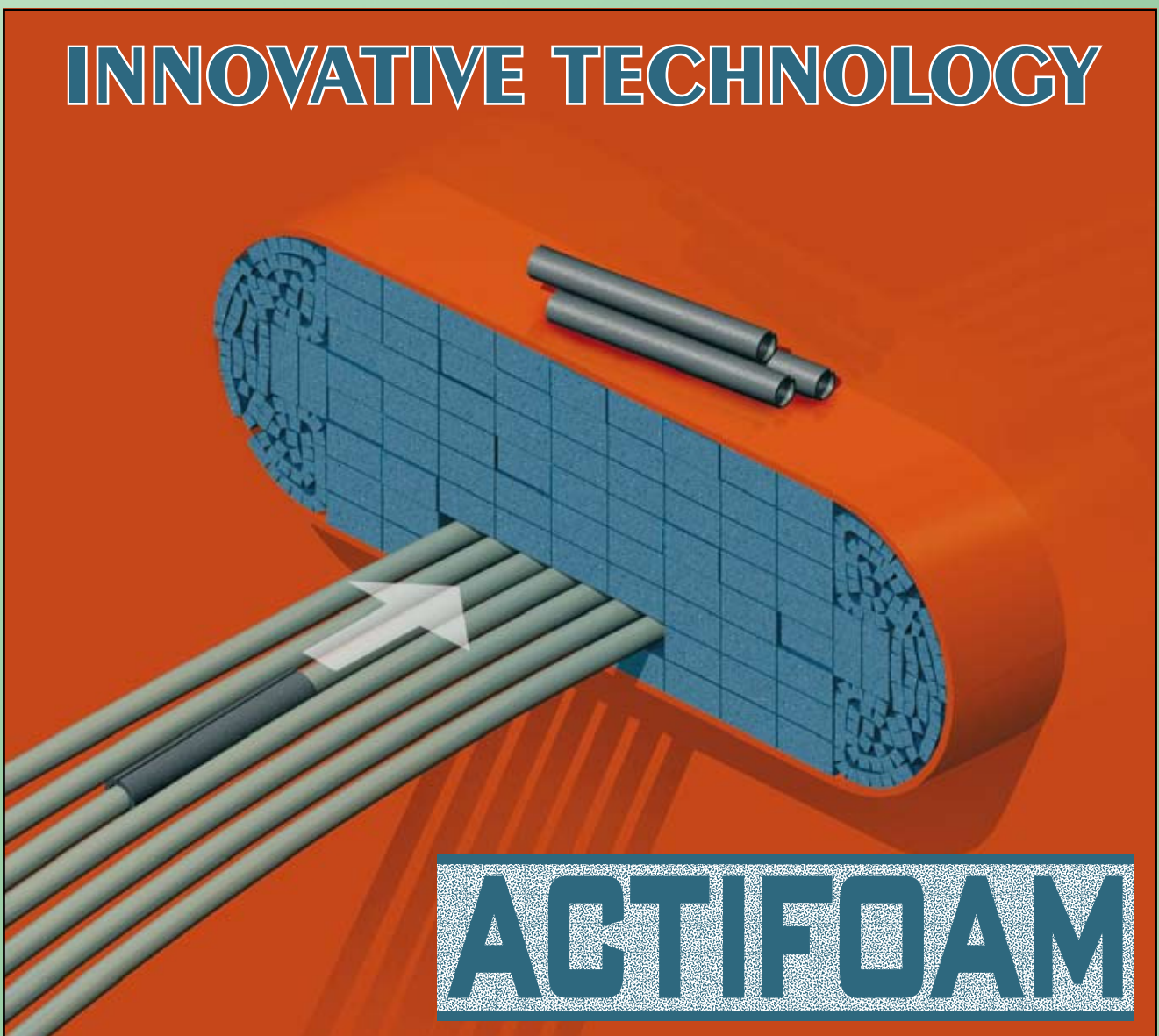


TEMPORARY FIRE SAFE SEALING SYSTEM FOR CABLE TRANSITS ON VESSELS UNDER CONSTRUCTION

INNOVATIVE TECHNOLOGY



SUCCESSFULLY TESTED AND APPROVED
FOR TEMPORARY SEALING
EASY TO BE TRANSFERRED TO A-CLASS
SYSTEMS AS RISE AND RIACNOF

ACTIFOAM

MAXIMUM SIMPLICITY OF USE OPTIMUM FLEXIBILITY OUTSTANDING PERFORMANCE

Websites: <http://www.actifoam.com>, www.beele.com, www.csdplugs.com, www.firsto.com,
www.nofirno.com, www.rise-systems.com, www.riswat.com and www.slipsil.com

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Edition

: September 2008

Note

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Research & Development

: BEELE Engineering BV, Aalten, the Netherlands.

Note

: The manufacturer reserves the right to make dimensional and design modifications without prior notification.

®

: ACTIFIRE, ACTIFOAM, AQUASTOP, BEEBLOCK, BEELE, BEESEAL, CONDUCTON, CRUSHER, CSD, CSD THE SIMPLE SEAL SYSTEM, DRIFIL, DYNATITE, FIRSTO, FIRUB/NOHAL, FITEFIRE, FIWA, FRR, LEAXEAL, LUMIREFLEC, NOFIRNO, RAPID TRANSIT SYSTEM, RIACNOF, RISE, RISWAT, \$, SLIPSIL, flanges of SLIPSIL plugs, ULEPSI and YFESTOS are registered trade marks of BEELE Engineering BV.

brochure code

: TEMPSEAL/hb/en/mar

BEELE ENGINEERING BV CSD INTERNATIONAL BV

BEELE Engineering and CSD International have been working in the field of water and gas tight and fireproof sealing of conduits for pipes and cables for more than 35 years. In the field of passive fire prevention, we have invested substantial amounts of money in the development of systems which are capable withstanding fires for extended periods of time. Passive fire prevention is a very complicated matter due to the fact that cable and pipe penetrations have to be designed to the actual circumstances at site and not for a laboratory test. In case of a catastrophe penetrations are subject not only to flame erosion and very high temperatures, but also

to mechanical loads due to collapsing cableways and possibly a jet of fire-fighting water. This means that the performance in actual situations can differ dramatically from that in a regular fire test. In fact, the systems could only be applied as tested to guarantee the required fire safety.

And this means discussions and limitations!

We have ensured that our systems will function under all circumstances, and the classification societies have awarded us signed and stamped installation drawings of our sealing systems. Approved for steel and aluminium partitions. Guaranteed safety in your installation will be the result.

The R&D department of BEELE Engineering is constantly working in the field of rubber and systems techniques to optimize the existing systems and to develop new concepts for cable and pipe conduits on board of vessels and offshore installations. Although installation of the CSD sealing systems is in fact an easy matter, a full training programme can be given in-house by our engineers. Because the advantages and possibilities of passive fire prevention and evacuation signposting can most effectively be discovered in an environment that matches the practical situation as closely as possible, we have constructed an unique research and development centre. As far is known, this R&D centre is the only institute world-wide where visitors can experience for themselves all the aspects of fire prevention and evacuation signposting systems.



Above an impression of the research and development centre with a training and schooling institute for passive fire prevention products and systems and for the improvement of evacuation signposting systems in buildings and on board ships. The centre consists of a presentation theatre seating up to 45 persons, and a mock-up covering about 500 square metres in which various evacuation signposting systems are installed to enable their effectiveness to be

determined in the dark.

The behaviour of escaping persons inside the test facility is recorded from a separate technical area (with an associated showroom) by means of infra-red cameras and an audio-video system.

In addition the centre comprises three laboratories with a total surface area of about 300 square metres in which, respectively, large-scale fire tests, mechanical tests, and light emission investigations are performed.

ACTIFOAM® TEMPORARY MULTI-CABLE TRANSIT SEALING SYSTEM

ACTIFOAM®: INNOVATIVE TECHNOLOGY

BEELE Engineering: the inventor of the ACTIFIRE® technology

The ACTIFIRE® technology was developed specifically to allow mechanical loads on the construction caused by fire to be absorbed. This technology is designed to enable the sealant materials used to perform an active and fire-resistant function during a fire. This function is not achieved by volume-expanding (intumescent) materials, whose surface structure swells during fire and thereby provides thermal insulation for the materials behind, but materials that when exposed to high temperatures or fire will produce new fire retardant material (in large volume).

The purpose of ACTIFIRE® technology is to ensure that during a fire the rubbers, thermoplastics and compounds used for the seal will produce such an amount of fire retardant material that major deformations or displacements can easily be followed. As a result the penetration will remain fire-tight. The higher the temperature, the more fire retardant material will be produced. Because of this 'active material production', in the event of a fire an elevated pressure will be formed inside the penetration. The result is that a virtually solid rubber mass forms inside the penetration, with which its fire resistant and sealing capacity is effortlessly maintained.

In addition, 'excess' new material produced is forced out of the penetration at the exposed side (together with all the softened plastic materials of the cable sheaths). The expansion caused in this way not only effectively lengthens the penetration but it also compensates for the displacements and substantially extends the withstand time in a fire.

This production of extra fire retardant material during fire is not only necessary in order to absorb the resultant deformations and displacements of the construction and conduits. This extra fire retardant material also fills up the openings which are left by the softening and combustion of cable sheathing and insulation.

The development of the ACTIFIRE® technology has the added benefit that the sealing systems which are manufactured on the basis of this technology are far less vulnerable for inadequate maintenance than existing systems.

Even if a cable is removed from the penetration without sealing the remaining opening, the ACTIFIRE® technology will ensure that this opening is immediately compressed in the event of subsequent fire or elevated temperature.

This means a significant reduction in the fire engineering risk of cable and pipe penetrations.

