

0434P DANPALON TRANSLUCENT FACADE CLADDING

Branded worksection

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Worksection abstract

This branded worksection *Template* is applicable to Danpalon lightweight external wall cladding by Danpal Australia Pty Limited.

How to use this worksection

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

Related material located elsewhere in NATSPEC

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

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

- *0182 Fire-stopping.*
- *0331 Brick and block construction* for brick veneer.
- *0342 Light steel framing* for subframing.
- *0382 Light timber framing* for subframing.
- *0471 Thermal insulation and pliable membranes* for wall insulation, thermal break strips and vapour permeable membranes.
- *0511 Lining* for internal lightweight linings.
- *0531 Suspended ceilings – combined* for suspended soffits.
- *0671 Painting* for in situ paint finishes.
- *0672 Textured and membrane coatings* for in situ application of membrane and surface coatings.

Each of the following worksections contains a single cladding system and may be used where appropriate in addition to this worksection.

- *0432 Curtain walls.*
- *0433 Stone cladding.*
- *0429p DANPALON roofing - glazed* for translucent roofing.
- *0435 Cladding – planks and weatherboards.*
- *0436 Cladding – profiled and seamed sheet metal.*
- *0437 Cladding – insulated panel systems.*

Material not included in NATSPEC

Some projects may include items not covered by NATSPEC. For these you may need to create new text or modify this text.

Documenting cladding 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 C and ABCB Fire performance of external walls and cladding advisory note. 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 external walls.
- For proprietary cladding systems, import information from suppliers.
- 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.
- Document the location of openings and penetrations to avoid waste and panel handling times.
- For flush jointed fibre cement soffit lining import the relevant material from *0511 Lining*.
- If required, state the minimum thermal resistance (R-Value) (m².K/W). See NATSPEC TECHnote DES 031 for information on specifying R-Values.

- In bushfire-prone areas, document bushfire protection requirements 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, the Australian Institute of Architects' practice advisory subscription service, for notes on the following:

- Guarantees and warranties.
- Site planning and design for bushfire.

Specifying ESD

The following may be specified by including additional text:

- Design for disassembly. Danpalon panels can be dismantled and reused elsewhere.
- High performance cladding systems to extend building service life.
- High thermal performance to reduce heating/cooling load.
- Recycled material content.
- Recycling of construction scrap materials. Polycarbonate is 100% recyclable.

Refer to the NATSPEC TECHreport TR 01 on specifying ESD.

1 GENERAL

Danpalon is a patented glazing snap-connection system with concealed fasteners that provides for 100% watertightness; free structural and thermal movement within a flexible system; structural properties that allow for a significantly reduced substructure; quick and easy installation; the elimination of gaskets and sealants; the elimination of fixing penetrations through the sheet and 99.9% UV protection with the protection coating co-extruded with the sheeting, eliminating any chance of delamination.

1.1 RESPONSIBILITIES

General

Requirement: Provide the Danpalon polycarbonate cladding system, as documented.

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

1.2 COMPANY CONTACTS

Danpalon technical contacts

Website: danpal.com.au/contact-us

Warranties: danpal.com.au/warranty

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 STANDARDS

General

Design and installation: To AS 1562.3.

The NCC cites AS/NZS 1562.3:1996 for BCA deemed-to-satisfy.

Polycarbonate: To AS 4256.5.

The NCC cites AS/NZS 4256.5:1996 for structural sufficiency of roof construction and weatherproofing of roofing.

1.5 MANUFACTURER'S DOCUMENTS

Technical manuals

Brochures: danpal.com.au/download-page

Design details: danpal.com.au/download-page

Colour properties: danpal.com.au/download-page

Warranties: danpal.com.au/download-page

Further information and sample orders: danpal.com.au/contact-us

1.6 INTERPRETATION

Abbreviations

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

- LT%: The percentage of visible light transmission (400 to 700 nm).
- SHGC: Solar heat gain coefficient.
- SR%: The percentage of total solar reflection (300 to 2800 nm).
- ST%: The percentage of total solar radiation transmission (300 to 2800 nm).

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

1.7 TOLERANCES

Permitted deviations

Requirement: To Danpalon's recommendations.

1.8 SUBMISSIONS

Fire performance

Fire hazard properties: Submit evidence of conformity to **TRANSLUCENT PANEL SYSTEMS GENERALLY, Fire hazard properties.**

Fire hazard properties may be documented in **PRODUCTS** and/or **EXECUTION**.

Operation and maintenance manuals

General: Submit Danpalon's published use, care and maintenance requirements.

Products and materials

Type tests: As appropriate for the project, submit results of facade testing as follows:

- Water penetration to AS/NZS 4284.
- Structural testing to AS/NZS 4284.
- Resistance to wind pressure:
 - . For non-cyclone regions to AS 4040.2
 - . For cyclone regions to AS 4040.3.
- Resistance to impact to AS/NZS 4040.5.

