

0428P KINGSPAN INSULATED PANELS ROOFING SYSTEMS

Branded worksection

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Worksection abstract

This branded worksection *Template* is applicable to the provision of roof coverings using KINGSPAN INSULATED PANELS roofing systems, and roof plumbing. It also covers skylights, roof hatches, roof windows, roof ventilators and roof access.

Guidance text

All text within these boxes is provided as guidance for developing this worksection and should not form part of the final specification. This *Guidance* text may be hidden or deleted from the document using the hidden text *Hide* and *Delete* functions of your word processing system. For additional information visit FAQs at www.natspec.com.au.

Optional style text

Text in this font (blue with a grey background) covers items specified less frequently. It is provided for incorporation into *Normal* style text where it is applicable to a project.

Related material located elsewhere in NATSPEC

If a listed worksection is not part of your subscription package and you wish to purchase it, contact NATSPEC.

Related material may be found in other worksections. See for example:

- 0193 *Building access safety systems.*
- 0411 *Waterproofing – external and tanking* for membrane roofs.
- 0423 *Roofing – profiled sheet metal.*
- 0424 *Roofing – seamed sheet metal.*
- 0425 *Roofing – shingles and shakes.*
- 0426 *Roofing – slate.*
- 0427 *Roofing – tiles.*
- 0428 *Roofing - insulated panel systems.*
- 0429 *Roofing - glazed*
- 0437p *KINGSPAN INSULATED PANELS cladding systems.*
- 0471p *KINGSPAN in thermal insulation and pliable membranes.*
- 0762p *KINGSPAN INSULATED PANELS in cool rooms* in cool rooms.
- 0802 *Hydraulic design and install* for stormwater and rainwater storage systems.
- 0933 *Power generation – photovoltaic* for integrated rooftop solar PV panels. Contact Kingspan to make sure the roofing system is suitable for PV integration.

Material not provided by KINGSPAN INSULATED PANELS

This branded worksection *Template* includes generic material which may not be provided by the Product Partner including:

- Some roof plumbing products.
- Roof hatches.
- Roof windows.
- Roof ventilators.

Documenting this and related work

You may document this and related work as follows:

- Locate the extent of roofing types, accessories, and finishes on drawings to your office documentation policy.
- Show on the drawings the arrangement of the rainwater plumbing system, including the type and size of the main components (gutters, downpipes, sumps, rainheads, etc.) and the size and spacing of supports and fixings. In high wind areas, consider the degree of exposure of gutters and downpipes and the need to provide additional fixings.
- If documenting stormwater disposal, rainwater tank and related products, use *0802 Hydraulic design and install*.
- If documenting electric fan powered roof ventilators, document the necessary electrical connection in *0902 Electrical design and install*.

- Where insulation is required for internal downpipes, document in *0471 Thermal insulation and pliable membranes* or show on drawings.
- If required, state the minimum thermal resistance (R-Value) (m².K/W). See NATSPEC TECHnote DES 031 for information on specifying R-Values.
- Check lead time for imported selections and consider adding a requirement, in **SUBMISSIONS**, for the builder to verify availability.
- Document bushfire protection to conform to AS 3959 and the NCC. See NATSPEC TECHnote DES 018 for information on bushfire protection.
- For guidelines on the design of roofs in snow areas, see AS/NZS 1170.3 and SA HB 106.
- For information on air moisture and condensation, see NATSPEC TECHnote DES 004.

The *Normal* style text of this worksection may refer to items as being documented elsewhere in the contract documentation. Make sure they are documented.

Search acumen.architecture.com.au, the Australian Institute of Architects' practice advisory subscription service, for notes on the following:

- Guarantees and warranties.
- Birds and buildings.

Specifying ESD

Green Star: Kingspan insulated panels may contribute to the overall Green Star rating for a building in categories such as Energy, Material, and Emissions.

Life Cycle Assessment: Kingspan products are environmentally assessed for impact on the environment, and environment product declarations are available on request. Kingspan is a manufacturer that has:

- Regular global reporting on sustainability performance.
- Low environmental impact for all products.
- Environmental product declaration's (EPD) for all products.

The following may be specified by retaining default text:

- Roof windows.

The following may be specified by including additional text:

- Rainwater tanks. See NATSPEC TECHnote DES 011 on rainwater harvesting.

Refer to the NATSPEC TECHreport TR 01 on specifying ESD.

1 GENERAL

KINGSPAN INSULATED PANELS is the global leader in the design, development and delivery of advanced building envelopes. Its wide range of products includes insulated roof panels, BENCHMARK high end roof systems and standing seam systems. KINGSPAN INSULATED PANELS is widely recognised in the industry for the high quality and performance of its products as well as its commitment to excellent customer services and technical support.

1.1 RESPONSIBILITIES

General

Requirement: Provide KINGSPAN INSULATED PANELS roofing systems and associated work, as documented.

Documented is defined in *0171 General requirements* as meaning contained in the contract documents.

Ambient climatic conditions

Design rainfall intensity (mm/h) to AS/NZS 3500.3: [complete/delete]

See AS/NZS 3500.3 Appendix E for selected place references or the Hydrometeorological Advisory Services of the Bureau of Meteorology (HAS) at www.bom.gov.au for rainfall data.

Atmospheric corrosivity

Atmospheric corrosivity category: To *0171 General requirements*.

Refer to *0171 General requirements* for the designation of the Exterior atmospheric corrosivity category of the project.

Distance from marine influence: [complete/delete]

Where the corrosive factor is a marine influence, the distance from marine influence determines the finish and grade of steel required.

Roof access

Type: [complete/delete]

e.g. Trafficable for short term roof maintenance access. When installed to Kingspan's recommendations and the span is within the safe spanning capability of the panel, Kingspan panels are suitable for short term maintenance access loading of up to 1.4 kN concentrated load or 0.25 kPa distributed load to AS/NZS 1170.1.

1.2 COMPANY CONTACTS**KINGSPAN INSULATED PANELS technical contacts**Website: www.kingspan.com/au/en-au**1.3 CROSS REFERENCES****General**

Requirement: Conform to the following:

- 0171 General requirements.

0171 General requirements contains umbrella requirements for all building and services worksections.

List the worksections cross referenced by this worksection. 0171 General requirements references the 018 Common requirements subgroup of worksections. It is not necessary to repeat them here. However, you may also wish to direct the contractor to other worksections where there may be work that is closely associated with this work.

NATSPEC uses generic worksection titles, whether or not there are branded equivalents. If you use a branded worksection, change the cross reference here.

1.4 MANUFACTURER'S DOCUMENTS**Technical manuals**Roofing panel and system product range: www.kingspan.com/au/products.Resource centre: www.kingspan.com/au/resources.Technical services: www.kingspan.com/au/contact-en.**1.5 INTERPRETATION****Abbreviations**

General: For the purposes of this worksection the following abbreviations apply:

- DLTR: Day-Lite Trapezoidal rooflight.
- KD: K-Dek.
- PIR: Polyisocyanurate.
- RL: BENCHMARK Roofliner.
- RW: Trapezoidal Roof Panel.

Edit the **Abbreviations** subclause to suit the project or delete if not required. List alphabetically.

1.6 TOLERANCES**Permitted deviations**

Requirement: To KINGSPAN INSULATED PANELS' recommendations.

Structural steelwork for KINGSPAN INSULATED PANELS roofing system: ± 5 mm between bearing planes of adjacent supports.

Supporting members: To AS 1562.1 clause 4.2.3.

