

# LUNAWOOD®

PROVEN ENDURANCE

DECKING

FAÇADE

INTERIOR

INDUSTRY



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# **FINLAND. NATURE. LUNAWOOD®**

Finland: land of a thousand lakes and forests. For countless years the northern climate has created slowly grown natural wood. At Lunawood we thermally modify this high quality raw material into ThermoWood® enhancing wood's natural properties and at the same time respecting and preserving the environment.

Lunawood® – highest quality, totally natural and chemical free.

# **FROM SUSTAINABLE FORESTS**

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# OY LUNAWOOD LTD

Oy Lunawood Ltd, established in 2002 is an innovative pioneer in thermal modification of wood and it has grown to be the Global market leader of thermowood. The company status is based on the quality of its product and its production capacity.

Since its inception Oy Lunawood Ltd has grown rapidly to employ in excess of 60 people at two production plants in Finland. The annual production capacity has risen to 62,000 m<sup>3</sup> from which majority is exported.

The company is proud of its high quality products matched only by its personal and expert service. As the leading producer of thermally modified wood its reputation is built upon innovation, reliability and cooperation. Oy Lunawood Ltd maintains a fully inclusive operating procedure with customers and partners alike enabling the sharing of knowledge, the dissemination of product news and a robust communication network.

The high quality of Lunawood ThermoWood® starts from the raw material. The main wood species modified are PEFC certified Scots pine and Norway spruce, which are graded in accordance with our specific and strict requirements. For Scots pine and Norwegian spruce only sound knotted heart wood originated from top log is suitable for our products. The properties and quality requirements of the spruce that we use in production are similar to those of pine. In order to include knotless products to our product range, we also thermally modify non-native tree species such as Radiata pine.



# LUNAWOOD® THERMOWOOD®

The thermal modification process of Lunawood® utilises only high temperatures (between 190 and 212 °C) and steam. Therefore the end-product is completely natural and chemical free. It can safely be burned or recycled after its long service life (Nordic Ecolabel).

Lunawood® respects the natural properties of wood. The patented process is based on a gradual thermal modification, in which the chemical and physical properties of wood change permanently. ThermoWood® is a registered trademark licensed exclusively to member companies of the International Thermowood Association. The quality of ThermoWood® production is monitored by an independent third party.

## THE RESULT OF THERMAL MODIFICATION: DURABLE AND STABLE WOOD

### **IMPROVED DURABILITY AGAINST DECAY**

Due to the breakdown of the hemicellulose (sugar chains) the wood no longer contains sufficient nutritional substance to support decay-causing fungi (KOMO).

### **IMPROVED DIMENSIONAL STABILITY**

The equilibrium moisture content of wood reduces as a result of thermal modification and ThermoWood® becomes hydrophobic meaning that it does not absorb water easily. This improves its dimensional stability and thermal insulation properties.

### **RESIN IS REMOVED IN THE PROCESS**

### **LUNAWOOD® IS A STERILE PURE PRODUCT**

Bacteria are killed resulting in a sterile material. Harmful emissions, such as formaldehydes, are eliminated which makes Lunawood® pure and safe for indoor and outdoor use.

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# LUNAWOOD®: TWO HEAT TREATMENT CLASSES

Lunawood produces two standard thermal modification classes, LunaThermo-S and LunaThermo-D. The difference between the classes centres on differing heat treatment temperatures.

## LUNATHERMO-S

LunaThermo-S, where S stands for stability, has an attractive shade of light brown and the stability is greatly improved. It is heat treated with milder temperatures (190°C). LunaThermo-S products are suitable mainly for indoor applications, but can also be used in protected outdoor areas as well.

