EPD®
THE INTERNATIONAL EPD® SYSTEM

ELLADECK
PREMIUM

ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025 / ISO 21930

WPC DECKING

Programme: The International EPD® System, www.environdec.com

Programme operator: EPD International AB

EPD registration number: EPD-IES-0013785

Publication date: 2024-06-27

Valid until: 2029-06-27

Geographical scope: China and EU

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 www.environdec.com.

GENERAL INFORMATION

COMPANY INFORMATION

Manufacturer	Lyctum d.o.o.
Address	Svetomira Đukića 24 Beograd-Zemun, Srbija
Contact details	Tel: +381113141060 Tel: +381658887200 E-mail: info@lyctum.com
Website	www.lyctum.com

PRODUCT IDENTIFICATION

Product name	WPC Decking
Additional label(s)	None
Product number / reference	/
Place(s) of production	China
CPC code	36910 Floor coverings of plastics, in rolls or in the form of tiles

EPD INFORMATION

EPD programme	The International EPD® System
Address	EPD International AB Box 210 60, SE-100 31 Stockholm, Sweden
E-mail	info@environdec.com
EPD standards	This EPD is in accordance with EN 15804:2012 +A2:2019/AC:2021 and ISO 14025:2010 standards.
Product category rules	The CEN standard EN 15804 serves as the core PCR. In addition, the Int'l EPD System PCR 2019:14 Construction products, version 1.3.4 (2024-04-30)
EPD author	Shuting Fan, Intertek
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☑ External verification
Verification date	2024-06-04
EPD verifier	Rui Wang, IVL Swedish Environmental Research Institute
EPD number	EPD-IES-0013785
ECO Platform nr.	-
Publishing date	2024-06-27
EPD valid until	2029-06-27

The EPD owner has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) 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. For further information about comparability, see EN 15804 and ISO 14025.

PRODUCT INFORMATION

PRODUCT DESCRIPTION

WPC decking combined the advantage of plastic and beauty of wood, make you feel very comfortable especially barefoot on it. Excellent anti-slip give you more safety and enjoy your life. The surface nearly to natural wood and beautiful appearance, rich colors suitable for varieties of decorate solutions. 360^{o} comprehensive coating, thickened protective layer, better waterproof and anticorrosive performance. The anti-aging performance of the surface layer is highest anti-aging material of BASF UK235 in German, which has better weather resistance.

PRODUCT APPLICATION

WPC Decking good weather ability suitable in all seasons, such as balcony, garden, park, swimming pool and so on.

TECHNICAL SPECIFICATIONS

140*22mm

PRODUCT STANDARDS

At present, the company has passed the following certifications:

ISO9001 Quality Management System Certification; ISO14001 Environmental Management System Certification; ASTM Test; UDEM EN-14342 Test.

PHYSICAL PROPERTIES OF THE PRODUCT

Testing items	wpc products
Density	1.25kg/m
Moisture Content	0.86%
Resistance to scratch test	Rate 2
UV Weathering Test	After 3000 hour test Grey Scale3, ΔE*=3.71
Rockwell Hardness	77.6R

ADDITIONAL TECHNICAL INFORMATION

Further information can be found at www.lvsenwpc.com

PRODUCT RAW MATERIAL AND PACKAGING COMPOSITION

Materials of Product and packaging for 1kg WPC product

Product components	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%	Country / Region of origin
Wood powder	0.55	0	100	China
HDPE	0.35	100	0	China
Chemical additive	0.1	0	0	China
TOTAL product weight	1	35	55	China
Packaging materials	**Weight, kg**	**Post-consumer material, weight-%**	**Renewable material, weight-%**	**Country / Region of origin**
Wood pallet	0.025	0	100	China
Packaging film	0.0008	0	0	China
Cardboard	0.0004	0	0	China
TOTAL packaging	0.0262	0	95	China
Dangerous substances from the candidate list of SVHC for authorisation	**EC No.**	**CAS No.**	**Weight-% per declared unit**	
None	None	None	0	

PRODUCT LIFE-CYCLE

MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials and other ancillary materials. The study also considers the material losses occurring during the manufacturing processes as well as handling of waste formed in the production processes at the manufacturing facilities.

The product stage of the WPC is divided into 3 modules: A1 “Raw material and supply”, A2 “Transport to the manufacturer” and A3 “Manufacturer”. The aggregation of the modules A1, A2 and A3 is a possibility considered by the EN 15804 standard. This rule is applied in this EPD.

A1, Raw material supply takes into account the extraction and processing of all raw materials and energy which occur upstream to the studied manufacturing process. Specifically, WPC raw material supply covers sourcing of wood fibre, HDPE and additives. Electricity is taken account for China.

A2, Transport to the manufacturer. The transportation of the raw materials to the manufacturing site is studied in this module.

A3, Manufacturing. Manufacturing covers all processes linked to production, include: Mixing of all raw materials (including plant fibre, PE and additives); pelletizing; co-extrusion moulding; water cooling; polishing and cutting process. Then products are packaged.

The environmental profile of these energy carriers is modelled for local conditions.

Packaging-related flows in the production process are included in the manufacturing module, i.e. wood pallet, packaging plastic and cardboard. Apart from production of packaging material, the supply and transport of packaging material are also considered in the LCA model.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

The construction process is divided into 2 modules: A4 “Transport to the building site” and A5 “Installation in the building”.

A4, Transport to the building site. This module includes transport from the production gate to the building site. Transport is calculated on the basis of a scenario with the parameters described. The average transportation distance from production plant to building site is assumed as 166 km transported by lorry, 21364 km transported by ship.

A5 Installation in the building occur in this stage. This module includes product installation losses and energy consumption during the installation of product, i.e. the additional production processes to compensate the loss. And the waste processing which occur in this stage.

Materials loss during installation are estimated as 1%.

The end of life of packaging are considered as, with reference to EU waste management:

Wood pallet: recycling 32%, landfill 19%, incineration 49%.

Plastic film: recycling 40.7%, landfill 19%, incineration 40.3%.

Cardboard: recycling 82.5%, landfill 19%, incineration 1.5%.

PRODUCT USE AND MAINTENANCE (B1-B7)

This EPD does not cover the use phase.
Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

The end-of life stage is divided into 4 modules: C1 “De-construction, demolition”, C2 “Transport to waste processing”, C3 “Waste processing for reuse, recovery and/or recycling”, C4 “Disposal”.

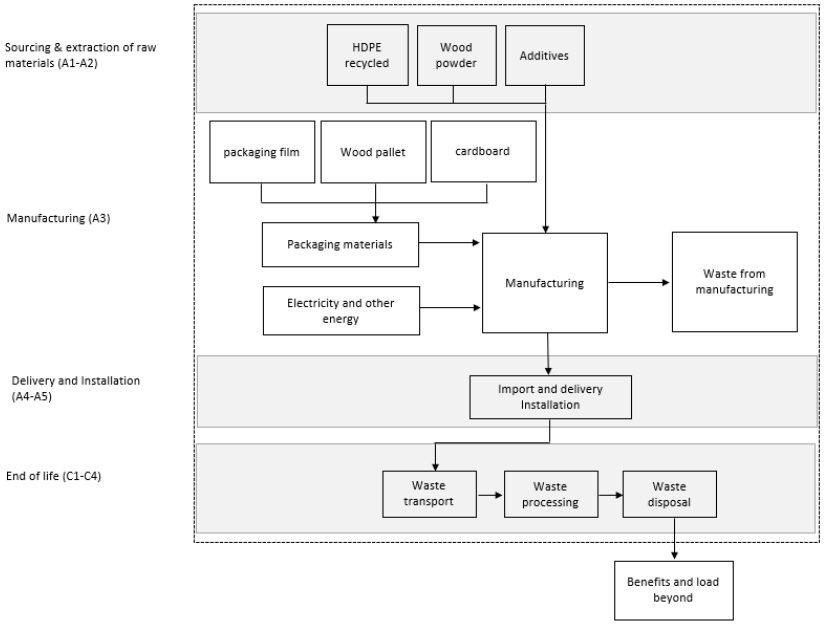
C1 De-construction, demolition. For WPCs, the energy consumption considered as 0.0015kWh/declared unit.

C2 Transport to waste processing. It is estimated that there is no mass loss during the use of the product, therefore the end-of-life product is assumed that it has the same weight with the declared product. All of the end-of-life product is assumed to be transported as separate construction waste to the closest facilities. Transportation distance to the closest disposal area is estimated as 200 km and the transportation method is lorry which is common.

C3 Waste processing for reuse, recovery and/or recycling. It is assumed that 95% of the product was sent to recycled

C4 Disposal. It is assumed that 5% of the product was sent to landfill.

MANUFACTURING PROCESS



LIFE-CYCLE ASSESSMENT

LIFE-CYCLE ASSESSMENT INFORMATION

Period for data	2023

DECLARED UNIT

Declared unit	1kg
Mass per functional unit	1kg
Reference service life	25 years

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0.27
Biogenic carbon content in packaging, kg C	0.00992

SYSTEM BOUNDARY

The system boundary is the Cradle to gate with options, modules C1–C4, module D and with optional modules, including: A1-A3 product stage, A4-A5 construction process stage, C1-C4 end-of-life stage, and D benefits and loads beyond the system boundary.

