

0461P VIRIDIAN GLAZING**Branded worksection**

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Worksection abstract

This branded worksection *Template* is applicable to VIRIDIAN glazing in framed openings to windows, doors and curtain walls based around AS 1288. It is also relevant to:

- Structural glass assemblies.
- Internal glazed partitions and glass applied wall finishes.
- Glass balustrades.
- Mirrors.
- Glass shower screens.

Guidance text

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

Optional style text

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

Related material located elsewhere in NATSPEC

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

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

- *0421 Roofing – combined* for glass roofs.
- *0432 Curtain walls*.
- *0451 Windows and glazed doors*.
- *0455 Door hardware*.
- *0462 Structural silicone glazing* for adhesive fixed glazing.
- *0463 Glass blockwork*.
- *0466 Structural glass assemblies*.
- *0467 Glass components* for mirrors, shower screens and balustrades.
- *0524 Partitions – glazed* for glazed internal partitions.
- *0641 Applied wall finishes* for glass lining to sheeted partitions.

Documenting this and related work

You may document this and related work as follows:

- *0461 Glazing* has been retained for use, as a stand alone worksection, in conjunction with *0432 Curtain walls*, *0462 Structural silicone glazing*, *0466 Structural glass assemblies* and site glazed situations. Coordinate as appropriate.
- For specifying glass, see NATSPEC TECHnote PRO 006.

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:

- Visible light transmission, U-Value and solar heat gain coefficient.

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

- Warranties and guarantees.

Specifying ESD

The following may be specified using included options:

- Thermal performance to reduce heating/cooling load by specifying the required U-Value and SHGC.

- Glass selection with an acceptable Visible transmittance for natural lighting.
- High performance glass, e.g. low-e, self-cleaning glass.

The following may be specified by including additional text:

- Recycled material content.

Refer to the NATSPEC TECHreport TR 01 on specifying ESD.

1 GENERAL

When you've been doing something for a long time, it becomes more than just a job! For over 160 years we've been operating in Australia. In that time we've helped shape the way Australians think about glass.

VIRIDIAN is the largest glass processor in Australia. We lead the industry for quality and innovation, supporting our customers and the wider community in accessing and understanding the benefits of choosing better glass for our homes and buildings.

1.1 RESPONSIBILITIES

General

Requirement: Provide VIRIDIAN glazing, as documented.

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

Performance

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

Solar control glass may be subject to thermal stress and should therefore be thermally assessed before installation.

1.2 COMPANY CONTACTS

VIRIDIAN technical contacts

Website: www.viridianglass.com/contact/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

Glazing

Glass type and thickness: To AS 1288, if no glass type or thickness is nominated.

For glass type and thickness refer to AS 1288 Table 4.1 and to AS/NZS 4667.

Glass thickness may be governed by human safety and other requirements – see AS 1288 Sections 5, 6 and 7. The maximum spans of various glasses are shown in AS 1288 Figures 4.1 and 4.34.

Show or nominate a thickness where:

- The glass is to be thicker than required by AS 1288 or applicable regulations.
- There are unusual conditions requiring detailed calculations for which the designer should be responsible.

In other cases the determination of thickness is usually within the competence of the glazing contractor.

Where thickness is determined by wind actions, the design wind pressure needs to be known in order to interpret the figures and tables of glass sizes and thicknesses in AS 1288.

Materials and installation: To AS 1288.

Quality requirements for cut-to-size and processed glass: To AS/NZS 4667.

The standard specifies requirement for the following:

- Cut sizes of flat, clear ordinary annealed and tinted heat-absorbing glass with glossy, apparently plane and smooth surface, which are used for general and architectural glazing or similar.

- Cut sizes of flat, clear ordinary annealed and tinted heat-absorbing processing glass used for Grade A safety requirements (i.e. toughened or laminated).
- Cut sizes of ordinary annealed, patterned and wired glass used in decorative and general glazing applications.
- Cut sizes of wired glass used for Grade B safety and general glazing applications.
- Processed laminated and toughened glass.

1.5 MANUFACTURER'S DOCUMENTS

Technical manuals

Website: www.viridianglass.com/knowledge/downloads/

Warranties: www.viridianglass.com/knowledge/downloads/warranties/

Cleaning: www.viridianglass.com/knowledge/downloads/cleaning-instructions/

1.6 INTERPRETATION

Abbreviations

General: For the purposes of this worksection the following abbreviation applies:

- R_w: Weighted sound reduction index.

Refer to NATSPEC TECHnote DES 032 for information on airborne sound insulation.

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

Definitions

General: For the purpose of this worksection the definitions given in AS/NZS 4668 apply.

1.7 SUBMISSIONS

Certification

Design: Submit an engineers' certificate confirming conformance to AS 1288.

Certification for a particular project may not be required if the window system is a nominated product that conforms to AS 2047 Appendix B.

Thermal safety assessment: Consider obtaining a thermal safety assessment from the glass manufacturer at the early design stage.

Opacified glass: Submit a report, from the manufacturer certifying that the proposed method of opacifying the glass will not be detrimental to the glass or affect the glass product warranty.

Installation: Submit certification from the fabricator that the method of glazing, the selection of sealant systems and conditions next to the glass will not be detrimental to the long term structural performance, weathering capabilities and visual qualities of the glass.

Glazier's data: Submit the glazing subcontractor's statement certifying the following:

- A satisfactory thermal safety assessment.
- The assembled frame provides the required glazing clearances and tolerances, and maximum and minimum joint configurations, based on the bow, warp and kink characteristics of the required glass types, and is ready for glazing.

