

0428P DELTA PANELS INSULATED ROOFING SYSTEMS**Branded worksection**

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Worksection abstract

This branded worksection *Template* is applicable to roof coverings using DELTA PANELS insulated roofing systems, and roof plumbing.

How to use this worksection

Customise this worksection *Template* 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.
- *0461 Glazing* for glass roofing and skylights.
- *0552 Metalwork - fabricated* for ladders, platforms and balustrades.
- *0802 Hydraulic design and install* for stormwater and rainwater storage systems.
- *0933 Power generation – photovoltaic* for integrated rooftop solar PV panels. Contact DELTA to make sure the roofing system is suitable for PV integration.

Each of the following worksections contain a single roofing system and may be used where appropriate in addition to this worksection:

- *0423 Roofing – profiled sheet metal.*
- *0424 Roofing – seamed sheet metal.*
- *0425 Roofing – shingles and shakes.*
- *0426 Roofing – slate.*
- *0427 Roofing – tiles.*
- *0429 Roofing – glazed.*

Related branded worksections include:

- *0437p DELTA PANELS insulated cladding systems.*
- *0762p DELTA PANELS in cool rooms.*

Material not provided by DELTA 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) ($\text{m}^2\cdot\text{K}/\text{W}$). See NATSPEC TECHnote DES 031 for information on specifying R-Values.
- If required, state the minimum thermal transmittance (U-Value) ($\text{W}/(\text{m}^2\cdot\text{K})$). See NATSPEC TECHnote DES 031 for information on specifying thermal transmittance.
- 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 (2018) 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 (2003) and SA HB 106 (1998).
- 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.
- Waterproofing.

Specifying ESD

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

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.
- High performance roofing systems to extend building service life.

Refer to NATSPEC TECHreport TR 01 on specifying ESD.

1 GENERAL

DELTA PANELS is a 100% Australian owned and operated manufacturer of insulated panels. Its range of products includes roof, wall and patio systems, plus a wide range of accessories. The range of panels, in various styles and colours, has been engineered for enhanced performance in Australia's harsh environment.

1.1 RESPONSIBILITIES

General

Requirement: Provide DELTA PANELS insulated panel roofing systems and associated work, as documented.

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

The responsibility of the designer is to make sure the roofing system and associated work is as follows:

- Appropriate for the roof application.
- Designed in conformance with the DELTA PANELS construction details.
- Deals with vapour pressure, condensation, corrosion and thermal movement.
- Remains intact and weathertight under the local or regional ambient climatic conditions.
- Protects people, property and the environment from the adverse effects of stormwater.
- Supports the documented imposed loads and types of roof access without impairment of performance.

If required, state the minimum added thermal resistance (R-Value) ($\text{m}^2\text{K}/\text{W}$).

See NATSPEC TECHnote DES 031 for information on specifying R-Values.

Ambient climatic conditions

Design rainfall intensity (mm/h) to AS/NZS 3500.3 (2021): [complete/delete]

See AS/NZS 3500.3 (2021) 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 (2014) Table 2.1, AS 4312 (2019) 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 (2019). Refer also to BlueScope Technical bulletins BlueScope TB-01A (2023) and BlueScope TB-01B (2022), 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 (2019).

1.2 COMPANY CONTACTS

DELTA PANELS technical contacts

Website: www.deltapanel.com.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

Roofing panel and system product range: www.deltapanel.com.au/architectural-panels.

Resource centre: www.deltapanel.com.au/engineering

Technical services: www.deltapanel.com.au/handling-installation

1.5 INTERPRETATION

Abbreviations

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

- EPS: Expanded polystyrene.
- EPS-FR: Expanded polystyrene with fire retardant.
- FM: Factory Mutual.
- PIR: Rigid polyisocyanurate.
- RC/PIR: Rigid cellular polyisocyanurate.
- TPC: Thermosetting phenolic composite.

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

1.6 TOLERANCES

Permitted deviations

Requirement: To DELTA PANELS' recommendations.

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

Supporting members: To AS 1562.1 (2018) clause 4.2.3.

