0194P RAVEN DOOR SEALS AND WINDOW SEALS

Branded worksection

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Worksection abstract

This branded worksection *Template* is applicable for sealing doors and windows against a combination of leakages and intrusions without impeding normal use, using RAVEN products. It should be read in conjunction with a separate door-by-door hardware schedule.

Background

Refer to NATSPEC TECHnote GEN 012 for more information about door hardware scheduling.

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, including:

- 0451 Windows and glazed doors.
- 0453 Doors and access panels for door types.
- 0454 Overhead doors for door types.
- 0455 Door hardware.
- 0461 Glazing
- 0472 Acoustic insulation.
- 0527 Room dividers for operable walls and folding doors.

Documenting this and related work

You may document this and related work as follows:

- The door-by-door hardware schedule may be prepared for the project to your office documentation policy or provided by a nominated architectural door hardware supplier.
- Proprietary systems such as aluminium doors or windows, room dividers and overhead doors often come supplied with their own standard proprietary hardware and in many instances, such as timber joinery doors and windows, there are no seals at all. In some proprietary systems the seals installed have little or no adjustability or are made from lesser performing materials. In these situations NCC compliance may be compromised particularly in the area of weather and energy door bottom sealing or fire/smoke door sealing.
- Selected RAVEN seals should be specified here and listed in the SELECTIONS section in the appropriate worksection for the proprietary system. Check that the manufacturer of the proprietary system will install the selected RAVEN seals where applicable.
- Coordinate with electronic security, automatic door closers and related hardware items.
- Raven support and supply all leading architectural door hardware suppliers in Australia. Raven is the leading support member of ADHA (Architectural Door Hardware Association) for door and window sealing in Australia.

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:

- Guarantees and warranties.
- Substitutions.

Specifying ESD

Raven seals are designed to meet the weatherproofing and energy efficiency requirements of the NCC.

Packaging is made using recyclable cardboard, recyclable polyethylene plastic bags and recyclable PVC clam shell packaging. The following may be specified by retaining default text: • UV inhibitors.

The following may be specified using included options:

• Thermal performance required to reduce heating/cooling load.

Refer to NATSPEC TECHreport TR 01 on specifying ESD.

1 GENERAL

Established in 1950, Raven Products is an Australian family owned and operated company producing a range of acoustic, fire, smoke, weather and energy sealing systems. Raven Products is a member of the Raven Group of companies worldwide.

Raven's door and window sealing systems have become synonymous with quality, value and reliability backed by service excellence, which is why it is the brand that architects, specifiers and builders can rely on.

1.1 **RESPONSIBILITIES**

General

Requirement: Provide RAVEN door seals and window seals, as documented.

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

Performance

Handing: Before supply, verify on site, the correct handing of hardware items.

Operation: Make sure working parts are accurately fitted to smooth close bearings, without binding or sticking, free from rattle or excessive play, lubricated if appropriate.

It is the designer's responsibility to select and the door seals and window seals as appropriate for the application and to coordinate the seals with other hardware items.

1.2 PERFORMANCE

Bushfire-prone areas

Bushfire Attack Level (BAL): To AS 3959 (2018).

The construction requirements for the Bushfire Attack Level (BAL) in AS 3959 (2018) are based on the site's level of exposure. There are six categories: BAL-LOW, BAL-12.5, BAL-19, BAL-29, BAL-40 and BAL-FZ. State variations apply. Document the BAL in *0171 General requirements*.

See the Weather and Energy section in RAVEN's product catalogue for information on Ember attack and BAL Ratings.

1.3 COMPANY CONTACTS

RAVEN technical contacts

Website: www.raven.com.au

1.4 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.

1.5 STANDARDS

Seals general

Quality management for manufacture: To ISO 9001 (2015).

Acoustic applications: Tested to AS 1191 (2002) or EN ISO 10140-2 (2021) and rated to the NCC cited AS/NZS ISO 717.1 (2004).

The NCC cites AS/NZS ISO 717.1 (2004). The current edition is AS ISO 717.1 (2024).

Products have been tested to EN ISO 10140-2 (2010), now superseded by EN ISO 10140-2 (2021). The test methods have not changed between the versions by any significant technical component, and a different result would be unlikely for the same products when tested to the newer standard.

Fire door assemblies: To AS 1530.4 (2014) and AS 1905.1 (2015).

Smoke door assemblies: To BCA (2022) Spec 12, tested to AS 1530.7 (2007) and rated to AS 6905 (2007), and tested to EN 1634-3 (2004).

Combined fire and smoke door assemblies: To BCA (2022) Spec 12, AS 1530.4 (2014),

AS 1905.1 (2015), AS 1530.7 (2007) and AS 3959 (2018) for weather seals providing BAL-FZ.

Buildings in bushfire-prone areas: To AS 3959 (2018):

- BAL-40: Flame retardant silicon, PVC and TPE weather seals with a Flammability Index not more than 5 when tested to AS 1530.2 (1993).

- BAL-FZ: Approved door seals for use with fire doorsets tested to AS 1530.4 (2014).

Weather and energy saving seals for proprietary windows and door assemblies: To AS 4420.1 (2016) clause 5 and clause 6, and AS 2047 (2014).

Door bottom and perimeter seals for glazed external doors: To AS 2047 (2014).

Threshold plates: To the NCC cited AS 1428.1 (2009).

The NCC cites AS 1428.1 (2001) and AS 1428.1 (2009). The current edition is AS 1428.1 (2021).

For more information on standards and authorities click here.

Non-proprietary doors and windows are not required by the NCC to comply with AS 4420.1 (2016) at this stage.

