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AUSTRALASIA EPD®
ENVIRONMENTAL PRODUCT DECLARATION

ECO PLATFORM EPD VERIFIED

ENVIRONMENTAL
PRODUCT DECLARATION

STRUCTURAL SOFTWOOD TIMBER

TIMBERLINK®
Australia & New Zealand

What is an Environmental Product Declaration?

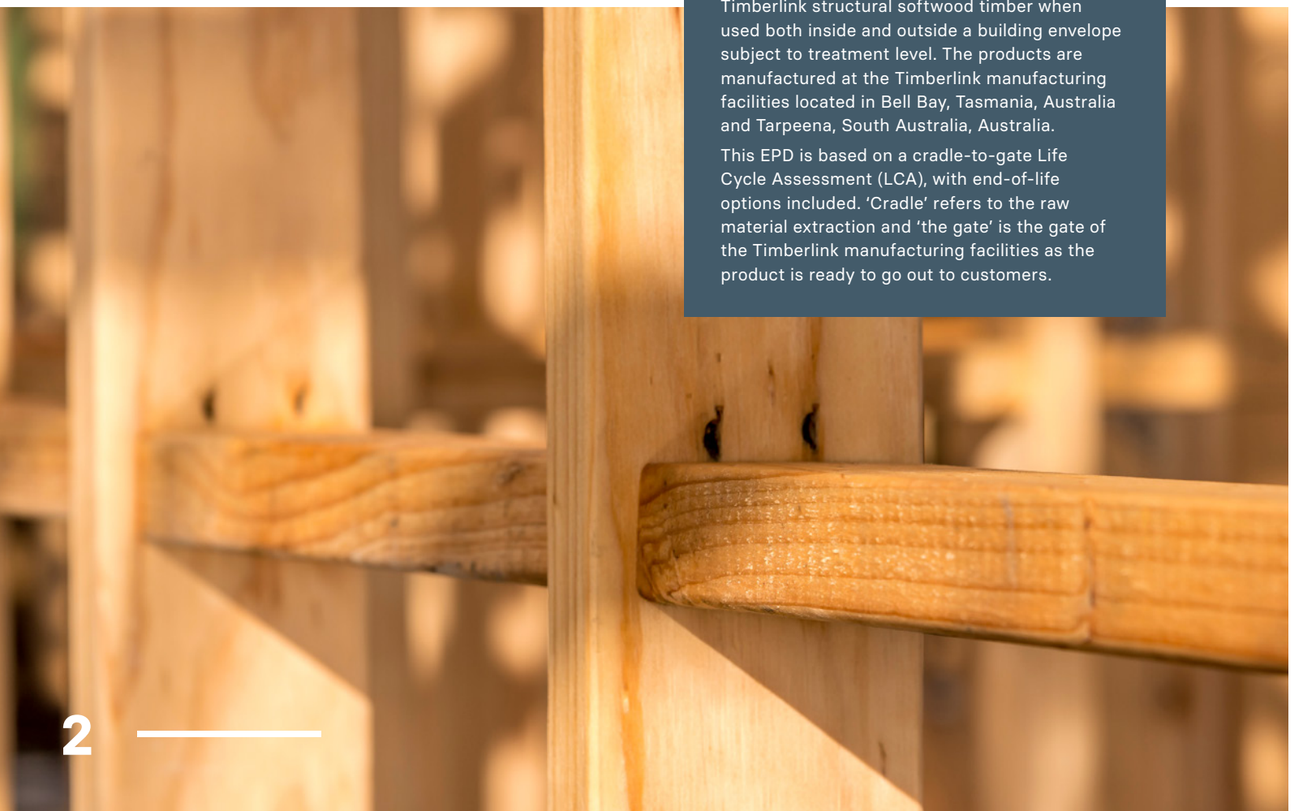
An Environmental Product Declaration (EPD) tells the environmental story of a product over its life cycle in a format that is clear and transparent. It is science-based, independently verified and publicly available. EPDs are often compared to the nutrition labels on food products.

EPDs help manufacturers translate complex sustainability information about their product's environmental footprint into simpler information that governments, companies, industry associations and end consumers can trust to make decisions.

An EPD communicates the environmental impacts at different stages in a product's life cycle. This may include the carbon emitted when it's made, and any emissions that pollute the air, land or waterways during its use.

This EPD covers the environmental impacts of Timberlink structural softwood timber when used both inside and outside a building envelope subject to treatment level. The products are manufactured at the Timberlink manufacturing facilities located in Bell Bay, Tasmania, Australia and Tarpeena, South Australia, Australia.

This EPD is based on a cradle-to-gate Life Cycle Assessment (LCA), with end-of-life options included. 'Cradle' refers to the raw material extraction and 'the gate' is the gate of the Timberlink manufacturing facilities as the product is ready to go out to customers.



TIMBERLINK | STRUCTURAL SOFTWOOD TIMBER | ENVIRONMENTAL PRODUCT DECLARATION

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ABOUT TIMBERLINK

Timberlink® is a leading producer of sustainably grown Australian radiata pine timber products. Timberlink operates two regional large scale timber manufacturing facilities: one in Bell Bay, Tasmania, and the other in Tarpeena, South Australia, directly employing close to 600 people, more than 80% of whom live in regional areas. Timberlink has sales and distribution teams based in Perth, Adelaide, Sydney, Melbourne and Bell Bay (Tas), plus sales and customer service in Blenheim (NZ).

In 2023 Timberlink is expected to commence production and distribution of Cross Laminated Timber (CLT), Glue Laminated Timber (GLT) and Wood Plastic Composite (WPC) products. These developments unlock higher fibre value by using sawn timber in panelised and beam construction systems, and wood-residues combined with recycled plastic to provide innovative products to both builders and consumers. For every cubic metre of Untreated Structural Softwood Timber Timberlink produces, 830kg of carbon dioxide is drawn from the atmosphere and retained in the timber over its entire lifetime (see Other Environmental Information on Pg 17).

Timberlink is owned by investment funds managed by New Forests, a global investment manager of nature-based real assets and natural capital strategies, headquartered in Sydney. Founded in 2005, New Forests has more than AUD 9.95 billion in assets under management, across more than 1,100,000 hectares of investments.

Learn more at www.newforests.com.au.

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SUSTAINABILITY

At Timberlink, sustainability is more than a policy. We like to think it is part of our DNA and it is entrenched in our overall purpose – to responsibly manufacture timber to build a more sustainable world.

Timberlink has committed to reduce scope 1 and 2 greenhouse gas emissions by 53% by 2030.

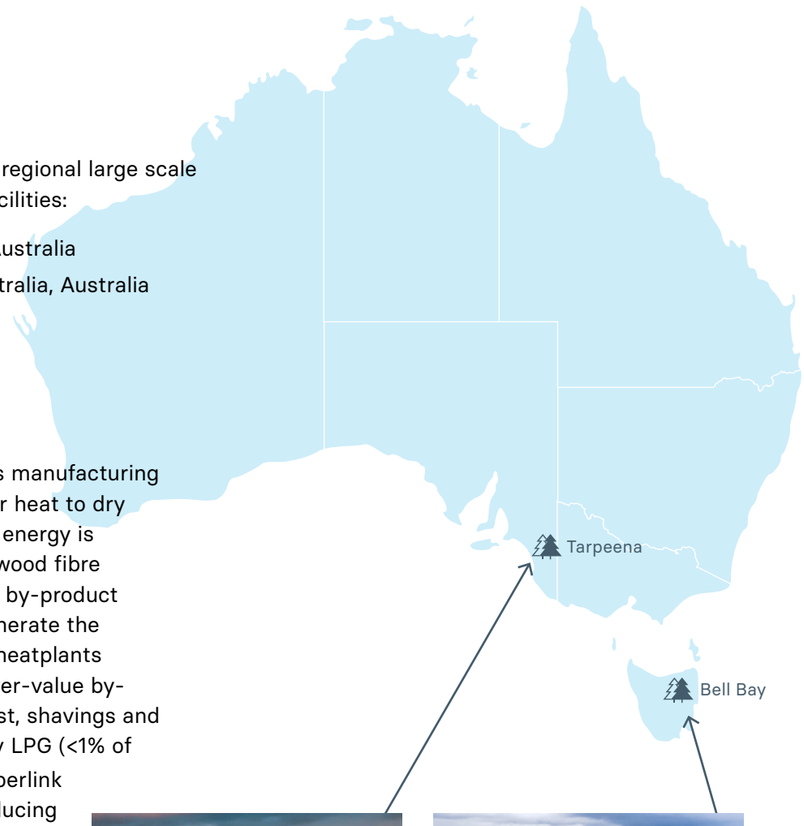
We have made significant investments at our manufacturing facilities over the past few years, with an emphasis on cutting-edge innovation to reduce emissions, waste and inefficiency.

