0428P ASKIN® XFLAM ROOFING SYSTEM

Branded worksection

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Worksection abstract

This branded worksection *Template* is applicable to an insulated composite roofing and ceiling panel system by **ASKIN®** and roof plumbing. ASKIN® XFLAM Performance Panel roofing comprises prefinished composite panels of metal faces bonded to each side of an insulating ASKIN® XFLAM core. It is a fully insulated ceiling and roof all-in-one which is fast to install, weathertight and extremely thermally efficient. Applications include:

- Corporate office centres.
- Data facilities.
- Sports arenas.
- Shopping centres.
- Residential.
- Medical centres.
- School/University facilities.
- Hospitals.
- Aquatic centres.

How to use this worksection

This worksection *Template* must be customised for each project. See A guide to NATSPEC worksections (www.natspec.com.au) for information on *Template* structure, word styles, and completing a worksection.

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*.
- *0343 Tensioned membrane structures* for suspended fabric roofing.
- *0411 Waterproofing – external and tanking* for membrane roofs.
- *0424 Roofing – seamed sheet metal*.
- *0425 Roofing – shingles and shakes*.
- *0426 Roofing – slate*.
- *0427 Roofing – tiles*.
- *0428p ASKIN VOLCORE performance panel roofing*.
- *0429 Roofing - glazed*.
- *0437p ASKIN VOLCORE performance panel cladding*.
- *0437p ASKIN XFLAM performance panel cladding*.
- *0461 Glazing* for glass roofing and skylights.
- *0762p ASKIN XFLAM performance panels in cool rooms*.
- *0802 Hydraulic design and install* for stormwater and rainwater storage systems.

Material not provided by ASKIN®

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

- Sheet metal roofing other than ASKIN® XFLAM Performance Panels.
- Roof plumbing.
- Roof hatches.
- 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.

- Roof plumbing: 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) (m^2.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.
- In bushfire-prone areas, document bushfire protection requirements 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:

- Birds and buildings.
- Green roofs.
- Guarantees and warranties.
- Site planning and design for bushfire.

Specifying ESD

ASKIN XFLAM® Performance Panels have the following sustainable product attributes:

- Thermal and acoustic performance.
- Easy to seal slip joint facilitating efficient hermetically sealed construction to allow controlled air flow and heating and cooling of the internal environment.
- 100% recyclable and may incorporate a proportion of granulated offcuts. The steel skins are recovered and recycled into new steel.
- Measures to minimise condensation leading to greater equipment life and limiting risk of microbial growth.
- Prohibition on use of CFCs and HCFCs as blowing agents.
- Durable components, particularly for corrosion resistance.
- Provision to reduce transmitted noise and vibration.
- pH neutral matrix which is inert and resistant to water ingress.
- Production plants with extremely low carbon footprint, nil water use and minimal atmospheric or other emissions.
- During its lifetime, ASKIN XFLAM® insulating material will save many times more energy through reduction of heating and cooling requirements than the energy or resources required to manufacture it.

The following may be specified by retaining default text:

- Energy efficient roofing.
- Durable and low maintenance roofing.
- Skylights, roof windows.

The following may be specified by including additional text:

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

Refer to NATSPEC TECHreport TR 01 on specifying ESD.

1 GENERAL

ASKIN® is an Australian owned manufacturer and installer of facade systems, roofing systems and temperature-controlled facilities in Australasia. ASKIN® is a 100% fully owned company that embraces a customer first approach in delivering sustainable, lifetime value. With a network of 12 sites throughout Australia and New Zealand, ASKIN's vast experience has

been built upon a strong foundation dating back to 1964. ASKIN®'s culture of customer first, constant improvement, quality and safety assurance is supported with our technical expertise and ISO 9001 and ISO 14001 accreditation.

1.1 RESPONSIBILITIES

General

Requirement: Provide an ASKIN XFLAM® Performance Panel fully insulated roofing system and associated work, as documented.

