

## Statement of Verification

BREG EN EPD No.: 000734

Issue 01

This is to verify that the  
**Environmental Product Declaration**  
provided by:  
**Specialist Door Solutions Ltd**



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 single Shieldoor door set including door and frame (926mm x 2150mm). The weight of the Declared Unit - door and frame is 229.91 kg including the glazed panel.

### Company Address

Specialist Door Solutions Ltd,  
Unit 1, Trading Estate  
Borden  
GU35 9HH



*Hayley Thomson*  
Signed for BRE Global Ltd

Hayley Thomson  
Operator

03 October 2025  
Date of this Issue

03 October 2025  
Date of First Issue

02 October 2030  
Expiry Date



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## Information modules covered

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

Note: Ticks indicate the Information Modules declared.

## Manufacturing site(s)

Specialist Door Solutions Ltd,  
Unit 1, Trading Estate  
Borden  
GU35 9HH

## Construction Product:

### Product Description

A PVC Postformed, resilient, hard wearing and hygienic doorset, with integral lead lining designed to shield against harmful radiation for use in X-Ray hospital environments.

Shieldoor is one of 4 doorsets within the SDS Doorset product range and is designed for use within a hospital. Shieldoor is delivered as a pre-hung option within a hardwood frame, it has a glazed vision panel and can be delivered with a wide range of architectural ironmongery.

Shieldoor is available to end users in two configurations: Double Door - Single Swing and Single Door – Single Swing Systems. Each system offers a range of two products, each with different dimensions.

For the purposes of this LCA analysis, the Shieldoor Single Swing Door Set, which includes the door, glazing, and frame, with dimensions of 926mm x 2150mm. This is the most commonly delivered size and has been selected as the representative doorset to assess and demonstrate the product’s environmental impact.

The LCA results presented apply specifically to doorsets of this size. The size modelled is representative of the product studied and makes up 90% of the Shieldoor product range.

### Technical Information

#### Standards

Shieldoor meets the requirements of the BM TRADA Q-Mark Timber Fire Door Manufacture scheme (certificate number 006/850).

Note: the technical information is from Specialist Door Solutions Limited BM Trada Q Mark Timber Fire Door Manufacture scheme certificate (certificate number 006/850). For more information: please contact Specialist Door Solutions Limited or visit <https://specialistdoorsolutions.com/doorsets/sds-shieldoor>



### Main Product Contents

Material/Chemical Input	%
Chipboard	25-30
PVC	10-15
Glass	10-15
Wood	5-10
Others	55-65%

## Manufacturing Process

### Specialist Door Solutions manufacturing Process

1. Material Receipt & Inspection - Material is received and inspected. If material passes inspection it is placed in store ready for the manufacturing process. If material fails inspection, it is rejected and returned to the supplier.

2. Raw Material - The door core blank is removed from stock

3. Beam Saw - The operative reads the schedule and inputs the dimension into the beam saw. The saw cuts the blank to the measurements as set out within the schedule

4. Drum Sander - The blank is placed within the machine and the edges sanded down and smoothed.

#### 5. Adhesive Station:

- An adhesive is sprayed onto the blank
- An adhesive is sprayed onto the PVC plastic
- The PVC plastic is placed onto the blank
- The operative will use a roller to ensure that the PVC plastic adheres to the door blank

6. Thermoforming – Doors: The PVC plastic is placed in the machine. The rollers form the PVC plastic around the edges of the door blank

