



CERTIFICATE OF FIRE APPROVAL

This is to certify that

The product detailed below will be accepted for compliance with the applicable Lloyd's Register Rules and Regulations and with the International Convention for the Safety of Life at Sea, (SOLAS), 1974, as amended, for use on ships and offshore installations classed with Lloyd's Register, and for use on ships and offshore installations when authorised by contracting governments to issue the relevant certificates, licences, permits etc.

Manufacturer	Roxtec International AB
Address	Rombvägen 2 Box 540 371 23 Karlskrona Sweden
Type	PIPE PENETRATION (STANDARD FIRE TEST)
Description	Fire Resisting Plastic Pipe Penetration Seals – Type: “RS PPS/S” series for applications in steel and aluminium bulkheads and decks
Specified Standard	IMO Res. MSC.61 (67)- (FTP Code) Annex 1 Part 3 IMO MSC/Circ.1120 IMO Res. MSC.307(88) – (2010 FTP Code), Section 8

The attached Design Appraisal Document forms part of this certificate.

This certificate remains valid unless cancelled or revoked, provided the conditions in the attached Design Appraisal Document are complied with and the equipment remains satisfactory in service.

Date of issue 18 March 2016 Expiry date 17 March 2021

Certificate No. SAS F160302 Signed 

Sheet No 1 of 5 Name S. Abraham
Surveyor to Lloyd's Register EMEA
A Member of the Lloyd's Register Group

Note:

This certificate is not valid for equipment, the design or manufacture of which has been varied or modified from the specimen tested. The manufacturer should notify Lloyd's Register of any modification or changes to the equipment in order to obtain a valid Certificate.

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DESIGN APPRAISAL DOCUMENT

Date	Quote this reference on all future communications
17 October 2016	SOUTSO/SFS/TA /FF/SA/WP25339853

ATTACHMENT TO CERTIFICATE OF TYPE APPROVAL No. SAS F160302

This Design Appraisal Document forms part of the Certificate.

APPROVAL DOCUMENTATION

SP Swedish National Testing Research Institute, Boras, Sweden, Test Report No: P605253 dated 09 February 2007, No: P902394 dated 25 May 2009, No: P701755, dated 12 June 2007. Danish Institute of Fire and Security Technology, Hvidovre, Denmark; Fire Test Reports no: PG 11898 and PG11955 both dated 17 April 2009. Research Institute of Marine Engineering (RIME), Tokyo, Japan; Fire Test Report No: 09-346(E) dated 11 December 2009.

CONDITIONS OF CERTIFICATION

1. When used in conjunction with A-60 Class steel and aluminium bulkheads and decks with approved insulation arrangements
2. Aluminium bulkheads and decks in all cases must be insulated with an approved system to prevent the core temperature exceeding 200°C and all penetrations fitted to such divisions must also be insulated with either the same system or another approved A-60 system
3. For applications in A-0, A-15, A-30 and A-60 Class steel divisions and all aluminium divisions, an additional A-60 insulation collar is to be fitted on both sides of the bulkhead and on the underside of the deck, for a minimum distance of 200mm around the plastic pipe penetration and insulation should be extended to cover the full side(s) and face(s) of the transit, with an overlap of at least 20mm from the steel edges
4. The above restriction regarding additional insulation collar does not apply to penetrations with Polypropylene pipes (16mm to 90mm diameter) when fitted in A-60 Class steel decks; however in such cases the A-60 Class insulation on the fire exposed side (underside) of the steel deck should be extended to fully cover the face of the penetration sleeve with a minimum overlap of 20mm from the steel edges
5. Roxtec RS PPS/S pipe penetration system consists of: an integrated sealing system with a single RS PPS/S seal incorporating "Kuhn Roku" intumescent strips at the centre, fitted around the plastic pipe and inserted into a welded/bolted sleeve from one side of the division. The sleeves/coamings may be of type: "SLRS", "SLFRS" or "SLRSX". The intumescent within the seal is fitted in a steel case and protected from compression by steel middle fitting plates on either side
6. The maximum rating achievable, the type and the minimum length of the seal system and the minimum number of intumescent layers required for different types and diameter of plastic pipes when penetrating steel bulkheads and decks are as described in table 1;



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Table 1: Steel Bulkhead and Deck Applications