The ACTIFIRE® technology is based on a combination of only two components (additives), which are capable of giving virtually all base elastomers fire-retardant properties. The new technology also ensures that, when exposed to flames, fire-retardant ACTIFIRE® rubbers, thermoplastics and compounds will not shrink.

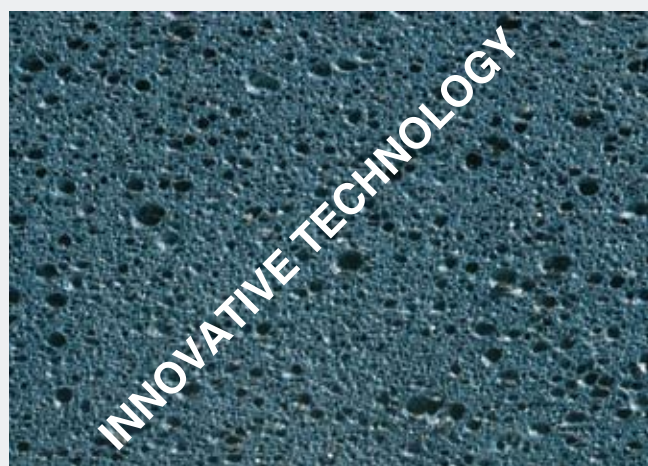
Based on the ACTIFIRE® technology it has proved possible to produce mixtures of rubbers and thermoplastics having an oxygen index far in excess of the minimum value of 30 LOI (Limiting Oxygen Index) which is specified for flame-suppressant materials. Rubber mixtures have even been formulated which exhibit an oxygen index of 85 (an oxygen-rich environment of 85% is required for the rubber to ignite!).

To obtain the flame-suppressant properties, the ACTIFIRE® technology does not make use of halogens, such as chlorine, bromine and fluorine. As a result, a number of rubber formulations (depending on the base elastomer) have been found to comply effortlessly with the values relating to the smoke index and the toxicity of fumes generated by rubber products as set by the Naval Engineering Standard.

The additives to be used for the ACTIFIRE® technology were chosen crucially on the basis of extreme length of lifetime. It is not specified anywhere in the specifications or regulations that fire-resistant sealing systems shall be artificially aged before the systems are tested. And nevertheless, it is known in advance that this kind of systems are characterized by long service lifetimes.

In spite of this omission in the requirements, the new ACTIFIRE® technology is 'future-proof'. After artificial ageing the flame-suppressant and shrink-resistant properties of various ACTIFIRE® rubbers and compounds, when used at normal temperature, exhibit hardly any difference from those of new material.

The newly developed ACTIFIRE® technology not only makes a fundamental contribution towards optimizing passive fire prevention systems. The technology also makes it possible to extend the application scope of passive fire prevention to many other sectors. Fire safety in general can therefore be raised to a significantly higher level on board ships and in buildings and installations.



ACTIFOAM® TEMPORARY MULTI-CABLE TRANSIT SEALING SYSTEM

ACTIFOAM®: INNOVATIVE TECHNOLOGY

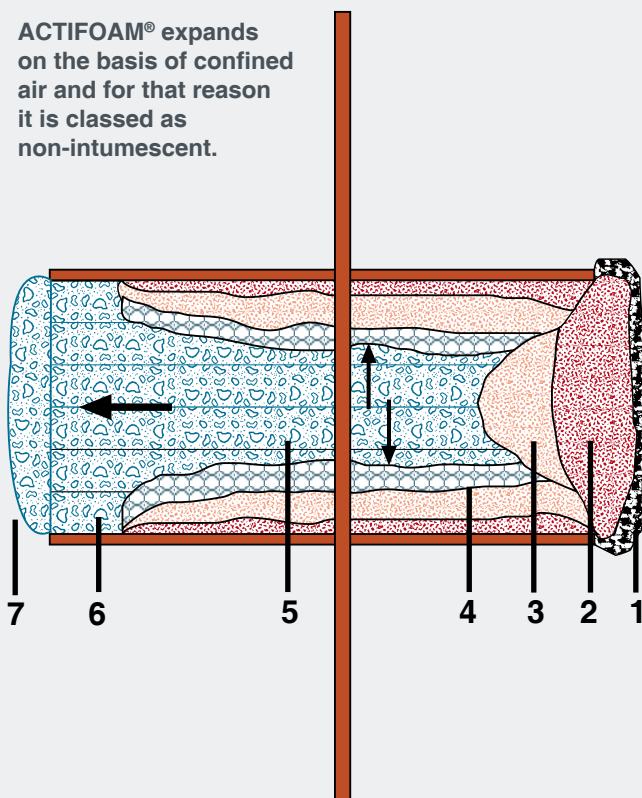
BEELE Engineering: the inventor of the ACTIFIRE® technology

Based on the experience gained with the ACTIFIRE® technology in the applications of the RISE® sealing system, a development has been started up with the goal of further optimizing the technology. In particular for the installations in the construction sector, the RISE® system – although recognized as superior in terms of fire performance – is perceived as being technologically rather too advanced. For that reason the ACTIFOAM® system has been developed as a derivative of the ACTIFIRE® technology. Installation of the ACTIFOAM® penetrations is extremely

simple. These penetrations also possess outstanding fire performance properties. The functionality of the expansion in the ACTIFOAM® penetrations is exactly opposite to that of the ACTIFIRE® technology. Instead of the length of the penetration being extended by the massive formation of new material at the exposed side, with ACTIFOAM® the expansion is achieved by means of volume expansion of confined air in the cell structure. As a result, the extension takes place at the non-exposed side.

The basics of the ACTIFOAM® technology

ACTIFOAM® expands on the basis of confined air and for that reason it is classed as non-intumescent.



1) at the exposed side some expansion of the foam occurs at first, and a crust forms under the effect of the fire. This crust encloses the foam and at the same time acts as a shield against the effect of the fire.

This is the protective fire barrier.

2) the foam behind the crust gradually loses its original structure and changes into a fine granular substance consisting of carbon held together by the softened polymer. In this way a second fire barrier is formed whilst some thermal insulation is maintained.

This is the thermal fire barrier.

3) the layer of foam behind is thermally protected, and only those cells coming into contact with high temperatures will burst open. The remaining foam continues to provide insulation on the basis of its closed cell structure. As a result the process of change in the foam structure will steadily diminish.

This is the retardant barrier.

Depending on the length of time it is exposed to fire, this barrier will move further and further into the penetration.

4) the temperature is now such that no more structural change takes place, and the air in the closed cells can expand without the cells bursting. This results in volume expansion of the foam, and in this way all the openings in the penetration are closed off.

This is the sealant barrier.

5) because the foam is enclosed inside the penetration, due to the volume enlargement of the closed cells the foam will expand towards the non-exposed side.

In effect this means that the length of the penetration is extended and therefore the foam rubber mass is given long-term protection against the continuing effects of fire and heat.

6) the foam is held tightly in the penetration. Because of the pressure exerted by the foam mass expanding inside the penetration, some foam will be forced out of the opening. As a result, the foam emerging from the penetration will swell to a larger size than when it was inside the penetration.

7) outside the penetration, the foam is heated only by the cables and pipes that it carries. The surface temperature will remain low and easily comply with the maximum temperature increase of 180°C as required in the standards. Furthermore, the original cell structure is maintained at the non-exposed side. Therefore the foam remains mechanically intact as well.

ACTIFOAM® TEMPORARY MULTI-CABLE TRANSIT SEALING SYSTEM

ACTIFOAM®: INNOVATIVE TECHNOLOGY

ACTIFOAM® is used to fill any cavities or gaps in constructions. In case of fire the cavity will be totally filled with the expanding rubber, offering a perfect fire seal for a very long duration.

Oxygen index 40% (>30% is flame retardant).

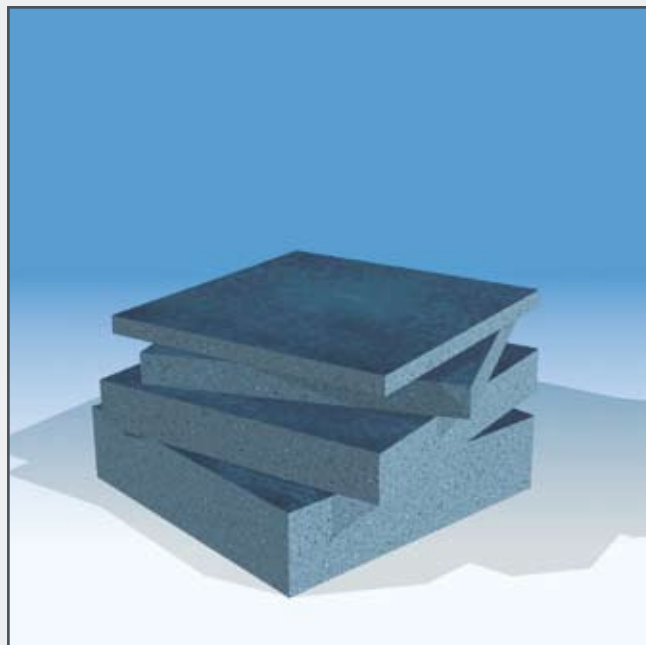
ACTIFOAM® can also be used for other sealing purposes.

An advantage is that ACTIFOAM® does not absorb water.

Tested at 2.5 bar water pressure during 24 hours.

Due to the closed cell structure, the rubber has good thermal insulation properties. The K value at 10 °C according to NEN-EN 12667 is 12.3 mk/W. The density of the foam rubber at 23 °C is between 0.35 and 0.4 g/cm³ in accordance with ISO 2781. Compression set of the foam rubber is 14% which stands for a good "memory".

Good weathering, UV and ozone resistance. Temperature range from -15 °C to +70 °C.



