

# Lunawood ThermoWood® Description

Essential characteristics	Pine (Pinus sylvestris)	Spruce (Picea abies)	Harmonized standard
Density	420 kg/m <sup>3</sup>	420 kg/m <sup>3</sup>	SFS-EN 317
Reaction to fire	D-s2,d0*	D-s2,d0*	SFS-EN 13501-1 + A1
Screw traction resistance	19,45 ± 1,47 N/mm <sup>2</sup>	-	SFS-EN 13446
Thermal conductivity	0,09 W/mK	0,09 W/mK	EN ISO 13787 + EN 12667
Durability class	Class 2 Thermo-D	Class 2 Thermo-D	EN 350-1
Use class	Class 3 Thermo-D	Class 3 Thermo-D	EN335
Stability, shrinking and swelling	Tangential fibre direction 4% Radial Fibre direction 2%	Tangential fibre direction 4% Radial fibre direction 2%	SFS EN 317
Equilibrium moisture content	6,40 %	7,30 %	EN 13183-1
Brinell Hardness	1,4 N/mm <sup>2</sup>	1,52 N/mm <sup>2</sup>	SFS-EN 1534
Janka	1700 N	1700 N	ASTM D143-94
TVOC	Thermo-D 0,077 mg/m <sup>2</sup> h	Thermo-D 0,022 mg/m <sup>2</sup> h	ISO 16000-9:2006 SFS-EN 16516:2017
CO2 emissions (EPD)	117 kg CO <sub>2</sub> eq/m <sup>3</sup>	117 kg CO <sub>2</sub> eq/m <sup>3</sup>	Lunawood EPD

\*Lunawood's flat tongue&groove cladding products of pine and spruce with a minimum actual thickness of 17 mm have the fire class D rating.

## TREATMENT CLASS

Thermo-D, where D stands for durability, has caramel brown tone. Its durability and stability are improved significantly. Thermo-D is thermally modified at 212°C and is suitable for internal and external applications without the need for chemical preservative treatment. Patented ThermoWood® process enhances Nordic wood's properties throughout the wood.



Thermo-D

## DIMENSIONAL STABILITY

Lowered equilibrium moisture content of Lunawood ThermoWood® makes it dimensionally stable and the material retains its shape far better than untreated wood. The outstanding dimensional stability allows Lunawood to be successfully used in all climates and even in hot and humid weather conditions indoors and outdoors.

## USE CLASS

Thermo-D is suitable for Use class 3 (EN 335) applications, "situations in which the wood is above ground and exposed to the weather (particularly rain)" It is suitable for use as cladding facades, rainscreen, decking and many other external applications. Lunawood ThermoWood® is not recommended for use in direct contact with the ground.

## DURABILITY

Thermo-D is classified as durability class 2 (EN 350) "durable" and carries a Building Research Establishment (BRE) endorsement stating an expected service life of 30 years when used as cladding and decking. Durability and colour is consistent throughout the piece.

## TERMITE RESISTANCY

Lunawood ThermoWood® is not termite resistant. Lunawood can be treated with specialist termite chemical treatments.

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## NON-TOXIC

Lunawood ThermoWood® is a pure organic material produced using only natural methods – heat and steam – without chemicals.

## LEACHING

Thermo-D will not leach colour. Minor release of the color pigment is possible during the first rains and in humid spaces like sauna and spa.

## RESIN FREE

Due to the thermal modification Lunawood ThermoWood® products are pure, safe, and hygienic for indoor use, even for allergy sufferers who are prone to wood-related reactions. From the visual point of view, surface treated Lunawood ThermoWood® retains its colour beautifully and does not secrete any resin through the paints or tints. And furthermore, thanks to the resin-free property, the knots don't show up through paints or tints even over time.

## SCENT

Lunawood ThermoWood® has a characteristic and elegant scent. Scent emerges in heat treatment from natural components of wood, along with other desirable properties. Scent has similarities with other products where heat and aroma are elements, like coffee extracted from roasted coffee beans, smoked foods, BBQ where smoke flavour is important, whiskey and cognac which are aged in flame treated barrels.

