

Bus | Coach | Train | Truck | Light Rail

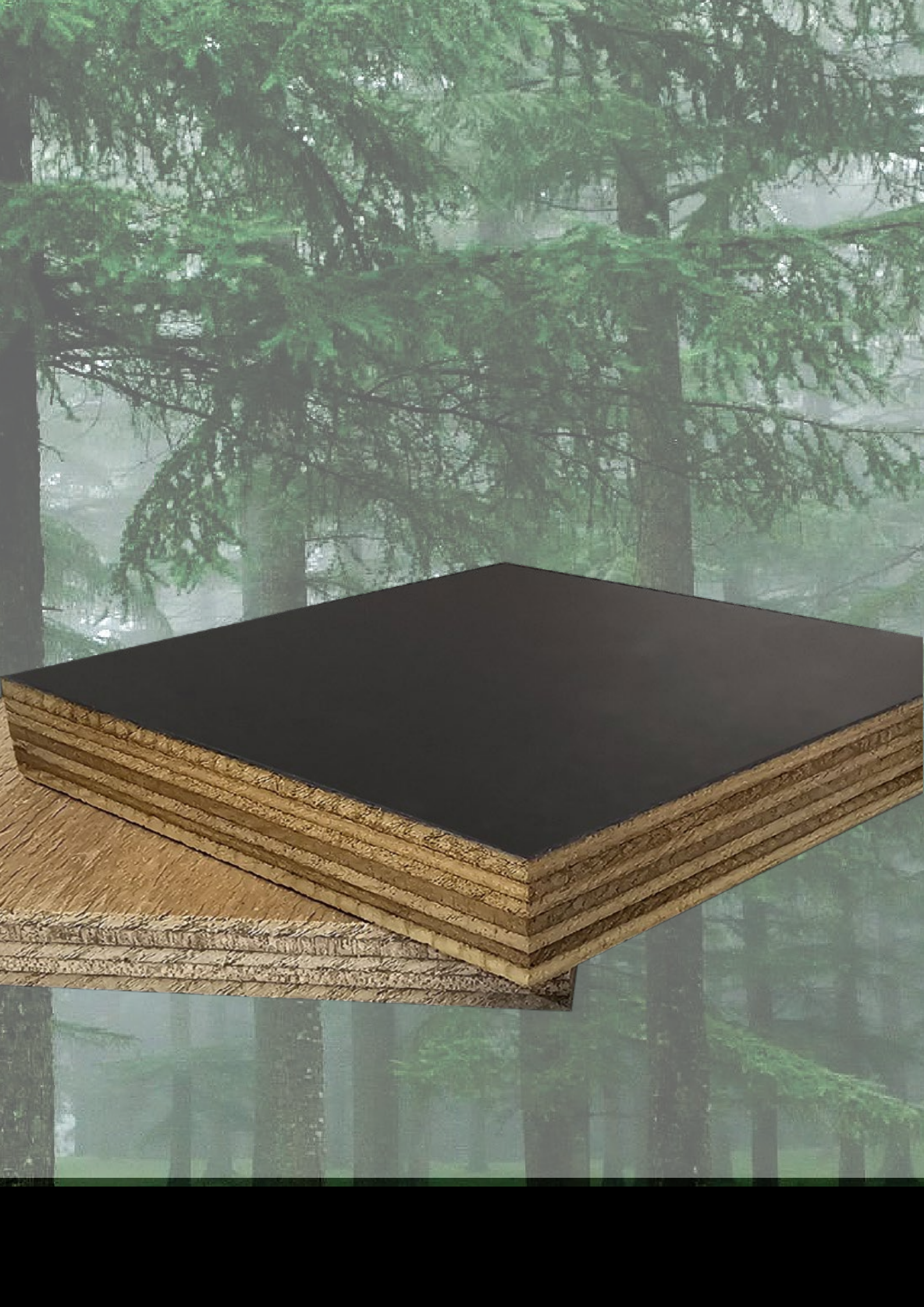
FLOORING

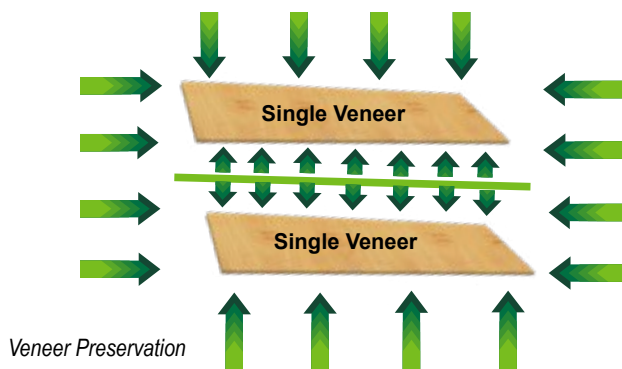
NiuCoach is a premium structural plywood floor panel which has a unique preservation treatment protecting the floor from fungal decay for at least 20 years. Manufactured from 100% sustainable plantation pine, NiuCoach utilizes the veneer preservation treatment method to ensure complete protection from fungal decay (rotting). Veneer treatment is the only way to ensure any unsealed cut panels will not decay.

NiuCoach is a premium structural plywood panel specifically designed for use on bus and coach floors



**As used by major manufacturers in Asia, Australia
and the South Pacific**





VENEER PRESERVATION

Manufactured from 100% sustainable plantation pine NiuCoach utilizes the veneer preservation treatment method to ensure complete protection from fungal decay (rotting). Veneer treatment is the only way to ensure any unsealed cut panels will not decay

Each individual sheet of veneer is preservative treated before being fabricated into plywood to ensure 100% penetration. The treated veneers are then bonded with a permanent phenolic resin which is often referred to as "A" bond or Marine "A" or Structural bond.

FEATURES & BENEFITS

- 100% Plantation pine with PEFC Chain of Custody.
- Manufactured using hydro-electric power.
- Lightweight and easy to install.

PRODUCT CERTIFICATION

