

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	Box 540 S-371 23 Karlskrona Sweden
Type	PIPE PENETRATION (STANDARD FIRE TEST)
Description	Fire Resisting Plastic Pipe Penetration Seals - Type: "RS PPS" (Double sided) series for bulkhead and deck applications.
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	10 February 2015	Expiry date	9 February 2020
Certificate No.	SAS F150155	Signed	
Sheet No	1 of 4	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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ATTACHMENT TO CERTIFICATE OF TYPE APPROVAL No. SAS F150155

This Design Appraisal Document forms part of the Certificate.

APPROVAL DOCUMENTATION

Norwegian Fire Research Laboratory (SINTEF), Trondheim, Norway, Test Report Nos. 103070.10A, dated 7 December 2001, 103070.13A, dated 23 April 2002, 103070.27A & B, both dated 4 July 2003, 103070.29A & B, both dated 28 October 2003, 103070.31A & B, both dated 24 March 2004, SP Swedish National Testing Research Institute, Boras, Sweden, Test Report Nos. P501943, dated 18 May 2005 and P403634, dated 30 December 2004, P502921 and P502922 both dated 1 December 2005.

Norwegian Fire Research Laboratory (SINTEF) Test Report No: 103070.33A, dated 15 November 2004, SP Swedish National Testing Research Institute, Boras, Sweden, Test Report Nos. P501943, dated 18 May 2005 and P403634, dated 30 December 2004.

CONDITIONS OF CERTIFICATION

- When used in conjunction with aluminium or steel bulkheads and decks with approved insulation arrangements as follows: (a) For applications in A-0, A-15, A-30 and A-60 steel bulkheads and decks, an additional A-60 insulation collar is to be fitted on the underside of deck and on both sides of bulkheads, for a minimum distance of 150mm (for A-60 applications) and 200mm (for A-0, A-15 and A-30 applications) around the penetration and the A-60 insulation should be extended to cover the full side(s) of the penetration and the face(s) of the steel coaming, with an overlap of at least 20mm. (b) For applications in A-60 aluminium bulkheads and decks, an additional A-60 insulation collar is to be fitted on the underside of decks and on one side of bulkheads, for a minimum distance of 150mm around the penetration and the A-60 insulation should be extended to cover the full side(s) of the penetration and the face of the steel coaming, with an overlap of at least 20mm.
- Roxtec RS PPS pipe penetration system consists of: two 'Roxtec RS-' or 'Roxtec CRS-' seals fitted on either sides of steel sleeve enclosing a plastic pipe wrapped with 2mm thick x 25mm wide "Kuhn Roku" intumescent strips at the centre. The steel sleeve may be welded or bolted to the steel division and the thickness of the steel sleeve for RS 31 to RS 400 is between 4mm to 9mm.
- 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 or decks are as described in the table below:

Steel Bulkhead or Deck Applications:

Pipe Material	Tested Pipe Nominal Diameter	Type of Seal/minimum length	Minimum Intumescent layers	Maximum Rating	Length of Steel Sleeve	Application (Bulkhead/Deck)
ABS	16mm	RS 31/40mm	4	A-60	156mm	Bulkhead/Deck
ABS	140mm	CRS 200/35mm	10	A-60	156mm	Bulkhead/Deck
PVDF	16mm	RS 31/40mm	4	A-60	156mm	Bulkhead/Deck
PVDF	125mm	CRS 175/35mm	13	A-60	156mm	Bulkhead/Deck
HDPE	16mm	RS 31/40mm	4	A-60	156mm	Bulkhead/Deck



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Pipe Material	Tested Pipe Nominal Diameter	Type of Seal/ minimum length	Minimum Intumescent layers	Maximum Rating	Length of Steel Sleeve	Application (Bulkhead/ Deck)
HDPE	125mm	CRS 175/35mm	13	A-60	156mm	Bulkhead/Deck
PVC	16mm	RS 31/40mm	4	A-60	156mm	Bulkhead/Deck
PVC	110mm	CRS 150/45mm	10	A-60	156mm	Bulkhead/Deck
PVC	125mm	CRS 175/35mm	13	A-60	156mm	Bulkhead/Deck
PVC	160mm	CRS 200/35mm	10	A-60	156mm	Bulkhead/Deck
PB	16 mm	RS 31/40mm	4	A-60	156mm	Bulkhead/Deck
PB	110 mm	CRS 150/45mm	10	A-60	156mm	Bulkhead/Deck
PP	16mm	RS 31/40mm	4	A-60	156mm	Bulkhead/Deck
PP	110mm	CRS 150/45mm	10	A-60	156mm	Bulkhead/Deck
PP	125mm	CRS 175/35mm	13	A-60	156mm	Bulkhead/Deck
PE	16mm	RS 31/40mm	4	A-60	156mm	Bulkhead/Deck
PE	110mm	CRS 150/45mm	10	A-60	156mm	Bulkhead/Deck
PE	315mm	RS 400/76mm	15	A-60	400mm	Bulkhead/Deck
Twin Pipe PE/PEX	25mm/15mm	CRS 50/40mm	6	A-30	156mm	Bulkhead only
Twin Pipe PE/PEX	25mm/15mm	CRS 50/40mm	6	A-60	156mm	Deck only
Twin Pipe PE/PEX	54mm/28mm	CRS 100/45mm	12	A-60	156mm	Bulkhead/Deck
Multi (PE) pipe with Armaflex insulation	75mm	RS 125/45	13	A-60	156mm	Deck Only

4. 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 or decks are as described in the table below:

Aluminium Bulkhead or Deck Applications:

Pipe Material	Tested Pipe Nominal Diameter	Type of Seal/minimum length	Minimum Intumescent layers	Maximum Rating	Length of aluminium Sleeve	Application (Bulkhead/ Deck)
PVC	16mm	RS 31/40mm	4	A-60	156mm	Bulkhead/Deck
PVC	160mm	CRS 200/35mm	10	A-60	156mm	Bulkhead/Deck
Flexi (PE/ALU /PE) pipe	16mm	RS 31/40mm	4	A-60	156mm	Bulkhead/Deck
Flexi (PE/ALU /PE) pipe	110mm	CRS 150/40mm	10	A-60	156mm	Bulkhead/Deck



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- For applications in aluminium bulkheads and decks, the aluminium transit coaming/sleeve may be welded midway through the bulkhead and only on the upper side of the deck. The thickness of the aluminium sleeve is between 4mm to 9mm.
- 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.

NOTES

- The aluminium penetration seals were subjected to a gastight pressure at 4 bar for 30 minutes with no leakage and hydrostatic pressure of 6 bar for a period of 30 minutes as detailed in report no. MLM020133.
- The penetration seals were subjected to gastight pressure tests using helium at 4 bar for 30 minutes at 4 bar without any leakage, as detailed in Report Nos. SKM-04-4088 and MLM010247.
- The penetration seals were subjected to hydrostatic pressure tests for 60 minutes at 6 bar without any leakage, as detailed in Report Nos. SKM-04-4088 and MLM010247.

PLACE OF PRODUCTION

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Sweden



Saji Abraham
Surveyor
Statutory Fire and Safety
London Design Support Services
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).