bayonet®

BayoWrap Roof 02 Underlay

Product Technical Statement & Installation Guide

ISSUED: APR 2024 | Version 4

Product Technical Statement

Product

1.1 Bayonet BayoWrap Roof 02 Underlay is a synthetic building underlay for use under roof claddings. The product consists of a micro-porous water-resistant film laminated to two layers of non woven spun-bonded polyolefin.

Scope

2.1 Bayonet BayoWrap Roof 02 Underlay has been appraised for use as a self-supporting roof underlay on buildings within the following scope:

- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 for timber-framed buildings; or,
- the scope limitations of NASH Building Envelope Solutions, Paragraph 1.1 for steel-framed buildings; and,
- with masonry tile roof cladding; and,
- with metal tile roof cladding; and,
- with profiled metal roof cladding; and,
- situated in NZS 3604 and Nash Standard Part 2 Wind Zones up to, and including, Extra High.

Specific Design

2.2 Bayonet BayoWrap Roof 02 Underlay has also been appraised for use on buildings subject to specific weathertightness design. Building designers are responsible for the building design and for the incorporation of Bayonet BayoWrap Roof 02 Underlay into their design in accordance with the declared properties and the instructions of Bayonet.

Building Regulations

New Zealand Building Code (NZBC)

3.1 Bayonet BayoWrap Roof 02 Underlay, if used, designed, installed and maintained in accordance with the statements and conditions within this brochure, will meet, or contribute to meeting the following provisions of the NZBC:

Clause B2 Durability: Performance B2.3.1(a), not less than 50 years, B2.3.1(b), 15 years and B2.3.2. Bayonet BayoWrap Roof 02 Underlay meets these requirements. See paragraphs 9.1 & 9.2.

Clause E2 External Moisture: Performance E2.3.2. When used as part of the roof cladding system, Bayonet BayoWrap Roof 02 Underlay will contribute to meeting this requirement. See paragraph 12.1 & 12.2.

Clause F2 Hazardous Building Materials: Performance F2.3.1. Bayonet BayoWrap Roof 02 Underlay meets this requirement.

Technical Specification

4.1 Bayonet BayoWrap Roof 02 Underlay is a synthetic building underlay for use under roof claddings. The product consists of a micro-porous water-resistant film laminated to two layers of non-woven spun-bonded polyolefin. Bayonet BayoWrap Roof 02 Underlay is coloured beige on the top face and black on the bottom face.

4.2 Bayonet BayoWrap Roof 02 Underlay is supplied in rolls as follows: 1.25m wide x 40m long, 1.5m wide x 34m long. The rolls are wrapped in clear polythene film.

Accessories

4.3 Accessories used with Bayonet BayoWrap Roof 02 Underlay which are supplied by the installer are:

- **Fixings** - stainless steel staples, clouts, screws or proprietary underlay fixings, or other temporary fixings to attach the roof underlay to the framing.
- **Thermal break sheathing (steel framing)** - in accordance with NASH Building Envelope Solutions, Paragraph 11.4.3.2.

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Handling & Storage

5.1 Handling and storage of the Bayonet BayoWrap Roof 02 Underlay, whether on or off site, is under the control of the installer. The rolls must be protected from damage and weather. They must be stored on end, under cover, in clean, dry conditions and must not be crushed.

Technical Literature

6.1 Refer to the appraisals listing on the BRANZ website for details of the technical literature for BayoWrap Roof 02 Underlay. This technical literature must be read in conjunction with the appraisal.

6.2 All aspects of design, use, installation & maintenance contained in the technical literature and within the scope of the appraisal must be followed.

Design Information - General

7.1 Bayonet BayoWrap Roof 02 Underlay is suitable for use at roof pitches 3° and above. When used at pitches less than 10°, Bayonet BayoWrap Roof 02 Underlay can be installed horizontally, or vertically when fully supported by a corrosion resistant roof underlay support. At pitches 10° and greater, Bayonet BayoWrap Roof 02 Underlay can be installed vertically or horizontally, spanning no greater than 1,200mm between supports. Refer to Table 2 for a summary of the roof underlay support requirements in the Bayonet BayoWrap Roof 02 Underlay Installation Guide.

7.2 Bayonet BayoWrap Roof 02 Underlay is intended for use as an alternative to conventional kraft paper roof underlays, which are fixed over timber or steel framed roofs in order to limit the entry of wind into the roof cavity, and to assist in the moisture management of the roof cladding system.

7.3 The material also provides a degree of temporary weather protection during early construction. However, the product will not make the roof weathertight, and some wetting of the underlying structure is always possible before the roof cladding is installed. Hence, the entire building must be closed-in and made weatherproof before moisture sensitive materials such as ceiling linings and insulation materials are installed.