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

The ASKIN® XFLAM Performance Panel roofing system is a fully insulated ceiling and roof all-in-one. It is fast to install, weathertight and exceeds the thermal requirements of BCA Section J. The prefinished internal ceiling and superior spanning capability reduces installation cost. With key supply partners, ASKIN® offer a range of skylights, trafficable access walkways and safety systems to complement our roofing systems.

It can be used in place of traditional built-up layered roofs and offers the following advantages:

- Reduced installation costs: Modular and prefinished requiring fewer purlins and no underlays, foils, mesh or additional insulation.
- Prefinished ceiling.
- Improved levels of air tightness: External continuous uniform end lap with an internal slip joint.
- Minimised risk of condensation or cold bridging.
- Reduced thickness suitable for residential applications.
- Hygienic and low maintenance finish suitable for food processing, food preparation and cool storage facilities.

The responsibility of the designer is to provide a roofing system and associated work which is as follows:

- Appropriate for the suspended ceiling type.
- Is designed in conformance with the ASKIN® standard roofing instructions.
- Resistant to impacts expected in use.
- Free of irregularities.

Ambient climatic conditions

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

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

Corrosion resistance

Material: To the manufacturer's recommendations for distance from marine influence.

Distance from marine influence: [complete/delete]

The distance from marine influence can be used as a guide to determine the finish and grade of steel required, however other factors may also need consideration. For information on determining corrosivity categories in relation to environmental influences, see AS 2312.1 Table 2.1, AS 4312 Table 2.1 and Table 4.1. Refer to **CORROSION RESISTANCE**, **Atmospheric corrosivity category** in *0171 General requirements*, for the project corrosivity categories to AS 4312. Refer also to BlueScope Technical bulletins BlueScope TB-01A and BlueScope TB-01B which discuss the selection of steel roofing and walling products, and the correlation of distance to marine influence to the corrosion categories defined in AS 4312.

Roof access

Type: [complete/delete]

e.g. Normal roof maintenance, Access to plant rooms (if by restricted paths show on the drawings).

Trafficable for short term roof maintenance access. When installed to ASKIN's recommendations and the span is within the safe spanning capability of the panel, ASKIN Insulated 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

ASKIN® contacts

Website: www.askin.net.au/contact

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

Website: For more technical information:

- General: www.askin.net.au
- Roofing: www.askin.net.au/downloads/

1.5 TOLERANCES

Tolerances table

Property	Tolerance criteria; Permitted deviation (mm)
Spacing of supporting members	± 5 mm on the nominated support member spacing
Vertical or horizontal misalignment at the abutting ends of sheets	≤ 2 mm
Tops of supporting members in plane parallel to the nominated roof slope	≤ 7 mm smooth deviation per metre length of supporting member

Supporting members: To AS 1562.1 clause 4.2.3.

1.6 SUBMISSIONS

Fire performance

Fire hazard properties: Submit evidence of conformity to PRODUCTS, **FIRE PERFORMANCE**, **Fire hazard properties**.

Operation and maintenance manuals

On completion: Submit ASKIN® *Warranty and maintenance* for care and maintenance of ASKIN® XFLAM Performance Panels including frequency of inspection and recommended methods of access, cleaning, repair and replacement.

Products and materials

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

Cyclonic load test to AS 4040. AS 4040 is a Normative document referenced in AS/NZS 1170.2.

Type tests: As appropriate for the project, submit evidence of conformance 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, when there are no SELECTIONS.

The NCC cites AS/NZS 1170.2:2011.

Samples

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

Requirement: Submit samples, photos or standard installation details of the following:

- Sheet metal finishes.
- Custom profiled flashings and cappings.
- Trims and accessories with colour finish.

- Sealants.

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 performance criteria specified. If this is not the case, delete **Shop drawings.**

General: Submit shop drawings, or standard details and panel installation layouts to a scale that best describes the detail, showing the following:

- [complete/delete]

e.g. Methods of fixing, required end and side laps, sound 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 details of proposed ASKIN® approved installers.