1.7 SUBMISSIONS

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

Fire performance

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

Operation and maintenance manuals

Requirement: Submit manual to **COMPLETION, Operation and maintenance manuals.**

Products and materials

Thermal insulation performance: Submit evidence of performance to AS/NZS 4859.1 (2018) and AS/NZS 4859.2 (2018).

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 (2018) clause 5.4 for resistance to concentrated load and to AS 1562.1 (2018) clause 5.5 for resistance to wind pressure.
- Metal roofing in AS/NZS 1170.2 (2021) cyclonic regions: Roof sheeting and fastenings to AS 1562.1 (2018) clause 5.6.
- Plastic sheet roofing: Roof sheeting and fastenings to AS 1562.3 (2006) 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.

Samples

Approved samples that define the acceptable limits of colour and texture variations are retained on site. If particular or additional samples are required, list them here.

Requirement: Submit samples of the following, showing the range of variation available:

- Trim and accessories with a colour finish.
- Panel metal finishes.
- Custom profiled flashings and cappings.
- 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 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 DELTA PANELS' approved installer.

Tests

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

Internal downpipes: Submit test results to **TESTING, Internal downpipe tests.**

Warranties

Requirement: Submit warranties to **COMPLETION, Warranties.**

1.8 INSPECTION**Notice**

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

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

Amend to suit the project, adding critical stage inspections agreed in advance with DELTA PANELS, as 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

Storage: To the manufacturer's recommendations and as follows:

- Keep clean, dry and unexposed to weather.
- Protect materials including edges and surfaces from damage.
- Do not drag metal 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

See DELTA PANELS website for fire performance test reports.

Fire hazard properties

Insulation materials: Tested to AS/NZS 1530.3 (1999). Fire hazard indices as follows:

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 (2022) Table S7C7.

DELTA PANELS insulated panels with EPS, TPC and PIR cores, with a nominal thickness of 100 mm tested to AS/NZS 1530.3 (1999) have the following indices:

- Ignitability index: 0.
- Spread-of-Flame Index: 0.
- Heat Evolved Index: 0.
- Smoke Developed Index: 2 for EPS, 3 for TPC, 3 for PIR.

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

Materials with reflective facing: Test to AS/NZS 1530.3 (1999) and the recommendations of Appendix A6.

AS/NZS 1530.3 (1999) Informative Appendix clause A6 recommends that reflective surfaces of test specimens (which would otherwise generally pass this test) be blackened and diagonally scored in order to simulate soot deposition onto reflective surfaces in a real fire situation. Note that AS/NZS 1530.3 (1999) clause 4.12.2(c) requires insulation materials faced with reflective surface materials to incorporate a representative vertical joint in three test specimens.

2.3 DELTA PANELS ANCILLARIES

Contact **DELTA 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 **DELTA PANELS Technical services** for advice and testing documentation. Recommended fasteners are available from recognised distributors.

DeltaTrim

Receiver channel:

- Folded steel channel sized to suit panel profile and thickness.

Apron flashing:

- Folded steel flashing to suit adjoining angled roofs.

Barge capping:

- Folded steel barge capping with drip guard, sized to suit panel profile and thickness.

Rear barge:

- Folded steel rear barge capping.

Fascia flashing:

- Folded steel flashing for gutter.

Ridge cap:

- Folded steel ridge cap.

DELTA PANELS skylight

Profiled translucent PVC extrusion: 150 mm wide.

Highline gutter

Gutter brackets: Match roof profile.

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.

2.4 DELTA PANELS INSULATED ROOFING SYSTEMS

Standards

Design, installation and materials: To AS 1562.1 (2018).

AS 1562.1 (2018) requires steel conform to AS 1397 (2021) for continuously hot-dipped metallic-coated sheet and strip or AS/NZS 2728 (2013) for prepainted and organic film/metal laminate products.

Polyisocyanurate (rigid cellular RC/PIR) core: To AS 1366.2 (1992).

DeltaCorroCorro-EPS-FR

DeltaCorroCorro-EPS-FR is an insulated roof panel system, comprising two pre-painted, roll-formed steel skins, bonded to a fire retardant grade expanded polystyrene insulating core. Both steel skins have a corrugated profile.

Description: A screw fixed, interlocking panel system of pre-finished corrugated steel sheets with a fire retardant EPS insulation core.

