

RISE/NOFIRNO®: THE ULTIMATE SEALING SYSTEM FOR MULTI-ALL- MIX TRANSITS® (PIPES AND CABLES)



**SUCCESSFULLY TESTED ACCORDING TO
EN 1366-3:2004; FIRE RESISTANCE
EI90/EI120 ACCORDING TO EN 13501-2:2003
CERTIFICATES 2008-EFECTIS-R0633-36**



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INTERNATIONAL

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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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brochure code	: RISE/NOFIRNOcable/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 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.

RISE®/NOFIRNO® SINGLE, MULTI AND MULTI-ALL-MIX TRANSITS

RISE®/NOFIRNO® multi-cable transits: based on ACTIFIRE® and NOFIRNO® technology

RISE®/NOFIRNO® multi-all-mix penetrations are a further development of the regular RISE® system. We have now combined the most superior compounds in our product ranges to obtain the ultimate in fire ratings and improvement of ease of installation. ACTIFIRE® and NOFIRNO® technology are utilized in an optimum way. Use is made of RISE® rubber insert sleeves (placed around the cables), RISE®/ULTRA crushers (around the plastic pipes) and NOFIRNO® filler sleeves. Based on the ACTIFIRE® technology the RISE® and RISE®/ULTRA rubber are activated when exposed to fire. NOFIRNO® however is inactive and is not consumed by the fire. On both sides of the penetration a layer of NOFIRNO® sealant is applied.

Only halogen free components.



RISE®/NOFIRNO® multi-cable transits: ultimate flexibility, maintenance friendly



RISE®/NOFIRNO® multi-all-mix penetrations offer a most simple way of installation. No precise positioning of the cables/pipes in the transit needed. The RISE®/NOFIRNO® sealing system allows cables to be ducted through conduit openings in a bent, curved or oblique way without any adverse impact on sealing performance. The RISE®/NOFIRNO® sealing system gives easy access to add or remove cables in a later stage without the necessity to disassemble the whole penetration. Just cut away a piece of the NOFIRNO® sealant layer at both sides of the penetration, remove NOFIRNO® filler sleeve(s) and pull the cable with a RISE® sleeve through and refill the opening in the sealant layer.

It is that simple!

RISE®/NOFIRNO® SINGLE, MULTI AND MULTI-ALL-MIX TRANSITS

RISE®/NOFIRNO® multi-cable transits: also tested for bundled cable sets



The RISE®/NOFIRNO® sealing system has been successfully tested according to EN 1366-3:2004 with sets of bundled cables. Specially in the case of ducting larger amounts of small diameter LAN cables a lot of time saving is obtained since not each and every cable has to be sleeved with a RISE® insert sleeve.

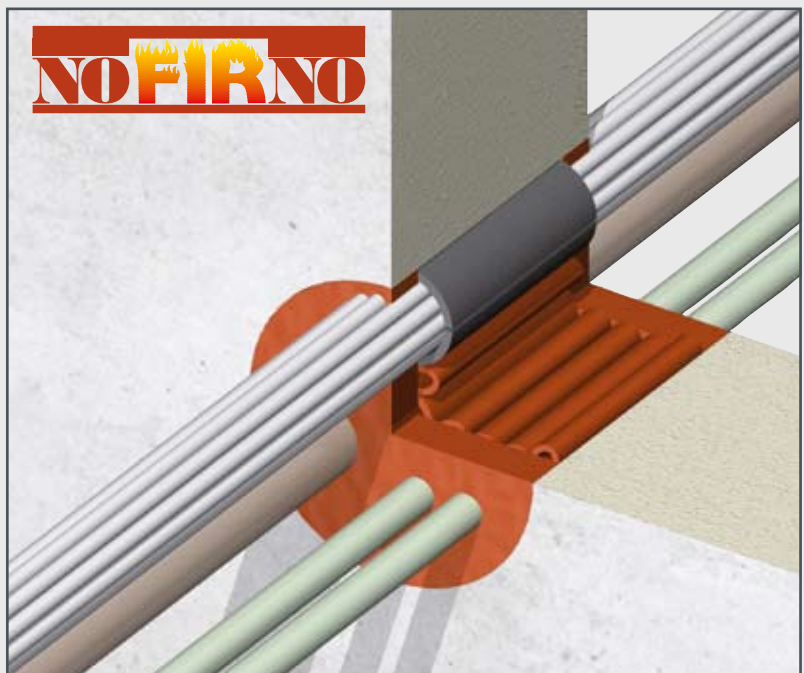
Cable sets of max. 25 LAN cables with an OD of 5 - 6 mm tightly bundled to max. 35 mm can be passed through the penetration. A single RISE® insert sleeve is then placed around the cable set and inserted into the penetration.

When applying the NOFIRNO® sealant care has to be taken that sufficient sealant is injected in between the cables and partly into the RISE® insert sleeve. This bundling is not allowed for gas and/or watertight penetrations.

RISE®/NOFIRNO® multi-all-mix transits: ultimate flexibility, maintenance friendly

The NOFIRNO® rubber grade has excellent properties and will not be consumed by the fire. The NOFIRNO® sealant forms immediately a protective layer and char when exposed to flames in this way protecting the filling of the penetration seal.

The thermal insulation is very high because of the air volume inside the penetration. The air is tightly enclosed by the sealant layer at both sides even when one side is exposed to the fire. The NOFIRNO® system has been subjected to A-0, H-0 and even Jet Fires without being severely affected. Due to the superb behaviour of our various systems the NOFIRNO® sealing system can be easily combined with RISE® and RISE®/ULTRA for the so-called multi-all-mix® system for ducting all types of pipes and cables through a single conduit. See also the RISE®/NOFIRNO® pipe brochure.



RISE®/NOFIRNO® SINGLE, MULTI AND MULTI-ALL-MIX TRANSITS

***RISE®/NOFIRNO® cable/pipe penetrations:
based on high-tech NOFIRNO® technology***

For manufacturing NOFIRNO® sleeves and sealant use is made of a high quality polymer. NOFIRNO® rubber has excellent weathering properties, UV and ozone resistance and long term behaviour. Service life of the sleeves and sealant easily exceeds 20 years under normal environmental conditions.

The sleeves and sealant can be used in a very wide temperature range. Even at low temperatures down to -50° C the rubber stays flexible and does not harden excessively as other rubber types will do. This guarantees tightness even at low temperatures. The rubber can also be used in applications up to +180° C.

A single rubber grade is now capable of satisfying almost all sealing conditions. Sealing systems are safety devices. Only highest quality can do the job, not only when newly installed but also after a long service life.

With NOFIRNO® this safety is guaranteed for a very long time!



The NOFIRNO® rubber grade, which is compounded under strict conditions in our factory, is suitable for gas and water tight ducting and for fire rated applications as well. For decades we have been involved with fire resistant rubbers. The drawbacks of certain fire resistant types are halogen content, hardness of the highly filled rubbers, hardening during lifetime and high permanent deformation sets. All these features will have an impact on performance in the long run.

NOFIRNO® rubber does not have the above drawbacks.

The processing conditions for optimized compounding in our factory assure highest performance of the rubber.

NOFIRNO® rubber is traceable to prevent counterfeiting and to guarantee users that they get the quality they are paying for.

From the way of surface charring and the rubber residues inside the product, it can easily be determined whether or not NOFIRNO® has been used.



RISE®/NOFIRNO® SINGLE, MULTI AND MULTI-ALL-MIX TRANSITS

RISE®/NOFIRNO® multi-cable transits: based on high-tech NOFIRNO® technology

The NOFIRNO® rubber has excellent properties regarding exposure to fire and excessive temperatures. Specially for A-0 class divisions this is an advantage because the sealing system will be exposed to hot metal parts all around; the steel division, the coaming/conduit sleeve and the ducted metallic pipe will all get extremely hot up to red glowing. The picture below left shows the red glowing bulkhead and coaming.

At the end of the one hour fire test, temperatures measured on the coaming were over 420 °C, and at a distance 25 mm away from the sealing system over 350 °C on the ducted steel pipe. Another unique property of the RISE®/NOFIRNO® system is its very high thermal insulation value. On the surface of the sealing system 23 mm away from the coaming and 23 mm away from the ducted steel pipe the temperature had only risen about 160 °C.

The picture below right shows the non-consumable feature of the rubber.



now also successfully tested for
H-0 class partitions at furnace
temperatures of 1150 °C.



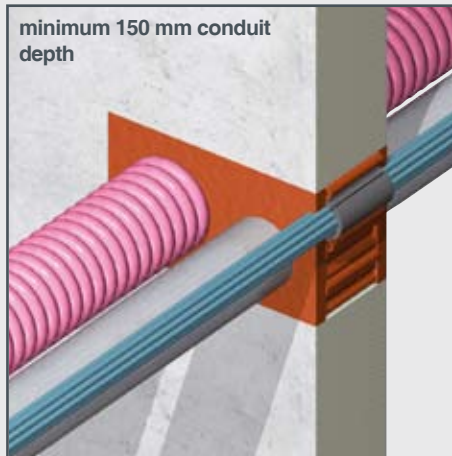
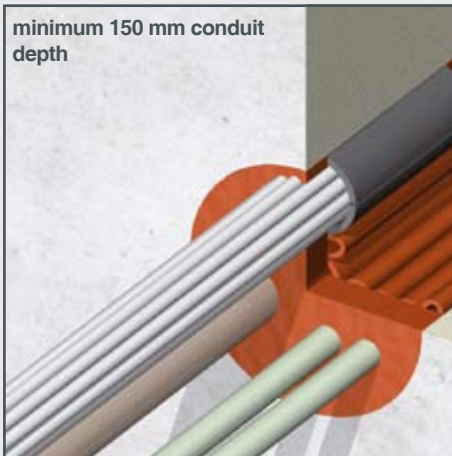
no smoke emission during
the one hour fire test, no
material fallen off.



proof after dismantling that the
rubber and sealant are only partly
affected by the hot coaming

RISE[®]/NOFIRNO[®] SINGLE, MULTI AND MULTI-ALL-MIX TRANSITS

RISE[®]-NOFIRNO[®] is based on a combination of NOFIRNO[®] and ACTIFIRE[®] technology



RISE[®]/NOFIRNO[®] cable penetrations have been tested with heavy conductor cables. The length of the conduit could be further minimized without the use of extra insulation by the thermally insulating properties of the NOFIRNO[®] filling. With 150 mm conduit depth already a fire classification E120/EI120 has been achieved. With increased conduit depths the rating will be higher.

no fussing with extra insulation in front of the penetration and in between the cables

system compensates for the melting cable sheathings and plastic pipes



Generally, rubbers used for multi-cable transit systems have the drawback, that these rubbers will start charring under heat and slowly but surely will shrink due to the loss of the water content in the rubber.

This is not the case with RISE[®]/NOFIRNO[®]!

