

## 0437P KINGSPAN INSULATED PANEL CLADDING SYSTEMS

### Branded worksection

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### Worksection abstract

This branded worksection *Template* is applicable to lightweight external cladding and facade systems using Kingspan insulated wall panels or polycarbonate sheets.

### Guidance text

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

### Optional style text

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

### Related material located elsewhere in NATSPEC

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

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

- 0331 *Brick and block construction* for brick veneer.
- 0342 *Light steel framing* for subframing.
- 0382 *Light timber framing* for subframing.
- 0423p *KINGSPAN insulated panel roofing systems*.
- 0432 *Curtain walls* for embedded anchors.
- 0433 *Stone cladding*.
- 0435 *Cladding – planks and weatherboards*.
- 0471p *KINGSPAN in thermal insulation and pliable membranes*.
- 0511 *Lining* for internal lightweight lining.
- 0531 *Suspended ceilings – combined* – for suspended soffits.

### Documenting this and related work

You may document this and related work as follows:

- Check if your cladding is required to be non-combustible, refer to BCA Section Cand ABCB Advisory Note 3. Consider adding a requirement in **SUBMISSIONS** for evidence of conformance from the contractor. If using a performance solution for facade cladding, type testing to AS 5113 may be used as the verification method for combustible external walls.
- Document the structural support system to your office documentation policy.
- Locate the extent of cladding types, accessories, and finishes on drawings to your office documentation policy.
- Penetrations: Show on the drawings the location and extent of penetrations for services and structural elements including flashing details.
- If required, state the minimum thermal resistance (R-Value (m<sup>2</sup>K/W)). See NATSPEC TECHnote DES 031 for information on specifying R-Values.
- Document bushfire protection requirements to conform to AS 3959 and the NCC. See NATSPEC TECHnote DES 018 for information on bushfire protection.
- Check lead time for imported selections and consider adding a requirement, in **SUBMISSIONS**, for the builder to confirm availability.

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

For example:

- Location of control joints.

Search [acumen.architecture.com.au](http://acumen.architecture.com.au), the Australian Institute of Architects' practice advisory subscription service, for notes on the following:

- Guarantees and warranties.

### Specifying ESD

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

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

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

Refer to the NATSPEC TECHreport TR 01 on specifying ESD.

## 1 GENERAL

Kingspan Insulated Panels is the global leader in the design, development and delivery of advanced building envelopes. Its wide range of products include insulated wall panels, BENCHMARK high end facade systems and standing seam systems. Kingspan Insulated Panels is widely recognised in the industry for the high quality and performance of its products as well as its commitment to excellent customer services and technical support.

### 1.1 RESPONSIBILITIES

#### General

Requirement: Provide KINGSPAN insulated wall panel cladding and associated work, as documented.

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

#### Location exposure severity

Exposure severity determines the grade of COLORBOND® steel. Refer to BlueScope TB-01A guide on selecting steel roofing products. Delete if not using profiled steel sheeting.

Exposure severity category: [complete/delete]

Select from the following exposure severity category:

- Benign: > 1000 m from breaking surf/exposed marine or > 1000 m from calm marine.
- Moderate: 401 to 1000 m from breaking surf/exposed marine or 201 to 1000 m from calm marine.
- Marine: 201 to 400 m from breaking surf/exposed marine or 101 to 200 m from calm marine.
- Severe marine: 101 to 200 m from breaking surf/exposed marine or 0 to 100 m from calm marine.
- Very severe marine: 0 to 100 m from breaking surf/exposed marine.

For organic coating used in sheet steel, there are additional corrosivity categories. Add, if appropriate. They are:

- Tropical inland - North Queensland, Northern Territory, North-West Western Australia, Papua New Guinea and the Pacific Islands, except where affected by salinity, and
- Very high - offshore and beach front locations and aggressive industrial environments where pH may be less than 5.

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

### 1.2 COMPANY CONTACTS

#### Kingspan technical contacts

Website: [www.kingspan.com/au/en-au/contact-us](http://www.kingspan.com/au/en-au/contact-us).

### 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

Wall panel and facade system product range: [www.kingspan.com/au/en-au/products](http://www.kingspan.com/au/en-au/products)

Resource centre: [www.Kingspanpanels.com.au/Resource-Centre](http://www.Kingspanpanels.com.au/Resource-Centre)

Technical services: [www.kingspan.com/au/en-au/contact-us](http://www.kingspan.com/au/en-au/contact-us).

## 1.5 INTERPRETATION

### Abbreviations

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

- AWP: Architectural Wall Panel range.
- DLAWP: Day-Lite Architectural Wall Panel.
- DLKK: Day-Lite Klick.
- DLTR: Day-Lite Trapezoidal rooflight.
- EG: Multi Groove.
- EVO: BENCHMARK Evolution range.
- KP: Karrier.
- MM: Mini-Micro.
- MR: Micro-Rib.
- PL: Plank.
- Q2: Recess.
- RW: Trapezoidal Wall Panel.
- WV: Wave.

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

## 1.6 TOLERANCES

### Permitted deviations

Requirement: To Kingspan's recommendations.

Structural steelwork for Kingspan wall panels:  $\pm 5$  mm between bearing planes of adjacent supports.