1.6 MANUFACTURER'S DOCUMENTS

Technical manuals

Website: www.raven.com.au

Click on the link to access RAVEN architectural door and window product catalogue and CAD file downloads. RAVEN fitting instructions are supplied with every product.

1.7 INTERPRETATION

Abbreviations and definitions

General: For the purposes of this worksection the following abbreviations and definitions apply: Ordering abbreviations:

- AI: Aluminium.
- B/A: Bronze anodised (15 μm for door bottom seals and perimeter seals, 25 μm for threshold plates).
- B/K: Black anodised (15 µm for door bottom seals and perimeter seals, 25 µm for threshold plates).
- C/A: Clear anodised (15 µm for door bottom seals and perimeter seals, 25 µm for threshold plates).
- EPDM: Ethylene Propylene Diene Monomer.
- M/F: Milled finish.
- PE: Painted Polyester Enamel finish (special order and extra cost).
- PVC: Polyvinyl Chloride.
- Si: Silicone Rubber.
- TPE: Thermoplastic Elastomer.

Edit the **Abbreviations and definitions** subclause to suit the project or delete, if not required. List alphabetically. For more detail on materials click here.

1.8 SUBMISSIONS

Samples

Requirement: Submit samples to PRODUCTS, GENERAL, Samples.

2 PRODUCTS

2.1 GENERAL

Product substitution

Other products: Conform to SUBSTITUTIONS in 0171 General requirements.

Alternatives: If alternatives to the documented products, methods or systems are proposed, submit sufficient information to permit evaluation of the proposed alternatives, including the following:

- Evidence that the performance is equal to or greater than that specified, including testing of equivalent to the RAVEN Tested and Certified Sealing System.
- Evidence of conformity to a cited standard.
- Samples.
- Essential technical information, in English.
- Reasons for the proposed substitutions.
- Statement of the extent of revisions to the contract documents.
- Statement of the extent of revisions to the construction program.
- Statement of cost implications including costs outside the contract.
- Statement of consequent alterations to other parts of the works.

Availability: If the documented products or systems are unavailable within the time constraints of the construction program, submit evidence.

Criteria: If the substitution is for any reason other than unavailability, submit evidence that the substitution:

- Is of net enhanced value to the principal.
- Is tested by a recognised third party authority.
- Is consistent with the contract documents and is as effective as the identified item, detail or method.

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.

Avoid the use of phrases such as 'or equivalent' for substitutions of proprietary products, as products that look or claim to be equivalent may not have undergone the same testing and certification processes as the specified products, and therefore may not be able to fulfill the same performance requirements.

Always specify Raven products by name, avoiding substitution of inferior products as you can be assured our systems are:

- Quality certified to ISO 9001 (2015).
- Tested by NATA Accredited Testing Laboratories to Australian and New Zealand, UL, ANSI, BHMA, European, British and ISO standards. Accredited Testing Laboratories include International Door and Window Laboratories (IDWL), CSIRO, BRANZ, Warringtonfire, Intertek and UL.

With Raven Group's world class testing facility every design and invention is rigorously tested and approved to comply with international building regulations and codes.

Raven Products choose to issue reports from International Door and Window Laboratories (IDWL), a NATA Accredited Testing Laboratory, as evidence of suitability for use to NCC (2022) A5G1.

While not recommended, if using this branded worksection as a standalone specification without 0171 General requirements, consider minimising the risk of product substitution by including this Optional style text by changing to Normal style text.

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.

Samples Particular samples required: [complete/delete] Nominate any items required for approval by the contract administrator.

2.2 MATERIALS

Aluminium

Material: Commercial grade alloy 6060, 6061 or 6063 with T5 or T6 temper.

Finish to visible extrusions:

- Satin clear, bright gold, bronze or black anodised.
- Anodising thickness:
 - . Perimeter seal extrusions: Minimum 15 µm.
 - . Threshold plates and threshold plate seals: Minimum 25 $\mu m.$
 - . Milled finish.

RAVEN polyester enamel (P.E. paint) colour matched finish options are available at an extra cost and an additional lead time.

PVC

RAVEN proprietary grade PVC extrusions:

- Highest quality available.
- Added UV inhibitors if exposed to sunlight.
- Self-extinguishing grade.
- Antimicrobial additive.

Available on selected extrusions. Consult the Raven website (www.raven.com.au) and the product catalogue.

- Service temperature -5°C to +70°C.

RAVEN polyester enamel (P.E. paint) colour matched finish options are available at an extra cost and an additional lead time.

Si

RAVEN proprietary grade silicon rubber extrusions:

- Are unique and if designated (SE) are self-extinguishing.
- Added UV inhibitors.
- Antimicrobial additive.
- Service temperature of -60°C to +230°C.

TPE

RAVEN proprietary grade TPE extrusions:

- Highest quality available.
- Added UV inhibitors.
- Flammability Index less than 5 to AS 1530.2 (1993) if indicated for bushfire-prone areas.
- Service temperature -40°C to +100°C.

EPDM

RAVEN proprietary grade closed cell EPDM rubber extrusions:

- Highest quality available as developed by the automotive industry.
- Added UV inhibitors.
- Classified SE/B self-extinguishing burn rate to SAE J 369 (2019), and ISO 3795 (1989).
- Service temperature -40°C to +70°C.

3 EXECUTION

3.1 INSTALLATION

Handing

Requirement: Match door seals to the handing of doors.

RAVEN automatic door bottom seals are supplied for all standard door openings and are designed to operate in both left and right-handed door openings. Seals can be easily installed to the door by the installer in the factory or retrofitted to existing doors by following the fitting instructions. Perimeter seals are supplied ex-stock in single and double door sets to suit most door openings. Single lengths are also available for non-standard door openings.