7.4 Bayonet BayoWrap Roof 02 Underlay must not be exposed to the weather or ultraviolet (UV) light for a total of more than 42 days before being covered by the roof cladding.

7.5 Bayonet BayoWrap Roof 02 Underlay is suitable for use under roof claddings on buildings as a roof underlay as called up in NZBC Acceptable Solution E2AS1, Table 23. Refer to Table 1 for the material properties of Bayonet BayoWrap Roof 02 Underlay.

Table 1. NZBC E2/AS1 Table 23 Requirements

NZBC E2/AS1 Table 23 Roof Underlays Properties	Property Performance Requirement	Results
Absorbency	≥ 150 g/m2	Pass
Vapour Resistance	≤ 7 MN s/g	Pass
Water Resistance	≥ 100 mm	Pass
pH of Extract	≥ 5.5 and ≤ 8	Pass
Shrinkage	≤ 0.5%	Pass
Mechanical	Edge tear and tensile strength	Edge Tear i. Machine Direction = 150 N ii. Cross Direction = 100 N Tensile Strength i. Machine Direction = 5kN/m ii. Cross Direction = 3.6kN/m

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Structure

8.1 Bayonet BayoWrap Roof 02 Underlay is suitable for use in all Building Wind Zones of NZS 3604 up to, and including, Extra High.

Durability

9.1 Bayonet BayoWrap Roof 02 Underlay meets code compliance with NZBC Clause B2.3.1 (a), not less than 50 years for roof underlays used where the roof cladding durability requirement or expected serviceable life is not less than 50 years, e.g. behind masonry roof tile cladding, and code compliance with NZBC Clause B2.3.1 (b), 15 years for roof underlays used where the roof cladding durability requirement is 15 years.

Serviceable Life

9.2 Provided it is not exposed to the weather or ultra-violet light for a total of more than 42 days, and provided the roof cladding is maintained in accordance with the cladding manufacturer's instructions and the roof cladding remains weather resistant, Bayonet BayoWrap Roof 02 Underlay is expected to have a serviceable life equal to that of the roof cladding.

Control of Internal Fire and Smoke Spread

10.1 Bayonet BayoWrap Roof 02 Underlay has an AS 1530 Part 2 flammability index of greater than 5. For Risk Groups other than SH Bayonet BayoWrap Roof 02 Underlay must be enclosed by a suitable internal lining in occupied spaces (not exposed to view).

Prevention of Fire Occuring

11.1 Separation or protection must be provided to Bayonet BayoWrap Roof 02 Underlay from heat sources such as fireplaces, heating appliances, flues and chimneys. Part 7 of NZBC Verification Method C/VM1 and Acceptable Solution C AS1, and Acceptable Solution C/AS2 provide methods for separation and protection of combustible materials from heat sources.

External Moisture

12.1 Bayonet BayoWrap Roof 02 Underlay must only be used under roof claddings that meet the requirements of the NZBC, such as those covered by NZBC Acceptable Solution E2/AS1, or roof claddings covered by a valid BRANZ Appraisal.

12.2 Bayonet BayoWrap Roof 02 Underlay, when installed in accordance with the technical literature and the BRANZ Appraisal, will assist in the total cladding system's compliance with NZBC Clause E2.

Installation Information

Installation Skill Level Requirements

13.1 Installation must always be carried out in accordance with the Bayonet BayoWrap Roof 02 Underlay technical literature and the BRANZ appraisal by or under the supervision of, a licensed building practitioner (LBP) with the relevant licence class.

13.2 Bayonet BayoWrap Roof 02 Underlay cannot be laid under translucent sheeting.

13.3 Bayonet BayoWrap Roof 02 Underlay must only be used as a underlay in closed cavity spaces.

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Underlay Installation

14.1 Bayonet BayoWrap Roof 02 Underlay must be fixed at maximum 300mm centres to all framing members with large-head clouts 20mm long, 6-8mm stainless steel staples, self-drilling screws or proprietary underlay fixings. The membrane must be pulled taut over the framing before fixing.

14.2 Bayonet BayoWrap Roof 02 Underlay may be installed vertically or horizontally at roof pitches greater than 3° and above (refer to Paragraph 7.1 for further guidance). It must extend from the ridge and overhang the fascia board by 20mm-25 mm. Vertical laps must be no less than 150mm wide. Horizontal laps must also be no less than 150mm, with the direction of the lap ensuring that water is shed to the outer face of the Underlay. End laps must be made over framing and be no less than 150mm wide.

14.3 When fixing the product in windy conditions, care must be taken due to the large sail area created.

14.4 Any damaged areas of Bayonet BayoWrap Roof 02 Underlay, such as tears, holes or gaps around service penetrations, must be repaired. Damaged areas can be repaired by covering with new material lapping the damaged area by at least 150mm and taping, or by taping small tears.

