

ENVIRONMENTAL PRODUCT DECLARATION

In accordance with 14025:2006 and EN15804:2012 +A2:2019/AC:2021

NEWTECHWOOD Wood Plastic Composite Decking



Owner of the declaration:
NEWTECHWOOD CORPORATION

Product name:
WPC Decking

Declared unit:
1 tonne

Product category /PCR:
NPCR 010

Program holder and publisher:
The Norwegian EPD foundation

Declaration number:
NEPD-6566-5815-EN

Registration number:
NEPD-6566-5815-EN

Issue date: 13.05.2024

Valid to: 13.05.2029

GENERAL INFORMATION

PRODUCT:

WPC Decking

PROGRAM OPERATOR:

The Norwegian EPD Foundation
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DECLARATION NUMBER:

NEPD-6566-5815-EN

THIS DECLARATION IS BASED ON PRODUCT CATEGORY

RULES:

NPCR 010 Part B for building boards

STATEMENTS:

The owner of the declaration shall be liable for the underlying information and evidence. EPD Norway shall not be liable with respect to manufacturer, life cycle assessment data and evidences.

DECLARED UNIT:

1 tonne

SYSTEM BOUNDARY:

Cradle to gate with options: A1-A3, A4, A5, B2, C1-C4 and D

VERIFICATION:

Independent verification of the declaration and data, according to ISO14025:2010	
Internal ☐	External ☒
Third Party Verifier: Martijn van Hövell  (Independent verifier approved by EPD Norway)	

OWNER OF THE DECLARATION:

NEWTECHWOOD CORPORATION
 E-mail: inquiry@newtechwood.com

MANUFACTURER:

NEWTECHWOOD CORPORATION

PLACE OF PRODUCTION:

Wutang Section, 12 Tuo, Daling, Huidong, Huizhou, Guangdong, China

MANAGEMENT SYSTEM:

ISO 9001 (Certificate Nr.: CN06/01765)
 ISO 14001 (Certificate Nr.: CN12/30261)
 ISO 45001 (Certificate Nr.: ZYC21S00049R0M)

ORGANISATION NO:

914413237638068970

ISSUE DATE:

13.05.2024

VALID TO:

13.05.2029

YEAR OF STUDY:

2022.09-2023.08

COMPARABILITY:

EPD of construction products may not be comparable if they not comply with EN 15804 and seen in a building context.

THE EPD HAS BEEN WORKED OUT BY:

Star Talers Environmental Technology



Approved



Manager of EPD Norway

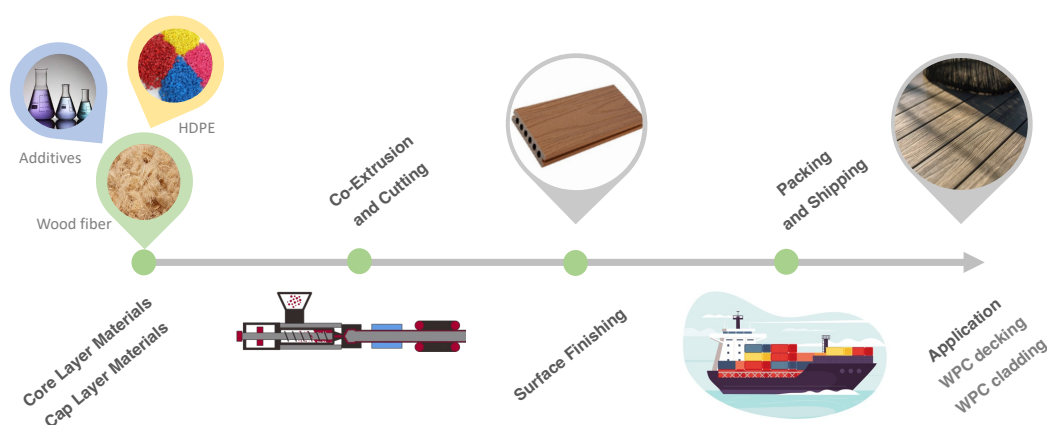
PRODUCT

PRODUCT DESCRIPTION:

NewTechWood is a manufacturer offering a variety of composite products to enhance outdoor living experience. The products feature UltraShield technology, a coating that protects the materials from rotting, fading, staining, scratching and various other issues associated with traditional wood decking. NewTechWood has pioneered the development of composite decks and railings and has been a leader in wood-plastic composite technology since 2004. With every product they develop and manufacture, NewTechWood is committed to creating beautiful, useful and dependable products that enhance your outdoor living space. The products adopt multi-layer co-extrusion composite technology for one-time molding. The surface of the profile is 360-degree covered with a dense and uniformly distributed polymer composite protective layer. The inner core layer is composed of wood flour, HDPE, and processing additives.

