

Statement of Verification

BREG EN EPD No.: 000553

Issue 01

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:

1 unit of 24/48 Screened and Unscreened Keystone Patch Panel and cable management bar

Company Address

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



Emma Baker

Signed for BRE Global Ltd

Emma Baker

Operator

30 January 2024

Date of this Issue

30 January 2024

Date of First Issue

29 January 2029

Expiry Date



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Environmental Product Declaration

EPD Number: 000553

General Information

EPD Programme Operator	Applicable Product Category Rules
BRE Global Watford, Herts WD25 9XX United Kingdom	BRE Environmental Profiles 2013 Product Category Rules for Type III environmental product declaration of construction products to EN 15804+A2 PN 514 Rev 3.1
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
1 unit of 24/48 Screened and Unscreened Keystone Patch Panel and cable management bar	Other (please specify). Product specific
EPD Type	Background database
Cradle to Gate with options	ecoinvent
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 ☐ Internal ☒ 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	
☒	☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	☐	☒	☒	☒	☒	☒	

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

A range Excel Patch 19" Patch Panels which comply with the current standards and include CAT5E punch down panels and various Keystone Jack frames, which are suitable for all Excel CAT6 & CAT6A unshielded and shielded Keystone Jacks. Each panel/frame offers a choice of labelling with the option to use screen-printed fields on the panel facia or the slide label system or pre-printed labels. The frames are available in either black powder-coat or nickel-plated finish. Ease of installation is assured with ample rear cable management positions and LSA IDC blocks on the punch down panels. All the panels are supplied in plastic-free packaging and come with accessory kit which includes fixing hardware, earth wire, cable ties etc.

Product name:	Item Code	Weight (kg/unit)
24 Port Keystone Patch Panel - Black	100-023	0.702
24 Port Keystone Patch Panel - chrome	100-024	0.702
24 Port Keystone Patch Panel	100-026	0.730
24 Port Keystone Patch Panel - chrome	100-028	0.680
24 Port Keystone V Patch Panel	100-040	0.545
24 Port Keystone Patch Panel - 0.5 U Chrome	100-041	0.283
48 Screened Port Keystone Panel Chrome	100-042	0.547
48 Unscreened Port Keystone Panel Black	100-050	0.546
24 Port Unscreened Patch Panel 1U	100-450	0.648
24 Port Unscreened Patch Panel 1U	100-451	0.648
1U Cable Management Bar	100-452	0.648
1U Cable Management Bar	100-582	0.648

Keystone Patch panels are available in 24 and 48 port with the variation in weight per unit, however the composition across all the patch panels are similar so therefore in this EPD the production data of 24 Port Keystone Patch panel with the weight of 0.730 per unit, 48 Screened Port Keystone patch panel with the weight of 0.547 per unit, 24 Port Unscreened Patch Panel 1U with the weight of 0.648 per unit, and Cable Management Bar with the weight of 0.60 per unit has been modelled, and the results are enclosed in this EPD.

Technical Information

Technical properties of 24 Port Unscreened patch panel:

Property	Value, Unit
Suitable for number of outlets	24
Type of connector	RJ45
Shielded	No
Category	5E
Number of rack units (RU)	1
Colour	Blue
Mounting Method	19-inch mounting
Height	44mm
Width	480mm
Depth	33mm
Wiring Specification	T568B
RJ45 Jack Min Life Expectancy	750 Insertions
RJ4 Jack Contact	50 microinch gold over 100 microinch nickel
IDC Contacts Max Life Expectancy	200 terminations
Contact compatibility	22 to 26AWG
Operating temperature range	-10°C to 60°C
Storage temperature range	-40°C to 68°C
Relative Humidity	10% to 90%
Panel Material	SPCC Steel
Frame Material	ABS
Jack housing material	PBT
IDC material	Phosphor bronze, tin over nickel undercoat

Note: The above technical information covers the 24 Port Unscreened Patch Panels (100-450, 100-451, and 100-452) that are covered by this EPD, and the product technical standard are listed in the annex section.

Technical properties of Keystone Patch panels:

Property	100-023, 100-024, 100-040, 100-026, 100-028, 100-041.	100-042 and 100-050
Suitable for number of outlets	24	48
Shielded	Yes	Yes
Category	Keystone jack	Keystone jack
Number of rack units (RU)	1	1
Colour	Black	Nickel
Mounting Method	19 inches	19 inches
Height	44mm	43.8mm
Width	483mm	482.5mm
Depth	155mm	153.3mm

Note: The above technical information covers the 24 and 48 Port Keystone Patch Panels that are covered by this EPD, and the product technical standards are listed in the annex section.

Technical properties of Cable Management Bar:

Property	100-582
Model	Cable management bar
Material	Steel
Number of rack units (RU)	1
Colour/Finish	Black Powder Coat



Main Product Contents

Material/Chemical Input	Keystone Patch panels	24 Port Unscreened patch panel
Steel	90-95%	95-97%
Others	0-5%	0-5%

Manufacturing Process

The manufacturing of Copper Panels and Frames involves several different processes, starting with the raw materials and ending with the completed assemblies. The products include a number of components, and the assembly is carried out in stages to produce sub-assemblies. Each sub-assembly is quality checked prior to moving on to the next process.

Firstly, the raw materials are checked for conformance. This includes the plastics, PCB's, pins and metals that are used to make up the assemblies. Once all the materials are verified, the mouldings can be produced. This is a process of injection moulding, where the plastics are melted and injected into a high-precision mould.

