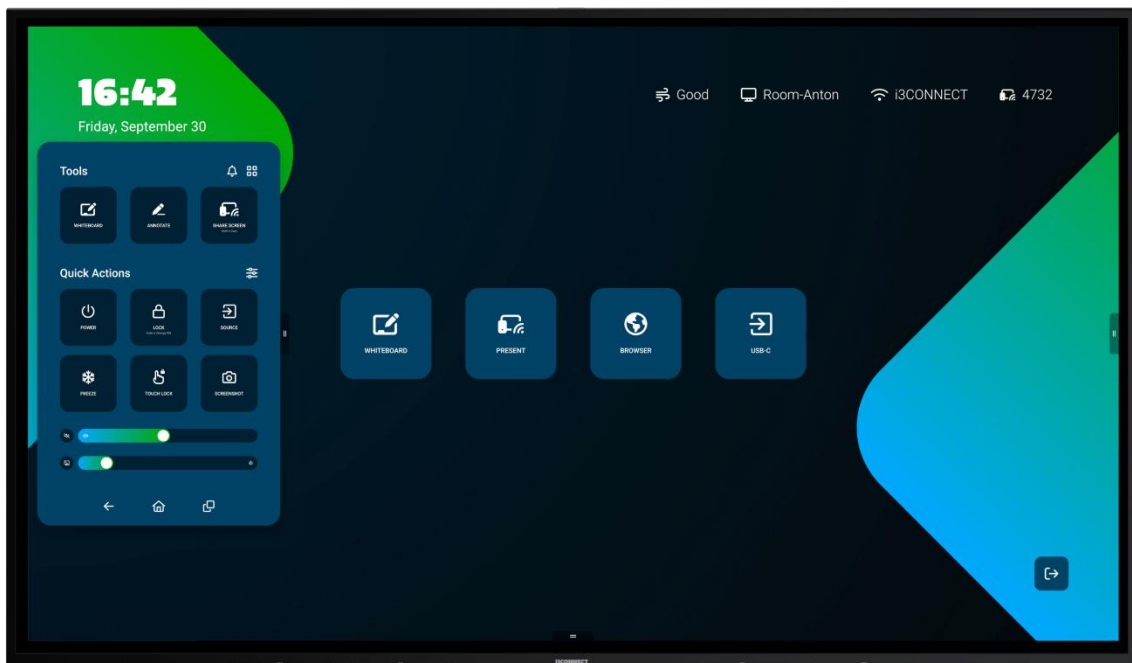


SUSTAINABILITY PASSPORT

Self-Declared Environmental Product Declaration

i3CONNECT Aspen 4 (65", 75", and 86")

Based on a Life Cycle Assessment according to ISO 14044 and the Product Category Rules (PCR) for Electronic and Electric Equipment



General Information

Company Information

EPD owner: i3CONNECT

Address: Achtseweg-Zuid, Eindhoven

Contact: Marielle Salh
marielle.salh@i3-connect.com

Website: i3-connect.com

Product Information

Product name: i3CONNECT Aspen 4

Functional unit: The manufacturing, packaging, distribution, installation, and end-of-life treatment of a single screen, as well as the use of that screen for the duration of its lifetime.

Reference flow: 1 unit

Product description: The i3CONNECT Aspen 4 is an Interactive Flat Panel Display (IFPD). It is a high-performance, touchscreen-enabled display designed to enhance collaboration, communication, and engagement in classrooms, meeting rooms, and other interactive environments. Combining clear visuals with intuitive touch capabilities, it offers a seamless digital experience for presentations, brainstorming sessions, and interactive learning. The IFPD comes in a 65", 75", and 86" display size, and is equipped with local dimming technology and a blackboard default to reduce energy consumption.

Production location: Huizhou, China

Lifetime: 8.56 years (50,000 hours (16/7))

EPD and LCA information

Study performed by: Edwin van Leth, Vince Evers, Raquel Kuperus from Dispersed

Date of publication: 25/11/2025

LCA standard: ISO14040-44:2006

LCIA method: Environmental Footprint v 3.1

Background data: Ecoinvent v 3.11, allocation, cut-off by classification system model

Product category rules: PCR for Electronic and Electric Equipment

EPD standard: ISO 14021 Type II – Self Declared

Third party review: Not Applicable

System Boundaries: In the LCA study, impacts were assessed from cradle-to-grave.

