

# NOFIRNO®

## SEALING SYSTEM FOR PIPE & MULTI-ALL-MIX® TRANSITS



TESTED TO IMO RESOLUTION A.754(I8);  
FIRE CLASS AO-A60, HO-HI20, JET FIRE  
EC (MED) CERTIFICATE  
MED-B-4908 ISSUED BY DNV

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<b>brochure code</b>	: nofirno pipe/hb/en/mar



## BEELE ENGINEERING - SAFETY, RELIABILITY, INVOLVEMENT

Every moment of the day, in every business and every situation, the threat of fire is present. For over three decades, BEELE Engineering has specialized in passive fire safety in the form of systems which prevent the spread of fire, smoke, water and gases via cable and pipe penetrations. With our superior sealing technologies, we have become the undisputed Number One in this particular field.

It is BEELE Engineering's philosophy that R&D exists to respond to market demands. Only then can research and development activities be classed as functional. Only then are innovative solutions generated for problems that have current or near-term relevance. Our policy is one of continuous active response to customers' demands, or to modified or new functional requirements. We listen, we observe and we interpret, and so we arrive at new product developments and bold innovations.

BEELE Engineering has built up an enormous body of specialized expertise and knowledge. Our company is the world market leader in sealing systems for state-of-the-art shipbuilding applications as well as civil and industrial applications. We do not follow trends, we set them.

Development of new products and technologies, as well as pioneering know-how, are present in every fibre of our organization. We are driven by passion for our specialization, and our customer involvement drives us to exceed the boundaries of what is technically feasible.

BEELE Engineering operates world-wide. From our agencies in virtually every industrialized country, our support and services are always somewhere nearby. We are there for you – also for on-site advice or in-house demonstrations, instructions and support at your location.



*Our development, test and production facilities are among the most advanced in the world. The factory is equipped with state of the art machines, which are tailor made to the requirements of our company. We work to a high-level ISO system, with unmatched involvement. Continuous investment in design technologies, combined with highest quality polymers, is our guarantee for the safety of lives and equipment. That is why BEELE Engineering is internationally recognized by all relevant certification institutes and classification societies.*



## NOFIRNO® (MULTI-) PIPE TRANSIT SEALING SYSTEM

BEELE Engineering is dedicated to fire safety. From the pictures below the text, it might be clear that fire prevention is not child's play, nor can it just be disregarded. In a fire, the partitions can get so hot that even approaching them is impossible. Right then it is of utmost importance that the cable and pipe penetration seals stop the spread of fire and smoke to adjacent areas. To address this problem, BEELE Engineering has developed the NOFIRNO® technology. The cable and pipe penetrations, based on this technology, have been tested successfully for A- and H-class, A-0 and H-0 class and Jet Fires.



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.

We have been involved with fire resistant rubbers for decades. The drawbacks of certain fire resistant rubbers are halogen content, hardness of the highly filled rubbers, hardening during lifetime, and high permanent deformation sets. All these disadvantages will have an impact on performance in the long run.

NOFIRNO® rubber does not have the above mentioned 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 the proven NOFIRNO® quality.

By way of surface charring and the rubber residues inside the product, it can easily be determined whether or not NOFIRNO® has been used (even after a fire).

1) the NOFIRNO® rubber shows minimum permanent deformation and limited stress relaxation, guaranteeing mechanical stability in the long term.

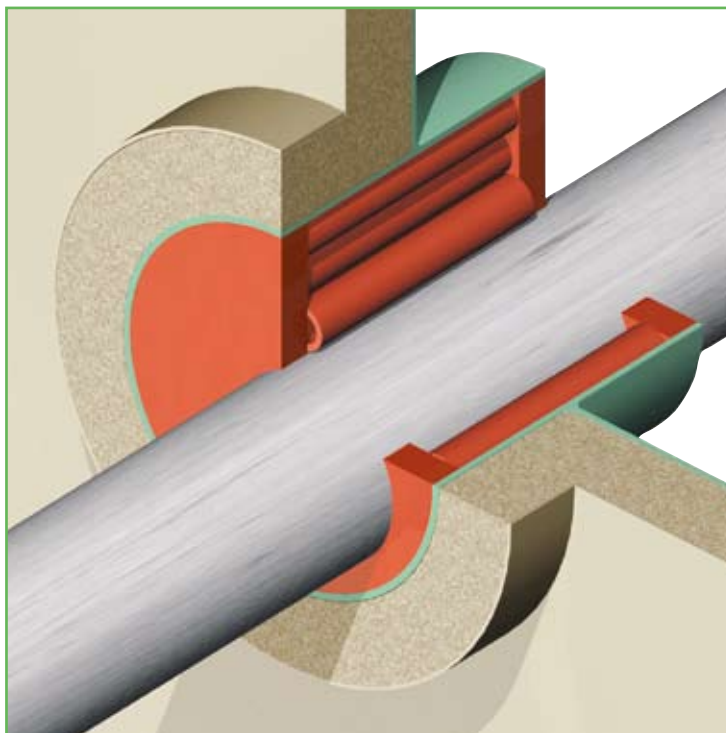
2) The NOFIRNO® rubber can be exposed to high temperatures (up to 180 °C), making the NOFIRNO® sealing system suitable for steam lines.

3) NOFIRNO® stays flexible at temperatures of -50 °C, allowing application in arctic environments.

4) The NOFIRNO® sealant/rubber has optimum fire stopping properties:

- a) creates immediately a protective layer at the fire side
- b) will not be consumed under fire exposure
- c) prevents smoke emission

5) Higher thermal insulation values under fire load.

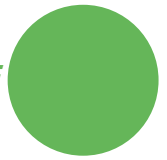


6) Shorter conduit depths.

7) Approved for A-0 and H-0 class without the use of any insulation. Certified up to A-60 and H-120 class.

8) Successfully exposed to a 2 hour Jet Fire test.

9) Can be combined with RISE® and RISE®/ULTRA.



## NOFIRNO® (MULTI-) PIPE TRANSIT SEALING SYSTEM

Non-insulated steel partitions (A-0) are most dangerous in fire conditions. Generally, certificates for use on boards ships and offshore constructions are issued on the basis of a successful A-60 test for A-0 up to A-60 class. However, if the approval is for A-0 up to A-60 without the remark that the system is approved for steel partitions without insulation, this means that for these applications, insulation has to be applied (insulated) as tested for A-60 class.

This may not be observed in practice since such partitions are generally not insulated at all. The fire integrity may then be very doubtful in such a case. The marketplace tends to think that A-0 is less severe than A-60. This is not the case! Due to the missing insulation it is just the opposite.

The intense heat of the construction will cause all materials in the direct vicinity to ignite spontaneously. The radiation heat can be so immense that ignition might occur even at several meters distance.



Especially with A-0 decks, the rising radiation heat of the deck, reaching temperatures of more than 700 °C, contributes to even more severe conditions. It will be obvious that the impact on sealing systems will be extreme. Based on "no insulation", the development of the NOFIRNO® sealing system was started. As proven with the SLIPSIL® plugs, the NOFIRNO® rubber will not be consumed by fire. For A-0 class it is of utmost importance to keep the sealing system inside the penetration. In contrast to the regular RISE® system, only a limited expansion of the rubber will take place. No material will fall off during fire exposure at the unexposed side. The NOFIRNO® sealant will follow any deformation of the division. The thermal insulation of the transit is maintained and no excessive temperatures will arise on the NOFIRNO® rubber/sealant. Furthermore, no smoke emission will occur, also limiting any ignition possibilities at the unexposed side.



## NOFIRNO® (MULTI-) PIPE TRANSIT SEALING SYSTEM

### NOFIRNO® filler sleeves



Operating temperatures:  
-50 °C up to +180 °C

filler sleeves are supplied non-split

### NOFIRNO® filler sleeve

### sleeve length

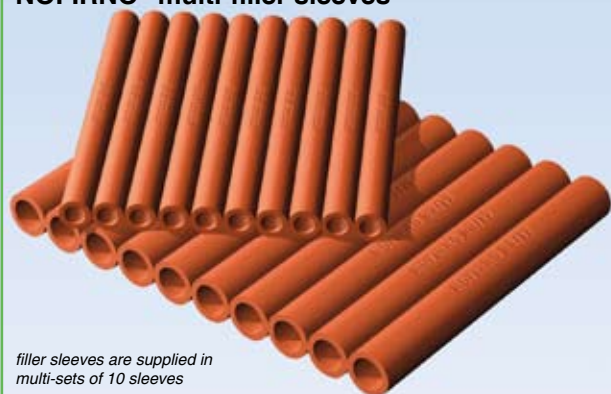
### article number

18/12 single	140	80.5002
18/12 multi	140	80.5052
18/12 single	160	80.5003
18/12 multi	160	80.5053
18/12 single	210	80.5004
18/12 multi	210	80.5054
27/19 single	140	80.5012
27/19 multi	140	80.5062
27/19 single	160	80.5013
27/19 multi	160	80.5063
27/19 single	210	80.5014
27/19 multi	210	80.5064

all dimensions in mm

Especially for single and multi-pipe penetrations, the multi-filler sleeves offer an advantage when filling the cavity between the conduit sleeve/frame and the ducted pipe. The sets are very flexible and can be wrapped around the ducted pipe. Furthermore, single filler sleeves can be torn off easily. The NOFIRNO® rubber has a good, long lasting memory, enabling a tight fit of the sleeves inside the conduit. This improves the overall mechanical stability of the sealing system during service life.