Modules declared, geographical scope, share of specific data (in GWP-GHG indicator) and data variation:

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	X	X	X	X	X	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	CN	CN	CN	CN to EU	EU	ND	ND	ND	ND	ND	ND	ND	EU	EU	EU	EU	EU
Specific data used	>90%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the EN 15804:2012 +A2:2019/AC:2021 and the applied PCR. The study does not exclude any hazardous materials or substances.

The clicks used during installation are 0.002kg/declare unit during installation. It is not more than 1% of each unit process mass and the total excluded input and output flows do not exceed 5% of mass. So considered to be cut-off flow. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation.

In this study, as per EN 15804, allocation is conducted in the following order;

1. Allocation should be avoided.
2. Allocation should be based on physical properties (e.g., mass, volume) when the difference in revenue is small.
3. Allocation should be based on economic values.

Allocation used in Ecoinvent 3.8 environmental data sources follows the methodology 'allocation, cut-off by classification'. This methodology is in line with the requirements of the EN 15804-standard.

For data sets in this study, the allocation of the inputs is generally carried out via the mass. The consumption and transportation of raw materials was allocated by mass ratio.

For data sets in this study, the allocation of the inputs is generally carried out via the mass. The consumption and transportation of raw materials was allocated by mass ratio.

In this study one allocation occurs on WPC production, in allocating the input and output, i.e. energy within the production site such as electricity and emission such as off gas, among the various series of WPC products, allocation is done via total production (WPC products with the unit as kg) of all products produced on a yearly average.

During the production process of WPC, there are no other by-products produced from the production line, hence there is no occasion that requires allocation for multi-output processes.

For this project, there is only one production site. So, there is no allocation among plants.

ENVIRONMENTAL IMPACT DATA OF WPC PER DECLARED UNIT

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total	kg CO_2 eq.	2,44E-01	2,23E-01	5,55E-02	ND	ND	ND	ND	ND	ND	ND	1,10E-03	1,88E-02	1,03E+00	4,93E-02	0,00E+00
GWP – fossil	kg CO_2 eq.	1,26E+00	2,22E-01	1,91E-02	ND	ND	ND	ND	ND	ND	ND	1,10E-03	1,88E-02	1,01E-01	2,63E-04	0,00E+00
GWP – biogenic	kg CO_2 eq.	-1,02E+00	5,90E-05	3,64E-02	ND	ND	ND	ND	ND	ND	ND	3,66E-06	8,47E-22	9,32E-01	4,90E-02	0,00E+00
GWP – Luluc	kg CO_2 eq.	8,73E-04	1,56E-04	1,46E-05	ND	ND	ND	ND	ND	ND	ND	2,30E-06	6,92E-06	1,35E-04	2,49E-07	0,00E+00
ODP	kg CFC_{-11} eq.	1,61E-06	4,46E-08	1,68E-08	ND	ND	ND	ND	ND	ND	ND	3,70E-11	4,32E-09	3,39E-09	1,07E-10	0,00E+00
AP	mol H^+ eq.	1,39E-02	6,77E-03	2,22E-04	ND	ND	ND	ND	ND	ND	ND	5,57E-06	7,95E-05	3,72E-04	2,48E-06	0,00E+00
EP-freshwater	kg P eq.	3,40E-05	8,66E-07	4,50E-07	ND	ND	ND	ND	ND	ND	ND	5,75E-08	1,54E-07	2,71E-06	2,76E-09	0,00E+00
EP-marine	kg N eq.	1,85E-03	1,67E-03	3,97E-05	ND	ND	ND	ND	ND	ND	ND	9,40E-07	2,36E-05	1,08E-04	8,57E-07	0,00E+00
EP-terrestrial	mol N eq.	1,90E-02	1,86E-02	4,21E-04	ND	ND	ND	ND	ND	ND	ND	1,05E-05	2,61E-04	1,08E-03	9,43E-06	0,00E+00
POCP	kg NMVOC eq.	1,07E-02	4,82E-03	1,69E-04	ND	ND	ND	ND	ND	ND	ND	2,83E-06	8,34E-05	3,36E-04	2,74E-06	0,00E+00
ADP-minerals & metals*	kg Sb eq.	9,37E-06	3,22E-07	1,15E-07	ND	ND	ND	ND	ND	ND	ND	5,13E-09	4,40E-08	9,32E-07	6,05E-10	0,00E+00
ADP-fossil*	MJ	1,74E+01	2,83E+00	2,38E-01	ND	ND	ND	ND	ND	ND	ND	1,43E-02	2,82E-01	6,41E-01	7,22E-03	0,00E+00
WDP*	m^3	4,42E-01	8,76E-03	5,96E-03	ND	ND	ND	ND	ND	ND	ND	3,00E-04	1,26E-03	1,98E-02	2,29E-05	0,00E+00
Acronyms	GWP-fossil= Global Warming Potential fossil fuels; GWP-biogenic= Global Warming Potential biogenic; GWP-luluc= Global Warming Potential land use and land use change; ODP=Depletion potential of the stratospheric ozone layer; AP = Acidification potential. Accumulated Exceedance; EP-freshwater=Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil=Abiotic depletion for fossil resources potential; WDP - Water (user) deprivation potential, deprivation-weighted water consumption															

*Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

ENVIRONMENTAL IMPACTS – GWP-GHG - THE INTERNATIONAL EPD SYSTEM

Impact category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP –GHG	kg CO_2 eq.	1,26E+00	2,22E-01	1,91E-02	ND	ND	ND	ND	ND	ND	ND	1,10E-03	1,88E-02	1,01E-01	2,63E-04	0,00E+00

USE OF RESOURCES

Impact category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy[6)]	MJ	3,13E+00	2,05E-02	3,44E-02	ND	ND	ND	ND	ND	ND	ND	1,85E-03	3,18E-03	6,62E-02	6,27E-05	0,00E+00
Renew. PER as material	MJ	4,62E+00	0,00E+00	-3,19E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	-4,09E+00	-2,15E-01	0,00E+00
Total use of renew. PER	MJ	7,75E+00	2,05E-02	-2,85E-01	ND	ND	ND	ND	ND	ND	ND	1,85E-03	3,18E-03	-4,02E+00	-2,15E-01	0,00E+00
Non-re. PER as energy	MJ	1,50E+01	2,83E+00	2,14E-01	ND	ND	ND	ND	ND	ND	ND	1,43E-02	2,82E-01	6,41E-01	7,22E-03	0,00E+00
Non-re. PER as material	MJ	1,74E+01	0,00E+00	-5,48E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	-1,64E+01	-8,65E-01	0,00E+00
Total use of non-re. PER	MJ	3,23E+01	2,83E+00	1,59E-01	ND	ND	ND	ND	ND	ND	ND	1,43E-02	2,82E-01	-1,58E+01	-8,58E-01	0,00E+00
Secondary materials	kg	3,78E-01	1,25E-03	3,83E-03	ND	ND	ND	ND	ND	ND	ND	1,31E-06	7,83E-05	3,01E-03	1,52E-06	0,00E+00
Renew. secondary fuels	MJ	8,40E-03	3,84E-06	8,44E-05	ND	ND	ND	ND	ND	ND	ND	9,12E-09	7,90E-07	2,50E-05	3,96E-08	0,00E+00
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m3	1,07E-02	1,96E-04	1,23E-04	ND	ND	ND	ND	ND	ND	ND	8,39E-06	3,65E-05	4,15E-04	7,90E-06	0,00E+00

PER abbreviation stands for primary energy resources

END OF LIFE – WASTE

Impact category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	1,13E-01	3,85E-03	1,41E-03	ND	ND	ND	ND	ND	ND	ND	9,21E-05	3,74E-04	1,07E-02	0,00E+00	0,00E+00
Non-hazardous waste	kg	1,35E+00	3,40E-02	3,58E-02	ND	ND	ND	ND	ND	ND	ND	2,47E-03	6,14E-03	1,20E-01	5,00E-02	0,00E+00
Radioactive waste	kg	2,36E-05	1,99E-05	5,72E-07	ND	ND	ND	ND	ND	ND	ND	4,40E-08	1,89E-06	1,87E-06	0,00E+00	0,00E+00

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	6,00E-03	0,00E+00	1,88E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	9,50E-01	0,00E+00	0,00E+00
Materials for energy rec	kg	0,00E+00	0,00E+00	1,27E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported electricity energy	MJ	0,00E+00	0,00E+00	1,97E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported thermal energy	MJ	0,00E+00	0,00E+00	1,11E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Disclaimer:
1. 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.
2. If module C is included in the EPD; a disclaimer discouraging the use of the results of modules A1-A3 (A1-A5 for services) without considering the results of module C. 3. EN 15804 reference package based on EF 3.0

SCENARIO DOCUMENTATION

Manufacturing energy scenario documentation

Scenario parameter	Value
Electricity data source and quality	LCA study for market group for electricity, medium voltage, in China. Ecoinvent, year: 2021.
Electricity kg CO_2e / kWh	1.06
Electricity data source and quality	Electricity production, photovoltaic, 3kWp slanted-roof installation, multi-Si, panel, mounted, in Shangdong China. Ecoinvent, year: 2021.
Electricity kg CO_2e / kWh	0.0671

Scrap input scenario documentation

Scenario parameter	Value
Scrap input	LCA study for Polyethylene production, high density, granulate, recycled, world. Ecoinvent, year: 2021.
Scrap input kg CO_2e / ton	480

BIBLIOGRAPHY

ISO 14025:2010 Environmental labels and declarations – Type III environmental declarations. Principles and procedures.