NiuCoach exploits the structural and preservation advantages of a veneer treated sustainable plantation resource, manufactured under the controls of a Type 5 ISO 17065 JAS-ANZ product certification scheme.

PNG Forest Products' Engineered Wood Products are certified by the Engineered Wood Products Association of Australasia (EWPAA) and carry the EWPAA JAS-ANZ brand. The EWPAA operates an ISO 17065 Type 5 third party product certification scheme that is accredited by the peak accreditation body JAS-ANZ. This means that any product branded with the EWPAA JAS-ANZ brand has been manufactured under an accredited third party audited, process-based quality control program that ensures the product meets the intended design criteria.



NiuCoach P1S

NiuCoach P1S (paper 1 side) is a premium structural plywood panel specifically designed for use on bus and coach floors.



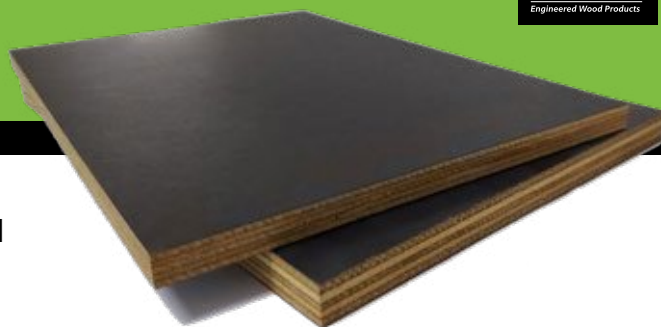
NiuCoach P1S has a heavy 215/435 gsm phenolic overlay coating 1 side.

Features and Benefits

- Larger scarf jointed panels available on request.
- Treated by veneer to hazard class H4 with ACQ (Alkaline Copper Quaternary).
- 215/435 gsm phenolic overlay coating one side minimising the chance of bi-metallic corrosion while ensuring a light weight panel.
- Long lasting and durable external surface (phenolic side).
- BS 476 Part 7 Class 2 reaction to fire test for phenolic overlay coated side*.

NiuCoach P2S

NiuCoach P2S (paper 2 side) is a premium structural plywood panel specifically designed for use on bus, coach and truck floors.



NiuCoach P2S has a heavy 215/435 gsm phenolic overlay coating both sides.