### NOFIRNO® multi-filler sleeves



filler sleeves are supplied in  
multi-sets of 10 sleeves

The NOFIRNO® rubber grade has excellent properties and will not be consumed by the fire. The NOFIRNO® sealant immediately forms 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®.

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).

## PRODUCT INFORMATION SEALANT

- |                         |   |
|-------------------------|---|
| 01) colour              | red brown   |
| 02) specific gravity    | 1.40 ± 0.03 g/cm³   |
| 03) curing of top layer | 0.5 - 1 hour depending on temperature and air humidity  |
| 04) service temperature | -50 °C up to +180 °C  |
| 05) tensile strength    | 1.5 MPa   |
| 06) elongation at break | 200%  |
| 07) hardness            | 45 Shore A  |
| 08) elastic deformation | approx. 50%   |
| 09) resistance          | UV, Ozone, arctic conditions  |
| 10) ageing              | more than 20 years  |
| 11) supplied in         | 310 ml cartridges   |
| 12) storage             | to be stored cool and dry<br>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 |



article number 50.0102

NOFIRNO® is a paste-like compound which is simple to use. NOFIRNO® has a balanced viscosity and can be applied overhead.

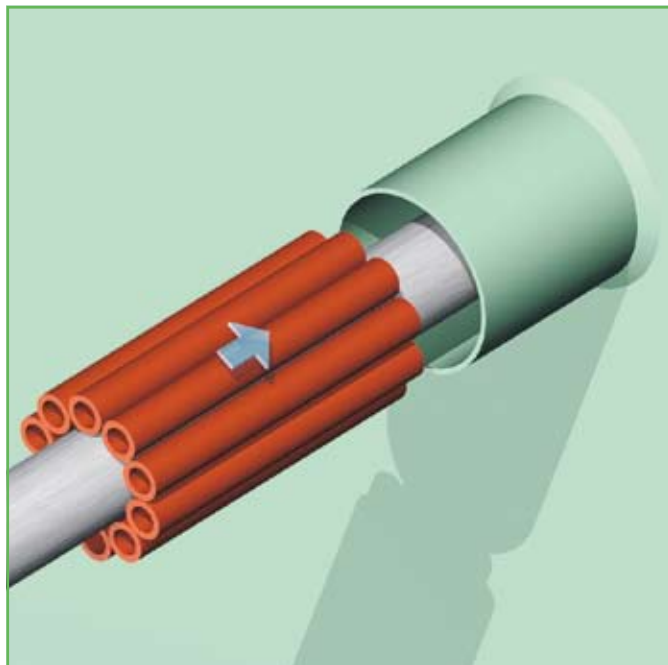
After applying the sealant, it can be smoothed by means of a wet cloth or by hand. Because the sealant adheres very tightly, the cloth and hands should be wetted with water before use to prevent sealant from sticking to them.

Shelf life is 12 months when stored properly. Since we have no control on storage, we can only guarantee for 6 months.

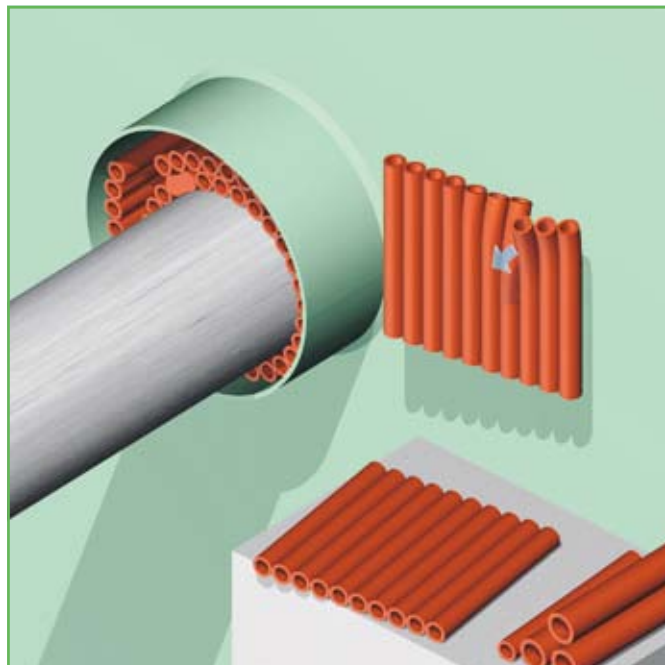




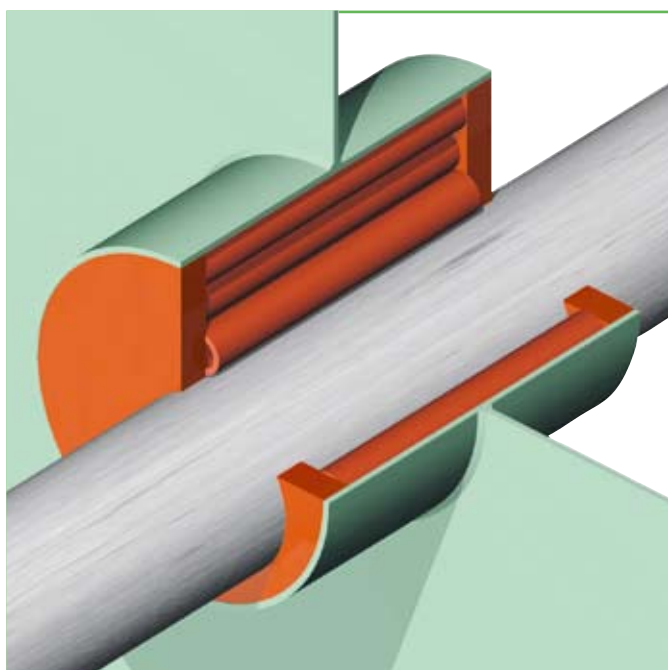
## NOFIRNO® (MULTI-) PIPE TRANSIT SEALING SYSTEM



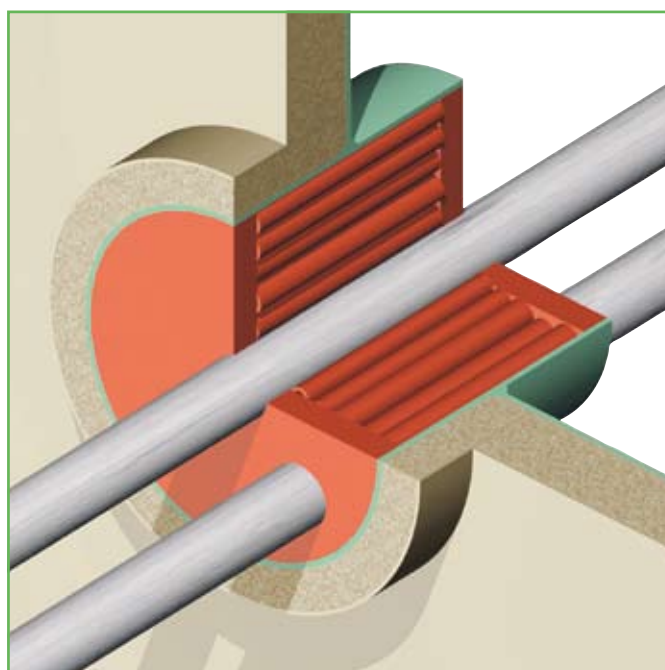
Several options are available with the NOFIRNO® sealing system. The most simple and cost effective solution is a fitting multi-filler sleeve applied in a conduit sleeve with an ID creating a tight fit. NOFIRNO® sealant with a thickness of minimum 20 mm to be applied at both sides.



For oversized conduits and/or off centre ducted pipes, a combination of NOFIRNO® single and multi-filler sleeves can be used. NOFIRNO® sealant with a thickness of minimum 20 mm to be applied at both sides. Conduit depth minimum 180 mm.



