# FINAL\_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.

*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://www.adha.net.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.

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 TECH report TR 01 on specifying ESD.

## 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, New Zealand, UL, ANSI, BHMA, European, British and ISO standards.

### 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.

### 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-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 # 115 for information on Ember attack and BAL Ratings.

### Company contacts

#### RAVEN technical contacts

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

### 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.

### 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/NZS 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](http://www.raven.com.au/domino/raven/ravenweb.nsf/gene-v/040).

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

### Manufacturer's documents

#### Technical manuals

Website: [www.raven.com.au/catalogue](http://www.raven.com.au/domino/raven/ravenweb.nsf/html-v/catalogue2).

Click on the link to access RAVEN architectural door and window product catalogue # 115 and CAD file downloads including product fitting instructions. RAVEN fitting instructions are supplied with every product.

### 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](http://www.raven.com.au/domino/raven/ravenweb.nsf/gene-v/020).

### Submissions

#### Samples

Particular samples required:

Nominate any items required for approval by the contract administrator.

## Products

### General

#### Product substitution

Other products: Conform to PRODUCTS, **GENERAL**, **Substitutions** in *0171 General requirements*.  
  
All substitutions must be tested equivalent to the RAVEN Tested and Certified Sealing System.

Identified proprietary items: Identification of a proprietary item does not necessarily imply exclusive preference for the identified item, but indicates the necessary properties of the item. 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.
* 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.

**ACUMEN ADVICE ON SUBSTITUTIONS AND VARIATIONS**

An architect administering the contract should be aware that:

* If the contractor proposes a substitution for materials specified in the contract documents, the architect should request approval from the owner for the substitution ... If a substitution is made, the procedures set out in the contract for a variation of the works should be followed.

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

#### Product identification

General: Marked to show the following:

* Manufacturer’s identification.
* Product brand name.
* Product type.
* Quantity.
* Product reference code and batch number.
* Date of manufacture.

Edit the list to suit the project or delete if not required.

### 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 - 5oC to + 70oC.

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 - 60oC to + 230oC.

#### 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 - 40oC to + 100oC.

#### 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 - 40oC to + 70oC.

## Execution

### 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.

### Completion

#### Warranties

Required:

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.

## 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.

### Noise – acoustic

Consult the Noise - Acoustic section of the RAVEN Catalogue # 115. Coordinate the door details with the Door Schedule to your office documentation policy. Refer to the RAVEN website for updated systems.

#### Rw30 to Rw33 acoustic sealing system schedule

| Rw | Raven acoustic sealing systems | Door | | | Duty level | Door No. |
| --- | --- | --- | --- | --- | --- | --- |
| Hinge | Configuration | Thickness  (mm) |
| 30 | RP78Si + RP8Si | Butt | Single | 35 | Medium |  |
| RP78Si + RP35Si | Butt | Single | 35 | Medium |  |
| RP10 / RP10Si + RP99Si | Butt | Single | 35 | Heavy |  |
| RP10Si + RP8Si | Butt | Single | 40 | Heavy |  |
| RP94Si + RP8Si | Butt | Single | 44 | Medium |  |
| RP94Si + RP99Si | Butt | Single | 44 | Medium |  |
| RP10Si + RP126Si + RP16Si | Butt | Double | 45 | Heavy |  |
| RP10Si + RP128Si + RP71Si | Butt | Double | 45 | Heavy |  |
| RP24 + RP38 + RP71 | Butt | Double | 45 | Heavy |  |
| RP24Si + RP38Si + RP16Si | Butt | Double | 45 | Heavy |  |
| RP44Si + RP127Si + RP71Si | Butt | Double | 45 | Heavy |  |
| RP84Si + RP126Si + RP16Si | Butt | Double | 45 | Heavy |  |
| RP84Si + RP128Si + RP71Si | Butt | Double | 45 | Heavy |  |
| RP84Si + RP8Si + RP71 | Butt | Double | 45 | Heavy |  |
| RP87HSi + RP126Si + RP16Si | Butt | Double | 45 | Heavy |  |
| 31 | RP120 + RP8Si | Butt | Single | 44 | Medium |  |
| RP84Si + RP127Si + RP71Si | Butt | Double | 45 | Heavy |  |
| 32 | RP10 / RP10Si + RP99Si | Butt | Single | 44 | Heavy |  |
| RP10 / RP10Si + RP99Si | Butt | Single | 44 | Heavy |  |
| RP10 / RP10Si + RP99Si + RP16Si | Butt | Double | 44 | Heavy |  |
| RP10 / RP10Si + RP99Si + RP71Si | Butt | Double | 44 | Heavy |  |
| RP10 / RP10Si + RP99Si + RP85 | Butt | Double | 44 | Heavy |  |
| RP24 + RP38 | Butt | Single | 44 | Heavy |  |
| RP24 + RP70 | Butt | Single | 44 | Heavy |  |
| RP47Si + RP38 | Butt | Single | 44 | Heavy |  |
| RP47Si + RP70 | Butt | Single | 44 | Heavy |  |
| RP93Si + RP99Si | Butt | Single | 44 | Medium |  |
| RP120 + RP38 | Butt | Single | 44 | Medium |  |
| RP10Si + RP127Si | Butt | Single | 48 | Heavy |  |
| 33 | RP78Si + RP8Si | Butt | Single | 40 | Medium |  |
| RP530 + RP38 | Butt | Single | 50 | Medium |  |
| RP530 + RP70 | Butt | Single | 50 | Medium |  |

