

**0429P DANPALON ROOFING - GLAZED****Branded worksection**

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**Worksection abstract**

This branded worksection *Template* is applicable to Danpalon roof glazing and glazed awning systems 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:

- 0341 Structural steelwork.
- 0342 Light steel framing for the subframe.
- 0434p DANPALON translucent facade cladding.

**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.
- Penetrations: Show on the drawings the location and extent of penetrations for services and structural elements including flashing details.
- Document the structural support system to your office documentation policy.
- Contact Danpalon for limits of panel length and span tables.

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**

The following may be specified by including additional text:

- Design for disassembly. Danpalon panels can be dismantled and reused elsewhere.
- High performance roofing systems to extend building service life.
- High thermal performance to reduce heating/cooling load.
- Recycled material content.
- Recycling of construction scrap materials or offcuts. 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 roof glazing system, as documented.

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

**Ambient climatic conditions**

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

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

## 1.2 COMPANY CONTACTS

### Danpalon technical contacts

Website: [danpal.com.au/contact-us](http://danpal.com.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 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](http://danpal.com.au/download-page)

Design details: [danpal.com.au/download-page](http://danpal.com.au/download-page)

Colour properties: [danpal.com.au/download-page](http://danpal.com.au/download-page)

Warranties: [danpal.com.au/download-page](http://danpal.com.au/download-page)

Further information and sample orders: [danpal.com.au/contact-us](http://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 SUBMISSIONS

### Fire hazard properties

Requirement: Submit evidence of conformance to PRODUCTS, **TRANSLUCENT PANEL SYSTEMS GENERALLY**, **Fire hazard properties**.

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

### Operations and maintenance manuals

On completion: Submit Danpalon's recommendations for the maintenance of the roofing system including, frequency of inspection and recommended methods of access, inspection, cleaning, repair and replacement.

### Samples

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

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

### Warranties

Requirement: Submit the following:

- Warranty item: [complete/delete]

Describe the requirement of warranties in **PRODUCTS** or **EXECUTION**, as appropriate, and list the submissions required here. e.g. Interlocking warranty for sealant type and application. Warranties for composite panels are project specific.

Translucent panel systems: Submit Danpalon's published product warranties.

## 1.8 INSPECTION

### Notice

Inspection: Give notice so that the framing and anchor points may be inspected before they are covered up or concealed.

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

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

## 2 PRODUCTS

### 2.1 GENERAL

#### Product substitution

Other products: Conform to 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.

### 2.2 TRANSLUCENT PANEL SYSTEMS GENERALLY

For atrium roofs, refer to BCA G3 to determine if the atrium roof requires sprinkler protection.

Framed and glazed roofing may be a better option to accommodate sprinklers.

#### 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](http://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: 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**.

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.

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.

### 2.3 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.

### 2.4 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.

### 2.5 PROPRIETARY STRUCTURAL SYSTEM - FREESPAN RAFTER SYSTEM

To suit solid or multiwall Danpalon systems.

#### General

Product: Freespan Rafter system.

System description: Proprietary aluminium curved or straight structural system that supports all types of Danpalon panels, with structural accessories to suit.

### 2.6 PROPRIETARY STRUCTURAL SYSTEM - SOLARSPACE FRAMELESS SYSTEM

Suitable for use with 8 mm, 10 mm, 12 mm, 16 mm and 22 mm Danpalon panels. Available either curved or straight with structural accessories to suit.

#### General

Product: Solarspace aluminium framing system.

System description: Proprietary aluminium structural system with connectors above the panels.

### 2.7 PROPRIETARY STRUCTURAL SYSTEM – SEAMLESS ROOF SYSTEM

Suitable for use with all Danpalon Honeycomb or Multicell panels, except 8 mm. Available either curved or straight with structural accessories to suit.

#### General

Product: Seamless aluminium framing system.

System description: Proprietary aluminium structural system with connectors beneath the panels.

### 2.8 PROPRIETARY STRUCTURAL SYSTEM – DANPALON SPACE TRUSS™ SYSTEM

Suitable for use with all Danpalon Honeycomb or Multicell panels. Applicable to large, free-spanning canopies up to 45 metres. Available either curved or straight with structural accessories to suit.

Typically, the trusses are spaced 1.04 metres apart to suit the width of Danpalon light transmitting glazing panels. This glazing can be above the trusses, below them or on both sides, depending on visual preference and insulation requirements.

Alternatively, any other roofing material can be installed by using special concealed brackets to attach purlins onto trusses up to

3.0 metres apart. The trusses are attached to the beams with special brackets that cater for free lateral thermal movement, resulting in a floating system with no stress on the materials.

The base support member is fixed to the beam, while the brackets holding the trusses can slide left or right, as required. The sliding brackets allow for movement in the trusses as well as accommodating a wide range of different shaped structures. By allowing the connection points to be adjustable, exact precision in locating the brackets and trusses during installation is not required.

### General

Product: Space Truss™ system.

System description: Proprietary steel aluminium framing system.

## 3 EXECUTION

### 3.1 PREPARATION

#### Substrate tolerance

Industry standards: [complete/delete]

Light steel framing: To NASH-1 Appendix D and NASH-2 Appendix A, cited in *0342 Light steel framing*.