DeltaCorroCorro-TPC

DeltaCorroCorro-TPC is an insulated roof panel system, comprising two pre-painted, roll-formed steel skins, bonded to a thermosetting phenolic composite insulating core. Both steel skins have a corrugated profile.

Description: A screw fixed, interlocking panel system of pre-finished corrugated steel sheets with a thermosetting phenolic composite insulation core.

DeltaCorroCorro-PIR

DeltaCorroCorro-PIR is a FM approved insulated roof panel system, comprising two pre-painted, roll-formed steel skins, with a polyisocyanurate core. Both steel skins have a corrugated profile.

Description: A screw fixed, interlocking panel system of pre-finished corrugated steel sheets with a PIR insulation core.

DeltaOrb-EPS-FR

DeltaOrb-EPS-FR is an insulated roof panel system, comprising two pre-painted, roll-formed steel skins, bonded to a fire retardant grade expanded polystyrene insulating core. The top steel skin has a corrugated profile and the bottom skin is flat.

Description: A screw fixed, interlocking panel system of pre-finished corrugated and flat steel sheets with a fire retardant EPS insulation core.

DeltaOrb-TPC

DeltaOrb-TPC is an insulated roof panel system, comprising two pre-painted, roll-formed steel skins, bonded to a thermosetting phenolic composite insulating core. The top steel skin has a corrugated profile and the bottom skin is flat.

Description: A screw fixed, interlocking panel system of pre-finished corrugated and flat steel sheets with a thermosetting phenolic composite insulation core.

DeltaOrb-PIR

DeltaOrb-PIR is a FM approved insulated roof panel system, comprising two pre-painted, roll-formed steel skins, with a polyisocyanurate core. The top steel skin has a corrugated profile and the bottom skin is flat.

Description: A screw, fixed, interlocking panel system of pre-finished corrugated and flat steel sheets with a PIR insulation core.

DeltaTrimCorro-EPS-FR

DeltaTrimCorro-EPS-FR is an insulated roof panel system, comprising two pre-painted, roll-formed steel skins, bonded to a fire retardant grade expanded polystyrene insulating core. The top steel skin has a trapezoidal profile and the bottom skin is corrugated.

Description: A screw fixed, interlocking panel system of pre-finished trapezoidal and corrugated steel sheets with a fire retardant EPS insulation core.

DeltaTrimCorro-TPC

DeltaTrimCorro-TPC is an insulated roof panel system, comprising two pre-painted, roll-formed steel skins, bonded to a thermosetting phenolic composite insulating core. The top steel skin has a trapezoidal profile and the bottom skin is corrugated.

Description: A screw fixed, interlocking panel system of pre-finished trapezoidal and corrugated steel sheets with a thermosetting phenolic composite insulation core.

DeltaTrimCorro-PIR

DeltaTrimCorro-PIR is an insulated roof panel system, comprising two pre-painted, roll-formed steel skins, with a polyisocyanurate core. The top steel skin has a trapezoidal profile and the bottom skin is corrugated.

Description: A screw fixed, interlocking panel system of pre-finished trapezoidal and corrugated steel sheets with a PIR insulation core.

DeltaTrim-EPS-FR

DeltaTrim-EPS-FR is an insulated roof panel system, comprising two pre-painted, roll-formed steel skins, bonded to a fire retardant grade expanded polystyrene insulating core. The top steel skin has a trapezoidal profile and the bottom skin is flat.

Description: A screw fixed, interlocking panel system of pre-finished trapezoidal and flat steel sheets with a fire retardant EPS insulation core.

DeltaTrim-TPC

DeltaTrim-TPC is an insulated roof panel system, comprising two pre-painted, roll-formed steel skins, bonded to a thermosetting phenolic composite insulating core. The top steel skin has a trapezoidal profile and the bottom skin is flat.

Description: A screw fixed, interlocking panel system of pre-finished trapezoidal and flat steel sheets with a thermosetting phenolic composite insulation core.

DeltaTrim-PIR

DeltaTrim-PIR is a FM approved insulated roof panel system, comprising two pre-painted, roll-formed steel skins, with a polyisocyanurate core. The top steel skin has a trapezoidal profile and the bottom skin is flat.

