Statement of Verification

BREG EN EPD No.: 000630 Issue 01

This is to verify that the

Environmental Product Declaration

provided by:

Axis Entrance Systems Limited

BRE Global Verified EPD

is in accordance with the requirements of:

EN 15804:2012+A2:2019

and

BRE Global Scheme Document SD207

This declaration is for:

1 unit Bi-Parting B100 (300 kg) and 1 unit Bi-Parting B01 (252 kg)

Company Address

Axis Entrance Systems Limited
Unit 7a
Queens Park Industrial Estate
Studland Road
Northampton
NN2 6NA

Signed for BRE Global Ltd	Emma Baker Operator	19 September 2024 Date of this Issue
19 September 2024 Date of First Issue		18 September 2029 Expiry Date

Environmental Product Declaration

EPD Number: 000630

General Information

EPD Programme Operator	Applicable Product Category Rules
BRE Global Watford, Herts WD25 9XX United Kingdom	BRE Environmental Profiles 2023 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**
Axis Entrance Systems Limited	Flavie Lowres/LINA A2
Declared/Functional Unit	**Applicability/Coverage**
This EPD covers 2 products: 1 unit Bi-Parting B100 (300 kg) and 1 unit Bi-Parting B01 (252 kg)	Product specific.
EPD Type	**Background database**
Cradle to Gate with Module C and D	Ecoinvent 3.8

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: Roger Connick
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)

Axis Entrance Systems Limited
Unit 7a
Queens Park Industrial Estate
Studland Road
Northampton
NN2 6NA

Construction Product:

Product Description

Flo-Motion® door sets are manual aluminium framed sliding internal glazed door system primarily used within the Healthcare sector. They feature recirculating ball guides on a special low resistance linear track with a damper mechanism. The door sets are fabricated using extruded aluminium profiles and include a 'goalpost' frame.

The aluminium door set to be formed from non-thermal aluminium extruded box section and to include a frame consisting of two jambs (100mm x 45mm profiles) and a 125mm x 100mm integral transom bar with a 7mm reinforced face. The frame to fit within the structural opening (see dimensions below) with the pair of doors sliding over glazed screens (B100) or glazed screens and walls (B01). The fixed glazed screens offer additional support and are secured within the frame structure by two concealed aluminium channels.
The glass panels are made of laminated glass. The doors modelled in this EPD assume that there is no blind fitted.

The door schedule is provided below:

Door Type	Width	Height	Total Weight/Door
Bi-Parting B100	3600 mm	2400 mm	300 kg
Bi-Parting B01	3400 mm	2400 mm	252 kg

Ref: axisflomotionbrochure_0.pdf (axisentrances.com) – the weight provided above are for a mid-size door for each range.

Bi-Parting B100

Bi-Parting B01

Technical Information

A typical Flo-Motion® entrance door set (representative of the whole Flo-Motion® door set range) has been independently tested to BS- EN1527:2019 - Digit 9 - Durability Grade 6 for 1,000,000 cycles.

