



Environmental Product Declaration

In accordance with ISO 14025 and EN 15804:2012+A2:2019 for:
Apton Quartz Glazed Frameless Partitioning System



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The Technical Committee of the International EPD[®] System. See www.environdec.com/TC for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/contact.

Independent third-party verification of the declaration and data, according to ISO 14025:2006:



EPD process verification



EPD verification

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Company Information

Founded in 1973, Apton Partitioning is a leading manufacturer of high-performance partition systems and doors, delivering innovative solutions for modern workspaces across the globe. With over 50 years at the forefront of office partitioning, Apton has built a strong reputation for quality, aesthetics, and technical excellence. Its products are designed to enhance the functionality and visual appeal of office interiors.

Collaboration is at the core of Apton's approach to partitioning solutions. The company works closely with clients to develop bespoke partitions tailored to specific requirements, ensuring the right balance of functionality and design. From materials and finishes to layouts and acoustic performance, each project is carefully considered to create spaces that meet both practical and aesthetic needs.

Apton is committed to maintaining the highest industry standards, holding ISO 9001 certification for quality management, ISO 14001 certification for environmental management, and ISO 45001 certification for occupational health and safety. These certifications reflect Apton's dedication to delivering high-quality products while minimising environmental impact, ensuring efficient operational processes, and prioritising workplace safety.

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Product Information

The Quartz glazed frameless partitioning system by Apton is a sophisticated solution designed for modern architectural and interior spaces, offering a sleek and minimalist appearance. This system utilises single glazed panels with a thickness ranging from 10 mm to 19 mm, providing a clean, frameless aesthetic that enhances the transparency and openness of any space. The partitions can reach heights up to 4200 mm, ensuring flexibility for various applications whilst maintaining a refined look.

The Quartz partitioning system's flexibility is one of its main features. The profiles are a great option for both new construction and renovations because they come in a variety of finishes and the complete assembly is made to be as lightweight as possible. The Apton Quartz glazed frameless partitioning system integrates seamlessly into modern interior designs by combining durability with a refined appearance, all while placing an emphasis on both design and performance.

Content Declaration:

Content information: Representative content information stands for the one square meter of non- fire-rated quartz-glazed frameless partitioning system (thickness 10 mm).

Product compositions	Quantity in Kg	Renewable material, %	Biogenic carbon, %
Glass	25	-	-
Aluminium	1.18	-	-
Plastic	<1	-	-
Rubber	<1	-	-
Total	26.45		
Packaging materials	Quantity in Kg	Renewable material, %	Biogenic carbon, %
Plastics	< 0.1	-	-
cardboard box	< 0.1	-	0.05
Total	0.1		

Table.1. Content declaration of Quartz glazed frameless partitioning system

Geographical scope: Europe

UN CPC 4211: Doors, windows, and their frames and thresholds for doors, of iron, steel, or aluminium. (Partitioning System)

Manufacturing Process

The storage of raw materials, components, and packaging is the first step in the production process. To prevent damage, large glass sheets (10–12 mm thick) are placed on racks, and to prevent warping, aluminium profiles are held on racks or bundled horizontally. To maintain their qualities, gaskets, seals, and other materials like rubber and jointing components (PVB, EVA) are kept in a regulated conditions. Keeping cardboard, foam, plastic wrap, and wooden crates on hand for use in the finishing stages of production, these supplies are stored close to the packaging area.

To ensure smooth edges and precise alignment with glass panels, the aluminium profiles are precisely cut utilising specialised equipment based on the dimensions provided by the system. The profiles are cleaned to get rid of contaminants and oils after cutting. After that, anodising or powder coating is used to improve the look and provide corrosion protection. After applying the powder electrostatically, it is baked in an oven to provide a smooth, long-lasting finish. Following quality assurance inspections, the profiles are ready for assembly.