## 1.7 SUBMISSIONS

### Fire performance

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

### Operation and maintenance manuals

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

### Products and materials

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

- Plastic cladding: Cladding and fastenings to AS 1562.3 Section 5 for resistance to wind forces and resistance to impact.

Type tests are carried out before the contract. 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**.

Refer to AS 1562.3 clause 5.3 for resistance of plastic cladding for cyclone regions.

Contact Kingspan for relevant testing and evidence of conformity.

### Prototypes

General: Erect a prototype of each panel type, including at least one example of each component in the system to verify selections submitted as samples, to demonstrate aesthetic effects, to set quality standards for materials and execution and to verify performance, including wind loading.

Inclusions:

- Typical components, attachments to building structure and methods of installation.
- Window opening with cladding panel, trim and returns.

- Sealant filled joint.

Type: [complete/delete]

Extent: [complete/delete]

Not less than 1800 mm long x 1200 mm high or Not less than 4.5 m long x 3 m high.

Location: [complete/delete]

Incorporation: Subject to approval, incorporate the prototype in the completed works.

Consider including this requirement by changing *Optional* style text to *Normal* style text.

Preferably show on the drawings the location and extent of the prototype and the number and type of components to be included. Delete if the size of the project does not justify a prototype.

### Samples

Approved samples are retained on site and define the acceptable limits of colour and texture variation.

Finish: Submit samples of the cladding material showing the range of variation available.

Sample size: [complete/delete]

300 mm x 150 mm samples are available from KINGSPAN.

### Shop drawings

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

- Dimensioned elevations of all elements.
- Details of construction, connections and all support systems.
- Dimensions of all typical elements and of any special sizes and shapes.
- Provision for the exclusion and/or drainage of moisture.
- Jointing details and method of fixing between individual elements and between this installation and adjacent work, including adjustment.
- Sealant types and full size sections of all sealant-filled joints and backing rods.
- Provision for thermal movement.
- Provision for movement under seismic and wind loads.
- Sequence of installation.
- Co-ordination requirements with other work.
- Schedule of materials, finishes, componentry, hardware and fittings.

### Subcontractors

General: Submit names and contact details of proposed Kingspan approved installer.

Evidence of experience: [complete/delete]

Contact your local Kingspan sales representative for a list of trained and recommended installers or for information about its free comprehensive installation training program.

### Warranties

Cladding materials: Submit the manufacturer's published product warranties.

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

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

## 1.8 INSPECTION

### Notice

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

- Workshop assemblies before delivery to the site.
- Framing, sarking, vapour barrier and insulation before covering up or concealing.
- Completion of a prototype.

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

**Hold points**, if required, should be inserted here.

Coordinate with requirements for prototypes or delete.

## 2 PRODUCTS

### 2.1 GENERAL

#### Product substitution

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

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

#### Storage and handling

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

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

Storage area conditions: Allocate a safe and free trade 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.

#### Components

Cladding support: Conform to the **Cladding support schedule**.

If using anchors or attachments cast in the concrete structure, refer to information on embedded anchors in *0432 Curtain walls* and document requirements in the selected concrete worksections.

Flashings: To AS/NZS 2904.

Coordinate with *0423p KINGSPAN in roofing - profiled sheet metal*.

### 2.2 FIRE PERFORMANCE

#### Fire hazard properties

Group number: To AS 5637.1.

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

Refer to BRANZ fire test certificate No 498 for the performance of Kingspan PIR cored sandwich panels with a nominal thickness of 200 mm which was found to meet the requirements of BCA Spec C1.10 as a Group 2 product, tested to AS ISO 9705, also having a Smoke Growth Rate Index (SMOGRA) of < 100.

Insulation materials: Tested to AS/NZS 1530.3. 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 Spec C1.10 Table 4. Refer to CSIRO's certificate of test report No. FNE8218 for the fire hazard properties of KS1200CS, with a nominal thickness of 150 mm tested to AS/NZS 1530.3:

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

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

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

AS/NZS 1530.3 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 clause 4.12.2(c) requires insulation materials faced with reflective surface materials to incorporate a representative vertical joint in three test specimens.

**Non-combustible construction required: [complete/delete]**

List any parts of the project that the BCA requires to be non-combustible. Delete if none. Construction required to be non-combustible by the BCA (e.g. fire walls and spandrels with a specific FRL) must be constructed wholly of materials that are not deemed combustible. In other situations, the BCA does not prohibit the use of combustible insulation materials, provided they meet the other fire properties.

Contact Kingspan for relevant testing of fire hazard properties as well as supporting evidence and documentation to assist a fire engineer prepare a performance solution for Type A and Type B construction.

## 2.3 KINGSPAN ARCHITECTURAL WALL PANEL (AWP) SYSTEMS

### General

KINGSPAN AWP can be installed vertically or horizontally depending on the desired aesthetics.

AWP are locally manufactured and available in a range of thicknesses, four colour palettes and profiles including:

- MiniMicro (KS1000, KS900, KS600 MM).
- Plank (KS1000, KS600 PL).
- Wave (KS1000, KS900, KS600 WV).
- MicroRib (KS1000, KS900, KS600 MR).