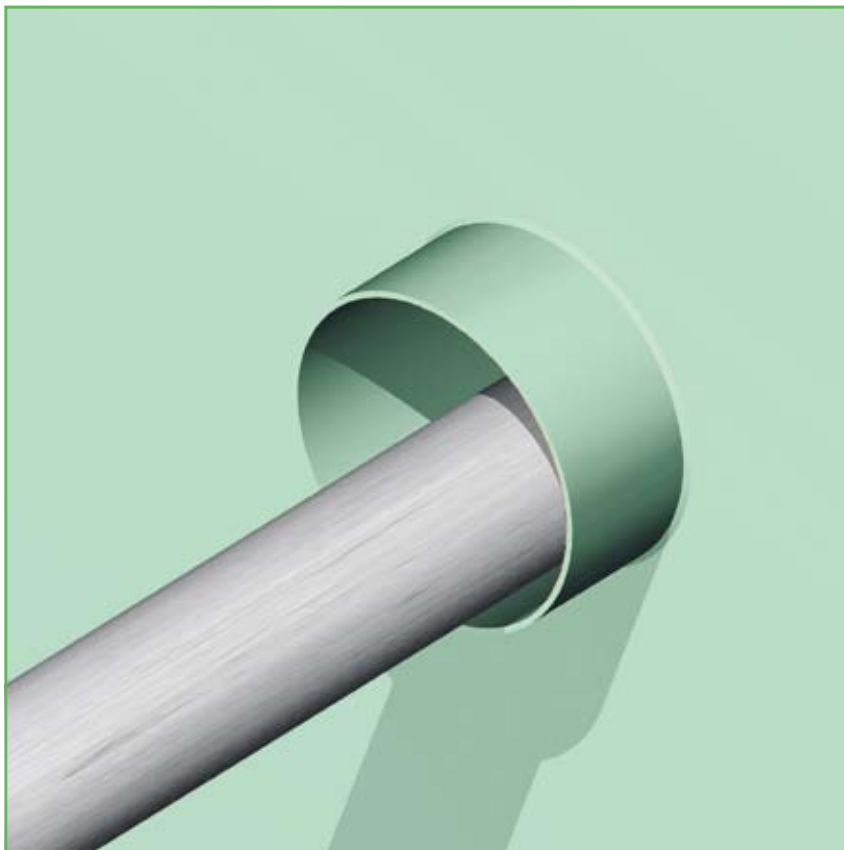
The NOFIRNO® sealing system is certified for A-0 and H-0 class without the use of any insulation. In these cases, the only difference is that the conduit depth is 250 mm instead of 180 mm. NOFIRNO® sealant with a thickness of minimum 20 mm to be applied at both sides. System is also gas and watertight.



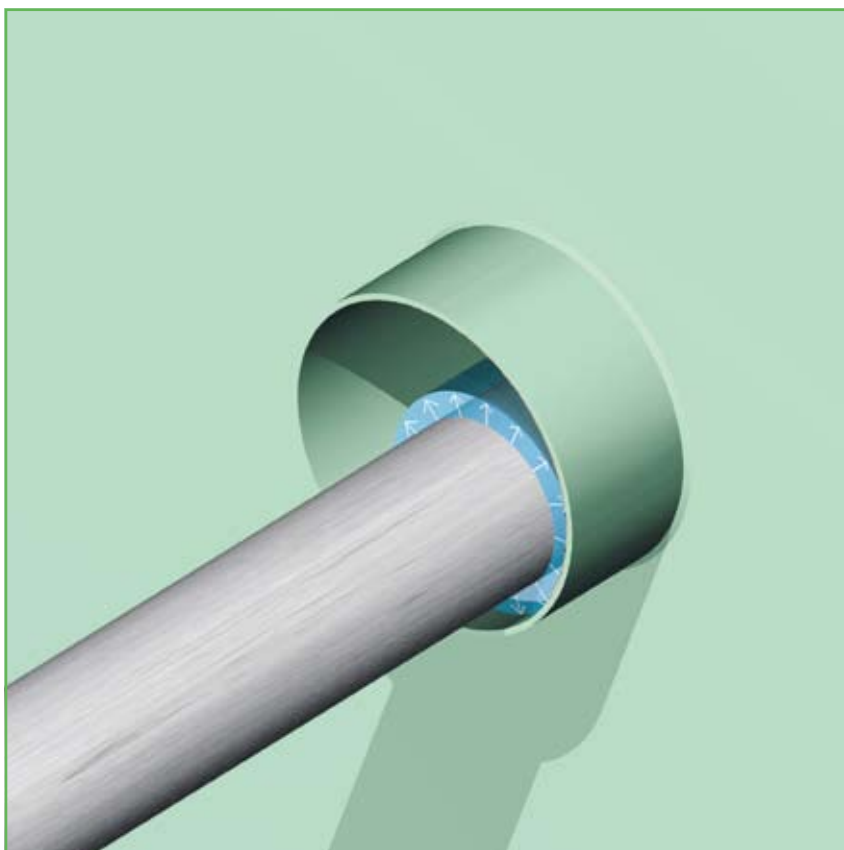
The NOFIRNO® sealing system is also approved for multi-pipe penetrations of steel, copper and GRP pipes to a transit size of 1000x300 mm with a depth of 180 mm only. Minimum separation of the pipes to be regarded. NOFIRNO® sealant with a thickness of minimum 20 mm to be applied at both sides.

## **NOFIRNO® (MULTI-) PIPE TRANSIT SEALING SYSTEM**

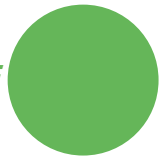
1) The metallic pipe can be passed through the conduit sleeve in any position, provided there is enough space between the sleeve and the ducted pipe (see next at 2).



2) Make sure that the minimum space between the pipe and the wall of the conduit sleeve is in accordance with the minimum allowed distance as certified.



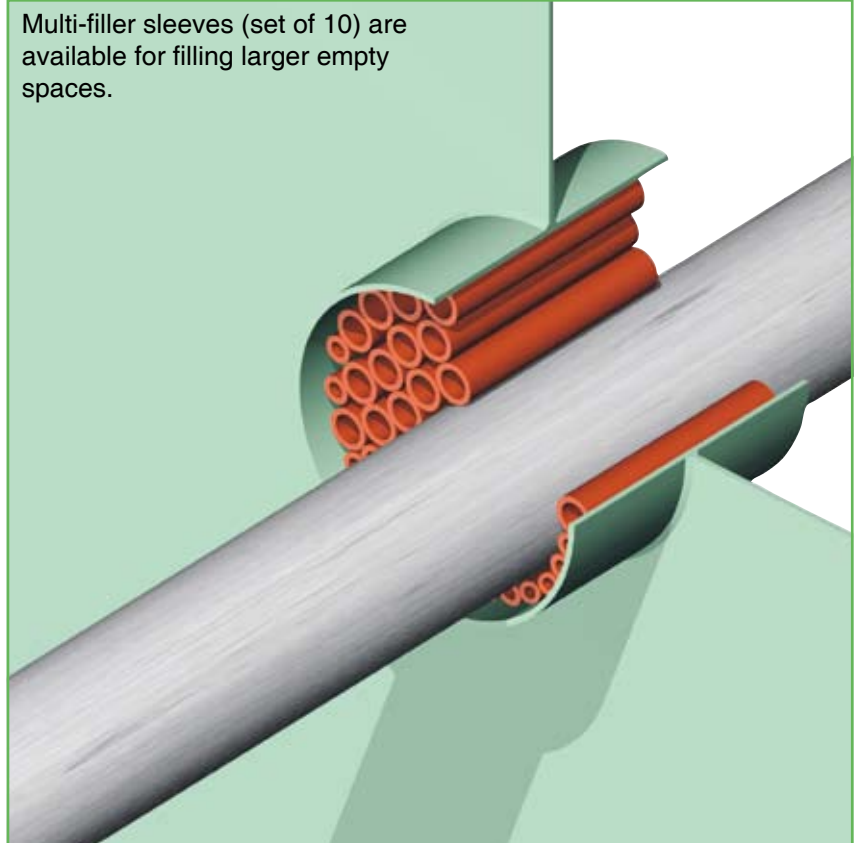




## NOFIRNO® (MULTI-) PIPE TRANSIT SEALING SYSTEM

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 filler sleeves are also supplied in multi-sets of 10 pieces. The ratio 27/19 to 18/12 should be about 2:1.

Multi-filler sleeves (set of 10) are available for filling larger empty spaces.



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

Before applying the sealant, it is advisable to perform a final check on the packing of filler sleeves.



## NOFIRNO® (MULTI-) PIPE TRANSIT SEALING SYSTEM

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

Use our professional sealant guns. Hand fatigue is prevented and optimum flow of the sealant is obtained.



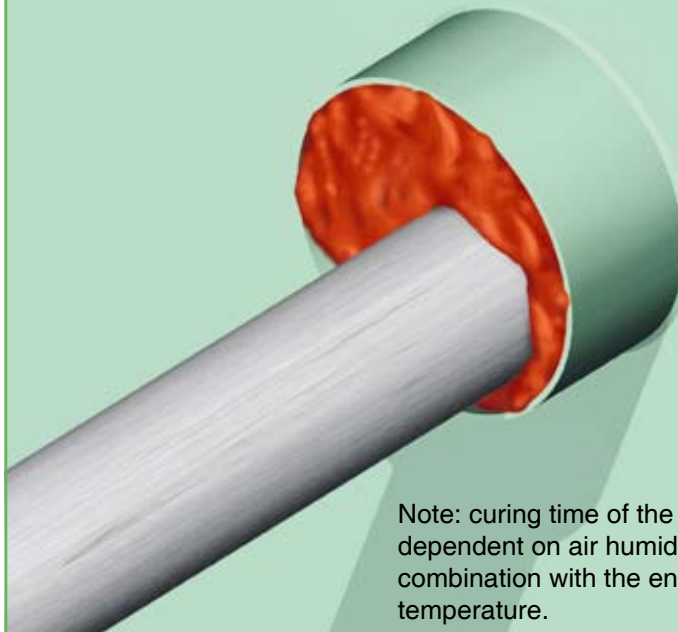
Note: due to the curing process, the sealant cannot be applied on hot surfaces. Maximum temperature is 60 °C (140 °F). After full curing max. operating temperature is 180 °C.