Description: A screw fixed, interlocking panel system of pre-finished trapezoidal and flat steel sheets with a PIR insulation core.

DeltaTrimTrim-EPS-FR

DeltaTrimTrim-EPS-FR is an insulated roof panel system, comprising two pre-painted, roll-formed steel skins, bonded to a fire retardant grade expanded polystyrene insulating core. Both steel skins have a trapezoidal profile.

Description: A screw fixed, interlocking panel system of pre-finished trapezoidal steel sheets with a fire retardant EPS insulation core.

DeltaTrimTrim-TPC

DeltaTrimTrim-TPC is an insulated roof panel system, comprising two pre-painted, roll-formed steel skins, bonded to a thermosetting phenolic composite insulating core. Both steel skins have a trapezoidal profile.

Description: A screw fixed, interlocking panel system of pre-finished trapezoidal steel sheets with a thermosetting phenolic composite insulation core.

DeltaTrimTrim-PIR

DeltaTrimTrim-PIR is an insulated roof panel system, comprising two pre-painted, roll-formed steel skins, with a polyisocyanurate core. Both steel skins have a trapezoidal profile.

Description: A screw fixed, interlocking panel system of pre-finished trapezoidal steel sheets with a PIR insulation core.

2.5 ROOF PLUMBING**General**

See SA HB 39 (2015) Section 5 for the manufacture and fitting of internal and external metal gutters, downpipes, sumps and rainheads, AS/NZS 3500.3 (2021) Section 3 for method of sizing gutters and downpipes, and AS/NZS 3500.3 (2021) 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.

Standards

Roof drainage: To AS/NZS 3500.3 (2021).

Metal rainwater goods: To AS/NZS 2179.1 (2014).

Minimum coating class, thickness and grade for commonly used materials are given in AS/NZS 2179.1 (2014) (for gutters, downpipes, rainheads) and AS/NZS 2904 (1995) (for flashings). See AS 1397 (2021) Appendix D for information and guidance on the selection of steel grades and coating classes.

PVC-U rainwater goods and accessories: To AS/NZS 3500.3 (2021).

For plastic rainwater goods, document by proprietary brand names.

Flashings and cappings: To AS/NZS 2904 (1995).

See SA HB 39 (2015) Section 8 for recommended practice for metal flashing and cappings.

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.

Flashing and capping types: DELTA PANELS' external prefabricated flashings to match insulated panel coating.

Minimum 0.5 mm coated steel to AS 1397 (2021) to match external coating thickness of the insulated panel.

Material and colour: Match roof panel top sheeting.

Ridge and barge cappings

Capping types: External prefabricated cappings to match insulated panel coating.

Material and colour: Match roof panel top sheeting.

Gutters

Eaves gutter: Highline gutter.

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

- Colour: Match roof panelling.

Valley and parapet gutters: As documented.

Box gutters laid to falls: As documented.

2.6 ROOF WINDOWS**General**

Standard: To AS 4285 (2019).

Description: A proprietary window system designed for non-vertical installation in roofs pitched greater than 15° and less than 90°, 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.

3 EXECUTION

3.1 GENERAL

Preparation

Substrates or framing: Before fixing roofing, check the alignment of substrates or framing and adjust if required.

Roofing: Make sure the roofing is clean and free of dust and loose particles.

3.2 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 (2018) Appendix C Table C3 for guidance on the compatibility of metals. See also SA HB 39 (2015) 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 (2018) clause 3.4.3 and AS 1562.1 (2018) Appendix C Table C4. There are four conditions to be avoided:

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

3.3 DELTA PANELS INSULATED ROOFING SYSTEM

Installation

Requirement: To DELTA PANELS' recommendations using DELTA PANELS' approved installers for installation, including the following:

- Fasteners, laps, sealants and fillers: Install, as documented.
- 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 x 250 mm: Provide additional structural support.

Refer to the DELTA Panels and Roofing, Handling and Installation Manual regarding handling, installation and cutting of panels.

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

Accessories: Provide material with the same finish as roofing sheets.

3.4 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 DELTA 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 DELTA PANELS' standard construction details.