Supply

Factory fit and retrofit: Deliver door seals for door perimeter seals and door bottom seals in complete sets for each door, ready for installation.

Identification: Mark packaging with relevant floor level and door location number.

Packaging: For rigid length seals, provide recyclable cartons and recyclable polyethylene with fixings and fitting instructions.

Off-site installation to proprietary window and door assemblies: Supply RAVEN TPE and silicon rubber weather stripping on bulk reels.

RAVEN silicon rubber weather stripping can be removed before painting or easily wiped clean if over painting occurs.

Door assemblies

Modification: Rebate and groove door assemblies to suit the dimensions recommended by RAVEN. Fitting instructions: Conform to RAVEN's fitting instructions, supplied with each product.

Fixing

Fasteners:

- Unexposed applications: Zinc-plated self-tapping fasteners supplied by RAVEN with each product.
- External coastal exposure applications: Substitute the standard fasteners supplied with equivalent stainless steel fasteners.

Backset: Allow backset clearances as required for hinging, latching and automatic closers.

Proprietary aluminium door/window frames: Select the fixing options to suit the documented RAVEN perimeter/frame seals.

3.2 COMPLETION

Warranties

Refer to 0171 General requirements for appropriate warranty type and the terms covered in the warranty.

Type: Manufacturer's warranty to cover manufacturing defects and defects with products and materials delivered to site.

Period: 2 years.

RAVEN seals are guaranteed for 2 years against defects in materials and workmanship, provided seals are fitted in conformance with manufacturer's product specifications and fitting instructions. Defective goods identified by RAVEN will be replaced. However, no claim for work done thereon or damage incurred will be allowed.

Self-adhesive backed; closed and open cell foam tape seals are not guaranteed. Defective goods identified by RAVEN may be replaced. Experience has shown that even for one and the same objective, the exact requirements may vary due to site and environmental conditions that are outside RAVEN Products control; this includes the surfaces to which self-adhesive products are being installed.

All technical data and recommendations, although based upon our research and believed to be reliable, is given in good faith but without warranty.

It is understood that users will independently determine the suitability of all products referenced herein for their purposes and as such RAVEN Products Pty. Ltd. accepts no liability.

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 SELECTING A SEALING SYSTEM DUTY LEVEL

Achieving fitness for purpose.

Below is a Sealing System Duty Level guide that will assist with selecting the appropriate sealing system for a building/room type including practical suggestions for single and double door scenarios.

Raven's Sealing System Duty Level guide is recommended for architects, engineers, builders and door hardware specifiers in the appropriate selection of Raven seals from its extensive range of door sealing systems.

Correct sealing system selection helps ensure Raven seals will perform as designed, are fit for purpose, conform to the mandatory requirements of the NCC and the anticipated life cycle inspection process of the building. System Duty Level selection is also important if high levels of pedestrian and wheeled traffic is moving through doorways.

Duty Levels are defined in three (3) categories – Light Duty (L), Medium Duty (M) and Heavy Duty (H). Sealing System products in each duty level differ depending on constructional features – material selection/material thickness and mechanical level adjustment (to name a few). Choose a solution appropriate to the application and environment:

- Light Duty (L): Generally used in residential and light traffic areas, such as Class 1 to 4 buildings.
- Medium Duty (M): Generally used in commercial and medium traffic areas, such as Class 3 to 6 buildings.
- Heavy Duty (H): Generally used in heavy pedestrian and wheeled traffic areas, such as Class 5 to 10 buildings. Heavy
 Duty Level system products will consist of thicker profiles and more robust materials than those listed in the other duty
 levels.

Below is Raven's Sealing System Duty Level guide that will assist in selecting the appropriate sealing system for a building/room type including practical suggestions for single and double door scenarios.

SYSTEM DUTY LEVEL	Building/Room	Suggested sealing	systems
	type	Single door	Double doors
LIGHT DUTY (Residential) Generally used in residential and light traffic areas, such as Class 1 to 4 buildings.	Apartments Bedrooms/sleeping areas Guest house rooms Living areas	RP120 + RP60 RP113 + RP3	RP120 + RP123 + RP510 RP520 + RP4 + RP150
MEDIUM DUTY (Commercial / Light industrial) Generally used in commercial and medium traffic areas, such as Class 3 to 6 buildings.	Art studios Auditoriums Bars and lounges Board rooms Boarding house rooms Cafés Car parks Cinemas/home theatres Classrooms Computer rooms Consulting rooms Consulting rooms Control rooms Control rooms Control rooms Convention centres Corridors / lobbies Drama studios Executive offices Film or television studios Gyms Hotel rooms/motel rooms Laboratories Libraries Meeting rooms Music practice/studio rooms Offices Places of worship University tutorial rooms/lecture	RP78Si + RP94Si + RP127Si RP10Si + RP38Si	RP78Si + RP8Si + RP71Si RP94Si + RP127Si + RP16Si RP10Si + RP126Si + RP16Si
HEAVY DUTY (Heavy Commercial / Public / Industrial) Generally used in heavy pedestrian and	Airports Court rooms Delivery suites Factories	RP10Si + RP38Si RP87Si +	RP10Si + RP38Si + RP16Si

Sealing System Duty Level quide

SYSTEM DUTY LEVEL	Building/Room	Suggested sealing systems			
	type	Single door	Double doors		
wheeled traffic areas, such as Class 5 to 10 buildings.	Food courts Government and defence rooms/buildings High security rooms Intensive care wards Music recording studios Prisons Recovery rooms Utility rooms Shopping malls/supermarkets Sound stages	RP70Si RP24Si + RP70Si	RP87Si + RP70Si + RP16Si RP24Si + RP70Si + RP37		

4.2 NOISE - ACOUSTIC

Consult the 'Noise - Acoustic' section of the Raven website (www.raven.com.au) and the Raven product catalogue for selection guidance and any updated or additional systems. Coordinate the door details with the Door Schedule to your office documentation policy.