Contact ASKIN® for details of ASKIN® approved installers appropriate to construction in your area.

Tests

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

Site tests: Submit results as follows:

- Internal downpipe hydrostatic testing: [complete/delete]

Warranties

General: Submit the warranties to **COMPLETION**, **Warranties**.

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

1.7 INSPECTION

Notice

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

- Roof supports before covering up or concealing.
- Glazing products before they are installed.
- The parts of the roofing, sarking, vapour barrier, insulation and roof plumbing installation before covering up or concealing.

Amend to suit the project, adding critical stage inspections required.

Hold points, if required, should be inserted here.

2 PRODUCTS

2.1 GENERAL

Product substitution

Other products: Conform to **SUBSTITUTIONS** in *0171 General requirements*.

SUBSTITUTIONS in *0171 General requirements* 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

Requirement: Store and handle materials to the manufacturer's recommendations and the following:

- Protect materials including edges and surfaces from damage.
- Keep dry and unexposed to weather.
- Do not drag sheets or panels across each other or over other materials.
- Store off the ground, in sealed unopened packaging on a slightly sloped surface to prevent ponding on panel faces.

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

Combustibility

Roofing: Tested to AS 1530.1.

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.

ASKIN® can provide Branz, FM and CSIRO tests reports on request.

The FM Approvals certification mark is intended to verify that the products described meet FM Approvals' stated conditions of performance, safety and quality useful to the ends of property conservation. Visit www.fmglobal.com for further information.

Group number: To BCA Spec C1.10 and AS 5637.1.

ASKIN® XFLAM Performance Panel is a Group 1 Material conforming to BCA Spec C1.10.

Group number: Refer to BCA Spec C1.10 Table 3 which has *group number* requirements for wall and ceiling linings. Materials used as a finish, surface, lining, or attachment to a wall or ceiling must be a Group 1, 2 or 3 material used in conformance with BCA Spec C1.10 Table 3.

Non-sprinklered buildings: Wall and ceiling linings must either have an *average specific extinction area* less than 250 m^2/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.

Fire-resistance level: Test to AS 1530.4.

Refer to NATSPEC TECHnote DES 020 for information on fire-resistance levels.

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

- Spread-of-Flame Index: ≤ 0.

Spread-of-Flame Index:

- ASKIN® AZ150/AM100: 0.
- ASKIN® Z275: 0.
- ASKIN® PVDF: 0.

- Smoke-Developed Index: ≤ 3.

Smoke-Developed Index:

- ASKIN® AZ150/AM100: 3.
- ASKIN® Z275: 3.
- ASKIN® PVDF: 3.

2.3 ASKIN® XFLAM ROOFING SYSTEM

General

Description: Proprietary panel roofing system comprising manufactured, prefinished structural composite panels with metal faces bonded to each side of an insulating, ASKIN® XFLAM core.

Standards

Design, installation and materials: To AS 1562.1.

Insulation blowing agents

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

ASKIN® XFLAM Panel insulation core

Material: Syntactic foam sheet with Factory Mutual certification to FM 4471, FM 4880 and FM 4881 and FM 4882.

ASKIN® XFLAM is a market leading, insurer endorsed, innovative product. It is a syntactic foam with excellent mechanical properties, superior insulation values, low toxicity and is completely recyclable. ASKIN® XFLAM achieves a high insulation rating to easily achieve BCA Section J compliance (R-Values of 1.5 to 8.10 m^2K/W). The high insulation value reduces the energy costs required for maintaining a comfortable and efficient environment within the building. ASKIN® XFLAM Performance Panels

achieve FM accreditation in all four relevant certifications for Insulated Panel Systems – FM 4471, FM 4880 , FM 4881 and FM 4882. These Approvals cover full scale fire, severe hail, and hurricane conditions.

Application: Recommended for general commercial construction, specifically coolstores, supermarkets, municipal facilities, schools hospitals, food and drug manufacture, storage, distribution and cold chain.