From hollow to solid boards, grooved or smooth varieties, NewTechWood offers a large range of composite decking to fulfill any installation need. NewTechWood decking is simple to install. The decking expands and contracts under various weather conditions without creating wear and tear on individual planks using the easy-to-install clip systems that keep your deck looking its best for years to come.

The manufacturing process mainly includes material preparation, production of core layer material and cap layer material, co-extrusion, surface finishing, cutting, and packing, which involves raw materials, energy and water, waste and emissions.



PRODUCT SPECIFICATION:

WPC decking is declared in this report. Materials compositions and technical data are shown below.

Materials	WPC Decking	
	KG/DU	%
Recycled PE	310	31.0%
Virgin PE	80	8.0 %
Wood powder	580	58.0%
Pigment	4	0.4%
Polyethylene grafted with Maleic anhydride	26	2.6%

TECHNICAL DATA:

Property	Test Method	Values
Abrasion Resistance	ASTM D4060	33mg (1000 cycles)
Brinell hardness	EN 15534	8.2N/mm ²
Degree of Chalking	EN 15534	Rating 0, no chalking
Fire resistance	ASTM E84	Flame Spread Index (FSI): 85 Smoke Developed Index (SDI): 300
Moisture content	EN 15534 EN322	0.83%
Resistance to scratch test	ISO4586-2	Rate 2
Thermal resistance	ASTM C518-2010	Thermal conductivity: 0.1589W/(m·k) Thermal resistance: 0.0830 (m ² ·K)/W

MARKET:

Global

REFERENCE SERVICE LIFE, PRODUCT:

25 years

LCA: CALCULATION RULES

DECLARED UNIT:

In this study, the declared unit is defined as 1 tonne of the WPC decking.

DATA QUALITY:

Primary data (such as materials or energy flows that enter and leave the production system) is from NewTechWood for the period spanning from September 2022 to August 2023 (annual average). Generic data related to the life cycle impacts of the material or energy flows that enter and leave the production system is sourced from Ecoinvent 3.9 "allocation, cut-off by classification - unit" database.

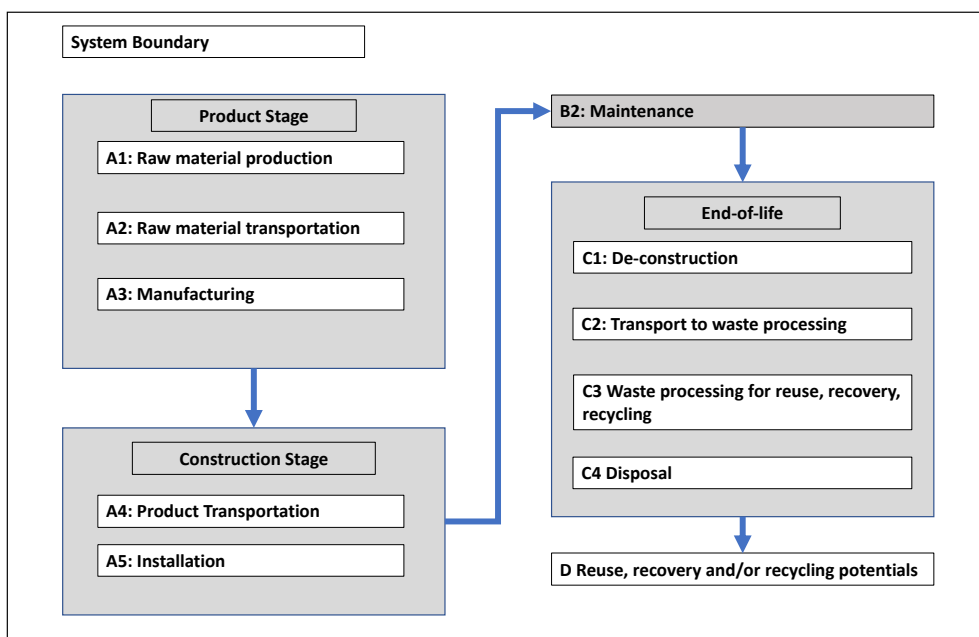
ALLOCATION:

The allocation is made in accordance with the provisions of EN 15804. The consumption of raw materials, auxiliary materials, energy and water, emissions and waste generated during manufacturing was allocated by mass ratio.

