

Ecoply roofing & decking manual

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Advantages of Ecoply Roofing and Decking

Superior strength

- Strength properties published in engineering codes. Can be designed for high wind suction and high load performance for commercial use.
- Ecoply is made using veneers that are sonically Metriguard graded for reliable strength and stiffness.
- Sheet diaphragm bracing capacity to resist lateral wind and earthquake loads.
- Strong substrate for staples and fasteners under a wide range of roofing tile systems.
- Smooth surface on Ecoply Flooring (CD grade), for deck membranes.
- Range of thicknesses to suit many timber or steel frame spacings, flat or curved.

Superior durability

- Full exterior phenolic marine type bond.
- H3 treatment available for high moisture exposure. Minimises decay risk from:
 - solar driven or condensation moisture.
 - long construction periods.
 - high humidity industrial or swimming pool environments.
 - water splash at gutter edges.

Description and Purpose

This manual provides guidance for the use of Ecoply plywood products as a substrate for decking and roofing for residential, commercial and industrial buildings such as houses, hostels, hotels, offices and factories.

Ecoply is a strong durable panel manufactured from plantation grown *Pinus radiata* veneers bonded with phenolic (exterior, marine) Type A bond adhesive.

The Ecoply Roofing and Decking range (Table 1) includes BD, CD, and DD grade Ecoply Structural panels with square edges for general use, and two special products with grooved long edges and a structural plastic tongue (T&G).

Any of these products may be used in roofing and decking depending on the requirements of the specific roof or decking covering. See the “Roofing Types” section on Page 7, for specific requirements.

Ecoply Structural (BD, CD, DD grades)

- Sanded surface, B, C, or D grade face.
- D grade cross band under the face veneer contains knot holes and can be used for underlay under rigid coverings like ceramic tiles, parquet, or other use where surface indentation from concentrated loads is shielded by the covering.
- Standard Ecoply Structural panels can be used for roof coverings under flexible coverings; however, for decks use Ecoply Flooring (CD grade).
- Edges have no tongue and groove and require blocking support at all edges.

Ecoply Flooring (CD grade)

- Sanded surface C grade face.
- Solid cross band for additional support of the face veneer to minimise indentation and surface bubbling.
- Particularly well suited for use under flexible coverings like deck membranes, linoleum, cork tiles, thin tiles as well as rigid coverings.
- Plastic tongue and grooved long edges, no blocking needed under edge joints, reduces squeaking.

Ecoply Roofing (DD grade)

- Unfilled D grade face contains knot holes, left unsanded for extra strength and grip.
- 15 mm panel specifically designed for use under shingles and tiles that have a coarser texture.
- Ecoply Roofing (DD grade) is **not** recommended under flexible coverings. Use Ecoply Flooring (CD grade) or Ecoply Structural (CD grade) panels.
- Plastic tongue and grooved long edges, no blocking needed under edge joints.

Table 1: Ecoply plywood for roofing and decking

PRODUCT	GRADE(S)	THICKNESS (mm)	SHEET SIZE (mm)	EDGES	ENDS
Ecoply Structural	BD, CD, DD	12, 15, 17*	2400 X 1200 2700 X 1200	square	square
Ecoply Flooring	CD	15, 17, 19, 21, 25	2400 X 1200 2700 X 1200	both grooved one plastic tongue	square
Ecoply Roofing	DD	15	2400 X 1200 2700 X 1200	both grooved one plastic tongue	square

* Other thicknesses of Ecoply BD, CD, and DD are subject to availability (check with your supplier). Refer to the Ecoply Structural Manual.

Table 2: Ecoply plywood weight

THICKNESS (mm)	12	15	17	19	21	25
kg/m ²	6.6	8.3	9.2	10.5	11.6	13.5
kg/2400 x 1200 sheet	19	24	26	30	33	39
kg/2700 x 1200 sheet	21	27	30	34	38	44

Ecoply Roofing or Flooring versus standard Ecoply

Use Ecoply Roofing (DD grade)

- Where the covering will have a coarse texture or is strong enough to span the holes in the D grade face (e.g. asphaltic roof tiles, torch welded polyester reinforced membranes).
- When extra grip is needed for installing sloping roofs.

Use Ecoply Flooring (CD grade)

- Where the covering needs tight control of bubbles or surface indentation (e.g. deck membranes).
- Ecoply Flooring T&G sheets are made with a solid cross band veneer under the face. This provides extra support for the face veneer and reduces rain moisture bubbling compared with standard square edged Ecoply Structural panels that are made with a D grade cross band (with holes) under the face.