Inspections

14.5 The Technical Literature must be referred to during the inspection of Bayonet BayoWrap Roof 02 Underlay installations.

Basis of Appraisal

The following is a summary of the technical investigations carried out:

Tests

15.1 The following tests have been carried out on Bayonet BayoWrap Roof 02 Underlay in accordance with NZBC Acceptable Solution E2/AS1, Table 23: tensile strength, edge-tear resistance and resistance to water vapour transmission in accordance with AS/NZS 4200.1, shrinkage in accordance with AS NZS 4201.3, resistance to water penetration in accordance with AS/NZS 4201.4, surface water absorbency in accordance with AS/NZS 4201.6 and pH of extract in accordance with AS/NZS 1301.421s. A range of these tests were completed before and after Bayonet BayoWrap Roof 02 Underlay was exposed to ultra-violet light.

15.2 The flammability index of Bayonet BayoWrap Roof 02 Underlay has been evaluated in accordance with AS 1530.2

15.3 This product has been BRANZ appraised (Appraisal No. 1263 (2024))

Bayonet BayoWrap
Roof 02 Underlay

Installation Guide

Installation Guide

Before you start

Installation of Bayonet BayoWrap Roof 02 Underlay can be used in warm, cold, and cold non-ventilated normal to pitched roofing systems. In roof construction it is important to recognise that underlays are one of the defence mechanisms in managing internal moisture and should not be used as a compensation for unreliable weatherproofing design or installation. For this reason the requirements of NZBC E2/AS1, New Zealand Metal Roofing Manufacturers Inc. code of practice, NZS 2295:2006, AS4200:Part 2, NASH Building Envelope Solutions: 2019 for Light Steel Framed Buildings and the following list of criteria must be met to comply with the requirements of this technical document.

Safety

Prior to accessing the roof the Best Practice Guidelines for Working on Roofs provided by Ministry of Business, Innovation and Employment (MBIE) must be applied to meet their obligations under the Health and Safety in Employment Act 1992 (HSE Act) and the HSE Regulations 1995.

Care should be taken in handling materials at height. In particular ensure that manual handling regulations are not exceeded. Sufficient edge protection, netting, appropriate scaffolding and lifting equipment are necessary to ensure the safe application of roofing underlays. Before work commences a method statement and risk assessment should be prepared and risk mitigation actions implemented.

Timing of installation

The Bayonet BayoWrap Roof 02 Underlay cannot be left uncladded for more than 42 days. Any further sunshine radiation exposure to the product will negativ ely affect its tensile strength properties.

The commencement of the installation of the roofing underlay can only start once the timber frame moisture content is less than 20% and the relative humidity of the interior of the building is below 75%. A relative humidity of the interior of the building of below 75% will be required before the installation roof underlay for steel frame and concrete buildings. Residual construction moisture will collect on the underlays soon after installation if installed at greater than 75% relative humidity levels.

Where timbers on roofs have been treated with wood preservative due to high moisture content of timbers, it is essential that manufacturer's guidance be sought in relation to chemical attack from preservative on roofing underlay especially treated with solvent based preservatives.

The underlay can be used to provide temporary weather protection, as the main function of a roof underlay is to provide a secondary barrier to the roof covering, preventing the ingress of wind-driven rain, snow, dust into the roof space and reduce the wind uplift forces acting on the roof covering. However the underlay is not a total waterproof barrier and if it is to be used as a temporary waterproof covering some rain penetration may occur.

In certain conditions, particularly if there is persistent heavy rainfall combined with subsequent severe freeze/thaw conditions, an underlay should not be exposed for more than one week. To avoid unnecessary damage to the underlay, care must be taken where high winds persist.

Moisture-sensitive internal materials and/or finishes should not be installed until the external roof covering has been completed.

Installation Guide

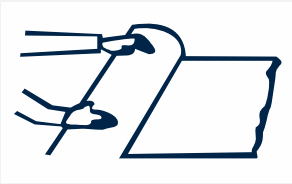
Installation process

1. **Safety:** Apply your risk assessment and mitigation actions as per the Best Practice Guidelines for Working on Roofs by (MBIE).

2. **Pre.-Installation conditions:** The roofing system meets the conditions as set out in the "Timing of installation" section on the previous page.

3. **Product Handling:** Reasonable precautions must be taken in handling the rolls to prevent damage, such as tears and perforations occurring before and during installation and prior to the application of the roof covering. The rolls must not be exposed to a naked flame or other ignition source and where possible, kept away from Ultraviolet light. Damage to the roof underlay greater than 75mm in the form of rips or tears requires the underlay to be replaced. Rips up to 75mm can be repaired using Bayonet BayoWrap Window Sealing Tape.

4. **Unrolling:** Remove packaging and labelling and unroll the underlay exactly as per the sketch, such that the inner surface of the roll [with printed laying lines] is facing up.