Flashings (non-cyclonic)

Fixing: Fix at 450 mm centres.

Overlapping: Overlap top sheets.

For cyclonic and non-cyclonic applications, refer to DELTA PANELS' Engineering and Construction manuals 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

DELTA PANELS roof panels:

- 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.

3.5 ROOF PLUMBING

External downpipes

Document the material, profile and size on the drawings or in a schedule. In high wind areas consider the degree of exposure of gutters and downpipes to wind actions and the need to provide additional fixings.

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.

- Size: Not less than the diameter of the downpipe.

Downpipe support: Provide supports and fixings for downpipes.

3.6 ROOF WINDOWS

Installation

Standard: To AS 4285 (2019).

Fixing: [complete/delete]

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

3.7 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**.

Internal downpipe tests

Standard: To AS/NZS 3500.3 (2021) clause 9.3.1.

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.

AS/NZS 2033 (2008) clause 7.3 notes test requirements for non-pressure polyethylene (PE) pipelines.

3.8 COMPLETION

Reinstatement

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

Touch up: To DELTA PANELS' recommendations.

Contact Delta for any further recommendations.

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

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 plasticisers.

DELTA PANELS roof panels: Clean surfaces to the manufacturer's recommendations.

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

Operation and maintenance manuals

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

Compliance with this clause targets the Operations and Maintenance requirement within the Minimum Expectation level of the Verification and Handover credit in Green Star Buildings (2021).

Warranties

Requirement: Cover materials and workmanship in the terms of the warranty in the form of interlocking warranties from the manufacturer and the installer.

- Form: Against failure of materials and execution under normal environment and use conditions.
- Period: As offered by the manufacturer and the installer.

Use only if warranties extending beyond the defects liability period are available for the particular system. Insert the required warranty period and terms, which should be negotiated beforehand. If 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.

DELTA 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 DELTA PANELS' recommendations and engineering specifications, the warranty period is as follows:

- 15 years covering defects caused by the manufacturing process.

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 PRODUCT

DELTA PANELS insulated roofing system schedule

	A	B	C
Product			
Profile			
Roof pitch			
Internal environment			
Panel width (mm)			
Panel length (m)			
Top sheet thickness (mm)			
Bottom sheet thickness (mm)			
Top sheet: Colour			
Bottom sheet: Colour			
Thickness (mm)			
R-Value (m ² .K/W)			
Solar absorptance			
Light Reflectance Value (LRV)			

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.

Profile: Select from:

- DeltaCorroCorro.
- DeltaOrb.
- DeltaTrimCorro.
- DeltaTrim.

Roof pitch: If required, document the roof pitch:

- DeltaCorroCorro: 3° minimum.
- DeltaOrb: 3° minimum.
- DeltaTrimCorro: 3° minimum.
- DeltaTrim: 2° minimum.
- DeltaTrimTrim: 2° minimum.

Internal environment: Select Low-humidity or High-humidity. Delete if not required.

Panel width (mm): 1000.

Panel length (mm): Cut to length. Minimum 1800.

Top sheet thickness (mm): 0.42.

Bottom sheet thickness (mm): 0.40 to 0.60.

Top sheet colour: Select from standard colour range.

Bottom sheet colour: Select from standard colour range.

Thickness (mm): Select from:

- DeltaCorroCorro: 75, 100, 125, 150, 175, 200, 225, and 250.
- DeltaOrb: 50, 75, 100, 125, 150, 175, 200, 225, and 250.
- DeltaTrimCorro: 75, 100, 125, 150, 175, 200, 225, and 250.
- DeltaTrim: 50, 75, 100, 125, 150, 175, 200, 225, and 250.
- DeltaTrimTrim: 75, 100, 125, 150, 175, 200, 225, and 250.

