



CERTIFICATE OF APPROVAL No CF 5710

This is to certify that, in accordance with
TS00 General Requirements for Certification of Fire Protection Products
The undermentioned products of

RAVEN SEALING PRODUCTS (GLOBAL)

ROOMS 905, 9/F, METROPOLE BUILDING, NO. 53-63 PEKING
ROAD, TSIM SHA TSUI, HONG KONG

Tel: +852 2987 6257

Have been assessed against the requirements of the Technical Schedule(s)
denoted below and are approved for use subject to the conditions
appended hereto:

CERTIFIED PRODUCT

Raven Seals RP8Si, RP10Si,
RP16Si, RP24Si, RP35Si, RP38Si,
RP39, RP47Si, RP51Si, RP70Si,
RP71Si, RP78Si, RP78HSi,
RP84Si, RP85, RP87Si, RP87HSi,
RP93Si, RP94Si, RP97Si, RP99Si,
RP110Si, RP111Si, RP117Si,
RP118Si, RP120, RP124, RP126Si,
RP127Si, RP128Si, RP134,
RP139Si and RP150 Smoke Seals

TECHNICAL SCHEDULE

TS21 The Contribution of Edge
Seals to the Control of Smoke
Leakage via Door Assemblies

Signed and sealed for and on behalf of Warringtonfire Testing and Certification Limited

Paul Duggan
Certification Manager

Issued:
Reissued:
Valid to:

21st May 2020
25th November 2024
19th May 2030



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1. This certification is provided to the client for their own purposes and we cannot opine on whether it will be accepted by Building Control authorities or any other third parties for any purpose.
2. The Raven Seals RP8Si, RP35Si, RP38Si, RP70Si, RP99Si, RP126Si, RP127Si, RP128Si and RP139Si smoke seals approved in this certificate are aluminium cased automatic threshold seals. They are used for sealing the threshold of door assemblies against leakage of ambient temperature smoke, as defined in BS 476: Part 31.1: 1983. They do not contain intumescent material.
3. The Raven Seals RP10Si, RP16Si, RP24Si, RP39, RP47Si, RP51Si, RP71Si, RP78Si, RP78HSi, RP84Si, RP85, RP87Si, RP87HSi, RP93Si, RP94Si, RP97Si, RP110Si, RP111Si, RP117Si, RP118Si, RP120, RP124, RP134 and RP150 smoke seals approved in this certificate are of the compression/deflection (C/D) type or the Wiping (W) type. They are used for sealing door assemblies against leakage of ambient temperature smoke, as defined in BS 476: Part 31.1: 1983. They do not contain intumescent material.
4. Within BS 9999: 2008, a fire door required to resist the passage of smoke at ambient temperature conditions should, when tested in accordance with BS 476: Section 31.1 with the threshold taped and subjected to a pressure of 25 Pa, have a leakage not exceeding 3 m³/m/h. The threshold gap should be sealed either by a seal either with a leakage rate not exceeding 3m³/m/h at 25 Pa or just contacting the floor. Where this is impracticable the threshold gap should not exceed 3 mm at any point.
5. The door seals are approved on the basis of:
 - i) Initial type testing
 - ii) A design appraisal against TS21
 - iii) Certification under a CERTIFIRE approved quality management system.
 - iv) Inspection and surveillance of factory production control
6. This approval certifies that the above seals are suitable for use with single-acting door assemblies required to restrict smoke leakage at ambient temperatures as defined in Appendix B of Approved Document B, 'Fire Safety' to the Building Regulations 1991. It is applicable to latched and unlatched, single leaf and double leaf assemblies consisting of timber faced and edged leaves with timber, cellulosic or mineral cores in timber frames with or without intumescent edge seals (Code ITT and TT respectively). It is only applicable to assemblies that have been approved, or have been shown by test, to achieve the required period of fire resistance.

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7. The following table shows acceptable doorset types and fire resistance periods:

Door Assembly Type							
Class	ITT			ITM / ITC			IMM / MM
	C	H	I-O	C	H	I-O	M
FD30	✓	✓	✓	x	x	x	x
FD60	✓	✓	✓	x	x	x	x

Table 1: Universal Matrix for Field of Application

8. Doors are classified as the following types:

Type MM - 20 minute to 240 minute doorsets that consist of metallic leaves in metallic frames that do not contain intumescent materials in the frame to leaf gap.

