IBS Plyroof

September 2025

Design & Installation Guide

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IBS
SUSTAINABLE BUILDING PRODUCTS

Welcome to Independent Building Supplies (IBS), your trusted partner in the New Zealand building industry. Since our inception in 1993, IBS has been dedicated to sourcing and providing the highest quality building materials from around the globe. As a family business with four generations active in the building industry in New Zealand, we bring a wealth of experience and a deep commitment to excellence.

One of the key aspects that set IBS apart is our commitment to innovation. We are constantly on the lookout for new and improved building materials that can enhance the efficiency and effectiveness of construction projects. Our team of experts works closely with suppliers to bring cutting-edge products to the New Zealand market, ensuring that our customers have access to the latest advancements in building technology.

But our commitment to excellence doesn't stop at our products. At IBS, we pride ourselves on providing unparalleled customer service. Our knowledgeable and friendly team is always on hand to offer expert advice and support, helping you choose the right materials for your project.

ABOUT IBS

At IBS, we recognise that the foundation of any great building project lies in the quality of the materials used. That's why we meticulously select our suppliers, ensuring that every product meets our stringent standards for durability, performance, and sustainability. Our extensive range of offerings includes everything from plywood and panels to flooring and cladding, all tailored to meet the diverse needs of the New Zealand market.

OUR PRODUCT RANGE

We seek to develop the most innovative, professional and profitable experience for our clients. Our passion is for providing our customers with the best products, the best service, and the best experience

In addition to our exceptional product range and customer service, IBS is also dedicated to sustainability. We recognise the importance of protecting our environment and are committed to sourcing eco-friendly building materials. Our sustainable product offerings help reduce the environmental impact of construction projects, allowing our customers to build responsibly without compromising on quality or performance.

IBS is more than just a supplier of building materials; we are a partner in your success. Our comprehensive range of services includes everything from product sourcing and logistics to technical support and training. We work closely with our customers to understand their unique needs and provide tailored solutions that help them achieve their objectives.

Join the countless builders, contractors, and homeowners who trust IBS for their building material needs. Discover the difference that quality, innovation, and exceptional service can make in your next project. Choose Independent Building Supplies – your partner in building excellence for over 30 years.

- **IBS RigidRAP®**
- **IBS RigidRAP®- XT**
- **IBS EUROFloor**
- **IBS EUROLine**
- **IBS FIBRE® Range**
- **IBS Structural Ply**
- **IBS Builders Grade® Ply**
- **IBS Formply**
- **IBS Decorative Ply**
- **IBS PanelLine®**
- **IBS Showerline**
- **IBS Softboard**
- **IBS Hardboard**
- **IBS Peg Board**
- **IBS Acoustic Panels**
- **IBS Mini Panels**

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NZBN 9429000097253

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1. Introduction

This document is intended for designers and installers to ensure that IBS Plyroof is specified and installed correctly.

1.1 Introduction

Welcome to the design and installation guide for IBS Plyroof. This guide aims to provide comprehensive advice on handling, installing, and maintaining IBS Plyroof to ensure optimal performance and longevity. IBS Plyroof is a versatile and durable material, suitable for various construction applications, including internal linings, bracing elements, and roofing substrates.

This guide is intended for both professional builders and competent DIY enthusiasts. It includes essential information on the required skills, tools, and techniques for successful installation. Additionally, it highlights important documents and standards that must be adhered to, such as the IBS Plyroof pass™ and warranty.

By following the guidelines outlined in this document, you can ensure that your IBS Plyroof installations meet the highest standards of quality and safety. For further assistance, technical support is available at info@ibs.co.nz.

1.2 Scope

Recommended Applications

IBS Plyroof is designed for use as a roofing substrate in residential, commercial, and light industrial buildings. It is suitable for:

- **Roofing substrates** for shingle or tile applications, especially on steeper pitches
- **Sheet diaphragm bracing** to resist lateral wind and earthquake loads

Building Types

- Houses, hostels, hotels
- Offices, factories, and other commercial structures
- Multi-unit residential developments

Structural Compliance

- Meets the requirements of the New Zealand Building Code Clause B1 (Structure) and B2.3(a) (Durability)
- Manufactured to comply with AS/NZS 2269 for structural plywood
- Suitable for use within the scope of NZS 3604 or specific engineering design

Limitations

- Not suitable for use in **marine environments** or areas with persistent moisture unless protected by a compliant waterproofing system
- Must be installed and maintained according to IBS specifications to ensure warranty validity
- Not recommended for use as a finished surface without overlay or membrane

Installation Notes

- Sheets feature tongue and groove edges for easy jointing and reduced need for nogging
- Fixings should be placed at 150 mm centres around the perimeter and 300 mm centres through the body of the sheet
- Must be protected from moisture during and after installation
- Bubbling due to moisture exposure does not affect structural integrity and can be repaired with epoxy or filler

1.3 What is IBS Plyroof?

IBS Plyroof is a high-performance structural plywood panel engineered specifically for New Zealand roofing conditions. Manufactured using a combination of Pinus Radiata and Eucalyptus veneers, it delivers a robust balance of strength, stability, and durability.

Veneer Treated for Confidence

When supplied as a treated product, IBS Plyroof is veneer treated, meaning each individual veneer is treated before lamination. This ensures full preservative penetration throughout the sheet, so no re-treatment is required for cut edges, penetrations, or service holes saving time and ensuring long-term protection.

Engineered for Easy Installation

Each sheet features a plastic tongue and groove along the long edges, allowing for:

- Faster installation
- Improved sheet alignment and joint strength

Certified for Structural Integrity

IBS Plyroof is certified to AS/NZS 2269, giving you confidence that it meets the structural and durability requirements of the New Zealand Building Code. It is suitable for use under NZS 3604 or specific engineering design. IBS Plyroof also comes with a further third party verification pass document giving you peace of mind.

Stable, Flat, and Reliable

Thanks to its veneer-treated construction, IBS Plyroof offers enhanced dimensional stability and a flatter sheet profile, reducing the risk of warping or cupping during and after installation.

Versatile Roofing Substrate

IBS Plyroof is ideal as a substrate for:

- Shingles or tiles, especially on pitched roofs
- Corrugated iron roofing

1.4 Sizes & Applications

TABLE 1: IBS Plyroof Product Details			
L x W x Thickness (mm)	**Length (mm)**	**Width (mm)**	**Applications**
15	2700	1200	Roofing Substrate

1.5 Benefits

Certified to AS/NZS 2269

- Ensures structural integrity and compliance with the New Zealand Building Code for plywood used in structural applications.

Holds a Valid PASS™ Certificate

- Offers assurance that the product has been independently appraised for use in New Zealand construction environments.

Veneer Treated for Full Protection

- Each veneer is treated before lamination, meaning no re-treatment is required for cut edges, penetrations, or service holes, saving time and ensuring long-term durability.

Enhanced Dimensional Stability

- Veneer treatment also improves sheet flatness and reduces the risk of warping or cupping during and after installation.

Made from Pinus Radiata and Eucalyptus Veneers

- This combination provides a balance of flexibility and strength, with eucalyptus contributing to increased stiffness and durability.

Plastic Tongue and Groove Edges

- Long edges are fitted with a plastic tongue and groove system for faster installation, better alignment, and reduced need for nogging.