Primary (first) production of materials is always allocated to the primary user of a material. If material is recycled, the primary producer does not receive any credit for the provision of any recyclable materials. Consequently, recyclable materials are available burden-free for recycling processes, and secondary (recycled) materials bear only the impacts of the recycling processes.

SYSTEM BOUNDARY:

The system boundary considered in this LCA study is "cradle to gate with modules A4, C1-C4 and module D, with optional modules A5, B2".



CUT-OFF CRITERIA:

The following criteria were followed for the exclusion of inputs and outputs:

- All inputs and outputs to a (unit) process are included in the calculation for which data is available. Data gaps are filled by conservative assumptions with average or generic data. Any assumption for such choices is documented;
- According to PCR, the total of neglected input flows per module, e.g. per module A1-A3, A4-A5, B1-B5, B6-B7, C1-C4 and module D shall be a maximum of 5 % of energy usage and mass. In addition, if less than 100% of the inflows are accounted for, proxy data or extrapolation should be used to achieve 100% completeness.

LCA: SCENARIOS AND ADDITIONAL TECHNICAL INFORMATION

The following information describes the scenarios in different modules of the EPD.

TRANSPORT FROM PRODUCTION PLACE TO ASSEMBLY/USER (A4)

For domestic transportation, 16-32 metric ton, dataset for EURO6 type truck is used for modelling, while for sea transportation, dataset for container ship is used for modelling.

Transport from production place to assembly/user (A4)	Capacity utilisation (incl. return) %	Distance (km)	Fuel/Energy consumption	Unit	Value
Truck	36.7	417	Diesel	kg/tkm	0.036
Railway	-	-	-	-	-
Boat	70	11100	Heavy oil	kg/tkm	0.0025

ASSEMBLY (A5)

For A5, 5% material wastage is considered at this stage, activities related to the recycling and waste disposal of packaging materials were considered in this stage. Wood pallet is reused. Packaging carton board and paper will be directed to 75% recycled, 10% incinerated, 15% landfilled. The rest PE packaging materials will be incinerated.

A5 Assembly	Unit (per DU)	Value
Auxiliary	kg	-
Water consumption	m3	-
Electricity consumption	kWh	1.2
Other energy carriers	MJ	-
Material loss	kg	50
Output materials from waste treatment	kg	-
Dust in the air	kg	-

MAINTENANCE (B2)/REPAIR (B3)

During use stage, WPC requires very little maintenance. According to NewTechWood, the water consumption for decking cleaning is 0.1L/kg board and twice per month for the 25-year reference service life.

	Unit	Value
Water consumption	m ³ /DU	60
Electricity consumption	kWh/DU	-

END OF LIFE (C1, C3, C4)

For C1 stage, the electricity consumption for disassemble the WPC boards is assumed to be the same as installation stage.

For the waste scenario, 20% will be recycled, 75% will be incinerated and 5% will be directed to landfill.

TRANSPORT TO WASTE PROCESSING (C2)

100km transportation distance from the installation site to waste treatment site (C2) is assumed.

Transport from installation site to waste processing (C2)	Capacity utilisation (incl. return) %	Distance (km)	Fuel/Energy consumption	Unit	Value
Truck	36.7	100	Diesel	kg/tkm	0.036

BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES (D)

Module D assesses the impact of the net flows of recovered materials (recycled or reused) from the life cycle stages A to C. 20% will be recycled and 75% will be incinerated with energy recovery. Efforts required by secondary production, loss of materials and quality are considered.

LCA: RESULTS

The LCA results show the environmental impacts and resource input and output flows calculated according to EN 15804:2012+A2. The results are shown per declared unit (1 tonne). The LCA results have been calculated using the LCA software SimaPro 9.5.