BCA FP1.4 requires that cladding prevent the penetration of water so that internal conditions do not become unhealthy or dangerous

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

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

Evidence of delivery: Submit delivery docket as evidence of delivery of [complete/delete]

If evidence of delivery to site is required for particular products, consider including this *Optional* style text by changing to *Normal* style.

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 4500 mm long x 3000 mm high.

Location: [complete/delete]

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.

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

This *Optional* style text may be included by changing to *Normal* style text.

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]

Sample sizes are generally 300 x 300 mm or 600 x 600 mm.

Shop drawings

General: 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.

Warranties

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

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

Cladding materials: Submit the manufacturer's product warranties.

Weatherproofing performance

Requirement: Submit evidence of conformity to **PRODUCTS, WEATHERPROOFING**.

1.9 INSPECTION

Notice

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

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

Amend to suit the project, adding critical stage inspections 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

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

- Protect materials including edges and surfaces from damage.
- Keep dry and unexposed to weather.
- Do not drag sheets or panels across each other or over other materials.
- Sheeting: Stack flat and off the ground on at least 3 evenly placed bearers.

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

Fasteners and ties: To the cladding manufacturer's recommendations.

Flashings: To AS/NZS 2904.

2.2 TRANSLUCENT PANEL SYSTEMS GENERALLY

Danpalon systems

Description: Proprietary polycarbonate glazing system comprising polycarbonate panels, associated aluminium or polycarbonate connecting profiles and other framing accessories.

Certification: CodeMark Certificate No. CM20115.

The date of expiry of this CodeMark Certificate of Conformity is 13/12/2022.

See CodeMark Certificate of Conformity for conditions and limitations. To confirm it has not been withdrawn, suspended or superseded by later issue, See www.jas-anz.org/our-directory/codemark-certified-organisations for the CodeMark Register of Certificates of Conformity.

Fire hazard properties

Requirement: Conform to the following, tested to AS/NZS 1530.3:

- Ignitability Index: 0.
- Spread-of-Flame Index: 0.
- Heat evolved Index: 0.
- Smoke-Developed Index: Maximum 5.

Test results for Ignitability, Spread-of-flame, Heat evolved and Smoke-Developed Indices are available in the **Technical manuals**.

Check if your cladding is required to be non-combustible, refer to BCA Section C and the ABCB Fire performance of external walls and cladding advisory note. Consider adding a requirement in **SUBMISSIONS** for evidence of conformance from the contractor

Group number: To AS 5637.1.

Some Danpal products have been tested for group number to AS ISO 9705 and achieve a group number of 1 when manufactured with fire retardant additives. Contact Danpal for more information.

If Danpalon is used as an internal partition, check BCA Spec C1.10 Table 2 for permissible locations.

2.3 WEATHERPROOFING

General

Requirement: Conform to BCA FP1.4 or BCA P2.2.2 as appropriate and to AS/NZS 4284.

Class 2-9 buildings: Document wall construction to conform to BCA FP1.4, or refer to conforming manufacturer's details.

There is no NCC Deemed-to-Satisfy solution for BCA FP1.4. Products and their installation will require both the manufacturer's and installer's certification or a performance solution.

Class 1 buildings: Conform to BCA P2.2.2 or Part 3.5 acceptable construction methods.

2.4 SOLID TRANSPARENT PANELS (OVER SUBFRAME)

Detail the subframe to your office documentation policy. It is not provided by Danpalon.

General

Panel product: Danpalon 4 mm compact polycarbonate.

System description: Proprietary polycarbonate glazing system comprising solid polycarbonate panels, associated aluminium/polycarbonate connecting profiles and other framing accessories.

2.5 MULTIWALL TRANSLUCENT PANELS (OVER SUBFRAME)

Detail the subframe to your office documentation policy. It is not provided by Danpalon.

General

Panel product: Danpalon Honeycomb and Multicell polycarbonate (various thicknesses).

System description: Proprietary polycarbonate glazing system comprising multiwall polycarbonate panels, associated aluminium/polycarbonate connecting profiles and other framing accessories.

2.6 SEAMLESS FACADE SYSTEM

Detail the flashings and fixings of the Danpalon head, sill and jamb extrusions to your office documentation policy.

General

Panel product: Danpalon Honeycomb or Multicell polycarbonate.

Panel lengths: Up to 11 980 mm.

System description: Proprietary cladding system comprising polycarbonate panels and structural aluminium connectors which provides a clear span between the top and bottom framing.

Panel joint: Standing seam comprising a full mullion connector system of extruded aluminium exposed internally which provides a clear span between the top and bottom fixings.

