

Environmental Product Declaration

In accordance with ISO 14025 and EN 15804 for:

Insulated metal sandwich panels for walls, ceilings and roofings

Programme

The International EPD[®] System

**EPD registered through the fully aligned regional programme/hub:
EPD Latin America**

Programme operator

**EPD International AB
Regional Hub: EPD Latin America**

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2019-07-30

Geographical scope

Colombia

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METECNO is a company dedicated to the panel's manufacture/commercialization and architectural solutions with thermal and acoustic insulation, supporting its management in the following pillars:

1. Offers competitive and innovative alternatives, quality and technology to the construction market.
2. Responds in a timely and efficient way to the market's demands in which it participates.
3. Looks for improvements in the processes, to generate the profitability expected by the shareholders.
4. Encourages and supports the people's development, in order to have a talented and committed work team.
5. Contributes to the development and conservation of a healthy and sustainable environment.

As of 1999 Metecno Colombia is part of the Metecno group and currently has commercial offices in the main cities of the country; Bogotá, Medellín, Cali, Barranquilla and with a production plant in Santander de Quilichao in the state of Cauca.

The Colombian production plant has been in permanent growth since its founding and today from Colombia Metecno supplies countries such as Panama, Peru, Ecuador and Venezuela.

METECNO has two production lines that use last generation cyclopentane, one line of specialties and one for the personalized flashings. METECNO has a production capacity of more than 4 million square meters per year of insulated and self-supporting metal panels injected with polyurethane, destined to the national market, North American countries.

Insulated metal sandwich panels for walls, ceilings and roofs are a durable system due to the use of steel in its structure. The system is modular, lightweight and easy to transport, avoids the excessive consumption of resources such as energy and other materials during the installation, which makes it competitive in terms of costs.

The panels are also characterized to be optimal suppliers of thermal insulation, reducing the costs of heating and air conditioning during the building's operational life.

A wide range of products is produced in METECNO's facilities, used for various construction applications and architectural solutions; additionally, METECNO provides its customers fixing elements and accessories that turn its products into the New Millennium System.

This Environmental Product Declaration (EPD) includes five types of composite panels fabricated by METECNO in Colombia and it is in accordance with ISO 14025 and EN 15804. Insulated metal sandwich panels for walls, ceilings and roofings.

EPD of construction products may not be comparable if they do not comply with EN 15804 Sustainability of construction works – Environmental product declarations – Core rules for product group: UN CPC 4299, 4357,4394,4931 and 4954. Fabricated products made out of metal composite material (MCM); V.1.0.

The EPD owner has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804.

2. General information

Product:	Insulated metal sandwich panels for walls, ceilings and roofs.
Declaration owner:	METECNO DE COLOMBIA SA Calle. 104. No. 14 A 45 Of. 404, Bogotá, Colombia
Construction product description:	<p>Insulated sandwich-type metal panels, composed of steel and polyurethane: They are used by the construction sector as elements of exterior cladding, for their mechanical resistance, thermal insulation, the rise of load-bearing walls and covering surfaces of a wide range of buildings.</p> <p>The environmental performance of the panels presented as follows: Group 1: Average of TECHMET®, HWALL® 8P and FRIGOWALL®. Panels reported independently: SUPERWALL® and MONOWALL®.</p>
Declared Unit:	1 m2 of composite panels or sandwich type, with 25 dB sound reduction, variable thermal resistance and weight according to panel type.
Construction product identification:	UN CPC 4299, 4357, 4394, 4931 and 4954.
Main product components and/ or materials description:	The structure of composite METECNO panels has galvanized steel sheets and an insulating core injected with high-density polyurethane, to be used as roofings, facades, walls and in cold rooms, sound chambers, among other applications.
Life cycle stages not considered:	Distribution, use, end of life.
Declaration content:	<p>This EPD is based on information modules that do not cover the aspects of use and end of life of the product. It contains in detail, for Module A1, A2 and A3:</p> <ul style="list-style-type: none"> + Product definition and physical data. + Information about raw materials and origin. + Specifications on the product manufacturing. + Notes on product processing. + LCA based on a declared unit, cradle-to-gate. + LCA results. + Evidence and verifications.

For more information consult:	<p>Ing. Mónica Adriana Riveros Triana Jefe Departamento Técnico Mail: mriveros@metecnocolombia.com PBX: (571) 4 89 73 00 www.metecnocolombia.com</p>
Site for which this EPD is representative:	Production plant located in Santander de Quilichao in the department of Cauca
Public intended:	B2B (Business to business)

3. Product description

Composite insulated metal sandwich panels are used by the construction sector as elements of exterior cladding, for their mechanical resistance, thermal insulation, the rise of load-bearing walls and covering surfaces of a wide range of industrial, commercial, and residential buildings in the world. For more than 50 years the composite panels have offered engineers and architects new possibilities for planning, design, and cost management for new buildings construction and refurbishment, as they have proven to be a profitable, practical and versatile solution.

Composite panels' use has increased due to the need of the construction industry of a product with a specific relatively light weight, that also offers high values of thermal insulation and ease in installation.

Thermal insulation feature is satisfied thanks to the technical development of polyurethane (PUR) and polyisocyanurate (PIR) foams. The ease during installation is achieved with the simplicity of assembly in the load-bearing structure. This feature has turned out the main factor of the popularity of this product, since construction times have been reduced significantly compared to traditional methods, with consequent savings in labor costs.

Over the years, the structure of composite or sandwich type panels has always been based on the same configuration.

Starting from two thin surfaces with high mechanical properties, which enclose a material relatively light, with an appropriate rigid as provides the insulation conditions.

METECNO panels has galvanized steel sheets and an insulating core made of high-density polyurethane foam or high-density polyisocyanurate. This panel configuration has a special combination of properties that makes it ideal for use in facades, wall and roofings.

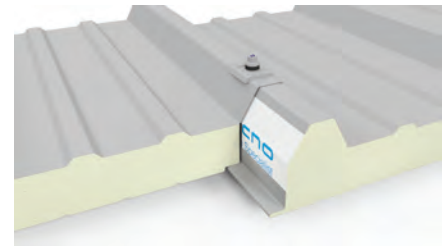


Above is an image of a work madewith METECNO panels

Composite panels included in this EPD

GLAMET / TECHMET®: Metal sandwich panel for roofs, injected in continuous line with high density expanded polyurethane and both sides in pre-painted galvanized steel sheets. Panel of optimal thermal insulation and high mechanical resistance.

This panel is recommended to be used as a cover for industrial, commercial and residential buildings. By its system of overlap with gasket and the height of its crests avoids the filtration of water achieving a good pluvial drainage. With both sides of prepainted galvanized steel sheet and polyurethane core. With an excellent thermal insulation.



MONOWALL®: Metallic panel type sandwich for facades with sight fixing, injected in continuous line with expanded polyurethane at high density and both sides in prepainted galvanized steel sheets. Panel of optimal thermal insulation and high mechanical resistance. Recommended metal panel for walls, injected in continuous line with high density expanded polyurethane and both sides in prepainted galvanized steel sheet. Optimal thermal insulation. Available in aluminum or zinc alum.



SUPERWALL®: Metallic sandwich panel for facades with concealed fixing, injected in continuous line with high density expanded polyurethane and both sides in pre-painted galvanized steel sheets. Panel of optimal thermal insulation and high mechanical resistance.

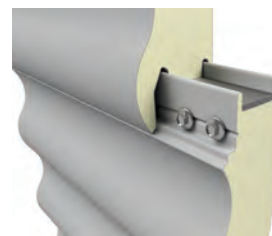


FRIGOWALL®: Metallic sandwich panel for walls and ceilings of refrigerated chambers and warehouses, injected in continuous line with high density expanded polyurethane and both sides in pre-painted galvanized steel sheets. Panel of optimal thermal insulation and high mechanical resistance.