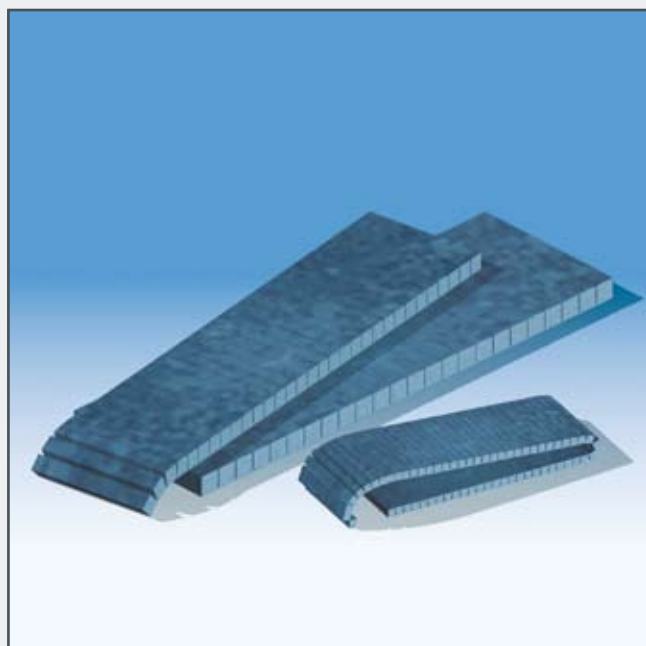
ACTIFOAM® foam rubber is supplied in sheets with a thickness ranging from 10 up to 25 mm.

Sheets are delivered in sizes:

500x500x7 mm	
500x500x10 mm	
500x500x15 mm	1000x500x15 mm
500x500x20 mm	1000x500x20 mm
500x500x25 mm	1000x500x25 mm

They can easily be cut to size with a sharp knife.

The colour is dark blue/grey.



ACTIFOAM® sheets and pre-slit sheets are delivered in sizes:

300x100x10 mm	600x100x10 mm
300x100x15 mm	600x100x15 mm
300x100x20 mm	600x100x20 mm
300x100x25 mm	600x100x25 mm
300x150x10 mm	600x150x10 mm
300x150x15 mm	600x150x15 mm
300x150x20 mm	600x150x20 mm
300x150x25 mm	600x150x25 mm
300x200x10 mm	600x200x10 mm
300x200x15 mm	600x200x15 mm
300x200x20 mm	600x200x20 mm
300x200x25 mm	600x200x25 mm
300x250x10 mm	600x250x10 mm
300x250x15 mm	600x250x15 mm
300x250x20 mm	600x250x20 mm
300x250x25 mm	600x250x25 mm

The 10 mm thick sheets have 30 (60) pre-cut profiles 10x10 mm, the 15 mm thick sheets 20 (40) profiles 15x15 mm, the 20 mm thick sheets 15 (30) profiles 20x20 mm and the 25 mm thick sheets 12 (24) profiles 25x25 mm.

The profiles can easily be torn off.

ACTIFOAM® TEMPORARY MULTI-CABLE TRANSIT SEALING SYSTEM

two components to transfer to RIACNOF® transits: sleeves and sealant



sleeve type	cable diameter	sleeve length (standard)	wall thickness
12/6	5 - 7	140-160-210	3
14/8	7 - 9	140-160-210	3
16/10	9 - 11	140-160-210	3
18/12*	11 - 13	140-160-210	3
20/14	13 - 15	140-160-210	3
22/16	15 - 17	140-160-210	3
27/19*	17 - 21	140-160-210	4
31/23	21 - 25	140-160-210	4
35/27	25 - 29	140-160-210	4
39/31	29 - 33	140-160-210	4
46/36	33 - 39	140-160-210	5
52/42	39 - 45	140-160-210	5
58/48	45 - 51	140-160-210	5
64/54	51 - 57	140-160-210	5
70/60	57 - 63	140-160-210	5

* filler sleeves are supplied non-split

dimensions in mm

optimum combination of viscosity, flow and bonding capacity of NOFIRNO® sealant

PRODUCT INFORMATION

- | | |
|-------------------------|---|
| 01) colour | red brown |
| 02) specific gravity | 1.40 ± 0.03 g/cm³ |
| 03) curing of top layer | 0.5 - 1 hour depending on temperature and air humidity |
| 04) service temperature | -50 °C up to +180 °C |
| 05) tensile strength | 1.5 MPa |
| 06) elongation at break | 200% |
| 07) hardness | 45 Shore A |
| 08) elastic deformation | approx. 50% |
| 09) resistance | UV, Ozone, arctic conditions |
| 10) ageing | more than 20 years |
| 11) supplied in | 310 ml cartridges |
| 12) storage | to be stored cool and dry
min/max temperature = +5/+30° C |
| 13) storage life | guaranteed 6 months; when applied later than 6 months after date of manufacturing, curing and adhesive properties have to be checked before application |



NOFIRNO® is a paste-like compound which is simple to use. NOFIRNO® has a balanced viscosity and can be applied overhead. After applying the sealant, it can be smoothed by means of a wet cloth or by hand. Because the sealant adheres very tightly, the cloth and hands should be wetted with water before use to prevent sealant from sticking to them.

ACTIFOAM® TEMPORARY MULTI-CABLE TRANSIT SEALING SYSTEM

1) ACTIFOAM® temporary seals should be used during the construction phase to avoid fire spread to adjacent areas through cable and pipe ducts not yet completed. The system allows easy access.

*Quality System Approval
SMS.W.I.CE.D/2357/A.0 and ISO
9001:2001 Certificate NL7001684
issued by Bureau Veritas*

ACTIFOAM



2) Use is made of ACTIFOAM® pre-slit rubber sheets. The 25 mm thick strips can be used best in square or rectangular openings, whilst 10 mm thick pre-slit sheets can be used easier in round conduit openings.

ACTIFOAM



ACTIFOAM® TEMPORARY MULTI-CABLE TRANSIT SEALING SYSTEM

3) The ACTIFOAM® strips can easily be piled in the larger areas. The pre-slit sheets can be rolled and stuffed into the remaining rounded areas. To obtain appropriate sealing, the sheets should be tightly rolled.

ACTIFOAM

The ACTIFOAM® system is approved for use as temporary seal during construction by Bureau Veritas and Det Norske Veritas.

Note: ACTIFOAM® temporary seals are not classed as a final A-class seal!

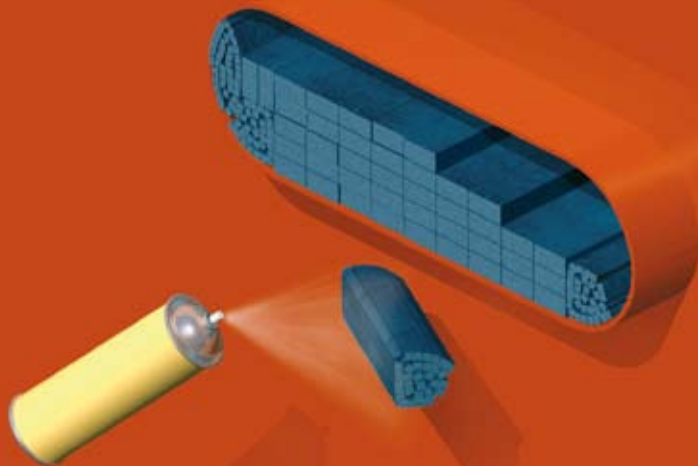


4) For ease of removal the ACTIFOAM® strips and rolls in a later stage they can be treated with a silicone spray. It is advisable to treat some of the strips only because otherwise the mechanical stability might suffer.

ACTIFOAM

The ACTIFOAM® system is approved for use as temporary seal during construction by Bureau Veritas and Det Norske Veritas.

Note: ACTIFOAM® temporary seals are not classed as a final A-class seal!



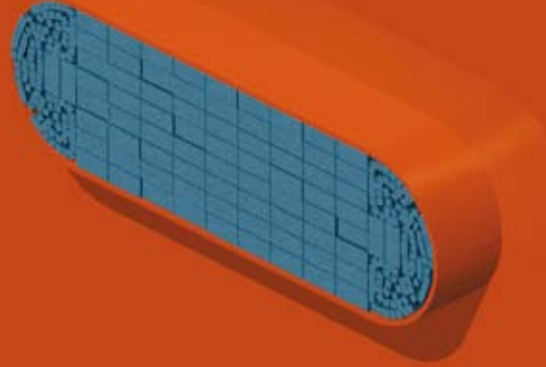
ACTIFOAM® TEMPORARY MULTI-CABLE TRANSIT SEALING SYSTEM

5) The ACTIFOAM® system is very easy to apply. In case of fire the ACTIFOAM® rubber expands and fills all air gaps. In this way the sealing system keeps the penetration tight and avoids flame spread.

ACTIFOAM

The ACTIFOAM® system is approved for use as temporary seal during construction by Bureau Veritas and Det Norske Veritas.

Note: ACTIFOAM® temporary seals are not classed as a final A-class seal!

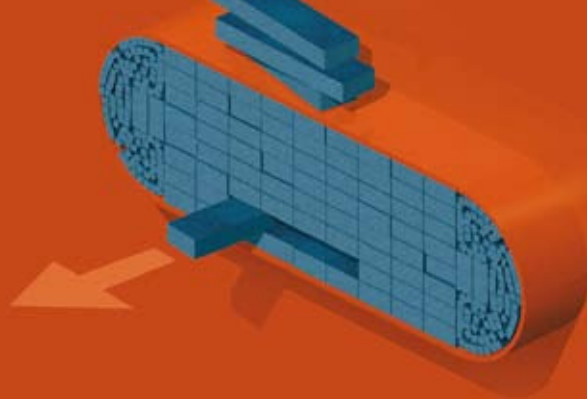


6) To pull cables through the conduit opening one or more ACTIFOAM® strips or rolls can be pulled out of the sealing system. In this way an opening can be created for ducting the cables.