Plastic Pipe Material	Tested Pipe Nominal Diameter	Rubber Seal		Intumescent		Maximum Rating	Length of Sleeve	Application (Steel Bhd/Deck)
		Type	Minimum length	No: of layers	Width x Thickness			
PE	16mm	RS PPS/S 43	78mm	5	8mm x 2mm	A-60	65mm	Bhd&Deck
PE	110mm	RS PPS/S 150	85mm	6	16mm x 2mm	A-60	65mm	Bhd&Deck
PPr	16mm	RS PPS/S 31	40mm	3	8mm x 2mm	A-60	35mm	Bhd&Deck
PPr	16mm	RS PPS/S 43	78mm	5	8mm x 2mm	A-60	65mm	Bhd &Deck
George Fischer Polypropylene (Flame retardant)	90mm	RS PPS/S 125	83mm	6	16mm x 2mm	A-60	65mm	Bhd&Deck
PPr	110mm	RS PPS/S 150	85mm	6	16mm x 2mm	A-60	65mm	Bhd &Deck

7. The maximum rating achievable, the type and the minimum length of the seal system and the minimum number of intumescent layers required for different types and diameter of plastic pipes when penetrating aluminium bulkheads and decks are as described in table 2 below:

Table 2: Aluminium Bulkhead and Deck Applications

Type of Plastic pipe	Tested Pipe Nominal Diameter	Rubber Seal		Intumescent		Maximum Rating	Length of Sleeve	Application (Aluminium Bulkhead/Deck)
		Type	Minimum length	No: of layers	Width x Thickness			
PE	16mm	RS PPS/S 31	40mm	3	8mm x 2mm	A-60	35mm	BHD&Deck
PE	16mm	RS PPS/S 43	78mm	5	8mm x 2mm	A-60	65mm	BHD&Deck
PE	90mm	RS PPS/S 125	83mm	6	16mm x 2mm	A-60	65mm	BHD&Deck
PE	110mm	RS PPS/S 150	85mm	6	16mm x 2mm	A-60	65mm	BHD&Deck
PPr	16mm	RS PPS/S 43	78mm	5	8mm x 2mm	A-60	65mm	BHD& Deck
PPr	90mm	RS PPS/S 125	83mm	6	16mm x 2mm	A-60	65mm	BHD& Deck
PPr	110mm	RS PPS/S 150	85mm	6	16mm x 2mm	A-60	65mm	BHD &Deck

8. Production items are to be manufactured in accordance with a quality control system which shall be maintained to ensure that items are of the same standard as the approved prototype



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NOTES

1. A type: RS PPS/S 31 and a type: RS PPS/S 175 plastic pipe penetrations were subjected to a hydrostatic test (6 bar) and a gas-tightness test (3 bar) for a period of 60 minutes and 30 minutes respectively without any leakage, as identified in DNV Witness certificate no: MLM 070656 dated 18 April 2007
2. The following Roxtec RS PPS/S plastic pipe penetration test specimens were subjected to indicative fire tests for 60 minutes and after cooling subjected to hydrostatic tests at a pressure of 2 bar for 30 minutes without any reported leakage. These tests were conducted at manufacturer's test facilities and witnessed by DNV surveyor; the details of the tested penetrations, test reports, witness reports are as identified in the table below. The penetration device consisted of a back to back RS PPS/S seal fitted to both ends of a 312mm long fully insulated steel sleeve with an approved A-60 insulation system as shown in Roxtec drawing No: S1023338, Rev. A

Type of Plastic pipe	Tested Pipe Nominal Dia.	Type of RS PPS/S Seal	Roxtec Test Report No:	DNV Witness Report No:
PVC	16mm	RS PPS/S 43	101108, test dated 16/02/2011	40007014 dated 04/03/2011
PVC	110mm	RS PPS/S 150	101108, test dated 16/02/2011	40007014 dated 04/03/2011
PP	16mm	RS PPS/S 43	101198, test dated 18/08/2011	40007360 dated 25/08/2011
PP	110mm	RS PPS/S 150	101108, test dated 16/02/2011	40007014 dated 04/03/2011
PB	110mm	RS PPS/S 150	101198, test dated 18/08/2011	40007360 dated 25/08/2011
PPFR	114mm	RS PPS/S 150	101199, test dated 19/08/2011	40007360 dated 25/08/2011
PVDF	16mm	RS PPS/S 43	101199, test dated 19/08/2011	40007360 dated 25/08/2011
PVDF	110mm	RS PPS/S 150	101199, test dated 19/08/2011	40007360 dated 25/08/2011

PLACE OF PRODUCTION

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ATTACHMENT TO CERTIFICATE OF TYPE APPROVAL No. SAS F160302



Saji Abraham
Surveyor
Statutory Fire & Safety
London Design Support Office
Lloyd's Register EMEA

Supplementary Type Approval Terms and Conditions

This certificate and Design Appraisal Document relates to type approval, it certifies that the prototype(s) of the product(s) referred to herein has/have been found to meet the applicable design criteria for the use specified herein, it does not mean or imply approval for any other use, nor approval of any products designed or manufactured otherwise than in strict conformity with the said prototype(s).