Use Ecoply Roofing (DD grade) or Ecoply Flooring (CD grade)

- When the tongue and groove edges can save the cost of blocking between the joists, and reduce squeak problems.

Use Ecoply Structural

- Where the type of covering can hide indentations that could occur over holes in a D grade cross band and blocking is needed for structural bracing (no tongue and groove is required).

Do not use Ecoply Structural or Ecoply Roofing (DD grade)

- Where avoidance of surface indentations is critical.

Identification

Ecoply structural plywood panels are manufactured under a third-party audited, product quality control programme to comply with AS/NZS2269:1994 "Plywood-Structural," by CHH Woodproducts, a Carter Holt Harvey business. As such they carry Plywood Association of Australasia Joint Accreditation System - Australia and New Zealand (PAA/JAS-ANZ) accreditation.



Limitations

All statements in this manual shall be read subject to the Ecoply being properly stored, handled, installed, used and maintained as appropriate to each application in accordance with specifications and instructions provided in this brochure, product specific brochures and CHH Woodproducts technical notes, and subject to the governing codes of practice.

Storage and Handling

- Keep dry.
- Store under cover.
- Handle and stack with care to avoid damage.
- Stack clear of the ground on at least three evenly spaced bearers.



Centre vent in gable

Performance and Building Code Compliance

Structure

Roof frame spacings in Table 4 for various Ecoply plywood thicknesses were determined in consultation with roofing tile and membrane suppliers and using the limit states design method in accordance with NZS 4203:1992 “General Structural Design and Design Loadings for Buildings” and NZS 3603:1993 “Timber Structures Standard”. These comply with verification method B1/VM1 clauses “2.0 Loadings” and “6.0 Timber” in the NZBC clause B1 Structure.

The plastic tongue has been tested for basic point live loads up to 2.7 kN. For houses, Ecoply roofing and decking sub-sheathing is acceptable under clauses 7.2.3.5 and 10.4.4 of NZS 3604:1999 “Timber Framed Buildings”, and the relevant sections of AS 1684:1999 “Residential Timber – Framed Construction”. Note that for horizontal diaphragm action, all panel edges including T&G edges need to be nailed to framing.



Note ridge vent

The frame spacings and Ecoply plywood thicknesses in Table 4 give acceptable levels of finish with most roof types.

Deflection is less visible in steeper roofs and shingles that have a rougher surface or heavier texture.

With flat profile shingles (such as three tab) or membrane roofs, deflection is more visible.

- Use the next lower recommended frame spacing or thicker Ecoply where appearance is critical.
- Where 12 and 15 mm Ecoply is used on flat roofs, use blocking at 600 mm centres to avoid ponding.

To suit trusses at 900 centres, 2700 long sheets are available.

Table 3: Frame set outs (mm) to match 2400 mm and 2700 mm sheet modules

2400 mm long	400	480	600	800
2700 mm long	450	540	675	900

Table 4: Maximum frame spacings for Ecoply plywood roof sheathing

		RECOMMENDED MAXIMUM FRAME CENTRES (mm)							
		for Ecoply plywood thickness (mm) (Face grain across supports)							
Application	Approx mass roof material (kg/m ²)	7	9	12	15	17	19	21	25
1. Sub-sheathing under steel or self supporting roofing where main purpose is support of building paper or lateral diaphragm action		800*	900*	1200	1350				
2. Sub-sheathing non-trafficable sloping roof	10			675	900	900	1200	1200	1350
	50			600	675	800	900	900	1200
3. Sub-sheathing non-trafficable flat roof (1.5° minimum slope)	10			600	600	800	900	900	1200
	50			480	600	600	800	800	900
4. Trafficable roof (1.5° minimum slope)	10			400	480	540	600	600	800
						400	400	480	600
5. Decking (1.2° minimum slope) where butyl rubber, vinyl or E.P.D.M. membranes are to be laid †						400	400	480	600

* This span and thickness will not sustain a 1 kN point load and must be protected from construction traffic.

Note • The plywood must be continuous over at least two spans, if there is no blocking at panel edges.

† Frame centres are conservative and allow for the risk of plywood being laid with face grain parallel to framing.