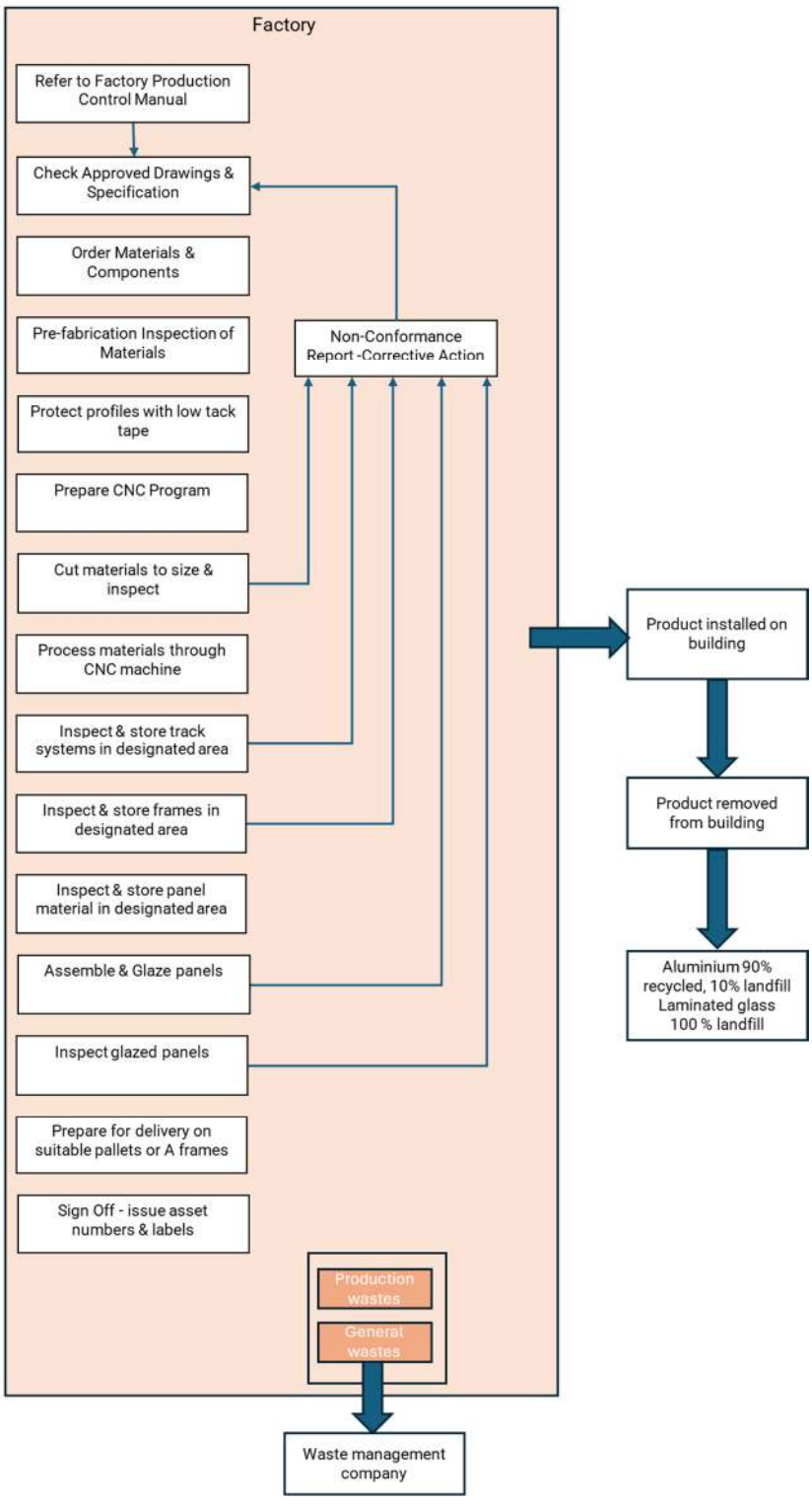
Main Product Contents

Material/Chemical Input	%
Aluminium extruded	34-41%
Glass	52-60%
Stainless steel	<5%
Handles	<2%
Plastic	<1%

Manufacturing Process

All components are brought to site. Most components are cut to size on site, apart from the glazed panels which are brought to site to the right size. All components are assembled on site. The door units are packaged and prepared for delivery.

Process flow diagram



End of Life

C1: All components are disassembled using a very small amount of energy and assumed to be zero in this EPD. this assumption is based on actual practice.

C2: all elements of the system can be disassembled and recycled through commonly available waste management processing plant estimated to be 50 km from a typical site

C3: no processing is required

C4: It was assumed the following recycling rate, based on and general practice:
-aluminium and stainless steel are widely recycled and based on BRE's PCR for EN15804+A2:2019 (BRE PN514 EN15804+A2 PCR V3.1.pdf (greenbooklive.com)), it was assumed that 95% was recycled and 5% sent to landfill
-laminated glass is typically hard to recycled, so it was assumed that it was 100% sent to landfill

Life Cycle Assessment Calculation Rules

Declared / Functional unit description

1 unit Bi-Parting B100 (300 kg) and 1 unit Bi-Parting B01 (252 kg)

System boundary

In accordance with the modular approach as defined in EN15804:2012+A2:2019, this cradle-to-gate EPD includes the processes covered in the manufacturing site A1 to A3. It also includes C1 to C4 and module D.

Data sources, quality and allocation

Specific primary data derived from Axis Entrance Systems Ltd have been modelled using LINA v2 software for the period 1st April 2022 to 31st March 2023. In accordance with the requirements of EN15804, the most current available data has been used. Secondary data has been obtained for all remaining upstream and downstream processes that are beyond the control of the manufacturer 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+A2:2019. The 1 unit Bi-Parting B100 and 1 unit Bi-Parting B01 are not the only products manufactured at the Axis Entrance Systems Ltd factory. An allocation by mass of the data has been carried out for energy, water and office wastes as follow:

Product description as per door schedule above	% allocation
Bi-parting B100	7%
Bi-Parting B01	4%

The raw materials quantities were uplifted to account for the difference in the mass balance results. Production wastes has been allocated specifically for each product based on factory data.

Quality Level Geographical
Datasets representative of UK electricity have been selected from the ecoinvent LCI. The quality level of time and technological representativeness is good as the background LCI datasets are based on ecoinvent v3.8 which was compiled in 2021. Therefore, the most appropriate LCA data have been used.