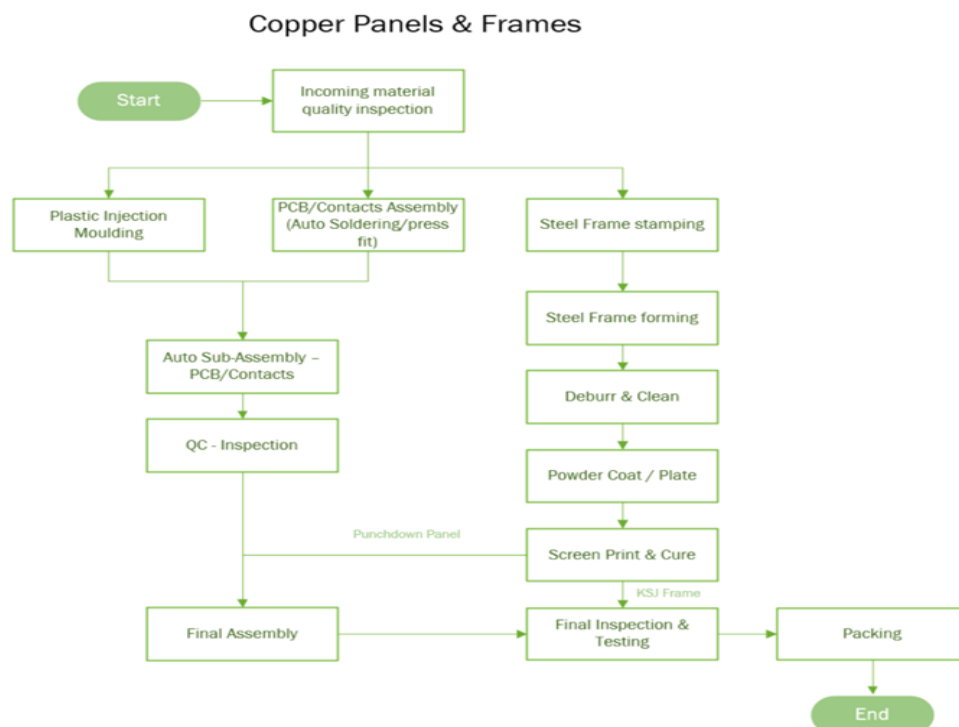
The PCB's and Punch-Down contacts (if applicable) are assembled to the mouldings. The contacts are soldered to the PCBs prior to the PCB being assembled to the mouldings.

Separately, the steel panel frames are produced from sheet steel, which is punched, formed, deburred, cleaned and powder coated, or nickel plated as required. Finally, the frame is screen-printed with the port numbering, Excel logo etc.

The final assembly will bring all the components together, which includes the PCB/Contact assembly, and finished steel frame. These parts are either clipped or screwed together to form the finished product.

All assemblies are visually and electrically tested for conformance and packed together with accessories (such as fitting hardware, cable ties, termination instructions etc.)

Process flow diagram



End of Life

The end-of-life stage starts when the product is replaced, dismantled, and does not provide any further function. The Keystone panels made up of steel and other mixes; therefore, at the end of life, 95% of the steel is assumed to be recycled, and 5% of the other compositions are assumed to be unrecoverable, so they are sent to landfills.

24 Port Unscreened Patch Panel is made up of steel and other plastic components, therefore at the EoL it is not economical to recycle plastic data modules therefore they are taken to landfill via a WEEE registered commercial waste disposal company. Therefore, without any pre-processing on the recovered patch panel's will be sent to landfilling.

Life Cycle Assessment Calculation Rules

Declared unit description.

1 unit of 24/48 Screened and Unscreened Keystone Patch Panel and cable management bar.

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 3.1).

Data sources, quality and allocation

The quantity used in the data collection for this EPD is the total quantity of 24/48 Screened and Unscreened Port Keystone Patch panel, and Cable Management Bar manufactured as a proportion of the total manufactured, during the data collection period (01/01/21-31/12/21). Mayflex receives the data cables from their PRC manufacturing partners, therefore the transportation used to transfer the products from PRC to the UK is included in the LCA analysis. Other products are manufactured in addition to Keystone patch panel and cable management bar; 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 EN15804.

In this EPD, 24 Port Keystone Patch panel with the weight of 0.730 per unit, 48 Screened Port Keystone patch panel with the weight of 0.547 per unit, 24 Port Unscreened Patch Panel 1U with the weight of 0.648 per unit, and Cable Management Bar with the weight of 0.60 per unit has been modelled and the LCA results are enclosed in this EPD. 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 Global and 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 kgCO₂e/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 - 24 Port Keystone Patch Panel Frame 1U with the weight of 0.73 kg.

