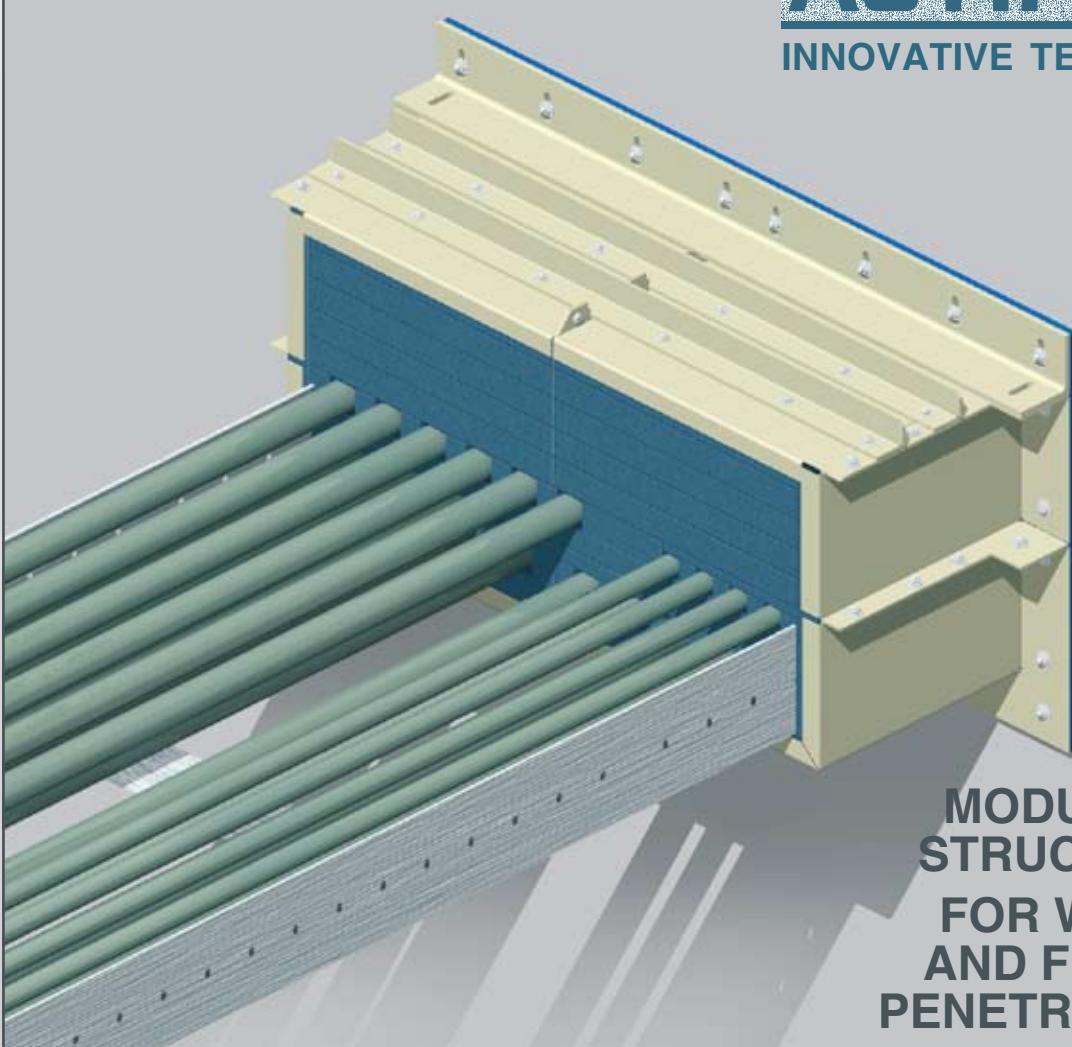


FIRSTO®-ACTIFOAM® SEALING SYSTEM FOR CABLES/CABLE WAYS IN BUILDING AND INDUSTRIAL PLANTS

ACTIFOAM
INNOVATIVE TECHNOLOGY



**MODULAR
STRUCTURE
FOR WALL
AND FLOOR
PENETRATIONS**

**SUCCESSFULLY TESTED ACCORDING TO
UL1479, DIN 4102 AND EN 1366-3:2004;
FIRE RESISTANCE UP TO 120 MINUTES FOR
WALL OPENINGS UP TO 750X400 MM**

ACTIFOAM

**MAXIMUM SIMPLICITY OF USE
OPTIMUM FLEXIBILITY
OUTSTANDING PERFORMANCE**

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

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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, MULTI-ALL-MIX, NOFIRNO, RAPID TRANSIT SYSTEM, RIACNOF, RISE, RISWAT, S, SLIPSIL, flanges SLIPSIL plugs, ULEPSI and YFESTOS are registered trade marks of BEELE Engineering BV.
brochure code	: FIRSTO/hb/en/con

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 of 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.

FIRSTO® - ACTIFOAM® CABLE AND CABLE RUN PENETRATIONS

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 (intumescence) 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.

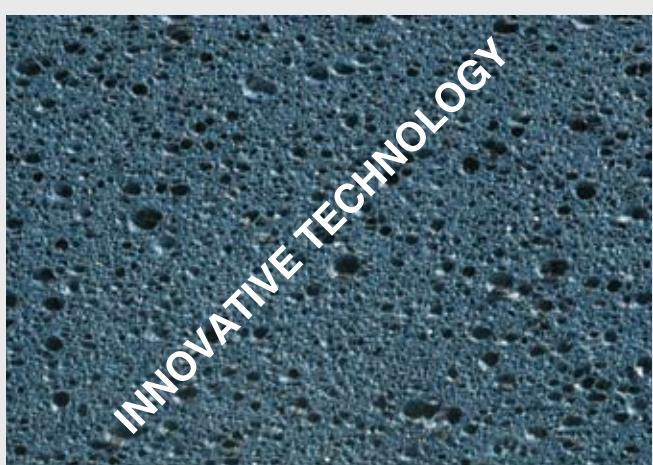
Based on the ACTIFIRE® technology it has proved possible to produce mixtures of rubbers and thermoplastics having an oxygen index far in excess of the minimum value of 30 LOI (Limiting Oxygen Index) which is specified for flame-suppressant materials. Rubber mixtures have even been formulated which exhibit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



FIRSTO® - ACTIFOAM® CABLE AND CABLE RUN PENETRATIONS

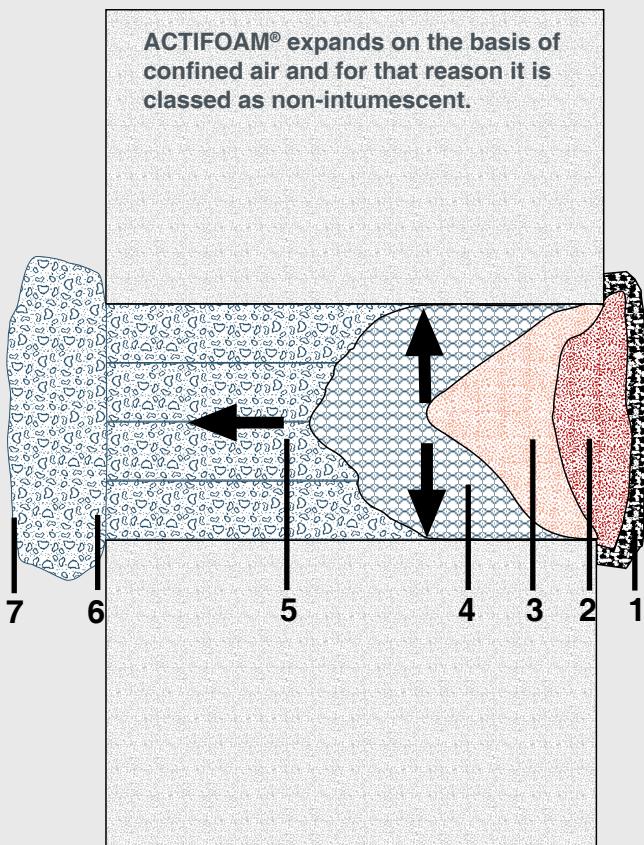
ACTIFOAM®: INNOVATIVE TECHNOLOGY

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



1) at the exposed side some expansion of the foam first 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 casing. Because of the pressure exerted by the foam mass expanding inside the casing, only some foam applied in the front part of the opening will be forced out of the casing. As a result, the foam emerging from the penetration will swell to a larger size than when it was inside the penetration and provide renewed sealant protection.

7) 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.

FIRSTO® - ACTIFOAM® CABLE AND CABLE RUN PENETRATIONS

ACTIFOAM®: INNOVATIVE TECHNOLOGY

BEELE Engineering: the inventor of the ACTIFIRE® technology

In developing the FIRSTO® firestop on the basis of the ACTIFOAM® technology it was sought to keep the number of components to the absolute minimum. The FIRSTO® firestop consists of a metal enclosure, a set of ACTIFOAM® sheets for the fire safe filling and a set of gaskets.

FIRSTO® firestops are available for wall and floor penetrations. They have a modular composition.

ACTIFOAM® foam rubber sheets with a thickness of 25 mm are standard supplied for the filling of the space for ducting of all types of FIRSTO® firestops. The sheets can easily be cut to size with a sharp knife to create a proper cable separation and filling of the open spaces. Pre-slit sheets are available to fit the filling to the cable configuration so that cutting at site is reduced to a minimum.

COMPONENT PARTS OF THE FIRESTOP

Basically, the FIRSTO® firestop consists of a metal enclosure, a fire safe filling with ACTIFOAM® sheets and a set of gaskets.