ACTIFOAM

The ACTIFOAM® system is approved for use as temporary seal during construction by Bureau Veritas and Det Norske Veritas.

Note: ACTIFOAM® temporary seals are not classed as a final A-class seal!



ACTIFOAM® TEMPORARY MULTI-CABLE TRANSIT SEALING SYSTEM



ATTESTATION DT4/04/00606 LBN/NF

Manufacturer : BEELE ENGINEERING
Aalten, the Netherlands

Product : "ACTIFOAM" temporary seals

Description : The bulkhead or deck penetration (i.e coaming) is filled with ACTIFOAM sheets 25 mm thick at the bottom and side walls and the remaining spaces are filled with rolled ACTIFOAM pre-slit sheets 10 mm thick.

During the tests, following coaming dimensions were tested :

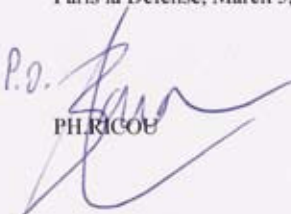
- 450 x 200 mm, depth 200 mm, bulkhead penetration (A-0 class steel bulkhead)
- Ø 273 mm, depth 160 mm, deck penetration (A.O Class steel deck)

Test : In house test report n° 0309-015 dated 19.09.03 following IMO A.754 (18) resolution (except furnace size). Test witnessed by DNV.

Scope of use : To be used during the building process of a vessel construction as temporary seals for bulkhead and deck penetrations.
In no case it shall be used as permanent A-O Class penetration.

Paris la Défense, March 3, 2004

L. BARON

P.O. 
PHRICOU

Misc. Act. 0604

The ACTIFOAM® system is approved for use as temporary seal during construction by Bureau Veritas and Det Norske Veritas.

Note: ACTIFOAM® temporary seals are not classed as a final A-class seal!

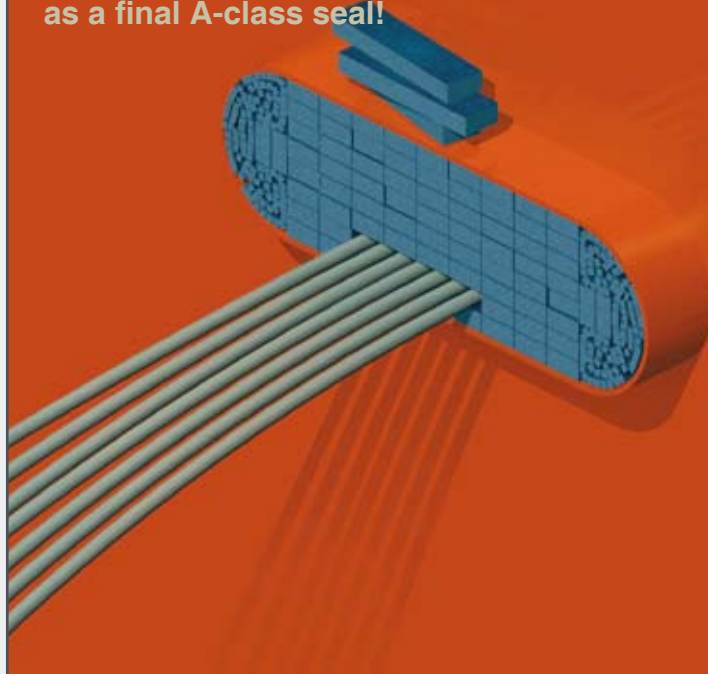
ACTIFOAM® TEMPORARY MULTI-CABLE TRANSIT SEALING SYSTEM

7) When the ACTIFOAM® strips are installed tightly fitted they won't fall down at the spot where some strips are removed. A steel or plastic plate can be placed on top of the underlying layer during pulling cables.

ACTIFOAM

The ACTIFOAM® system is approved for use as temporary seal during construction by Bureau Veritas and Det Norske Veritas.

Note: ACTIFOAM® temporary seals are not classed as a final A-class seal!

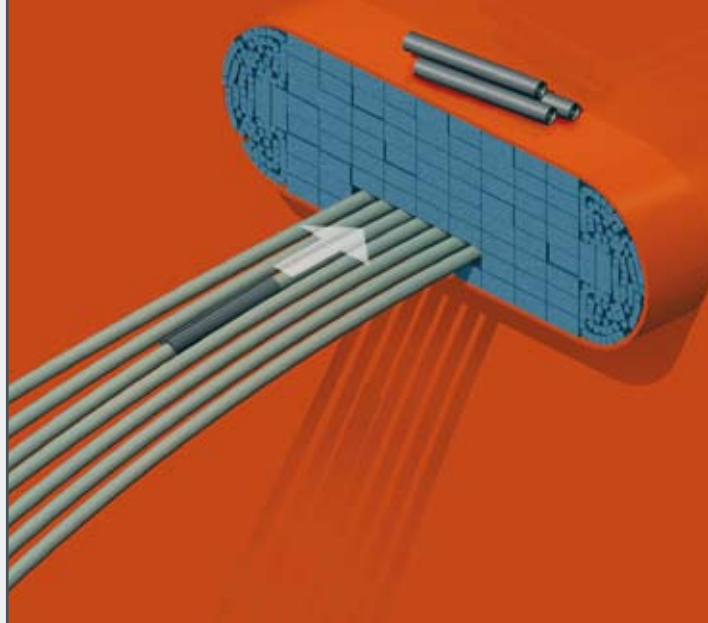


8) It is now also easy to prepare the penetration for the final sealing with the RISE® or RIACNOF® system. Just place insert sleeves around the cables and stuff these in the opening. The fire rating improves during construction.

ACTIFOAM

The ACTIFOAM® system is approved for use as temporary seal during construction by Bureau Veritas and Det Norske Veritas.

Note: ACTIFOAM® temporary seals are not classed as a final A-class seal!



RISE® AND RIACNOF® MULTI-CABLE TRANSIT SEALING SYSTEM

Page 1/3

MARINE DIVISION

17 bis Place des Reflets - La Defense 2

92402 Courbevoie - France

Tel. 33 1 42 91 52 91

Fax. 33 1 42 91 28 94

www.vertair.com

Certificate number: 09156/02 EC

File number : ACI 4000/041/004

Annex A1 Item number : A, 1/3, 258

USCG approval category : 164.136

This certificate is not valid when presented without the full attached schedule composed of 7 sections

EC TYPE EXAMINATION CERTIFICATE

as per Module B of European Union Council Directive 90/96/EC on marine equipment
as last amended by Commission Directive 2002/75/EC of 2 September 2002

This certificate is issued to

BEELE ENGINEERING

Aachen - NETHERLANDS

for the type of product

PENETRATIONS THROUGH "A" CLASS DIVISIONS: ELECTRIC CABLE TRANSITS
RISE/NORIRN, RISE/NORIRN EXTENDED single-multi-cable transit and multi-tube, and RIACNOF multi-cable transit

Regulations and standards :

SOLAS 74 Convention, as amended, Regs II-2/3.3.1 - IMO Resolution MSC 61(57)(TP Code) Annex 1 Part 3 and Annex 2 - IMO Resolution A.754 (18).

This certificate is issued under the French Maritime Authority to attest that BUREAU VERITAS did undertake the relevant type-examination procedures for the product identified above which was found to comply with the relevant requirements of the Council Directive 90/96/EC of 20 December 1990 as amended

This certificate is valid until : 16 Nov 2009

At Paris la Defense, on: 09 April 2008

For BUREAU VERITAS, Notified Body N°062

By order of the Secretary

Approval office

Local office : BV ROTTERDAM

Bureaucr. J. Huis

L. COCHIMBERG-CHAVIERE

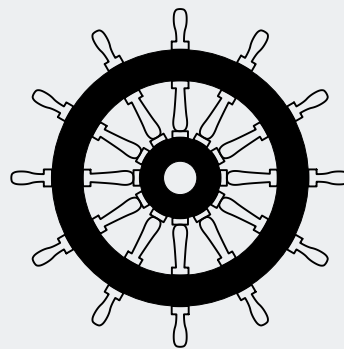
This certificate does not allow to issue the Declaration of Conformity and to affix the mark of conformity (signature) to the products corresponding to this type. To this end, the production control phase module B1, B2 or B3 of Annex B of the Directive is to be completed with and controlled by a written inspection agreement with a notified body.

This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the adjacent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant imposes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with BUREAU VERITAS. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) have to be re-approved prior to affixing being placed on board vessels in which the amended regulations or standards apply. BUREAU VERITAS S.A. is designated by the French Maritime Authority as a 'notified body' under the terms of the French Regulations Chapter 142 Chapter 142-2. This certificate is issued within the scope of the General Conditions of BUREAU VERITAS Marine Division. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against BUREAU VERITAS for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

Bf most. AEE 506 August 2006

This certificate consists of 3 pages

EC (MED) certificates according to EUROPEAN UNION COUNCIL DIRECTIVE 96/98 EC on MARINE EQUIPMENT have been issued by Det Norske Veritas certificates N° MED-B-4906 for RISE/ULTRA and N° MED-B-4908 for RISE/NOFIRNO multi-pipe and multi-all-mix penetrations and by Bureau Veritas certificates N° 09156/B2 EC for RISE, RISE/NOFIRNO and RIACNOF multi-cable penetrations and extended multi-cable penetrations, N° 11301/B0 EC for RISE-EMC multi-cable penetrations, N° 11302/A2 EC for RISE busbar penetrations and certificates N° 10035/B0 EC and N° 10710/B1 EC for RISE single and multi-pipe penetrations for metallic and plastic pipes.