Standard lengths from 2 m to 13.7 m. Longer lengths on request. For orders outside Australia, maximum lengths are 11.8 m. Maximum length for panels transported by rail is 12 m. Exact lengths will be determined by cladding contractor form steelwork drawings.

Contact Kingspan's local specification manager for minimum order quantities and associated lead times.

Description: Secret fixed weathertight wall cladding system comprising Kingspan insulated wall panels and accessories.

KS600, KS900, KS1000 AWP panels: Prefinished metal skins continuously laminated over a polyisocyanurate (PIR) core.

KS1000 IPL4 panels: Prefinished metal skins continuously laminated over a polyisocyanurate (PIR) core.

The AWP IPL4 panel is engineered to meet the AS/NZS 1170.2 clause 2.5.8 impact loading from windborne debris.

Certification: Kingspan KS1000/900/600 AWP CodeMark certificate CM20103.

### System accessories

Requirement: Kingspan system accessories colour matched to wall panels, as documented:

- Top hats.

Steel top hats maximum length 3 m. Aluminium top hats maximum lengths 6 m.

- Preformed insulated corners.

A range of preformed insulated corners as an alternative to traditional corner flashing. Contact Kingspan Technical regarding suitability of preformed corners and limitations.

- KS1000 DLAWP daylighting panels.

### Ancillaries

Sealant tape: 6 mm x 4 mm butyl rubber.

AWP profile filler for KS1000 AWP: 25 mm x 25 mm x 5 mm.

Horizontal installation:

- Base support: AWP base channel for 50, 80, 100 and 140 mm thick panels.
- Panel bearer for 50, 80 and 100 mm thick panels.
- VJ2 Bubble gasket: 95 mm wide.
- Neutral cure gun grade silicone sealant: As required.

Sealant not supplied by Kingspan. Refer to Kingspan's technical drawings for sealant locations.

- Foam tape: 4.8 mm x 60 mm wide neoprene for high humidity applications.

When using WV (wave) profile, use 6 mm x 9 mm PVC foam tape (not supplied by Kingspan) under flashings/top hats.

**Flashings**

Prefabricated flashings: Minimum 0.5 mm coated steel to AS 1397 manufactured to suit the selected external and internal sheet.

**Fasteners (non cyclonic)**

Primary: Self-tapping, self-drilling screws manufactured from carbon steel, anti-corrosion coated and fitted with a 16 mm diameter bonded washer. If the panel's tongue is removed on site, use face fixed fasteners to Kingspan's recommendations.

Secondary: Carbon steel stitching screws complete with bonded 14 mm diameter EPDM washers or rivets.

Cyclonic applications: Contact Kingspan technical services for recommendations and testing documentation.

**2.4 KINGSPAN TRAPEZOIDAL WALL PANEL (RW) SYSTEM****General**

KINGSPAN Trapezoidal Wall Panels can be installed vertically or horizontally depending on the desired aesthetics.

Description: Through fixed weathertight wall cladding system comprising Kingspan insulated wall panels and accessories.

KS1000 RW panels: Prefinished metal skins continuously laminated over a polyisocyanurate (PIR) core.

Certification: Kingspan KS1000 RW CodeMark certificate CM20103.

**System accessories**

Requirement: Kingspan system accessories colour matched to wall panels, as documented:

- Steel top hats with flush insert: THA.

Steel top hats maximum length 3 m.

- Preformed insulated corners.

A range of preformed insulated corners as an alternative to traditional corner flashing. Contact Kingspan technical services regarding suitability of preformed corners and limitations.

- KS1000 DLTR daylighting panels.

**Ancillaries**

Sealant tape: 6 mm x 4 mm butyl rubber.

RW profile filler for KS1000 RW: 100 mm x 35 mm x 35 mm.

VJ2 Bubble gasket: 95 mm wide.

Foam tape: 4.8 mm x 60 mm wide neoprene for high humidity applications.

Neutral cure gun grade silicone sealant: As required.

Sealant not supplied by Kingspan. Refer to Kingspan's technical drawings for sealing locations.

**Flashings**

Prefabricated flashings: Minimum 0.5 mm coated steel to AS 1397 manufactured to suit the selected external and internal sheet.

**Fasteners (non cyclonic)**

Primary: Self-tapping, self-drilling screws, manufactured from carbon steel, anti-corrosion coated and fitted with a 16 mm diameter bonded washer. Colour matched heads or caps.

Secondary: Carbon steel stitching screws complete with bonded 14 mm diameter EPDM washers.

Cyclonic applications: Contact Kingspan technical services for recommendations and testing documentation.

**2.5 KINGSPAN BENCHMARK PANELISED FACADE (EVO) SYSTEM****General**

Manufactured in Australia, BENCHMARK Evolution provides a flat facade, combining leading-edge design with excellent thermal performance. Specifically engineered joint details provide an absolute weather tight building envelope. Three BENCHMARK Evolution options are available including BENCHMARK Evolution Axis, BENCHMARK Evolution Multi-Groove and BENCHMARK Evolution Recess.

Contact Kingspan's local specification manager for minimum order quantities and associated lead times.

Description: Secret fixed facade system comprising Kingspan Evolution Axis insulated wall panels and accessories.