Greater than 95% of our Australian log intake is certified by either the Responsible Wood (RW) or FSC® schemes or both. RW holds mutual recognition status with the international PEFC system. The remainder is controlled through a Due Diligence System.

OUR MANUFACTURING FACILITIES

Timberlink operates two regional large scale timber manufacturing facilities:

1. Bell Bay, Tasmania, Australia
2. Tarpeena, South Australia, Australia

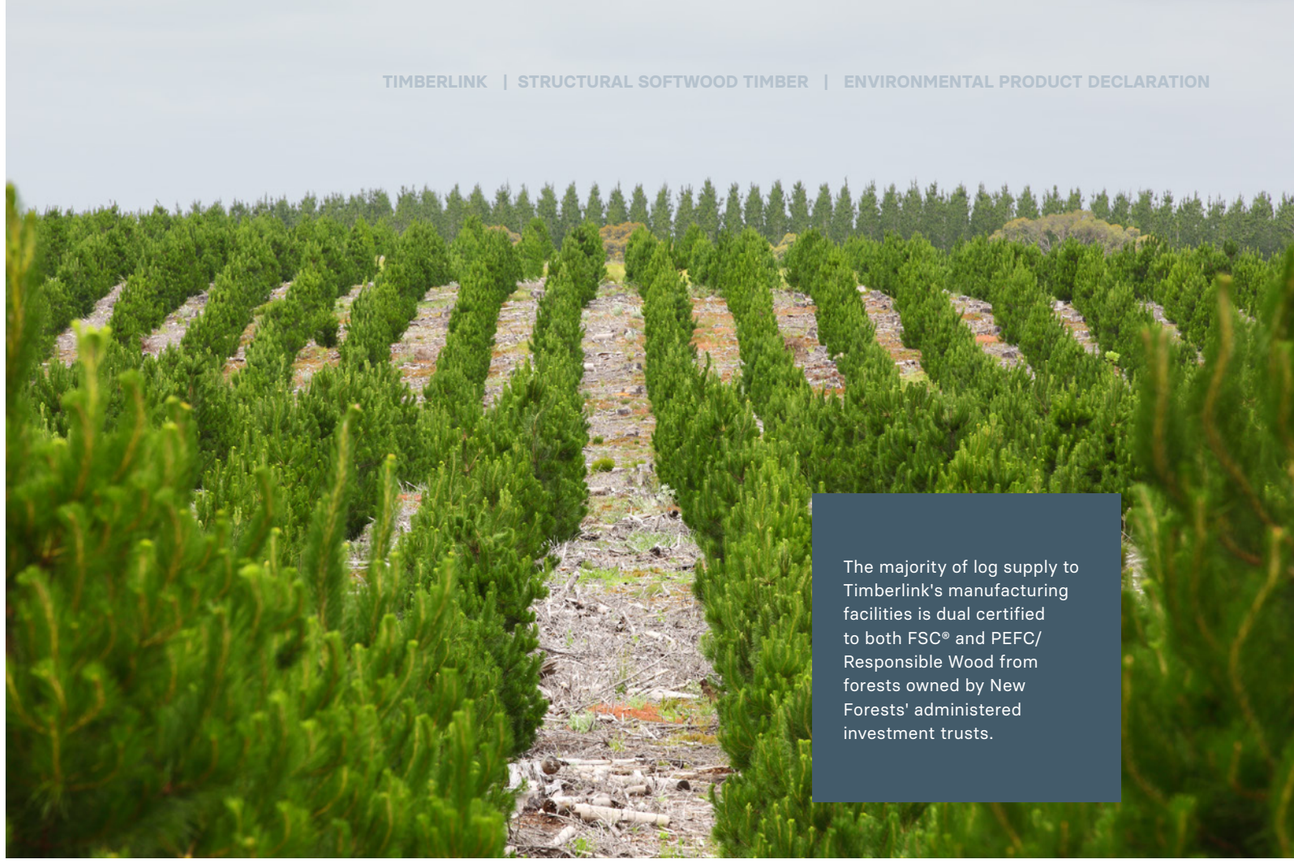


Energy

Over 80% of Timberlink's manufacturing energy requirement is for heat to dry timber in kilns. The heat energy is produced from our own wood fibre by-product, with surplus by-product available for sale. We generate the energy in biomass fired heatplants which are run on our lower-value by-products such as sawdust, shavings and offcuts supplemented by LPG (<1% of energy generated). Timberlink continues to work on reducing kiln heat consumption.

Three continuous kilns (CFKs) are employed: one mid-sized at Bell Bay and two large at Tarpeena. Each of these has reduced the energy used to dry timber by more than 30%, relative to drying in traditional batch kilns.

TIMBERLINK | STRUCTURAL SOFTWOOD TIMBER | ENVIRONMENTAL PRODUCT DECLARATION



The majority of log supply to Timberlink's manufacturing facilities is dual certified to both FSC® and PEFC/ Responsible Wood from forests owned by New Forests' administered investment trusts.

FSC® Certification

Timberlink Australia holds an FSC® chain of custody and controlled wood certificate covering our Australian mills and distribution centres for the production and distribution of sawn timber, woodchips, and all by-product including reject logs, sawdust and charcoal (FSC® C117015). Our products are made of FSC® certified and other controlled material. By choosing Timberlink Australia products, you are supporting responsible management of the world's forests.

Responsible Wood Certification

Timberlink holds RW Chain of Custody certification at both Australian sites for solid wood products and by-products (including woodchip) covering both our Australian mills, license number 100872. RW holds mutual recognition status with the international PEFC system, enabling Timberlink to market RW certified products to the domestic market and PEFC certified products internationally.

Structural Timber Certification Scheme (AS/NZ 1748)

Our structural timber is certified to be compliant to AS/NZS 1748 Solid Timber - Stress-Graded for Structural Purposes by EWPAA. Certification Bell Bay site: Mill 704. Certification Tarpeena site: 558

STRUCTURAL TIMBER COVERED IN THIS EPD

Timberlink Untreated Structural

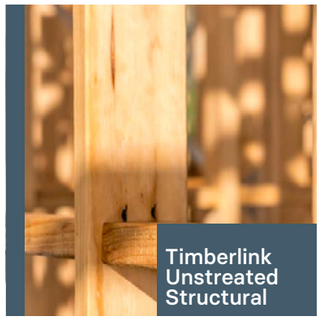
Timberlink Untreated structural timber is manufactured from sustainably grown Australian radiata pine. It is not treated. It is suitable for indoor load bearing, above ground applications.

Timberlink Green

Timberlink Green structural timber is produced from sustainably grown Australian radiata pine, preservative treated to H3 level with low odour Light Organic Solvent Preservative (LOSP). It is suitable for external, above ground (>150mm above finished ground level) load bearing applications, such as deck substructures, pergolas and carports. Timberlink Green includes compounds that are designed to assist the product resist water penetration, and is therefore also suitable for internal framing in wet areas, such as bathrooms. Timberlink Green is also visually graded for appearance.

Timberlink Blue

Timberlink Blue structural timber is termite and European house borer resistant sustainably grown Australian radiata pine timber, H2F treated with either Permethrin or Imidacloprid. These treatments have been approved for use by the APVMA (Australian Pesticides and Veterinary Medicines Authority). It is suitable for indoor load bearing, above ground applications built south of the Tropic of Capricorn.



TIMBERLINK® Australia & New Zealand

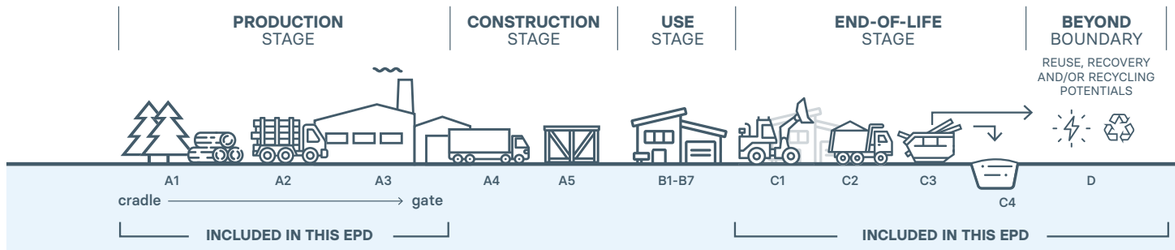
TIMBERLINK® GREEN

TIMBERLINK® BLUE

MANUFACTURING PROCESS

This is a 'cradle-to-gate' type EPD with modules C1-C4 and module D added. This means that the production (modules A1-A3), end-of-life (C1-C4) and reuse, recovery and/or recycling potentials (D) are modelled in this EPD. The construction process (modules A4-A5) and use stages (B1-B7) are not modelled (see figure 1 below).

