ASP™ access floors INTERNATIONAL

ENVIRONMENTAL PRODUCT DECLARATION OF

EVO ACCESS FLOOR SYSTEM

ENVIRONMENTAL PRODUCT DECLARATION (EPD)
IN ACCORDANCE WITH
ISO 14025: 2006 AND EN 15804+A2:2019/AC:2021

PROGRAMME: EPD AUSTRALASIA
PROGRAMME: EPD AUSTRALASIA https://epd-australasia.com/
PROGRAMME OPERATOR: EPD INTERNATIONAL AB
PROGRAMME OPERATOR: EPD AUSTRALASIA
EPD REGISTRATION NUMBER: S-P-10951
VALID FROM: 2024-02-28
VALID UNTIL: 2029-02-28
VERSION NUMBER: 1.0
GEOGRAPHICAL SCOPE: SOUTH EAST ASIA

EPD® THE INTERNATIONAL EPD® SYSTEM

AUSTRALASIA EPD® ENVIRONMENTAL PRODUCT DECLARATION

ECO PLATFORM EPD VERIFIED

This EPD covers multiple products (average set of results). The product covered in the EPD is EVO access floor.

An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at https://epd-australasia.com/

Contents

EPD Profile

An Environmental Product Declaration, or EPD, is a standardised and verified way of quantifying the environmental impacts of a product based on a consistent set of rules known as a PCR (Product Category Rules).
ASP Access Floors has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programmes may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR (including the same version number up to the first two digits) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison.
EPDs of construction products may not be comparable if they do not comply with EN 15804. The results for EN15804+A1 compliant EPDs are not comparable with EN15804+A2 compliant studies as the methodologies are different. Results that are EN15804+A1 compliant are given in this document to assist comparability across EPDs."

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CEN standard EN 15804 serve as the core Product Category Rules (PCR)
Product category rules (PCR): PCR 2019: 14 Construction products, version 1.3.1
PCR review was conducted by: The Technical Committee of the International EPD® System. See www.environdec.com for a list of members.
Review Chair: Martin Erlandsson. Contact via info@environdec.com

Independent verification of the declaration and data, according to ISO 14025:

- [ ] EDP process certification (internal)
- [X] EPD verification (external)

This EPD can be used to claim points under Green Building Council Australia (GBCA) Green Star rating tools, specifically Material credits (up to 7 credits total) and Responsible Building Material Credits (up to 3 credits) in the Green Star Design & As Built tool.

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

Third-party verification
Independent verification of the declaration and data, according to ISO 14025: 2006, via:
EPD verification by individual verification by individual verifier.

Third-party verifier: *Jonas Bengtsson*
jonas.bengtsson@edgeimpacy.global

Verifier approved by: *EPD Australasia*

Procedure for follow-up of data during EPD validity involved third-party verifier
Yes [ ]
No [X]

Company Profile

ASP Access Floors Pty Ltd is a global leading company that specializes in manufacture, distribution, and installation of access floors around the world. Our sole mission at ASP is to provide all our clients with exceptional products and service.

Since our conception ASP has delivered some of the most effective solutions on the market. Through research and analysing current trends and problems that occur with access floors, we have already developed some of the most unique and effective products on the market.

Ease of Configuration

The modular design of the access floor enables businesses to re-configure their offices.

Cost

The cost differentiation between the installation and maintenance of traditional suspended ceiling system vs. ASP access floor system are exceptionally high. Overall access floors are approximately 40% cheaper to install and maintain services.

Project Timeline

Installing services in the floor in lieu of the suspended ceiling system dramatically cuts the time of installation, which in turn cuts the overall project construction time.

Maintenance

Services can be maintained regularly and without lengthy time delays as service personnel are able to isolate and service zones as required, which minimizes the interruptions to your work.

Comfort

With HVAC system installed in the floor, employees can individually control air pressure and temperature through their office floor diffusers.

The use of access floors in the workplace is rapidly gaining popularity within the construction industry. Their specifically designed flexibility and capacity to change has made access floors the perfect solution for many owners, developer, designers and facility managers.

Product Description

The access flooring system is made up of floor panels and pedestals. The **Evo** panel is a robust lightweight cementitious panel which is steel encased to help provide maximum durability. The Evo panel is the most specified panel in the industry and is regarded as ASP Access Floors' standard panel for numerous applications.

The standard Evo panel (600mm x 600mm) consists of a powder-coated high-density steel shell and edge.
A cementitious core (cement, fly ash and grey water) is injected to provide a robust sound-dampening flooring surface.

The under-structure system is composed of Field and Perimeter Pedestals consisting of a head and a base, attached together with a gasket. Different combinations are available to control the cavity height.
ASP Access Floor products are used in a variety of applications e.g. general office areas, gaming areas, education facilities, banks, libraries etc. Before designing the layout and functionality of an access floor, the load capacity and tolerance are determined (concentrated load, ultimate load, uniform load, impact load, rolling load) and the relevant ASP Access Floors componentry selected.