#### Rw34 to Rw40 acoustic sealing system schedule

| Rw | Raven acoustic sealing systems | Door | | | Duty level | Door No. |
| --- | --- | --- | --- | --- | --- | --- |
| Hinge | Configuration | Thickness  (mm) |
| 34 | RP78Si + RP530 + RP70 | Butt | Single | 50 | Medium |  |
| 36 | RP78Si + RP124 + RP8Si | Butt | Single | 35 | Medium |  |
| RP120 + RP520 + RP8Si + RP99Si | Butt | Single | 44 | Medium |  |
| RP10Si + RP127Si | Butt | Single | 68 | Heavy |  |
| 37 | RP78Si + RP8Si | Butt | Single | 35 | Medium |  |
| RP10Si + RP128Si | Butt | Single | 35 | Heavy |  |
| RP24Si + RP38Si | Butt | Single | 35 | Heavy |  |
| RP120 + RP520 + RP38 + RP99Si | Butt | Single | 44 | Medium |  |
| RP24Si + RP127Si + RP126Si | Butt | Single | 48 | Heavy |  |
| 38 | RP120 + RP127Si | Butt | Single | 48 | Medium |  |
| *RP78Si* + RP530 + RP70 + RP117Si | Butt | Single | 53 | Medium |  |
| 39 | RP78Si + RP120 + RP70 | Butt | Single | 53 | Medium |  |
| 40 | RP124 + RP127Si | Butt | Single | 48 | Medium |  |

#### Rw41 to Rw50 acoustic sealing system schedule

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Rw | Raven acoustic sealing systems | Door | | | | Duty level | Door No. |
| Hinge | Configuration | | Thickness  (mm) |
| 41 | RP78Si + RP530 + RP38 + RP16Si | Butt | Double | 54 | | Medium |  |
| 42 | RP10Si + RP124 + RP8Si + RP128Si | Butt | Single | 35 | | Heavy |  |
| RP24Si + RP124 + RP8Si + RP38Si | Butt | Single | 35 | | Heavy |  |
| RP87Si + RP124 + RP8Si + RP128Si | Butt | Single | 35 | | Heavy |  |
| RP10Si + RP124 + RP127Si | Butt | Single | 68 | | Heavy |  |
| RP24Si + RP127Si + RP126Si | Butt | Single | 68 | | Heavy |  |
| 43 | RP78Si + RP124 + RP8Si + RP128Si | Butt | Single | 35 | | Medium |  |
| RP10Si + RP124 + RP8Si + RP128Si | Butt | Single | 35 | | Heavy |  |
| RP10Si + RP124 + RP127Si | Butt | Single | 48 | | Heavy |  |
| 45 | RP10Si + RP124 + RP127Si + RP126Si | Butt | Single | 48 | | Heavy |  |
| RP78Si + RP120 + RP70 + RP120 + RP71 + RP393Si | Butt | Double | 54 | | Medium |  |
| RP24Si + RP124 + RP127Si + RP126Si | Butt | Single | 68 | | Heavy |  |
| 46 | RP78Si + RP120 + RP2004F + RP8Si | Butt | Double | 60 | | Medium |  |
| RP85 + RP124 + RP127Si + RP126Si | Butt | Single | 68 | | Heavy |  |
| 47 | RP78Si + RP120 + RP70 + RP71 +  RP393Si | Butt | Single | 54 | | Medium |  |
| 49 | RP78Si + RP120 + RP2004F + RP8Si + RP71 + RP393Si | Butt | Double | 60 | | Medium |  |

