

## 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](http://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:

- 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. Raven is a draft committee contributor to Australian Standards for door and window sealing.

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](http://acumen.architecture.com.au), the Australian Institute of Architects' practice advisory subscription service, for notes on the following:

- 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. Our leading brands comprise RAVEN Door & Window Sealing Systems, CS Cavity Sliders, DTAC tactiles and stair edging solutions.

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 where appropriate.

It is the designer's responsibility to select 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](http://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 AS/NZS ISO 717.1 (2004).

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](http://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:

- Al: 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.
- PE: Painted Polyester Enamel finish (special order and extra cost).
- PVC: Polyvinyl Chloride.
- Si: Silicone Rubber.
- TPE: Thermoplastic Elastomer.

Edit the **Abbreviations** 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 sure 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.

Raven's world class testing facility means that we are constantly developing new ways to respond to the rapid advances in the building industry. 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, or as documented.

- Anodising thickness:
  - . Perimeter seal extrusions: Minimum 15 µm.
  - . Threshold plates and threshold plate seals: Minimum 25 µm.

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 where exposed to sunlight.
- Self-extinguishing grade.
- Antimicrobial additive.

Available on selected extrusions. Consult RAVEN 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 where 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) where 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 style 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 handed to the door by the installer in the factory or retrofit installations to the fitting instruction. Perimeter frame seals are supplied ex-stock in single door sets and double door sets to suit most openings. Stock single lengths are also available for non-standard 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 where 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**

Requirement: [complete/delete]

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 cell 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, and 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 where 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 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.

**Sealing System Duty Level guide**

SYSTEM DUTY LEVEL	Building/Room type	Suggested sealing systems
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		Single door	Double doors
<b>LIGHT DUTY</b> (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
<b>MEDIUM DUTY</b> (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 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 theatres	RP78Si + RP8Si  RP94Si + RP127Si  RP10Si + RP38Si	RP78Si + RP8Si + RP71Si  RP94Si + RP127Si + RP16Si  RP10Si + RP126Si + RP16Si
<b>HEAVY DUTY</b> (Heavy Commercial / Public / Industrial)  Generally used in heavy pedestrian and wheeled traffic areas, such as Class 5 to 10 buildings.	Airports Court rooms Delivery suites Factories 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	RP10Si + RP38Si  RP87Si + RP70Si  RP24Si + RP70Si	RP10Si + RP38Si + RP16Si  RP87Si + RP70Si + RP16Si  RP24Si + RP70Si + RP37

## 4.2 NOISE – ACOUSTIC

Consult the Noise - Acoustic section of the RAVEN Catalogue. Coordinate the door details with the Door Schedule to your office documentation policy. Refer to the RAVEN website for updated systems.

### R<sub>w</sub> 30 to R<sub>w</sub> 33 acoustic sealing system schedule

R <sub>w</sub>	Raven	Refer to	Door	System	Door No.
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	acoustic sealing systems	the categories in the Raven Acoustic Sealing System Catalogue	Hinge	Configuration	Thickness (mm)	Duty level	
30	RP78Si + RP8Si	R <sub>w</sub> 30 to R <sub>w</sub> 33 Acoustic Sealing Systems	Butt	Single	37	M	
	RP78Si + RP35Si		Butt	Single	35	M	
	RP10+ RP99Si		Butt	Single	37	H	
	RP10Si + RP8Si		Butt	Single	40	M	
	RP94Si + RP8Si		Butt	Single	46	M	
	RP94Si + RP99Si		Butt	Single	46	M	
	RP10Si + RP126Si + RP16Si		Butt	Double	45	H	
	RP10Si + RP128Si + RP71Si		Butt	Double	45	H	
	RP24 + RP38 + RP71		Butt	Double	45	H	
	RP24Si + RP38Si + RP16Si		Butt	Double	45	H	
	RP44Si + RP127Si + RP71Si		Butt	Double	45	M	
	RP84Si + RP126Si + RP16Si		Butt	Double	45	H	
	RP84Si + RP128Si + RP71Si		Butt	Double	45	H	
	RP84Si + RP8Si + RP71		Butt	Double	45	M	
	RP87HSi + RP126Si + RP16Si		Butt	Double	45	H	
31	RP120 + RP8Si		Butt	Single	44	M	
	RP84Si + RP127Si + RP71Si		Butt	Double	45	H	
32	RP10 + RP99Si		Butt	Single	46	H	
	RP10 +		Butt	Single	46	H	