Durability

Roofing materials: Various roofing materials used over Ecoply plywood have different durability expectations, normally in excess of the 15 years required by the Building Code clause B2.3.1b. Durability of the roofing is subject to the specifications, installation and maintenance requirements of the roofing manufacturer. The durability of the Ecoply can only be assured as long as the overlying roofing and detailing excludes moisture. With good building practice and maintenance, roofing materials can be repaired or replaced at regular intervals to achieve life from the Ecoply in excess of the original roofing. With this proviso the durability of Ecoply structural plywood will be in excess of 50 years if installed in accordance with instructions and limitations in this brochure.

Insect resistance: Low moisture content of untreated Ecoply must be maintained (by adequate ventilation) for the life of the building. H3 treated Ecoply provides extra protection where necessary.

High humidity, condensation and solar driven moisture: Where the moisture content of wood may exceed 18% for prolonged periods, Ecoply must be H3 treated with water-borne CCA (Copper Chrome Arsenic) preservative in compliance with NZS 3602:1995 “Timber and Wood-based Products for Use in Building”, to resist decay hazard. This includes Ecoply used under roof coverings that may be subject to condensation, or where rain moisture soaked in the roof covering can be driven into the Ecoply by the sun. Appropriate building detailing and ventilation is recommended. See the section on ventilation on Page 6 in this brochure. Good ventilation design can reduce the need for treatment.

Bubbling: Plywood bubbling occurs when moisture trapped in knot holes in inner veneers expands as the temperature rises. This moisture will dissipate through the face veneer and will not affect the structural integrity of the plywood panel. As membrane coverings can prevent moisture dissipation, Ecoply Flooring (which has a solid cross band veneer) is recommended if the visual appearance of bubbles is not acceptable. Note: Where rubber membranes are being applied, care must be taken to ensure the adhesive is sufficiently dry to prevent trapped glue solvents from causing blistering.

Soil: Ecoply plywood (untreated or H3 treated) must not be allowed to come in contact with soil. Surfaces, flashings and gutters should be detailed to avoid trapping detritus and moisture.

Rain wetting and construction time: Untreated Ecoply will withstand a reasonable amount of rain wetting and exposure during construction for up to three months. Some discolouration and minor checking of the face veneers can be expected if Ecoply is exposed for extended periods. For roofs uncovered for longer periods use H3 treated Ecoply to lower the risk of decay. Return Ecoply to below 18% moisture content before installing moisture sensitive materials, coverings, coatings or adhesives. For best results, protect the Ecoply.

Exterior decking: Structural Ecoply plywood is not normally recommended for decks where it is permanently exposed to the weather. Exposed Ecoply for decking must be preservative treated to at least H3 hazard class. However a properly detailed Building Code compliant barrier material eg. butyl rubber, vinyl or E.P.D.M should be used to protect Ecoply from rain and sunlight (weathering) exposure.

Gutter details: Where structural Ecoply plywood sub-sheathing supports roofing at gutters, a metal drip edge must be provided with appropriate gaps to shed water. Gutters should have a front edge overflow or ends lower than the back to shed water overflow away from framing and sub-sheathing Ecoply (see details on Page 6). H3 treatment is recommended for Ecoply sheets that protrude into gutters, with regular maintenance to avoid leaf mould (soil) development. Do not expose untreated Ecoply to gutter splash or moisture.

* For more information consult the CHH Woodproducts “Durability Statement”, 01/11/10.

Fire

Plywood is combustible but may be used as a roof substrate for all purpose groups subject to the provisions of NZBIA acceptable solution C/AS1 7.1 and 7.9. For purpose groups SC and SD a 19 mm Ecoply panel complies with the requirement of 7.11.1.



Vent near chimney

Design and Detailing

Ventilation and preservative treatment

Poorly ventilated spaces can develop very high temperature and moisture levels. The most likely source of moisture is the condensation of vapour from warm interior air on the underside of cold roofing. Good ventilation can remove the need for treatment by removing excess moisture vapour in warmer climates but in regions where winter nights are consistently colder, H3 treated Ecoply is recommended. However, the use of H3 treated Ecoply is not an excuse for poor ventilation design. Moisture induced decay is only one issue. If incorrectly detailed, Ecoply clad roof spaces can be very "tight" and the dark colour of many roofing materials means that excessive heat can build up causing distortion in plywood or even framing members.

Use the suggested details or alternatives to suit. Designers must consider roofing type, seasonal conditions, wind effects and the intended use of the building.

As a minimum, CHH Woodproducts recommends a vent area of 1/300th of the ceiling plan area (approx 3350 mm² per square metre of ceiling) equally distributed at the eaves and ridge to allow free flow under the Ecoply, up the roof slope, and out.