Under fire exposure the rubber is not consumed by the fire load and stays in place.

non-consumable NOFIRNO[®] combined with “active” RISE[®] rubber: optimum safety

RISE[®]/NOFIRNO[®] SINGLE, MULTI AND MULTI-ALL-MIX TRANSITS

***RISE[®]/NOFIRNO[®] multi-cable transits: based
on ACTIFIRE[®] and NOFIRNO[®] technology***

SYSTEM WILL NOT BE CONSUMED WHEN EXPOSED TO FIRE

ALL COMPONENTS ARE TOTALLY HALOGEN FREE

IN CASE OF FIRE: NON-TOXIC, LOW SMOKE INDEX

CLASSIFIED ACCORDING TO EN 13501-2:2003

EC (MED) AND TYPE APPROVAL CERTIFICATES ISSUED

TESTED ACCORDING TO IMO RESOLUTION A.754(18)

NO METAL PARTS, NO CORROSION

CAN BE USED IN ARCTIC CONDITIONS

HIGH LEVEL OF THERMAL INSULATION AND SOUND DAMPING

SHOCK AND VIBRATION RESISTANCE

OVER 20 YEARS SERVICE LIFE

CAPABLE OF ABSORBING TEMPERATURE CHANGES

WEATHERING, UV AND OZONE RESISTANT

NO PRE-ENGINEERING NEEDED

NO SPECIAL CONDUIT FRAMES

MINIMIZED NUMBER OF STRUCTURAL COMPONENTS

MOST COMPACT INSTALLATION

CONTRASTING COLOUR OF SEALANT FOR BETTER INSPECTION

EXTREMELY SIMPLE TO INSTALL

NO INSULATION IN FRONT OF THE PENETRATION

SHORTEST POSSIBLE CONDUIT LENGTH

LESS OVERALL INSULATION NEEDED

APPROVED FOR CONCRETE, STEEL AND ALUMINIUM PARTITIONS

MAINTENANCE FRIENDLY

RISE®/NOFIRNO® SINGLE, MULTI AND MULTI-ALL-MIX TRANSITS

additional safety with RISE® and RISE®-NOFIRNO® multi-cable penetrations

* Naval Engineering Standard 711: Issue 2: Determination of the smoke index	passed
* Naval Engineering Standard 713: Issue 3: Determination of the toxicity index	passed
* ISO 4589 - 2 : 1996 Determination of the oxygen index	passed
* ISO 4589 - 3 : 1996 Determination of the temperature index	passed
* IMO Resolution A.653(16) Determination of low flame spread characteristics	passed
* Artificial ageing test Determination of properties after 25-50 years	passed
* Thermal cycling test Determination of adhesion at +120 °C / ambient / -40 °C (+212 °F / ambient / -40°F)	passed
* Naval Engineering Standard 510: Issue 2, Draft B: Shock (100 g _n) and vibration test (5-350 Hz) combined with 1 bar leak test afterwards	passed
* Naval Engineering Standard 814: Shock test, acceleration level 8378/s/s in two directions combined with 6.9 bar leak test afterwards	passed
* Naval Engineering Standard 510: Issue 2, Draft B: Leak test after a one hour fire test	passed
* General classification Helium gas leak test up to 1 bar	passed
* Nordtest method NT ELEC 030, modified for conducted attenuation	20-100 dB
* Sound damping test According to EN ISO 717-1:1996	70 dB
* Rapid rise fire test According to Mil-P-24705 of the US Navy	passed
* Dynamic cycling test Displacement 10 mm, 100,000 cycles, frequency 0.5 Hz	passed

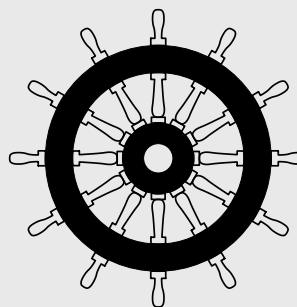
Initially some of these tests have been carried out with the regular RISE® system. The sealant is a determining factor for successful mechanical testing. NOFIRNO® sealant has improved mechanical properties so that RISE®/NOFIRNO® can also be classed for these tests as well.

To prove the outstanding quality and safety of the RISE® cable and pipe penetrations, the basic materials (FIWA sealant and FRR/LEHF rubber) have been subjected to additional tests. These tests have been carried out by official institutes: Warrington Fire Research and RAPRA Technologies in the United Kingdom, the Fire Technology Institute of the University of Ghent in Belgium and TNO Laboratories in The Netherlands. The RISE® cable and pipe penetrations have also been subjected to additional tests at official institutes such as DELTA Danish Electronics, Light and Acoustics Testing in Denmark, QinetiQ in England, South West Research Institute in USA and in-house under survey of the classification societies. To name some: sound tests, shock and vibration tests, rapid temperature rise tests, leak tests after a one hour fire test, EMC tests, A-0 test without insulation, dynamic cycling test, several configurations on watertightness and a helium gas leak test.

RISE®/NOFIRNO® SINGLE, MULTI AND MULTI-ALL-MIX TRANSITS



EC (MED) certificates according to EUROPEAN UNION COUNCIL DIRECTIVE 96/98 EC on MARINE EQUIPMENT have been issued by Det Norske Veritas certificates N° MED-B-4906 for RISE/ULTRA, N° MED-B-4908 for RISE/NOFIRNO multi-pipe and multi-all-mix penetrations and N° MED-B-4941 for SLIPSIL plugs and by Bureau Veritas certificates N° 09156/B2 EC for RISE, RISE/NOFIRNO and RIACNOF multi-cable penetrations and extended multi-cable penetrations, N° 11301/B0 EC for RISE-EMC multi-cable penetrations, N° 11302/A2 EC for RISE busbar penetrations and certificates N° 10035/B0 EC and N° 10710/B1 EC for RISE single and multi-pipe penetrations for metallic and plastic pipes.



AMERICAN BUREAU OF SHIPPING . . . *CERTIFIED*
BUREAU VERITAS *CERTIFIED*
CHINA CLASSIFICATION SOCIETY
CHINA CORPORATION REGISTER OF SHIPPING
DET NORSKE VERITAS *CERTIFIED*
GERMANISCHER LLOYD
KOREAN REGISTER OF SHIPPING
LLOYD'S REGISTER OF SHIPPING
NIPPON KAIYOKAI
RUSSIAN MARITIME REGISTER OF SHIPPING
TRANSPORT CANADA VIA DNV CERTIFICATES
USCG VIA MED CERTIFICATES

APPLIED FOR



**CERTIFIED BY
THE MAJOR
CLASSIFICATION
SOCIETIES**

*Note: configurations may differ
per classification society.*

RISE[®]/NOFIRNO[®] SINGLE, MULTI AND MULTI-ALL-MIX TRANSITS

*three different components for
RISE[®]/NOFIRNO[®]: sleeves, fillers and sealant*



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

* filler sleeves are supplied non-split dimensions in mm

*RISE[®]/NOFIRNO[®] multi-cable transits:
non-toxic, halogen free components*



sleeve type	sleeve length (standard)	wall thickness
18/12*	140-160-210	3
27/19*	140-160-210	4

* filler sleeves are supplied non-split for ease of filling dimensions in mm



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

Furthermore the NOFIRNO rubber has a low smoke index (NES 711: Issue 2: 1981) and a high oxygen index (ISO 4589-2: 1996).

RISE[®]/NOFIRNO[®] SINGLE, MULTI AND MULTI-ALL-MIX TRANSITS

*three different components for
RISE[®]/NOFIRNO[®]: sleeves, fillers and sealant*



NOFIRNO[®] is a fire-resistant sealant based on a single component silicone compound.

NOFIRNO[®] is also water-repellent

High bonding strength

UV and Ozone resistant

The numerous fire tests we have carried out with NOFIRNO[®] sealant has shown that the sealant is able to withstand fire and thermal loads without showing any dramatic colour change or carbonization at the unexposed side. At the exposed side the sealant will NOT be consumed by the fire due to the protective layer and char formed. This means that the sealant will stay in place there.

NOFIRNO[®] sealant is halogen free, has outstanding weathering properties, does not shrink during fire exposure, has an oxygen index of 45% (>30% is flame retardant), a low smoke index and is non-toxic.

The cured sealant layer maintains its original hardness during service life. NOFIRNO[®] sealant can be used in a very wide temperature range.

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

PRODUCT INFORMATION

01) colour	red brown
02) specific gravity	1.40 ± 0.03 g/cm ³
03) curing of top layer	0.5 - 1 hour depending on temperature and air humidity
04) service temperature	-50 °C up to +180 °C
05) tensile strength	1.5 MPa
06) elongation at break	200%
07) hardness	45 Shore A
08) elastic deformation	approx. 50%
09) resistance	UV, Ozone, arctic conditions
10) ageing	more than 20 years
11) supplied in	310 ml cartridges
12) storage	to be stored cool and dry min/max temperature = +5/+30° C
13) storage life	guaranteed 6 months; when applied later than 6 months after date of manufacturing, curing and adhesive properties have to be checked before application



NOFIRNO[®] is a paste-like compound which is simple to use.

NOFIRNO[®] has a balanced viscosity and can be applied overhead. After applying the sealant, it can be smoothed by means of a wet cloth or by hand.

Because the sealant adheres very tightly, the cloth and hands should be wetted with water before use to prevent sealant from sticking to them.

RISE®/NOFIRNO® SINGLE, MULTI AND MULTI-ALL-MIX TRANSITS

1) The cables can be ducted through the conduit sleeve/frame in random order. It is most important that they are not pulled too tight in order not to hamper their separation when RISE® insert sleeves are inserted. Ask for our free installation video.



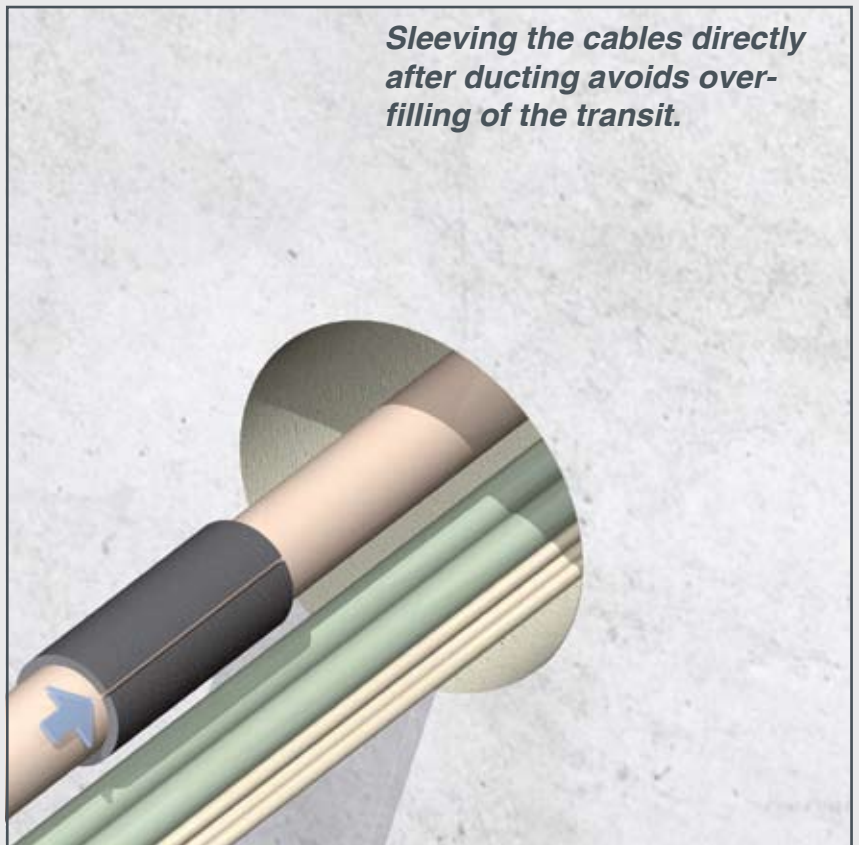
2) After the cables have been ducted, RISE® insert sleeves are applied around each cable. The insert sleeves are split length-wise and can therefore be fitted around the cables in front of the conduit. See above.



