国检集团

Declaration number: EPD-CTC-2021-26008

Environmental Product Declaration

Applicant

3A Composites (China) Ltd.

Declared product

Non-combustible Metal Composite Panel

Issuing authority

China Testing & Certification International Group Co.,Ltd.

2021/ 08 / 09

General information

EPD owner

Name of applicant	3A Composites (China) Ltd.		
Address of applicant	No.298 Kangqiao East Road, China (Shanghai) Pilot Free Trade Zone		
Name of manufacturer	Alucobond Composites (Jiangsu) Ltd.		
Address of manufacturer	No.10 South Hehuan Road, Changzhou, Jiangsu		
Product name	Non-combustible Metal Composite Panel	Type	Non-combustible Aluminum Composite Panel (Alucobond A2) for curtain wall
Contact	Zhenghua Wang	Phone number	0519-81665781

Programme holder

Issuing authority	China Testing & Certification International Group Co.,Ltd.		
Address	No.1 Guanzhuang Dongli, Chaoyang District, Beijing 100024		
legal representative	Lianbin Zhu	Phone number	010-51167672
Contact	Liping Ma	Phone number	010-51167148
References	1.ISO 14025:2006, Environmental labels and declarations -Type III environmental declarations-Principles and procedures, IDT 2.ISO 21930:2017 Sustainability in buildings and civil engineering works — Core rules for environmental product declarations of construction products and services		
Cut-off	Production process of pretreatment fluid and protective film		

Product life cycle environmental impact assessment

Functional unit	1m^2 of Non-combustible Metal Composite Panel		
System boundary	From resource exploitation, raw and auxiliary materials production and transportation, energy production, product production to product delivery (from cradle to gate)		
Environmental impact	Environmental impact categories	Unit	Value
	Abiotic depletion potential（ADP）	kgSb-Equiv./m^2	9.95E-04
	Acidification Potential（AP）	kgSO_2-Equiv.m^2	5.55E-01
	Primary energy demand（PED）	MJ/m^2	1.77E+03
	Eutrophication Potential（EP）	kgPO_4^{3-}-Equiv./m^2	4.48E-02
	Global Warming Potential（GWP）	kgCO_2-Equiv./m^2	1.20E+02
	Respiratory Inorganics（RI）	kg$PM_{2.5}$-Equiv./m^2	1.90E-01
	Water use	kg/m^2	7.77E+02
Issued date	2021-08-09	Duration	5 years

Approver: Reviewer: Editor:

1 Company description

Siren Composites (China) Co., Ltd, as a wholly owned subsidiary of 3A Composites Group in China, was established in 1997 with a total investment of US$20 million. It is the original and only manufacturer of ALUCOBOND®, ALUCORE®, DIBOND®, and other related brands, and the company has a series of architectural applications such as sunshade, energy-saving sandwich wall panel systems, and aluminum coated products.

2 Product information

-ALUCOBOND® curtain wall and decorative panels for construction (curtain wall and roof eaves, interior walls, ceiling cladding columns, etc.)

-ALUCORE® panels for construction and transportation.

-DIBOND® panels for display and advertising industry

Comply with GB/T 17748-2016 "Non-combustible grade metal composite panels for architectural curtain wall", GB/T 22412-2016 "Non-combustible grade metal composite panels for general decoration", JCT 2113-2012 "Aluminum honeycomb composite panels for general decoration of buildings", JCT 2561 2020 "Non-combustible grade metal composite panels for decoration of buildings", JGT 334-2012 "Non-combustible grade metal composite panels for external walls of buildings", JGT 334-2012 "Aluminum honeycomb composite panels for external walls of buildings". Aluminum Honeycomb Composite Panel for Building Exterior Wall" standard.

ALUCOBOND® aluminum panels have an excellent strength/weight ratio. Due to its light weight, ALUCOBOND® is easy to handle at fabrication plants and project sites. The high strength and stiffness of ALUCOBOND® make it the most suitable material for interior and exterior walls of buildings. When properly designed and installed, ALUCOBOND® maintains long term flatness, even in the harshest climates.

