

# PINE THERMO-D DATA SHEET

DAMOON THERMOWOOD



Mechanical Properties, Strength values	Pine, Kiln-dried	Pine, Thermowood
Modules of elasticity (MOE), flatwise (MPa-N/mm2) 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 20o C (Increased Stability) (Minimized deformations) (Minimized Expansion and Shrinkage)	Pine, Kiln-dried	Pine, Thermowood
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

Physical Properties, Moisture content	Pine, Kiln-dried	Pine, Thermowood
Equilibrium moisture content at 20/65 (%) EN 13183-1	11,6 (9-12)	4(4-6)
Raw density at 20/65 (kg/m3 ) DIN 52182	434-470	362-404

Biological durability against wood-decaying basidiomycetes (Increased durability to decay) (Resins and sugars removed) (Low moisture content prevents decay and fungi growth)	Pine, Kiln-dried	Pine, Thermowood
Preliminary durability classification Median mass loss (< 5 %) CEN/TS 15083-1	-	class2

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Surface burning characteristics of buildings material- Fire resistance. (Improved fire-resistance)		Pine, Kiln-dried	Pine, Thermowood
Fire Resistance (UNCOATED)	Class	-	D
EN 13823	Smoke Production	-	S2
	Flaming droplets/particles	-	dO
Fire Resistance	Class	-	A2/B
(COATED by using fire retardancy liquids) (immersed/impregnated wood)	Smoke Production	-	S1
EN 13823	Flaming droplets/particles	-	dO
Nail and screw holding strength (screw withdrawal strength)		Pine, Kiln-dried	Pine, Thermowood
a. Stainless steel or galvanised 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
Glueing		Pine, Kiln-dried	Pine, Thermowood
Fingerjoints Laminations Panel production			MUF, Polyuretane
Brinell Hardness		Pine, Kiln-dried	Pine, Thermowood
Brinell Hardness		Pine, Kiln-dried -	Pine, Thermowood
Brinell Hardness		Pine, Kiln-dried -	
Brinell Hardness		Pine, Kiln-dried -	
Brinell Hardness  Emissions		Pine, Kiln-dried  Pine, Kiln-dried	
			15 N/mm2
Emissions			Pine, Thermowood
Emissions The emissions are not harmful in fresh air.  The smell of thermowood products may disappear within a few but with the surface treatment or rain it may raise up again.			Pine, Thermowood
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Emissions The emissions are not harmful in fresh air.  The smell of thermowood products may disappear within a few but with the surface treatment or rain it may raise up again. 100 % natural, environmentally friendly and recyclable product  Thermal conductivity, Insulation (Decreased Thermal Conductivity)  Heat conductivity W/mK		Pine, Kiln-dried  - Pine, Kiln-dried	Pine, Thermowood  OK  Short Time  Pine, Thermowood
Emissions The emissions are not harmful in fresh air.  The smell of thermowood products may disappear within a few but with the surface treatment or rain it may raise up again. 100 % natural, environmentally friendly and recyclable product  Thermal conductivity, Insulation (Decreased Thermal Conductivity)  Heat conductivity W/mK TS EN 12667		Pine, Kiln-dried  - Pine, Kiln-dried  1.2	Pine, Thermowood  OK  Short Time  Pine, Thermowood  0.099
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Environment (100 % naturel) (recycleable) (from renewable forests)	Pine, Kiln-dried	Pine, Thermowood
PEFC certified	-	OK
100 % naturel	ОК	OK
100 % recyclable and biodegradable	ОК	OK
Low processing energy demand	OK	OK
Sustainable development and a low carbon future	ОК	OK
Wood industries on fast grown plantation wood	ОК	OK
From sustainably managed forests	OK	OK

Healty and safety	Pine, Kiln-dried	Pine, Thermowood
Definitely naturel and harmless. Free of chemicals.	ОК	ОК
Completely healthy.	ОК	OK
Improving the stability and durability of wood without using any persistent toxic chemicals	ОК	OK

#### Freeze-heat shock treatments

 $1\,\text{Cycle}$ : Freezing stage: 3 days -40°C as frozen wood and then Heating stage: 30 min 200°C in furnace as thermal shock effects.

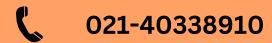
## Pine, Kiln-dried

### Pine, Thermowood

OK-5 cycle (surfacequlity) (no cracks) (no color change)







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