R <sub>w</sub>	Raven acoustic sealing systems	Refer to the categories in the Raven Acoustic Sealing System Catalogue	Door			System Duty level	Door No.
			Hinge	Configuration	Thickness (mm)		
	RP99Si						
	RP10 + RP99Si + RP16Si		Butt	Double	46	H	
	RP10 + RP99Si + RP71Si		Butt	Double	46	H	
	RP10 + RP99Si + RP85		Butt	Double	46	H	
	RP24 + RP38		Butt	Single	46	H	
	RP24 + RP70		Butt	Single	46	H	
	RP47Si + RP3		Butt	Single	46	H	
	RP47Si + RP70		Butt	Single	46	H	
	RP93Si + RP99Si		Butt	Single	44	M	
	RP120 + RP3		Butt	Single	44	M	
	RP10Si + RP127Si		Butt	Single	48	H	
33*	RP78Si + RP8Si		Butt	Single	40	M	

Note: (\*) Door Assembly R<sub>w</sub> ratings above R<sub>w</sub>32 require acoustically constructed door leaves.

R<sub>w</sub> 34 to R<sub>w</sub> 40 acoustic sealing system schedule

R <sub>w</sub>	Raven acoustic sealing systems	Refer to the categories in the Raven Acoustic Sealing System Catalogue	Door			System Duty level	Door No.
			Hinge	Configuration	Thickness (mm)		
36*	RP78Si + RP124 + RP8Si	R <sub>w</sub> 34 to R <sub>w</sub> 40 Acoustic Sealing System	Butt	Single	35	M	
	RP120 + RP520 + RP8Si + RP99Si		Butt	Single	44	M	
	RP10Si +		Butt	Single	68	H	

R <sub>w</sub>	Raven acoustic sealing systems	Refer to the categories in the Raven Acoustic Sealing System Catalogue	Door			System Duty level	Door No.
			Hinge	Configuration	Thickness (mm)		
	RP127Si						
37*	RP78Si + RP8Si		Butt	Single	35	M	
	RP10Si + RP128Si		Butt	Single	35	H	
	RP24Si + RP38Si		Butt	Single	35	H	
	RP120 + RP520 + RP38 + RP99Si		Butt	Single	44	M	
	RP24Si + RP127Si + RP126Si		Butt	Single	48	H	
38*	RP120 + RP127Si		Butt	Single	48	M	
40*	RP124 + RP127Si		Butt	Single	48	M	

Note: (\*) Door Assembly R<sub>w</sub> ratings above R<sub>w</sub>32 require acoustically constructed door leaves.

R<sub>w</sub> 41 to R<sub>w</sub> 50 acoustic sealing system schedule

R <sub>w</sub>	Raven acoustic sealing systems	Refer to the categories in the Raven Acoustic Sealing System Catalogue	Door			System Duty level	Door No.
			Hinge	Configuration	Thickness (mm)		
42*	RP24Si + RP124 + RP8Si + RP38Si	R <sub>w</sub> 41 to R <sub>w</sub> 50 Acoustic Sealing Systems	Butt	Single	35	H	
	RP87Si + RP124 + RP8Si + RP128Si		Butt	Single	35	H	
	RP10Si + RP124 + RP127Si		Butt	Single	68	H	
	RP24Si + RP127Si + RP126Si		Butt	Single	68	H	
43*	RP78Si + RP124 +		Butt	Single	35	M	

R <sub>w</sub>	Raven acoustic sealing systems	Refer to the categories in the Raven Acoustic Sealing System Catalogue	Door			System Duty level	Door No.
			Hinge	Configuration	Thickness (mm)		
	RP8Si + RP128Si						
	RP10Si + RP124 + RP8Si + RP128Si		Butt	Single	35	M	
	RP10Si + RP124 + RP127Si		Butt	Single	48	M	
45*	RP24Si + RP124 + RP127Si + RP126Si		Butt	Single	68	M	
46*	RP85 + RP124 + RP127Si + RP126Si		Butt	Single	68	M	

Note: (\*) Door Assembly R<sub>w</sub> ratings above R<sub>w</sub>32 require acoustically constructed door leaves.