3 Life cycle environmental impact assessment

3.1 System boundary

The product life cycle system boundaries defined in this report, as shown in Figure 1, from resource extraction, raw material production and transportation, energy production, product production to the factory (from cradle to gate), including:

(1) Production of raw and auxiliary materials (bright aluminum, paint, etc.);

(2) energy production (Electricity and natural gas etc.);

(3) transportation (transportation of main raw materials);

(4) Non-combustible Metal Composite Panel.

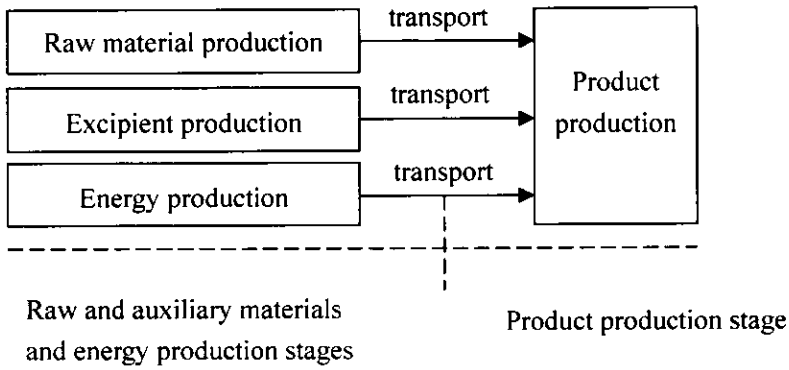

Figure 1 System boundaries of Non-combustible Metal Composite Panel

3.2 Functional unit

Produce 1 m^2 of Non-combustible Metal Composite Panel.

3.3 Inventory data

On-site production data includes inventory data such as raw material consumption, energy consumption, pollutant emissions, and transportation during the production phase of the product. The data are shown in tables 1 and 2, and the upstream background data include inventory data for raw material extraction and energy production, as well as inventory data for the transport of raw and auxiliary materials, as shown in table 3.

Table 1 Inventory data of energy consumption

Name	Value	Unit	Mode of transport	Distance in km
Electricity	1.40E+01	kWh	Wire	——
Natural gas	2.44E+00	m^3	Pipe	——

Table 2 Inventory data of raw material consumption

Name	Value	Unit	Mode of transport	Distance in km
Bright aluminum	3.11E-03	t	Truck	900
Paint	2.18E-04	t	Truck	200
Pretreatment fluid	1.56E-05	t	Truck	200
Protective film	9.34E-05	t	Truck	200
Adhesive/Polymer Film	4.67E-04	t	Truck	1500
Polyethylene plastic particles	1.25E-02	t	Truck	200
Water	4.90E-02	t	Pipe	——

Table 3 Data source

Name	Region	Base year	Database
Bright aluminum	China	2013	CLCD 0.8
Paint	Europe	2010	Ecoinvent 2.2.0
Adhesive/Polymer Film	Europe	2010	Ecoinvent 2.2.0
Polyethylene plastic particles	Europe	2010	Ecoinvent 2.2.0
Water	China	2013	CLCD 0.8
Electricity	China	2013	CLCD 0.8
Natural gas	China	2013	CLCD 0.8
Transport	China	2013	CLCD 0.8

Note: CLCD (Chinese Life Cycle Database, CLCD) is the basic database of China's life cycle, with data from industry statistics and literature, representing the average of the Chinese market. The Ecoinvent database is a commonly used life cycle inventory database in Europe.3.

3.4 Data time-range

The production life cycle model data is based on the company's production data in 2020, and the upstream data time is 2010-2013.

3.5 Trade-off principle

- All inputs to the energy are listed;

- All inputs of raw materials are listed;

- The project input of the auxiliary material quality is less than 0.01% of the total consumption of raw materials is negligible;

- Greenhouse gas emissions are listed;

- Streams of substances and energy that contribute less than 1% both inventory analysis and environmental impact are negligible.

3.6 LCA results

The environmental impact assessment of the production life cycle of Non-combustible Metal Composite Panel products for household appliances and the corresponding contributions to the environmental impact of each stage of the life cycle are shown in Table 4 and Table 5 respectively, and the contribution of each environmental impact index of the life cycle to the total environmental impact of the unit process and the corresponding contribution to the environmental impact of each stage of the life cycle are shown in Figure 3 and Figure 4, respectively.