3 EXECUTION

3.1 GENERAL

Preparation

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

Cladding: Make sure the cladding is clean and free of dust and loose particles.

Substrate tolerance

Industry standards: [complete/delete]

Light steel framing: To NASH-1 Appendix D and NASH-2 Appendix A.

Structural steel: To AS/NZS 5131 Section 12 and Appendix F.

Concrete: To AS 3610.1.

Danpalon requirements

Cutting and assembly: To the Danpalon installation specification.

Installation

Requirement: Install cladding as follows:

- Fix sheeting firmly against framing to the manufacturer's recommendations.

Select either direct fixed cladding or a ventilated cavity/rainscreen construction to conform to the manufacturer's recommendations. Document a certified system or a project based performance solution.

- Plumb, level, straight and to documented tolerances.

- Fixed or anchored to the building structure in conformance with the wind action loading recommendations.
- Isolated from any building loads, including loads caused by structural deflection or shortening.
- Allow for thermal movement.

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

Cladding layout: Cut/fabricate and install cladding to suit the layout as documented.

Document the location of openings and penetrations to avoid waste and panel handling times.

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

Accessories and trim

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

Horizontal cladding

Horizontal cladding surface:

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

Defective and damaged parts

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

Damaged parts: Remove and replace damaged parts during installation.

3.2 COMPLETION

Fasteners

Requirement: Adjust for weather tightness without distortion of external panel face.

Reinstatement

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

Cleaning

General: To the Danpalon installation specification.

Warranties

Type: Limited 15 year warranty.

Conditions: Refer to Danpalon's published product warranties.

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. Complete or delete the following subclauses as appropriate for the project.

4.1 SOLID TRANSLUCENT PANELS

Solid transparent panels (over subframe)

Support system: [complete/delete]

Describe the support system or detail the subframe to your office documentation policy. It is not provided by Danpalon.

Panel lengths: Up to 12 000 mm.

Longer lengths panels available to order, subject to lead time.

Installed module width: 600 mm.

U-Value: 5.36 W/m².K.

Colour: [complete/delete]

Select from the following stocked colours:

- Reflective Grey.
- Grey.
- Clear.

Other colours are available to order, subject to lead time. Refer to Danpal for the optical and solar properties, including the LT%, ST%, SR% and SHGC for each colour.

4.2 MULTIWALL TRANSLUCENT PANELS (OVER SUBFRAME)

General

Support system: [complete/delete]

Describe the support system or detail the subframe to your office documentation policy. It is not provided by Danpalon.

8 mm Honeycomb panels

Panel lengths: Up to 12 000 mm.

Longer lengths are panels are available to order, subject to lead time.

Installed module width:

- With fasteners: 602 mm.

U-Value: 2.46 W/m².K.

Colour: [complete/delete]

Select from the following stocked colours:

- Reflective Grey.
- Reflective Ice.
- Opal.
- Clear.

Other colours are available to order, subject to lead time. Refer to Danpalon for the optical and solar properties, including the LT%, ST%, SR% and SHGC for each colour.

10 mm Honeycomb panels

Panel lengths: Up to 12 000 mm.

Longer lengths panels are available to order, subject to lead time.

Installed module width:

- Without fasteners: 600 mm.

- With fasteners: 602 mm.

U-Value: 2.11 W/m².K.

Colour: [complete/delete]

Select from the following colours:

- Reflective Grey.
- Opal.
- Bronze.
- Grey.
- Ice.
- Blue.
- Green.
- Clear.
- Gold.
- Purple.
- Red.
- Yellow.

Refer to Danpal for the optical and solar properties, including the LT%, ST%, SR% and SHGC for each colour.

12 mm Multicell panels

Panel lengths: Up to 12 000 mm.

Installed module width:

- Without fasteners: 900 mm.

- With fasteners: 902 mm.

U-Value: 1.84 W/m².K.

Colour: [complete/delete]

Select from the following stocked colours:

- Reflective Grey.
- Ice with Softlite.

16 mm Multicell panels

Panel lengths: Up to 12 000 mm.

Longer lengths panels are available to order, subject to lead time.

Width: [complete/delete]

Select from 600 mm or 1040 mm. 900 mm wide panels are available, subject to minimum quantities and lead time.

U-Value: 1.53 W/m².K.

Colour: [complete/delete]

Select from the following stocked colours:

- Reflective Grey.
- Ice (with or without Softlite)
- Opal.
- Clear.

Other colours are available to order, subject to lead time.

Refer to Danpalon for the optical and solar properties, including the LT%, ST%, SR% and SHGC for each colour.

22 mm Multicell panels (3D Lite)

Panel lengths: Up to 1200 mm.

Longer length panels are available to order, subject to lead time.

Width: 600 mm.

U-Value: 1.75 W/m².K.

