



## Performance Requirements

### Results of Testing of Performance of the Product Under Both Concentrated Static Loads and Impact Loads

Property		Requirement		Result <sup>1</sup>	
		Minimum Ultimate Load (kN)	Maximum Deflection Under 0.89-kN Load (mm)	Ultimate Load (kN)	Deflection Under 0.89-kN Load (mm)
Concentrated load	decking at 50°C	2.45	2.0	2.35	6.34 <sup>2</sup>
	decking at 20°C			2.98	2.99
Impact load of 102 N-m (kN)	decking at 50°C	1.78	2.0	2.45	9.5 <sup>2</sup>

1 Test results for planks with supports at 400 mm o.c.

2 Deemed acceptable. Although this result exceeds the 2.0 mm requirement, the additional deflection is not considered significant for material at 50°C.

### Results of Testing of the Durability of the Product

Property	Requirement	Result	
		SPF Lumber	"Armadillo"
Bending stiffness	Mean percentage loss in bending modulus of elasticity (MOE) after ultraviolet (UV) exposure <sup>1</sup> and accelerated aging <sup>2</sup> must be less than or equal to spruce lumber	0.2%	18.5% <sup>3</sup>
Bending strength	Mean percentage loss in bending stress (MOR) after (UV) exposure <sup>1</sup> and accelerated aging <sup>2</sup> must be less than or equal to spruce lumber	9.2%	7.4%

1 4 500 hours of Xenon-Arc exposure following Cycle 1 of ASTM D 2565-99, "Standard Practice for Xenon-Arc Exposure of Plastics Intended for Outdoor Applications."

2 Five cycles of accelerated aging (wetting, freezing, thawing and drying).

3 Deemed to be acceptable in comparison to percentage loss of stiffness in lumber after aging.

## Results of Testing of the Product Performance

Property		Requirement		Result <sup>1</sup>	
		Minimum Ultimate Load (kN)	Maximum Deflection Under 1 kN (mm)	Applied Ultimate Load (kN)	Deflection Under 1 kN (mm)
Concentrated load	stair tread	5 <sup>2</sup>	13.5	6.3	0.67
	stair tread nosing	5 <sup>3</sup>		8.3	

1 Test results are for stair stringers spaced at 230 mm o.c. at a test condition of 50°C and 80% RH. Three specimens were tested for each test.

2 Applied through a 75-mm-diameter disk positioned at the centreline of the plank and midway between stringers.

3 Applied through a 38-mm-diameter disk positioned along the outside edge of the nosing at the stringer location.

## Additional Performance Data

### Results of Testing of Additional Performance Properties of the Product

Property		Unit	Reference value	Result
Coefficient of linear expansion (thermal)	longitudinal	cm/cm/°C	$\leq 2 \times 10^{-5}$	$3 \times 10^{-5}$ <sup>1</sup>

<b>Impact resistance (Izod impact, notched)</b>		J/m	≥ 53.4	37.0 <sup>2</sup>
<b>Hardness (11.28-mm-diameter ball)</b>		kN	≥ 1.8	8.1
<b>Slip resistance</b>	<b>dry condition</b>	≥ 0.5 ASTM D2394 -05(2011), Standard Test Methods for Simulated Service Testing of wood and Wood Base Finish Flooring		0.22 (with grain)
	<b>wet condition</b>			0.26 (against grain)
				0.43 (with grain)
				0.54 (against grain) <sup>3</sup>

1. The manufacturer's gapping installation instructions must address the linear expansion values.

2. The Izod impact is a small-scale test used to characterize the material. Very low performance values show a sensitivity to a loss of impact strength when the product is significantly damaged by a notch, cut or split. The results of the large-scale impact floor tests are the primary performance indicator with respect to floor impact loads.

3. Having fallen to 0.22 under the dry condition and 0.43 under the wet condition with grain, only the wet condition against grain met the 0.5 criterion. This criterion may not meet all occupant expectations. The manufacturer may be contacted for further information.

## Mechanical Properties

### Results of Testing of Basic Physical and Mechanical Properties for the Product

Property			Unit	Requirement	Result <sup>1 2</sup>	
<b>Dimensional change</b>	<b>Coefficient of linear expansion (thermal)</b>		Cm/cm/°C	≤ 2 X 10 <sup>-5</sup>	3 X 10 <sup>-5 3</sup>	
	<b>Coefficient of linear expansion (swelling)</b>		%	≥ 0.5, by 80% of specimens	0.00	
<b>Strength and stiffness</b>	<b>Modulus of elasticity (MOE)</b>		MPa	≥ 750	1 868	
	<b>Modulus of rupture (MOR)</b>		MPa	≥ 9	26.7	
<b>Creep, recovery and load duration</b>			%	≤ 25 for creep	39	
<b>Strength and stiffness after aging</b>	<b>Weathering</b>		%	≥ 75 of non-weathered value	103	
	<b>Accelerated aging</b>		%	≥ 50 of non-aged value	140	
	<b>Fastener holding capacity</b>	<b>grooved</b>	<b>nail withdrawal strength</b>	N	≥ 600	1 218
			<b>lateral nail strength</b>	N	≥ 720	1 870
		<b>solid</b>	<b>nail withdrawal strength</b>	N	≥ 600	3 646
			<b>lateral nail strength</b>	N	≥ 720	2 039

1 Average test results of six specimens, except for the "Creep, recovery and load duration" results that are from three specimens.

2 Test results were obtained to classify the product and are not intended to be used as engineering design properties.

3 Deemed as an acceptable performance based on manufacturer's gapping installation instructions.