Versatile Roofing Substrate

- Suitable for use under shingles, tiles, or corrugated iron roofing, and compatible with waterproof membrane systems.

1.6 Intended Use

- Roofing Substrate for residential, commercial and light industrial buildings
- Suitable for installation under shingles, tiles or corrugated iron roofing
- Wall lining
- Ceiling Lining

1.7 Supporting Info & Documents

This document must be read in conjunction with the:

- IBS Maintenance and Warranty for IBS Plyroof

CAD details and all other information including any updates are available at www.ibs.co.nz

2. Best Practice

2.1 Health & Safety

When cutting and handling IBS Plyroof sheets, you must always wear safety gloves, eye protection, and a dust mask. Use well-ventilated areas and appropriate cutting tools. Secure sheets to prevent movement. Dispose of offcuts and packaging responsibly. Complete the installation checklist and take clear photos of the finished work for documentation.

For further information on Health & Safety, refer to:

- The Absolutely Essential Health and Safety Toolkit
- Worksafe New Zealand Quick Guide.

2.2 Handling & Storage

Loading and Unloading

IBS Plyroof boards are usually supplied on pallets suitable for forklift. If crane offloading by slings is envisaged, special notification must be made in advance or upon placing orders.

All pallets and crates can be safely handled by using a barge lift or hoisting equipment and straps. Steel cables should not be used as it will damage both the pallet and the panels within.

Transport to Site

Always drive the delivery vehicle as close as possible to the location where the panels are to be installed. When transporting the panels, it is essential to firmly secure the pallets to prevent the panels from sliding or moving while in transit.

Storage

All IBS Plyroof boards must be stored flat on pallets and placed inside in covered and dry conditions, optimising protection for stored panels against exposure to weather and other unfavourable conditions.

Before installation please check panels for defects.

Site considerations:

- Selection of the right equipment for working from a height
- Safe working with ladders and stepladders
- Maintain a clear unobstructed work area

2.3 Cutting

Cut sheets with a fine-tooth handsaw or power saw. Smooth the edges using a plane or sandpaper (120–150 grit) wrapped around a sanding block.

- Provide adequate ventilation or use mechanical dust extraction when cutting or drilling.
- Support sheets properly during cutting to prevent movement or damage.
- Operate all tools according to their instruction manuals.
- Use edge protection and/or appropriate scaffolding when working at height.

2.4 Drilling Pilot Holes

When fixing sheets with screws, predrill 2.0 mm pilot holes to avoid splitting the edges. Make the holes 2–3 mm deeper than the screw length. Avoid over-tightening, as this can weaken the screw's holding strength.

2.5 Service Penetration

Very often apertures need to be cut within a board in order to allow for penetration of services such as switchboxes, lights, access panels etc. Therefore, the following procedures would serve as general guidelines to achieve this requirement.

For smooth, clean cut circular holes:

- Mark the centre of the hole on the board.
- Pre-drill a hole to be used as a guide.
- Cut hole to the required diameter using a hole saw fitted to a electric drill where the central bit is inserted into the pre-drilled hole.

For small irregular holes:

- Small rectangular apertures can be achieved by forming a series of small holes around the perimeter of the opening.
- Tap out with a chisel and clean up with sand paper or a rasp.

3. Durability

3.1 Compliance

IBS Plyroof is manufactured to meet the stringent requirements of AS/NZS 2269, ensuring it delivers strength, durability, and reliable performance in structural applications. This certification involves rigorous testing of mechanical properties, bond quality, and dimensional stability, confirming the plywood can withstand heavy loads and resist moisture and temperature changes.

By choosing IBS Plyroof, builders and designers can trust in a product that meets and often exceeds industry standards for quality and safety.

To minimise risk:

Use cutting tools equipped with dust extraction or suppression features whenever possible. Ensure proper ventilation in the work area. Protect against dust exposure by wearing suitable personal protective equipment, including safety goggles, protective clothing, and an approved respirator, such as a dust mask of at least type P2.

For additional safety information, please refer to the relevant Product Data Sheet, available upon request.

3.2 Responsibility

Designers and/or contractors responsible for the intended project should follow the details and recommendations specified in this manual.

It is also wise to keep in mind that all designs and constructions should comply with appropriate and relevant requirements of current legal building codes, regulations and standards, both domestic and international.

*The information provided in this installation guideline is valid at the time of publication. IBS reserves the right to change the information contained in this document without prior notice. It is your responsibility to ensure that you have the most up-to-date information available, including at the time of applying for a building consent.

3.3 Conditions

IBS Plyroof is a versatile and durable building material used in a variety of construction applications. It is renowned for its strength, stability, and resistance to environmental factors, making it a preferred choice for many builders and architects. However, to maximise its benefits and ensure long-lasting performance, it is essential to understand the specific conditions under which IBS Plyroof should be used.

Conditions for Use

Environmental Conditions:

The performance of IBS Plyroof is significantly influenced by environmental conditions. Here are some key considerations:

- **Moisture:** While it is moisture-resistant, prolonged exposure to water should be avoided. It is essential to ensure proper sealing and maintenance to prevent water damage.
- **Temperature:** It performs well in a wide range of temperatures but should be protected from extreme heat, which can degrade the adhesive bonds.
- **Humidity:** Suitable for humid environments, provided it is adequately sealed.

Other Conditions:

- **Fixing Requirements:** Do not use jolt or bullet head nails/do not overdrive/over penetrate the board. (Finish nail head flush).
- **Soil contact:** IBS Plyroof whether untreated, or H3.2 treated, must not come into direct contact with soil. Design all surfaces, flashings, and gutters to prevent the buildup of detritus or trapped moisture, which can accelerate decay.

Load-Bearing Requirements

- When used in load-bearing applications, it is crucial to consider the specific load requirements. IBS Plyroof can support substantial weights, but the thickness and grade must align with the project's load specifications. Consulting with a structural engineer can ensure the plywood meets the necessary standards.

3.4 Prohibited Uses

Specifiers, designers and installers must ensure that any time that IBS Plyroof is installed that it is only used when all conditions are met in relation to the local requirements as well as E2/AS1 and the current Building Code. IBS Plyroof is not to be installed as a external cladding.

3.5 Defects

Before Installation, please ensure you check the panels for defects or damage.

3.6 Differing Installation

To ensure the warranty on the product remains valid, it is crucial to follow the design and installation guidelines provided. Failure to adhere to these instructions may result in the warranty being voided.

4. Design

4.1 Check the Substrate

- The roof trusses must fully support all joins on the short edge. The plastic tongue and groove long edge is self-supporting
- All short edge joining must be done using a brick pattern where no short edge joins are adjacent to each other.
- They must also comply with the NZBC or be suitable for the intended building work.
- Timber framing must be in accordance with framing manufacturer's specification.
- Lightweight steel framing must be in accordance with Nash Design and NZS 3404 Steel Structures Standard.

Make sure the timber framing that the structural plywood will be fixed to has a moisture content of 18% or less. For internal linings, confirm the building is fully weathertight.

4.2 Framing

In order to achieve an acceptable wall finish, it is imperative that framing is straight and true. Framing tolerances must comply with the requirements of NZS 3604.
All framing shall be made flush.

