Onshore

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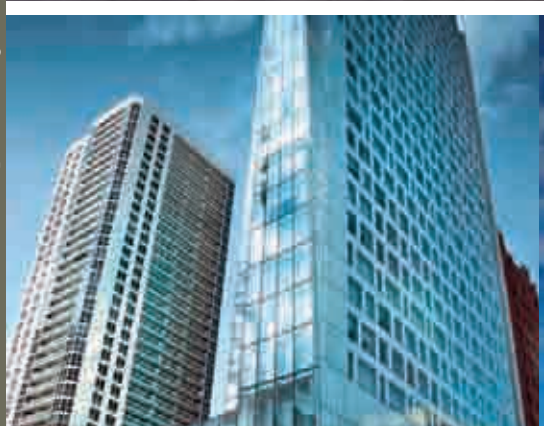
CSD SEALING SYSTEMS

The most advanced product range of fireproof, gastight and watertight sealing for cable and pipe entries.



Onshore The most advanced product range of fireproof, gastight and watertight sealing for cable and pipe entries.

Safety. Reliability. Ingenuity.

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Whatever the challenge, we have the solution...

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Introduction.

An experienced partner

CSD Sealing Systems have specialised in fireproof, gastight and watertight sealing systems in the UK for over 18 years.

With close links to CSD International and Beele Engineering in the Netherlands, a company with over 35 years experience of development and production in this field, our clients can be assured of first class products and first class service, whatever their industry.

Customer focused

At CSD, we realise the importance of keeping to budgets and time-scales, and that is why we have developed systems which require few components and materials, and are guaranteed to lower costs of both inventory and installation.

Certified systems

CSD products have been extensively tested by all major world-wide classification societies and independent institutes, and are proven to ensure the highest standards of quality, safety, reliability and durability.

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Onshore capabilities.

“CSD Sealing Systems provide an advanced product range to suit all conduit sealing applications. CSD products have been installed in a wide variety of projects both on and offshore throughout the world.”

An advanced product range

Whatever the project, CSD offer the most comprehensive and cost effective range of sealing systems designed to seal cable and pipe entries to reduce the risk of explosion, water ingress or spread of fire, protecting assets and personnel.

With a range that is expertly designed, CSD products are ideally suited for numerous environments, both on and offshore. Rubber grades will protect for the life of the structure, even in salt laden atmospheres or when exposed to severe weather conditions and UV.

With products retaining extremely high levels of protection and age tested to ensure no deterioration in performance in excess of 50 years, CSD Sealing Systems offer the ideal solution to any high risk environment.

Across many industries.

Civil Construction

CSD products have been installed in a wide variety of civil construction applications. Whatever the project, CSD offer the most comprehensive and cost-effective range of sealing systems designed to prevent the spread of fire, fumes, smoke, gases and water helping to save lives as well as buildings and equipment.

Pharmaceutical

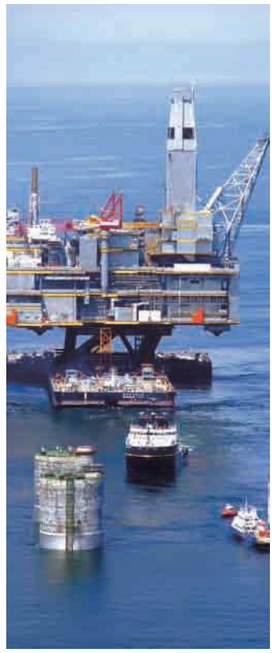
Due to the advanced designs of our products, they are ideally suited for ensuring safety in a clean room environment day after day. A wide range of rubber grades means we offer sealing solutions against even the most aggressive chemicals. Also, the materials we use will guarantee no fibre migration throughout the building.

Petrochemical

With products designed to increase the level of fire safety and with extremely high levels of protection against jet fire, the spread of explosive gases, coupled with straight forward installation and maintenance, CSD Sealing Systems offer the ideal solution to this high-risk environment.

Power Generation & Distribution

Using the latest polymer technology and with a wide range of solutions, CSD products are guaranteed to resolve any sealing challenges across the power generation industry. Whether it is the high risk environments such as Nuclear Power Stations, where safety is the number one priority, or in arduous environments such as offshore wind farms, CSD have a long running pedigree in supplying products that guarantee safety and protection of life and assets with seals that will continue to perform for the lifetime of the structure.



Offshore

Offshore platforms are a hazardous environment and therefore require the highest levels of safety. CSD Sealing Systems have been supplying offshore engineers with specialist sealing solutions for over 20 years, protecting against the demanding situations and ensuring the fireproof, gastight and watertight ducting of all pipe and cable penetrations.

Naval

Naval vessels are amongst the most advanced ships in the world and as such require the most progressive sealing solutions. The full range of CSD products has been extensively tested under the most extreme conditions, to prove their suitability for surface ships and submarine applications, offering a lightweight, space-efficient solution and guaranteeing the highest level of safety for naval vessels and their personnel.

Marine

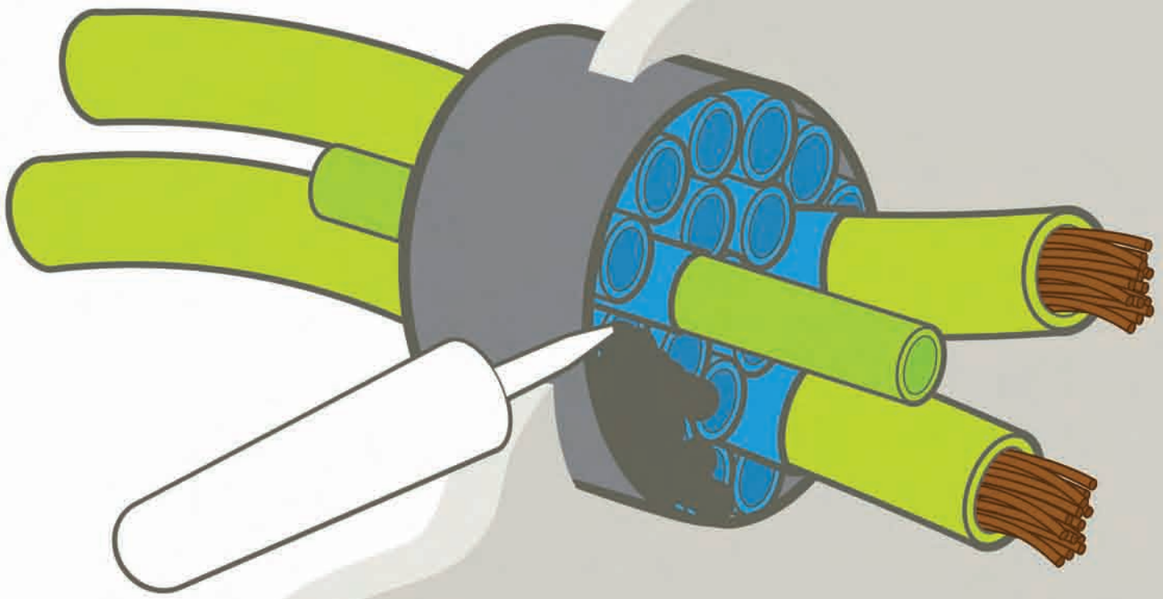
CSD Sealing Systems is a market leader in cable and pipe sealing systems for the marine industry. Safe, cost-effective, flexible systems are the key in the construction of all seagoing vessels today, and the reason why CSD products have been specified and installed by many leading worldwide shipbuilders to provide solutions that offer the highest standards of quality, safety and reliability.

Water

CSD have been market leaders in sealing cable entry ducts within the water industry for several years. Our range of products are designed to suit the specific needs of the water industry, where resistance to gases such as methane, as well as long term and high levels of protection against explosion risk is a specific and unique requirement. With products designed for simple installation, effective long term sealing of cable and pipe entries is assured.

RISE®

Multi Cable and Pipe Sealing System.



"...an effective and simple solution to all fireproof, gastight and watertight sealing requirements."

Features.

Simple and effective

The RISE Duct Seal is a multi-cable and pipe transit sealing system. It provides an effective and simple solution to all fireproof, gastight and watertight duct sealing requirements.

Few components

It consists of only two components: rubber insert sleeves, used to guarantee cable separation and as a backing for the sealant layer, and FIWA (or NOFIRNO) sealant, a high quality silicone based, fire resistant, water repellent sealant which consequently makes the system quick and easy to install.

Gas and water tight

The elasticity and high bonding strength of sealant offers a flexible seal which resists movement, shock and vibration, as well as high pressure. The RISE rubber insert sleeves are applied to provide cable separation and a backing for the application of the sealant. For gastight and watertight applications, our standard 60mm RISE sleeve is sufficient.

Fire, gas and water tight

Using the RISE insert sleeves at a length of 160mm and applying sealant to both faces of the opening, will provide a fire tight seal. When exposed to heat or flame, the advanced rubbers used within the system will resist heat and flame, assuring total conduit sealing protection against fire, heat, toxic and corrosive gases.

Flexible and versatile

The RISE System can be used in vertical as well as horizontal ducts. The insert sleeves cling to the cables without sliding down and falling out of the penetration. The high adhesion and viscosity of the sealant means it will not run or drip when applied overhead.

Adding/removing cables

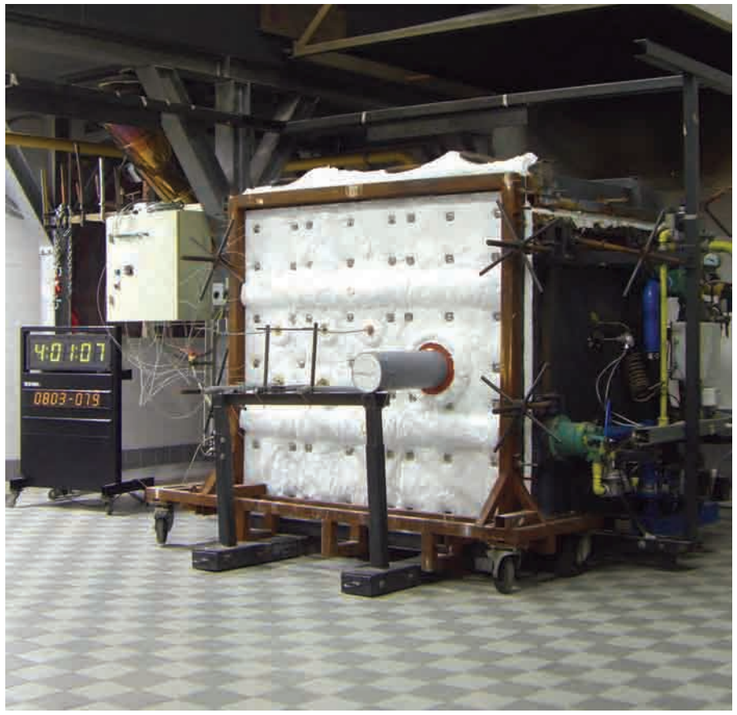
Installing additional cables is very straightforward. It is a simple matter of coring into the soft rubber layer of the sealant to a depth of 20mm and passing the additional cables through the opening created. The sealant is then applied around the new cable to re-seal. There is no need to disassemble the whole transit.

Benefits.

"The RISE Transit System is quick and flexible, making it easier to achieve an effective gas and watertight seal."

- Cost-effective
- Up to four hours fire protection
- WIMES compliant
- ***Ensures DSEAR compliance***
- High levels of gas and water tightness
- Ease of re-entry for adding cables
- Few components
- No frame required
- Suitable for trefoil cables
- Age tested – 50 years
- ***Complies with ATEX regulations***
- Resistant to methane, hydrogen sulphide and chlorine
- Resistant to submersion in petrol, diesel and transformer oils
- Quick and easy to install

Extensive test programme.



In-house fire testing and pressure testing at CSD International's laboratories.

The RISE Duct Seal has been extensively tested, not only in-house at the technical laboratories of CSD International in the Netherlands, but also by independent experts TNO Rubber Technologies, and witnessed by independent approval bodies such as Lloyds Register. Our test programme ensures all of our products meet the rigorous quality standards of our customers in a wide range of industries, and guarantees our products will be effective against the spread of fire, gases or water in the most arduous environments. Our products are proven to show no deterioration in effectiveness in excess of 50 years.

