0434P PALRAM TRANSLUCENT FACADE CLADDING

Branded worksection

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Worksection abstract

This branded worksection *Template* is applicable to PALRAM lightweight external wall cladding 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:

- *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*.
- *0435 Cladding – planks and weatherboards*.
- *0436 Cladding – profiled and seamed sheet metal*.
- *0437 Cladding – insulated panel systems*.

Related branded worksections include:

- *0429p PALRAM roofing – glazed* for translucent roofing.

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 (2022) Section C and *ABCB Fire performance of external walls and cladding advisory note (2020)*. 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 (2016) may be used as the verification method for external walls.
- Weatherproofing: Conform to BCA (2022) F3D5 for Class 2 to Class 9 buildings or BCA (2022) H1D7 for Class 1 and 10 buildings. Alternatively, document a performance solution. Consider adding a requirement for evidence of conformance from the contractor. Refer to NATSPEC TECHnote DES 044 for information on weatherproofing of 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.
- 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) (m^2.K/W). See NATSPEC TECHnote DES 031 for information on specifying R-Values.

- In bushfire-prone areas, document bushfire protection requirements to AS 3959 (2018) and the NCC. See NATSPEC TECHnote DES 018 for information on bushfire protection.
- 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:

- 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 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 cladding system, with the necessary supports, trims, flashings, sealants and associated work, as documented.

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

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 TOLERANCES

Permitted deviations
Requirement: To PALRAM's recommendations.

1.8 SUBMISSIONS

Fire performance
Fire hazard properties: Submit evidence of conformity 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**.

Products and materials
Type tests: As appropriate for the project, submit results of facade testing as follows:
- Water penetration to AS/NZS 4284 (2008).
- Structural testing to AS/NZS 4284 (2008).
- Resistance to wind pressure:
  - For non-cyclone regions to AS 4040.2 (1992).
  - For cyclone regions to AS 4040.3 (2018).
- Resistance to impact to AS/NZS 4040.5 (1996).

BCA (2022) F3P1 requires that external walls prevent the penetration of water so that internal conditions do not become unhealthy or dangerous.

Refer to AS 1562.3 (2006) 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, when 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.

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

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

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.
- Coordination requirements with other work.
- Schedule of materials, finishes, componentry, hardware and fittings.

Warranties

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

1.9 INSPECTION

Notice

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

- Workshop assemblies before delivery to the site.
- Framing.
- 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 **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.

Components

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

Flashings: To AS/NZS 2904 (1995).

Coordinate with *042 Roofing* worksections.

2.2 PALRAM SYSTEMS GENERALLY

General

Description: Proprietary polycarbonate glazing system 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 Index: 0.
- Smoke-Developed Index: Maximum 5.

Test results for Ignitability, Spread-of-flame, Heat evolved and Smoke-Developed Indices are available from PALRAM at palram.com.au/products

Check if your cladding is required to be non-combustible, refer to BCA (2022) Section C and the *ABCB Fire performance of external walls and cladding advisory note (2020)*. Consider adding a requirement in **SUBMISSIONS** for evidence of conformance from the contractor.

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. If PALRAM is used as an internal partition, check BCA (2022) Table S7C3 for permissible locations.

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

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 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 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 Multicell polycarbonate thermal rated wall cladding system.

System description: Proprietary polycarbonate system comprising multicell polycarbonate thermal/acoustic rated panels with associated aluminium/polycarbonate connecting profiles for standing seam or mullions for seamless joints.

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 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 cladding, check the alignment of substrates or framing and correct centre spacings and adjust if required.

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

Substrate tolerance

Requirement: +2 mm – 0 mm.

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

Structural steel: To AS/NZS 5131 (2016) Section 12 and Appendix F.

Concrete: To AS 3610.1 (2018).

PALRAM requirements
Cutting and assembly: To the PALRAM installation details.

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.

Defective and damaged parts
Defective components: Do not install component parts that 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 weathertightness 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 PALRAM installation recommendations.

Operation and maintenance manuals
Requirement: Prepare a manual that includes PALRAM's published use, care and maintenance requirements.

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

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

	A	B	C

	A	B	C
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

	A	B	C
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

	A	B	C
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.
- Orange.
- Purple.
- Magenta.
- Green.
- Yellow.
- 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	B	C
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	B	C
Product			
Panel finish			
Thickness			
Profile			
Panel lengths			
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.
- Solar Control Grey.
- Metallic Sandune.
- Metallic Jasper.
- 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 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

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

AS 3610		Formwork for concrete
AS 3610.1	2018	Specifications
AS 3959	2018	Construction of buildings in bushfire-prone areas
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
BCA F3D5	2022	Health and amenity - Roof and wall cladding - Wall cladding
BCA F3P1	2022	Health and amenity - Roof and wall cladding - Weatherproofing
BCA H1D7	2022	Class 1 and 10 buildings - Structure - Roof and wall cladding
BCA Section C	2022	Fire resistance
BCA Table S7C3	2022	Fire resistance - Fire hazard properties - Floor linings and floor coverings - Critical radiant flux (CHF in kW/m²) of floor linings and floor coverings
ABCB Fire performance	2020	Fire performance of external walls and cladding advisory note
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 018		Bushfire protection
NATSPEC DES 031		Specifying R-Values
NATSPEC DES 044		Weatherproofing of external walls
NATSPEC GEN 006		Product specifying and substitution
NATSPEC GEN 024		Using NATSPEC selections schedules
NATSPEC TR 01		Specifying ESD