4.3 Sheet fasteners & fixing

Fixing Instructions:

- Where moisture changes may cause sheet expansion, allow a 2–3 mm gap between sheets.
- Use flathead nails or screws only, with or without construction adhesive.
- Use hot-dip galvanised or corrosion-resistant fasteners (e.g. stainless steel) as required for environmental conditions.
- Stainless steel nails must be annular grooved.
- Refer to Table 7 page 22 for minimum fastener sizes.
- Avoid overdriving power-driven nails.

4.4 Nail Fixing Specifications by Wind Zone

For Wind Zones Up to and Including High

- Use **60 x 2.8 mm nails**
- Fix at **150 mm centres** on all cross framing
- Min 7mm from short edge
- Min 15mm from long edge

For Very High and Extra High Wind Zones

- Use **75 x 3.15 mm nails**
- Fix at **150 mm centres** on all cross framing
- Min 7mm from short edge
- Min 15mm from long edge

These specifications ensure the structural integrity of the Plyroof under varying wind loads and align with New Zealand Building Code requirements.

4.5 Design Considerations

Durability & Moisture (NZBC B2 & E2)

IBS Plyroof is made from wood veneers and should be treated and detailed to minimise risks from moisture and biological exposure, helping meet NZBC durability standards.

Formaldehyde

IBS Plyroof uses fully cured phenol formaldehyde resin with ultra-low emissions (E0 rating, <0.5 mg/L).

Moisture & Movement

Moisture content at manufacture ranges between 8–15%. Like other wood products, IBS Plyroof can expand or contract with humidity. H3.2 treated panels are dried to ~18% for use in higher-humidity settings. Always allow for movement in detailing.

Face Checks

Fine surface cracks can occur from moisture changes but don't impact strength or performance.

Veneer Overlaps

Manufacturing overlaps and core gaps are normal and permitted under AS/NZS 2269 when structural performance is unaffected.

Durability

With proper treatment and installation, IBS Plyroof offers up to 50 years of durability in dry interior conditions. Use H3.2-treated panels for areas with higher humidity or condensation.

Fire Performance

As a timber-based product, IBS Plyroof is considered combustible. Fire performance depends on coatings. Refer to coating suppliers and NZBC Clauses C1–C6 for more guidance.

4.6 Fastener Spacings from Edges

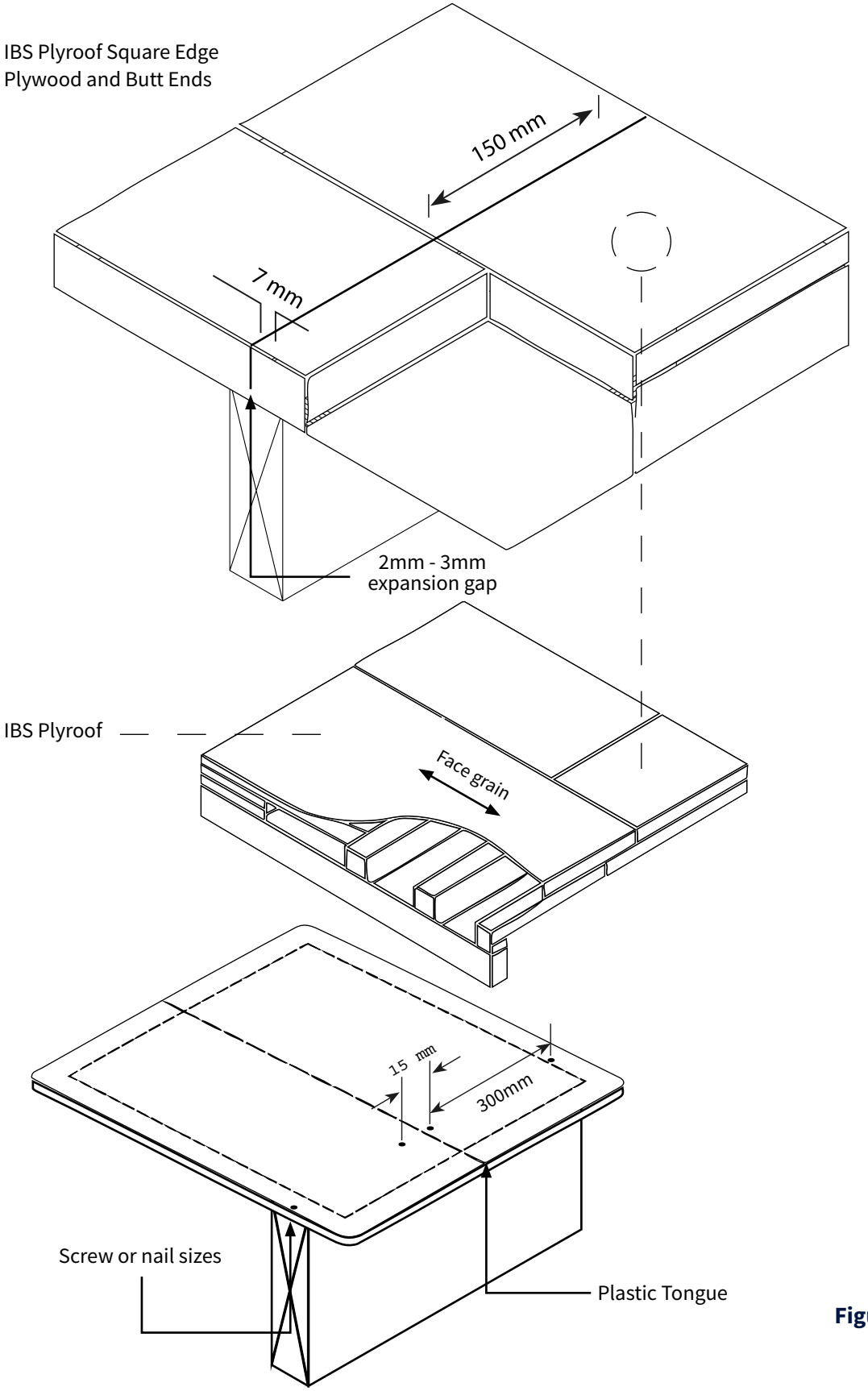

Figure 1

5. Installation

Below is the recommended process for IBS Plyroof, please make sure you follow the below steps in order.