SYSTEM BOUNDARIES (X=INCLUDED, MND= MODULE NOT DECLARED, MNR=MODULE NOT RELEVANT)

Product stage			Assembly stage		Use stage							End of life stage				Benefits & loads beyond system boundary
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	MND	X	MND	MND	MND	MND	MND	X	X	X	X	X

CORE ENVIRONMENTAL IMPACT INDICATORS

Indicator	Unit	A1-A3	A4	A5	B2	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq.	2.38E+02	1.91E+02	1.31E+02	1.88E+01	4.40E-01	1.85E+01	1.25E+03	4.83E+00	-1.10E+03
GWP-fossil	kg CO ₂ eq.	1.32E+03	1.91E+02	9.79E+01	1.84E+01	4.25E-01	1.85E+01	1.90E+01	5.98E-01	-1.75E+02
GWP-biogenic	kg CO ₂ eq.	-1.08E+03	1.23E-02	3.30E+01	3.87E-01	1.48E-02	1.69E-02	1.23E+03	4.23E+00	-9.21E+02
GWP-LULUC	kg CO ₂ eq.	2.44E+00	1.28E-01	1.24E-01	3.21E-02	1.06E-03	9.12E-03	2.11E-02	4.51E-04	-4.55E-01
ODP	kg CFC11 eq.	1.34E-05	3.02E-06	7.34E-07	5.21E-07	8.09E-09	4.02E-07	3.34E-07	1.38E-08	-1.83E-05
AP	mol H ⁺ eq.	7.05E+00	3.55E+00	3.69E-01	1.01E-01	2.44E-03	4.04E-02	1.60E-01	4.27E-03	1.35E-01
EP-freshwater	kg P eq.	3.26E-02	1.17E-03	1.70E-03	1.33E-03	4.20E-05	1.50E-04	8.83E-04	1.06E-05	-1.78E-02
EP-marine	kg N eq.	1.37E+00	8.84E-01	7.98E-02	1.67E-02	3.06E-04	9.94E-03	6.38E-02	3.00E-03	3.45E-02
EP-terrestrial	mol N eq.	1.49E+01	9.76E+00	8.14E-01	1.88E-01	3.56E-03	1.04E-01	6.85E-01	1.69E-02	2.86E-01
POCP	kg NMVO C eq.	5.29E+00	2.77E+00	2.87E-01	6.89E-02	1.14E-03	6.27E-02	1.79E-01	6.87E-03	3.68E-01
ADP-M&M	kg Sb eq.	7.04E-03	3.64E-04	3.64E-04	9.68E-05	5.15E-06	6.04E-05	3.80E-05	1.25E-06	1.71E-03
ADP-fossil	MJ	2.24E+04	2.49E+03	1.16E+03	3.31E+02	9.66E+00	2.62E+02	2.65E+02	1.28E+01	5.28E+03
WDP	m ³	4.15E+02	7.95E+00	2.08E+01	2.52E+03	1.09E-01	1.08E+00	-9.13E+00	5.39E-01	3.04E+02

GWP-total: Global Warming Potential; **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; See "additional requirements" for indicator given as PO₄ eq. **EP-marine:** Eutrophication potential, fraction of nutrients reaching freshwater end compartment; **EP-terrestrial:** Eutrophication potential, Accumulated Exceedance; **POCP:** Formation potential of tropospheric ozone; **ADP-M&M:** Abiotic depletion potential for non-fossil resources (minerals and metals); **ADP-fossil:** Abiotic depletion potential for fossil resources; **WDP:** Water deprivation potential, deprivation weighted water consumption

RESOURCE USE

Parameter	Unit	A1-A3	A4	A5	B2	C1	C2	C3	C4	D
RPEE	MJ	3.90E+03	2.46E+01	2.13E+02	4.89E+01	2.17E+00	4.12E+00	3.39E+01	2.36E-01	5.45E+02
RPEM	MJ	3.04E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TPE	MJ	4.21E+03	2.46E+01	2.13E+02	4.89E+01	2.17E+00	4.12E+00	3.39E+01	2.36E-01	5.45E+02
NRPE	MJ	1.97E+04	2.64E+03	1.23E+03	3.48E+02	1.01E+01	2.79E+02	2.81E+02	1.37E+01	0.00E+00
NRPM	MJ	4.11E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TRPE	MJ	2.38E+04	2.64E+03	1.23E+03	3.48E+02	1.01E+01	2.79E+02	2.81E+02	1.37E+01	5.61E+03
SM	kg	9.18E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
W	m³	1.07E+01	2.43E-01	5.44E-01	5.90E+01	7.79E-03	3.54E-02	-4.90E-02	1.29E-02	4.35E-01