KS600, KS900, KS1000 EVOLUTION - Evolution Axis panels: Prefinished metal skins continuously laminated over a polyisocyanurate (PIR) core.

KS600, KS900, KS1000 Q2 - Evolution Recess Panels: Prefinished metal skins continuously laminated over a polyisocyanurate (PIR) core with factory formed flanges.

KS600, KS900, KS1000 EG - Evolution Multi-Groove Panels: Prefinished metal skins continuously laminated over a polyisocyanurate (PIR) core with one, two or three additional equally spaced groove(s) added to external facing.

Certification: Kingspan KS1000/900/600 EVO CodeMark certificate CM20103.

### System accessories

Requirement: Kingspan system accessories colour matched to wall panels, as documented:

- Top hats.

Steel top hats maximum length 3 m. Aluminium (uncoated) top hats maximum lengths 6 m.

- Preformed insulated corners.

A range of preformed insulated corners as an alternative to traditional corner flashing. Contact Kingspan technical services regarding suitability of preformed corners and limitations.

- KS1000 DLAWP daylighting panels.

### Ancillaries

Sealant tape: 6 mm x 4 mm butyl rubber.

AWP profile filler: 25 mm x 25 mm x 5 mm.

Horizontal installation:

- Base support: AWP base channel for 50, 80, 100 and 140 mm thick panels.
- Panel bearer for 50, 80 and 100 mm thick panels.
- VJ2 Bubble gasket: 95 mm.
- Foam tape: 4.8 mm x 60 mm wide neoprene for high humidity applications.
- For KS600, KS900, KS1000 Q2 Recess: Black push gasket, Benchmark Ref: EQ2-10 or EQ2-20.

### Flashings

Prefabricated flashings: Minimum 0.7 mm coated steel to AS 1397 manufactured to suit the selected external and internal sheet.

### Fasteners (non cyclonic)

Primary: Self-tapping, self-drilling screws, manufactured from carbon steel, anti-corrosion coated and fitted with a 16 mm diameter bonded washer, for locating through the tongue section of the panel. If the tongue is removed on site, use face fixed fasteners to Kingspan's recommendations.

Secondary: Carbon steel stitching screws complete with bonded 14 mm diameter EPDM washers or rivets.

Cyclonic applications: Contact Kingspan technical services for recommendations and testing documentation.

## 2.6 KINGSPAN BENCHMARK RAINDSCREEN SUBSTRUCTURE SYSTEM (KP - KARRIER)

### General

BENCHMARK Rainscreen Substrate System - Karrier Panel (KP) provides a high end, aesthetic, high performing building envelopes. The secondary support/railing system for the selected façade is fixed directly to the outer skin of the panel systems to remove all risk of thermal bridging. Cassette options include:

- Dri-Design Flat, Dri-Design Tapered, Dri-Design Shadow or Dri-Design Perforated.
- Shingle.
- Interlocking plank.
- Hook on Cassette.

Contact your local Kingspan specification manager for further advice and availability.

Description: Facade cladding system comprising a rainscreen fixed to pre-engineered Kingspan BENCHMARK insulated wall panels and system accessories.

BENCHMARK Karrier (KS1100 KP): Prefinished internal and external coated steel skins with a polyisocyanurate (PIR) core.

### Ancillaries

Sealant tape: Butyl rubber:



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

Foam tape: 120 mm x 2 mm ethylene propylene diene monomer (EPDM).

Neutral cure gun grade silicone sealant: As required.

Sealant not supplied by Kingspan. Refer to Kingspan's technical drawings for sealant locations.

### Fasteners (non cyclonic)

Primary: Flush finish:

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

Primary: Non flush finish:

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

Secondary: Carbon steel stitching screws complete with bonded 14 mm diameter EPDM washers or rivets.

Rainscreen fasteners: Rivets or Fablocks.

Rainscreen fasteners: Contact Kingspan technical services for recommendations on specific project requirements.

Cyclonic applications: Contact Kingspan technical services for recommendations and testing documentation.

## 2.7 KINGSPAN DAY-LITE SYSTEMS

### General

Description: Translucent polycarbonate, secret fixed wall daylight unit with proprietary UV protection to external surface:

- Day-Lite Architectural (KS1000 DLAWP).

Not suitable for integration with Architectural Wall Panel (KS1000 AWP) or BENCHMARK Evolution with a core thickness of 50 mm.

Co-extruded, multi-wall polycarbonate wall light offering excellent interior levels of natural light without compromising building performance. Installed both vertically and horizontally and is suitable for all building applications (except where the occupants or processes add significant quantities of water to the air, or where there are internal environment with low temperatures).

Standard lengths available from 1.2 m to 6 m. Longer lengths available on request. Extended lead times and additional cost may apply

Standard module width: 1000 mm.

Colour availability: Opal. Contact your local Kingspan specification manager for further advice and availability of additional colours.

- Day-Lite Klick (KS500 DLKK).

A secret fix wall light system typically suited for vertical applications. Featuring an innovative joint detail, this flexible wall light system is designed for standalone use where no integration with insulated panels is required, and can also be combined with an extruded aluminium frame to allow for integration with a range of building materials. The system is suitable for all building applications (except where the occupants or processes add significant quantities of water to the air, or where there are internal environments with low temperatures).