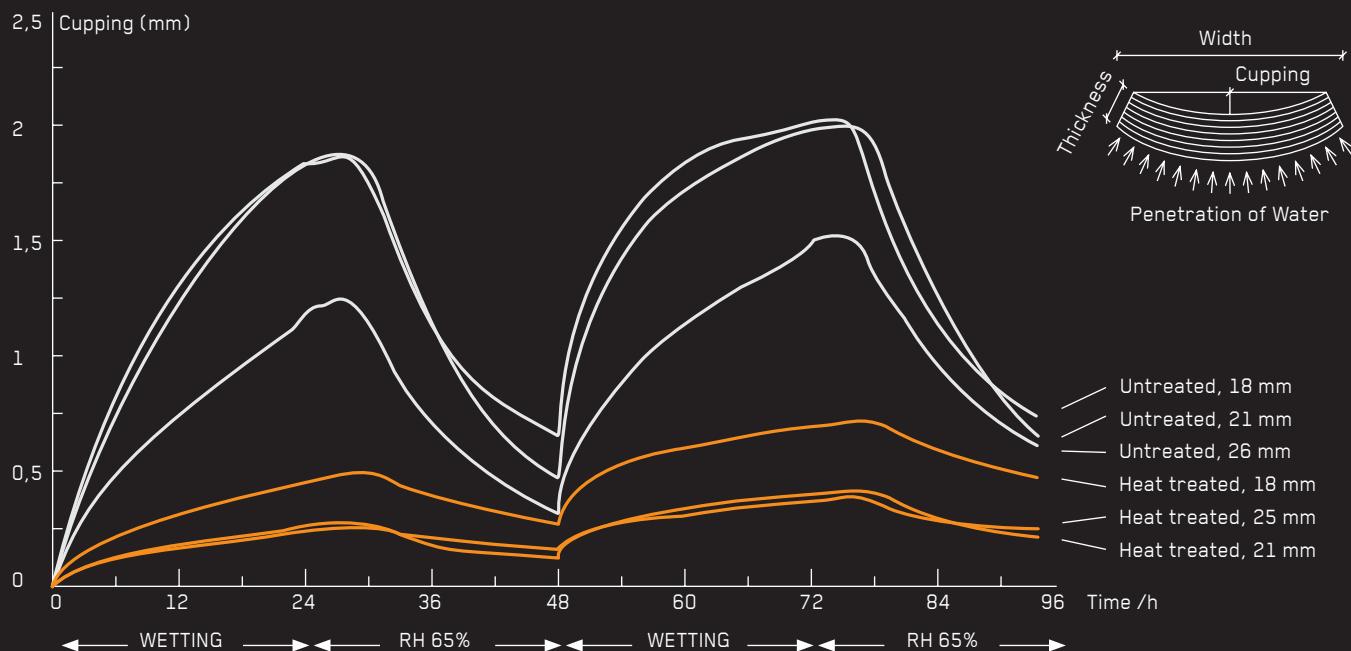
## LUNATHERMO-D

LunaThermo-D, where D stands for durability, has a darker brown tone. Its durability and stability are improved significantly. LunaThermo-D is thermally modified using higher temperatures (212°C) and products are suitable for both outdoor and indoor use.

## DURABILITY CLASS 2, SUITABLE FOR EXTERIOR USE (EN 350-1)

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## STABILITY DIAGRAM OF EXTERIOR CLADDING BOARDS



Cupping of exterior cladding boards: Comparison between LunaThermo-D and untreated Scandinavian pine and spruce in different thicknesses.

Source: Jari Virta, Helsinki University of Technology

## DURABILITY CLASSES OF DIFFERENT WOOD SPECIES

<b>1 (HIGHEST)</b>	Ipe	Teak			Cumaru	Impregnated wood A class	
<b>2</b>	<b>LUNATHERMO-D</b>	Iroko	Merbau	Western Red Cedar (WRC)		Impregnated wood AB class	
<b>3</b>	<b>LUNATHERMO-S</b>	Western Red Cedar (WRC)			Siberian Larch	Douglas Fir	
<b>4</b>	Norway Spruce		Scots pine			Douglas Fir	
<b>5 (WEAKEST)</b>	Birch	Aspen			European Ash		

Timber in durability class 2 is suitable for exterior applications above ground without the need for further treatment.





# LUNAWOOD® DECKING APPLICATIONS

Lunawood® is an outstanding deck material due to its stability and durability. Improved insulation properties make Lunawood® an excellent decking material, which balances the changes of heat and cold and makes it pleasant to walk on. Lunawood® decking is resin-free, light-weight and easy to work. Lunawood's unique PROFIX fastening clip enables quick and easy installation of the deck and creates a clean and elegant appearance without visible screws. It is an ecological, durable and chemical-free solution for creating the finishing touch to your home surrounding.