Figure 1. basic product life cycle



PRODUCTION STAGE EXPLAINED

1 | SOURCING

Logs are sourced from sustainably grown plantations, the majority of which are dual-certified FSC and PEFC. They are transported to mill sites by road. Once on site, bark is removed, and logs sorted by size ready for sawing.

2 | SAWING

Logs are sawn to boards and trimmed to length. State-of-the-art technologies are used to maximise yield.

3 | KILN DRYING

Latest-technology continuous drying kilns maximise energy efficiency and optimise dried quality. Heat for the kilns is provided by biomass heatplants powered by renewable residues from our process supplemented by LPG (<1% of energy generated).

4 | DRY MILLING

Kiln dried timber is planed smooth to accurate dimensions. Each piece is then graded using mechanical grading and the latest non-contact multi-sensor scanners to maximise structural grade yield and product reliability. Verification testing confirms compliance of graded timber.

5 | PRESERVATION (OPTIONAL)

Untreated timber does not go through the preservation process. Timberlink Blue is structural framing for protected applications which has been treated with a termite repellent. Timberlink Green is structural graded timber treated with carbon-based and triazole and synthetic pyrethroid active constituents to provide protection in outdoor above-ground applications.

6 | PACKAGING

Packs of timber are wrapped in low-density polyethylene to provide protection from the elements during transportation and storage. Strapping keeps the timber secure during transport.

Timber is ready for transport across Australia by a mix of road, rail, and sea freight.

ready at gate for transport

HOW TO USE THIS EPD

Timberlink has developed this manufacturer specific EPD to help to showcase the environmental credentials of their wood products. The EPD also provides life cycle data for calculating the impacts of wood products at a building level. These data sets may be used by specifiers and developers to calculate and present the environmental impacts of particular construction projects.

This EPD can allow the represented products to qualify for points under the Green Building Council Australia (GBCA) Green Star rating system.

The following section of this EPD comprises of the Technical Information for the method, assumptions, and description of environmental indicators. Followed by the results from modelling the life cycle assessment of the different products.

TIMBERLINK | STRUCTURAL SOFTWOOD TIMBER | ENVIRONMENTAL PRODUCT DECLARATION

TECHNICAL INFORMATION

Declared Unit

One cubic metre of timber, as specified in the table below, packaged and ready for dispatch to the consumer.

Table 1. Declared unit

Product Group	Unit	Product
Sawn and planed softwood: Timberlink Untreated Structural	1 m^3	Sawn and planed kiln dried softwood 11.9% moisture content (dry basis), with an average density of 528kg/m3
Sawn and planed softwood: Timberlink Green	1 m^3	Sawn and planed kiln dried softwood 12.8% moisture content (dry basis), with an average density of 526kg/m3 treated to H3 level
Sawn and planed softwood: Timberlink Blue	1 m^3	Sawn and planed kiln dried softwood 11.9% moisture content (dry basis), with an average density of 528kg/m3 treated to H2F level

Preservative treatments

The Tarpeena sawmill applied H2F Imidacloprid to kiln dried softwood. The Bell Bay sawmill applied H3 LOSP and H2F Permethrin to kiln dried softwood.

Timber treatments have been modelled based on available GaBi datasets for the following treatment types:

- H2F Permethrin (used as a proxy for H2F Imidacloprid)
- H3 Propiconazole + Tebuconazole (LOSP)

Treatment is applied to the surface of the wood or within pressurised chambers depending on the requirements of the treatment type used.

Table 2. Treatment class Treatment type Use

Treatment class	Treatment type	Use
H2F	Permethrin and Imidicloprid	House framing
H3	Propiconazole + Tebuconazole (LOSP)	Outdoor products (paint coating reqired), not in ground contact, non-structural

Classification

Table 3 shows the classification codes and class descriptions of the products included within this EPD according to the UN CPC (Version 2.1) and ANZSIC 2006 classification systems.

Table 3. Timber products included in this EPD

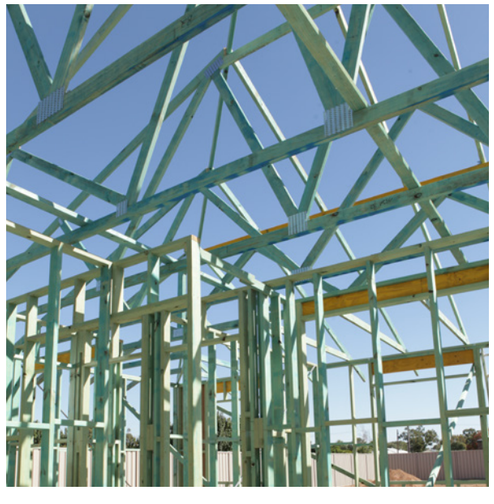
Product type	Classification	Code	Category
Sawn Timber	UN CPC Ver.2.1	31101	Wood, sawn or chipped lengthwise, sliced or peeled, of a thickness exceeding 6 mm, of coniferous wood
	ANZSIC 2006	1411 1413	Log Sawmilling Timber re-sawing and dressing

Product composition

All timber products included in this EPD are of the species radiata pine (*Pinus radiata*), grown within Australia in independent sustainably managed plantations and processed by Timberlink.

Treated timber products declared within this EPD include those treated with Permethrin and Light Organic Solvent Preservatives (LOSP).

No products declared within this EPD contain substances exceeding the limits for registration according to the European Chemicals Agency's "Candidate List of Substances of Very High Concern for authorisation".



System Boundaries

In Life Cycle Assessments (LCA), the system boundary is a line that divides the processes which are included from those which are excluded.

As shown in Table 5 this EPD is 'cradle-to-gate' with modules C1-C4 (end-of-life processing) and module D (recycling potential). The options include end-of-life processing (Modules C3-C4) and the recycling potential (Module D).

Other life cycle stages (Modules A4-A5 and B1-B7) are dependent on particular scenarios and best modelled at the building level, therefore these modules have not been declared.

Table 4. Modules included in the scope of the EPD (X = declared module | ND = module not declared)

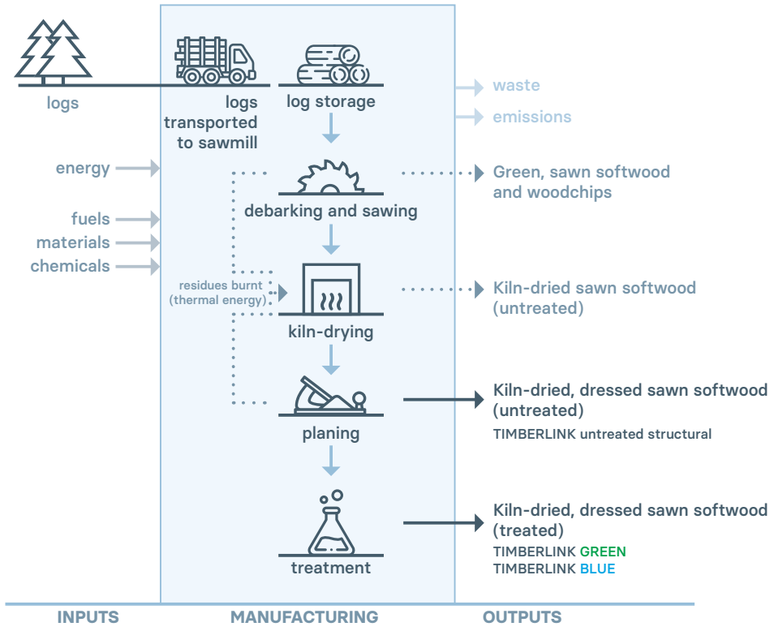
	Product stage			Construction process stage		Use stage							End-of-life				Recovery
	Raw material supply	Transport	Manufacturing	Transport	Construction Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction / demoliti	Transport	Waste processing	Disposal	Future reuse, recycling or energy recovery potential
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	AU	AU	AU	-	-	-	-	-	-	-	-	-	AU	AU	AU	AU	AU
Specific data	>90%					-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	Not relevant					-	-	-	-	-	-	-	-	-	-	-	-
Variation - sites	+8%/-16%					-	-	-	-	-	-	-	-	-	-	-	-

Production (Modules A1-A3)

For all timber products in this EPD, the production stage includes the forestry, sawmilling and kiln drying stages. It also includes planing and possible treatment for the applicable products.

