0429P PALRAM ROOFING - GLAZED

Branded worksection

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Worksection abstract

This branded worksection *Template* is applicable to PALRAM roof glazing and glazed awning systems by PALRAM Industries Limited.

How to use this worksection

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

Related material located elsewhere in NATSPEC

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

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

- 0193 Building access safety systems.
- 0341 Structural steelwork.
- 0342 Light steel framing for the subframe.
- 0343 Tensioned membrane structures for suspended fabric roofing.
- 0411 Waterproofing external and tanking for membrane roofs.
- 0461 Glazing for glass roofing and skylights.
- 0552 Metalwork fabricated for ladders, platforms and balustrades.
- 0802 Hydraulic design and install for stormwater and rainwater storage systems.

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

- 0423 Roofing profiled sheet metal.
- 0424 Roofing seamed sheet metal.
- 0425 Roofing shingles and shakes.
- 0426 Roofing slate.
- 0427 Roofing tiles.
- 0428 Roofing insulated panel systems.

Related branded worksections include:

0434p PALRAM 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 PALRAM for limits of panel length and span tables.
- Coordinate the glazed roofing with any supporting structure and framing designed by a structural engineer.
- Show on the drawings the arrangement of the rainwater plumbing system, including the type and size of the main components (gutters, downpipes, sumps, rainheads, etc.) and the size and spacing of supports and fixings. In high wind areas, consider the degree of exposure of gutters and downpipes and the need to provide additional fixings.
- If documenting stormwater disposal, rainwater tank and related products, use 0802 Hydraulic design and install.
- If documenting electric fan powered roof ventilators, document the necessary electrical connection in 0902 Electrical design and install
- Where insulation is required for internal downpipes, document in 0471 Thermal insulation and pliable membranes or show on drawings.

- If required, state the minimum thermal resistance (R-Value) (m2.K/W). See NATSPEC TECHnote DES 031 for information on specifying R-Values.
- If required, state the minimum thermal transmittance (U-Value) (W/(m².K). See NATSPEC TECHnote DES 031 for information on specifying thermal transmittance.
- For guidelines on the design of roofs in snow areas, see AS/NZS 1170.3 (2003) and SA HB 106 (1998).

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

Search acumen.architecture.com.au, the Australian Institute of Architects' practice advisory subscription service, for notes on the following:

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

Specifying ESD

The following may be specified by including additional text:

- 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 NATSPEC TECHreport TR 01 on specifying ESD.

1 GENERAL

PALRAM is a world-leading manufacturer of extruded thermoplastic sheets and panel systems. With over 50 years of experience, a large portfolio of products, PALRAM is recognized as a leading brand for quality and service.

PALRAM has grown into an industry leader and multinational conglomerate with branches on six continents. With added focus on advanced technologies, PALRAM offers professionals and users the solutions and support they need for a wide variety of applications.

1.1 RESPONSIBILITIES

General

Requirement: Provide the PALRAM polycarbonate roof glazing system, with the necessary supports, trim, flashings, sealants and associated work, as documented.

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

Performance

Thermal qualities: Provide glazing with U-Value and Solar heat gain coefficient (SHGC), as documented.

Ambient climatic conditions

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

See AS/NZS 3500.3 (2021) Appendix D for selected place references or the Hydrometeorological Advisory Services of the Bureau of Meteorology (HAS) at www.bom.gov.au for rainfall data.

Roof access

Type: [complete/delete]

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

1.2 COMPANY CONTACTS

PALRAM technical contacts

Website: palram.com.au/contact

1.3 CROSS REFERENCES

General

Requirement: Conform to the following:

- 0171 General requirements.

0171 General requirements contains umbrella requirements for all building and services worksections.

List the worksections cross referenced by this worksection. *0171 General requirements* references the *018 Common requirements* subgroup of worksections. It is not necessary to repeat them here. However, you may also wish to direct the contractor to other worksections where there may be work that is closely associated with this work.