Our decking products are also available as factory oiled. 2 coats of pigmented wood oil are applied in a controlled factory environment creating an even coating and consistent colour tone. The product is ready to be installed and does not require immediate coating to secure the colour preservation.

In addition our product range provides wide decking boards produced by using glue lamination technology. Thanks to thermal modification and gluing we are able to offer 210 mm wide sound knotted deck boards with hidden PROFIX fastening system. The dimensional stability and bending strength are exceptional good.

**ANNUALLY OVER 300 000 M<sup>2</sup> OF NEW  
LUNAWOOD DECKS ARE BUILT IN EUROPE**

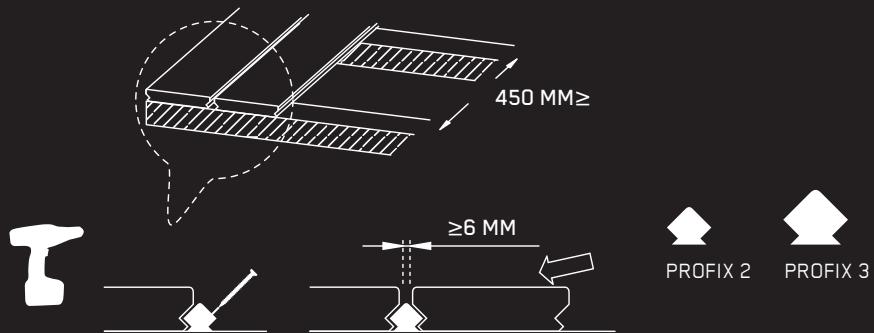
**bre**

BRE [the trading name of Building Research Establishment Limited] is a British independent and impartial, research based consultancy, testing and training organisation, offering expertise in every aspect of the built environment and associated industries.

BRE is able to conclude that the expected service life for LunaThermo-D used in the UK for exterior cladding and decking will be 30 years, when following manufacturer's guidance and best practice construction principles







## DECKING BOARDS

PROFILE	DIMENSION (MM)	SPECIES	CLASS
LUNADECK 2 PROFIX 2	26X92	PINE	LUNATHERMO-D
LUNADECK 2 PROFIX 2	26X117	PINE	LUNATHERMO-D
SHP	26X117	PINE	LUNATHERMO-D
LDR+ PROFIX 2	26X118	PINE	LUNATHERMO-D
SHP PROFIX 2	26X140	PINE	LUNATHERMO-D



LUNADECK 2 PROFIX 2  
26X92



LUNADECK 2 PROFIX 2  
26X117



SHP 26X117



LDR+ PROFIX 2  
26X118



SHP PROFIX 2  
26X140

## CONSTRUCTION

PROFILE	DIMENSION (MM)	SPECIES	CLASS
SHP	42X68	PINE	LUNATHERMO-D
SHP	42X92	PINE	LUNATHERMO-D
SHP	42X140	PINE	LUNATHERMO-D
LUNAPOST	88X88	GLUED PINE	LUNATHERMO-D



SHP 42X68



SHP 42X92



SHP 42X140



LUNAPOST 88X88

## LUNA SUNDAY

PROFILE	DIMENSION (MM)	SPECIES	CLASS
LUNA SUNDAY	34/40X185	OILED PINE	LUNATHERMO-D



LUNA SUNDAY PROFIX 3  
34/40X185

## LUNALAM

PROFILE	DIMENSION (MM)	SPECIES	CLASS
SHP PROFIX 2	26X160	GLUED PINE	LUNATHERMO-D
SHP PROFIX 2	26X185	GLUED PINE	LUNATHERMO-D
SHP PROFIX 2	26X210	GLUED PINE	LUNATHERMO-D



LUNALAM PROFIX 2  
26X160/185/210

## CLIP JUAN® TERRACE FASTENING SYSTEM

Clip JuAn® terrace fastening system is a patented, tested and award winning French innovation. Lunawood offers the complete package; quick and time saving Clip JuAn® terrace fastening system together with the pre-grooved Lunawood ThermoWood® 26x118 terrace products.

Rather than screwing the deck boards to the sub construction the boards are simply clicked to Clip JuAn® strips fastened to the joists. The fastening strip locates into a special groove on the reverse side of the deck board allowing easy and quick fastening. This kind of system is possible only with stable wood making Lunawood® a perfect material.