6) 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.

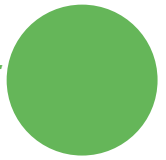
People with sensitive skin should use gloves when working with NOFIRNO®.

Please refer to the Safety Data Sheet for more information.



Note: curing time of the sealant is dependent on air humidity in combination with the environmental temperature.





## NOFIRNO® (MULTI-) PIPE TRANSIT SEALING SYSTEM

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 soap water!



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





## NOFIRNO® (MULTI-) PIPE TRANSIT SEALING SYSTEM

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

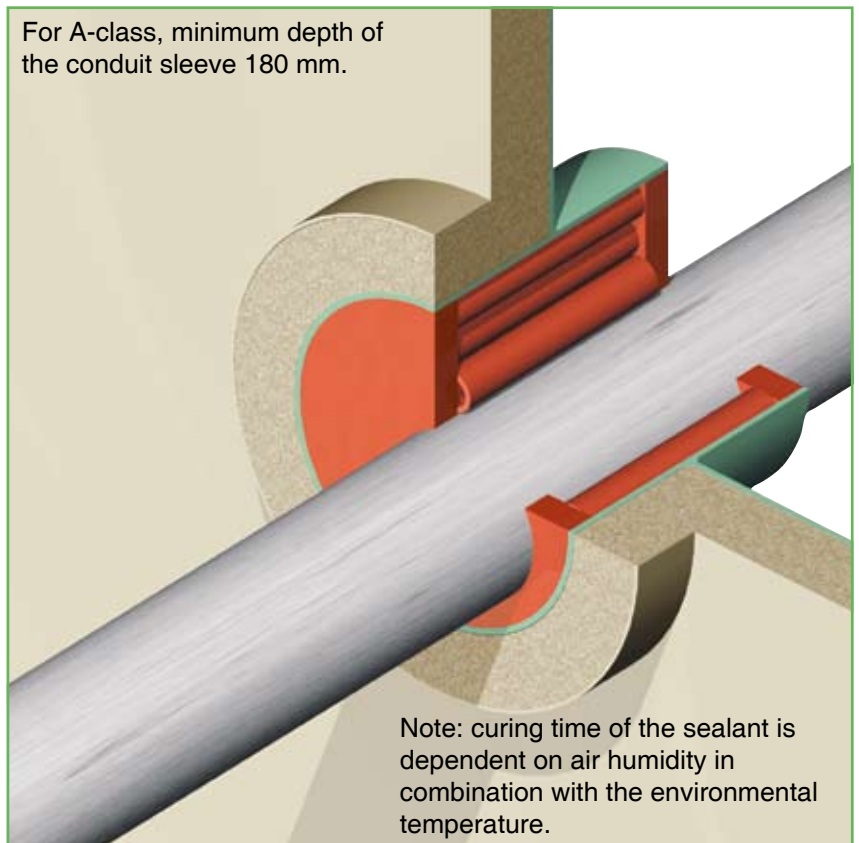
People with sensitive skin should use gloves when working with NOFIRNO®.

Please refer to the Safety Data Sheet for more information.



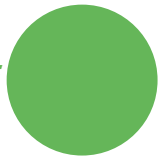
10) For A-class penetrations (which are insulated), the conduit sleeve needs to be insulated only at the insulated side of the bulkhead or at the lower side of the deck. The ducted pipe has to be insulated according to the specifications on the certified drawings.

For A-class, minimum depth of the conduit sleeve 180 mm.



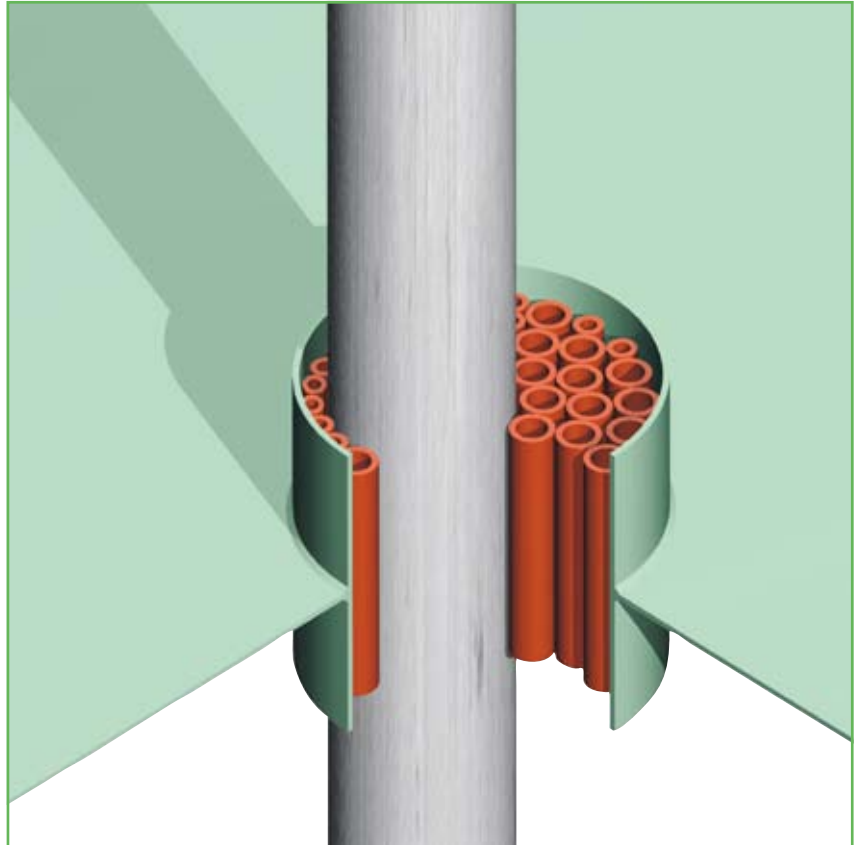
Note: curing time of the sealant is dependent on air humidity in combination with the environmental temperature.





## NOFIRNO® (MULTI-) PIPE TRANSIT SEALING SYSTEM

11) Vertical transits are easy to install as well. To prevent the filler sleeves from falling out of the conduit sleeve, multi-sleeves are preferably used.



12) The optimized viscosity and the superb adhesion properties of the NOFIRNO® sealant make applying the sealant overhead an easy matter. NOFIRNO® sealant does not sag and will not drip off.

People with sensitive skin should use gloves when working with NOFIRNO®.

Please refer to the Safety Data Sheet for more information.

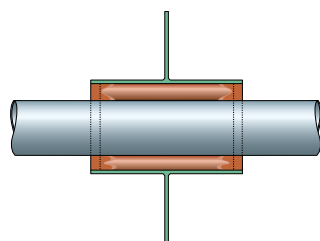


Note: due to the curing process, the sealant cannot be applied on hot surfaces. Maximum temperature is 60 °C (140 °F). After full curing max. operating temperature is 180 °C.



## NOFIRNO® (MULTI-) PIPE TRANSIT SEALING SYSTEM

L1: A-60/H-120 approved bulkhead insulation.