NATSPEC uses generic worksection titles, whether or not there are branded equivalents. If you use a branded worksection, change the cross reference here.

1.4 STANDARDS

General

Design and installation: To AS 1562.3 (2006).

Polycarbonate: To AS 4256.5 (2006).

1.5 MANUFACTURER'S DOCUMENTS

Technical manuals

Website: palram.com.au/products

1.6 INTERPRETATION

Abbreviations

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

- LT%: The percentage of visible light transmission.
- SC: Shading coefficient.
- SHGC: Solar heat gain coefficient.

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, **PALRAM SYSTEMS GENERALLY**, **Fire hazard properties**.

Fire hazard properties may be documented in PRODUCTS.

Operation and maintenance manuals

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

Samples

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

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

- Glazing materials, each at least 200 x 200 mm, showing specified visual properties.
- Custom profiled flashings and cappings
- Trim and accessories with a colour finish.
- Sealants.

Shop drawings

Shop drawings are necessary if some or all of the system is to be designed by the contractor or a specialist subcontractor to meet the performance criteria specified. If this is not the case, delete **Shop drawings**.

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

- Layout and arrangement of roof glazing panels.
- Connection to substructure.
- Edge restraint.
- Clearances and tolerances.
- Glazing gaskets and sealant beads.

Subcontractors

Installers experience: Submit evidence of experience with glazed roofing installations.

Tests

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

Requirement: Submit test results of the following:

- Internal downpipes to TESTING, Internal downpipe tests.
- Watertightness to TESTING, Watertightness tests.

Warranties

Requirement: Submit warranties to COMPLETION, 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 **SUBSTITUTIONS** in *0171 General requirements*.

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

Storage and handling

Storage: To PALRAM's recommendations and as follows:

- Keep clean, dry and unexposed to weather.
- Protect from building materials and loose debris such as wet plaster, mortar, paint and welding splatter.
- Do not drag sheets or panels across each other or over other materials.
- Store off the ground, in sealed unopened packaging on a slightly sloped surface to prevent ponding on panel faces.

Storage area conditions: Allocate a safe and trade free area.

Product identification

General: Marked to show the following:

- Manufacturer's identification.
- Product brand name.
- Product type.
- Quantity.
- Product reference code and batch number.
- Date of manufacture.

Edit the list to suit the project or delete if not required.

2.2 PALRAM SYSTEMS GENERALLY

For atrium roofs, refer to BCA (2022) G3 to determine if the atrium roof requires sprinkler protection.

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

General

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

Fire hazard properties

Requirement: Conform to the following, tested to AS/NZS 1530.3 (1999).

- 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 at palram.com.au/products.

Group number: To AS 5637.1 (2015).

Some PALRAM products have been tested for group number to AS ISO 9705 (2003) and achieve a group number of 1. Contact PALRAM for more information.

Non-sprinklered buildings: Wall and ceiling linings must either have an average specific extinction area less than 250 m²/kg or a *smoke growth rate index* not more than 100 as determined by AS 5637.1 (2015).

Refer to NATSPEC TECHnote DES 020 for information on fire hazard properties.

2.3 PALRAM SUNGLAZE - SOLID TRANSPARENT PANELS (OVER SUBFRAME)

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

General

Panel product: PALRAM SUNGLAZE solid polycarbonate standing seam architectural system.

System description: Solid polycarbonate roof glazing system with standing seam and proprietary aluminium connection detail.

Cover width: 800 mm. Thickness: 4 mm.

Nominate colour, profile, thickness, connectors, accessories and performance requirements in SELECTIONS, **PALRAM SUNGLAZE - Solid transparent panels**.

2.4 PALRAM EZ-GLAZE - SOLID TRANSPARENT PANELS (OVER RAFTERS)

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

General

Panel product: PALRAM EZ-Glaze, solid polycarbonate roof sheet.