1.7 SUBMISSIONS

Edit the **SUBMISSIONS** clause to suit project requirements.

Fire performanceFire hazard properties: Submit evidence of conformity to PRODUCTS, **FIRE PERFORMANCE**, Fire hazard properties.**Operation and maintenance manuals**

On completion: Submit a manual of recommendations from Kingspan for annual maintenance of the roofing system, including recommended methods of access, inspection, cleaning, repair and replacement.

Products and materials

Thermal insulation performance: Submit evidence of performance to AS/NZS 4859.1 and AS/NZS 4859.2.

This is primarily to verify claimed R-Values for NCC compliance.

Type tests: As appropriate for the project, submit evidence of conformity to the following:

- Metal roofing generally: Roof sheeting and fastenings to AS 1562.1 clause 5.4 for resistance to concentrated load and AS 1562.1 clause 5.5 for resistance to wind pressure.
- Metal roofing in cyclonic regions to AS/NZS 1170.2: Roof sheeting and fastenings to AS 1562.1 clause 5.6.
- Plastic sheet roofing: Roof sheeting and fastenings to AS 1562.3 Section 5 for resistance to wind forces and resistance to impact.

Type tests are carried out off-site. However, submission of evidence of a successful type test may be called up here for requirements specified in **SELECTIONS** or **PRODUCTS**, if there are no **SELECTIONS**.

Samples

Approved samples which define acceptable limits of colour and texture variations are retained on site. If particular or additional samples are required, e.g. samples for testing, list them here.

Requirement: Submit samples of the following:

- Custom profiled flashings and cappings.
- Sheet metal finishes showing the range of variation available.
- Sealants.
- Trims and accessories with a colour finish.

Shop drawings

Shop drawings are necessary if some or all of the system is to be designed by the contractor or a specialist subcontractor to meet the performance criteria specified. If this is not the case, delete **Shop drawings**.

General: Submit shop drawings to a scale that best describes the detail, showing the following:

- [complete/delete]

e.g. Methods of fixing, required end and side laps, acoustic insulation, suppression of impact noise, provisions for thermal movement, birdproofing, flashing, ridge cappings, roof water disposal, thermal insulation, vapour barrier, control joint treatment, isolation of incompatible metals, access for maintenance, provision for traffic.

Subcontractors

General: Submit names and contact details of proposed KINGSPAN INSULATED PANELS approved installer.

Evidence of experience: [complete/delete]

Delete if supplier/installer details are not required. Check the conditions of warranty for the panels selected and contact your local Kingspan sales representative for a list of trained and recommended installers or for information about its free comprehensive installation training program.

Tests

0171 General requirements covers tests in **Definitions** and calls for an inspection and testing plan under **SUBMISSIONS, Tests**.

Site tests: Submit results as follows:

- Internal downpipe hydrostatic testing: [complete/delete]

Detail the tests required in **PRODUCTS** or **EXECUTION**, as appropriate, and list the submissions required here.

Warranties

Roofing materials: Submit the manufacturer's product warranties.

Workmanship: Submit a warranty on the installation of the roofing system.

Describe the requirement of warranties in **PRODUCTS** or **EXECUTION**, as appropriate, and list the submissions required here.

1.8 INSPECTION

Notice

Inspection: Give notice so that inspection may be made of the following:

- Roof supports.

- The parts of the roof plumbing installation before covering up or concealing.

Amend to suit the project, adding critical stage inspections agreed in advance with Kingspan, as required.

Hold points, if required, should be inserted here.

2 PRODUCTS

2.1 GENERAL

Product substitution

Other products: Conform to PRODUCTS, **GENERAL**, **Substitutions** in *0171 General requirements*.

The *0171 General requirements* clause sets out the submissions required if the contractor proposes alternative products. Refer also to NATSPEC TECHnote GEN 006 for more information on proprietary specification.

Storage and handling

Storage and handling: To the manufacturer's recommendations and the following:

- Sealed, unopened packaging on a slightly sloped surface to prevent ponding on panel faces.
- Keep dry and unexposed to weather, including direct sunlight.
- Protect materials including edges and surfaces from damage.
- Do not drag metal sheets or panels across each other or over other materials.

Storage area conditions: Allocate a safe and trade free area.

Product identification

General: Marked to show the following:

- Manufacturer's identification.
- Product brand name.
- Product type.
- Quantity.
- Product reference code and batch number.
- Date of manufacture.

Edit the list to suit the project or delete if not required.

2.2 FIRE PERFORMANCE

Fire hazard properties

See NATSPEC TECHnote DES 003 for more information on the fire hazard properties of insulation materials and NATSPEC TECHnote DES 020 on fire behaviour of building materials and assemblies. See also BCA Spec C1.10 Table 4.

Group number: To AS 5637.1.

Non-sprinklered buildings: Wall and ceiling linings must either have an *average specific extinction area* less than 250 m²/kg or a *smoke growth rate index* not more than 100 as determined by AS 5637.1.

Refer to NATSPEC TECHnote DES 020 for information on fire hazard properties.

Insulation materials: Tested to AS/NZS 1530.3. Fire hazard indices as follows:

Refer to CSIRO's certificate of test report No. FNE8218 for the fire hazard properties of KS1200CS, with a nominal thickness of 150 mm tested to AS/NZS 1530.3:

- Ignitability index: 0.
- Spread-of-Flame Index: 0.
- Heat Evolved Index: 0.
- Smoke Developed Index: 2.

- Spread-of-Flame Index: ≤ 9.
- Smoke-Developed Index: ≤ 8 if Spread-of-Flame Index > 5.

2.3 KINGSPAN INSULATED PANELS ROOFING SYSTEMS

Standards

Design, installation and materials: To AS 1562.1.

AS 1562.1 requires steel conform to AS 1397 for continuously hot-dipped metallic coated sheet and strip or AS/NZS 2728 for prepainted and organic film/metal laminate products.

Polyisocyanurate (rigid cellular RC/PIR) core: To AS 1366.2.

Insulation blowing agents

Restricted agents: Conform to **MATERIALS AND COMPONENTS, Prohibited materials** in 0171 *General requirements*.

Trapezoidal (KS1000 RW)

Compatible with KINGSPAN INSULATED PANELS daylighting systems and KINGSPAN INSULATED PANELS insulated gutters. KS1000 RW is designed for applications with a roof pitch of 3° or above after deflection and is suitable for most new build and refurbishment building applications as a roofing element. A choice of exterior and interior finishes caters for a range of colours and coatings in standard and high humidity environments. Specifications for lower pitches are available on request from KINGSPAN INSULATED PANELS Technical Services.

Description: A through fixed system of pre-painted, trapezoidal steel sheets with a PIR insulation core.

Sealant tape: 6 mm x 4 mm butyl rubber.

Neoprene foam tape: 4.8 mm x 60 mm wide neoprene, for high humidity applications.

RW profile filler: 1000 mm x 35 mm x 35 mm.

Neutral cure gun grade silicone sealant: As required.

Sealant not supplied by KINGSPAN INSULATED PANELS. Refer to KINGSPAN INSULATED PANELS's technical drawings for sealant locations.

Flashing: 0.5 mm minimum thickness, metallic-coated steel.

KINGSPAN INSULATED PANELS manufacture flashings to order to the specification of the external and internal sheet respectively.

Primary fasteners (Non Cyclonic): Self-tapping, self-drilling screws, manufactured from carbon steel, anti-corrosion coated, and fitted with a 19 mm or 25 mm diameter embossed stainless steel (or aluminium) washer.