(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	3.85E+00	3.82E+00	2.40E-02	3.87E-03	1.78E-07	2.77E-02	1.79E-03
	Transport	A2	1.90E-01	1.90E-01	1.98E-05	1.24E-04	3.91E-08	4.92E-03	7.60E-06
	Manufacturing	A3	7.94E-01	8.61E-01	-6.97E-02	1.25E-03	2.31E-08	4.44E-03	2.08E-04
	Total (Consumption grid)	A1-3	4.84E+00	4.87E+00	-4.57E-02	5.24E-03	2.41E-07	3.71E-02	2.01E-03
Construction process stage	Transport	A4	2.09E-02	2.09E-02	1.78E-05	8.19E-06	4.83E-09	8.47E-05	1.34E-06
	Construction	A5	2.23E-02	1.43E-02	7.52E-03	9.89E-06	2.05E-09	7.95E-05	1.87E-06
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 and 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	1.52E-03	1.52E-03	1.29E-06	5.96E-07	3.51E-10	6.16E-06	9.77E-08
	Waste processing	C3	3.97E-02	3.97E-02	1.40E-05	3.96E-06	8.49E-09	4.13E-04	1.23E-06
	Disposal	C4	4.69E-03	4.69E-03	3.03E-06	4.80E-07	1.29E-10	3.84E-06	7.05E-08
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	1.27E+00	1.27E+00	2.89E-03	-8.01E-04	-5.77E-08	-4.87E-03	-5.60E-04

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	4.03E-03	4.40E-02	1.39E-02	2.56E-04	4.28E+01	1.37E+00	3.12E-07
	Transport	A2	1.22E-03	1.35E-02	3.54E-03	3.53E-07	2.53E+00	7.38E-03	8.33E-09
	Manufacturing	A3	1.21E-03	1.08E-02	2.71E-03	1.54E-06	8.83E+00	1.62E-01	6.46E-08
	Total (Consumption grid)	A1-3	6.45E-03	6.83E-02	2.01E-02	2.58E-04	5.42E+01	1.54E+00	3.85E-07
Construction process stage	Transport	A4	2.55E-05	2.79E-04	8.54E-05	7.26E-08	3.15E-01	1.42E-03	1.80E-09
	Construction	A5	3.25E-05	3.01E-04	1.03E-04	9.43E-08	1.60E-01	1.37E-03	2.72E-09
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 and 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	1.85E-06	2.03E-05	6.20E-06	5.27E-09	2.29E-02	1.03E-04	1.31E-10
	Waste processing	C3	1.83E-04	2.00E-03	5.51E-04	2.04E-08	5.45E-01	1.26E-03	1.11E-08
	Disposal	C4	8.56E-05	1.39E-05	4.97E-06	1.49E-09	1.02E-02	4.53E-04	7.26E-11
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.17E-03	-1.23E-02	-6.02E-03	-1.73E-06	-1.23E+01	-3.04E-01	-9.65E-08

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	2.67E-01	1.68E+02	8.33E-08	1.78E-07	2.23E+01
	Transport	A2	1.18E-02	1.66E+00	1.05E-10	1.28E-09	7.07E-01
	Manufacturing	A3	3.08E-02	2.08E+01	2.42E-10	8.91E-09	9.24E+00
	Total (Consumption grid)	A1-3	3.10E-01	1.90E+02	8.36E-08	1.88E-07	3.23E+01
Construction process stage	Transport	A4	1.62E-03	2.46E-01	7.97E-12	2.58E-10	2.17E-01
	Construction	A5	9.05E-04	8.39E-01	2.06E-11	2.14E-10	5.74E-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 and 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	1.18E-04	1.79E-02	5.80E-13	1.88E-11	1.58E-02
	Waste processing	C3	2.46E-03	3.19E-01	1.23E-11	2.31E-10	6.94E-02
	Disposal	C4	4.98E-05	2.14E-02	3.43E-13	9.06E-12	2.38E-02
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-3.12E-02	-3.54E+01	-7.43E-09	-2.63E-08	-3.41E+00

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)

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

Parameters describing resource use, primary energy			PERE	PERM	PERT	PENRE	PENRM	PENRT
			MJ	MJ	MJ	MJ	MJ	MJ
Product stage	Raw material supply	A1	1.01E+01	0.00E+00	1.01E+01	3.99E+01	1.53E-01	4.01E+01
	Transport	A2	2.19E-02	0.00E+00	2.19E-02	2.48E+00	0.00E+00	2.48E+00
	Manufacturing	A3	2.15E+00	2.31E+00	4.46E+00	2.97E+01	3.37E-01	3.01E+01
	Total (Consumption grid)	A1-3	1.23E+01	2.31E+00	1.46E+01	7.21E+01	4.89E-01	7.26E+01
Construction process stage	Transport	A4	4.44E-03	0.00E+00	4.44E-03	3.10E-01	0.00E+00	3.10E-01
	Construction	A5	-3.44E+00	3.44E+00	0.00E+00	1.07E-02	0.00E+00	1.07E-02
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 and 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	3.23E-04	0.00E+00	3.23E-04	2.25E-02	0.00E+00	2.25E-02
	Waste processing	C3	3.05E-03	0.00E+00	3.05E-03	5.34E-01	0.00E+00	5.34E-01
	Disposal	C4	2.10E-04	0.00E+00	2.10E-04	-1.22E+00	1.23E+00	1.01E-02
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-3.90E-01	0.00E+00	-3.90E-01	-1.21E+01	0.00E+00	-1.21E+01

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)

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

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	4.01E-01	0.00E+00	0.00E+00	4.02E-02
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	1.83E-04
	Manufacturing	A3	4.59E-04	0.00E+00	0.00E+00	4.43E-03
	Total (Consumption grid)	A1-3	4.01E-01	0.00E+00	0.00E+00	4.48E-02
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	3.52E-05
	Construction	A5	2.36E-01	0.00E+00	0.00E+00	3.44E-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
95% Recycling and 5% Landfill						
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	2.56E-06
	Waste processing	C3	2.09E-04	0.00E+00	0.00E+00	3.11E-05
	Disposal	C4	3.53E-06	0.00E+00	0.00E+00	1.07E-05
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	-7.27E-03