Standard lengths available from 1.2 m to 6 m. Longer lengths available on request. Extended lead times and additional cost may apply

Standard module width: 500 mm.

Contact your local Kingspan specification manager for further advice and colours available.

- Day-Lite Trapezoidal (KS1000 DLTR).

Only suitable for integration with Trapezoidal (KS1000 RW) wall panel system.

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

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

Standard module width: 1000 mm.

Colour availability: Clear/ Opal/ Opal 3.4.

Contact your local Kingspan specification manager for further advice and availability of additional colours.

### Ancillaries

Day-Lite Architectural (KS1000 DLAWP):

- Sealant tape: 6 mm x 4 mm butyl rubber.
- AWP profile filler: 25 mm x 25 mm x 5 mm.

Day-Lite Trapezoidal (KS1000 DLTR):

- Sealant tape: 6 mm x 4 mm butyl rubber.
- PVC magnetic spacers: For 40, 60, 70 and 100 mm thick panels.
- KS1000 RW profile filler: 1000 mm x 35 mm x 35 mm.

### Fasteners

Day-Lite Architectural (KS1000 DLAWP):

- Primary: Self-tapping, self-drilling screws, manufactured from carbon steel, anti-corrosion coated and fitted with a 16 mm diameter bonded washer. If the tongue is removed on site, use face fixed fasteners to Kingspan's recommendations.

Day-Lite Trapezoidal (KS1000 DLTR):

- Primary: Self-tapping, self-drilling screws, manufactured from carbon steel, anti-corrosion coated and fitted with a 19 mm diameter embossed stainless steel or aluminium washer bonded and storm washers.
- Storm washers: 1.5 mm thick x 50 mm long and poppy red.

## 3 EXECUTION

### 3.1 PREPARATION

#### Substrates or framing

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

### 3.2 INSTALLATION

#### General

Site assembly instructions are available from Kingspan technical services. Kingspan recommend the contractor attends the appropriate product installation training course prior to installation which is provided by Kingspan Field Service Department.

Requirement: Conform to Kingspan's recommendations, using Kingspan approved installers for installation, including the following:

- Fasteners, laps, seals 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.

Refer to Kingspan's technical bulletin, *Method statement for the on-site cutting of insulated panels.*

- Cut openings to the minimum size necessary.
- Penetrations larger than 300 mm x 300 mm: Provide additional structural support.
- Swarf: Remove swarf and any foreign matter immediately from the external surface of panels.

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

Fixing method: As documented or to the following:

- Steel and timber framing: Screw.

Horizontal cladding surface: Slope away from visible vertical façade areas to prevent staining.

Document control joints, flashings at windows and abutments, and penetrations to the manufacturer's recommendations on the drawings. Contact Kingspan for further details and limitations regarding penetrations.

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

Damaged parts: Remove and replace members damaged during installation.

#### Accessories and trim

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

#### Metal separation

Design for compatibility or detail separation.

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

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

Incompatible metal fixings: Do not use.

#### Joints

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

Structural movement joints:

- Location: Coincident with structural movement joints, as documented.
- Joint width: To match structural movement joint requirements.

### 3.3 KINGSPAN ARCHITECTURAL WALL PANELS (AWP) SYSTEM

#### Laps, sealants and fillers

Horizontally installed:

- Horizontal panel joint with factory applied weather seal:
  - . High humidity applications: Seal internal joint with an unbroken run of sealant tape.
  - . Vertical panel joint: Seal internally with two unbroken runs of sealant or bubble gasket.

Vertically installed: Vertical panel joint with factory applied weather seal:

- High humidity applications: Seal internal joint with an unbroken run of sealant tape.

Intermediate supports in high humidity applications: Seal along purlins using two unbroken runs of sealant tape or neoprene foam tape.

Refer to Kingspan's technical drawings for high humidity applications.

Profile fillers: Seal and close joints using AWP profile fillers.

Junctions between the roof panel system and walls/penetrations: Fill using fire-resisting, gun-applied canister urethane insulation.

Flashings: Air seal flashings at laps and along the length with an unbroken bead of sealant tape.

#### Fasteners (non cyclonic)

Contact Kingspan's technical services for advice on number of fixings required for the location and for further information on fasteners.

Primary:

- Hidden/secret fix: Locate fasteners through the tongue section of the panel. If required, cover with a flashing to maintain concealed fix appearance.

A recessed washer option is available.

Secondary: Stitch flashings at maximum 450 mm centres.

Cyclonic applications: Contact Kingspan's technical services for recommendations and testing documentation.

### 3.4 KINGSPAN TRAPEZOIDAL WALL PANEL (RW) SYSTEM

#### Laps, sealants and fillers

Refer to Kingspan's technical drawings for high humidity applications.

Side laps with factory applied weather seal:

- High humidity applications: Seal internal joint, using an additional unbroken run of sealant tape.

External end laps:

- Lap sheeting 75 mm and weather seal using two unbroken runs of sealant tape.

- High humidity applications: Seal along purlins and intermediate supports using two unbroken runs of sealant tape or neoprene foam tape.