5.1 Sheet and Framing Layout

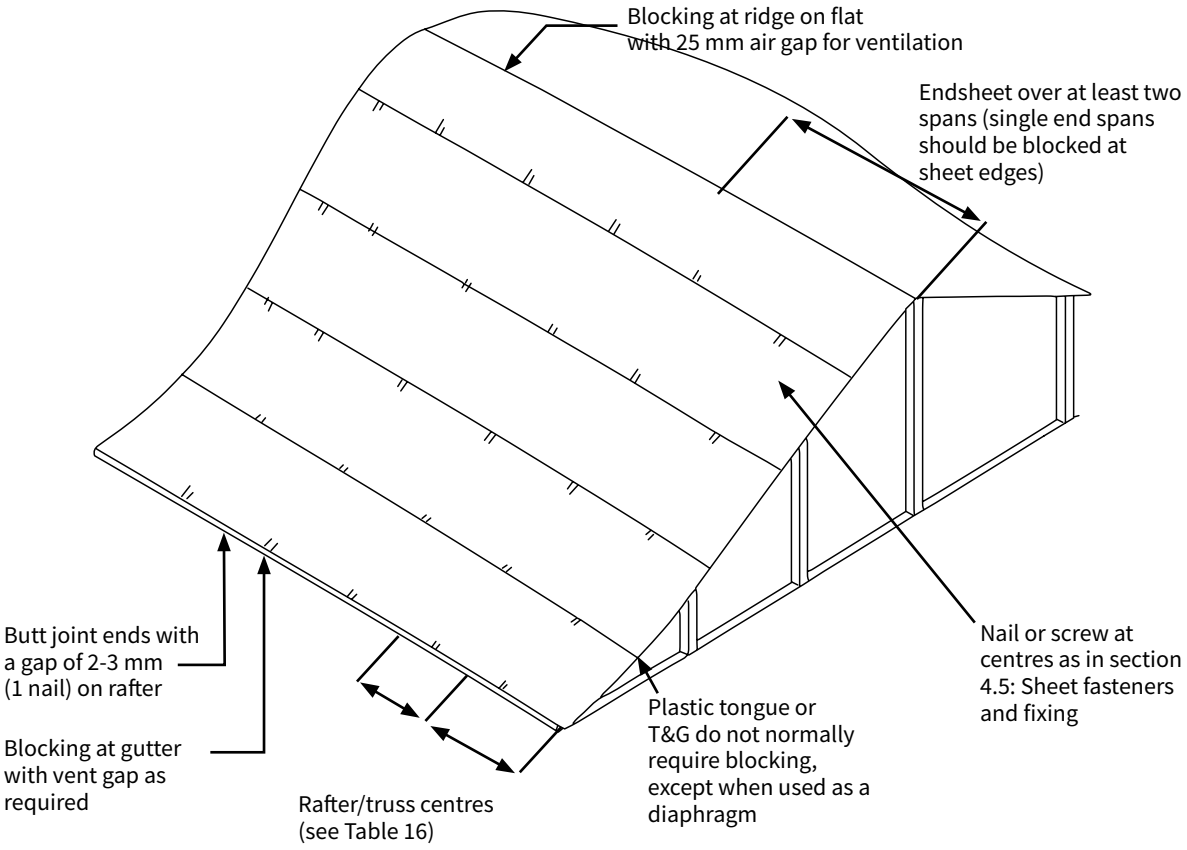

Figure 2

Sheet Layout

Confirm that all IBS Plyroof sheets are completely dry. Installing damp or wet sheets can lead to movement, swelling, or surface defects once the roof is in service.

- When positioning the sheets, always run the face grain at right angles to the supporting members. This orientation maximises the structural capacity of the plywood and ensures the roof performs as designed under load.
- Each sheet must extend continuously across at least two spans, meaning it should be supported by a minimum of three framing members. This continuous spanning helps to distribute loads evenly and prevents localised stress points that may lead to deflection or failure.

- To increase overall stiffness and reduce the risk of long continuous joints, sheets should be arranged in a staggered, brick-bond type pattern. This layout strengthens the roof diaphragm and improves resistance to wind and seismic forces.
- Where the roof structure meets rigid confining elements, such as concrete upstands, brickwork, or masonry walls, it is important to provide adequate clearance. This allows the plywood to expand and contract with changes in temperature and humidity, reducing the likelihood of buckling. For larger roof areas, additional allowance for movement should be incorporated.
- Finally, ensure that ventilation spaces are maintained wherever required by the design. Proper ventilation helps manage moisture levels, protects the durability of the plywood, and contributes to a healthy building environment.

Fixing of Sheets

IBS Plyroof can be fixed to various framing types using nails, screws, or a combination of fasteners and construction adhesives. Fasteners should be corrosion-resistant, appropriate to the expected service life (15 or 50 years) and moisture exposure. When in contact with H3.2 treated timber or IBS Plyroof, fasteners must be at least hot-dip galvanised. In some cases, stainless steel fasteners are required refer to section 4 of NZS 3604. Stainless steel nails must be annular grooved for better holding. The strength of a plywood roof system depends on proper fixing to the framing. IBS Plyroof must be fixed to resist wind suction and maintain the surface quality of the roof covering.

- Always consult the roofing system supplier for specific fixing requirements.
- Check for additional requirements related to wind exposure.
- For very exposed sites, cyclonic conditions, or roofs over 10 metres high, perform structural design per relevant standards.
- Screw fixings are preferred for all systems due to improved holding power and reduced nail head popping.
- For minimum fastener spacing to resist wind suction, see page 17 section 4.5 Sheet fasteners & fixing.

5.2 Fixing to Timber Frames

General Recommendations

- Use ring shank nails, annular grooved nails, or screws for additional holding power.
- Always use flathead nails.
- Do not use jolt or bullet head nails.
- For stainless steel nails, ensure they are annular grooved to maintain grip and corrosion resistance.
- Confirm that the fastener is compatible with the roofing cover consult the roofing system supplier for guidance.

✓ **Staple Use**

- Staples may be used only if the withdrawal load is equivalent to hand-driven galvanised flathead nails.

Suggested minimum specification:

- **Length:** 50 mm
- **Crown:** 12 mm
- **Leg Diameter:** 1.8 mm
- **Spacing:** Place staples 20% closer than nails to maintain equivalent holding strength.

Refer to the manufacturer's information for corrosion resistance and durability ratings.

5.3 Fixing IBS Plyroof to Steel Frames

When installing IBS Plyroof over steel framing, special care must be taken to ensure secure fastening and long-term durability.

✓ **Direct Fixing to Steel**

- Fix directly to roll-formed steel up to 2 mm thick using self-drilling, self-tapping screws.
- If the plywood becomes damp and expands, screws in thicker steel may shear. To prevent this:
- Keep IBS Plyroof dry during installation, or
- Use larger gauge screws to accommodate potential expansion.

✓ **Using Battens**

- Alternatively, bolt or screw timber battens to the steel frame.
- Fix IBS Plyroof to the battens using standard timber framing methods.
- Ensure battens have adequate thickness to support the minimum nail or screw length required for structural compliance.

X Treatment Compatibility

- H3.2 treated plywood must not be fixed directly to steel framing due to potential chemical interaction and corrosion risk.

Blocking (Nogs, Dwangs)

- Block edges at ridge and gutter lines to prevent sagging under capping or gutters.
- Provide blocking in areas subject to high face loads or where access for maintenance is required.
- Blocking within the body of the roof is not required for Plyroof Tongue and Groove roofing, unless: It's needed for framing stability, or The plywood is used as a diaphragm to resist lateral loads (e.g. wind or earthquake). In these cases, shear transfer fixings should be specified in the construction drawings.
- Install flat blocking where ventilation gaps are needed.
- Some roofing systems may require specific blocking to suit their design always follow supplier recommendations.

5.4 Roof tile systems

Compatibility with Roofing Systems

Most fibreglass, asphalt, wooden shingle, and tile roofing systems are suitable for installation over DD grade plywood surfaces.

- Use IBS Plyroof as a substrate.
- Install all tile roofing in accordance with the tile manufacturer's specifications.
- For asphalt shingle applications, apply a felt underlay over the IBS Plyroof prior to shingle installation.

5.5 Roofing and Decking with Membranes on IBS Plyroof

Roofing and decking membranes may consist of synthetic rubber sheeting adhered to IBS Plyroof, or torch-on bitumen membranes.