- Lloyds Register witnessed – up to 2.5 bar pressure test
- TNO Efectis Laboratory – Age Testing to 50 years with no deterioration in performance
- BSEN1366-3 European Fire Test – 4 hour fire protection
- Def Stan 02-711 Low Smoke Index (formerly NES711)
- Def Stan 02-713 Low Toxicity Index (formerly NES713)
- ISO 4589-3 – High Temperature Index
- ISO 4589-2 – High Oxygen Index
- Complies with ATEX regulations
- Ensures DSEAR compliance

Installation layout.

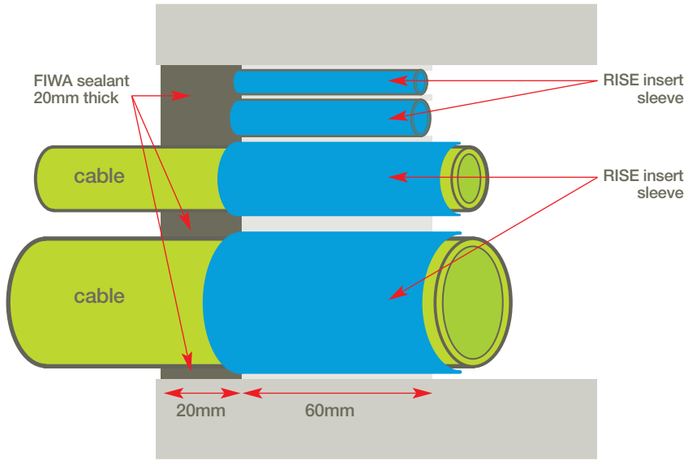
Onshore application.

Gastight and watertight

The elasticity and high bonding strength of FIWA sealant offers a flexible seal, which resists movement, shock and vibration, as well as high pressure. The RISE rubber insert sleeves are applied to provide cable separation and a backing for the application of the FIWA sealant. For gastight and watertight applications, our standard 60mm RISE sleeve is sufficient.

20mm layer FIWA (or NOFIRNO) sealant
60mm RISE insert sleeves

- Certified Pressure Resistance – 1.5 bar

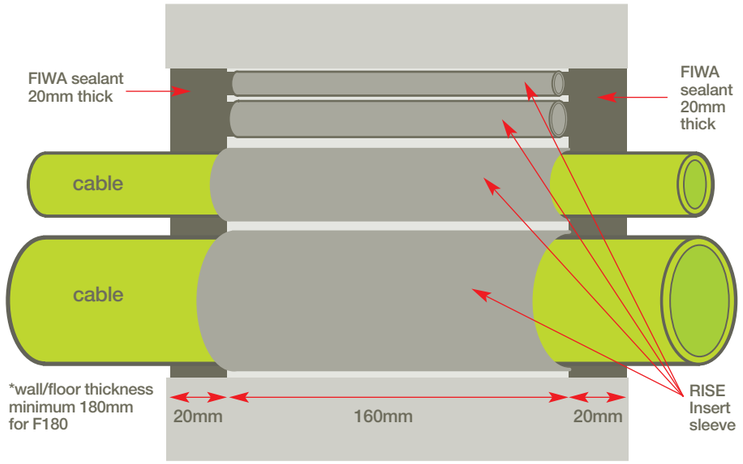


Fireproof, gastight and watertight

Using the RISE insert sleeves at a length of 160mm and applying FIWA sealant to both faces of the opening, will provide a fire tight seal. When exposed to heat or flame, the advanced rubbers used within the system will resist heat and flame, assuring total conduit sealing protection against fire, heat,

2 x 20mm FIWA (or NOFIRNO) sealant layers
160mm RISE insert sleeves Type FRR/LEHF

- Certified Pressure Resistance – 2.5 bar
- 4 hours fire protection



Installation.

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Step 1

Thoroughly clean the inside of the duct and cables, use an appropriate degreaser to remove the dirt, dust or oil to allow the FIWA (or NOFIRNO) sealant to bond. Apply a RISE insert sleeve of the relevant diameter around each cable to ensure all cables are separated.

Step 2

Fill the remaining free space with spare RISE insert sleeves, usually of sizes 27/19 and 18/12. Pack sleeves tightly, then adjust to allow a 20mm gap from the front of the transit.

Step 3

Apply a 20mm layer of sealant to the face of the transit. Begin in the most difficult area and work outwards. A slight overfill is recommended. Ensure sealant is applied between all cables.

Installation.

Step 4

Using a damp cloth, press the sealant down and between the cables. Ensure a sufficient amount is applied and it makes good contact with all surfaces.

Step 5

Using your hand (nitrile gloves are recommended), make sure enough sealant is between the cables and has been applied to the required depth and then smooth to finish. Wet the hands to prevent the sealant sticking.

Step 6

Take a final check with a torch to ensure sufficient sealant has been applied between the cables. Sealant layer cures on average at a rate of 2mm per day.

Adding a cable.

Step 1

Adding extra cables is a straightforward job. Cut away the sealant layer at both sides of the penetration with a plastic knife or a hollow punch in a tapering shape as shown above. This creates a good foundation for the sealant mass to be applied later.

Step 2

Pull the cable through one of the empty filler sleeves with an inner diameter more or less corresponding to the outer diameter of the cable.

Refill the opening in the sealant layer at both sides of the penetration with sufficient sealant.

Step 3

If the empty filler sleeves do not fit the cable to be ducted, a number of these insert sleeves must be removed from the penetration.

Install a fitting insert sleeve (with some filler sleeves if necessary) in the open space in the penetration.

Step 4

Pull the cable through the fitting insert sleeve that has now been installed. Refill the openings cut in the sealant layer at both sides of the penetration with sufficient sealant. The sealant is pressed down firmly and smoothed with a damp cloth.

Standard RISE kits – order table.

REQUIREMENT	SIZE	ORDER CODE
GASTIGHT/WATERTIGHT	3 X 50MM DUCTS	RISEDUCT3X50WG
GASTIGHT/WATERTIGHT	100MM DUCT	RISEDUCT100WG
GASTIGHT/WATERTIGHT	125MM DUCT	RISEDUCT125WG
GASTIGHT/WATERTIGHT	150MM DUCT	RISEDUCT150WG
GASTIGHT/WATERTIGHT	200MM DUCT	RISEDUCT200WG
GASTIGHT/WATERTIGHT	250MM DUCT	RISEDUCT250WG
FIREPROOF, GASTIGHT AND WATERTIGHT	3 X 50MM DUCTS	RISEDUCT3X50F
FIREPROOF, GASTIGHT AND WATERTIGHT	100MM DUCT	RISEDUCT100F
FIREPROOF, GASTIGHT AND WATERTIGHT	125MM DUCT	RISEDUCT25F
FIREPROOF, GASTIGHT AND WATERTIGHT	150MM DUCT	RISEDUCT150F
FIREPROOF, GASTIGHT AND WATERTIGHT	200MM DUCT	RISEDUCT200F
FIREPROOF, GASTIGHT AND WATERTIGHT	250MM DUCT	RISEDUCT250F

NOTE: RISE can be used to suit **ANY** size opening. If the above standard selection does not suit your requirements please contact us.

TOOLS REQUIRED

- **High ratio sealant gun**
- **Disposable nitrile gloves**
- **Cloths**
- **Long nose pliers**
- **Water spray**
- **Wooden 20mm depth gauge**
- **Wire brush**
- **Degreasing agent**

INSTALLATION KITS AVAILABLE

RISE Finishing Kit
(includes water spray, cloths, nitrile gloves, depth gauge)
RISE Full Installation Kit (includes all tools)

RISE RAPID
Duct Seal
Multi Cable and Pipe Transit Sealing System

Simple and effective

The RISE RAPID Duct seal has been developed with speed of installation in mind, but without compromising on the high levels of reliability and safety synonymous with our range of RISE Duct sealing systems.

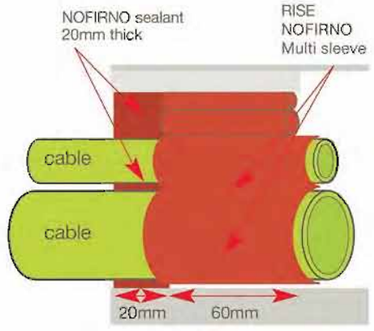
The innovative multi sleeves are supplied bonded in strips of ten, making installation even quicker than with our traditional RISE Duct Seals. Bonded sleeves can be easily torn off if neccessary and with our cutting tool, sleeves can be quickly slit to fit around cables.

Gas and water tight

The elasticity and high bonding strength of NOFIRNO sealant offers a flexible seal, which resists movement, shock and vibration, as well as high pressure. The RISE NOFIRNO multi sleeves ensure cable separation and are used to pack the free space and provide a backing for the application of the sealant. The completed duct seal will prevent the migration of dangerous gases and provide flood protection and has been independently tested to prove no deteriation in performance for more than 50 years.

20mm layer of NOFIRNO sealant. 60mm RISE NOFIRNO Multi sleeves

- Certified Pressure Resistance – 4 bar



Installation instructions

The RISE RAPID Multi Cable and Pipe Transit Sealing System provides an effective and simple solution to all gas and water tight duct sealing requirements. It consists of only two components: NOFIRNO sealant, a silicone based fire resistant, water repellent sealant and rubber multi sleeves. These joined sleeves make the system even quicker and easier to install than the standard RISE Duct Seal.

Step 1

Ensure the duct opening is clear, removing any debris which may interfere with the installation of the RISE Duct Seal. The duct should also be dry.

Step 2

Using an approved degreasing cleaner, thoroughly clean the inside 20mm edge of the transit. All dirt, dust, rust or oil residues must be removed to ensure a good bond of the NOFIRNO sealant to the ducting.

Step 3

Using the sleeve cutting tool, slit a quantity of the Nofirno sleeves, about equal to the quantity of cables in the duct.

Step 4

Place a split sleeve around each of the cables in the duct and then push the multi sleeves into the duct. For larger or single cables, this is not necassary. Simply ensure the multi sleeves provide separation between cables and between the duct and cables.

Step 5

Fill the remaining free space with spare NOFIRNO multi sleeves.

Step 6

Smaller gaps should be filled with smaller sized 18/12 NOFIRNO filler sleeves. Filler sleeves can be easily separated in to smaller quantities. It is important to ensure filler sleeves are tightly packed into the transit to create a solid base for the application of the sealant.

Step 7

Push all of the filler sleeves into the duct.

Step 8

Leave 20mm free space at the front of the duct for the application of the NOFIRNO sealant layer.

Step 9

Adjustments can be made to the filler sleeves using a pair of long nosed pliers. Allowing the correct 20mm depth will ensure a suitable layer of sealant is applied and a good seal is maintained.

Step 10

Attach the nozzle to the NOFIRNO sealant cartridge and snip the nozzle at an angle, this will help installation. For awkward applications longer nozzles and angled applicators are available.

Step 11

Using a specialist high ratio caulking gun, apply the NOFIRNO sealant to the most awkward places, (around cables). Apply sealant against sleeves, allowing to fill out to the required 20mm depth; a slight overfill is needed.

Step 12

Using the water spray dampen a cloth, this is done to stop the sealant from sticking to the cloth whilst working with it. When working with the NOFIRNO sealant we recommend the use of disposable nitrile gloves.

Step 13

Using a dabbing motion, pat down the NOFIRNO sealant, ensuring the sealant makes good contact with both cable and the duct wall. The sealant should stand just proud of the duct; allowing any water to run off the surface without pooling.

Step 14

Use the water spray to wet your gloves, this will ensure the sealant does not stick to the gloves.

Step 15

The surface of the NOFIRNO sealant should then be finished off by hand. Ensuring a good smooth finish is obtained.

Step 16

Take a final check with a torch to ensure sufficient sealant has been applied and the transit is properly sealed. If there are any areas that do not seem sufficiently sealed add more NOFIRNO sealant in this area and smooth off in the usual way.

Step 17

The completed RISE RAPID Duct Seal will provide a 4 bar (58 psi) water tight and 1.0 bar (15 psi) gas tight rated seal. The RISE NOFIRNO system is proven to provide maintenance free protection for a period in excess of 50 years.

See following page 'Adding or replacing a cable'

Adding a cable.

Step 1

Adding new cables is a simple process. Cut away the sealant layer using a plastic knife or hollow punch. Take care not to damage existing cables. A hole slightly larger than the new cable should be made.

Step 2

Pull the new cable through one of the empty filler sleeves. Use an approved degreaser to ensure the cable sheath is clean and free from dirt, dust or oil to ensure the sealant will bond to the cable.