Type IMM - 20 minute to 240 minute doorsets that consist of metallic leaves in metallic frames that contain intumescent materials in the frame to leaf gap.

Type ITT - 20 minute to 120 minute doorsets containing intumescent seals and consisting of non-metallic faced and edged leaves hung in timber frames

Type ITM - 20 minute to 120 minute doorsets containing intumescent seals and consisting of non-metallic faced and edged leaves hung in metal frames.

Type ITC - 20 minute to 120 minute doorsets containing intumescent seals and consisting of non-metallic faced and edged leaves hung in proprietary composite frames, of which the principal material is other than timber or metal but which may include any other materials.

9. It is sometimes necessary to sub-divide fire doors into the following categories:

Type C - Door leaves where all parts of the construction are of timber or other cellulosic material, e.g. flaxboard, chipboard, fibreboard etc, or leaves where inorganic or mineral based materials are surrounded by softwood or hardwood framing. The mineral based material may be in the form of a solid slab or as sub-facings either side of a void, with or without intermediate rails. The timber framing must be unprotected for not less than 40mm which includes any lipping. The framing may be reinforced by additional timber or similar material at the head or at lock blocks to product a larger frame to support ironmongery.

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Type I-O - Door leaves constructed primarily of inorganic, or mineral based materials where the surrounding frame of timber is less than 40mm wide, including any lippings.

Type H - Door leaves where a type 'C' door leaf, normally all of cellulosic construction is faced on both sides with an inorganic board or a rigid intumescent sheet material not less than 2mm thick, either as a facing or a sub-facing. This material will extend from leaf edge to leaf edge, excluding any lippings.

Type M - Door leaves where the facings or sub-facings are of a steel construction and where the edges are metal (excluding any seals fitted), including primarily glazed leaves where the structural leaf framing consist of metal sections.

10. If the proposed door is to include partially morticed or fully morticed Raven 'Dropseals' to the bottom edge of the leaf, then the available test evidence should be applicable to door leaves incorporating fully morticed dropseals of the required dimensions.
11. The use of the seals discussed in this certificate are subject to the acceptance by the chosen door assembly supplier's tested, assessed, or certificated scope, which generally identifies the types of hardware approved, the required specification/design based on the key materials and maximum dimensions, and the application of any additional intumescent protection. On this basis, approval should be sought from the specific door assembly supplier to ensure compliance based on this certificated scope.
12. Frame seals shall be uninterrupted and fixed around the head and vertical edges of the frame. The seals shall be installed in accordance with the manufacturer's instructions.
13. Threshold seals shall be uninterrupted and fixed to the bottom edge of door leaves. Double leaf door assemblies shall additionally incorporate a threshold seal to both door leaves. The seals shall be installed in accordance with the manufacturer's instructions.
14. The maximum gap between the bottom edge of the door leaf and the opposing face of the threshold shall not exceed 7 mm.
15. Please note that this maximum 7 mm threshold gap is subject to the acceptance by the chosen door assembly supplier's tested, assessed, or certificated scope, which generally identifies the maximum threshold gap permitted, which could be less than the 7 mm discussed here. On this basis, approval should be sought from the specific door assembly supplier to ensure compliance based on this certificate scope, on the basis of whichever threshold gap specification is smaller.

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16. Astragal seals shall be uninterrupted and fixed to the meeting edge of the door leaves.

A single RP16Si may be installed to the meeting stiles of FD30 and FD60 single-acting, **Raven Seals RP8Si, RP10Si, RP16Si, RP24Si, RP35Si, RP38Si, RP39, RP47Si, RP51Si, RP70Si, RP71Si, RP78Si, RP78HSi, RP84Si, RP85, RP87Si, RP87HSi, RP93Si, RP94Si, RP97Si, RP99Si, RP110Si, RP111Si, RP117Si, RP118Si, RP120, RP124, RP126Si, RP127Si, RP128Si, RP134, RP139Si and RP150 Smoke Seals**

double-leaf assemblies complete with 1 mm thick Interdens intumescent sheet material.