Colour matched heads or caps can also be used.

K-Dek (KS1000 KD)

KS1000 KD is suitable for flat and pitched roofs above 1:80 (0.72°) after deflection. It can be used for all building applications except where there is a requirement for a low temperature controlled environment or a high humidity environment.

Description: A single component, factory pre-engineered roof deck, manufactured with a single ply membrane, with PIR insulation and a trapezoidal steel deck.

Sealant tape: 6 mm x 4 mm butyl rubber.

Neoprene foam tape: 4.8 mm x 60 mm wide.

Double sided acrylic tape: KDSLTAPE.

RW profile filler: 1000 mm x 35 mm x 35 mm.

Neutral cure gun grade silicone sealant: As required.

Sealant not supplied by KINGSPAN INSULATED PANELS. Refer to KINGSPAN INSULATED PANELS' technical drawings for sealant locations.

External flashing: Galvanized steel with membrane flashing overlay and membrane lined steel to KINGSPAN INSULATED PANELS recommendations.

Internal flashing: To match the internal liner sheet.

Primary fasteners: Self-coring carbon steel fasteners incorporating a 19 mm washer.

Secondary fasteners: For fixing flashing to panels:

- Flat head SFS IR2-C at 330 mm centres.
- Fastener length minimum: 120 mm for pan fixing and 155 mm for crown fixing.

BENCHMARK Roofliner (KS1100 RL)

KS1100 RL is suitable for buildings with flat, pitched and curved roofs with a convex or concave radius of 20 m, when used on a frame-to-frame long spanning structure.

Description: A PIR insulated roof panel system.

Roof sheeting/membrane for use over KINGSPAN Roofliner (KS1100 RL): [complete/delete].

This product requires installation of an additional fully sealed roof covering: either membrane or sheet metal. e.g. To 0423 Roofing – profiled sheet metal, To 0424 Roofing – seamed sheet metal or To 0411 Waterproofing – external and tanking.

Document the roof sheeting/membrane to be used with BENCHMARK Roofliner (KS1100 RL) insulated panel roofing system in the appropriate worksection or import relevant information.

Sealant tape: Butyl rubber:

- 6 mm x 4 mm.
- 50 mm x 1 mm.

Foam tape: 120 mm x 2 mm wide EPDM rubber tape.

Primary fasteners:

- Self-tapping, self-drilling screws, manufactured from carbon steel, anti-corrosion coated, and fitted with a 19 mm or 25 mm diameter embossed stainless steel (or aluminium) washer.

Colour matched heads or caps can also be used.

- For a flush finish:
 - . Recessed flat head fasteners complete with bearing plate with ultra-low profile finish.
 - . Type, size and drilling capacity: To the manufacturer's recommendations for type and thickness of supports, and thickness of cladding panels.

Secondary fasteners: For fixing flashing to panels:

- Steel rivets, or self-tapping screws at 300 mm centres (maximum).

System accessories

Requirement: KINGSPAN INSULATED PANELS accessories colour matched to insulated panels, as documented.

2.4 ROOF PLUMBING

General

See SA HB 39 Section 5 for the manufacture and fitting of internal and external metal gutters, downpipes, sumps and rainheads, AS/NZS 3500.3 Section 3 for method of sizing gutters and downpipes and AS/NZS 3500.3 clause 4.9 for support systems of roof drainage systems. Show particular requirements, if any, on the drawings.

See NATSPEC TECHnote DES 011 for more information on rainwater harvesting.

Description: Flashings, cappings, gutters, rainheads, outlets, downpipes and accessories necessary to complete the roofing system.

Flashing and capping: Notched to match profile of roof sheeting.

Matching fascia/arge capping: If the selected eaves gutter is a proprietary high front pattern forming part of a combined system of gutter, fascia and barge, provide matching proprietary fascias and barge cappings to roof verges and edges.

Delete if not required.

Standards

Roof drainage: To AS/NZS 3500.3.

Metal rainwater goods: To AS/NZS 2179.1.

Flashings and cappings: To AS/NZS 2904.

See SA HB 39 Section 8 for recommended practice for metal flashings and cappings.

Profiled fillers

Type: Purpose-made closed cell polyethylene foam profiled to match the roofing panel profile.

Location: Provide profiled fillers, under flashings and to close off corrugation cavities from the inside and outside of the building, to the following:

- Ridges.
- Eaves.
- Steps in roof panelling.

Add locations as required.

Colour: Black.

KINGSPAN INSULATED PANELS membrane lined insulated gutters

Eaves gutter: Highline gutter.

Gutter brackets: Match roof profile.

Lightweight pre-coated steel guttering, available in lengths up to 6 m and supplied in a corrosion-resistant range of finishes.

- Finish: [complete/delete]

e.g. Standard coating, High performance, Metallic or Bespoke colour.

- Colour: Match roof sheeting

Valley and parapet gutters: To the **KINGSPAN INSULATED PANELS** membrane lined insulated gutter schedule.

Membrane lined insulated gutters, available for manufacture to customers' requirements up to and including 6 m long, making it fast to install.

KINGSPAN INSULATED PANELS insulated parapet gutter and valley gutter are laid flat for use with syphonic drainage systems. External membrane thickness: 0.6 mm. Finish/colour: 0.6 mm IKO Armourplan PVC membrane.

Box gutters laid to falls: To the **KINGSPAN INSULATED PANELS** membrane lined insulated gutter schedule.

Membrane strip: 250 mm x 1.5 mm.

Foil tape: 100 mm wide.

Membrane outlet: To suit 100 mm or 150 mm downpipe.

Starter piece: Insulated and factory fitted, or as documented.

Stop ends: Site fitted, or as documented.

Outlets:

- Site fitted, or as documented.
- Polyethylene with sealing membrane.
- Standard diameters: 100 mm or 150 mm.

External pipe dimensions.

Sumps: Site assembled and fitted, or as documented.

KINGSPAN INSULATED PANELS insulated box gutters are laid to falls. External facing thickness: 0.6 mm. Finish/colour: 0.6 mm IKO Armourplan PVC membrane.

Fasteners

Requirement: To manufacturer's recommendations.

Sealants

Materials: Non-staining and to the manufacturer's recommendations.

2.5 KINGSPAN DAY-LITE TRAPEZOIDAL (KS1000 DLTR)

General

Day-Lite Trapezoidal (KS1000 DLTR) is only suitable for integration with the Trapezoidal (KS1000 RW) roofing panel system and a minimum pitch of 4° after deflection. Specifications for lower pitches are available from **KINGSPAN INSULATED PANELS** on request from **KINGSPAN INSULATED PANELS** Technical Services.

The system is designed to allow high levels of natural light into buildings. This range of translucent polycarbonate system provides superior resistance to UV degradation, resulting in excellent long-term light transmission, thermal and structural performance. The system is suitable for all building applications (except where the occupants or processes add significant quantities of water to the air, or where there are internal environments with low temperatures).

Standard lengths available from 1.8 m to 6 m (including 150 mm end lap). Longer lengths available on request. Extended lead times and additional cost may apply.

Colour availability: Clear/ Opal/ Opal 3.4.

Contact **KINGSPAN INSULATED PANELS** for further advice and availability of additional colours/SHGC.

Polycarbonate: To AS 4256.5.

The BCA cites AS/NZS 4256.5:1996.

Material: Co-extruded, multi-wall polycarbonate rigid thermoplastic sheeting.