The GWP of the dataset used for this EPD is: 1 kWh UK electricity = 2E-01 kgCO2eq (Electricity GB (kWh) market for electricity, medium voltage)

Cut-off criteria

This study includes the manufacturing of 1 unit Bi-Parting B100 and 1 unit Bi-Parting B01 and the end of life scenarios of these products (modules C and D). The manufacturing process is mainly an assembly process, so there are no emissions to air, water and soil.

LCA Results – 1 unit Bi-Parting B100 (300 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	2.01E+03	2.00E+03	-7.31E-01	4.88E+00	1.03E-04	1.36E+01	6.50E-01
	Transport	A2	5.68E+00	5.66E+00	7.61E-03	2.70E-03	1.27E-06	2.60E-02	5.30E-04
	Manufacturing	A3	1.30E+02	1.27E+02	2.17E+00	7.86E-02	1.06E-05	2.09E-01	1.26E-02
	Total (Consumption grid)	A1-3	2.15E+03	2.13E+03	1.45E+00	4.96E+00	1.15E-04	1.38E+01	6.63E-01
Scenario: metals 95% recycled and laminated glass 0% recycled									
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	2.50E+00	2.49E+00	2.13E-03	9.80E-04	5.77E-07	1.01E-02	1.61E-04
	Waste processing	C3	6.39E-01	6.39E-01	2.26E-04	6.38E-05	1.37E-07	6.64E-03	1.98E-05
	Disposal	C4	1.34E+01	1.34E+01	1.79E-02	2.37E-03	6.75E-07	2.02E-02	6.75E-04
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-5.93E+02	-5.93E+02	1.74E+00	-7.80E-01	-1.76E-05	-3.77E+00	-1.78E-01

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) – 1 unit Bi-Parting B100 (300 kg)

(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	2.26E+00	2.36E+01	6.71E+00	1.30E-02	2.07E+04	5.85E+02	1.62E-04
	Transport	A2	7.83E-03	8.58E-02	2.70E-02	4.23E-05	8.51E+01	4.66E-01	5.32E-07
	Manufacturing	A3	9.34E-02	7.01E-01	1.90E-01	4.73E-04	2.87E+03	1.36E+01	1.65E-06
	Total (Consumption grid)	A1-A3	2.36E+00	2.44E+01	6.93E+00	1.35E-02	2.37E+04	5.99E+02	1.64E-04
Scenario: metals 95% recycled and laminated glass 0% recycled									
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	3.05E-03	3.33E-02	1.02E-02	8.68E-06	3.77E+01	1.70E-01	2.15E-07
	Waste processing	C3	2.94E-03	3.22E-02	8.86E-03	3.29E-07	8.76E+00	2.03E-02	1.78E-07
	Disposal	C4	7.31E-03	7.67E-02	2.18E-02	8.47E-06	4.97E+01	2.33E+00	3.61E-07
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-6.32E-01	-6.61E+00	-1.92E+00	-5.11E-04	-5.35E+03	-7.00E+01	-4.88E-05

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) – 1 unit Bi-Parting B100 (300 kg)

(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	9.47E+01	6.35E+04	3.65E-06	4.58E-05	5.25E+03
	Transport	A2	4.72E-01	7.30E+01	4.60E-09	8.35E-08	5.24E+01
	Manufacturing	A3	6.28E+01	1.47E+03	3.70E-08	7.91E-07	7.30E+02
	Total (Consumption grid)	A1-3	1.58E+02	6.50E+04	3.69E-06	4.67E-05	6.03E+03
Scenario: metals 95% recycled and laminated glass 0% recycled							
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.94E-01	2.94E+01	9.53E-10	3.09E-08	2.59E+01
	Waste processing	C3	3.95E-02	5.13E+00	1.98E-10	3.72E-09	1.12E+00
	Disposal	C4	2.45E-01	3.28E+03	3.80E-09	4.73E-08	1.11E+02
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-7.07E+00	-1.53E+04	-6.56E-07	-1.30E-05	-1.11E+03

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) – 1 unit Bi-Parting B100 (300 kg)

Parameters describing resource use, primary energy								
			PERE	PERM	PERT	PENRE	PENRM	PENRT
			MJ	MJ	MJ	MJ	MJ	MJ
Product stage	Raw material supply	A1	2.24E+03	0.00E+00	2.24E+03	2.04E+04	1.51E+02	2.06E+04
	Transport	A2	1.59E+00	0.00E+00	1.59E+00	8.36E+01	0.00E+00	8.36E+01
	Manufacturing	A3	4.40E+02	1.01E+01	4.50E+02	3.46E+03	5.05E+01	3.51E+03
	Total (Consumption grid)	A1-3	2.68E+03	1.01E+01	2.69E+03	2.39E+04	2.02E+02	2.42E+04
Scenario: metals 95% recycled and laminated glass 0% recycled								
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	5.31E-01	0.00E+00	5.31E-01	3.70E+01	0.00E+00	3.70E+01
	Waste processing	C3	4.91E-02	0.00E+00	4.91E-02	8.59E+00	0.00E+00	8.59E+00
	Disposal	C4	9.47E-01	0.00E+00	9.47E-01	4.67E+01	0.00E+00	4.67E+01
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-3.24E+02	0.00E+00	-3.24E+02	-5.31E+03	0.00E+00	-5.31E+03