Features and Benefits

- Larger scarf jointed panels available on request.
- Treated by veneer to hazard class H4 with ACQ (Alkaline Copper Quaternary).
- 215/435 gsm phenolic overlay coating both sides minimising the chance of bi-metallic corrosion with a hard surface both sides
- Long lasting and durable external surface (both sides).
- BS 476 Part 7 Class 2 reaction to fire test for phenolic overlay coated sides.

NiuCoach BB

NiuCoach BB is a premium structural plywood panel specifically designed for use on bus and coach floors.



Features and Benefits

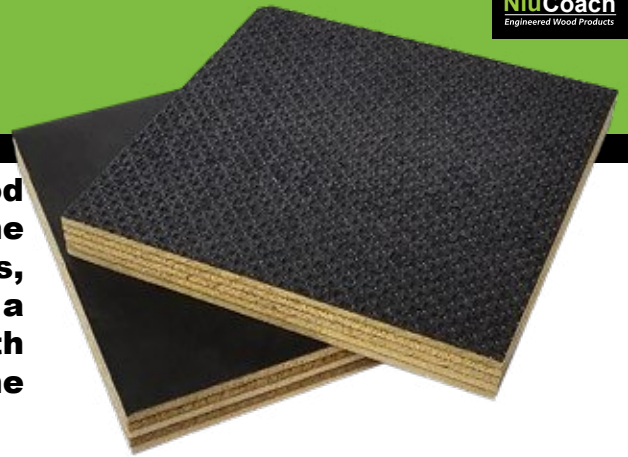
- Larger scarf jointed panels available on request.
- Treated by veneer to hazard class H4 with ACQ (Alkaline Copper Quaternary).
- B-grade sanded both sides (AS/NZS 2269)

Product/Attribute	NiuCoach		
	P1S	P2S	BB
Veneer Species	Hoop or Klinkii Plantation pine		
Surface Finish	Phenolic Overlay Coating 200/435 one sides	Phenolic Overlay Coating 200/435 both sides	Sanded B grade veneer face and back
Sheet Length	2400mm		
Sheet width	1200mm		
Nominal Sheet Thickness (mm) #	12, 15, 18		
Preservative treatment	ACQ H4 by individual veneer		
Bond type	"A" Bond (Phenol formaldehyde)		
EWPA Certificate	Product and PEFC Chain of Custody		
Design Life	20 years		
Manufacturing Structural Standard	AS/NZS 2269: Plywood Structural		
Preservation Standard	AS/NZS 1604: Preservative-treated wood-based products		
Treatment Warranty	50 years Koppers Treatment Warranty		

Overlay coating adds between 0.2 to 0.5mm per side

P1S, P2S, BB Structural Attribute	Thickness (mm)		
	12	15	18
Construction Code as per AS/NZS2269	12-24-5	15-30-5	18-15-7
Moment of Inertia (I_{par}) mm ⁴ /mm	115	225	270
Moment of Inertia (I_{perp}) mm ⁴ /mm	33	65	230
Section Modulus (Z_{par}) mm ³ /mm	19	29.5	29.5
Section Modulus (Z_{perp}) mm ³ /mm	8.3	13	29.5
Modulus of Elasticity - E_{par} & E_{perp} Mpa (Overlay 1 side, Overlay 2 sides, No Overlay)	12000/12000, 14000/14000, 12000/12000	12000/12000, 14000/14000, 12000/12000	12000/12000, 14000/14000, 12000/12000
Characteristic Strength Bending - f_b par & $perp$ Mpa (Overlay 1 side, Overlay 2 sides, No Overlay)	36, 45, 36	36, 45, 36	36, 45, 36
Characteristic Strength Tension - f_t par & $perp$ Mpa (Overlay 1 side, Overlay 2 sides, No Overlay)	22, 27, 22	22, 27, 22	22, 27, 22
Characteristic Strength Panel Shear (f_s $par/perp$) Mpa (Overlay 1 side, Overlay 2 sides, No Overlay)	4.8, 5.1, 4.8	4.8, 5.1, 4.8	4.8, 5.1, 4.8
Approximate Density Kg/m ³ (Overlay 1 side, Overlay 2 sides, No Overlay)	585 620, 550	580, 605, 550	575, 600, 550

NiuGrip



NiuGrip is a premium structural plywood panel specifically designed to be used in the transport industry as floors in light trucks, trailers and railway wagons. NiuGrip has a heavy 80/220 phenolic overlay paper with a slip resistant wire mesh pattern on one side.