Execution details

Site glazing: If site glazing is intended, submit proposals.

Operation and maintenance manuals

Requirement: Submit manufacturers' published recommendations for service use.

Samples

General: Submit samples of glazing materials, each at least 200 x 200 mm, showing specified visual properties and the range of variation, if any, for each of the following:

- Tinted or coloured glass or glazing plastics.
- Surface modified or surface coated glass.
- Patterned or obscured glass or glazing plastics.
- Ceramic-coated glass.
- Wired glass.
- Insulating glass units.
- Mirror glass.

Edit as required.

Shop drawings

Requirement: Submit shop drawings showing the following:

- Method of glazing
- Rebate depth.
- Edge restraint.
- Clearances and tolerances.
- Glazing gaskets and sealant beads.

Warranties

Requirement: Submit the following:

- [complete/delete]

Manufacturer's warranty: Submit the VIRIDIAN published product warranties.

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

1.8 INSPECTION

Notice

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

- Glass products before they are installed.

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

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.

Heat strengthening

Requirement: Heat strengthen all glass that requires extra strength and thermal resistance.

Standard: To ASTM C1048.

Heat strengthening increases the strength of annealed glass. It is not a substitute for toughened glass.

Heat soaking

Requirement: All toughened and heat strengthened glass products.

Standard: To EN 14179-1.

Heat soaking is a process that reduces the risk of breakage during service from impurities such as nickel sulphide inclusions in the glass. The process puts the glass through a heat cycle to encourage the glass to break under test if it is at risk of inclusions.

All monolithic toughened and heat strengthened glass with a surface compression greater than 52 MPa should be heat soaked.

Heat soaked thermally toughened soda lime silica glass is defined in EN 14179-1 and specifies the heat soak process, along with requirements for tolerances, flatness, edgework and fragmentation.

Storage and handling

Storage: Store glass and glazing materials in a clean, dry area and unaffected by weather, to the manufacturer's recommendations. Protect from building materials and loose debris such as wet plaster, mortar, paint and welding splatter.

Handling: Handle glass to the manufacturer's recommendations.

2.2 GLASS**Glass and glazing materials**

Glass: Free from defects which detract from appearance or interfere with performance under normal conditions of use.

Safety glass

Toughened glass product: VIRIDIAN VTough™.

Laminated glass product: VIRIDIAN VLam™.

Standard: To AS/NZS 2208.

AS/NZS 2208 includes toughened, laminated, wired and organic-coated glass, and safety plastic glazing sheets. The required grade (A or B) is specified in AS 1288 Section 5 for each application.

See AS/NZS 2208 Section 2 for dimensional specifications and AS/NZS 2208 Table 2.3 for overall bow and warpage.

Roller wave distortion (not in the standard) is a consequence of heat treating glass and may be more noticeable in some applications. Consult the manufacturer for more information on tolerances.

Type: Grade A to AS 1288.

Certification: Required.

- Certification provider: An organisation accredited by the Joint Accreditation System of Australia and New Zealand (JAS-ANZ).

Heat soaking: Heat soak test all toughened glass.

VIRIDIAN recommends heat soak testing all toughened glass. See AWA for more information on Nickel sulphide inclusions and AS 1288 clause 3.8 for situations where toughened glass in Class 2 to 9 buildings must be heat soak tested or suitably protected.

Unacceptable blemishes in heat-treated flat glass (including tinted and coated glass)

Standard: To AS/NZS 4667.

Ceramic-coated glass

Product: VIRIDIAN Seraphic™.

Maximum size: 4500 x 2200 mm Seraphic includes standard colours and designs, and custom colours and designs.

Description: Heat strengthened or toughened glass with a coloured ceramic coating fused to and made an integral part of the surface to ASTM C1048, Condition B.

Opacified glass

Description: Glass with an opacifier permanently bonded to the inner face.

Insulating glass units (IGUs)

Maximum size: 2700 x 4500 mm. Nominate the variable properties in **Selections**.

Product: Select from the following:

- VIRIDIAN ThermoTech™.
- VIRIDIAN ThermoTech Low E™.
- VIRIDIAN PerformaTech™.
- VIRIDIAN LightBridge Next™.
- VIRIDIAN ClimaTech™.

Manufacture and installation: To AS 4666.

Glass thickness selection: To AS 1288.

Exposed edge seal: Advise the manufacturer at the time of order if the edge seal (secondary seal) of the IGU is subject to UV or sunlight.

Structural silicone must be used if the IGU is being used in a structural application, or the secondary seal is exposed to UV.

2.3 GLASS IDENTIFICATION

Heat soaked glass

Requirement: Marked to EN 14179-1 or certified by the manufacturer to AS 1288 clause 3.8.2.

Noise reducing glazed assemblies

Identification: Label each panel with a legible non-permanent mark, self-destroying when removed, stating and certifying the R_w rating, and identifying the testing authority. Remove when directed.

Safety glazing materials

Identification: Identify each piece or panel, to AS 1288.

Identification: See AS 1288 clause 5.23 on identification of safety glass to AS/NZS 2208. Inconspicuous permanent labelling of tempered and reflective-coated glass for use in curtain walls is recommended, to identify inner and outer surfaces, strength grades, manufacturer, processor, and standard.

2.4 GLAZING MATERIALS

General

Requirement: Glazing materials including putty, glazing compounds, sealants, gaskets, glazing tapes, spacing strips, spacing tapes, spacers, setting blocks, shims and compression wedges appropriate for the conditions of application and required performance.

Compounds, sealants and tapes

Glazing tapes: To AAMA 800, specifications 804.3, 806.3, or 807.3, as applicable.