5. **Roof types:** Laying of underlay can either be horizontal or vertical when at roof pitches of 3° or above. Underlay support may be required depending on the roof pitch and the direction the underlay is laid (vertically or horizontally). (Refer to table 2. Roof Underlay Support Requirements)

6. **Lapping:** All sides of the underlay must overlap by 150mm. Overlapping of underlay must be kept to a minimum and there are specific requirements for the ends of the underlay to terminate at the ridge, eaves, abutments and roof protrusions (see items 8-24).

Table 2. Roof Underlay Support Requirements

	Roof pitches 3° and above	Roof pitches 10° and above
Horizontal laying	Self supporting	Self supporting
Vertical laying	Support required	Self supporting
Good ventilation design and effective weathertight details need to be applied in conjunction with underlay details for effective moisture control especially with low pitch roofs.		

Installation Guide

7. **Support:** Bayonet BayoWrap Roof 02 Underlay is strong enough to support its own weight up to a 1200mm span when laid (horizontally or vertically) on a roof of10° pitch and above. It will also support its own weight up to a 1200mm span if laid (horizontally) on a roof pitch of 3° and above. When laying vertically on roof pitches between 3° and 10° an underlay support is required. (Refer to Table 2: Roof Underlay Support Requirements)

8. **Ridges:** All underlay is terminated at the ridge, and if not, it should be slit or slotted to allow passive ventilation of the ceiling cavity.

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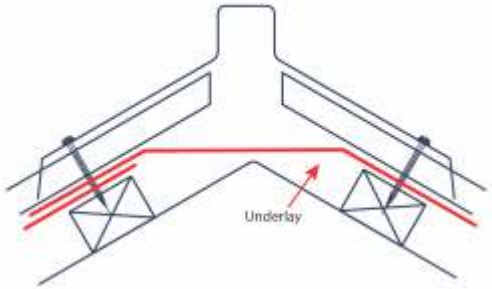

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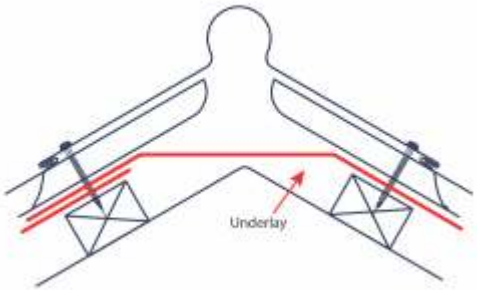

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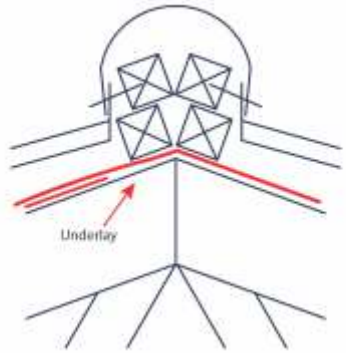

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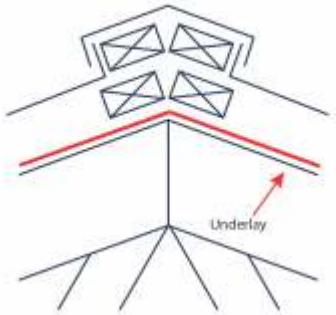

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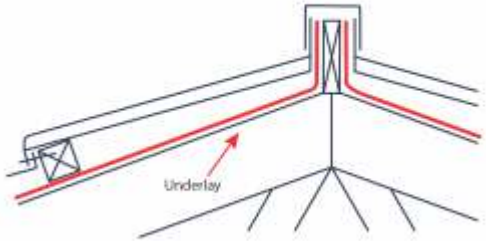

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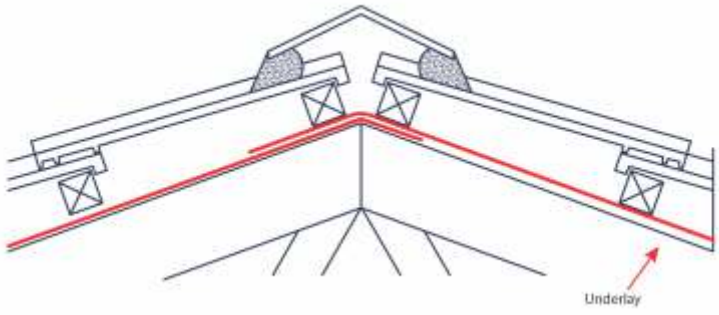

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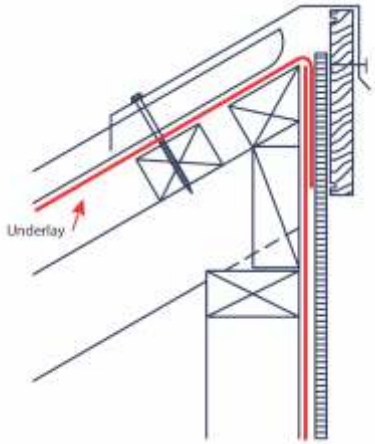
9. **Eaves:** E2/AS1 requires an eaves flashing to be installed with long-run profiled metal roofing in Very High and Extra High wind zones, where the soffit width is 100mm or less from the cladding and where the roof pitch is 10 ° or less. The eaves flashing is required to extend back up under the roofing by 125mm and extend out from the upstand of the gutter by 35mm. (Refer to figure 9 .4).

