



PRODUCT DESCRIPTION		
Size	Overall Thickness	12mm
Top layer	Type	Overlay+decor melamine impregnated paper
	Thickness	0.15mm
Core	Type	High density fiber board
	Thickness	11.7mm
	Color	Black
	Density	≥850kg/m ³
Balanced layer	Type	Melamine impregnated paper
	Thickness	0.15mm
Backing	Type	None
	Thickness	None
Bevel		4V nano bevel
Locking system		Tight lock
Type of installation		Floating
Underfloorheating compatibility		Yes but under certain condition- See installation instruction manual
DIMENSIONAL TOLERANCE		
Thickness tolerance		+/- 0.5mm
Width tolerance		+/- 0.2mm
Length tolerance		+/- 0.5mm
Height difference		Handscraped texture ≤ 0.30mm, Others texture ≤ 0.15mm
Gap between planks		≤ 0.20mm
Cupping up		≤ 0.15% of the planks width
Cupping down		≤ 0.2% of the planks width
End lift		≤ 0.5% of the planks length
Bowing		≤ 1.0% of the planks length
Squareness		≤ 0.2mm


	Norm	Test method	Requirement	Test results	Conclusion
CHEMICAL COMPOSITION					
Formaldehyde emission	CARB	ASTM D6007	≤ 0.11 ppm	0.046	Meet CARB phase 2 requirement
	EN 14041	EN 717-1	Release ≤ 0.124 mg/m ³	0.04	E0
VOC	Decret No2011-321	ISO 16000	TVOC<1000µg/m ³	5	VOC A
	DIBT	ISO 16000	TVOC<1000µg/m ³	24	Meet AgBB requirement - U mark certified
Ortho-phthalates	Prop 65	Spectrometry	Ortho-phthalate free	Not detected	Ortho-phthalate free, Comply with Prop 65
Lead	CPSIA	CPSC-CH-E-1002-08	≤ 90ppm	Not detected	Meet children toy regulation
PAHs	EU REACH regulation No. 1907/2006	Spectrometry and chromatography	<1mg/kg	Not detected	Meet requirement of product that can be put in mouth
PCP	EN 14041	EN 12673	<1ppm	Not detected	Pass
Substances of Very High Concern (SVHC) (mercury, chromium VI, Cadmium, SCCp, benzene, Xylene, tributyltin, etc)	EU REACH regulation No. 1907/2006	Spectrometry and chromatography	≤ 0.1% (w/w)	Not detected	REACH compliant

PHYSICAL PROPERTIES						
Dimensional variation (humidity change)		EN 13329	EN 13329	$\Delta W/\Delta L \leq 0.9\%$	$\Delta W/\Delta L \leq 0.28\%$	Pass
Swelling after submersion in water		EN 13329	EN 13329	18%	12%	Class 33, heavy commercial
		NALFA LF 01-2011	NALFA LF 01-2011	16%	12%	Class 4, heavy commercial
Impact sound reduction (IIC)		-	ASTM E492-09	-	NA	NA
Sound transmission reduction (STC)		-	ASTM E90-09	-	NA	NA
Thermal conductivity		EN 14041	EN 12667	-	0.123 W/(m.k)	Suitable for underfloor heating system
Thermal resistance (R value)		-	EN 12667/ASTM C518	-	0.103 m ² ·K/W	Suitable for underfloor heating system
Reaction to fire		EN 14041	EN 13051-1	-	PASS	Class Cfl -S1
Optical smoke density		-	ASTM E662	-	< 450	Pass
Critical Radiant Flux		-	ASTM E648	-	1.08W/cm ²	Class I
WATER RESISTANCE/Swelling		HDF	Finished Without Click	Finished With Click and Wax	Time before Start Swelling	Real Life Swelling Ratio
	Norms	EN 317	EN 13329	Similar to EN 13329	Real life test	Similar to EN 382-2
	Official Requirement	$\leq 15\%$	$\leq 18\%$	N.A.	N.A.	N.A.
Regular Laminate	Internal Standard	$\leq 10\%$	$\leq 18\%$	$\leq 12\%$	3H	9%
	Actual Value	7-9%	14-16%	8-11%	6-8H	4-8%
Atroguard	Internal Standard	$\leq 5.5\%$	$\leq 10\%$	$\leq 6\%$	24H	3%
	Actual Value	$\leq 5.5\%$	$\leq 10\%$	4-5%	25-28H	0-2%
SURFACE PROPERTIES						
Wear resistance		EN 13329	EN 13329	≥ 4000 cycles	5000	AC4, Class 32, General commercial
		NALFA LF 01-2011	NALFA LF 01-2011	≥ 4000 cycles	5000	AC4, Class 3, Commercial
Scratch		-	-	$\geq 4N$	4N	Pass
Surface bonding		NALFA LF 01-2011	EN311/NALFA LF 01-2011	1.25 N/mm ²	1.4 N/mm ²	Class 3, commercial
Static load (250LBS/115KG)		NALFA LF 01-2011	ASTM F970	≥ 8 Mpa	15	Class 4, Heavy commercial
Residual indentation		ASTM F1700	ASTM F1914	$\leq 8\%$ (140 lbs/63kg)	0.50%	Pass
		EN 16511	EN 433/ISO 24343-1	≤ 0.15 mm	0.03	Class 34, Heavy commercial
Impact resistance (big ball)		EN 13329	EN 13329	≥ 1600 mm	≥ 1600	IC3, Class 33, Commercial
		NALFA LF 01-2011	NALFA LF 01-2011	≥ 1400 mm	≥ 1400	Class 4, Heavy commercial
Impact resistance (small ball)		EN 13329	EN438	≥ 15 N	16	IC3, Class 33, Heavy commercial
		NALFA LF 01-2011	NALFA LF 01-2011	≥ 500 mm (19.7 in)	950	Class 4, Heavy commercial
Slipperiness		EN14041	EN 13893	DryCOF ≥ 0.3	0.43	Class DS
		-	ASTM C1028	≥ 0.5	NA	NA
		-	D 51130	$\geq R9$	NA	NA
Colour fastness to light		EN 13329	ISO 105-B02:1994, Method 3a	\geq Grade 6	≥ 6	Pass
		NALFA LF 01-2011	NALFA LF 01-2011	Slight change only	Slight change only	Class 4, Heavy commercial
Resistance to staining		EN 13329	EN 438-2	Group 1 and 2: grade 5, group3: grade 4	Group 1 and 2: grade 5, group3: grade 4	Class 34, Heavy commercial
		NALFA LF 01-2011	NALFA LF 01-2011	Slight change only	No change	Class 4, Heavy commercial