H-WALL®8P: Metallic sandwich panel for horizontal walls with concealed fixing, injected in continuous line with high density expanded polyurethane and both sides in prepainted galvanized steel sheets. Panel of optimal thermal insulation and high mechanical resistance. On its outer face it has a wavy profile.

It is recommended to use it as a facade in buildings that require aesthetic characteristics. With polyurethane core (P), it is excellent to be installed in a horizontal way between structural frames without any additional secondary pole, achieving a pleasant visual effect. With an excellent thermal insulation.



4. Content declaration

A list of materials and chemical substances, including information about hazardous properties, are provided according to the European Chemicals Agency.

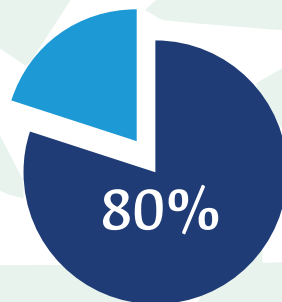
Material content in insulated metal sandwich panels			
Material	Weight	Function	Health class ¹
TECHMET®			
Galvanized steel	83%	Structural	Non hazardous
Polyurethane	16%	Thermal insulation	Non hazardous
Others	1%	Packaging	Non hazardous
H WALL® 8P			
Galvanized steel	75%	Structural	Non hazardous
Polyurethane	24%	Thermal insulation	Non hazardous
Others	1%	Packaging	Non hazardous
FRIGOWALL®			
Galvanized steel	70%	Structural	Non hazardous
Polyurethane	29%	Thermal insulation	Non hazardous
Others	1%	Packaging	Non hazardous
MONOWALL®			
Galvanized steel	81%	Structural	Non hazardous
Polyurethane	18%	Thermal insulation	Non hazardous
Others	1%	Packaging	Non hazardous
SUPERWALL® (141-B)			
Galvanized steel	82%	Structural	Non hazardous
Polyurethane	17%	Thermal insulation	Non hazardous
Others	1%	Packaging	Non hazardous

Table 1. Content declaration

¹According to EN15804 declaration of material content of the product shall List of Substances of Very High Concern (SVHC) that are listed by European Chemicals Agency.

4.1 Recycled material content

The present product does not contain recycled materials, but one of its main components is galvanized steel that can contain up to 80% recycled steel.



4.2 Distribution packaging

The materials used for packaging are expanded polystyrene (EPS), cardboard and Packaging film (low-density polyethene).

5. LCA Rules

5.1. Declared unit

1 m² of composite insulated metal sandwich panel's, with 25 dB of sound reduction and variable thermal resistance and weight according to the panel type.

Panel	Weight (kg/m ²)	Thermal resistance (ft ² h °F/BTU)	Coefficient of thermal conductivity (W/ (m ² .C))
TECHMET®	9.337	9.56	0.59
MONOWALL®	8.870	11.36	0.50
SUPERWALL®	9.204	11.36	0.50
H-WALL®8P	10.281	16.70	0.34
FRIGOWALL®	10.392	22.19	0.28

Table 2. Technical specification

Acoustic isolation: Laboratory tests were performed on each type of panel to obtain acoustic insulation results, under ISO 140-1 measurement, ISO 140-3 noise reduction and ISO 717-1 classification.

5.2. System Boundary

Environmental potential impacts were calculated, according to EN 15804:2012 and PCR 2012:01 Construction products and construction services Version 2.2 (2017-05-30). The scope of is a "Cradle-to-gate" EPD, in line with ISO 14025:2006.


The potential environmental impacts were calculated through Life Cycle Assessment (LCA) methodology of Insulated sandwich-type metal panels according to ISO 14040:2006 and ISO 14044:2006. (Metecno 2019). This study went through a critical review process in accordance with ISO / TS 14071: 2014.

For a "cradle-to-gate " EPD is be based on information modules A1 to A3. (see table 3).

Composite panel life cycle information										Additional information (beyond lifecycle)
A1-A3			A4-A5		B1 - B7	C1-C4		D		
Product stage			Construction stage		Use stage	End of life stage		Benefits and burdens beyond the System boundary		
A1	A2	A3	A4	A5	B2	C2	C4			
Raw material supply composite panel	Transportation of each of the raw materials to the manufacturing site of the composite panel.	Fabrication	Transport	Construction stage-installation	Use, Maintenance, Repair, Replacement, Rehabilitation	Deconstruction - Demolition Transport	Waste treatment Waste disposal			Reuse, recovery and recycling potential
Module	Module	Module	Module	Module	Module	Module	Module	Declared unit		


Table 3. System boundary

METECNO of Colombia collected primary (specific) data from annual internal records of the year 2015 for the following aspects:



A1) Raw materials supply

Raw materials consumption for panels manufacturing.



A2) Transportation


Transportation distance of raw materials and ancillary materials for panels.

Transportation of other raw materials.

Transportation of auxiliary materials.

Internal transportation requirements.

Transportation distance to waste treatment.



A3) Manufacturing

Energy consumption for panels manufacturing.

Production yield and products generation.

Waste generation and management strategies.

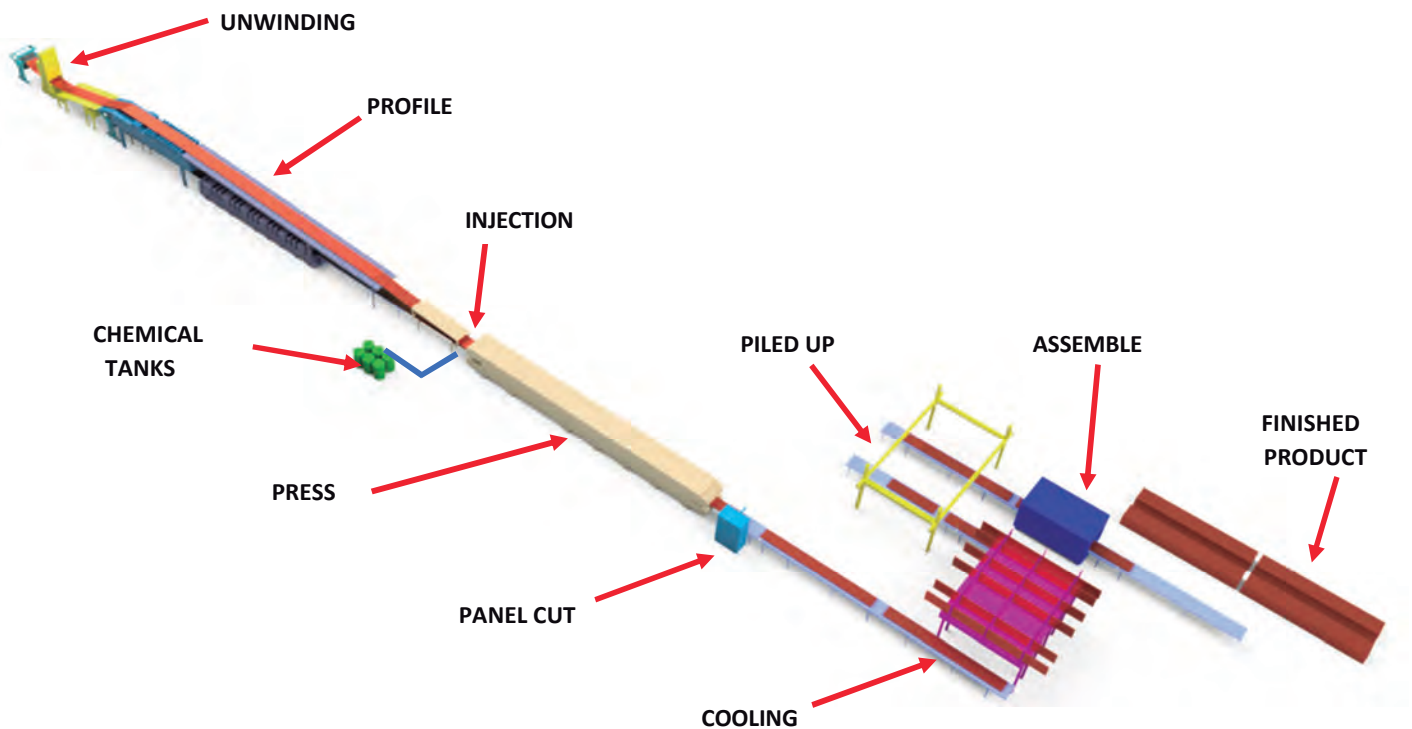
Emissions to air during manufacturing process.