## CLIP JUAN® TERRACE FASTENING SYSTEM

PROFILE	DIMENSION (MM)	SPECIES	CLASS
LDR CLIPJUAN	26X118	PINE	LUNATHERMO-D



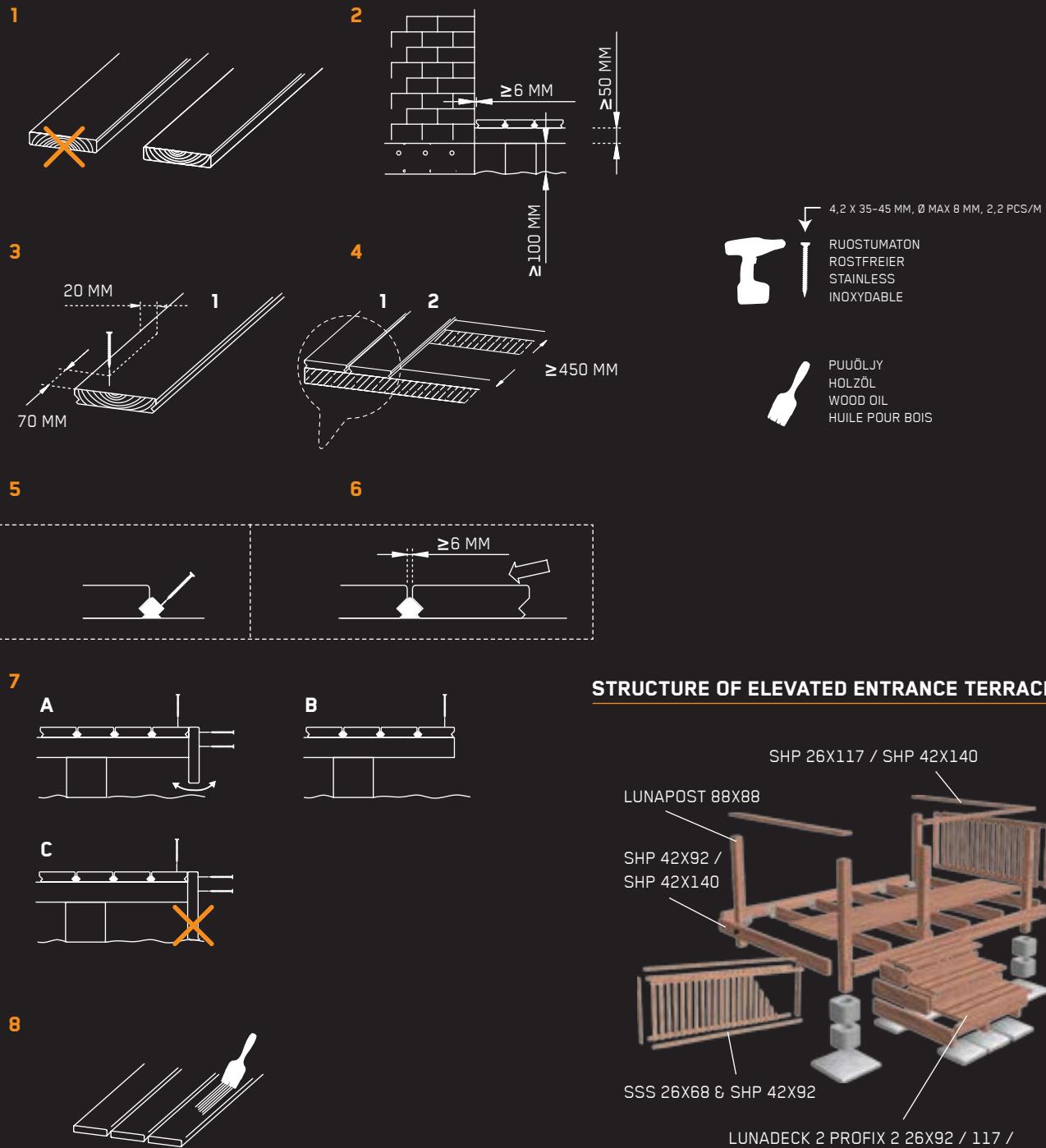
LDR CLIPJUAN 26X118



CLIP JUAN®



## INSTALLATION OF LUNAWOOD® DECKING









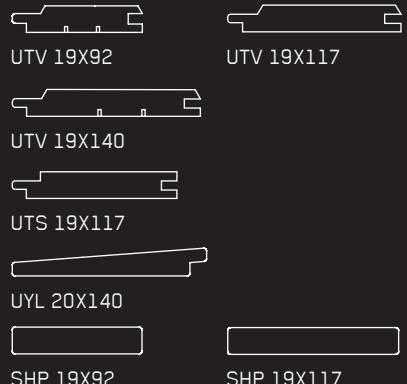
# LUNAWOOD® EXTERIOR CLADDINGS

Dimensionally stable and durable Lunawood® is an outstanding choice for exterior claddings and facades. Lunawood® allows Scandinavian softwood to be successfully used in hot and humid weather conditions. In addition all our cladding products have the European conformity mark, the CE – mark.

Also our product range provides wide cladding boards produced by utilising glue lamination technology. Thanks to thermal modification and gluing we are able to offer 210 mm wide sound knotted durable cladding boards with outstanding dimensional stability.

