

<b>0194P RAVEN DOOR SEALS AND WINDOW SEALS</b>
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**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.

**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](http://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:

- *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 BCA 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 \(Architectural Door Hardware Association\)](http://adha.com.au) 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 polythene 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 the NATSPEC TECHreport TR 01 on specifying ESD.

**1 GENERAL**

Raven is one of the most trusted brands in the building hardware industry providing innovative, tested and certified door and window sealing systems.

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.

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.

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

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

- Quality certified to ISO 9001.
- Ecospecifier Global certified.

Tested to Australian and New Zealand, UL, ANSI, BHMA, European, British and ISO standards.

**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 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.

The construction requirements for the Bushfire Attack Level (BAL) in AS 3959 are based on the site's level of exposure. There are six categories: 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 #116 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.

Acoustic applications: Tested to AS 1191 or EN ISO 10140-2 and rated to AS/NZS ISO 717.1.

Fire door assemblies: To AS 1530.4 and AS 1905.1.

Smoke door assemblies: To BCA Spec C3.4, tested to AS 1530.7 and rated to AS 6905, and tested to EN 1634-3.

Combined fire and smoke door assemblies: To BCA Spec C3.4, AS 1530.4, AS 1905.1, AS 1530.7 and AS 3959 for weather seals providing BAL FZ.

Buildings in bushfire prone areas: To AS 3959:

- BAL-40: Flame retardant silicon, PVC and TPE weather seals with a Flammability Index not more than 5 when tested to AS 1530.2.
- BAL-FZ: Approved door seals for use with fire doorsets tested to AS 1530.4.

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

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

Threshold plates: To AS 1428.1.

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 at this stage.

## 1.6 MANUFACTURER'S DOCUMENTS

### Technical manuals

Website: [www.raven.com.au/catalogue](http://www.raven.com.au/catalogue).

Click on the link to access RAVEN architectural door and window product catalogue #116 and CAD file downloads including product fitting instructions. 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.
- C/A: Clear anodised (15 µm for perimeter seals. 25 µm for threshold plates).
- B/A: Bronze anodised. (15 µm for 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: Thermo Plastic 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

Particular samples required: [\[complete/delete\]](#)

Nominate any items required for approval by the contract administrator.

## 2 PRODUCTS

### 2.1 GENERAL

#### Product substitution

Other products: Conform to PRODUCTS, **GENERAL, 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 to 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.

The *0171 General requirements* clause sets out the submissions required if the contractor proposes alternative products as a variation to the contract. Refer also to NATSPEC TECHnote GEN 006 for more information on proprietary specification.

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.

### 2.2 MATERIALS

#### Al

Material: Commercial grade alloy B6060 T5 or T6 hardness.

Finish to visible extrusions:

- Satin clear or medium bronze 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.
- 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.
- Service temperature - 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 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, and ISO 3795.
- 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 polythene 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

Required: [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 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 SELECTING A SEALING SYSTEM DUTY LEVEL

Achieving fitness for purpose.

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

Raven's 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 and are fit for purpose in accordance with 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). (H) Duty Level system products will consist of thicker profiles and more robust materials than those listed in the other duty levels for (L) or (M). Ensure to choose a solution appropriate to the application and environment.

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	
		Single door	Double doors
<b>L</b> LIGHT DUTY (Residential)	Apartments Bedrooms/sleeping areas Guest house rooms Living areas	RP120 + RP60  RP113 + RP3	RP120 + RP123 + RP510  RP520 + RP4 + RP150
<b>M</b> MEDIUM DUTY (Commercial / Light industrial)	Art studios Auditoriums Bars and lounges Board rooms Boarding house rooms Cafés Carparks Cinemas/home theatres Classrooms Computer rooms	RP78Si + RP8Si  RP94Si + RP127Si  RP10Si + RP38Si	RP78 + RP8Si + RP71Si  RP94Si + RP127Si + RP16Si  RP10Si + RP126Si +

	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		RP16Si
<b>H</b> HEAVY DUTY (Heavy Commercial / Public / Industrial)	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 #116. 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 acoustic sealing systems	Door			System Duty level	Door No.
		Hinge	Configuration	Thickness (mm)		
30	RP78Si + RP8Si	Butt	Single	35	M	
	RP78Si + RP35Si	Butt	Single	35	M	
	RP10 / RP10Si + RP99Si	Butt	Single	35	H	
	RP10Si + RP8Si	Butt	Single	40	M	
	RP94Si + RP8Si	Butt	Single	44	M	
	RP94Si + RP99Si	Butt	Single	44	M	
	RP10Si + RP126Si + RP16Si	Butt	Double	45	H	
	RP10Si +	Butt	Double	45	H	