Table 4. Description of information modules included in this EPD

5.3. Description of the manufacturing process

All the necessary resources, raw materials and supplies for panel manufacturing are considered. Energy consumption, such as electricity and natural gas, is also included. All the outputs, e.g. waste generation and emissions resulting from the process, are also considered.

Manufacture begins unwinding two galvanized steel coils. This process is connected to a continuous coating step, in which steel is protected with a Polyethylene film. In the next step a rolling dice creates a profile in both steel sheets. Then, injection moulding and reaction is carried out to introduce the polyurethane rigid foam between steel sheets. During this step, a foaming head mixes the chemicals and inject them to form the panel core. The reactions take place in a furnace. After the reaction time has elapsed, the panel is taken out and cut to the specified dimension.



5.4. Assumptions

1. The manufacturing inventory and the potential environmental impact production of cyclopentane was modeled using alternative datasets from Ecoinvent. A sensitivity analysis showed no significant differences among them.
2. It was assumed that the waste generated by the acquisition of raw materials, such as paper, steel and wood, goes to a recovery center. The distance and type of transport were also assumed.
3. The type of transport and the distance were assumed, where the waste generated by the acquisition of raw materials is transported, which, when classified, is delivered to end of life or recycling companies.
4. It was assumed the distances and the type of transport of materials used for the packaging of the panel.
5. It is assumed that the Gasket is composed of 50% low density polyethylene and 50% Polyurethane.

5.5. Cut-off criteria

All flows of fuel, energy, materials and supplies necessary for the production of the panel have been considered; materials that could be used in preventive or corrective maintenance of machinery and equipment were disregarded, as well as the use of uniforms and personal protective equipment or other auxiliary materials, which could be used eventually in the process, for the performance of preventive maintenance or corrective of machinery correctiveness, leaving out textile impregnated with oils and the final disposal of these as hazardous waste.

5.6. Allocation

No allocation was made to the input or output data of the panel since METECNO does not report co-products during its internal manufacturing processes or other situations that require.

5.7. Time representativeness

Data corresponds to the year 2015.

5.8. Data quality assessment

Summary of data quality analysis											
Data quality requirement	Temporal coverage	Geographic coverage	Technological coverage	Precision	Integrity	Representativeness	Coherence	Reproducibility	Sources of information	Measured or estimated	Scale uncertainty
Summary of the data quality analysis for module A1)											
Raw materials consumption for the panel ´s manufacture	2015	Colombia	Current	✓	✓	✓	✓	✓	METECNO	M	Low
Galvanized Steel production	2015	Colombia / China	Current	✓	✓	✓	✓	✓	Ecoinvent 3 Mexicaniuh	M&E	Low
Isocyanate production	1995 - 2016	European production	Current	✓	✓	✓	✓	✓	Ecoinvent 3	M	Medium
Polyol production	1995 - 2016	European production	Current	✓	✓	✓	✓	✓	Ecoinvent 3	M	High
Catalyst	2000 - 2016	Switzerland "global"	Current Current	✓	✓	✓	✓	✓	Ecoinvent 3	M	Medium
Cyclopentane	2001 - 2016	European production	Current	✓	✓	✓	✓	✓	Ecoinvent 3	M	High
Gasket	1996 -2016	European production	Current	✓	✓	✓	✓	✓	Created	M&E	Low
PE film to coat steel	1999 - 2016	European production	Current	✓	✓	✓	✓	✓	Ecoinvent 3	M&E	Medium
Side label	2000 - 2016	European production	Current	✓	✓	✓	✓	✓	Ecoinvent 3	M&E	High
Production of raw materials packaging	2000 - 2016	European production	Current	✓	✓	✓	✓	✓	Ecoinvent 3 Mexicaniuh	M&E	Low
Data quality analysis for module A2) "Transportation"											
Transport Distance of raw materials	2015	Colombia/ other countries	does not apply	✓	✓	✓	✓	✓	METECNO and Google Maps	M&E	Low
Transport Distance of packaging materials	2015	Colombia/ other countries	does not apply	✓	✓	✓	✓	✓	METECNO and Google Maps	M&E	Low
Fuel transport distance	2015	Colombia	does not apply	✓	✓	✓	✓	✓	METECNO and Google Maps	M&E	Low
Waste transport distance	2015	Colombia	does not apply	✓	✓	✓	✓	✓	METECNO and Google Maps	M&E	Low
Transport Distance of raw materials	1992-2014	Worldwide average based on Europe	Worldwide average based on Europe	✓	✓	Worldwide average based on Europe	✓	✓	Ecoinvent 3.3	M&E	High

Table 5. Data quality assessment

Data quality for module A3) "Manufacturing"											
Data quality requirement	Temporal coverage	Geographic coverage	Technological coverage	Precision	Integrity	Representativeness	Coherence	Reproducibility	Sources of information	Measured or estimated	Scale uncertainty
Electricity consumption for the panel's manufacture	2015	Colombia	Current	✓	✓	✓	✓	✓	METECNO	M	Low
Electricity Production consumed in the panel's manufacture	1990 - 2016	Colombia	Mix Hydroelectric	✓	✓	✓	✓	✓	Mexicanuih	M&E	Low
Fuel consumption for the panel's manufacture	2015	Colombia	Current	✓	✓	✓	✓	✓	METECNO	M	Low
Fuel production consumed in the panel's manufacture	2015	Colombia	Mix Hydroelectric	✓	✓	✓	✓	✓	Mexicanuih	M&E	Low
Waste generation during manufacturing	2015	Colombia	Current	✓	✓	✓	✓	✓	METECNO	M	Low
Processes of waste treatment, consumptions of materials and related energy	1990 - 2015	Worldwide average based on Europe	Worldwide average based on Europe	✓	✓	Worldwide average based on Europe	✓	✓	METECNO	M&E	High
Emissions to air and water during the manufacturing process	2015	Worldwide average based on Europe	Worldwide average based on Europe	✓	✓	Worldwide average based on Europe	✓	✓	METECNO	M&E	High
Waste transport distance	2015	Colombia	Current	✓	Some distances were estimated	✓	✓	✓	METECNO and Google Maps	M	Low

Table 5. Data quality assessment

6. Environmental performance

The software SimaPro 8.4 was used for Life Cycle Impact Assessment.

For the development of this EPD was carried out, an analysis of the resulting data in the panel lifecycle assessment, identifying the percentage of variation of the results and grouping all those that did not have a difference greater than 10%.

Due to the similarity in the environmental performance, three panels are grouping and others declared independently, as presented below:

- Group 1: Average of TECHMET®, HWALL®8P and FRIGOWALL®, it has a difference of 3% among them.
- Panels reported independently: SUPERWALL® and MONOWALL®. Those panels presented a percentage of variation greater than >5%, with respect to the other panel, that is why its results are presented independently.

Since this is a Cradle to Gate EPD, reference service life is not specified.

