No.: 000540

Issue 02

This is to verify that the
Environmental Product Declaration
provided by:
Mayflex UK Limited



is in accordance with the requirements of:
EN 15804:2012+A2:2019
and
BRE Global Scheme Document SD207

This declaration is for:
Excel Environ WR600 Flat Packed Wall Rack Network Cabinet

Company Address

Mayflex UK Limited
Unit 15,
Junction Six Industrial Park,
Electric Avenue
Birmingham
B6 7JJ



Laura Critien
Operator

25 October 2023
Date of this Issue

25 October 2023
Date of First Issue

24 October 2028
Expiry Date



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Environmental Product Declaration

EPD Number: 000540

General Information

EPD Programme Operator	Applicable Product Category Rules
BRE Global Watford, Herts WD25 9XX United Kingdom	BRE 2021 Product Category Rules (PN 514 Rev 3.0) for Type III environmental product declaration of construction products to EN 15804:2012+A2:2019.
Commissioner of LCA study	LCA consultant/Tool
Mayflex UK Limited Unit 15, Junction Six Industrial Park, Electric Avenue Birmingham B6 7JJ	LCA Tool: BRE LINA A2 LCA Consultant: Bala Subramanian
Declared/Functional Unit	Applicability/Coverage
Excel Environ WR600 Flat Packed Wall Rack Network Cabinet.	Other (please specify). Product specific
EPD Type	Background database
Cradle to Gate with options	Other (please specify). Product Specific
Demonstration of Verification	
CEN standard EN 15804 serves as the core PCR ^a	
Independent verification of the declaration and data according to EN ISO 14025:2010 <input type="checkbox"/> Internal <input checked="" type="checkbox"/> External	
(Where appropriate ^b)Third party verifier: Pat Hermon	
a: Product category rules b: Optional for business-to-business communication; mandatory for business-to-consumer communication (see EN ISO 14025:2010, 9.4)	
Comparability	
Environmental product declarations from different programmes may not be comparable if not compliant with EN 15804:2012+A2:2019. Comparability is further dependent on the specific product category rules, system boundaries and allocations, and background data sources. See Clause 5.3 of EN 15804:2012+A2:2019 for further guidance	

Information modules covered

Product			Construction		Use stage							End-of-life				Benefits and loads beyond the system boundary
					Related to the building fabric					Related to the building						
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Raw materials supply	Transport	Manufacturing	Transport to site	Construction – Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction demolition	Transport	Waste processing	Disposal	Reuse, Recovery and/or Recycling potential
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Note: Ticks indicate the Information Modules declared.

Manufacturing site(s)

Mayflex UK Limited
 Unit 15,
 Junction Six Industrial Park,
 Electric Avenue
 Birmingham
 B6 7JJ

Construction Product:

Product Description

The Excel Environ range of Wallboxes are a versatile range with features suitable for a wide variety of applications within the data, security, audio visual and telecommunications markets. There is a range of sizes available from 6U up to 21U. All are 570mm wide with available depths of 390mm, 500mm or 600mm. All wallboxes come as standard with a lockable, quick release front glass door and lockable side panels for security in public areas. Internally, the wallboxes feature 19” mounting profiles front and rear, which are fully adjustable. Earth studs are also provided on the chassis, side panels and door. There are cable entry points in both the roof and base. A fan tray can be fitted to the roof if required.

In this EPD, Excel Environ WR600 Flat Packed Wall Rack Network Cabinet 18U 600 mm Deep Black with the weight of 32 kg (most weighted) has been taken as a representative among their group, and the end user table is included at the end of the EPD to enable the impacts of the other wall rack network cabinet.

Product name:	Item Code	Weight (kg)
Excel Environ WR600 Flat Packed Wall Rack Network Cabinet 9U 600 mm Deep Black	WBFP9.6SGB	23
Excel Environ WR600 Flat Packed Wall Rack Network Cabinet 12U 600 mm Deep Black	WBFP12.6SGB	25.5
Excel Environ WR600 Flat Packed Wall Rack Network Cabinet 15U 600 mm Deep Black	WBFP15.6SGB	29.5
Excel Environ WR600 Flat Packed Wall Rack Network Cabinet 18U 600 mm Deep Black	WBFP18.6SGB	32