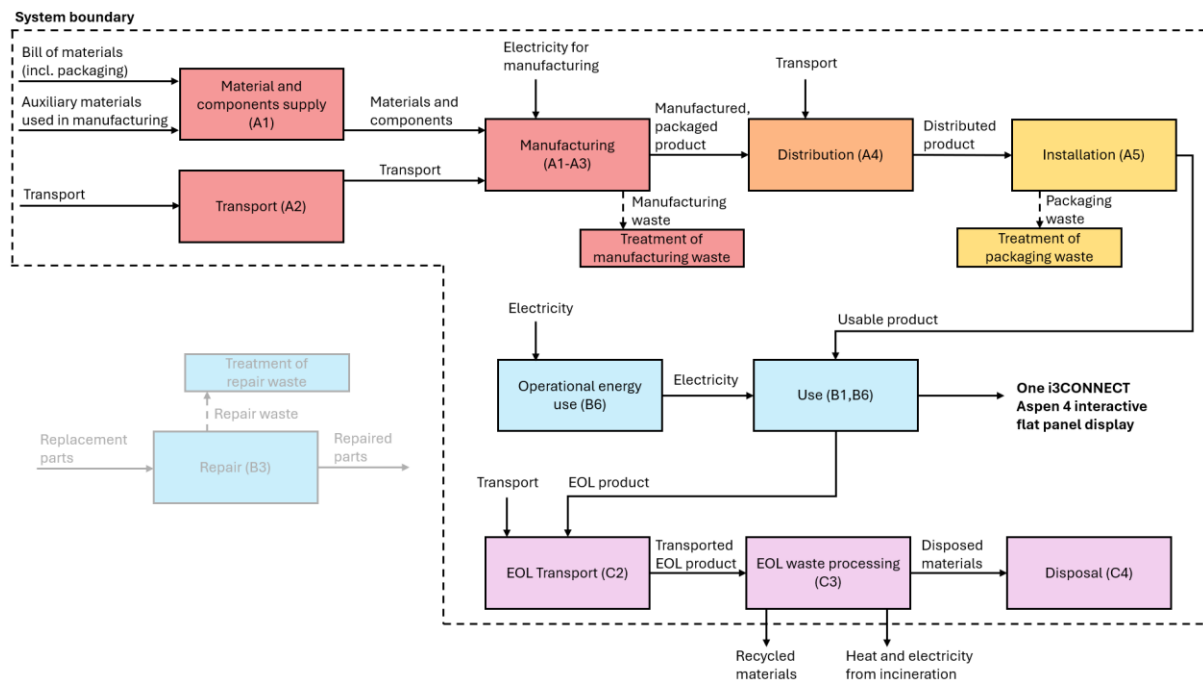
Production			Construction		Usage							End-of-Life				Module D
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	
Raw materials supply	Transport	Manufacturing	Transport	Construction and installation process	Use	Maintenance	Replacement	Repair	Refurbishment	Operational energy use	Operational water use	De-construction	Transport	Waste processing	Disposal	Benefits and loads beyond the system boundary
X	X	X	X	X	ND	ND	ND	ND	ND	X	ND	ND	X	X	X	ND

X: In Scope / ND: Not Declared

Geographical scope: The LCA assumes usage and end-of-life processing in the Netherlands.

Significant Exclusions: The plywood pallets used for packaging and transporting the screens have been excluded, as the pallets are typically reused many times throughout their lifespan and it is unclear how much of the pallet's impact is ultimately attributable to the i3CONNECT Aspen 4. Any repairs needed during the use phase of the IFPDs have also been excluded, due to a lack of data regarding repairs and since it is assumed that the majority of the touchscreens do not require any repair during their 8.5 year lifespan.

System diagram:



Data Collection and Life Cycle Inventory

Manufacturing (A1-3)

The impacts of manufacturing the i3CONNECT Aspen 4 have been calculated based on data provided by the manufacturing partner. This included the bill of materials for each of the three Aspen 4 sizes, a list of auxiliary materials used during manufacturing, and the energy consumption to produce one IFPD. Based on this data, Table 1 presents the total unpacked and packed mass of the three sizes of the Aspen 4.

Table 1. Mass of the i3CONNECT Aspen 4 IFPDs.

IFPD size	Total mass unpacked (kg)	Total mass packed (kg)
65 inch	38.56	48.89
75 inch	51.24	61.26
86 inch	66.98	80.02

An overview of the mass composition of each touchscreen can be seen in the following figures:

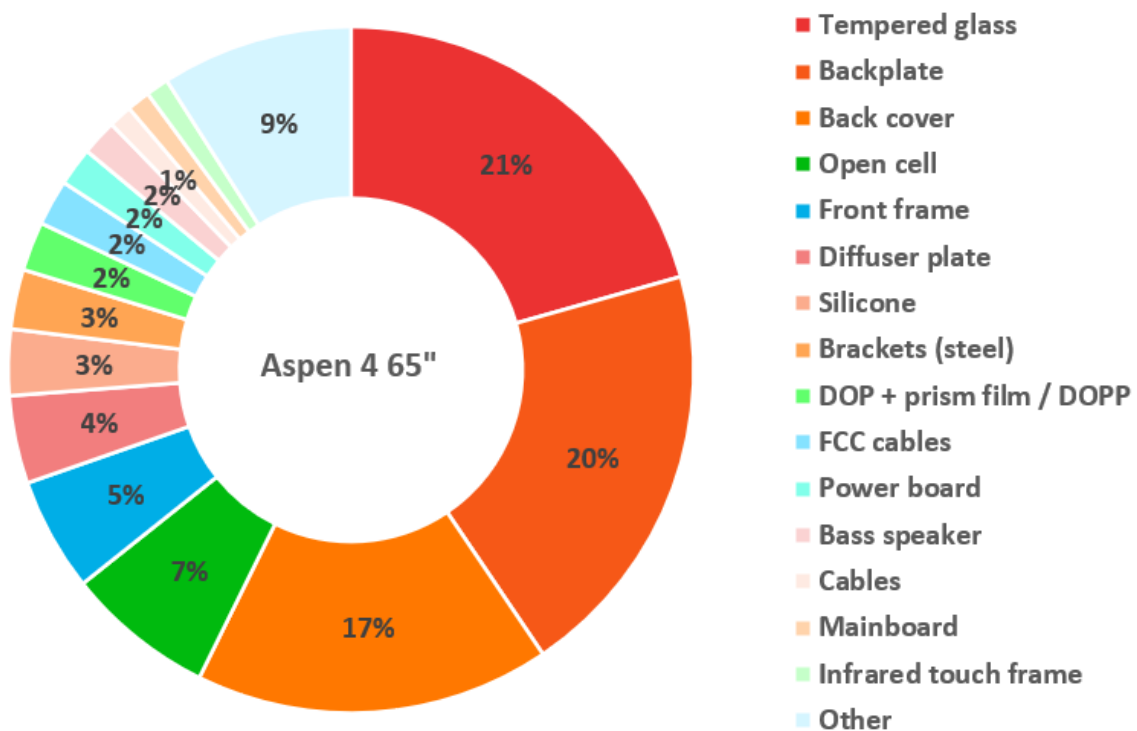


Figure 1. Mass composition of the i3CONNECT Aspen 4 65".

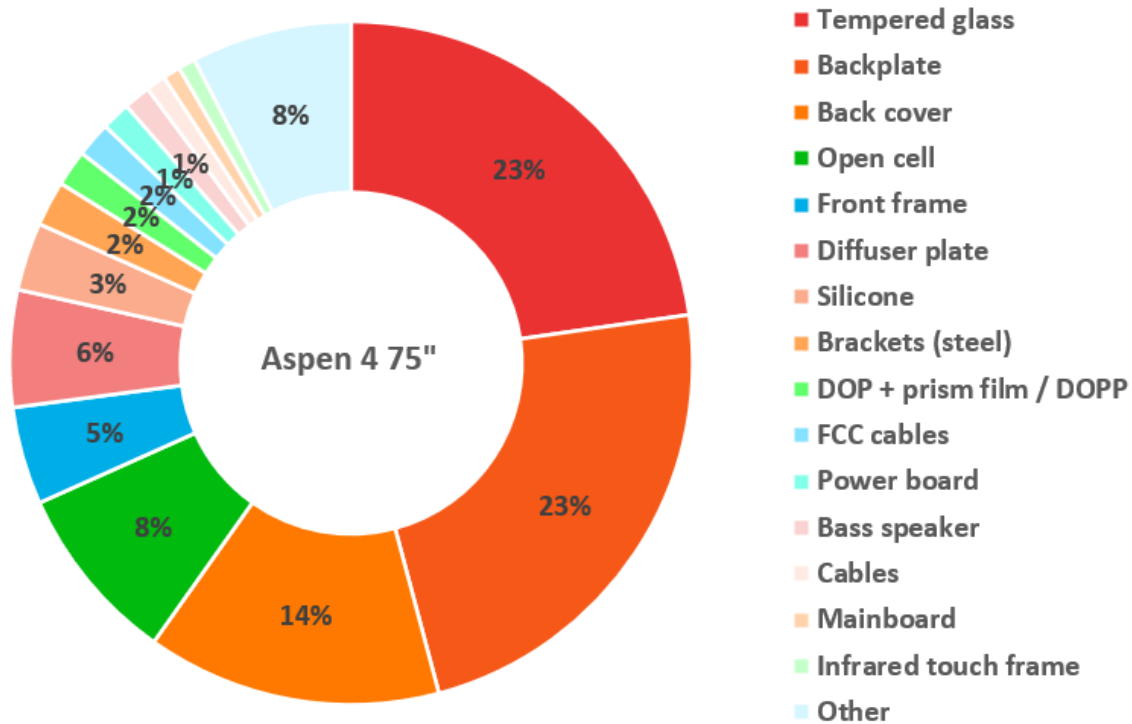


Figure 2. Mass composition of the i3CONNECT Aspen 4 75".