The inclusion of the RP16Si seal must not conceal or interrupt nor necessitate the repositioning of the intumescent seals to the meeting stiles.

2No. RP71Si may be installed to the same leaf at the meeting stiles of FD30 and FD60 single-acting, double-leaf assemblies complete with 1 mm thick Interdens intumescent sheet material. The inclusion of the RP71Si seals must not conceal or interrupt nor necessitate the repositioning of the intumescent seals to the meeting stiles.

17. The RP39, RP85, RP97Si, RP110Si, RP111Si and RP117Si are limited to 30 minute applications.
18. The RP39, RP47Si and RP85 seals are limited to use/installation on the non-fire-risk side (unexposed face) only where they form the frame stop and are limited to 30 minute applications. **Where a specific direction of fire exposure for the doorset cannot be identified these seals shall not be used in this configuration.** The seals may be utilised on either the exposed or unexposed face when fitted in addition to a timber based frame stop.
19. The RP10Si, RP24Si, RP78Si, RP78HSi, RP84Si, RP87Si, RP87HSi, RP93Si, RP94Si, and RP118Si stop mounted frames seals may be utilised on either the exposed (fire risk) or unexposed (non-fire risk) face when fitted in addition to a timber based frame stop. The use of these seals without a frame stop is not permitted.
20. The approval relates to ongoing production. Product and/or its immediate packaging is identified with the manufacturers' name, the product name or number, the CERTIFIRE name or name and mark, together with the CERTIFIRE certificate number and application where appropriate.

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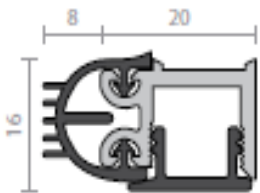
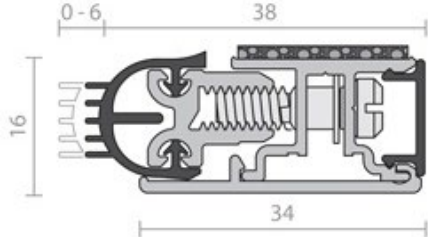
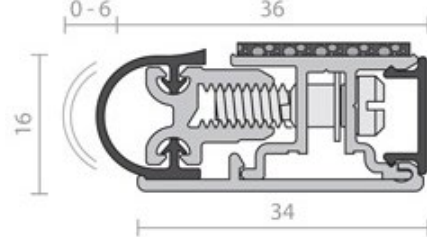
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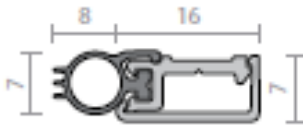
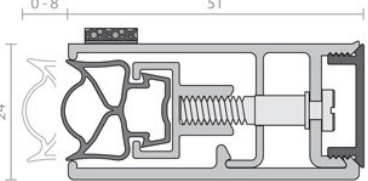
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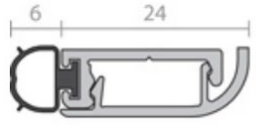
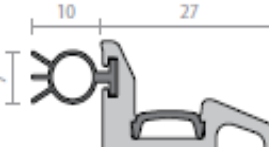
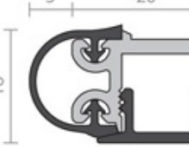
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Figure 1. Drawings of seals

		
RP10Si – Stop mounted only	RP87Si – Stop mounted only	RP87HSi – Stop mounted only

		
RP78Si – Stop mounted only	RP94Si – Stop mounted only	RP24Si – Stop mounted only

			
RP93Si – Stop mounted only	RP118Si – Stop mounted only	RP78HSi – Stop mounted only	RP84Si – Stop mounted only

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Figure 1 (Continued). Drawings of seals