- Always ensure IBS Plyroof is clean, dry, and free from dust or surface imperfections, as these can show through the membrane finish.
- Use IBS Plyroof or Structural Square Edge plywood (CD Grade) as the substrate.
- When using IBS Plyroof, consider applying a small daub of adhesive or a nail in the tongue and groove joint to minimise potential movement.
- For trafficable decks, a minimum plywood thickness of 17mm is recommended.
- Fix sheets using countersunk stainless steel screws and adhesive to the framing to prevent screw heads from popping. Apply adhesive between fastener lines.
- Use kiln-dried framing timber. Confirm with the membrane manufacturer whether bond breaker tape should be used over sheet joints to allow for natural movement.
- Where treatment is required, only use H3.2 treated IBS Plyroof. Do not use H3.1 LOSP-treated Plyroof, as solvent-based treatments are generally not compatible with membrane systems. If treatment salt crystals appear, gently scrub with water and allow to fully dry before applying the membrane.

Table 2: Roofing - Sheathing, Non Trafficable, Above 2 Degree Pitch

Application	Roof Pitch	Maximum Wind Zone	Maximum Frame Centres with face grain across framing	
Sheet thickness / Stress Grade			**15mm / F11**	**19mm / F11**
Substrate for flexible coverings requiring a smooth substrate and where avoidance of visible surface indentations is critical. Use as a substrate for flexible roof and deck membranes and thin roofing tiles.	>2˚	Extra High		800mm
	>28˚	High	900mm	
		Very High	800mm	
		Extra High	800mm	
	>20˚	Very High	900mm	
		Extra High	800mm	

Suggested applications include substrates for Asphalt Shingle.

The above suggested maximum framing spans are based on the following deflection criteria:

- Under a short term 1kN point load, deflection is less than Span/130.
- Under a long term self weight load, deflection is less than Span/400.
- Under a short term wind gust load, deflection is less than Span/150.

5.6 Roofing - design considerations

Roofing Materials

Various roofing materials used over IBS Plyroof plywood have different durability expectations, typically exceeding the 15-year minimum required by NZBC Clause B2. The durability of the roofing system depends on the specifications, installation, and ongoing maintenance as per the roofing manufacturer's requirements.

The durability of IBS Plyroof can only be assured if the roofing materials and associated detailing effectively exclude moisture. With proper building practices and regular maintenance, roofing materials can be repaired or replaced as needed, allowing the IBS Plyroof substrate to outlast the original roofing system.

When installed in accordance with the instructions and limitations outlined in this guide, and provided the roof system is adequately maintained, IBS Plyroof structural plywood will continue to meet the relevant requirements of the NZBC for 50 years.

High Humidity

For High Humidity, condensation and Solar Driven moisture applications, Treated IBS Plyroof must be used. However all care and design considerations must be taken to ensure that the moisture content remains below 18% at all times.

Table 3: Fasteners and Characteristic Shear Loads for IBS Plyroof					
	15mm	**Load**		**19mm**	**Load**
Minimum nail size in timber framing	60 x 2.8mm	736		60 x 2.8mm	736
Screw size in timber framing	8g x 40mm	1230		10g x 45mm	1650
1.15mm steel framing	10-24 x 40mm	2000		10-16 x 45mm	2100
Screw size in 2.80mm steel framing	10-16 x 40mm	1200		14-20 x 45mm	4000

5.7 Roof Ventilation

Good ventilation and moisture control are critical design considerations when using H3.2 treated IBS Plyroof panels. Poorly ventilated roof spaces can lead to elevated temperatures and moisture levels. The most common source of moisture is condensation forming from warm interior air on the underside of cold roofing.

Effective ventilation helps minimise excess moisture vapour buildup, especially in warmer climates. In colder regions, where winter nights are consistently low in temperature, H3.2 treated IBS Plyroof should be used.

However, moisture-induced decay is only one of several potential risks. Tight or poorly detailed roof cavities, combined with the heat absorption of darker roofing materials, can result in excessive heat buildup, leading to distortion in plywood or even framing members.

Use the suggested construction details, or suitable alternatives, to address these risks. Designers must account for roofing type, seasonal climate, wind exposure, and the intended use of the building.

As a general guideline, a minimum vent area of 1/300th of the ceiling plan area (approximately 3350 mm^2 per square metre) should be provided, evenly distributed between the eaves and the ridge, to allow airflow beneath the IBS Plyroof, up the roof pitch, and out. Roofing system manufacturers should provide appropriate ventilation details for their specific membrane or tile roofing solutions.

Ridge venting profiles and ventilation accessories are available from roofing suppliers. Ensure 25 mm ventilation gaps are detailed in the plywood at ridges, and where roof slopes meet upper-storey walls. For flat roofs, where natural airflow may be restricted, install roof vents to support ventilation. Consider forced ventilation as appropriate.

5.8 Bubbling

Plywood bubbling can occur when moisture trapped within knot holes in the inner veneers expands due to rising temperatures. This moisture will gradually dissipate through the face veneer and does not affect the structural integrity of the IBS Plyroof panel.

What is Bubbling?

Bubbling refers to the appearance of raised or uneven areas on the surface of the plywood sheet. This can occur when the panel is exposed to moisture either during storage, transport, or installation before it is fully protected by roofing membranes or coverings. It is caused when moisture is trapped between the first and second veneer.

Does Bubbling Affect Structural Integrity?

No. Bubbling is a cosmetic issue only and does not compromise the structural performance of IBS Plyroof. The product remains fully compliant with AS/NZS 2269 and continues to meet the requirements of the New Zealand Building Code for structural applications.

5.9 How to Fix Bubbling

To restore a smooth surface:

1. **Allow the sheet to dry** thoroughly if it is still damp.
2. **Remove the bubbled area** either with a chisel or a router, ensure that the area is clean.
3. **Fill the area** with a suitable epoxy or flexible wood filler.
4. **Sand** once the filler has cured to achieve a flush finish.
5. **Ensure the sheet is protected** from further moisture exposure until the final roofing layer is installed.