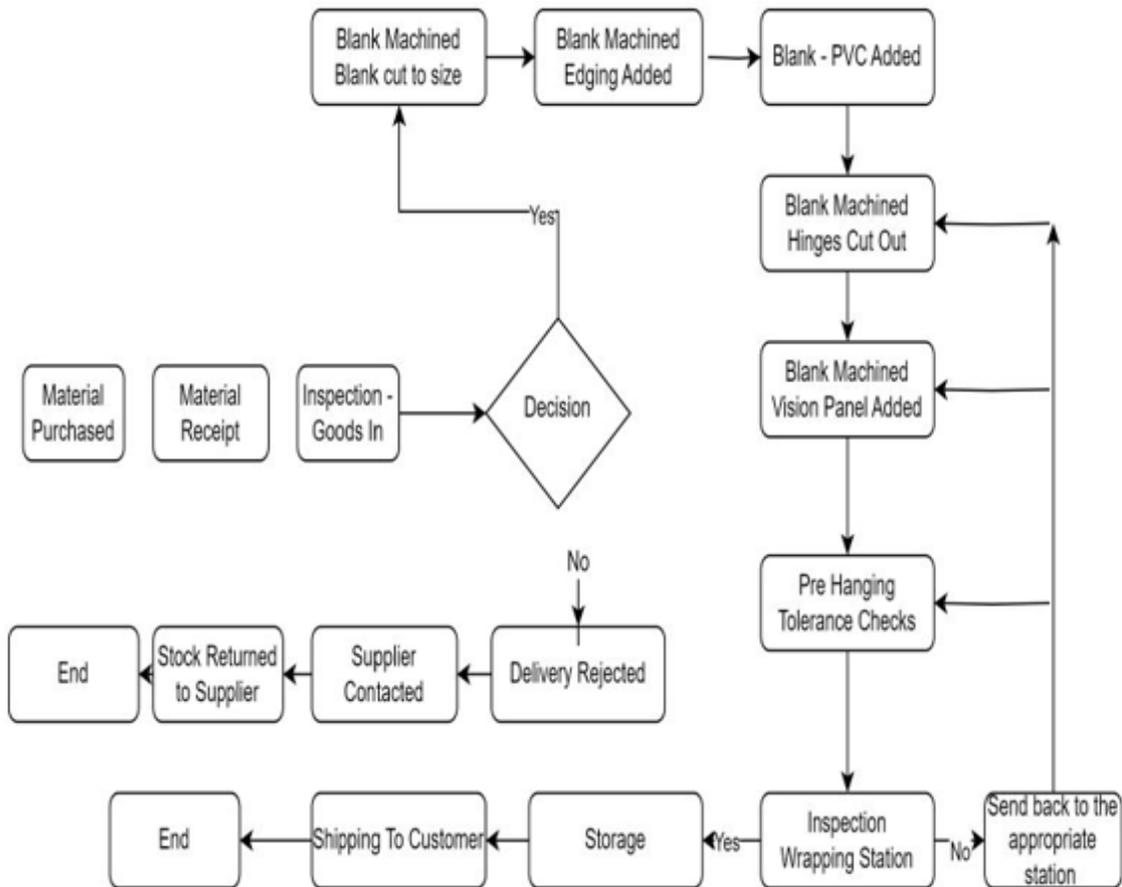
7. CNC - The blank is placed in the CNC where the hinges are cut out and if required a hole for a privacy screen. All this information is available on the schedule which is available at every station

8. Pre-Hanging -The ironmongery is added to the door by the operatives working at that station

#### 9. Wrapping Station:

- This is the last quality stop on the production line. The operative will be checking for any marks, scratches or bumps. Ensuring the sizing of the door is correct and the colour chosen by the client is correct.
- If the door is rejected, then the PVC plastic will need to be removed and sent back to an allocated station
- If the door is accepted, then it will go through the wrapping station, be loaded onto a pallet and ready for either storage on site or shipped out using a courier.
- Any rejected door maybe skimmed, reused or scrapped.
- Any scrapped door is recycled by our waste provider

## Process flow diagram



Note: All the production wastages will be incinerated and recycled.

## Construction Installation

The delivered doors and frames are assembled as a whole and fitted on site.

It is assumed therefore there is no wastage. Doors are supplied in a finished state ready for install.

Fitting instructions are supplied to installation contractors, this details the type of fixings required (frame fixing consisting of screws and plastic plugs) and the type of mastic to be applied between the door opening and the frame.

The frame fixings and mastic are not supplied, the installation contractors' source from local builders' merchants.

It has been assumed that local builders' merchants will be located on average 10km from the site of installation.

Installation energy usage based on standard electric hammer drill size (800W) and number of holes to be drilled into the opening (13 holes per door at 30 seconds per drilled hole).



### Use Information

There are no specific in use and maintenance requirements for Shieldoor.

### End of Life

The following disposal scenario has been assumed.

It is assumed that 100% of the product is recovered from the demolition site, and that the amount of energy required to install the door would be equivalent to the energy needed to remove it during demolition. The ancillary materials used for installing the door are considered waste at the demolition stage and are sent for recycling.

## Life Cycle Assessment Calculation Rules

### Declared / Functional unit description

1 unit of single Shieldoor door set including door and frame (926mm x 2150mm). The weight of the Declared Unit - door and frame is 229.91 kg including the glazed panel.