#### Other acoustic sealing system schedule

| Rw | | Raven acoustic sealing systems | Door | | | Duty level | Door No. |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Hinge | Configuration | Thickness  (mm) |
| 30 | RP47Si | | Broad butt | Single | 35 | Heavy |  |
| RP118Si + RP71Si + RP117Si | | Broad butt | Double | 45 | Heavy |  |
| RP118Si | | Broad butt | Single | 45 | Heavy |  |
| 31 | RP84Si + RP51F + RP52F | | Sliding | Single | 35 | Heavy |  |
| RP93Si + RP71Si + RP97Si | | Broad butt | Double | 45 | Medium |  |
| RP118Si + RP8Si + RP16Si | | Broad butt | Double | 45 | Heavy |  |
| 32 | RP47Si | | Broad butt | Single | 44 | Heavy |  |
| 34 | RP10Si + RP51F + RP52F | | Sliding | Single | 35 | Heavy |  |
| 35 | RP71Si + RP71Si + RP96 | | Pivot | Single | 50 | Medium |  |
| 38 | RP94Si + RP8Si | | Broad butt | Interconnecting | 40 | Medium |  |
| 44 | RP530 + RP70 | | Broad butt | Interconnecting | 50 | Medium |  |
| 52 | RP78Si + RP120 + RP70 + RP71 + RP393Si | | Broad butt | Interconnecting | 54 | Medium |  |

### Smoke doors

Medium temperature smoke. 200°C for 30 minutes (BCA Spec C3.4). Consult the Fire and Smoke section of the RAVEN catalogue #115 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 ≤ 25m3/h @ 25 Pa for single doors and ≤ 40m3/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 | | | | Duty level | Door No. |
| --- | --- | --- | --- | --- | --- | --- |
| Seal installation type | Hinge | Configuration | Thickness  (mm) |
| RP120 + RP8Si | Mortised | Butt | Single | 35+ | Medium |  |
| RP120 + RP35Si | Face fixed | Butt | Single | 35+ | Medium |  |
| RP150 + RP8Si | Face fixed | Butt | Single | 35+ | Medium |  |
| RP78Si + RP8Si | Mortised | Butt | Single | 35+ | Medium |  |
| RP78Si + RP38Si | Face fixed | Butt | Single | 35+ | Medium |  |
| RP78Si + RP35Si | Face fixed | Butt | Single | 35+ | Medium |  |
| RP78Si + RP128Si | Face fixed | Butt | Single | 35+ | Medium |  |
| RP124 + RP128Si | Face fixed | Butt | Single | 35+ | Medium |  |
| RP124 + RP126Si | Face fixed | Butt | Single | 35+ | Medium |  |
| RP124 + RP127Si | Face fixed | Butt | Single | 40+ | Medium |  |
| RP23 + RP8Si | Mortised | Butt | Single | 35+ | Medium |  |
| RP24Si + RP38Si | Semi mortised | Butt | Single | 40+ | Heavy |  |
| RP87Si + RP126Si | Semi mortised | Butt | Single | 40+ | Heavy |  |
| RP78Si + RP38Si + RP16Si | Semi mortised | Butt | Double | 40+ | Medium |  |
| RP120 + RP8Si + RP120 | In meeting stile rebate | Butt | Double | 40+ | Medium |  |
| RP150 + RP8Si + RP150 | In meeting stile rebate | Butt | Double | 40+ | Medium |  |
| RP124 + RP35Si + RP71Si | Face fixed | Butt | Double | 40+ | Medium |  |
| RP130Si + RP129F + RP130Si  + RP115 threshold plate | On meeting stile | Pivot double acting | Double | 40+ | Heavy |  |

#### 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 ≤ 25 m3/h @ 25 Pa for single doors and ≤ 40m3/h @ 25 Pa for double doors when exposed to 200°C for 30 minutes in accordance with AS 6905.