6.1. Use of resources

Parameters describing resource use were evaluated with the Cumulated Energy Demand method version 1.09 (Frischknecht et al. 2007) except for the use of net freshwater indicator that was evaluated with Recipe 2016 Midpoint (H) version 1.00 (Huijbregts et al. 2017). The Table below shows the results for the declared unit.

Parameter	Unit	Group 1	Superwall®	Monowall®
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	MJ	71.67	77.16	73.20
Use of renewable primary energy as raw materials	MJ	0	0	0
Total use of renewable primary energy resources	MJ	71.67	77.16	73.20
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	MJ	617.8	565.75	511.15
Use of non-renewable primary energy used as raw materials	MJ	0	0	0
Total use of non-renewable primary energy resources	MJ	617.8	565.75	511.15
Use of secondary material	kg	0	0	0
Use of renewable secondary fuels	kg	0	0	0
Use of non-renewable secondary fuels	kg	0	0	0
Use of net fresh water	m ³	1.91	1.824	1.769

Table 6. Use of resources

6.2 Potential environmental impact.

Parameters describing environmental potential impacts were calculated using CML-IA method version 3.04 (Guinee et al. 2001; Huijbregts et al. 2003; Wegener et al. 2008) as implemented in SimaPro 8.4. Water scarcity potential was calculated using AWARE method (Boulay et al. 2016).



6.2.1 Description of information modules and environmental results

A1) Raw material supply:

The following raw materials are used for the panel's preparation, with the exception that some of them use the cyclopentane as a blowing agent, and others use a component.

- Cyclopentane: The cyclopentane used as a foaming agent to produce polyurethane, present in the panels. Is used, under the Montreal Protocol in Article 5 states that, only the use of a substance is valid with zero ODP (depletion potential of the ozone) in production de polyurethane.
- Galvanized steel
- Isocyanate
- Polyol
- Catalyst
- Other supplies
- Gasket
- PE film for coat steel
- Side label
- Glue for PU
- Raw material packaging

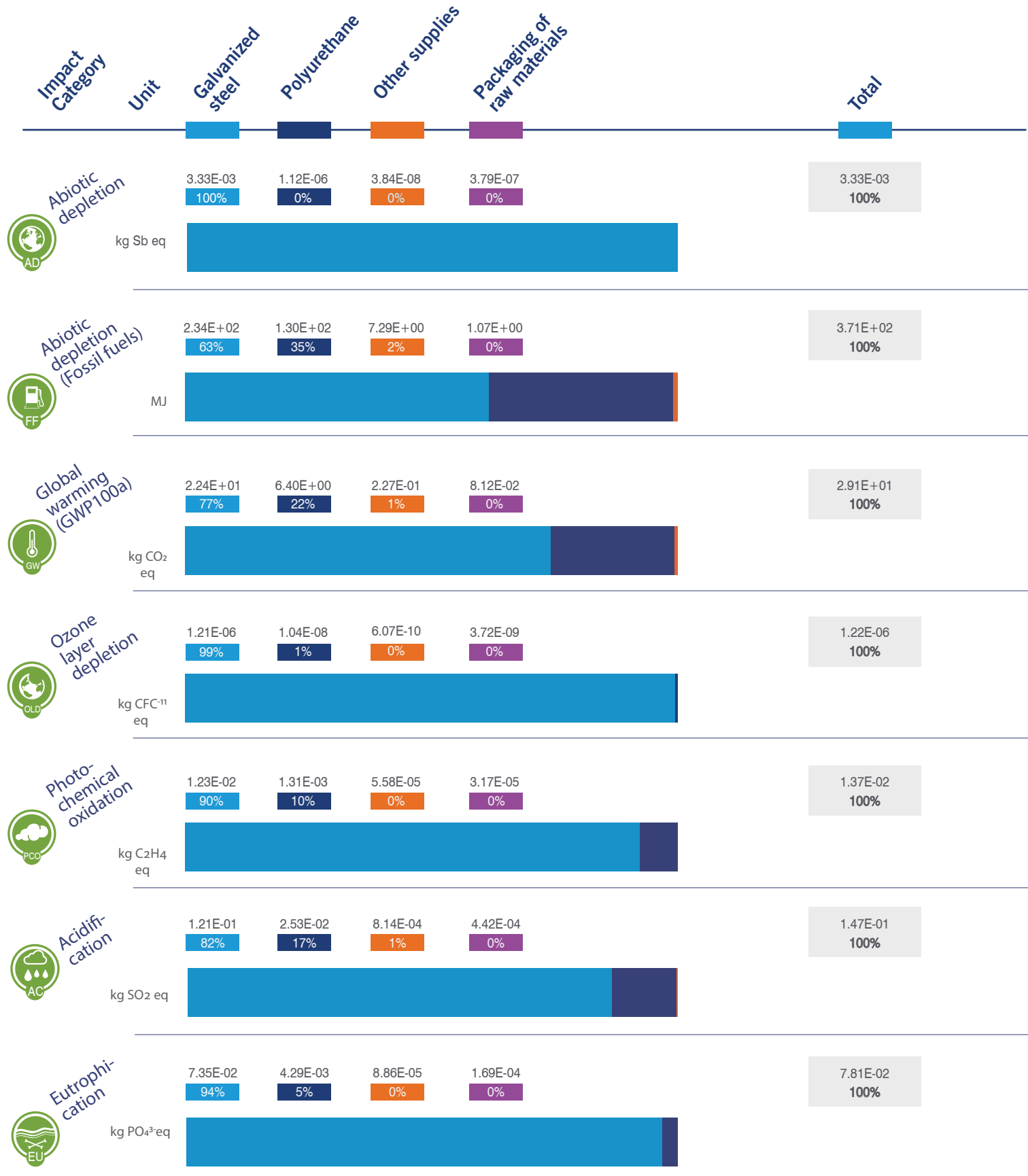
Table 7.Environmental Results for A2 Group 1.



Table 8.Environmental Results for A1 SUPERWALL®.



Table 9. Environmental Results for A1 MONOWALL®





6.2.2 Information modules and environmental results description A2) Transport:

6.2.2 Information modules and environmental results description A2) Transport:

All the transportation associated with the materials contained in the different types of panels and the distances of each one from suppliers were considered.

For the management of generated waste, the company normally hires a service provider that is responsible for recycling or waste disposal.

Table 10. Environmental Results for A2 Group 1.