The metal enclosure consists of a casing (a), an attachment bracket (b) and a cover (c).

Angle-irons are positioned below the casing and on the cover to ensure sufficient stability under fire load.

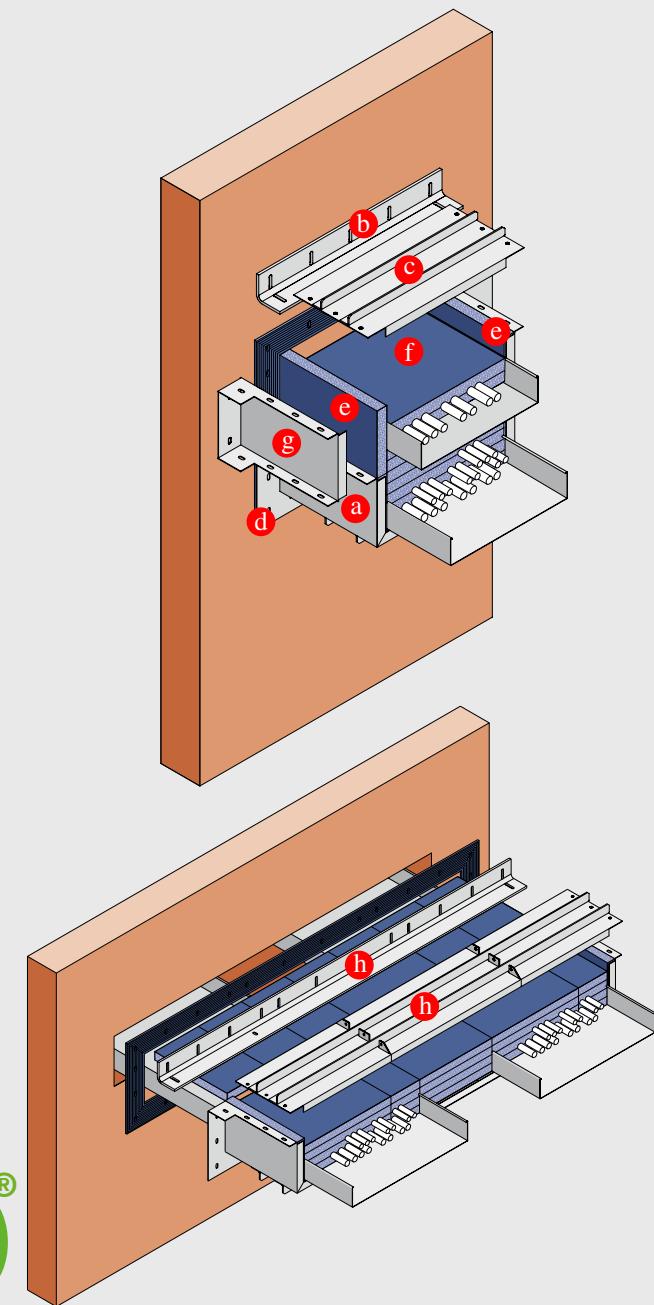
A fireproof gasket (d) is fitted between the casing and the wall or floor.

Inside the enclosure, fireproof ACTIFOAM® sheets (e) with a thickness of 25 mm are placed all round against the walls of the casing and below the cover. The space around the cable tray and in between the cables is packed with ACTIFOAM® sheets cut to size or ACTIFOAM® pre-slit sheets (f) in various thickness.

Height adapters (g) are placed between the casing and the cover to enable the firestop to be adjusted in height to the existing conduit opening.

Length adapters (h) are placed between the sides of the casing and the cover in order to adjust the firestop in length to the existing conduit opening.

Note: the ACTIFOAM® sheets which are used against the side walls and at the bottom of the casing and underneath the cover plate should have always a thickness of 25 mm. The thickness of the ACTIFOAM® sheets used for filling may vary on the basis of the cable set. The standard set of filling consists of ACTIFOAM® sheets 25 mm thick.



FIRSTO®

FIRSTO® - ACTIFOAM® CABLE AND CABLE RUN PENETRATIONS

ACTIFOAM®: INNOVATIVE TECHNOLOGY

BEELE Engineering: the inventor of the ACTIFIRE® technology

In developing the FIRSTO® firestop on the basis of the ACTIFOAM® technology it was sought to keep the number of components to the absolute minimum. The FIRSTO® firestop consists of a metal enclosure, a set of ACTIFOAM® sheets for the fire safe filling and a set of gaskets.

FIRSTO® firestops are available for wall and floor penetrations. They have a modular composition.

ACTIFOAM® foam rubber sheets with a thickness of 25 mm are standard supplied for the filling of the space for ducting of all types of FIRSTO® firestops. The sheets can easily be cut to size with a sharp knife to create a proper cable separation and filling of the open spaces. Pre-slit sheets are available to fit the filling to the cable configuration so that cutting at site is reduced to a minimum.

COMPONENT PARTS OF THE FIRESTOP

The enclosure casing is not used in the case of floor conduits in front of a wall. In such situations, the side walls of the firestop are assembled with the aid of height adapters.

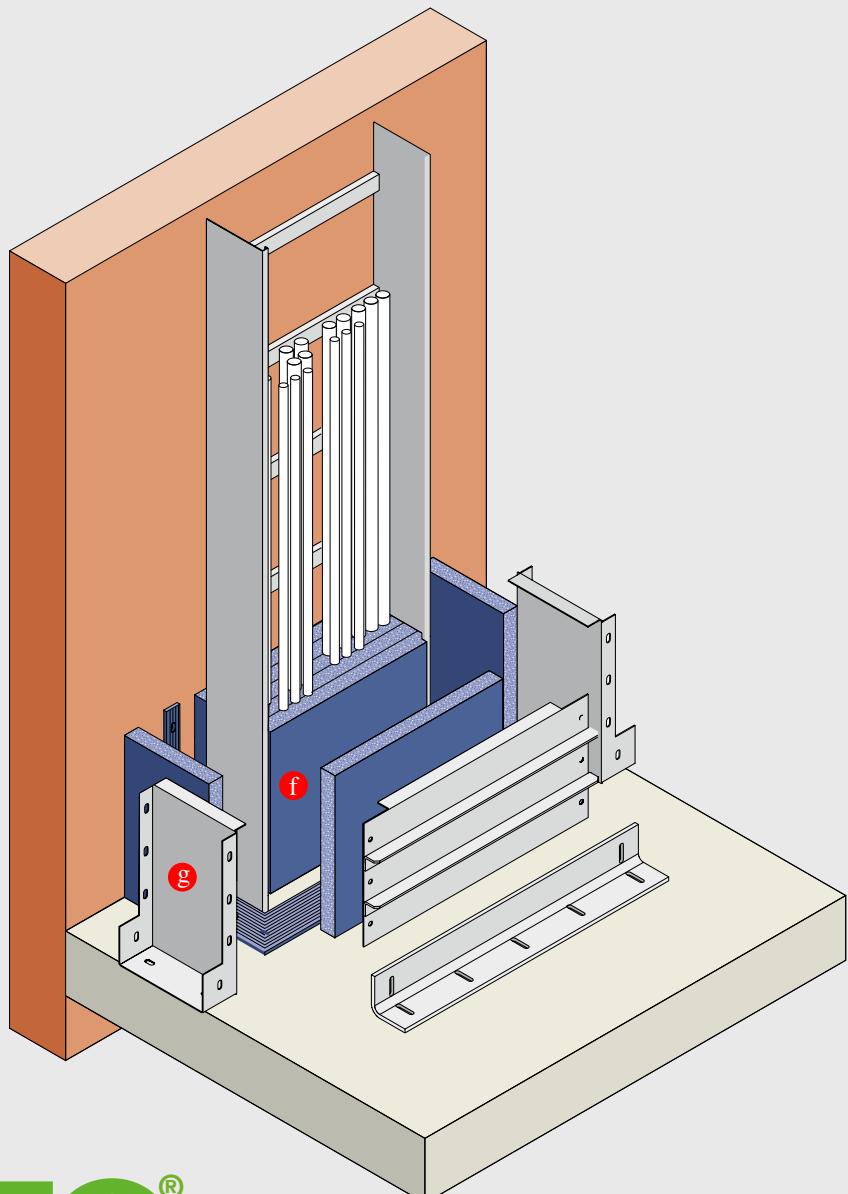
The covers and attachment brackets correspond with those of the firestops for wall conduits. Gaskets are placed on the floor and against the wall.

The open space around the cable tray and between the cables is filled with ACTIFOAM® sheets cut to size or with strips torn off the pre-slit sheets (f) in various thickness.

Height adapters (g) are placed between the casing and the cover to enable the firestop to be adjusted in height to the existing conduit opening.

Note: the ACTIFOAM® sheets which are used against the side walls of the casing, underneath the cover plate and against the wall should have always a thickness of 25 mm. The thickness of the ACTIFOAM® sheets used for filling may vary on the basis of the cable set.

The standard set of filling consists of ACTIFOAM® sheets 25 mm thick.