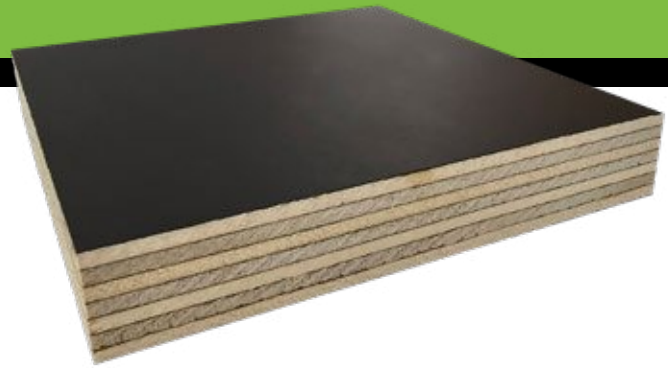
Features and Benefits

- 100% Plantation pine with PEFC Chain of Custody
- Manufactured using hydro-electric power
- High strength and slip resistant
- Available with optional durable veneer treatment to Hazard Class H4
- Phenolic 80/220 coating both sides
- Lightweight and easy to install/machine
- Applications
 - Vehicle floor
 - Trailer decks
 - Platforms

Veneer Species	Araucaria (Hoop or Klinkii) Plantation pine
EWPA certified	Yes
Sheet Length	2400 mm
Sheet width	1200 mm
Sheet Thickness	12, 15, 17mm
Face Back grade	80/220 gsm Phenolic overlay both sides
Average Density	590 kg/m ³
Preservative Treatment	Optional ACQ by veneer to H4
Moisture content:	<15% (despatch)
Tolerances:	Thickness +/- 4%
	Length, Width +/- 1.5mm
Glue:	Phenolic Resin – AS 2754.1
Bond:	Type A – AS/NZS 2098.2, Super E ₀ formaldehyde emission class
Finish:	Wire-mesh pattern face, smooth back
Bond type	“A” Bond (Phenol formaldehyde)
Dry friction slip test	AS 4586 Class D1
Wet pendulum slip test	AS 4586 Class P5
Manufacturing standards	AS/NZS 2260: Plywood – Structural Optional AS/NZS 1604: Preservative-treated wood-based products

Wire Structural Attribute	Thickness (mm)		
	12	15	17
Construction Code as per AS/NZS2269	12-24-5	15-30-5	17-24-7
Moment of Inertia (<i>I_{par}</i>) mm ⁴ /mm	115	225	285
Moment of Inertia (<i>I_{perp}</i>) mm ⁴ /mm	33	65	120
Section Modulus (<i>Z_{par}</i>) mm ³ /mm	19	29.5	33.5
Section Modulus (<i>Z_{perp}</i>) mm ³ /mm	8.3	13	19
Modulus of Elasticity - <i>E_{par}</i> & <i>perp</i> Mpa	14000	14000	14000
Characteristic Strength Bending - <i>f_b</i> <i>par</i> & <i>perp</i> Mpa	45	45	45
Characteristic Strength Tension - <i>f_t</i> <i>par</i> & <i>perp</i> Mpa	27	27	27
Characteristic Strength Panel Shear (<i>f_s</i> <i>par/perp</i>) Mpa	5.1	5.1	5.1

NiuTrain is a premium structural plywood panel specifically designed for use on train and tram floors.



Features and Benefits

- Larger scarf jointed panels available on request.
- Available with optional veneer treatment to hazard class H4 with ACQ (Alkaline Copper Quaternary).
- 215/435 gsm phenolic overlay coating one or both sides.
- Long lasting and durable external surface.
- BS 476 Part 7 Class 2 reaction to fire test for phenolic overlay coated both sides*.