The procedure ends with packaging and assembly carried out at site. After the glass panes are cut and the aluminium profiles are coated, each part is precisely wrapped to ensure safe transportation. Aluminium profiles and smaller parts, such as seals and connectors, are individually wrapped and tagged, while glass panes are covered with foam, plastic, and corner protectors. Smaller shipments are packed in strong cardboard boxes, while larger shipments are stored in wooden crates. Glass panes are built at the installation site by fitting them into aluminium profiles, sealing the edges with gaskets, and joining them at the corners to provide exact alignment and flexibility for impulsively modifications.



Life Cycle Assessment

Geographical scope	Europe
Functional unit	1 m2 (thickness: 10 mm) of Quartz Glazed Frameless Partitioning System.
Allocation	In the case of a partitioning system, most of the processes have a single output. Therefore, allocation was not required. Wherever necessary, allocation based on quantities like mass and economy has been used in this study.
Cut-off rules	1% cut-off applied. Life Cycle Inventory data for a minimum of 99 % of total inflows to the three life cycle stages have been included and a cut-off rule of 1% regarding energy, mass and environmental relevance was applied.
Database(s) and LCA software used	Ecoinvent v3.10 (allocation, cut-off by classification) database and SimaPro v9.6 software have been used for the LCA calculations. LCA methods used are EN 15804 + A2 (EF3.1) V1.01 / EF 3.1 normalisation and weighting set.
Description of system boundaries	Cradle to Gate choices, modules C1-C4, and module D (A1-A5 + C1- C4 + D)
Data quality and data collection:	The Apton Partitioning Ltd. manufacturing unit provided detailed data for module A3 in accordance with EN 15804:2012+A2:2019/AC:2021 standards. Specific data includes real product weights, raw material amounts used, product content, energy use, transportation statistics, water consumption, and waste amounts.
Time representativeness:	Primary data from the manufacturing site, suppliers, and the electricity mix collected for the study cover the year 2023.
Reference service life:	No reference service life is specified in this EPD.

Modules Declared, Geographical Scope, Share of Specific Data and Data Variation

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	Raw material	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Recycling potential
Module	A1	A2	A3	A4	A5	B1 B2	B3 B4 B5	ND ND	ND ND ND		B6	B7	C1	C2	C3	C4	D
Module declared	X	X	X	X	X						ND	ND	X	X	X	X	X
Geography	EU	EU	EU	EU	EU	-	-	-	-	-	-	-	EU	EU	EU	EU	EU
Specific data used	>52%			-		-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	Not relevant					-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	Not relevant					-	-	-	-	-	-	-	-	-	-	-	-

X: Declared ND: Not declared

Process	Source	Reference Year	Data category	%Share of primary data of GWP-GHG results for A1-A3
Glass	EPD Owner	2023	Primary Data	45.51
Aluminium	Ecoinvent 3.10	2024	Secondary Data	45.3
Electricity	Ecoinvent 3.10	2024	Primary Data	3.43
Transportation of input materials to site	Ecoinvent 3.10	2024	Primary Data	3.2
Polypropylene, granulate [Packaging]	Ecoinvent 3.10	2024	Secondary Data	0.7
Other	Ecoinvent 3.10	2024	Secondary Data	1.8

Table.2. Data quality during LCA modelling

Note: There is no exclusion of any process during modelling.

A1-A3 – Production stage (Cradle to Gate):

The partitioning system's life cycle begins with the extraction and processing of raw materials like silica sand for glass and bauxite for aluminium. The manufacturing process involves extrusion and coating of aluminium, while glass is cut and annealed. The logistics-related fuel use and emissions are accounted for during the transportation phase. The production phase uses large energy inputs and includes emissions and resource consumption. Utilising the results of modules A1–A3 (A1– A5 for services) without taking module C results into account.

A4-A5 – Transportation to the client site & Installation:

Phases A4 and A5 cover transportation and installation of partitioning system components from the factory to the installation location. The A4 phase considers distances between the plant and construction site, with the client site being 100 km away from the Apton production facility.