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



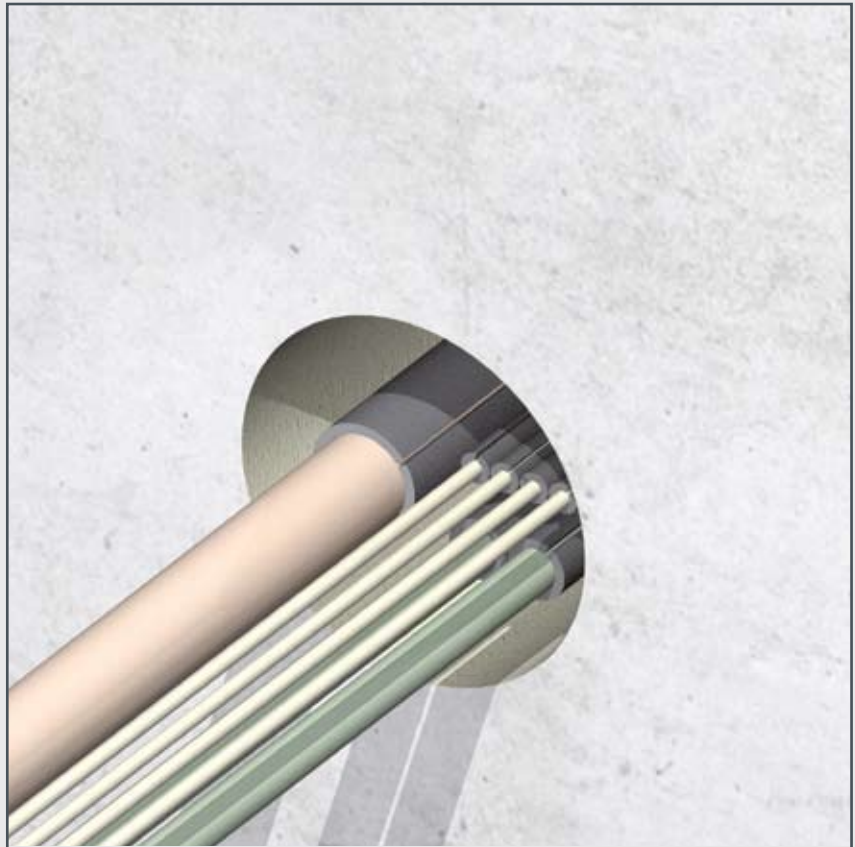
*Sleeving the cables directly
after ducting avoids over-
filling of the transit.*



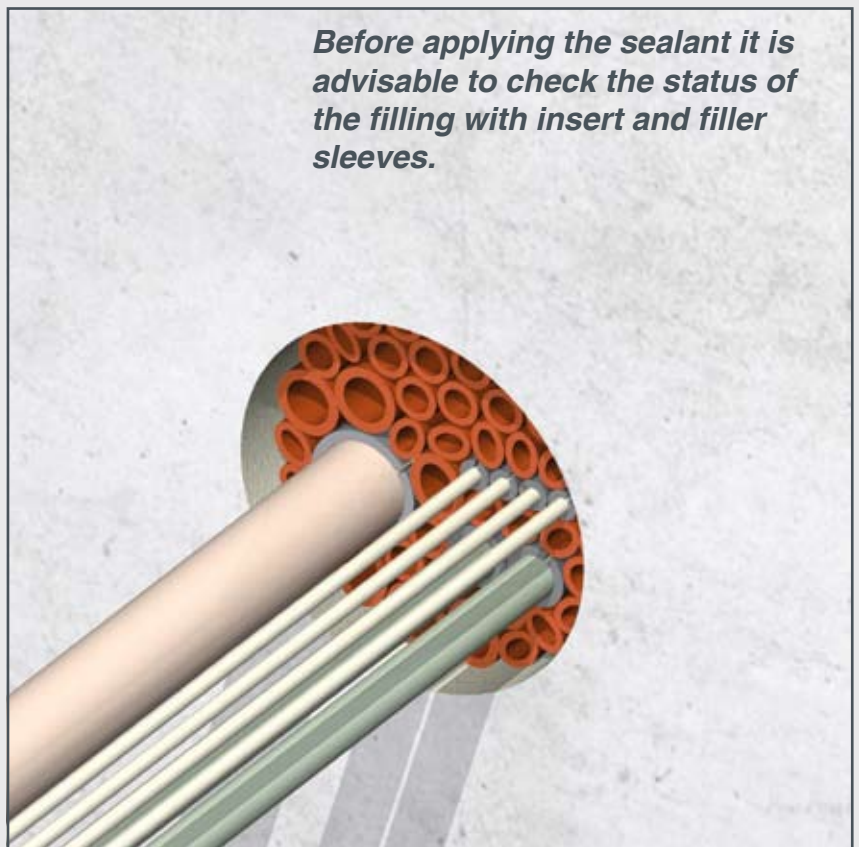
RISE[®]/NOFIRNO[®] SINGLE, MULTI AND MULTI-ALL-MIX TRANSITS

3) The remaining free space in the conduit is filled with NOFIRNO[®] filler sleeves type 27/19 and 18/12.

For ease of filling the NOFIRNO[®] filler sleeves are delivered non-split. The ratio 27/19 to 18/12 should be about 2:1.

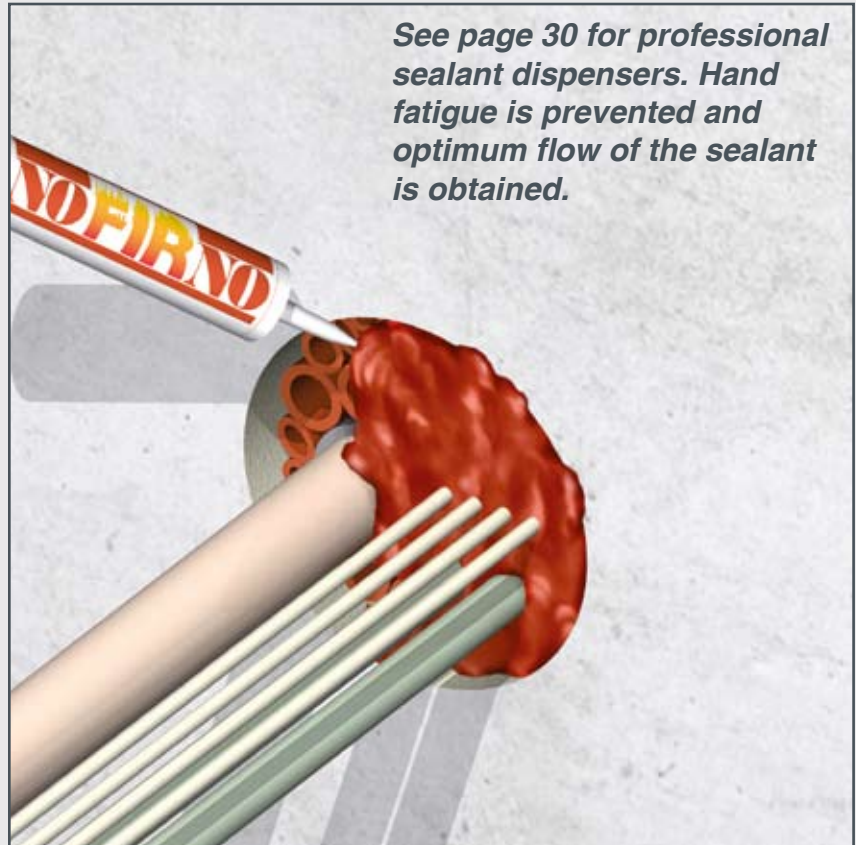


4) Push the insert/filler sleeves into the conduit in such a way as to leave about 20 mm free space at the front. The whole set of insert and filler sleeves should tightly fit into the conduit to offer sufficient mechanical stability.

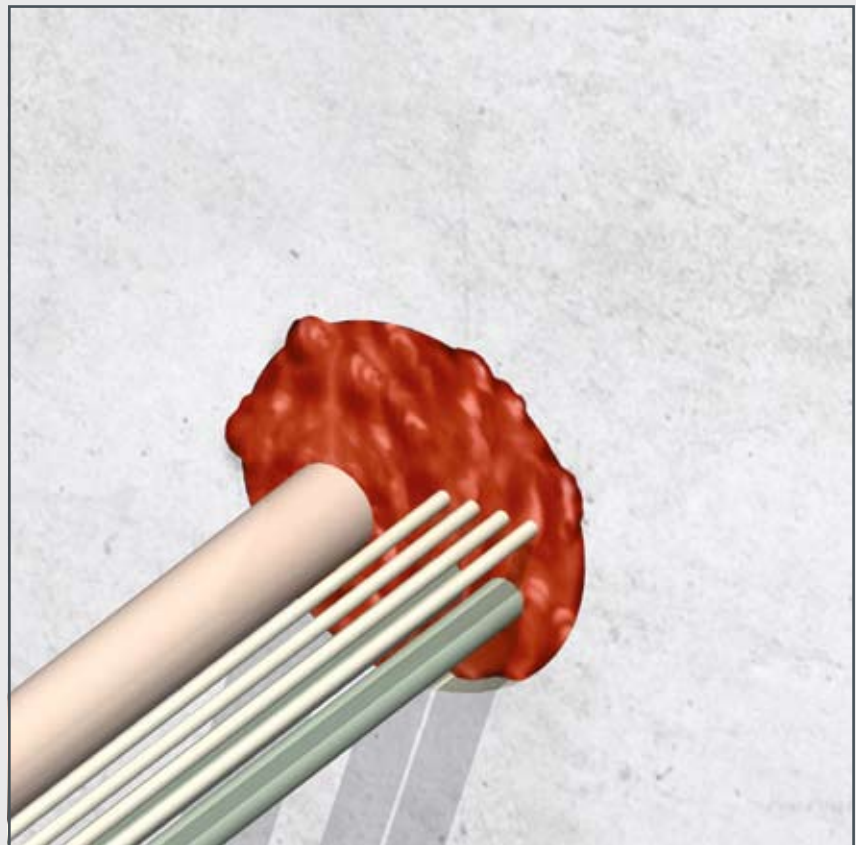


RISE®/NOFIRNO® SINGLE, MULTI AND MULTI-ALL-MIX TRANSITS

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



6) The conduit should be overfilled with NOFIRNO® sealant, because some sealant will be pushed between and into the empty insert sleeves during further finishing. This will contribute to obtain higher tightness ratings.