### System boundary

This is a Cradle-to-Gate with Options EPD, reporting the upstream processing stages A1 to A3, construction stages A4-A5, end-of-life stages C1-C4 and D in accordance with EN 15804:2012+A2:2019 and BRE 2023 Product Category Rules (PN 514 Rev 3.1).

### Data sources, quality and allocation

The datasets are derived from Ecoinvent v3.8, and the LCA tool used was BRE LINA A2. The LCA analysis is conducted for a Shieldoor door on a product specific basis with a weight of 229.91 kg, and it includes the total amount of MDF used to manufacture the Defendoor doors over the period of one year (from 01/01/2023 to 31/12/2023). The results of this EPD refer to a Shieldoor with a weight of 229.91 kg.

In addition to the Shieldoor product, other products are manufactured in the Specialist Door Solutions SDS manufacturing unit. Therefore, the allocation of electricity, water consumption and discharge are required. This allocation has been done according to the provisions of BRE PCR PN514 and EN 15804, using the mass production quantity. Data on waste generated per door, categorised by waste type, was multiplied by the production volume to calculate the total waste associated with the manufacturing of Shieldoor Site wide values for energy, water and wastewater have been taken from bills. The manufacturer has confirmed that the manufacturing department is the main consumer of the company's electricity. The production of Shieldoor accounts for 10% of the year's operations. Figures for the raw materials, ancillary materials and packaging were from actual usages. During the production process, wood waste is sent for recycling & incineration. Plastic waste is sent to incineration in accordance with product Category Rules. Further, the mass balance with the range i.e., total raw material quantity is equal to the production output of the product. 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 EN 15804:2012+A2: 2019.

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).	There is approximately 1-2 years between the Ecoinvent LCI reference year, and the time period for which the LCA was undertaken.

Specific European datasets have been selected from the ecoinvent LCI for this LCA. Manufacturer uses the national grid electricity and natural gas 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 is 0.239 kgCO<sub>2</sub>e/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 input to the manufacturing process have been included, except for direct emissions to air, water, and soil, which are not measured. The inventory process in this LCA includes all data related to raw material, packaging material and consumable items.

## LCA Results

(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 <sub>2</sub> eq	kg CFC11 eq	mol H <sup>+</sup> eq	kg (PO <sub>4</sub> ) <sup>3-</sup> eq			
Product stage	Raw material supply	A1	2.16E+02	3.97E+02	-1.83E+02	4.96E-01	6.06E-05	7.53E+00	3.96E-01
	Transport	A2	1.12E+01	1.12E+01	9.42E-03	5.19E-03	2.51E-06	9.30E-02	7.57E-04
	Manufacturing	A3	1.39E+02	7.07E+01	6.85E+01	3.05E-02	3.44E-06	1.03E-01	7.72E-03
	Total (Consumption grid)	A1-3	3.66E+02	4.79E+02	-1.14E+02	5.31E-01	6.66E-05	7.73E+00	4.04E-01
Construction process stage	Transport	A4	7.76E+01	7.74E+01	1.78E-01	4.94E-02	1.62E-05	4.34E-01	1.16E-02
	Construction	A5	5.58E+00	3.17E+00	2.41E+00	1.03E-03	6.09E-08	6.75E-03	3.72E-04
End of life	Deconstruction, demolition	C1	1.10E-01	1.10E-01	7.45E-05	9.01E-06	2.96E-09	1.45E-04	1.53E-06
	Transport	C2	7.65E-01	7.64E-01	6.51E-04	3.00E-04	1.77E-07	3.10E-03	4.92E-05
	Waste processing	C3	1.59E+02	5.02E+01	1.09E+02	4.31E-03	1.69E-06	1.07E-01	1.15E-03
	Disposal	C4	1.08E-01	1.07E-01	9.77E-04	1.01E-04	3.57E-08	9.54E-04	1.33E-05
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-3.39E+02	-3.34E+02	-3.93E+00	-3.30E-01	-2.15E-05	-6.91E+00	-3.81E-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)