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) – 1 unit Bi-Parting B100 (300 kg)

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	1.47E+01	0.00E+00	0.00E+00	1.49E+01
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	1.16E-02
	Manufacturing	A3	2.42E-01	1.62E-03	0.00E+00	6.27E-01
	Total (Consumption grid)	A1-3	1.49E+01	1.62E-03	0.00E+00	1.55E+01
Scenario: metals 95% recycled and laminated glass 0% recycled						
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	4.20E-03
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	5.00E-04
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	5.49E-02
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	-1.88E+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) – 1 unit Bi-Parting B100 (300 kg)

Other environmental information describing waste categories					
			HWD	NHWD	RWD
			kg	kg	kg
Product stage	Raw material supply	A1	4.03E+02	2.75E+03	4.46E-02
	Transport	A2	1.23E-01	2.35E+00	1.88E+02
	Manufacturing	A3	2.90E+00	5.27E+01	1.87E-02
	Total (Consumption grid)	A1-3	4.06E+02	2.81E+03	1.88E+02
Scenario: metals 95% recycled and laminated glass 0% recycled					
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	4.16E-02	7.39E-01	2.55E-04
	Waste processing	C3	1.15E-02	8.08E-02	6.05E-05
	Disposal	C4	1.66E-01	1.87E+02	2.78E-04
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.17E+02	-7.41E+02	-6.16E-03

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

LCA Results (continued) – 1 unit Bi-Parting B100 (300 kg)

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	2.77E-02	1.41E-05	1.34E+00	0.00E+00	0.00E+00
	Total (Consumption grid)	A1-3	0.00E+00	2.77E-02	1.41E-05	1.34E+00	0.00E+00	0.00E+00
Scenario: metals 95% recycled and laminated glass 0% recycled								
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	1.11E+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

LCA Results – 1 unit Bi-Parting B01 (252 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	1.92E+03	1.92E+03	-1.36E+00	4.77E+00	9.13E-05	1.29E+01	6.26E-01
	Transport	A2	5.13E+00	5.12E+00	7.16E-03	2.48E-03	1.14E-06	2.38E-02	4.95E-04
	Manufacturing	A3	1.09E+02	1.07E+02	1.83E+00	6.63E-02	8.95E-06	1.78E-01	1.07E-02
	Total (Consumption grid)	A1-3	2.03E+03	2.03E+03	4.77E-01	4.84E+00	1.01E-04	1.31E+01	6.37E-01
Scenario: metals 95% recycled and laminated glass 0% recycled									
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	2.10E+00	2.10E+00	1.79E-03	8.23E-04	4.85E-07	8.51E-03	1.35E-04
	Waste processing	C3	6.39E-01	6.39E-01	2.26E-04	6.38E-05	1.37E-07	6.64E-03	1.98E-05
	Disposal	C4	1.29E+01	1.29E+01	1.40E-02	1.86E-03	5.22E-07	1.60E-02	5.28E-04
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-5.93E+02	-5.93E+02	1.74E+00	-7.80E-01	-1.76E-05	-3.77E+00	-1.78E-01

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) – 1 unit Bi-Parting B01 (252 kg)

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	2.14E+00	2.22E+01	6.36E+00	1.21E-02	1.96E+04	5.54E+02	1.55E-04
	Transport	A2	7.17E-03	7.86E-02	2.48E-02	4.05E-05	7.69E+01	4.29E-01	4.86E-07
	Manufacturing	A3	7.87E-02	5.92E-01	1.63E-01	4.00E-04	2.42E+03	1.18E+01	1.40E-06
	Total (Consumption grid)	A1-3	2.23E+00	2.29E+01	6.55E+00	1.25E-02	2.21E+04	5.66E+02	1.57E-04
Scenario: metals 95% recycled and laminated glass 0% recycled									
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	2.56E-03	2.80E-02	8.58E-03	7.29E-06	3.17E+01	1.43E-01	1.81E-07
	Waste processing	C3	2.94E-03	3.22E-02	8.86E-03	3.29E-07	8.76E+00	2.03E-02	1.78E-07
	Disposal	C4	5.85E-03	6.08E-02	1.72E-02	6.83E-06	3.78E+01	1.80E+00	2.75E-07
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-6.32E-01	-6.61E+00	-1.92E+00	-5.11E-04	-5.35E+03	-7.00E+01	-4.88E-05

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) – 1 unit Bi-Parting B01 (252 kg)