RPEE: Renewable primary energy resources used as energy carrier; **RPEM:** Renewable primary energy resources used as raw materials; **TPE:** Total use of renewable primary energy resources; **NRPE:** Non-renewable primary energy resources used as energy carrier; **NRPM:** Non-renewable primary energy resources used as materials; **TRPE:** Total use of non-renewable primary energy resources; **SM:** Use of secondary materials; **RSF:** Use of renewable secondary fuels; **NRSF:** Use of non-renewable secondary fuels; **W:** Use of net fresh water

END OF LIFE – WASTE

Parameter	Unit	A1-A3	A4	A5	B2	C1	C2	C3	C4	D
HW	kg	1.11E-01	1.40E-02	5.79E-03	9.60E-04	1.70E-05	1.67E-03	7.43E-04	6.36E-05	-2.58E-02
NHW	kg	2.00E+02	5.81E+01	1.74E+01	3.83E+00	3.88E-02	1.30E+01	9.81E+00	5.01E+01	-1.33E+00
RW	kg	3.15E-02	4.03E-04	1.66E-03	1.79E-03	6.97E-05	8.63E-05	1.20E-03	4.29E-06	-3.38E-02

HW: Hazardous waste disposed; **NHW:** Non-hazardous waste disposed; **RW:** Radioactive waste disposed

END OF LIFE – OUTPUT FLOW

Parameter	Unit	A1-A3	A4	A5	B2	C1	C2	C3	C4	D
CR	kg	0.00E+00	0.00E+00	1.60E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MR	kg	0.00E+00	0.00E+00	1.50E+01	0.00E+00	0.00E+00	0.00E+00	2.00E+02	0.00E+00	0.00E+00
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	MJ	0.00E+00	0.00E+00	4.03E+03	0.00E+00	0.00E+00	0.00E+00	1.31E+03	0.00E+00	0.00E+00
ETE	MJ	0.00E+00	0.00E+00	8.06E+03	0.00E+00	0.00E+00	0.00E+00	2.62E+03	0.00E+00	0.00E+00

CR: Components for reuse; **MR:** Materials for recycling; **MER:** Materials for energy recovery; **EEE:** Exported electric energy; **ETE:** Exported thermal energy

INFORMATION DESCRIBING THE BIOGENIC CARBON CONTENT AT THE FACTORY GATE

Biogenic carbon content	Unit (per DU)	WPC Decking
Biogenic carbon content in product	kg C	287
Biogenic carbon content in the accompanying packaging	kg C	30

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO₂

ADDITIONAL REQUIREMENTS

GREENHOUS GAS EMISSION FROM THE USE OF ELECTRICITY IN THE MANUFACTURING PHASE

Dataset for China southern power grid electricity mix is applied for the manufacturing process (A3).

National electricity grid	Unit	Value
Electricity, low voltage {CSG} market for electricity, low voltage Cut-off, U	kg CO ₂ -eq/kWh	0.65

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS REQUIRED IN NPCR PART A FOR CONSTRUCTION PRODUCTS

In order to increase the transparency of biogenic carbon contribution to climate impact, the indicator GWP-IOBC is required as it declares climate impacts calculated according to the principle of instantaneous oxidation. GWP-IOBC is also referred to as GWP-GHG in context to Swedish public procurement legislation.

Indicator	Unit	A1-A3	A4	A5	B2	C1	C2	C3	C4	D
GWP-IOBC	kg CO ₂ eq.	1.32E+03	1.91E+02	9.80E+01	1.84E+01	4.26E-01	1.85E+01	1.90E+01	5.99E-01	-1.76E+02

GWP-IOBC: Global warming potential calculated according to the principle of instantaneous oxidation.

HAZARDOUS SUBSTANCES

The sample of NewTechWood WPC decking has been tested according to REACH Regulation (EC) No. 1907/2006. The substances of Very High Concern concentration are less than 0.1%. Test reports are available upon request to EPD owner.

BIBLIOGRAPHY

- [1] Ecoinvent, 2021. Swiss Centre for Life Cycle Assessment, v3.9 (www.ecoinvent.ch).
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- [5] ISO 14044: 2006/Amd 2:2020 Environmental management - Life cycle assessment - Requirements and guidelines Amendment 2 (ISO 2020).
- [6] ISO 21930:2017, Sustainability in buildings and civil engineering works – Core rules for environmental product declarations of construction products and services.
- [7] NPCR Part A: Construction products and services. Ver. 2.0. April 2021, EPD-Norge.
- [8] NPCR 010 Part B for building boards

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