R <sub>w</sub>	Raven	Door			System Duty	Door No.
		RP128Si + RP71Si				
	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 / RP10Si + RP99Si	Butt	Single	44	H	
	RP10 / RP10Si + RP99Si	Butt	Single	44	H	
	RP10 / RP10Si + RP99Si + RP16Si	Butt	Double	44	H	
	RP10 / RP10Si + RP99Si + RP71Si	Butt	Double	44	H	
	RP10 / RP10Si + RP99Si + RP85	Butt	Double	44	H	
	RP24 + RP38	Butt	Single	44	H	
	RP24 + RP70	Butt	Single	44	H	
	RP47Si + RP38	Butt	Single	44	H	
	RP47Si + RP70	Butt	Single	44	H	
	RP93Si + RP99Si	Butt	Single	44	M	



R <sub>w</sub>	Raven	Door			System Duty	Door No.
		Butt	Configuration	Thickness (mm)		
	RP120 + RP38	Butt	Single	44	M	
	RP10Si + RP127Si	Butt	Single	48	H	
33*	RP78Si + RP8Si	Butt	Single	40	M	
	RP530 + RP38	Butt	Single	50	M	
	RP530 + RP70	Butt	Single	50	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	Door			System Duty level	Door No.
		Hinge	Configuration	Thickness (mm)		
34*	RP78Si + RP530 + RP70	Butt	Single	50	M	
36*	RP78Si + RP124 + RP8Si	Butt	Single	35	M	
	RP120 + RP520 + RP8Si + RP99Si	Butt	Single	44	M	
	RP10Si + RP127Si	Butt	Single	68	H	
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	
	RP78Si + RP530 + RP70 + RP117Si	Butt	Single	53	M	
39*	RP78Si + RP120 + RP70	Butt	Single	53	M	
40*	RP124 + RP127Si	Butt	Single	48	M	

R <sub>w</sub>	Raven	Door	System Duty	Door No.
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	Door			System Duty level	Door No.
		Hinge	Configuration	Thickness (mm)		
41*	RP78Si + RP530 + RP38 + RP16Si	Butt	Double	54	M	
42*	RP10Si + RP124 + RP8Si + RP128Si	Butt	Single	35	H	
	RP24Si + RP124 + RP8Si + RP38Si	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 + RP8Si + RP128Si	Butt	Single	35	M	
	RP10Si + RP124 + RP8Si + RP128Si	Butt	Single	35	H	
	RP10Si + RP124 + RP127Si	Butt	Single	48	H	
45*	RP10Si + RP124 + RP127Si + RP126Si	Butt	Single	48	H	
	RP78Si + RP120 + RP70 + RP120 + RP71 + RP393Si	Butt	Double	54	M	
	RP24Si + RP124 + RP127Si + RP126Si	Butt	Single	68	H	

46*	RP78Si + RP120 + RP2004F + RP8Si	Butt	Double	60	M	
	RP85 + RP124 + RP127Si + RP126Si	Butt	Single	68	H	
47*	RP78Si + RP120 + RP70 + RP71 + RP393Si	Butt	Single	54	M	
49*	RP78Si + RP120 + RP2004F + RP8Si + RP71 + RP393Si	Butt	Double	60	M	
Note: (*) Door Assembly $R_w$ ratings above $R_w32$ require acoustically constructed door leaves.						

## Other acoustic sealing system schedule

$R_w$	Raven acoustic sealing systems	Door			System Duty level	Door No.
		Hinge	Configuration	Thickness (mm)		
30	RP47Si	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 + RP71Si + RP96	Pivot	Single	50	M	
38*	RP94Si + RP8Si	Broad butt	Interconnecting	40	M	
44*	RP530 + RP70	Broad butt	Interconnecting	50	M	
52*	RP78Si + RP120 + RP70 + RP71 + RP393Si	Broad butt	Interconnecting	54	M	
Note: (*) Door Assembly $R_w$ ratings above $R_w32$ require acoustically constructed door leaves.						

### 4.3 SMOKE DOORS

Medium temperature smoke. 200°C for 30 minutes (BCA Spec C3.4). Consult the Fire and Smoke section of the RAVEN catalogue #116 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 Spec C3.4. These systems meet the leakage rates specified in AS 6905 when the door assembly is installed to BCA Spec C3.4.

AS 1530.7  $\leq 25\text{m}^3/\text{h}$  @ 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.