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	8.60E+01	5.83E+04	3.58E-06	4.46E-05	4.84E+03
	Transport	A2	4.30E-01	6.66E+01	4.40E-09	7.68E-08	4.68E+01
	Manufacturing	A3	5.28E+01	1.23E+03	3.12E-08	6.67E-07	6.14E+02
	Total (Consumption grid)	A1-3	1.39E+02	5.96E+04	3.62E-06	4.53E-05	5.50E+03
Scenario: metals 95% recycled and laminated glass 0% recycled							
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.63E-01	2.47E+01	8.01E-10	2.59E-08	2.18E+01
	Waste processing	C3	3.95E-02	5.13E+00	1.98E-10	3.72E-09	1.12E+00
	Disposal	C4	1.89E-01	3.28E+03	3.45E-09	4.17E-08	8.27E+01
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-7.07E+00	-1.53E+04	-6.56E-07	-1.30E-05	-1.11E+03

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) – 1 unit Bi-Parting B01 (252 kg)

Parameters describing resource use, primary energy								
			PERE	PERM	PERT	PENRE	PENRM	PENRT
			MJ	MJ	MJ	MJ	MJ	MJ
Product stage	Raw material supply	A1	2.15E+03	0.00E+00	2.15E+03	1.93E+04	1.51E+02	1.95E+04
	Transport	A2	1.47E+00	0.00E+00	1.47E+00	7.56E+01	0.00E+00	7.56E+01
	Manufacturing	A3	3.70E+02	8.51E+00	3.79E+02	2.91E+03	4.92E+01	2.96E+03
	Total (Consumption grid)	A1-3	2.52E+03	8.51E+00	2.53E+03	2.23E+04	1.86E+02	2.25E+04
Scenario: metals 95% recycled and laminated glass 0% recycled								
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	4.46E-01	0.00E+00	4.46E-01	3.11E+01	0.00E+00	3.11E+01
	Waste processing	C3	4.91E-02	0.00E+00	4.91E-02	8.59E+00	0.00E+00	8.59E+00
	Disposal	C4	7.45E-01	0.00E+00	7.45E-01	3.50E+01	0.00E+00	3.50E+01
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-3.24E+02	0.00E+00	-3.24E+02	-5.31E+03	0.00E+00	-5.31E+03

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) – 1 unit Bi-Parting B01 (252 kg)

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	1.48E+01	0.00E+00	0.00E+00	1.41E+01
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	1.07E-02
	Manufacturing	A3	2.04E-01	1.36E-03	0.00E+00	5.35E-01
	Total (Consumption grid)	A1-3	1.50E+01	1.36E-03	0.00E+00	1.46E+01
Scenario: metals 95% recycled and laminated glass 0% recycled						
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	3.53E-03
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	5.00E-04
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	4.24E-02
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	-1.88E+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) – 1 unit Bi-Parting B01 (252 kg)

Other environmental information describing waste categories					
			HWD	NHWD	RWD
			kg	kg	kg
Product stage	Raw material supply	A1	3.96E+02	2.65E+03	4.05E-02
	Transport	A2	1.14E-01	2.19E+00	1.88E+02
	Manufacturing	A3	2.45E+00	4.48E+01	1.57E-02
	Total (Consumption grid)	A1-3	3.99E+02	2.70E+03	1.88E+02
Scenario: metals 95% recycled and laminated glass 0% recycled					
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	3.49E-02	6.20E-01	2.14E-04
	Waste processing	C3	1.15E-02	8.08E-02	6.05E-05
	Disposal	C4	1.42E-01	1.39E+02	2.07E-04
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.17E+02	-7.41E+02	-6.16E-03

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

LCA Results (continued) – 1 unit Bi-Parting B01 (252 kg)

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	2.32E-02	1.19E-05	1.13E+00	0.00E+00	0.00E+00
	Total (Consumption grid)	A1-3	0.00E+00	2.32E-02	1.19E-05	1.13E+00	0.00E+00	0.00E+00
Scenario: metals 95% recycled and laminated glass 0% recycled								
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	1.11E+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

<table>
<tr><th colspan="4">Scenarios and additional technical information</th></tr>
<tr><td>Scenario</td><td>Parameter</td><td>Units</td><td>Results</td></tr>
<tr><td>C1 to C4
End of life,</td><td colspan="3"></td></tr>
<tr><td>C1 - Deconstruction</td><td>All components are disassembled using a very small amount of energy and assumed to be zero in this EPD. this assumption is based on actual practice</td><td>N/A</td><td>0</td></tr>
<tr><td>C2 - Transport from site to pre-processing facility or landfill</td><td>All elements of the system can be disassembled and recycled through commonly available waste management processing plant estimated to be 50 km from a typical site</td><td>km</td><td>50</td></tr>
<tr><td>C3 - Pre-processing of uninstalled product (if relevant)</td><td>According to BRE’s PCR for EN15804:2019+A2,95% metals can be recycled