Step 3

Refill the opening cut in the sealant layer with sufficient sealant. A slight overfill is required.

Step 4

Finish the sealant layer in the usual way. Using a damp cloth pat down the NOFIRNO sealant, ensure the sealant makes good contact with the cable and the existing sealant layer. Finally, smooth the surface by hand.

Standard RISE RAPID Duct Seal kits – order table.

REQUIREMENT	SIZE	ORDER CODE
GASTIGHT/WATERTIGHT	1 KIT = 100MM DUCT 2 KITS = 150MM DUCT	RISEDUCT-R
GASTIGHT/WATERTIGHT	125MM DUCT	RISEDUCT125-R
GASTIGHT/WATERTIGHT	150MM DUCT	RISEDUCT150-R
GASTIGHT/WATERTIGHT	160MM DUCT	RISEDUCT160-R
GASTIGHT/WATERTIGHT	200MM DUCT	RISEDUCT200-R
GASTIGHT/WATERTIGHT	225MM DUCT	RISEDUCT225-R
GASTIGHT/WATERTIGHT	250MM DUCT	RISEDUCT250-R
GASTIGHT/WATERTIGHT	300MM DUCT	RISEDUCT300-R

NOTE: RISE can be used to suit **ANY** size opening. If the above standard selection does not suit your requirements please contact us.

TOOLS REQUIRED

- High ratio sealant gun
- Disposable nitrile gloves
- Approved cloths
- Long nose pliers
- Water spray
- Wooden 20mm depth gauge
- Wire brush
- Approved degreaser
- Sleeve cutting tool

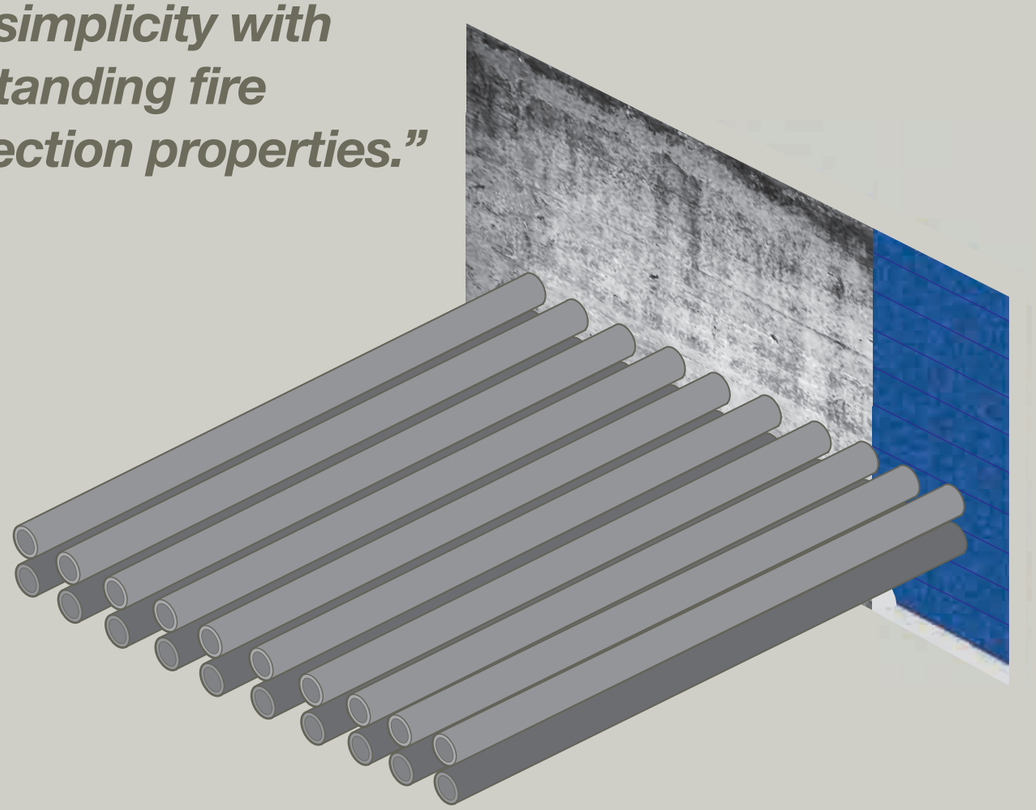
RISE FINISHING KITS AVAILABLE

RISE Finishing Kit
(includes water spray, cloths, nitrile gloves, wooden gauge, long nozzels & angles)
RISE Full Installation Kit (includes all tools)

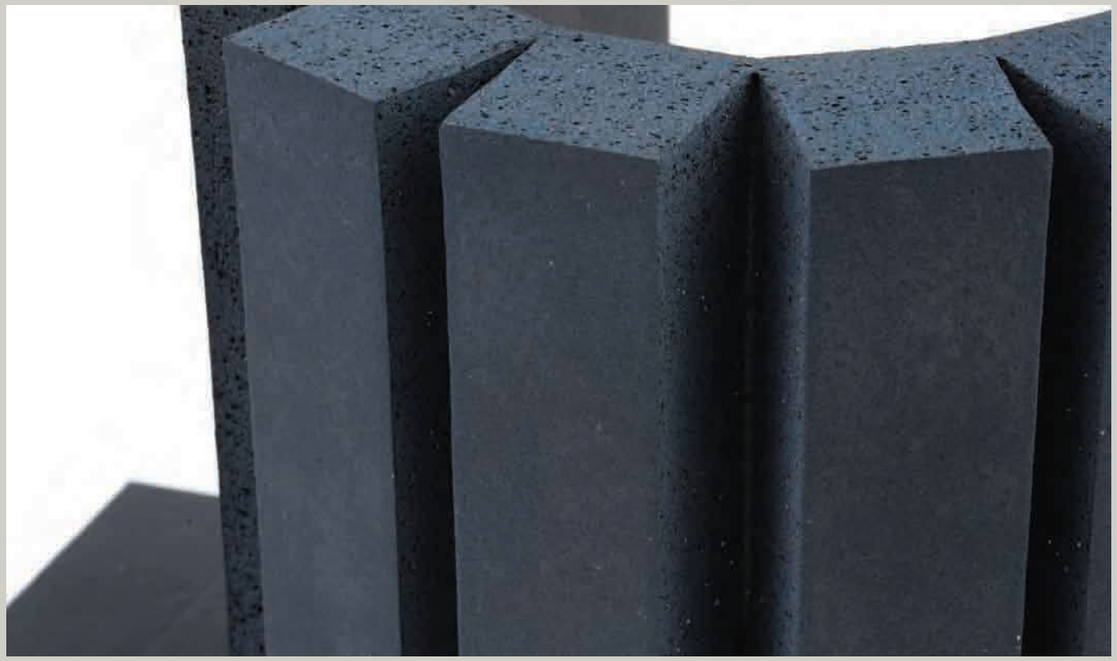
ACTIFOAM® FIRESTOP

Cable and Pipe Fire-Stopping System.

“…combines flexibility and simplicity with outstanding fire protection properties.”



Features.



Flexibility and simplicity

ACTIFOAM is designed for fireproof ducting of cables in building and industrial applications. The ACTIFOAM system combines flexibility and simplicity with outstanding fire protection properties. Closed cell foam rubber sheets can be sized to suit any variety of service types passing through any size wall or floor opening.

Two designs, one purpose

CSD’s frame design is combined with ACTIFOAM to create an extremely high level of fire resistance, in a format that is simple to install and easy to regularly disassemble - ideal for applications where routing or re-routing of cables is common place.

Outstanding performance

The purpose of ACTIFOAM 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 in the services or structure are effectively accommodated.

As a result, the penetration will remain fire tight. The higher the temperature, the more fire retardant material will be produced.

Tested to the limit

ACTIFOAM is an expanding rubber that fills any cavities or gaps in constructions, offering a perfect fire seal.

ACTIFOAM has been extensively tested to guarantee low smoke and low toxic gas production, to such a high level; it has been approved for use in areas where low smoke and low toxicity products are a life saving necessity. ACTIFOAM provides up to 2 hours fire protection and 2 hours insulation in accordance with the new BSEN1366-3 (will soon become mandatory).

A seal against water, gases & cold smoke

ACTIFOAM is a closed cell rubber so it will not absorb moisture, making it suitable for use outdoors or in harsh environments. In addition, with the application of CSD’s FIWA (or NOFIRNO) sealant, the system provides a seal against water, gases or cold smoke, to pressures in excess of 1.5 bar. ACTIFOAM really is the seal for all applications and all environments.

Benefits.

"Low smoke and toxicity index and up to 2 hours fire protection."

Suitable for outdoor environments

- High levels of fire resistance
- No fibre migration
- Age tested in excess of 50 years
- Remains mechanically intact
- Thermal protection
- Lowest smoke and toxicity materials
- Long term protection against fire and heat
- Ducting of additional cables is very simple
- Lower maintenance costs
- Aesthetic finish

Easy to install

Extensive test programme.

certifire
No CF 465

Offering 2 hour fire protection for both integrity and insulation, ACTIFOAM has been tested in accordance with the most stringent fire test procedure, BSEN1366-3 (will soon become mandatory). With the addition of a FIWA (or NOFIRNO) layer, the system also becomes gastight and watertight.

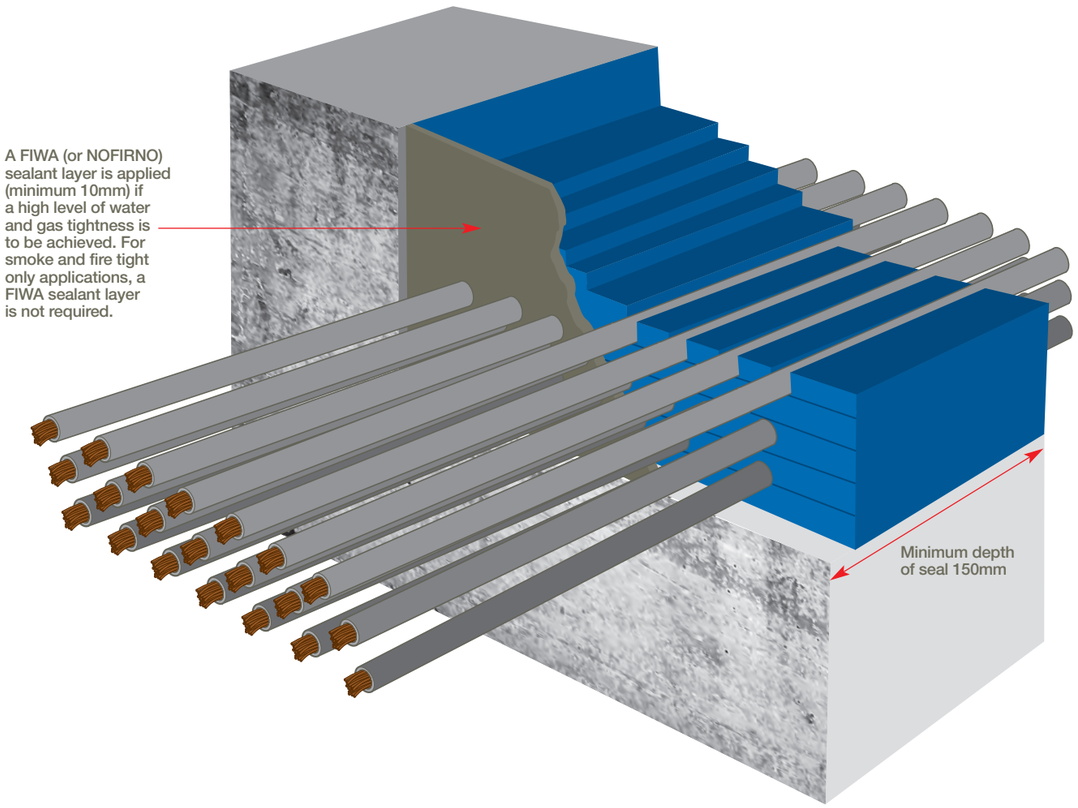
- BSEN1366-3 European Fire Test – 2 hour fire protection (will soon become mandatory)
- Lloyds Register witnessed – 1.5 bar pressure test
- TNO Efectis Laboratory – Age Testing to 50 years with no deterioration in performance
- Def Stan 02-711 Low Smoke Index (formerly NES711)
- Def Stan 02-713 Low Toxicity Index (formerly NES713)
- ISO 4589-3 – High Temperature Index
- ISO 4589-2 – High Oxygen Index
- Certifire approved (third party accreditation)
- BS476 Part 20:1987

Innovative technology.