FIRSTO®

FIRSTO® - ACTIFOAM® CABLE AND CABLE RUN PENETRATIONS

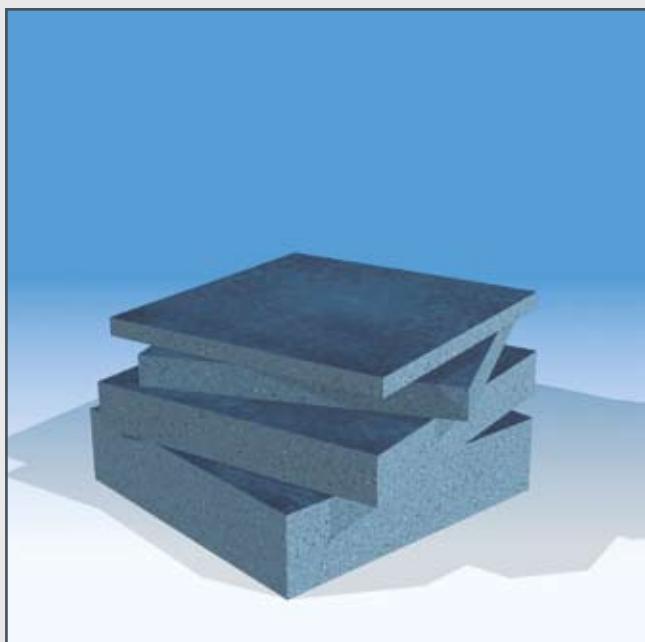
ACTIFOAM®: INNOVATIVE TECHNOLOGY

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 pads for firestops are supplied with a thickness ranging from 10 up to 25 mm.

Sheets are delivered in sizes:

150x250x10 mm	300x250x10 mm
150x250x15 mm	300x250x15 mm
150x250x20 mm	300x250x20 mm
150x250x25 mm	300x250x25 mm

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

For the side walls, sheets measuring 100x250, 150x250, 200x250, 250x250 and 300x250 mm, dependent on the height of the firestops, exclusively with a thickness of 25 mm are supplied.

Dependent on the composition of the cable set, a non-standard filling can be delivered. On the basis of the space for ducting (see page 8) of the firestop concerned, the amount of sheets can be easily calculated.

Example: for a firestop type 750/2 a non-standard filling is required on the basis of cables with a diameter varying from 10 to 20 mm. The height for ducting of the firestop is 200 mm. A choice might be then 4 layers of 10 mm, 4 layers of 15 mm and 5 layers of 20 mm. The width for ducting is 750 mm, requiring 2 sheets of 300 mm wide and one 150 mm wide per layer. Totally needed for filling the firestop 8 sheets 300x250x10, 4 sheets 150x250x10, 8 sheets 300x250x15, 4 sheets 150x250x15, 10 sheets 300x250x20 and 5 sheets 150x250x20 mm.

Standard would have been supplied for the firestop 16 sheets 300x250x25 and 16 sheets 150x250x25 mm. This is exclusive the sheets all around against the casing of the firestop.

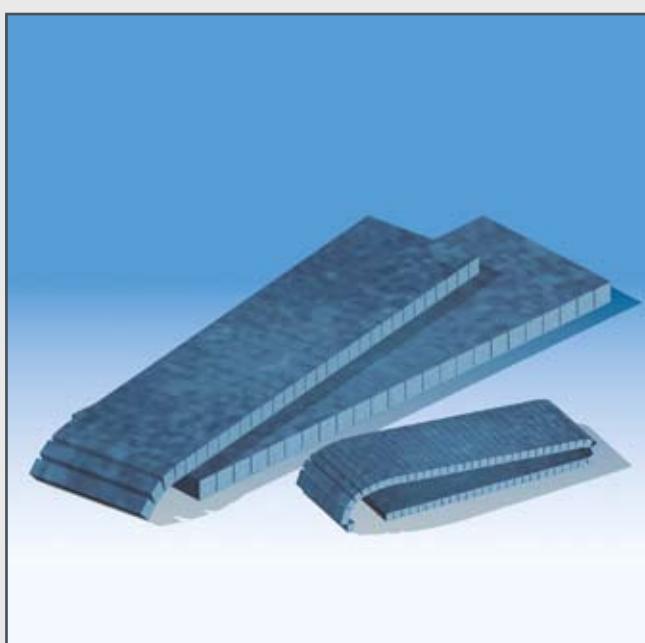
ACTIFOAM® pre-slit sheets used for cable separation are delivered in sizes:

300x250x10 mm	600x250x15 mm
300x250x15 mm	600x250x20 mm
300x250x20 mm	600x250x25 mm
300x250x25 mm	600x250x25 mm

The 10 mm thick sheets have 30 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.

The colour is dark blue/grey.



FIRSTO® - ACTIFOAM® CABLE AND CABLE RUN PENETRATIONS

FIWA® sealant for gas and watertight penetrations



FIWA® is a fire-resistant sealant based on a single component silicone compound.

FIWA® is also water-repellent

High bonding strength

UV and Ozone resistant

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® sealant is not caused by intumescence, but by a chemical process (Intumescence means the occurrence of volume enlargement under the effect of heat, caused by the surface structure being inflated by fumes originating from the product). The advantage of this is that the expansion of FIWA® is not accompanied by formation of large amounts of fumes.

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

PRODUCT INFORMATION

01)	colour	dark grey
02)	specific gravity	$1.30 \pm 0.03 \text{ g/cm}^3$
03)	curing of top layer	0.5 - 1 hour depending on temperature and air humidity
04)	service temperature	-50 °C up to +160 °C
05)	tensile strength	1.15 MPa
06)	elongation at break	125%
07)	hardness	35 Shore A
08)	elastic deformation	approx. 25%
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



FIWA is absolutely HALOGEN FREE (tested according to Naval Engineering Standard NES 713: Issue 3).

Furthermore FIWA has a low smoke index (NES 711: Issue 2: 1981) and a high oxygen index (ISO 4589-2: 1996), and low flame spread characteristics according to IMO Resolution A.653(16).

FIRSTO® - ACTIFOAM® CABLE AND CABLE RUN PENETRATIONS

ACTIFOAM®: INNOVATIVE TECHNOLOGY

TABLE FIRESTOPPS

TYPE WALL	SPACE FOR DUCTING	CONDUIT OPENING MAX.	TYPE FLOOR	SPACE FOR DUCTING	CONDUIT OPENING MAX
FSP 300	300 x 100	300 x 100	FSP 300-F	300 x 100	300 x 125
FSP 300/1	300 x 150	300 x 150	FSP 300/1-F	300 x 150	300 x 175
FSP 300/2	300 x 200	300 x 200	FSP 300/2-F	300 x 200	300 x 225
FSP 300/3	300 x 250	300 x 250	FSP 300/3-F	300 x 250	300 x 275
FSP 300/4	300 x 300	300 x 300	FSP 300/4-F	300 x 300	300 x 325
FSP 450	450 x 100	450 x 100	FSP 450-F	450 x 100	450 x 125
FSP 450/1	450 x 150	450 x 150	FSP 450/1-F	450 x 150	450 x 175
FSP 450/2	450 x 200	450 x 200	FSP 450/2-F	450 x 200	450 x 225
FSP 450/3	450 x 250	450 x 250	FSP 450/3-F	450 x 250	450 x 275
FSP 450/4	450 x 300	450 x 300	FSP 450/4-F	450 x 300	450 x 325
FSP 600	600 x 100	600 x 100	FSP 600-F	600 x 100	600 x 125
FSP 600/1	600 x 150	600 x 150	FSP 600/1-F	600 x 150	600 x 175
FSP 600/2	600 x 200	600 x 200	FSP 600/2-F	600 x 200	600 x 225
FSP 600/3	600 x 250	600 x 250	FSP 600/3-F	600 x 250	600 x 275
FSP 600/4	600 x 300	600 x 300	FSP 600/4-F	600 x 300	600 x 325
FSP 750	750 x 100	750 x 100	FSP 750-F	750 x 100	750 x 125
FSP 750/1	750 x 150	750 x 150	FSP 750/1-F	750 x 150	750 x 175
FSP 750/2	750 x 200	750 x 200	FSP 750/2-F	750 x 200	750 x 225
FSP 750/3	750 x 250	750 x 250	FSP 750/3-F	750 x 250	750 x 275
FSP 750/4	750 x 300	750 x 300	FSP 750/4-F	750 x 300	750 x 325
FSP 900	900 x 100	900 x 100	FSP 900-F	900 x 100	900 x 125
FSP 900/1	900 x 150	900 x 150	FSP 900/1-F	900 x 150	900 x 175
FSP 900/2	900 x 200	900 x 200	FSP 900/2-F	900 x 200	900 x 225
FSP 900/3	900 x 250	900 x 250	FSP 900/3-F	900 x 250	900 x 275
FSP 900/4	900 x 300	900 x 300	FSP 900/4-F	900 x 300	900 x 325
FSP 1050	1050 x 100	1050 x 100	FSP 1050-F	1050 x 100	1050 x 125
FSP 1050/1	1050 x 150	1050 x 150	FSP 1050/1-F	1050 x 150	1050 x 175
FSP 1050/2	1050 x 200	1050 x 200	FSP 1050/2-F	1050 x 200	1050 x 225
FSP 1050/3	1050 x 250	1050 x 250	FSP 1050/3-F	1050 x 250	1050 x 275
FSP 1050/4	1050 x 300	1050 x 300	FSP 1050/4-F	1050 x 300	1050 x 325
FSP 1200	1200 x 100	1200 x 100	FSP 1200-F	1200 x 100	1200 x 125
FSP 1200/1	1200 x 150	1200 x 150	FSP 1200/1-F	1200 x 150	1200 x 175
FSP 1200/2	1200 x 200	1200 x 200	FSP 1200/2-F	1200 x 200	1200 x 225
FSP 1200/3	1200 x 250	1200 x 250	FSP 1200/3-F	1200 x 250	1200 x 275
FSP 1200/4	1200 x 300	1200 x 300	FSP 1200/4-F	1200 x 300	1200 x 325

