









# ASH THERMO-D DATA SHEET









Mechanical Properties, Strength values		Ash, Kiln-dried	Ash, Thermowood
Modules of elasticity (MOE), flatwise (MPa-N/mm <sup>2</sup> ) DIN EN 408, TS 2478		19.226	12.480 - 14.000
Modules of rupture (MOR), flatwise (MPa) DIN EN 408, TS 2474		131,8	56.6 – 85.7
Impact bending strength (IBS), flatwise (MPa) TS 2477		-	-
Compressive strength (CS), (MPa) TS 2595		-	-

Dimensional Stability 65%Rh 20°C (Increased Stability) (Minimized deformations) (Minimized Expansion and Shrinkage)		Ash, Kiln-dried	Ash, Thermowood
Maximum swelling ratio, tangential (SW-T) (%) DIN 52184 , TS 4083, 4084		10,3	5,3
Maximum swelling ratio, radial (SW-R) (%) TS 4083, 4084		5,8	2,9
Maximum swelling ratio, longitudinal (SW-L) (%) TS 4083, 4084		-	-
Maximum shrinkage ratio, tangential (Sh-T) (%) TS 4083, 4084		7,1	4,6
Maximum shrinkage ratio, radial (Sh-R) (%) TS 4083, 4084		3,9	2,03
Maximum shrinkage ratio, longitudinal (Sh-L) (%) TS 4083, 4084		-	-

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Physical Properties, Moisture content 		Ash, Kiln-dried	Ash, Thermowood
Equilibrium moisture content at 20/65 (%) EN 13183-1		10.1 (9-11)	4.2 (4-6)
Raw density at 20/65 (kg/m <sup>3</sup> ) DIN 52182		677-738	595-629
Biological durability against wood-decaying basidiomycetes (Increased durability to decay) (Resins and sugars removed) (Low moisture content prevents decay and fungi growth) 		Ash, Kiln-dried	Ash, Thermowood
Median mass loss with Coniophora puteana DSM 3085 (n = 30) (%) CEN/TS 15083-1		-	0,1
Median mass loss with Coriolus versicolor CTB 863A (n = 30) CEN/TS 15083-1		-	0,1
Preliminary durability Classification Median mass loss (< 5 %)		-	1 "very durable"
Surface burning characteristics of buildings material- Fire resistance. (Improved fire-resistance) 		Ash, Kiln-dried	Ash, Thermowood
a. Flame Spread Index (FSI) ASTM E84-16		-	a. 40 Class B or II
b. For British fire resistance EN 13501		-	b. Class D
Smoke developed Index (SDI) ASTM E84-16		-	200 Class B or II
By using fire retardancy liquids		-	OK
Nail and screw holding strength (screw withdrawal strength) 		Ash, Kiln-dried	Ash, 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 		Ash, Kiln-dried	Ash, Thermowood
Fingerjoints Laminations Panel production		-	MUF, Polyuretane
Brinell Hardness 		Ash, Kiln-dried	Ash, Thermowood
		-	30.5 N/mm <sup>2</sup>

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Emissions		Ash, Kiln-dried	Ash, Thermowood
The emissions are not harmful in fresh air.		-	OK
The smell of thermowood products may disappear within a few days but with the surface treatment or rain it may raise up again.		-	Short Time
Thermal conductivity, Insulation (Decreased Thermal Conductivity)		Ash, Kiln-dried	Ash, Thermowood
Heat conductivity W/mK TSEN 12667		1,2	0,099
Colour		Ash, Kiln-dried	Ash, Thermowood
Colour of the wood changes (Ash colour is dark brown)		-	OK
Oil and water based coatings		-	OK
Environment (100 % naturel) (recycleable) (from renewable forests)		Ash, Kiln-dried	Ash, Thermowood
FSC certified		-	OK
100 % naturel		OK	OK
100 % recyclable and biodegradable		OK	OK
Low processing energy demand		OK	OK
Sustainable development and a low carbon future		OK	OK
Healthy and safety		Ash, Kiln-dried	Ash, Thermowood
Definitely naturel and harmless. Free of chemicals.		OK	OK
Completely healthy.		OK	OK
Improving the stability and durability of wood without using any persistent toxic chemicals		OK	OK
			
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. Novawood R&D test specs and ASTM-D 143-94 standards.		-	OK-5 cycle (surface quality) (no cracks) (no color change).