Ridge Detail With Ridgeboard

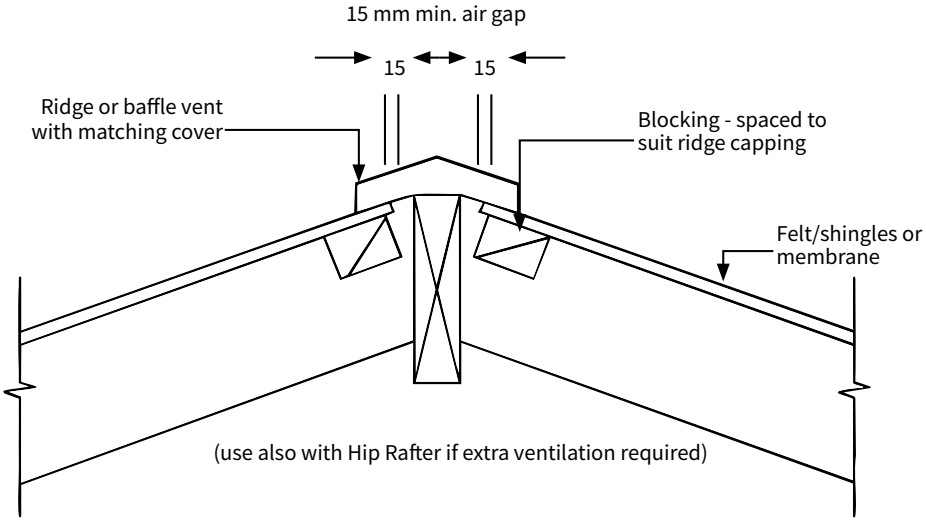

Figure 3

Truss Ridge Detail

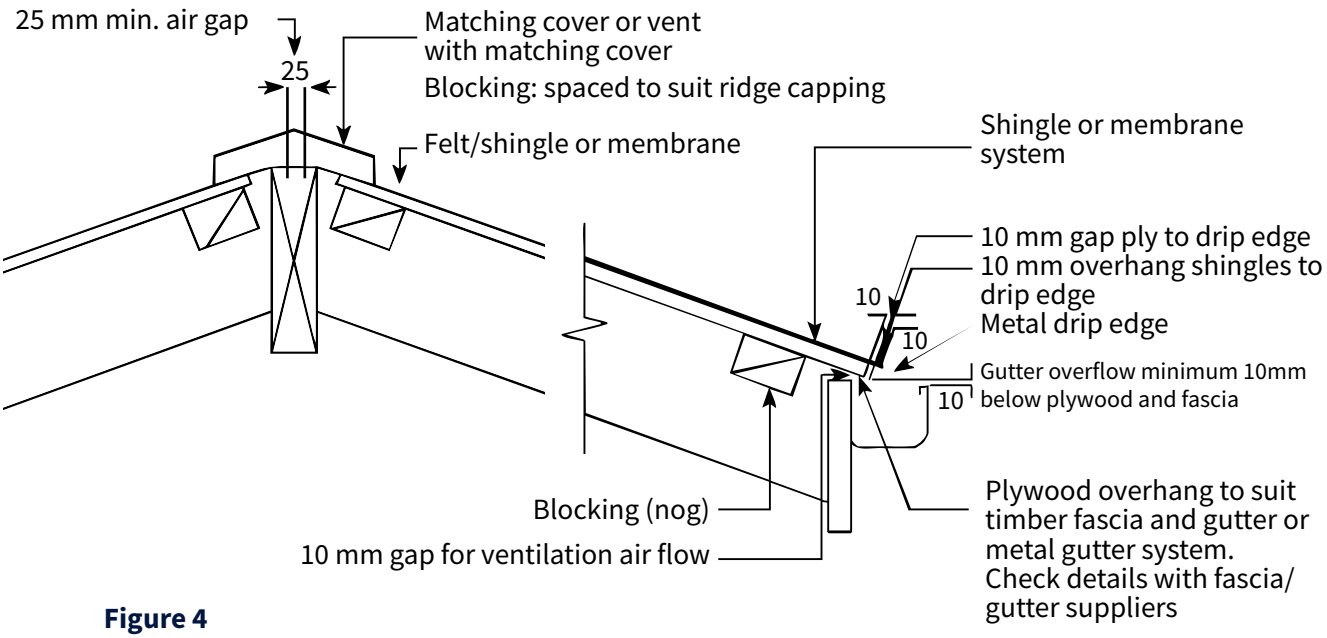

Figure 4

Roof to Wall Junction Vent

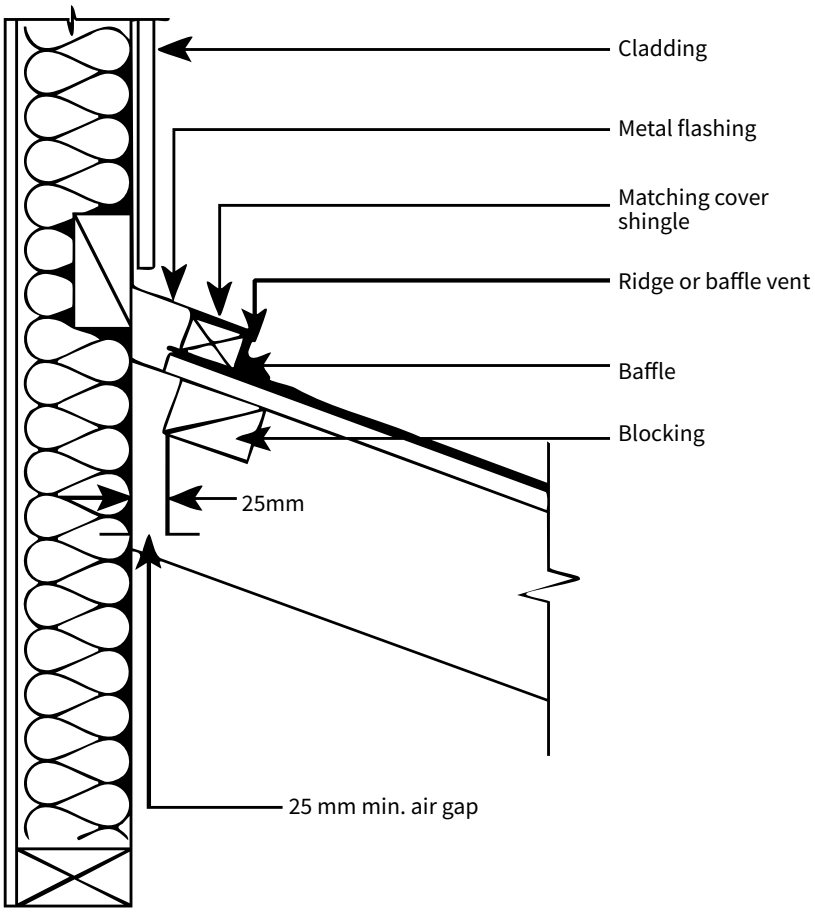

Figure 5

5.10 Rain, Weathering, and IBS Plyroof Performance

Untreated IBS Plyroof can tolerate moderate rain exposure during construction for up to three months. However, in extreme weather conditions involving high temperatures or heavy rainfall, this duration may be reduced.

If exposed, the sheet surface may develop discolouration and face checking. For roofs that will remain uncovered for extended periods, use H3-treated IBS Plyroof to reduce the risk of decay.

Ensure the moisture content of IBS Plyroof returns to below 18% before applying moisture-sensitive materials such as adhesives, or roof coverings.

Gutter Details

Where IBS Plyroof structural plywood is used as sub-sheathing to support roofing at gutters, a metal drip edge must be installed, allowing for appropriate gaps to ensure effective water shedding.

Gutters should include a front-edge overflow or be designed with end points lower than the back edge to direct water overflow away from both the framing and the IBS Plyroof sub-sheathing.

For IBS Plyroof sheets that extend into gutter areas, H3.2 treatment is recommended, along with regular maintenance to prevent the accumulation of leaf litter or soil (which can retain moisture).

Untreated IBS Plyroof must not be exposed to gutter splash or direct moisture contact.

5.11 Wind Suction – Fastener Placement

Wind pressure creates withdrawal forces on nails that secure plywood to purlins and trusses. For framing configurations referenced in Table 2, designers may use the following guidance in accordance with wind zones defined by NZS 3604.

Note: Full penetration of fasteners into the supporting member is assumed.