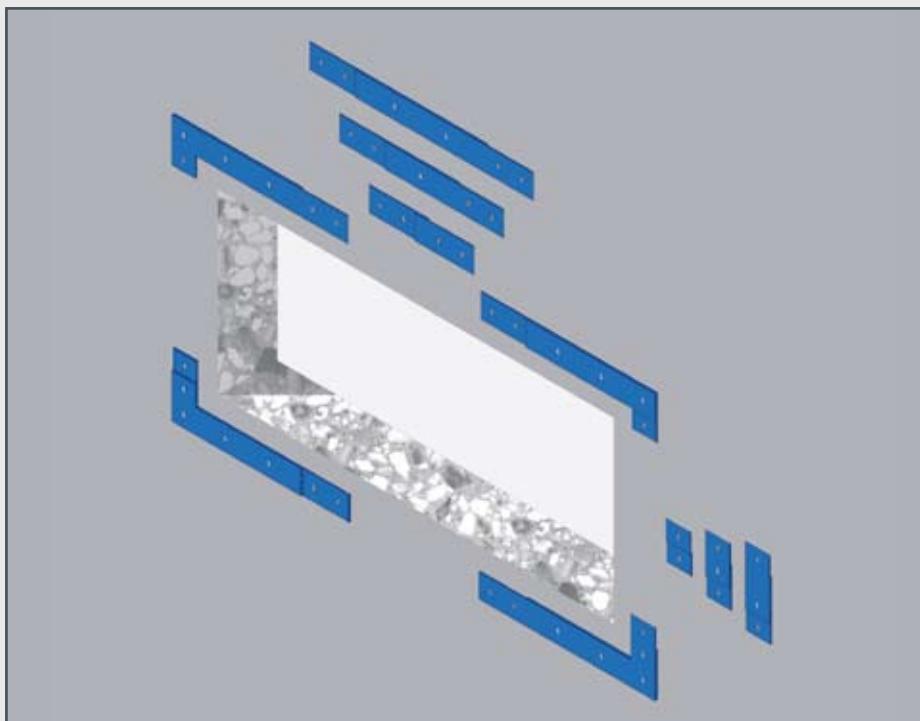
standard: metal parts steel 37.2, powder-coated
 special: type reference ss for stainless steel parts
 casings: the casings of the firestops are delivered assembled
 filling: the ACTIFOAM® filling is delivered standard with 25 mm thick sheets
 non-standard compositions can be supplied to order
 gaskets: are supplied as a complete set for the ordered types of firestops

all dimensions in mm

FIRSTO® - ACTIFOAM® CABLE AND CABLE RUN PENETRATIONS

ACTIFOAM®: INNOVATIVE TECHNOLOGY

COMPOSITION OF GASKETS



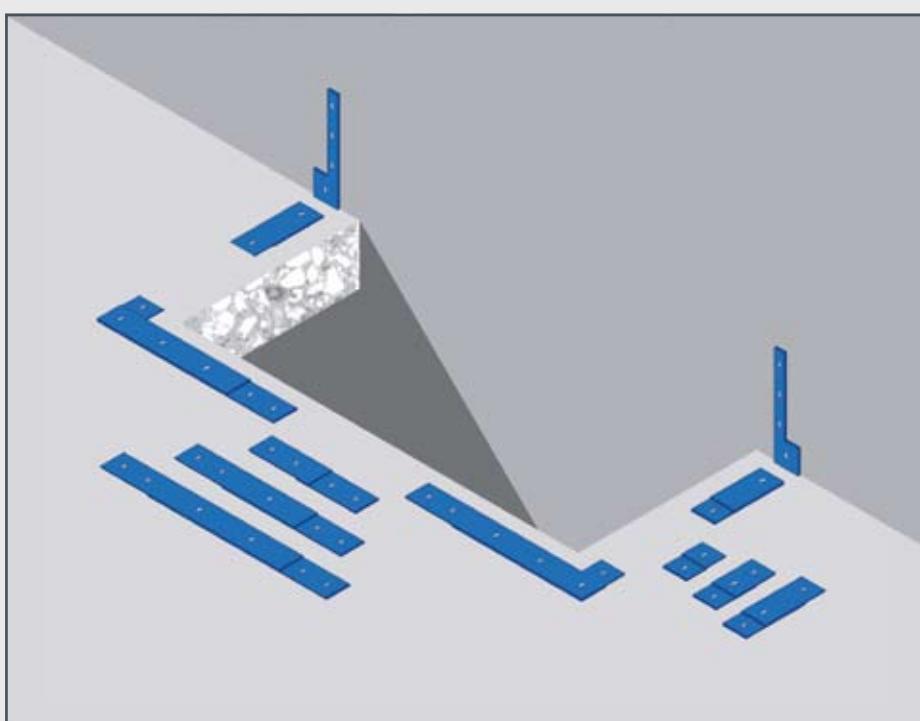
FIRUB/NOHAL® gaskets are used to create a seal between the wall or floor and the FIRSTO® firestop.

The gaskets are made from the FRR/HF (fire resistant, rubber/halogen free) rubber compound which has been proved to possess very good fire engineering properties in addition to good mechanical properties.

The gasket has a special profile at each side, which ensures an optimized seal.

If the wall or floor around the conduit opening exhibits large irregularities, they should be locally smoothed with FIWA® firesafe sealant.

This to prevent smoke emission between the firestop and the wall or floor.



With regard to the modular construction of the FIRSTO® firestops, the FIRUB/NOHAL® gaskets have also a modular composition.

The parts of the gaskets, to be applied between the firestop and the wall/floor, are composed of split parts underneath the attachment bracket and the casing.

Extension gaskets with a length of 50, 100 and 150 mm are used underneath the height-adapters. Underneath the attachment bracket and the length adapters of the casing extension gaskets with a length of 150, 300 and 450 mm are used. The sets of gaskets are composed for each type of firestop. The gaskets are delivered as a complete set when ordering firestops.

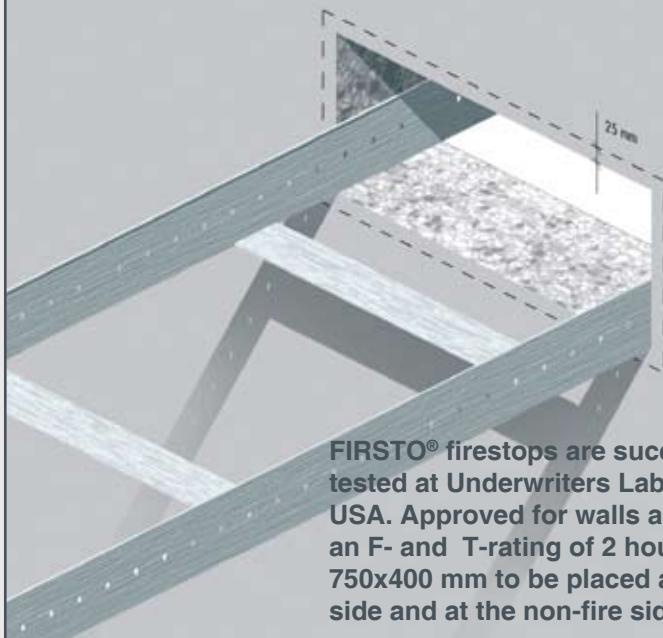
FIRSTO® - ACTIFOAM® CABLE AND CABLE RUN PENETRATIONS

1) The conduit opening has to be 25 mm smaller all around than the inner dimensions of the firestop.

This will keep the ACTIFOAM® pads against the walls inside the firestop in place during fire exposure.

ACTIFOAM

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

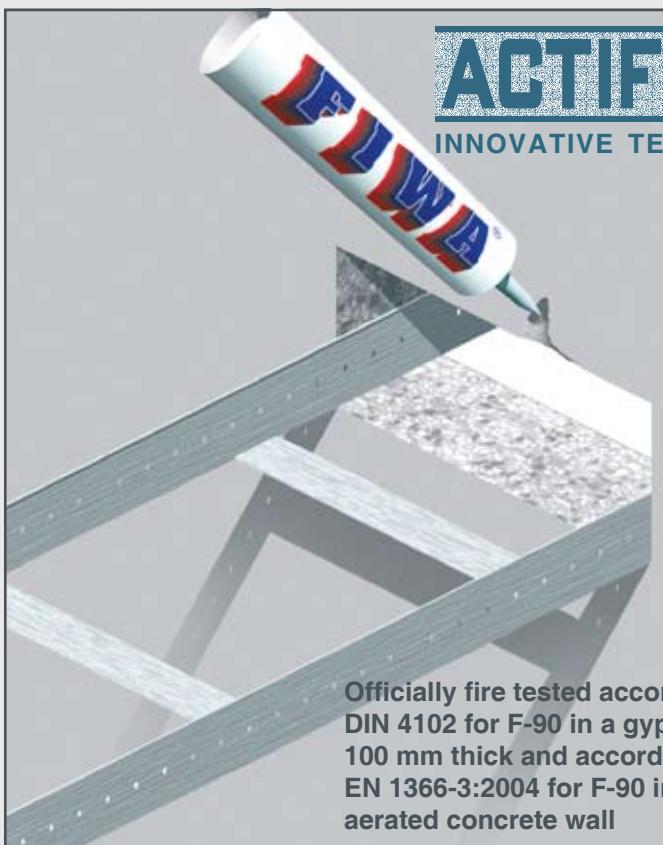


FIRSTO® firestops are successfully tested at Underwriters Laboratories in USA. Approved for walls and floors for an F- and T-rating of 2 hours for units 750x400 mm to be placed at the fire side and at the non-fire side.