If an AGWA Compliance Certificate is not nominated in **SELECTIONS**, change this *Optional* style text to *Normal* style text to describe the quality standards for glazing tapes, glazing compounds, narrow joint sealer, exterior perimeter sealing compound, non-drying sealant and expanded cellular glazing tape.

AAMA 800 glazing tape definitions:

- 804.3 - Designed for use in less severe back bedding and drop-in glazing applications such as residential and light commercial fenestrations.
- 806.3 - Designed for use in high performance commercial fenestrations in which the tape is subjected to continuous pressure exerted from gaskets or pressure generating stop designs.
- 807.3 - Designed for use in commercial fenestrations in which the tape is not subjected to continuous pressure from gaskets or pressure generating stop designs. This tape may be used in applications described for 804.3 tapes.

Glazing compounds: To AAMA 800 specification 802.3 (Types I or II), or 805.2, as applicable.

AAMA 800 glazing compounds definitions:

- 802.3 (Type I and II): Ductile back bedding compound intended to remain ductile and to permit movement without loss of bond.
- 805.2 (Type A and C): Bonding type bedding compound which cure relatively hard and stiff and to permit limited movement without loss of bond.

Narrow joint seam sealer: To AAMA 800 specification 803.3.

AAMA 800 narrow joint seam sealer definitions:

- 803.3 (Type I): Non-sag narrow joint sealers which are elastic or ductile compounds with maximum slump of 2.5 mm.
- 803.3 (Type II): Self-levelling narrow joint sealers which are elastic or ductile compounds with maximum slump of 2.5 mm.

Exterior perimeter sealing compound: To AAMA 800 specification 808.3.

AAMA 800 exterior perimeter sealing compound definition:

- 808.3: Perimeter sealing compound intended to remain elastic or ductile and to permit movement without loss of bond.

Non-drying sealant: To AAMA 800 specification 809.2.

AAMA 800 non-drying sealant definition:

- 809.2: Non-drying sealant intended to remain pliable and tacky for use in sealing hidden joints.

Expanded cellular glazing tape: To AAMA 800 specifications 810.1.

AAMA 800 expanded cellular glazing tape definitions:

- 810.1 (Type I): Tape intended as primary seal to prevent air and water leakage.
- 810.1 (Type II): Tape intended as secondary seal where tape used in combination with a full bead of wet sealant to prevent air and water leakage.

Jointing materials

Requirement: Provide recommended jointing and pointing materials which are compatible with each other and with the contact surfaces and non-staining to finished surfaces. Do not provide bituminous materials on absorbent surfaces.

For structural glazing applications utilising IGUs with thermoplastic spacers (VIRIDIAN ThermoTech TPS®), Dow Corning 991 or 995 must be used as the weather sealant or structural glazing sealant.

Primer

Compatibility: Apply the manufacturer's recommended primer to the surfaces in contact with sealant materials.

2.5 ANCILLARY MATERIALS**Extruded gaskets and seals**

General: Provide seals, as documented.

Location or function: [complete/delete]

Materials: Non-cellular (solid) elastopressive seals as follows:

- Rubber products (neoprene, ethylene propylene diene monomer (EPDM) or silicone rubber): To BS 4255-1.
- Flexible polyvinyl chloride (PVC): To BS 2571, E type compounds, colour fastness grade B.

Pile weather strips

Standard: To AAMA 701/702.

Standard: AAMA 701/702 is a guide to selecting pile weather strips used in windows and doors. It defines requirements to restrict air and water penetration.

Location: [complete/delete]

Material: Polypropylene or equivalent pile and backing, low friction silicone treated, ultraviolet stabilised.

Finned type: A pile weather seal with a central polypropylene fin bonded into the centre of the backing rod and raised above the pile level.

3 EXECUTION**3.1 GLASS PROCESSING****General**

Requirement: Glazing materials including putty, glazing compounds, sealants, gaskets, glazing tapes, spacing strips, spacing tapes, spacers, setting blocks, shims and compression wedges appropriate for the conditions of application and required performance.

Processing: Refer to manufacturer's documents for further details. Refer to the Viridian website – glass processing.

3.2 INSTALLATION**Glazing**

If the glazing system or method is not covered by the installation provisions of AS 1288 (e.g. patent glazing, structural glazing or installation of IGUs) edit to suit the recommendations of the system and materials manufacturer.

Specify in 0462 Structural silicone glazing or 0432 Curtain walls particular installation methods and detailed performance testing requirements for water and airtightness.

General: Install the glass as follows:

- Permanently fix in place each piece of glass to withstand the normal loadings and ambient conditions at its location without distortion or damage to glass and glazing materials.
- No transfer of building movements to the glass.
- Watertight and airtight for external glazing.

Temporary marking: Use a method which does not harm the glass. Remove marking on completion.

Toughened glass: Do not cut, work, or permanently mark after toughening. Use installation methods which prevent the glass making direct contact with metals or other non-resilient materials.

Heat absorbing glass: In locations exposed to direct sunlight, provide wheel cut edges free from damage or blemishes, with minimum feather.

Preglazing

Window assemblies and glazed doors: Supply inclusive of glazing, shop preglazed.

Curtain walls: Supply inclusive of glazing, shop preglazed.

Site glazing

Minimum dimensional requirements: Edge clearance, edge cover, front clearance and back clearance to AS 1288.

Preglazing and **Site glazing** are alternatives, edit as appropriate. Nominate the face.

3.3 COMPLETION**Replacement**

Requirement: After replacing damaged glass, leave the work clean, polished, free from defects, and in good condition.