AMERICAN BUREAU of SHIPPING
BUREAU VERITAS
CHINA CLASSIFICATION SOCIETY
CHINA CORPORATION REGISTER of SHIPPING
DET NORSKE VERITAS
GERMANISCHER Lloyd
KOREAN REGISTER of SHIPPING
Lloyd's REGISTER of SHIPPING
Nippon Kaiji Kyokai
RUSSIAN MARITIME REGISTER of SHIPPING
TRANSPORT CANADA via DNV CERTIFICATES
USCG via MED CERTIFICATES

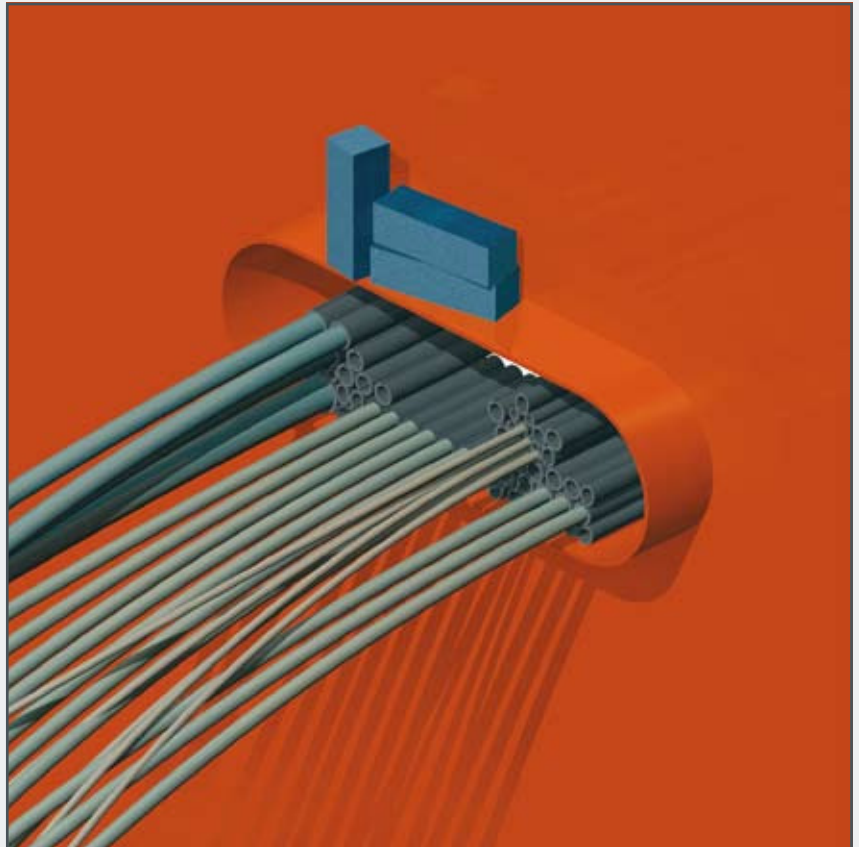
RISE

**CERTIFIED BY
THE MAJOR
CLASSIFICATION
SOCIETIES**

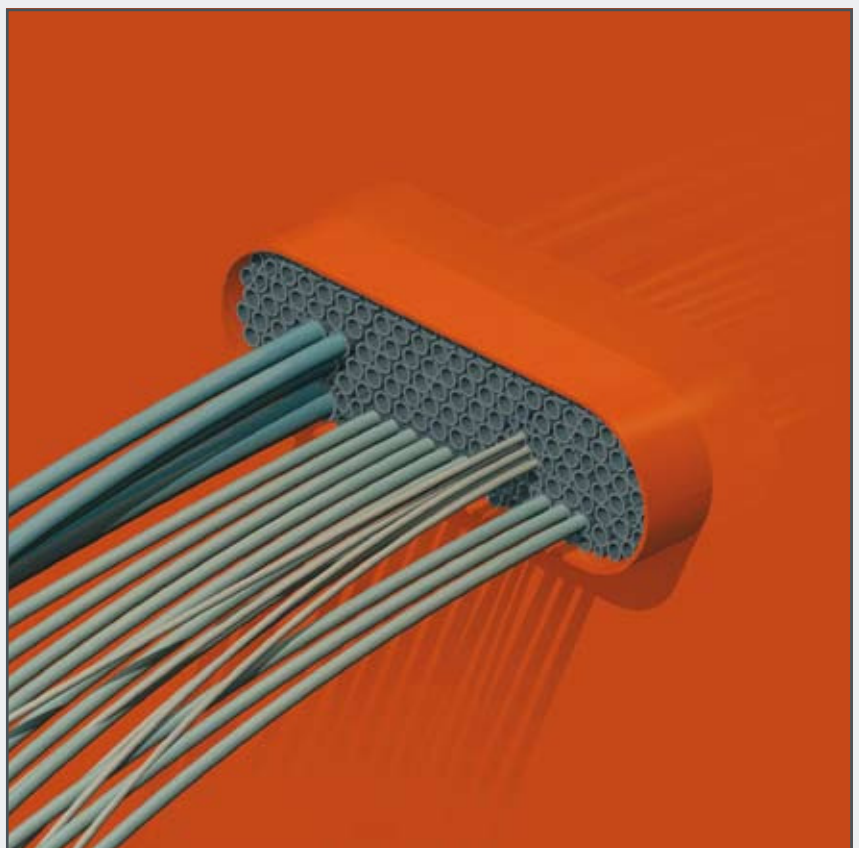
Note: configurations may differ per classification society.

ACTIFOAM® TEMPORARY MULTI-CABLE TRANSIT SEALING SYSTEM

9) When the installation is completed and no more cables have to be pulled through the penetration, all ACTIFOAM® could be removed for final finishing as a RISE® multi-cable penetration.

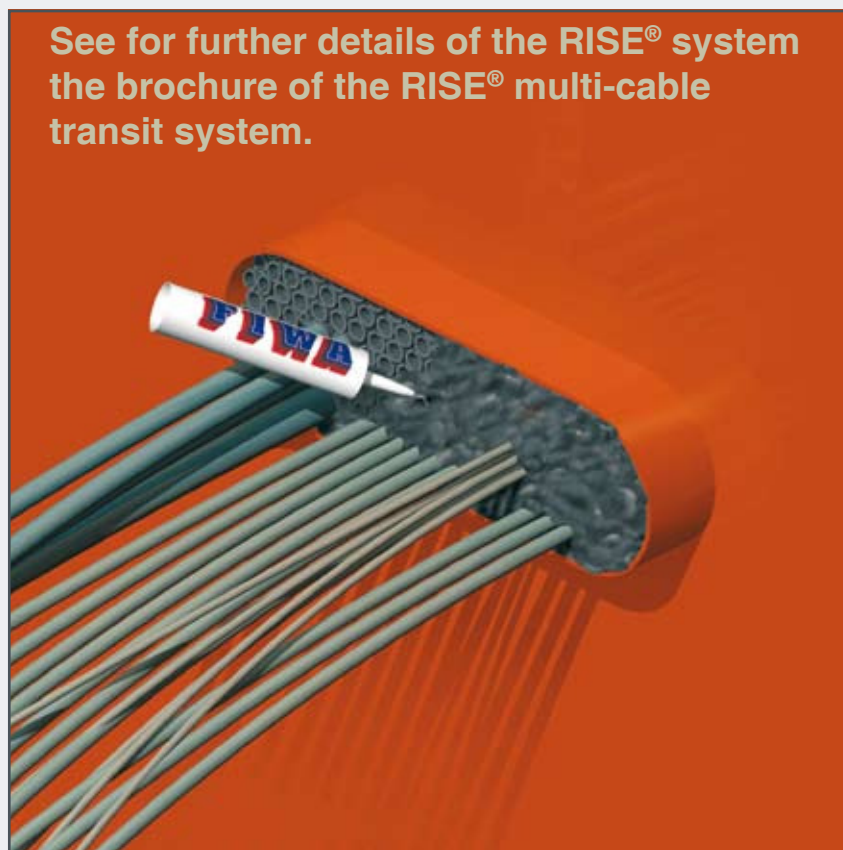


10) The remaining open space in the penetration is filled with RISE® filler sleeves or the ACTIFOAM® fillers can stay in place. We refer to the installation instructions of the RISE® or the RIACNOF® system.

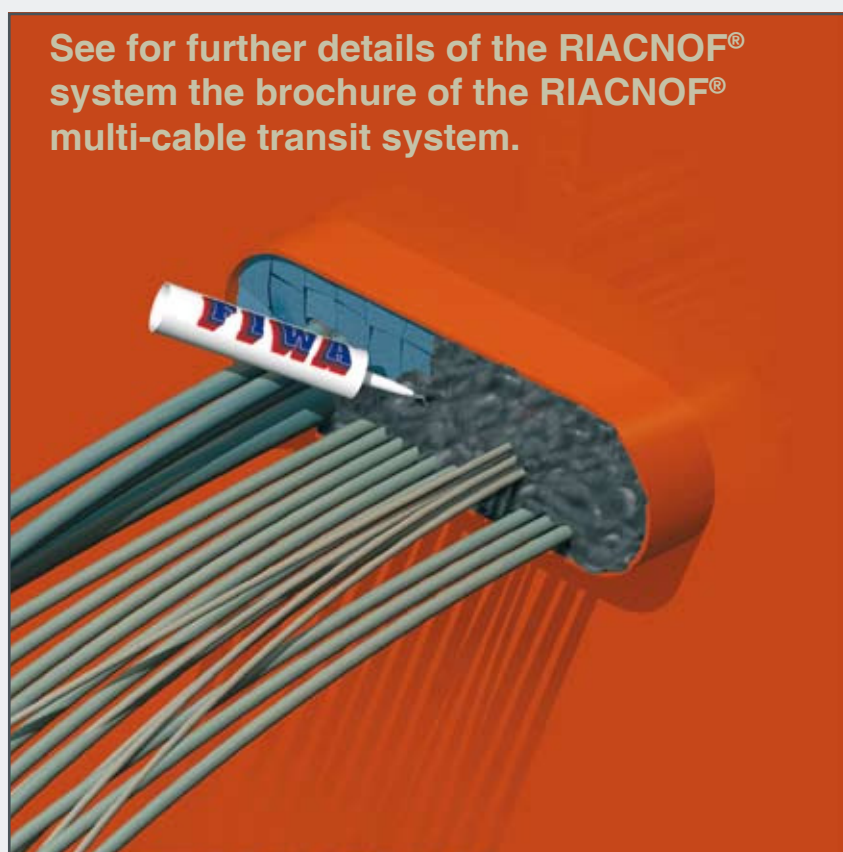


ACTIFOAM® TEMPORARY MULTI-CABLE TRANSIT SEALING SYSTEM

11) A 20 mm thick layer of FIWA® sealant is applied at each side of the conduit. Clean and dry the conduit opening and the cables thoroughly and remove any dirt, rust or oil residues before applying the sealant.