Veneer Species	Hoop or Klinkii Plantation pine
Surface Finish	Phenolic Overlay Coating 215/435 both sides
Sheet Length	1200 or 1210mm
Sheet width	2400mm
Sheet Thickness	18mm nominal with overlay coating both sides
Face Back grade	BB
Average Density	600 kg/m ³
Preservative treatment	Optional ACQ H4 by individual veneer
Bond type	"A" Bond (Phenol formaldehyde)
EWPA Certificate	Product and PEFC Chain of Custody
Durability	20 years bond and preservation treatment
Manufacturing standards	AS/NZS 2269: Plywood Structural AS/NZS 1604: Preservative-treated wood-based products (if applicable)

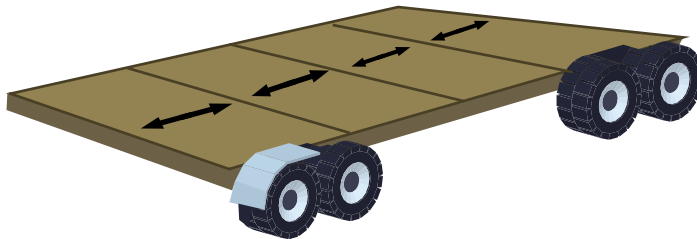
*TUV SUDPSB report no: 7191334523-MEC24-YWA

Structural Attribute (NiuTrain)	Panel Thickness – Excluding Overlays (mm)
	17
Construction Code as per AS/NZS2269	17-24-7
Moment of Inertia (<i>I_{par}</i>) mm ⁴ /mm	285
Moment of Inertia (<i>I_{perp}</i>) mm ⁴ /mm	120
Section Modulus (<i>Z_{par}</i>) mm ³ /mm	33.5
Section Modulus (<i>Z_{perp}</i>) mm ³ /mm	19.0
Modulus of Elasticity - <i>E_{par}</i> & <i>perp</i> Mpa (Overlay 1 side/Overlay 2 sides/No Overlay)	12000/ 14000/ 12000
Characteristic Strength Bending - <i>f_b</i> <i>par</i> & <i>perp</i> Mpa (Overlay 1 side/Overlay 2 sides/No Overlay)	36/ 45/ 36
Characteristic Strength Tension - <i>f_t</i> <i>par</i> & <i>perp</i> Mpa (Overlay 1 side/Overlay 2 sides/No Overlay)	22/ 27/ 22
Characteristic Strength Panel Shear (<i>f_s</i> <i>par/perp</i>) Mpa (Overlay 1 side/Overlay 2 sides)	4.8/ 5.1/ 4.8
Approximate Density Kg/m ³	600

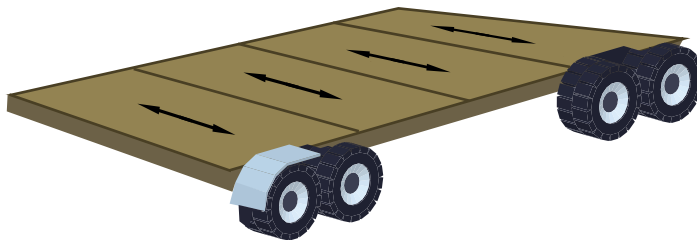
Trailer Floor Installation

Installation and Fixing Details

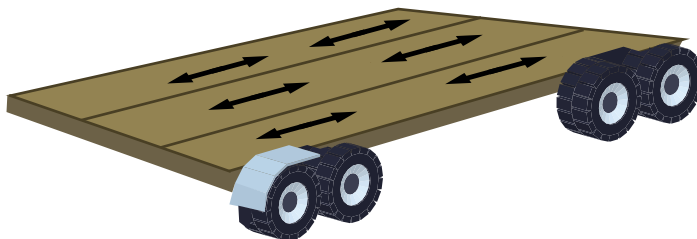
- The plywood edges must be sealed before assembly.
- All edges must be evenly supported.
- Joints between adjacent sheets must be on the same level with a minimum gap between the panels of 2mm.
- Joints must be filled with a flexible sealing compound.
- Fasten panels securely to supports with screw spacing around the edges of between 150 – 300mm and elsewhere 300 – 400mm.
- Screw heads to be a minimum of 10mm from any edge.
- Pre-drilling and countersinking of screws is recommended to avoid splitting of veneer around the screws.
- Screws types are to be compatible with the ACQ preservation treatment chemical to avoid the potential of bi-metallic corrosion of the screws and/or sub-frame.