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)

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

Other environmental information describing waste categories					
			HWD	NHWD	RWD
			kg	kg	kg
Product stage	Raw material supply	A1	3.54E+00	7.41E+00	1.00E-04
	Transport	A2	3.23E-03	3.33E-02	1.75E-05
	Manufacturing	A3	4.11E-01	2.84E+00	2.31E-05
	Total (Consumption grid)	A1-3	3.95E+00	1.03E+01	1.41E-04
Construction process stage	Transport	A4	3.48E-04	6.18E-03	2.13E-06
	Construction	A5	2.22E-05	3.34E-04	6.97E-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
95% Recycling and 5% Landfill					
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	2.53E-05	4.49E-04	1.55E-07
	Waste processing	C3	7.18E-04	5.02E-03	3.76E-06
	Disposal	C4	2.15E-05	4.04E-02	6.00E-08
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-2.36E-01	-2.01E+00	-1.98E-05

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

LCA Results (continued)

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

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	-1.35E-03	-7.60E-02
	Total (Consumption grid)	A1-3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-1.35E-03	-7.60E-02
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	1.06E-01
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 and 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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Waste processing	C3	0.00E+00	6.90E-01	0.00E+00	0.00E+00	0.00E+00	6.90E-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	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

LCA Results - 24 Port Unscreened Patch Panel 1U with the weight of 0.648 kg per unit

(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	9.89E+00	9.82E+00	4.23E-02	1.69E-02	6.07E-07	7.21E-02	6.57E-03
	Transport	A2	1.75E-01	1.75E-01	2.53E-05	1.12E-04	3.64E-08	4.34E-03	7.25E-06
	Manufacturing	A3	4.90E-01	6.84E-01	-1.96E-01	1.38E-03	2.16E-08	3.67E-03	1.81E-04
	Total (Consumption grid)	A1-3	1.06E+01	1.07E+01	-1.54E-01	1.84E-02	6.65E-07	8.01E-02	6.76E-03
Construction process stage	Transport	A4	1.85E-02	1.85E-02	1.58E-05	7.27E-06	4.29E-09	7.52E-05	1.19E-06
	Construction	A5	5.09E-03	3.74E-03	1.28E-03	2.27E-06	6.48E-10	2.10E-05	4.21E-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
100% 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	1.35E-03	1.35E-03	1.15E-06	5.29E-07	3.12E-10	5.46E-06	8.67E-08
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	7.60E-02	7.60E-02	4.91E-05	7.78E-06	2.09E-09	6.22E-05	1.14E-06
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	0.00E+00

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 & metals	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	1.16E-02	1.22E-01	4.95E-02	1.34E-03	1.35E+02	4.41E+00	6.10E-07
	Transport	A2	1.08E-03	1.20E-02	3.13E-03	3.41E-07	2.35E+00	7.09E-03	8.09E-09
	Manufacturing	A3	9.50E-04	8.97E-03	2.32E-03	1.51E-06	7.15E+00	4.95E-01	5.50E-08
	Total (Consumption grid)	A1-3	1.37E-02	1.43E-01	5.49E-02	1.34E-03	1.44E+02	4.91E+00	6.73E-07
Construction process stage	Transport	A4	2.26E-05	2.47E-04	7.58E-05	6.44E-08	2.80E-01	1.26E-03	1.60E-09
	Construction	A5	8.23E-06	8.09E-05	2.59E-05	2.05E-08	4.73E-02	3.41E-04	6.04E-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
100% 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	1.65E-06	1.80E-05	5.51E-06	4.68E-09	2.04E-02	9.16E-05	1.16E-10
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	1.39E-03	2.25E-04	8.06E-05	2.41E-08	1.66E-01	7.33E-03	1.18E-09
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	0.00E+00

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	1.05E+00	5.54E+02	4.55E-08	4.48E-07	5.63E+01
	Transport	A2	1.11E-02	1.56E+00	9.51E-11	1.24E-09	7.15E-01
	Manufacturing	A3	3.49E-02	1.84E+01	3.90E-10	8.27E-09	2.05E+01
	Total (Consumption grid)	A1-3	1.09E+00	5.74E+02	4.60E-08	4.57E-07	7.75E+01
Construction process stage	Transport	A4	1.44E-03	2.19E-01	7.08E-12	2.29E-10	1.92E-01
	Construction	A5	2.63E-04	1.58E-01	4.16E-12	5.46E-11	2.67E-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
100% Landfill							
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.05E-04	1.59E-02	5.14E-13	1.67E-11	1.40E-02
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	8.07E-04	3.46E-01	5.55E-12	1.47E-10	3.85E-01
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

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)

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

Parameters describing resource use, primary energy			PERE	PERM	PERT	PENRE	PENRM	PENRT
			MJ	MJ	MJ	MJ	MJ	MJ
Product stage	Raw material supply	A1	1.51E+01	0.00E+00	1.51E+01	1.24E+02	9.69E+00	1.34E+02
	Transport	A2	2.12E-02	0.00E+00	2.12E-02	2.31E+00	0.00E+00	2.31E+00
	Manufacturing	A3	2.71E+00	3.77E+00	6.48E+00	2.35E+01	5.30E-02	2.35E+01
	Total (Consumption grid)	A1-3	1.78E+01	3.77E+00	2.16E+01	1.50E+02	9.74E+00	1.60E+02
Construction process stage	Transport	A4	3.95E-03	0.00E+00	3.95E-03	2.75E-01	0.00E+00	2.75E-01
	Construction	A5	-1.52E+01	1.52E+01	3.54E-04	2.15E-02	0.00E+00	2.15E-02
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% 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	2.87E-04	0.00E+00	2.87E-04	2.00E-02	0.00E+00	2.00E-02
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	3.40E-03	0.00E+00	3.40E-03	-1.98E+01	2.00E+01	1.63E-01
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