Figure 2 shows the basic manufacturing processes for the products included within this EPD.

Figure 2. basic manufacturing



End-of-life

At the end of its useful life, a timber product is removed from the building and may end up recycled, reused, combusted to produce energy, or landfilled. In Australia, the most common end-of-life method is landfill, especially for treated products, which have limitations for recycling and incinerating.

The landfill scenario and three other possible end of life scenarios is described below. Each scenario assumes that 100% of the wood is sent to that scenario. To create an end-of-life mix for a given region or end use, the reader should take a weighted sum of these scenarios. Where no specific data are available, the 'landfill' scenario should be used.

Under EN 15804+A2, the carbon sequestration of timber has a net neutral impact over the whole life cycle because all sequestered carbon is released at the end-of-life stage. This means that assumptions of the decomposition of wood products and various end-of-life scenarios all have the same effect in terms of biogenic carbon.

Landfill

Emissions from landfill are dependent on the Degradable Organic Carbon fraction (DOCf).

The DOCf = 0.1% for radiata pine. This is based on bioreactor laboratory research by Wang et al. (2011) for *Pinus radiata*. The impacts associated with the landfill are declared in module C4. All landfill gas that is combusted for energy recovery (module C4) is assumed to occur in a power plant with an electrical conversion efficiency of 36% (Australian Government 2014, p. 189) and the resulting electricity receives a credit for offsetting average electricity from the Australian grid (module D) in line with EN 16485:2014 (Section 6.3.4.5).

The landfill scenario assumes the following for carbon emissions:

- Of the carbon in the wood that breaks down in landfill, 50% is methane and 50% is carbon dioxide (Australian Government 2016, Table 43).
- All carbon dioxide is released directly to the atmosphere.
- 43% of the methane is captured based on landfill gas capture in Australian landfills (Australian Government, 2021).
- Of this, one quarter (10.8% of the total) is flared, and three quarters (32.3% of the total) is used for energy recovery (Carre, 2011).
- Of the 57% of methane that is not captured, 10% (5.7% of the total) is oxidised (Australian Government, 2020, Table 43) and 90% (51.3%) is released to the atmosphere.
- In summary, for every kilogram of carbon converted to landfill gas, 74.4% is released as carbon dioxide and 25.6% is released as methane.

In accordance with EN 15804+A2, any remaining biogenic carbon not degraded (99.9% of the carbon in the wood) is modelled as an emission of biogenic CO2 to the air. Refer to the Additional Environmental Information section for information on permanent storage of biogenic carbon in radiata pine in landfill.

Energy recovery

Untreated products may be used for energy recovery. This scenario includes shredding (module C3) and combustion with the recovered thermal energy assumed to replace thermal energy from natural gas (module D) in line with EN 16485:2014 (Section 6.3.4.5). Note that other options may also be in use within Australia, including replacement of coal, replacement of electricity, and replacement of both electricity and thermal energy (via co-generation).

Recycling

Timber may be recycled in many different ways. This scenario considers shredding and effectively downcycling into wood chips. Wood waste is chipped (module C3) and assigned credits relative to the avoided production of virgin woodchips as a co-product from sawmilling (module D). In line with the reuse scenario, the CO_2 sequestered, and energy content of the wood are assumed to leave the system boundary at C3 so that future product systems can also claim these without double-counting (EN 16485:2014, Section 6.3.4.2).

Reuse

The product is assumed to be removed from a building manually and reused with no further processing (i.e. direct reuse). Transport and wastage are excluded and only one reuse cycle is considered. The second life is assumed to be the same (or very similar) to the first, meaning that a credit is given for production of 1 m^3 of timber in module D. The CO_2 sequestered, and energy content of the wood are assumed to leave the system boundary at module C3 so that future product systems can also claim these without double-counting in line with EN 16485:2014 (Section 6.3.4.2). Any further processing, waste or transport would need to be modelled and included separately.

LIFE CYCLE INVENTORY (LCI) AND ASSUMPTIONS

Energy

Thermal energy and transport fuels have been modelled using the Australian average (see Sphera, 2021 for documentation).

Electricity for timber production (modules A1-A3) has been modelled with the relevant Australian State (South Australia and Tasmania) production grid mixes as detailed in the GaBi 2021 databases. The South Australian and Tasmania electricity grid consumption mix can be seen in Table 5. The emission factor for the South Australian and Tasmanian grid for the GWP-GHG indicator is 0.597 and 0.173 kg CO_2e/kWh respectively.

Table 5. Electricity Grid Mixes as detailed in the GaBi 2021 databases.

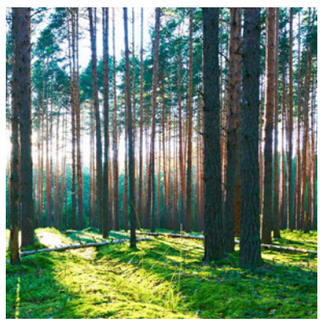
Source	South Australia	Tasmania
Heavy fuel oil	0.1%	0%
Hydro	0%	75.9%
Natural Gas	51.2%	6.9%
Wind	39.5%	9.1%
Import from Victoria	9.2%	8.1%
Total	100%	100%

Forestry

Forestry data used in the modelling of this EPD comes from the previous LCI work done on Softwood Forestry for FWPA by thinkstep-anz (FWPA, 2022). The data is regionally applicable for South Australian and Tasmanian forestry activities.

Primary data

Primary data was used for all manufacturing processes. Sawn timber, kiln-drying and gauged timber data was collected from Timberlink manufacturing facilities at Tarpeena (South Australia) and Bell Bay (Tasmania).



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Allocation

For refinery products, allocation is applied by mass and net calorific value. Inventories for electricity and thermal energy generation include allocation by economic value for some by-products (e.g. gypsum, boiler ash and fly ash). Allocation by energy is applied for co-generation of heat and power.

Co-products

These include bark, woodchips, sawdust and shavings. As the difference in economic value of the co-products is high (>25% as per EN 15804, Section 6.4.3.2), allocation by economic value has been applied.

Cut-off criteria

Environmental impacts relating to personnel, infrastructure, and production equipment not directly consumed in the process are excluded from the system boundary as per the PCR (EPD International, 2019, Section 7.5.4). All other reported data were incorporated and modelled using the best available life cycle inventory data.

Representatives

Geographical

All primary and secondary data were collected specific to the countries or regions under study. Where country-specific or region-specific data were unavailable, proxy data were used. Geographical representativeness is considered to be high.

Temporal

Primary data for sawmilling, kiln-drying, planing, finger-jointing, packaging and treatment was collected for the 12 month period from 1st July 2021 to 30 June 2022. All secondary data comes from the GaBi 2021 databases and are representative of the years 2015-2020.

Long-term emissions (>100 years) are not taken into consideration in the impact estimate. Waste to landfill is modelled assuming a 100-year time horizon.

Technological

All primary and secondary data were modelled to be specific to the technologies or technology mixes under study. Where technology-specific data were unavailable, proxy data were used. Technological representativeness is considered to be high.

OTHER ENVIRONMENTAL INFORMATION

When timber is landfilled any carbon not degraded can be expected to remain stored in the wood indefinitely under anaerobic conditions (Wang 2011 and Ximenes et al 2019). For Timberlink Untreated Structural timber and Timberlink Blue this would result in a reduction of the GWP (biogenic) and GWP (total) for module C4 for the "landfill (typical)" scenario of 830 kg CO_2 eq so that the module C4 total GWP (biogenic) is 39 kg CO_2 eq. For Timberlink Green this would result in a reduction of 818 kg CO_2 eq and a module C4 total GWP (biogenic) of 51 kg CO_2 eq.

ENVIRONMENTAL IMPACT INDICATORS

An introduction to the core environmental impact indicators is provided below. The best-known effect of each indicator is listed in the descriptions and the abbreviations, in brackets, correspond to the labels in the following results tables.