EPD Product Inclusions

The Evo System is a stringer-less system where the panels are individually screw fixed onto the pedestal heads **(Figure 1).** This system is widely used for electrical and data cable management, and for applications where there is a need for an under-floor baffle/plenum of air highway. This system is recommended for applications such as general offices, banks, learning institutions and libraries.

Figure 1:

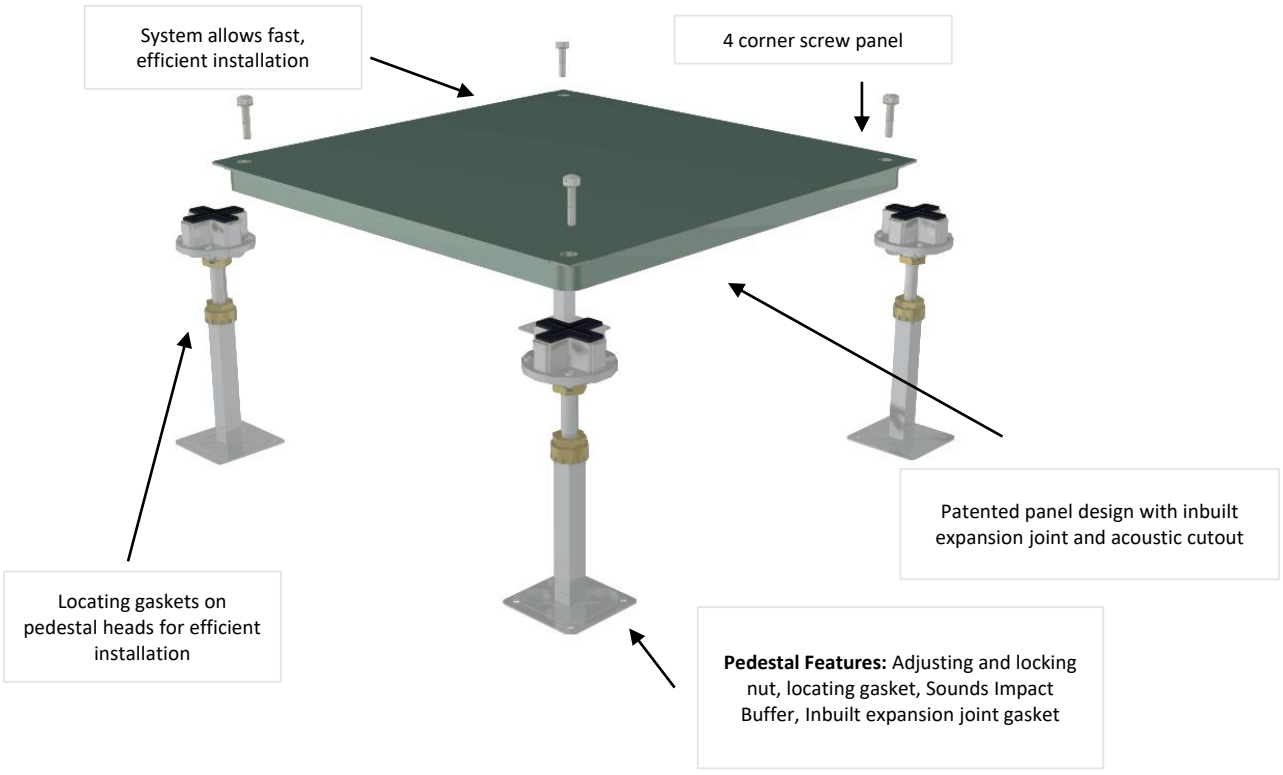


Table 1: Industry Classification

PRODUCT	CLASSIFICATION	CODE	CATEGORY
Evo Access Floor System	UN CPC Ver.2	37550	Prefabricated structural components for building or civil engineering, of cement, concrete or artificial stone
	ANZSIC 2006	324	Building Completion Services

EPD Product Inclusions

PRODUCT NAME	PANEL	FFH	PEDESTALS	STRINGERS
EVO	Medium Grade (600x600mm) Evo Panel	110-180mm	Field Petestal: S3 Perimeter Pedestal: S4	/
EVO	Heavy Grade (600x600mm) Evo Panel	110-180mm	Field Petestal: S3 Perimeter Pedestal: S4	/

Declared Unit: ISO 14040 defines a functional unit as “quantified performance of a product system for use as a reference unit”. EPDs that do not cover the full product life cycle from raw material extraction through to end-of-life use the term “declared unit” instead. The declared unit for each of the product categories is 1 square meter (m2) of access floor installed. The Technical service life of the product is 100 years. The product is expected to last the lifespan of the building.