Technical Information

Property	WB9.6SGB	WB12.6SGB	WB15.6SGB	WB18.6SGB
Mounting Profiles	Front & Rear	Front & Rear	Front & Rear	Front & Rear
Profile spacing	19"	19"	19"	19"
Width	570mm	570mm	570mm	570mm
Height	501mm	635mm	769mm	901mm
Depth	600mm	600mm	600mm	600mm
Internal U Height	9U	12U	15U	18U
Colour	Black RAL9004	Black RAL9004	Black RAL9004	Black RAL9004
Load Capacity	60kg	60kg	60kg	60kg
Removable roof plate	Yes	Yes	Yes	Yes
Earth Studs	Yes	Yes	Yes	Yes
Front Door	Glass	Glass	Glass	Glass
Material	Steel	Steel	Steel	Steel
Finish	Powder Coat	Powder Coat	Powder Coat	Powder Coat
IP Rating	IP20	IP20	IP20	IP20

Note: Technical properties of all products assessed within this EPD

Applicable Standard	Subject
ANSI/EIA-310-E	Electronic Industries Association standard for horizontal spacing, vertical hole spacing, rack opening and front panel width
BS EN 60297-3-100:2009	Mechanical structures for electronic equipment. Dimensions of mechanical structures of the 482,6 mm (19 in) series. Basic dimensions of front panels, sub-racks, chassis, racks and cabinets
IEC 62262: 2002	Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code)
DIN 41494 Part 1 & 7	Panel Mounting Racks for Electronics Equipment; Racks And Panels, Dimensions; Dimensions of cabinets and suites of racks
WFD	Compliant to Waste Framework Directive
SCIP	Compliant - Does Not Contain Substances of Concern in Products

Note: Technical standards of all products assessed within this EPD



Main Product Contents

Material/Chemical Input	%
Carbon steel	90 - 95
Glass	0 - 5
Others	0 - 2

Note: Material composition of all products assessed within this EPD

Manufacturing Process

Incoming materials are selected and inspected for defects and anomalies. Once approved for production they are prepared for stamping. Production starts with blanking which is the separation of the workpiece from the primary sheet, once the workpiece is ready, it is stamped into a useable shape by a die and a press. The workpiece is then bent into the required shape by means of applying force using a press brake tool, the work piece is then inspected.

The shaped work piece now goes through the welding process. The first produced sample is inspected by the production operator, foreman and quality control class inspector to confirm production is accurate and without errors. Random inspections on products continue throughout production. The welding process comprises the use of jigs and welding fixtures depending on product model specifications.

The work piece now enters the grinding & de-burring process to remove all excess metal shavings and rough edging from the previous steps. Once complete, the product is inspected for manufacturing errors and dimensions to ensure all is within tolerance for later assembly.

The work piece is now thoroughly cleaned/de-greased prior to powder coating/spraying. This process takes place on a conveyor and the parts will be passed through an oven to bake on the coating. Once complete, it will be quality inspected. The final stage of production is the assembly of the product. Doors, handles, hinges, and other items. Once this is completed, the product is fully inspected to confirm accuracy and quality, it is then packaged & labelled and ready to be shipped.

Process flow diagram



Construction Installation

Installation of Excel Environ Wallboxes is simple by selecting a suitable fixings appropriate for the floor.

1. Insert top and bottom panels into the side frames. And fixed the frame on the front door position with 4 M5*8 self-tapping screws.
2. Use 16 M8*12 inner hex round screws and M8 flange nut for fixing the top & bottom panels into two side frames.
3. Fix mounting profile on the frame with 8 M6*12 head screws.
4. Insert back panel into the hinge of the frame, with C shaped circlip fixed.
5. Fix the removable cable entry panels.
6. Install front glass door into frames, put a door latch at the right bottom.
7. Install side panels into both sides of frames, switch the door to be smooth.

End of Life

Excel Environ Wallboxes is made up of steel and assembled with glass on it, so at the end of life the cabinet will be recycled, and glasses will be sent to landfill.

Life Cycle Assessment Calculation Rules

Declared / Functional unit description

Excel Environ WR600 Flat Packed Wall Rack Network Cabinet.

System boundary

This is a cradle-to-gate LCA, reporting all production life cycle stages of modules A1 to A3 and A4 and A5 (transportation and installation) and end of life stages C1-C4, and D in accordance with EN 15804:2012+A2:2019 and BRE 2021 Product Category Rules (PN 514 Rev 3.0).