Recycling quantities in kg
<table>
<tr><td></td><td>Aluminium</td><td>Steel</td></tr>
<tr><td>B100 bi-parting</td><td>98.5</td><td>11.1</td></tr>
<tr><td>B01 bi-parting</td><td>98.5</td><td>11.1</td></tr>
</table></td><td>%</td><td>95</td></tr>
<tr><td rowspan="3">C4 – Disposal</td><td>According to BRE’s PCR for EN15804:2019+A2, 5% of metals are landfilled</td><td>%</td><td>5</td></tr>
<tr><td>Laminated glass is typically hard to recycled, so it was assumed that it was 100% sent to landfill</td><td>%</td><td>100</td></tr>
<tr><td>Landfill quantities in kg
<table>
<tr><td></td><td>Aluminium</td><td>Steel</td><td>Glass</td><td>Plastic</td></tr>
<tr><td>B100 bi-parting</td><td>5.2</td><td>0.58</td><td>180</td><td>4.82</td></tr>
<tr><td>B01 bi-parting</td><td>5.2</td><td>0.58</td><td>132</td><td>4.82</td></tr>
</table></td><td></td><td></td></tr>
<tr><td>Module D</td><td colspan="3">Metals are widely recycled. It can be assumed that 95% will be recycled, in accordance with BRE’s PCR
<table>
<tr><td></td><td>Aluminium</td><td>Steel</td></tr>
<tr><td>B100 bi-parting</td><td>25.9</td><td>5.9</td></tr>
<tr><td>B01 bi-parting</td><td>25.9</td><td>5.9</td></tr>
</table>
It was assumed that the primary content of aluminium was 30% and 56% for steel as per the generic datasets from ecoinvent 3.8.</td></tr>
</table>

Interpretation of results

Figures 1 below show the results in kgCO_2eq per stage for 1 unit bi-parting B100 (300 kg). It shows that 94% of the impact of this product is associated with the impact of the raw materials.

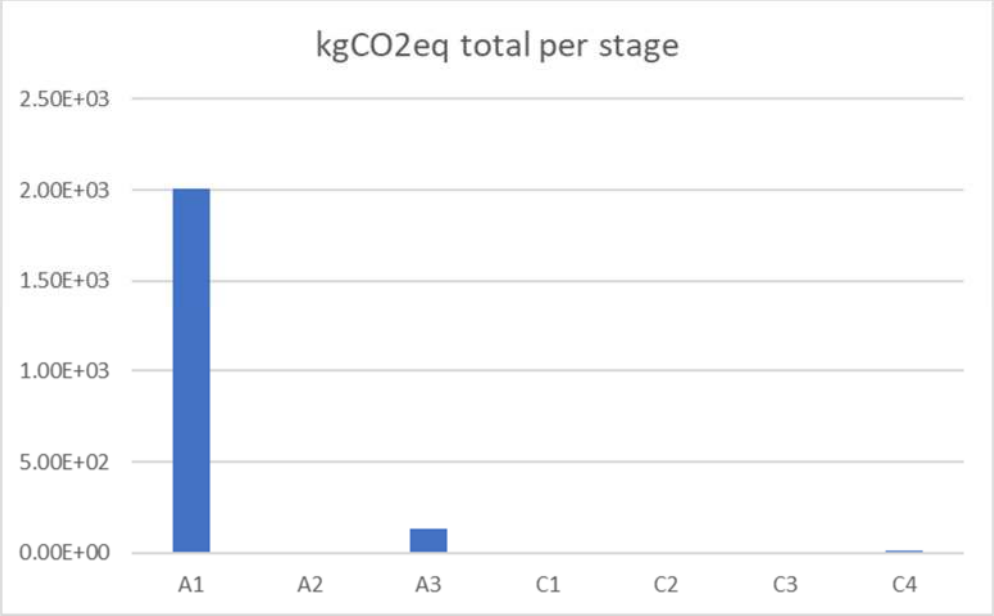


Figure 1: kgCO_2eq per stage for 1 unit bi-parting B100

Further analysis of stage A1 shows that 79% of the kgCO_2eq of 1 unit bi-parting B100 (300 kg) are associated with the aluminium and 16% is associated with the glass – see figure 2:

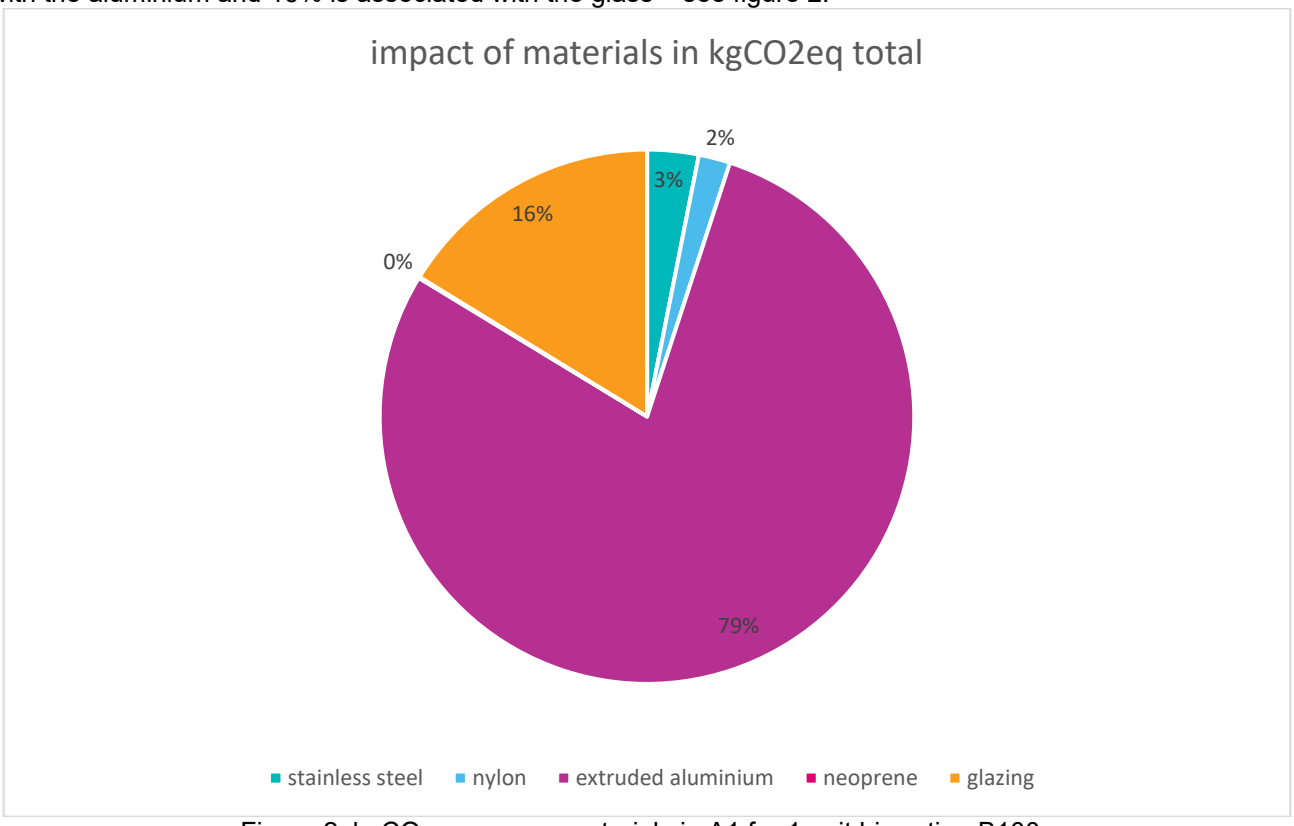


Figure 2: kgCO_2eq per raw materials in A1 for 1 unit bi-parting B100

Figures 3 below show the results in kgCO_2eq per stage for 1 unit bi-parting B01 (252 kg). It shows that 94% of the impact of this product is associated with the impact of the raw materials.