No CF 465

ACTIFOAM Firestop System.

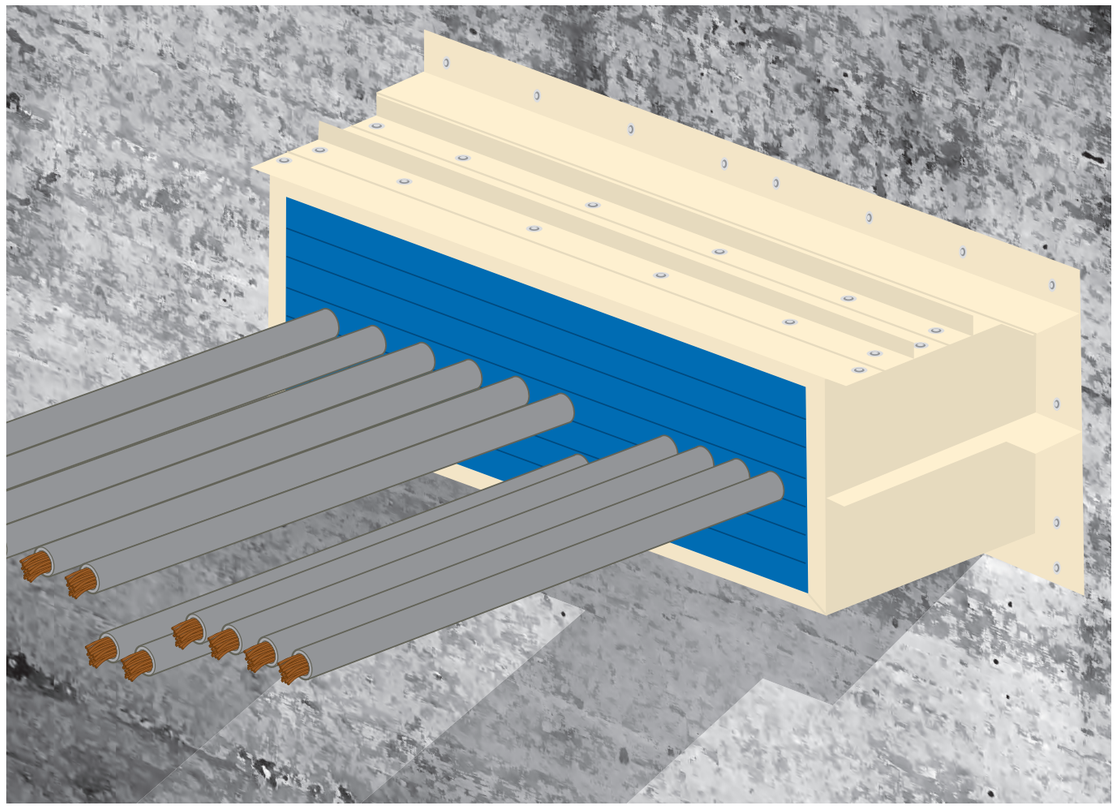
Where cables are in trunking, ACTIFOAM is used to fill any available voids around cable bundles and trunking. Where cables run through on tray, ACTIFOAM is applied in between cables. Cable separation to correspond with cable diameter (small cables can be bundled to a max bundle of 35mm).



Test standards	Fire resistance integrity	Fire resistance insulation
BSEN1366-3	2 hrs	2 hrs

ACTIFOAM Firestop System with Frames.

Where the depth of wall is less than 150mm, or in areas where cables are regularly ran or re-routed, the ACTIFOAM Firestop system with frame, which is bolted to the face of the wall or floor, is the ideal flexible and aesthetic solution.

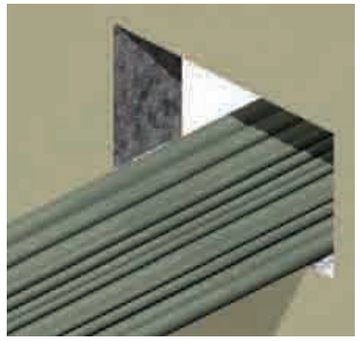


Test standards	Fire resistance integrity	Fire resistance insulation
BSEN1366-3	2 hrs	2 hrs

Installation.
ACTIFOAM Firestop System.

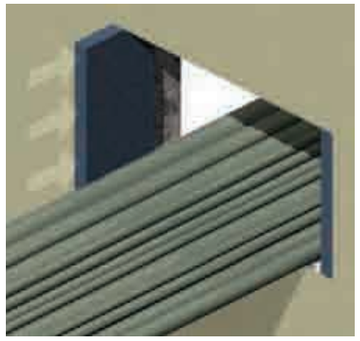
Step 1

If the walls inside the conduit opening exhibit large irregularities, they should be locally smoothed with FIWA (or NOFIRNO) fireproof sealant, otherwise insufficient smoke tightness will be obtained.



Step 2

The cables can be ducted through the conduit opening in random order. It is important that they are not pulled too tight in order not to hamper their separation.



Step 3

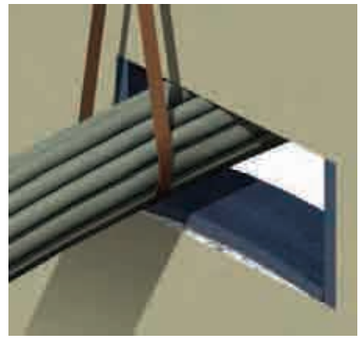
ACTIFOAM rubber sheets are cut into strips fitting to the size of the walls inside the conduit opening. For this purpose ACTIFOAM sheets with a thickness of 25mm are used.

Step 4

The ACTIFOAM rubber sheets should fit snuggly in the conduit opening to ensure a tight fit against the walls. This is important to avoid smoke penetrating between the sheets and the wall.

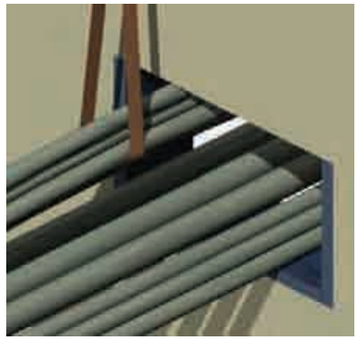
Step 5

An ACTIFOAM rubber sheet must also be placed in the conduit opening underneath the layer of cables. A band is placed around the cable bundle to lift the bundle of cables.



Step 6

A slightly oversized strip of ACTIFOAM rubber with a thickness of 25mm is placed inside the conduit opening underneath the cables. The sheet will be compressed by the weight of the cables.

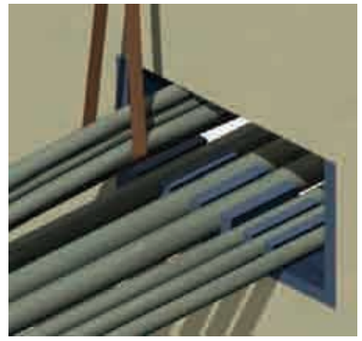


Step 7

One layer of cables is spread out on the ACTIFOAM rubber sheet at the bottom of the conduit opening. The other cables are lifted to make room for further finishing to the first layer.

Step 8

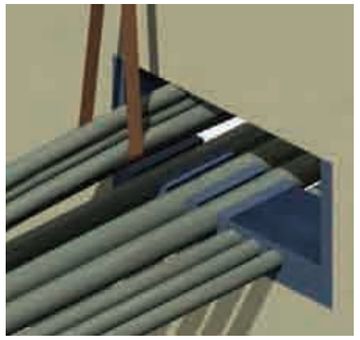
For proper cable separation, square profiles are torn off the pre-slit ACTIFOAM rubber sheets. The sizes of the profiles should be equivalent to the cable diameters.



Step 9

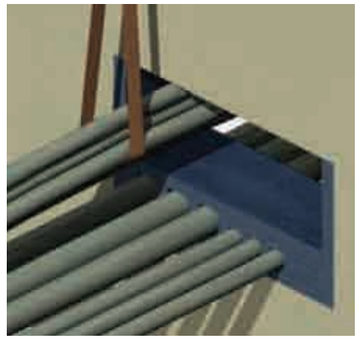
Profiles are slit in sizes of 10x10, 15x15, 20x20 and 25x25mm. This enables an easy fit for corresponding cable sizes. Cables larger than 25mm should be separated by a minimum of 25mm.

...continued.
ACTIFOAM Firestop System.



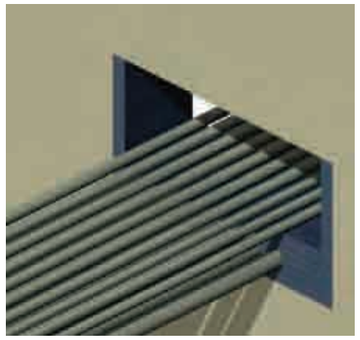
Step 10

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 conduit opening.



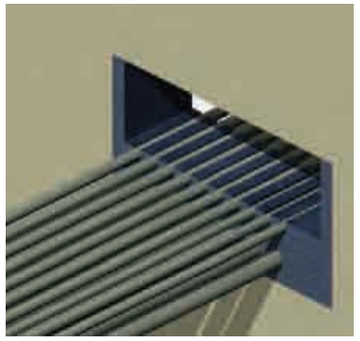
Step 11

An intermediate ACTIFOAM rubber sheet is inserted in the conduit opening on top of the levelled first layer. The thickness of the intermediate layer is dependent on the maximum cable diameter.



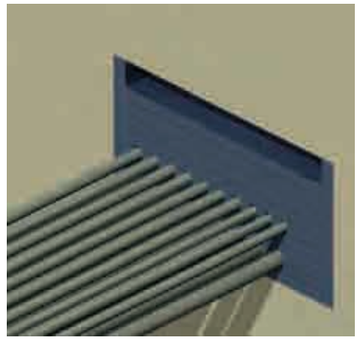
Step 12

The next layer of cables is spread out on the ACTIFOAM intermediate rubber sheet.
As indicated before, the cables should not be pulled too tight to enable this.



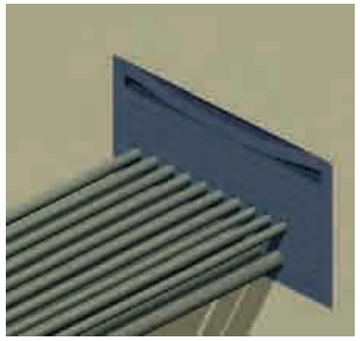
Step 13

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.



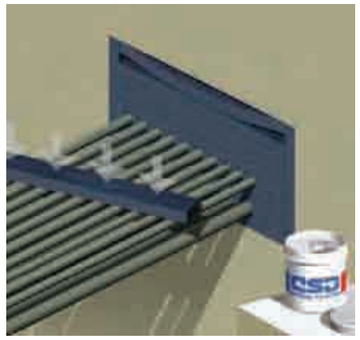
Step 14

The remaining space is filled with one or more ACTIFOAM sheets. All sheets should fit tightly in the conduit opening to obtain a fair degree of smoke tightness.



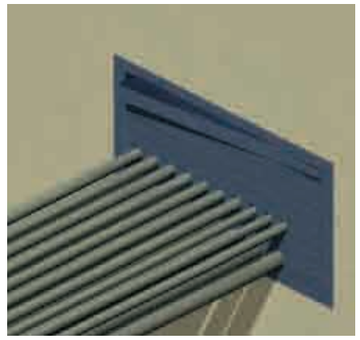
Step 15

Due to better sliding of greased rubber on rubber and for final finishing, an ACTIFOAM sheet must be inserted between the top layers of ACTIFOAM sheets.



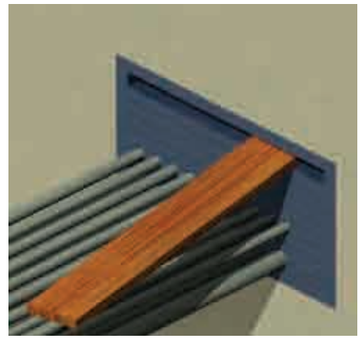
Step 16

Compression of the filling is necessary to obtain stability.
For this purpose it is easier to insert a couple of strips instead of sheets. The strips are greased all around with CSD lubricant.