ISO 14040:2006 Environmental management. Life cycle assessment. Principles and frameworks.

ISO 14044:2006 Environmental management. Life cycle assessment. Requirements and guidelines.

Ecoinvent 3.8 (Allocation, cut-off, EN 15804) and One Click LCA database.

EN 15804:2012+A2:2019/AC:2021 Sustainability in construction works – Environmental product declarations – Core rules for the product category of construction products.

Int'l EPD System PCR 2019:14 Construction products, version 1.3.4 (2024-04-30)

Lvsen LCA background report 2024-04-24

ABOUT THE COMPANY

Shandong Lvsen Wood-plastic Composite Co.,Ltd was established in 2006. It was created under the background that human beings have just entered the 21st century and the world's forestshave been greatly reduced, and have made due contributions to the sustainable development of the earth. After 16years of development, Lvsenwood has become a world-renowned WPC products producer, and It's annaual production capacity is more than 60,000tons. The products are included the outdoor WPC decking series, WPC outdoor wall panel grille series, WPC balustrade fence series, and other products. Products are sold to more than 701 countries and regions around the world.

EPD AUTHOR AND CONTRIBUTORS

Manufacturer	Shandong Lvsen Wood-plastic Composite Co., Ltd
EPD author	Shuting Fan, Intertek
EPD verifier	Rui Wang, IVL Swedish Environmental Research Institute
EPD program operator	EPD International AB
Background data	This EPD is based on Ecoinvent 3.8 (Allocation, cut-off, EN 15804) and One Click LCA databases.
LCA software	The LCA and EPD have been created using One Click LCA Pre-Verified EPD Generator for Construction products

VERIFICATION STATEMENT

VERIFICATION PROCESS FOR THIS EPD

This EPD has been verified in accordance with ISO 14025 by an independent, third-party verifier by reviewing results, documents and compliancy with EN 15804, ISO 14025 and ISO 14040/14044, following the process and checklists of the program operator for:

- This Environmental Product Declaration
- The Life-Cycle Assessment used in this EPD
- The background report (project report) for this EPD

Why does verification transparency matter? Read more online.

VERIFICATION OVERVIEW

Following independent third party has verified this specific EPD:

EPD verification information	Answer
Independent EPD verifier	Rui Wang, IVL Swedish Environmental Research Institute
EPD verification started on	2024-06-04
EPD verification completed on	2024-06-20
Approver of the EPD verifier	The International EPD System

Author & tool verification	Answer
EPD author	Shuting Fan, Intertek
EPD author training completion	2022-11-04
EPD Generator module	Construction products
Independent software verifier	Ugo Pretato, Studio Fieschi & soci
Software verification date	2021-05-11

THIRD-PARTY VERIFICATION STATEMENT

I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of

- the data collected and used in the LCA calculations,
- the way the LCA-based calculations have been carried out,
- the presentation of environmental data in the EPD, and
- other additional environmental information, as present

with respect to the procedural and methodological requirements in ISO 14025:2010 and EN 15804:2012+A2:2019/AC:2021.

I confirm that the company-specific data has been examined as regards plausibility and consistency; the declaration owner is responsible for its factual integrity and legal compliance.

I confirm that I have sufficient knowledge and experience of construction products, this specific product category, the construction industry, relevant standards, and the geographical area of the EPD to carry out this verification.

I confirm my independence in my role as verifier; I have not been involved in the execution of the LCA or in the development of the declaration and have no conflicts of interest regarding this verification.

Rui Wang, IVL Swedish Environmental Research Institute

Test Report (SVHC)

No.: TAOPC26004159902 **Date:** May 08, 2026

Client Name: LYCTUM DOO

Client Address: SVETOMIRA ĐUKIĆA 24, BEOGRAD-ZEMUN, SERBIA

Sample Name:	CO-EXTRUSION WPC BOARD
Manufacturer:	LYCTUM DOO
Lot No.:	95105.R15
Material and Mark:	WPC&LVSENWOOD
Product Specification:	140*15mm
Other:	140*10mm 140*22mm 140*22.5mm 139*24mm 218*24mm 162*19.5mm 150*23mm 218*33mm 268*33mm 134.5*24.5mm 153*24mm 95*24mm 162*25mm 186.5*20mm 71*10mm 50*50mm 70*10.5mm 52*10mm 90*40mm 120*60mm 160*28mm

The above sample(s) and information were provided by the client.

SGS Job No.:	QDPC2604000623
Sample Receiving Date:	Apr 20, 2026
Testing Period:	Apr 20, 2026 ~ Apr 28, 2026
Test Requested:	As requested by client, SVHC in Candidate List screening is performed according to: (i) Two hundred and fifty-three (253) substances in the Candidate List of Substances of Very High Concern (SVHC) for authorization published by European Chemicals Agency (ECHA) on and before Feb 4, 2026 regarding Regulation (EC) No 1907/2006 concerning the REACH.

Signed for and on behalf of
SGS-CSTC Standards Technical Services (Qingdao) Co., Ltd.

Esther He

Esther He
Approved Signatory

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Verification:
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As requested by client, Potential SVHC screening is performed according to: (i) One (1) potential Substances of Very High Concern (SVHC) in the Identification ongoing.

Test Method(s): Please refer to next page(s).

Test Result(s): Please refer to next page(s).

Summary:

According to the specified scope and evaluation screening, the results of 253 SVHC in the Candidate List are ≤ 0.1% (w/w) in the submitted sample.	Pass
According to the specified scope and evaluation screening, the results of 1 Potential SVHC are ≤ 0.1% (w/w) in the submitted sample.	Pass

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Remark :

1. The chemical analysis of specified SVHC is performed by means of currently available analytical techniques against the following SVHC related documents published by ECHA:
   http://echa.europa.eu/web/guest/candidate-list-table
   These lists are under evaluation by ECHA and may subject to change in the future.
2. REACH obligation:
   2.1 Concerning article(s):
   Communication:
   Article 33 of Regulation (EC) No 1907/2006 requires supplier of an article containing a substance meeting the criteria in Article 57 and identified in accordance with Article 59(1) in a concentration above 0.1% weight by weight (w/w) shall provide the recipient of the article with sufficient information, available to the supplier, to allow safe use of the article including, as a minimum, the name of that substance in the Candidate List.

   Notification:
   In accordance with Regulation (EC) No 1907/2006, any EU producer or importer of articles shall notify ECHA, in accordance with paragraph 4 of Article 7, if a substance meets the criteria in Article 57 and is identified in accordance with Article 59(1) of the Regulation, if (a) the substance in the Candidate List is present in those articles in quantities totaling over one tonne per producer or importer per year; and (b) the substance in the Candidate List is present in those articles above a concentration of 0.1% weight by weight (w/w).

   Companies supplying articles containing substances of very high concern (SVHCs) on the Candidate List in a concentration above 0.1% weight by weight (w/w) on the EU market must comply with the Waste Framework Directive 2008/98/EC requirement and submit SCIP notifications on these articles to ECHA, as from 5 January 2021.

   2.2 Concerning material(s):
   Test results in this report are based on the tested sample. This report refers to testing result of tested sample submitted as homogenous material(s). In case such material is being used to compose an article, the results indicated in this report may not represent SVHC concentration in such article. If this report refers to testing result of composite material group by equal weight proportion, the material in each composite test group may come from more than one article.

   If the sample is a substance or mixture, and it directly exports to EU, client has the obligation to comply with the supply chain communication obligation under Article 31 of Regulation (EC) No. 1907/2006 and the conditions of Authorization of substance of very high concern included in the Annex XIV of the Regulation (EC) No. 1907/2006.

   2.3 Concerning substance and preparation:
   If a SVHC is found over 0.1% (w/w) and/or the specific concentration limit which is set in Regulation (EC) No 1272/2008 and its amendments, client is suggested to prepare a Safety Data Sheet (SDS) against the SVHC to comply with the supply chain communication obligation under Regulation (EC) No 1907/2006, in which:
   - a substance that is classified as hazardous under the CLP Regulation (EC) No 1272/2008.
   - a mixture that is classified as hazardous under the CLP Regulation (EC) No 1272/2008, when it contains a substance with concentration equal to, or greater than the classification limit as set in Regulation (EC) No. 1272/2008; or
   - a mixture is not classified as hazardous under the CLP Regulation (EC) No 1272/2008, but contains either:

(a) a substance posing human health or environmental hazards in an individual concentration of ≥ 1 % by weight for mixtures that are solid or liquids (i.e., non-gaseous mixtures) or ≥ 0.2 % by volume for gaseous mixtures; or
(b) a substance that is PBT, or vPvB in an individual concentration of ≥ 0.1 % by weight for mixtures that are solid or liquids (i.e., non-gaseous mixtures); or
(c) a substance on the SVHC candidate list (for reasons other than those listed above), in an individual concentration of ≥ 0.1 % by weight for non-gaseous mixtures; or
(d) a substance for which there are Europe-wide workplace exposure limits

3. If a SVHC is found over the reporting limit, client is suggested to identify the composite component which contains the SVHC and the exact concentration of the SVHC by requesting further quantitative analysis from the laboratory.