Internal and external skins

Document requirements in the **ASKIN® XFLAM roofing system schedule**. If there is only one type, delete alternatives. Other options are available. Contact your local ASKIN sales representative to discuss your project requirements.

Skin material and thickness: As documented.

The standard external skin material is 0.5 mm AM100 colour coated steel. The standard internal skin is 0.4 mm Z275 color coated steel. AS150, PVDF or ASKIN® 200 Plus are available for alternate performance. All Colorbond® colours or Printech® (PVDF) steel are available. The available skin thicknesses are 0.4, 0.5 or 0.6 mm depending on requirements for structural performance and fire resistance. Other options are available. Contact your local ASKIN sales representative to discuss your project requirements.

Factory pre-coating: Polyester to a dry film thickness of 25 microns.

Colorbond® Surfmist® is standard. All Colorbond® or Printech® (PVDF) colours are available. Other options are available. Contact your local ASKIN sales representative to discuss your project requirements.

Internal skins for highly corrosive conditions (AQUATIC): ASKIN 200® Plus.

The integrated plastisol 200 mm coating is durable, abrasion-resistant and provides outstanding colour retention and corrosion resistance for the lifetime of the building. Other options are available. Contact your local ASKIN sales representative to discuss your project requirements.

Profile: Internal and external panel profiles as documented:

Standard internal liner profile is flat. Other profiles are available on request. Various secondary profiling available on request e.g. Silkline ribs mesa, essentially a flat panel with a skin impression as opposed to a deep profile, like Metric.

Dimensions

ASKIN® XFLAM Performance Panels are available in lengths up to 25 m. Other options are available. Contact your local ASKIN sales representative to discuss your project requirements.

Panel thickness: As documented.

Document thickness in the **ASKIN® XFLAM roofing system schedule**. ASKIN® XFLAM Performance Panels are available in thicknesses from 50 to 250 mm in 25 mm increments. Thickness is dictated by insulation, structural capacity and fire performance required. Contact ASKIN® to discuss your project requirements. Other options are available. Contact your local ASKIN sales representative to discuss your project requirements.

Panel width:

- Unideck module width: 1200 mm.
- Metric module width: 1000 mm.
- Flat module: 1200 mm.

Corrosion protection

Ferrous metals: Aluminium, stainless steel or protected from corrosion by hot-dip galvanizing, metallic coating, powder coating or anodizing.

Fastenings: Stainless steel, non-ferrous only or galvanized minimum Class 4 fastenings only.

Fasteners

Rivets: ASKIN® approved expanding solid end type 4.8 mm diameter.

Lapp screws: 16 x 22 wafer head SD 10 C3 screws.

Fixing screws: 14 gauge self drilling Class 4 or 5 tek screw with bonded washer secured through purlin.

Finish: Prefinish exposed fasteners with an oven baked polymer coating to match the roofing material.

Profiled fillers

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

Location: Profiled fillers under flashings to the following:

- Ridges.
- Eaves.
- Lapped joints in roof sheeting.
- Step-joint in roof system.

- Gutter flashings.

Add locations as required.

Sealants

Materials: One-component compounds with a neutral curing mechanism, vulcanising at room temperature. Provide sealants that:

- Do not foster microbial growth.

The requirement that sealants not foster microbial growth is consistent with AS/NZS 3666.1. Sealants that support mould growth (e.g. some grades of silicone) and are unsuitable for use in food preparation areas, laboratories, heath facilities and the like.

- Maintain their sealing performance for the life of the partition.
- Bond to the surface of application without primers.
- Are resistant to oils, food acids and water after curing.
- Are non-toxic.
- After curing retain their elastomeric properties over the range of room operating temperatures.
- Are suitable for application by gun or hand tools.
- Are ASKIN® approved for the application.

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/barge 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.

The NCC cites AS/NZS 3500.3:2018.

Metal rainwater goods: To AS/NZS 2179.1.