Structural steel: To AS/NZS 5131, cited in the *0341 Structural steelwork*. AS/NZS 5131 Section 12 and Appendix F cover tolerances.

Concrete: To the **Flatness tolerance class table** in either *0310 Concrete – combined* or *0315 Concrete finishes*.

### 3.2 INSTALLATION

#### Danpalon requirements

Cutting and assembly: To the Danpalon installation specification.

### 3.3 COMPLETION

#### Cleaning

General: To Danpal's cleaning instructions.

## 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/m<sup>2</sup>.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/m<sup>2</sup>.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/m<sup>2</sup>.K.

Colour: [complete/delete]

Select from the following colours:

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

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

### 12 mm Honeycomb panels

Panel lengths: Up to 12 000 mm.

Installed module width:

- Without fasteners: 900 mm.

- With fasteners: 902 mm.

U-Value: 1.84 W/m<sup>2</sup>.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. Reflective Grey has a 1050 mm installed module because a 10 mm spacer is installed between the panels.

U-Value: 1.53 W/m<sup>2</sup>.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 12 000 mm.

Subject to minimum quantities and lead time.

Width: 600 mm.

U-Value: 1.75 W/m<sup>2</sup>.K.

Colour: [complete/delete]

Stocked colour is white. All other colours are available to order, subject to lead time.

**35 mm Multicell panels**

Panel lengths: [complete/delete]

All panels are made to order, subject to minimum quantities and lead time.

Width: 900 mm.

U-Value: 1.2 W/m<sup>2</sup>.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:

- DPAC: Standard connector. Available in lengths up to 12 000mm.
- DPACW: 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 ROOF 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:

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

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

Select from the following:

- DPAEC: 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 - FREESPAN RAFTER SYSTEM

Complete or delete this clause as appropriate for the project.

##### General

Danpalon panels: [complete/delete]

Select from all Danpalon Honeycomb or Multicell panels except 22 mm and 35 mm.

Application: All Danpalon panels, except 22 mm and 35 mm.

##### Straight or curved aluminium rafters

DP Bars: [complete/delete]

Select from the following:

- DPAB60: For 4 mm, 8 mm or 10 mm panels.
- DPAB70: For 4 mm, 8 mm or 10 mm panels.
- DPAB80: For 10 mm or 12 mm panels.
- DPAB50: For 16 mm panels.
- DPAB100: For 16 mm panels.
- DPAB150: For 16mm panels.

#### 4.4 PROPRIETARY STRUCTURAL SYSTEM – SOLARSPACE FRAMELESS SYSTEM

Complete or delete this clause as appropriate for the project.

##### Solarspace frameless system

Panel type: [complete/delete]

Connector type: [complete/delete]

Select from the following:

- DPAC60: 60 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.

#### 4.5 PROPRIETARY STRUCTURAL SYSTEM – SEAMLESS ROOF SYSTEM

Complete or delete this clause as appropriate for the project.

##### General

Danpalon panel type:[complete/delete]

Select from Danpalon Honeycomb or Multicell panels.

Danpalon panel thickness: [complete/delete]

Select from 10 mm, 12mm, 16mm, 22mm and 35 mm.

##### Connectors

Material: Aluminium.

Type:[complete/delete]

Select from the following:

- 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.

#### 4.6 PROPRIETARY STRUCTURAL SYSTEM – DANPALON SPACE TRUSS™ SYSTEM

Complete or delete this clause as appropriate for the project.

##### General

Danpalon panels: [complete/delete]

Select from Danpalon Honeycomb or Multicell panels.

Danpalon panel thickness: [complete/delete]

Select from 8 mm, 10 mm, 12 mm, 16 mm, 22 mm and 35 mm.

Other panels: [complete/delete]

Other roofing material can be installed by using special concealed brackets to attach purlins onto trusses up to 3.0 metres apart, e.g. profiled metal roofing, insulated metal roofing..

##### Connectors

Material: Aluminium.

Type: [complete/delete]

Select from the following:

- DPATC: Truss connector for panels either above or below the trusses.
- DPATB: Truss bar for panels above the trusses.
- DPATBS: Truss box section for non-Danpalon panels or trusses with purlins.

##### 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 3500		Plumbing and drainage
AS/NZS 3500.3	2018	Stormwater drainage
AS 4256		Plastic roof and wall cladding materials
AS 4256.5	2006	Polycarbonate
AS 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 1562		Design and installation of sheet roof and wall cladding
AS/NZS 1562.3	1996	Plastic
AS 4256		Plastic roof and wall cladding materials
AS/NZS 4256.5	1996	Polycarbonate
AS/NZS 5131	2016	Structural steelwork - Fabrication and erection
AS ISO 9705	2003	Fire tests - Full-scale room test for surface products
BCA G3	2019	Ancillary provisions - Atrium construction
NASH		NASH Standard Residential and Low-rise Steel Framing
NASH-1	2005	Design criteria
NASH-2	2014	Design solutions
NATSPEC DES 020	2018	Fire behaviour of building materials and assemblies
NATSPEC GEN 006	2015	Product specifying and substitution
NATSPEC GEN 024	2019	Using NATSPEC selections schedules
NATSPEC TR 01	2019	Specifying ESD