Table 2: Content declaration (per 1m^2 product)

PRODUCT COMPONENTS	WEIGHT, KG		POST-CONSUMER RECYCLED MATERIAL, WEIGHT-%	BIOGENIC MATERIAL, WEIGHT-% AND KG C/KG
	EVO (medium)	EVO (heavy)		
Steel	14.7	16.4	0.91	0 resp. 0
Cement	13.8	13.8	0	0 resp. 0
Fly Ash	3.46	3.46	0	0 resp. 0
Grey Water	3.46	3.46	0	0 resp. 0
Epoxy Paint	0.417	0.417	0	0 resp. 0
Aluminium	0.207	0.207	0	0 resp. 0
Zinc Paint	0.122	0.122	0	0 resp. 0
ABS	0.019	0.019	0	0 resp. 0
Rubber	0.003	0.003	0	0 resp. 0
Paper	0.000	0.000	0	0.5 resp. 0.5
Total	36.2	37.8		0.5 resp. 0.5

Table 3: Composition of packaging (per 1m^2 product)

PRODUCT COMPONENTS	WEIGHT, KG	WEIGHT, KG	WEIGHT % (VERSUS THE PRODUCT)	0.5 RESP. 0.5 WEIGHT-% (VERSUS THE PRODUCT)
	EVO (medium)	EVO (heavy)		
Cardboard	0.131	0.131	0.004	0.5
Wood	0.529	0.529	0.014	0.5
PE film	0.0222	0.0222	0.001	0
Steel	0.0680	0.0680	0.002	0
Total	0.750	0.750	0	0.440

ASP has delivered some of the most **effective solutions** on the market

Production

All components of the Evo flooring system are manufactured, assembled and supplied by Changzhou Wujin Zhongtian Computer-Room Equipment Co. Ltd in China. The cementitious compound, steel, and aluminium used have verified recycled contents of 97%, 97% and 100% respectively.

The manufacturing process for each component is described briefly below.