2) If the wall around the conduit opening exhibits large irregularities, they should be locally smoothed with FIWA® fire safe sealant. This to prevent smoke emission between the firestop and the wall.

ACTIFOAM

ACTIFOAM
INNOVATIVE TECHNOLOGY



Officially fire tested according to DIN 4102 for F-90 in a gypsum wall 100 mm thick and according to EN 1366-3:2004 for F-90 in a 150 mm thick aerated concrete wall

FIRSTO® - ACTIFOAM® CABLE AND CABLE RUN PENETRATIONS

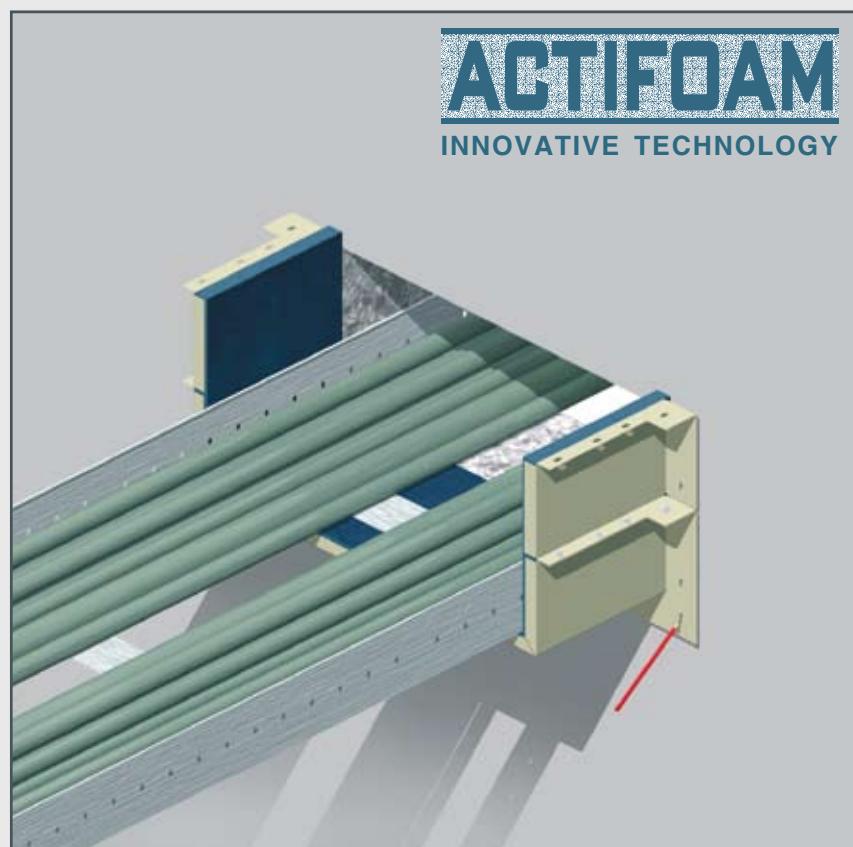
3) Remove the attachment bracket and the cover of the firestop. Remove all ACTIFOAM® rubber pads with the exception of the bottom layer and the layers against the side walls of the casing.

ACTIFOAM



4) The casing is used as a template to mark off the attachment holes. The rubber pads against the inside walls of the firestop are 25 mm thick and should be flush with the conduit opening.

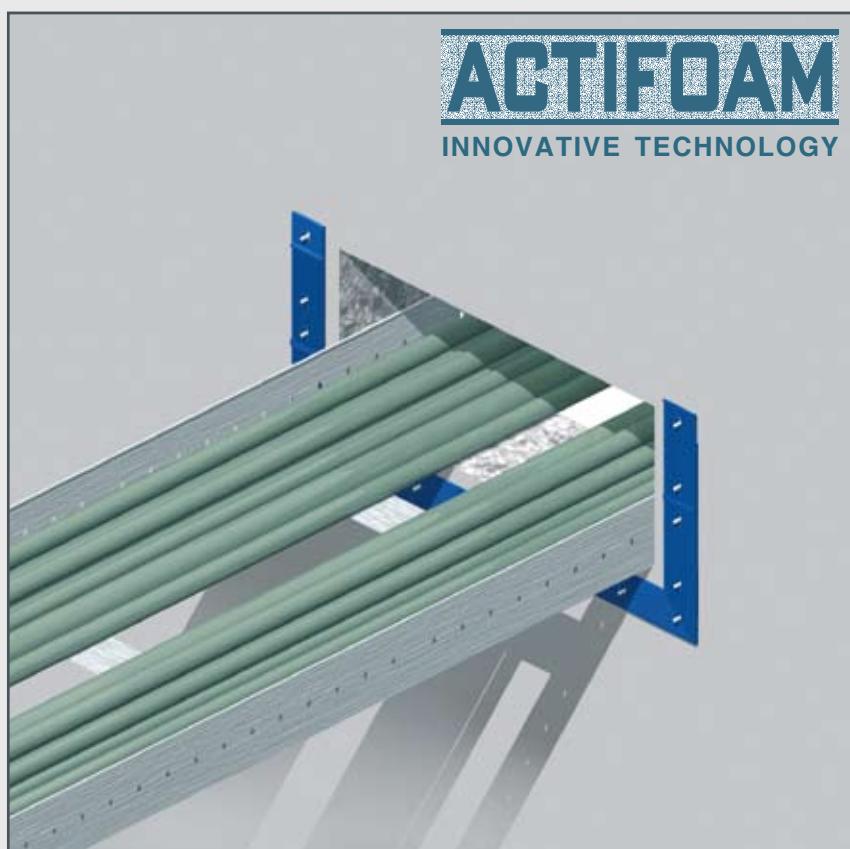
ACTIFOAM



FIRSTO® - ACTIFOAM® CABLE AND CABLE RUN PENETRATIONS

5) Then drill the holes for the anchoring bolts. After the bolts have been positioned, push all parts of the fire resistant FRR/HF gasket over the anchoring bolts and lay them against the wall.

ACTIFOAM



6) The casing containing the bottom layer of ACTIFOAM® rubber pads and the ACTIFOAM® rubber pads against the side walls is pushed over the anchoring bolts against the wall and firmly tightened.

ACTIFOAM



FIRSTO® - ACTIFOAM® CABLE AND CABLE RUN PENETRATIONS

7) Position the attachment bracket on the casing against the wall and mark off the attachment holes.

If necessary, the holes in the upper parts of the gasket can also be used for this purpose.

ACTIFOAM



8) After drilling, position the anchoring bolts and the attachment bracket. Do not tighten the bracket firmly, in order to facilitate insertion of the top layer of rubber pads later during installation.

ACTIFOAM



FIRSTO® - ACTIFOAM® CABLE AND CABLE RUN PENETRATIONS

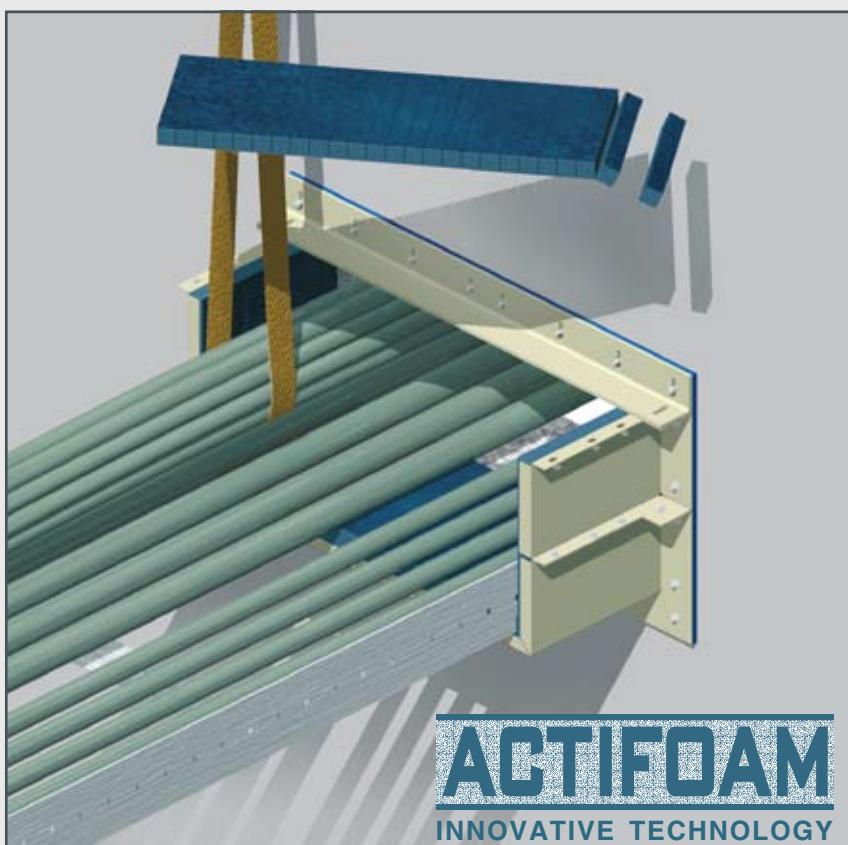
9) In case of larger amounts of cables, a band is placed around the cable bundle to lift the bundle of cables. ACTIFOAM® rubber pads are placed in the firestop underneath the layer of cables.