Rw	Raven	Refer to the categories in the Raven Acoustic Sealing System Catalogue	Door			System Duty level	Door No.
	acoustic sealing systems		Hinge	Configuration	Thickness (mm)		
30 R R R R R R R R R R R R R	RP78Si + RP8Si	R _w 30 to R _w 33 Acoustic Sealing Systems	Butt	Single	37	М	
	RP78Si + RP35Si		Butt	Single	35	М	
	RP10 / RP10Si + RP99Si		Butt	Single	37	Н	
	RP10Si + RP8Si		Butt	Single	40	М	
	RP94Si + RP8Si		Butt	Single	46	М	
	RP94Si + RP99Si		Butt	Single	46	М	
R R	RP10Si + RP126Si + RP16Si		Butt	Double	45	Н	
	RP10Si + RP128Si + RP71Si		Butt	Double	45	Н	
	RP24 + RP38 + RP71		Butt	Double	45	Н	

 R_w 30 to R_w 33 acoustic sealing system schedule

R _w	Raven	Refer to	Door		System	Door No.	
	acoustic sealing systems	the categories in the Raven Acoustic Sealing System Catalogue	Hinge	Configuration	Thickness (mm)	Duty level	
	RP24Si + RP38Si + RP16Si		Butt	Double	45	Н	
	RP44Si + RP127Si + RP71Si		Butt	Double	45	Μ	
	RP84Si + RP126Si + RP16Si		Butt	Double	45	Н	
	RP84Si + RP128Si + RP71Si		Butt	Double	45	Н	
	RP84Si + RP8Si + RP71		Butt	Double	45	Μ	
	RP87HSi + RP126Si + RP16Si		Butt	Double	45	Н	
31	RP120 + RP8Si		Butt	Single	44	М	
	RP84Si + RP127Si + RP71Si		Butt	Double	45	Н	
32	RP10 / RP10Si + RP99Si		Butt	Single	44	Н	
	RP10 / RP10Si + RP99Si		Butt	Single	46	Н	
	RP10 / RP10Si + RP99Si + RP16Si		Butt	Double	46	H	
	RP10 / RP10Si + RP99Si + RP71Si		Butt	Double	46	Н	
	RP10 / RP10Si + RP99Si + RP85		Butt	Double	46	Н	
	RP24 + RP38		Butt	Single	46	Н	
	RP24 + RP70		Butt	Single	46	Н	
	RP47Si + RP38		Butt	Single	46	Н	

R _w	Raven	Refer to the categories in the Raven Acoustic Sealing System Catalogue	Door			System	Door No.
	acoustic sealing systems		Hinge	Configuration	Thickness (mm)	Duty level	
	RP47Si + RP70		Butt	Single	46	Н	
	RP93Si + RP99Si		Butt	Single	44	М	
	RP120 + RP38		Butt	Single	44	М	
	RP10Si + RP127Si		Butt	Single	48	Н	
33*	RP78Si + RP8Si		Butt	Single	40	М	
Note: (*) Door	Assembly R _v	, ratings abo	ve R _w 32 rec	uire acoustically	/ constructe	d door leave	es.

R _w :	36 to	R _w 40	acoustic	sealing	system	schedule
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R _w	Raven acoustic sealing systems	Refer to the categories in the Raven Acoustic Sealing System Catalogue	Door		System	Door No.	
			Hinge	Configuration	Thickness (mm)	Duty level	
36*	RP78Si + RP124 + RP8Si	R _w 36 to I R _w 40 Acoustic Sealing System	Butt	Single	35	Μ	
	RP120 + RP520 + RP8Si + RP99Si		Butt	Single	44	Μ	
	RP10Si + RP127Si		Butt	Single	68	Н	
37*	RP78Si + RP8Si		Butt	Single	35	М	
	RP10Si + RP128Si		Butt	Single	35	Н	
	RP24Si + RP38Si		Butt	Single	35	Н	
	RP120 + RP520 + RP38 + RP99Si		Butt	Single	44	Μ	
	RP24Si + RP127Si + RP126Si		Butt	Single	48	Н	
38*	RP120 + RP127Si		Butt	Single	48	М	

R _w 40*	Raven acoustic sealing systems	Refer to the categories in the Raven Acoustic Sealing System Catalogue	Door			System	Door No.
			Hinge	Configuration	Thickness (mm)	Duty level	
40*	RP124 + RP127Si		Butt	Single	48	М	
Note: (*) Door A	Assembly R _M	ratings abo	ve R _w 32 req	uire acoustically	constructe	d door leave	s.

R	42 to R	46 20015	tic spaling	system	schadula
NW		40 acous	inc seaming	System	Scheudle

R _w	Raven acoustic sealing systems	Refer to the categories in the Raven Acoustic Sealing System Catalogue	Door		System	Door No.	
			Hinge	Configuration	Thickness (mm)	Duty level	
42* RP2 RP1 RP5 RP5 RP5 RP1 RP1 RP1 RP1 RP1 RP1 RP1 RP1	RP24Si + RP124 + RP8Si + RP38Si	R _w 42 to R _w 46 Acoustic Sealing Systems	Butt	Single	35	Н	
	RP87Si + RP124 + RP8Si + RP128Si		Butt	Single	35	Н	
	RP10Si + RP124 + RP127Si		Butt	Single	68	Н	
	RP24Si + RP127Si + RP126Si		Butt	Single	68	Н	
43*	RP78Si + RP124 + RP8Si + RP128Si		Butt	Single	35	Μ	
	RP10Si + RP124 + RP8Si + RP128Si		Butt	Single	35	Μ	
	RP10Si + RP124 + RP127Si		Butt	Single	48	М	
45*	RP24Si + RP124 + RP127Si + RP126Si		Butt	Single	68	Μ	
46*	RP85 + RP124 + RP127Si + RP126Si		Butt	Single	68	M	

R _w R	Raven	Refer to	Door			System	Door No.
	acoustic sealing systems	the categories in the Raven Acoustic Sealing System Catalogue	Hinge	Configuration	Thickness (mm)	Duty level	
Note: (*) Door A	ssembly R ₄	ratings abo	ve R _w 32 red	uire acoustically	/ constructe	d door leave	S.

