

Stora Enso ThermoWood

Guidelines for installing and maintaining decking



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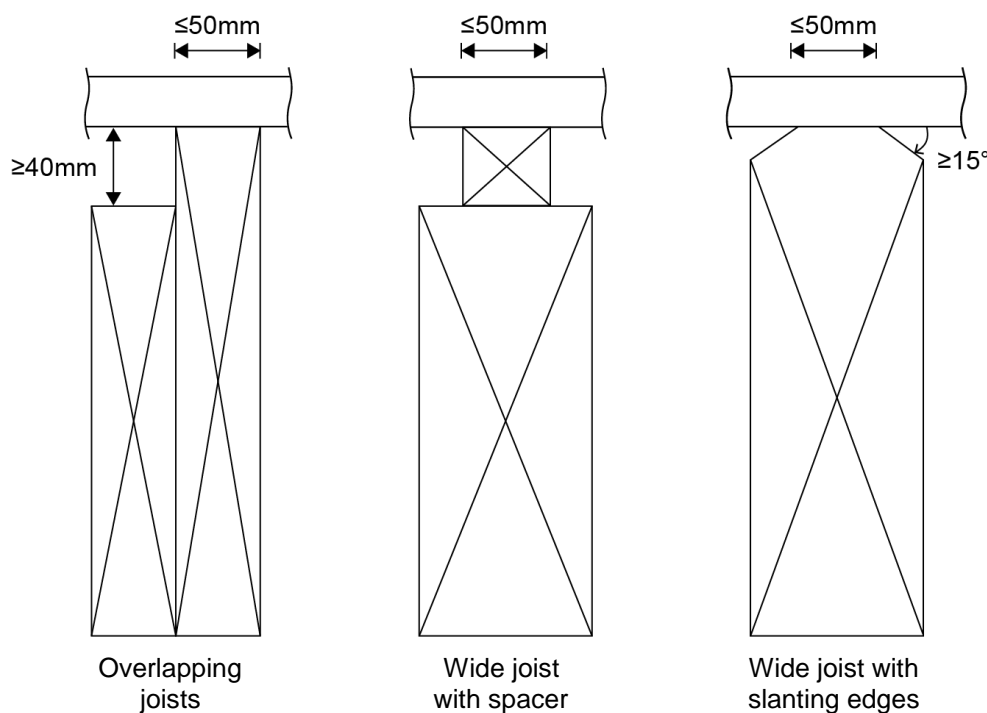
Design guidelines for ThermoWood decking

Stora Enso ThermoWood® shall not be used in ground contact or under such conditions that it is constantly or under prolonged periods exposed to water. A ThermoWood deck shall be designed to avoid water or plant residue being trapped in the construction. Prolonged exposure to water or decomposing debris in direct contact to the wood may lead to decay spreading into the ThermoWood. The deck shall be well ventilated to allow the wood to dry out between rainfalls.

Ventilation of the ThermoWood deck

A ThermoWood deck must be installed with adequate ventilation below the deck. The distance between the deck and ground below the deck shall be minimum 50mm. A water proof membrane below the joist is recommended to avoid capillary suction of water.

Joists are recommended to be maximum 50mm wide. If joists wider than 50mm are used, or if two joists are placed adjacent to each other, a distance element should be placed on top of the joist, or the joist or the top of the joists should be profiled as shown in the figure below.



Designs suggested to avoid water and debris accumulating on top of joists.

Storage and working with ThermoWood material

Packages of ThermoWood shall be stored protected against rain and snow. The packages should be stored flat with sufficient supports between packs to avoid distortion. Packs should be stored off the ground. Care should be taken to avoid unnecessary impacts or damages when cutting or moving the material, heavy handling could lead to unwanted splits or other damage.



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Sawing of ThermoWood can be carried out in the same way as working with other wood species. Sharp tools are recommended to give the best results. When using electric saws or planing equipment on site it is recommended to wear a dust mask as the dust particle size with ThermoWood is small, as might be expected with some hardwoods or MDF.

Distance between trusses

Recommended distance between trusses depends on the dimensions of the decking boards.

Table 1. Span recommendations for usual ground-based decking or ground-based stairs

Thickness of decking board (mm)	Recommended c-c span between trusses (mm)
26	400
32	500
42	600

Please note! Stora Enso ThermoWood is not a strength graded product and it is not recommended to be used in load bearing structures.

Distance between boards

The dimensional stability of ThermoWood is greatly improved as compared to untreated wood. ThermoWood swells and shrinks approximately half as much as untreated wood. This allows for a certain reduction of spacing between decking boards as compared to untreated wood.