RISE®/NOFIRNO® SINGLE, MULTI AND MULTI-ALL-MIX TRANSITS

7) To smooth the surface of the NOFIRNO® sealant layer, a cloth is sprayed with water. This prevents the sealant from sticking to the cloth.

Note: do not use soapwater!



8) The cloth is then used to press down the sealant layer. People with sensitive skin should use gloves when working with the NOFIRNO®. Please refer to the Safety Data Sheet for more information.

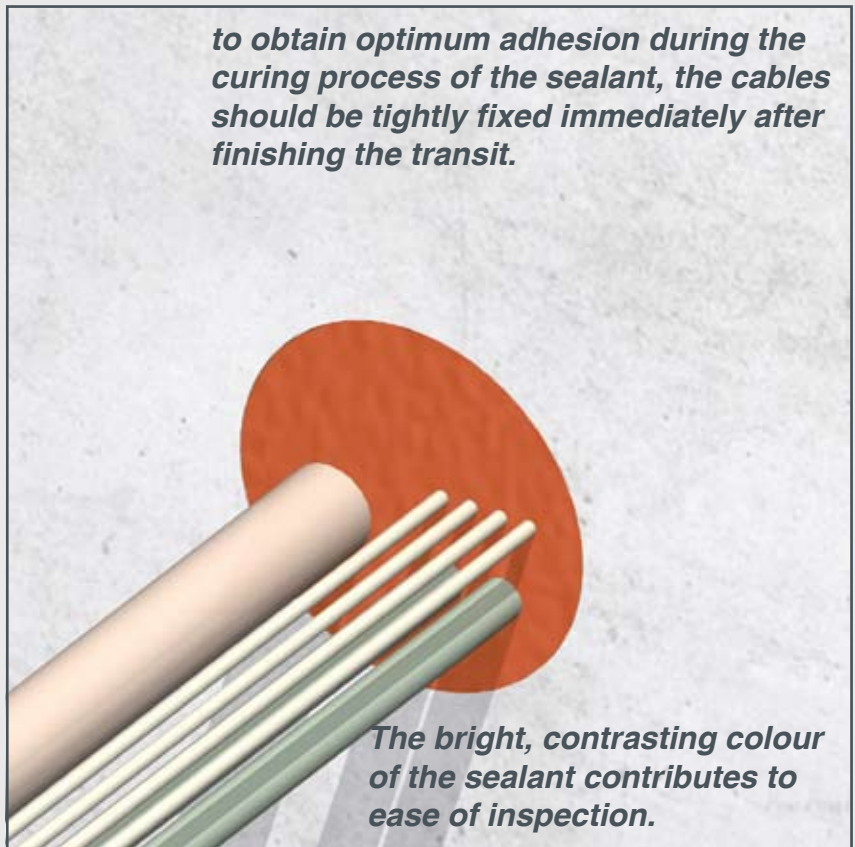


RISE®/NOFIRNO® SINGLE, MULTI AND MULTI-ALL-MIX TRANSITS

9) The surface can be further smoothed by hand. Just wet the hand thoroughly with soap and water. No dirty hands when working with NOFIRNO® and a very neat surface is the result. People with sensitive skin should use gloves when working with NOFIRNO®.

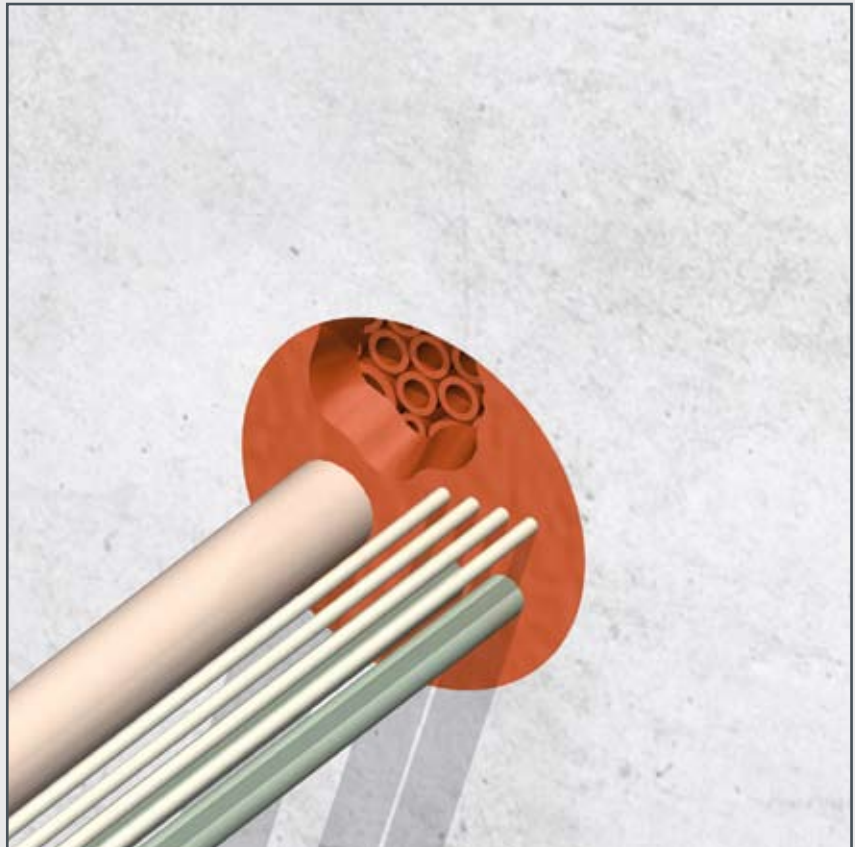


10) After smoothing is finished a last check should be taken if sufficient sealant is applied in between the cables especially at penetrations with larger amounts of cables. This is most important specially for water and gastight penetrations.

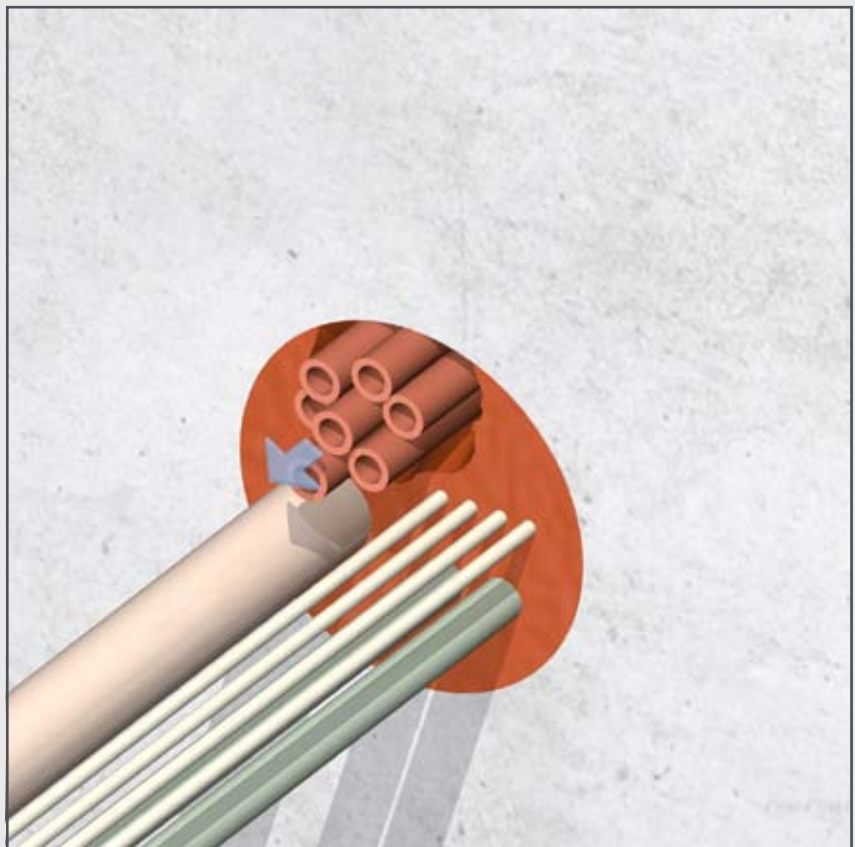


RISE®/NOFIRNO® SINGLE, MULTI AND MULTI-ALL-MIX TRANSITS

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



Remove one or more NOFIRNO® filler sleeves to create a fitting opening for the cable to be ducted.



RISE®/NOFIRNO® SINGLE, MULTI AND MULTI-ALL-MIX TRANSITS

Pull a set of bundled cables through the conduit and place a RISE® insert sleeve around the cable.

Not to be used for gas or watertight penetrations!

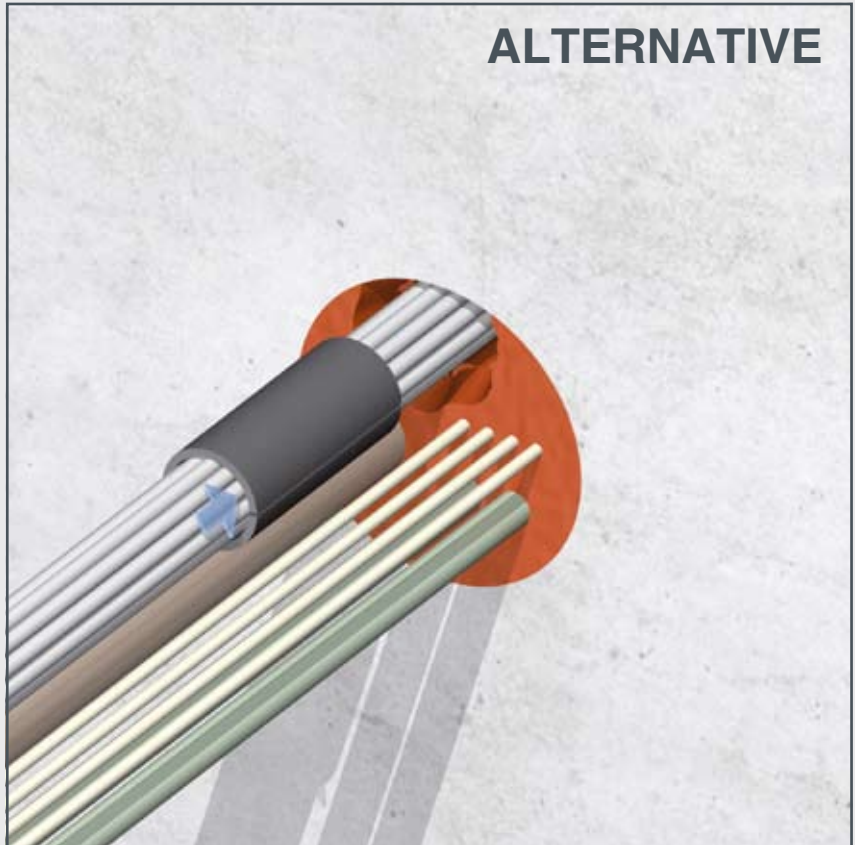


Push the insert sleeve into the conduit in such a way as to leave about 20 mm free space at the front,

The conduit to be finished as described on pages 14-16.