Profile fillers: If flashings are fixed across the profile of the panel, provide closed cell polyethylene foam fillers to seal and close the profile. Seal the top, bottom and side of profiled fillers with neutral cure, gun-grade sealant.

Junctions between the roof panel system and walls/penetrations: Fill using fire-resisting, gun-applied canister urethane insulation.

Refer to Kingspan's technical drawings for KS1000 RW walls.

Flashings: Air seal flashings at laps and along the length with an unbroken bead of sealant tape.

#### **Fasteners (non cyclonic)**

Primary: Locate at every pan of the panel and at every support, or as documented.

Secondary: Stitch side laps and flashings at maximum 450 mm centres.

Cyclonic applications: Contact Kingspan technical services for recommendations and testing documentation.

### **3.5 KINGSPAN BENCHMARK PANELISED FACADE (EVO) SYSTEM**

#### **Laps, sealants and fillers**

Horizontally installed:

- Horizontal panel joint in high humidity applications: Seal internal joint with an unbroken run of sealant tape.
- Vertical panel joint: Seal internally with two unbroken runs of sealant or bubble gasket.

Vertically installed: Vertical panel joint in high humidity applications:

- Seal internal joint with an unbroken run of sealant tape.

Intermediate supports in high humidity applications: Seal along purlins using two unbroken runs of sealant tape or neoprene foam tape.

Refer to Kingspan's technical drawings for high humidity applications.

Profile fillers: If required, seal and close joints using AWP profile fillers.

Junctions between the roof panel system and walls/penetrations: Fill using fire-resisting, gun-applied canister urethane insulation.

Flashings: Air seal flashings at laps and along the length with an unbroken bead of sealant tape.

#### **Fasteners (non cyclonic)**

Contact Kingspan's technical services for advice on number of fixings required for the location and for further information on fasteners.

Primary:

- Hidden/secret fix: Locate fasteners through the tongue section of the panel. If required, cover with a flashing to maintain concealed fix appearance.

A recessed washer option is available.

Secondary: Stitch flashings at maximum 450 mm centres.

Cyclonic applications: Contact Kingspan technical services for recommendations and testing documentation.

### **3.6 KINGSPAN BENCHMARK RAINSCREEN SUBSTRUCTURE SYSTEM (KP - KARRIER)**

#### **Laps, sealants and fillers**

Sealants: If required, seal flashings and penetrations with natural cure sealants to Kingspan's recommendations.

Visible facing joints: 3 mm maximum gap between tongue and grove panels.

Female joint: Install a continuous 6 mm diameter bead of non-curing gun-grade sealant in female joint on external face before installing panel.

Panel end joints: Seal using continuous adhesive 50 mm butyl mastic tape on the external face. Apply EPDM 120 x 2 mm self-adhesive sealing tape to purlin/supporting steelwork before laying panels.

Fire-resisting panel end joints: If required, fill panel to panel end joints with a fire-resisting, gun applied canister urethane insulation, and over flash to Kingspan's recommendations.

Flashings: Seal at laps and along the length with an unbroken bead of sealant tape.

### 3.7 KINGSPAN DAY-LITE-SYSTEMS

#### Laps, sealants and fillers

Day-Lite Architectural (KS1000 DLAWP):

- Profile fillers: If required, seal and close joints using AWP profile fillers.
- Sealing spacers: Seal behind aluminium spacers factory adhered to the panel and panel supports with white polyethylene foam fillers.

Day-Lite Trapezoidal (KS1000 DLTR):

- Side laps: Seal externally, using an unbroken bead of sealant tape.
- External end laps: Lap sheeting 150 mm and weather seal, using three unbroken runs of sealant tape.

Refer to Kingspan's technical drawings for KS1000 DLTR.

- Profile fillers: If flashings are fixed across the profile of the panel, provide closed cell polyethylene foam fillers to seal and close the profile. Seal the top, bottom and side of profiled fillers with neutral cure gun-grade sealant.
- Junctions between roofing and walls/penetrations: Fill using fire-resisting gun-applied canister urethane insulation.

If polycarbonate is joined to KS1000 RW using a top hat, refer to KS1000 DLTR horizontally laid details.

#### Fasteners

Contact Kingspan for advice on number of fixings required for the location and for further information on fasteners.

Day-Lite Architectural (KS1000 DLAWP):

- Primary:
  - . Hidden/secret fix: Locate through the tongue section of the panel. If required, cover with a flashing to maintain concealed fix appearance.

A recessed washer option is available.

Day-Lite Trapezoidal (KS1000 DLTR):

- Primary: Locate on the crown of the profile.
- Secondary:
  - . Side laps: Fix with carbon steel screws with EPDM seal, 28 mm long with a 19 mm diameter bonded and embossed stainless steel or aluminium washer.

Kingspan can provide advice on the number of fixings required for the application. This must be signed off by the project engineer.

### 3.8 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: If it is necessary to touch up minor damage to prepainted metal roofing, do not overspray onto undamaged surfaces.

#### Cleaning

Protection: After completion, remove protective coatings 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: Check and adjust if necessary to make sure they are weather tight and external panel facing is not distorted.

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

Refer to Kingspan's technical bulletin, *Annual inspection and maintenance*.

#### Warranties

Requirement: Cover materials and workmanship in the terms of the warranty from the supplier and installer.