Cleaning

Method: Conform to the VIRIDIAN cleaning advice.

Extent: All frames and glass surfaces inside and out.

Warranties

List the requirements of the action to be warranted.

Delete this subclause if glass and glazing materials are covered by a comprehensive window or curtain wall warranty, or if material performance is, for the purposes of the project, sufficiently covered by consumer protection legislation.

Glazing subcontractor's warranty: Provide an undertaking conditional only on compliance with the manufacturers' recommendations for maintenance, to repair or replace glass and glazing materials that become defective or prove unsuitable for the nominated application; during the warranty period.

4 SELECTIONS

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

4.1 PERFORMANCE

Use the **Glass performance schedule** if 0461p VIRIDIAN glazing is associated with 0432 Curtain walls

0462 Structural silicone glazing or 0466 Structural glass assemblies. Delete the schedule if all windows and doors are specified in 0451 Windows and glazed doors .

Glass performance schedule

Property	A	B	C
U-Value (thermal transmittance, W/m ² .K)			
Solar heat gain coefficient (SHGC)			
Weighted sound reduction index (R _w or R _w + C _{tr})			
Visible transmittance (T _{vis})			
Reflectance (%)			

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

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

U-Value (thermal transmittance, W/m².K): Note that the total system U-Value for the glass and supporting frame, not glass only U-Value, must be used to determine NCC conformance, and calculated to BCA Spec J1.5a. This should be obtained from tests to NFRC 100. Select the product to fulfil design and compliance requirements. See NATSPEC TECHnote DES 015 on NCC energy provisions.

Solar heat gain coefficient (SHGC): Note that total system SHGC for glass and supporting frame, not glass only SHGC, must be used to determine NCC conformance. These should be obtained from tests to NFRC 200. Select the product to fulfil design and compliance requirements.

Weighted sound reduction index: It is advisable to obtain the advice of an acoustic consultant on the selection of a R_w or $R_w + C_{tr}$ rating for sound transmission reduction. State the required rating to AS/NZS ISO 717.1. Refer to NATSPEC TECHnote DES 032 for information on airborne sound insulation.

Visible transmittance (T_{vis}): The visible light passing directly through the glass. The higher the T_{vis} , the more daylight.

Reflectance %: A maximum value is often a council requirement. Refer to the NCC Glazing calculator www.abcb.gov.au. Delete if this requirement is more appropriately covered in the **Glass schedule**.

4.2 GLAZING

Consider exporting the VIRIDIAN glass selections to *0451 Windows and glazed doors, 0462 Structural silicone glazing and 0432 Curtain walls*.

Annealed glass schedule

Generic term/application	Product	Thickness	Colour	Process	Code
Float, general quality	VIRIDIAN VFloat™				
Float, optically clear	VIRIDIAN VFloat™ SuperClear™				

Thickness: Nominate a thickness if the glass is to be thicker than required by AS 1288 or applicable regulations or there are unusual conditions requiring detailed calculations for which the designer should be responsible. In other cases, the determination of thickness to AS 1288 is usually within the competence of the glazing contractor. Available from 4 mm to 19 mm. Refer to the product webpages for thicknesses available for each colour.

Colour – Float general quality: Select from Clear, Grey, Green, Bronze, SuperClear.

Process: Select heat strengthening for annealed tinted glass installed externally.

Code: e.g. G1, G2, designation code to locate the glass type. Repeat the table for each designation code.

Bushfire resistant glass schedule

Generic term/application	Product	Colour	Code
Bush fire resistant glass	VIRIDIAN PyroGuard 40™		

VIRIDIAN PyroGuard™ product descriptions: Bushfire resistant insulated glass unit (IGU) consisting of a specially toughened and processed outer pane, and specially processed and processed coated inner pane, together with the framing system can achieve up to BAL 40.

Colour: Clear, Green, Grey, Bronze or SuperGreen.

Code: e.g. G1, G2, designation code to locate the glass type.

Noise control glass schedule

Generic term/application	Product	Thickness	Colour	Coating	Code
Noise control laminated glass	VIRIDIAN VLam™ Hush				
Noise control and solar control laminated glass	ComfortHush™				

Thickness: Select from the following:

- VIRIDIAN VLam Hush™: Select from 6.5 mm, 6.88 mm, 8.5 mm, 10.5 mm, 10.88, 12.5 mm or 12.88 mm to AS 1288.
- ComfortHush™: Select from 6.5 mm, 6.88 mm or 10.5 mm, 10.88 mm to AS 1288.

Colour: . Refer to the product webpages for thicknesses available for each colour.

- VIRIDIAN VLam Hush™: Clear, Grey or Translucent.
- ComfortHush™: Clear Neutral, Grey or Translucent.

Coating: Select ComfortHush low emissivity coating for improved energy efficiency.

Code: e.g. G1, G2, designation code to locate the glass type. Repeat the table for each designation code.

Safety glass schedule

Generic term/application	Product	Thickness	Colour	Process	Code
Toughened	VIRIDIAN VTough™				
Laminated - annealed	VIRIDIAN VLam™				
Laminated - toughened	VIRIDIAN VLam Tough™				

Refer to the product webpages for thicknesses available for each colour

Thickness: Nominate a thickness if the glass is to be thicker than required by AS 1288 or applicable regulations or there are unusual conditions requiring detailed calculations for which the designer should be responsible. In other cases the determination of thickness to AS 1288 is usually within the competence of the glazing contractor. Select from the following:

- VIRIDIAN VTough™ 4 mm, 5 mm, 6 mm, 8 mm, 10 mm, 12 mm, 15 mm or 19 mm.
- VIRIDIAN VTough™ standard thickness: 6.38 mm, 8.38 mm, 10.38 mm or 12.38 mm.
- VIRIDIAN VTough™ custom thickness: 9.52 mm to 39.52 mm.