System description: Solid, flat polycarbonate glazing panels with profiled edge for lapping and fixing

directly over rafters.

Cover width: 600 mm.

Thickness: 3 mm.

Nominate length, colour and accessories in SELECTIONS, PALRAM SUNTUF EZ-Glaze - Flat transparent panels.

2.5 PALRAM SUNPAL - MULTIWALL TRANSLUCENT PANELS (OVER SUBFRAME)

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

General

Panel product: PALRAM SUNPAL multiwall polycarbonate standing seam architectural system.

System description: Proprietary polycarbonate system comprising multicell polycarbonate thermal/acoustic rated panels with associated aluminium/polycarbonate standing seam connecting profiles, support rafters and other framing accessories.

Nominate colour, thickness, connectors, accessories and performance requirements in SELECTIONS, **PALRAM SUNPAL - Multiwall translucent panels**.

2.6 PALRAM DURASHIELD - NON-CORROSIVE PROFILED PVC SHEET

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

General

Panel product: PALRAM DURASHIELD industrial profiled PVC roof sheet.

System description: Proprietary profiled opaque PVC sheet for industrial applications with superior chemical, fire and impact resistance.

Nominate colour, profile, thickness, connectors and performance requirements in SELECTIONS, **PALRAM DURASHIELD - Profiled PVC sheet**.

2.7 SUNTUF PROFILED INDUSTRIAL SHEET

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

General

Panel product: PALRAM SUNTUF profiled polycarbonate sheet.

System description: Proprietary profiled polycarbonate sheet suitable for industrial applications, with superior impact resistance and high light transmission rates. Available in hundreds of profiles to match metal profiles.

Nominate colour, profile, thickness, connectors and performance requirements in SELECTIONS, **PALRAM SUNTUF - Profiled transparent panels**.

2.8 SUNTUF BEEHIVE

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

General

Panel product: PALRAM BEEHIVE corrugated polycarbonate sheet.

System description: Proprietary profiled polycarbonate sheet, with diffused light transmission and prismatic obscure finish.

Nominate colour, connectors and performance requirements in SELECTIONS, **PALRAM SUNTUF - Profiled transparent panels.**

3 EXECUTION

3.1 GENERAL

Preparation

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

Industry standards: [complete/delete]

Light steel framing: To NASH-1 (2005) Appendix D and NASH-2 (2014) Appendix A, cited in 0342 Light steel framing.

Structural steel: To AS/NZS 5131 (2016), cited in the 0341 Structural steelwork. AS/NZS 5131 (2016) 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

PALRAM requirements

Cutting and assembly: To the PALRAM installation details.

Support system: [complete/delete]

Subframe by others. Document on architectural drawings or to structural engineers details.

ROOF PLUMBING, **ROOF VENTILATORS**, **ROOF ACCESS** and **TESTING** are not included in this worksection. Import text from *0421 Roofing – combined* where required.

Protection

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

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

Thermal movement

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

Metal separation

Make sure of compatibility or detail separation.

See AS 1562.1 (2018) Appendix C Table C3 for guidance on the compatibility of metals. See also SA HB 39 (2015) Section 2 on material selection. It is primarily a design responsibility that incompatible metals are not documented or shown to be in contact. Preferably show the separation method on the drawings.

Corrosion can result from water run-off between incompatible surfaces. See AS 1562.1 (2018) clause 3.4.3 and AS 1562.1 (2018) Appendix C Table C4. There are four conditions to be avoided:

- Run-off from copper and copper alloys onto aluminium, zinc, galvanized, or aluminium/zinc-coated surfaces.
- Run-off from glass onto stainless steel, zinc or galvanized surfaces.
- Run-off from plastic onto zinc or galvanized surfaces.

Run-off from inert catchment surfaces such as glazed terracotta, prepainted steel, aluminium and aluminium/zinc onto zinc
or galvanized surfaces.