Other acoustic sealing system schedule

Rw	Raven acoustic sealing systems	Refer to the categories in the Raven Architectural Catalogue	Door			System s Duty level	Door No.
			Hinge	Configuration	Thickness (mm)		
30	RP47Si + RP47Si	Noise-Acoustic- Sealing System	Broad butt	Single	37	Н	
	RP118Si + RP71Si + RP117Si	(Bulkhead, Interconnecting, Sliding, Pivot)	Broad butt	Double	45	M	
31 RP RP RP RP RP RP RP RP + R + R	RP84Si + RP51F + RP52F		Sliding	Single	35	М	
	RP93Si + RP71Si + RP97Si		Broad butt	Double	45	М	
	RP118Si + RP8Si + RP16Si		Broad butt	Double	45	М	
32	RP47Si + RP47Si		Broad butt	Single	44	Н	
34*	RP10Si + RP51F + RP52F		Sliding	Single	35	М	
35*	RP71Si + RP71Si + RP96		Pivot	Single	50	М	
38*	RP94Si + RP8Si		Broad butt	Interconnecting	40	М	
Note: (*) Door	Assembly I	R _w ratings above	R _w 32 requ	ire acoustically co	onstructed d	oor leaves	3.

4.3 SMOKE DOORS

Medium temperature smoke. 200°C for 30 minutes BCA (2022) Spec 12. Consult the 'Smoke - Smoke Sealing systems' section of the Raven website (www.raven.com.au) and the Raven product catalogue for selection guidance and any updated or additional systems.

Smoke and Acoustic seals tested on solid core doors meet the requirements for BCA (2022) Spec 12. These sealing systems meet the leakage rates specified in AS 6905 (2007) when the door assembly is installed to BCA (2022) Spec 12.

AS 1530.7 (2007) \leq 25 m³/h @ 25 Pa for single doors and \leq 40 m³/h @ 25 Pa for double doors when exposed to 200°C for 30 minutes in accordance with AS 6905 (2007).

Smoke sealing system schedule RAVEN Refer to the Door System Door No.

smoke sealing system	categories in the Raven Architectural Catalogue	Hinge	Configuration	Thickness (mm)	Duty level	
RP120 + RP8Si + RP120	Smoke Door Sealing Systems	Butt	Single	35+	Μ	
RP78Si + RP8Si	(Tested & Certified on	Butt	Single	35+	М	
RP78Si + RP38Si	Doors)	Butt	Single	35+	М	
RP78Si + RP35Si		Butt	Single	35+	М	
RP78Si + RP128Si		Butt	Single	35+	М	
RP124 + RP128Si		Butt	Single	35+	М	
RP124 + RP126Si		Butt	Single	35+	М	
RP160 + RP35Si		Butt	Single	35+	М	
RP124 + RP127Si		Butt	Single	40+	М	
RP23 + RP8Si]	Butt	Single	35+	М	
RP24Si + RP38Si		Butt	Single	40+	Н	
RP87Si + RP126Si		Butt	Single	40+	Н	
RP78Si + RP38Si + RP16Si		Butt	Double	40+	Μ	
RP120 + RP8Si + RP120		Butt	Double	40+	Μ	
RP150 + RP8Si + RP150		Butt	Double	40+	Μ	
RP124 + RP35Si + RP71Si		Butt	Double	40+	М	
RP130Si + RP129F + RP130Si + RP115 threshold plate		Pivot double acting	Double	40+	н	

Smoke sealing system schedule - fire engineered alternative solution tested to AS 1530.7 (2007)

These sealing systems are tested to AS 1530.7 (2007). They may be used if the source of exposure is from either side of the door opening and can be used when a Fire Engineered alternative solution is required. Effective combinations of Smoke and Acoustic seals tested on solid core doors meet the requirements of BCA (2022) Spec 12. Consult the 'Smoke - Smoke Sealing systems' section of the Raven website (www.raven.com.au) and the Raven product catalogue for selection guidance and any updated or additional systems.

AS 1530.7 (2007) \leq 25 m³/h @ 25 Pa for single doors and \leq 40 m³/h @ 25 Pa for double doors when exposed to 200°C for 30 minutes in accordance with AS 6905 (2007).

All 'Intumescent' seals have been developed for fires above 600°C and hot smoke above 200°C.							
RAVEN	Refer to the	Door			System	Door No.	
smoke categories in sealing the Raven system Architectural Catalogue	Hinge	Configuration	Thickness (mm)	Duty level			
RP120 + RP8Si	Smoke Door Sealing	Butt	Single	35+	Μ		
RP670 + RP8Si	Systems (Fire Engineered –	Butt	Single	35+	Μ		
RP124 + RP35Si	Solutions)	Butt	Single	35+	Μ		
RP76Si + RP8Si		Butt	Single	35+	Μ		
RP160 + RP8Si		Butt	Single	35+	Μ		
RP160 + RP35Si		Butt	Single	35+	Μ		
RP78Si + RP38Si + RP16Si		Butt	Double	46+	М		
RP124 + RP8Si + RP16Si		Butt	Double	40+	М		
RP150 + RP126Si + RP150		Butt	Double	40+	М		
RP130Si + RP129F + RP130Si + RP115 threshold plate		Pivot double acting	Double	40+	Н		

4.4 **FIRE DOORS**

Consult the 'Fire Doors - Sealing Systems for Fire Doors' section of the Raven website (www.raven.com.au) and the Raven product catalogue for selection guidance and any updated or additional systems.