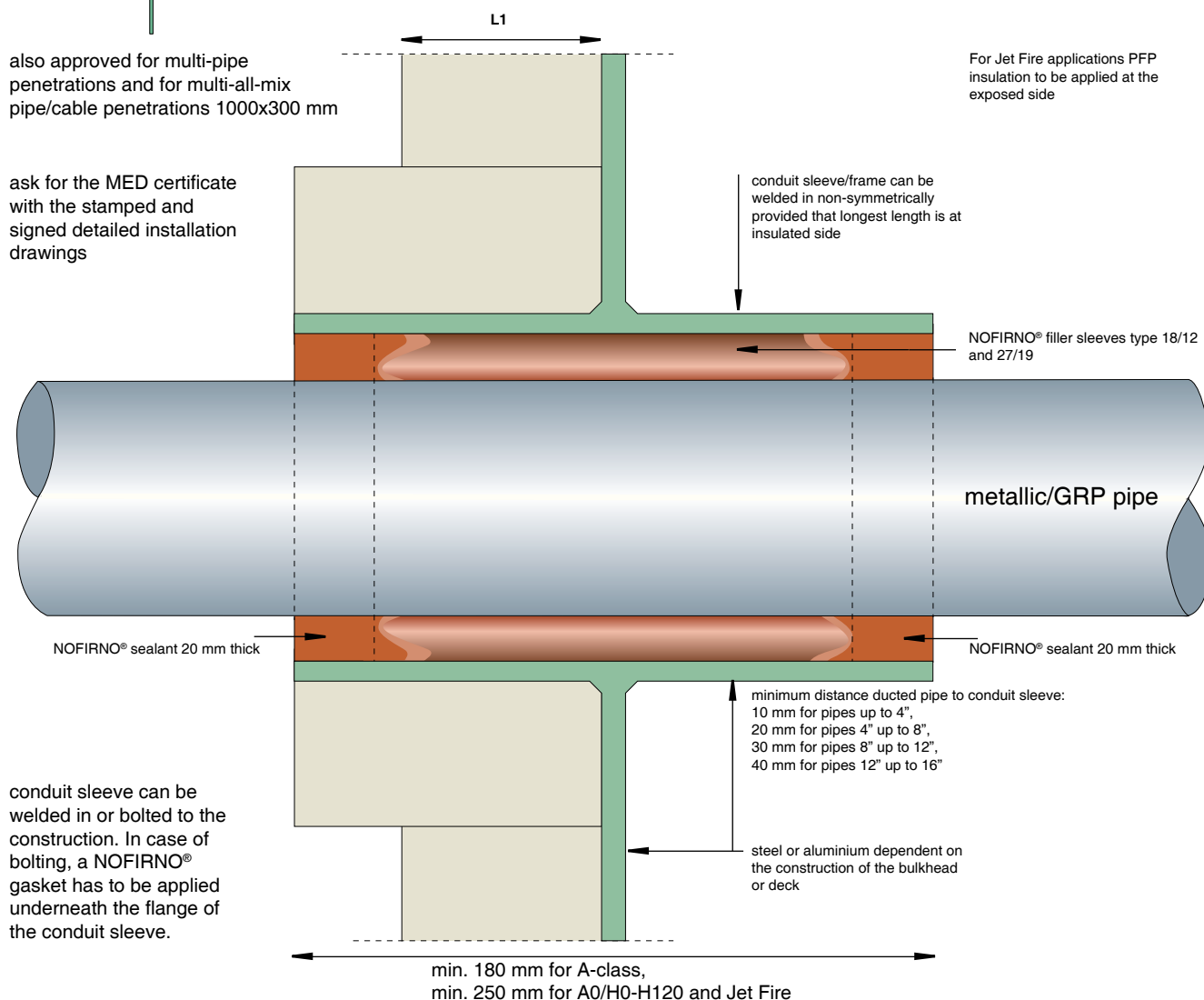
**NO INSULATION  
REQUIRED FOR A-0  
AND H-0 DIVISIONS**

- CAN BE USED FOR OFF CENTRE, EXCENTRICALLY AND ANGLED DUCTED PIPES
- FOR METALLIC AND GRP PIPES

also approved for multi-pipe penetrations and for multi-all-mix pipe/cable penetrations 1000x300 mm

ask for the MED certificate with the stamped and signed detailed installation drawings

For Jet Fire applications PFP insulation to be applied at the exposed side



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

Specifications for A-class according to EC (MED) certificate MED-B-4908 issued by Det Norske Veritas. Drawings N0009E, N0011E, N0018E and N0020E, R0207E, R0213E.  
For H-class DNV certificate F-18820. Drawings N0032E, N0033E, N0034E and N0035E.

For steel/stainless steel pipes up to 408 mm, copper/CuNi pipes up to 420 mm and GRP pipes up to 408 mm.  
For length of insulation of the ducted pipes see certified drawings N009E, N0011E, N0018E, N0020E, R0207E and R0213E.

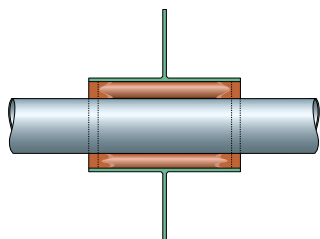
**A0-A60 / H0-H120  
METALLIC AND  
GRP PIPE TRANSIT**





## NOFIRNO® (MULTI-) PIPE TRANSIT SEALING SYSTEM

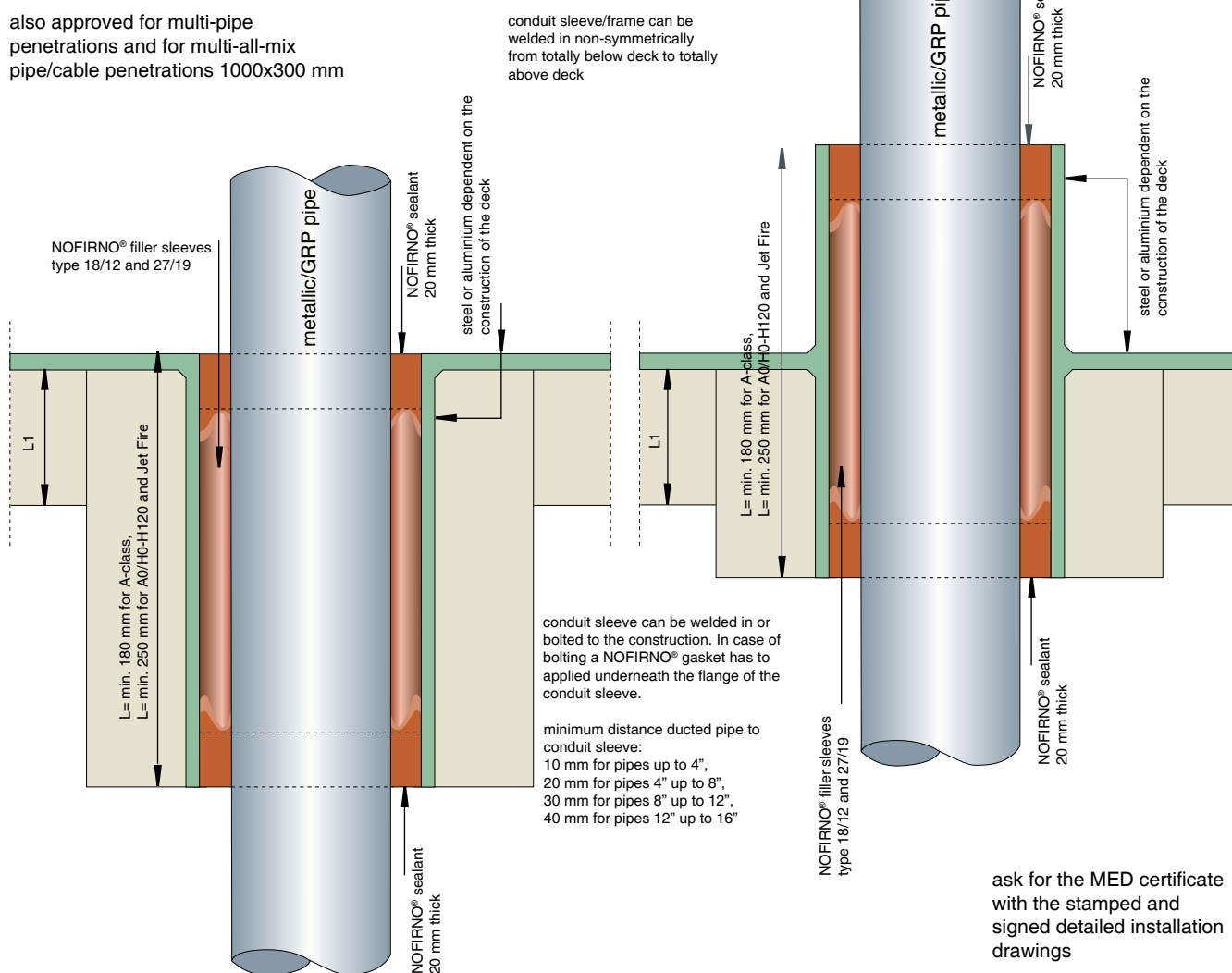
L1: A-60/H-120 approved deck insulation.



**NO INSULATION  
REQUIRED FOR A-0  
AND H-0 DIVISIONS**

also approved for multi-pipe penetrations and for multi-all-mix pipe/cable penetrations 1000x300 mm

- CAN BE USED FOR OFF CENTRE, EXCENTRICALLY AND ANGLED DUCTED PIPES
- FOR METALLIC AND GRP PIPES



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

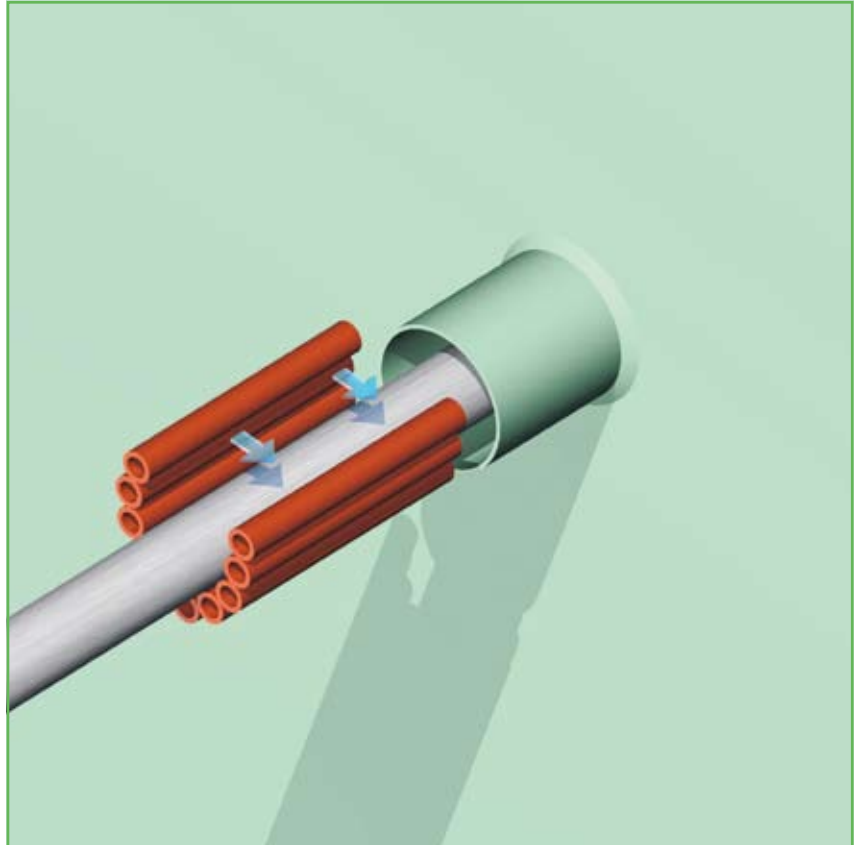
For steel/stainless steel pipes up to 408 mm, copper/CuNi pipes up to 420 mm and GRP pipes up to 408 mm.  
For length of insulation of the ducted pipes see certified drawings N009E, N0011E, N0018E, N0020E, R0207E and R0213E.