(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 <sup>3</sup> world eq deprived	disease incidence
Product stage	Raw material supply	A1	5.67E-01	6.25E+00	1.93E+00	3.79E-01	5.06E+03	3.61E+02	3.79E-05
	Transport	A2	2.51E-02	2.77E-01	7.84E-02	4.73E-05	1.65E+02	7.43E-01	9.02E-07
	Manufacturing	A3	3.71E-02	3.39E-01	9.16E-02	2.10E-04	7.69E+02	9.33E+00	8.56E-07
	Total (Consumption grid)	A1-3	6.29E-01	6.87E+00	2.10E+00	3.79E-01	5.99E+03	3.71E+02	3.96E-05
Construction process stage	Transport	A4	1.31E-01	1.44E+00	4.70E-01	1.18E-03	1.15E+03	8.51E+00	8.43E-06
	Construction	A5	1.53E-03	1.58E-02	4.81E-03	2.63E-05	1.44E+01	4.62E-01	8.60E-08
End of life	Deconstruction, demolition	C1	6.48E-05	6.82E-04	1.83E-04	5.44E-08	3.42E-01	6.63E-03	3.13E-09
	Transport	C2	9.34E-04	1.02E-02	3.13E-03	2.66E-06	1.16E+01	5.20E-02	6.60E-08
	Waste processing	C3	4.89E-02	5.20E-01	1.40E-01	1.69E-05	1.19E+02	4.71E+00	2.15E-06
	Disposal	C4	3.36E-04	3.67E-03	1.06E-03	3.47E-07	2.64E+00	1.22E-01	1.99E-08
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-4.96E-01	-5.40E+00	-1.63E+00	-3.66E-01	-3.87E+03	-2.96E+02	-3.07E-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)

(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 <sup>235</sup> eq	CTUe	CTUh	CTUh	dimensionless
Product stage	Raw material supply	A1	2.90E+01	5.75E+04	4.45E-06	3.20E-04	9.13E+03
	Transport	A2	8.52E-01	1.29E+02	5.92E-09	1.34E-07	9.98E+01
	Manufacturing	A3	1.99E+01	6.51E+02	2.72E-08	7.17E-07	4.33E+02
	Total (Consumption grid)	A1-3	4.98E+01	5.83E+04	4.48E-06	3.21E-04	9.66E+03
Construction process stage	Transport	A4	7.31E+00	1.16E+03	1.28E-07	1.50E-06	5.43E+02
	Construction	A5	8.96E-02	3.57E+01	2.18E-08	2.99E-08	5.50E+00
End of life	Deconstruction, demolition	C1	6.69E-03	3.57E-01	1.38E-11	4.28E-10	9.17E-02
	Transport	C2	5.94E-02	9.02E+00	2.92E-10	9.45E-09	7.94E+00
	Waste processing	C3	6.69E-01	1.69E+02	2.84E-08	2.58E-07	2.33E+01
	Disposal	C4	1.16E-02	1.74E+01	7.77E-11	1.09E-09	6.65E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-3.23E+01	-5.44E+04	-3.84E-06	-3.11E-04	-6.45E+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)

(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	3.02E+03	9.31E+02	3.95E+03	4.55E+03	5.03E+02	5.05E+03
	Transport	A2	2.36E+00	0.00E+00	2.36E+00	1.61E+02	0.00E+00	1.61E+02
	Manufacturing	A3	-5.00E+02	6.76E+02	1.76E+02	4.44E+02	5.02E+02	9.46E+02
	Total (Consumption grid)	A1-3	2.52E+03	1.61E+03	4.13E+03	5.15E+03	1.00E+03	6.16E+03
Construction process stage	Transport	A4	3.18E+01	0.00E+00	3.18E+01	1.13E+03	0.00E+00	1.13E+03
	Construction	A5	-1.85E+01	2.10E+01	2.47E+00	7.85E+00	5.90E+00	1.37E+01
End of life	Deconstruction, demolition	C1	4.50E-02	0.00E+00	4.50E-02	-8.03E-01	1.20E+00	3.97E-01
	Transport	C2	1.63E-01	0.00E+00	1.63E-01	1.13E+01	0.00E+00	1.13E+01
	Waste processing	C3	-9.46E+02	9.47E+02	1.80E+00	-4.25E+02	5.44E+02	1.18E+02
	Disposal	C4	3.27E-02	0.00E+00	3.27E-02	2.59E+00	0.00E+00	2.59E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-2.07E+02	-8.02E+02	-1.01E+03	-3.87E+03	0.00E+00	-3.87E+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)