External profile depth: 35 mm, overall polycarbonate depth 55 mm.

Sealant tape: 6 mm x 4 mm butyl rubber.

KS1000RW profile filler: 1000 mm x 35 mm x 35 mm.

PVC magnetic spacers: For 40 mm, 60 mm, 70 mm and 100 mm thick panels.

Primary fasteners:

- Self-tapping, self-drilling screws, manufactured from carbon steel, anti-corrosion coated, and fitted with a 19 mm diameter embossed stainless steel (or aluminium) washer bonded with EPDM and storm washers.
- Profiled aluminium storm washer: 1 mm thick x 50 mm long incorporating reinforcement ribs along back and sides, dimensions to match the crown of the sheet.
 - . Underside: Bonded closed cell EPDM backing, 2 mm thick to the full washer profile.
 - . Density of foam: 135 kg/m³.
 - . Resistance temperature: - 40°C to + 100°C.
 - . Colour: Poppy red.

Secondary fasteners: For fixing side laps:

- Carbon steel stitching screw, anti-corrosion coated, 6.3 mm x 28 mm complete with a 19 mm diameter embossed stainless steel (or aluminum) washer bonded with EPDM.

2.6 ROOF HATCHES

General

Description: A proprietary roof hatch system including framing, fixing, trim, seals, accessories and flashings.

2.7 ROOF WINDOWS

General

Standard: To AS 4285.

Description: A proprietary window system designed for non-vertical installation in roofs pitched between 15° and 85°, consisting of the following:

- Timber frame and sash, shop clear primed or prefinished.
- External anodised aluminium protective profiles.
- Sealed double glazing.
- Horizontally pivoted sash, 180° reversible, on patent friction hinges.
- Opening and locking by patent control bar.
- Ventilation flap.

2.8 ROOF VENTILATORS

General

Document any particular requirements, material, type (e.g. static, wind driven, electric fan powered), size, etc. if not shown on the drawings. For roof mounted heat exhaust vents, see AS 2427. For design of smoke/heat venting systems, see AS 2665.

Description: A proprietary roof ventilator system including framing, fixing, trim, seals, accessories and flashings.

3 EXECUTION

3.1 INSTALLATION

Protection

General: Keep the roofing and rainwater system free of debris and loose material during construction.

Metal separation

Make sure of compatibility or detail separation.

See AS 1562.1 Appendix C Table C3 for guidance on the compatibility of metals. See also SA HB 39 Section 2 on material selection. It is primarily a design responsibility that incompatible metals are not documented or shown to be in contact. Preferably show the separation method on the drawings.

Corrosion can result from water run-off between incompatible surfaces. See AS 1562.1 clause 3.4.3 and AS 1562.1 Appendix C Table C4. There are two conditions to be avoided:

- Run-off from copper and copper alloys onto aluminium, zinc, galvanized, or aluminium/zinc-coated surfaces.
- Run-off from inert catchment surfaces such as glazed terracotta, prepainted steel, aluminium and aluminium/zinc onto galvanized surfaces.

In marine or high humidity environments, separate green hardwood from aluminium and coated steel.

Typical methods for metal separation include:

- Applying an anti-corrosion, low moisture transmission coating such as zinc or barium chromate primer or aluminium pigmented bituminous paint to contact surfaces.
- Inserting a separation layer such as polyethylene film, adhesive tape or bituminous felt.

Requirement: Prevent direct contact between incompatible metals, and between green hardwood or chemically treated timber and aluminium or coated steel, by one of the following methods:

- Applying an anti-corrosion, low moisture transmission coating to contact surfaces.
- Inserting a separation layer.

3.2 KINGSPAN INSULATED PANELS ROOFING SYSTEM

Installation

Requirement: To KINGSPAN INSULATED PANELS recommendations using KINGSPAN INSULATED PANELS approved installers for installation, including the following:

- Minimum falls: To the manufacturer's recommendations.
- Fasteners, laps, sealants and fillers: Install, as documented.

Contact KINGSPAN INSULATED PANELS Technical services for the number of fixings required at each location as these are project specific and determined by the project specific wind loads.

To conform to local and cyclonic wind load requirements, and those of FM Approvals certification, it may be necessary to provide additional fasteners in areas of high local suction.

For fastener recommendations for cyclonic applications, contact KINGSPAN INSULATED PANELS Technical Services for advice and testing documentation. Recommended fasteners are available from recognized distributors, please contact technical team for further information.

- Site cut panels:
 - . Provide accurate, true lines with no distortion.
 - . Cut with a suitable metal cutting circular type saw and treat exposed edges with a suitable edge protection lacquer.
 - . Cut openings to the minimum size necessary.
 - . Penetrations larger than 300 mm x 250 mm: Provide additional structural support.

Refer to *Kingspan Method Statement* for information regarding cut panels.

It is not recommended that penetrations intersect the crown of a panel. For further advice, contact KINGSPAN INSULATED PANELS Technical Services.

Installation of roof sheeting/membrane over KINGSPAN Roofliner (KS1100 RL):

e.g. To 0423 Roofing – profiled sheet metal, To 0424 Roofing – seamed sheet metal or To 0411 Waterproofing – external and tanking. Document the roof sheeting/membrane to be used with BENCHMARK Roofliner (KS1100 RL) insulated panel roofing system in the appropriate worksection or import relevant information.

Swarf: Remove swarf and other debris as soon as it is deposited.

Protection: Protect surfaces and finishes, including the retention of protective coatings during installation.

Horizontal flashing and capping surfaces:

- Minimum slope: 1:15.
- Staining: Slope away from visible vertical facade areas to prevent staining.

Defective components: Do not install component parts which are defective, including warped, bowed, dented, abraded or broken members.

Damaged parts: Remove and replace damaged members during installation.

Joints

Requirement: Rigidly secure joints other than movement and open joints. Reinforce as required and fix with hairline abutments or as documented.

Panel to panel end joints: If roof lengths exceed maximum manufactured panel lengths, join panels using the manufacturer's recommended details.

Control joints:

- Location: To coincide with structural movement joints, as documented.

Subcontractors

General: Use panel manufacturer approved installers for installation and commissioning.

Accessories and trim

Requirement: Provide accessories and trim necessary to complete the installation, or as documented.

3.3 BUILDING ELEMENTS**Ridges and eaves**

Sheet ends: Treat as follows:

- Project panel ends with a 75 mm cut back at the eaves.
- Close off ridges with purpose-made ridge fillers of closed cell polyethylene foam.

Refer to KINGSPAN INSULATED PANELS standard construction details.

Ridges and barge

Capping: Finish off along ridge and verge lines with purpose-made ridge capping or barge rolls.

Refer to KINGSPAN INSULATED PANELS standard construction details.

Laps, sealants and fillers

Trapezoidal (KS1000 RW):

- Side laps: Factory applied weather seal (FAWS).

Continuous weather seal applied under controlled factory conditions to ensure a more efficient seal between individual panels.

- External end laps:
 - . KINGSPAN End Lap: Lap sheeting 150 mm and weather seal using three unbroken runs of sealant tape.
 - . KINGSPAN Prime Roof End Lap: Lap sheeting 75 mm and weather seal using Prime Roof Solution.