12) In case of transfer to a RIACNOF® multi-cable penetration, 20 mm thick layer of FIWA® or NOFIRNO® sealant is applied at each side of the conduit.

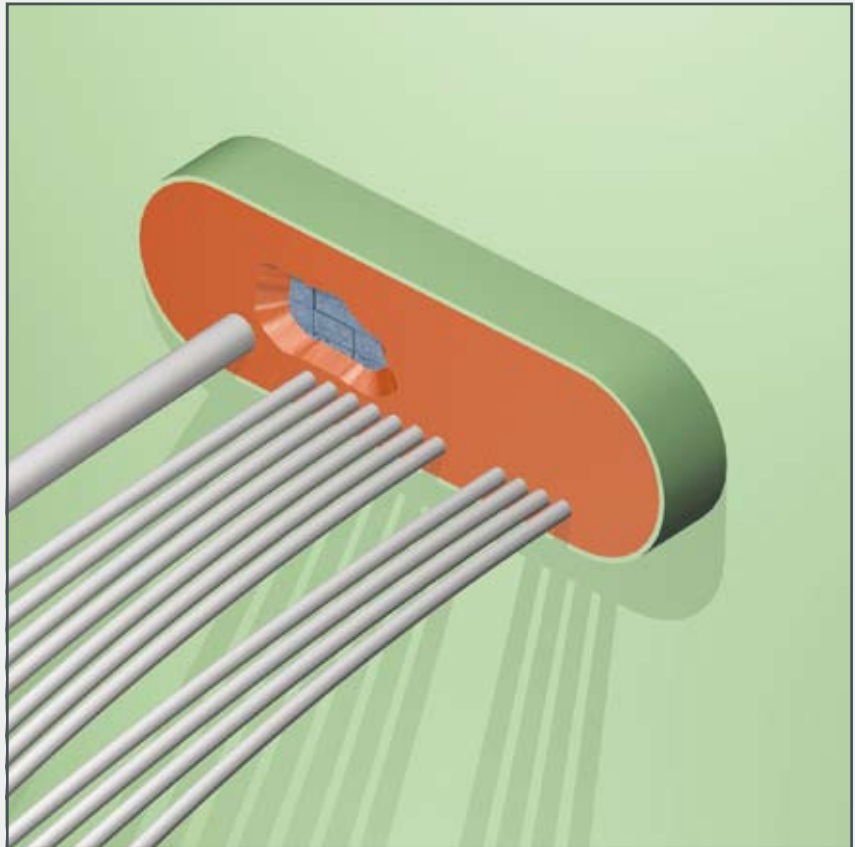


RIACNOF® MULTI-CABLE TRANSIT SEALING SYSTEM

13) Adding extra cables is an easy job.

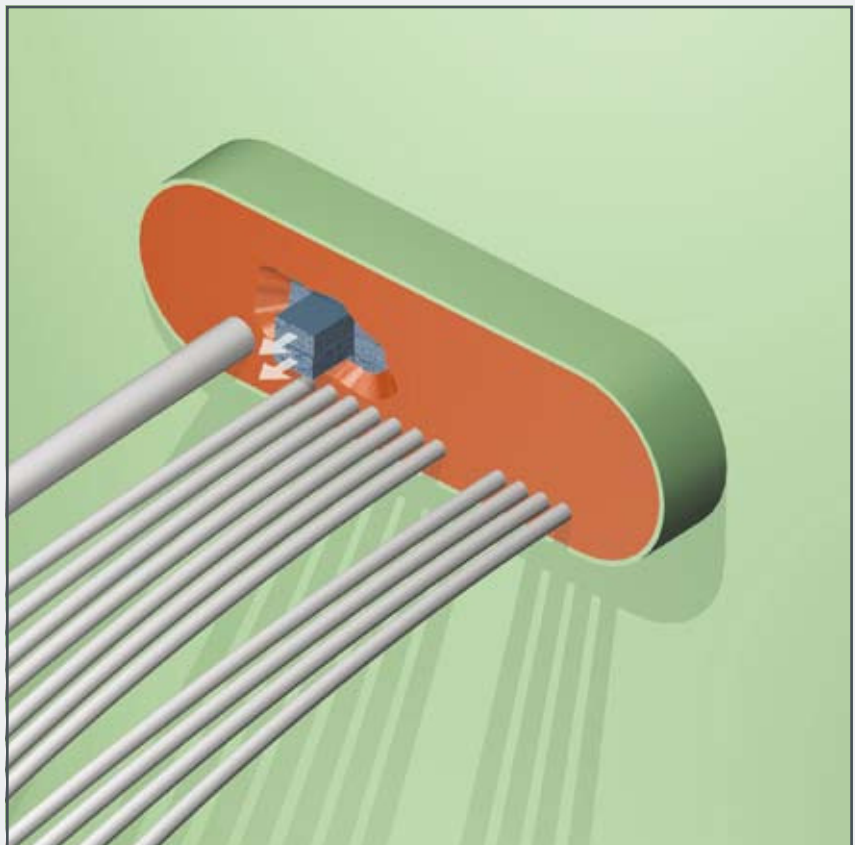
Cut away the NOFIRNO® sealant layer at both sides of the penetration with a knife or a hollow punch in a tapering shape.

This creates a good foundation for the sealant mass to be applied later.



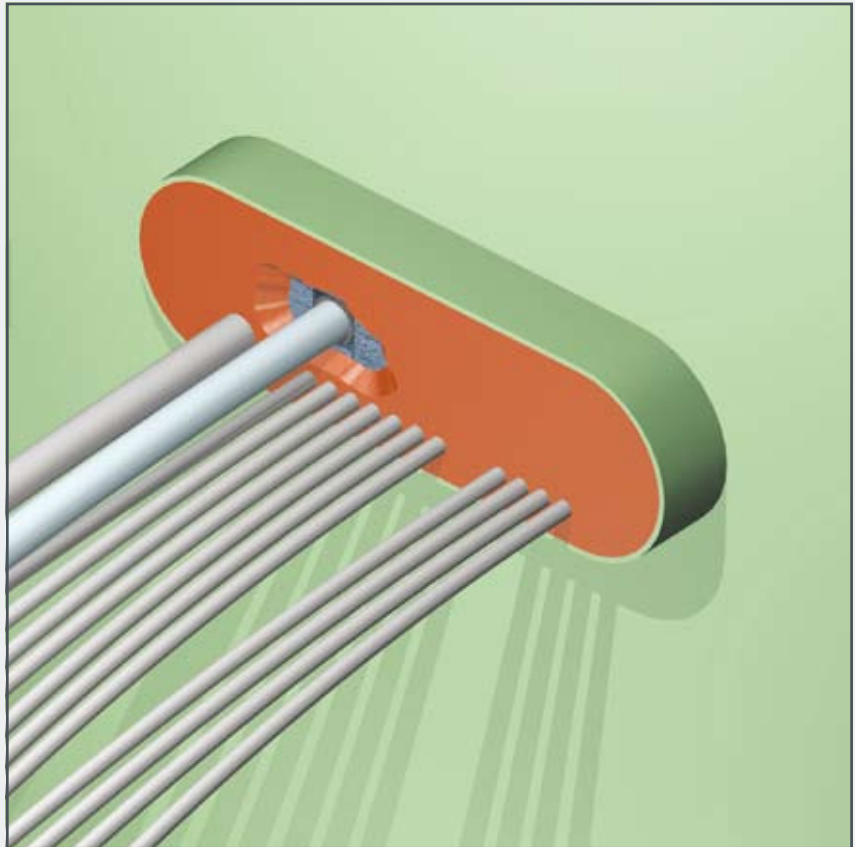
ACTIFOAM

14) Remove one or more of the ACTIFOAM® filler strips.