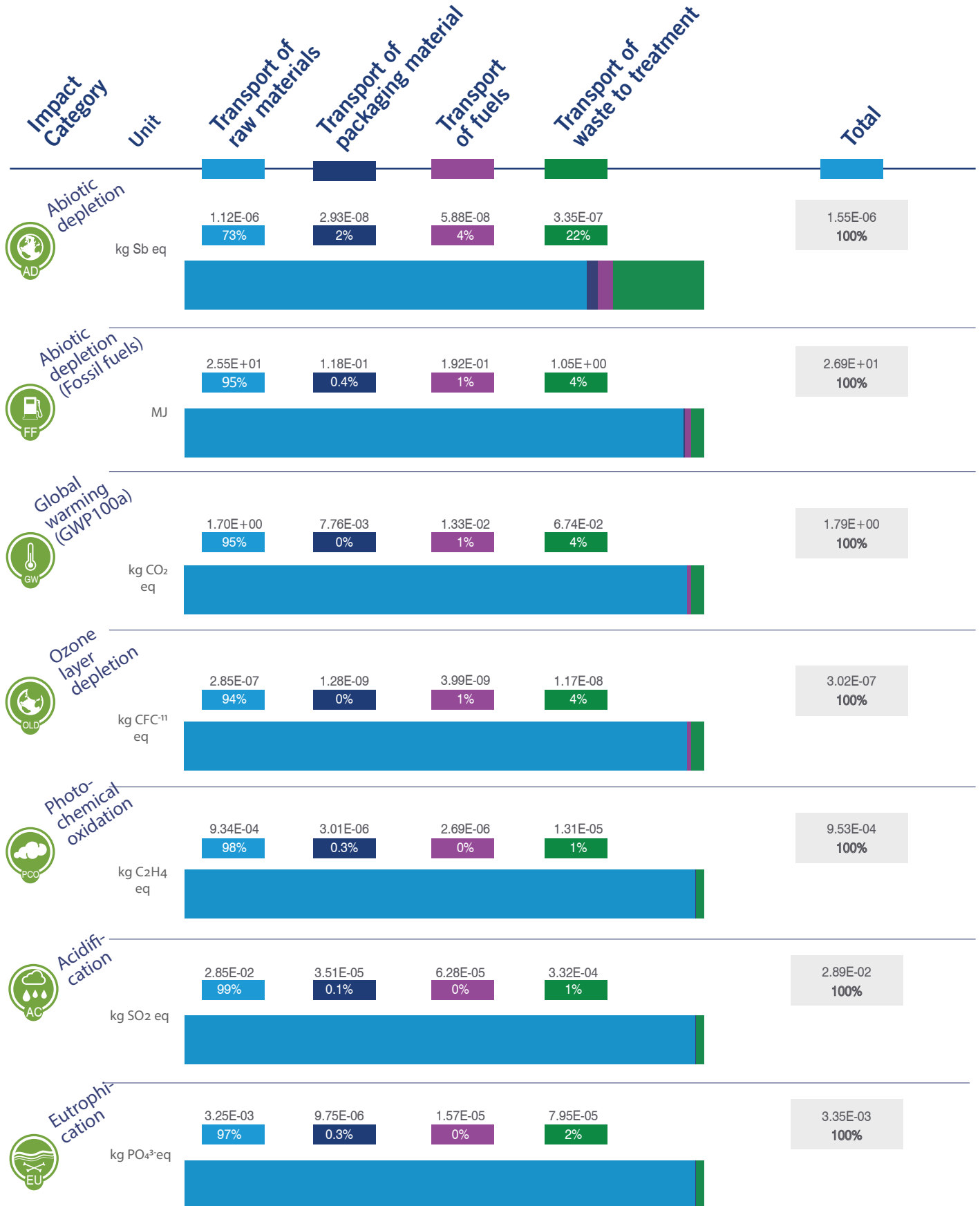


Table 11. Environmental Results for A2 SUPERWALL®.

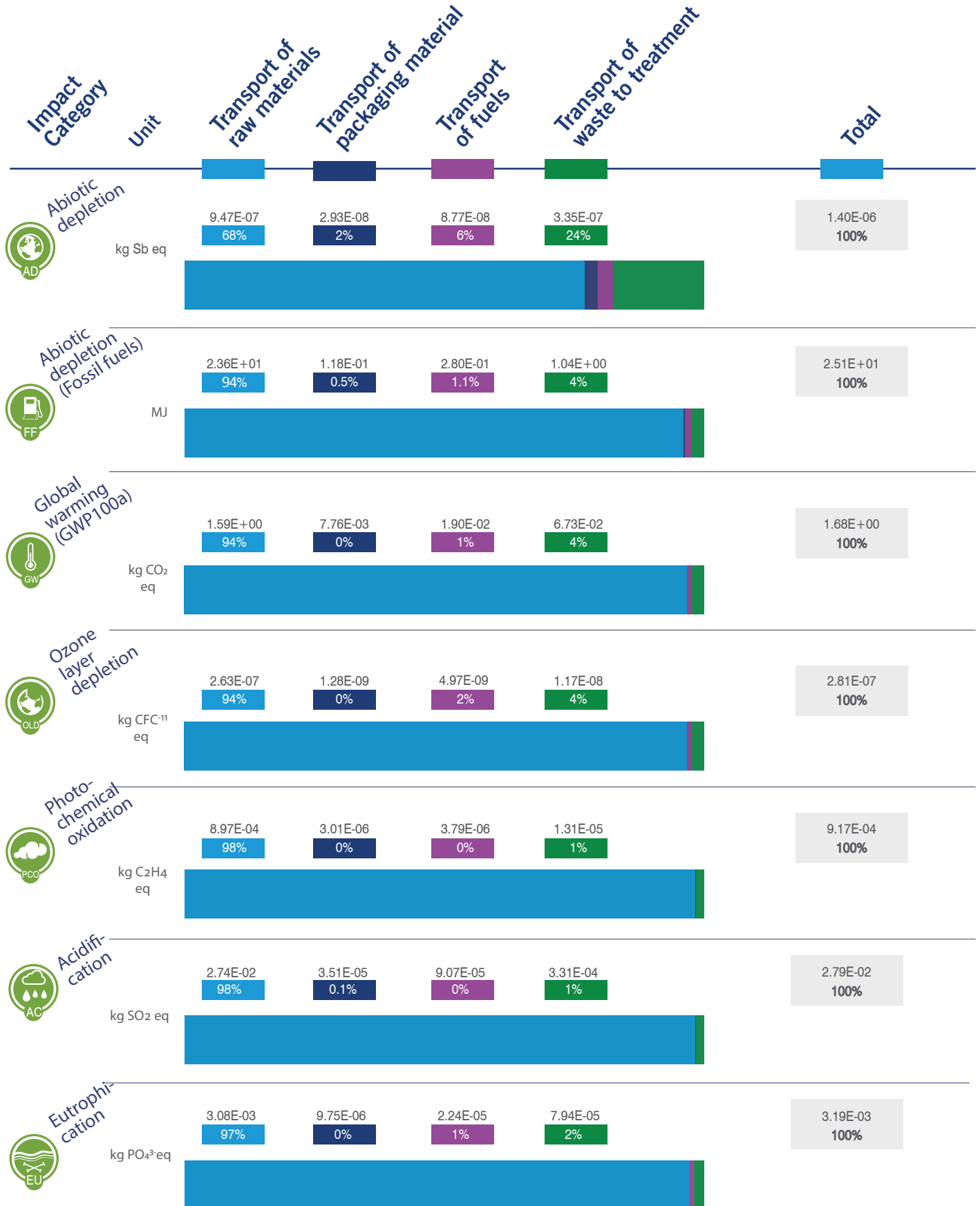
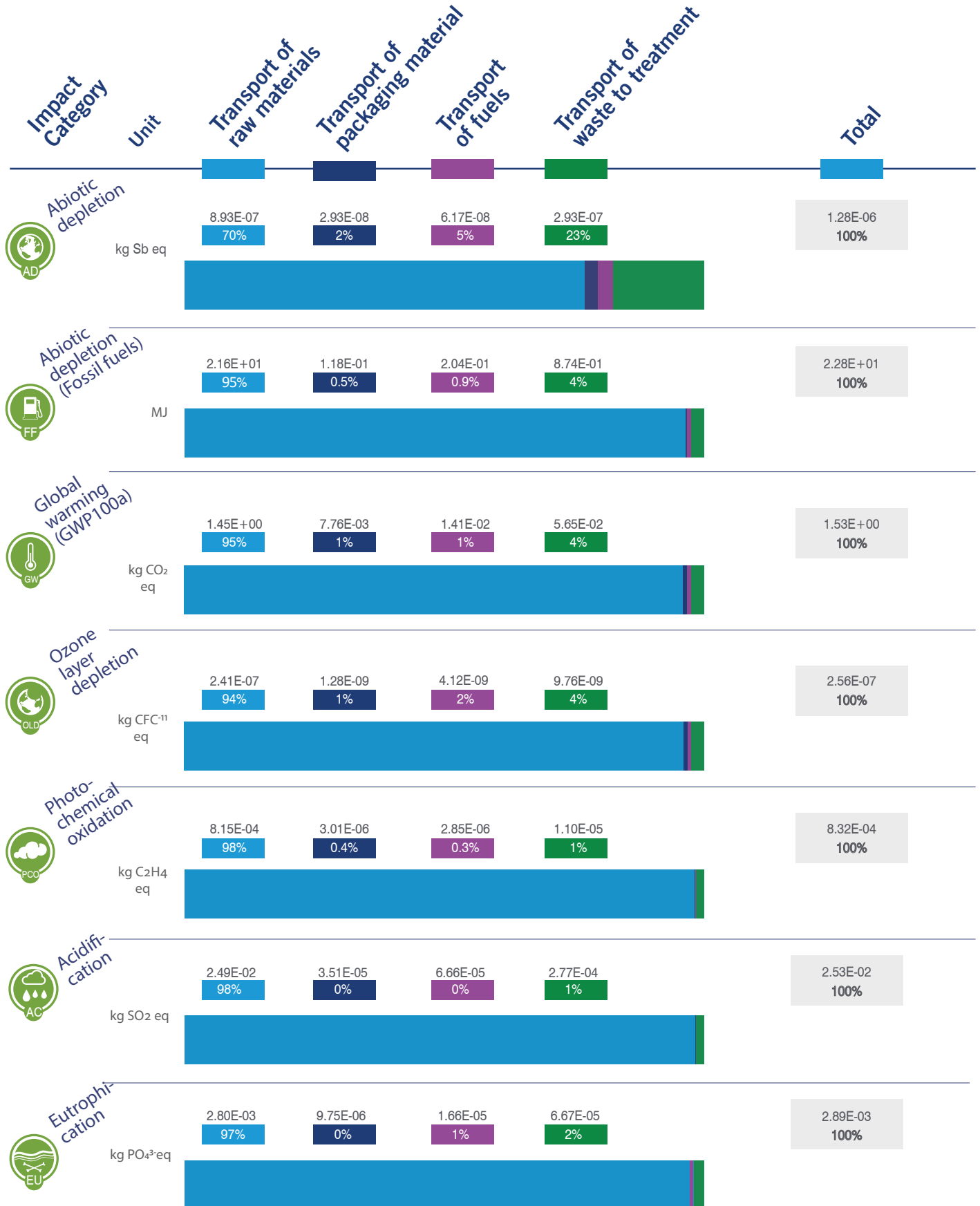