The system is installed on-site during the A5 stage, which includes the usage of tools and equipment, energy utilisation, and packaging waste management. This stage also includes any emissions or trash produced during installation, such as the removal of packaging materials and offcuts. Although some equipment and manpower are needed for installation, they are relatively minimal in relation to the system's defined unit, so we can neglect them for this study. The packaging raw material is balanced out in the A5 setp in accordance with the Product Category Rules (PCR), and the biogenic carbon content, which is roughly 0.05%, is also balanced at this step.

C1-C4 - End of life stage:

C1 - De-construction

This stage includes the energy and emissions of removing the partitioning system at the end of the building's life, which involves carefully removing aluminium profiles and glass in a frameless glazed system, which would use approximately 0.25 kWh of electricity, based on the European average low voltage supply.

C2 - Transport to waste processing

The components of the dismantled system are delivered to recycling or disposal sites. In this stage, fuel consumption and transportation-related emissions are estimated. The calculation scenario is described in the below table.

C2-Module	
Distance (km) (for recycling facility)	50
Distance (km) (for Disposal site)	100
Transport by Truck	Lorry 3.5-7.5 metric ton
Database	Ecoinvent 3.10

Table.3. C2 Module info

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

The partitioning system breaks down into recyclable and non-recyclable parts once it reaches a waste processing plant. Glass and aluminium profiles are probably going to be recycled, while other elements, like seals, might wind up in landfills or waste-to-energy facilities. 90% of non-glass materials and 30% of glass materials are assumed to be recovered or recycled in accordance with EN 17213, with the remaining materials being landfilled. Out of the materials that are recovered or recycled, it is expected that glass and metals be recycled, with all metal components.

C4 - Final disposal

The final stage C4 involves the disposal of materials. The remaining 70% of the declared unit's glass content and 10% of its non-glass material, along with its non-reusable packaging, are disposed of in the landfill. The mixed plastic and metal portion in the LCA represents the non-glass composition.

D - Reuse, recovery or recycling

The possible environmental benefits of reusing, recycling, or recovering energy from materials after they reach the end of their lifespans are taken into consideration in this phase. Glass and aluminium are two very recyclable materials. When recycled aluminium is produced instead of primary aluminium, the environmental impact is greatly reduced. In the same way, new glass goods can be made from recycled glass. This stage acquires the benefits of ensuring these materials avoid landfills and recycling them in manufacturing processes.

Electricity Modelling:

Apton received all electricity from the EU grid. The electricity mix for the EU (as per eurostat) is 73.76% from fossil fuels, 9.22% from renewable, and 17.02% from nuclear. It also contributes about 0.278 kg CO₂ eq./kWh to the climate (GWP-GHG indicator).