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)

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

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	1.53E-01	0.00E+00	0.00E+00	1.13E-01
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	1.75E-04
	Manufacturing	A3	6.64E-03	0.00E+00	0.00E+00	1.21E-02
	Total (Consumption grid)	A1-3	1.60E-01	0.00E+00	0.00E+00	1.25E-01
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	3.12E-05
	Construction	A5	4.00E-02	0.00E+00	0.00E+00	8.55E-06
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% Landfill						
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	2.27E-06
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	5.72E-05	0.00E+00	0.00E+00	1.73E-04
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

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)

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

Other environmental information describing waste categories					
			HWD	NHWD	RWD
			kg	kg	kg
Product stage	Raw material supply	A1	2.45E+00	4.02E+01	3.33E-04
	Transport	A2	2.98E-03	3.19E-02	1.62E-05
	Manufacturing	A3	3.12E-01	2.36E+00	2.45E-05
	Total (Consumption grid)	A1-3	2.77E+00	4.26E+01	3.74E-04
Construction process stage	Transport	A4	3.09E-04	5.48E-03	1.89E-06
	Construction	A5	2.94E-05	5.37E-04	1.47E-07
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% Landfill					
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	2.24E-05	3.99E-04	1.38E-07
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	3.49E-04	6.54E-01	9.72E-07
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00

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

LCA Results (continued)

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

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	-7.11E-03	1.55E-03
	Total (Consumption grid)	A1-3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-7.11E-03	1.55E-03
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	7.41E-02	1.80E-02
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% 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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Waste processing	C3	0.00E+00	0.00E+00	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

LCA Results - 48 Port Keystone Patch Panel Frame 1U with the weight of 0.547 kg

(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	2.90E+00	2.88E+00	1.80E-02	2.94E-03	1.35E-07	2.24E-02	1.47E-03
	Transport	A2	1.41E-01	1.41E-01	1.38E-05	9.22E-05	2.90E-08	3.68E-03	5.61E-06
	Manufacturing	A3	6.85E-01	7.87E-01	-1.06E-01	1.88E-03	3.41E-08	4.05E-03	2.25E-04
	Total (Consumption grid)	A1-3	3.73E+00	3.81E+00	-8.77E-02	4.91E-03	1.98E-07	3.01E-02	1.70E-03
Construction process stage	Transport	A4	1.57E-02	1.56E-02	1.33E-05	6.14E-06	3.62E-09	6.35E-05	1.01E-06
	Construction	A5	4.91E-02	3.15E-02	1.65E-02	2.18E-05	4.51E-09	1.75E-04	4.11E-06
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 and 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	1.14E-03	1.14E-03	9.69E-07	4.46E-07	2.63E-10	4.61E-06	7.32E-08
	Waste processing	C3	2.99E-02	2.99E-02	1.06E-05	2.99E-06	6.39E-09	3.11E-04	9.27E-07
	Disposal	C4	1.58E-03	1.58E-03	5.57E-07	1.57E-07	3.37E-10	1.64E-05	4.89E-08
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-9.54E-01	-9.55E-01	2.18E-03	-6.03E-04	-4.35E-08	-3.67E-03	-4.22E-04

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 & metals	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	3.10E-03	3.40E-02	1.07E-02	2.31E-04	3.22E+01	1.05E+00	2.37E-07
	Transport	A2	9.13E-04	1.01E-02	2.64E-03	2.60E-07	1.88E+00	5.44E-03	6.13E-09
	Manufacturing	A3	1.29E-03	1.04E-02	2.52E-03	1.87E-06	8.70E+00	2.08E-01	6.00E-08
	Total (Consumption grid)	A1-3	5.30E-03	5.45E-02	1.59E-02	2.33E-04	4.27E+01	1.26E+00	3.03E-07
Construction process stage	Transport	A4	1.91E-05	2.09E-04	6.40E-05	5.44E-08	2.36E-01	1.06E-03	1.35E-09
	Construction	A5	7.15E-05	6.63E-04	2.26E-04	2.07E-07	3.53E-01	3.01E-03	5.98E-09
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 and 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	1.39E-06	1.52E-05	4.65E-06	3.95E-09	1.72E-02	7.73E-05	9.81E-11
	Waste processing	C3	1.38E-04	1.51E-03	4.15E-04	1.54E-08	4.10E-01	9.48E-04	8.33E-09
	Disposal	C4	7.26E-06	7.95E-05	2.19E-05	8.11E-10	2.16E-02	5.00E-05	4.39E-10
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-8.79E-04	-9.23E-03	-4.54E-03	-1.30E-06	-9.28E+00	-2.29E-01	-7.27E-08