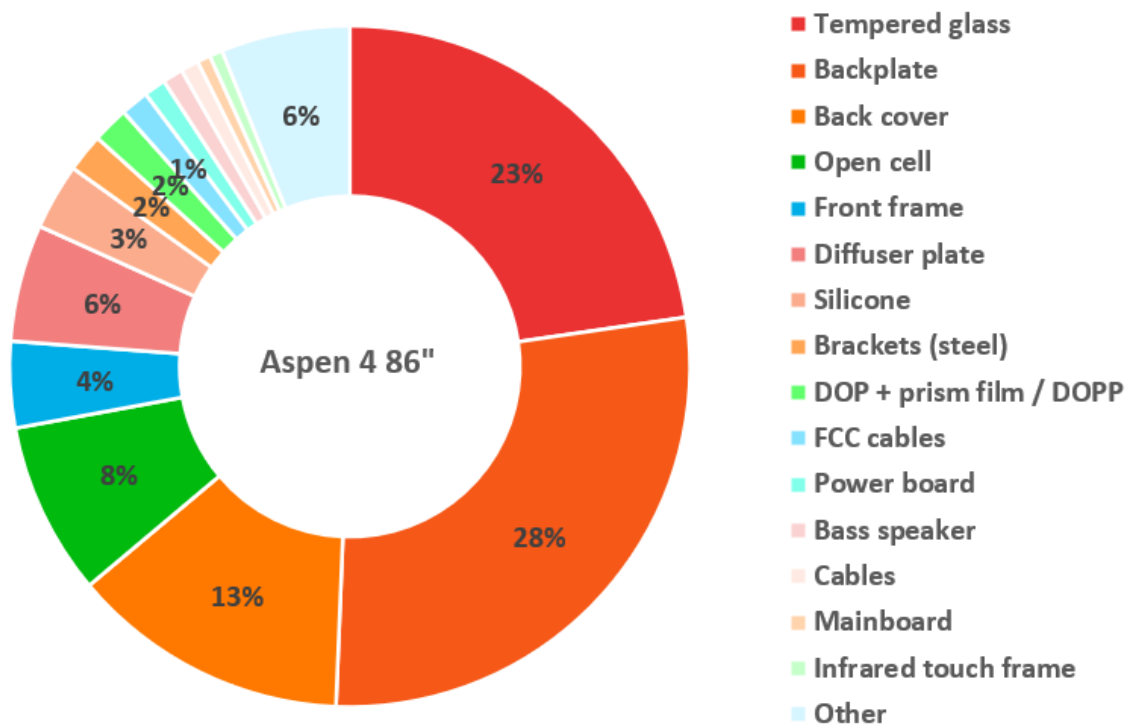


Figure 3. Mass composition of the i3CONNECT Aspen 4 86".

Table 2 lists the packaging materials used for each size of the Aspen 4.

Table 2. Inventory of packaging materials that are used for the three sizes of the i3CONNECT Aspen 4.

Packaging material	65" (kg)	75" (kg)	86" (kg)
Buckle	0.060	0.060	0.060
Cardboard box	8.519	8.217	11.096
Desiccant	0.352	0.352	0.352
Documentation	0.017	0.017	0.017
EPP packaging	0.726	0.726	0.726
Labels	0.013	0.013	0.013
Paper corner protection	0.240	0.213	0.240
Plastic bag	0.400	0.418	0.530

The components outlined above are assembled into the final, packaged products at the manufacturing partner's facilities. The environmental impacts of assembly are directly related to the energy consumption during this process. Table 3 contains the electricity used to manufacture one Aspen 4, including the share of grey and green electricity, as indicated by the manufacturing partner.

Table 3. Electricity consumption to manufacture one Aspen 4 IFPD.

Electricity	65"	75"	86"
Grey electricity (kWh)	1.391	1.391	1.391
Green electricity (kWh)	0.190	0.190	0.190

Table 4 contains an inventory of the auxiliary materials used and lost during the manufacturing of the Aspen 4.

Table 4. Auxiliary material used and lost during manufacturing.

Auxiliary material	65" (kg)	75" (kg)	86" (kg)
Release paper	0.001	0.001	0.001

Distribution (A4)

The impacts relating to distribution occur in four different transportation stages, which are described in Table 5. Since the geographical scope of this EPD assumes final consumption in the Netherlands, an average distance to customers in the Dutch market is used.