**Transversal
Installation**



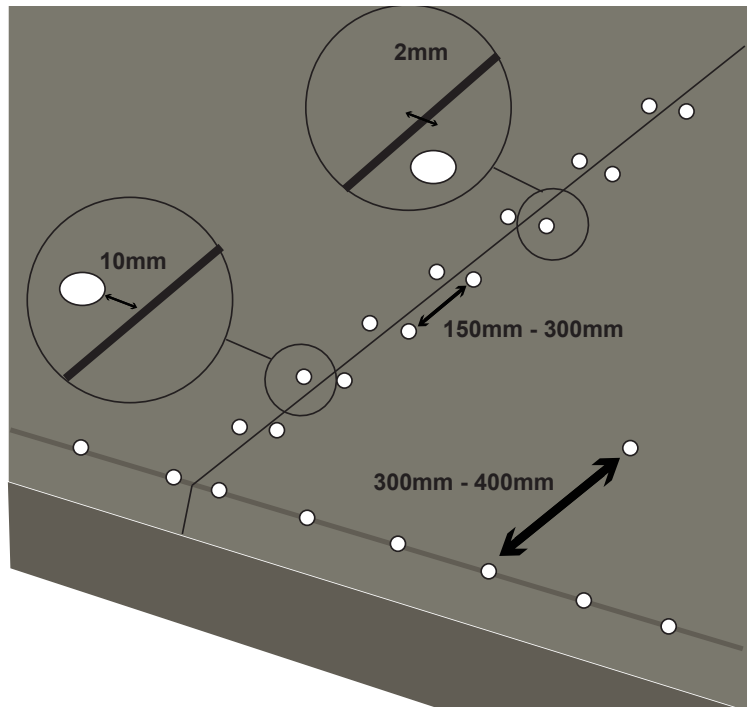
**Longitudinal
Installation**



Installation - Fixing Details

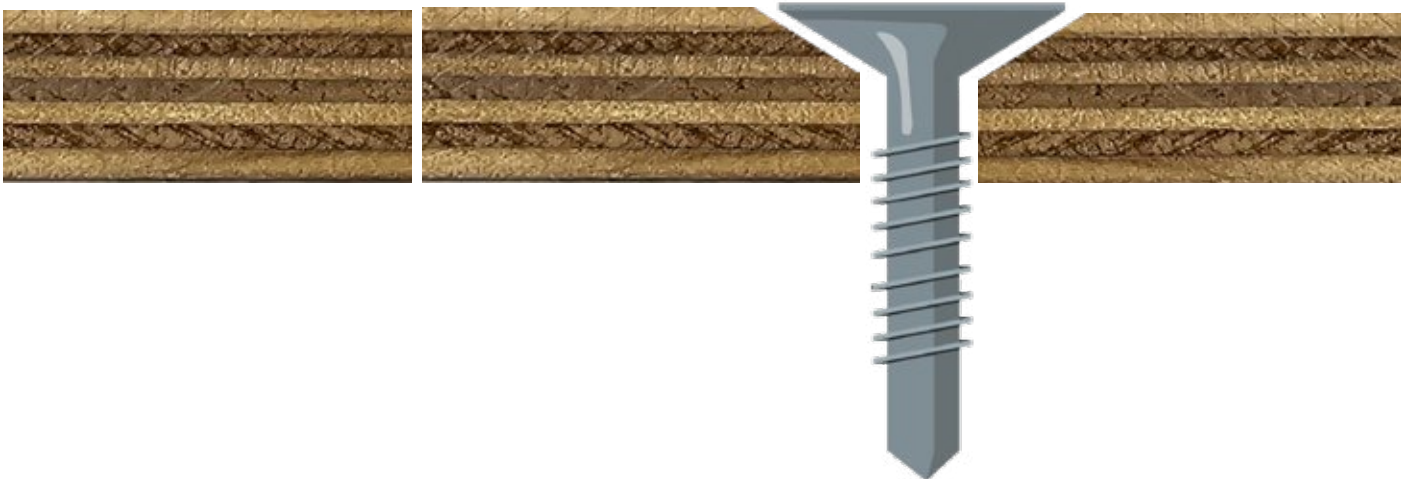
SCREW SPACING RECOMMENDATIONS

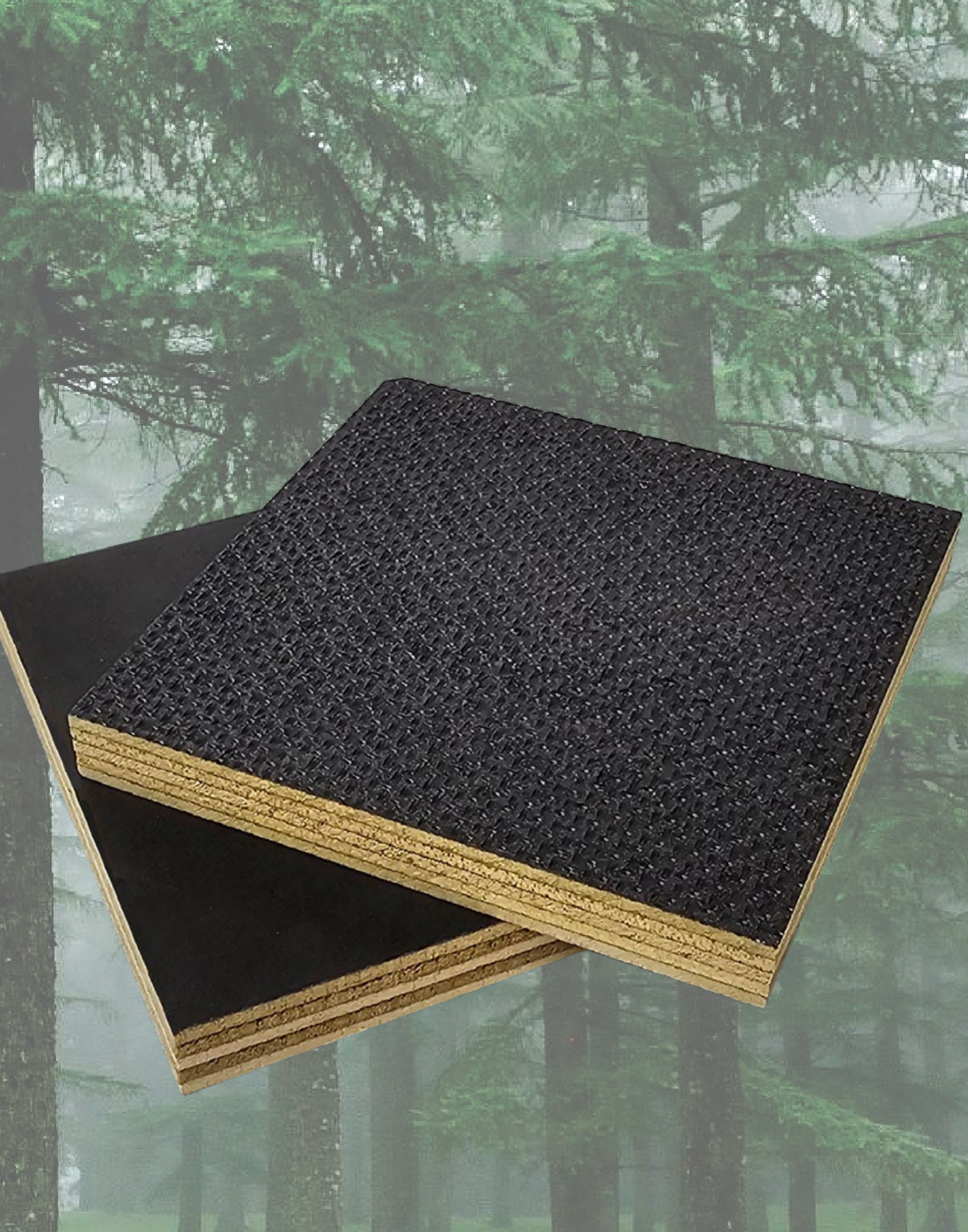
- Spacing between screws should be 150-300mm near to the edge and elsewhere 300-400mm.
- In order to avoid surface veneer from splitting, drilling with countersinking is recommended.
- Minimum distance with countersinking is 10mm from the nearest edge of the screw to the panel edge.
- Screws to be compatible with NiuCoach and sub frame.
- Screw head should be at the same level than the plywood surface.