ALTERNATIVE



RISE®/NOFIRNO® SINGLE, MULTI AND MULTI-ALL-MIX TRANSITS

A bundle of max. 12 plastic installation pipes for cables with an OD of 12 mm can be ducted and fire safe sealed with a RISE®/ULTRA crusher and NOFIRNO® filler sleeves.

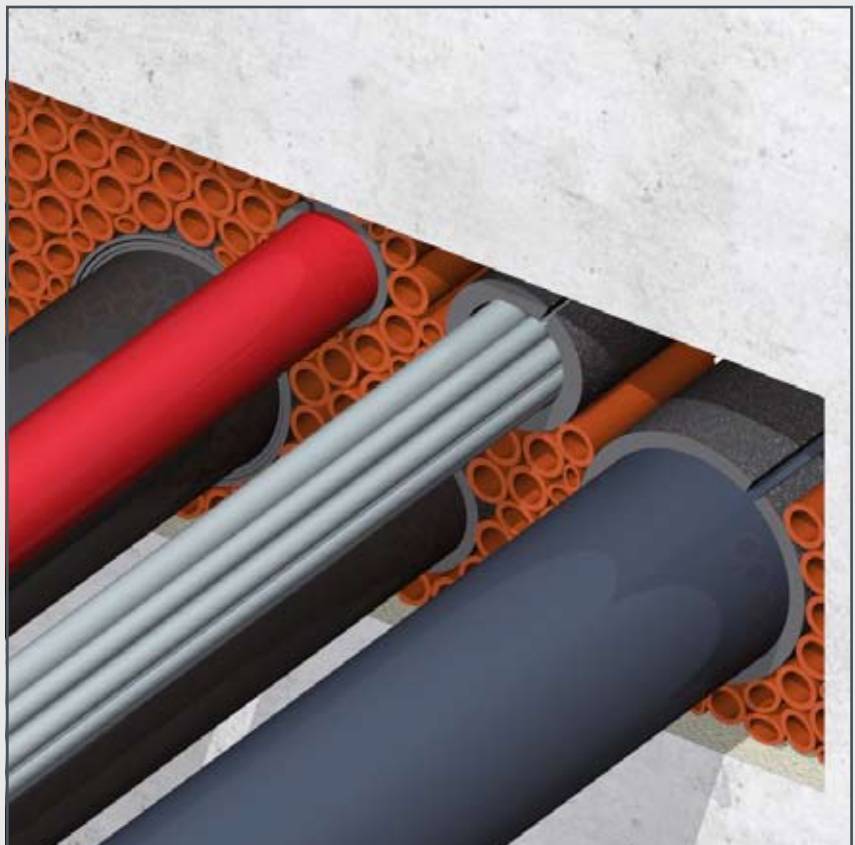
Not to be used for gas or watertight penetrations!

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

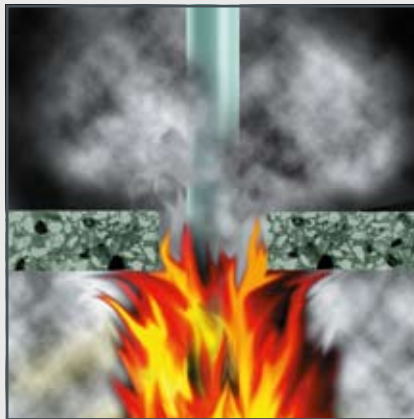
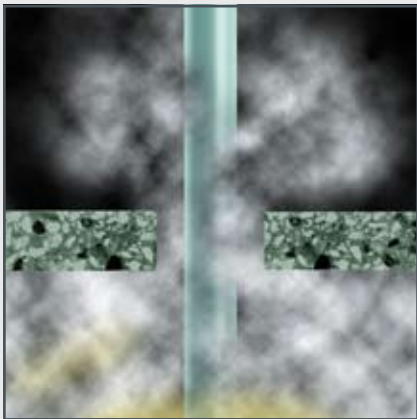
Place a RISE®/ULTRA crusher around the bundled pipes in front of the penetration and push into the conduit. RISE®/ULTRA crushers are split lengthwise. NB: the pipes should be tightly bundled to avoid larger openings within the pipe set.



CRUSHER

RISE®/NOFIRNO® + RISE®/ULTRA MULTI-ALL-MIX CABLE/PIPE TRANSITS

Plastic pipes which pass through fire-rated bulkheads and decks as part of, for example, sanitation systems, are a potential source of 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, BEELE Engineering has developed the CRUSHER® technology.

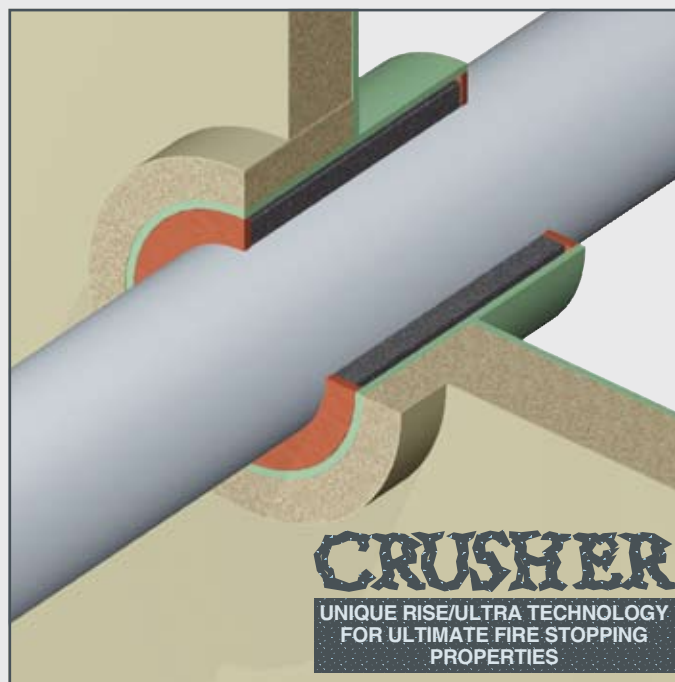


Based on the CRUSHER® technology it is now possible to make fire stop penetrations for plastic pipes just by inserting a single RISE®/ULTRA crusher into the conduit opening. The RISE®/ULTRA crusher is placed around the ducted plastic pipe. For conduits which should also be air or water tight, a combination of RISE®/ULTRA and NOFIRNO® sealant is used. The design of the crusher allows for a balanced amount of hot air penetrating around the crusher. The time to close off the opening left by the burned or softened plastic pipe must be very short. Otherwise a chimney effect will occur causing the pipe at the unexposed side to melt. The unique RISE®/ULTRA rubber reacts at two different temperature levels to speed up compression. The first reaction transfers the rubber under limited expansion to a very adhesive substance. Adhesive sealing all around causes the

trapped air to expand rather fast. In this way compression of the plastic pipe starts already at an early stage of the fire. The unique RISE®/ULTRA crusher allows for smallest conduit openings. For oversized openings and for multi-plastic

pipe penetrations use is made of NOFIRNO® filler sleeves and NOFIRNO® sealant. Based on the properties of the RISE®/ULTRA rubber, ultimately a hard solid rubber mass adhering to the wall of the conduit and the remaining part of the plastic pipe is formed. In this way the penetration keeps tight. Official fire tests according to IMO Resolution A.754(18) have successfully been carried out at the EFECTIS (formerly TNO) test institute, including multi-mix (cables, metallic and

plastic pipe) transits. RISE®/ULTRA crushers have also been tested according to EN1366-3:2004 for a fire rating of two hours and lately in-house for a four hour fire rating.

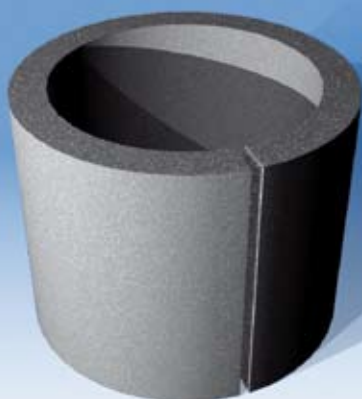


CRUSHER®

RISE®/NOFIRNO® + RISE®/ULTRA MULTI-ALL-MIX CABLE/PIPE TRANSITS

***RISE®/NOFIRNO® combined with RISE®/ULTRA
for plastic pipe and multi-all-mix transits***

CRUSHER



*Only halogen free, non-intumescent,
extremely low-ageing, non-moisture
sensitive components.*

pipe OD	crusher type	wall thickness	crusher lengths	conduit opening
16	24/16	4	110/160	25-30
18	24/18	3	110/160	25-30
20	28/20	4	110/160	28-34
25	33/25	4	110/160	33-40
32	40/32	4	110/160	40-48
40	48/40	4	110/160	49-55
50	58/50	4	110/160	60-66
63	75/63	6	110/160	75-83
75	90/75	7.5	110/160	90-100
90	105/90	7.5	110/160	105-115
110	138/110	14	110/160	139-160

*Note: only in combination with 20 mm NOFIRNO®
sealant at both sides.*

For more information we refer to the RISE®/ULTRA brochure.

***RISE®/ULTRA crushers toepassen om de
kunststof buizen in de multi-all-mix transit***



*Only halogen free, non-intumescent,
extremely low-ageing, non-moisture
sensitive components.*

*Instead of using fitting RISE®/ULTRA
crushers or in case no fitting crushers
are available, use can be made of the
RISE®/ULTRA wraps. These can be
wrapped around the ducted plastic pipe
and in this way made to fit at site.
Wraps make material management at
site very easy.*

*The sheets are available in sizes
1000x110x2.5 mm and 1000x160x2.5
mm. See the RISE®/ULTRA brochure
for thickness to be applied.*

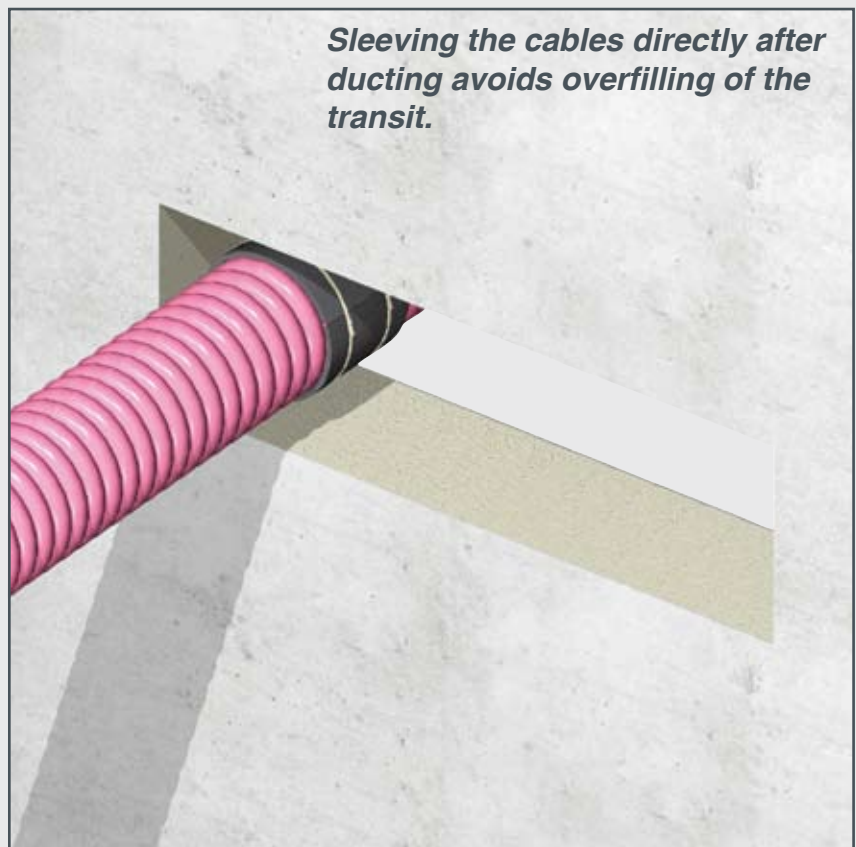
*Note: only in combination with 20 mm NOFIRNO®
sealant at both sides.*

RISE[®]/NOFIRNO[®] + RISE[®]/ULTRA MULTI-ALL-MIX CABLE/PIPE TRANSITS

1) The cables can be ducted through the conduit sleeve/frame in random order. After the cables have been ducted, RISE[®] insert sleeves are applied around each cable.