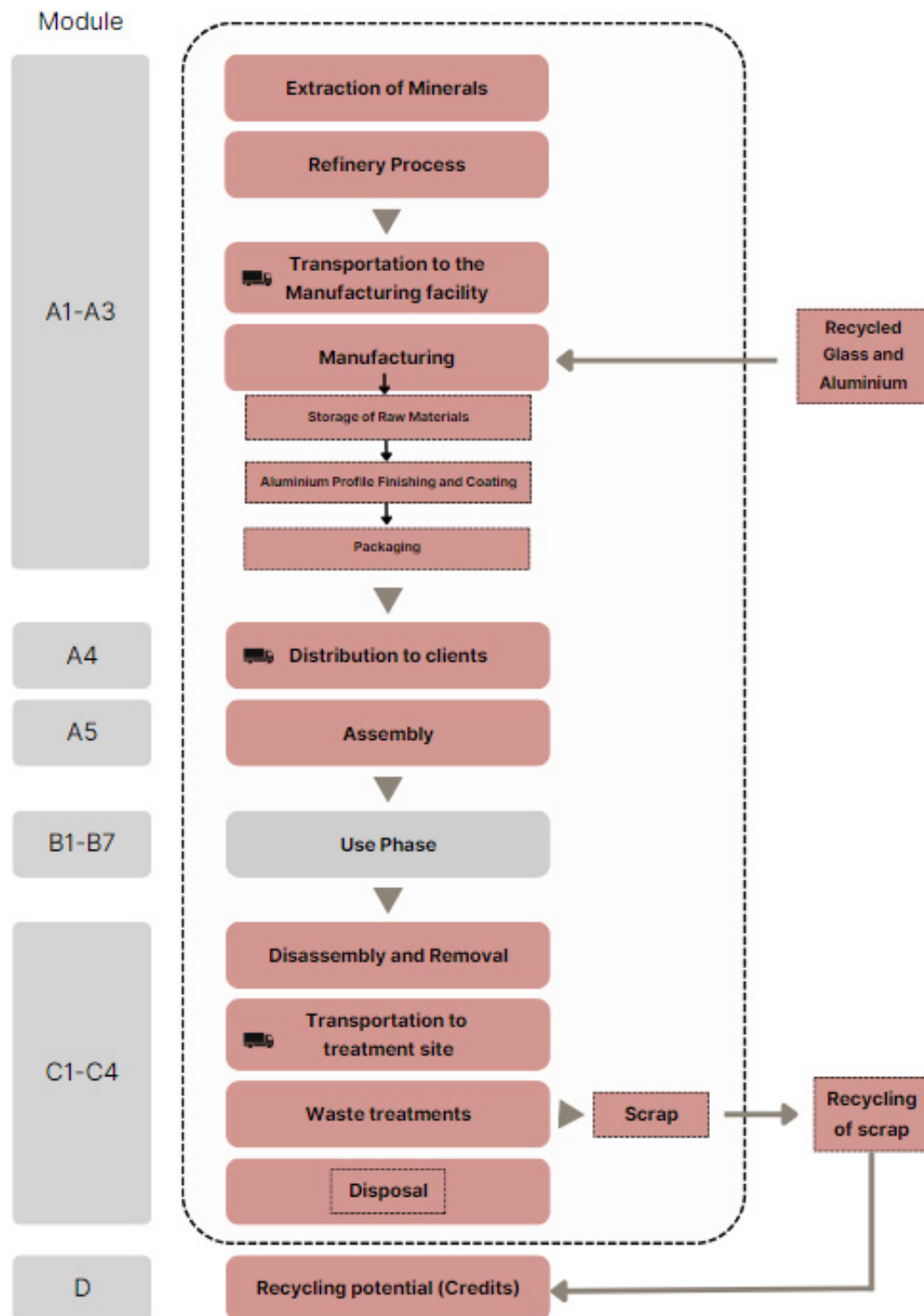


Fig.1. System boundary(Modular structure)

Environmental Performance:

Impact category	Unit	A1- A3	A4	A5	C1	C2	C3	C4	D
Climate change	kg CO2 eq	6.00E+01	4.03E-01	0	8.42E-02	5.38E-01	1.98E-01	4.84E-01	-7.51E+00
Climate change - Biogenic	kg CO2 eq	-1.77E-03	2.47E-04	1.77E-03	3.06E-03	3.15E-04	2.05E-02	4.78E-02	-5.01E-02
Climate change - Fossil	kg CO2 eq	6.00E+01	4.02E-01	0	8.09E-02	5.38E-01	1.78E-01	4.36E-01	-7.46E+00
Climate change - Land use and LU change	kg CO2 eq	4.90E-02	1.39E-04	0	2.50E-04	1.70E-04	9.90E-05	2.73E-04	-1.97E-03
Ozone depletion Potential	kg CFC11 eq	9.92E-07	8.16E-09	0	1.40E-09	1.08E-08	3.99E-09	9.69E-09	-1.56E-07
Acidification Potential	mol H+ eq	2.76E-01	8.77E-04	0	4.12E-04	1.06E-03	8.70E-04	2.15E-03	-7.38E-02
Eutrophication, freshwater	kg P eq	1.31E-02	2.82E-05	0	7.22E-05	3.53E-05	1.88E-05	4.66E-05	-8.33E-04
Eutrophication, marine	kg N eq	4.40E-02	2.17E-04	0	7.15E-05	2.49E-04	3.34E-04	8.27E-04	-1.20E-02
Eutrophication, terrestrial	mol N eq	5.59E-01	2.35E-03	0	6.22E-04	2.69E-03	3.63E-03	8.92E-03	-1.46E-01
Photochemical ozone formation	kg NMVOC eq	1.57E-01	1.48E-03	0	2.06E-04	1.78E-03	1.45E-03	3.54E-03	-4.07E-02
Abiotic depletion potential - non fossil	kg Sb eq	2.39E-04	1.28E-06	0	1.77E-07	1.71E-06	4.78E-07	1.17E-06	-4.14E-05
Abiotic depletion potential fossil fuels	MJ	2.62E+02	4.87E-01	0	1.38E+00	6.00E-01	3.37E-01	8.39E-01	-1.15E+01
Water user deprivation potential	m3 W eq. Dep	1.28E+01	2.59E-02	0	2.18E-02	2.90E-02	-5.80E-02	-2.29E-01	-1.74E+00

Acronyms : GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption

Table.4. Potential environmental impact – mandatory indicators according to EN 15804:2012+A2:2019/AC:2021

Note: The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.

Results according to EN 15804+A2 for 1m2 partitioning system

Impact category	Unit	A1- A3	A4	A5	C1	C2	C3	C4	D
Global Warming Potential – (GWP-GHG)	kg CO2 eq	5.85E+01	4.00E-01	0	7.18E-02	5.34E-01	1.79E-01	4.38E-01	-7.26E+00

Results according to EN 15804+A2 for 1m2 partitioning system

Impact category	Unit	A1- A3	A4	A5	C1	C2	C3	C4	D
Particulate matter emissions (PM)	disease inc.	3.40E-06	3.22E-08	0	1.44E-09	3.34E-08	2.90E-08	6.98E-08	-7.65E-07
Ionising radiation Human Health (IRP)	kBq U-235 eq	2.19E+00	7.82E-03	0	5.35E-02	1.15E-02	4.31E-03	1.07E-02	-2.75E-01
Ecotoxicity, freshwater	CTUe	6.71E+02	1.89E+00	0	1.03E+00	2.42E+00	2.12E+00	2.45E+01	-7.46E+01
Human toxicity, cancer effect	CTUh	1.24E-07	2.72E-09	0	1.62E-10	3.22E-09	2.38E-09	5.66E-09	-1.22E-08
Human toxicity, non-cancer effects	CTUh	4.41E-07	3.63E-09	0	6.19E-10	4.35E-09	1.37E-09	5.54E-09	-3.20E-08
Land use related impacts	dimensionles	1.64E+02	4.34E+00	0	3.26E-01	3.87E+00	4.18E+00	1.02E+01	-2.41E+01

Acronyms:

GWP-GHG = Global Warming Potential total excl. biogenic carbon following IPCC AR5 methodology; **IRP** = Ionizing radiation, human health; **ET-freshwater** = Eco-toxicity (freshwater); **HT-cancer** = Human toxicity, cancer effects; **HT-non-cancer** = Human toxicity, non-cancer effects; **SQP** = Potential soil quality index (SQP)

Table.5. Potential environmental impact – additional mandatory and voluntary indicators