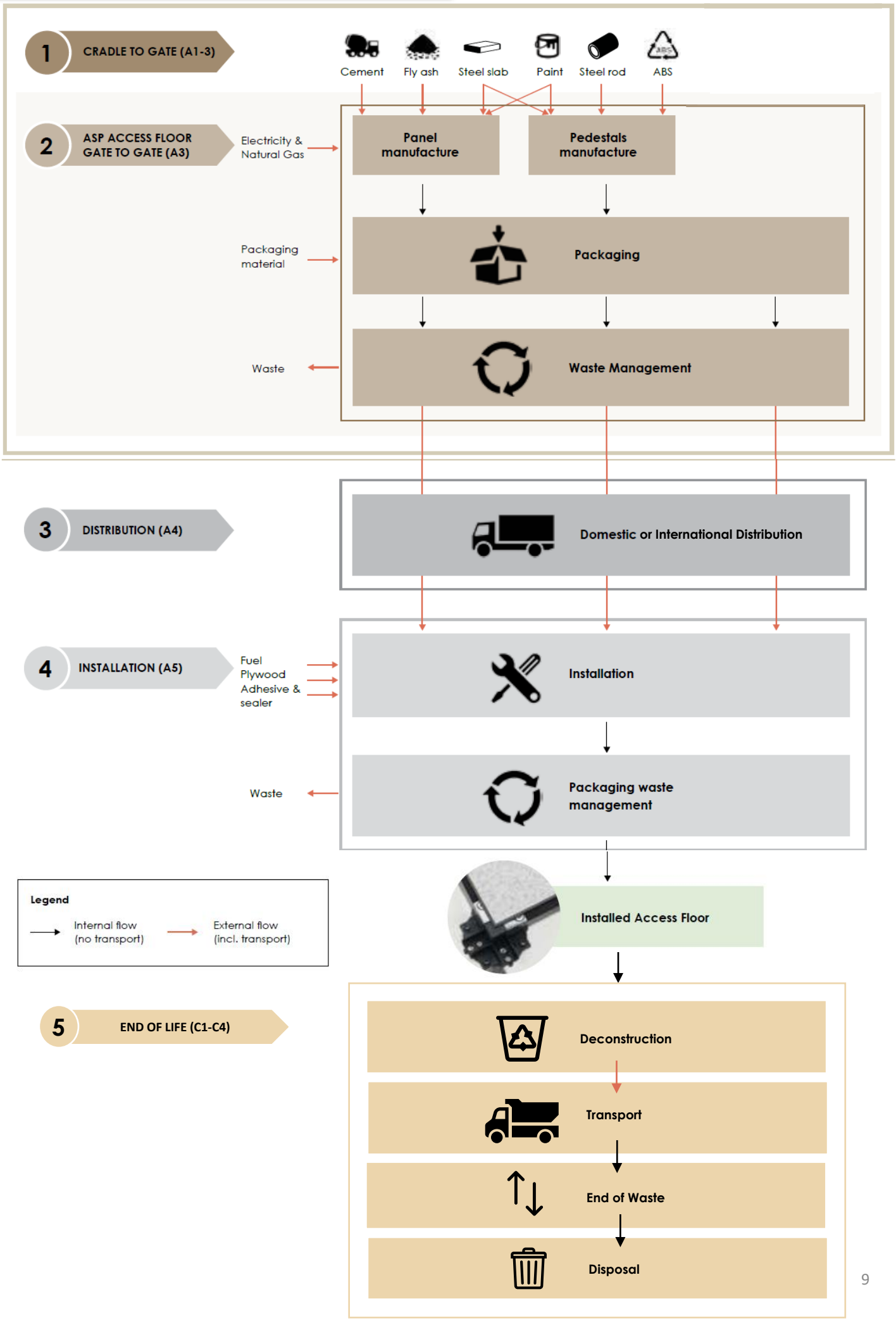
Panels

600mm x 600mm sheets of mild steel are spot welded together with a 1.5mm edge to form a solid steel case. The case consists of an enclosed die formed cupped bottom pan and a steel top sheet. The steel provides the structural strength to the panel. A cementitious core consisting of cement, fly ash and grey water, is injected between the sheets to provide sound dampening and additional strength. Panels are then powder coated in an epoxy paint finish.

Pedestals

The steel plates are punched and then welded onto individual threaded rods. The resulting bases are powder coated and a nut is added to the threaded rod. Field pedestal heads (S3) are die-formed punched aluminium threaded onto a steel threaded tube. The inbuilt expansion joint gasket is moulded ABS. Perimeter pedestal heads (S4) consist of a punched steel plate welded to a steel tube. This is zinc plated and a moulded ABS plastic gasket is attached.

Manufacturing Process



System Boundaries

As shown in the table below, this EPD is of the type Cradle to gate with modules C1–C4 and module D (A1–A3, A4, A5 + C + D). Other life cycle stages (Modules B1-B7) are dependent on scenarios and best modelled at the building level.

Table 4: Modules included in the scope of the EPD

PRODUCT STAGE				CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				RESOURCE RECOVERY STAGE
	Raw material supply	Transport of raw materials	Manufacturing	Transport to customer	Construction / Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction / demolition	Transport to waste processing	Waste processing	Disposal	Reuse - Recovery- Recycling- potential
	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
	X	X	X	X	X	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	GLO	GLO	CN	VN	VN	ND	ND	ND	ND	ND	ND	ND	VN	VN	VN	VN	VN
Specific Data	>90%					-	-	-	-	-	-	-	-	-	-	-	-
Variation: Products	<10%					-	-	-	-	-	-	-	-	-	-	-	-
Variation: Sites	NA					-	-	-	-	-	-	-	-	-	-	-	-

X = included in the EPD; ND = Module not declared (such a declaration shall not be regarded as an indicator result of zero)

Vietnam is included as proxy for Southeast Asia region. The processes below are included in the product system to be studied. For modules beyond A3, the scenarios included are currently in use and are representative for one of the most probable alternatives.

Product Stage (Modules A1-A3)

All components of the EVO flooring system are manufactured, assembled and supplied by Changzhou Wujin Zhongtian Computer-Room Equipment Co. Ltd in China Module A1 (raw material supply) includes the production of metals, cement, plastics as received by the supplier. Module A2 (transportation) includes the transport of these raw materials from producers to the supplier. All raw materials are produced within 100 km distance, and transport by truck was assumed. Module A3 (manufacturing) includes the processing of the raw materials into the finalised components ready to be assembled; this includes the production of the cementitious. Since Module C is included in the EPD, the use of Module A1-A3 results without considering the results of Module C is discouraged.

Transport to Customer Stage (Module A4)

Distribution includes transport of product from the manufacturing site to customers in South East Asia. This is based on the sales weighted average transport distances and is not representative for any given customer. Customers should individually establish the transport requirements between distribution centre and their site rather than relying on the average.

Construction/Installation

After being delivered to the construction site, access floor parts (panels, pedestals, stringers and fixing screws) are unpacked and installed. Depending on the building site, the product can be mechanically lifted using diesel machinery. As a conservative assumption, fuel consumption was estimated using the gravitational energy potential for product lifted 20 m with a 10% diesel efficiency.

End of Life (Module C)

When a building reaches its end-of-life it will be demolished (C1) and the demolition waste transported to a processing facility (C2). The waste processing (C3) includes the separation of steel waste from other building materials and shredding activities. Material that cannot be recycled will be disposed (C4). The end-of-life stage (Modules C1-C4) and resource recovery stage (Module D) are modelled using a scenario reflecting end-of-life recycling/ landfilling rates for steel products in the construction sector.