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	2.02E-01	1.39E+02	6.28E-08	1.55E-07	1.73E+01
	Transport	A2	8.77E-03	1.23E+00	7.79E-11	9.45E-10	5.16E-01
	Manufacturing	A3	3.93E-02	1.83E+01	2.59E-10	8.40E-09	1.35E+01
	Total (Consumption grid)	A1-3	2.50E-01	1.58E+02	6.31E-08	1.64E-07	3.13E+01
Construction process stage	Transport	A4	1.22E-03	1.85E-01	5.98E-12	1.93E-10	1.62E-01
	Construction	A5	1.99E-03	1.85E+00	4.53E-11	4.71E-10	1.26E-01
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 and 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	8.83E-05	1.34E-02	4.34E-13	1.41E-11	1.18E-02
	Waste processing	C3	1.85E-03	2.40E-01	9.29E-12	1.74E-10	5.23E-02
	Disposal	C4	9.75E-05	1.27E-02	4.90E-13	9.18E-12	2.75E-03
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-2.35E-02	-2.67E+01	-5.60E-09	-1.98E-08	-2.56E+00

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)

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

Parameters describing resource use, primary energy			PERE	PERM	PERT	PENRE	PENRM	PENRT
			MJ	MJ	MJ	MJ	MJ	MJ
Product stage	Raw material supply	A1	7.84E+00	0.00E+00	7.84E+00	3.01E+01	0.00E+00	3.01E+01
	Transport	A2	1.62E-02	0.00E+00	1.62E-02	1.84E+00	0.00E+00	1.84E+00
	Manufacturing	A3	1.01E+00	3.73E+00	4.74E+00	2.42E+01	3.20E-01	2.45E+01
	Total (Consumption grid)	A1-3	8.87E+00	3.73E+00	1.26E+01	5.62E+01	3.20E-01	5.65E+01
Construction process stage	Transport	A4	3.33E-03	0.00E+00	3.33E-03	2.32E-01	0.00E+00	2.32E-01
	Construction	A5	-7.46E+00	7.46E+00	0.00E+00	2.34E-02	0.00E+00	2.34E-02
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 and 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	2.42E-04	0.00E+00	2.42E-04	1.69E-02	0.00E+00	1.69E-02
	Waste processing	C3	2.30E-03	0.00E+00	2.30E-03	4.02E-01	0.00E+00	4.02E-01
	Disposal	C4	1.21E-04	0.00E+00	1.21E-04	2.12E-02	0.00E+00	2.12E-02
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-2.94E-01	0.00E+00	-2.94E-01	-9.15E+00	0.00E+00	-9.15E+00

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)

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

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	3.01E-01	0.00E+00	0.00E+00	3.07E-02
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	1.35E-04
	Manufacturing	A3	4.38E-04	0.00E+00	0.00E+00	5.40E-03
	Total (Consumption grid)	A1-3	3.01E-01	0.00E+00	0.00E+00	3.63E-02
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	2.64E-05
	Construction	A5	5.18E-01	0.00E+00	0.00E+00	7.56E-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
95% Recycling and 5% Landfill						
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	1.92E-06
	Waste processing	C3	1.57E-04	0.00E+00	0.00E+00	2.34E-05
	Disposal	C4	8.30E-06	0.00E+00	0.00E+00	1.23E-06
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	-5.48E-03

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)

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

Other environmental information describing waste categories					
			HWD	NHWD	RWD
			kg	kg	kg
Product stage	Raw material supply	A1	2.66E+00	5.93E+00	7.68E-05
	Transport	A2	2.40E-03	2.46E-02	1.29E-05
	Manufacturing	A3	3.14E-01	2.34E+00	2.33E-05
	Total (Consumption grid)	A1-3	2.98E+00	8.29E+00	1.13E-04
Construction process stage	Transport	A4	2.61E-04	4.63E-03	1.60E-06
	Construction	A5	4.89E-05	7.36E-04	1.53E-07
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
95% Recycling and 5% Landfill					
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.89E-05	3.36E-04	1.16E-07
	Waste processing	C3	5.40E-04	3.78E-03	2.83E-06
	Disposal	C4	2.85E-05	1.99E-04	1.49E-07
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.78E-01	-1.52E+00	-1.49E-05

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

LCA Results (continued)

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

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	-1.35E-03	-1.26E-01
	Total (Consumption grid)	A1-3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-1.35E-03	-1.26E-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	2.33E-01
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 and 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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Waste processing	C3	0.00E+00	6.90E-01	0.00E+00	0.00E+00	0.00E+00	6.90E-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	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

LCA Results – Cable Management Bar with the weight of 0.600 per unit

(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	3.17E+00	3.15E+00	2.02E-02	3.13E-03	1.47E-07	1.79E-02	1.08E-03
	Transport	A2	2.06E-01	2.06E-01	6.77E-05	1.24E-04	4.35E-08	4.32E-03	1.00E-05
	Manufacturing	A3	2.58E+00	2.66E+00	-8.10E-02	1.48E-03	4.26E-08	1.35E-02	5.24E-04
	Total (Consumption grid)	A1-3	5.96E+00	6.01E+00	-6.07E-02	4.73E-03	2.33E-07	3.57E-02	1.62E-03
Construction process stage	Transport	A4	1.72E-02	1.72E-02	1.46E-05	6.73E-06	3.97E-09	6.96E-05	1.10E-06
	Construction	A5	3.12E-02	2.01E-02	1.05E-02	1.39E-05	2.87E-09	1.11E-04	2.62E-06
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 and 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	1.25E-03	1.25E-03	1.06E-06	4.89E-07	2.88E-10	5.06E-06	8.03E-08
	Waste processing	C3	3.28E-02	3.28E-02	1.16E-05	3.27E-06	7.01E-09	3.41E-04	1.02E-06
	Disposal	C4	1.58E-04	1.58E-04	1.57E-07	1.49E-07	6.39E-11	1.49E-06	1.45E-08
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	- 1.05E+00	- 1.05E+00	2.39E-03	-6.62E-04	-4.77E-08	-4.02E-03	-4.62E-04