Data sources, quality and allocation

The quantity used in the data collection for this EPD is the total quantity of Excel Environ Wallboxes manufactured as a proportion of the total manufactured during the data collection period (01/01/21-31/12/21). Mayflex receives the Wall Rack Network Cabinet from their PRC manufacturing partners, therefore the transportation used to transfer the products from PRC to the UK is included in the LCA analysis. In the manufactures site, other products are manufactured in addition to the wallboxes, therefore the allocation of electricity and water consumption and discharge are required, and this has been done according to the provisions of the BRE PCR PN514 and EN 15804.

The Excel Environ range of wallboxes are available in a range of sizes from 6U up to 21U with the different weight from 23kg to 32kg. In this EPD, the Excel Environ WR600 Flat Packed Wall Rack Network Cabinet 9U 600 mm Deep Black with the weight of 32kg has been taken as a representative among their group. After the manufacturing, the final product will be powder coated before sending to the customer site, therefore the Powder coat material is also one of the ingredients in the raw material list. During the LCA modelling, there is no direct dataset for the powder coating products in the LINA background however LINA has an unspecified organic pigment dataset which is used as a proxy dataset. Secondary data has been obtained for all other upstream and downstream processes that are beyond the control of the manufacturer (i.e., raw material production) from the ecoinvent 3.8 database. All ecoinvent datasets are complete within the context used and conform to the system boundary and the criteria for the exclusion of inputs and outputs, according to the requirements specified in EN15804 A2.

ISO14044 guidance. Quality Level	Geographical representativeness	Technical representativeness	Time representativeness
Very Good	Data from area under study.	Data from processes and products under study. Same state of technology applied as defined in goal and scope (i.e., identical technology).	n/a
Very Good	n/a	n/a	There is approximately 1-2 years between the Ecoinvent LCI reference year, and the time period for which the LCA was undertaken.

Specific European datasets have been selected from the ecoinvent LCI for this LCA. Manufacturer uses the national grid electricity for production, so therefore the national grid electricity dataset has been used for the LCA modelling (Ecoinvent 3.8). The GWP carbon footprint for using 1 kWh of Electricity, China is 1.054 in kgCO_{2e}/kWh. The quality level of time representativeness is also Very Good as the background LCI datasets are based on ecoinvent v3.8 which was compiled in 2021. Therefore, there is less than 5 years between the ecoinvent LCI reference year and the time period for which the LCA was undertaken.

Cut-off criteria

All raw materials and energy inputs to the manufacturing process have been included. There were no ancillary materials used during the production and no direct emissions to air, water, or soil, which were not measured, and there were no non-production wastes recorded during the production period.

LCA Results - Excel Environ WR600 Flat Packed Wall Rack Network Cabinet 9U 600 mm Deep Black with the weight of 32kg

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts			GWP-total	GWP-fossil	GWP-biogenic	GWP-luluc	ODP	AP	EP-freshwater
			kg CO ₂ eq	kg CO ₂ eq	kg CO ₂ eq	kg CO ₂ eq	kg CFC11 eq	mol H ⁺ eq	kg (PO ₄) ³⁻ eq
Product stage	Raw material supply	A1	6.99E+01	6.96E+01	2.04E-01	5.55E-02	3.80E-06	3.72E-01	3.21E-02
	Transport	A2	1.56E+01	1.56E+01	6.95E-03	8.31E-03	3.39E-06	2.48E-01	7.97E-04
	Manufacturing	A3	1.11E+00	1.56E+00	-4.76E-01	8.59E-03	1.63E-07	7.57E-03	7.08E-04
	Total (Consumption grid)	A1-3	8.66E+01	8.67E+01	-2.65E-01	7.24E-02	7.35E-06	6.28E-01	3.36E-02
Construction process stage	Transport	A4	9.16E-01	9.15E-01	7.80E-04	3.59E-04	2.12E-07	3.71E-03	5.89E-05
	Construction	A5	5.28E-03	3.79E-03	1.40E-03	2.54E-06	4.61E-10	1.80E-05	4.95E-07
Use stage	Use	B1	MND	MND	MND	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND	MND
95% - Recycling & 5% - Landfill									
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	6.66E-02	6.65E-02	5.67E-05	2.61E-05	1.54E-08	2.70E-04	4.28E-06
	Waste processing	C3	5.47E-02	5.47E-02	1.93E-05	5.46E-06	1.17E-08	5.68E-04	1.69E-06
	Disposal	C4	1.31E-02	1.29E-02	1.94E-04	3.34E-06	4.96E-09	1.15E-04	3.60E-06
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-5.58E+01	-5.59E+01	1.27E-01	-3.53E-02	-2.54E-06	-2.15E-01	-2.47E-02