## EXTERIOR CLADDING BOARDS

PROFILE	DIMENSION (MM)	SPECIES	CLASS
UTV	19X92	PINE	LUNATHERMO-D
UTV	19X117	PINE	LUNATHERMO-D
UTV	19X140	PINE	LUNATHERMO-D
UTS	19X117	PINE	LUNATHERMO-D
UYL	20X140	PINE	LUNATHERMO-D
SHP	19X92	PINE	LUNATHERMO-D
SHP	19X117	PINE	LUNATHERMO-D



## LUNALAM CLADDING

PROFILE	DIMENSION (MM)	SPECIES	CLASS
UTS/UTV	19X160	GLUED PINE	LUNATHERMO-D
UTS/UTV	19X185	GLUED PINE	LUNATHERMO-D
UTS/UTV	26X210	GLUED PINE	LUNATHERMO-D



## PANEL SYSTEM

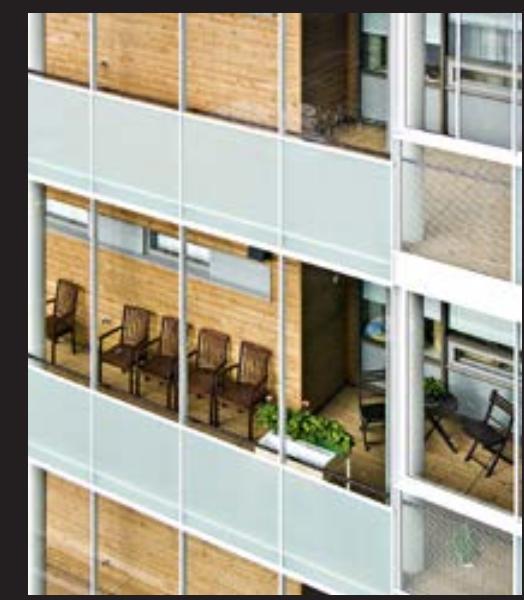
PROFILE	DIMENSION (MM)	SPECIES	CLASS
PANEL 68	19X68	PINE	LUNATHERMO-D
PANEL 117	19X117	PINE	LUNATHERMO-D
PANEL 185	19X185	PINE	LUNATHERMO-D



## SOLAR SHADES

PROFILE	DIMENSION (MM)	SPECIES	CLASS
SHP	42X42	PINE	LUNATHERMO-D
HALF PARALLELOGRAM/HSS	28/42X42	PINE	LUNATHERMO-D
PARALLELOGRAM/SSS	20/92	PINE	LUNATHERMO-D
PARALLELOGRAM/SSS	26X68	PINE	LUNATHERMO-D