TABLE 5: END OF LIFE SCENARIOS FOR PRODUCTS	UNIT (PER DECLARED UNIT AND TYPE OF MATERIAL	
Excavator	Equivalent weight of 1 m^2 of access flooring	
Recovery system specified by type	All materials, 0% recycled, 100% landfill	(Hoang, et al., 2019)
	We considered Vietnam as a proxy for the region where ASP markets its products. As per reference, waste management "activities are not well documented", and "no official statistics are available regarding construction waste generation and handling practices including reuse, recycling and disposal rate". Therefore, we assumed the most conservative scenario with all materials going to landfill.	
	All other material landfilled	
Disposal specified by type	Steel: 100% modelled as ferrous metals in landfill Waste core: 100% Inert matter on landfill Plastic: 100% Plastic waste on landfill	
Assumptions for scenario development	• C1 - Demolishing with an Excavator (100kW)- Fuel consumption is calculated at 0.172 kg diesel input per tonne of material. • C2 - 50 km of transport by truck	

Recovery and Recycling potential (Module D)

Module D declares a potential credit or burden for the net scrap associated with ASP Access Floors' products. Net scrap is the amount of scrap left after scrap from post-consumer needs is removed from scrap produced from the product. That is, secondary product used in product manufacture is subtracted from the overall amount of recycled product after the first life cycle. If the net balance is positive, a credit is given. The credit is calculated by comparing the impacts associated with primary product produced.

Life Cycle Inventory (LCI) Data & Assumptions

Primary life cycle inventory data was used for all manufacturing operations up to the plant gate, and for all installation in South East Asia. Primary data were collected for product manufacturing, distribution, installation, and end-of-life for the year 2022 (from 2022-01-01 to 2022-12-31)..

Upstream Data

Chinese and Vietnam-specific datasets have been used where available, including the Chinese electricity mix regionalised for East China. Other energy sources generally use Chinese (for production) or Vietnam (for installation) datasets, for example, diesel. Water inputs are modelled as tap water, regionalised for China.
The upstream production impacts for materials used in the products were calculated based on the quantities in the Bill of Materials, uplifted for any production waste, and using dataset-specific impacts extracted from Sphera databases.

LCA Software & Database

The LCA was modelled in LCA for Experts 10.7 from Sphera Solutions. All data in the background system was from the Sphera Life Cycle Inventory Database 2023. Documentation can be found at: https://sphera.com/product-sustainability-gabi-data-search/
Note that all MLC datasets have as a minimum their energy upstream (and any energy upstream present in their material upstream) updated on an annual basis. In addition, all MLC datasets are updated whenever the technology or geographical mix of the producers of a product changes significantly.

Transport

Transport data was collected from ASP for all input materials to all sites. The transport data included the transport modes and distances from suppliers. Transport distances were mapped against each line of BOM data and used to calculate upstream transport impacts using the calculated input volumes. Where transport data was not available, a standard value of 100 km was used.

Electricity

The composition of the electricity grid mix was modelled in LCA for experts. Purchased electricity accounts for approximately 100% of electricity used for access floor manufacture. The East Chinese electricity grid consumption mix (2019) is made up of hard coal (63.9%), photovoltaics (11.2%), hydro (7.9%), nuclear (5.7%), wind (4.9%), natural gas (2.9%), coal gases (1.7%), biomass (1.5%), waste (0.1%), and fuel oil (0.1%). The emission factor for the East Chinese national grid for the GWP-GHG indicator is 0.709 kg CO2-eq/kWh.

Multiple products EPD: Products & Variation

Weighted average grouping was done for product lines under the two-load classification (medium and heavy grade). Overall, one group were considered using weighted average sales.
The variation of the grouped results in relation to the weighted average result for the group is below ±10% for all environmental core indicators. Therefore, this EPD is of multiple products, based on the average results of Evo medium and heavy grade.

Cut off criteria

Environmental impacts relating to personnel, infrastructure, and production equipment not directly consumed in the process are excluded from the system boundary as per PCR v1.3.1. All other reported data were incorporated and modelled using the best available life cycle inventory data.

Allocation

Where subdivision of processes was not possible, allocation rules listed in PCR chapter 6.7 have been applied. Multi-output allocation generally follows the requirements of ISO 14044, section 4.3.4.2. Site level data for electricity, diesel for mobile plant (e.g. loaders), water, and lubricant usage are allocated by mass, based on the annual production. Allocation of background data (energy and materials) is according to Sphera LCI databases; documentation is available at https://sphera.com/product-sustainability-gabi-data-search/.

ASP provides businesses & developers the perfect balance between optimum **design & functionality**

Assessment Indicators

The results tables describe the different environmental indicators for each product per declared unit, for each declared module. The EN 15804 reference package based on EF 3.0 is used.