Trapezoidal (KS1000 RW): High humidity applications:

- Side laps: Seal internal joint with an unbroken run of sealant tape.
- External end laps:
 - . KINGSPAN End Lap: Lap sheeting 150 mm and weather seal using three unbroken runs of sealant tape. Seal along purlins using two unbroken runs of sealant tape or neoprene foam tape.
 - . KINGSPAN Prime Roof End Lap: Lap sheeting 75 mm and weather seal using Prime Roof Solution. Seal along purlins using two unbroken runs of sealant tape or neoprene foam tape.

Refer to KINGSPAN INSULATED PANELS standard construction details.

- Intermediate supports: Seal along purlins using two unbroken runs of sealant tape or neoprene foam tape.

K-Dek (KS1000 KD):

- End laps: 200 mm membrane strip welded at lap. Nominal weld 40 mm to each panel.
- Side laps: Apply KDSLTAPE to side lap before welding. Overlap membrane welded to membrane of adjacent panel at side laps, nominally 40 mm.

Refer to KINGSPAN INSULATED PANELS standard construction details.

BENCHMARK Roofliner (KS1100 RL):

- Panel end joints: Seal using continuous adhesive 50 mm butyl mastic tape on the external face. Before panels are laid, apply EPDM 120 x 2 mm self-adhesive sealing tape to purlin/supporting steelwork.
- Fire resistant panel end joints: If required, fill panel to panel end joints with a fire resisting gun applied canister urethane insulation, and over flash to KINGSPAN INSULATED PANELS recommendations.

Flashings (non cyclonic)

Fixing: Fix at maximum 450 mm centres.

Overlapping: Overlap 150 mm at joints.

Sealing: Seal laps with two unbroken runs of sealant tape. Air seal along the length with an unbroken run of sealant tape.

K-Dek (KS1000 KD):

- Membrane lined steel flashings: Seal at laps with a minimum 125 mm welded membrane strip.

For cyclonic applications, contact KINGSPAN INSULATED PANELS Technical Services for fixing recommendations and testing documentation.

Profiled fillers

Sealing: Seal the top, bottom and sides of each profile filler with a single line of non-setting gun-grade sealant.

Fixing: Provide a tight fit, without gaps.

Fasteners

KS1000 RW:

- Standard applications: Locate fasteners through every crown of the profile.
- Additional fixings: Locate in the valley of the panel.

To conform to local and cyclonic wind load requirements, and those of Factory Mutual, it may be necessary to provide additional fasteners in areas of high local suction.

- Side laps and flashings: Stitch at 450 mm centres (maximum) with carbon steel stitching screws complete with and EPDM seal.
- End laps: Tail stitch with 2 fasteners in each valley and one per crown.

K-Dek (KS1000 KD):

- Panel ends: Minimum of 3 fasteners.
- Intermediate supports: Minimum of 1 fastener.

The number of fasteners required depends on the project wind loads. See K-Dek load/span table for further information. Cover intermediate fasteners with a 90 mm welded membrane patch.

Day-Lite Trapezoidal (KS1000 DLTR) fasteners:

- Primary: Locate on the crown of the profile.
- Secondary: Side laps:
 - . Stitch at max. 300 mm centres, provide poppy red heads or caps.
- Fastener heads: Provide poppy red fastener heads.

End Laps: Refer to KS1000 DLTR construction details for latest end lap recommendations.

3.4 ROOF PLUMBING

Jointing sheet metal rainwater goods

See AS/NZS 3500.3 clause 2.7 for information on joint materials and products.

Butt joints: Make joints over a backing strip of the same material.

Soldered joints: Do not solder aluminium or aluminium/zinc-coated steel.

Sealing: Seal fasteners and mechanically fastened joints. Fill the holes of blind rivets with silicone sealant.

Jointing system: [complete/delete]

e.g. Blind rivet and seal as follows:

- Prepainted stainless: Stainless steel blind rivets with stainless steel mandrels.
- Prepainted or zinc-aluminium alloy coated steel: Aluminium blind rivets.

Flashings

Installation: Flash roof junctions, upstands, abutments and projections through the roof. Preform to required shapes if possible. Notch, scribe, flute or dress down as necessary to follow the profile of adjacent surfaces. Mitre angles and lap joints 150 mm in running lengths. Provide matching expansion joints at 6 m maximum intervals.

6 m corresponds to the manufacturing length. Movement at these joints would be less than 1 mm so all may not need to be fully-fledged expansion joints.

Upstands: Flash projections above or through the roof with two part flashings, consisting of a base flashing and a cover flashing, with at least 100 mm vertical overlap. Provide for independent movement between the roof and the projection.

Large penetrations in low pitch roofs: Extend the base flashing over the roofing to the ridge to prevent ponding behind the penetrating element.

This situation often occurs with mechanical plant. Consider documenting it on the drawings.

Wall abutments: Where a roof abuts a wall, provide overflashing as follows:

- In masonry walls, planked cladding or concrete: Step in courses to the roof slope. Interleave with damp proof course, if any.
- Raking in masonry: Build into the full width of the outer leaf. Turn up within cavity, slope inward across the cavity and fix to or build into the inner leaf at least 75 mm above the roofing line.
- Raking in concrete: Turn 25 mm into joints or grooves, wedge at 200 mm centres with compatible material and point up.

Fixing to pipes: Solder or seal with neutral cured silicone rubber and either of the following:

- Secure with a clamping ring.
- Provide a proprietary flexible clamping shoe with attached metal surround flashing.

Ridges and barge

Capping: Finish off along ridge and verge lines with purpose-made ridge capping or barge rolls.

Refer to manufacturer's standard construction details.

Sheet ends: Treat as follows:

- Project panel ends with a 75 mm cut back at the eaves.
- Close off ridges with purpose-made ridge fillers of closed cell polyethylene foam.

Refer to manufacturer's standard construction details.

Flashings (non-cyclonic)

Fixing: Fix at 450 mm centres.

Overlapping: Overlap top sheets.

For cyclonic and non-cyclonic applications, refer to manufacturer's for fixing recommendations and documentation.

Profiled fillers

Sealing: Seal the top, bottom and sides of each profile filler with a single line of non-setting gun-grade sealant.

Fixing: Provide a tight fit, without gaps.

Fasteners

Requirement: To manufacturer's recommendations.

KINGSPAN INSULATED PANELS membrane lined insulated gutters

Document the material, profile and size on the drawings or in a schedule.

Gutter and sump support: Provide framing and lining to support valley gutters, box gutters and sumps. Line the whole area under the gutters and sumps.

Support: [complete/delete]

e.g. Proprietary metallic-coated adjustable strap and channel system.

External and internal laps: 50 mm.

Fixing laps:

- One line of rivets at 75 mm maximum centres, 25 mm from the edge, using stainless steel rivets of 3.2 mm diameter x 8 mm long.
- Lay 100 mm wide silver foil tape centrally over joint.
- Heat seal the membrane over the joint using 1.5 x 250 mm PVC strip.

Box gutter: Prefabricate box gutters to the required section and shape. Form stop ends, downpipe nozzles, bends and returns. Dress downpipe nozzles into outlets.

- Hail guards: Install grating over the whole of the box gutter, over all box gutter sumps and over the edges of roofing sheeting entering box gutters.
- Overflows: Provide overflows to prevent back-flooding. Size to pass 100% of the design rainfall. Discharge overflows in visible locations and so water does not enter the building or cause damage to the building.
- Sumps: Minimum 150 mm deep and the full width of the box gutter.

This is a typical minimum size. Coordinate with hydraulic design.

Insulated box gutters (laid to falls): Provide Jonda brackets, installed at maximum 600 mm centres.