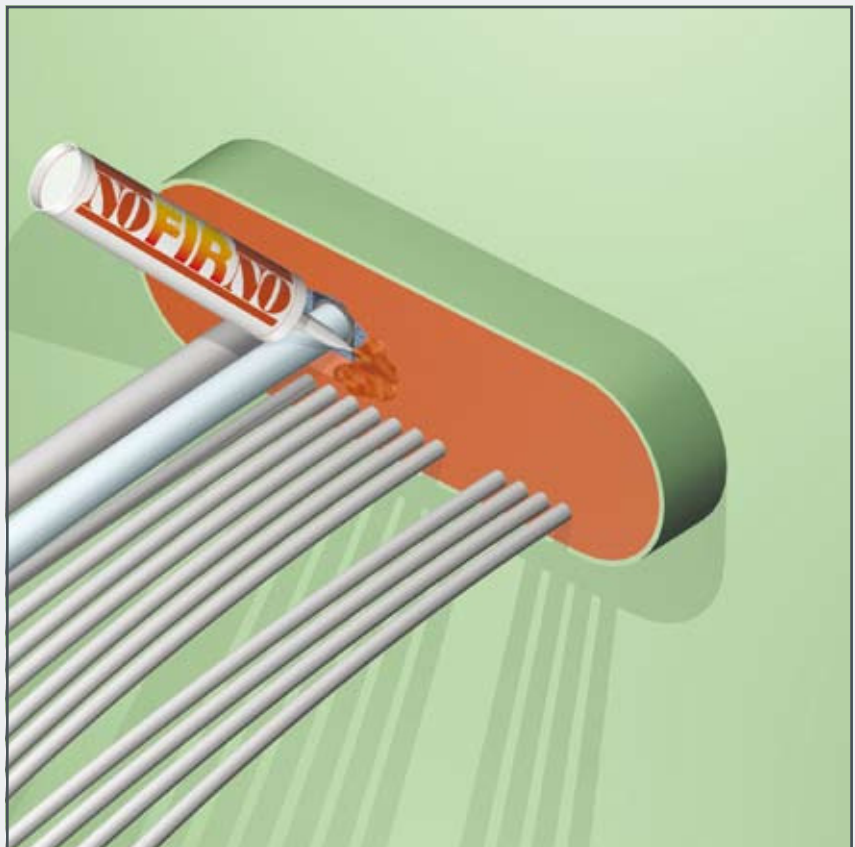
RIACNOF® MULTI-CABLE TRANSIT SEALING SYSTEM

15) Pull the cable through the conduit and place a RISE® insert sleeve around the cable.
Fill the remaining space with ACTIFOAM® filler strip(s).



ACTIFOAM

16) Reseal the sealant layer with NOFIRNO® sealant.
Press down and smooth as described before.



RIACNOF® MULTI-CABLE TRANSIT SEALING SYSTEM

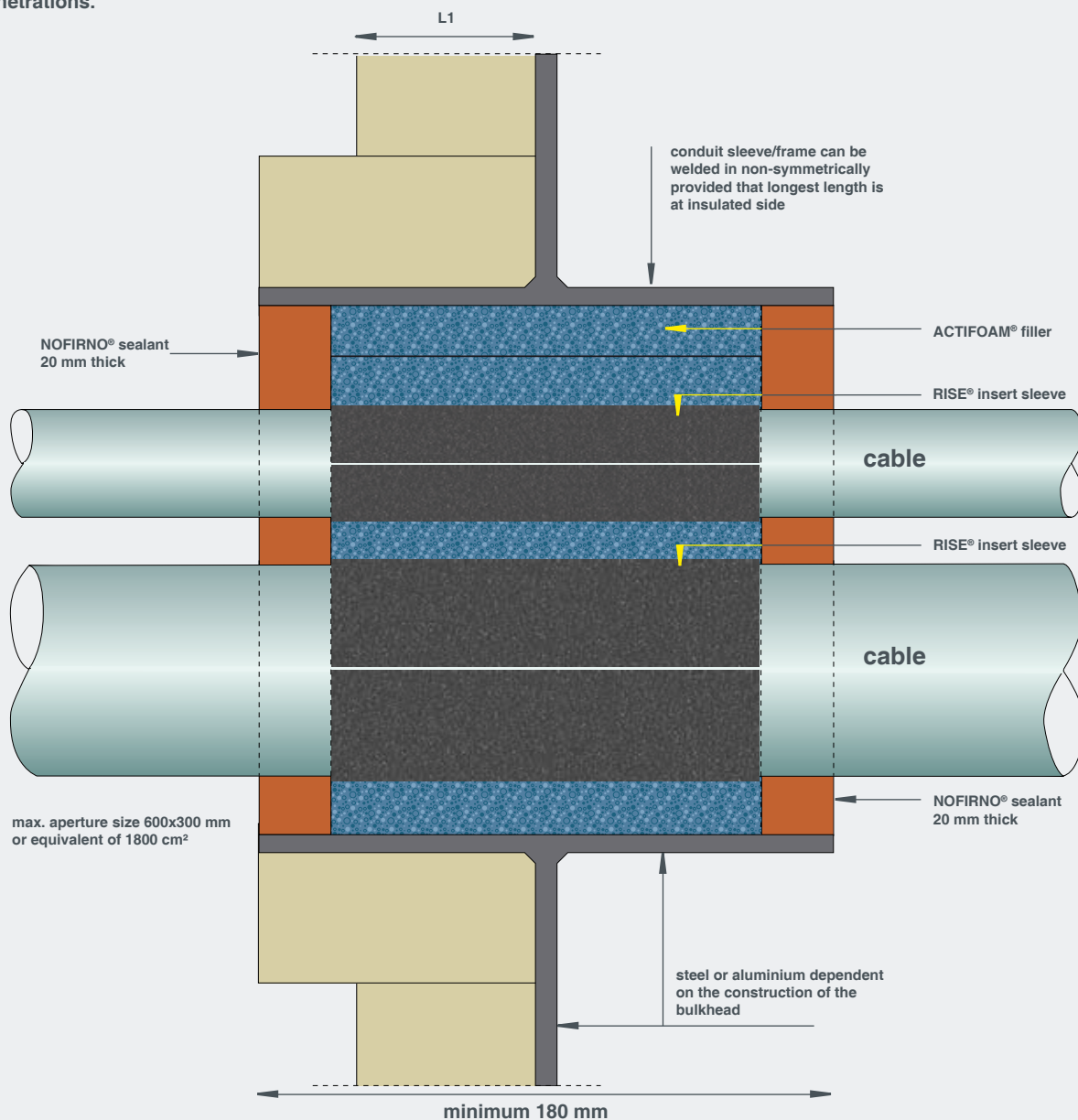
DIAGRAMMATIC OVERVIEW OF SHIPBUILDING/OFFSHORE APPLICATIONS

L1: A-60 approved bulkhead insulation

- APPROVED FOR ALL TYPES OF CABLES INCL. LAN AND CLX
- APPROVED FOR CABLE SIZES UP TO 105 MM OD AND UP TO 3x400 MM²
- APPROVED FOR BUNDLED CABLES UP TO 15 MM - MAX BUNDLE SIZE 50 MM

Bundling not allowed for watertight penetrations.

- NO EXTRA INSULATION REQUIRED AT THE FRONT OF THE PENETRATION AND/OR IN BETWEEN THE CABLES



Specifications for A-class according to EC (MED) certificate 09156/B2 EC

Non-fire rated conduits which should only be gas or water tight can be shorter in length. For ease of installation it is advisable for the length of the coaming not to be shorter than 100 mm.

A0-A60 MULTI-CABLE TRANSIT

RISE® MULTI-CABLE TRANSITS: THE RAPID® SEALING SYSTEM

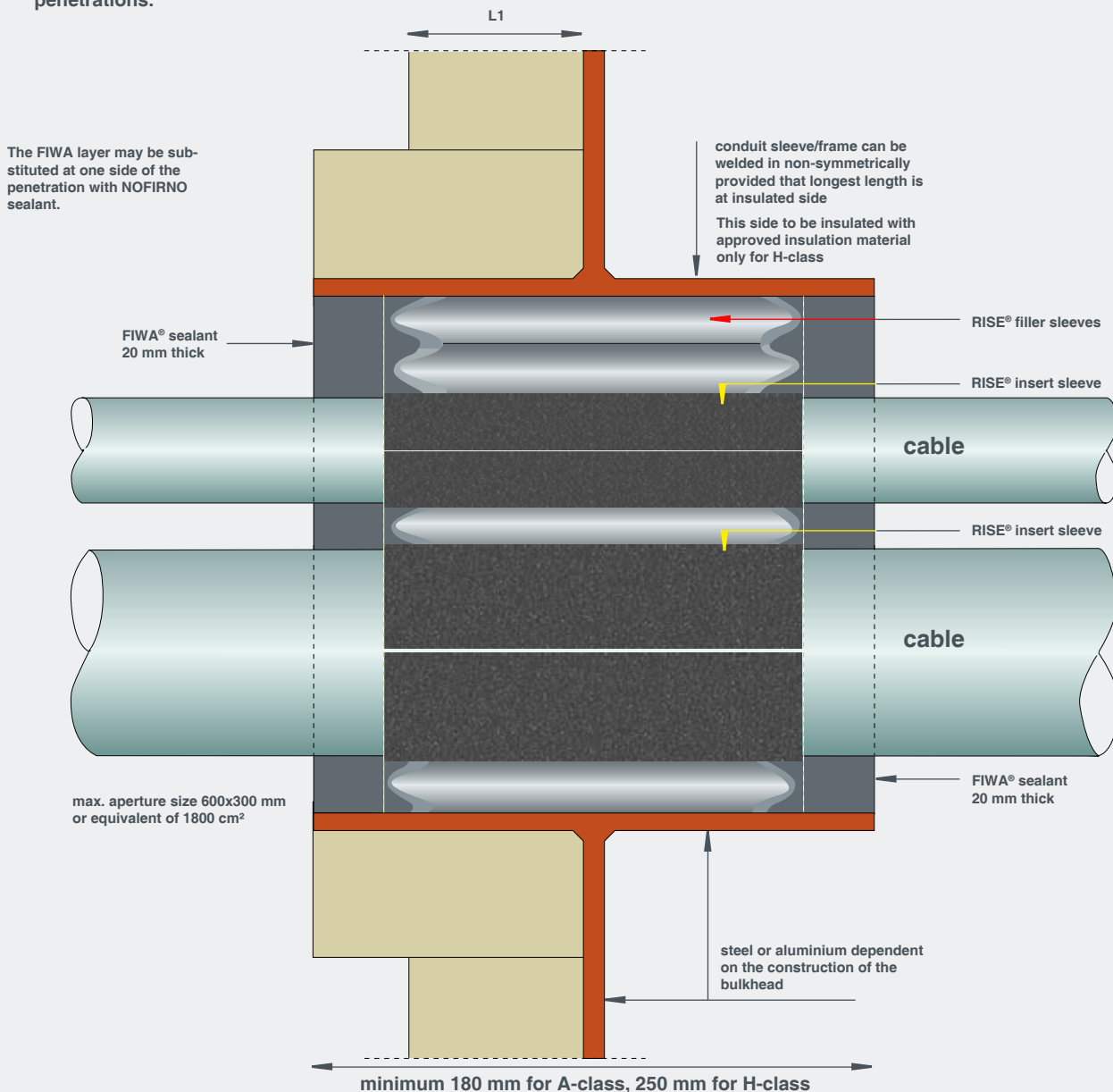
DIAGRAMMATIC OVERVIEW OF SHIPBUILDING/OFFSHORE APPLICATIONS

L1: A or H-class approved bulkhead insulation

- APPROVED FOR ALL TYPES OF CABLES INCL. LAN AND CLX
- APPROVED FOR CABLE SIZES UP TO 105 MM OD AND UP TO 3x400 MM²
- APPROVED FOR BUNDLED CABLES UP TO 15 MM - MAX BUNDLE SIZE 50 MM

Bundling not allowed for watertight penetrations.