Table 12.Environmental Results for A2 MONOWALL®





6.2.3 Description of information modules and environmental results

A3) Fabrication:

In module A3 the necessary inputs for the panels manufacture of the panel's and the materials for the packaging of the finished product were considered, as can be seen in the result tables below.

All waste and emissions generated during the manufacturing process were considered.

Table 13. Environmental Results for A3 Group 1.

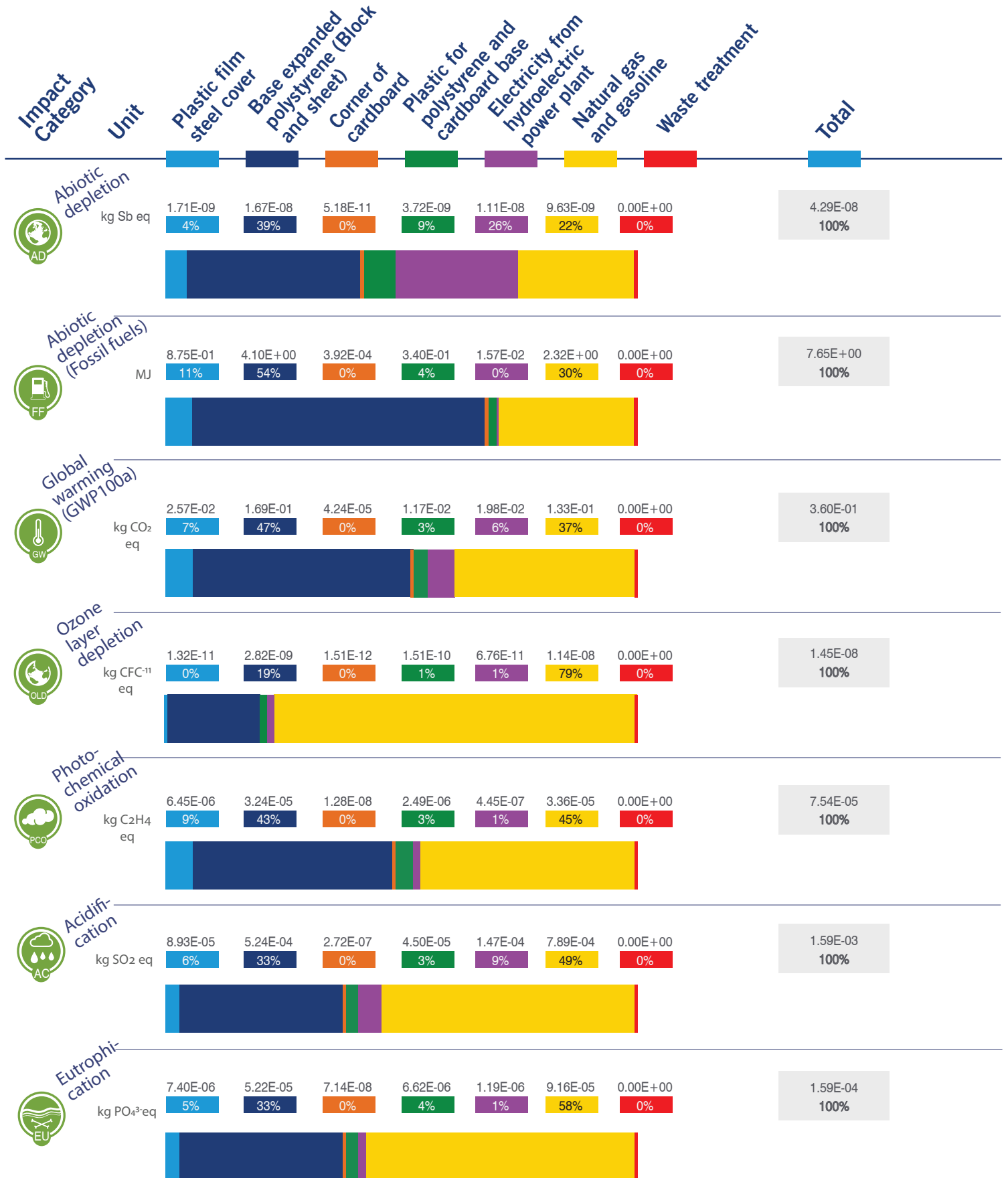


Table 14. 8 Environmental Results for A3 SUPERWALL®.