Table 5. Transportation modes and distances for each part of the distribution route.

Transportation stage	Mode of transport	Distance (km)
Manufacturer to Port in China	Truck	65
Port in China to Port of Rotterdam	Ship	18,152
Port of Rotterdam to i3CONNECT warehouse	Truck	144
i3CONNECT warehouse to final customer in NL	Truck	150

Installation (A5)

The only environmental impact associated with the installation of the Aspen 4 at the customer site arises from the end-of-life treatment of the packaging materials. Accordingly, the life cycle inventory for the installation phase (A5) focuses on the manual unpacking of the product and the subsequent processing of the packaging waste.

Use (B6)

Throughout its lifetime of approximately 8.5 years, the Aspen 4 consumes electricity. To model the environmental impacts of this electricity consumption, two average use scenarios were developed: one for an educational setting and one for a corporate setting. Per scenario, assumptions were made about the number of hours spent in each of the following modes: blackboard mode, screensharing/ other apps, sleep mode, and off/standby mode. The two scenarios were then combined into one weighted scenario based on i3CONNECT's typical sales distribution. Using the power consumption values shown in Table 6, the expected lifetime electricity consumption for the Aspen 4 was calculated.

Table 6. Power consumption of the Aspen 4 in different modes and the assumed lifetime electricity consumption. The values marked with a “~” were calculated by scaling the values measured for the 86” screen based on the Energy Star power consumption.

	Power ~65% Brightness (W)		Energy Star Report Power ~65% Brightness (W)	Sleep (W)	Off/ standby (W)	Lifetime electricity consumption (kWh)
	Whiteboard	Blackboard				
65”	~ 165	~ 45	121	47	<0.5	1187
75”	~ 207	~ 57	152	47	<0.5	1429
86”	248	68	182	47	<0.5	1663

Since the geographical scope of this EPD assumes that the Aspen 4 is used and reaches its end-of-life in the Netherlands, the electricity mix of the Netherlands has been used to model the environmental impacts the use phase. The Dutch electricity mix, presented in Table 7, is sourced from the International Energy Agency (IEA) database (IEA, 2024) and reflects the most current available data at the time of the study. This approach ensures consistency with the assumed market and aligns with the system boundaries defined for this assessment.

Table 7. Electricity mix of the Netherlands, assumed during the use phase.

Electricity source	Share in NL mix	Emission factor (kg CO2-eq/kWh)
Natural gas	35.9%	0.70
Wind	27.2%	0.02
Solar PV	17.3%	0.10
Coal	8.2%	1.00
Biofuels	3.9%	0.04
Nuclear	2.9%	0.00701
Waste	2.9%	0
Oil	1.1%	0.85
Other	0.5%	0.44
Hydropower	0.1%	0.00435

End-of-Life (C2-4)

The end-of-life (EoL) stage of the Aspen 4 displays was modelled in accordance with the product's expected waste management practices in the Netherlands, covering transport to treatment facilities (C2), processing for recovery (C3), and final disposal (C4).

The transportation distance to the treatment facility was assumed to be 50 km and the subsequent distance to an incineration plant or landfill was assumed to be an additional 100km.

The end-of-life treatment of the displays was modelled based on the Dutch scenario in which the products are processed by Mirec, a specialized electronics recycling facility in Eindhoven. In 2024, MIREC processed approximately 5,065 kg of CTOUCH products, for which detailed primary data on material recycling rates were obtained. The processing (C3) and final disposal (C4) stages are based on this primary data collected from MIREC's 2024 operations. This dataset, presented in Table 8, provided specific information on the actual shares of material that were recycled, incinerated (with or without energy recovery), or landfilled. Using these detailed recycling and disposal rates, the associated environmental impacts were modelled, ensuring that the waste treatment modelling accurately reflects real-world performance at the end-of-life stage for the Aspen 4 products.

Table 8. Waste treatment trajectories for the materials in the IFPDs, based on a study conducted by Mirec.

Waste category	Recycling (%)	Incineration with energy recovery (%)	Incineration without energy recovery (%)	Landfill (%)
Aluminium	100%			
Battery	100%			
Ferrous	100%			
Flat panel display	73%	26%		1%
Glass	100%			
Metal containing products ("raffineer")	74%	25%	1%	
Other		100%		
Paper		100%		
Plastic	59%	41%		

Environmental Performance

Table 9. EPD results for the 65" Aspen 4.