Table 6. Environmental impact indicators described

	Indicator and description
	Climate change (Global Warming Potential) (GWP-total, GWPf, GWPb, GWPluc) A measure of greenhouse gas emissions, such as CO2 and methane. These emissions are causing an increase in the absorption of radiation emitted by the earth, increasing the natural greenhouse effect. This may in turn have adverse impacts on ecosystem health, human health and material welfare. The Global Warming Potential (GWP) is split into three sub indicators: total (GWPt), fossil (GWPf), biogenic (GWPb), and land-use and land-use change (GWPluluc).
	Ozone Depletion Potential (ODP) Depletion of the ozone leads to higher levels of UVB ultraviolet rays reaching the earth's surface with detrimental effects on humans and plants. The Ozone Depletion Potential is a measure of air emissions that contribute to the depletion of the stratospheric ozone layer.
	Acidification potential (AP) Acidification Potential is a measure of emissions that cause acidifying effects to the environment. A molecule's acidification potential indicates its capacity to increase the hydrogen ion (H+) concentration in the presence of water, thus decreasing the pH value. Potential effects include fish mortality, forest decline, and the deterioration of building materials.
	Eutrophication Potential (EP-fw, EP-fm, EP-tr) Eutrophication covers all potential impacts of excessively high levels of macronutrients, the most important of which are nitrogen (N)and phosphorus (P). In aquatic ecosystems where this term is mostly applied, this typically describes a degradation in water quality. Eutrophication can result in an undesirable change in the type of species that flourish and an increase in the production of biomass. As the decomposition of biomass consumes oxygen, eutrophication may decrease the available oxygen level in the water column and threaten fish in their ability to respire.
	Photochemical Ozone Formation Potential (POFP) Photochemical Ozone Formation Potential gives an indication of the emissions from precursors that contribute to ground level smog formation, mainly ozone (O3). Ground level ozone may be harmful to human health and ecosystems and may also damage crops. These emissions are produced by the reaction of volatile organic compounds (VOCs) and carbon monoxide in the presence of nitrogen oxides and UV light.
	Abiotic Resource Depletion (ADP-mm, ADPf) The consumption of non-renewable resources decreases the availability of these resources and their associated functions in the future. Depletion of mineral resources and non-renewable energy resources are reported separately. Depletion of mineral resources is assessed based on total reserves.
	Water use (WDP) Water scarcity is a measure of the stress on a region due to water consumption

TIMBERLINK | STRUCTURAL SOFTWOOD TIMBER | ENVIRONMENTAL PRODUCT DECLARATION

RESULTS

The following tables show the results for the three product groups: Timberlink Green, Timberlink Blue, and Timberlink Untreated Structural.

The results are grouped in 7 categories each looking at different types of indicators. The headings on the opposite page provide descriptions for each of these categories. Each column of numbers represents one declared unit: 1m³ of timber, packaged and ready for dispatch to the customer.

Environmental impact indicators

The first row of the Environmental impact indicators, the Global Warming Potential (total) (GWPT) represents the total carbon footprint of the product. This is the sum of the biogenic carbon footprint (GWPB), mostly from the sequestration of carbon in wood, and the fossil carbon footprint (GWPF), which is mostly from the fossil fuels combusted during the production of the product. It should be noted that the GWPB is largely dependent on the density of the wood, which can vary by a large degree due to a range of factors.

For timber products, the most common value used for the carbon footprint in ratings tools like Green Star and eTool is the fossil carbon footprint (GWPF).

To assess treated product, the indicators for the specific treatment type should be combined with those of the product in question.

Resource use

The resource use indicators describe the use of renewable and non-renewable material resources, renewable and non-renewable primary energy and water.

Note: Water consumption: The FW indicator in the EPD results tables reports consumption (i.e. net use) of 'blue water' (which includes river water, lake water and ground water). This indicator deliberately excludes consumption of 'green water' (rain water), as net loss should be interpreted as any additional water loss beyond what would occur in the original, natural system. For plantation softwood forestry, the natural system might be a native forest or a grassland (Quinteiro et al. 2015).

Waste and output flow

Waste indicators describe waste generated within the life cycle of the product. Waste is categorised by hazard class, end of life fate and exported energy content.

Additional environmental impact indicators

These indicators are voluntarily included to facilitate modularity where an EPD is used as input data for creating another EPD downstream in the value chain (EPD International, 2021).

Biogenic carbon indicators

Biogenic carbon refers to the carbon stored in organic materials. This is sequestered during growth and released at end of life. EN15804+A2 requires the declaration of biogenic carbon content of the product and its packaging

Environmental impact EN15804+A1

EN 15804+A1 core environmental impact categories aid with historical comparison and are used within various rating tools.

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RESULTS FOR 1m³ OF TIMBERLINK UNTREATED STRUCTURAL

TIMBERLINK® Australia & New Zealand

Environmental impact indicators

Table 7. Environmental impact (EN15804+A2) covering modules A1-3, C1-4 and D

Indicator	Abbr	Unit	Production untreated	Decon-struction	Transport to EOL	Landfill (typical)		Energy recovery		Recycling		Reuse	
			A1-A3	C1	C2	C4	D	C3	D	C3	D	C3	D
Global warming potential	GWP	kg CO_2 eq	-711	0.340	1.73	925	-0.107	872	-599	768	-20.5	866	-155
Global warming potential (fossil)	GWPf	kg CO_2 eq	119	0.340	1.66	56.2	-0.107	5.47	-601	-67.8	-20.3	0	-119
Global warming potential (biogenic)	GWPb	kg CO_2 eq	-830	-3.48E-04	0.0733	869	-3.10E-05	866	1.75	836	-0.237	866	-35.8
Global warming potential (land use change)	GWPluc	kg CO_2 eq	0.00992	6.85E-06	2.60E-05	0.0405	-2.18E-06	1.59E-04	-0.00781	-0.00651	-4.41E-04	0	-0.00992
Depletion potential of the stratospheric ozone layer	ODP	kg CFC 11 eq	4.97E-12	5.01E-17	1.94E-16	1.39E-13	-4.42E-16	7.92E-16	-1.32E-14	-3.56E-12	-6.66E-14	0	-4.97E-12
Acidification potential - terrestrial and freshwater	AP	Mol H+ eq	1.00	0.00171	0.00508	0.195	-2.49E-04	0.0483	-0.0786	-0.731	-0.0530	0	-1.00
Eutrophication potential - freshwater	EPfw	kg P eq	2.48E-04	5.60E-08	3.03E-07	3.75E-05	-2.87E-09	9.19E-07	-1.04E-05	-7.09E-05	-1.20E-04	0	-2.48E-04
Eutrophication potential - marine	EPm	kg N eq	0.639	8.10E-04	0.00245	0.0550	-9.42E-05	0.0235	-0.122	-0.489	-0.0221	0	-0.639
Eutrophication potential - terrestrial	EPt	Mol N eq	4.87	0.00887	0.0269	0.602	-0.00103	0.257	-1.34	-3.55	-0.237	0	-4.87
Photochemical ozone formation potential	POFP	kg NMVOC eq	3.03	0.00227	0.00472	0.158	-2.55E-04	0.0649	-0.166	-2.26	-0.230	0	-3.03
Abiotic depletion potential – minerals & metals*	ADPmm	kg Sb eq	8.97E-05	5.26E-09	2.80E-08	5.42E-06	-2.13E-08	8.35E-08	-7.08E-05	-7.15E-05	-3.30E-06	0	-8.97E-05
Abiotic depletion potential – fossil fuels*	ADPf	MJ	1,350	4.51	22.9	804	-1.55	71.3	-10,300	-679	-269	0	-1,350
Water scarcity*	WDP	m³ world eq	105	0.00223	0.0134	-0.905	-0.213	0.0353	-0.498	-47.6	-35.1	0	-105