RP8Si	RP35Si	RP38Si	RP51Si	RP70Si
RP99Si	RP126Si	RP127Si	RP128Si	RP139Si

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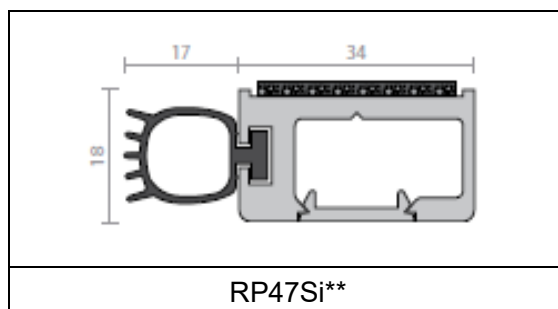
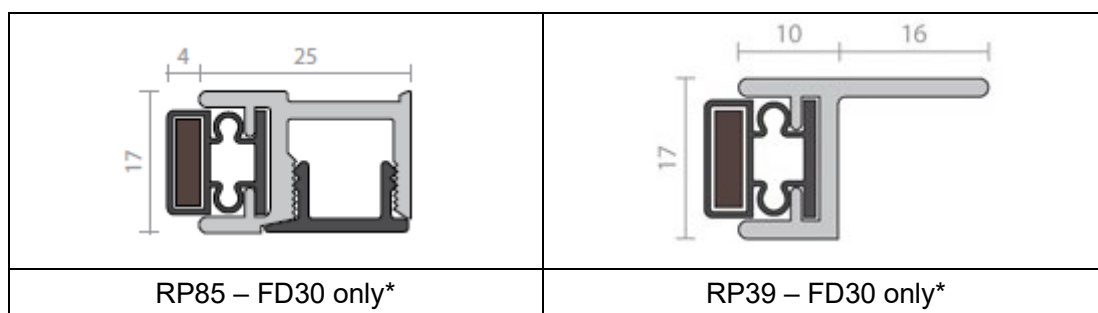
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Figure 1 (Continued). Drawings of seals



- * The RP39, and RP85 seals are limited to use/installation on the non-fire-risk side (unexposed face) only where they form the frame stop and are limited to 30 minute applications. **Where a specific direction of fire exposure for the doorset cannot be identified these seals shall not be used in this configuration.** The seals may be utilised on either the exposed or unexposed face when fitted in addition to a timber based frame stop.
- ** The RP47Si seal is limited 30 minute applications when used/installed on the non-fire-risk side (unexposed face) only, where the seal forms the frame stop. **Where a specific direction of fire exposure for the doorset cannot be identified this seal shall not be used in this configuration.** The seals may be utilised on either the exposed or unexposed face when fitted in addition to a timber based frame stop for 30 minute and 60 minute applications.

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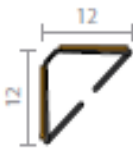
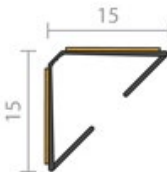
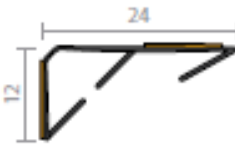
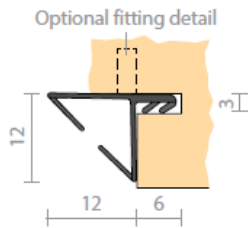
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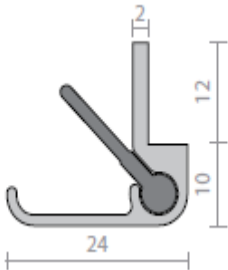
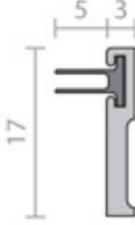
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Figure 1 (Continued). Drawings of seals

			
RP120	RP150	RP124	RP134

	
RP16Si*	RP71Si**

* A single RP16Si may be installed to the meeting stiles of FD30 and FD60 single-acting, double-leaf assemblies complete with 1 mm thick Interdens intumescent sheet material. The inclusion of the RP16Si seal must not conceal or interrupt nor necessitate the repositioning of the intumescent seals to the meeting stiles.

** 2No. RP71Si may be installed to the same leaf at the meeting stiles of FD30 and FD60 single-acting, double-leaf assemblies complete with 1 mm thick Interdens intumescent sheet material. The inclusion of the RP71Si seals must not conceal or interrupt nor necessitate the repositioning of the intumescent seals to the meeting stiles.