Impact category	Unit	A1-3	A4	A5	B6	C2	C3	C4	Total
Acidification	mol H+ eq	7.75E+00	2.81E-01	3.44E-03	8.85E-01	4.46E-03	1.03E-02	6.16E-05	8.93E+00
Climate change	kg CO2 eq	9.58E+02	1.24E+01	4.46E+00	4.36E+02	1.09E+00	9.38E+00	2.15E-01	1.42E+03
Climate change - biogenic	kg CO2 eq	4.04E+00	2.06E-03	1.05E+00	4.83E-01	2.10E-04	1.63E-01	6.06E-06	5.74E+00
Climate change - fossil	kg CO2 eq	9.53E+02	1.24E+01	3.40E+00	4.35E+02	1.09E+00	9.22E+00	2.15E-01	1.41E+03
Climate change - land use and LU change	kg CO2 eq	1.55E+00	6.07E-03	1.37E-04	7.22E-02	3.64E-04	2.24E-03	3.88E-06	1.63E+00
Ecotoxicity, freshwater	CTUe	2.74E+04	1.46E+01	1.95E+01	4.86E+02	2.07E+00	8.05E+01	2.20E+00	2.80E+04
Ecotoxicity, freshwater - inorganics	CTUe	2.32E+04	1.37E+01	1.95E+01	4.75E+02	2.00E+00	8.03E+01	2.20E+00	2.38E+04
Ecotoxicity, freshwater - organics	CTUe	1.54E+02	8.59E-01	4.08E-02	1.12E+01	6.98E-02	1.61E-01	5.62E-04	1.66E+02
Eutrophication, freshwater	kg P eq	1.83E-01	6.31E-05	6.79E-06	1.14E-02	8.06E-06	5.27E-05	7.50E-08	1.95E-01
Eutrophication, marine	kg N eq	1.22E+00	7.14E-02	1.94E-03	2.54E-01	1.66E-03	3.50E-03	3.07E-05	1.55E+00
Eutrophication, terrestrial	mol N eq	1.39E+01	7.94E-01	1.56E-02	2.83E+00	1.83E-02	3.27E-02	3.10E-04	1.76E+01
Human toxicity, cancer	CTUh	6.58E-07	2.48E-09	1.09E-09	5.46E-08	1.85E-10	2.97E-09	4.03E-11	7.20E-07
Human toxicity, cancer - inorganics	CTUh	4.08E-07	1.69E-09	9.09E-10	1.55E-08	8.03E-11	2.58E-09	3.86E-11	4.28E-07
Human toxicity, cancer - organics	CTUh	2.20E-07	7.87E-10	1.79E-10	3.92E-08	1.05E-10	3.95E-10	1.66E-12	2.60E-07
Human toxicity, non-cancer	CTUh	3.43E-05	5.64E-08	5.77E-08	1.40E-06	9.73E-09	2.02E-07	5.00E-09	3.60E-05
Human toxicity, non-cancer - inorganics	CTUh	3.16E-05	5.27E-08	5.56E-08	1.32E-06	9.08E-09	1.99E-07	5.00E-09	3.32E-05
Human toxicity, non-cancer - organics	CTUh	1.34E-06	3.78E-09	2.08E-09	8.08E-08	6.50E-10	2.27E-09	2.48E-12	1.43E-06
Ionising radiation	kBq U235 eq	3.46E+01	3.84E-02	2.39E-03	8.69E+00	6.74E-03	4.59E-02	2.68E-05	4.34E+01
Land use	Pt	4.99E+03	3.62E+01	2.10E+00	3.37E+03	9.22E+00	2.58E+01	3.92E-02	8.44E+03
Ozone depletion	kg CFC11 eq	2.08E-04	1.97E-07	6.96E-09	1.32E-05	2.40E-08	2.22E-08	8.75E-11	2.22E-04
Particulate matter	disease inc.	6.40E-05	5.40E-07	3.38E-08	4.26E-06	8.95E-08	1.39E-07	4.58E-10	6.90E-05
Photochemical ozone formation	kg NMVOC eq	4.04E+00	2.20E-01	4.55E-03	9.70E-01	6.61E-03	9.70E-03	7.97E-05	5.25E+00
Resource use, fossils	MJ	1.19E+04	1.58E+02	4.01E+00	6.36E+03	1.55E+01	1.99E+01	6.29E-02	1.85E+04
Resource use, minerals and metals	kg Sb eq	2.71E-01	2.04E-05	9.60E-07	1.12E-03	3.71E-06	2.53E-05	1.23E-08	2.73E-01
Water use	m3-world eq	3.20E+02	5.68E-01	4.10E-01	8.19E+01	7.25E-02	4.70E-01	5.10E-03	4.03E+02

Table 10. EPD results for the 75" Aspen 4.