Test Sample:

Testing Group:

Test Result ID	Description	Test Part ID	SGS Sample ID
001	Brown board	A2	TAO26-0041599-0001.C002

Test Method:
With reference to SGS In-House method, analysis was performed by ICP-OES, UV-VIS, GC-MS, HPLC-DAD/MS and Colorimetric Method.

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Result of SVHC in the Candidate List

Batch	Substance Name	CAS No.	001 Concentration (%)	RL (%)
-	All SVHC in Candidate list	-	ND	-

Result of Potential SVHC

Batch	Substance Name	CAS No.	001 Concentration (%)	RL (%)
/	All Potential SVHC	-	ND	-

Notes:

(1) The table above only shows detected SVHC, and SVHC that below RL are not reported. Please refer to Appendix for the full list of tested SVHC.

(2) RL = Reporting Limit (Test data will be shown if it ≥ RL. RL is not regulatory limit.)
ND = Not detected (lower than RL), ND is denoted on the SVHC substance.

(3) * The result is based on the calculation of selected element(s) under the worst-case scenario, and the evaluation of substance usage and material properties.
** The result is based on the calculation of selected marker(s) and to the worst-case scenario.
Calculated concentration of boric compounds are based on water extractive boron detected by ICP-OES.
Calculated concentration of Barium diboron tetraoxide is based on water extractive boron and barium detected by ICP-OES.
RL = 0.005% is evaluated for element (i.e. cobalt, arsenic, lead, chromium, chromium (VI), aluminum, zirconium, boron, strontium, zinc, antimony, titanium, barium and cadmium respectively), except molybdenum RL=0.0005%, boron RL=0.0025% (only for Lead bis(tetrafluoroborate)), fluorine RL=0.050%.

(4) § The substance is proposed for the identification as SVHC only where it contains Michler's ketone (CAS Number: 90-94-8) or Michler's base (CAS Number: 101-61-1) ≥0.1% (w/w).

(5) / = Potential SVHC

Unless otherwise stated, the decision rule for conformity reporting is based on Binary Statement for Simple Acceptance Rule (*w*=0) stated in ILAC-G8:09/2019.

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Appendix:

Full list of tested SVHC

Batch	No.	Substance Name	CAS No.	RL (%)
I	1	4,4'-Diaminodiphenylmethane(MDA)	101-77-9	0.050
I	2	5-tert-butyl-2,4,6-trinitro-m-xylene (musk xylene)	81-15-2	0.050
I	3	Alkanes, C10-13, chloro (Short Chain Chlorinated Paraffins)	85535-84-8	0.050
I	4	Anthracene	120-12-7	0.050
I	5	Benzyl butyl phthalate (BBP)	85-68-7	0.050
I	6	Bis(2-ethylhexyl)phthalate (DEHP)	117-81-7	0.050
I	7	Bis(tributyltin)oxide (TBTO)	56-35-9	0.050
I	8	Cobalt dichloride*	7646-79-9	0.005
I	9	Diarsenic pentaoxide*	1303-28-2	0.005
I	10	Diarsenic trioxide*	1327-53-3	0.005
I	11	Dibutyl phthalate (DBP)	84-74-2	0.050
I	12	Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified (α-HBCDD, β-HBCDD, γ-HBCDD)	-	0.050
I	13	Lead hydrogen arsenate*	7784-40-9	0.005
I	14	Sodium dichromate*	10588-01-9 /7789-12-0	0.005
I	15	Triethyl arsenate*	15606-95-8	0.005
II	16	2,4-Dinitrotoluene	121-14-2	0.050
II	17	Anthracene oil**	90640-80-5	0.050
II	18	Anthracene oil, anthracene paste**	90640-81-6	0.050
II	19	Anthracene oil, anthracene paste, anthracene fraction**	91995-15-2	0.050
II	20	Anthracene oil, anthracene paste, distn. Lights**	91995-17-4	0.050
II	21	Anthracene oil, anthracene-low**	90640-82-7	0.050
II	22	Diisobutyl phthalate	84-69-5	0.050
II	23	Lead chromate*	7758-97-6	0.005
II	24	Lead chromate molybdate sulphate red (C.I. Pigment Red 104)*	12656-85-8	0.005
II	25	Lead sulfochromate yellow (C.I. Pigment Yellow 34)*	1344-37-2	0.005
II	26	Pitch, coal tar, high temp. **	65996-93-2	0.050
II	27	Tris(2-chloroethyl)phosphate	115-96-8	0.050
II	28	Acrylamide	79-06-1	0.050
III	29	Ammonium dichromate*	7789-09-5	0.005
III	30	Boric acid*	-	0.005
III	31	Disodium tetraborate, anhydrous*	12179-04-3 /1303-96-4 /1330-43-4	0.005
III	32	Potassium chromate*	7789-00-6	0.005
III	33	Potassium dichromate*	7778-50-9	0.005
III	34	Sodium chromate*	7775-11-3	0.005
III	35	Tetraboron disodium heptaoxide, hydrate*	12267-73-1	0.005

Batch	No.	Substance Name	CAS No.	RL (%)
III	36	Trichloroethylene	79-01-6	0.050
IV	37	2-Ethoxyethanol	110-80-5	0.050
IV	38	2-Methoxyethanol	109-86-4	0.050
IV	39	Chromic acid, Oligomers of chromic acid and dichromic acid, Dichromic acid*	-	0.005
IV	40	Chromium trioxide*	1333-82-0	0.005
IV	41	Cobalt(II) carbonate*	513-79-1	0.005
IV	42	Cobalt(II) diacetate*	71-48-7	0.005
IV	43	Cobalt(II) dinitrate*	10141-05-6	0.005
IV	44	Cobalt(II) sulphate*	10124-43-3	0.005
V	45	1,2,3-trichloropropane	96-18-4	0.050
V	46	1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich	71888-89-6	0.050
V	47	1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters	68515-42-4	0.050
V	48	1-methyl-2-pyrrolidone	872-50-4	0.050
V	49	2-ethoxyethyl acetate	111-15-9	0.050
V	50	Hydrazine	302-01-2 /7803-57-8	0.050
V	51	strontium chromate*	7789-06-2	0.005
VI	52	1,2-Dichloroethane	107-06-2	0.050
VI	53	2,2'-dichloro-4,4'-methylenedianiline	101-14-4	0.050
VI	54	2-Methoxyaniline; o-Anisidine	90-04-0	0.050
VI	55	4-(1,1,3,3-tetramethylbutyl)phenol	140-66-9	0.050
VI	56	Aluminosilicate Refractory Ceramic Fibres*	-	0.005
VI	57	Arsenic acid*	7778-39-4	0.005
VI	58	Bis(2-methoxyethyl) ether	111-96-6	0.050
VI	59	Bis(2-methoxyethyl) phthalate	117-82-8	0.050
VI	60	Calcium arsenate*	7778-44-1	0.005
VI	61	Dichromium tris(chromate)*	24613-89-6	0.005
VI	62	Formaldehyde, oligomeric reaction products with aniline	25214-70-4	0.050
VI	63	Lead diazide, Lead azide*	13424-46-9	0.005
VI	64	Lead dipicrate*	6477-64-1	0.005
VI	65	Lead styphnate*	15245-44-0	0.005
VI	66	N,N-dimethylacetamide	127-19-5	0.050
VI	67	Pentazinc chromate octahydroxide*	49663-84-5	0.005
VI	68	Phenolphthalein	77-09-8	0.050
VI	69	Potassium hydroxyoctaoxodizincatedichromate*	11103-86-9	0.005
VI	70	Trilead diarsenate*	3687-31-8	0.005
VI	71	Zirconia Aluminosilicate Refractory Ceramic Fibres*	-	0.005
VII	72	[4-[[4-anilino-1-naphthyl][4-(dimethylamino)phenyl]methylene]cyclohexa-2,5-dien-1-ylidene] dimethylammonium chloride (C.I. Basic Blue 26)§	2580-56-5	0.050