R-Value (m².K/W) for thickness (mm): Select from:

- DeltaCorroCorro-EPS-FR: 1.61 (75), 2.26 (100), 2.66 (125), 3.56 (150), 4.10 (175).
- DeltaCorroCorro-TPC: 2.5 (75), 3.3 (100), 4.2 (125), 5.0 (150), 5.9 (175), 6.8 (200), 7.7 (225), 8.5 (250).
- DeltaCorroCorro-PIR: 3.23 (75), 4.31 (100), 5.39 (125), 6.03 (150), 7.54 (175).
- DeltaOrb-EPS-FR: 1.4 (50), 2.1 (75), 2.7 (100), 3.4 (125), 4.1 (150), 5.4 (200), 6.1 (225), and 6.8 (250).
- DeltaOrb-TPC: 1.7 (50), 2.5 (75), 3.3 (100), 4.2 (125), 5.0 (150), 5.9 (175), 6.8 (200), 7.7 (225), 8.5 (250).
- DeltaOrb-PIR: 2.16 (50), 3.23 (75), 4.31 (100), 5.39 (125), 6.47 (150), 7.54 (175), and 8.62 (200).
- DeltaTrimCorro-EPS-FR: 1.61 (75), 2.26 (100), 2.66 (125), 3.56 (150), 4.10 (175).
- DeltaTrimCorro-TPC: 2.5 (75), 3.3 (100), 4.2 (125), 5.0 (150), 5.9 (175), 6.8 (200), 7.7 (225), 8.5 (250).
- DeltaTrimCorro-PIR: 3.23 (75), 4.31 (100), 5.39 (125), 6.47 (150), and 7.54 (175).
- DeltaTrim-EPS-FR: 1.4 (50), 2.1 (75), 2.7 (100), 3.4 (125), 4.1 (150), 5.4 (200), 6.1 (225), and 6.8 (250).
- DeltaTrim-TPC: 1.7 (50), 2.5 (75), 3.3 (100), 4.2 (125), 5.0 (150), 5.9 (175), 6.8 (200), 7.7 (225), 8.5 (250).
- DeltaTrim-PIR: 2.16 (50), 3.23 (75), 4.31 (100), 5.39 (125), 6.47 (150), 7.54 (175), and 8.62 (200).
- DeltaTrimTrim-EPS-FR: 1.61 (75), 2.26 (100), 2.66 (125), 3.56 (150), 4.10 (175).
- DeltaTrimTrim-TPC: 2.5 (75), 3.3 (100), 4.2 (125), 5.0 (150), 5.9 (175), 6.8 (200), 7.7 (225), 8.5 (250).
- DeltaTrimTrim-PIR: 2.16 (50), 3.23 (75), 4.31 (100), 5.39 (125), 6.47 (150), and 7.54 (175).

Solar absorptance: Select from manufacturer's range. Light (< 0.40), Medium (0.40 to 0.60), Dark (> 0.60). See BCA (2022) J3D8 for external walls to a Class 2 building or a Class 4 part of a building.

Light Reflectance Value (LRV): If required, nominate the light reflectance value. Some local government authorities limit the light reflectance value for building exteriors. Refer to the relevant local government authority for any requirements.

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 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	Plastic
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

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

AS/NZS 1170		Structural design actions
AS/NZS 1170.3	2003	Snow and ice actions
AS 1397	2021	Continuous hot-dip metallic coated steel sheet and strip - Coatings of zinc and zinc alloyed with aluminium and magnesium
AS/NZS 2033	2008	Installation of polyethylene pipe systems
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/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 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 the design of structures in snow areas
BCA J3D8	2022	Energy efficiency - Elemental provisions for a sole-occupancy unit of a Class 2 building or a Class 4 part of a building - External walls of a sole-occupancy unit of a Class 2 building or a Class 4 part of a building
BCA Table S7C7	2022	Fire resistance - Fire hazard properties - Other materials - Other materials
BlueScope TB-01A	2023	Steel roofing products - Selection guide
BlueScope TB-01B	2022	Steel walling products - Selection guide
GBCA Buildings	2021	Green Star Buildings
NATSPEC DES 003		Fire hazard properties of insulation and pliable membranes

NATSPEC DES 004	Air, moisture and condensation
NATSPEC DES 011	Rainwater harvesting
NATSPEC DES 018	Bushfire protection
NATSPEC DES 020	Fire behaviour of building materials and assemblies
NATSPEC DES 031	Specifying R-Values
NATSPEC GEN 006	Product specifying and substitution
NATSPEC GEN 024	Using NATSPEC selections schedules
NATSPEC TR 01	Specifying ESD