The Main Body of the Roof

For wind zones up to and including High, use 60 x 2.8 mm nails spaced at 150 mm centres on all cross framing. For Very High and Extra High wind zones, use 75 x 3.15 mm nails spaced at 150 mm centres.

All IBS Plyroof structural plywood used in roof edge zones, including gutters, eaves, and gable ends, must be fully supported on framing and fixed as follows:

- Use 60 x 2.8 mm nails at 75 mm centres for wind zones up to and including High.
- Use 75 x 3.15 mm nails at 75 mm centres for Very High and Extra High wind zones.
- Local pressure zones are defined in AS/NZS 1170 as being within 20% of the building's length, width, or the average of gutter and ridge height.

Designers and builders should review site conditions to ensure adequate fixing is applied. Buildings in exposed sites and lee zones should be specifically designed using the loading standard (AS/NZS 1170) and the timber structures standard NZS 3603.

In some wind conditions, the tiles themselves may be sucked from the plywood. Use a consulting engineer to assess site conditions, calculate wind pressures for the specific site, and determine the fastening and span requirements, and to check that the truss system can resist the loads being applied through the plywood.

5.12 Fixing of Roofing, tile, shingle and membrane system

Fixing methods for tile, shingle and membrane systems must be designed for the expected wind and weather exposure to protect the IBS Plyroof substrate.

Some shingle systems may not be suitable for use in very high or cyclonic wind zones.

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

Sheet Layout

- Ensure IBS Plyroof 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.
- Allow sufficient clearance inside confining structure such as concrete or brick walls adjacent to the roof. Use extra allowances with large areas.
- Allow clearance for ventilation as required.

6. Finishing

6.1 Preparation

Before applying any roofing overlay, ensure the moisture content of IBS Plyroof is below 18%. Installing roofing over damp plywood can compromise performance and durability. IBS Plyroof must not be exposed to the weather for more than 90 days under any circumstances.

To maintain sheet integrity and prevent moisture-related issues such as swelling or delamination, the roofing material should be applied as soon as possible after the sheets have been fixed.

Delays in covering the plywood increase the risk of weather exposure and may void warranty conditions. Always follow best practice installation and protection procedures.

7. Care & Maintenance

7.1 Care & Maintenance

Under normal conditions, IBS Plyroof panels require little to no maintenance, provided the roofing system is properly applied and maintained over time.

Regular inspections are recommended to ensure the roofing remains intact and the panels are protected from moisture and weather exposure.

Proper care of the finish will help extend the lifespan and appearance of the Plyroof system.

- **Inspection:** Periodically inspect for signs of damage, delamination, or moisture ingress.
- **Ensure:** That the roofing used is kept in good order and condition.
- **Should it get wet:** Make sure that you allow IBS Plyroof to fully dry before replacing the roofing used. Inspect the boards to ensure that they do not have any decay if they do then replace immediately.

8. Warranty

8.1 Warranty

Independent Building Supplies Limited (IBS) supplies sustainable building products, which when used and installed in accordance with all relevant instructions and specifications, will be fit for purpose.

As part of our commitment to performance, IBS provides a warranty in respect of IBS Hardboard (Product) in accordance with the following terms and conditions.

These terms and conditions must be read in conjunction with all product specific relevant and applicable technical documentation, information and guidelines published or referenced by IBS from time to time (Specifications) in relation to the Product.

1. IBS warrants that:

1.1 At the time of delivery to the merchant or site (where applicable) the IBS supplied Product will:

(a) be free from freight related defects;

(b) be free from defects that may have arisen through defective factory workmanship or materials; and

(c) conform to the performance characteristics listed on the applicable pass™ (warranted condition).

1.2 Once installed properly and in accordance with all appropriate Specifications the Product will continue to meet the relevant provisions of the building code as described on the applicable pass™ (warranted performance).

2. Date warranty valid:

2.1 IBS warrants:

(a) the warranted performance for 15 years from proven date of purchase or dispatch from IBS whichever date is the earlier; and

(b) the warranted performance for the durability period as specified by the NZ Building Code.

The durability period begins from the date the product is first installed or two months after the date of delivery, whichever is the earlier.

2.2 All enquiries relating to this warranty must (in the first instance) be directed to the place of purchase, the supplier or the installer.

2.3 By submitting a claim under the warranty, you grant IBS and its agents, consultants and contractors full rights of access, at no cost and at any reasonable time, to the relevant building to inspect the Product and the installation method for the purpose of determining the validity of the claim.

3. In the event a breach of the warranty is proven, the following applies:

3.1 For any valid and accepted breach of a warranty, IBS will, in its sole discretion, either:

(a) repair, replace or rectify the defective Product; or

(b) refund the purchase price of the defective Product. Where applicable the value will be reduced pro-rata, based on the remaining life of the Product (as set by the relevant durability requirements of the NZ Building Code).

3.2 Any action taken by IBS in satisfaction of a warranty claim shall constitute full and final settlement of all claims and IBS's total liability related to a breach of the warranty is limited to the direct cost to IBS of performing either of the above options.

3.3 IBS reserves the right to supply other comparable materials or products should the warranted Product no longer be supplied by IBS.

4. This warranty is subject to the following:

4.1 Receipt of evidence of the date of purchase of the Product.

4.2 Evidence satisfactory to IBS of failure of the Product.

4.3 Receipt of a written claim from the claimant either within 30 days of when the defect or failure of the Product would have become reasonably apparent or, if the defect was reasonably apparent prior to installation, then the claim must be made prior to installation.

4.4 The claim must include full details of the alleged defect in the Product.

5.2 IBS will in no circumstances be liable for:

(a) any damage or loss caused by a person other than IBS, or by any other factor outside IBS's reasonable control, including without limitation fire, moisture, lightning, liquid, strike or lockout, chemicals, insects or animal;

(b) any damage or loss caused or contributed to by incorrect or improper use or a failure to comply with all Specifications and all applicable building codes, regulations and legislation;

(c) neglect, abuse, misuse, growth of mould/ mildew/fungi/bacteria or other organism; or

(d) any direct or indirect loss, or consequential loss or damage, of any kind.

5.3 All warranties, conditions, liabilities and obligations implied by law or custom (other than the warranties in these terms) are excluded to the fullest extent permitted by law, and without limitation, where the Product is provided for the purposes of trade, the provisions of the Consumer Guarantees Act 1993 shall not apply.

5.4 Except as provided in these terms, IBS will not be liable (under legislation, contract, tort, or otherwise including in equity) in respect of any defects in the Product or for any other cost, expense or liability caused by or related to the use of the Product.

9. Technical Properties

9.1 Technical Properties

IBS Plyroof is an F11 structural plywood. The veneers are glued with an exterior phenol formaldehyde resin. The IBS Plyroof sheets are CD grade; no knot holes and only minor face repairs. Sheets are supplied untreated or treated to H3 (Micronized Copper Azole (MCA)) or H3.2 (CCA).