Results according to EN 15804+A2 for 1m2 partitioning system

Impact category	Unit	A1- A3	A4	A5	C1	C2	C3	C4	D
Use of renewable primary energy carrier	MJ	4.26E+01	1.02E-01	0	4.47E-01	1.45E-01	8.24E-02	2.01E-01	-4.53E+00
Use of renewable primary energy raw mtl	MJ	0	0	0	0	0	0	0	0
Total use of renewable primary energy	MJ	4.26E+01	1.02E-01	0	4.47E-01	1.45E-01	8.24E-02	2.01E-01	-4.53E+00
Use of non-ren_ble prim energy as raw mt	MJ	0	0	0	0	0	0	0	0
Use of non-ren. primary energy carrier	MJ	2.74E+02	5.08E-01	0	1.42E+00	6.25E-01	3.52E-01	8.77E-01	-1.20E+01
Total of non-ren. primary energy sources	MJ	2.74E+02	5.08E-01	0	1.42E+00	6.25E-01	3.52E-01	8.77E-01	-1.20E+01
Use of Secondary Material	Kg	0	0	0	0	0	0	0	0
Use of renewable Secondary fuels	MJ	0	0	0	0	0	0	0	0
Use of non-renewable secondary fuels	MJ	0	0	0	0	0	0	0	0
Net Use of Freshwater	m3	3.69E-01	8.07E-04	0	1.59E-03	1.00E-03	1.06E-04	-1.92E-03	-4.81E-02

Acronyms:

PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding nonrenewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

Table.6. Use of resources

Results according to EN 15804+A2 for 1m2 partitioning system

Impact category	Unit	A1- A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste disposed	kg	2.71E-03	3.87E-05	0	2.83E-06	5.03E-05	2.17E-05	5.29E-05	-3.73E-04
Non-Hazardous waste disposed	kg	3.80E+00	3.57E-01	0	3.92E-03	3.02E-01	6.44E-01	2.08E+00	-4.87E-01
Radioactive waste disposed	Kg	0	0	0	0	0	0	0	0

Table.7. Waste production

Results according to EN 15804+A2 for 1m2 partitioning system

Impact category	Unit	A1- A3	A4	A5	C1	C2	C3	C4	D
Components for reuse	Kg	0	0	0	0	0	0	0	0
Materials for recycling	Kg	0	0	0	0	0	8.8	0	0
Materials for energy recovery	Kg	0	0	0	0	0	0	0	0
Exported Electrical Energy	MJ	0	0	0	0	0	0	0	0
Exported thermal Energy	MJ	0	0	0	0	0	0	0	0

Table.8. Output flows

Life Cycle Interpretation:

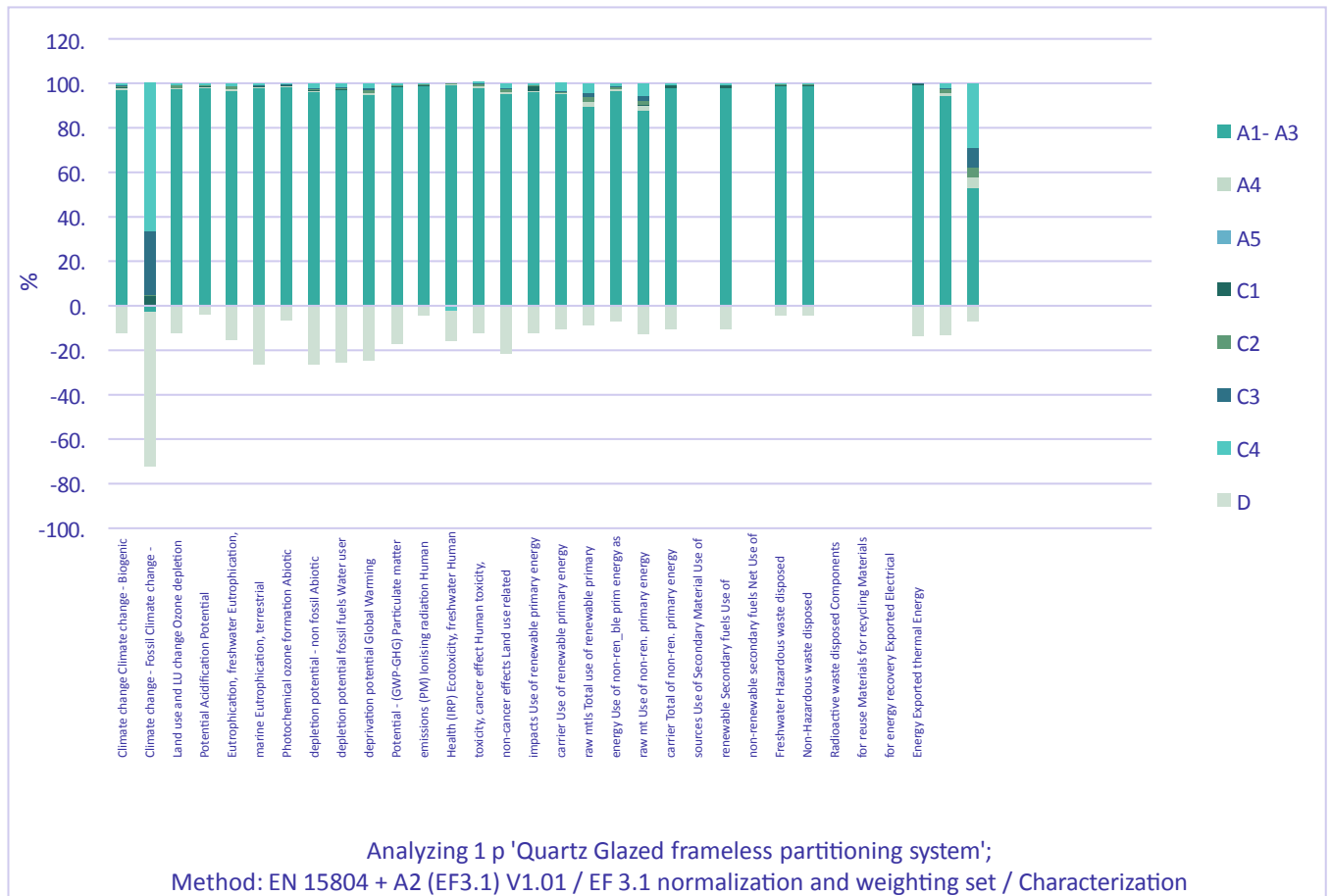


Fig.2. Potential environmental impact for 1m2 of Quartz glazed frameless partitioning system

Fig. 2 illustrates the environmental impacts of the partitioning system life cycle, indicating the most significant affects caused by modules A1-A3. Raw materials have the most significant