Minimum coating class, thickness and grade for commonly used materials are given in AS/NZS 2179.1 (for gutters, downpipes, rainheads) and AS/NZS 2904 (for flashings). See AS 1397 Appendix D for information and guidance on the selection of steel grades and coating classes.

Flashings and cappings: To AS/NZS 2904.

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

Flashing materials include 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. Document proprietary profiles as proprietary items and special profiles on drawings. If sizes are not shown on the drawings document here.

2.5 SKYLIGHTS

General

Standard: To AS 4285.

Description

Product: ENERGY EFFICIENT FACTORY ASSEMBLED SKYLIGHT (EEFAS).

The translucent sheeting to be Ampelite Energy Efficient Factory Assembled Skylight (EEFAS) as manufactured by Ampelite Australia Pty. Ltd. to AS 4256.1, AS 4256.3 and AS 4256.5 and AS 4040.0.

The EEFAS panel to conform to the Askin profile and thickness. The Weblgas GC external skin shall be Cool-lite White. The Lexan Thermoclear internal ceiling shall be clear.

2.6 ROOF HATCHES

General

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

2.9 ROOF ACCESS

Walkways

Product: Roofsafe Industrial Safety Proprietary Roof walkway system.

See www.rissafety.com/systems/

3 EXECUTION

3.1 INSTALLATION

Protection

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

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

Thermal movement

Requirement: Allow for thermal movement in the roof installation and the structure, including movement in joints and fastenings.

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 ASKIN XFLAM ROOFING SYSTEM

General

Requirement: To ASKIN®'s recommendations and RS-XMR standard detail drawing, including framing, fixing, trim, accessories and flashings.

Installation: Install panels as follows:

- Minimum falls: To manufacturer's recommendations.
- Plumb, level, straight and true within acceptable building tolerances.
- Fixed or anchored to the building structure in conformity with the wind action loading recommendations.
- Isolated from any building loads, including loads caused by structural deflection or shortening.
- Allowing for thermal movement.

Allowance for expansion and contraction of components needs to be provided. Temperature change due to climatic conditions must not cause harmful buckling, opening of joints, undue stress on fastening and anchors, noise of any kind or other defects.

For project specific performance requirements regarding NCC criteria, Factory Mutual Approval requirements, please contact the ASKIN Technical Services 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 proprietary edge protection lacquer.
- Cut openings to the minimum size necessary.

Penetrations larger than 300 x 250 mm: Provide additional structural support.

Swarf: Remove swarf and any foreign matter immediately from the external surface of panels.

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

Panel to panel end joints: Eliminate unless roof lengths exceed maximum manufactured panel lengths. In these instances, join panels using the manufacturer's recommended details.

Control joints: To coincide with structural movement joints and 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.

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 manufacturer's standard construction details.

Ridge and barge

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

End laps

General: If end laps are unavoidable, and the sheet profile is not suitable for interlocking or contact end laps, construct a stepped type lap.

Length of lap (mm): [complete/delete]

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.

3.3 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, but movement at these joints would be less than 1 mm so they perhaps do not all 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: Extend the top flashing over the roofing ribs 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: Provide overflashings where roofs abut walls, stepped to the roof slope in masonry and planked cladding, otherwise raking and as follows:

- In masonry: Build into the full width of the outer leaf. Turn up within cavity, sloping inward across the cavity and fixed to or built in to the inner leaf at least 75 mm above.
- In concrete: Turn 25 mm into joints or grooves, wedge at 200 mm centres with compatible material and point up.

Fixing to masonry or concrete: Step in courses to the roof slope. Interleave with damp proof course, if any.

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.

Gutters

See SA HB 39 Section 5 for recommended practice for metal rainwater drainage. See AS/NZS 3500.3 Section 3 for method of sizing gutters and downpipes. See AS/NZS 3500.3 clause 4.9 for support systems of roof drainage systems. Show particular requirements, if any, on the drawings. Show on the drawings the location of gutters, box gutters, overflows, valley gutters, rainwater heads and sumps. In high wind areas consider the degree of exposure of gutters and downpipes to wind actions and the need to provide additional fixings.