Colour: Refer to the product webpages for the colours available for each product and thickness.

Process: Select heat soak treatment for all toughened glass. Select heat strengthening for laminated annealed glass installed externally.

Code: e.g. G1, G2, designation code to locate the glass type. Repeat the table for each designation code.

Security glass schedule

Generic term/application	Product	Thickness	Class to AS/NZS 2343	Colour	Code
Physical attack	VIRIDIAN IntruderGuard™				
Physical attack	VIRIDIAN AssaultGuard™				
Physical attack	VIRIDIAN AssaultGuard Ultra™				
Jail/detention glass products	VIRIDIAN JailGuard™				
Bullet resistant/ballistic attack	VIRIDIAN BulletGuard™				
Blast resistant/bomb attack	VIRIDIAN Bomb & BlastGuard™				

Document frame strengths and glazing methods to provide the level of security required.

Product: Select from the following:

- VIRIDIAN IntruderGuard™ for domestic and low level security applications.
- VIRIDIAN AssaultGuard™ or AssaultGuard Ultra™ for low to high security applications.
- VIRIDIAN JailGuard™ for maximum security applications.

Thickness: Select from the following:

- VIRIDIAN IntruderGuard™: 6.52 mm or 7.52 mm.
- VIRIDIAN AssaultGuard™: 9.52 mm, 11.52 mm or 13.52 mm..

- VIRIDIAN AssaultGuard Ultra™: Nominate the level of security, VIRIDIAN AssaultGuard Ultra™ 10 Minimum Security Glass, VIRIDIAN AssaultGuard Ultra™ 12 Medium Security Glass or VIRIDIAN AssaultGuard Ultra™ 14 High Security Glass.
- VIRIDIAN JailGuard™: Select from 14.6 mm, 16.50 mm Ultra or 22 mm Sentry. Nominate the level of security to determine thickness.

Ballistic attack: Select the class as defined in AS/NZS 2343 as follows:

- Class G0 – resistant to attack by a 9 mm military parabellum hand gun.
- Class G1 – resistant to attack by a 357 magnum hand gun.
- Class G2 – resistant to attack by a 44 magnum hand gun.
- Class R1 – resistant to attack by a 5.56 mm rifle.
- Class R2 – resistant to attack by a 7.62 mm rifle.
- Class S0 – refer to Appendix B Table B1.
- Class S1 – refer to Appendix B Table B1.
- Special class – refer to Appendix B Table B1.

Bomb attack: Determine the level of threat before developing a specification. Contact VIRIDIAN for assistance.

Colour/interlayer/coating: Select from a wide range of glass colour/interlayer colour and coating options. Refer to the product webpages for thicknesses available for each colour

Code: e.g. G1, G2, designation code to locate the glass type.

Observation glazing schedule

Generic term/application	Product	Thickness	Colour	Code
One-way laminated mirror	VIRIDIAN OneWay™	8.76 mm		

Installation – VIRIDIAN One Way™: The reflective surface must be installed facing the subject side and higher lighting levels maintained on the subject side for this product to function as intended. A lighting level ratio of 1:7, observer: subject side, is recommended.

Colour: Consult VIRIDIAN.

Code: e.g. G1, G2, designation code to locate the glass type. Repeat the table for each designation code.

Patterned glass schedule

Generic term/application	Product	Thickness	Colour/Pattern	Process	Code
Patterned	VIRIDIAN DécorPattern™				

Maximum dimensions: Sheet sizes vary with pattern. Refer to the product webpages for thicknesses available for each colour

Thickness: Nominate a thickness if the glass is to be thicker than required by AS 1288 or applicable regulations or there are unusual conditions requiring detailed calculations for which the designer should be responsible. In other cases the determination of thickness to AS 1288 is usually within the competence of the glazing contractor. Select from the following:

- Annealed glass: 4 mm, 5 mm or 6 mm.
- Heat strengthened glass: 4 mm, 5 mm or 6 mm.
- Toughened glass: 4 mm, 5 mm or 6 mm.

Colour: Clear or Grey

Pattern: Refer to the product webpage for patterns available for each colour and thickness:

- Satinlite, Spotswood, Cathlite, Squarelite or Polished Wire.(Polished Wire cannot be toughened)

Process: Heat strengthened or Toughened.

Code: e.g. G1, G2, designation code to locate the glass type.

Ceramic-coated glass schedule

Generic term/application	Product	Thickness	Colour/Pattern	Code
Ceramic coated – solid and translucent	VIRIDIAN Seraphic Standard™			

Generic term/application	Product	Thickness	Colour/Pattern	Code
coloured				
Ceramic coated – standard patterned	VIRIDIAN Seraphic Design™			

Maximum dimension: 4500 mm x 2200 mm.

Thickness: Nominate a thickness if the glass is to be thicker than required by AS 1288 or applicable regulations or there are unusual conditions requiring detailed calculations for which the designer should be responsible. In other cases the determination of thickness to AS 1288 is usually within the competence of the glazing contractor. Select from the following:

- Toughened glass: 4 mm to 19 mm.
- Heat strengthened glass: 4 mm to 12 mm.
- Laminated or toughened laminated glass: 9.52 mm to 39.52 mm.

Colour and pattern: Refer to the product webpages for representations of standard colours (solid and translucent) and patterns.