Table 4 Environmental impact

impact categories	unit	value
Abiotic depletion potential（ADP）	kgSb-Equiv./m^2	9.95E-04
Acidification Potential（AP）	kgSO_2-Equiv.m^2	5.55E-01
Primary energy demand（PED）	MJ/m^2	1.77E+03
Eutrophication Potential（EP）	kgPO_4^{3-}-Equiv./m^2	4.48E-02
Global Warming Potential（GWP）	kgCO_2-Equiv./m^2	1.20E+02
Respiratory Inorganics（RI）	kg$PM_{2.5}$-Equiv./m^2	1.90E-01
Water use	kg/m^2	7.77E+02

(1) Abiotic depletion potential (ADP): the equivalent amount of non-renewable resource substances consumed in the production of 1m^2 Non-combustible Metal Composite Panel products for household appliances;

(2) Acidification Potential (AP): production of 1m^2 sulfur dioxide equivalent emitted by Non-combustible Metal Composite Panel;

(3) Primary energy demand (PED): The primary energy consumption equivalent of the production of Non-combustible Metal Composite Panel;

(4) Eutrophication Potential (EP): Production of 1m^2 household appliances Non-combustible Metal Composite Panel product emissions of PO_4^{3-}equivalent:

(5) Global Warming Potential (GWP): Production of 1m^2 of carbon dioxide equivalent emitted by Non-combustible Metal Composite Panel;

(6) Respiratory Inorganics (RI): Production of 1m^2 pm2.5 equivalent of Non-combustible Metal Composite Panel;

(7) Water use: The amount of fresh water required to produce 1m^2 Non-combustible Metal Composite Panel.

Table 5 Corresponding contributions to environmental impacts at each stage of the life cycle

Name	ADP	AP	PED	EP	GWP	RI	water use
Bright aluminum	78.65%	62.66%	46.92%	56.04%	58.54%	60.44%	36.86%
Paint	0.74%	0.63%	0.72%	2.92%	0.50%	0.24%	0.00%
Adhesive/Polymer Film	2.55%	1.10%	3.22%	5.44%	1.61%	0.49%	0.00%
Polyethylene plastic particles	16.19%	21.12%	37.09%	23.46%	27.72%	26.47%	49.81%
Water	0.00%	0.01%	0.01%	0.01%	0.01%	0.01%	6.43%
Electricity	0.84%	13.51%	9.83%	10.40%	10.96%	11.75%	6.68%
Natural gas	0.97%	0.37%	2.13%	0.34%	0.54%	0.27%	0.18%
Transport	17.99%	35.00%	49.06%	34.22%	39.22%	38.49%	63.11%

It can be seen from Tables 4 and 5 that the Paint, etc. to the environmental impact is greater than 1%, and according to the trade-off principle, it is included in the environmental impact assessment.