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

Installation: To ASKIN® RS-XMR standard detail drawings.

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.

Lining: [complete/delete]

e.g. Square corrugated profiled metal roof sheeting.

ASKIN® Insulated box gutter: Prefabricate box gutters to ASKIN®'s recommendations and as follows:.

- Form stop ends, downpipe nozzles, bends and returns.
- Dress downpipe nozzles into outlets.
- Provide overflows to prevent back-flooding.
- Hail guards: Install grating over the whole of the box gutter, over all 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.

Valley gutters: Profile to suit the valley boarding. Turn back both edges 180 x 6 mm radius. Nail or screw to the valley boarding at the top end to prevent the gutter creeping downwards.

Expansion joints in guttering longer than 30 m: Provide as follows:

- Type: [complete/delete]

e.g. As detailed or proprietary elastic expanding adhesive fixed type.

Gratings: Install removable gratings over rainheads and sumps.

Leaf guard 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 or AS 1589 for copper).

Sound 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.

3.4 SKYLIGHTS

Installation

Standard: To AS 4285.

Installation: Install Ampelite Energy Efficient Factory Assembled Skylight (EEFAS) to AS 1562.3 and in accordance with Ampelite fixing instructions.

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

Specify and detail to the recommendations of the skylight manufacturer.

3.5 ROOF HATCHES

Installation

Fixing: [complete/delete]

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

3.6 ROOF VENTILATORS

Roof ventilators

Fixing: [complete/delete]

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

3.7 ROOF ACCESS

Walkway

Installation: [complete/delete]

For ladders, platforms and balustrades, cross reference the appropriate worksection, e.g. *0552 Metalwork – fabricated* and *0341 Structural steelwork.*

3.8 TESTING

0171 General requirements defines different tests in **INTERPRETATION**, **Definitions** and calls for an inspection and testing plan in **TESTING - GENERALLY**, **Inspection and testing plan**.

Site tests

Internal downpipes: Test each stack hydrostatically in stages 2 storeys high for two hours. Remedy defects and retest if necessary.

3.9 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 ASKIN Performance Panel's recommendations.

Contact ASKIN Performance Panel for any further recommendations.

Cleaning

Roofing and rainwater drainage system: Remove 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 weathertight and external panel facings are not distorted.

Insulated panels: Clean surfaces to the manufacturer's recommendations.

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

Warranties

Requirement: Provide warranties for materials and workmanship in the form of interlocking warranties from the supplier and installer.

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

ASKIN® standard warranty is up to 25 years for materials, covering structural thermal and coating performance. ASKIN standard warranty varies with the application. Special warranty may apply. Contact ASKIN.

Subject to maintenance conforming to the *ASKIN® General guide to panel care*, ASKIN® standard warranty for corrosion or blistering of the skin material is 25 years for general application subject to location.

4 SELECTIONS

Schedules are a tool to specify properties required for products or systems. If the principal permits documentation of the product or system by proprietary name, some of the properties may be unnecessary and can be deleted. Document the product or system's location or application here and/or on the drawings with a matching project code. Refer to NATSPEC TECHnote GEN 024 for guidance on using and editing schedules.

4.1 PERFORMANCE

Roofing performance schedule

	A	B	C
Fire hazard property: Group number	Group Number 1		
Fire hazard property: Spread-of-Flame Index			
Fire hazard property: Smoke-Developed Index			
R-Value (m^2.K/W)			

The codes in the header row of the schedule designate each application or location of the item scheduled. Edit the codes to match those in other contract documents.

Fire hazard property: Group Number: Refer to BCA Spec C1.10.

Fire hazard property: Spread-of-Flame Index: e.g. 0.

Fire hazard property: Smoke-Developed Index: e.g. 3.