## Other acoustic sealing system schedule

R <sub>w</sub>	Raven acoustic sealing systems	Refer to the categories in the Raven Architectural Catalogue	Door			System Duty level	Door No.
			Hinge	Configuration	Thickness (mm)		
30	RP47Si	Noise-Acoustic-Sealing System (Bulkhead, Interconnecting, Sliding, Pivot)	Broad butt	Single	35	H	
	RP118Si + RP71Si + RP117Si		Broad butt	Double	45	M	
31	RP84Si + RP51F + RP52F		Sliding	Single	35	M	
	RP93Si + RP71Si + RP97Si		Broad butt	Double	45	M	
	RP118Si + RP8Si + RP16Si		Broad butt	Double	45	M	
32	RP47Si		Broad butt	Single	44	H	
34*	RP10Si + RP51F + RP52F		Sliding	Single	35	M	
35*	RP71Si		Pivot	Single	50	M	

R <sub>w</sub>	Raven acoustic sealing systems	Refer to the categories in the Raven Architectural Catalogue	Door			System Duty level	Door No.
			Hinge	Configuration	Thickness (mm)		
	+ RP71Si + RP96						
38*	RP94Si + RP8Si		Broad butt	Interconnecting	40	M	

Note: (\*) Door Assembly R<sub>w</sub> ratings above R<sub>w</sub>32 require acoustically constructed door leaves.

### 4.3 SMOKE DOORS

Medium temperature smoke, 200°C for 30 minutes BCA (2022) Spec 12. Consult the Fire and Smoke section of the RAVEN catalogue for selection guidance. Refer to the RAVEN website for updated systems.

Smoke and acoustic seals tested on solid core doors meet the requirements for BCA (2022) Spec 12. These 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) ≤ 25 m³/h @ 25 Pa for single doors and ≤ 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 smoke sealing system	Refer to the categories in the Raven Architectural Catalogue	Door			System Duty level	Door No.
		Hinge	Configuration	Thickness (mm)		
RP120 + RP8Si	Smoke Door Sealing Systems (Tested & Certified on Solid Core Doors)	Butt	Single	35+	M	
RP78Si + RP8Si		Butt	Single	35+	M	
RP78Si + RP38Si		Butt	Single	35+	M	
RP78Si + RP35Si		Butt	Single	35+	M	
RP78Si + RP128Si		Butt	Single	35+	M	
RP124 + RP126Si		Butt	Single	35+	M	
RP124 + RP127Si		Butt	Single	40+	M	
RP23 + RP8Si		Butt	Single	35+	M	
RP24Si + RP38Si		Butt	Single	40+	H	
RP87Si + RP126Si		Butt	Single	40+	H	
RP78Si + RP38Si + RP16Si		Butt	Double	40+	M	
RP120 + RP8Si + RP120		Butt	Double	40+	M	
RP150 + RP8Si + RP150		Butt	Double	40+	M	
RP124 +		Butt	Double	40+	M	

RAVEN smoke sealing system	Refer to the categories in the Raven Architectural Catalogue	Door			System Duty level	Door No.
		Hinge	Configuration	Thickness (mm)		
RP35Si + RP71Si						

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

These systems are tested to AS 1530.7 (2007). They may be used where 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. Refer to the RAVEN website for updated systems.

AS 1530.7 (2007)  $\leq 25 \text{ m}^3/\text{h}$  @ 25 Pa for single doors and  $\leq 40 \text{ m}^3/\text{h}$  @ 25 Pa for double doors when exposed to 200°C for 30 minutes in accordance with AS 6905 (2007).

Intumescent seals for developed fires above 600°C and hot smoke above 200°C.

RAVEN smoke sealing system	Refer to the categories in the Raven Architectural Catalogue	Door			System Duty level	Door No.
		Hinge	Configuration	Thickness (mm)		
RP120 + RP8Si	Smoke Door Sealing	Butt	Single	35+	M	
RP670 + RP8Si	Systems (Fire Engineered – Performance Solutions)	Butt	Single	35+	M	
RP124 + RP35Si		Butt	Single	35+	M	
RP76Si + RP8Si		Butt	Single	35+	M	
RP78Si + RP38Si + RP16Si		Butt	Double	46+	M	
RP124 + RP8Si + RP16Si		Butt	Double	40+	M	
RP150 + RP126Si + RP150		Butt	Double	40+	M	
RP130Si + RP129Si + RP130Si + RP115 threshold plate		Pivot double acting	Double	40+	H	

#### 4.4 FIRE DOORS

Consult the Fire and Smoke section of the RAVEN Catalogue. Refer to the RAVEN website for updated systems.