In marine or high humidity environments, separate green hardwood from aluminium and coated steel.

Typical methods for metal separation include:

- Applying an anti-corrosion, low moisture transmission coating such as zinc or barium chromate primer or aluminium pigmented bituminous paint to contact surfaces.
- Inserting a separation layer such as polyethylene film, adhesive tape or bituminous felt.

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

- Applying an anti-corrosion, low moisture transmission coating to contact surfaces.
- Inserting a separation layer such as foam tape.

3.3 TESTING

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

Internal downpipe tests

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

Internal downpipes: Test each stack hydrostatically in stages, each test to run over two storeys high for two hours. Remedy defects and retest if necessary.

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

Watertightness tests

Glazed roofing: Test for watertightness after installation. If required, remedy defects and retest.

3.4 COMPLETION

Cleaning

General: To PALRAM's cleaning instructions.

Operation and maintenance manuals

Requirement: Prepare a manual that includes PALRAM's recommendations for the maintenance of the roofing system including, frequency of inspection and recommended methods of access, inspection, cleaning, repair and replacement.

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

Warranties

Requirement: Provide warranties for materials and workmanship as offered by the manufacturer.

Refer to PALRAM for the warranties available for the particular system at palram.com.au/products.

4 SELECTIONS

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

4.1 PRODUCT

PALRAM SUNGLAZE - Solid transparent panels

	Α	В	С
Panel lengths			
Colour			
Light transmission (LT %)			
Solar heat gain (SHGC)			
Shading coefficient (SC)			
U value			

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

Panel lengths: Nominate length up to 12 m (longer lengths can be produced). Palram Australia hold 9 m lengths in stock.

Colour: Select from;

- Clear.
- Solar Grey.

Solar Smart range:

- Solar Ice.
- Solar Control Grey.
- Bluish Breeze.

Light transmission (LT): Subject to colour selected. Refer to PALRAM product details.

Solar heat gain coefficient (SHGC): Subject to colour selected. Refer to PALRAM product details.

Shading coefficient (SC): Subject to colour selected. Refer to PALRAM product details.

U value: 5.29 Wm²k for 4 mm thickness.

PALRAM SUNTUF EZ-Glaze - Flat transparent panels

	Α	В	С
Panel lengths			
Colour			
Accessories			

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

Panel lengths: Nominate length up to 7 m (special order for longer lengths).

Colour: Select from:

- Clear.
- Bluish Breeze.
- Grey.

Accessories: Nominate fixings, foam infills, purlin tape and project specific requirements. Refer to PALRAM product details.

PALRAM SUNPAL - Multiwall translucent panels

	Α	В	С	
Thickness				
Width				
Panel lengths				
Colour				
Light transmission (LT %)				
Solar heat gain (SHGC)				
Shading coefficient (SC)				
U value				
Joiners				
Accessories				

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

Thickness: Select from: 10 mm, 18 mm and 20 mm (non-stocked thickness).

Width: Select from 600 mm or 1000 mm.

Panel lengths: Nominate length up to 11.980 m.

Colour: Select from:

- Clear.
- Solar Grey.

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Orange.

•	Purple.
•	Yellow.
	Magenta

- Green.
- Bronze.
- White Opal.
- Red.
- Blue.

Solar Smart. Select from:

- Solar Ice.
- Solar Control Grey.
- Bluish Breeze.

Diffuser Plus colour. Select from:

- White Opal.
- Clear.
- Solar Ice.

Light transmission (LT): Subject to colour selected. Refer to PALRAM product details.

Solar heat gain coefficient (SHGC): Subject to colour selected. Refer to PALRAM product details.

Shading coefficient (SC): Subject to colour selected. Refer to PALRAM product details.

U value: Nominate requirement here. Refer to PALRAM product details.

Joiners: Select from polycarbonate or aluminium.