Bayonet recommends that and eaves flashing is installed on all long-run profiled metal roofing where synthetic roof underlays are used and that the underlay should terminate on the upper side of the eaves flashing. If no eaves flashing has been used, the underlay should overhang the facia by no more than 20mm to prevent wicking.

9.1



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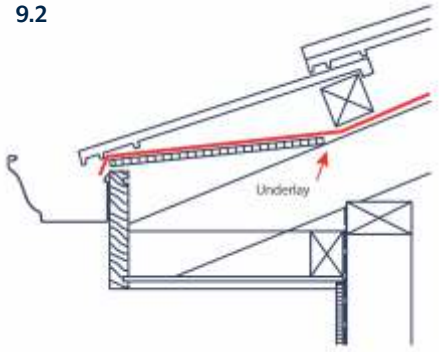

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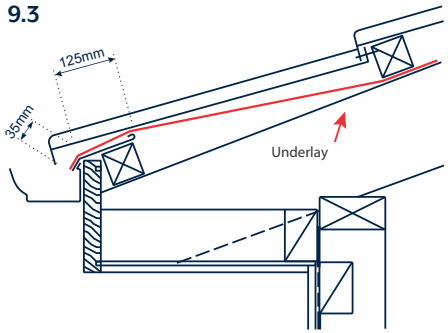

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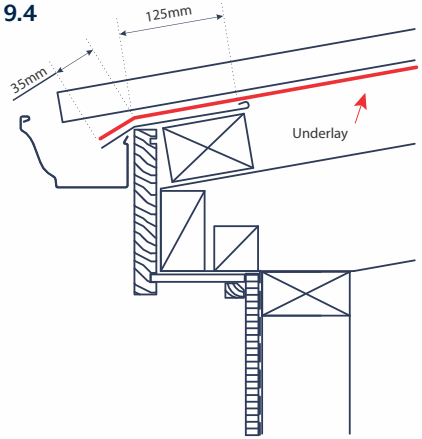

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10. **Barge:** The underlay should terminate to the highest point, either the top of the barge board or meet the metal barge flashing except for horizontal profiled metal where the underlay is used to separate the metal from timber.

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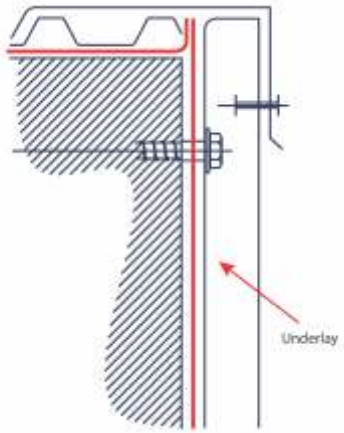

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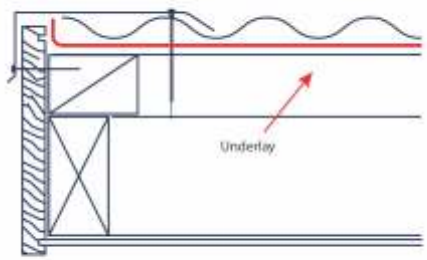

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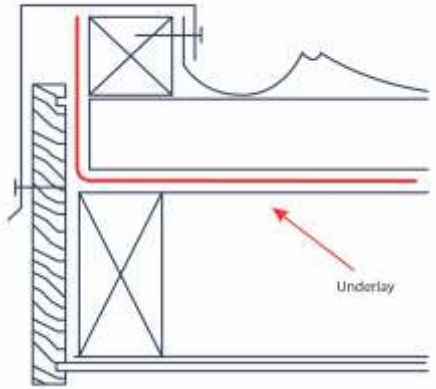

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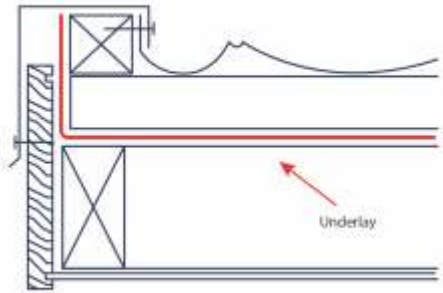