GWP-total = Global warming potential, total;
 GWP-fossil = Global warming potential, fossil;
 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; and
 EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment

LCA Results (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts			EP-marine	EP-terrestrial	POCP	ADP-mineral & metal	ADP-fossil	WDP	PM
			kg N eq	mol N eq	kg NMVOC eq	kg Sb eq	MJ, net calorific value	m ³ world eq deprived	disease incidence
Product stage	Raw material supply	A1	7.47E-02	7.16E-01	3.15E-01	8.05E-04	7.58E+02	3.52E+01	5.88E-06
	Transport	A2	6.31E-02	6.99E-01	1.87E-01	4.05E-05	2.20E+02	8.13E-01	9.85E-07
	Manufacturing	A3	3.72E-03	2.27E-02	5.41E-03	7.72E-06	2.54E+01	9.66E-01	1.14E-07
	Total (Consumption grid)	A1-3	1.42E-01	1.44E+00	5.07E-01	8.53E-04	1.00E+03	3.69E+01	6.98E-06
Construction process stage	Transport	A4	1.12E-03	1.22E-02	3.74E-03	3.18E-06	1.38E+01	6.22E-02	7.89E-08
	Construction	A5	7.27E-06	6.58E-05	2.23E-05	2.32E-08	4.09E-02	5.12E-04	5.72E-10
Use stage	Use	B1	MND	MND	MND	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND	MND
95% - Recycling & 5% - Landfill									
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	8.13E-05	8.88E-04	2.72E-04	2.31E-07	1.01E+00	4.52E-03	5.74E-09
	Waste processing	C3	2.52E-04	2.76E-03	7.58E-04	2.81E-08	7.50E-01	1.73E-03	1.52E-08
	Disposal	C4	4.35E-05	4.77E-04	1.37E-04	4.38E-08	3.57E-01	1.89E-02	2.58E-09
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-5.14E-02	-5.40E-01	-2.65E-01	-7.62E-05	-5.43E+02	-1.34E+01	-4.25E-06

EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment;
 EP-terrestrial = Eutrophication potential, accumulated exceedance;
 POCP = Formation potential of tropospheric ozone;
 ADP-mineral&metals = Abiotic depletion potential for non-fossil resources;

ADP-fossil = Depletion potential of the stratospheric ozone layer;
 WDP = Water (user) deprivation potential, deprivation-weighted water consumption; and
 PM = Particulate matter.

LCA Results (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts			IRP	ETP-fw	HTP-c	HTP-nc	SQP
			kBq U ²³⁵ eq	CTUe	CTUh	CTUh	dimensionless
Product stage	Raw material supply	A1	4.04E+00	2.15E+03	5.25E-07	2.20E-06	2.56E+02
	Transport	A2	1.08E+00	1.58E+02	7.39E-09	1.45E-07	1.05E+02
	Manufacturing	A3	1.70E-01	2.90E+01	8.12E-10	1.78E-08	5.92E+01
	Total (Consumption grid)	A1-3	5.29E+00	2.33E+03	5.34E-07	2.36E-06	4.20E+02
Construction process stage	Transport	A4	7.11E-02	1.08E+01	3.50E-10	1.13E-08	9.50E+00
	Construction	A5	2.28E-04	1.68E-01	5.19E-12	5.18E-11	1.92E-02
Use stage	Use	B1	MND	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND
95% - Recycling & 5% - Landfill							
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	5.17E-03	7.84E-01	2.54E-11	8.22E-10	6.91E-01
	Waste processing	C3	3.38E-03	4.39E-01	1.70E-11	3.18E-10	9.55E-02
	Disposal	C4	2.10E-03	2.10E-01	9.93E-12	1.20E-10	9.32E-01
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.38E+00	-1.56E+03	-3.27E-07	-1.16E-06	-1.50E+02

IRP = Potential human exposure efficiency relative to U235;
 ETP-fw = Potential comparative toxic unit for ecosystems;
 HTP-c = Potential comparative toxic unit for humans;

HTP-nc = Potential comparative toxic unit for humans; and
 SQP = Potential soil quality index.