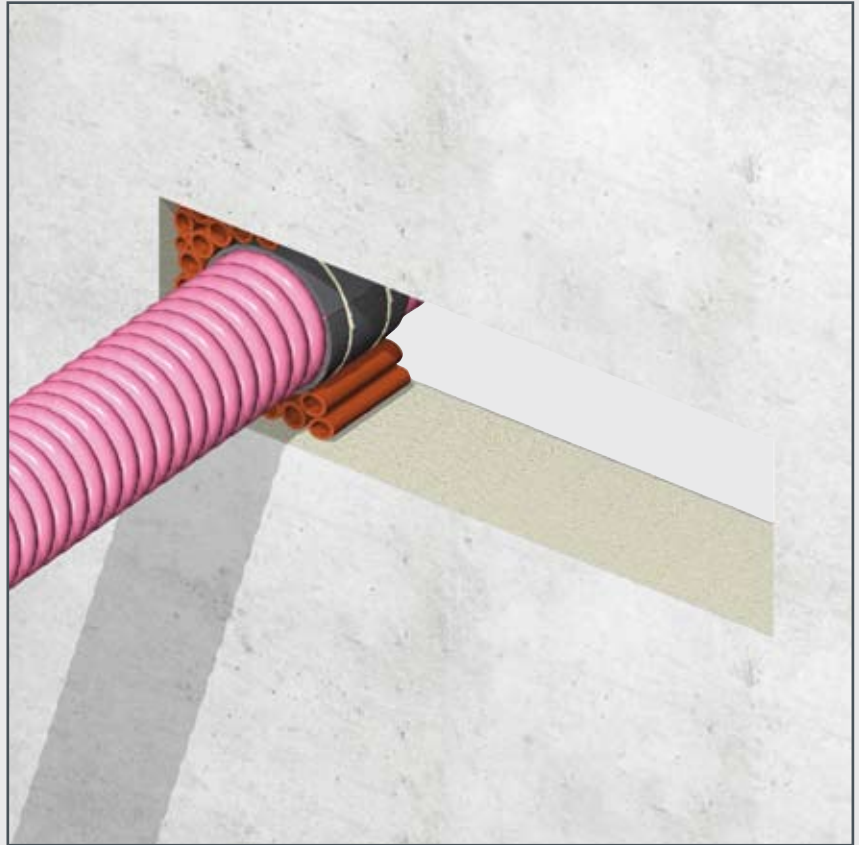


2) The RISE[®] insert sleeves are split length-wise and can therefore be fitted around the cables in front of the conduit. For cable sizes > 64 mm a RISE[®] wrap with thickness 5 mm is applied. The wraps can be fixed with a tie-wrap.

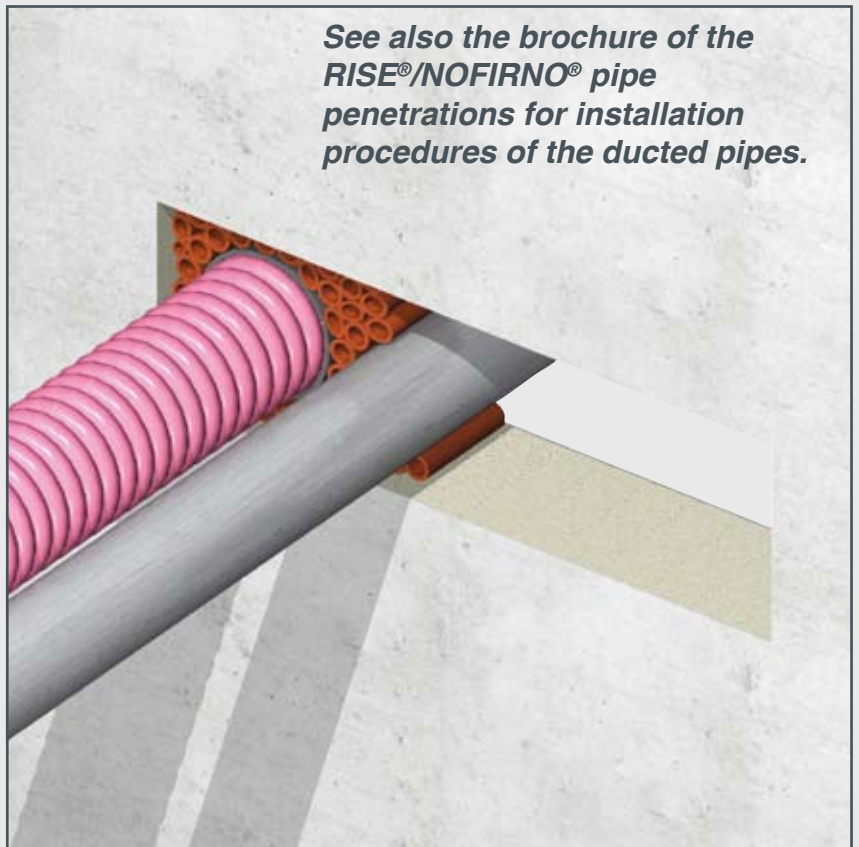


RISE®/NOFIRNO® + RISE®/ULTRA MULTI-ALL-MIX CABLE/PIPE TRANSITS

3) The system is also approved for ducting steel/stainless steel pipes. The minimum interspacing should be regarded according to the specifications on the approved installation drawings.

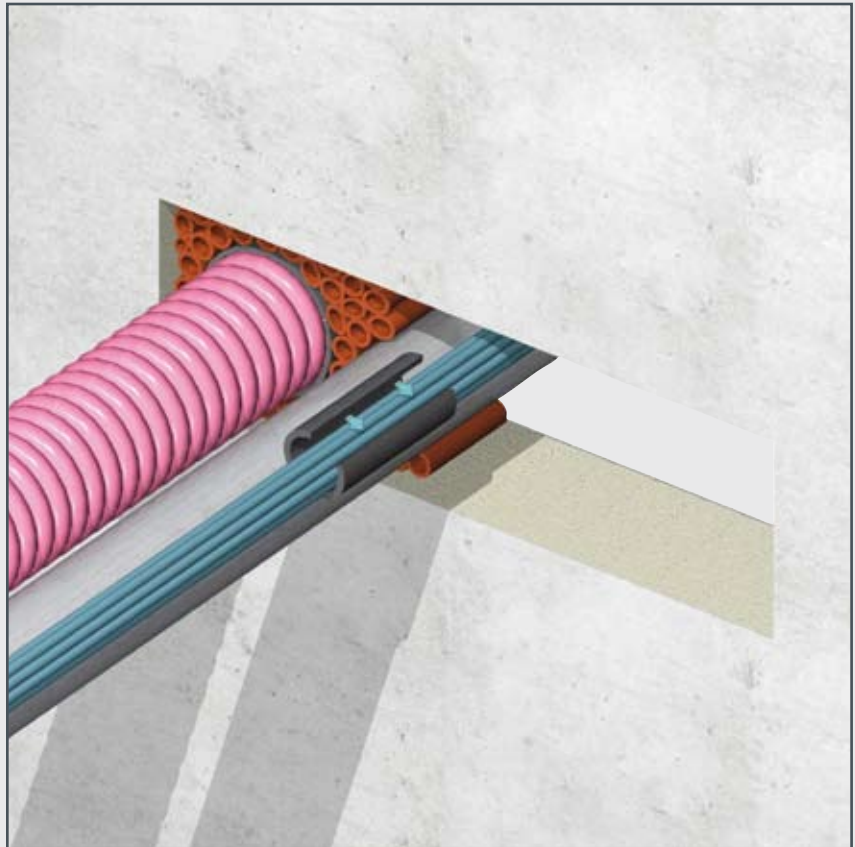


4) Separation of the metallic pipes is provided by NOFIRNO® filler sleeves all around the ducted pipe(s). NOFIRNO® filler sleeves are available in sizes 18/12 and 27/19 and are non-split for ease of installation.

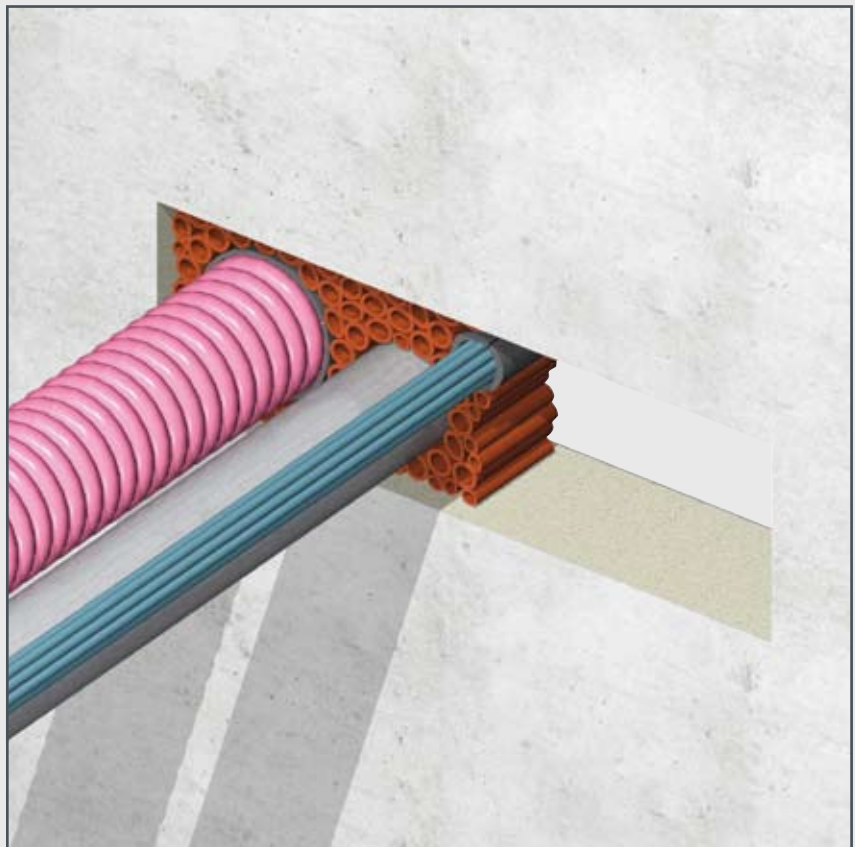


RISE®/NOFIRNO® + RISE®/ULTRA MULTI-ALL-MIX CABLE/PIPE TRANSITS

5) Bundled cable sets are allowed in the RISE®/NOFIRNO® multi-all-mix sealing system, using only one RISE® insert sleeve. See for details the approved installation drawings.