Batch	No.	Substance Name	CAS No.	RL (%)
VII	73	[4-[4,4'-bis(dimethylamino) benzhydrylidene]cyclohexa-2,5-dien-1-ylidene]dimethylammonium chloride (C.I. Basic Violet 3) §	548-62-9	0.050
VII	74	1,2-bis(2-methoxyethoxy)ethane (TEGDME; triglyme)	112-49-2	0.050
VII	75	1,2-dimethoxyethane; ethylene glycol dimethyl ether (EGDME)	110-71-4	0.050
VII	76	4,4'-bis(dimethylamino) benzophenone (Michler's Ketone)	90-94-8	0.050
VII	77	4,4'-bis(dimethylamino)-4''-(methylamino)trityl alcohol§	561-41-1	0.050
VII	78	Diboron trioxide*	1303-86-2	0.005
VII	79	Formamide	75-12-7	0.050
VII	80	Lead(II) bis(methanesulfonate)*	17570-76-2	0.005
VII	81	N,N,N',N'-tetramethyl-4,4'-methylenedianiline (Michler's base)	101-61-1	0.050
VII	82	TGIC (1,3,5-tris(oxiranylmethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione)	2451-62-9	0.050
VII	83	α,α-Bis[4-(dimethylamino)phenyl]-4 (phenylamino)naphthalene-1-methanol (C.I. Solvent Blue 4) §	6786-83-0	0.050
VII	84	β-TGIC (1,3,5-tris[(2S and 2R)-2,3-epoxypropyl]-1,3,5-triazine-2,4,6-(1H,3H,5H)-trione)	59653-74-6	0.050
VIII	85	[Phthalato(2-)]dioxotrilead*	69011-06-9	0.005
VIII	86	1,2-Benzenedicarboxylic acid, dipentylester, branched and linear	84777-06-0	0.050
VIII	87	1,2-Diethoxyethane	629-14-1	0.050
VIII	88	1-Bromopropane	106-94-5	0.050
VIII	89	3-Ethyl-2-methyl-2-(3-methylbutyl)-1,3-oxazolidine	143860-04-2	0.050
VIII	90	4-(1,1,3,3-tetramethylbutyl)phenol, ethoxylated	-	0.050
VIII	91	4,4'-Methylenedi-o-toluidine	838-88-0	0.050
VIII	92	4,4'-Oxydianiline and its salts	101-80-4	0.050
VIII	93	4-Aminoazobenzene	60-09-3	0.050
VIII	94	4-Methyl-m-phenylenediamine	95-80-7	0.050
VIII	95	4-Nonylphenol, branched and linear	-	0.050
VIII	96	6-Methoxy-m-toluidine	120-71-8	0.050
VIII	97	Acetic acid, lead salt, basic*	51404-69-4	0.005
VIII	98	Biphenyl-4-ylamine	92-67-1	0.050
VIII	99	Decabromodiphenyl ether (DecaBDE)	1163-19-5	0.050
VIII	100	Cyclohexane-1,2-dicarboxylic anhydride, cis-cyclohexane-1,2-dicarboxylic anhydride, trans-cyclohexane-1,2-dicarboxylic anhydride	-	0.050
VIII	101	Diazene-1,2-dicarboxamide (C,C'-azodi(formamide))	123-77-3	0.050

Batch	No.	Substance Name	CAS No.	RL (%)
VIII	102	Dibutyltin dichloride (DBTC)	683-18-1	0.050
VIII	103	Diethyl sulphate	64-67-5	0.050
VIII	104	Diisopentylphthalate	605-50-5	0.050
VIII	105	Dimethyl sulphate	77-78-1	0.050
VIII	106	Dinoseb	88-85-7	0.050
VIII	107	Dioxobis(stearato)trilead*	12578-12-0	0.005
VIII	108	Fatty acids, C16-18, lead salts*	91031-62-8	0.005
VIII	109	Furan	110-00-9	0.050
VIII	110	Henicosafluoroundecanoic acid	2058-94-8	0.050
VIII	111	Heptacosafluorotetradecanoic acid	376-06-7	0.050
VIII	112	Hexahydromethylphthalic anhydride, Hexahydro-4-methylphthalic anhydride, Hexahydro-1-methylphthalic anhydride, Hexahydro-3-methylphthalic anhydride	-	0.050
VIII	113	Lead bis(tetrafluoroborate)*	13814-96-5	0.005
VIII	114	Lead cyanamidate*	20837-86-9	0.005
VIII	115	Lead dinitrate*	10099-74-8	0.005
VIII	116	Lead monoxide*	1317-36-8	0.005
VIII	117	Lead oxide sulfate*	12036-76-9	0.005
VIII	118	Lead tetroxide (orange lead)*	1314-41-6	0.005
VIII	119	Lead titanium trioxide*	12060-00-3	0.005
VIII	120	Lead titanium zirconium oxide*	12626-81-2	0.005
VIII	121	Methoxyacetic acid	625-45-6	0.050
VIII	122	Methyloxirane (Propylene oxide)	75-56-9	0.050
VIII	123	N,N-Dimethylformamide	68-12-2	0.050
VIII	124	N-Methylacetamide	79-16-3	0.050
VIII	125	N-Pentyl-isopentylphthalate	776297-69-9	0.050
VIII	126	o-Aminoazotoluene	97-56-3	0.050
VIII	127	o-Toluidine	95-53-4	0.050
VIII	128	Pentacosafluorotridecanoic acid	72629-94-8	0.050
VIII	129	Pentalead tetraoxide sulphate*	12065-90-6	0.005
VIII	130	Pyrochlore, antimony lead yellow*	8012-00-8	0.005
VIII	131	Silicic acid, barium salt, lead-doped*	68784-75-8	0.005
VIII	132	Silicic acid, lead salt*	11120-22-2	0.005
VIII	133	Sulfurous acid, lead salt, dibasic*	62229-08-7	0.005
VIII	134	Tetraethyllead*	78-00-2	0.005
VIII	135	Tetralead trioxide sulphate*	12202-17-4	0.005
VIII	136	Tricosafluorododecanoic acid	307-55-1	0.050
VIII	137	Trilead bis(carbonate)dihydroxide (basic lead carbonate)*	1319-46-6	0.005
VIII	138	Trilead dioxide phosphonate*	12141-20-7	0.005
IX	139	4-Nonylphenol, branched and linear, ethoxylated	-	0.050
IX	140	Ammonium pentadecafluorooctanoate (APFO)**	3825-26-1	0.050
IX	141	Cadmium oxide*	1306-19-0	0.005
IX	142	Cadmium	7440-43-9	0.005

Batch	No.	Substance Name	CAS No.	RL (%)
IX	143	Dipentyl phthalate (DPP)	131-18-0	0.050
IX	144	Pentadecafluorooctanoic acid (PFOA)	335-67-1	0.050
X	145	Cadmium sulphide*	1306-23-6	0.005
X	146	Dihexyl phthalate	84-75-3	0.050
X	147	Disodium 3,3'-[[1,1'-biphenyl]-4,4'-diylbis(azo)]bis(4-aminonaphthalene-1-sulphonate) (C.I. Direct Red 28)	573-58-0	0.050
X	148	Disodium 4-amino-3-[[4'-[(2,4-diaminophenyl)azo][1,1'-biphenyl]-4-yl]azo] -5-hydroxy-6-(phenylazo)naphthalene-2,7-disulphonate (C.I. Direct Black 38)	1937-37-7	0.050
X	149	Imidazolidine-2-thione; (2-imidazoline-2-thiol)	96-45-7	0.050
X	150	Lead di(acetate)*	301-04-2	0.005
X	151	Trixylyl phosphate	25155-23-1	0.050
XI	152	1,2-Benzenedicarboxylic acid, dihexyl ester, branched and linear	68515-50-4	0.050
XI	153	Cadmium chloride*	10108-64-2	0.005
XI	154	Sodium perborate; perboric acid, sodium salt*	-	0.005
XI	155	Sodium peroxometaborate*	7632-04-4	0.005
XII	156	2-(2H-benzotriazol-2-yl)-4,6-ditertpentylphenol (UV-328)	25973-55-1	0.050
XII	157	2-benzotriazol-2-yl-4,6-di-tert-butylphenol (UV-320)	3846-71-7	0.050
XII	158	2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate (DOTE)	15571-58-1	0.050
XII	159	Cadmium fluoride*	7790-79-6	0.005
XII	160	Cadmium sulphate*	10124-36-4 /31119-53-6	0.005
XII	161	Reaction mass of 2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate & 2-ethylhexyl 10-ethyl-4-[[2-[(2-ethylhexyl)oxy]-2-oxoethyl]thio]-4-octyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate (reaction mass of DOTE & MOTE)	-	0.050
XIII	162	1,2-benzenedicarboxylic acid, di-C6-10-alkyl esters; 1,2-benzenedicarboxylic acid, mixed decyl and hexyl and octyl diesters with ≥ 0.3% of dihexyl phthalate	-	0.050
XIII	163	5-sec-butyl-2-(2,4-dimethylcyclohex-3-en-1-yl)-5-methyl-1,3-dioxane [1], 5-sec-butyl-2-(4,6-dimethylcyclohex-3-en-1-yl)-5-methyl-1,3-dioxane [2] [covering any of the individual isomers of [1] and [2] or any combination thereof]	-	0.050
XIV	164	1,3-propanesultone	1120-71-4	0.050
XIV	165	2,4-di-tert-butyl-6-(5-chlorobenzotriazol-2-yl) phenol (UV-327)	3864-99-1	0.050