Combined smoke and acoustic sealing system schedule

RAVEN	Refer to the	Door	System	Door No		
smoke sealing system	categories in the Raven Architectural Catalogue	FRL (Fire Rating)	Configuration	Thickness (mm)	Duty level	
RP120 + RP8Si	Smoke Sealing	-/120/30 -/180/30	Single/Double	38 47	М	
RP10Si + RP8Si	Systems (Fire Rated	-/120/30 -/240/30	Single/Double	38 47	М	
RP24Si + RP38Si	Doors)	-/120/30	Single/Double	47	Н	
RP78Si + RP8Si		-/120/30 -/240/30	Single/Double	38 47	М	
RP78Si + RP35Si		-/120/30 -/240/30	Single/Double	38 47	М	
RP78Si +		-/120/30	Single/Double	38	М	

RAVEN	Refer to the	Door			System	Door No.
smoke sealing system	categories in the Raven Architectural Catalogue	FRL (Fire Rating)	Configuration	Thickness (mm)	Duty level	
RP38Si		-/240/30		47		
RP78Si + RP127Si		Up to - /120/30	Single/Double	47	Μ	
RP93Si + RP99Si		Up to - /240/30	Single/Double	47	Μ	
RP87Si + RP128Si		-/120/30 -/120/30	Single/Double	38 47	н	
RP94Si + RP126Si		-/120/30	Single/Double	38	Μ	
RP160 + RP8Si		-/120/30	Single/Double	38 47	Μ	
RP160 + RP35Si		-/120/30	Single/Double	38 47	Μ	

Threshold at doorways schedule

RAVEN NCC cited		Durability	Fire door		Syste	Doo
threshol d (plates/ ramps and plate seals)	AS 1428.1 (2009) (Design for access and mobility) clauses 7.2 Construction tolerances for abutment of surfaces and 10.5 Threshold	ANSI/BHMA A156.21 (2019) designation	FRL (fire resistanc e level)	Configuratio n	m Duty level	r No.
RP4b	-	J33100	Up to - /240/30	Single/Double	М	
RP13	Yes	J30300	Up to - /240/30	Single/Double	Н	
RP19	-	-	Up to - /240/30	Single/Double	Н	
RP27	-	J33100	Up to - /240/30	Single/Double	Н	
RP28	-	J32130	Up to - /240/30	Single/Double	Н	
RP29	-	J32130	Up to - /240/30	Single/Double	Н	
RP66	Yes	J32140	Up to - /240/30	Single/Double	Н	
RP77	Yes	J38130	Up to - /240/30	Single/Double	Н	
RP82	Yes	J32300	Up to - /240/30	Single/Double	Н	
RP91	-	J30300	Up to - /240/30	Single/Double	Н	_
RP95	Yes	J32300	Up to - /240/30	Single/Double	Н	

RAVEN NCC cited		Durability	Fire door	Syste D	Doo	
threshol d (plates/ ramps and plate seals)	AS 1428.1 (2009) (Design for access and mobility) clauses 7.2 Construction tolerances for abutment of surfaces and 10.5 Threshold	ANSI/BHMA A156.21 (2019) designation	FRL (fire resistanc e level)	Configuratio n	m Duty level	r No.
RP96	Yes	J32300	Up to - /240/30	Single/Double	Н	
RP97Si	Yes	J38130	Up to - /240/30	Single/Double	Н	
RP98	Yes	J38130	Up to - /240/30	Single/Double	Н	
RP109Si	-	J36100	Up to - /240/30	Single/Double	Н	
RP110Si	-	J36100	Up to - /240/30	Single/Double	Н	
RP111Si	-	J36100	Up to - /240/30	Single/Double	Н	
RP112	Yes	J38130	Up to - /240/30	Single/Double	М	
RP115	Yes	J32130	Up to - /240/30	Single/Double	н	
RP116	Yes	J32130	Up to - /240/30	Single/Double	Н	
RP117Si	-	J36100	Up to - /240/30	Single/Double	Н	
RP137	Yes	J32130	Up to - /240/30	Single/Double	Н	
RP138	Yes	J38130	Up to - /240/30	Single/Double	Н	
RP151	Yes	J32130	Up to - /180/30	Single/Double	Н	
RP170	Yes	J38130	Up to - /240/30	Single/Double	Н	
RP171	Yes	J38130	Up to - /240/30	Single/Double	Н	
RP172	Yes	J38130	Up to - /240/30	Single/Double	Н	

The NCC cites AS 1428.1 (2001) and AS 1428.1 (2009). The current edition is AS 1428.1 (2021).

4.5 BUSHFIRE-PRONE AREAS

Consult the 'BUSHFIRE - Sealing Systems for Bushfire Prone Areas' section of the Raven website (www.raven.com.au) and the Raven product catalogue for selection guidance and any updated or additional systems. Raven seals are multi-purpose and can be used for new and retrofit installations. Refer to the RAVEN website for updated systems.

The schedules below have been included to assist the specifier select products that meet the requirements of AS 3959 (2018). Determine if the information is suitable for your project.

'Weather and Energy' sealing in bushfire prone areas: Door sets to AS 3959 (2018).