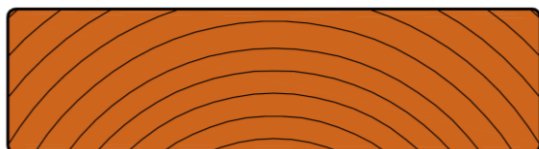
The distance between boards shall be minimum 6mm when the deck is exposed to rain to allow for water to be drained. The 6mm requirement applies both to distance between edges and distance between ends. Boards protected by roof may be installed with 3mm distance.

Orientation of ThermoWood to avoid growth ring loosening

ThermoWood made from spruce shall be produced and installed so that the sapwood face (outer face) of the board is turned towards the weather exposed surface. The inner face (pith face) of the board shall always be oriented away from the weather exposed surface, see the figure below. Failure to follow this instruction will almost certainly lead to some growth ring loosening around the pith.

Note that this does not apply to ThermoWood made from pine. ThermoWood made from pine can be used with either sapwood or heartwood side as weather exposed surface.

Spruce: sapwood / surface side up



Spruce: heartwood side / pith side down

ThermoWood decking made from spruce shall always be oriented with inner (pith) face turned down, away from weather exposed surface. Pine can be oriented with outer or inner face upwards.



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Surface protection and maintenance

ThermoWood decking will start to grey and weather in quite a short period of time, as all natural wood products exposed to weather. If left without surface protection small fissures will appear in the surface and the softer early wood in the growth rings will start to erode – this again is a common weathering feature of all wood material over time. As all materials which are exposed to weathering, ThermoWood can be affected by surface mould and staining fungi. This will not affect the integrity of the cladding and will only have a negative aesthetic effect on the material. Keeping the surface clean reduces the risk that dirt or organic residue may initialize discoloration or biological degrade.

The ends of the boards should preferably be treated with oil before the boards are installed to provide additional protection of the material. Oiling of the deck should be done immediately after instalment for improved weather resistance of the surface.

Inorganic oils are recommended. Purely organic oils such as Linseed oil and Bankirai-oil are highly nutritious and have led to an increase of mould growth. Solvent borne oils have shown deeper penetration into the wood as compared to water borne. Graying of the surfaces can be reduced by use of pigmented oils or oils containing UV-absorbents. Examples of recommended products for surface treatment are listed in Table 2 below.

Table 2. Recommended products for surface protection of ThermoWood decking.

Producer	Not pigmented	Pigmented
Flügger	Flügger Wood Oil Classic	Flügger Wood Oil Classic
Jotun	Jotun Wood Oil	Wood Oil + Trebitt Oljelasyr C-base such as 0682
Teknos	Woodex Wood Oil	Woodex TM4532/99 + Woodex oil or Teknoshield 4015
Tikkurila	Valtti Wood Oil	Valtti Wood Oil ThermoWood colour TVT 318R

Oil should be applied in a thin layer according to manufacturer's recommendations. Excessive use of oil does not improve protection of the wood, but may instead lead to build up on top of the surface and subsequent flaking, especially for oils containing UV-absorbents.

Surfaces should be oiled at regular intervals depending of the exposure to weather and UV-light. Suggested service intervals in various regions are stated in Table 3. Note that the service intervals may need to be shortened if the deck is in an exposed position such as in coastal areas.

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Table 3. Approximate service intervals for oiled ThermoWood decking

Geographic area	Minimum service frequency	Recommended service frequency
Nordic countries	24 months	12 months
North Europe	12 months	6 months
Central and Western Europe	6 months	4 months
South Europe	4 months	3 months

Maintenance intervals are highly dependent on parameters like climatic conditions and mechanical wear. Severely exposed ThermoWood may require more frequent treatment.

Fasteners and fixings

ThermoWood shall be fixed with stainless steel fasteners. Using normal steel will lead to rust stains and overall deterioration in the fixing due to the low pH of ThermoWood. Stainless steel should comply with the International Stainless Steel Standard code AISI 304.

Screws are recommended prior to nails. Pre drilling is recommended when ThermoWood is fixed with screws. Alternatively self-drilling screws are to be used. Pre drilling shall always be used close to board ends. Heads shall finish flush to the surface or penetrate marginally into the surface (1mm).

Environment and health

ThermoWood contains no added chemicals or preservatives. No toxic or harmful components have been found in ThermoWood (VTT 2001). However if wood splinters penetrate the skin remove as soon as possible as with normal material.

ThermoWood dust has smaller particle size than normal softwoods. It is comparable to MDF (although lower density) or hardwood dust. The dust removal system may need to be adapted to the smaller particles, and the wearing of a mask is recommended.

ThermoWood is a natural wood product without any chemicals added to it. When not glued or painted ThermoWood waste can be handled as any other untreated wood waste. ThermoWood is non-toxic and not classified as hazardous waste.

ThermoWood can be burned as untreated wood. There are no significant differences between the compounds of smoke from ThermoWood as compared to those from normal wood. It produces about 30% less energy than untreated wood, as the majority of the energy containing extractives has already been removed in the heat treatment process.

Read more:

www.storaenso.com/thermowood