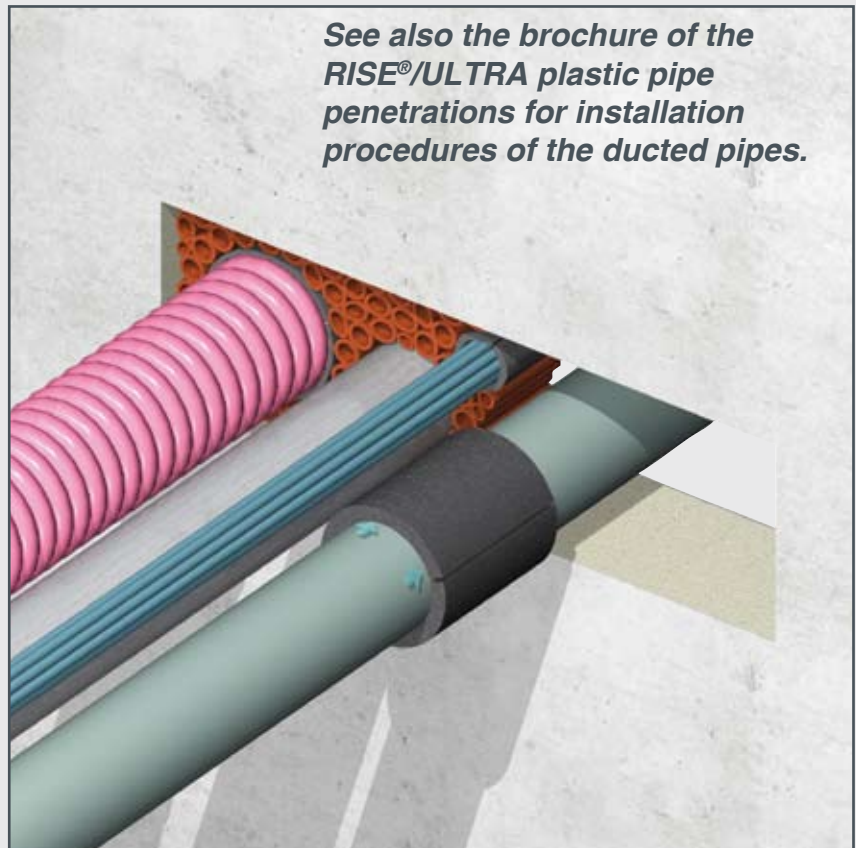


6) Open spaces in the conduit can be directly or afterwards filled with NOFIRNO® filler sleeves type 27/19 and 18/12. The ratio 27/19 to 18/12 should be about 2:1.



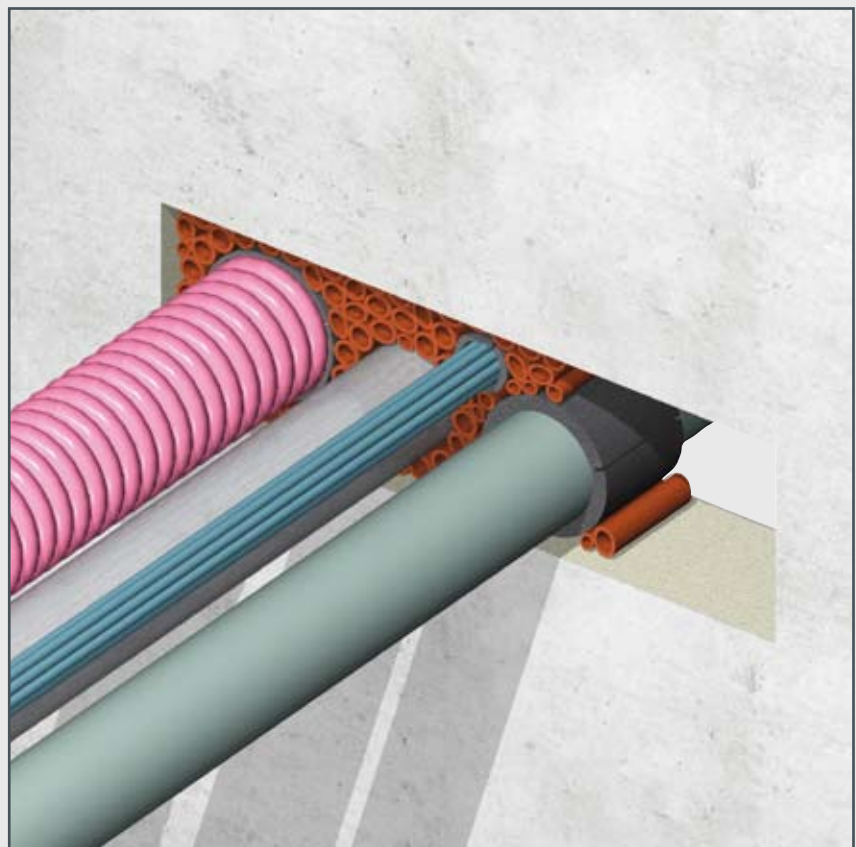
RISE®/NOFIRNO® + RISE®/ULTRA MULTI-ALL-MIX CABLE/PIPE TRANSITS

7) Plastic pipes can also be ducted through the multi-all-mix® transit. Place a RISE®/ULTRA crusher around the ducted pipe in front of the penetration. RISE®/ULTRA crushers are split lengthwise.



8) Push the insert/filler sleeves and the crusher into the conduit in such a way as to leave about 20 mm free space at both sides of the transit.

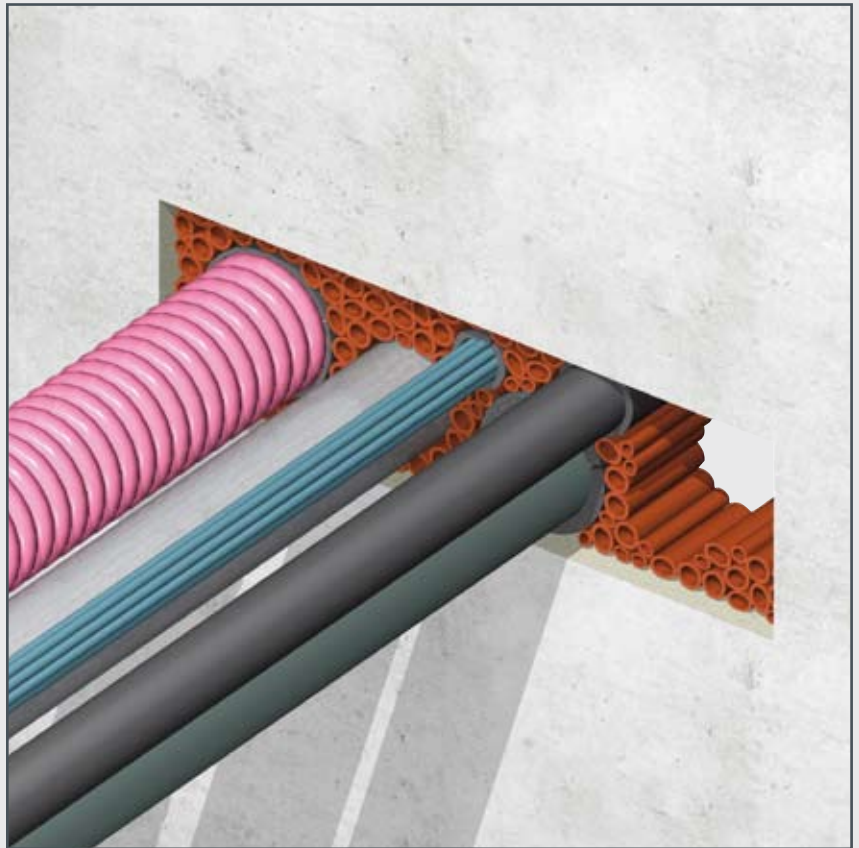
This space is needed to apply in a later stage the NOFIRNO® sealant.



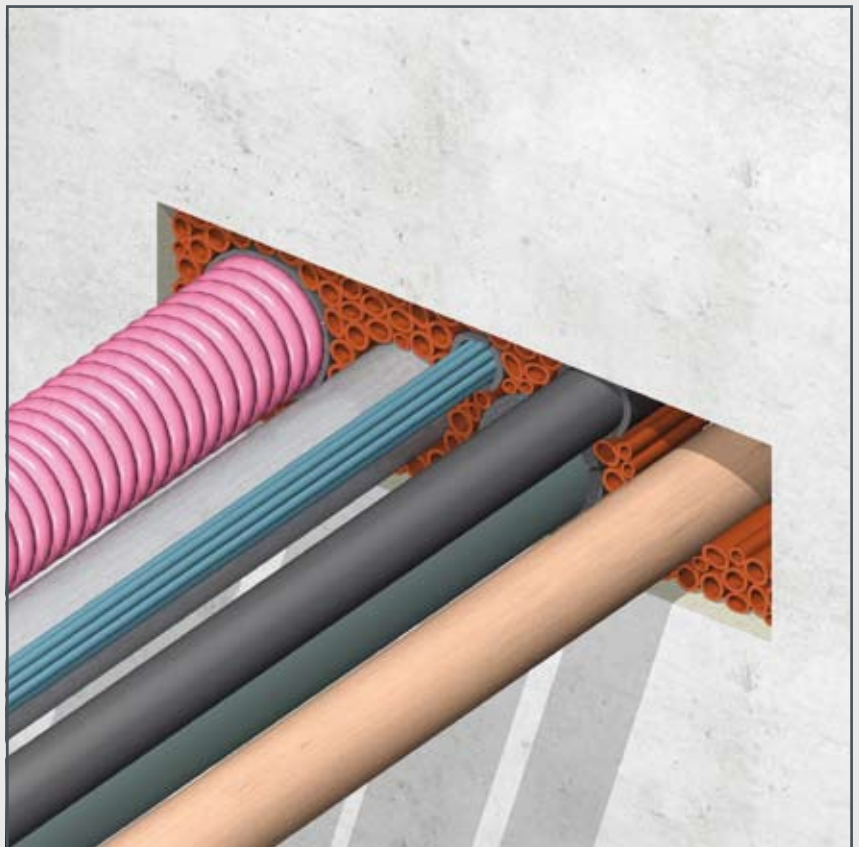
RISE®/NOFIRNO® + RISE®/ULTRA MULTI-ALL-MIX CABLE/PIPE TRANSITS

9) The system allows also for insulated chilled water lines without interrupting the insulation and multi-beverage lines.