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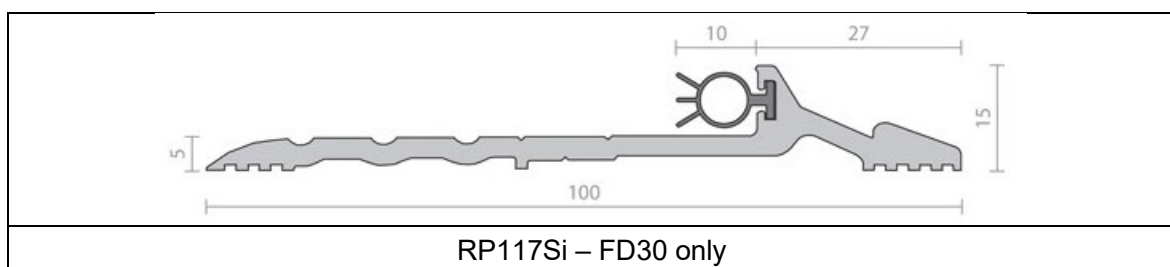
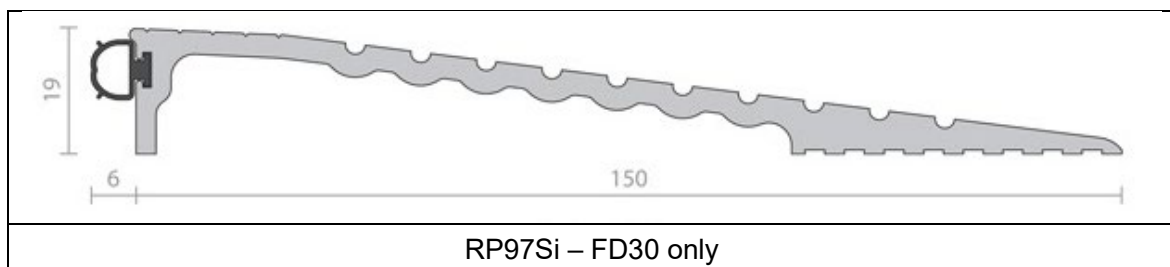
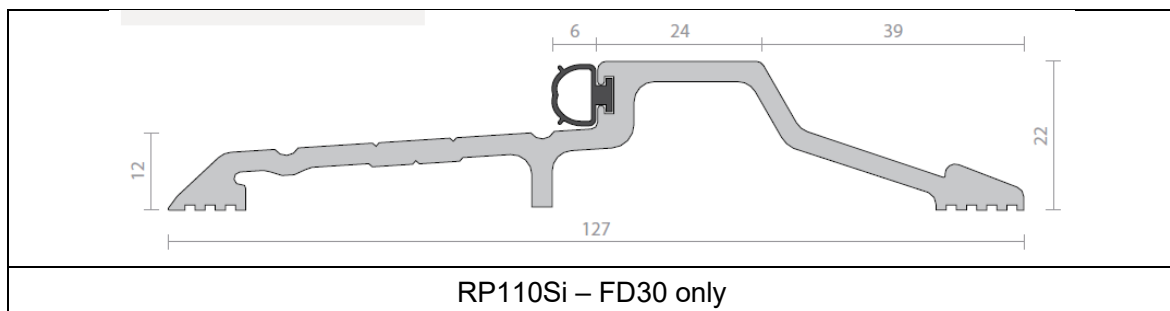
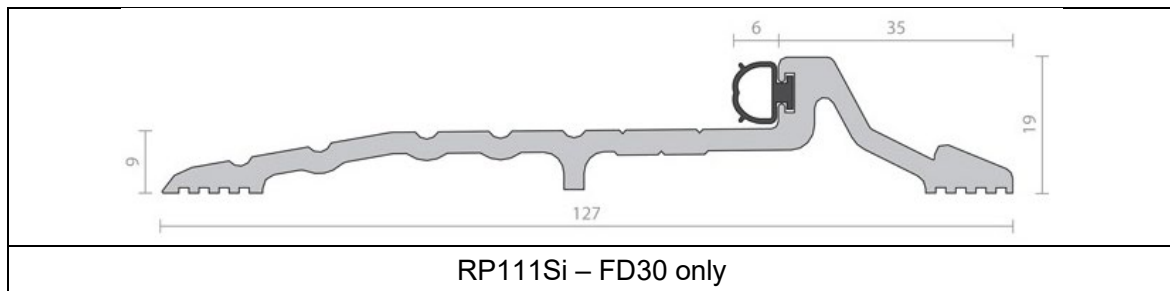
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Figure 1 (Continued). Drawings of seals



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