Specifications for A-class according to EC (MED) certificate MED-B-4908 issued by Det Norske Veritas. Drawings N0009E, N0011E, N0018E and N0020E, R0207E, R0213E.  
For H-class DNV certificate F-18820. Drawings N0032E, N0033E, N0034E and N0035E.

### A0-A60 / H0-H120 METALLIC AND GRP PIPE TRANSIT

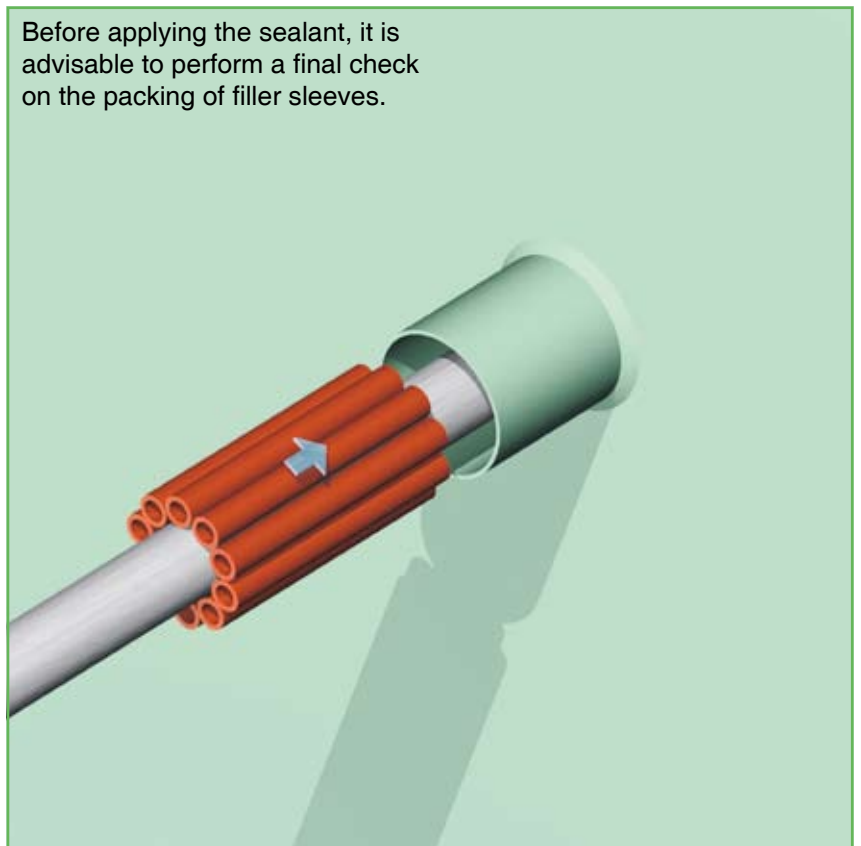
## NOFIRNO® (MULTI-) PIPE TRANSIT SEALING SYSTEM

1) NOFIRNO® multi-filler sleeves are especially useful for packing single pipe penetrations. Due to the high flexibility of the intermediate rubber parts, the multi-set can be wrapped around smallest service pipes. A single filler sleeve can be torn off easily.



2) Once the set is completely wrapped around the ducted pipe, it is then pushed into the conduit sleeve. Leave about 20 mm free space at the front and the back. The hollow filler sleeves allow for larger tolerances. The transit is further finished as described on pages 6-11. NOFIRNO® multi-filler sleeves offer a very economical sealing solution.

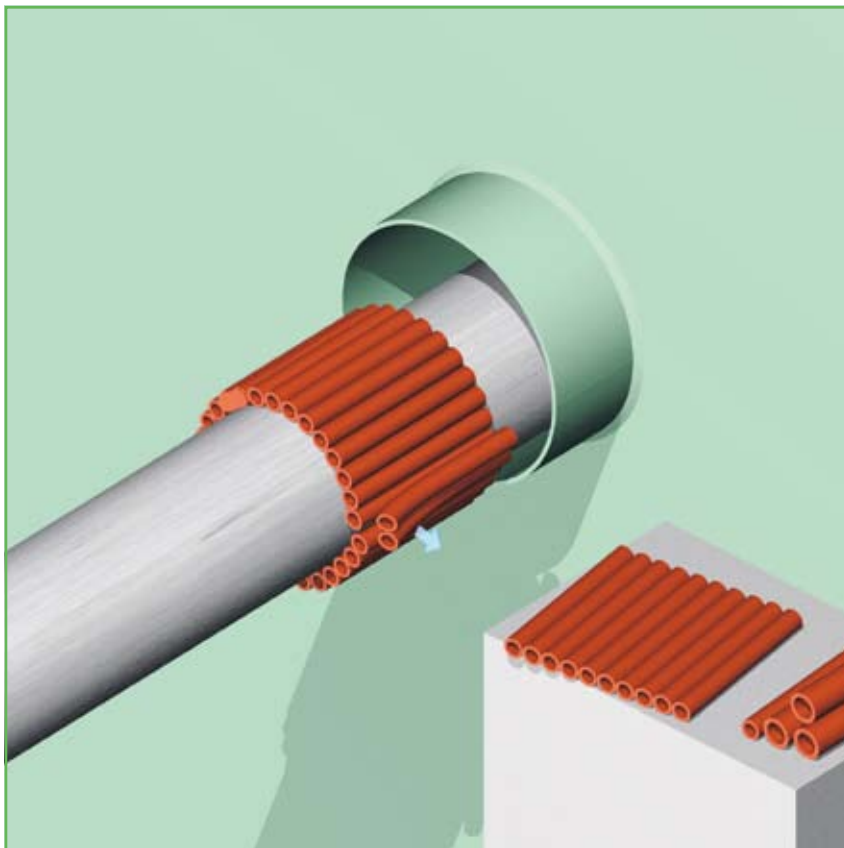
Before applying the sealant, it is advisable to perform a final check on the packing of filler sleeves.





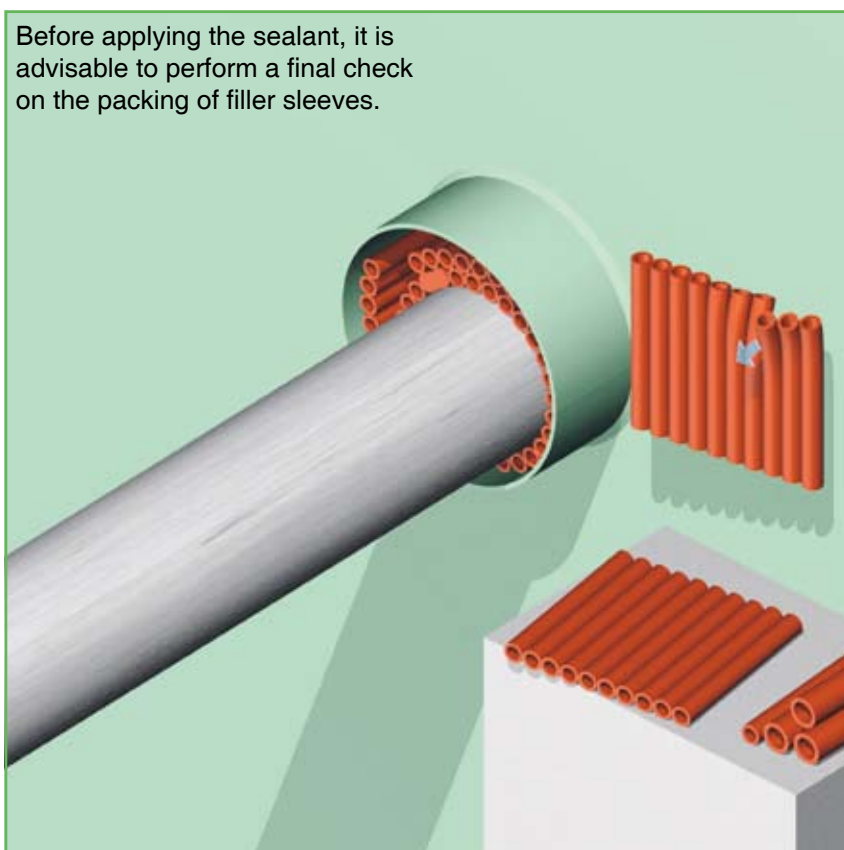
## NOFIRNO® (MULTI-) PIPE TRANSIT SEALING SYSTEM

3) For larger pipes, the NOFIRNO® multi-sets can be connected together with rubber connectors. In this way, a long set - which fits around the ducted pipe, can be created. The overlap of filler sleeves can be torn off to make the set fit around the ducted pipe.