- → Table 6 con tains the core environmental impact indicators in accordance with EN 15804:2012+A2:2019, describing the potential environmental impacts of the product.
- → Table 7 shows the life cycle inventory indicators for resource use.
- → Table 8 displays the life cycle inventory indicators for waste and other outputs.
- → Table 9 provides additional environmental impact indicators in accordance with EN 15804:2012+A2:2019.
- → Table 10 displays biogenic carbon content indicators.
- → Table 11 contains results for environmental impact indicators in accordance with EN 15804:2012+A1:2013 to aid backward comparability.

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.
Energy indicators (MJ) are always given as net calorific value.

Table 6: EN15804+A2 Core Environmental Impact Indicators

IMPACT CATEGORY	ABBREVIATION	UNIT
Climate change – total	GWP-total	kg CO_2-eq.
Climate change – fossil	GWP-fossil	kg CO_2-eq.
Climate change – biogenic	GWP-biogenic	kg CO_2-eq.
Climate change – land use and land use change	GWP-luluc	kg CO_2-eq.
Ozone depletion	ODP	kg CFC11-eq.
Acidification	AP	Mole of H^+ eq.
Eutrophication aquatic freshwater	EP-freshwater	kg P eq.
Eutrophication aquatic marine	EP-marine	kg N eq.
Eutrophication terrestrial	EP-terrestrial	Mole of N eq.
Photochemical ozone formation	POFP	kg NMVOC eq.
Depletion of abiotic resources – minerals and metals[1]	ADP-m&m	kg Sb-eq.
Depletion of abiotic resources – fossil fuels[1]	ADP-fossil	MJ
Water use[1]	WDP	m^3 world equiv.

Table 7: Life cycle inventory indicators on use of resources

INDICATOR	ABBREVIATION	UNIT
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	PERE	MJ
Use of renewable primary energy resources used as raw materials	PERM	MJ
Total use of renewable primary energy resources	PERT	MJ
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	PENRE	MJ
Use of non-renewable primary energy resources used as raw materials	PENRM	MJ
Total use of non-renewable primary energy resources	PENRT	MJ
Use of secondary material;	SM	kg
Use of renewable secondary fuels	RSF	MJ
Use of non-renewable secondary fuels	NRSF	MJ
Total use of net fresh water	FW	m^3

Table 8: Life cycle inventory indicators on waste categories and output flows

INDICATOR	ABBREVIATION	UNIT
Hazardous waste disposed	HWD	kg
Non-hazardous waste disposed	NHWD	kg
Radioactive waste disposed	RWD	kg
Components for reuse	CRU	kg
Materials for energy recovery	MER	kg
Materials for recycling	MFR	kg
Exported electrical energy	EEE	MJ
Exported thermal energy	EET	MJ

Assessment Indicators

Table 9: EN15804+A2 Additional Environmental Impact Indicators

INDICATOR	ABBREVIATION	UNIT
Climate Change[2]	GWP-GHG	kg CO_2-eq
Particulate Matter emissions	PM	Disease incidences
Ionising Radiation – human health[3]	IRP	kBq U235 eq.
Eco-toxicity (freshwater)[1]	ETP-fw	CTUe
Human Toxicity, cancer[1]	HTP-c	CTUh
Human Toxicity, non-cancer[1]	HTP-nc	CTUh
Land use related impacts / soil quality[1]	SQP	Dimensionless

Table 10: Biogenic carbon content indicators

INDICATOR	ABBREVIATION	UNIT
Biogenic carbon content - product	BCC-prod	kg C
Biogenic carbon content - packaging	BCC-pack	kg C

Table 11: EN15804+A1 Environmental Impact Indicators

INDICATOR	ABBREVIATION	UNIT
Global warming potential	GWP (EN15804+A1)	kg CO_2-eq.
Ozone depletion potential	ODP (EN15804+A1)	kg CFC11-eq.
Acidification potential	AP (EN15804+A1)	kg SO_2-eq.
Eutrophication potential	EP (EN15804+A1)	kg PO_4^{3-}- eq.
Photochemical ozone creation potential	POCP (EN15804+A1)	kg C_2H_4-eq.
Abiotic depletion potential for non-fossil resources	ADPE (EN15804+A1)	kg Sb-eq.
Abiotic depletion potential for fossil resources	ADPF (EN15804+A1)	MJ

1The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.
2This indicator is identical to GWP-total except that the CF for biogenic CO2 is set to zero. It has been included in the EPD following the PCR.
3This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and some construction materials, is also not measured by this indicator.

For Evo products the following indicators are not relevant, hence result in zero values:

- → Use of renewable secondary fuels (RSF)
- → Use of non-renewable secondary fuels (NRSF)
- → Materials for energy recovery (MER)
- → Biogenic carbon content – product (BCC-prod)

Environmental Performance

Results for one square meter of Evo installed.