ACTIFOAM



10) A layer of cables is spread out. For proper cable separation, square profiles are torn off the pre-slit ACTIFOAM® rubber sheets. The sizes of the profiles should be equivalent to the cable diameters.

ACTIFOAM



FIRSTO® - ACTIFOAM® CABLE AND CABLE RUN PENETRATIONS

11) Profiles are slit in sizes of 10x10, 15x15, 20x20 and 25x25 mm. This enables an easy fit for corresponding cable sizes. Cables larger than 25 mm should be separated by a minimum of 25 mm.

ACTIFOAM



12) Adjacent to the first layer of cables and profiles, one or more extra sheets of ACTIFOAM® rubber is fitted to create a level layer for further filling the firestop.

ACTIFOAM



FIRSTO® - ACTIFOAM® CABLE AND CABLE RUN PENETRATIONS

13) A layer of intermediate ACTIFOAM® rubber pads is inserted in the firestop on top of the levelled first layer. The thickness of the intermediate layer is dependent on the maximum cable diameter.

ACTIFOAM



14) The next layer of cables is spread out on the layer of ACTIFOAM® intermediate rubber pads. It is most important that the cables are not pulled too tight to enable this.

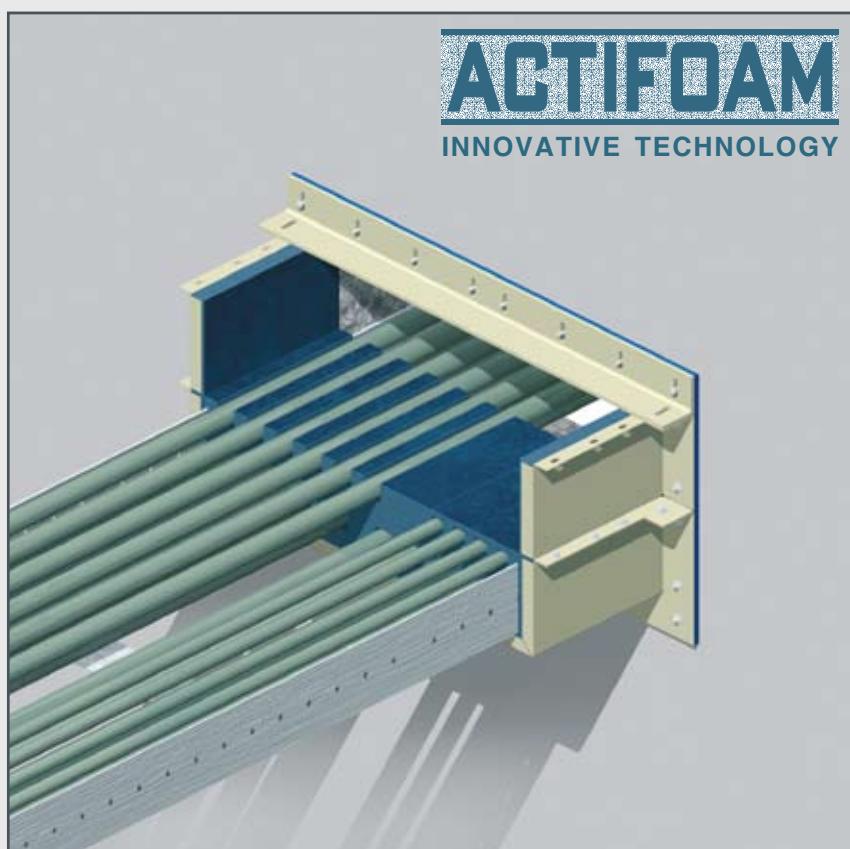
ACTIFOAM



FIRSTO® - ACTIFOAM® CABLE AND CABLE RUN PENETRATIONS

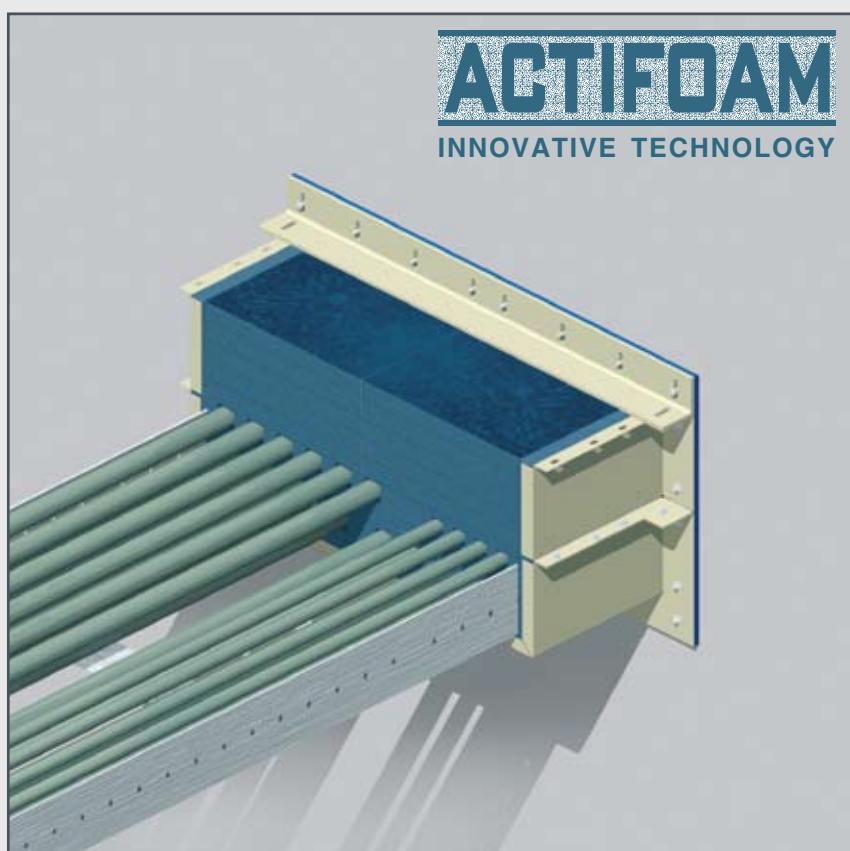
15) In the same way as with the first layer of cables, the cables are separated with the ACTIFOAM® pre-slit profiles and levelled with one or more ACTIFOAM® sheets. Take care for a tight fit.

ACTIFOAM



16) The remaining space is filled with layers of ACTIFOAM® pads. The filling should be flush with the top side of the firestop casing. For this purpose the pads are available 10, 15, 20 and 25 mm thick.

ACTIFOAM



FIRSTO® - ACTIFOAM® CABLE AND CABLE RUN PENETRATIONS

17) On top of the filling overfill pads of minimum 10 mm should be placed.

They are pushed below the attachment bracket. The bracket has not been tightened firmly yet, in order to leave sufficient play.

ACTIFOAM



18) Place the cover on the firestop casing and fit the attachment bolts in the holes.

The attachment bolts are long enough to put easily the nuts on despite the overfill of 10 mm inside the firestop.

ACTIFOAM



FIRSTO® - ACTIFOAM® CABLE AND CABLE RUN PENETRATIONS

19) Tighten the attachment bolts firmly.

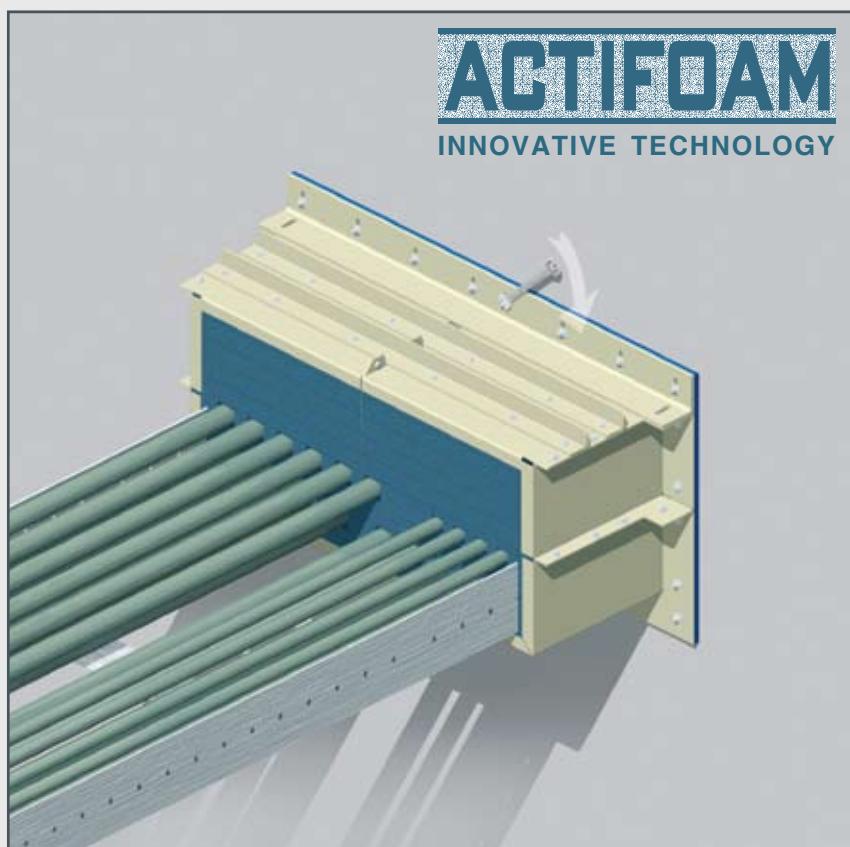
With respect to mechanical stability and tightness, it is very important to check if the overfill is sufficient to obtain an optimum compressibility.