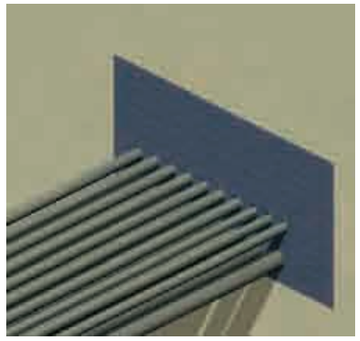
Step 17

The first strip is inserted into the opening between the layers by hand. For a wall thickness of 150mm, it is advisable to cut three strips 50mm wide to enable easier insertion.



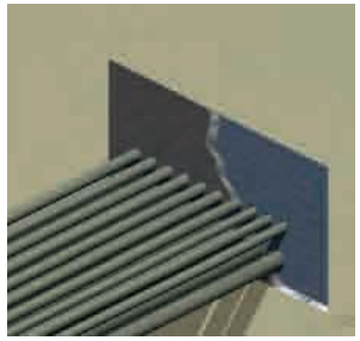
Step 18

A piece of wood is used to push the strips tightly into the opening between the ACTIFOAM rubber sheets. The use of strips instead of sheets makes this much easier to do.



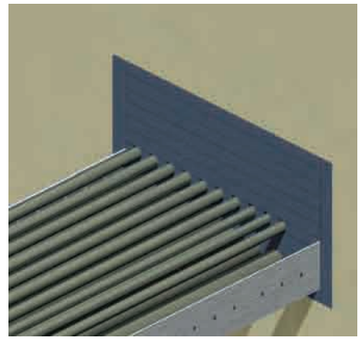
Step 19

The finished ACTIFOAM multi-cable penetration. Officially fire tested according to BSEN 1366-3 (NEN 6069) for 2 hours in an aerated concrete wall 150mm thick.



Step 20

In case the penetration has to be not only fire safe but also gas and water tight, the ACTIFOAM foam rubber filling can be covered with a layer of FIWA (or NOFIRNO) sealant in a minimum thickness of 10mm.

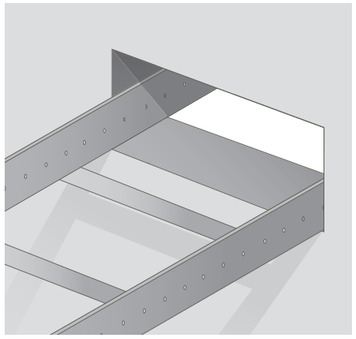


Step 21

It is not necessary to interrupt the cable tray. ACTIFOAM allows, if required, the tray to be passed through the conduit opening. ACTIFOAM sheets are placed around the cable tray.

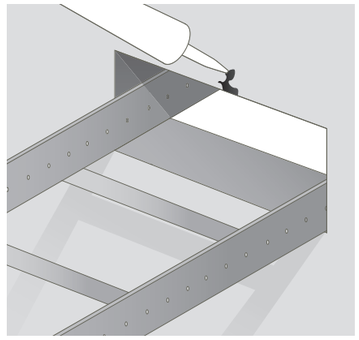
Installation.

ACTIFOAM Firestop System (with frames).



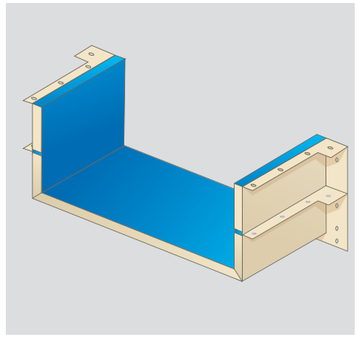
Step 1

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



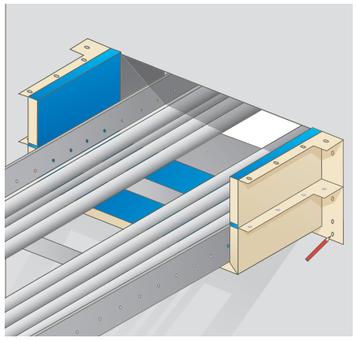
Step 2

If the wall around the conduit opening exhibits large irregularities, they should be locally smoothed with FIWA (or NOFIRNO) fire safe sealant. This is to prevent smoke emission between the FIRESTOP and the wall.



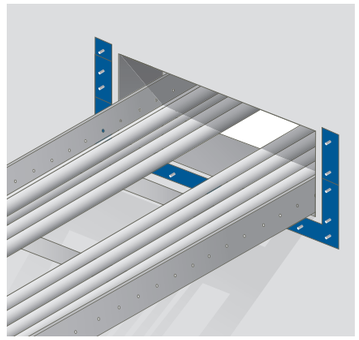
Step 3

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.



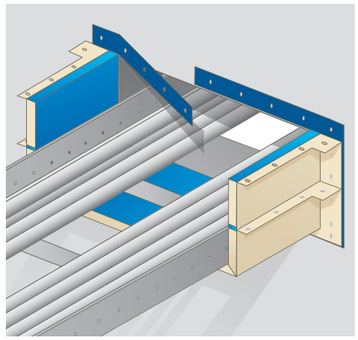
Step 4

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



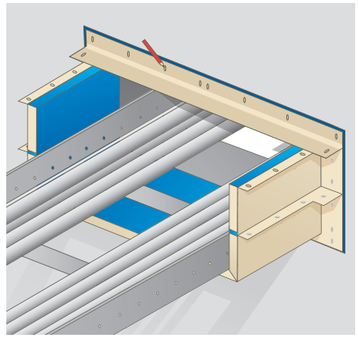
Step 5

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.



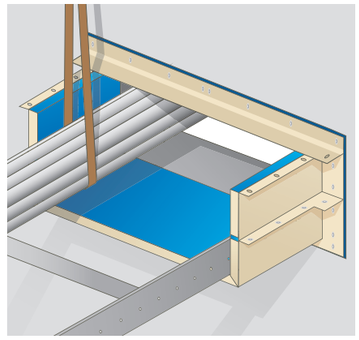
Step 6

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



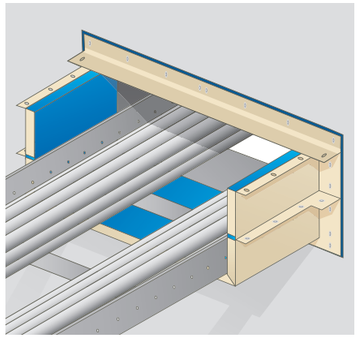
Step 7

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.



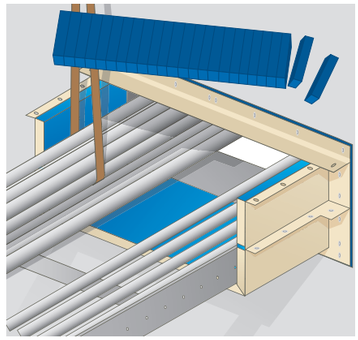
Step 8

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.



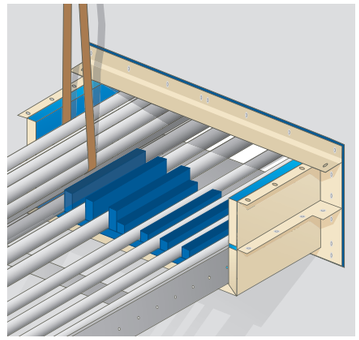
Step 9

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.



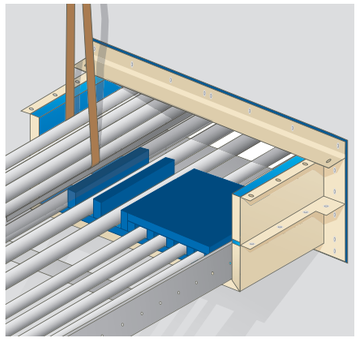
Step 10

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.



Step 11

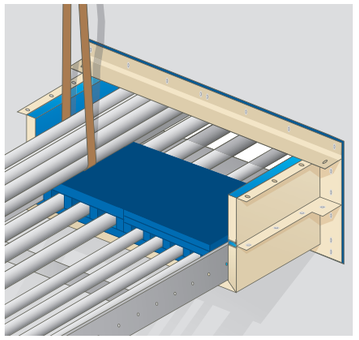
Profiles are slit in sizes of 10x10, 15x15, 20x20 and 25x25mm. This enables an easy fit for corresponding cable sizes. Cables larger than 25mm should be separated by a minimum of 25mm.



Step 12

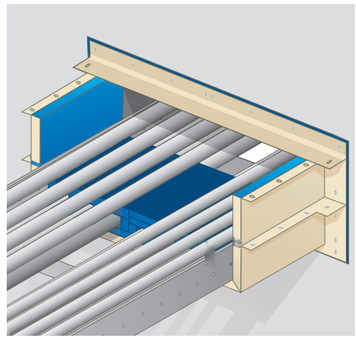
Adjacent to the first layer of cables and profiles, one or more extra sheets of ACTIFOAM rubber is fitted to create a level layer for further filling the FIRESTOP.

…continued.
ACTIFOAM Firestop System (with frames).



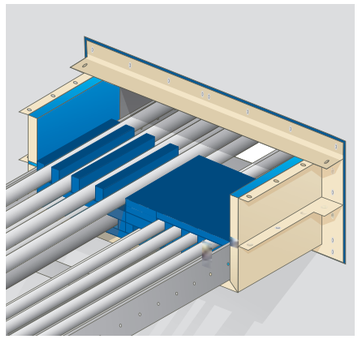
Step 13

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.



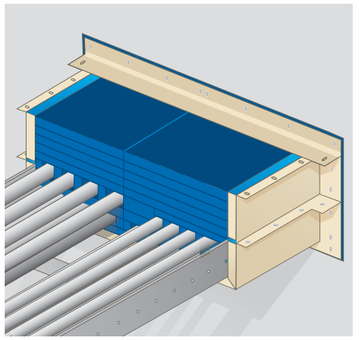
Step 14

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.



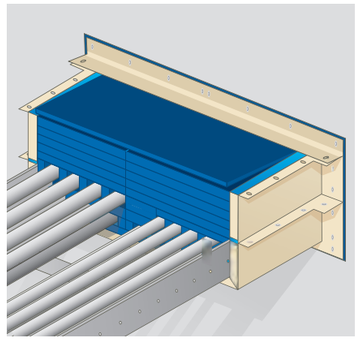
Step 15

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.



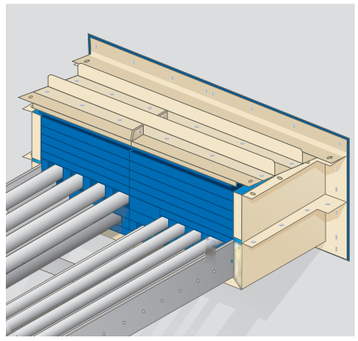
Step 16

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 25mm thick.



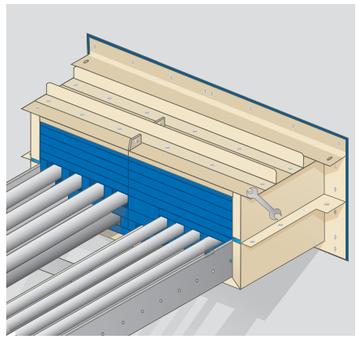
Step 17

On top of the filling overfill pads of minimum 10mm should be placed. They are pushed below the attachment bracket. The bracket has not been tightened firmly yet, in order to leave sufficient play.



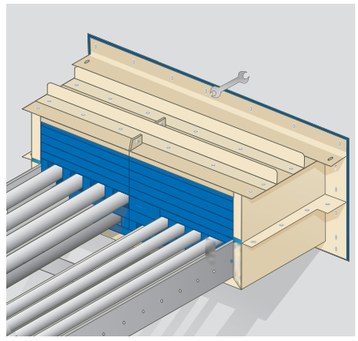
Step 18

Place the cover on the FIRESTOP casing and fit the attachment bolts in the holes. The attachment bolts are long enough to put the nuts on easily despite the overfill of 10mm inside the FIRESTOP.



Step 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.



Step 20

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

Foam rubber is supplied in sheets with a thickness from 10 up to 25mm.