Roofing material suppliers should detail vent systems suited to their specific membrane or tile roofing. Proprietary ridge capping profiles or vents are available from roofing suppliers. Detail gaps of 25 mm at ridges, and at walls where a roof slopes up to an upper storey.

For flat roofs, natural ventilation flows may be impeded. Use proprietary roof vents. Consider forced ventilation as appropriate.

Figure 1: Ridge detail with ridgeboard

(use also with Hip Rafter if extra ventilation required)

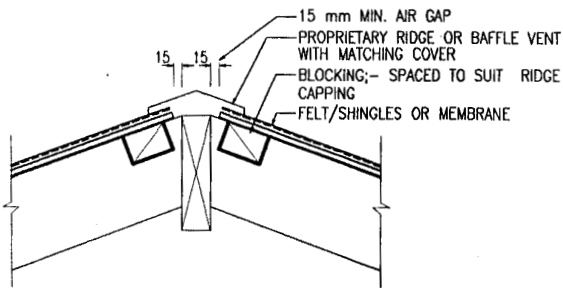


Figure 2: Roof to wall junction vent

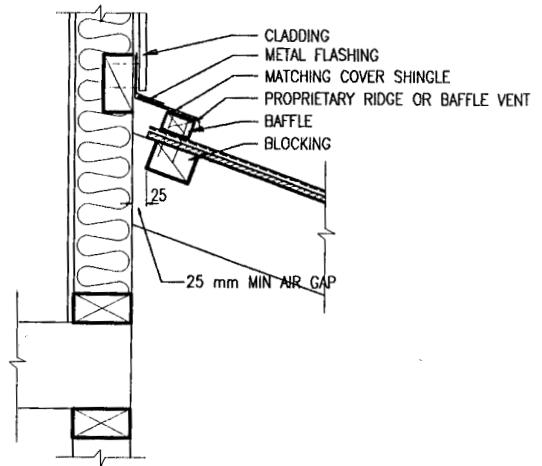


Figure 3: Truss ridge detail

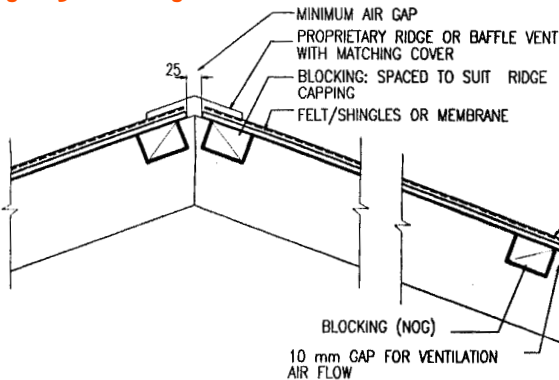
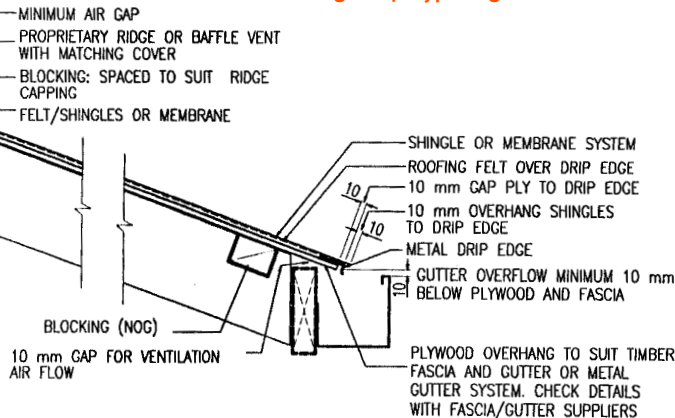


Figure 4: Typical gutter detail



Roofing Types

Many different roofing products are now available for use and installation over a plywood substrate. The choice of plywood grade depends on the type of roofing, and on the level of finish required. Ecoply roof sheathing provides a safe substrate for roofing crews and can eliminate tile battens or purlins from the framing cost.

Exposed ceilings and soffits:

For roof, soffit, or ceiling lining visible from underneath, Ecoply Grooved Lining or Shadowclad installed with the face down provide textured or groove options for clear finishing or painting. Grooves can be routed through to get ventilation. Exposed ceilings will usually require framing battens above to provide for insulation and an exterior layer of plywood for the roof itself. Some tile systems require that tile nails penetrate the Ecoply sheathing rendering the roofing unsuited to a visible finish from the underside.