ACTIFOAM



20) Place rings and nuts on all the remaining anchor bolts and tighten the attachment bolts of the attachment bracket firmly.

ACTIFOAM

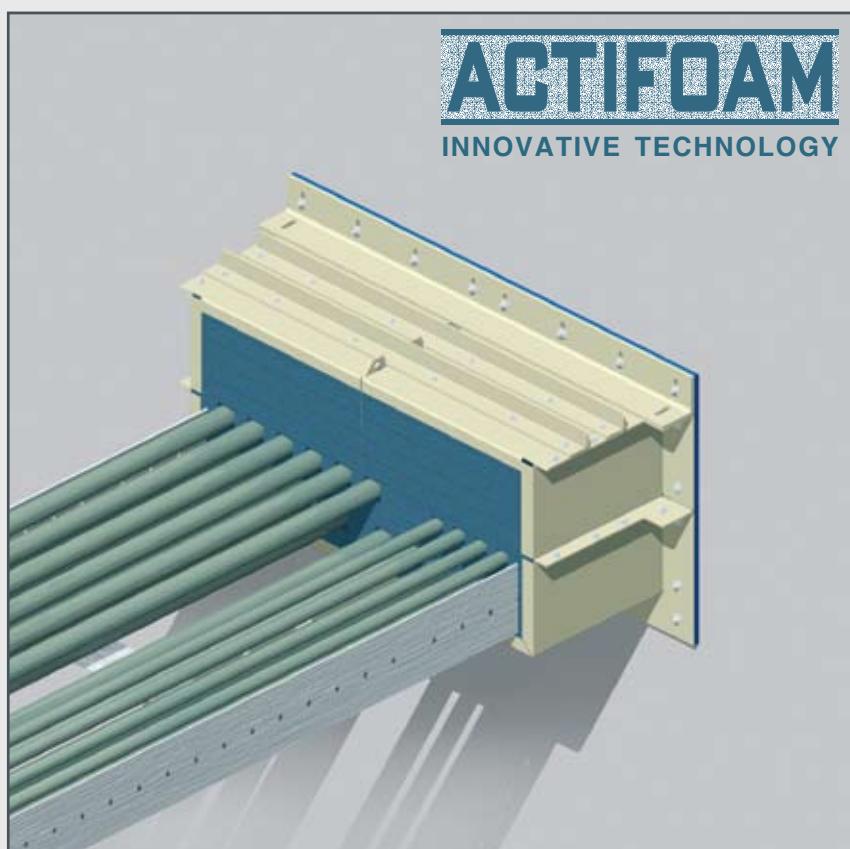


FIRSTO® - ACTIFOAM® CABLE AND CABLE RUN PENETRATIONS

21) The installation procedure has now been completed.

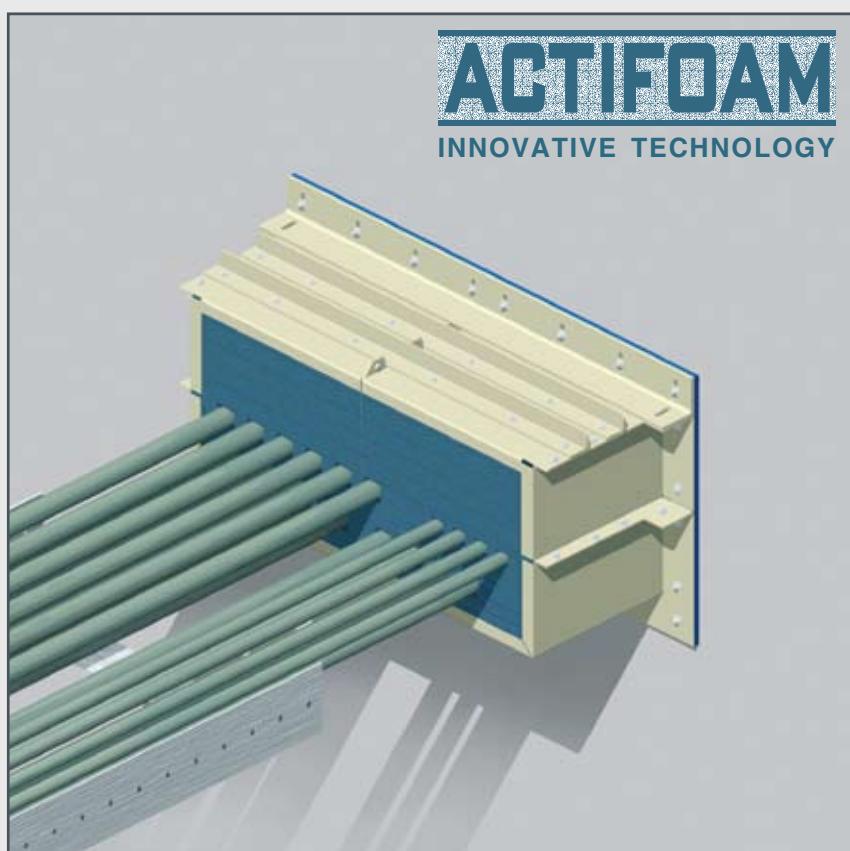
Firestops based on ACTIFOAM® need only to be placed at one side of the wall.

ACTIFOAM



22) The FIRSTO® fire-stops with ACTIFOAM® technology can also be used in installations in which the cable tray or ladder is not passed through the wall or floor opening.

ACTIFOAM



FIRSTO® - ACTIFOAM® CABLE AND CABLE RUN PENETRATIONS

22) To duct in a later stage more cables, only the six bolts of the cover plate have to be removed. Then the cover plate can be lifted to enable one or more layers of ACTIFOAM® to be removed from the inside of the firestop.

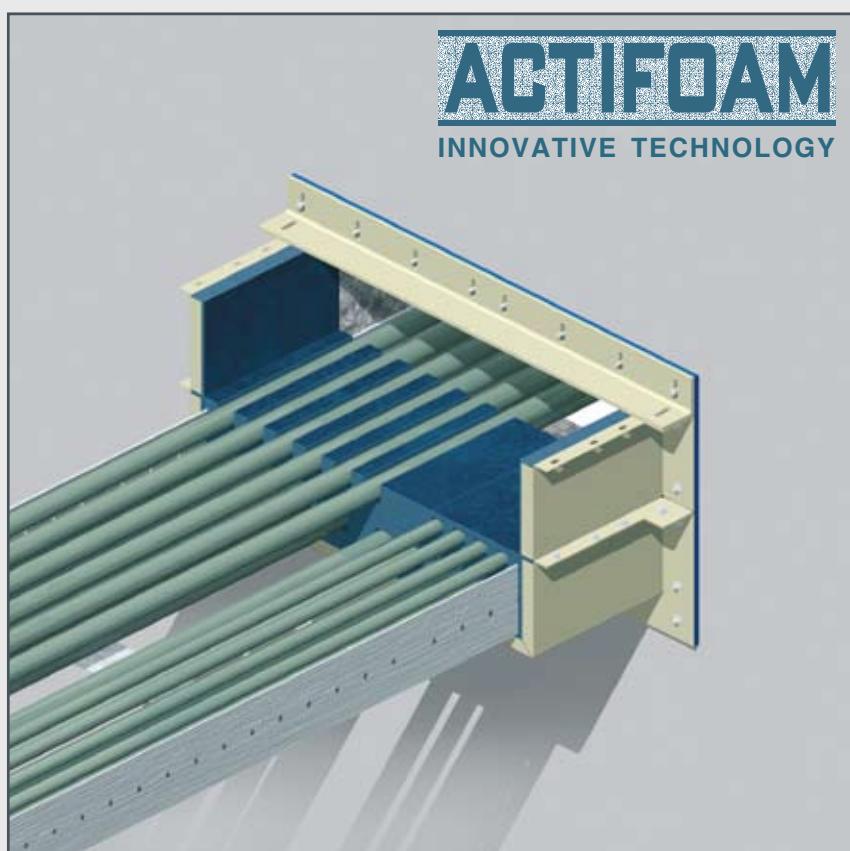
ACTIFOAM



23) The cable(s) can be ducted and separated in the way as described before. Then the firestop can be refilled with the removed ACTIFOAM® filling and the cover plate can be fixed again on the casing.

Maintenance is also very easy.

ACTIFOAM



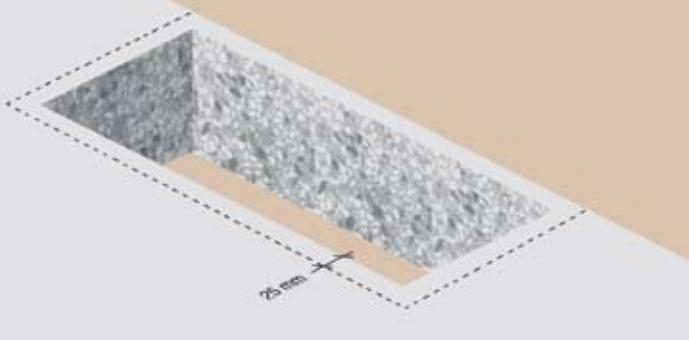
FIRSTO® - ACTIFOAM® CABLE AND CABLE RUN PENETRATIONS

1) The conduit opening has to be 25 mm smaller all around than the inner dimensions of the firestop. This will keep the rubber pads against the floor inside the firestop in place during fire exposure.

ACTIFOAM

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

FIRSTO® firestops are successfully tested at Underwriters Laboratories in USA. Approved for walls and floors for an F- and T-rating of 2 hours for units 750x400 mm to be placed at the fire side and at the non-fire side.