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

Resource use indicators

Table 8. Resource use indicators covering modules A1-3, C1-4 and D

Indicator	Abbr	Unit	Production untreated	Decon-struction	Transport to EOL	Landfill (typical)		Energy recovery		Recycling		Reuse	
			A1-A3	C1	C2	C4	D	C3	D	C3	D	C3	D
Renewable primary energy as energy carrier	PERE	MJ	2,390	0.0220	0.0975	81.6	-1.04	0.355	-4.08	-1,850	-155	0	-2,390
Renewable primary energy resources as material utilisation	PERM	MJ	8,910	0	0	0	0	-8,910	0	-8,910	0	-8,910	0
Total use of renewable primary energy resources	PERT	MJ	11,300	0.0220	0.0975	81.6	-1.04	-8,910	-4.08	-10,800	-155	-8,910	-2,390
Non-renewable primary energy as energy carrier	PENRE	MJ	1,360	4.51	22.9	805	-1.55	71.3	-10,300	-680	-269	0	-1,360
Non-renewable primary energy as material utilisation	PENRM	MJ	0	0	0	0	0	0	0	0	0	0	0
Total use of non-renewable primary energy resources	PENRT	MJ	1,360	4.51	22.9	805	-1.55	71.3	-10,300	-680	-269	0	-1,360
Use of secondary material	SM	kg	0	0	0	0	0	0	0	0	528	0	528
Use of renewable secondary fuels	RSF	MJ	0	0	0	0	0	0	8,910	0	0	0	0
Use of non-renewable secondary fuels	NRSF	MJ	0	0	0	0	0	0	0	0	0	0	0
Use of net fresh water	FW	m3	1.87	4.37E-05	2.01E-04	0.0623	-0.00296	6.98E-04	-0.0151	-0.898	-0.533	0	-1.87

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RESULTS FOR 1m³ OF TIMBERLINK UNTREATED STRUCTURAL

TIMBERLINK®
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Waste material and output flow indicators

Table 9. Waste material and output flow indicators covering modules A1-3, C1-4 and D

Indicator	Abbr	Unit	Production untreated	Decon-struction	Transport to EOL	Landfill (typical)		Energy recovery		Recycling		Reuse	
			A1-A3	C1	C2	C4	D	C3	D	C3	D	C3	D
Hazardous waste disposed	HWD	kg	7.63E-07	1.63E-11	6.89E-11	8.05E-08	-1.08E-10	6.37E-08	-7.66E-07	-5.53E-07	-1.74E-08	0	-7.63E-07
Non-hazardous waste disposed	NHWD	kg	27.9	1.08E-04	3.63E-04	529	-3.95E-04	0.00171	24.6	-23.2	-0.316	0	-27.9
Radioactive waste disposed	RWD	kg	0.00279	6.22E-07	5.36E-07	0.00421	-2.55E-07	9.88E-06	-7.24E-04	-0.00160	-7.34E-05	0	-0.00279
Components for re-use	CRU	kg	0	0	0	0	0	0	0	0	0	528	-528
Materials for recycling	MFR	kg	0	0	0	0	0	0	0	528	0	0	0
Materials for energy recovery	MER	kg	0	0	0	0	0	528	0	0	0	0	0
Exported electrical energy	EEE	MJ	0	0	0	0.857	0	0	0	0	0	0	0
Exported thermal energy	EET	MJ	0	0	0	0	0	0	0	0	0	0	0

Additional environmental impact indicators

Table 10. Additional environmental indicators covering modules A1-3, C1-4 and D

Indicator	Abbr	Unit	Production untreated	Decon-struction	Transport to EOL	Landfill (typical)		Energy recovery		Recycling		Reuse	
			A1-A3	C1	C2	C4	D	C3	D	C3	D	C3	D
IPCC AR5 GWP (excluding biogenic carbon)	GWP-GHG	kg CO_2 eq	126	0.339	1.65	59.5	-0.107	5.45	-604	-75.9	-18.6	0	-126
Respiratory inorganics	PM	Disease incidence	1.46E-05	1.96E-08	2.65E-08	1.52E-06	-2.42E-09	1.15E-06	1.89E-05	-1.07E-05	-4.16E-07	0	-1.46E-05
Ionizing radiation - human health[#]	IR	kBq U235 eq	0.312	7.30E-05	6.00E-05	0.390	-2.42E-05	0.00116	-0.0883	-0.169	-0.00825	0	-0.312
Ecotoxicity freshwater[^]	ETf	CTUe	515	1.72	6.12	405	-0.495	27.2	-3,840	-258	-102	0	-515
Human toxicity, cancer[^]	HTc	CTUh	1.16E-07	2.94E-11	1.04E-10	2.99E-08	-3.54E-11	3.54E-09	-1.84E-08	-5.21E-08	-2.47E-08	0	-1.16E-07
Human toxicity, non-canc.[^]	HTnc	CTUh	2.05E-05	1.51E-09	5.76E-09	2.89E-06	-5.35E-10	2.88E-08	3.42E-06	-1.20E-05	-3.70E-06	0	-2.05E-05
Land use[^]	LU	Dimensionless	4,400	0.0116	0.0476	45.4	-0.00367	0.216	-7.19	-16.7	-1.06	0	-4,400

[#]This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

[^]The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

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RESULTS FOR 1m³ OF TIMBERLINK UNTREATED STRUCTURAL

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Biogenic carbon content

Table 12. Biogenic carbon content covering modules A1-3, C1-4 and D

Indicator	Abbr	Unit	Production untreated	Decon-struction	Transport to EOL	Landfill (typical)		Energy recovery		Recycling		Reuse	
			A1-A3	C1	C2	C4	D	C3	D	C3	D	C3	D
Biogenic carbon content - product	BCC-prod	kg	236	0	0	0	0	0	0	0	0	0	-236
Biogenic carbon content - packaging	BCC-pack	kg	3.01	0	0	0	0	0	0	0	0	0	-3.01

Environmental impact (EN15804+A1) indicators

Table 11. Environmental impact (EN15804+A1) indicators covering modules A1-3, C1-4 and D

Indicator	Abbr	Unit	Production untreated	Decon-struction	Transport to EOL	Landfill (typical)		Energy recovery		Recycling		Reuse	
			A1-A3	C1	C2	C4	D	C3	D	C3	D	C3	D
Global warming potential (total)	GWP	kg CO_2 eq	-742	0.335	1.71	55.6	-0.105	872	-590	792	-18.4	866	-124
Depletion potential of the stratospheric ozone layer	ODP	kg CFC-11 eq	9.10E-12	6.68E-17	2.59E-16	1.85E-13	-5.89E-16	1.06E-15	-1.76E-14	-6.60E-12	-8.88E-14	0	-9.10E-12
Acidification potential of land and water	AP	kg SO_2 eq	0.711	0.00120	0.00351	0.153	-1.85E-04	0.0335	-0.0159	-0.517	-0.0386	0	-0.711
Eutrophication potential	EP	kg $(PO_4)^{3-}$ eq	0.240	2.72E-04	8.25E-04	0.0190	-3.18E-05	0.00786	-0.0414	-0.185	-0.00823	0	-0.240
Photochemical ozone creation potential	POCP	kg Ethene eq	0.691	1.12E-04	-0.00136	0.00982	-1.40E-05	0.00295	0.0962	-0.430	-0.155	0	-0.691
Abiotic depletion potential – elements*	ADPe	kg Sb eq	8.97E-05	5.26E-09	2.80E-08	5.45E-06	-2.13E-08	8.36E-08	-7.08E-05	-7.15E-05	-3.30E-06	0	-8.97E-05
Abiotic depletion potential – fossil fuels*	ADPf	MJ	1,350	4.51	22.9	793	-1.55	71.2	-10,300	-674	-268	0	-1,350

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

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RESULTS FOR 1m³ OF TIMBERLINK GREEN

treated to H3 level (LOSP)

TIMBERLINK® GREEN

Environmental impact indicators

Table 13. Environmental impact (EN15804+A2) covering modules A1-3, C1-4 and D

Indicator	Abbr	Unit	Production H3 (LOSP)	Decon-struction	Transport to EOL	Landfill (typical)		Treated wood products can not be used for energy recovery and recycling: Energy recovery		Recycling		Reuse	
			A1-A3	C1	C2	C4	D	C3	D	C3	D	C3	D
Global warming potential	GWP	kg CO_2 eq	-670	0.340	1.73	925	-0.107					866	-155
Global warming potential (fossil)	GWPf	kg CO_2 eq	148	0.340	1.66	56.2	-0.107					0	-119
Global warming potential (biogenic)	GWPb	kg CO_2 eq	-818	-3.48E-04	0.0733	869	-3.10E-05					866	-35.8
Global warming potential (land use change)	GWPluc	kg CO_2 eq	1.86E-02	6.85E-06	2.60E-05	0.0405	-2.18E-06					0	-0.00992
Depletion potential of the stratospheric ozone layer	ODP	kg CFC 11 eq	5.41E-12	5.01E-17	1.94E-16	1.39E-13	-4.42E-16					0	-4.97E-12
Acidification potential - terrestrial and freshwater	AP	Mol H+ eq	1.11	0.00171	0.00508	0.195	-2.49E-04					0	-1.00
Eutrophication potential - freshwater	EPfw	kg P eq	5.54E-04	5.60E-08	3.03E-07	3.75E-05	-2.87E-09					0	-2.48E-04
Eutrophication potential - marine	EPm	kg N eq	0.668	8.10E-04	0.00245	0.0550	-9.42E-05					0	-0.639
Eutrophication potential - terrestrial	EPt	Mol N eq	5.11	0.00887	0.0269	0.602	-0.00103					0	-4.87
Photochemical ozone formation potential	POFP	kg NMVOC eq	14.37	0.00227	0.00472	0.158	-2.55E-04					0	-3.03
Abiotic depletion potential – minerals & metals*	ADPmm	kg Sb eq	2.75E-04	5.26E-09	2.80E-08	5.42E-06	-2.13E-08					0	-8.97E-05
Abiotic depletion potential – fossil fuels*	ADPf	MJ	2947	4.51	22.9	804	-1.55					0	-1,350
Water scarcity*	WDP	m³ world eq	278	0.00223	0.0134	-0.905	-0.213					0	-105