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

Use only where 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 Kingspan and installer are required.

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

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

Warranty periods: Provided the panels are installed to Kingspan’s recommendations and installers are trained by Kingspan’s field service manager, warranties periods are as follows:

- AWP range and BENCHMARK EVO range: Up to 15 years warranty.
- KS1100 KP: Up to 25 years warranty.
- KS1000 DLTR, DLAWP and DLKK: Up to 15 years warranty.

**4 SELECTIONS**

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

**4.1 PRODUCT**

**Kingspan insulated wall panel schedule**

Property	A	B	C
Product			
Internal environment			
Panel width (mm)			
Panel length (m)			
External sheet: Thickness (mm)			
External sheet: Colour range			
External sheet: Colour			
Core thickness (mm)			
Internal liner sheet: Thickness (mm)			
Internal liner sheet: Colour range			
Internal liner sheet: Colour			
Fire hazard properties: Group number			
Panel orientation			
R-Value (m <sup>2</sup> .K/W)			
Top hat profile			
Preformed corners			

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

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

Product: Select from:

- AWP panels: KS1000/KS900/KS600 MR (Micro-Rib), KS1000/KS900/KS600 MM (Mini-Micro), KS1000/KS600 PL (Plank), KS1000/KS900/KS600 WV (Wave).
- KS1000/KS900/KS600 IPL4 (PL, WV, MM, MR).
- KS1000 RW (Trapezoidal profile).

Internal environment: Low-humidity or High-humidity.

Panel width (mm): Select from:

- AWP Panels: 1000, 900 or 600.
- IPL4 Panels: 1000, 900 or 600.
- KS1000 RW: 1000.

Panel length (m): Standard lengths available from 2 m to 13.7 m. Longer lengths can be supplied on request. For orders outside of Australia, maximum lengths are 11.8 m. Maximum lengths for panels transported by rail is 12 m.

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

- KS1000/KS900/KS600 (PL, WV, EB, MM and MR) minimum: 0.5.
- KS1000 RW minimum: 0.5.

External sheet - Colour range: Standard Range, High performance Range, Metallic Range or Custom Colour.

External sheet - Colour: Contact Kingspan for available colours.

Core thickness (mm): Select from:

- KS1000/KS900/KS600 (PL, WV, EB, MM, MR): Select from 50, 80, 100, 140.
- KS1000/KS900/KS600 IPL4 (PL, WV, MM, MR): Select from 80, 100, 140.
- KS1000 RW: Select from 40, 60, 70, 100.

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

- Minimum: 0.4.

Internal liner sheet - Colour range: Select from:

- CLEANsafe15 (standard internal liner), External Standard Range, Metallic Range or Custom Colour.
- High humidity internal environment: AQUAsafe 55 (swimming pools) or AQUAsafe.

Internal liner sheet - Colour: CLEANsafe15 (bright white liner),

Group number: BCA Spec C1.10 Table 3 lists permitted wall and ceiling material group numbers. Refer to the product's data sheets (PDS).

Panel orientation: Horizontal or Vertical.

R-Value ( $m^2.K/W$ ): Select from:

- KS1000 AWP: 2.65, 4.15, 5.15, 7.15.
- KS1000 IPL4: 4.15, 5.15, 7.15.
- KS1000 RW: 2.35, 3.37, 3.88, 5.36.

Top hat profile for AWP and EVO panels: Select from:

- THA: Steel with flush insert (coated).
- TH1: Aluminium with flush insert (uncoated).
- TH2: Aluminium with recessed insert (uncoated).
- TH3: Aluminium with rubber insert (uncoated).

Top hat profile for RW panels: THA.

Preformed corner: Select from Single-cranked, Double-cranked, Chamfered or Column encasement. Contact Kingspan for suitability of preformed corners and information regarding limitations associated with vertical and horizontal preformed corners.

### Kingspan BENCHMARK facade system schedule

Property	A	B	C
Product			
Internal environment			
Panel width (mm)			
Panel length (mm)			
External sheet: Thickness (mm)			
External sheet: Colour range			
External sheet: Colour			
Core thickness (mm)			

Property	A	B	C
Internal liner sheet: Thickness (mm)			
Internal liner sheet: Colour range			
Internal liner sheet: Colour			
Panel orientation			
Fire hazard properties: Group number			
R-Value (m <sup>2</sup> .K/W)			
External facing			

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

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

Product: Select from:

- Evolution Axis: KS1000 EVOLUTION, KS900 EVOLUTION or KS600 EVOLUTION.
- Evolution Recess: KS1000 Q2, KS900 Q2 or KS600 Q2.
- Evolution Multi-Groove: KS1000 EG, KS900 EG or KS600 EG.
- Karrier KS1100 KP.

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

Panel width (mm): Select from:

- KS1000/KS900/KS600 EVO range: 1000, 900 or 600.
- KS1100 KP: 1100.

Panel length (m): Standard lengths available from 2 m to 13.7 m. Longer lengths can be supplied on request. For orders outside of Australia, maximum lengths are 11.8 m. Maximum lengths for panels transported by rail is 12 m. For KS1000/900/600 Q2 – Evolution Recess max. length 8 m.