4) To tear off sleeves from the multi-set, the procedure is to do this backwards/ forwards and not sideways. This is because of the strength of the intermediate rubber parts. The transit is further finished as described on pages 6-11. NOFIRNO® multi-filler sleeves offer a very economical sealing solution.

Before applying the sealant, it is advisable to perform a final check on the packing of filler sleeves.





## NOFIRNO® (MULTI-) PIPE TRANSIT SEALING SYSTEM

### JET FIRE TEST ACCORDING TO ISO 22899-1:2007 AND ISO/CD 22899-2

Article 6.5 of ISO/CD 22899-2 mentions:

There are concerns regarding the application and performance of passive fire protection materials and products when subjected to extreme fire events. Limited information is available how passive fire protection materials and products (developed for buildings only to withstand relatively slow build up fire tests such as ISO 834) perform if subjected to a fire exposure significantly more severe.

A fire protection material or system intended to withstand a conventional building fire for a specified period may not perform adequately in an extreme event scenario. Products that have demonstrated the ability to withstand a jet fire can be used to protect buildings more sensitive to extreme fires.

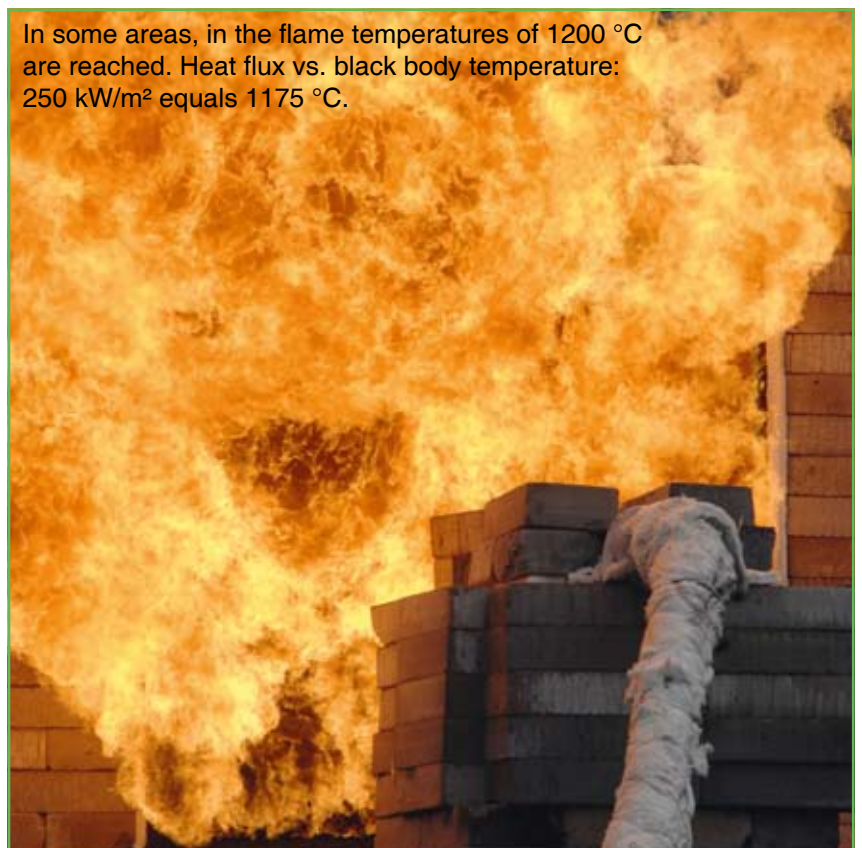


Article 9.1 of ISO/CD 22899-2 mentions:

Whilst hydrocarbon furnace tests are designed to represent a particular type of fire, they do not reproduce the actual fire conditions. Parameters such as: the balance between radiative and convective heat transfer, pressure fluctuations due to turbulence, erosive forces from high gas velocities, thermal shock and differential heating are not reproduced.

***Jet fire tests simulate the most onerous conditions of a hydrocarbon fueled fire on an offshore oil rig, or a missile strike on a military warship.***

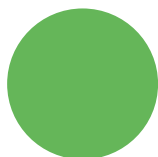
In some areas, in the flame temperatures of 1200 °C are reached. Heat flux vs. black body temperature: 250 kW/m<sup>2</sup> equals 1175 °C.



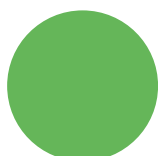


## **NOFIRNO® (MULTI-) PIPE TRANSIT SEALING SYSTEM**

### **Cutting Edge NOFIRNO® technology for optimum performance under harshest conditions:**



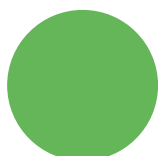
SYSTEM WILL NOT BE CONSUMED WHEN EXPOSED TO FIRE  
ALL COMPONENTS ARE MADE OF INERT SILICONE RUBBER  
IN CASE OF FIRE: NON-TOXIC, LOW SMOKE INDEX  
CE (MED) CERTIFICATES FOR A-O UP TO A-60  
CERTIFIED FOR H-O UP TO H-I20 AND JET FIRE TESTED



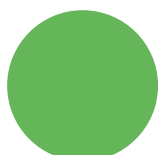
APPROVED WATER TIGHT UP TO 2.5 BAR  
APPROVED GAS TIGHT UP TO 1 BAR  
CAN BE USED IN ARCTIC CONDITIONS AND FOR STEAM LINES  
HIGH LEVEL OF SOUND DAMPING/EMC ATTENUATION  
SHOCK AND VIBRATION PROOF  
NO MECHANICAL STRESSES TRANSFERRED TO THE DIVISION



UP TO 50 YEARS SERVICE LIFE  
CAPABLE OF ABSORBING TEMPERATURE CHANGES  
WEATHERING, UV AND OZONE RESISTANT  
PROVIDES CATHODIC PROTECTION  
ALLOWS LONGITUDINAL/RADIAL MOVEMENT



FOR METALLIC, GRP AND PLASTIC PIPES  
APPROVED FOR MULTI-ALL-MIX PIPE/CABLE PENETRATIONS  
EXTREMELY SIMPLE TO INSTALL



INSULATION ONLY AT THE INSULATED SIDE OF THE DIVISION  
NO INSULATION REQUIRED FOR A-O AND H-O DIVISIONS  
SYSTEM PREVENTS CORROSION INSIDE THE TRANSIT  
APPROVED FOR STEEL AND ALUMINIUM PARTITIONS  
MAINTENANCE FRIENDLY

## NOFIRNO®/MULTI-ALL-MIX® CABLE/ PIPE TRANSIT SEALING SYSTEM

### CRUSHER® type C-FIT



### CRUSHER® type WRAP



plastic pipe OD	crusher® type	crusher® length	article number
16	30/16	140	80.2720
18	30/18	140	80.2721
20	40/20	140	80.2722
25	40/25	140	80.2723
32	50/32	140	80.2724
40	50/40	140	80.2725
50	70/50	140	80.2726
63	80/63	140	80.2727
75	100/75	140	80.2728
90	125/90	140	80.2729
110	150/110	140	80.2730
125	160/125	140	80.2731
140	180/140	140	80.2732
160	200/160	140	80.2733
wrap 1000x140x2.5 mm			80.2512

### RISE® cable sleeves



Note: maximum continuous service temperature of the RISE® sleeves and CRUSHERS® not to exceed 70 °C.  
Consult our technical support department in case of higher operating temperatures.

cable sleeves are supplied split lengthwise

RISE® cable sleeve	cable diameter	sleeve length	article number
12/6	5 - 7	140	80.0051
14/8	7 - 9	140	80.0052
16/10	9 - 11	140	80.0053
18/12	11 - 13	140	80.0054
20/14	13 - 15	140	80.0055
22/16	15 - 17	140	80.0056
27/19	17 - 21	140	80.0057
31/23	21 - 25	140	80.0058
35/27	25 - 29	140	80.0059
39/31	29 - 33	140	80.0060
46/36	33 - 39	140	80.0061
52/42	39 - 45	140	80.0062
58/48	45 - 51	140	80.0063
64/54	51 - 57	140	80.0064
70/60	57 - 63	140	80.0065

NOFIRNO® filler sleeve	sleeve length	article number
18/12 single	140	80.5002
18/12 multi	140	80.5052
27/19 single	140	80.5012
27/19 multi	140	80.5062

### NOFIRNO® filler sleeves



filler sleeves are supplied non-split, single and multi (set of 10)

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.

Shelf life is 12 months when stored properly. Since we have no control on storage, we can only guarantee for 6 months.