Curved roofs

Ecoply plywood may be curved when supported on adequate framing and fastened with longer or ring shank nails to maintain the curve. Attach the outer edges with tack nails first to develop the curve, and then fix sheets from the centre out. Remove tack nails when other fasteners are fixed. For load bearing curves, load capacity must be checked.

Table 5: Recommended minimum bending radii for Ecoply plywood

Ecoply thickness (mm)	7	9	12	15	17	19	21	25
Along sheet (m)	1.8	2.3	3.6	4.6	5.9	6.7	7.4	8.6
Across sheet (m)	0.6	1.0	2.2	2.9	4.2	4.6	5.2	6.5

Membrane systems

Roofing membranes may comprise synthetic rubber sheeting glued to the Ecoply, or bitumen sheets torch welded to the Ecoply. Follow the membrane supplier's specifications for membrane fixing, surface preparation, dryness and cleanliness.

Rubber membranes

Smooth, rubber membranes highlight any trapped dust or blemishes in the subsheathing.

- Use Ecoply Flooring (CD grade) for decks. This provides a smooth sanded C face to bond the rubber, and a solid cross band under the face to reduce the possibility of surface bubbling over holes in the interior veneers. Ecoply Structural (CD grade) can be used on roof areas where the possibility of some surface bubbling is acceptable.
- Keep Ecoply dry and clean.
- Minimum 17 mm Ecoply thickness is recommended by most rubber membrane suppliers.
- Lightly arris all edges before fixing.
- Use countersunk stainless steel screws fixed over a bead of adhesive on framing to avoid head popping. (Head popping can also be reduced using kiln dry framing).
- Tape over all joints to provide a bond break under the membrane to allow elongation with moisture induced movement in the Ecoply.
- If treatment is required use water-borne treatments only (no solvent based treatments). Ecoply CCA treated panels are kiln dried after treatment so should be at the right moisture content for gluing. If there is evidence of treatment salt crystals on the surface, scrub with a minimum quantity of water and allow the surface to dry before spreading membrane adhesive.
- Prepare the surface with hot air or gas blow driers to ensure wash, dew or rain water is driven off.
- Clear away even the smallest of dust particles as these show up clearly under the membrane.
- Apply adhesive and allow to dry to prevent trapped glue solvents from causing blistering.



Rubber membrane on plywood



Rubber membrane on plywood



Note: Staggered sheets and screw fixing with face grain running at right angles to the joists.

Torch welded bitumen membranes

Polyester reinforced modified bitumen membranes will tolerate DD grade surface characteristics.

- Use unsanded Ecoply Roofing (DD grade), or sanded Ecoply of the required thickness in Table 4.
- Use countersunk screws fixed over a bead of adhesive on framing to avoid head popping. (Head popping can also be reduced using kiln dry framing).
- Detail expansion joints in accordance with practice recommended by the membrane supplier to allow elongation with any movement in the Ecoply.
- Keep Ecoply dry and clean.
- If treatment is required use water-borne treatments only (no solvent based treatments). Ecoply CCA treated panels are kiln dried after treatment so should be at the right moisture content for fixing.

Tile systems

Most fibreglass, asphaltic or wooden shingle or tile systems will tolerate DD grade surface characteristics.

- Use unsanded Ecoply Roofing (DD grade), or sanded Ecoply of the required thickness in Table 4.
- The unsanded surface provides extra grip on steeper roofs.
- A plywood substrate can avoid the cost of battens.
- Fix tiles according to tile manufacturer's specification.
- Under asphaltic shingles use saturated felt underlay over the Ecoply.

Check and confirm all of the recommendations above with the manufacturer of the chosen roofing type.