Table 12: EN15804+A2 Core environmental impact indicators

ABB.	UNIT	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	kg CO_2 eq.	32.3	2.56	11.1	0.0229	0.279	0	1.64	30.1
GWP-fossil	kg CO_2 eq.	33.2	2.56	3.73	0.0229	0.279	0	1.13	30.1
GWP-biogenic	kg CO_2 eq.	-1.00	6.98E-04	7.36	2.52E-06	3.19E-05	0	0.510	-0.00933
GWP-luluc	kg CO_2 eq.	0.0120	4.45E-05	5.17E-04	2.47E-07	3.18E-06	0	0.00174	9.94E-04
ODP	kg CFC 11 eq.	1.27E-10	5.30E-14	6.60E-12	1.24E-16	3.87E-15	0	2.05E-12	2.65E-12
AP	mol H^+ eq.	0.108	0.0606	0.0215	1.09E-04	0.00157	0	0.00472	0.0658
EP-freshwater	kg P eq.	2.66E-05	2.80E-07	4.23E-06	2.72E-09	4.15E-08	0	1.29E-05	6.14E-06
EP-marine	kg N eq.	0.0248	0.0162	0.0104	5.18E-05	7.86E-04	0	0.00129	0.0115
EP-terrestrial	mol N eq.	0.268	0.177	0.0889	5.67E-04	0.00864	0	0.0133	0.101
POCP	kg NMVOC eq.	0.0781	0.0434	0.0446	1.46E-04	0.00148	0	0.00389	0.0464
ADP-m&m	kg Sb eq.	2.25E-04	1.05E-08	1.08E-06	3.09E-11	6.41E-10	0	3.52E-08	1.07E-04
ADP-fossil	MJ	373	33.1	57.9	0.301	3.78	0	15.5	279
WDP	m^3 world eq. deprived	5.03	0.00424	1.71	1.24E-05	3.10E-04	0	0.0265	5.57

Table 13: Use of Resources

ABB.	UNIT	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	65.4	0.0462	53.1	1.97E-04	0.00421	0	1.70	-13.8
PERM	MJ	11.4	0	-11.4	0	0	0	0	0
PERT	MJ	76.8	0.0462	41.7	1.97E-04	0.00421	0	1.70	-13.8
PENRE	MJ	371	33.2	58.9	0.301	3.78	0	16.7	279
PENRM	MJ	2.03	0	-0.916	0	0	0	-1.12	0
PENRT	MJ	373	33.2	58.0	0.301	3.78	0	15.5	279
SM	kg	37.0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0
FWT	m^3	0.0772	1.34E-04	0.0332	6.21E-07	8.25E-06	0	0.00124	0.128

Table 14: Waste Production & Output Flows

ABB.	UNIT	A1-A3	A4	A5	C1	C2	C3	C4	D
HWD	kg	5.12E-07	1.70E-11	2.64E-08	2.03E-13	2.45E-12	0	1.03E-09	3.63E-08
NHWD	kg	1.46	8.99E-04	1.07	3.81E-06	4.53E-05	0	37.0	-4.04
RWD	kg	0.00471	5.57E-06	2.27E-04	6.65E-09	1.00E-07	0	1.80E-04	2.83E-04
CRU	kg	0	0	0.0143	0	0	0	0	0
MER	kg	0.366	0	0	0	0	0	0	0
MFR	kg	0	0	0	0	0	0	0	0
EEE	MJ	0	0	0	0	0	0	0.161	0
EET	MJ	0	0	0	0	0	0	0	0