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

- KS1000/KS900/KS600 EVO range minimum: 0.7.
- KS1100 KP minimum: 0.6.

External sheet - Colour range:

- KS1000/KS900/KS600 EVO range: Select from Standard Range, High performance Range, Metallic Range or Custom colour.
- KS1100 KP: Off white.

External sheet - Colour:

- Contact Kingspan for available colours.
- KS1100 KP: Off white.

Core thickness (mm):

- KS1000/KS900/KS600 EVO range: Select from 50, 80, 100, 140.
- KS1100 KP: Select from 50, 75, 100, 125, 150 200.

Internal liner sheet: Thickness (mm): Select from:

- KS1000/KS900/KS600 EVO range minimum: 0.4.
- KS1100 KP minimum: 0.5.

Internal liner sheet - Colour range: Select from:

- CLEANsafe15 (standard internal liner), External Standard Range, Metallic Range or Custom Colour.
- High humidity internal environments: AQUAsafe 55 (swimming pools) or AQUAsafe.

Internal liner sheet - Colour:

- CLEANsafe15 Bright White Liner.
- Contact Kingspan for additional colours.
- KS1100 KP: Off white.



Panel orientation: Horizontal or vertical.

Group number: BCA Spec C1.10 Table 3 lists permitted wall and ceiling material group numbers. Refer to the product's data sheets (PDS).

R-Value ( $m^2.K/W$ ): Select from:

- KS1000/KS900/KS600 EVO range: 2.65, 4.15, 5.15, 7.15.
- KS1100 KP: 2.65, 3.90, 5.15, 6.40, 7.65, 10.15.

External facing: Describe the facing material or nominate the product. Select from:

If the external facing product is not provided by Kingspan, document the additional requirements in this worksection. External facings may include Metallic, Ceramic, Fibre cement, HPL and timber.

#### Kingspan day-lite system schedule

Property	A	B	C
Product			
Panel width (mm)			
Panel length (m)			
Colour			
Panel orientation			
R-Value ( $m^2.K/W$ )			

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

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

Product: Select from:

- KS1000 DLAWP.
- KS500 DLKK.
- KS1000 DLTR.

Panel width (mm):

- KS1000 DLAWP: 1000.
- KS500 DLKK: 500.
- KS1000 DLTR: 1000.

Panel length (m): Longer lengths are available on request. Note extended lead times and additional costs may apply. Select from:

- KS1000 DLAWP: Standard lengths from 1.2 to 6.
- KS500 DLKK: Standard lengths from 1.2 to 6.
- KS1000 DLTR: Standard lengths from 1.8 to 6 (including 150 mm end lap).

Colour:

- KS1000 DLAWP: Opal.
- KS1000 DLKK: Contact Kingspan for availability.
- KS1000 DLTR: Select from: Clear, Opal or Opal 3.4.

Contact Kingspan technical services for availability of additional colours.

Panel orientation:

- KS1000 DLAWP: Horizontal or Vertical.
- KS500 DLKK: Vertical.
- KS1000 DLTR: Horizontal or Vertical.

R-Value ( $m^2.K/W$ ): 0.77.

#### Cladding support schedule

Property	A	B	C
Product			
Material			

Property	A	B	C
Vertical members			
Horizontal members			
Spacing: Vertical members			
Spacing: Horizontal members			

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

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

Product: Nominate proprietary items or describe the cladding support system and document the subframe to your office documentation policy. Fabricated panels are usually secret fixed to the structural support or the subframe. Cross reference *0342 Light steel framing* for the subframe or import the relevant clauses, if required.

Material: e.g. Galvanized steel, Anodized aluminium or Stainless steel appropriate to the project's location.

If using anchors or attachments cast in the concrete structure, refer to information on embedded anchors in *0432 Curtain walls* and document requirements in the selected concrete worksections.

#### REFERENCED DOCUMENTS

The following documents are incorporated into this worksection by reference:

AS 1397	2011	Continuous hot-dip metallic coated steel sheet and strip - Coatings of zinc and zinc alloyed with aluminium and magnesium
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 1562.3	2006	Plastics
AS/NZS 2904	1995	Damp-proof courses and flashings
AS 5637		Determination of fire hazard properties
AS 5637.1	2015	Wall and ceiling linings

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

AS/NZS 1170		Structural design actions
AS/NZS 1170.2	2011	Wind actions
AS 3959	2009	Construction of buildings in bushfire prone areas
AS 5113	2016	Fire propagation testing and classification of external walls of buildings
ABC Advisory Note 3	2016	Fire performance of external walls and cladding
BCA Section C	2016	Fire Resistance
BCA Spec C1.10	2016	Fire resistance - Fire hazard properties
BlueScope TB-01A	2016	Steel roofing products - Selection guide
NATSPEC DES 003	2006	Fire hazard properties of insulation and pliable membranes
NATSPEC DES 018	2008	Bushfire protection
NATSPEC DES 020	2011	Fire behaviour of building materials and assemblies
NATSPEC DES 031	2014	Specifying R-Values
NATSPEC GEN 006	2007	Product specifying and substitution
NATSPEC GEN 024	2015	Using NATSPEC selections schedules
NATSPEC TR 01	2018	Specifying ESD