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

### 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 # 115. Refer to the RAVEN website for updated systems.

#### Combined smoke and acoustic sealing system schedule

| RAVEN smoke sealing system | Fire door | | | | Duty level | Door No. |
| --- | --- | --- | --- | --- | --- | --- |
| Seal installation type | FRL  (Fire Rating) | Configuration | Thickness  (mm) |
| RP120 + RP8Si | Mortised | Up to -/240/60 | Single/Double | 38 and 47 | Medium |  |
| RP10Si + RP8Si | Mortised | Up to -/240/60 | Single/Double | 38 and 47 | Heavy |  |
| RP24Si + RP38Si | Semi Mortised | Up to -/240/30 | Single/Double | 47 | Heavy |  |
| RP78Si + RP8Si | Mortised | Up to -/240/60 | Single/Double | 38 and 47 | Heavy |  |
| RP78Si + RP35Si | Face Fixed | Up to -/240/60 | Single/Double | 38 and 47 | Heavy |  |
| RP78Si + RP38Si | Face Fixed | Up to -/240/60 | Single/Double | 38 and 47 | Heavy |  |
| RP78Si + RP127Si | Mortised | Up to -/240/60 | Single/Double | 47 | Medium |  |
| RP87Si + RP128Si | - | Up to -/240/30 | Single/Double | 38 and 47 | Heavy |  |
| RP93Si + RP99Si | Fully Mortised | Up to -/240/30 | Single/Double | 47 | Medium |  |
| RP87Si + RP128Si | - | Up to -/240/30 | Single/Double | 38 and 47 | Heavy |  |
| RP94Si + RP126Si | Semi Mortised | Up to -/240/30 | Single/Double | 47 | Medium |  |

#### Threshold at doorways schedule

| RAVEN threshold (plates/ramps and plate seals) | AS 1428.1  compliant | Durability  ANSI BHMA 156.21 designation | Fire door | | Duty level | Door No. |
| --- | --- | --- | --- | --- | --- | --- |
| FRL (fire resistance level) | Configuration |
| RP4b | - | J33100 | Up to -/240/30 | Single/Double | Medium |  |
| RP13 | Yes | J30300 | Up to -/240/30 | Single/Double | Heavy |  |
| RP18 | - | J34370 | Up to -/240/30 | Single/Double | Heavy |  |
| RP19 | - | - | Up to -/240/30 | Single/Double | Heavy |  |
| RP27 | - | J33100 | Up to -/240/30 | Single/Double | Heavy |  |
| RP28 | - | J32130 | Up to -/240/30 | Single/Double | Heavy |  |
| RP29 | - | J32130 | Up to -/240/30 | Single/Double | Heavy |  |
| RP66 | Yes | J32140 | Up to -/240/30 | Single/Double | Heavy |  |
| RP77 | Yes | J38130 | Up to -/240/30 | Single/Double | Heavy |  |
| RP82 | Yes | J32300 | Up to -/240/30 | Single/Double | Heavy |  |
| RP91 | - | J30300 | Up to -/240/30 | Single/Double | Heavy |  |
| RP95 | Yes | J32300 | Up to -/240/30 | Single/Double | Heavy |  |
| RP96 | Yes | J32300 | Up to -/240/30 | Single/Double | Heavy |  |
| RP98 | Yes | J38130 | Up to -/240/30 | Single/Double | Heavy |  |
| RP109Si | - | J36100 | Up to -/240/30 | Single/Double | Heavy |  |
| RP110Si | - | J36100 | Up to -/240/30 | Single/Double | Heavy |  |
| RP111Si | - | J36100 | Up to -/240/30 | Single/Double | Heavy |  |
| RP112 | Yes | J38130 | Up to -/240/30 | Single/Double | Medium |  |
| RP115 | Yes | J32130 | Up to -/240/30 | Single/Double | Heavy |  |
| RP116 | Yes | J32130 | Up to -/240/30 | Single/Double | Heavy |  |
| RP117Si | - | J36100 | Up to -/240/30 | Single/Double | Heavy |  |
| RP137 | Yes | J32130 | Up to -/240/30 | Single/Double | Heavy |  |
| RP138 | Yes | J38130 | Up to -/240/30 | Single/Double | Heavy |  |