Door sealing system schedule

RAVEN bushfire sealing system	Refer to the categories in the Raven Architectural Catalogue	Door configuration Doorsets to AS 3959 (2018) BAL requirements	BAL	Door No.
RP78Si + RP4FZ	Bushfire Sealing	Butt hinged single	BAL - FZ	
RP78Si + RP51Si + RP16Si + RP82	Systems (Bushfire Prone Areas) F v A	Butt hinged single and double	BAL - 40	
RP600 series - Weather Stripping		Folding doors and windows to AS 3959 (2018)	BAL - 40	
RP600 + RP51Si		Folding doors and windows to AS 3959 (2018)	BAL - 40	
RP41 + RP75 + RP114 + RP91		Panel lift garage door	BAL - 40	
RP75 + RP75		Sliding garage doors	BAL - 40	

Garage door sealing system schedule

Bushfire Attack Level (BAL) to AS 3959 (2018)	Side hung (ember attack) - Perimeter and door bottom seals	Garage doors (ember attack) - roller and sectional overhead doors	Door No.
BAL – LOW Note: There is no further requirement from AS 3959 (2018).	RAVEN weather and energy draught seals	RAVEN Nylon Brush Strip seal with a flammability rating no greater than 5. Includes: RP2a, RP2b, RP41, RP49, RP50, RP51F, RP57, RP58, RP74, RP74F, RP75 at door head and sides if required. Door bottom seal RP4T or RP51Si (if bottom seal not supplied with door). Option: Threshold plate RP91	
BAL 12.5 - BAL 29	RAVEN weather and energy draught seals	RAVEN Nylon Brush Strip seal with a flammability rating no greater than 5. Includes: RP2a, RP2b, RP41, RP49, RP50, RP51F, RP57, RP58, RP74, RP74F, RP75 at door head and sides if required. Door bottom seal RP114 or RP51Si (if bottom seal not supplied with door). Option: Threshold	

Bushfire Attack Level (BAL) to AS 3959 (2018)	Side hung (ember attack) - Perimeter and door bottom seals	Garage doors (ember attack) - roller and sectional overhead doors	Door No.
		plate RP91	
BAL - 40	RAVEN seals with a flammability index ≤ 5 tested to AS 1530.2 (1993)	RAVEN Nylon Brush Strip seal with a flammability rating no greater than 5. Includes: RP2a, RP2b, RP41, RP49, RP50, RP51F, RP74, RP74F, RP75 at door head and sides if required. Door bottom seal RP4T or RP51Si (if bottom seal not supplied with door). Option: Threshold plate RP91	
BAL - FZ	RAVEN seals tested to AS 1530.4 (2014) used with fire- resisting doorsets to AS 1905.1 (2015) and BCA (2022) Spec 12	RAVEN Nylon Brush Strip seal includes: RP2a, RP2b, RP41, RP49, RP50, RP51F, RP74, RP74F, RP75 at door head and sides if required. Door bottom seal RP4T or RP51Si (if bottom seal not supplied with door). Option: Threshold plate RP91	

4.6 WEATHER AND ENERGY

Protection from draughts and dust, insects, vermin and light. Added benefits include energy wise design, improved health and hygiene. Consult the 'Weather and Energy' section of the Raven website (www.raven.com.au) and the Raven product catalogue for selection guidance and any updated or additional systems.

Weather sealing system schedule

Weather sealing systems to BCA (2022) J5D5 for Class 2 to 9 buildings and BCA (2022) H6D2(1)(b)(iii) for Class 1 and 10 buildings.

RAVEN	Refer to the	Door	Door		Door No
weather sealing systems	categories in the Raven Architectural Catalogue	Hinge	Configuration	level	
RP78Si + RP4 + RP16Si	Weather and Energy Sealing System (Butt Hinged Doors)	Butt	Timber single and double	М	
RP10 + RP8Si + RP98		Butt	Aluminium - single	H	
RP84Si + RP89 + RP77		Butt	Aluminium - single	M	

RAVEN	Refer to the	Door		System Duty	Door No
weather sealing systems	categories in the Raven Architectural Catalogue	Hinge	Configuration	level	
RP74F + RP74F + RP52F + RP82		Pivot	Timber single and double	Н	
RP130Si + RP129Si + RP130Si + RP115 threshold plate		Pivot	Timber single and double	Н	
RP89 + RP89 + RP116 threshold plate		Pivot	Aluminium - single and double	М	
RP74F + RP74F + RP19		Pivot	Aluminium - single and double	Н	
RP51F + RP2a		Sliding	Timber	Н	
RP51F + RP74F		Sliding	Timber	Н	
RP73 + RP17b		Sliding	Timber	L	
RP41 + RP4T + RP91		Panel lift garage door	Metal	Н	
RP57 + RP4T + RP91		Roll-up garage door	Metal	Н	
RP500 Series Weather Stripping		Folding doors and windows	Timber	Н	
RP500 + RP550 + RP73		Folding doors and windows	Timber	Н	
RP600 Series Weather Stripping		Folding doors and windows	Timber	Н	

RP500 and RP600 Series Weather Stripping have been used in door and window systems to meet the requirements of AS 2047 (2014) when tested to AS 4420.1 (2016).

4.7 ACCESS AND MOBILITY

Consult the 'Threshold Plates/Ramps' section of the Raven website (www.raven.com.au) and the Raven product catalogue for selection guidance and any updated or additional systems.

Application - thresholds at doorways

RAVEN threshold plates: [complete/delete]

Specify the RAVEN product required.

4.8 HEALTH AND AGED CARE

Acoustic and smoke sealing system schedule

Sealing systems designed for aged and health care BCA Class 3, 8 and 9 buildings. Consult the 'Health & Aged Care sealing systems' section of the Raven website (www.raven.com.au) and the Raven product catalogue for selection guidance and any updated or additional systems.