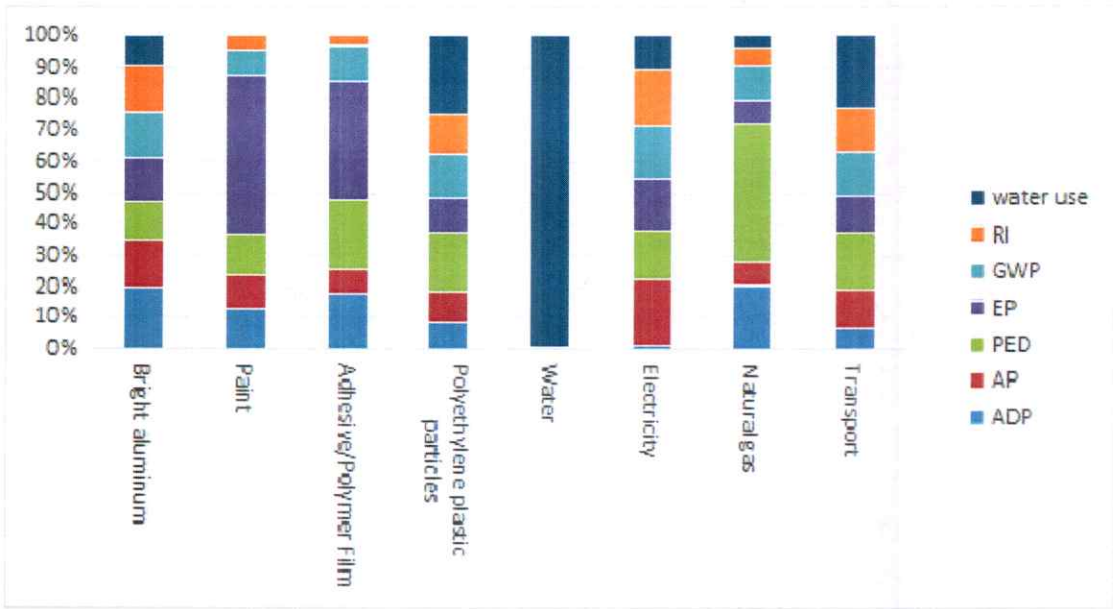

Figure 2 The contribution of the various environmental impact indicators to the total environmental impact of the unit process

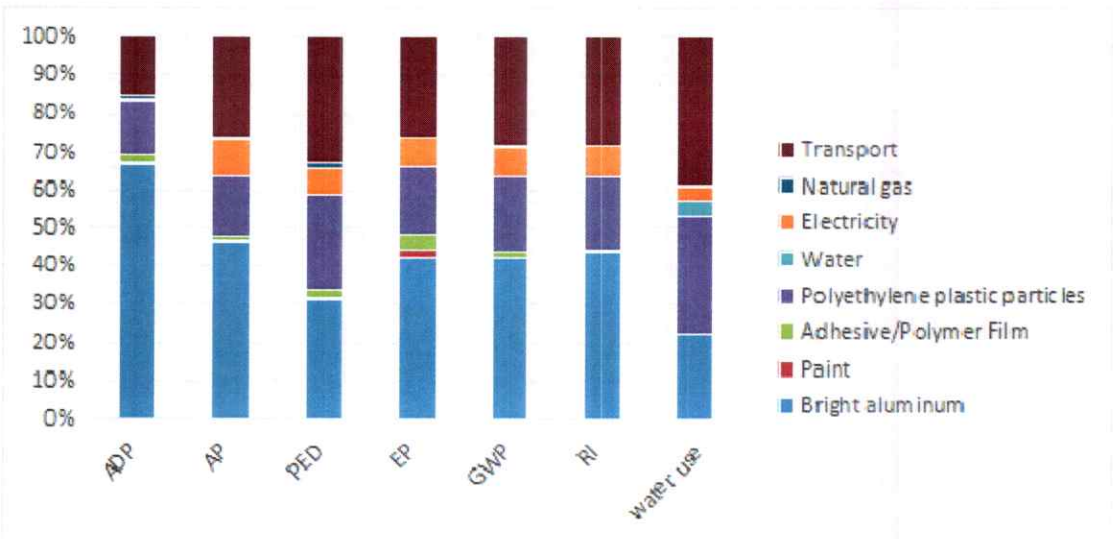

Figure 3 Corresponding contributions to the environmental impact at each stage of the production life cycle

As can be seen from Figures 2 and 3:

(1) The environmental impact of raw materials for the life cycle of Non-combustible Metal Composite Panel is mainly derived from the use of Bright aluminum, the potential for non-renewable resource depletion, acidification effect, primary energy consumption, eutrophication potential, global warming potential, inhalable inorganic matter and freshwater consumption, and its contribution rates are 78.65%, 62.66%, 46.92%, 56.04%, 58.54%, 60.44%, 36.86%, accounting for a large proportion of environmental impact, respectively. Therefore, the rational use of Bright aluminum and the reduction of Bright aluminum waste are important measures to reduce the environmental impact load of the enterprise;

(2) The transportation process of various raw materials also has a high environmental impact, which can be reduced by optimizing the transportation distance of various raw materials and energy, reducing the transportation distance, and establishing a raw material symbiosis park.

4 Additional Information

None.