Refer to KINGSPAN INSULATED PANELS Insulated gutter details or contact KINGSPAN INSULATED PANELS Technical Services.

Gratings: Install removable gratings over rainheads and sumps.

Leaf screen location: All gutter outlets.

External downpipes

Document the material, profile and size on the drawings or in a schedule.

General: Prefabricate downpipes to the required section and shape where possible. Connect heads to gutter outlets and, if applicable, connect feet to rainwater drains.

Access cover: Provide a removable watertight access cover at the foot of each downpipe stack.

Downpipe support: Provide supports and fixings for downpipes.

Internal downpipes

Jointing method: [complete/delete]

e.g. Sealant joint or Bolted gland joint to AS 1631 (ductile iron), Screwed fittings to AS 1589 (copper), Solvent cement jointing (PVC-U), etc.

Access: Provide access openings as follows:

- At each junction and bend.
- At the foot of each stack.
- At every second floor level.

Modify locations to suit the project.

Type of access opening: [complete/delete]

e.g. Cast iron inspection openings to AS 1631 (or AS/NZS 1260 for PVC-U, AS 1589 for copper).

Acoustic insulation: Mineral fibre pipe insulation 50 mm thick, spirally bound on with 1.5 mm wire at 150 mm pitch.

Delete if not required.

Building in: If pipes are built into masonry or concrete, spiral wrap the pipe (and insulation, if any) with building paper.

Rainwater disposal

System: [complete/delete]

If not shown on the drawings, document method of disposal. Alternatives include Connection to stormwater drains, Discharge to rainwater tanks or Discharge to soakage pits.

3.5 KINGSPAN DAY-LITE TRAPEZOIDAL ROOF SYSTEM (KS1000DLTR)

Installation

Standard: To AS 1562.3.

AS 1562.3 covers the installation of plastic cladding materials. See also SA HB 39 Section 9. The BCA cites AS/NZS 1562.3:1996.

Requirement: To KINGSPAN INSULATED PANELS recommendations, using KINGSPAN INSULATED PANELS approved installers for installation.

External side laps: Weather seal along the length with an unbroken run of 6 mm x 4 mm sealant tape.

External end laps: Lap sheeting 150 mm and weather seal across the width using three unbroken runs of 6 mm x 4 mm sealant tape.

End lap cut back: 150 mm.

Refer to KS1000 DLTR construction details for lap recommendations and standard construction details.

Bearing width:

- End lap: Minimum 60 mm.
- Intermediate supports: Minimum 60 mm.

Fastener heads and caps: Provide fasteners with poppy red fastener heads and caps.

3.6 ROOF HATCHES

Installation

Fixing: [complete/delete]

Specify and detail to the recommendations of the roof hatch manufacturer.

3.7 ROOF WINDOWS

Installation

Standard: To AS 4285.

Fixing: [complete/delete]

Specify and detail to the recommendations of the roof window manufacturer.

3.8 ROOF VENTILATORS

Installation

Fixing: [complete/delete]

Specify and detail to the recommendations of the roof window manufacturer.

3.9 TESTING

0171 General requirements covers tests in **Definitions** and calls for an inspection and testing plan under **SUBMISSIONS, Tests**.

Site tests

Internal downpipes: Test each stack hydrostatically in stages, each test to run over two storeys high for two hours. Remedy defects and retest if necessary.

3.10 COMPLETION

Reinstatement

Extent: Repair or replace damage to the roofing and rainwater system. If the work cannot be repaired satisfactorily, replace the whole area affected.

Touch up: To KINGSPAN INSULATED PANELS recommendations.

Contact KINGSPAN INSULATED PANELS for any further recommendations.

Cleaning

Roofing and rainwater drainage system: Remove excess debris, metal swarf, solder, sealants and unused materials.

Exposed metal surfaces: Clean surfaces of substances that interfere with uniform weathering or oxidisation.

Protection: After completion, remove protective coatings using methods to the manufacturer's recommendations.

Protective film will withstand exposure to weather for a limited period of time before losing its peel-off characteristics and causing staining. The gloss coating changes when exposed to plasticizers.

Fasteners: Make sure weather tight and external panel facings are not distorted.

KINGSPAN INSULATED PANELS panels: Clean surfaces to the manufacturer's recommendations.

Refer to KINGSPAN INSULATED PANELS technical bulletin *Annual Inspection and maintenance*.

Roof plumbing: Clean out spoutings, gutters and rainwater pipes after completion of roof installation.

Warranties

Requirement: Provide materials and workmanship warranties as follows:

- Roofing materials: The manufacturer's product warranty.
- Workmanship: Installer's warranty.

Form: Against failure of materials and execution under normal environment and use conditions.

Period: As offered by the supplier/manufacturer.

Use only if warranties extending beyond the defects liability period are available for the particular system. As the warranty is in the form of separate material and installation warranties, the signatures of both manufacturer and installer are required.

The form(s) required should be provided as part of the contract documentation.

KINGSPAN INSULATED PANELS standard warranties include paint systems and panel materials. All warranties are project specific and long term product performance can depend on many factors, including the project location, aspect to prevailing winds, proximity to bodies of water (marine or otherwise) and local site factors such as nearby industries or industrial processes.

Warranty periods: Provided the panels are installed to KINGSPAN INSULATED PANELS recommendations and installers are trained by KINGSPAN INSULATED PANELS field service manager, warranties periods are as follows:

- KS1000 RW: Up to 25 years covering structural, thermal and coating performance.
- KS1000 KD: Up to 20 years structural and thermal performance.
- KS1100 RL: Up to 25 years structural and thermal performance.

4 SELECTIONS

Schedules are a way of documenting a selection of proprietary or generic products or systems by their properties. Indicate their locations here and/or on the drawings. Refer to NATSPEC TECHnote GEN 024 for guidance on using and editing schedules.

4.1 PRODUCT

KINGSPAN INSULATED PANELS roofing system schedule

Property	A	B	C
Profile			
Roof pitch			
Internal environment			
Panel width (mm)			
Panel length (m)			
External sheet thickness (mm)			
External sheet: Colour range/finish			
External sheet: Colour			
Covering for use with KS1100 RL			
Core thickness (mm)			
Internal liner sheet thickness (mm)			
Internal liner sheet: Colour range/finish			
Internal liner sheet: Colour			
R-Value (m ² .K/W)			

A, B, C: These designate each instance or type or location of the item scheduled.

Edit codes in the **Schedule** to match those on drawings.

Profile: Select from:

- KS1000 RW (Trapezoidal).
- KS1000 KD (K-Dek): Not suitable for use in a high humidity application.
- KS1100 RL (BENCHMARK Roofliner).

Roof pitch: If required, document the roof pitch:

- KS1000 RW: 3° or above after deflection. Contact KINGSPAN INSULATED PANELS for pitches less than 3°.
- KS1000 KD minimum pitch: 1:80 (0.72°) after deflection.
- KS1100 RL minimum pitch: To suit documented decking/membrane. Refer to the manufacturer’s recommendations.

Internal environment for KS1000 RW and KS1100 RL: Select Low-humidity or High-humidity. Delete if not required.

Panel width (mm): Standard module:

- KS1000 RW/KD: 1000.
- KS1100 RL: 1100.

Panel length (m): Standard lengths available from 2 to 13.7. Longer lengths can be supplied on request. For orders outside of Australia, maximum lengths are 11. 8. Maximum length for panels transported by rail is 12.