LEED SCORECARD

LEED was developed to address all buildings everywhere, regardless of where they are in their life cycle. From hospitals to data centers, from historical buildings to those still in the design phase, there is a LEED certification program for every building. Our products will contribute value to a building's LEED v4 Scorecard in the following LEED certification program categories recognized by the USGBC as per following

LEED program certification	Category	Credit title	LEED points attainable	Credit description	How our product contribute to obtain LEED points
 <p>BD+C Building Design and Construction</p> <p>Applies to buildings that are being newly constructed or going through a major renovation; includes New Construction, Core & Shell, Schools, Retail, Hospitality, Data Centers, Warehouses & Distribution Centers, and Healthcare</p>	<p>Indoor Environmental Quality</p>	<p>Credit 1: Enhanced Indoor Air Quality Strategies – Option 2 Additional Enhanced IAQ Strategies - option D</p>	<p>1 point ID&C, 2 points Retail CI</p>	<p>To reduce concentrations of chemical contaminants that can damage air quality, human health, productivity, and the environment.</p>	<p>1. TVOCs are less than 0.5mg/m3.</p>
		<p>Credit 2: Low-Emitting Materials – Option1 Flooring</p>	<p>1 point</p>		<p>1. VOC emission are less than 0.5mg/m3.</p>
		<p>Credit 4: Indoor Air Quality Assessment - Option 2 Air Testing</p>	<p>2 points</p>		<p>1. TVOCs are less than 0.5mg/m3.</p>
	<p>Material & Resource</p>	<p>Credit 4: Material ingredient – Option 2</p>	<p>1 point</p>	<p>Minimize the use and generation of harmful substances</p>	<p>The product is 100% REACH compliant</p>
		<p>Credit 6 – PBT source reduction: lead, cadmium and copper</p>	<p>1 point</p>	<p>To reduce the release of persistent, bioaccumulative, and toxic chemicals</p>	<p>The product is free of lead, cadmium and copper</p>
 <p>O+M Building Operations and Maintenance</p> <p>Applies to existing buildings that are undergoing improvement work.</p>	<p>Material & Resource</p>	<p>Credit 3: Purchasing - Facility maintenance and renovation</p>	<p>1 point</p>	<p>To reduce the environmental harm from materials used in building renovations</p>	<p>1. The product is 100% REACH compliant 2. TVOCs are less than 0.5mg/m3. 3. Test report according to ISO 16000 is available on request.</p>

LEED programm certification	Category	Credit title	LEED points attainable	Credit description	How our product contribute to obtain LEED points
 <p data-bbox="353 376 517 416">Interior Design and Construction</p> <p data-bbox="210 549 660 627">Applies to projects that are a complete interior fit-out; includes Commercial Interiors, Retail and Hospitality</p>	Indoor Environmental Quality	Credit 1: Enhanced Indoor Air Quality Strategies – Option 2 Additional Enhanced IAQ Strategies - option D	1 point ID&C, 2 points Retail CI	To reduce concentrations of chemical contaminants that can damage air quality, human health, productivity, and the environment.	1. TVOCs are less than 0.5mg/m3.
		Credit 2: Low-Emitting Materials – Option1 Flooring	1 point		1. VOC emission are less than 0.5mg/m3.
		Credit 4: Indoor Air Quality Assessment - Option 2 Air Testing	2 points	To establish better quality indoor air in the building	1. TVOCs are less than 0.5mg/m3.
	Material & Resource	Credit 4: Material ingredient – Option 2	1 point	Minimize the use and generation of harmful substances	The product is 100% REACH compliant
	Material & Resource	Credit 4: Material ingredient – Option 2	1 point	Minimize the use and generation of harmful substances	The product is 100% REACH compliant