Impact category	Unit	A1-3	A4	A5	B6	C2	C3	C4	Total
Acidification	mol H+ eq	8.71E+00	3.52E-01	3.35E-03	1.07E+00	5.92E-03	1.33E-02	8.78E-05	1.01E+01
Climate change	kg CO2 eq	1.12E+03	1.56E+01	4.45E+00	5.24E+02	1.45E+00	1.33E+01	3.18E-01	1.68E+03
Climate change - biogenic	kg CO2 eq	4.78E+00	2.58E-03	1.01E+00	5.81E-01	2.79E-04	2.16E-01	8.55E-06	6.59E+00
Climate change - fossil	kg CO2 eq	1.11E+03	1.56E+01	3.43E+00	5.24E+02	1.45E+00	1.31E+01	3.18E-01	1.67E+03
Climate change - land use and LU change	kg CO2 eq	1.65E+00	7.61E-03	1.33E-04	8.69E-02	4.84E-04	2.87E-03	4.55E-06	1.74E+00
Ecotoxicity, freshwater	CTUe	3.18E+04	1.83E+01	1.90E+01	5.85E+02	2.75E+00	1.17E+02	3.29E+00	3.25E+04
Ecotoxicity, freshwater - inorganics	CTUe	2.50E+04	1.72E+01	1.90E+01	5.71E+02	2.66E+00	1.17E+02	3.28E+00	2.57E+04
Ecotoxicity, freshwater - organics	CTUe	1.77E+02	1.08E+00	3.96E-02	1.35E+01	9.28E-02	2.11E-01	7.05E-04	1.92E+02
Eutrophication, freshwater	kg P eq	2.09E-01	7.90E-05	6.59E-06	1.37E-02	1.07E-05	6.62E-05	1.01E-07	2.23E-01
Eutrophication, marine	kg N eq	1.37E+00	8.95E-02	1.89E-03	3.06E-01	2.21E-03	4.69E-03	4.43E-05	1.78E+00
Eutrophication, terrestrial	mol N eq	1.55E+01	9.94E-01	1.52E-02	3.41E+00	2.43E-02	4.37E-02	4.46E-04	2.00E+01

Human toxicity, cancer	CTUh	7.38E-07	3.10E-09	1.06E-09	6.58E-08	2.46E-10	4.10E-09	5.36E-11	8.13E-07
Human toxicity, cancer - inorganics	CTUh	4.31E-07	2.12E-09	8.87E-10	1.86E-08	1.07E-10	3.58E-09	5.14E-11	4.56E-07
Human toxicity, cancer - organics	CTUh	2.57E-07	9.86E-10	1.74E-10	4.72E-08	1.40E-10	5.19E-10	2.21E-12	3.06E-07
Human toxicity, non-cancer	CTUh	3.73E-05	7.07E-08	5.60E-08	1.68E-06	1.29E-08	2.88E-07	7.47E-09	3.94E-05
Human toxicity, non-cancer - inorganics	CTUh	3.36E-05	6.60E-08	5.40E-08	1.58E-06	1.21E-08	2.85E-07	7.46E-09	3.57E-05
Human toxicity, non-cancer - organics	CTUh	1.48E-06	4.74E-09	2.01E-09	9.72E-08	8.64E-10	2.87E-09	3.09E-12	1.59E-06
Ionising radiation	kBq U235 eq	3.80E+01	4.82E-02	2.32E-03	1.05E+01	8.95E-03	5.73E-02	3.54E-05	4.86E+01
Land use	Pt	5.48E+03	4.54E+01	2.04E+00	4.06E+03	1.23E+01	3.35E+01	4.54E-02	9.63E+03
Ozone depletion	kg CFC11 eq	2.83E-04	2.46E-07	6.77E-09	1.58E-05	3.19E-08	2.87E-08	1.18E-10	2.99E-04
Particulate matter	disease inc.	7.62E-05	6.77E-07	3.28E-08	5.12E-06	1.19E-07	1.79E-07	5.79E-10	8.23E-05
Photochemical ozone formation	kg NMVOC eq	4.54E+00	2.76E-01	4.43E-03	1.17E+00	8.78E-03	1.29E-02	1.13E-04	6.01E+00
Resource use, fossils	MJ	1.37E+04	1.98E+02	3.90E+00	7.66E+03	2.06E+01	2.56E+01	8.29E-02	2.16E+04
Resource use, minerals and metals	kg Sb eq	2.75E-01	2.56E-05	9.34E-07	1.35E-03	4.93E-06	3.07E-05	1.62E-08	2.77E-01
Water use	m3-world eq	3.75E+02	7.11E-01	4.01E-01	9.86E+01	9.63E-02	6.37E-01	7.10E-03	4.75E+02

Table 11. EPD results for the 86" Aspen 4.