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 & metals	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	3.13E-03	3.34E-02	1.07E-02	8.39E-05	3.51E+01	1.07E+00	2.50E-07
	Transport	A2	1.08E-03	1.20E-02	3.16E-03	5.47E-07	2.83E+00	9.69E-03	1.12E-08
	Manufacturing	A3	3.19E-03	3.16E-02	8.07E-03	3.05E-06	2.49E+01	2.71E-01	1.92E-07
	Total (Consumption grid)	A1-3	7.40E-03	7.70E-02	2.19E-02	8.75E-05	6.28E+01	1.35E+00	4.54E-07
Construction process stage	Transport	A4	2.10E-05	2.29E-04	7.02E-05	5.96E-08	2.59E-01	1.17E-03	1.48E-09
	Construction	A5	4.55E-05	4.22E-04	1.44E-04	1.32E-07	2.25E-01	1.91E-03	3.81E-09
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 and 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	1.52E-06	1.67E-05	5.10E-06	4.33E-09	1.88E-02	8.48E-05	1.08E-10
	Waste processing	C3	1.51E-04	1.65E-03	4.55E-04	1.69E-08	4.50E-01	1.04E-03	9.14E-09
	Disposal	C4	5.16E-07	5.65E-06	1.65E-06	3.60E-10	4.41E-03	2.02E-04	2.99E-11
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-9.64E-04	-1.01E-02	-4.98E-03	-1.43E-06	-1.02E+01	-2.51E-01	-7.97E-08

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	2.17E-01	9.78E+01	6.92E-08	7.73E-08	1.71E+01
	Transport	A2	1.37E-02	1.97E+00	1.15E-10	1.71E-09	1.06E+00
	Manufacturing	A3	6.07E-02	6.46E+01	6.07E-10	2.60E-08	1.28E+01
	Total (Consumption grid)	A1-3	2.92E-01	1.64E+02	6.99E-08	1.05E-07	3.10E+01
Construction process stage	Transport	A4	1.33E-03	2.02E-01	6.55E-12	2.12E-10	1.78E-01
	Construction	A5	1.27E-03	1.18E+00	2.88E-11	3.00E-10	8.04E-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 and 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	9.69E-05	1.47E-02	4.76E-13	1.54E-11	1.29E-02
	Waste processing	C3	2.03E-03	2.63E-01	1.02E-11	1.91E-10	5.73E-02
	Disposal	C4	1.96E-05	2.79E-03	7.07E-14	1.83E-12	9.26E-03
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-2.58E-02	-2.93E+01	-6.14E-09	-2.18E-08	-2.81E+00

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)

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

Parameters describing resource use, primary energy								
			PERE	PERM	PERT	PENRE	PENRM	PENRT
			MJ	MJ	MJ	MJ	MJ	MJ
Product stage	Raw material supply	A1	7.70E+00	0.00E+00	7.70E+00	3.27E+01	0.00E+00	3.27E+01
	Transport	A2	2.99E-02	0.00E+00	2.99E-02	2.77E+00	0.00E+00	2.77E+00
	Manufacturing	A3	8.86E+00	2.55E+00	1.14E+01	1.01E+02	2.07E-02	1.01E+02
	Total (Consumption grid)	A1-3	1.66E+01	2.55E+00	1.91E+01	1.36E+02	2.07E-02	1.36E+02
Construction process stage	Transport	A4	3.65E-03	0.00E+00	3.65E-03	2.55E-01	0.00E+00	2.55E-01
	Construction	A5	-4.66E+00	4.66E+00	0.00E+00	1.49E-02	0.00E+00	1.49E-02
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 and 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	2.66E-04	0.00E+00	2.66E-04	1.85E-02	0.00E+00	1.85E-02
	Waste processing	C3	2.52E-03	0.00E+00	2.52E-03	4.41E-01	0.00E+00	4.41E-01
	Disposal	C4	3.76E-05	0.00E+00	3.76E-05	4.33E-03	0.00E+00	4.33E-03
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-3.22E-01	0.00E+00	-3.22E-01	-1.00E+01	0.00E+00	-1.00E+01

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)

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

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	3.38E-01	0.00E+00	0.00E+00	3.18E-02
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	2.40E-04
	Manufacturing	A3	4.98E-05	0.00E+00	0.00E+00	8.50E-03
	Total (Consumption grid)	A1-3	3.38E-01	0.00E+00	0.00E+00	4.05E-02
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	2.89E-05
	Construction	A5	3.30E-01	0.00E+00	0.00E+00	4.82E-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
95% Recycling and 5% Landfill						
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	2.10E-06
	Waste processing	C3	1.73E-04	0.00E+00	0.00E+00	2.57E-05
	Disposal	C4	9.09E-07	0.00E+00	0.00E+00	4.73E-06
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	-6.01E-03

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)