#### Combined smoke and acoustic sealing system schedule

RAVEN smoke sealing system	Refer to the categories in the Raven Architectural Catalogue	Door			System Duty level	Door No.
		FRL (Fire Rating)	Configuration	Thickness (mm)		
RP120 +	Smoke	-/120/30	Single/Double	38	M	

RAVEN smoke sealing system	Refer to the categories in the Raven Architectural Catalogue	Door			System Duty level	Door No.
		FRL (Fire Rating)	Configuration	Thickness (mm)		
RP8Si	Sealing	-/180/30		47		
RP10Si + RP8Si	Systems (Fire Rated 'Labelled' Doors)	-/120/30	Single/Double	38	M	
		-/240/30		47		
RP24Si + RP38Si		-/120/30	Single/Double	47	H	
RP78Si + RP8Si		-/120/30	Single/Double	38	M	
		-/240/30		47		
RP78Si + RP35Si		-/120/30	Single/Double	38	M	
		-/240/30		47		
RP78Si + RP38Si		-/120/30	Single/Double	38	M	
		-/240/30		47		
RP78Si + RP127Si		Up to - /120/30	Single/Double	47	M	
RP93Si + RP99Si		Up to - /240/30	Single/Double	47	M	
RP87Si + RP128Si		-/120/30	Single/Double	38	H	
		-/120/30		47		
RP94Si + RP126Si		-/120/30	Single/Double	38	M	

## Threshold at doorways schedule

RAVEN threshold (plates/ramps and plate seals)	NCC cited AS 1428.1 (2009) (Design for access and mobility)	Durability ANSI/BHMA A156.21 (2019) designation	Fire door		System Duty level	Door No.
			FRL (fire resistance level)	Configuration		
RP4b	-	J33100	Up to - /240/30	Single/Double	M	
RP13	Yes	J30300	Up to - /240/30	Single/Double	H	
RP19	-	-	Up to - /240/30	Single/Double	H	
RP27	-	J33100	Up to - /240/30	Single/Double	H	
RP28	-	J32130	Up to - /240/30	Single/Double	H	
RP29	-	J32130	Up to - /240/30	Single/Double	H	
RP66	Yes	J32140	Up to - /240/30	Single/Double	H	
RP77	Yes	J38130	Up to - /240/30	Single/Double	H	
RP82	Yes	J32300	Up to - /240/30	Single/Double	H	
RP91	-	J30300	Up to - /240/30	Single/Double	H	
RP95	Yes	J32300	Up to -	Single/Double	H	

RAVEN threshold (plates/ramps and plate seals)	NCC cited AS 1428.1 (2009) (Design for access and mobility)	Durability ANSI/BHMA A156.21 (2019) designation	Fire door		System Duty level	Door No.
			FRL (fire resistance level)	Configuration		
			/240/30			
RP96	Yes	J32300	Up to - /240/30	Single/Double	H	
RP97Si	Yes	J38130	Up to - /240/30	Single/Double	H	
RP98	Yes	J38130	Up to - /240/30	Single/Double	H	
RP109Si	-	J36100	Up to - /240/30	Single/Double	H	
RP110Si	-	J36100	Up to - /240/30	Single/Double	H	
RP111Si	-	J36100	Up to - /240/30	Single/Double	H	
RP112	Yes	J38130	Up to - /240/30	Single/Double	M	
RP115	Yes	J32130	Up to - /240/30	Single/Double	H	
RP116	Yes	J32130	Up to - /240/30	Single/Double	H	
RP117Si	-	J36100	Up to - /240/30	Single/Double	H	
RP137	Yes	J32130	Up to - /240/30	Single/Double	H	
RP138	Yes	J38130	Up to - /240/30	Single/Double	H	
RP151	Yes	J32130	Up to - /180/30	Single/Double	H	

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 Bushfire – Sealing systems in the RAVEN Catalogue for selection guidance. Raven seals are multi-purpose and can be used for new and retrofit work. 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 Systems (Bushfire Prone Areas)	Butt hinged single	BAL - FZ	
RP78Si + RP51Si + RP16Si + RP82		Butt hinged single and double	BAL - 40	
RP600 series - Weather Stripping		Folding doors and windows to AS 3959 (2018)	BAL - 40	

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.
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 where 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 where required. Door bottom seal RP114 or RP51Si (if bottom seal not supplied with door). Option: Threshold plate RP91	
BAL - 40	RAVEN seals with a flammability index $\leq 5$ 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 where 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 where required. Door bottom	

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.
		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 Catalogue for selection guidance.