LCA Results (continued)

Parameters describing resource use, primary energy			PERE	PERM	PERT	PENRE	PENRM	PENRT
			MJ	MJ	MJ	MJ	MJ	MJ
Product stage	Raw material supply	A1	6.45E+01	0.00E+00	6.45E+01	7.07E+02	0.00E+00	7.07E+02
	Transport	A2	2.49E+00	0.00E+00	2.49E+00	2.16E+02	0.00E+00	2.16E+02
	Manufacturing	A3	-5.63E+00	1.80E+01	1.24E+01	1.72E+01	1.47E-01	1.74E+01
	Total (Consumption grid)	A1-3	6.14E+01	1.80E+01	7.94E+01	9.41E+02	1.47E-01	9.41E+02
Construction process stage	Transport	A4	1.95E-01	0.00E+00	1.95E-01	1.36E+01	0.00E+00	1.36E+01
	Construction	A5	-6.21E-01	6.21E-01	0.00E+00	-1.27E-01	1.27E-01	1.99E-03
Use stage	Use	B1	MND	MND	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND
95% - Recycling & 5% - Landfill								
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.42E-02	0.00E+00	1.42E-02	9.87E-01	0.00E+00	9.87E-01
	Waste processing	C3	4.20E-03	0.00E+00	4.20E-03	7.36E-01	0.00E+00	7.36E-01
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.72E+01	0.00E+00	-1.72E+01	-5.35E+02	0.00E+00	-5.35E+02

PERE = Use of renewable primary energy excluding renewable primary energy used as raw materials;
 PERM = Use of renewable primary energy resources used as raw materials;
 PERT = Total use of renewable primary energy resources;

PENRE = Use of non-renewable primary energy 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 resource

LCA Results (continued)

Parameters describing resource use, secondary materials and fuels, use of water						
			SM	RSF	NRSF	FW
			kg	MJ net calorific value	MJ net calorific value	m ³
Product stage	Raw material supply	A1	0.00E+00	0.00E+00	0.00E+00	8.66E-01
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	2.01E-02
	Manufacturing	A3	0.00E+00	0.00E+00	0.00E+00	2.31E-02
	Total (Consumption grid)	A1-3	0.00E+00	0.00E+00	0.00E+00	9.10E-01
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	1.54E-03
	Construction	A5	0.00E+00	0.00E+00	0.00E+00	1.26E-05
Use stage	Use	B1	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND
100% - Recycling						
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	1.12E-04
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	4.28E-05
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	4.49E-04
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	-3.20E-01

SM = Use of secondary material;
RSF = Use of renewable secondary fuels;

NRSF = Use of non-renewable secondary fuels;
FW = Net use of fresh water

LCA Results (continued)

Other environmental information describing waste categories					
			HWD	NHWD	RWD
			kg	kg	kg
Product stage	Raw material supply	A1	2.56E+01	1.18E+02	1.65E-03
	Transport	A2	2.63E-01	3.59E+00	1.51E-03
	Manufacturing	A3	6.59E-02	1.83E+00	5.23E-05
	Total (Consumption grid)	A1-3	2.59E+01	1.23E+02	3.20E-03
Construction process stage	Transport	A4	1.52E-02	2.71E-01	9.36E-05
	Construction	A5	4.15E-06	6.25E-05	1.30E-08
Use stage	Use	B1	MND	MND	MND
	Maintenance	B2	MND	MND	MND
	Repair	B3	MND	MND	MND
	Replacement	B4	MND	MND	MND
	Refurbishment	B5	MND	MND	MND
	Operational energy use	B6	MND	MND	MND
	Operational water use	B7	MND	MND	MND
100% - Recycling					
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.11E-03	1.97E-02	6.80E-06
	Waste processing	C3	9.88E-04	6.92E-03	5.18E-06
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.04E+01	-8.88E+01	-8.72E-04

HWD = Hazardous waste disposed;
 NHWD = Non-hazardous waste disposed;
 RWD = Radioactive waste disposed

LCA Results (continued)