RAVEN	Refer to the	Door		System Duty	Door No.
sealing system	categories in the Raven Architectural Catalogue	Hinge	Configuration	level	
RP24Si + RP38Si	Health and Aged Care -	Butt	Timber single	Н	
RP78HSi + RP8Si	Sealing System (Butt Hinged	Butt	Timber single	М	
RP87HSi + RP126Si	Doors)	Butt	Timber Single	Н	
RP87HSi + RP128Si		Butt	Single	Н	
RP84Si + RP126Si + RP71Si		Butt	Timber single and double	М	
RP124 + RP127Si + RP71Si		Butt	Timber single and double	М	
RP71Si + RP71Si + RP71Si + RP96		Pivot	Timber single and double	М	
RP130Si + RP52F + RP130Si		Pivot	Timber single and double	Н	
RP130Si + RP129F + RP130Si		Pivot	Timber single and double	Н	
RP130Si + RP129Si + RP130Si + RP96		Pivot	Timber single and double	Н	

4.9 CHILDCARE

The Anti-finger Jam Seals (RP62 range) can be installed wherever doors are accessible to children in schools, kindergartens and children day care centres. These products have been tested to meet the requirements of BS 8613 (2017) as a Class 1 product.

Consult Complementary Products in the RAVEN Catalogue for selection guidance.

RAVEN seals	BS 8613 (2017) Class 1 compliant	Comments	Door		System	Door No.
			Hinge	Configuration	Duty level	
RP62	Yes	-	Butt	Timber/Aluminium	Н	
RP62 BW	Yes	-	Butt	Timber/Aluminium	Н	
RP62 LGBK	Yes	-	Butt	Timber/Aluminium	Н	
RP62s	Yes	Used in conjunction	Butt	Timber/Aluminium	Н	

Anti-finger Jam Seals schedule

RAVEN seals	BS 8613 (2017)	Comments	Door		System	Door No.						
Class 1			Hinge Configuration		Duty level							
	compliant			g								
		with larger										
		RP62										
		series (as										
		above)										
REFERENCED DOCUMENTS												
The following documents are incorporated into this worksection by reference:												
AS ISO 717		Acoustics - Rat	ing of sound insu	lation in buildings and o	of building eleme	nts						
AS/NZS ISU /17.	1 2004	2004 Airborne sound insulation										
AS 1191	2002	J2 Acoustics - Method for laboratory measurement of airborne sound transmission										
AS 1429		Insulation of building elements										
AS 1420 AS 1428 1	2000	Design for access and mobility Constal requirements for access. New building work										
AS 1420.1 AS 1530	2009	General requirements for access - New Duliding Work										
AS 1530 AS 1530 2	1003	Test for flammability of materials										
AS 1530.4	2014	Test for indifinitioning of materials										
AS 1530 7	2017	File-resistance tests for elements of construction Smoke control assemblies - Ambient and modium temporature lookage test										
1000.1	2001	procedure										
AS 1905		Components for the protection of openings in fire-resistant walls										
AS 1905.1	2015	Fire-resistant doorsets										
AS 2047	2014	Windows and external glazed doors in buildings										
AS 3959	2018	Construction of buildings in bushfire-prone areas										
AS 4420		Windows, external glazed, timber and composite doors - Methods of test										
AS 4420.1	2016	Test sequence, sampling and test methods										
AS 6905	2007	Smoke doors										
BCA Spec 12	2022	Fire resistance - Fire doors, smoke doors, fire windows and shutters										
BS 8613	2017	Finger protection devices for pedestrian doors - Specification - Safety requirements and										
ANSI/BHMA A156	6.21 2019	Standard for the	resholds									
SAF 1 369	2019	Flammability of polymeric interior materials - Horizontal test method										
EN 1634	20.0	Fire resistance and smoke control tests for door and shutter assemblies, openable										
	windows and elements of building hardware											
EN 1634-3 2004		Smoke control test for door and shutter assemblies										
EN ISO 10140		Acoustics - Lab	Acoustics - Laboratory measurement of sound insulation of building elements									
EN ISO 10140-2	2021	Measurement of airborne sound insulation										
ISO 3795	1989	Road vehicles, and tractors and machinery for agriculture and forestry - Determination										
		of burning beha	viour of interior i	materials								
ISO 9001	2015	Quality manage	ement systems -	Requirements								
The following do	cuments are mentio	ned only in the	Guidance text:									
AS ISO 717		Acoustics - Rat	ing of sound insu	lation in buildings and o	of building eleme	nts						
AS ISO 717.1	2024	Airborne so	und insulation		-							
AS 1428		Design for acce	ess and mobility									
AS 1428.1	2001	General rec	quirements for ac	cess - New building wo	rk							
AS 1428.1	2021	General rec	quirements for ac	cess - New building wo	rk							
BCA H6D2	2022	Class 1 and 10	buildings - Ener	gy efficiency - Applicatio	n of Part H6							
BCA J5D5	2022	Energy efficiency - Building sealing - Windows and doors										
NCC A5G1	JCC A5G1 2022 Governing re			uirements - Documentation of design and construction - Suitability								
NATSPEC GEN 0	06	Product specify	ing and substitut	ion								
NATSPEC GEN 0	12	Door hardware	scheduling									
NATSPEC GEN 0	24	Using NATSPE	C selections sch	edules								
NATSPECTR 01		Specifying ESD) 	and all an oral based of	a of land offer a of							
EN ISO 10140	2040	ACOUSTICS - Lab	oratory measure	ment or sound insulatio	n or building eler	nents						
EN 150 10140-2	2010	weasureme	ent of all porne so	Junu Insulation								