Batch	No.	Substance Name	CAS No.	RL (%)
XIV	166	2-(2H-benzotriazol-2-yl)-4-(tert-butyl)-6-(sec-butyl) phenol (UV-350)	36437-37-3	0.050
XIV	167	Nitrobenzene	98-95-3	0.050
XIV	168	Perfluorononan-1-oic-acid and its sodium and ammonium salts	-	0.050
XV	169	Benzo[def]chrysene (Benzo[a]pyrene)	50-32-8	0.050
XVI	170	4,4'-isopropylidenediphenol (bisphenol A)	80-05-7	0.050
XVI	171	4-Heptylphenol, branched and linear	-	0.050
XVI	172	Nonadecafluorodecanoic acid (PFDA) and its sodium and ammonium salts	-	0.050
XVI	173	p-(1,1-dimethylpropyl)phenol	80-46-6	0.050
XVII	174	Perfluorohexane-1-sulphonic acid and its salts	-	0.050
XVIII	175	1,6,7,8,9,14,15,16,17,17,18,18-Dodecachloropentacyclo[12.2.1.16,9.02,13.05,10]octadeca-7,15-diene ("Dechlorane Plus"™) [covering any of its individual anti- and syn-isomers or any combination thereof]	-	0.050
XVIII	176	Benz[a]anthracene	56-55-3	0.050
XVIII	177	Cadmium nitrate*	10325-94-7	0.005
XVIII	178	Cadmium carbonate*	513-78-0	0.005
XVIII	179	Cadmium hydroxide*	21041-95-2	0.005
XVIII	180	Chrysene	218-01-9	0.050
XVIII	181	Reaction products of 1,3,4-thiadiazolidine-2,5-dithione, formaldehyde and 4-heptylphenol, branched and linear (RP-HP) [with ≥0.1% w/w 4-heptylphenol, branched and linear]	-	0.050
XIX	182	Benzene-1,2,4-tricarboxylic acid 1,2 anhydride (trimellitic anhydride) (TMA)	552-30-7	0.050
XIX	183	Benzo[ghi]perylene	191-24-2	0.050
XIX	184	Decamethylcyclopentasiloxane (D5)	541-02-6	0.050
XIX	185	Dicyclohexyl phthalate (DCHP)	84-61-7	0.050
XIX	186	Disodium octaborate*	12008-41-2	0.005
XIX	187	Dodecamethylcyclohexasiloxane (D6)	540-97-6	0.050
XIX	188	Ethylenediamine (EDA)	107-15-3	0.050
XIX	189	Lead	7439-92-1	0.005
XIX	190	Octamethylcyclotetrasiloxane (D4)	556-67-2	0.050
XIX	191	Terphenyl, hydrogenated	61788-32-7	0.050
XX	192	1,7,7-trimethyl-3-(phenylmethylene)bicyclo[2.2.1]heptan-2-one (3-benzylidene camphor)	15087-24-8	0.050
XX	193	2,2-bis(4'-hydroxyphenyl)-4-methylpentane	6807-17-6	0.050
XX	194	Benzo[k]fluoranthene	207-08-9	0.050
XX	195	Fluoranthene	206-44-0	0.050
XX	196	Phenanthrene	85-01-8	0.050
XX	197	Pyrene	129-00-0	0.050
XXI	198	2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propionic acid, its salts	-	0.050

Batch	No.	Substance Name	CAS No.	RL (%)
		and its acyl halides (covering any of their individual isomers and combinations thereof)		
XXI	199	2-methoxyethyl acetate	110-49-6	0.050
XXI	200	4-tert-butylphenol (PTBP)	98-54-4	0.050
XXI	201	Tris(4-nonylphenyl, branched and linear) phosphite (TNPP)	-	0.050
XXII	202	2-benzyl-2-dimethylamino-4'-morpholinobutyrophenone	119313-12-1	0.050
XXII	203	2-methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one	71868-10-5	0.050
XXII	204	Diisohexyl phthalate	71850-09-4	0.050
XXII	205	Perfluorobutane sulfonic acid (PFBS) and its salts	-	0.050
XXIII	206	1-vinylimidazole	1072-63-5	0.050
XXIII	207	2-methylimidazole	693-98-1	0.050
XXIII	208	Butyl 4-hydroxybenzoate	94-26-8	0.050
XXIII	209	Dibutylbis(pentane-2,4-dionato-O,O')tin**	22673-19-4	0.050
XXIV	210	bis(2-(2-methoxyethoxy)ethyl) ether	143-24-8	0.050
XXIV	211	Dioctyltin dilaurate, stannane, dioctyl-, bis(coco acyloxy) derivs., and any other stannane, dioctyl-, bis(fatty acyloxy) derivs. wherein C12 is the predominant carbon number of the fatty acyloxy moiety**	-	0.050
XXV	212	1,4-Dioxane	123-91-1	0.050
XXV	213	2,2-bis(bromomethyl)propane1,3-diol (BMP); 2,2-dimethylpropan-1-ol, tribromo derivative/3-bromo-2,2-bis(bromomethyl)-1-propanol (TBNPA); 2,3-dibromo-1-propanol (2,3-DBPA)	-	0.050
XXV	214	2-(4-tert-butylbenzyl)propionaldehyde and its individual stereoisomers	-	0.050
XXV	215	4,4'-(1-methylpropylidene)bisphenol; (bisphenol B)	77-40-7	0.050
XXV	216	Glutaral	111-30-8	0.050
XXV	217	Medium-chain chlorinated paraffins (MCCP) [UVCB substances consisting of more than or equal to 80% linear chloroalkanes with carbon chain lengths within the range from C14 to C17]	-	0.050
XXV	218	Orthoboric acid, sodium salt*	13840-56-7	0.005
XXV	219	Phenol, alkylation products (mainly in para position) with C12-rich branched or linear alkyl chains from oligomerisation, covering any individual isomers and/ or combinations thereof (PDDP)	-	0.050
XXVI	220	(±)-1,7,7-trimethyl-3-[(4-methylphenyl)methylene]bicyclo[2.2.1]heptan-2-one covering any of the individual isomers and/or combinations thereof (4-MBC)	-	0.050

Batch	No.	Substance Name	CAS No.	RL (%)
XXVI	221	6,6'-di-tert-butyl-2,2'-methylenedi-p-cresol (DBMC)	119-47-1	0.050
XXVI	222	S-(tricyclo[5.2.1.0'2,6]deca-3-en-8(or 9)-yl) O-(isopropyl or isobutyl or 2-ethylhexyl) O-(isopropyl or isobutyl or 2-ethylhexyl) phosphorodithioate	255881-94-8	0.050
XXVI	223	Tris(2-methoxyethoxy)vinylsilane	1067-53-4	0.050
XXVII	224	N-(hydroxymethyl)acrylamide	924-42-5	0.050
XXVIII	225	1,1'-[ethane-1,2-diylbisoxy]bis[2,4,6-tribromobenzene]	37853-59-1	0.050
XXVIII	226	2,2',6,6'-tetrabromo-4,4'-isopropylidenediphenol	79-94-7	0.050
XXVIII	227	4,4'-sulphonyldiphenol	80-09-1	0.050
XXVIII	228	Barium diboron tetraoxide*	13701-59-2	0.005
XXVIII	229	Bis(2-ethylhexyl) tetrabromophthalate covering any of the individual isomers and/or combinations thereof	-	0.050
XXVIII	230	Isobutyl 4-hydroxybenzoate	4247-02-3	0.050
XXVIII	231	Melamine	108-78-1	0.050
XXVIII	232	Perfluoroheptanoic acid and its salts	-	0.050
XXVIII	233	reaction mass of 2,2,3,3,5,5,6,6-octafluoro-4-(1,1,1,2,3,3,3-heptafluoropropan-2-yl)morpholine and 2,2,3,3,5,5,6,6-octafluoro-4-(heptafluoropropyl)morpholine*	-	0.050
XXIX	234	Bis(4-chlorophenyl) sulphone	80-07-9	0.050
XXIX	235	Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide	75980-60-8	0.050
XXX	236	2,4,6-tri-tert-butylphenol	732-26-3	0.050
XXX	237	2-(2H-benzotriazol-2-yl)-4-(1,1,3,3-tetramethylbutyl)phenol (UV-329)	3147-75-9	0.050
XXX	238	2-(dimethylamino)-2-[(4-methylphenyl)methyl]-1-[4-(morpholin-4-yl)phenyl]butan-1-one	119344-86-4	0.050
XXX	239	Bumetrizole (UV-326)	3896-11-5	0.050
XXX	240	Oligomerisation and alkylation reaction products of 2-phenylpropene and phenol	-	0.050
XXXI	241	Bis(α,α-dimethylbenzyl) peroxide	80-43-3	0.050
XXXI	242	Triphenyl phosphate	115-86-6	0.050
XXXII	243	6-[(C10-C13)-alkyl-(branched, unsaturated)-2,5-dioxopyrrolidin-1-yl]hexanoic acid	2156592-54-8	0.050
XXXII	244	O,O,O-triphenyl phosphorothioate	597-82-0	0.050
XXXII	245	Octamethyltrisiloxane	107-51-7	0.050
XXXII	246	Perfluamine	338-83-0	0.050
XXXII	247	Reaction mass of: triphenylthiophosphate and tertiary butylated phenyl derivatives	192268-65-8	0.050
XXXIII	248	1,1,1,3,5,5,5-heptamethyl-3-[(trimethylsilyl)oxy]trisiloxane	17928-28-8	0.050
XXXIII	249	Decamethyltetrasiloxane	141-62-8	0.050

Batch	No.	Substance Name	CAS No.	RL (%)
XXXIII	250	tetra(sodium/potassium) 7-[(E)-{2-acetamido-4-[(E)-(4-{[4-chloro-6-({2-[(4-fluoro-6-{[4-(vinylsulfonyl)phenyl]amino}-1,3,5-triazine-2-yl)amino]propyl}amino)-1,3,5-triazine-2-yl]amino}-5-sulfonato-1-naphthyl)diazenyl]-5-methoxyphenyl}diazenyl]-1,3,6-naphthalenetrisulfonate; Reactive Brown 51	-	0.050
XXXIV	251	1,1'-(ethane-1,2-diyl)bis[pentabromobenzene] (DBDPE)	84852-53-9	0.050
XXXV	252	4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]diphenol (BPAF) and its salts	-	0.050
XXXV	253	n-hexane	110-54-3	0.050
/	254	Resorcinol	108-46-3	0.050