- NO EXTRA INSULATION REQUIRED AT THE FRONT OF THE PENETRATION AND/OR IN BETWEEN THE CABLES



Specifications for A-class according to EC (MED) certificate 09156/B2 EC and for H-class to Type Approval Certificate 11908/A0 BV. Also approved for busbar penetrations: EC (MED) certificate 11302/A2 EC

Non-fire rated conduits which should only be gas or water tight can be shorter in length. For ease of installation it is advisable for the length of the coaming not to be shorter than 100 mm.

**A0-A60 / H0-H120
CABLE TRANSIT**

RISE® AND RIACNOF® MULTI-CABLE TRANSIT SEALING SYSTEM



DRIFIL® is a water-repellent sealant based on a single-component silicone compound. In developing DRIFIL® sealing compound, high priority was focused on its power of adhesion to subsurfaces as occurring in the construction sector, and to cable sheathing and metal and plastic pipes.

In addition, special attention was given to the permanent flexibility of the sealant in order to permit minor settlements and movements of the cable/pipe bunch after the sealant has set. The purpose of this is to ensure that the seal remains intact in the longer term even in spite of possible mechanical loading.

DRIFIL® sealant has a very short setting time. The top layer is rapidly tack-free.



FIWA® is a fire-resistant sealant based on a single component silicone compound. FIWA® is also water-repellent. The sealant adheres well to most subsurfaces occurring in the building industry, and is permanently elastic. In the event of fire or at temperatures in excess of 200 °C the sealant expands to about five to ten times its original volume. During this process a porous mass is formed which has excellent thermal insulation properties. In contrast to conventional materials that swell under severe heat exposure, the expansion of FIWA® is not caused by intumescence, but by a chemical process.

The advantage of this is that the expansion of FIWA® is not accompanied by the formation of fumes.



NOFIRNO® is a fire-resistant sealant based on a single component silicone compound. The numerous fire tests we have carried out with NOFIRNO® sealant has shown that the sealant is able to withstand fire and thermal loads without showing any dramatic colour change or carbonization at the unexposed side. At the exposed side the sealant will NOT be consumed by the fire due to the protective layer and char formed. This means that the sealant stays in place there. NOFIRNO® sealant is halogen free, does not harden during service life, has outstanding weathering properties, does not shrink during fire exposure, has an oxygen index of 45% (>30% is flame retardant) and a low smoke index. Can be used in a very wide temperature range.



For ease of application of very high viscosity sealants, we have selected a powerful manual applicator with a 26 : 1 trigger leverage. This means much easier dispensing and reduced fatigue. The applicator is equipped with the so-called Wear Compensating Device, which automatically removes free-play in the trigger to provide instant rod drive immediately when the trigger is pulled. Less full trigger strokes required to empty a cartridge. Extended working life of the applicator.



We have also selected a powerful pneumatic applicator for highest productivity. Quiet operation (less than 70 dB). Air supply to suit most standard systems. Fast, easy pressure regulation for accurate flow control. High volume trigger valve for immediate sealant flow. Ergonomic design: comfort, minimal operator fatigue. Short, well balanced design, combined with lightweight engineering plastic and aluminium components. Also available for 1 liter cartridges.

RISE® AND RIACNOF® MULTI-CABLE TRANSIT SEALING SYSTEM

*ease of calculation with
our cable and pipe penetrations*

TRANSIT CALCULATOR

**Calculate
your materials
requirements for our
fire safe and gas and
smoke tight sealing
systems**

**RISE
RISE/NOFIRNO
RISE/ULTRA
RISWAT
RIACNOF**



Free software. Can be downloaded from our website <http://www.rise-systems.com>.

After the entry of the dimensions of the conduit opening and the amount and outer diameters of the ducted cables or pipes, the software calculates the amount of RISE® or RIWAT® insert sleeves, the RISE®, RISWAT® or NOFIRNO® filler sleeves, the ACTIFOAM® spare filling sheets, the RISE® or RISE®/ULTRA crushers and the DRIFIL®, FIWA® or NOFIRNO® sealant.

It is easy to switch between the several systems and also between A-class, H-class, EMC and watertight penetrations.

After entry of the dimensions and amount and sizes of cables/pipes, a drawing appears on the screen showing also the remaining free space in the conduit opening. Furthermore the filling rate of the cable penetrations is shown.

Warnings appear for deviations of the certified configurations and for overfilling the transits or exceeding filling rates.

For a created project all calculated transits can be stored in a database. Order/calculation forms can be shown on screen for project totals and single transits. The material lists can be printed and/or exported to MS Word.

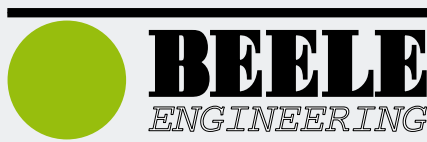
*we are there with full support for
our cable and pipe penetrations*

ARTIST IMPRESSION OF THE FIRST PHASE OF THE NEW FACTORY NEXT TO OUR R&D CENTRE



- 1) machines specially developed for compounding and processing of rubbers under controlled conditions to obtain optimum quality
- 2) machines specially developed for compounding and manufacturing of all types of sealants under controlled processing
- 3) moisture treatment installation and processing equipment for manufacturing of electrically conductive sealants and rubbers
- 4) a complete line of injection moulding presses ranging from 40 tons up to 400 tons for manufacturing sealing plugs and other rubber components
- 5) a complete line of compression moulding presses up to 300 tons for manufacturing larger type sealing plugs and ULEPSI rubber plates
- 6) processing installation for after-curing of rubber products to obtain the required compression set (long term behaviour)
- 7) extruder line including cooling system and cutting and slitting installation for manufacturing insert and filler sleeves for the RISWAT system
- 8) fully automatic extruder lines with a length of 20 meters, including cooling system and automatic cutting, slitting and sorting installation for manufacturing rubber insert and filler sleeves and rubber strips of the RISE system
- 9) extruder line for manufacturing luminescent profiles and hoses
- 10) injection moulding machine for manufacturing thermoplastic YFESTOS products and other plastic parts
- 11) completely equipped die-making shop for the in-house production of all tooling for rubber and plastics manufacturing
- 12) modern laser equipment for engraving the type codes in the dies for rubber manufacturing and for marking products with bar and 2D-matrix codes
- 13) mixing and airless spraying facilities for the NOFIRNO boards

*Together with highly advanced systems and technologies
we offer highest quality products.*



**YOUR RELIABLE
PARTNERS**



ACTIFOAM

MAXIMUM SIMPLICITY OF USE OPTIMUM FLEXIBILITY OUTSTANDING PERFORMANCE

Websites: <http://www.actifoam.com>, www.beele.com, www.csdplugs.com, www.firsto.com,
www.nofirno.com, www.rise-systems.com, www.riswat.com and www.slipsil.com

ASK FOR THE SEPARATE BROCHURES ON OUR PRODUCT RANGES:

- * RISE® MULTI-CABLE TRANSIT SYSTEM
- * RISE® SEALING SYSTEM FOR SINGLE AND MULTI-PIPE PENETRATIONS
- * RIACNOF® MULTI-CABLE TRANSIT SYSTEM
- * RISE®/NOFIRNO® MULTI-ALL-MIX CABLE AND PIPE TRANSITS
- * RISE®-ULTRA SINGLE PLASTIC PIPE PENETRATIONS
- * RISWAT® GAS AND WATERTIGHT CABLE AND PIPE DUCTS
- * SLIPSIL® SEALING PLUGS FOR PIPE ENTRIES
- * SLIPSIL®-SQ MULTI-CABLE TRANSITS
- * DYNATITE® DYNAMIC HIGH PRESSURE SEALS
- * BEESEAL® MULTI-PIPE AND CABLE PENETRATIONS
- * ACTIFOAM® TEMPORARY SEALS AND CAVITY SEALS
- * FIRSTO® FIRESTOPS FOR CABLE TRAY PENETRATIONS
- * NOFIRNO® CAVITY SEALS, COATINGS AND SEALANTS
- * ULEPSI® TANK SUPPORTS FOR BITUMEN TANKERS



**CONDUIT SEALING DEVICES OF AN
AMAZING SIMPLICITY WITH AN
OUTSTANDING PERFORMANCE**

ACTIFOAM

BEELE Engineering and CSD International have been involved with fire, water and gas tight sealing for more than 30 years. We have developed and tested products proven to provide the utmost in sealing protection around the world. To receive our complete civil construction and/or marine products catalogues, please contact your distributor or local representative.

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