Colour: [complete/delete]

Stocked in white. All colours are available to order, subject to minimum quantities and lead time.

35 mm Multicell panels

Panel lengths: All panels are made to order.

Subject to minimum quantities and lead time.

Width: 900 mm.

U-Value: 1.2 W/m².K.

Colour: [complete/delete]

All colours are available to order, subject to minimum quantities and lead time.

System components

Support system: [complete/delete]

Refer to the Danpalon span table to determine subframe requirements as applicable.

Connectors: [complete/delete]

Polycarbonate:

- DPC: Standard connector. Available in lengths up to 12 000 mm.
- DPCW: Wide connector for 16 mm Reflective Grey 1040 mm wide panels. Available in lengths up to 12 000 mm.

Aluminium:

- DPAC30: Standard connector. Available in lengths up to 7000 mm.
- DPAC54: Heavy-duty connector. Available in lengths up to 7000 mm.
- DPACH: H connector for double glazed systems. Available in lengths up to 7000 mm.
- For other connector options, see **PROPRIETARY STRUCTURAL SYSTEM — SEAMLESS FACADE SYSTEM.**

Connector caps to seal off the ends of the connectors: [complete/delete]

Select from the following:

- DPECC: Polycarbonate connector end cap.

- DPACEC: Aluminium connector end cap.

Aluminium F sections to seal off the sides of the roof area: [complete/delete]

Select from the following:

- DPFS: 8 mm, 10 mm, 12 mm or 16 mm to suit panels.

Panel caps to seal off the ends of the panels: [complete/delete]

Select from the following:

- DPAC: Aluminium panel end cap, for high end of panels.
- DPAPEC: Aluminium pivot panel end cap, for low end of panels.

Fastener fixing centres: [complete/delete]

Determine the fastener centres by the spanning capability of the panels and connectors specified, with reference to the Danpalon span table.

4.3 PROPRIETARY STRUCTURAL SYSTEM – SEAMLESS FACADE SYSTEM

Complete or delete this clause as appropriate for the project.

General

Application: All Danpalon Honeycomb or Multicell panels.

Connectors

Material: Aluminium.

Type: [complete/delete]

Select from:

- DPAC40: 40 mm connector. Available in lengths up to 7000 mm.
- DPAC50: 50 mm connector. Available in lengths up to 7000 mm.
- DPAC60: 60 mm connector. Available in lengths up to 7000 mm.
- DPAC70: 70 mm connector. Available in lengths up to 7000 mm.
- DPAC80: 80 mm connector. Available in lengths up to 7000 mm.
- DPAC100: 100 mm connector. Available in lengths up to 9000 mm.
- DPAC150: 150 mm connector. Available in lengths up to 9000 mm.

REFERENCED DOCUMENTS

The following documents are incorporated into this worksection by reference:

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 4040		Methods of testing sheet roof and wall cladding
AS 4040.2	1992	Resistance to wind pressures for non-cyclone regions
AS 4040.3	2018	Resistance to wind pressures for cyclone regions
AS/NZS 4040.5	1996	Resistance to impact (sandbag) for wall boards
AS 4256		Plastic roof and wall cladding materials
AS 4256.5	2006	Polycarbonate
AS/NZS 4284	2008	Testing of building facades
AS 5637		Determination of fire hazard properties
AS 5637.1	2015	Wall and ceiling linings
BCA FP1.4	2019	Health and amenity - Damp and weatherproofing - Performance requirements - Weatherproofing
BCA P2.2.2	2019	Performance provisions - Damp and weatherproofing - Weatherproofing

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

AS 1562		Design and installation of sheet roof and wall cladding
AS/NZS 1562.3	1996	Plastic
AS 3610		Formwork for concrete
AS 3610.1	2018	Specifications
AS 3959	2018	Construction of buildings in bushfire-prone areas
AS 4256		Plastic roof and wall cladding materials
AS/NZS 4256.5	1996	Polycarbonate
AS 5113	2016	Classification of external walls of buildings based on reaction-to-fire performance
AS/NZS 5131	2016	Structural steelwork - Fabrication and erection
AS ISO 9705	2003	Fire tests - Full-scale room test for surface products
ABC Fire performance	2020	Fire performance of external walls and cladding advisory note
BCA Section C	2019	Fire resistance

BCA Spec C1.10	2019	Fire resistance - Fire hazard properties
NASH		NASH Standard Residential and Low-rise Steel Framing
NASH-1	2005	Design criteria
NASH-2	2014	Design solutions
NATSPEC DES 018	2019	Bushfire protection
NATSPEC DES 031	2019	Specifying R-Values
NATSPEC GEN 006	2015	Product specifying and substitution
NATSPEC GEN 024	2019	Using NATSPEC selections schedules
NATSPEC TR 01	2019	Specifying ESD