##### 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 weather sealing systems	Refer to the categories in the Raven Architectural Catalogue	Door		System Duty level	Door No
		Hinge	Configuration		
RP78Si + RP4 + RP16Si	Weather and Energy Sealing System (Butt Hinged Doors)	Butt	Timber single and double	M	
RP10 + RP8Si + RP98		Butt	Aluminium - single	H	
RP84Si + RP89 + RP77		Butt	Aluminium - single	M	
RP74F + RP74F + RP52F + RP82		Pivot	Timber single and double	H	
RP130Si + RP129Si + RP130Si + RP115		Pivot	Timber single and double	H	
RP89 + RP89 + RP116		Pivot	Aluminium - single and double	M	
RP74F + RP74F + RP19		Pivot	Aluminium - single and double	H	
RP51F + RP2a		Sliding	Timber	H	
RP51F + RP74F		Sliding	Timber	H	
RP73 + RP17b		Sliding	Timber	L	
RP41 + RP4T + RP91		Panel lift garage door	Metal	H	
RP57 + RP4T + RP91		Roll-up garage door	Metal	H	
RP500 Series Weather Stripping		Folding doors and windows	Timber	H	
RP500 +		Folding doors	Timber	H	

RAVEN weather sealing systems	Refer to the categories in the Raven Architectural Catalogue	Door		System Duty level	Door No
		Hinge	Configuration		
RP550 + RP73		and windows			
RP600 Series Weather Stripping		Folding doors and windows	Timber	H	

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 Threshold Plate Seals in the RAVEN Catalogue for selection guidance.

##### 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.

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

RAVEN sealing system	Refer to the categories in the Raven Architectural Catalogue	Door		System Duty level	Door No.
		Hinge	Configuration		
RP130Si + RP96					

#### 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.

##### Anti-finger Jam Seals schedule

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

##### REFERENCED DOCUMENTS

The following documents are incorporated into this worksection by reference:

AS ISO 717		Acoustics - Rating of sound insulation in buildings and of building elements
AS/NZS ISO 717.1	2004	Airborne sound insulation
AS 1191	2002	Acoustics - Method for laboratory measurement of airborne sound transmission insulation of building elements
AS 1428		Design for access and mobility
AS 1428.1	2009	General requirements for access - New building work
AS 1530		Methods for fire tests on building materials, components and structures
AS 1530.2	1993	Test for flammability of materials
AS 1530.4	2014	Fire-resistance tests for elements of construction
AS 1530.7	2007	Smoke control assemblies - Ambient and medium temperature leakage test 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 test methods
ANSI/BHMA A156.21	2019	Standard for thresholds
SAE J 369	2019	Flammability of polymeric interior materials - Horizontal test method
EN 1634		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 - 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 behaviour of interior materials
ISO 9001	2015	Quality management systems - Requirements
The following documents are mentioned only in the Guidance text:		
AS 1428		Design for access and mobility

AS 1428.1	2001	General requirements for access - New building work
AS 1428.1	2021	General requirements for access - New building work
BCA H6D2	2022	Class 1 and 10 buildings - Energy efficiency - Application of Part H6
BCA J5D5	2022	Energy efficiency - Building sealing - Windows and doors
NCC A5G1	2022	Governing requirements - Documentation of design and construction - Suitability
NATSPEC GEN 006		Product specifying and substitution
NATSPEC GEN 012		Door hardware scheduling
NATSPEC GEN 024		Using NATSPEC selections schedules
NATSPEC TR 01		Specifying ESD
EN ISO 10140		Acoustics - Laboratory measurement of sound insulation of building elements
EN ISO 10140-2	2010	Measurement of airborne sound insulation