Accessories: Nominate Spanbar aluminium rafters, fixings, foam infills, purlin tape and project specific requirements. Refer to PALRAM product details.

PALRAM DURASHIELD - Profiled PVC sheet

	A	В	С
Profile			
Panel lengths			
Thickness			
Colour			
Accessories			

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

Profile: Select from:

- Corrugated (Industrial Wave).
- Trimdeck (Industrial Rib).
- Spandek (Greca Wide).

Panel lengths: Up to 9 m.

Thickness: Refer to PALRAM product details.

Colour: Select from White (opaque) or Beige (opaque).

Accessories: Nominate fixings, foam infills, purlin tape and project specific requirements. Refer to PALRAM product details.

PALRAM SUNTUF - Profiled transparent panels

	A	В	С
Product			
Panel finish			
Thickness			
Profile			
Panel lengths			

	Α	В	С
Colour			
Light transmission (LT %)			
Solar heat gain (SHGC)			
Shading coefficient (SC)			
U value			
Accessories			

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

Product: Select from the SUNTUF product range including:

- SUNTUF Industrial: For Industrial exterior applications, with high light transmission.
- SUNTUF Beehive: Corrugated, embossed polycarbonate sheet. Stronger Impact Resistance.

Panel finish. Select from:

- SUNTUF: Sheet with integrated UV protective layer on one side.
- SUNTUF Plus: Sheet with UV protective layer on external side and anti-condensation treatment to the interior side.
- SUNTUF SolarSmart: Transmits selected percentage of daylight and reflects and absorbs some of the heat generating
 infra-red radiation. Embossed underside dissipating the light.

Thickness: Refer to PALRAM product details.

Profile: Nominate the profile here.

Standard SUNTUF Industrial profiles:

- Corrugated.
- Trimdeck.
- Spandeck.
- Kliplock.

Can be produced to match metal roofing profiles.

Panel lengths: Up to 12 m. Palram Australia hold 9m lengths in stock.

Colour: Select from:

Transparent

- Clear.
- Solar Grey.
- Bronze.
- Transparent Grey.

Translucent

- White Opal.
- White Diffuser.
- Metallic Sandune.
- Metallic Jasper.
- Solar Control Grey.
- Solar Ice.
- Smooth Cream.

Light transmission (LT): Subject to colour selected. Refer to PALRAM product details.

Solar heat gain coefficient (SHGC): Subject to colour selected. Refer to PALRAM product details.

Shading coefficient (SC): Subject to colour selected. Refer to PALRAM product details.

U value: Nominate requirement here. Refer to PALRAM product details.

Accessories: Nominate fixings, foam infills, purlin tape and project specific requirements. Refer to PALRAM product details.

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	Plastic
AS/NZS 3500		Plumbing and drainage
AS/NZS 3500.3	2021	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 docume	ents are men	tioned only in the Guidance text:
AS/NZS 1170		Structural design actions
AS/NZS 1170.3	2003	Snow and ice actions
AS 1562		Design and installation of sheet roof and wall cladding
AS 1562.1	2018	Metal
AS/NZS 2033	2008	Installation of polyethylene pipe systems
AS/NZS 5131	2016	Structural steelwork - Fabrication and erection
AS ISO 9705	2003	Fire tests - Full-scale room test for surface products
SA HB 39	2015	Installation code for metal roof and wall cladding
SA HB 106	1998	Guidelines for the design of structures in snow areas
BCA G3	2022	Ancillary provisions - Atrium construction
GBCA Buildings	2021	Green Star Buildings
NASH		NASH Standard residential and low-rise steel framing
NASH-1	2005	Design criteria
NASH-2	2014	Design solutions
NATSPEC DES 020		Fire behaviour of building materials and assemblies
NATSPEC DES 031		Specifying R-Values
NATSPEC GEN 006		Product specifying and substitution
NATSPEC GEN 024		Using NATSPEC selections schedules
NATSPEC TR 01		Specifying ESD