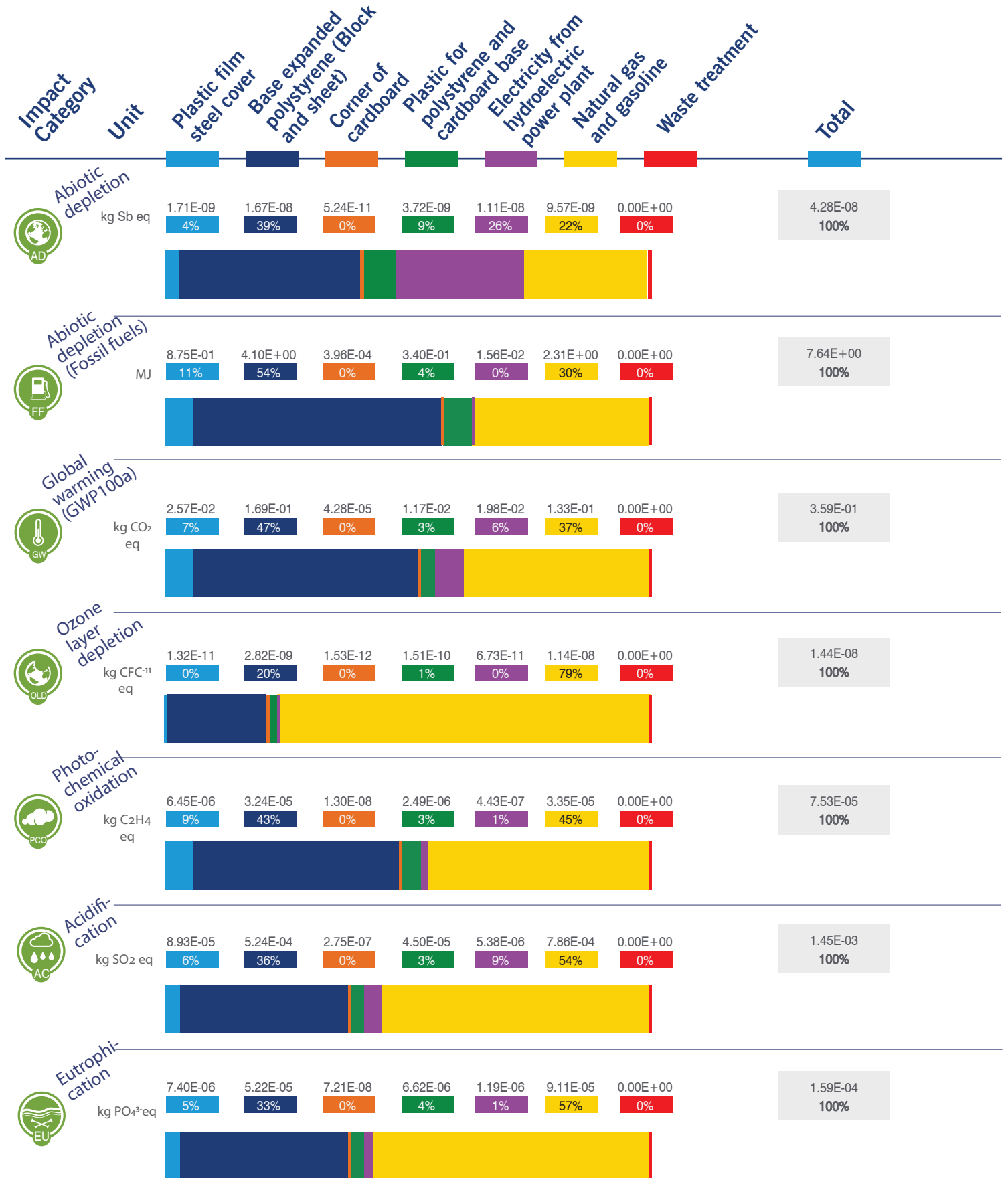
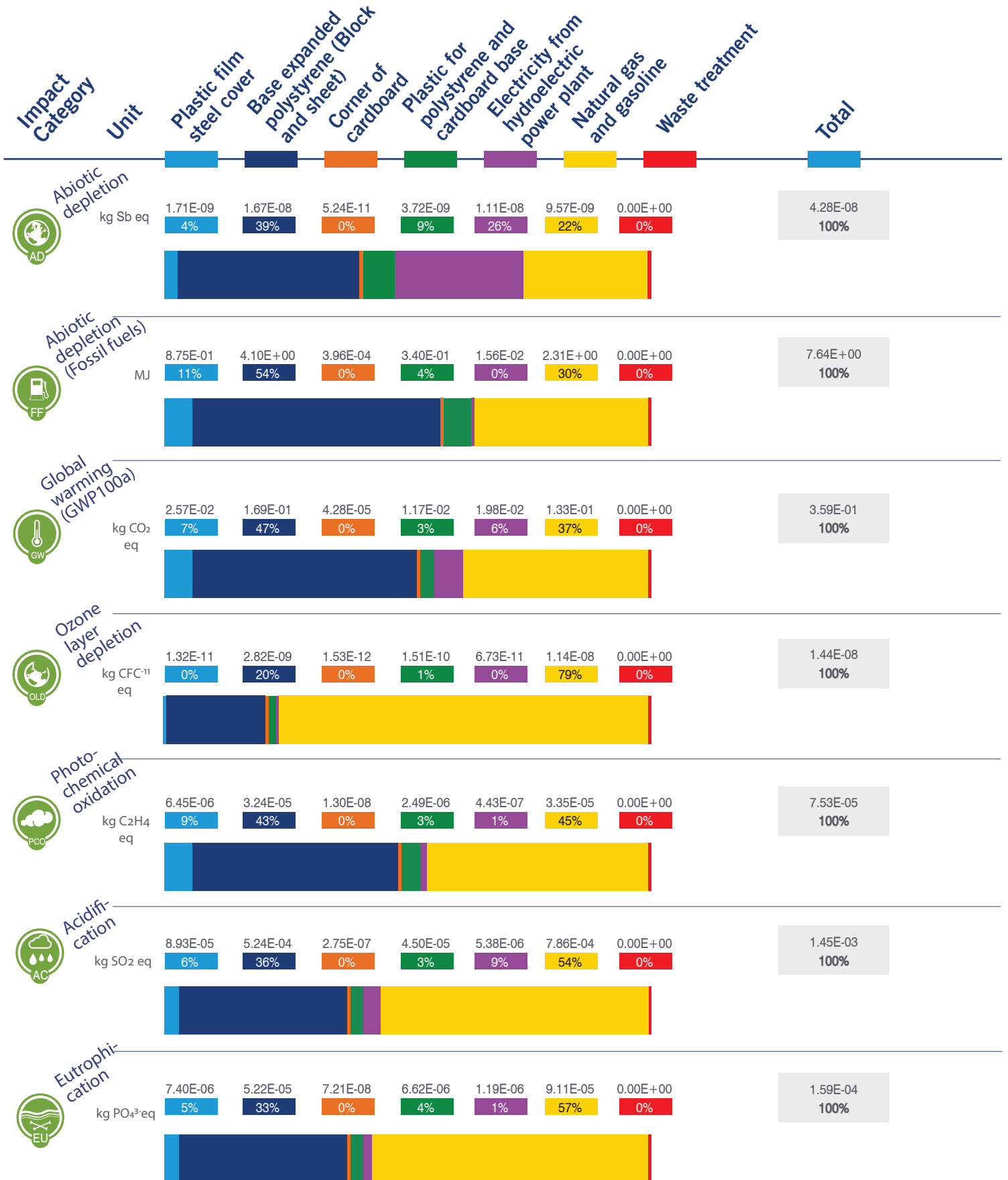


Table 15. Environmental Results for A3 MONOWALL®



6.2.4 Total Environmental Results

Impact category	Total performances Group 1			performances SUPERWALL®			performances MONOWALL®		
	A1	A2	A3	A1	A2	A3	A1	A2	A3
Abiotic depletion kg Sb eq	3.70E-03	1.49E-06	5.81E-08	3.69E-03	1.31E-06	8.83E-08	3.33E-03	1.22E-06	8.83E-08
Abiotic depletion (fossil fuels) MJ	4.66E+02	2.67E+01	1.43E+01	4.03E+02	2.48E+01	2.77E+01	3.71E+02	2.26E+01	2.76E+01
Global warming (GWP100a) kg CO ₂ eq	3.51E+01	1.78E+00	5.56E-01	3.19E+01	1.66E+00	9.48E-01	2.91E+01	1.51E+00	9.48E-01
Ozone layer depletion (ODP) kg CFC-11 eq	1.36E-06	3.00E-07	1.46E-08	1.36E-06	2.78E-07	1.48E-08	1.22E-06	2.54E-07	1.48E-08
Photochemical oxidation kg C ₂ H ₄ eq	1.57E-02	9.50E-04	1.25E-04	1.50E-02	9.14E-04	2.23E-04	1.37E-02	8.29E-04	2.23E-04
Acidification kg SO ₂ eq	1.74E-01	2.89E-02	2.13E-03	1.61E-01	2.78E-02	3.50E-03	1.47E-01	2.52E-02	3.50E-03
Eutrophication kg PO ₄ ³⁻ eq	8.85E-02	3.34E-03	2.16E-04	8.62E-02	3.17E-03	3.30E-04	7.81E-02	2.88E-03	3.30E-04

Table 16. Results report

6.2.5 Water Scarcity Footprint

In the following table is shown the water scarcity per group or Independent panel.