External sheet thickness (mm): Consult KINGSPAN INSULATED PANELS when thicknesses required for the project differ from the following:

- KS1000 RW minimum: 0.5.
- KS1000 KD: For PVC, 1.5, 1.8 or 2.0. For TPO, contact KINGSPAN INSULATED PANELS for available thicknesses.
- KS1100 RL minimum: 0.6.

External sheet colour range/finish: Select from:

- KS1000 RW: Select from Standard Range, High performance Range, Metallic Range or Custom Colour.
- KS1000 KD: Select from PVC or TPO.
- KS1100 RL: Off white.

External sheet colour: Consult KINGSPAN INSULATED PANELS for the colours available:

- KS1000 KD: White or Light grey.

Covering for use with KS1100 RL: Nominate the product or select from:

- Profiled sheet metal.
- Seamed sheet metal.
- Membrane.

Core thickness (mm): Select from:

- KS1000 RW: 40, 60, 70, 100 or 120.
- KS1000 KD: 70, 100.
- KS1100 RL: 50, 75, 100, 125, 150 or 200.

Internal liner sheet thickness (mm): Consult KINGSPAN INSULATED PANELS when thicknesses required for the project differ from the following:

- KS1000 RW minimum: 0.4.
- KS1000 KD minimum: 0.5.
- KS1100 RL minimum: 0.5.

Internal liner sheet colour range/finish: Select from:

- KS1000 RW: CLEANsafe15 (standard internal liner), External Standard Range, Metallic Range or Custom Colour.
- KS1000 RW high humidity internal environments: AQUAsafe 55 (swimming pools) or AQUAsafe.
- KS1000 KD: Off white (standard K-Dek internal liner), External Standard Range, Metallic Range or Custom Colour.
- KS1100 RL: CLEANsafe15 (standard internal liner), External Standard Range, Metallic Range or Custom Colour.

Internal liner sheet colour: Consult KINGSPAN INSULATED PANELS for the colours available.

R-Value (m².K/W): AS/NZS 4859 requires that R-Value is declared at 23°C for insulation products sold in Australia. Select from:

- KS1000 RW: 2.34, 3.36, 3.87, 5.35, 6.39.
- KS1000 KD: 3.76, 5.27.
- KS1100 RL: 2.65, 3.90, 5.15, 6.40, 7.65, 10.15.

KINGSPAN INSULATED PANELS Day-Lite system schedule

Property	A	B	C
Product	KS1000 DLTR	KS1000 DLTR	KS1000 DLTR
Roof pitch			
Panel width (mm)	1000	1000	1000
Panel length (m)			
Colour			
Fire performance			
Total system solar heat gain coefficient (SHGC)			
R-Value (m ² .K/W)			

Property	A	B	C
Total system U-Value (W/m ² K)			

A, B, C: These designate each instance or type or location of the item scheduled.

Edit codes in the **Schedule** to match those on drawings.

Product: KS 1000 DLTR.

Roof pitch: 3° or above after deflection. Contact Kingspan for pitches less than 3°.

Panel width (mm): 1000.

Panel length (m): Lengths are available from 1.8 m up to 6.0 m (including 150 mm end lap). Longer lengths available on request.

Colour: Select from the following:

- Clear.
- Opal.
- Opal 0.34.

Fire performance: Fire hazard properties as required by BCA.

Total system solar heat gain coefficient (SHGC): Select from the following:

- Clear: 0.65.
- Opal: 0.55.
- Opal 0.34: 0.34.

R-Value (m².K/W): 0.63.

Total system U-Value (W/m²K): Add Total system SHGC and Total system U-Value if required in BCA 3.12.1.3 or BCA J1.4.

KS1000 DLTR U-Value (not the Total system U-Value): 1.58 W/m²K. Refer to Kingspan's product data sheets for colour and daylighting performances.

4.2 ROOF PLUMBING

KINGSPAN INSULATED PANELS membrane lined insulated gutter schedule

Property	A	B	C
Product			
Core thickness (mm)			
Internal coating options			
Length (m)			
Box gutter size (mm)			
Girth (mm)			
Sump size(mm):			
Outlet (mm)			
R-Value (m ² .K/W)			

A, B, C: These designate each instance or type or location of the item scheduled.

Edit codes in the **Schedule** to match those on drawings.

Product: Select from the following:

- KINGSPAN INSULATED PANELS valley gutter.
- KINGSPAN INSULATED PANELS parapet gutter.
- KINGSPAN INSULATED PANELS box gutter (laid to falls).

Add requirements for syphonic systems separately, as appropriate.

Core thickness (mm): 60.

Internal coating options: Select from CLEANsafe15 (standard internal liner), External Standard Range, Metallic Range, Kingspan AQUAsafe 55 (swimming pools), KINGSPAN AQUAsafe or Antibacterial white.

Length (m): Maximum 6.0. Contact KINGSPAN INSULATED PANELS for longer lengths.

Box gutter size (laid to falls) (mm): Select from the following:

- 800 x 200.
- 600 x 175.
- Bespoke: Specify size.

Girth (mm):

- Valley gutter: MG600, MG1000, MG1200 or MG1450 maximum.
- Box: Maximum MG1450 (laid to falls).
- Parapet gutter: MG600, MG1000, MG1250 or MG1450 maximum.

Contact KINGSPAN INSULATED PANELS Technical Services for assistance with bespoke insulated gutter designs.

Sump size (mm): As documented.

Outlet (mm) 100 or 150.

R-Value (m².K/W): AS/NZS 4859 requires that R-Value is declared at 23°C for insulation products sold in Australia. Select:

- 60 mm thick: 3.0.

Flashing and capping schedule

Property	A	B	C
Type			
Product			
Material			
Thickness and grade			
Colour			

A, B, C: These designate each instance or type or location of the item scheduled.

Edit codes in the **Schedule** to match those on drawings.

Document proprietary profiles as proprietary items and custom profiles on drawings. If sizes are not shown on the drawings document here.

Type: e.g. Ridge capping, Roll top ridge capping, Change of pitch flashing, Apron flashing, Barge capping, Saddle flashing, Custom flashing, Barge roll, Spear point.

Product: Nominate a proprietary system or product and edit schedule to suit.

Material: e.g. Metallic-coated steel, Soft zinc, Lead, Copper, Aluminium annealed sheet, Bitumen (or polyethylene) coated aluminium, Stainless steel, PVC, Butyl rubber and Neoprene rubber. Lead is not compatible with aluminium or aluminium/zinc coated steel. For malleable flashings, consider soft zinc or plastic sheet. Select the material recommended by the Rollformer or Distributor with reference to the atmospheric corrosivity category nominated for the project in *0171 General requirements*. Refer also to NATSPEC TECHnote DES 010.

Thickness and grade: Minimum thickness and grade for commonly used materials are given in AS/NZS 2904. If other thicknesses are required, document them here.

Colour: e.g. Match roofing or consult the nominated Rollformer or Distributor's colour chart.

Roof plumbing schedule

Item	Type	Product	Material	Thickness/Grade	Colour/Shape/Size
Eaves gutter					
Valley gutter					
Box gutter					
Rainhead					
Sump					
Downpipe					
Vent					
Hail guard					
Grate					
Leaf guard					

A, B, C: These designate each instance or type or location of the item scheduled.

Edit codes in the **Schedule** to match those on drawings. Document requirements here if not shown on the drawings.