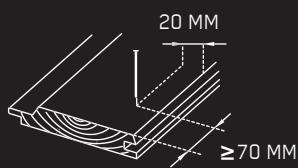




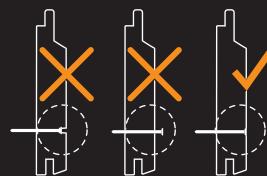


## INSTALLATION OF LUNAWOOD® CLADDING

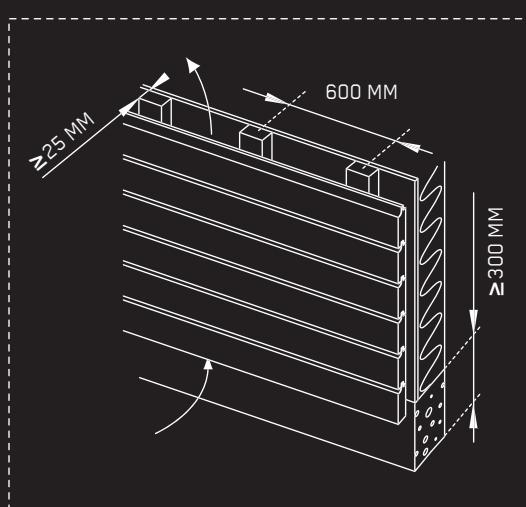
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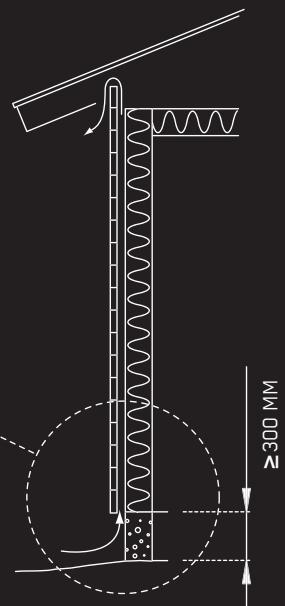
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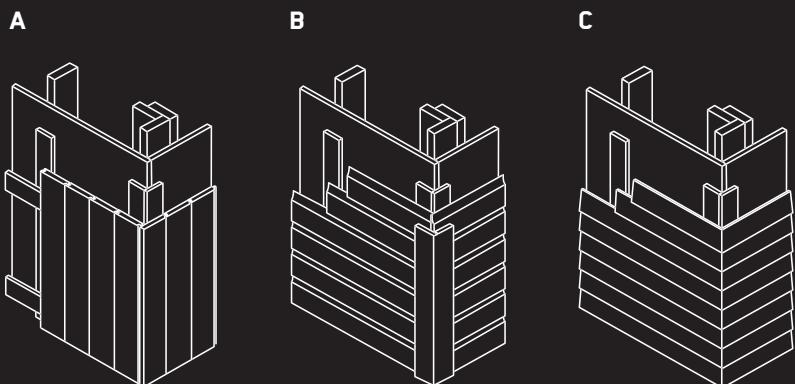
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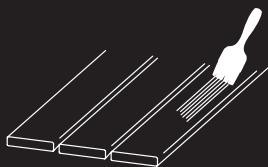
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5



6



**WITH WOODEN CLADDING IT IS IMPORTANT  
TO SECURE AIR VENTILATION**

BRE is able to conclude that the expected service life for LunaThermo-D used in the UK for exterior cladding will be 30 years, when following manufacturer's guidance and best practice construction principles.

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# LUNAWOOD® INTERIOR PRODUCTS

## INTERIOR DECORATION

The appearance of Lunawood® is soft and warm with a rich shade of brown. It is highly suitable for interior panelling and flooring, creating a cosy atmosphere in any home. The boards are easy to cut, shape and install. In addition to its attractive appearance the thermal modification of wood eliminates the risk of harmful emissions, such as formaldehydes; this makes the wood pure, safe and hygienic for indoor use even for those consumers prone to wood related reactions.

## SAUNA & BATHROOM

Lower thermal conductivity and improved stability of thermally modified wood makes Lunawood® an outstanding product in hot and humid environments. Further, it is a hygienic material without resin, which broadens the variety of end uses and applications. Lunawood® produces sauna & bathroom products both in dark and light brown tones.

## RADIATA PINE

Lunawood's product selection includes knotless wood material, Radiata pine originating from New Zealand. Thermal modification improves the dimensional stability of this fast grown species. Beautiful brown tone and the attractive appearance of the surface make it a decorative material for interior applications and saunas.