Seraphic Standard™ colours: White Snow, White Frost, APO Grey, Stone Grey, Ironstone, Monument, Nightsky, Surfmist, Paperbark, Jasper, Dune, Mangrove, Woodland Grey, Signal Red, Orange, Lemon Yellow, Shallow Sea, Pommel Blue, Mistletoe.

Seraphic Design™ patterns: Select pattern in any of the above standard colours:

- 6 mm Circle.
- 3 mm Dots.
- 3 mm Reverse Dots.
- 5 mm Dots.
- Diamond.
- Checkerboard.
- 2 mm Line/2 mm gap – Vertical or Horizontal.
- 5 mm Line/5 mm gap – Vertical or Horizontal.
- 10 mm Line/10 mm gap – Vertical or Horizontal.
- Spiders Wisp.
- Grid #1 – 3 mm clear block.
- Grid #2 – 6 mm x 15 mm.

Code: e.g. G1, G2, designation code to locate the glass type.

Acid-etched glass schedule

Generic term/application	Product	Thickness	Colour	Process	Code
Acid-etched (pre-finished)	VIRIDIAN DécorSatin™				

VIRIDIAN DécorSatin™ sheets are acid-etched at the time of manufacture, ensuring an overall consistent finish. It is moisture and UV resistant, and suitable for both interior and exterior applications.

Thickness: Nominate a thickness if the glass is to be thicker than required by AS 1288 or applicable regulations or there are unusual conditions requiring detailed calculations for which the designer should be responsible. In other cases the determination of thickness to AS 1288 is usually within the competence of the glazing contractor.

-Annealed, heat strengthened or toughened glass: 4 mm to 12 mm.

Colour: Clear, Grey or SuperClear. Refer to the product webpages for thicknesses available for each colour

Process: Heat strengthened or Toughened.

Code: e.g. G1, G2, designation code to locate the glass type.

Decorative laminated glass schedule

Generic term/application	Product	Thickness	Colour	Process	Code
Laminated – white translucent	VIRIDIAN VLam Translucent™				

Generic term/application	Product	Thickness	Colour	Process	Code
Laminated – coloured	VIRIDIAN DécorColour™				

Thickness: Nominate a thickness if the glass is to be thicker than required by AS 1288 or applicable regulations or there are unusual conditions requiring detailed calculations for which the designer should be responsible. In other cases the determination of thickness to AS 1288 is usually within the competence of the glazing contractor. Select from the following:

- VIRIDIAN VLam Translucent™: 6.38 mm, 8.38 mm, 10.38 mm or 12.38 mm.
- VIRIDIAN VLam Translucent™ Grey: 6.76 mm.
- VIRIDIAN VLam Translucent™ SuperClear: 10.38 mm or 12.38 mm.
- VIRIDIAN DécorColour™: 8.38 mm, 10.38 mm and 12.38 mm. Maximum dimension: 3660 mm x 2400 mm.

Colour: Select from the following:

- Transparent colours: Select from Sapphire, Aquamarine, Ruby Red, Coral Rose, Sahara Sun, Golden Light, Evening Shadow, Smoke Grey, Deep Red, True Blue, Ocean Grey, Tangerine.
- Translucent colours: Select from: Cool White, Arctic Snow.
- Opaque colour: Polar White.
- Obscure colour: Absolute Black
- Choose up to 4 interlayers from the above colour set to customise over 1,000+ colour options in transparent, translucent or opaque finishes.

Process: Heat strengthened or Toughened.

Refer to the product webpages for thicknesses available for each colour

Code: e.g. G1, G2, designation code to locate the glass type.

Digital printed glass schedule

Generic term/application	Product	Glass	Thickness	Process	Code
Digital printed	PixaGraphic™				

PixaGraphic is a decorative digital printed glass, consisting of a photographic image printed directly on a glass substrate. Contact VIRIDIAN for ordering and art work guidelines.

Glass: Select from VIRIDIAN VFloat™, toughened safety glass VIRIDIAN VTough™ or VIRIDIAN SuperClear™ (low iron glass).

Thickness: Nominate a thickness if the glass is to be thicker than required by AS 1288 or applicable regulations or there are unusual conditions requiring detailed calculations for which the designer should be responsible. In other cases the determination of thickness to AS 1288 is usually within the competence of the glazing contractor.

Process: Heat strengthened or Toughened.

Code: e.g. G1, G2, designation code to locate the glass type.

Decorative painted glass schedule

Generic term/application	Product	Thickness	Colour	Code
Painted	VIRIDIAN DécorPanel™ SB			
2-pack polyurethane paint	VIRIDIAN ColourBack™			

VIRIDIAN DécorPanel™ glass is painted with paint specifically formulated for glass and the coating protected by vinyl sheet. It is classed as a Grade A safety glass under AS/NZS 2208, and is suitable for wardrobe doors and dry wall lining. It is not recommended where moisture is present, including, but not restricted to, kitchens or bathrooms. Nominate Seraphic for these applications.

- Maximum dimension: 2760 mm x 1220 mm.
- Thickness: 4 mm.
- Colour: White, White on SuperClear or Black.

VIRIDIAN ColourBack™:

- Maximum dimension: 3600 x 1800 mm.
- Thickness of non-toughened glass: 4 mm to 19 mm.
- Thickness of toughened glass: 4 mm to 19 mm.
- Colours: Black, Graphite, Slate, Gray Mist, Taupe, Ecru, Shell, Ivory, White, Seafoam, Mimosa, Teal, Mandarin, Cobalt, Rouge, Lime, Black Metallic, Gun Metal Metallic, Silver Metallic, Gold Metallic.

Code: e.g. G1, G2, designation code to locate the glass type.