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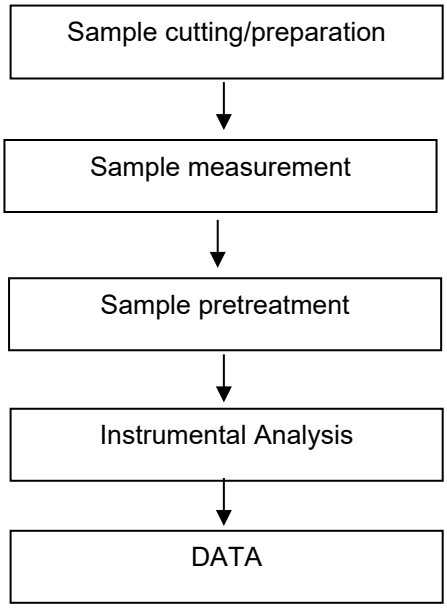
中国·山东·青岛市崂山区株洲路143号通标中心 邮编：266101 t (86-532) 68999888 sgs.china@sgs.com

ATTACHMENTS

Testing Flow Chart



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中国·山东·青岛市崂山区株洲路143号通标中心 邮编：266101 t (86-532) 68999888 sgs.china@sgs.com

Sample photos:

TAO26-0041599-0001.C002

SGS authenticate the photo on original report only

*** End of Report ***

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TEST REPORT

REPORT NUMBER
171207003SHF-BP-1

ISSUE DATE
2018-03-12

PAGES
4

DOCUMENT CONTROL NUMBER
LFT-APAC-SHF-OP-10a

Intertek Testing Services Ltd., Shanghai
Plant 5, No. 6958 Daye Road, Fengxian District, Shanghai, China
Tel: 021-61136116 Fax: 021-61189921
Website: www.intertek.com

Test Report

Issue Date: 2018-03-12 Intertek Report No. 171207003SHF-BP-1

Applicant: Lyctum d.o.o.

Applicant Address: Svetomira Đukića 24, Beograd-Zemun

Attn: An Yunpeng

SUBJECT: Performance testing
Co-Extrusion wood plastic composite

Dear Sir,
This test report represents the results of our evaluation of the above referenced product(s) to the requirements contained in the following standards:

TEST METHODS AND STANDARDS
Refer to the next following Pages.

SAMPLE ID	MODEL	SPECIFICATION
S171207003SHF.001	140x22mm	140x22mm

SAMPLE RECEIEVED: 2017-10-30
TESTED FROM: 2017-12-07 TO 2018-03-07

Total Quality. Assured.

Test Report

Issue Date: 2018-03-12 Intertek Report No. 171207003SHF-BP-1

Test Items, Method and Results:

Test Item: Resistance to artificial weathering - Xenon-arc Lamps

Test Sample: Co-Extrusion wood plastic composite

Test Method: ISO 4892-2:2013 Cycle 1

Exposure cycle:

1) 102 min light at (65±3)°C,Black-standard-temperature, Relative humidity (50±10)%,
Irradiance: 0.51 ± 0.02 W/(m^2·nm) at 340 nm.

2) 18 min light and water spray, Irradiance: 0.51 ± 0.02 W/(m^2·nm) at 340 nm.

Test Duration: 2000 hours

Test Result:

ΔL*	Δa*	Δb*	ΔE*	Grey scale	Observation
0.55	0.28	-0.48	0.83	4-5	Slight color change

Tested sample photo

Total Quality. Assured.

Test Report

Issue Date: 2018-03-12 Intertek Report No. 171207003SHF-BP-1

APPENDIX: SAMPLE RECEIVED PHOTO

REPORT AUTHORIZED

When signed with physical or electronic signature, the contents of this report have been prepared and approved per Intertek's quality process in accordance with ISO 17025.

Name: Sally Xie	Name: Daniel Zhang	Name: Kyle Wang
Title: Approver	Title: Reviewer	Title: Project Engineer

INTERTEK TESTING SERVICES LTD. SHANGHAI 上海天祥检测技术服务有限公司 检验检测专用章

Revision:

NO.	DATE	CHANGES	AUTHOR	REVIEWER
171207003SHF-BP-1	2018-03-12	First issue	Kyle Wang	Daniel Zhang

TEST REPORT

SCOPE OF WORK
wpc co-extrusion hollow decking

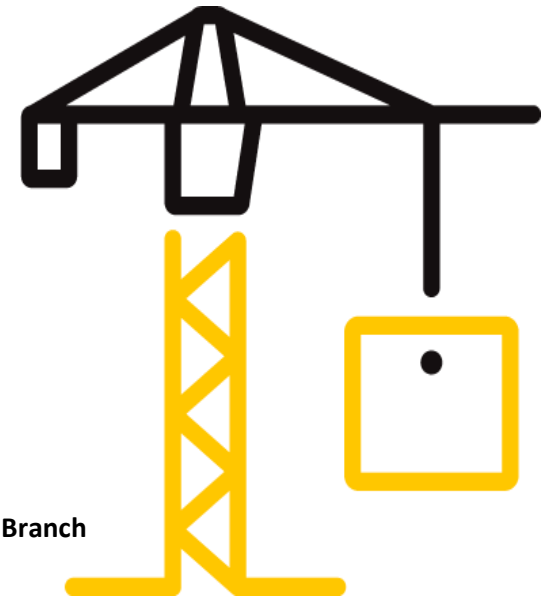
REPORT NUMBER
210628005SHF-001

TEST DATE(S)
2021-06-28 - 2021-08-02

ISSUE DATE
2021-10-11

PAGES
10

DOCUMENT CONTROL NUMBER
LFT-APAC-SHF-OP-10k(May 1, 2021)



Intertek Testing Services Shenzhen Ltd. Shanghai Fengxian Branch

Test Report

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7.The report was digital signed by Shang Hai, Intertek Group plc, please using Adobe Acrobat Reader to verify the authenticity.

Intertek Testing Services Shenzhen Ltd. Shanghai Fengxian Branch
Plant 5, No. 6958 Daye Road, Fengxian District, Shanghai, China
Tel: 021-61136116 Fax: 021-61189921
Website: www.intertek.com

Test Report

Issue Date: 2021-10-11 Intertek Report No. 210628005SHF-001

Applicant: LYCTUM DOO

Address: SVETOMIRA ĐUKIĆA 24, BEOGRAD-ZEMUN, SERBIA.

Attn: Yuan Zhang

Manufacturer: LYCTUM DOO

Address: SVETOMIRA ĐUKIĆA 24, BEOGRAD-ZEMUN, SERBIA.

Test Type: Performance test, samples provided by the applicant.

Product Information

Product Name	wpc co-extrusion hollow decking	**Brand**	/
Sample Description	Good Condition	**Sample Amount**	2 packages
		Received Date	2021-06-23; 2021-07-08

Sample ID	Model	Specification
S210628005SHF.001~006	LSCO-S1	140*22mm

Test Methods And Standards

Test Standard	EN 15534-1:2014 Section 7.1.2.1, 7.5, 8.3.1, 9.2, 6.4.2, EN 15534-4:2014 Section 4.5.1, 4.5.7, 4.5.5, 4.5.6, 4.4, CEN/TS 15676:2007, ISO 11359-2:1999
Specification Standard	EN 15534-4:2014
Test Conclusion	The samples were tested according to the above standards, and the results are shown in the following page.

Note:

1.This report relates specifically to the sample(s) that were drawn and provided by the applicant or their nominated third party. The reported result(s) provide no warranty or verification on the sample(s) representing any specific goods and/or shipment and only relate to the sample(s) as received and tested.

Report Authorized

Name: Daniel Zhang	Name: Sally Xie	Name: Flora Fan
Title: Approver	Title: Reviewer	Title: Project Engineer

Test Report

Issue Date: 2021-10-11 Intertek Report No. 210628005SHF-001

Test Items, Method and Results:

EN 15534-4:2014 Composites made from cellulose-based materials and thermoplastics (usually called wood-polymer composites (WPC) or natural fibre composites (NFC)) Part 4: Specifications for decking profiles and tiles

Test Items	Test Method	Test Results	Test requirements	Verdict
Falling mass impact resistance	EN 15534-4:2014 Section 4.5.1 EN 15534-1:2014 Section 7.1.2.1	Hollow profile Max. Crack length (mm): No Crack Max. Residual Indentation (mm): 0.09	None of 10 test specimens shall show a failure with a crack length ⩾ 10 mm or a depth of residual indentation ⩾ 0.5 mm.	Pass

Note:

1. The falling mass was 1000g and the height was 700mm.

Test Report

Issue Date: 2021-10-11 Intertek Report No. 210628005SHF-001

Test Items, Method and Results:

EN 15534-4:2014 Composites made from cellulose-based materials and thermoplastics (usually called wood-polymer composites (WPC) or natural fibre composites (NFC)) Part 4: Specifications for decking profiles and tiles

Indenter: a hardened steel spherical body with diameter of 10 mm

Test load: Additional load of 2000N with preload of 20N

Indentation time: (25 ± 5) s

Recovery time: at least 24h

Test Items	Test Method	Test Results	
Resistance to indentation	EN 15534-4:2014 Section 4.5.7 EN 15534-1:2014 Section 7.5	Brinell hardness:	67.17 MPa
		Rate of elastic recovery:	54 %