ACTIFOAM FIRESTOP

Sheets are delivered in sizes:

500x500x10mm	
500x500x15mm	1000x500x15mm
500x500x20mm	1000x500x20mm
500x500x25mm	1000x500x25mm

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

Sheets and pre-slit sheets are delivered in sizes:

ACTIFOAM FIRESTOP

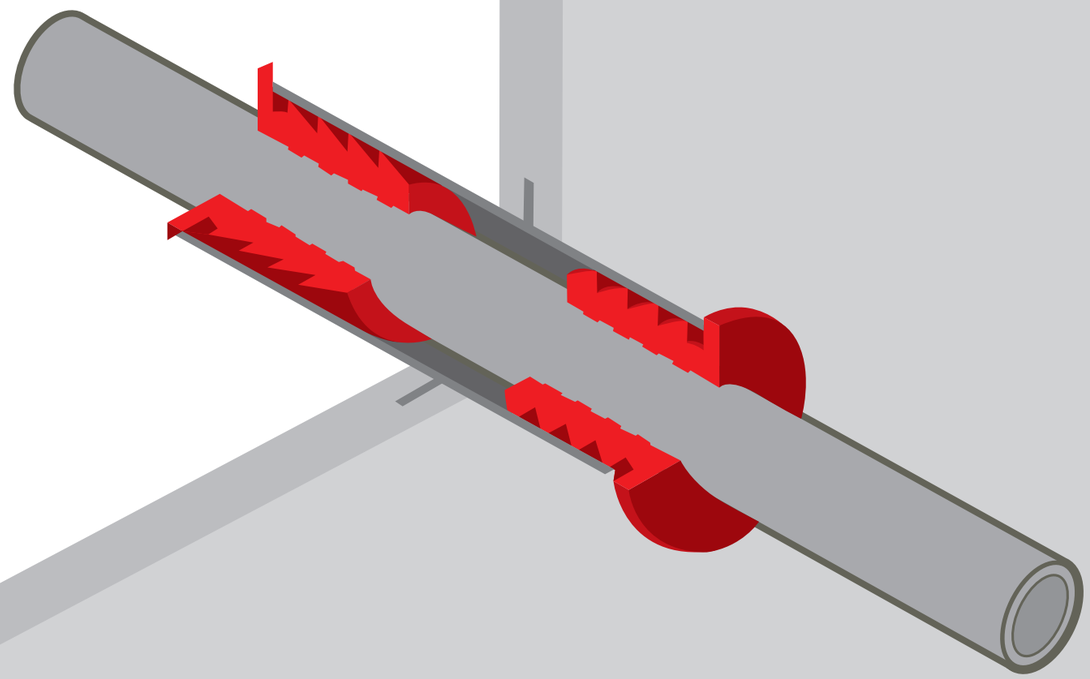
300x100x10mm	600x100x10mm
300x100x15mm	600x100x15mm
300x100x20mm	600x100x20mm
300x100x25mm	600x100x25mm
300x150x10mm	600x150x10mm
300x150x15mm	600x150x15mm
300x150x20mm	600x150x20mm
300x150x25mm	600x150x25mm
300x200x10mm	600x200x10mm
300x200x15mm	600x200x15mm
300x200x20mm	600x200x20mm
300x200x25mm	600x200x25mm
300x250x10mm	600x250x10mm
300x250x15mm	600x250x15mm
300x250x20mm	600x250x20mm
300x250x25mm	600x250x25mm

The **10mm thick sheets** have 30 (60) pre-cut profiles 10x10mm.
The **15mm thick sheets** have 20 (40) pre-cut profiles 15x15mm.
The **20mm thick sheets** have 15 (30) pre-cut profiles 20x20mm.
The **25mm thick sheets** have 12 (24) pre-cut profiles 25x25mm.

The profiles can easily be torn off.

SLIPSIL®

Seals for Cable and Pipe Entries.



"CSD Sealing Plugs consist of two equal parts that allows them to be inserted after all pipes or cables in a conduit are installed."

Features.

New generation seals

SLIPSIL is the new generation sealing plug from CSD. It combines simple installation with effective sealing performance. It is designed to seal pipes and cables against the ingress of fire, gas and water at pressures in excess of 2.5 bar, and is resistant against fire for up to 2 hours. In a range of sizes to suit services between 5mm and 520mm in diameter, the plug will cope with a much larger tolerance than the traditional CSD Sealing Plugs.

Simple installation, outstanding performance

CSD Sealing Plugs consist of two equal parts that allows them to be inserted after all pipes or cables in a conduit are installed.

The flange of the sealing plug prevents the sealing plug being inserted too far and is labelled with size information to ease identification and inspection. The profiling of the sealing plug makes it easy to push into the opening, but will create an extremely effective long-term seal with guaranteed performance.

Benefits.

“Fast and simple to install.”

Can be installed in minutes

- Allows the shortest possible conduit length for fire rated penetrations
- Can be used for all types of metallic and plastic pipes
- Does not require bolting or any other mechanical outfitting
- Low maintenance
- Can be exposed to high pressure loads directly after installation
- Tested under severe conditions, suitable for wide ranging industries and for use in the harshest environments

Extensive pressure testing.

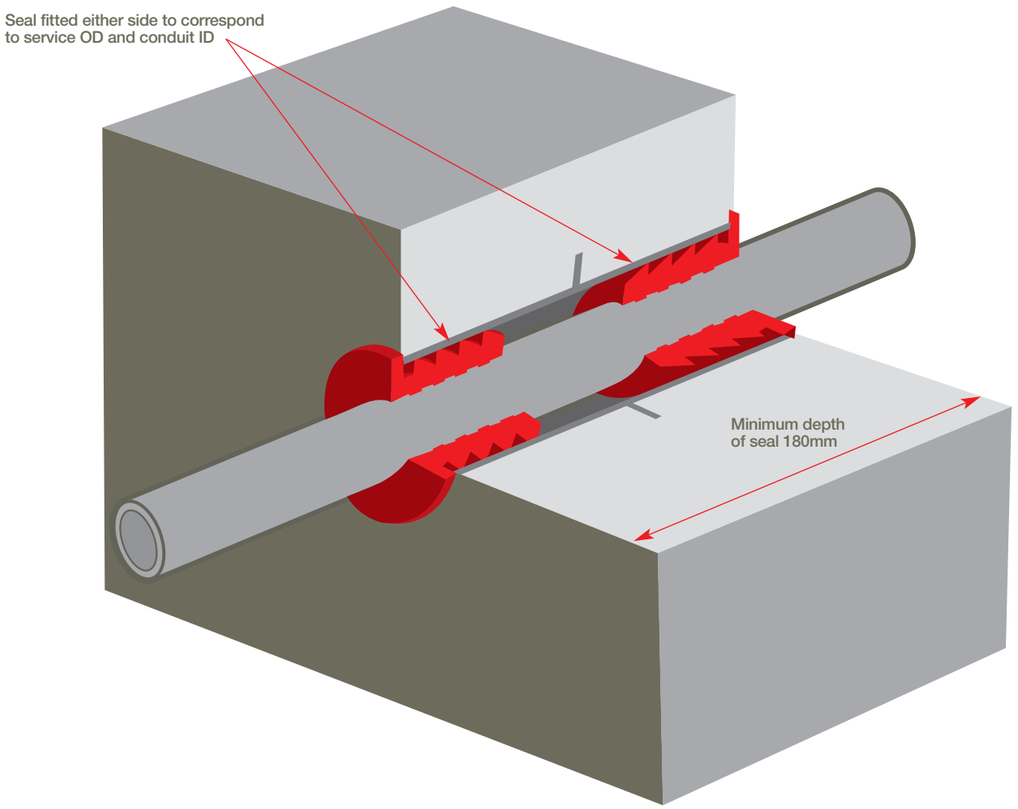
SLIPSIL sealing plugs have gone through three pressure tests at nominal dimensions to determine the pressure ratings for plugs with smallest, medium and largest of openings.

Each plug size is then also pressure tested at each of the possible tolerance limits from the largest allowable conduit dimension with the smallest allowable service pipe dimension, through to the opposite limits.

This creates a total of twelve pressure tests for each series to determine the operational tolerances and ease of installation.

- Lloyds Register Witnessed – 2.5 bar pressure test
- TNO Laboratory – Age Testing to 50 years
- BSEN1366-3 European Fire Test – 2 hour fire protection
- NES711 – Low Smoke Index
- NES713 – Low Toxicity Index
- ISO 4589-3 – High Temperature Index
- ISO 4589-2 – High Oxygen Index

Innovative technology.



Test standards	Fire resistance integrity	Fire resistance insulation
BSEN1366-3	2 hrs	2 hrs
BSEN13501-2:2003	2 hrs	2 hrs

Specialist conduit frames are available. Alternatively, SLIPSIL plugs can be inserted into core drilled holes.

Installation.

Step 1

Before starting the installation, any dirt or oil residues should be removed from the conduit opening.

Step 2

The inside wall should then be treated with CSD lubricant along a distance which approximately corresponds with the length of the sealing plug.

Step 3

The inside surfaces of both segments of the sealing plug need to then be covered with CSD lubricant.

…continued.

Step 4

The segments of the sealing plug need to be treated with CSD lubricant on the outside. Ensure all surfaces are well lubricated.

Step 5

Place both segments of the sealing plug around the ducted pipe and then push into the conduit opening as far as the first serration.

Step 6

Push both segments of the sealing plug evenly by hand, serration by serration, further into the conduit opening. For some plugs at extreme tolerance, a wooden section and mallet may be required.

Step 7

To satisfy certification requirements a plug should be installed at each end of the penetration (flanged edge flush against the frame). When installing the second plug, air can become trapped inside the penetration. Use a lubricated screwdriver and carefully insert the end between the 2 plug segments to release the air. Repeat process if required until all air is released and the second plug is fully inserted.

Plastic pipes (additional steps)

Step 8

For plastic pipes, you must use an 80mm wide wrap of RISE FRR/EHF rubber between the SLIPSIL plugs. A pre-formed sleeve can be used for pipe sizes up to 44mm and wrap in 1m or 3m lengths for sizes above.

Step 9

Once the wrap is inserted in to the centre of the penetration, the second SLIPSIL plug can be installed as before. This will create your fully certified plastic pipe SLIPSIL penetration.

SLIPSIL selection table for metallic and GRP pipework.

STEP 1			STEP 2						
BS (NB)	ASTM (NB)	MM	SERIES 35 (Suits 5-20mm)	SERIES 53 (Suits 10-34mm)	SERIES 78 (Suits 22-50mm)	SERIES 103 (Suits 40-75mm)	SERIES 128 (Suits 60-92mm)	SERIES 154 (Suits 88-125mm)	SERIES 207 (Suits 110-168mm)
		6	35/5-6						
		8	35/8-9						
		10	35/10-12	53/10-12					
		12	35/12-14	53/12-14					
1/4"	1/4"	13	35/12-14	53/12-14					
		15	35/14-16	53/14-16					
3/8"	3/8"	17	35/16-18	53/16-18					
		18	35/18-20	53/18-20					
		20		53/20-22					
		21		53/20-22					
		22		53/22/-24					
		25		53/24-26					
3/4"	3/4"	26		53/26-28					
		28		53/28-30	78/28-30				
		30		53/30-31	78/30-32				
1"	1"	33		53/33-34	78/32-34				
		35			78/34-36				
		38			78/38-40				
		40			78/40-42				
1 1/4"	1 1/4"	42			78/42-44	103/42-44			
		44			78/44-46	103/44-46			
1 1/2"	1 1/2"	48			78/48-50	103/48-50			
		50			78/50	103/50-52			
		53				103/52-54			
		54				103/54-56			
2"	2"	60				103/60-62	128/60-62		
		63				103/62-63	128/62-64		
		67				103/66-68	128/66-68		
	2 1/2"	73				103/72-74	128/72-74		
2 1/2"		76					128/76-78		
3"	3"	88					128/88-90	154/88-90	
		108						154/108-110	
4"	4"	114						154/114-116	
6"	6"	168							207/168

STEP 3							
NB	1 1/4"	2"	3"	4"	5"	6"	8"
OD & Wall Thickness (mm)	42.2 x 3.56	60.3 x 3.6	88.9 x 5.49	114.3 x 5.6	139.7 x 5.6	168.3 x 7.11	219.1 x 6.3
Inside Diameter (mm)	35.08	53.1	77.92	103.1	128.5	154.08	206.5
Allowable Tolerance on ID (mm)	34.5-35.7	52-53.7	77-78.7	102-103.7	127-128.7	153-154.7	206-207.7
Suggested Steel Specification	API 5L Grade B	ST.52 DIN 1629	API 5L Grade B	API 5L Grade B	ST.52 DIN 1629	API 5L Grade B	API 5L Grade B
Minimum Frame Length (mm)	120	120	160	160	160	160	160

STEP 1: Select the outside diameter of the service pipe from the table.