(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 <sup>3</sup>
Product stage	Raw material supply	A1	1.16E+00	0.00E+00	0.00E+00	8.58E+00
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	1.84E-02
	Manufacturing	A3	1.59E-01	5.03E-04	0.00E+00	3.15E-01
	Total (Consumption grid)	A1-3	1.32E+00	5.03E-04	0.00E+00	8.92E+00
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	2.12E-01
	Construction	A5	1.04E-01	1.58E-07	0.00E+00	1.29E-02
End of life	Deconstruction, demolition	C1	2.04E-05	1.58E-07	0.00E+00	1.85E-04
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	1.29E-03
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	1.11E-01
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	2.86E-03
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	-7.04E+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	8.82E+02	1.91E+04	7.33E-01
	Transport	A2	2.01E-01	3.39E+00	1.21E+02
	Manufacturing	A3	5.03E+00	1.28E+02	5.68E-03
	Total (Consumption grid)	A1-3	8.87E+02	1.92E+04	1.22E+02
Construction process stage	Transport	A4	2.45E+00	5.02E+01	7.57E+03
	Construction	A5	9.06E-01	3.32E+00	7.13E-02
End of life	Deconstruction, demolition	C1	1.85E-03	4.65E-02	2.58E-06
	Transport	C2	1.27E-02	2.26E-01	7.82E-05
	Waste processing	C3	1.23E+00	9.38E+01	7.29E-04
	Disposal	C4	4.65E-03	1.23E+00	1.62E-05
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-6.42E+01	-6.70E+02	-9.89E-03

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	-1.02E+01	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	8.72E-03	2.50E-01	4.02E-01	2.19E+01	-5.87E-01
	Total (Consumption grid)	A1-3	0.00E+00	8.72E-03	2.50E-01	4.02E-01	1.17E+01	-5.87E-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	2.75E-06	1.50E-01	1.27E-04	0.00E+00	0.00E+00
End of life	Deconstruction, demolition	C1	0.00E+00	2.74E-06	3.90E-02	1.26E-04	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	1.77E+01	0.00E+00	1.48E+01	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	-2.69E-03	-1.64E-05	-2.72E+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	This is the average distance the stated production output (329 doors) travels to site. 112 miles (180.2 km) average delivery distance. The analysis undertaken is based on the number of deliveries in the period and destination of deliveries		
	Transport by Road to ports (km)	Van	180.2
	Capacity utilisation (incl. empty returns)	%	40
	Bulk density of transported products	kg/m <sup>3</sup>	303.42
A5 – Installation in the building	<p>The delivered doors and frames are assembled as a whole and fitted on site. It is assumed therefore there is no wastage. Doors are supplied in a finished state ready for install. Fitting instructions are supplied to installation contractors, this details the type of fixings required (frame fixing consisting of screws and plastic plugs) and the type of mastic to be applied between the door opening and the frame.</p> <p>The frame fixings and mastic are not supplied, the installation contractors' source from local builders' merchants.</p> <p>It has been assumed that local builders' merchants will be located on average 10km from the site of installation.</p> <p>Installation energy usage based on standard electric hammer drill size (800W) and number of holes to be drilled into the opening (13 holes per door at 30 seconds per drilled hole).</p>		
Ancillary required for installation	Frame fixings Screw	kg	0.182
Ancillary required for installation	Plastic Plugs	kg	0.039
Energy required	Electricity	kWh	0.029
Packaging waste	Plastic mixed waste to landfill	kg	0.7477
	Plastic waste to landfill	kg	0.1402
	Plastic mixed waste to landfill	kg	0.1402
	Wood waste to recycling	kg	1.498
C1 - Deconstruction	<p>Door reaches a state of non-compliance or is no longer required on site:            Erection of temporary dust barriers.            Shut off any electrical connections (for automatic doors or signage).            Remove hinges from door and remove door from the structural opening.            Remove frame fixings using electric driver.            The following disposal scenario has been assumed.            It is assumed that 100% of the product is recovered from the demolition site, and that the amount of energy required to install the door would be equivalent to the energy needed to remove it during demolition. The ancillary materials used for installing the door are considered waste at the demolition stage and are sent for recycling.</p>		
	Electricity	kWh	0.029
	Frame fixing waste during the deconstruction process	kg	0.182
	Plastic plug waste during the deconstruction process	kg	0.039
C2 – Transportation	Transportation to waste processing - 100% returned from hospital location to waste disposal site. Assumed all hospitals will be located in cities and towns and will be a maximum distance of 20km from waste disposal facility.		