Installation

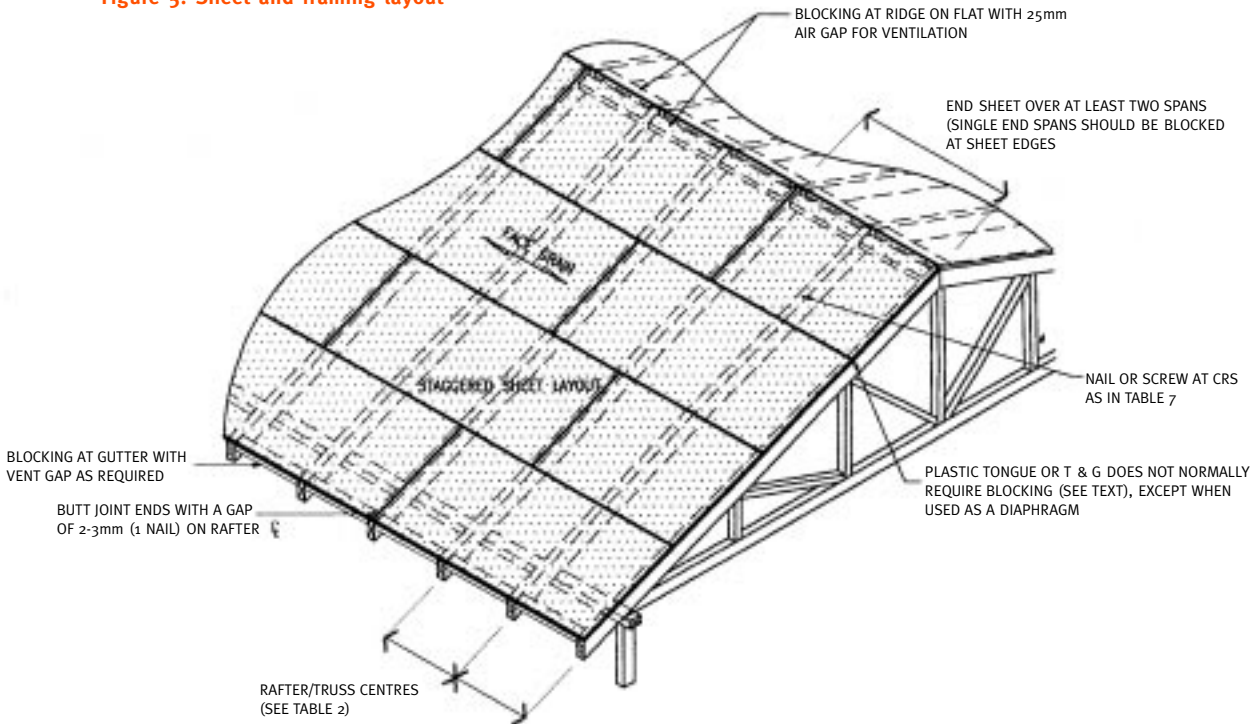
Framing

- Use timber or steel frame spacings in Table 4 to suit Ecoply thickness.
- Ensure top edges of framing are properly aligned.
- Use kiln dry Laserframe, hyBEAM® or hySPAN® framing to lower moisture level in roof spaces and reduce differential truss or rafter deflections.
- Blocking (nogs, dwangs)
 - block all edges of standard “square edge” Ecoply Structural plywood.
 - block all Ecoply edges at the ridge and gutter lines to prevent sag at capping or gutters.
 - block for high face loads or under areas accessed for maintenance.
 - blocking within the body of the roof is not required for tongue and grooved edges, unless plywood is being used as a diaphragm to resist horizontal wind or earthquake loads, with fixings to transfer shear across the joints. In this case, details should be specified on drawings.
 - use blocking “on the flat” to provide gaps where air flow is needed for ventilation.

Sheet layout

- Ensure Ecoply sheets are dry before installation.
- Place face grain at right angles to supports.
- Sheets must be continuous over at least two spans (three framing members).
- Lay the sheets in a staggered pattern.
- With square edge sheets, allow a 2 to 3 mm expansion gap between sheets.
- Butt tongue and groove panels at the tongues because the machined edges can accommodate the movement. Allow a 2 to 3 mm expansion gap at the ends.
- Allow 5 mm clearance inside confining structure such as concrete or brick walls adjacent to the roof.
- Allow clearance for ventilation as required.

Figure 5: Sheet and framing layout

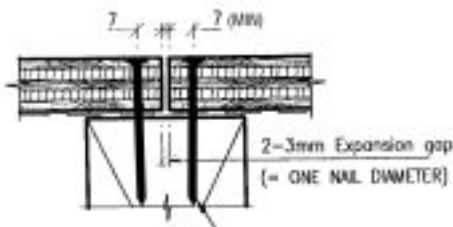


Fixing of sheets

The integrity of a plywood based roof system is directly related to how well the panels are fixed to the framing. Ecoply must be fixed to resist wind suction loads, and to maintain surface qualities of the overlying roofing. The minimum fastener specifications are in Tables 6 and 7. For high wind zones (over 44 m/s), very exposed sites, cyclonic conditions or roofs above 8 metres average height, carry out specific structural design to the relevant national standards.

