

Thermowood Pine provides a natural, durable, and aesthetic solution for modern architecture and wood applications, offering an environmentally friendly alternative

## 1. PRODUCT DESCRIPTION

Thermowood Pine is a natural and eco-friendly wood material obtained by treating Finnish pine wood under high temperatures and controlled steam conditions. The wood undergoes thermal modification at temperatures ranging from 180°C to 212°C without the use of chemicals, relying solely on heat and steam. This process enhances the structural properties of the wood, darkens its color, increases resistance to moisture changes, and improves insulation properties. Thermowood Pine is produced in line with sustainability principles and ensures long-lasting use.

## 2. GENERAL CHARACTERISTICS

Property	Specification
Wood Species	Pine ( <i>Pinus Sylvestris</i> )
Type and Origin	Finland
Treatment Type	Thermal Modification
Color Before Thermal Modification	Yellowish light brown
Color After Thermal Modification	Dark brown with homogeneous tones
Density (Before Thermal Modification)	480–550 kg/m <sup>3</sup>
Density (After Thermal Modification)	400–480 kg/m <sup>3</sup>
Outdoor Durability	High
Bending Strength	Medium to High
Janka Hardness	1.6–2.8 kN
Workability	Easily workable, suitable for nailing and screwing
Water Absorption Rate	Low
Dimensional Stability	High
Fire Resistance	Class D

## 3. THERMAL MODIFICATION PROCESS

Thermowood Pine is treated in a controlled atmosphere with steam at temperatures between 180°C and 212°C. This process causes chemical changes in the wood structure and provides the following benefits:

- **100% Natural:** Contains no chemical substances
- **Ecological:** Environmentally friendly and safe for human health
- **Durable:** Resistant to decay, moisture, and weather conditions
- **Stable:** Reduced risk of warping and cracking
- **Uniform Appearance:** Achieves a homogeneous color tone

- **Insulating:** Enhanced thermal and acoustic insulation properties
- **Safe:** Increased resistance to fungi and pests
- **Moisture Balance:** Low moisture content ensures dimensional stability

#### 4. PHYSICAL PROPERTIES

Property	Value
Moisture Content	4–7%
Dimensional Stability	2% – 3% (with humidity changes)
Thermal Expansion	Low
Thermal Conductivity ( $\lambda$ )	0.09 – 0.14 W/m·K
Bending Strength	30 – 45 MPa

#### 5. APPLICATION AREAS

Thermowood Pine offers both a natural appearance and high durability, making it suitable for a wide range of indoor and outdoor applications:

##### Outdoor Applications

- Façade cladding
- Decking systems
- Pergolas
- Fencing systems,
- Outdoor furniture

##### Interior Applications

- Wall and ceiling paneling
- Decorative elements
- Sauna construction

#### 6. MAINTENANCE AND CLEANING:

- **Outdoor Use:** Long-lasting; however, regular maintenance is recommended
- **Aging Process:** Naturally weathers to a silver-grey tone when exposed to sunlight
- **Surface Protection:** UV-protective oil is recommended

#### 7. ENVIRONMENTAL IMPACT AND SUSTAINABILITY:

- **Carbon Footprint:** Low carbon emissions during thermal modification
- **Energy Use:** Energy-efficient processes ensure minimal environmental impact
- **Recyclability:** Biodegradable at the end of its lifecycle

### 8. ENVIRONMENTAL IMPACT & SUSTAINABILITY

- **Cutting and Shaping:** Easily machinable with hand tools such as saws, planers, and routers
- **Installation:** Can be mounted using wood screws, stainless steel nails, or clip systems
- **Storage:** Should be stored in dry, well-ventilated areas, away from direct sunlight

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