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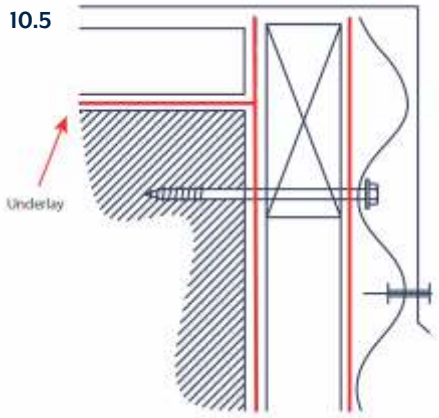

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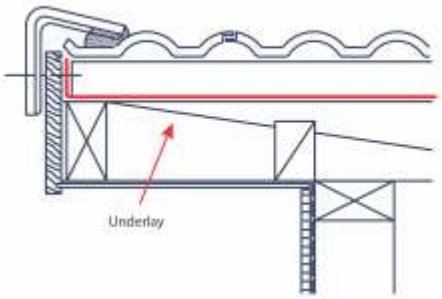

Installation Guide

11. **Aprons:** The underlay lap should terminate at a minimum of 150mm from the roof edge to the wall and separate any metal aprons flashing from the wall/ timber.

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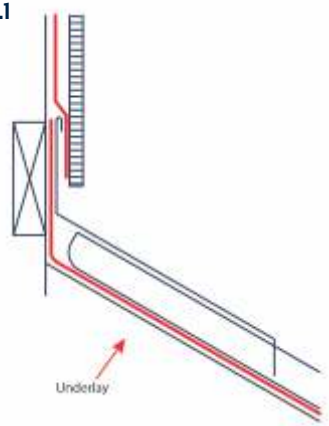

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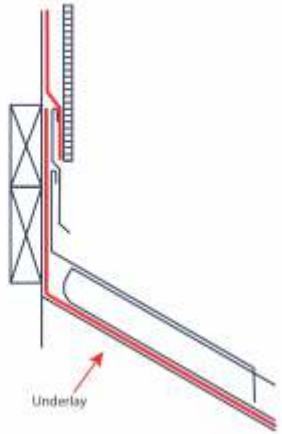

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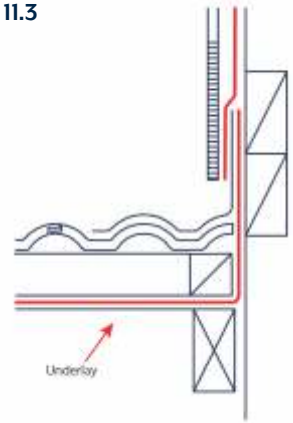

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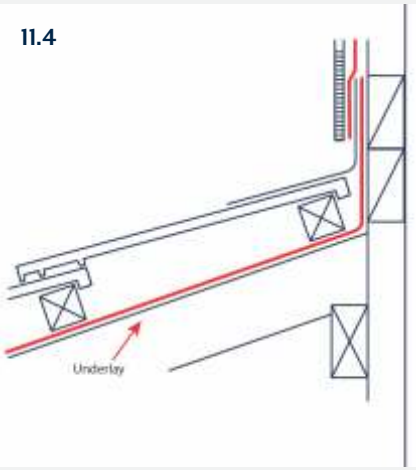

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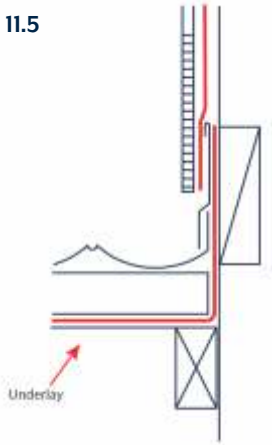

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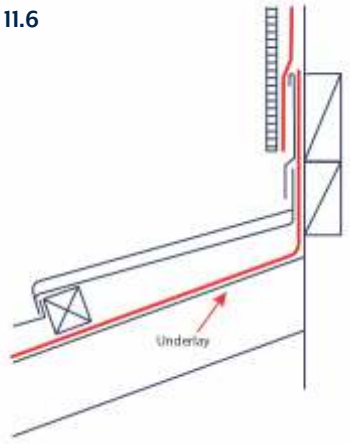

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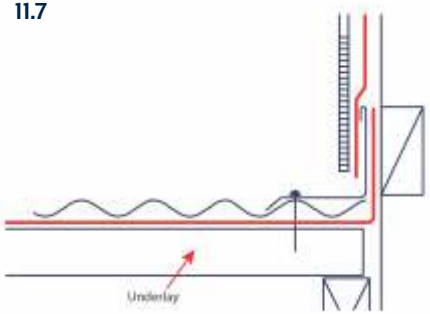