Non-laminated solar control glass schedule

Generic term/application	Product	Thickness	Colour	Process	Code
Solar control - tinted	VIRIDIAN VTough™				
Solar control - tinted	VIRIDIAN VFloat™ Toned				
Solar control - tinted	VIRIDIAN VFloat™ SuperToned				
Solar control with low E coating	EVantage™				
Solar control with low E coating	SmartGlass™				
Solar control with low E coating	EnergyTech™				
Solar control with reflective coating	SolTech™				

Thickness: Nominate a thickness if the glass is to be thicker than required by AS 1288 or applicable regulations or there are unusual conditions requiring detailed calculations for which the designer should be responsible. In other cases the determination of thickness to AS 1288 is usually within the competence of the glazing contractor. Select from the following

- VIRIDIAN VTough™ toughened glass: 4 mm, 5 mm, 6 mm, 8 mm, 10 mm or 12 mm
- VIRIDIAN heat strengthened glass: 4 mm, 5 mm, 6 mm, 8 mm, 10 mm or 12 mm.

Colour: Refer to the product webpages for colour available for each thickness. Select from the following:

- VIRIDIAN VFloat Toned™: Grey, Green or Bronze.
- VIRIDIAN VFloat SuperToned™: SuperGrey, SuperGreen or SuperBlue.
- EVantage™: Grey, Bronze, BlueGreen, Clear, SuperBlue or SuperGreen.
- SmartGlass™ SP10 Clear, SP30 Neutral, or SP35 Grey.
- EnergyTech™: Clear, Grey or SuperGreen.
- SolTech™: Grey or Neutral.

Process: Document heat strengthened or toughened glass. Consult with VIRIDIAN to determine the appropriate treatment for specific applications.

Code: e.g. G1, G2, designation code to locate the glass type. Repeat the table for each designation code.

Laminated solar control glass schedule

Generic term/application	Product	Thickness	Colour	Code
Solar control – Low E Laminate	ComfortPlus™			
Solar control – Low E Laminate	VIRIDIAN EnviroShield Performance™ ITO			
Solar control – Low E Laminate	VIRIDIAN EnviroShield Performance™ XIR			

VIRIDIAN produce an extensive range of energy management glasses which includes many combinations of glasses, interlayers, coatings and insulating cavities. Consult with VIRIDIAN for advice on the most appropriate product for a given application.

Maximum dimensions: Refer to the product webpages for sizes available for each product.

Thickness: Nominate a thickness if the glass is to be thicker than required by AS 1288 or applicable regulations or there are unusual conditions requiring detailed calculations for which the designer should be responsible. In other cases the determination of thickness to AS 1288 is usually within the competence of the glazing contractor. Select from the following:

- VIRIDIAN VLam™ Laminated Glass: 6.38 mm to 12.38 mm.
- VIRIDIAN VLam™ Toughened Laminated Glass: 9.52 mm to 39.52 mm.
- ComfortPlus™: Laminated: 6.38 mm to 12.38 mm. Toughened Laminated: 9.52 mm to 21.52 mm.
- VIRIDIAN EnviroShield Performance ITO™: 6.76 mm to 21.52 mm.
- VIRIDIAN EnviroShield Performance XIR™: Laminated: 8.76 mm to 21.52 mm. Toughened Laminated: 9.52 mm to 21.52 mm.

Colour: Select from the following:

- ComfortPlus™: Clear, Grey, Neutral, LightGrey, Bronze or Translucent.
- VIRIDIAN EnviroShield Performance™ ITO: Select ITO Clear, ITO Green, ITO Neutral, ITO Grey, ITO SuperBlue.
- VIRIDIAN EnviroShield Performance™ XIR: Select XIR Clear , or XIR EnergyTech

Code: e.g. G1, G2, designation code to locate the glass type. Repeat the table for each designation code.

Insulating glass unit (IGU) schedule

Properties	A	B	C	D	E	F
Product	VIRIDIAN ThermoTech™	VIRIDIAN ThermoTech E™	VIRIDIAN PerformaTech™	VIRIDIAN LightBridge™	VIRIDIAN LightBridge Next™	VIRIDIAN ClimaTech™
Outer pane: Glass type						
Outer pane: Thickness (mm)						
Outer pane: Colour/coating						
Inner pane: Glass type						
Inner pane: Thickness (mm)						
Inner pane: Colour/coating						
Spacer Material			Metal	Warm Edge	Warm Edge	Metal
Spacer width (mm)						
Secondary seal						
Glass colour						

A - F: These designate each instance or type or location of the item scheduled.

Coordinate codes in the Schedule with those that appear on drawings.

Consult the manufacturers for available combinations. If the units are intended for noise reduction, it may be necessary to specify a weighted sound reduction index (Rw) rating for the assembly. See AS/NZS ISO 717.1.

See Glass Schedule for guidance on glass pane type and thickness.

Outer pane/Inner pane: Colour/coating type: e.g. Solar reflective or Low emissivity. Delete if no coating is required. State which surface of which pane is to be coated.

Spacer: Select (VIRIDIAN ThermoTech TPS®) or Metal spacer.

Spacer width:

- Metal Spacer: Select from 6 mm, 8 mm, 10 mm, 12 mm, 16 mm or 18 mm.
- Thermoplastic spacer: Thickness between 6 mm to 18 mm in 0.1 mm increments.
- Warm Edge Spacer: Select from 6 mm, 8 mm, 10 mm, 12 mm, 16 mm, 18 mm, 20 or 24mm.

Secondary seal: Select from:

- Polysulfide (standard).

