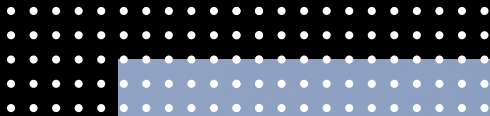


THERMOWOOD

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Thermowood Pine Data Sheet





Mechanical Properties, Strength Values	Kiln-Dried Pine	Thermowood Pine
Modules of elasticity (MOE), flatwise (MPa-N/mm ²) DIN EN 408, TS 2478	8529	7411
Modules of rupture (MOR), flatwise (MPa) DIN EN 408, TS 2474	76	31-42
Impact bending strength (IBS), flatwise (MPa) TS 2477	0.43	0.16
Compressive strength (CS), (MPa) TS 2595	42	44

Dimensional Stability 65%Rh 20° C	Kiln-Dried Pine	Thermowood Pine
Maximum swelling ratio, tangential (SW-T) (%) DIN 52184, TS 4083, 4084	8.6	3.22
Maximum swelling ratio, radial (SW-R) (%) TS 4083, 4084	4.42	1.5
Maximum swelling ratio, longitudinal (SW-L) (%) TS 4083, 4084	0.18	0.07
Maximum shrinkage ratio, tangential (Sh-T) (%) TS 4083, 4084	7.26	3.62
Maximum shrinkage ratio, radial (Sh-R) (%) TS 4083, 4084	4	1.79
Maximum shrinkage ratio, longitudinal (Sh-L) (%) TS 4083, 4084	0.16	0.08

Thermowood Pine has enhanced dimensional stability: Increased Stability | Minimized Deformations | Minimized Expansion and Shrinkage

Physical Properties, Moisture Content	Kiln-Dried Pine	Thermowood Pine
Equilibrium moisture content at 20/65 (%) EN 13183-1	11.6 (9-12)	4 (4-6)
Raw density at 20/65 (kg/m ³) DIN 52182	434-470	362-404

Biological Durability Against Wood-Decaying Basidiomycetes	Kiln-Dried Pine	Thermowood Pine
Increased durability to decay	No	Yes
Resins and sugars removed	No	Yes
Preliminary durability classification Median mass loss (< 5 %) CEN/TS 15083-1	-	Class 2

Thermowood Pine has low moisture content that prevents decay and fungi growth.

Surface Burning Characteristics of Buildings Material – Fire Resistance	Kiln-Dried Pine	Thermowood Pine
Fire resistance (UNCOATED) EN 13823	Class	D
	Smoke production	S2
	Flaming droplets/particles	d0
Fire resistance (COATED by using fire retardancy liquids) (immersed/impregnated wood) EN 13823	Class	A2/B
	Smoke production	S1
	Flaming droplets/particles	d0

Thermowood Pine has improved fire resistance.

Nail and Screw Holding Strength	Kiln-Dried Pine	Thermowood Pine
a. Stainless steel or galvanized screws and plastic clips are recommended. Hidden and face fixing systems EN 1383, NEN 6562 b. Steel material standard 10088-3	-	Class A2

Surface contaminations from fixation elements - Not delicate

Thermowood Pine has screw withdrawal strength.

Glueing	Kiln-Dried Pine	Thermowood Pine
Fingerjoints Laminations Panel production	-	MUF, Polyurethane

Brinell Hardness	Kiln-Dried Pine	Thermowood Pine
	-	15 N/mm2

Thermal Conductivity, Insulation	Kiln-Dried Pine	Thermowood Pine
Heat conductivity W/mK TS EN 12667	1.2	0.099

Freeze-Heat Shock Treatments	Kiln-Dried Pine	Thermowood Pine
1 Cycle: Freezing stage: 3 days -40°C as frozen wood and then Heating stage: 30 min 200°C in furnace as thermal shock effects Thermowood R&D test specs and ASTM-D 143-94 standards	-	OK-5 cycle (surfacequality) (no cracks) (no color change).

Emissions

- The emissions are not harmful in fresh air.
- The scent of thermo products may disappear within a few days, but with the surface treatment or rain, it may return. The products are 100% natural, environmentally friendly, and recyclable.

Color

- The color of the wood changes (Pine color is dark brown).
- The coatings are oil and water based.

Environment

- PEFC certified
- 100% natural
- 100% recyclable and biodegradable
- Low processing energy demand
- Sustainable development and a low carbon future
- Fast-growing plantation wood
- From renewable forests

Health and Safety

- Natural, harmless, and free of chemicals
- Completely healthy
- Improves the stability and durability of the wood without the use of persistent toxic chemicals

THERMOWOOD

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