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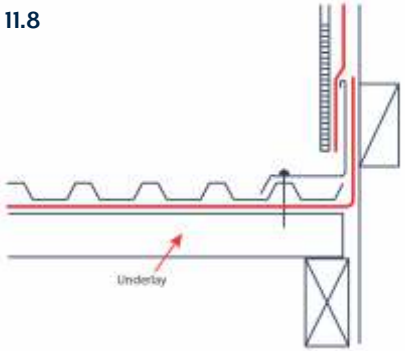

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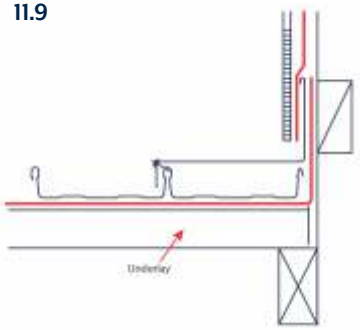

Installation Guide

12. **Aprons flashing and change in roof pitch:** The underlay lap should terminate at the end of the apron flashing so as to any metal apron flashing from the supporting roof structure.

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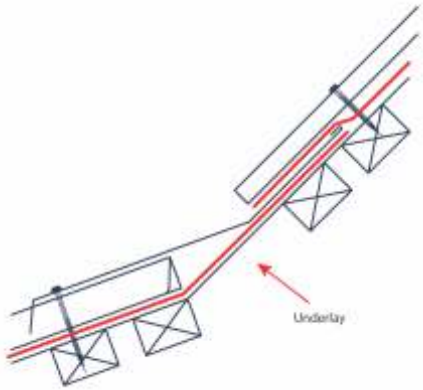

13. **Abutment:** The underlay is to cover the gutter lining under the roof area and overlap into thegutter by a maximum of 20mm to prevent wicking.

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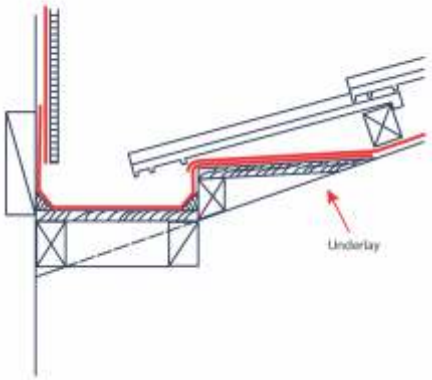
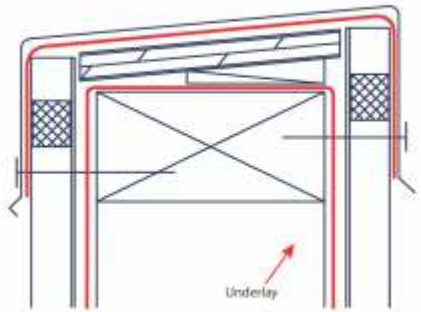
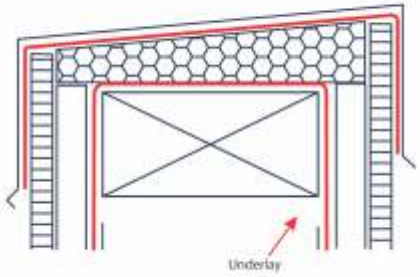


14. **Parapet and enclosed balustrades:** The underlay is to provide separation of the metal and timber.

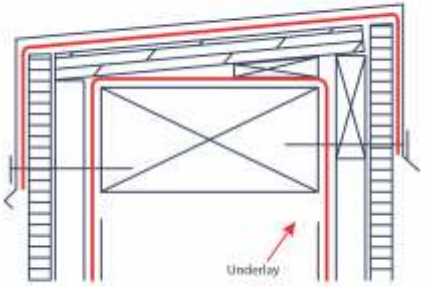
14.1



14.2



14.2

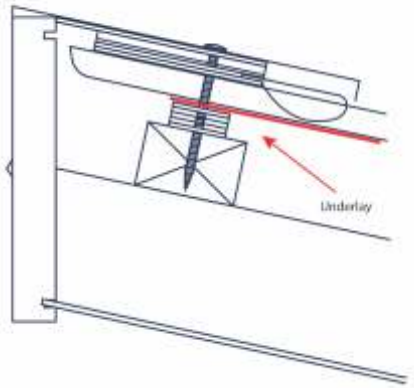


Installation Guide

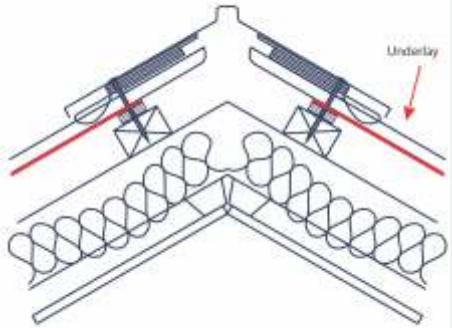
15. **Penetrations:** All roof penetrations that pass through the roof underlay will be installed by star-cutting the underlay carefully to prevent tears, closely fitted over the pipe, ensuring that all the tabs project upwards along the pipe, and then the tabs taped around the circumference of the pipe using a flexible flashing tape compiling with Parts 3.2 and 4 of ICBO Acceptance Criteria AC148, shall be compatible or roof underlay, and be used only in fully concealed applications.