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

Resource use indicators

Table 14. Resource use indicators covering modules A1-3, C1-4 and D

Indicator	Abbr	Unit	Production H3 (LOSP)	Decon-struction	Transport to EOL	Landfill (typical)		Treated wood products can not be used for energy recovery and recycling: Energy recovery		Recycling		Reuse	
			A1-A3	C1	C2	C4	D	C3	D	C3	D	C3	D
Renewable primary energy as energy carrier	PERE	MJ	2748	0.0220	0.0975	81.6	-1.04					0	-2,390
Renewable primary energy resources as material utilisation	PERM	MJ	8810	0	0	0	0					-8,910	0
Total use of renewable primary energy resources	PERT	MJ	11568	0.0220	0.0975	81.6	-1.04					-8,910	-2,390
Non-renewable primary energy as energy carrier	PENRE	MJ	2948	4.51	22.9	805	-1.55					0	-1,360
Non-renewable primary energy as material utilisation	PENRM	MJ	0	0	0	0	0					0	0
Total use of non-renewable primary energy resources	PENRT	MJ	2948	4.51	22.9	805	-1.55					0	-1,360
Use of secondary material	SM	kg	0	0	0	0	0					0	528
Use of renewable secondary fuels	RSF	MJ	0	0	0	0	0					0	0
Use of non-renewable secondary fuels	NRSF	MJ	0	0	0	0	0					0	0
Use of net fresh water	FW	m3	4.62	4.37E-05	2.01E-04	0.0623	-0.00296					0	-1.87

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RESULTS FOR 1m³ OF TIMBERLINK GREEN

treated to H3 level (LOSP)

TIMBERLINK® GREEN

Waste material and output flow indicators

Table 15. Waste material and output flow indicators covering modules A1-3, C1-4 and D

Indicator	Abbr	Unit	Production H3 (LOSP)	Decon-struction	Transport to EOL	Landfill (typical)		Treated wood products can not be used for energy recovery and recycling: Energy recovery		Recycling		Reuse	
			A1-A3	C1	C2	C4	D	C3	D	C3	D	C3	D
Hazardous waste disposed	HWD	kg	8.69E-07	1.63E-11	6.89E-11	8.05E-08	-1.08E-10					0	-7.63E-07
Non-hazardous waste disposed	NHWD	kg	30.5	1.08E-04	3.63E-04	529	-3.95E-04					0	-27.9
Radioactive waste disposed	RWD	kg	7.43E-03	6.22E-07	5.36E-07	0.00421	-2.55E-07					0	-0.00279
Components for re-use	CRU	kg	0	0	0	0	0					528	-528
Materials for recycling	MFR	kg	0	0	0	0	0					0	0
Materials for energy recovery	MER	kg	0	0	0	0	0					0	0
Exported electrical energy	EEE	MJ	0	0	0	0.857	0					0	0
Exported thermal energy	EET	MJ	0	0	0	0	0					0	0

Additional environmental impact indicators

Table 16. Additional environmental indicators covering modules A1-3, C1-4 and D

Indicator	Abbr	Unit	Production LOSP	Decon-struction	Transport to EOL	Landfill (typical)		Treated wood products can not be used for energy recovery and recycling: Energy recovery		Recycling		Reuse	
			A1-A3	C1	C2	C4	D	C3	D	C3	D	C3	D
IPCC AR5 GWP (excluding biogenic carbon)	GWP-GHG	kg CO_2 eq	155	0.339	1.65	59.5	-0.107					0	-126
Respiratory inorganics	PM	Disease incidence	1.59E-05	1.96E-08	2.65E-08	1.52E-06	-2.42E-09					0	-1.46E-05
Ionizing radiation - human health[#]	IR	kBq U235 eq	0.914	7.30E-05	6.00E-05	0.390	-2.42E-05					0	-0.312
Ecotoxicity freshwater[^]	ETf	CTUe	1511	1.72	6.12	405	-0.495					0	-515
Human toxicity, cancer[^]	HTc	CTUh	8.14E-06	2.94E-11	1.04E-10	2.99E-08	-3.54E-11					0	-1.16E-07
Human toxicity, non-canc.[^]	HTnc	CTUh	3.28E-05	1.51E-09	5.76E-09	2.89E-06	-5.35E-10					0	-2.05E-05
Land use[^]	LU	Dimensionless	4561	0.0116	0.0476	45.4	-0.00367					0	-4,400

[#]This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

[^]The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

RESULTS FOR 1m³ OF TIMBERLINK GREEN

treated to H3 level (LOSP)

TIMBERLINK® GREEN

Biogenic carbon content

Table 17. Biogenic carbon content covering modules A1-3, C1-4 and D

Indicator	Abbr	Unit	Production H3 (LOSP)	Decon-struction	Transport to EOL	Landfill (typical)		Treated wood products can not be used for energy recovery and recycling: Energy recovery		Recycling		Reuse	
			A1-A3	C1	C2	C4	D	C3	D	C3	D	C3	D
Biogenic carbon content - product	BCC-prod	kg	233	0	0	0	0					0	-236
Biogenic carbon content - packaging	BCC-pack	kg	2.59	0	0	0	0					0	-3.01

Environmental impact (EN15804+A1) indicators

Table 18. Environmental impact (EN15804+A1) indicators covering modules A1-3, C1-4 and D

Indicator	Abbr	Unit	Production H3 (LOSP)	Decon-struction	Transport to EOL	Landfill (typical)		Treated wood products can not be used for energy recovery and recycling: Energy recovery		Recycling		Reuse	
			A1-A3	C1	C2	C4	D	C3	D	C3	D	C3	D
Global warming potential (total)	GWP	kg CO_2 eq	-703	0.335	1.71	55.6	-0.105					866	-124
Depletion potential of the stratospheric ozone layer	ODP	kg CFC-11 eq	9.90E-12	6.68E-17	2.59E-16	1.85E-13	-5.89E-16					0	-9.10E-12
Acidification potential of land and water	AP	kg SO_2 eq	0.793	0.00120	0.00351	0.153	-1.85E-04					0	-0.711
Eutrophication potential	EP	kg $(PO_4)^{3-}$ eq	0.253	2.72E-04	8.25E-04	0.0190	-3.18E-05					0	-0.240
Photochemical ozone creation potential	POCP	kg Ethene eq	7.367	1.12E-04	-0.00136	0.00982	-1.40E-05					0	-0.691
Abiotic depletion potential – elements	ADPe*	kg Sb eq	2.76E-04	5.26E-09	2.80E-08	5.45E-06	-2.13E-08					0	-8.97E-05
Abiotic depletion potential – fossil fuels	ADPf*	MJ	2919	4.51	22.9	793	-1.55					0	-1,350

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

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RESULTS FOR 1m³ OF TIMBERLINK BLUE

treated to H2F level (Permethrin or Imidacloprid)