2) If the floor around the conduit opening exhibits large irregularities, they should be locally smoothed with FIWA® fire safe sealant. This to prevent smoke emission between the firestop and the floor.

ACTIFOAM

ACTIFOAM
INNOVATIVE TECHNOLOGY

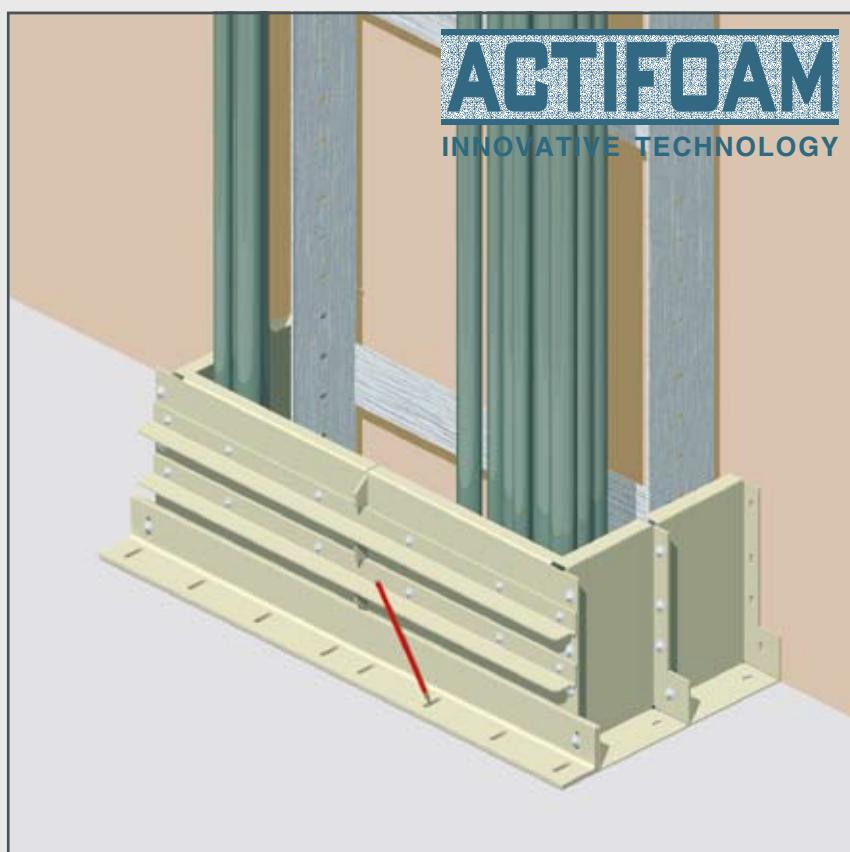
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100 mm thick and according to
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FIRSTO® - ACTIFOAM® CABLE AND CABLE RUN PENETRATIONS

3) The casing is used as a template to mark off the attachment holes. The rubber pads against the inside walls of should be flush with the conduit opening. They could be used to position the firestop.

ACTIFOAM



4) Then drill the holes for the anchoring bolts. After the bolts have been positioned, push all parts of the gasket over the anchoring bolts and lay them against the wall and on the floor.

ACTIFOAM



FIRSTO® - ACTIFOAM® CABLE AND CABLE RUN PENETRATIONS

5) Fill the space behind the cable ladder with ACTIFOAM® rubber pads. They should snugly fit to prevent them from falling down. ACTIFOAM® pads are available in a thickness of 10, 15, 20 or 25 mm.

ACTIFOAM



6) The casing is placed. The fixation bolts of the casing are firmly tightened. Do not tighten the bracket firmly, in order to facilitate insertion of the top layer of rubber pads later during installation.

ACTIFOAM



FIRSTO® - ACTIFOAM® CABLE AND CABLE RUN PENETRATIONS

7) Insert ACTIFOAM® rubber pads against the side walls of the casing. The firestop is filled from the bottom of the cable ladder on. Further installation is similar to the firestops for walls.

ACTIFOAM



8) On top of the filling overfill pads of minimum 10 mm should be placed. They are pushed below the attachment bracket. Place the cover on the firestop casing and fit the attachment bolts in the holes.

ACTIFOAM



FIRSTO® - ACTIFOAM® CABLE AND CABLE RUN PENETRATIONS

9) Place rings and nuts on all the remaining anchor bolts and tighten the attachment bolts of the attachment bracket firmly.



10) The installation procedure has now been completed.

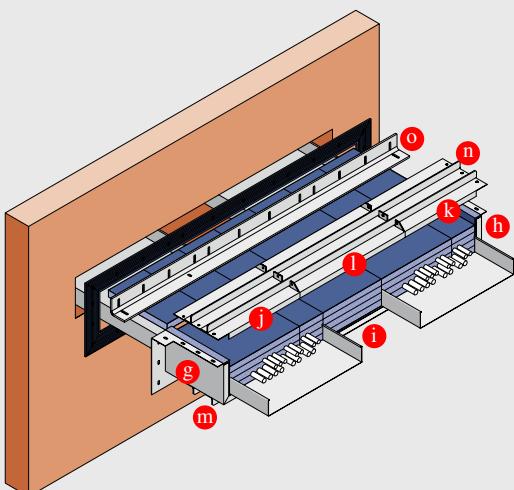
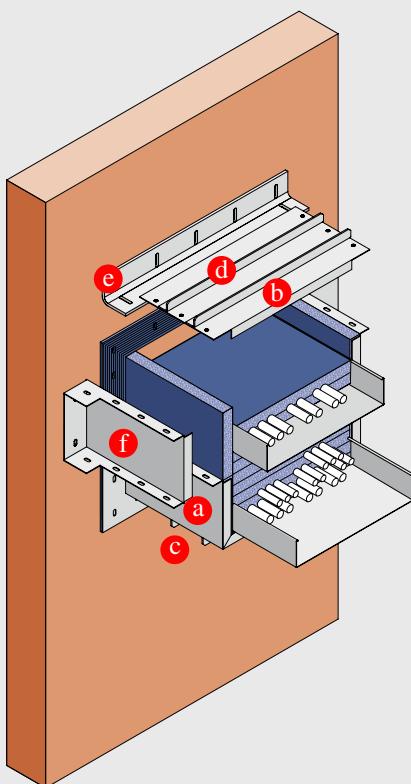
Firestops based on ACTIFOAM® need only to be placed at one side of the floor.



FIRSTO® - ACTIFOAM® CABLE AND CABLE RUN PENETRATIONS

ACTIFOAM®: INNOVATIVE TECHNOLOGY

PARTS OF FIRE STOP CASINGS



a) C300	firestop casing FSP 300
a) C450	firestop casing FSP 450
b) L300	firestop cover plate FSP 300
b) L450	firestop cover plate FSP 450
c) SBC 350	support brackets on casing FSP 300
c) SBC 450	support brackets on casing FSP 450
d) SBL 400	support brackets on cover plate FSP 300 (-F)
d) SBL 450	support brackets on cover plate FSP 450 (-F)
e) SB 470	attachment bracket FSP 300 (-F)
e) SB 620	attachment bracket FSP 450 (-F)
f) HA 50	height adapter 50 mm for all types FSP/1 (and-F)
f) HA 100	height adapter 100 mm for all types FSP .../2 and FSP .../4 (2x) (and-F)
f) HA 150	height adapter 150 mm for all types FSP .../3 (and-F)
g) SPC 325L	left casing side of firestops type 600, 750, 900, 1050 and 1200
h) SPC 325R	dto. right casing side
i) IPC 150	length adapter casing 150 mm for type 750
i) IPC 300	length adapter casing 300 mm for type 900 and 1200 (2x)
i) IPC 450	length adapter casing 450 mm for type 1050
j) SPL 325L	left cover side of firestops type 600, 750, 900, 1050 and 1200 (and-F)
k) SPL 325R	dto. right cover side
l) IPL 150	length adapter cover plate 150 mm for type 750 (-F)
l) IPL 300	length adapter cover plate 300 mm for type 900 (-F) and 1200 (-F)(2x)
l) IPL 450	length adapter cover plate 450 mm for type 1050 (-F)
m) SBC 650	support bracket on casing FSP 600
m) SBC 800	support bracket on casing FSP 750
m) SBC 950	support bracket on casing FSP 900
m) SBC 1100	support bracket on casing FSP 1050
m) SBC 1250	support bracket on casing FSP 1200
n) SBL 700	support bracket on cover plate FSP 600 (-F)
n) SBL 850	support bracket on cover plate FSP 750 (-F)
n) SBL 1000	support bracket on cover plate FSP 900 (-F)
n) SBL 1150	support bracket on cover plate FSP 1050 (-F)
n) SBL 1300	support bracket on cover plate FSP 1200 (-F)
o) SB 770	attachment bracket FSP 600 (-F)
o) SB 920	attachment bracket FSP 750 (-F)
o) SB 1070	attachment bracket FSP 900 (-F)
o) SB 1220	attachment bracket FSP 1050 (-F)
o) SB 1370	attachment bracket FSP 1200 (-F)

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



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

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- * **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® FIRETOPS FOR CABLE TRAY PENETRATIONS**
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- * **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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Beunkdijk 11 - 7122 NZ AALTEN - THE NETHERLANDS
Tel. +31 543 461629 - Fax +31 543 461786 - E-mail: info@beele.com
Websites: <http://www.actifoam.com>, www.beele.com, www.csdplugs.com, www.firsto.com,
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