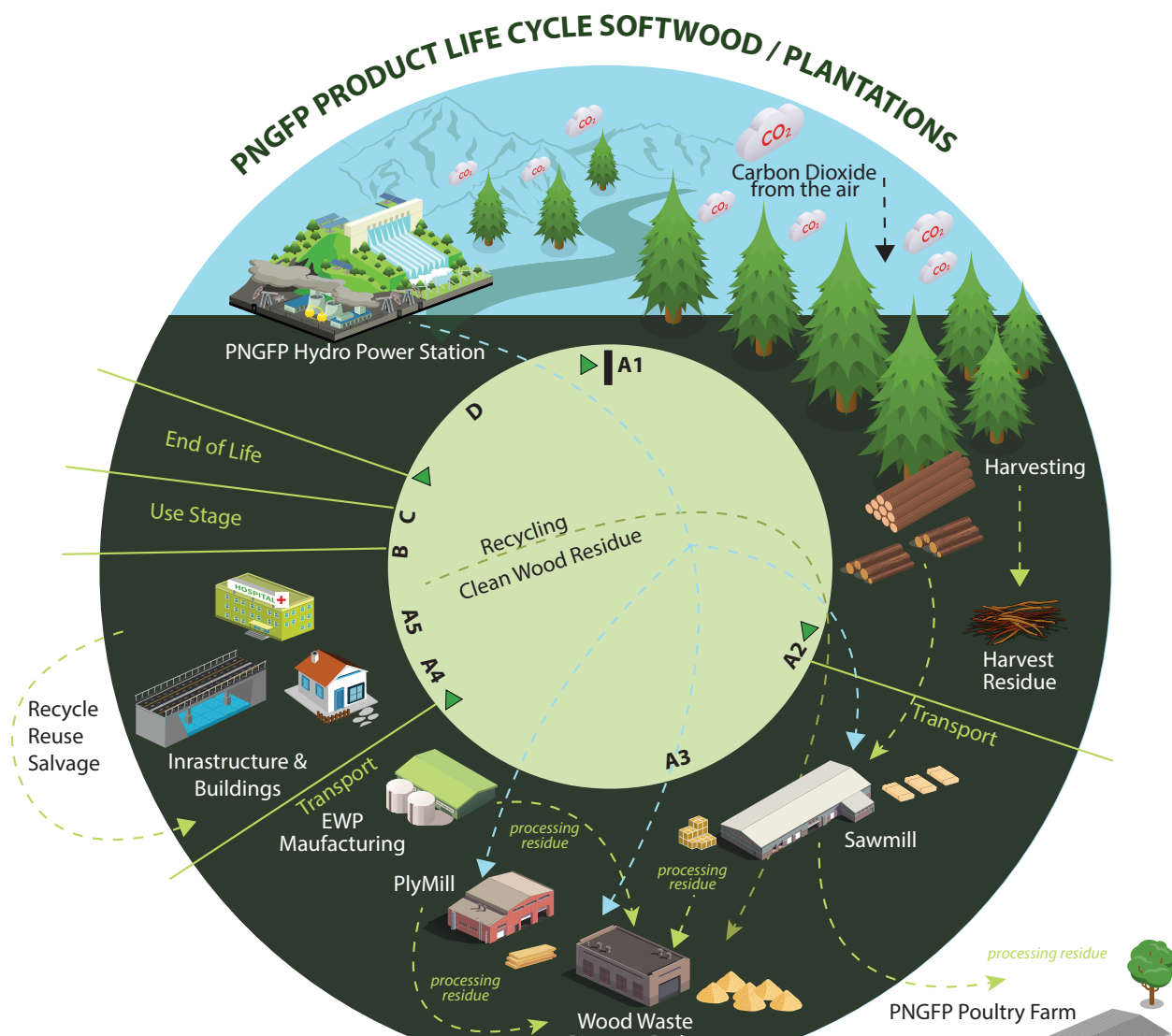


COUNTERSINKING

According to screw head shape is recommended







PNGFP NiuCoach has exceptional sustainability attributes being produced from high density plantation softwood using 100% sustainable hydro power, with all heat provided by a residue biomass boiler. A truly sustainable alternative, capturing and storing carbon from the atmosphere.

PNGF
NiuCoach
Engineered Wood Products

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FLOORING

Bus | Coach | Train | Truck | Light Rail



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