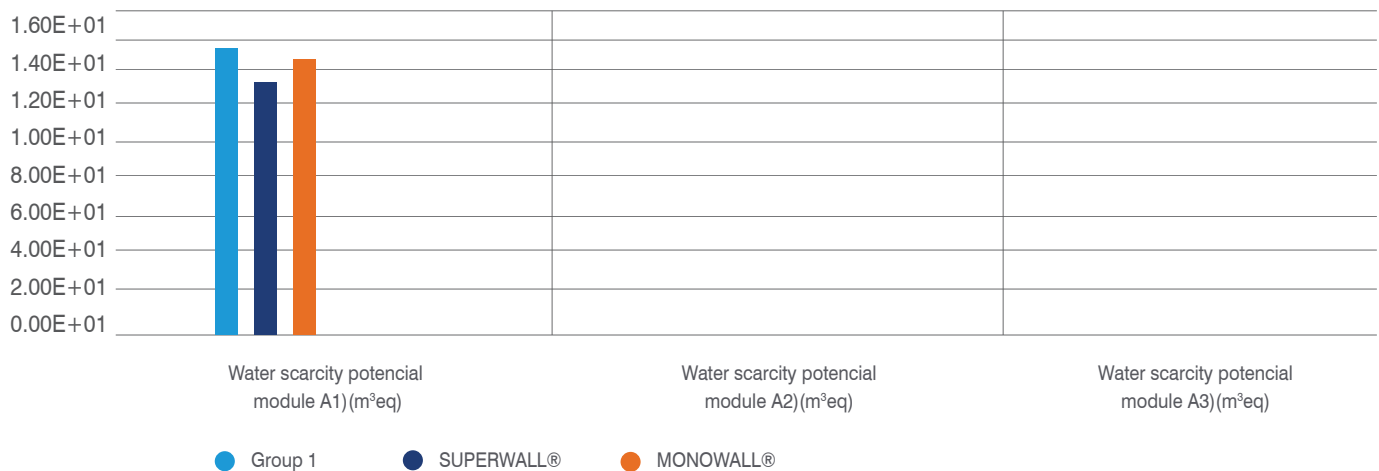


Table 17. Water scarcity potential

TYPE OF PANEL	Water scarcity potential module A1 (m ³ eq)	Water scarcity potential module A2 (m ³ eq)	Water scarcity potential module A3 (m ³ eq)
Grupo 1	1.47E+01	6.94E-03	5.48E-03
MONOWALL®	1.31E+01	5.55E-03	1.07E-03
SUPERWALL®	1.45E+01	6.02E-03	5.48E-03

6.3 Waste Generation

Parameters describing hazardous, non-hazardous and radioactive waste were calculated using EDIP.

Table 18. Waste Production

Parameter	Unit	Group 1			MONOWALL®			SUPERWALL®		
		A1	A2	A3	A1	A2	A3	A1	A2	A3
Hazardous waste	kg	2.9E-03	1.7E-05	1.1E-06	2.6E-03	1.4E-05	1.2E-06	2.9E-03	1.6E-05	1.2E-06
Non hazardous waste	kg	7.7E+00	6.4E-01	5.6E-03	6.9E+00	4.8E-01	1.1E-02	7.7E+00	5.2E-01	1.1E-02
Radioactive waste*	kg	4.6E-04	1.7E-04	6.6E-06	4.1E-04	1.5E-04	6.6E-06	4.5E-04	1.6E-04	6.6E-06

*No radioactive waste is produced during METECNO operation.

6.4 Interpretation

1. The global warming potential impact is dominated by modules (A1) and (A2) for each of the groups and individual panel analyzed.
2. The A1 module is the main contributor in all environmental impact categories analyzed.
3. In the raw material module (A1), for the considered group and panels galvanized steel production is the major contributor for each of the environmental impact categories.
4. The contribution of the transportation stage (A2) to global warming and Ozone layer depletion (ODP) is less than the contribution generated by the manufacturing module (A3) and originate from fuel combustion.
5. The largest contributions for module A3 are generated by the consumption of natural gas and gasoline, the second most important contribution is generated using base expanded polystyrene in the packaging of the panels.
6. One of the advantages of Sandwich panels is that they are a durable system due to the use of galvanized steel in their structure and it is important to note that during their manufacture, water is not consumed, therefore their water scarcity footprint is so low in the module A3).
7. It is a light, modular system, easy portability thanks to technological improvements in its installation as it is competitive in terms of costs due to the easy and quick installation that avoids the excessive consumption of resourcit such as energy and other materials.
8. Being made of galvanized steel in its entirety, is a material that can be reincorporated into new value chains at the end of its useful life.

7. Verification and registration

Programme:	International EPD® System www.environdec.com 
	EPD registered through the fully aligned regional programme/hub: EPD Latin America  www.epd-americalatina.com
Programme operator:	EPD International AB / Box 210 60 / SE-100 31 Stockholm, Sweden EPD Latin America / Chile: Alonso de Ercilla 2996, Ñuñoa, Santiago Chile. Mexico: Av. Convento de Actopan 24 Int. 7A, Colonia Jardines de Santa Mónica, Tlalnepantla de Baz, Estado de México, México, C.P. 54050
EPD registration number:	S-P-01233
Date of publication (issue):	2019-08-29
Date of validity:	2024-07-29
Date of revision:	2019-07-30
Reference year of data:	2015
Geographical scope:	Colombia
Product Category Rules (PCR):	PRODUCT GROUP: UN CPC 4299, 4357, 4394, 4931, 4954, FABRICATED PRODUCTS MADE OUT OF METAL COMPOSITE MATERIAL (MCM), registration no: 2015:04, publication date 2015-08-19, version 1.0. International EPD System
PCR review was conducted by:	The Technical Committee of the International EPD®. System. Chair: Massimo Marino. Contact via info@environdec.com
Independent verification of the declaration data, according to ISO 14025:2006.	<input type="checkbox"/> EPD process certification (Internal) <input checked="" type="checkbox"/> EPD verification (External)
Third-party verifier and critical reviewer of the LCA:	Dr. Pablo Alejandro Arena aparena@gmail.com
Approved by:	The International EPD® System

<p>Procedure for follow-up of data during EPD validity involves third-party verifier:</p>	<p><input type="checkbox"/> Yes</p> <p><input checked="" type="checkbox"/> No</p>
<p>LCA:</p>	<p>This environmental product declaration was carried out based on the Life Cycle Assessment study of Insulated metal sandwich panels for walls, ceilings, and roofings. (CADIS; Claudia Luque; Andrés Martínez; Juan Pablo Chargoy, 2018)</p>

8. Additional environmental information

8.1 Environmental positive contribution (foaming agent substitution)

METECNO produce some of its products with cyclopentane, the firm purpose of collaborating with the protection of the ozone layer and conserving the environment free of HCFCs (hydrochlorofluorocarbons), responsible to a large extent for the depletion of the ozone layer and liable additionally are the gases with high global warming potential.

8.2 Certifications

The company has the following certifications:



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Assesment study of Insulated metal
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