Fire resistance level: If required, nominate the FRL to AS 1530.4. See NATSPEC TECHnote DES 020 on fire behaviour of building materials and assemblies.

R-Value: Select from manufacturer's range. AS/NZS 4859.1 requires that R-Value is declared at 23°C for insulation products sold in Australia.

4.2 ASKIN® ROOFING PRODUCTS

ASKIN® XFLAM roofing system schedule

	A	B	C
Roof pitch			
Internal environment			
Panel thickness (mm)	50-250 mm		
Panel skin material: External	AM100		

	A	B	C
Panel skin material: Internal	Z275		
Panel skin thickness: External (mm)	0.5 mm		
Panel skin thickness: Internal (mm)	0.6 mm		
Panel profile: External			
Panel profile: Internal			
Panel finish and colour: External	Colorbond® Surfmist®		
Panel finish and colour: Internal	Colorbond® Surfmist®		
R-Value			

The codes in the header row of the schedule designate each application or location of the item scheduled. Edit the codes to match those in other contract documents.

Contact ASKIN® to discuss your project requirements.

Roof pitch: Refer to ASKIN roof standard details for best installation practice.

- 2° minimum. As referenced in SA HB 39. Subject to project specific requirements, please contact ASKIN representative.
- 3° minimum.
- 3° to 6°- (Butyl tape required) Standard cut back for gutter - 75 mm.
- 6°+ - (No tape required) Standard lap at joint - 200 mm.

Internal environment: Refer to *0171 General requirements* for the designation of the Interior atmospheric corrosivity category of the project. A corrosive internal atmosphere due to building use determines the finish and grade of steel required.

Panel thickness: Select from 50 to 250 mm in 25 mm increments.

Panel skin material: Internal and external:

- AM100 colour coated steel.
- AZ150 colour coated steel.
- Z275 colour coated steel.
- ASKIN® 200 Plus colour coated steel.

Panel skin thickness: Internal and external: e.g. 0.4, 0.5, or 0.6 mm.

Panel external (roofing) profile: e.g. Metric or Unideck.

Panel internal (ceiling) profile: e.g. Flat, Rib, Mesa or ASKIN® 200 Plus.

Panel finish - external: Select from Colorbond® or Printech® (PDVF) ranges.

Panel finish - internal: Select from Colorbond®, ASKIN® 200 Plus or Printech® (PVDF) ranges.

4.3 ROOF PLUMBING

Flashing and capping schedule

	A	B	C
Type			
Product			
Material			
Thickness and grade			
Colour			

The codes in the header row of the schedule designate each application or location of the item scheduled. Edit the codes to match those in other contract documents.

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		ASKIN®			
Valley gutter					
Box gutter		ASKIN® insulated box gutter			
Rainhead					
Sump					
Downpipe					
Vent					
Hail guard					
Grate					
Leaf screen					

The codes in the header row of the schedule designate each application or location of the item scheduled. Edit the codes to match those in other contract documents.

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 product 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 screen: 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. 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.

4.4 ROOF ACCESSORIES

Skylight schedule

	A	B	C
Product	ASKIN® EEFAS	ASKIN® EEFAS	ASKIN® EEFAS
Type			
Size (mm)			
Light shaft			
Ceiling diffuser			
Total system solar heat gain coefficient (SHGC)			
Total system U-Value ($W/m^2.K$)			
WERS for Skylights energy rating % heating			
WERS for Skylights energy rating % cooling			
Hail guard			

The codes in the header row of the schedule designate each application or location of the item scheduled. Edit the codes to match those in other contract documents.

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

Type: e.g. Fixed, Opening, Retractable, Tubular, Ventilated.

Light shaft: Used to bring light through the roof structure and help control light distribution. Local solar geometry, surface reflectance (influenced by structural material and colour) and shape are basic considerations (see AS 4285 Appendix C for more information on skylights shaft or lightwell).