Impact category	Unit	A1-3	A4	A5	B6	C2	C3	C4	Total
Acidification	mol H+ eq	9.52E+00	4.59E-01	4.34E-03	1.24E+00	7.75E-03	1.67E-02	1.10E-04	1.13E+01
Climate change	kg CO2 eq	1.25E+03	2.04E+01	5.18E+00	6.10E+02	1.90E+00	1.68E+01	4.03E-01	1.91E+03
Climate change - biogenic	kg CO2 eq	6.10E+00	3.37E-03	1.37E+00	6.77E-01	3.65E-04	3.04E-01	1.06E-05	8.45E+00
Climate change - fossil	kg CO2 eq	1.24E+03	2.03E+01	3.82E+00	6.10E+02	1.90E+00	1.65E+01	4.03E-01	1.90E+03
Climate change - land use and LU change	kg CO2 eq	1.76E+00	9.94E-03	1.74E-04	1.01E-01	6.33E-04	3.53E-03	5.13E-06	1.87E+00
Ecotoxicity, freshwater	CTUe	3.50E+04	2.39E+01	2.51E+01	6.81E+02	3.59E+00	1.47E+02	4.19E+00	3.59E+04
Ecotoxicity, freshwater - inorganics	CTUe	2.65E+04	2.25E+01	2.51E+01	6.65E+02	3.47E+00	1.47E+02	4.19E+00	2.73E+04
Ecotoxicity, freshwater - organics	CTUe	2.00E+02	1.41E+00	5.22E-02	1.57E+01	1.21E-01	2.65E-01	8.25E-04	2.18E+02
Eutrophication, freshwater	kg P eq	2.28E-01	1.03E-04	8.67E-06	1.60E-02	1.40E-05	8.20E-05	1.22E-07	2.44E-01
Eutrophication, marine	kg N eq	1.51E+00	1.17E-01	2.45E-03	3.56E-01	2.89E-03	6.03E-03	5.56E-05	1.99E+00
Eutrophication, terrestrial	mol N eq	1.70E+01	1.30E+00	1.96E-02	3.97E+00	3.17E-02	5.53E-02	5.60E-04	2.23E+01
Human toxicity, cancer	CTUh	8.23E-07	4.05E-09	1.38E-09	7.66E-08	3.22E-10	5.12E-09	6.48E-11	9.11E-07
Human toxicity, cancer - inorganics	CTUh	4.61E-07	2.76E-09	1.15E-09	2.16E-08	1.39E-10	4.45E-09	6.21E-11	4.91E-07
Human toxicity, cancer - organics	CTUh	2.99E-07	1.29E-09	2.29E-10	5.49E-08	1.83E-10	6.68E-10	2.67E-12	3.56E-07
Human toxicity, non-cancer	CTUh	4.03E-05	9.24E-08	7.38E-08	1.96E-06	1.69E-08	3.60E-07	9.52E-09	4.28E-05
Human toxicity, non-cancer - inorganics	CTUh	3.58E-05	8.62E-08	7.11E-08	1.84E-06	1.58E-08	3.57E-07	9.52E-09	3.82E-05
Human toxicity, non-cancer - organics	CTUh	1.64E-06	6.19E-09	2.70E-09	1.13E-07	1.13E-09	3.68E-09	3.59E-12	1.76E-06
Ionising radiation	kBq U235 eq	4.08E+01	6.29E-02	3.03E-03	1.22E+01	1.17E-02	7.16E-02	4.26E-05	5.31E+01
Land use	Pt	6.16E+03	5.93E+01	2.64E+00	4.73E+03	1.60E+01	4.48E+01	5.07E-02	1.10E+04
Ozone depletion	kg CFC11 eq	3.51E-04	3.22E-07	8.80E-09	1.84E-05	4.17E-08	3.62E-08	1.44E-10	3.69E-04
Particulate matter	disease inc.	8.70E-05	8.84E-07	4.28E-08	5.96E-06	1.56E-07	2.25E-07	6.80E-10	9.42E-05
Photochemical ozone formation	kg NMVOC eq	4.98E+00	3.61E-01	5.75E-03	1.36E+00	1.15E-02	1.63E-02	1.42E-04	6.73E+00
Resource use, fossils	MJ	1.52E+04	2.58E+02	5.05E+00	8.92E+03	2.69E+01	3.20E+01	9.95E-02	2.44E+04
Resource use, minerals and metals	kg Sb eq	2.78E-01	3.34E-05	1.22E-06	1.57E-03	6.45E-06	3.81E-05	1.95E-08	2.79E-01
Water use	m3-world eq	4.26E+02	9.29E-01	5.26E-01	1.15E+02	1.26E-01	7.96E-01	8.78E-03	5.43E+02



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