16. **Vented Cavity Battens:** The underlay should be positioned on the upper side of the batten, directly under the roof covering allowing the battens to vent the roof cavity directly.

16.1

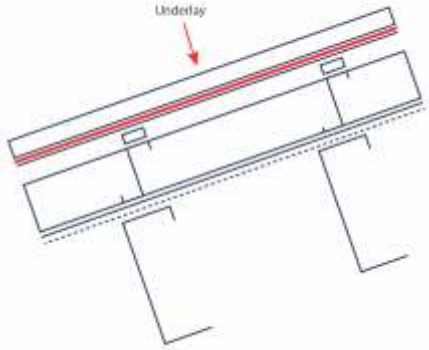


16.2



17. **Thermal breaks:** The underlay is to be installed between the roof covering and the insulating spacer to avoid thermal bridging.

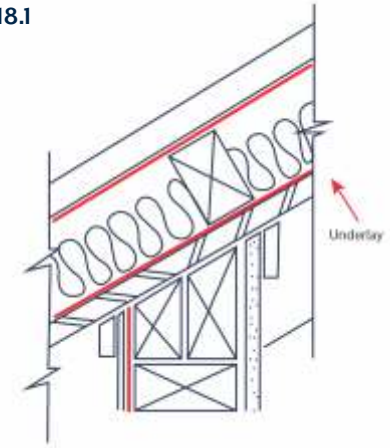
17



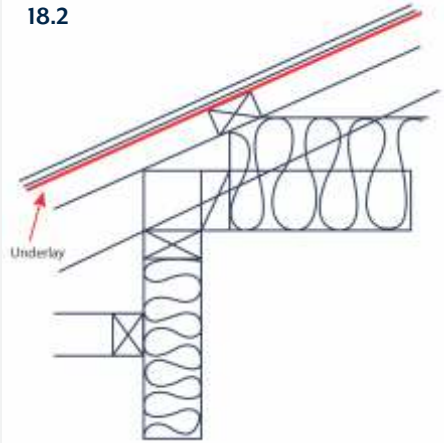
Installation Guide

18. **Cold roofs and insulation:** In cold roof construction, the insulation is at ceiling level and there is an air gap between the insulation and the roof underlay of at least 25mm.

18.1



18.2



19. **Separation from sources of heat:** Underlays being combustible materials must be separated from chimneys, flues, fire places and heating appliances as indicated in Part 7 of NZBC Acceptable Solutions C/AS1 and C/AS2 and NZBC Verification Method C/VM1.

20. **Accidental ignition:** Underlays have the risk of fire spread when used unsupported, should the material be accidentally ignited during maintenance works, etc. (e.g. by a roofer or plumbers torch). As with all types of sarking and bituminous material, care must be taken during building and maintenance to avoid the material becoming ignited.

21. **Fixings of roof underlay:** If the underlay is laid during roof or batten installation then the fixings used will be normally permanent through the roof, battens or purlins and comply with the specific design requirements of the building including the NZBC. If the temporary fixing is required then 6-8mm stainless steel staples or self drilling screws that are compatible with the roof coverings can be used as long as they are compatible with the roof covering. The maximum distance between fixing centres to all framing members is 300mm.

22. **Ultraviolet Radiation:** Once the underlay is installed and covered with the roof covering, it must not be exposed to the weather or direct ultra-violet light for long periods. It is recommended that any transparent cladding or windows have UV filters in place to prevent the degradation of the underlay over time as the UV reflective properties of white paint, concrete and asphalt range from 4-22% and will reduce the serviceable life of the underlay to that of the roof cladding.

23. **Loading Underlay:** Bayonet BayoWrap Roof 02 Underlay is not designed to withstand the weight of an installer, tiles, roofing material being loaded out. Purlins must therefore be installed as work progresses from eaves to ridge for achieving support for feet and avoiding damage to the underlay surface. No materials or implements should be resting on the underlay. Where pressure on the underlay over a rafter is unavoidable, it should be noted that the underlay does not offer substantial grip, particularly at overlaps or when wet.

24. **Repairing Installed Underlay:** Where the underlay becomes damaged for whatever reason, repairs can be carried out by overlaying the damaged area with a layer of additional material ensuring a 150mm overlap all round, ensuring that the up-slope side is overlapped by the next highest horizontal run of underlay, and secured under a batten. If the underlay is vertically installed, a full new sheet width will be installed from and fixed to the purlin below the damaged area to two purlins above the damaged area, fitted to under the old sheet and fixed to the purlin.