TIMBERLINK® BLUE

Environmental impact indicators

Table 19. Environmental impact (EN15804+A2) covering modules A1-3, C1-4 and D

Indicator	Abbr	Unit	Production H2F	Decon-struction	Transport to EOL	Landfill (typical)		Treated wood products can not be used for energy recovery and recycling: Energy recovery		Recycling		Reuse	
			A1-A3	C1	C2	C4	D	C3	D	C3	D	C3	D
Global warming potential	GWP	kg CO_2 eq	-705	0.340	1.73	925	-0.107					866	-155
Global warming potential (fossil)	GWPf	kg CO_2 eq	125	0.340	1.66	56.2	-0.107					0	-119
Global warming potential (biogenic)	GWPb	kg CO_2 eq	-830	-3.48E-04	0.0733	869	-3.10E-05					866	-35.8
Global warming potential (land use change)	GWPluc	kg CO_2 eq	1.01E-02	6.85E-06	2.60E-05	0.0405	-2.18E-06					0	-0.00992
Depletion potential of the stratospheric ozone layer	ODP	kg CFC 11 eq	5.00E-12	5.01E-17	1.94E-16	1.39E-13	-4.42E-16					0	-4.97E-12
Acidification potential - terrestrial and freshwater	AP	Mol H+ eq	1.02	0.00171	0.00508	0.195	-2.49E-04					0	-1.00
Eutrophication potential - freshwater	EPfw	kg P eq	2.48E-04	5.60E-08	3.03E-07	3.75E-05	-2.87E-09					0	-2.48E-04
Eutrophication potential - marine	EPm	kg N eq	0.646	8.10E-04	0.00245	0.0550	-9.42E-05					0	-0.639
Eutrophication potential - terrestrial	EPt	Mol N eq	4.95	0.00887	0.0269	0.602	-0.00103					0	-4.87
Photochemical ozone formation potential	POFP	kg NMVOC eq	3.05	0.00227	0.00472	0.158	-2.55E-04					0	-3.03
Abiotic depletion potential – minerals & metals*	ADPmm	kg Sb eq	9.12E-05	5.26E-09	2.80E-08	5.42E-06	-2.13E-08					0	-8.97E-05
Abiotic depletion potential – fossil fuels*	ADPf	MJ	1445	4.51	22.9	804	-1.55					0	-1,350
Water scarcity*	WDP	m³ world eq	109	0.00223	0.0134	-0.905	-0.213					0	-105

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

Resource use indicators

Table 20. Resource use indicators covering modules A1-3, C1-4 and D

Indicator	Abbr	Unit	Production H2F	Decon-struction	Transport to EOL	Landfill (typical)		Treated wood products can not be used for energy recovery and recycling: Energy recovery		Recycling		Reuse	
			A1-A3	C1	C2	C4	D	C3	D	C3	D	C3	D
Renewable primary energy as energy carrier	PERE	MJ	2437	0.0220	0.0975	81.6	-1.04					0	-2,390
Renewable primary energy resources as material utilisation	PERM	MJ	8910	0	0	0	0					-8,910	0
Total use of renewable primary energy resources	PERT	MJ	11347	0.0220	0.0975	81.6	-1.04					-8,910	-2,390
Non-renewable primary energy as energy carrier	PENRE	MJ	1455	4.51	22.9	805	-1.55					0	-1,360
Non-renewable primary energy as material utilisation	PENRM	MJ	0	0	0	0	0					0	0
Total use of non-renewable primary energy resources	PENRT	MJ	1455	4.51	22.9	805	-1.55					0	-1,360
Use of secondary material	SM	kg	0	0	0	0	0					0	528
Use of renewable secondary fuels	RSF	MJ	0	0	0	0	0					0	0
Use of non-renewable secondary fuels	NRSF	MJ	0	0	0	0	0					0	0
Use of net fresh water	FW	m3	1.94	4.37E-05	2.01E-04	0.0623	-0.00296					0	-1.87

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treated to H2F level (Permethrin or Imidacloprid)

TIMBERLINK® BLUE

Waste material and output flow indicators

Table 21. Waste material and output flow indicators covering modules A1-3, C1-4 and D

Indicator	Abbr	Unit	Production H2F	Decon-struction	Transport to EOL	Landfill (typical)		Treated wood products can not be used for energy recovery and recycling: Energy recovery		Recycling		Reuse	
			A1-A3	C1	C2	C4	D	C3	D	C3	D	C3	D
Hazardous waste disposed	HWD	kg	7.69E-07	1.63E-11	6.89E-11	8.05E-08	-1.08E-10					0	-7.63E-07
Non-hazardous waste disposed	NHWD	kg	27.9	1.08E-04	3.63E-04	529	-3.95E-04					0	-27.9
Radioactive waste disposed	RWD	kg	2.81E-03	6.22E-07	5.36E-07	0.00421	-2.55E-07					0	-0.00279
Components for re-use	CRU	kg	0	0	0	0	0					528	-528
Materials for recycling	MFR	kg	0	0	0	0	0					0	0
Materials for energy recovery	MER	kg	0	0	0	0	0					0	0
Exported electrical energy	EEE	MJ	0	0	0	0.857	0					0	0
Exported thermal energy	EET	MJ	0	0	0	0	0					0	0

Additional environmental impact indicators

Table 22. Additional environmental indicators covering modules A1-3, C1-4 and D

Indicator	Abbr	Unit	Production H2F	Decon-struction	Transport to EOL	Landfill (typical)		Treated wood products can not be used for energy recovery and recycling: Energy recovery		Recycling		Reuse	
			A1-A3	C1	C2	C4	D	C3	D	C3	D	C3	D
IPCC AR5 GWP (excluding biogenic carbon)	GWP-GHG	kg CO_2 eq	132	0.339	1.65	59.5	-0.107					0	-126
Respiratory inorganics	PM	Disease incidence	1.47E-05	1.96E-08	2.65E-08	1.52E-06	-2.42E-09					0	-1.46E-05
Ionizing radiation - human health[#]	IR	kBq U235 eq	0.314	7.30E-05	6.00E-05	0.390	-2.42E-05					0	-0.312
Ecotoxicity freshwater[^]	ETf	CTUe	547	1.72	6.12	405	-0.495					0	-515
Human toxicity, cancer[^]	HTc	CTUh	1.20E-07	2.94E-11	1.04E-10	2.99E-08	-3.54E-11					0	-1.16E-07
Human toxicity, non-canc.[^]	HTnc	CTUh	2.05E-05	1.51E-09	5.76E-09	2.89E-06	-5.35E-10					0	-2.05E-05
Land use[^]	LU	Dimensionless	4400	0.0116	0.0476	45.4	-0.00367					0	-4,400

[#]This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

[^]The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

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treated to H2F level (Permethrin or Imidacloprid)

TIMBERLINK® BLUE

Biogenic carbon content

Table 23. Biogenic carbon content covering modules A1-3, C1-4 and D

Indicator	Abbr	Unit	Production H2F	Decon-struction	Transport to EOL	Landfill (typical)		Treated wood products can not be used for energy recovery and recycling: Energy recovery		Recycling		Reuse	
			A1-A3	C1	C2	C4	D	C3	D	C3	D	C3	D
Biogenic carbon content - product	BCC-prod	kg	236	0	0	0	0					0	-236
Biogenic carbon content - packaging	BCC-pack	kg	3.01	0	0	0	0					0	-3.01

Environmental impact (EN15804+A1) indicators

Table 24. Environmental impact (EN15804+A1) indicators covering modules A1-3, C1-4 and D

Indicator	Abbr	Unit	Production H2F	Decon-struction	Transport to EOL	Landfill (typical)		Treated wood products can not be used for energy recovery and recycling: Energy recovery		Recycling		Reuse	
			A1-A3	C1	C2	C4	D	C3	D	C3	D	C3	D
Global warming potential (total)	GWP	kg CO_2 eq	-736	0.335	1.71	55.6	-0.105					866	-124
Depletion potential of the stratospheric ozone layer	ODP	kg CFC-11 eq	9.14E-12	6.68E-17	2.59E-16	1.85E-13	-5.89E-16					0	-9.10E-12
Acidification potential of land and water	AP	kg SO_2 eq	0.724	0.00120	0.00351	0.153	-1.85E-04					0	-0.711
Eutrophication potential	EP	kg $(PO_4)^{3-}$ eq	0.242	2.72E-04	8.25E-04	0.0190	-3.18E-05					0	-0.240
Photochemical ozone creation potential	POCP	kg Ethene eq	0.693	1.12E-04	-0.00136	0.00982	-1.40E-05					0	-0.691
Abiotic depletion potential – elements	ADPe*	kg Sb eq	9.12E-05	5.26E-09	2.80E-08	5.45E-06	-2.13E-08					0	-8.97E-05
Abiotic depletion potential – fossil fuels	ADPf*	MJ	1445	4.51	22.9	793	-1.55					0	-1,350

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

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PROGRAMME-RELATED INFORMATION AND VERIFICATION

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