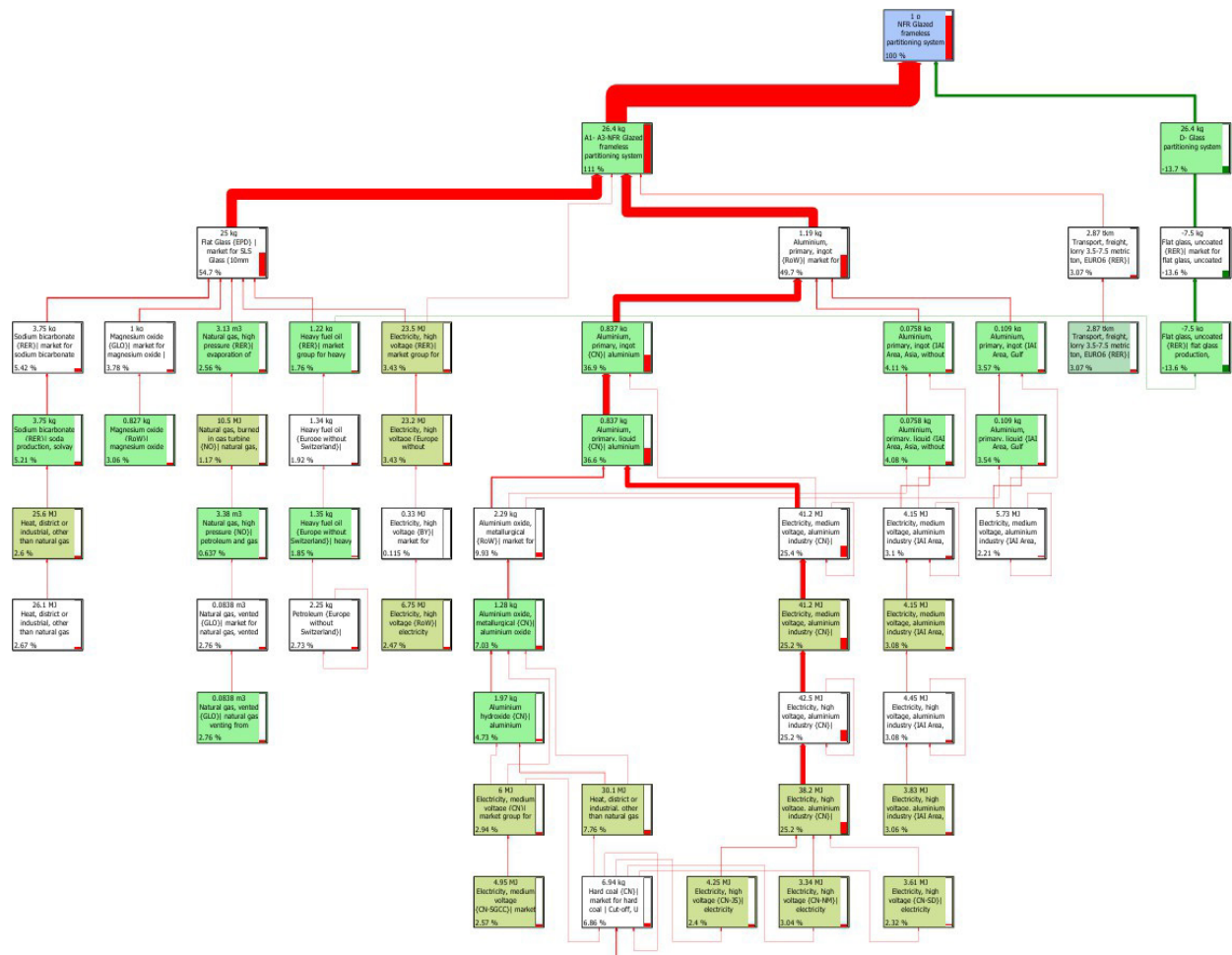


Fig.3. GWP-GHG network flow for 1m2 of Quartz glazed frameless partitioning system

Figure 3 illustrates the GWP-GHG results as kg CO₂ eq. (cut-off 2%). The manufacturing of partitioning systems is responsible for almost 97.90% of the overall effect, with the majority (close to 92%) coming from the production of glass and aluminium. Improvements in material recycling are necessary to reduce the impact on the environment.

References

- 1 ISO 14044: 2006 – Environmental management – Life cycle assessment – Requirements and guidelines
- 2 ISO 14040: 2006 – Environmental management – Life cycle assessment – Principles and framework
- 3 ISO 14025: 2006 Environmental labels and declarations -- Type III environmental declarations -- Principles and procedures
- 4 EN 15804:2012+A2:2019 Sustainability of construction works – Environmental product declarations - Core rules for the product category of construction products
- 5 PCR 2019:14 Construction products, Version 1.3.4 - EPD International AB, Sweden
- 6 Ecoinvent 3.10; www.ecoinvent.org
- 7 SimaPro LCA software; simapro.com
- 8 Life cycle assessment of flat glass and the implications of thinner and stronger glass – Linnaeus University Sweden
- 9 <https://api.environdec.com/api/v1/EPDLibrary/Files/c5528e8f-bfee-4803-9351-08dc6f302e37/Data>
- 10 EN 17213:2020 Windows and doors - Environmental Product Declarations - Product category rules for windows and pedestrian doorsets
- 11 [Frameless Glass Partitioning - Apton Partitioning \(apton-partitioning.com\)](http://apton-partitioning.com)

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