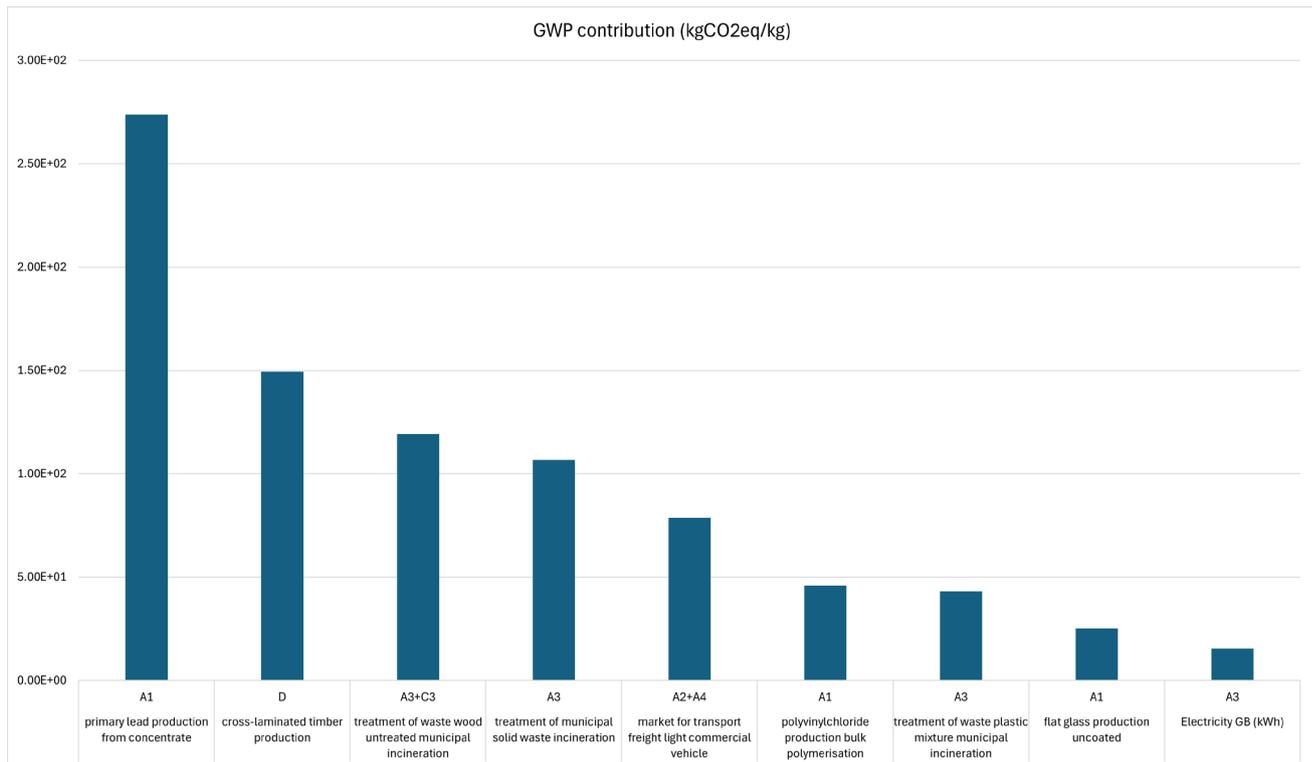
Scenarios and additional technical information			
Scenario	Parameter	Units	Results
	Transport to local waste processing facility using Lorry, 16-32 metric ton using the roadways	km	20
C3 – Preprocessing	Upon receipt of door at waste processing the following will be undertaken: <ul style="list-style-type: none"> <li>• All door furniture manually removed</li> <li>• Glazing removed</li> <li>• Plastic components removed</li> <li>• Mineral &amp; chemical components removed.</li> </ul> Materials sorted into different waste streams. Industrial default end-of life scenarios have been modelled in accordance with BRE Global Product Category Rules (PCR) PN 514 Rev 3.1.		
	55% of the wood waste to recycling	kg	37.246
	45% of the wood waste to incineration	kg	30.474
	95% of the steel waste to recycling	kg	1.473
	61% of glass waste to recycling	kg	15.74
	100% of the lead waste to recycling	kg	114.38
	100% of the plastic waste to incineration	kg	17.66
	100% of the inert waste to incineration	kg	1.15
	95% of the aluminium waste to recycling	kg	0.475
C4 – Disposal	Unrecovered waste steel, glass, aluminium, and adhesive waste is sent to landfill.		
	39% of the glass waste to landfill	kg	10.062
	58% of the steel waste to landfill	kg	0.0775
	100% of the adhesive waste to landfill	kg	1.15
	5% of the aluminium waste to landfill	kg	0.025