A RISE®/ULTRA crusher or wrap is placed around the insulation and inserted into the penetration.

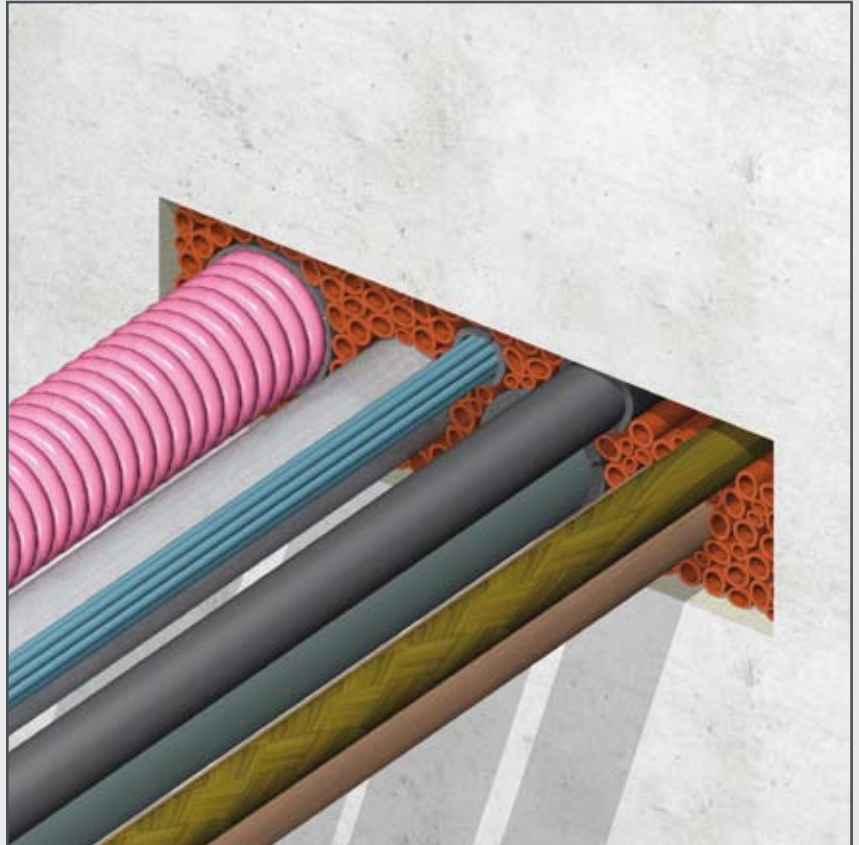


10) Copper/CuNi pipes can also be ducted through the multi-all-mix penetration. Separation of the metallic pipes is provided by RISE®/NOFIRNO filler sleeves all around the ducted pipe(s). See the approved drawings for minimum interspacing.



RISE®/NOFIRNO® + RISE®/ULTRA MULTI-ALL-MIX CABLE/PIPE TRANSITS

11) Also GRP pipes are allowed. Separation of the GRP pipes is provided by NOFIRNO® filler sleeves all around the ducted pipe(s).



12) The remaining open spaces in the transit are filled with NOFIRNO® filler sleeves.

The whole set of crushers, insert and filler sleeves should tightly fit into the conduit to offer sufficient mechanical stability.

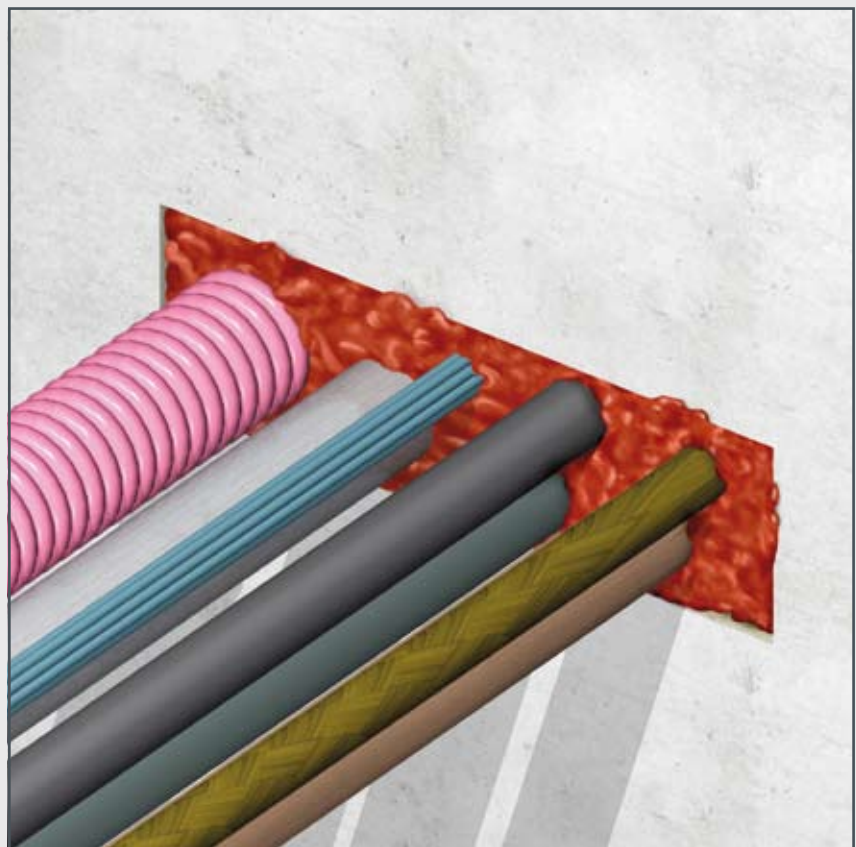


RISE®/NOFIRNO® + RISE®/ULTRA MULTI-ALL-MIX CABLE/PIPE TRANSITS

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



14) The conduit should be overfilled with NOFIRNO® sealant, because some sealant will be pushed between and into the empty filler sleeves during further finishing. This will contribute to obtain higher tightness ratings.



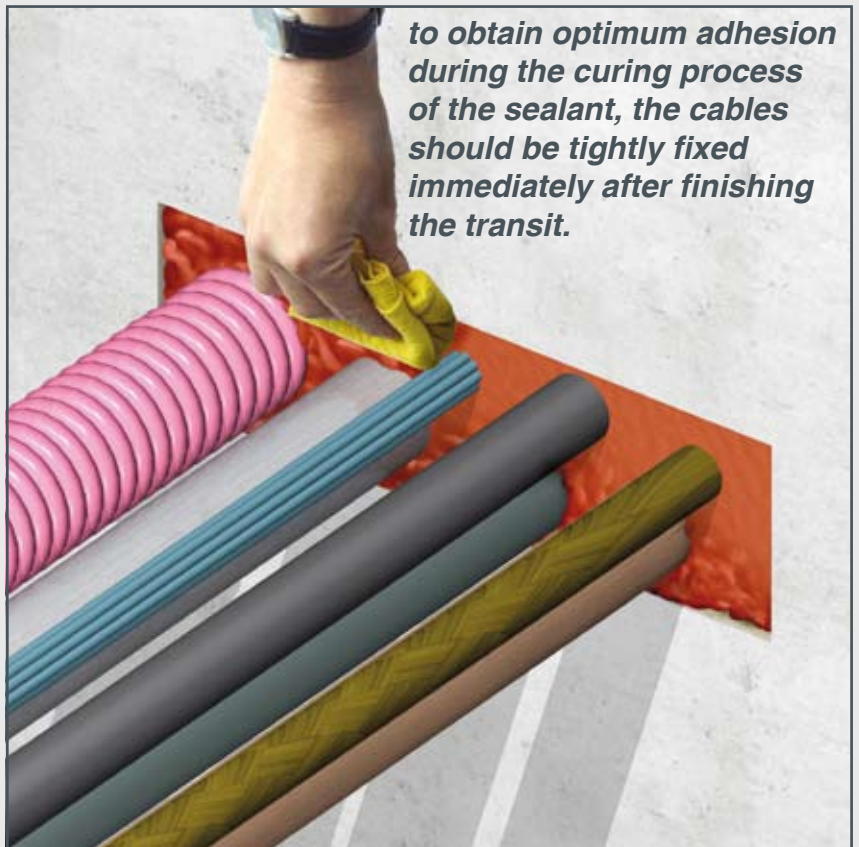
RISE®/NOFIRNO® + RISE®/ULTRA MULTI-ALL-MIX CABLE/PIPE TRANSITS

15) To smooth the surface of the FIWA® sealant layer, a cloth is sprayed with water. This prevents the sealant from sticking to the cloth.

Note: do not use soapwater!



16) The cloth is then used to press down the sealant layer. People with sensitive skin should use gloves when working with the NOFIRNO®. Please refer to the Safety Data Sheet for more information.



RISE®/NOFIRNO® MULTI-ALL-MIX TRANSIT SEALING SYSTEM



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

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

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



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

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



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



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



We have also selected a powerful pneumatic applicator for highest productivity.

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

RISE®/NOFIRNO® MULTI-ALL-MIX TRANSIT SEALING SYSTEM

*ease of calculation with
our cable and pipe penetrations*

TRANSIT CALCULATOR

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

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



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

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

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

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

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

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

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

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



- 1) machines specially developed for compounding and processing of rubbers under controlled conditions to obtain optimum quality
- 2) machines specially developed for compounding and manufacturing of all types of sealants under controlled processing
- 3) moisture treatment installation and processing equipment for manufacturing of electrically conductive sealants and rubbers
- 4) a complete line of injection moulding presses ranging from 40 tons up to 400 tons for manufacturing sealing plugs and other rubber components
- 5) a complete line of compression moulding presses up to 300 tons for manufacturing larger type sealing plugs and ULEPSI rubber plates
- 6) processing installation for after-curing of rubber products to obtain the required compression set (long term behaviour)
- 7) extruder line including cooling system and cutting and slitting installation for manufacturing insert and filler sleeves for the RISWAT system
- 8) fully automatic extruder lines with a length of 20 meters, including cooling system and automatic cutting, slitting and sorting installation for manufacturing rubber insert and filler sleeves and rubber strips of the RISE system
- 9) extruder line for manufacturing luminescent profiles and hoses
- 10) line of injection moulding machines ranging from 50 up to 200 tons for manufacturing plates of the ULEPSI tank supports and luminescent YFESTOS floor coverings
- 11) completely equipped die-making shop for the in-house production of all tooling for rubber and plastics manufacturing
- 12) modern laser equipment for engraving the type codes in the dyes for rubber manufacturing and for marking products with bar and 2D-matrix codes
- 13) mixing and airless spraying facilities for the NOFIRNO boards

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



**YOUR RELIABLE
PARTNERS**





**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

ASK FOR THE SEPARATE BROCHURES ON OUR PRODUCT RANGES:

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



CONDUIT SEALING DEVICES OF AN AMAZING SIMPLICITY WITH AN OUTSTANDING PERFORMANCE



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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