Table 15: Waste Production & Output Flows

PARAMETER	UNIT	A1-A3
BCC-prod	kg C	0
BCC-pack	kg C	0.330

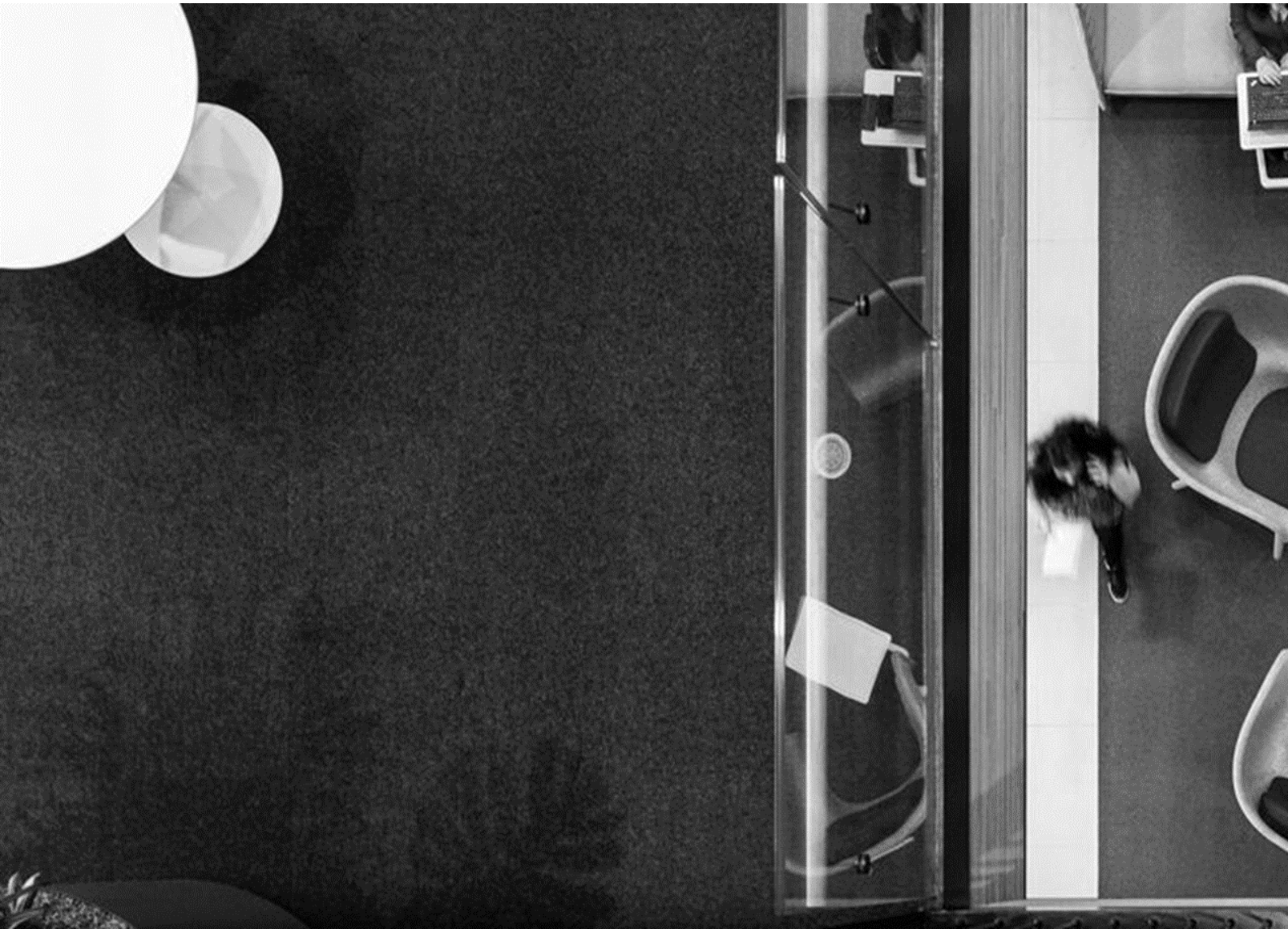
Environmental Performance

Table 16: EN15804+A2 Additional Environmental Impact Indicators

ABB.	UNIT	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-GHG	kg CO_2-eq	33.3	2.56	13.7	0.0229	0.279	0	1.61	30.1
PM	Disease incidences	1.41E-06	1.02E-06	2.67E-07	1.24E-09	9.54E-09	0	5.41E-08	9.20E-07
IR	kBq U235 eq.	0.384	3.96E-04	0.0242	5.95E-07	9.70E-06	0	0.0250	-0.620
ETP-fw	CTUe	97.1	26.7	19.6	0.0565	0.793	0	6.02	18.6
HTP-c	CTUh	1.48E-07	4.31E-10	3.72E-09	1.07E-12	1.43E-11	0	7.58E-10	1.23E-08
HTP-nc	CTUh	5.55E-07	1.61E-08	1.85E-07	7.69E-11	1.01E-09	0	7.91E-08	4.07E-07
SQP	Dimensionless	109	0.0416	1.46	2.38E-04	0.00313	0	2.07	7.89

Table 17: EN15804+A1 Environmental Impact Indicators

ABB.	UNIT	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP	kg CO2-eq.	31.1	2.52	7.63	0.0224	0.274	0	1.44	28.7
ODP	kg CFC11-eq.	1.49E-10	6.24E-14	1.14E-11	1.46E-16	4.56E-15	0	2.41E-12	3.13E-12
AP	kg SO2-eq.	0.0878	0.0481	0.0159	7.61E-05	0.00107	0	0.00375	0.0560
EP	kg PO43-- eq.	0.00884	0.00542	0.00381	1.74E-05	2.65E-04	0	8.53E-04	0.00386
POCP	kg C2H4-eq.	0.0113	8.07E-04	0.00849	7.88E-06	-4.79E-04	0	4.14E-04	0.0138
ADPE	kg Sb-eq.	2.25E-04	1.05E-08	1.09E-06	3.10E-11	6.41E-10	0	3.64E-08	1.07E-04
ADPF	MJ	343	33.1	57.3	0.301	3.78	0	14.8	284



Our sole mission at ASP is to provide all of our clients with **exceptional sustainable products**

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