Type:

- Eaves gutter: e.g. Quad, Fascia, Half round, Half round flatback.
- Box gutters: Internal box gutters are usually difficult to clean and replace. Add requirements for siphonic systems separately, as appropriate.
- Rainhead: e.g. Standard, Tapered, Custom made square, Custom made round, Corner ogee, Ogee, Chinaman's hat.
- Downpipe: e.g. Internal or External and Rectangular or Circular. Internal downpipes are mainly for multi-storey applications. Acoustic insulation will not be required where downpipes are built into sound rated ducts. For plastic rainwater goods, use proprietary brand names.
- Hail guard: Nominate type of mesh and fixing method.
- Gratings: e.g. Wire netting ball or Hemispherical wire mesh dome. Document the metal and coating. Check if leaf screens are required.

Product: Nominate a proprietary system or product and edit schedule to suit.

Material:

- Metal rainwater goods: Select the material recommended by the Rollformer or Distributor with reference to the atmospheric corrosivity category nominated for the project in *0171 General requirements*. Refer also to NATSPEC TECHnote DES 010.
- Box gutter: Nominate material and base metal thickness (BMT)(mm). Plain zinc-coated steel is not recommended for internal box gutters, Welded stainless steel is recommended.
- Internal downpipe: e.g. Cast iron to AS 1631 (may be bitumen-coated, epoxy-coated or cement-coated, if required), Copper Type D to AS 1432, Stainless steel Type 304, PVC-U to AS/NZS 1260. PVC-U may not be acceptable for fire-resistance rating.
- Leaf guard: e.g. Plastic mesh or proprietary metal guards to match the gutter profile. Plastic leaf guards are not permitted for bushfire-prone areas.

Thickness/Grade: Minimum thickness and grade for commonly used materials are given in AS/NZS 2179.1. If other thicknesses are required, specify them here. See AS 1397 Appendix D for information and guidance on the selection of steel grades and coating classes.

Colour/Shape/Size:

- Box gutter: Nominate cross-section dimensions (mm) and sump size.
- Downpipe: Nominate colour and size (mm).
- Rainhead and vents: Nominate colour, shape and pattern.

4.3 ROOF ACCESSORIES

Roof hatch schedule

Property	A	B	C
Product			
Size (mm)			

A, B, C: These designate each instance or type or location of the item scheduled.

Edit codes in the **Schedule** to match those on drawings.

Product: Nominate a proprietary system or product and edit schedule to suit.

Roof window schedule

Property	A	B	C
Product			
Type			
Size (mm)			
Total system solar heat gain coefficient (SHGC)			
Total system U-Value (W/m ² .K)			
WERS for Skylights energy rating % heating			

Property	A	B	C
WERS for Skylights energy rating % cooling			
Hail guard			

A, B, C: These designate each instance or type or location of the item scheduled.

Edit codes in the **Schedule** to match those on drawings.

Product: Nominate a proprietary system or product and edit schedule to suit.

Type: e.g. Fixed, Opening.

Solar heat gain coefficient (SHGC) and U-Value (W/m².K): Add if required in BCA 3.12.1.3 or BCA J1.4.

WERS for Skylights energy rating %: The % heating and % cooling refers to the percentage improvement in performance of the window compared with using a base-case Generic Window 1 (3 mm clear glazing in a standard aluminium frame).

Roof ventilator schedule

Property	A	B	C
Product			
Size (mm)			
Throat diameter (mm)			
Material			
Finish			
Capacity			
Options			

A, B, C: These designate each instance or type or location of the item scheduled.

Edit codes in the **Schedule** to match those on drawings.

Product: Nominate a proprietary system or product and edit schedule to suit.

Material: Select the material recommended by the Rollformer or Distributor with reference to the atmospheric corrosivity category nominated for the project in *0171 General requirements*. Refer also to NATSPEC TECHnote DES 010.

Finish: e.g. Match roofing.

REFERENCED DOCUMENTS

The following documents are incorporated into this worksection by reference:

AS/NZS 1170		Structural design actions
AS/NZS 1170.2	2011	Wind actions
AS 1366		Rigid cellular plastics sheets for thermal insulation
AS 1366.2	1992	Rigid cellular polyisocyanurate (RC/PIR)
AS 1530		Methods for fire tests on building materials, components and structures
AS/NZS 1530.3	1999	Simultaneous determination of ignitability, flame propagation, heat release and smoke release
AS 1562		Design and installation of sheet roof and wall cladding
AS 1562.1	2018	Metal
AS 1562.3	2006	Plastics
AS/NZS 2179		Specifications for rainwater goods, accessories and fasteners
AS/NZS 2179.1	2014	Metal shape or sheet rainwater goods, and metal accessories and fasteners
AS/NZS 2904	1995	Damp-proof courses and flashings
AS/NZS 3500		Plumbing and drainage
AS/NZS 3500.3	2018	Stormwater drainage
AS 4256		Plastic roof and wall cladding materials
AS 4256.5	2006	Polycarbonate
AS 4285	2019	Rooflights
AS/NZS 4859		Thermal insulation of buildings
AS/NZS 4859.1	2018	General criteria and technical provisions
AS/NZS 4859.2	2018	Design
AS 5637		Determination of fire hazard properties
AS 5637.1	2015	Wall and ceiling linings

The following documents are mentioned only in the **Guidance** text:

AS/NZS 1170		Structural design actions
AS/NZS 1170.1	2002	Permanent, imposed and other actions
AS/NZS 1170.3	2003	Snow and ice actions
AS/NZS 1260	2017	PVC-U pipes and fittings for drain, waste and vent application

AS 1397	2011	Continuous hot-dip metallic coated steel sheet and strip - Coatings of zinc and zinc alloyed with aluminium and magnesium
AS 1432	2004	Copper tubes for plumbing, gasfitting and drainage applications
AS 1562		Design and installation of sheet roof and wall cladding
AS/NZS 1562.3	1996	Plastic
AS 1589	2001	Copper and copper alloy waste fittings
AS 1631	1994	Cast grey and ductile iron non-pressure pipes and fittings
AS 2427	2004	Smoke/heat release vents
AS 2665	2001	Smoke/heat venting systems- Design, installation and commissioning
AS/NZS 2728	2013	Prefinished/prepainted sheet metal products for interior/exterior building applications - Performance requirements
AS 3959	2018	Construction of buildings in bushfire prone areas
AS 4256		Plastic roof and wall cladding materials
AS/NZS 4256.5	1996	Polycarbonate
AS/NZS 4859		Thermal insulation of buildings
SA HB 39	2015	Installation code for metal roof and wall cladding
SA HB 106	1998	Guidelines for design of structures in snow areas
BCA 3.12.1.3	2019	Acceptable construction - Energy efficiency - Building fabric - Roof lights
BCA Spec C1.10	2019	Fire resistance - Fire hazard properties
BCA J1.4	2019	Energy efficiency - Building fabric - Roof lights
NATSPEC DES 003	2018	Fire hazard properties of insulation and pliable membranes
NATSPEC DES 004	2019	Air, moisture and condensation
NATSPEC DES 010	2020	Atmospheric corrosivity categories for ferrous products
NATSPEC DES 011	2016	Rainwater harvesting
NATSPEC DES 018	2019	Bushfire protection
NATSPEC DES 020	2018	Fire behaviour of building materials and assemblies
NATSPEC DES 031	2019	Specifying R-Values
NATSPEC GEN 006	2015	Product specifying and substitution
NATSPEC GEN 024	2015	Using NATSPEC selections schedules
NATSPEC TR 01	2019	Specifying ESD