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

Other environmental information describing waste categories					
			HWD	NHWD	RWD
			kg	kg	kg
Product stage	Raw material supply	A1	2.96E+00	4.99E+00	7.88E-05
	Transport	A2	3.60E-03	4.44E-02	7.31E-01
	Manufacturing	A3	1.44E+00	9.44E+00	6.44E-05
	Total (Consumption grid)	A1-3	4.40E+00	1.45E+01	7.31E-01
Construction process stage	Transport	A4	2.86E-04	5.08E-03	1.75E-06
	Construction	A5	3.12E-05	4.69E-04	9.77E-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
95% Recycling and 5% Landfill					
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	2.08E-05	3.69E-04	1.28E-07
	Waste processing	C3	5.93E-04	4.15E-03	3.11E-06
	Disposal	C4	4.59E-06	6.48E-05	2.89E-08
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.95E-01	-1.66E+00	-1.64E-05

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

LCA Results (continued)

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

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	-9.00E-02
	Total (Consumption grid)	A1-3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-9.00E-02
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	1.48E-01
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 and 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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Waste processing	C3	0.00E+00	6.90E-01	0.00E+00	0.00E+00	0.00E+00	6.90E-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	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 Patch panel 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 Patch panel is generally carried out by manual labour, no powered equipment or consumable items are used in this process, so no waste is generated during the installation			
	Packaging waste during the installation (kg)	24 Port Keystone Patch Panel (100-026)	48 Screened Port Keystone Panel Chrome (100-042)	24 Port Unscreened Patch Panel (100-452)
	Cardboard	0.235	0.518	0.92
	Paper	0.007	0.009	0.04
	Labels	0.001	0.001	0.00
	Wood Pallet	0.00	0.00	0.15
C1- Deconstruction	Keystone Patch panels are removed manually from the building sites. Therefore, no energy is associated while removing the panels from the building.			
C2- Transportation	Recovered products are taken back by the registered broker to landfill.		km	12.5
C3- Preprocessing	The end-of-life stage starts when the product is replaced, dismantled, and does not provide any further function. The Keystone panels made up of steel and other mixes; therefore, at the end of life, 95% of the steel is assumed to be recycled, and 5% of the other compositions are assumed to be unrecoverable, so they are sent to landfills.			
	The separation processes have not been included in Module C3 because they are assumed to be very small and effectively negligible.			
	24 Port Keystone Patch Panel	Stainless steel – Recycling	0.69	kg
	48 Screened Port Keystone Panel	Stainless steel – Recycling	0.52	kg
	Cable Management Bar	Stainless steel - Recycling	0.57	kg
C4- Disposal	The recovered panel is sent recycling while a small portion is assumed to be unrecoverable which is considered to send to landfill			
	Unrecoverable panel waste from C3 during the processing of 24 Port Keystone Patch panel		0.04	kg
	Unrecoverable panel waste from C3 during the processing of 48 Screened Port Keystone Panel		0.03	kg
	Unrecoverable panel waste from C3 during the processing of Cable Management bar		0.03	kg

Scenarios and additional technical information

Scenario	Parameter	Units	Results
	24 Port Unscreened Patch Panel is made up of steel and other plastic components, therefore at the EoL it is not economical to recycle plastic data modules therefore they are taken to landfill via a WEEE registered commercial waste disposal company. Therefore, without any pre-processing on the recovered patch panel's will be sent to landfilling	0.648	kg
Module D	It is assumed that 95% of the patch panels used in the construction building is recovered for recycling and remaining 5% is sent to landfill. The calculation assumes that there is no yield-loss during the recycling processes.		
	Stainless steel	95%	Recycling

Interpretation results

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

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.

Technical Standards:

24 Port Unscreened patch panel	100-450	100-451	100-452
ISO/IEC 11801-1:2017 Information technology - Generic cabling for customer premises: Part 1 General Requirements	✓	✓	✓
IEC 61156-5:2009+AMD1:2012 CSV Multicore and symmetrical pair/quad cables for digital communications - Part 5: Symmetrical pair/quad cables with transmission characteristics up to 1 000 MHz - Horizontal floor wiring - Sectional specification	✓	✓	✓
ISO 50173-1:2018 Information technology. Generic cabling systems - General requirements	✓	✓	✓
EN 50173-2:2007 + A1:2010 Information technology. Generic cabling systems - Office premises	✓	✓	✓
ANSI/TIA 568-2.D Balanced Twisted-Pair Telecommunications Cabling and Components Standards	✓	✓	✓
ANSI/EIA-310-E Electronic Industries Association standard for horizontal spacing, vertical hole spacing, rack opening and front panel width	✓	✓	✓
RoHS Restriction of Hazardous Substances - Compliant	✓	✓	✓
WFD Compliant to Waste Framework Directive	✓	✓	✓
SCIP Compliant - Does Not Contain Substances of Concern in Products	✓	✓	✓

Keystone Patch panels and Cable management Bar	100-026	100-028	100-041	100-042	100-050	100-023	100-024	100-040	100-582
EIA-310-D Cabinets, Racks, Panels, and Associated Equipment			✓	✓	✓	✓	✓		
RoHS Compliant to the Restriction of Hazardous Substances	✓	✓	✓	✓	✓	✓	✓	✓	✓
UL-94-V-0 Burning stops within 10 seconds after two applications of ten seconds each of a flame to a test bar. NO flaming drips are allowed.	✓				✓				
WFD Compliant to Waste Framework Directive	✓	✓	✓	✓	✓	✓	✓	✓	✓
SCIP Compliant - Does Not Contain Substances of Concern in Products	✓	✓	✓	✓	✓	✓	✓	✓	✓