### Scenarios and additional technical information

Scenario	Parameter	Units	Results
Module D	<p>“Benefits and loads beyond the system boundary” (module D) accounts for the environmental benefits and loads resulting from waste Steel, plastic, glass wood which is collected for recycling and incineration at end of life.</p> <p>For benefits and loads of recycling steel are calculated by excluding the pre-existing recycled Steel that is used in the primary process. The secondary content of stainless steel is 57.3%, the primary content to calculate the benefits are <math>1.4725 * (1 - 57\%) = 0.6332</math> kg</p> <p>For benefits and loads of recycling aluminium are calculated by excluding the pre-existing recycled aluminium that is used in the primary process. The secondary content of Extruded Aluminium profiles is 7.4%, the primary content to calculate the benefits are <math>0.475 * (1 - 7.4\%) = 0.43985</math> kg.</p> <p>Benefits due to incineration of wood = 30.474 kg            Benefits due to recycling of wood = 37.246 kg            Benefits due to incineration of PVC = 17.66 kg            Benefits due to recycling of lead = 114.38 kg            Benefits due to recycling of glass (pre-existing recycled content &lt; 1%, so can be ignored) = 15.738 kg            Benefits due to incineration of mineral = 1.15 kg</p> <p>For benefits due to incineration of PVC and wood waste, the EU electricity (Electricity, high voltage (RER) market for electricity, high voltage) with an emission factor of 0.396 kgCO<sub>2</sub>eq/kWh,            EU heat (Heat, district or industrial, natural gas (RER) market for heat, district or industrial, natural gas) with an emission factor of 0.187 kgCO<sub>2</sub>eq/kWh,            and EU heat (Heat, district or industrial, other than natural gas (RER) market for heat, district or industrial, other than natural gas) with an emission factor of 0.244 kgCO<sub>2</sub>eq/kWh have been used as the background data for the energy recovered.</p>		

### Interpretation

The top three contributors across the whole life cycles covered by information modules A1-D of EN15804:2012+A2:2019 — lead production, cross-laminated timber production and treatment of untreated wood waste via municipal incineration — with a CO<sub>2</sub>-equivalent around 110–280 kgCO<sub>2</sub>eq/kg. These are followed by treatment of municipal solid waste incineration and transport by light commercial vehicles. The lowest contributors are treatment of waste plastic mixture municipal incineration, flat glass production and electricity use (GB, 2022), all around or below 50 kgCO<sub>2</sub>eq/kg. This suggests a re-prioritization in emission sources, where certain waste treatments and material productions remain key hotspots for carbon impact.



Note: In this LCA, a background dataset wood chips from cross-laminated timber has been used for benefits and loads of wood waste to recycling in Module D. The GWP impact of benefits and loads due to recycling of wood waste is a positive figure (environmental burden) and this is because the sequestered carbon is being released from the wood at the end of life of this product.

## End-user table

The LCA results in the EPD are for 1 unit of Single Shielddoor door set including door and frame (926mm x 2150mm). The weight of the Declared Unit - door and frame is 229.91 kg including the glazed panel. However, a change will be implemented to the product design in the recent future. The change is to the thickness of the PVC covering from 2mm to 1.5mm, which means a 25% reduction of PVC weight. Therefore, an LCA has been made based on this change to estimate the environmental impacts of the new design.

The current weight of PVC of this product is 17.66 kg/unit, when the thickness is reduced from 2mm to 1.5 mm, the new weight of PVC will be 13.245 kg/unit. The new declared unit will therefore be reduced to around 225.50kg/unit (the worst-case scenario has been used, assuming other composition remains the same). The LCA results (A1-A3) based on the change has been attached below as a reference for the EPD users. Specialist Door Solutions Ltd will inform Trident Utilities and BRE to update the LCA and the EPD once the new data is ready.

Product	PVC covering thickness (mm)	PVC weight (kg)	Declared Unit (kg/unit)	GWP-total A1-A3 (kgCO2eq/unit)
Current design	2	17.66	229.91	3.66E+02
25% PVC reduced design	1.5	13.245	225.50	3.53E+02

## 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.

BM TRADA Q-Mark Timber Fire Door Manufacture, certificate number 006/850.