## INDOOR AIR QUALITY -EMISSIONS

Lunawood ThermoWood® total emissions are significantly lower than untreated softwood. TVOC (Total Volatile Organic Compound) for Thermowood is 0,04 mg/m<sup>2</sup>h. For comparison, untreated Scot Pine has TVOC of 1 mg/m<sup>2</sup>h. Emission profile is also different, like scent. Emissions will decrease overtime from their already low levels.

## ACOUSTIC

Lunawood ThermoWood® walls, ceilings, floors, or other interior elements naturally soften noise by creating a soft, sound-breaking surface in the space. Echo is reduced on wooden surfaces, which reduces the noise level in the premises. The porous wood surface does not reflect sound in the same way as hard and artificial materials. According to the tests, Lunawood ThermoWood® has 20% shorter reverberation than hard surfaces. When installed battens or Lunawood 3D profiles, the reverberation is even shorter.

## FIRERATING

Fire rating of Lunawood ThermoWood® products varies due to the design of the profile. Lunawood's flat tongue & groove cladding products of pine and spruce with a minimum actual thickness of 17 mm have the fire class D rating.

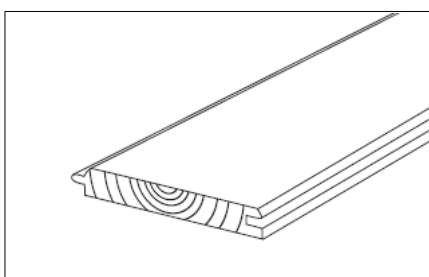
Lunawood provides its tongue&groove products also fire protected to (EN13501) Euroclass B-s1,d0 or B-s2,d0 depending on the profiles. Lunawood Battens can also be fire protected, but the structure needs to be fire tested on case by case basis.

## MACHINEABILITY

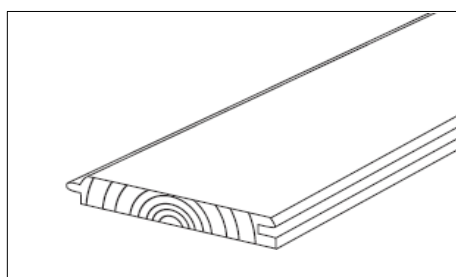
Processing does not affect the unique performance properties of Lunawood ThermoWood®, as it is modified throughout. Planing Lunawood gives its surface a superior quality. Sawing Lunawood is just as easy as sawing ordinary wood. Wear dust mask and eye protection when machining the Lunawood.

## USING SIDE

Our pine products have heart side as using side due to its better durability (Picture 1). Our spruce products have SAP (sapwood) as using side due to straight grain structure of spruce which reduces de-lamination (Picture 2).



Picture 1: Heart side as using side



Picture 2: SAP side as using side

## INSTALLATION

### CLADDING:

Lunawood cladding products should always be installed on support battens. Vertical battens (wood or metal) are spaced max. 600 mm centres. In vertical orientation, a double order of support battens is used to provide adequate air ventilation. The ventilation cavity should maintain a consistent minimum thickness of 25 mm to ensure drainage and ventilation. Lunawood ThermoWood® is not recommended to be installed in direct contact with the ground and thus sufficient ground clearance, based on the type of soil, is required. Stainless steel screws/nails are recommended. The minimum thickness in facade profiles is 19 mm.

### DECKING:

Lunawood decking profiles should always be installed on strong substructure. Double row of joists under the end points of the decking boards is recommended. Use spacing/insulation band to ensure capillary break between substructure and decking boards. Joist spacing for 26 mm thick decking boards is 450 mm. For 32 mm or thicker boards maximum joist spacing is 600 mm. The minimum thickness in decking profiles is 26 mm. Use Lunawood Profix hidden fixing to secure invisible fixing and 6mm gap between the boards. End-grain sealant is recommended.

For detailed information on fixings please refer to the Lunawood installation guide:

<https://lunawood.com/download-centre>

### GLUING

Gluing of Lunawood ThermoWood is possible. However, the gluing and compression time may be 4–6 times longer compared to un-modified wood. Good results can be achieved with most common adhesives, but PUR (Polyurethane-reactive adhesives) glue gives the best performance according to test results.