Structural Silicone. If the edge seal (secondary seal) of the IGU is used in a structural silicone glazing system, or is subject to UV or sunlight, structural silicone must be used. For structural glazing applications utilising IGUs with thermoplastic spacers, Dow Corning 991 or 995 must be used as the weather sealant or structural glazing sealant. Advise VIRIDIAN of this at the time of order. It is the glazier's responsibility to consult with the sealant supplier to ensure the sealant used is compatible with the glass supplied, especially laminated and insulating glass units (IGUs).

Thickness: Nominate a thickness where:

- The glass is to be thicker than required by AS 1288 or applicable regulations.
- There are unusual conditions requiring detailed calculations for which the designer should be responsible.

In other cases the determination of thickness to AS 1288 is usually within the competence of the glazing contractor.

Glass colour: Nominate the pane to be coloured, refer to the VIRIDIAN Glass Performance Chart for glass options

The orientation of coated faces depends on the application – consult with VIRIDIAN. Nominate coating to one or two panes.

ThermoTech™ Point Fixed IGU - Consult the manufacturers for available combinations.

Code: e.g. G1, G2, designation code to locate the glass type. Repeat the table for each designation code.

Structural glazing schedule

Generic term/application	Product	Thickness	Colour	Process	Code
Engineered Flooring	VIRIDIAN DécorFloor™				

Maximum dimensions: 2500 x 2000 mm. Consult VIRIDIAN for available combinations and engineering support.

Thickness: Nominate a thickness if the glass is to be thicker than required by AS 1288 or applicable regulations or there are unusual conditions requiring detailed calculations for which the designer should be responsible. In other cases the determination of thickness to AS 1288 is usually within the competence of the glazing contractor. Select from the following:

- VIRIDIAN DécorFloor™ laminated glass: 29 mm, 33 mm or 47 mm
- VIRIDIAN DécorFloor™ toughened laminated glass: 29 mm, 33 mm or 47 mm.
- Based on 4 edge support

Colour: Clear - nominate non slip pattern to top layer

Process: Document heat strengthened or toughened glass. Consult with VIRIDIAN to determine the appropriate treatment for specific applications.

Code: e.g. G1, G2, designation code to locate the glass type. Repeat the table for each designation code.

Mirror glass schedule

Generic term/application	Product	Thickness	Colour	Edge processing	Code
Mirror	VIRIDIAN DécorMirror™				
Mirror - laminated	VIRIDIAN DécorMirror™ VLam™				
Mirror – vinyl safety backing	VIRIDIAN DécorMirror Safe™				

Thickness:

- VIRIDIAN DécorMirror™: Select from 4 mm, 5 mm, 6 mm,
- VIRIDIAN DécorMirror™ VLam™ 6.38 mm
- VIRIDIAN DécorMirror Safe™ SB: Select from 4 mm or 6 mm.

Colour:

- VIRIDIAN DécorMirror™: Select from Clear, Bronze or Grey.
- VIRIDIAN DécorMirror™ VLam™ Clear
- VIRIDIAN DécorMirror Safe™: Select Clear with a vinyl safety backing.

Edge processing: e.g. Ground, pencil, polished pencil edge, bevelled. Specify rough arrissed if edges are concealed.

Code: e.g. G1, G2, designation code to locate the glass type.

Shower screens

Generic term/application	Product	Thickness	Colour/Pattern	Process	Code
Glass	VIRIDIAN VTough™				

Balustrade glass schedule

Generic term/application	Product	Thickness	Colour	Process	Code
Balustrade	VIRIDIAN VTough™				
Balustrade	VIRIDIAN VLam™				

Code: e.g. G1, G2, designation code to locate the glass type.

REFERENCED DOCUMENTS

The following documents are incorporated into this worksection by reference:

AS 1288	2006	Glass in buildings - Selection and installation
AS/NZS 2208	1996	Safety glazing materials in buildings
AS/NZS 2343	1997	Bullet-resistant panels and elements
AS 4666	2012	Insulating glass units
AS/NZS 4667	2000	Quality requirements for cut-to-size and processed glass
AS/NZS 4668	2000	Glossary of terms used in the glass and glazing industry
BS 2571	1990	Specification for general-purpose flexible PVC compounds for moulding and extrusion
BS 4255		Rubber used in preformed gaskets for weather exclusion from buildings
BS 4255-1	1986	Specification for non-cellular gaskets
AAMA 701/702	2011	Voluntary specification for pile weatherstripping and replaceable fenestration weatherseals
ASTM C1048	2018	Standard specification for heat-strengthened and fully tempered flat glass
EN 14179		Glass in buildings - Heat soaking thermally toughened soda lime silicate safety glass
EN 14179-1	2016	Definition and description

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

AS ISO 717		Acoustics - Rating of sound insulation in buildings and of building elements
AS/NZS ISO 717.1	2004	Airborne sound insulation
AS 2047	2014	Windows and external glazed doors in buildings
BCA Spec J1.5a	2019	Energy efficiency - Calculation of U-Value and solar admittance
NATSPEC DES 015	2019	NCC - BCA Volume One Energy efficiency provisions
NATSPEC DES 032	2018	Airborne sound insulation
NATSPEC GEN 006	2015	Product specifying and substitution
NATSPEC GEN 024	2015	Using NATSPEC selections schedules
NATSPEC PRO 006	2016	Glass types used in buildings
NATSPEC TR 01	2019	Specifying ESD
AAMA 800	2016	Voluntary specifications and test methods for sealants
NFRC 100	2017	Procedure for determining fenestration product U-factors
NFRC 200	2017	Procedure for determining fenestration product solar heat gain coefficient and visible transmittance at normal incidence