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## INTERIOR PANELS

PROFILE	DIMENSION (MM)	SPECIES	CLASS
STP	15X92	PINE	LUNATHERMO-D
PANEL SYSTEM	14X92	RADIATA PINE	LUNATHERMO-D
PANEL SYSTEM	19X185	RADIATA PINE	LUNATHERMO-D
PANEL SYSTEM	14X140	RADIATA PINE	LUNATHERMO-S



STP 15X92



PANEL SYSTEM 14X92/140



PANEL SYSTEM 19X185

## SAUNA BENCH

PROFILE	DIMENSION (MM)	SPECIES	CLASS
SAUNA SHP	26X92	PINE	LUNATHERMO-S
SAUNA SHP	26X92	PINE	LUNATHERMO-D
SAUNA SHP	26X92	RADIATA PINE	LUNATHERMO-D
SAUNA SHP	26X185	RADIATA PINE	LUNATHERMO-D



SAUNA SHP 26X92



SAUNA SHP 26X185

## FLOORING

PROFILE	DIMENSION (MM)	SPECIES	CLASS
HLL FLOORING 4 SIDE T&G	26X92	PINE	LUNATHERMO-S



HLL PP 26X92

# OTHER PRODUCTS AND INDUSTRIAL END USE

Lunawood® ThermoWood is an excellent material for use in a wide range of garden and landscaping products like fences, pergolas, posts or garden buildings such as gazebos and greenhouses.

All the improved properties in Lunawood® create many opportunities for its use in industrial applications. It is an excellent raw material for joinery products such as doors, windows, and garden furniture. In addition to planed profiles Lunawood provides thermally modified sawn timber in several dimensions. Our product range also includes glue laminated sound knotted wide sections. Thermowood does not include any chemicals so it can be used in kitchenware and worktops.

## THERMOWOOD SAWN DIMENSIONS

PINE	CLASS
19X100	LUNATHERMO-D
25X100/125/150	LUNATHERMO-D
32X75/100/125/150	LUNATHERMO-D
38X125/150	LUNATHERMO-D
50X50/75/100/150/200	LUNATHERMO-D

RADIATA PINE	CLASS
19X150	LUNATHERMO-D
25X200	LUNATHERMO-D
32X100	LUNATHERMO-D
32X200	LUNATHERMO-D

NORWAY SPRUCE	CLASS
22X150	LUNATHERMO-S AND -D
22X200	LUNATHERMO-S AND -D
22X225	LUNATHERMO-S
25X150	LUNATHERMO-D
25X200	LUNATHERMO-D
25X225	LUNATHERMO-S AND -D
25X250	LUNATHERMO-S AND -D







# GOOD TO KNOW ABOUT THERMOWOOD®

The following chapter will present some useful advice and recommendations on the use of Lunawood®. The purpose of this information is to help you to enjoy all the many benefits of using Lunawood® ThermoWood.

## DURABILITY

LunaThermo-D belonging to durability class 2 has a projected service life of 30+ years when resistance to decay is considered (BRE). This applies to exterior cladding and decking applications. However the decking material is subject to surface wear and loading which decreases the reasonable expected service life to 15–20 years. Thermowood is not recommended for use in direct contact with ground.

## EQUILIBRIUM MOISTURE CONTENT

After the thermal process the equilibrium moisture content of Lunawood® is 5 % (+/- 2%). In outdoor use (+20 Celsius, RH 85 %) the equilibrium moisture content of Lunawood® thermoD pine stabilizes at 10 % (EN 13183).

## FASTENING

### BY HAND

Thermal processing makes wood slightly more susceptible to splitting. For this reason we recommend using self-tapping screws with a coarse thread or pre-drilled holes before fixing. The screws should be stainless-steel and suitable for fastening wood. When using nails, they should not be closer than 7 cm from the end of the board or use pre-drilled nail holes. When using a conventional hammer, it is advisable to use a nail punch for the last 2–3 mm.

Tongue and grooved boards should be fastened using pre-drilled holes from over the top of the tongue so that the screw or thin nail is driven in at an angle of less than 40 degrees. In the installation the heart side should always be the weather exposed face.

### BY PNEUMATIC NAILING MACHINE

Good results can be achieved by using a small pneumatic nailing machine. However the pressure must be adjusted so that the nails are not driven too deeply into the wood.

## GLUING

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Gluing of Lunawood® ThermoWood is possible. However the gluing and compression time may be 4-6 times longer compared to untreated wood. Always follow the glue manufacturers' guidelines.