### WEARING OVER TIME

Like all timber products, Lunawood ThermoWood® will go grey upon exposure to UV and moisture, and in time may show some fine cracks or splits on the surface. The graying effect will be visible in a relatively short period of time, 3 to 6 months after installation (see examples below). It is recommended to apply UV-protected and colour pigmented wood coating to help preserve and maintain the original caramel brown colour and appearance.

## PHASES OF GREYING PROCESS



The year of construction 2020, South Africa. The graying process has begun. The boards most exposed to UV radiation start first to fade. Part of them very uneven. This is due to the inherent properties of wood and their variation.

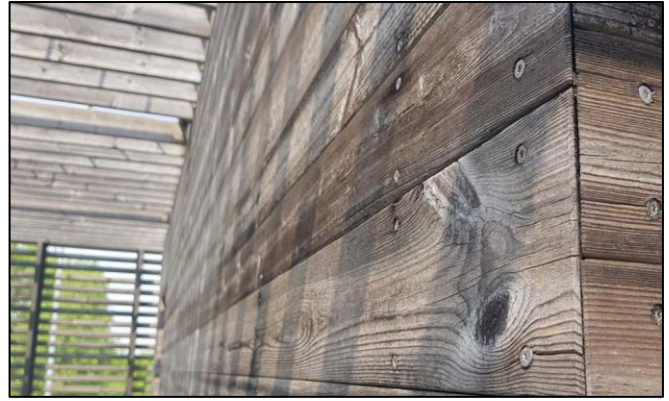


The year of construction 2020, photo 2022, the Netherlands. The compass point also affects the progress of the graying process. The color can sometimes be partially or completely black. Momentary humidity conditions also affect the prevailing tone of shades. The installation direction also affects the speed of the process.





The year of construction 2015, photo 2019, Portugal. The surface has taken on a beautiful silver-gray hue. The part of the wall in the shady area has still retained its original, albeit faded tone.



The year of construction 2009, photo 2019, Italy. Although the graying process has reached its end point, there are still shade variations in the surface according to the variation in the natural properties of the wood.

## SURFACE COATINGS

Linseed oil is not suitable for ThermoWood® because it enables fungal growth. Lunawood ThermoWood® will accept most high-quality surface coatings that are suitable for un-modified wood. It can be treated with tinted or pigmented wood oil, wax, wood-protecting stain, varnish or paint – which contains a UV-filter – which helps retain the surface color. The surface treatment can be applied either before or immediately after installation using only a thin coat. When coating, Lunawood ThermoWood® doesn't require four side treatment. Only weather exposed surfaces might be coated. It is always recommended to seal the cut ends.

## MAINTENANCE

Lunawood ThermoWood® is durable and does not require maintenance to withstand time. To keep the original appearance of ThermoWood®, surface treatment is required. The surface treatment should be renewed as necessary. The need for re-coating varies depending on the climate, amount of usage and the degree of exposure to UV-light.

## TRANSPORTATION AND STORAGE

Lunawood ThermoWood® should be carefully transported and stored horizontally in a manner consistent with other high-quality decorative wood materials. Store Lunawood ThermoWood horizontally on bearers at least 75 mm off the ground.

Lunawood ThermoWood profiles and accessories must be kept clean, dry, under cover and out of the weather. Avoid exposure to UV-light as Lunawood ThermoWood® will turn to silver grey. Store Lunawood in its original packaging or completely and tightly covered under a UV-protective wrap during installation phase to avoid graying of the surface and the formation of shade differences.

## HANDLING

Extra care must be taken during handling and installation so as not to damage the factory finish of the boards. Therefore, sorting of the boards should be done with support from both ends or the middle. The same care must be taken during transfer. Lunawood has a uniform color throughout the profile. Even small dents and scratches are not visible, and the surface can be sanded if necessary – and the product still has a beautiful original shade.

## WASTE DISPOSAL

Dispose off-cuts in the same manner as untreated wood. Lunawood ThermoWood® can be burned like untreated wood.

## LUNAWOOD THERMOWOOD® RAW MATERIAL CERTIFICATION

Lunawood has FSC and PEFC chain of custody certifications and is sourcing only from certified suppliers. Lunawood uses wood from sustainably managed Nordic forests.



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