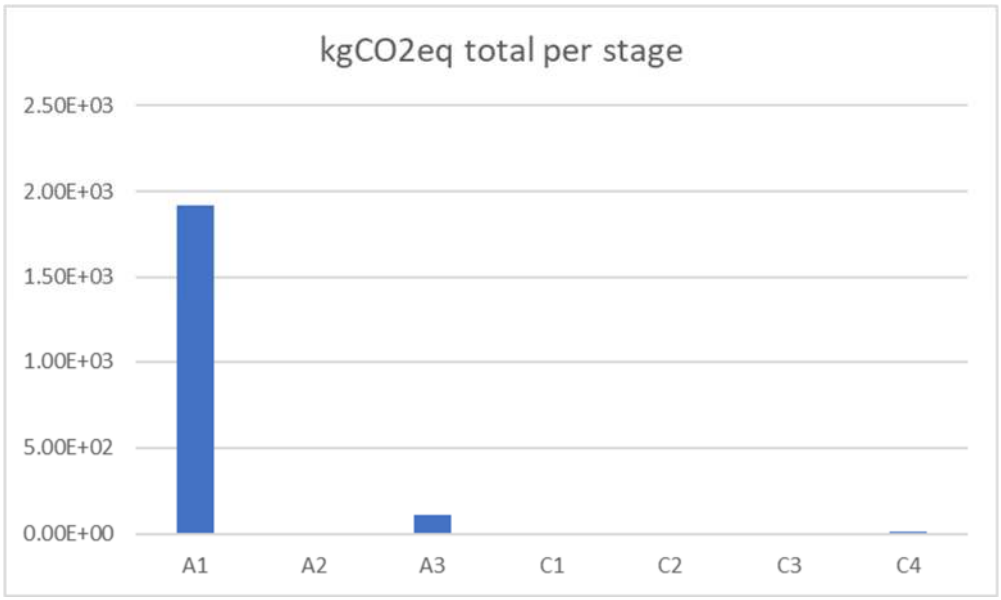


Figure 3: kgCO_2eq per stage for 1 unit bi-parting B01

Further analysis of stage A1 shows that 82% of the kgCO_2eq of 1 unit bi-parting B01 (252 kg)are associated with the aluminium and 13% is associated with the glass – see figure 4:

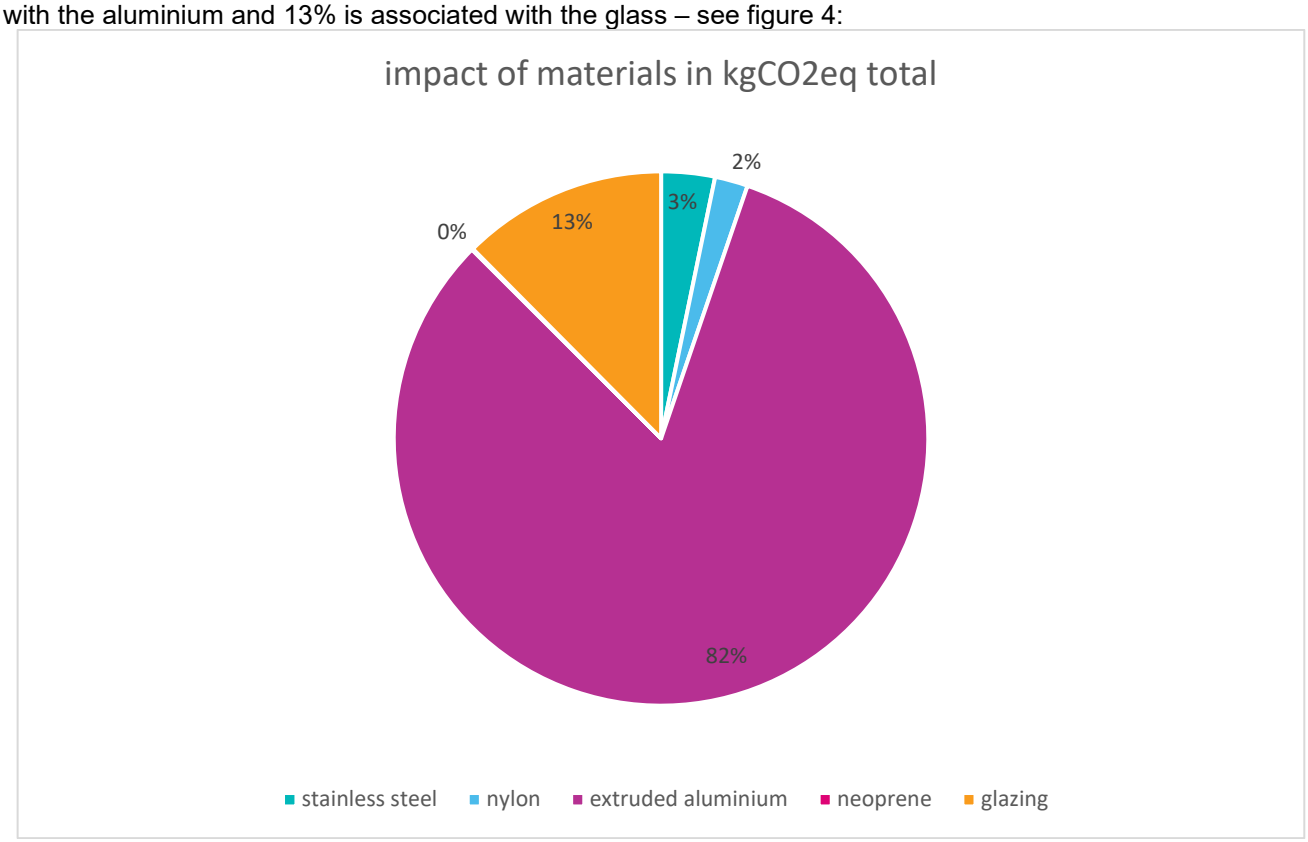


Figure 4: kgCO_2eq per raw materials in A1 for 1 unit bi-parting B01

References

BSI. Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products. BS EN 15804:2012+A1:2013. London, BSI, 2013.

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.

BSI Building hardware. Hardware for sliding doors and folding doors. Requirements and test methods BS EN 1527:2019 - TC