Other environmental information describing output flows – at end of life								
			CRU	MFR	MER	EE	Biogenic carbon (product)	Biogenic carbon (packaging)
			kg	kg	kg	MJ per energy carrier	kg C	kg C
Product stage	Raw material supply	A1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Manufacturing	A3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.35E-01
	Total (Consumption grid)	A1-3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.35E-01
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Construction	A5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use stage	Use	B1	MND	MND	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND
100% - Recycling								
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Waste processing	C3	0.00E+00	3.04E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

CRU = Components for reuse;
MFR = Materials for recycling

MER = Materials for energy recovery;
EE = Exported Energy

Scenarios and additional technical information

Scenarios and additional technical information			
Scenario	Parameter	Units	Results
A4 – Transport to the building site	Mayflex receives the wallboxes from PRC and without any further processing in the distribution sector they will be distributed to the customer site.		
	Fuel type / Vehicle type	Road transport	16–32-ton lorry
	Distance: Mayflex to customer site	Km	172
	Capacity utilisation (incl. empty returns)	%	49
	Bulk density of transported products	kg/m ³	342
A5 – Installation in the building	Installation of Excel Environ floor-standing racks is simple by selecting a suitable fixings appropriate for the floor. There won't be any installation wastages and some wastes are from packaging.		
	Cardboard waste – recycling	kg	0.044
	Plastic waste – recycling	kg	0.003
End of life	Excel Environ Wallboxes are dis. Further, wallboxes are disassembled on the demolition site. No power tools are used. Therefore, no impacts are associated with this module.		
C2 – Transportation	Wallboxes are taken back by the registered broker	Road transport	16–32-ton lorry
	Distance: Deconstruction unit to pre-processing unit	km	12.5
C3 – Pre processing	Wallboxes is made up of 95% of steel and remaining 5% of glasses and other components, therefore, in the pre-processing unit, glasses and other components will be separated from the wall boxes, by either manual or by using advanced machinery. Therefore, it is assumed that 95% of the product will go to recycling and 5% to landfills. The impacts associated with recycling are covered in this module.		
	The separation process has not been included in Module C3 because it is assumed to be very small and effectively negligible.		
	Steel – Recycling	%	95
C4 - Disposal	The recovered wallboxes will be sent to recycling while a small portion is assumed to be unrecoverable which is considered to send to landfill		
	Unrecovered wall box waste to landfill	%	5
Module D – Recovered cabinet box are 95% recycled	This scenario assumes that 95% of the product is recycled. Therefore, pre-processed wallboxes can be used in place of virgin materials. In line with this, 0.95 kg of scrap steel waste recovered from the building demolition sites can be used to offset the impacts of virgin material, and it is assumed that there is a 100% recycling yield from the recycling process.		

Interpretation of results:

The bulk of the environmental impacts are attributed to the manufacturing of wallboxes covered by information modules A1-A3 of EN15804:2012+A2:2019.

Individual product calculations:

The LCA results listed in the tables above are for Excel Environ Wallboxes, which are for the processing of 32 kg. The end-user of this EPD can therefore use these results to calculate impact profiles for Wallboxes with different dimensions by using the weight per kg. In the below calculation table, the GWP impacts have been calculated for the standard product weight for 1 kg as an example to enable calculations for other cabinets.

Wall Rack Network Cabinet			Wall Rack Network Cabinet 9U	Wall Rack Network Cabinet 12U	Wall Rack Network Cabinet 15U
kg	32	1	23	25.5	29.5
A1	6.99E+01	2.18E+00	5.02E+01	5.57E+01	6.44E+01
A2	1.56E+01	4.88E-01	1.12E+01	1.24E+01	1.44E+01
A3	1.11E+00	3.47E-02	7.98E-01	8.85E-01	1.02E+00
A1-A3	8.66E+01	2.71E+00	6.22E+01	6.90E+01	7.98E+01

References

BSI. Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products. BS EN 15804:2012+A2:2019. London, BSI, 2019.

BSI. Environmental labels and declarations – Type III Environmental declarations – Principles and procedures. BS EN ISO 14025:2010 (exactly identical to ISO 14025:2006). London, BSI, 2010.

BSI. Environmental management – Life cycle assessment – Principles and framework. BS EN ISO 14040:2006. London, BSI, 2006.

BSI. Environmental management – Life cycle assessment – requirements and guidelines. BS EN ISO 14044:2006. London, BSI, 2006.