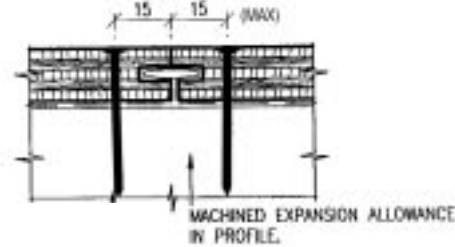
- Screw fixing must be used for membrane roofing, and is preferred for all systems because of increased holding power and avoidance of head popping.
- Do not over-drive gun nails or screws.
- Fix at least 7 mm or 3 fastener diameters from the sheet edges or behind tongues.
- Fix no more than 15 mm from sheet edges.
- Space fasteners at centres according to wind exposure in Table 7.
- Fasteners should be corrosion resistant to a level appropriate to the end use, life expectancy (15 or 50 years) and expected exposure to moisture during construction and service. Galvanised fasteners are the minimum recommendation and are normally satisfactory in dry wood. Where Ecoply or framing may become damp or is H3 treated, use stainless steel screws or annular grooved nails for maximum durability. Follow the recommendations of the fastener manufacturer or membrane supplier.

Figure 6: End joint over joist



NAILS OR SCREWS AS IN TABLE 5

Figure 7: Tongue joint edge fixed onto each frame crossing



NAILS OR SCREWS AS IN TABLE 5

Table 6: Fasteners and characteristic shear loads

Plywood Thickness (mm)	7 & 9	Load [†]	12 & 15	Load	17	Load	19 & 21	Load	25	Load
Minimum Nail size in timber	40 x 2.5 mm	570	50 x 2.8 mm	710	60 x 2.8 mm	710	60 x 2.8 mm	710	75 x 3.15 mm	883
Screw size in timber	No. 8 x 30 mm	1230	No. 8 x 40 mm	1230	No. 10 x 40 mm	1650	No. 10 x 45 mm	1650	No. 10 x 50 mm	1650
Screw size in 1.15 mm steel*	10-24-35 [†]	1300	10-24-40	2000	10-16-45	2100	10-16-45	2100	10-16-45	2100
Screw size in 2.80 mm steel*	10-24-35 [†]	1200	10-16-40	1200	14-20-45	3000	14-20-45	4000	14-20-45	5000

* Self tapping, self countersinking screw † Screw numbers indicate: Gauge - Threads per inch - Length (mm)

† The load is the characteristic load (N) for one fastener in single shear

- Note
- Steel thickness, screw sizes, characteristic loads, refer to assemblies actually tested.
 - Other screw sizes may be used. Screw properties vary between screw suppliers and the suitability of a particular size should be verified by the designer for performance under changing physical conditions and cyclic loading.

Fixing to timber:

- Galvanised nails or annular grooved nails have better holding power than smooth nails.
- Use flathead nails. Do not use jolt or bullet head nails.
- Ring shank nails or annular grooved nails or screws are recommended for additional holding power.
- Stainless steel nails must be annular grooved.
- Ensure fastener is compatible with the roofing cover (see Design and Detailing on Page 6, and consult roofing suppliers).
- Staples may be used provided that the withdrawal load is equivalent to the hand driven galvanised flathead nail. A suggested minimum is a 50 mm long staple with 12 mm crown and legs 1.8 mm diameter. Space staples 20% closer than nails (Table 7). Refer manufacturer for corrosion resistance and durability.

Fixing to steel:

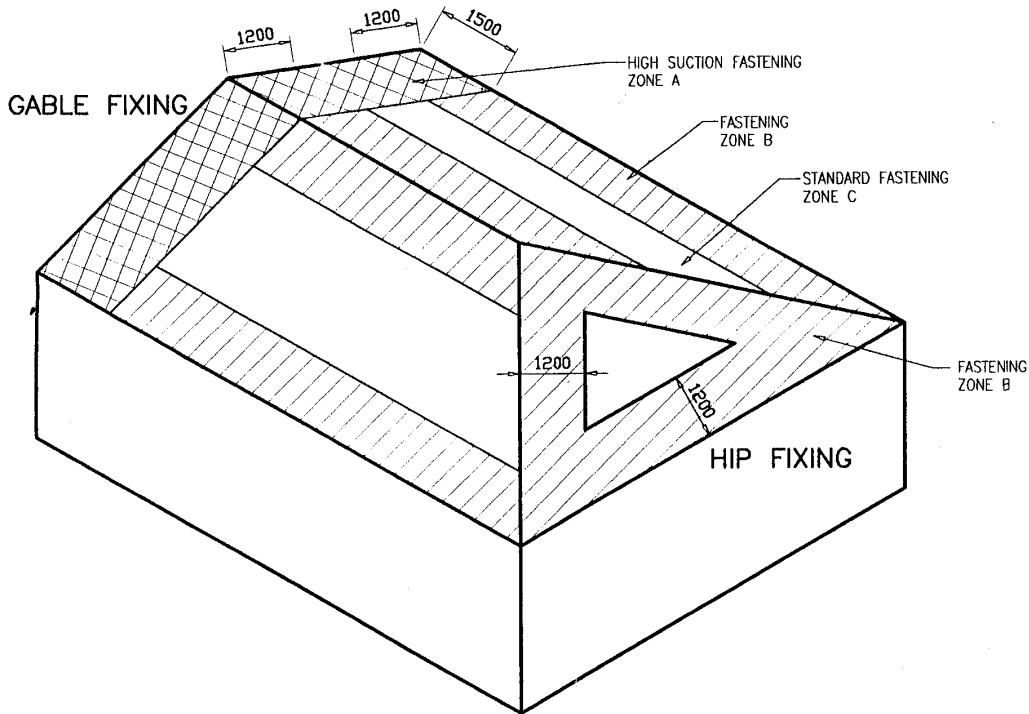
- Fix directly to roll formed steel (up to 2 mm thick) with self-drilling, self-tapping screws. If plywood gets damp and expands, screws in thicker steel may break. Keep Ecoply dry or use larger screws or:
- Bolt or screw battens to the steel and apply Ecoply as above for timber. Ensure that battens have adequate thickness for the minimum nail or screw length.

Table 7: Maximum fastener spacing for Ecoply plywood in roofing

Wind speed category (Refer NZS 4203)	FASTENER SPACING IN ROOF WIND SUCTION ZONE		
	High Suction Zone A (above gables)	Zone B (near ridge and eaves)	Standard Zone C (bulk of roof)
Low and medium (up to 37 m/s)	100	150	150
High, (up to 44 m/s) Increase nail dia. to 3.05 mm	100	100	150

Very high or cyclonic use specific design to NZS 3603 and NZS 4203

Figure 8: Gable and hip fixing



Adhesives:

Polyurethane adhesives may be used for non-permanent loads and reduced fastener popping.

- Use a bead of structural polyurethane adhesive in accordance with manufacturer's instructions.
- Apply pressure using the standard fastener patterns above.
- Polyurethane adhesives must meet American Plywood Association (APA) specification AFG 01 (e.g. BRANZ appraised Holdfast Gorilla Nail Power or similar).

For full structural bonds with permanent loads use factory applied phenolic glue to NZS 3606:1987 "Specification for the Manufacture of Glue Laminated Lumber", or similar.

Fixing of roofing

Fixing methods for tile, shingle and membrane systems must be designed for the expected wind and weather exposure to protect the Ecoply substrate. Some shingle systems may not be used in very high or cyclonic wind zones.

Follow the specifications of the roofing manufacturer and refer to the appropriate BRANZ Appraisals.

References and Sources of Information

- CHH Woodproducts "Ecoply Structural Manual"
- CHH Woodproducts "Durability Statement", 01/11/10
- CHH Woodproducts "Plywood, Fire and the Building Code", 95/03/14
- BRANZ Bulletin 345: Flat membrane roofs - design and installation
- BRANZ Bulletin 346: Flat membrane roofs - materials
- BRANZ Bulletin 289: Asphalt shingle roofing
- BRANZ Appraisals 141A, 307, 334, 404, 406, 411, 412

Standards

AS 1684:1999 "Residential Timber Framed Construction"

AS/NZS 2269:1994 "Plywood – Structural"

NZS 3602:1995 "Timber and Wood-based Products for Use in Building"

NZS 3603:1993 "Timber Structures Standard"

NZS 3604:1999 "Timber Framed Buildings"

NZS 3606:1987 "Specification for the Manufacture of Glue Laminated Lumber"

NZS 4203:1992 "General Structural Design and Design Loadings for Buildings"

Supply

Available from stockists, merchants and agents throughout New Zealand, Australia, Pacific Islands and some Asian countries.



The information contained in this document is based on data available at the time of writing, which we believe is accurate and reliable. CHH Woodproducts reserves the right to change the information without prior notice.

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Supersedes all previous Carter Holt Harvey Ecoply Roofing information.

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