Ceiling diffuser: Translucent polymer or glass installed at ceiling level of a lightwell shaft to diffuse or redirect incoming light. Also used to control heat gains (ventilated skylights) or losses (non-ventilated skylights) and glare. Open cell diffusers are also used with ventilated skylights.

Solar heat gain coefficient (SHGC) and U-Value ($W/m^2.K$): 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).

Contact Window Energy Rating Scheme operated by the Australian Window Association www.wers.net.

Roof hatch schedule

	A	B	C
Product			
Size (mm)			

The codes in the header row of the schedule designate each application or location of the item scheduled. Edit the codes to match those in other contract documents.

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

Roof ventilator schedule

	A	B	C
Product			

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

The codes in the header row of the schedule designate each application or location of the item scheduled. Edit the codes to match those in other contract documents.

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.

Roof access schedule

	A	B	C
Product			
Size (mm)			
Material			

The codes in the header row of the schedule designate each application or location of the item scheduled. Edit the codes to match those in other contract documents.

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

REFERENCED DOCUMENTS

The following documents are incorporated into this worksection by reference:

AS/NZS 1170		Structural design actions
AS/NZS 1170.2	2021	Wind actions
AS 1530		Methods for fire tests on building materials, components and structures
AS 1530.1	1994	Combustibility test for materials
AS/NZS 1530.3	1999	Simultaneous determination of ignitability, flame propagation, heat release and smoke release
AS 1530.4	2014	Fire-resistance tests for elements of construction
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	2021	Stormwater drainage
AS 4285	2019	Rooflights
AS/NZS 4859		Thermal insulation materials for 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
BCA Spec C1.10	2019	Fire resistance - Fire hazard properties
FM 4471	2010	Approval standard for Class 1 panel roofs
FM 4880	2017	Approval standard for Evaluating the Fire Performance of Building Panel Assemblies and Interior Finish Materials
FM 4881	2017	Approval standard for Class 1 exterior wall systems

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 1170.2	2011	Wind actions
AS/NZS 1170.3	2003	Snow and ice actions
AS/NZS 1260	2017	PVC-U pipes and fittings for drain, waste and vent applications
AS 1397	2021	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/NZS 2179		Specifications for rainwater goods, accessories and fasteners
AS/NZS 2312		Guide to the protection of structural steel against atmospheric corrosion by the use of protective coatings
AS 2312.1	2014	Paint coatings
AS 2427	2004	Smoke/heat release vents
AS 2665	2001	Smoke/heat venting systems - Design, installation and commissioning
AS/NZS 3500		Plumbing and drainage
AS/NZS 3500.3	2018	Stormwater drainage
AS/NZS 3666		Air-handling and water systems of buildings - Microbial control
AS/NZS 3666.1	2011	Design, installation and commissioning
AS 3959	2018	Construction of buildings in bushfire-prone areas
AS 4040		Methods of testing sheet roof and wall cladding
AS 4040.0	1992	Introduction, list of methods and general requirements
AS 4256		Plastic roof and wall cladding materials
AS 4256.1	2006	General requirements
AS 4256.3	2006	Glass fibre reinforced polyester (GRP)
AS 4256.5	2006	Polycarbonate
AS 4312	2019	Atmospheric corrosivity zones in Australia
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 Section J	2019	Energy efficiency
BCA J1.4	2019	Energy efficiency - Building fabric - Roof lights
BlueScope TB-01A	2021	Steel roofing products - Selection guide
BlueScope TB-01B	2021	Steel walling products - Selection guide
NATSPEC DES 003	2018	Fire hazard properties of insulation and pliable membranes
NATSPEC DES 004	2019	Air, moisture and condensation
NATSPEC DES 010	2021	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	2021	Using NATSPEC selections schedules
NATSPEC TR 01	2021	Specifying ESD
FM 4882	2016	Class 1 Interior wall and ceiling materials or systems for smoke sensitive occupancies
ISO 9001	2015	Quality management systems - Requirements
ISO 14001	2015	Environmental management systems - Requirements with guidance for use