#### Smoke sealing system schedule

RAVEN smoke sealing system	Door				System Duty level	Door No.
	Seal installation type	Hinge	Configuration	Thickness (mm)		
RP120 + RP8Si	Mortised	Butt	Single	35+	M	
RP120 + RP35Si	Face fixed	Butt	Single	35+	M	
RP150 + RP8Si	Face fixed	Butt	Single	35+	M	
RP78Si + RP8Si	Mortised	Butt	Single	35+	M	
RP78Si + RP38Si	Face fixed	Butt	Single	35+	M	
RP78Si + RP35Si	Face fixed	Butt	Single	35+	M	
RP78Si + RP128Si	Face fixed	Butt	Single	35+	M	
RP124 + RP128Si	Face fixed	Butt	Single	35+	M	
RP124 + RP126Si	Face fixed	Butt	Single	35+	M	
RP124 + RP127Si	Face fixed	Butt	Single	40+	M	
RP23 + RP8Si	Mortised	Butt	Single	35+	M	
RP24Si + RP38Si	Semi mortised	Butt	Single	40+	H	
RP87Si + RP126Si	Semi mortised	Butt	Single	40+	H	
RP78Si + RP38Si + RP16Si	Semi mortised	Butt	Double	40+	M	
RP120 + RP8Si + RP120	In meeting stile rebate	Butt	Double	40+	M	
RP150 + RP8Si + RP150	In meeting stile rebate	Butt	Double	40+	M	
RP124 + RP35Si + RP71Si	Face fixed	Butt	Double	40+	M	
RP130Si + RP129F +	On meeting stile	Pivot double acting	Double	40+	H	

RAVEN	Door				System	Door No.
RP130Si + RP115 threshold plate						

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

These systems are tested to AS 1530.7. 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 for to BCA Spec C3.4. Refer to the RAVEN website for updated systems.

AS 1530.7  $\leq 25 \text{ m}^3/\text{h}$  @ 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.

RAVEN smoke sealing system	Door				System Duty level	Door No.
	Seal installation type	Hinge	Configuration	Thickness (mm)		
RP120 + RP8Si	Mortised	Butt	Single	35+	M	
RP670 + RP8Si	Mortised	Butt	Single	35+	M	
RP124 + RP35Si	Face fixed	Butt	Single	35+	M	
RP76Si + RP8Si	Mortised	Butt	Single	35+	M	
RP78Si + RP38Si + RP16Si	Semi mortised	Butt	Double	47+	M	
RP124 + RP8Si + RP16Si	-	Butt	Double	40+	M	
RP150 + RP126Si + RP150	In meeting stile rebate	Butt	Double	40+	M	
RP130Si + RP129F + RP130Si + RP115 threshold plate	In meeting stile	Pivot double acting	Double	40+	H	
RP130Si + RP129Si + RP130Si + RP115 threshold plate	In meeting stile	Pivot double acting	Double	40+	H	

#### 4.4 FIRE DOORS

Intumescent seals for developed fires above 600°C and hot smoke above 200°C (AS 1530.4). Consult the Fire and Smoke section of the RAVEN Catalogue #116. Refer to the RAVEN website for updated systems.

#### Combined smoke and acoustic sealing system schedule

RAVEN smoke sealing	Fire door				System Duty level	Door No.
	Seal installation	FRL (Fire)	Configuration	Thickness (mm)		

system	type	Rating)				
RP120 + RP8Si	Mortised	Up to - /240/60	Single/Double	38 and 47	M	
RP10Si + RP8Si	Mortised	Up to - /240/60	Single/Double	38 and 47	M	
RP24Si + RP38Si	Semi Mortised	Up to - /240/30	Single/Double	47	H	
RP78Si + RP8Si	Mortised	Up to - /240/60	Single/Double	38 and 47	M	
RP78Si + RP35Si	Face Fixed	Up to - /240/60	Single/Double	38 and 47	M	
RP78Si + RP38Si	Face Fixed	Up to - /240/60	Single/Double	38 and 47	M	
RP78Si + RP127Si	Mortised	Up to - /240/60	Single/Double	47	M	
RP93Si + RP99Si	Fully Mortised	Up to - /240/30	Single/Double	47	M	
RP87Si + RP128Si	-	Up to - /240/30	Single/Double	38 and 47	H	
RP94Si + RP126Si	Semi Mortised	Up to - /240/30	Single/Double	47	M	

#### Threshold at doorways schedule

RAVEN threshold (plates/ramps and plate seals)	AS 1428.1 compliant	Durability ANSI/BHMA A156.21 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	
RP18	-	J34370	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 - /240/30	Single/Double	H	
RP96	Yes	J32300	Up to -	Single/Double	H	

RAVEN	AS 1428.1	Durability	Fire door		System	Door
			/240/30			
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	

#### 4.5 BUSHFIRE PRONE AREAS

Consult Bushfire – Sealing systems in the RAVEN Catalogue #116 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. Determine if the information is suitable for your project.

Weather and energy sealing in bushfire prone areas: Door sets to AS 3959.