## INSTALLATION

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### DECKING

When building a deck it is always recommended to keep the deck off the ground to improve the air circulation below. The gap between the boards should be at least 6 mm to secure air ventilation and promote drainage of rain water. Any gap next to an adjoining wall should be at least 6 mm and the gap between two board ends should be 1-2 mm to allow for any movement.

### CLADDING

In claddings, ventilation should be provided behind the boards (22-25 mm). Please also note that there should be at least 30 cm between the ground and lower edge of the cladding.

## MILLING

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If Lunawood® is intended to be milled, the blades should be in good and sharp condition to ensure good end results. The light, fine-grained saw dust is readily extracted with no adhesion to the cutter blades. Further due to the fine-grained saw dust, it is recommended to use a respiratory protection mask.

## PLANING

Lunawood® can be planed with a normal planer or planing machine. Planing Lunawood® gives its surface a superior quality. The planing machine should be adjusted for hardwood species and the planing speed is less than with untreated similar wood. The raw material after thermal processing may be convex and therefore the feed rollers should be adjusted accordingly to prevent the boards from splitting.

## SANDING

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Sanding may not be needed with Lunawood® at all because the quality of the surface is so good after being planed and milled. However if Lunawood® is sanded the resin free material keeps your sand paper in good shape for a longer period of time.

## SAWING

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Sawing Lunawood® is just as easy as sawing ordinary wood. However the blade should be a sharp, fine-toothed saw and the wood should be fed slowly.

## SURFACE TREATMENT

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### OUTDOORS

Lunawood® ThermoWood should be surface treated before installation or immediately after installation if the beautiful brown colour is to be retained. The surface colour can be retained by treating the boards with tinted/pigmented wood oil, wax, wood-protecting stain, varnish or paint, which contains a UV filter. The surface treatment can be applied either before or immediately after installation using only a thin coat. Any excess should be wiped off. However one should always follow the manufacturer's recommended guidelines.

The surface treatment should be renewed as necessary. The need for re-treating varies depending on the climate, amount of usage and the degree of exposure to UV light. With painted untreated wood the typical interval between maintenance is approximately 5 years. With Lunawood® ThermoWood the maintenance interval in painting can be greatly extended, possibly three times longer than usual. By using a more stable material considerable costs can be saved in cladding and decking, taking into consideration the entire lifespan of the product.

### INDOORS

Normal paints, wood oils, waxes and varnishes can be used indoors. For saunas, paraffin oil can be used in addition to a surface treatment agent to emphasize the colour of thermowood and protect it from impurities.

## THE USE OF LUNAWOOD® WITHOUT SURFACE TREATMENT

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We recommend using some form of surface treatment to protect Lunawood® from air born impurities. However unfinished thermowood may be used. The brown colour of the surface will simply fade and turn to grey over time due to the influence of UV.

The weathered appearance of the wood is elegant and the beneficial properties remain intact. The surface of the wood merely creates a protective layer for itself. The original brown colour can be restored, using an effective washing solution after which a surface treatment can be applied.

However Lunawood always recommends the use of some kind of surface coating to protect the wood from airborne impurities and ease the cleaning.

## BENDING STRENGTH

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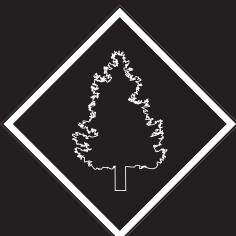
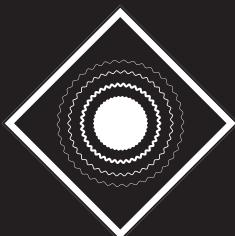
Bending strength properties are somewhat reduced with heat treatment class LunaThermo-D. Therefore it is not recommended to use Lunawood® in load bearing structures without additional support; or that strength calculations are carried out on a case-by-case basis.



LUNAWOOD® THERMOWOOD is produced by using only high temperatures and steam. This natural wood product is suitable for both indoor and outdoor use. It is attractive, durable, and non-toxic. Lunawood® is remarkably dimensionally stable and easy to machine and work.



[WWW.LUNAWOOD.FI](http://WWW.LUNAWOOD.FI)



**FROM  
SUSTAINABLE  
FORESTS**

**GREAT  
WEATHER  
ENDURANCE**

**THERMO  
WOOD**



**EASY TO  
ASSEMBLE**



**NON  
TOXIC  
0%  
CHEMICALS**