5 References

1) GB/T 24025-2009 Environmental Labeling and Declaration Type III Environmental Declaration Principles and Procedures（ISO 14025:2006，Environmental labels and declarations -Type III environmental declarations-Principles and procedures, IDT）
2) GB/T 24040-2008 Environmental Management Life Cycle Assessment Principles and Framework（ISO 14040:2006，Environmental management -Life cycle assessment - Principles and framework, IDT）
3) GB/T 24044-2008 Environmental Management Life Cycle Assessment Requirements and Guidelines（ISO 14044:2006，Environmental management- Life cycle assessment- Requirements and guidelines, IDT）
4) Product category rules of Non-combustible Metal Composite Panel production
5) CLCD（Chinese Life Cycle Database，CLCD），China Life Cycle Basic Database version 0.8
6) Ecoinvent database, European Lifecycle Inventory Database version 2.2.0

国检集团

Carbon Footprint Certificate

Certificate Number: CFP-CTC-2021-26008

Product name:	**Non-combustible Metal Composite Panel**
Name and address of applicant:	**3A Composites (China) Ltd.** **No.298 Kangqiao East Road, China (Shanghai) Pilot Free Trade Zone**
Name and address of manufacturer:	**Alucobond Composites (Jiangsu) Ltd.** **No.10 South Hehuan Road, Changzhou, Jiangsu**
References:	**ISO 14067:2018 Greenhouse gases - Carbon footprint of products - Requirements and guidelines for quantification and communication & PAS 2050:2011 Specification for the assessment of the life cycle greenhouse gas emissions of goods and services**
Functional unit:	**1m² Non-combustible Metal Composite Panel**
System boundary:	**From resource exploitation, raw and auxiliary materials production and transportation, energy production, product production to product delivery (from cradle to gate)**
Carbon footprint per functional unit:	**120.45 kg**
Term of validity:	**From 2021-08-09 to 2026-08-08**
Issuing authority:	**China Testing & Certification International Group Co., Ltd.**

Within the period of validity, the certificate shall remain valid through annual supervision. The result of the annual supervision shall be shown in the annual supervision qualification announcement.

Environmental Product Declarations

Declaration number: EPD-CTC-2021-26008

Product name:	**Non-combustible Metal Composite Panel**
Name and address of applicant:	**3A Composites (China) Ltd.** **No.298 Kangqiao East Road, China (Shanghai) Pilot Free Trade Zone**
Name and address of manufacturer:	**Alucobond Composites (Jiangsu) Ltd.** **No.10 South Hehuan Road, Changzhou, Jiangsu**
References:	**GB/T 24025-2009 Environmental labels and declarations. Tyre III environmental declarations. Principles and procedures** **ISO 14025:2006 Environmental labels and declarations – Type III environmental declarations – Principles and procedures**
Functional unit:	**1m² Non-combustible Metal Composite Panel**
System boundary:	**From resource exploitation, raw and auxiliary materials production and transportation, energy production, product production to product delivery (from cradle to gate)**
Results:	**See Appendix**
Date of issue:	**2021-08-09**
Date of expiry:	**2026-08-08**

Within the period of validity, the certificate shall remain valid through annual supervision. The result of the annual supervision shall be shown in the annual supervision qualification announcement.

Address: No.1 Guanzhuang Dongli, Chaoyang District, Beijing 100024.

Issuing authority: China Testing & Certification International Group Co.,Ltd.

Declaration number：EPD-CTC-2021-26008

Appendix：

Product name:	**Non-combustible Metal Composite Panel**	
Type:	**Non-combustible Aluminum Composite Panel (Alucobond A2) for curtain wall**	
Environmental impact categories	**Unit**	**Value**
Abiotic depletion potential （ADP）	$kgSb\text{-}Equiv./m^2$	9.95E-04
Acidification Potential （AP）	$kgSO_2\text{-}Equiv./m^2$	5.55E-01
Primary energy demand （PED）	MJ/m^2	1.77E+03
Eutrophication Potential （EP）	$kgPO_4^{3-}\text{-}Equiv./m^2$	4.48E-02
Global Warming Potential （GWP）	$kgCO_2\text{-}Equiv./m^2$	1.20E+02
Respiratory Inorganics （RI）	$kgPM_{2.5}\text{-}Equiv./m^2$	1.90E-01
Water use	kg/m^2	7.77E+02

Note: Above information is based on the basic information provided by the applicant, and is verified by our company.
This Appendix table shall be used together with the original certificate.

China Testing & Certification International Group Co.,Ltd.

Valid date of the appendix：2021-08-09