##### Door sealing system schedule

RAVEN sealing system	Door configuration Doorsets to AS 3959 BAL requirements	BAL	Door No.
RP78Si + RP4FZ	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	BAL - 40	
RP41 + RP75 + RP114 + RP91	Panel lift garage door	BAL - FZ	
RP75 + RP75	Sliding garage doors	BAL - FZ	

##### Garage door sealing system schedule

Bushfire Attack Level (BAL) to AS 3959	Side hung (ember attack) - Perimeter and door bottom seals	Garage doors (ember attack) - roller and sectional overhead doors	Door No.
BAL - 12.5 - 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,	

Bushfire Attack Level (BAL) to AS 3959	Side hung (ember attack) - Perimeter and door bottom seals	Garage doors (ember attack) - roller and sectional overhead doors	Door No.
		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	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 RP114 or RP51Si (if bottom seal not supplied with door). Option: Threshold plate RP91	
BAL - FZ	RAVEN seals tested to AS 1530.4 used with fire-resisting doorsets to AS 1905.1 and BCA Spec C3.4	RAVEN Nylon Brush Strip seal includes: RP2a, RP2b, RP41, RP49, RP50, RP51F, 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.	

#### 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 #116 for selection guidance.

##### Weather sealing system schedule

Weather sealing systems to BCA J3.4 for class 2 to 9 buildings and BCA 3.12.3.3 for class 1 and class 10 buildings.

RAVEN weather sealing systems	Door		System Duty level	Door No
	Hinge	Configuration		
RP113 + RP54	Butt	Timber single	M	
RP78Si + RP4 + RP16Si	Butt	Timber single and double	M	
RP10 + RP8Si + RP98	Butt	Single aluminium	H	
RP84Si + RP89 + RP77	Butt	Single	M	



RAVEN weather	Door		System Duty	Door No
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	M	
RP74F + RP74F + RP19	Pivot	Aluminium	H	
RP2a + RP52F	Sliding	Timber	H	
RP74F + RP74F	Sliding	Timber	H	
RP73 + RP17b	Sliding	Timber	L	
RP41 + RP114 + RP91	Panel lift garage door	Metal	H	
RP57 + RP114 + RP91	Roll-up garage door	Metal	H	
RP500 Series Weather Stripping	Folding doors and windows	Timber	H	
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 when tested to AS 4420.1.

#### 4.7 ACCESS AND MOBILITY

Consult Threshold Plate Seals in the RAVEN Catalogue #116 for selection guidance.

##### Application - thresholds at doorways

RAVEN threshold plates: [complete/delete]

Specify the RAVEN product required at the prompt.

#### 4.8 HEALTH AND AGED CARE

##### Acoustic and smoke sealing system schedule

Sealing systems designed for aged and health care NCC Class 3, 8 and 9 Buildings.

RAVEN sealing system	Door			System Duty level	Door No.
	Door seal installation type	Hinge	Configuration		
RP24Si + RP38Si	RP38Si Semi mortised or face fix	Butt	Timber single	H	
RP78HSi + RP8Si	RP8Si Mortised	Butt	Timber single	M	
RP87HSi + RP126Si	RP126Si Semi mortised or face fix	Butt	Timber Single	H	
RP87HSi + RP128Si	RP128Si Face fix	Butt	Single	H	
RP84Si + RP126Si + RP71Si	RP126Si Semi mortised or Face Fix	Butt	Timber single and double	M	
RP124 + RP127Si + RP71Si	RP127Si Mortised	Butt	Timber single and double	M	

RAVEN sealing	Door			System Duty	Door No.
RP71Si + RP71Si + RP71Si + RP96	RP71Si x 2 around full perimeter	Pivot	Timber single and double	M	
RP130Si + RP52F	RP52F Mortised into door Bottom	Pivot	Timber single and double	H	
RP130Si + RP129F + RP130Si	RP130Si x 2 around perimeter, RP129F on door bottom	Pivot	Timber single and double	H	
RP130Si + RP129Si + RP130Si + RP96	RP130Si x 2 around Perimeter, RP129Si on door bottom	Pivot	Timber single and double	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	2016	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 C3.4	2019	Fire resistance - Fire doors, smoke doors, fire windows and shutters
ANSI/BHMA A156.21	2019	Standard for thresholds
SAE J 369	2013	Flammability of Polymeric Interior Materials - Horizontal Test Method
EN1634		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	2010	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
<b>The following documents are mentioned only in the Guidance text:</b>		
BCA 3.12.3.3	2019	Acceptable construction - Energy efficiency - Building sealing -External windows and doors
BCA J3.4	2019	Energy efficiency - Building sealing - Windows and doors
NATSPEC GEN 006	2015	Product specifying and substitution
NATSPEC GEN 012	2011	Door hardware scheduling
NATSPEC GEN 024	2015	Using NATSPEC selections schedules
NATSPEC TR 01	2019	Specifying ESD