Test Report

Issue Date: 2021-10-11 Intertek Report No. 210628005SHF-001

Test Items, Method and Results:

EN 15534-4:2014 Composites made from cellulose-based materials and thermoplastics (usually called wood-polymer composites (WPC) or natural fibre composites (NFC)) Part 4: Specifications for decking profiles and tiles

Test Items	Test Method	Test Results	Test requirements	Verdict
Swelling and water absorption (28 days immersion)	EN 15534-4:2014 Section 4.5.5 EN 15534-1:2014 Section 8.3.1	Mean Swelling: 0.62 % in thickness 0.28 % in width 0.04 % in length Max. Swelling: 0.83 % in thickness 0.32 % in width 0.04 % in length Water absorption: Mean: 3.44 % Max.: 3.64 %	Means swelling: ≤ 4 % in thickness ≤ 0,8 % in width ≤ 0,4 % in length Max. swelling: ≤ 5 % in thickness ≤ 1,2 % in width ≤ 0,6 % in length Water absorption: Mean≤ 7 % Max.≤ 9 %	Pass

Test Report

Issue Date: 2021-10-11 Intertek Report No. 210628005SHF-001

Test Items, Method and Results:

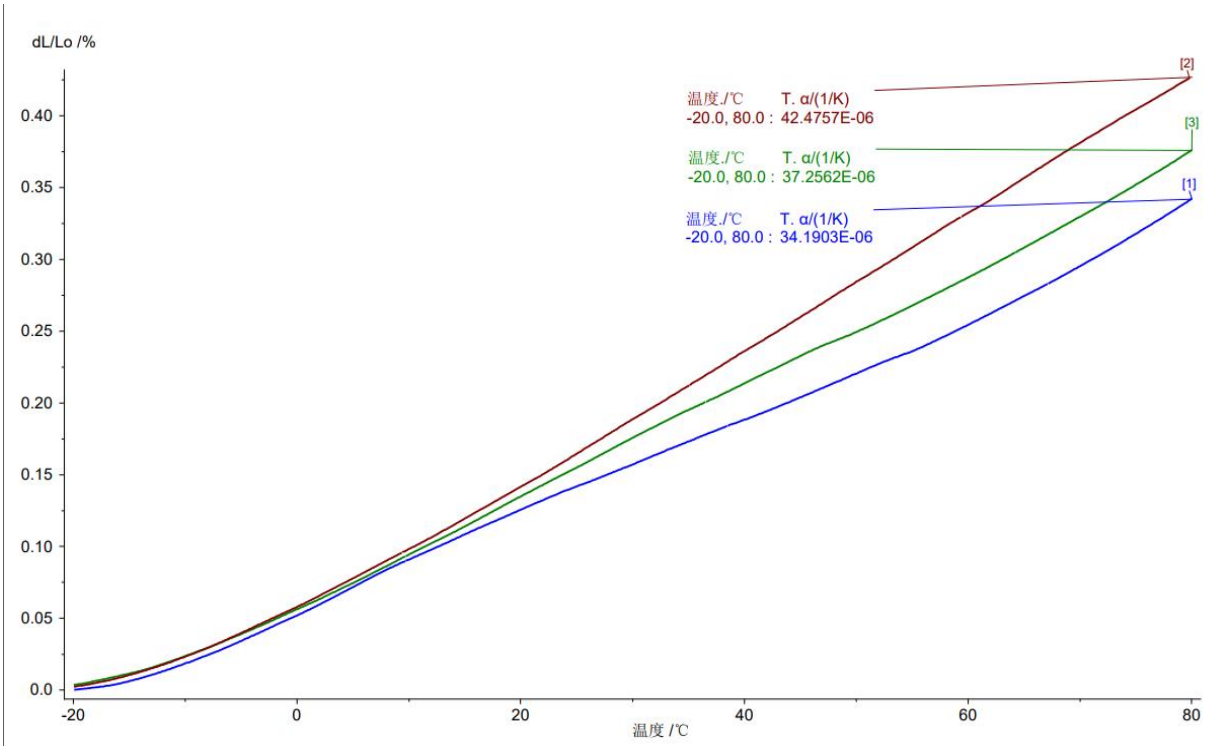
EN 15534-4:2014 Composites made from cellulose-based materials and thermoplastics (usually called wood-polymer composites (WPC) or natural fibre composites (NFC)) Part 4: Specifications for decking profiles and tiles

Test Items	Test Method	Test Results	Test requirements	Verdict
Linear thermal expansion coefficient	EN 15534-4:2014 Section 4.5.6 EN 15534-1:2014 Section 9.2 ISO 11359-2:1999	Mean: $38.0 \cdot 10^{-6}\ K^{-1}$	$\leqslant 50 \cdot 10^{-6}\ K^{-1}$	Pass

Note:

1. Test item is subcontracted on accreditation by CNAS L2233.

Test graph



Test Report

Issue Date: 2021-10-11 Intertek Report No. 210628005SHF-001

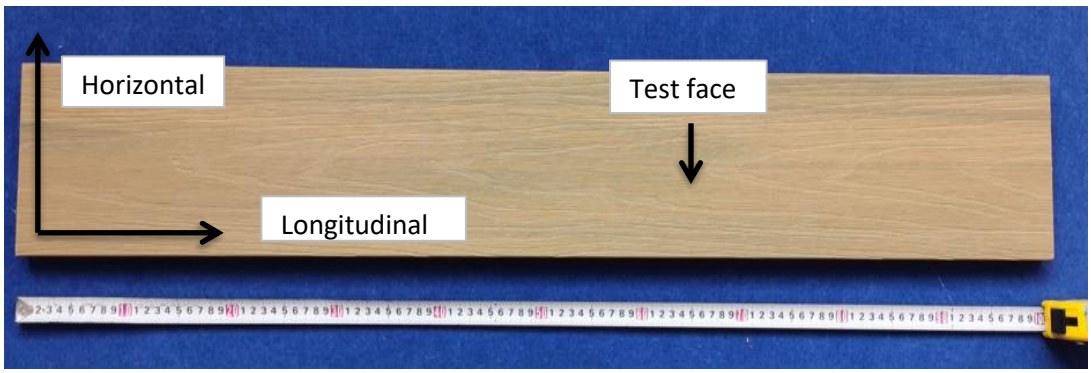
Test Items, Method and Results:

EN 15534-4:2014 Composites made from cellulose-based materials and thermoplastics (usually called wood-polymer composites (WPC) or natural fibre composites (NFC)) Part 4: Specifications for decking profiles and tiles

Test Items	Test Method	Test Results	Test requirements	Verdict
Slipperiness (Pendulum test)	EN 15534-4:2014 Section 4.4 EN 15534-1:2014 Section 6.4.2 CEN/TS 15676:2007	Test condition: Dry condition Longitudinal direction: Mean: 80 Min.: 75 Horizontal direction: Mean: 91 Min.: 88 Test condition: Wet condition Longitudinal direction: Mean: 36 Min.: 32 Horizontal direction: Mean: 39 Min.: 38	Pendulum value≥36	Pass

Note:

1. Requirement is cited from EN 15534-4:2014 Table 1.
2. Test surface and direction please refer to below picture.

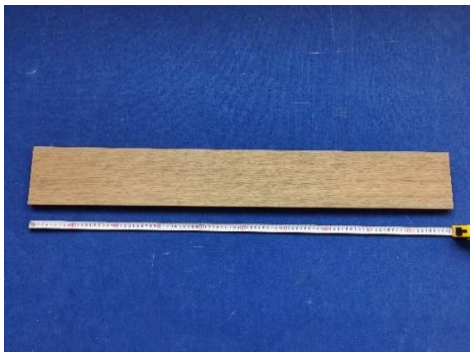


Test Report

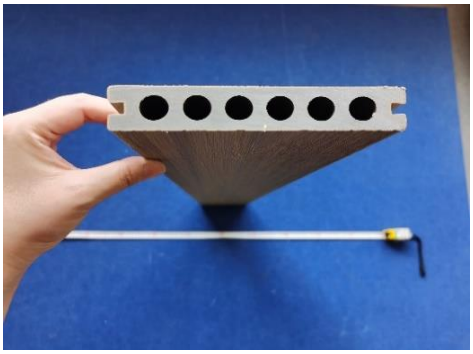
Issue Date: 2021-10-11 Intertek Report No. 210628005SHF-001

Appendix A: Sample Received Photo

Front view (Only for Slipperiness test)



Back view (Only for Slipperiness test)



Section View (Only for Slipperiness test)

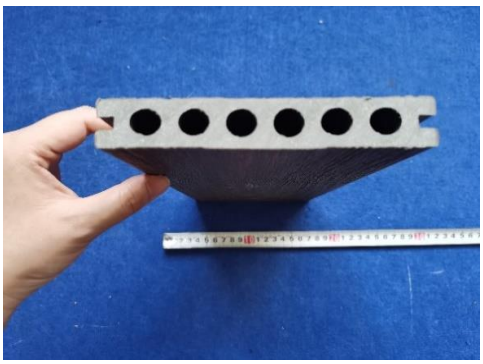
Test Report

Issue Date: 2021-10-11 Intertek Report No. 210628005SHF-001

Appendix A: Sample Received Photo

Front view (for other tests)

Back view (for other tests)



Section View (for other tests)

Revision:

NO.	Date	Changes
210628005SHF-001	2021-10-11	First issue