### Bushfire prone areas

Consult Bushfire – Sealing systems in the RAVEN Catalogue # 115 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 – LOW  Note: There is no further requirement from AS 3959. | 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 - 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 RP4T or RP51Si (if bottom seal not supplied with door).  Option: Threshold plate RP91 |  |
| BAL - 40 | RAVEN seals with a flammability index ≤ 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 RP4T 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 RP4T or RP51Si (if bottom seal not supplied with door).  Option: Threshold plate RP91. |  |

### 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 # 115 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 | | Duty level | Door No |
| --- | --- | --- | --- | --- |
| Hinge | Configuration |
| RP113 + RP54 | Butt | Timber single | Medium |  |
| RP78Si + RP4 + RP16Si | Butt | Timber single and double | Medium |  |
| RP10 + RP8Si + RP98 | Butt | Single aluminium | Heavy |  |
| RP84Si + RP89 + RP77 | Butt | Single | Medium |  |
| RP74F + RP74F + RP52F + RP82 | Pivot | Timber single and double | Heavy |  |
| RP130Si + RP129Si + RP130Si + RP115 | Pivot | Timber single and double | Heavy |  |
| RP89 + RP89 + RP116 | Pivot | Aluminium | Medium |  |
| RP74F + RP74F + RP19 | Pivot | Aluminium | Heavy |  |
| RP51F + RP2a | Sliding | Timber | Heavy |  |
| RP51F + RP74F | Sliding | Timber | Heavy |  |
| RP73 + RP17b | Sliding | Timber | Light |  |
| RP41 + RP4T + RP91 | Panel lift garage door | Metal | Heavy |  |
| RP57 + RP4T + RP91 | Roll-up garage door | Metal | Heavy |  |
| RP500 Series Weather Stripping | Folding doors and windows | Timber | Heavy |  |
| RP600 Series Weather Stripping | Folding doors and windows | Timber | Heavy |  |

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.

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### Access and mobility

Consult Threshold Plate Seals in the RAVEN Catalogue # 115 for selection guidance.

#### Application - thresholds at doorways

RAVEN threshold plates:

Specify the RAVEN product required at the prompt.

### 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 | | | Duty level | Door No. |
| --- | --- | --- | --- | --- | --- |
| Door seal installation type | Hinge | Configuration |
| RP24Si + RP38Si | RP38Si Semi mortised  or face fix | Butt | Timber single | Heavy |  |
| RP78HSi + RP8Si | RP8Si Mortised | Butt | Timber single | Medium |  |
| RP87HSi + RP126Si | RP126Si Semi mortised  or face fix | Butt | Timber Single | Heavy |  |
| RP87HSi + RP128Si | RP128Si Face fix | Butt | Single | Heavy |  |
| RP84Si + RP126Si + RP71Si | RP126Si Semi mortised  or Face Fix | Butt | Timber single and double | Medium |  |
| RP124 + RP127Si + RP71Si | RP127Si Mortised | Butt | Timber single and double | Medium |  |
| RP71Si + RP71Si + RP71Si + RP96 | RP71Si x 2 around  full perimeter | Pivot | Timber single and double | Medium |  |
| RP130Si + RP52F | RP52F Mortised  into door Bottom | Pivot | Timber single and double | Heavy |  |
| RP130Si + RP129F + RP130Si | RP130Si x 2 around perimeter, RP129F on  door bottom | Pivot | Timber single and double | Heavy |  |
| RP130Si + RP129Si + RP130Si  + RP96 | RP130Si x 2 around Perimeter, RP129Si on  door bottom | Pivot | Timber single and double | Heavy |  |

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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/NZS 4420 2016 Windows, external glazed, timber and composite doors - Methods of test

AS/NZS 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 156.21 2009 American National Standard For Thresholds – Builders Hardware Manufacturers Association

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

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

NATSPEC GEN 006 2007 Product specifying and substitution

NATSPEC GEN 012 2010 Door hardware scheduling

NATSPEC GEN 024 2015 Using NATSPEC selections schedules

NATSPEC TR 01 2019 Specifying ESD