The sheets have a plastic tongue and groove installed down the length of the board to enable simpler joining. If designed, installed and maintained in accordance with all IBS requirements, IBS Plyroof will comply with or contribute to compliance with the following performance claims:

Table 4 - IBS Plyfloor Nominal Strengths (Limit States) per mm width

Parallel to the Face Grain					**Perpendicular to the Face Grain**		
Nominal Plywood Thickness[2] (mm)	**Stress Grade**	**Bending Stiffness EI** (1000 Nmm2)	**Bending Moment $f_{pb}Z$** (Nmm2)	**Rolling Shear $f_{pr}I/Q$** (N)	**Bending Stiffness EI** (1000 Nmm2)	**Bending Moment $f_{pb}Z$** (Nmm)	**Rolling Shear $f_{pr}I/Q$** (N)
15	F11	2357.3	920.7	21.0	593.2	325.0	11.1

Table 5 - IBS Plyfloor Characteristic Strength MPa

Stress Grade	**F11**
Bending (f_{pb})	31.0
Tension (f_{pt})	18.0
Panel Shear (f_{ps})	4.5
Rolling Shear (f_{pr})	1.8
Compression in Plane of Sheet (f_{pc})	22.0
Compression Normal to the Plane of the Sheet (f_{pp})	12.0
Modulus of Elasticity (E)	10500
Modulus of Rigidity (G)	525

10. Additional Resources

10.1 Compliance and Information

For compliance & information of IBS Plyroof refer to:

- IBS Product Specification
- IBS Plyroof Warranty
- www.ibs.co.nz
- 0800 367 759

10.2 Designing outside of scope

If you're designing or installing a product that deviates from these specifications or the guidelines in this design and install guide, please note that this will void any warranty claims unless specifically approved by IBS prior to any works starting.

11. Frequently Asked Questions

Q: What is IBS Plyroof?

A: IBS Plyroof is a high-performance structural plywood panel engineered for New Zealand roofing conditions.

Q: Where can IBS Plyroof be used?

A: It's suitable for residential, commercial, and light industrial buildings as a roofing substrate, especially for shingle or tile applications on steeper pitches.

Q: Is IBS Plyroof compliant with NZ Building Code?

A: Yes, it meets NZBC Clause B1 (Structure) and B2.3(a) (Durability), and complies with AS/NZS 2269 for structural plywood.

Q: Can IBS Plyroof be used in marine environments?

A: No, unless protected by a compliant waterproofing system. It's not recommended for persistent moisture zones.

Q: Is IBS Plyroof suitable as a finished surface?

A: No, it must be overlaid with a membrane or other finishing system.

Q: What are the recommended fixing patterns?

A: Fixings should be placed at 150 mm centres around the perimeter and 300 mm centres through the body of the sheet.

Q: Does IBS Plyroof have tongue and groove edges?

A: Yes, for easy jointing and reduced need for nogging.

Q: What happens if Plyroof sheets bubble due to moisture?

A: Bubbling doesn't affect structural integrity and can be repaired with epoxy or filler.

Q: Can IBS Plyroof be used for diaphragm bracing?

A: Yes, it's suitable for sheet diaphragm bracing to resist lateral wind and earthquake loads.

Q: What building types is Plyroof suitable for?

A: Houses, hostels, hotels, offices, factories, and multi-unit residential developments.

Q: What are the limitations of IBS Plyroof?

A: It must be installed and maintained per IBS specifications to ensure warranty validity.

Q: Can IBS Plyroof be used with tile roofing systems?

A: Yes, it's ideal as a substrate for tile roofing systems, especially on steeper pitches.

12. Limitations

When you are specifying and installing IBS Plyroof, the IBS Plyroof Installation Guide must be followed.

The below installation areas are considered critical to the successful installation of IBS Plyroof. Using this sheet as a checklist during installation will aid in problem free product installation and long term product durability post construction.

IMPORTANT NOTES:
All sections of this checklist should be completed in full.

Careful adherence to technical specification literature is critically important for completing IBS Plyroof construction. The construction shall comply with requirements of building consent. Any variations made should be approved by the BCA prior to work being undertaken.

The information contained in this document is current as at September 2025 and is based on data available to IBS Sustainable Building Products at the time.

All photographic images are intended to provide a general impression only and shall not be relied upon as an accurate example of IBS products installed in accordance with this document.

IBS reserves the right to change the information contained in this document without prior notice. It is your responsibility to ensure that you have the most up-to-date information available, including at the time of applying for a building consent. You can call 0800 367 759 or visit www.ibs.co.nz to obtain current information.

IBS has used all reasonable endeavours to ensure the accuracy and reliability of the information contained in this document. However, to the maximum extent permitted by law, IBS assumes no responsibility or liability for any inaccuracies, omissions, or errors in this information, nor for any actions taken in reliance on this information.

13. Installation Checklist

	Items to be checked	✓ Tick ☐	Notes
	Preparation & Design		
1	**Confirm Scope of Use:** Ensure IBS Plyroof is being used as a roofing substrate for residential, commercial, or light industrial buildings.	☐	
2	**Check Building Type Compatibility:** Verify that the building type (e.g., house, hostel, hotel, office, factory) is suitable for IBS Plyroof.	☐	
3	**Inspect Substrate Support:** : Roof trusses must fully support all short-edge joins; long edges are self-supporting via tongue and groove.	☐	
	Fastening		
4	**Use Brick Pattern for Short Edges:** Ensure no adjacent short-edge joins to maintain structural integrity.	☐	
5	**Allow Expansion Gaps:** Maintain a 2–3 mm gap between sheets to accommodate moisture-related expansion.	☐	
6	**Select Correct Fasteners for Wind Zone:** • High wind zones: 60 x 2.8 mm nails • Very high/extra high: 75 x 3.15 mm nails	☐	

7	**Fixing Pattern Compliance:** • 150 mm centres on all cross framing • Minimum 7 mm from short edge • Minimum 15 mm from long edge	☐	
8	**Use Corrosion-Resistant Fasteners:** Hot-dip galvanised or stainless steel nails (annular grooved) as per environmental conditions.	☐	
9	**Avoid Overdriving Nails:** Prevent damage by not overdriving power-driven nails.	☐	
10	**Confirm Fastener Compatibility:** Ensure fasteners are compatible with the roofing cover system.	☐	
11	**Staple Use Conditions:** Only use staples if withdrawal load matches hand-driven nails; place 20% closer than nails.	☐	
12	**Steel Frame Fixing:** • Use self-drilling screws for steel up to 2 mm thick • Use battens for thicker steel or damp conditions	☐	

13	Avoid Direct Fixing of H3.2 Treated Ply to Steel: Prevent corrosion due to chemical interaction.	☐	
	Installation		
14	**Moisture Protection During Install:** Keep sheets dry during and after installation to avoid bubbling or warping.	☐	
15	**Inspect for Bubbling:** If bubbling occurs, allow sheet to dry, remove affected area, fill with epoxy, and sand flush.	☐	
16	**Roofing Overlay Timing:** Install roofing overlay within 90 days to prevent exposure damage.	☐	
17	**Moisture Content Check:** Ensure moisture content is below 18% before overlay application.	☐	
18	**Periodic Inspection Post-Install:** Check for damage, delamination, or moisture ingress regularly.	☐	
19	**Replace Damaged Boards:** If decay is found, replace affected boards immediately.	☐	
20	**Maintain Roofing System:** Ensure the roofing system remains in good condition to protect the Plyroof substrate	☐	

Job Details

Site Location: _____

Date of Installation: _____

LBP Builder Name: _____

LBP Number: _____

IBS Plyroof

Design & Installation Guide

SUSTAINABLE BUILDING PRODUCTS

September 2025

Scan the QR code to view all IBS Plyroof documents.

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