STEP 2: Read along the row to select the correct plug size and type.

STEP 3: Read down the column to select the correct penetration sleeve.

The internal diameter of the chosen sleeve is critical to ensure a water tight seal. The ID must be within the tolerance indicated in the table.

Penetration sleeves are available direct from CSD, sized to suit and with a bevel applied to the inside edge to aid insertion of the SLIPSIL plugs.

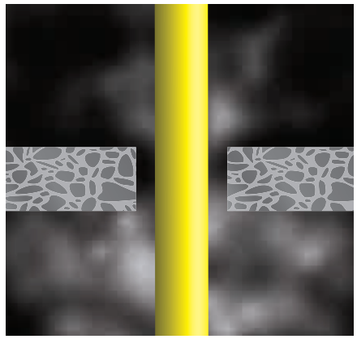
Mild steel is supplied as standard and can be coated to your specification if required. Aluminium, Stainless Steel and GRP sleeves are also available.

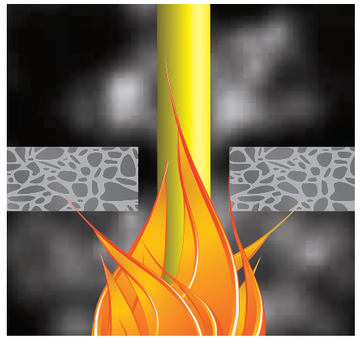
The above is not a complete listing of plugs available, but does cover the majority of requirements. If it does not cover yours, please request a complete listing of available sizes.

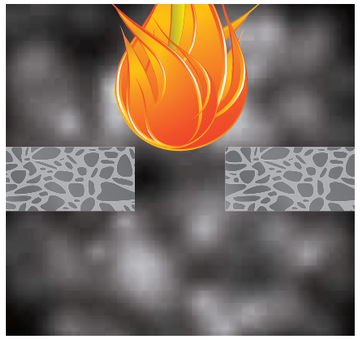
Note: New plug series are added to the range on a regular basis. Please contact our sales department when there is a need for a new series not listed above.

Plastic pipes.

SLIPSIL Sealing Plugs and RISE Ultra.







Plastic pipes which pass through fire-rated walls and floors as part of, for example, sanitation systems, create serious problems in case of fire.

Most plastic pipes start to soften at a temperature of about 75˚C and ignite at a temperature of about 140˚C. This means that, should a fire occur, a hole will be formed by the softened or combusted plastic pipe, allowing fumes and flames to spread freely.

To meet this problem, the SLIPSIL Plug System and RISE Ultra has been developed.

To avoid smoke and fire spread RISE rubber is used; type FRR-EHF (fire resistant rubber – expanding, halogen free). This rubber is placed between SLIPSIL Sealing Plugs made of NOFIRNO rubber.

When exposed to temperatures above 200˚C or flames, RISE rubber will expand vigorously to more than ten times its original volume with such a force that even a thin wall aluminium pipe will be crushed. This means that in case of a fire, no opening will be left in the conduit for the passage of smoke and flames.

The cavity between both SLIPSIL plugs needs to be partly filled with RISE rubber strips or sleeves. Other than with PE/ALU pipes, the time to close off the opening left by the burned or softened plastic pipe is very short. If the reaction is too late, a chimney effect will occur, causing the pipe at the unexposed side to melt.

RISE rubber will expand as soon as the conduit sleeve is subjected to heat, and as a result it will seal off the opening created by the softened or combusted plastic pipe in a very short time.

The expanded RISE rubber possesses good thermal insulation properties, ensuring that the softened pipe will re-harden after compression.

NOFIRNO rubber will form a char at the front exposed side of the SLIPSIL plug and will slightly expand.

In this way, the RISE rubber is fully enclosed and can only expand in the direction of the softened plastic pipe.

The SLIPSIL plug at the unexposed side will keep the penetration smoke tight during the fire. The SLIPSIL plug system is a push-in system and requires no complicated installation work.

It is fireproof, gastight and watertight.

This is accredited to EN13501-2:2003 in accordance BSEN1366-3.

RISE Ultra

RISE Ultra plastic pipe penetrations are a newly developed version of Beele Engineering and CSD's CRUSHER technology used in all our RISE products. It uses a combination of adhesion followed by rapid and extreme expansion, resulting in a solid, stable filling of the conduit opening, closing off any gaps left by the melting plastic pipe.

The RISE Ultra's effectiveness comes from its reaction at two different temperature levels.

Firstly, the rubber becomes very adhesive, bonding itself to the ducted pipe and then following the initial stage of expansion, bonding itself to the inside wall of the conduit opening. The next stage of the reaction as the temperatures increase further is a huge expansion of material which crushes the softening plastic pipe quickly and prevents any smoke or fire breakthrough. The resulting rubber mass is then extremely stable and will withstand extended exposure to fire.

Installation layout.

Plastic pipe penetration walls and floors

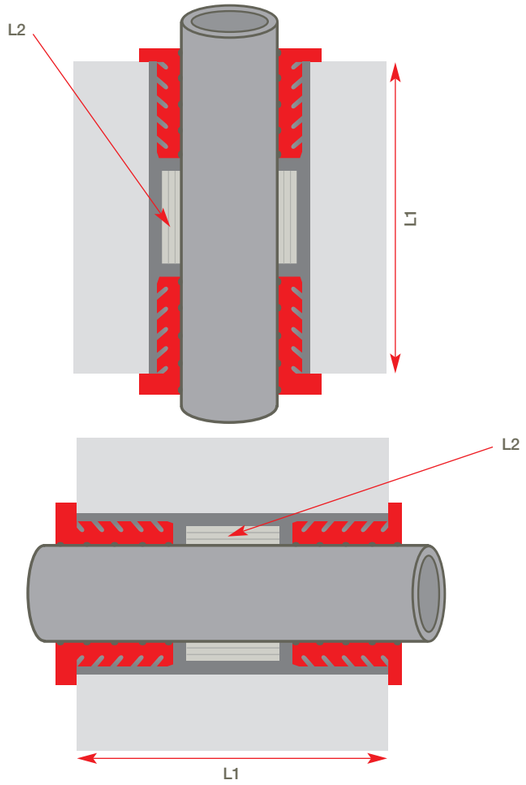
L1: 250mm

L2: 80mm wide strips of RISE strip to be wrapped around the ducted pipe to a minimum thickness of 1/4xD, rounded up to the nearest +/-5mm. For pipe sizes up to 42mm, a pre-formed sleeve of the required thickness is available. Available sizes are:

Pipe OD	RISE Sleeve
15	35/16
16	35/16
20	39/20
22	46/22
25	46/26
30	46/30
32	52/32
40	64/40
50	2.5mm wrap - minimum 4 layers
63	2.5mm wrap - minimum 6 layers
75	2.5mm wrap - minimum 6 layers
90	2.5mm wrap - minimum 8 layers
110	2.5mm wrap - minimum 10 layers
160	2.5mm wrap - minimum 16 layers

ID of conduit sleeve to be within the tolerances detailed on page 35.

SLIPSIL sealing plugs to be inserted both sides of the conduit (either core drilled concrete or ducting are suitable).



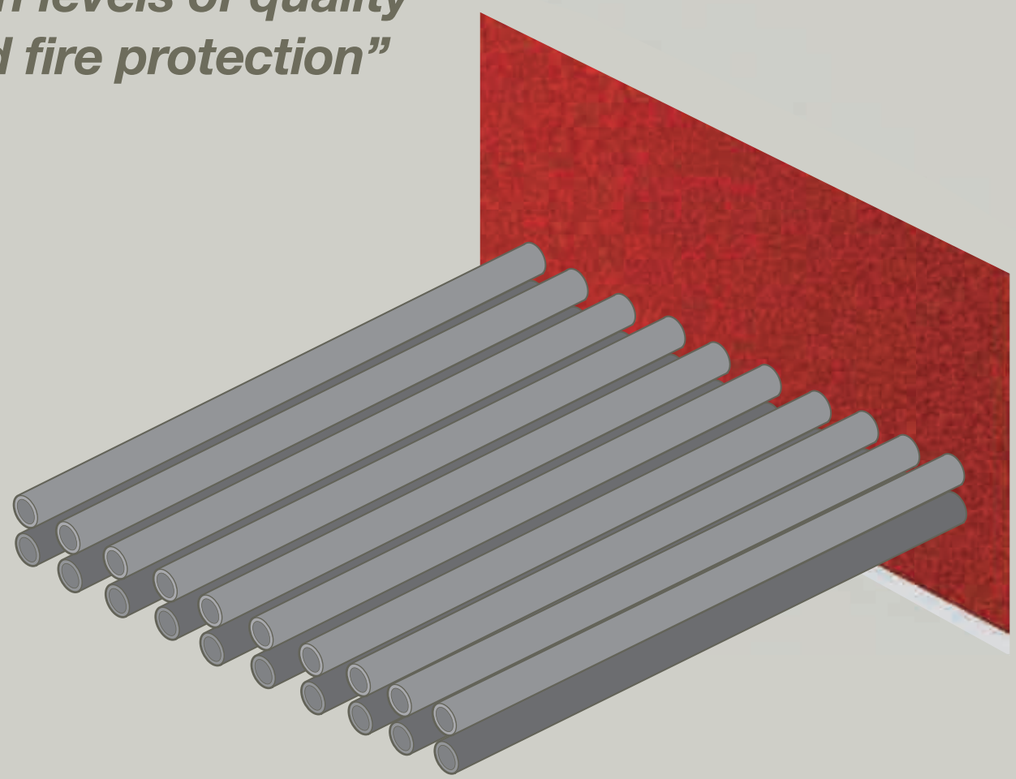
STEP 1 Plastic Service Pipe Sizes		**STEP 2** Slipsil Plug to suit service pipe						
	MM	**SERIES 35**	**SERIES 53**	**SERIES 78**	**SERIES 103**	**SERIES 128**	**SERIES 154**	**SERIES 207**
		(Suits 15-16mm)	(Suits 15-32mm)	(Suits 22-50mm)	(Suits 40-63mm)	(Suits 62-75mm)	(Suits 90mm)	(Suits 110-160mm)
	15	35/15-16	53/14-16					
	16	35/16-18	53/16-18					
1/2"	20		53/20-22					
	22		53/22-24	78/22-24				
3/4"	25		53/24-26	78/24-26				
	30		53/30-31	78/30-32				
1"	32		53/32-33	78/32-34				
1 1/4"	40			78/40-42	103/40-42			
1 1/2"	50			78/50	103/50-52			
2"	63				103/62-64	128/62-64		
2 1/2"	75					128/74-76		
3"	90						154/90-92	
4"	110							207/110
6"	160							207/160

STEP 3							
NB	**1 1/4"**	**2"**	**3"**	**4"**	**5"**	**6"**	**8"**
OD & Wall Thickness (mm)	42.2 x 3.56	60.3 x 3.6	88.9 x 5.49	114.3 x 5.6	139.7 x 5.6	168.3 x 7.11	219.1 x 6.3
Inside Diameter (mm)	35.08	53.1	77.92	103.1	128.5	154.08	206.5
Allowable Tolerance on ID (mm)	34.5-35.7	52-53.7	77-78.7	102-103.7	127-128.7	153-154.7	206-207.7
Suggested Steel Specification	API 5L Grade B	ST.52 DIN 1629	API 5L Grade B	API 5L Grade B	ST.52 DIN 1629	API 5L Grade B	API 5L Grade B
Minimum Frame Length (mm)	200	200	200	200	200	250	250
CSD Part Number	FRAME35X200	FRAME53X200	FRAME78X200	FRAME103X200	FRAME128X200	FRAME154X160	FRAME207X160

NOFIRNO

Fire-Stopping for Cable and Pipe Entries.

"Simple application, cost-effective system, yet still meets CSD's high levels of quality and fire protection"



Features.

Simple and cost effective

NOFIRNO coated mineral wool boards are designed for the fireproof ducting of cables in building and industrial applications.

It is coupled with a NOFIRNO fire-resistant sealant based on a single component silicone compound that is paste like and simple to use.

For wall and floor openings that are oversized, the combination of NOFIRNO sealant and NOFIRNO coated mineral wool boards have been developed to provide a cost-effective fire stopping solution.

NOFIRNO exhibits excellent fire stopping, coupled with very low smoke and toxicity properties.

NOFIRNO mineral wool boards are supplied measuring 1000mm x 600mm with a 1.2-1.5 mm thick layer of coating on one or both sides.

The NOFIRNO mineral wool boards are 60mm thick and have a density of 152 kg/m3. The boards can be easily cut to size at site.

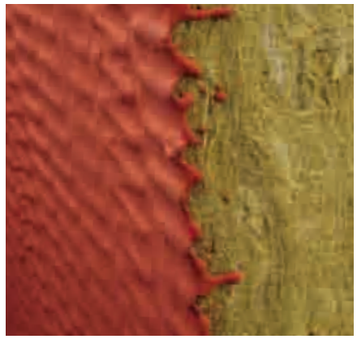
In the event of fire, the NOFIRNO coating will form a ceramic protective layer at the exposed side which also acts as a thermal barrier, and prevents moisture from escaping from the inside of the mineral wool board. This in turn prevents shrinkage during fire exposure.

For mechanical stability, it is of the utmost importance that the boards fit snugly in the conduit opening and that the boards are sealed all around with NOFIRNO sealant.

NOFIRNO is a fire-resistant sealant based on a single component silicone compound. NOFIRNO is also water repellent with high bonding strength UV and is also ozone resistant.

The numerous fire tests we have carried out with NOFIRNO sealant have 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 fire due to the protective layer and char formed. 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. NOFIRNO sealant can be used in a very wide temperature range.

Benefits.



Suitable for outdoor environments

- Simple solution for oversized conduits
- High thermal insulation properties
- Easy access for extensions
- Cost-effective
- Optimized fire and smoke barrier
- Waterproof coating

Extensive test programme.

Extensively Tested

NOFIRNO boards have been tested in accordance with the European fire classification, BSEN1366-3:2004 and approved for 2 hours fire protection. It has also received the classification of up to E120, tested in accordance with classification BSEN13501-2:2003.

Smoke Tight
(when used with Nofirno Sealant)

TNO Laboratory – Age Testing to 50 years

BSEN1366-3 European Fire Test
– 2 hours fire protection

NES711 – Low Smoke Index

NES713 – Low Toxicity Index

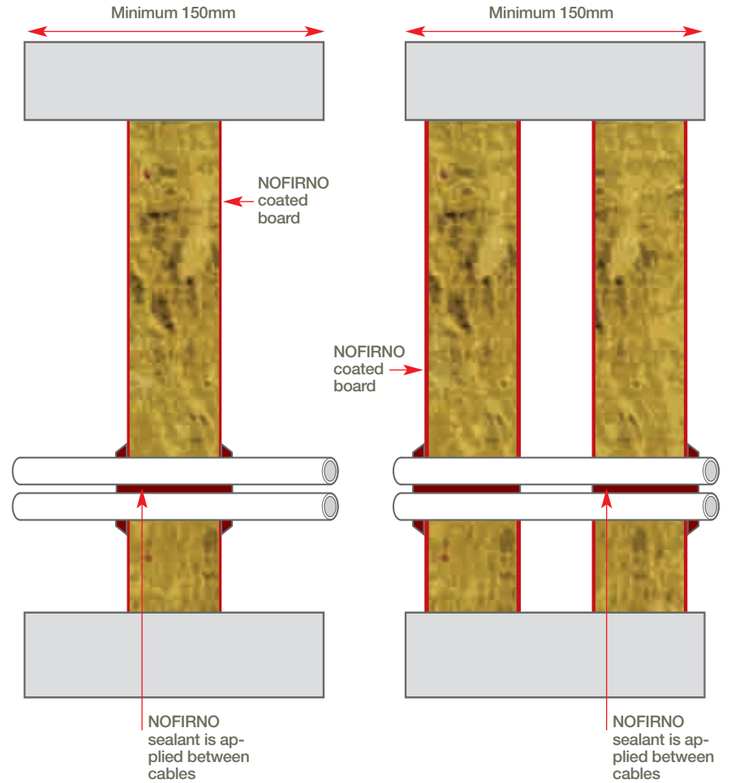
ISO 4589-3 – High Temperature Index

ISO 4589-2 – High Oxygen Index

Installation Layout.

Conditions of approval

- Suitable for use in an aerated concrete wall, minimum depth 150mm.
- Maximum unsupported opening size 600mmx600mm. For larger openings structural supports must be used, such as Unistrut.
- NOFIRNO coated Rockwool boards are of a minimum depth of 60mm and 150kg/m3 density.
- Suitable for all types of cable and cable trays as specified within BSEN1366-3.



EI60 (Integrity, stability and insulation – 60 minutes)

Testing in accordance with BSEN1366-3

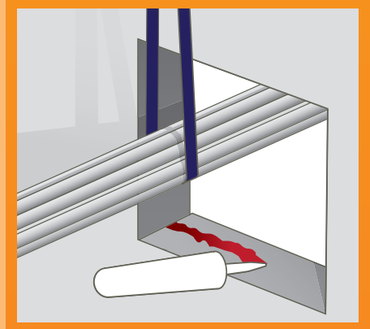
EI90 (Integrity, stability and insulation – 90 minutes)

E120 (Integrity, stability – 120 minutes)

Testing in accordance with BSEN1366-3

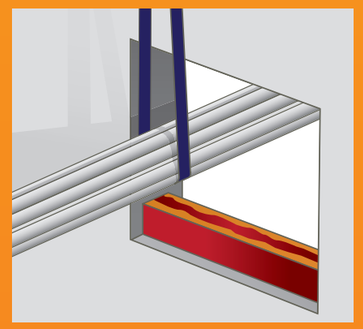
...continued.

Installation instructions



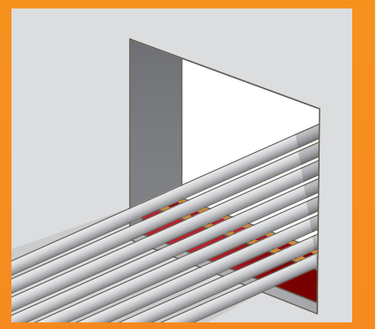
Step 1

For smaller sized conduit openings or for penetrations with a low cable fill, a NOFIRNO 'solo' board system can be applied. Use is made of NOFIRNO coated boards and NOFIRNO sealant. In this case, more sealant is needed to obtain sufficient mechanical stability.



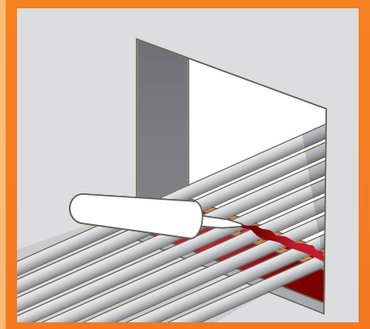
Step 2

A NOFIRNO board is placed inside the penetration on top of the layer of NOFIRNO sealant. A layer of NOFIRNO sealant is also applied on top of the board as well, in order to assure effective stability and smoke tightness.



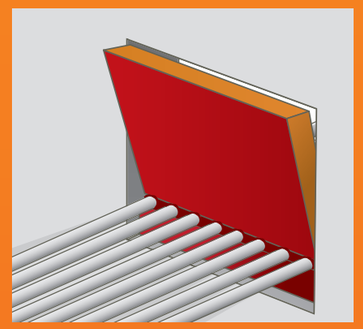
Step 3

Then the cables are spread out on the NOFIRNO board inserted at the bottom of the conduit opening. Care has to be taken that sufficient NOFIRNO sealant is applied in between the cables. Seperation of the cables preferably about 5-10mm.



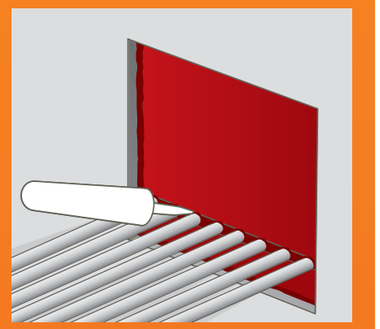
Step 4

On top of the cable set, another layer of NOFIRNO sealant is applied to obtain optimum tightness between each of the cables and between the cables and the NOFIRNO boards. This also improves mechanical stability of the penetration seal.



Step 5

The top NOFIRNO board is cut to size and tightly inserted into the open space of the conduit. The NOFIRNO board should be a bit oversized and can be forced into the opening using a wooden section and mallet.



Step 6

Finally, all seams around the NOFIRNO boards are sealed with NOFIRNO sealant. The NOFIRNO sealant can be smoothed by hand. Wet the hand with soap and water to avoid sealant sticking to the hand.

Recent projects.

Power Generation & Distribution

EDF Energy
Olympic Park Primary substation and infrastructure
Leatherhead 132 Kv substation
Reading University substation
North Sevenoaks substation
Rokerby substation
Bow substation
Whitstable Primary substation
Stonemarket substation

National Grid (SEESA)
Hackney substation
Barking substation

Scottish Power Distribution
Chapelcross 33 Kv substation
Douglas Water substation

Scottish Hydro Transmission
– Kintyre to Hunterston substation

Scottish & Southern Energy
Heathrow Terminal 5 substations
Newcastle Great Park substation
Shalfleet substation
Slough substation
St Cross, Winchester substation
Southgate substation

Western Power
Bridgend substation
Seabank Power Station

E.on Central Networks
Castle Road substation

CE Electric
Olympia & Selby substation
Immingham substation
Milford Haven CCGT Plant
Cruachan Power Station

Wind Farms

E.on UK
Robin Rigg offshore wind farm
Great Eppleton onshore wind farm

Centrica and Dong Energy
Barrow offshore wind farm

Scottish Power Renewables
Whitelees onshore wind farm

Scottish & Southern Renewables
Toddleburn onshore wind farm

Your Energy
Pates Hill wind farm
Milton Keynes wind farm

ESB
West Durham onshore wind farm

RWE Npower Renewables
Llyn Alaw onshore wind farm
Carno onshore wind farm

Wind Prospect
Long Park wind farm

Novera Energy
Lissett wind farm

A7 Energy
Lochhead Wind farm

Water Industry

Thames Water – DSEAR program across all sites and included within specification, Beckton, Beddington Crossness & Ashford Common STW

Scottish Water – Various WWTW – DSEAR program to ensure compliance across sites

Southern Water – RISE duct seal included within specification on all projects

Wessex Water – Weymouth & Wyke STW

Northumbrian Water – Barnard Castle, West Cornforth, Belford & Marske STW

Yorkshire Water - Toll House, Malton WWTW

Anglian Water – Morcott WWTW

Severn Trent Water – Minworth STW, Melton Mowbray WWTW

Welsh Water – Various STW

United Utilities – Penrith, Orton STW & Uston STW, thorpe WWTW

Bournemouth & West Hampshire Water

General Construction

Heathrow Terminal 5
Wembley City Development
Kendrew Quadrangle – Oxford University
Reading University
Guys Hospital – London
John Radcliffe Hospital – Oxford
Medical Research Institute – Edinburgh
Pollock Halls of Residence – Edinburgh
HMNB Clyde - Faslane
MOD Northwood
AWE Aldermaston
RAF Wittering – Ammunition Storage Area
GCHQ NAP Project

HSBC IT Data Centre – Wakefield

HSBC World Headquarters – London

Orange – Data Centre – Bristol

Cap Gemini – London

Global Switch – London

Regents Quarter – London

Dairy Crest – Wrexham

Pfizer – Sandwich

GSK Research Institute – Stevenage

Oil Refinery & Gas Storage

Total – Pembroke Oil Refinery

Texaco – Pembroke Oil refinery

Humbly Grove gas storage facility
Easington gas receiving facility on Langeled pipeline
Felindre Gas Terminal
Dragon LNG Terminal
Aldbrough Gas Storage

Motorway Infrastructure

M1 Motorway
M62 Jct 22 to Jct 25
M6 Jct with M55
A465 Trunk Road
M25 Bell Common Tunnel Refurbishment

Telecommunication Sites

Virgin Media - Leeds Hub station

BT Openreach – Across UK network

ERH Communications – Bristol – Transmitter Stations

WWW.CABLEJOINTS.CO.UK
THORNE & DERRICK UK
TEL 0044 191 490 1547 FAX 0044 477 5371
TEL 0044 117 977 4647 FAX 0044 977 5582
WWW.THORNEANDDERRICK.CO.UK

SEALING SYSTEMS