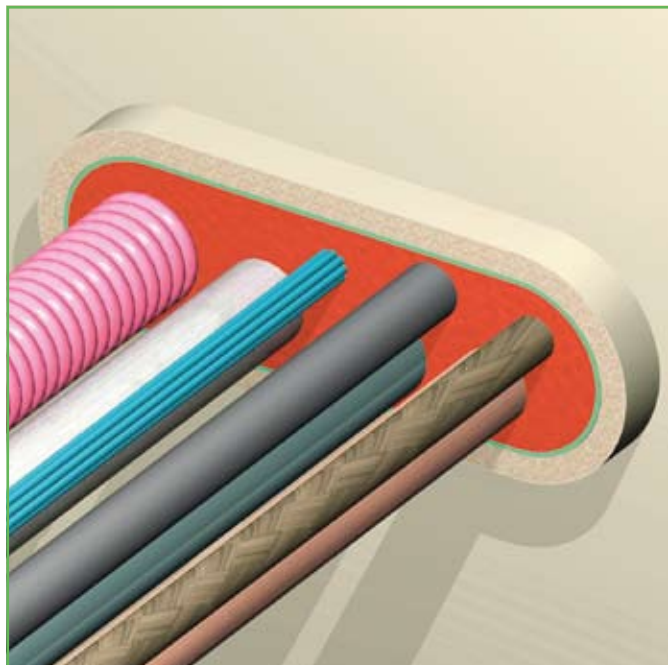
article number 50.0102



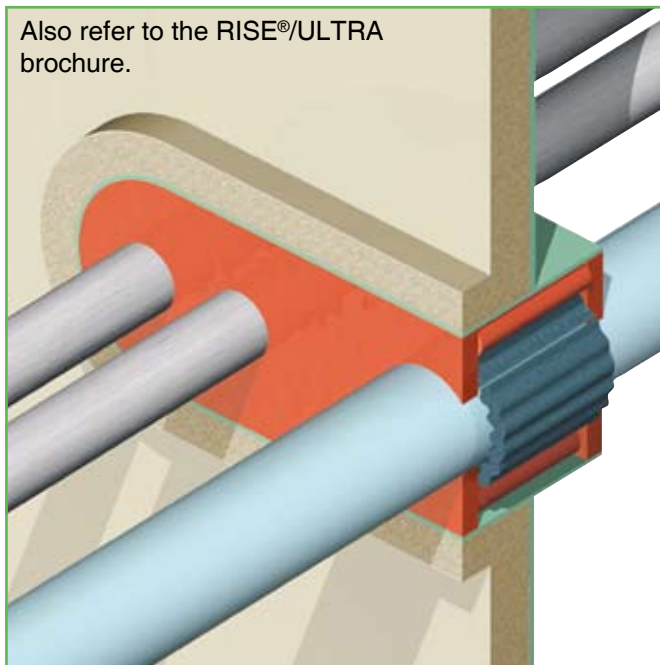




## NOFIRNO®/MULTI-ALL-MIX® CABLE/ PIPE TRANSIT SEALING SYSTEM

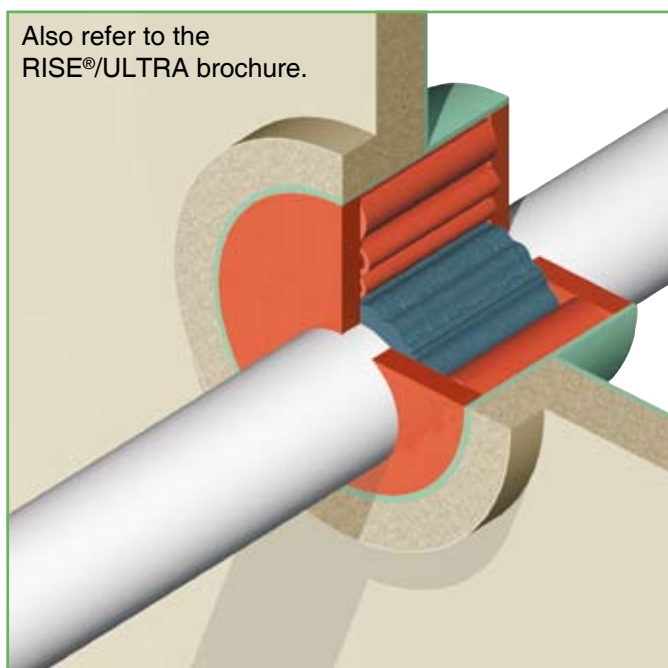


Several options are available with NOFIRNO® in combination with RISE® and RISE®/ULTRA. The latest development is the so-called MULTI-ALL-MIX® cable/pipe transit system. RISE® for the cables, RISE®/ULTRA for the plastic pipes and NOFIRNO® for finishing.



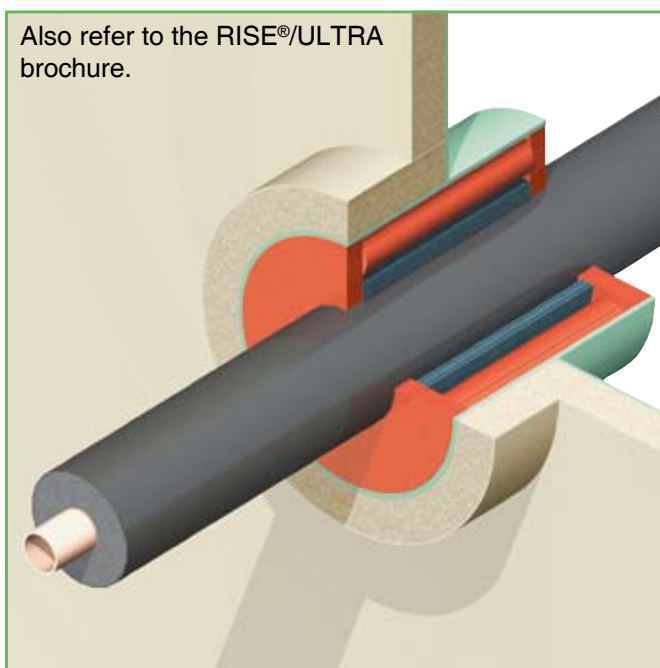
Also refer to the RISE®/ULTRA brochure.

RISE®/ULTRA in combination with NOFIRNO® filler sleeves and sealant can be used for multi-plastic and multi-plastic/metallic pipe penetrations. NOFIRNO® filler sleeves fill open spaces in the conduit, and NOFIRNO® sealant is applied at both sides of the penetration.



Also refer to the RISE®/ULTRA brochure.

For oversized conduits and off centre ducted plastic pipes, NOFIRNO® filler sleeves are used to fill open spaces in the penetration between the RISE®/ULTRA crusher and the wall of the conduit sleeve. NOFIRNO® sealant to be applied in a thickness of 20 mm at both sides of the penetration.

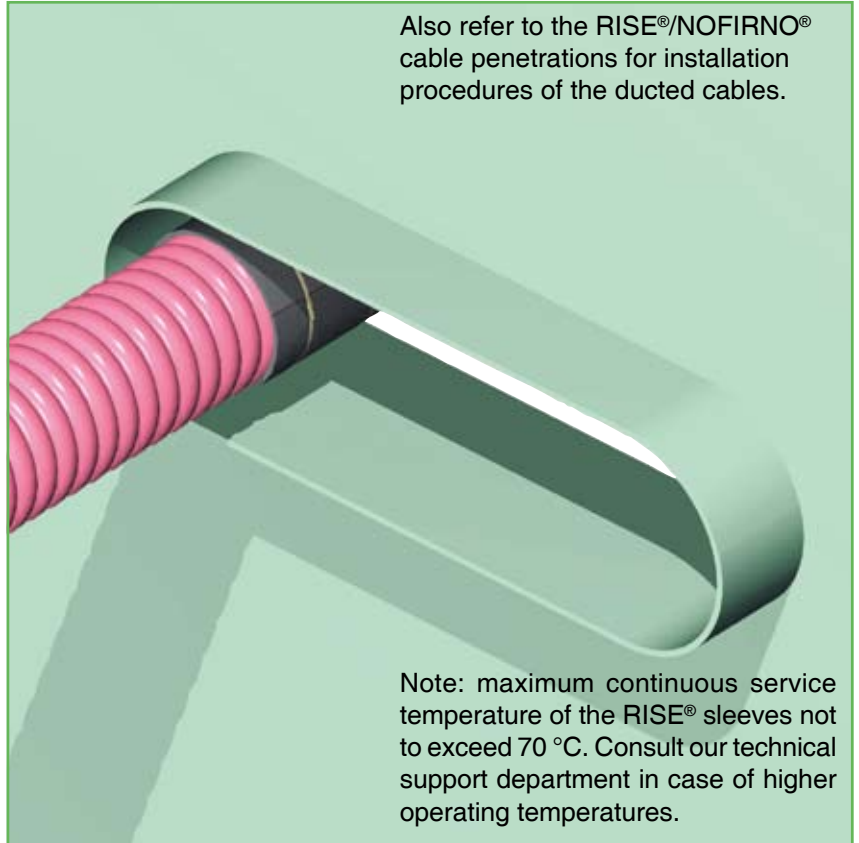


Also refer to the RISE®/ULTRA brochure.

RISE®/ULTRA crushers in combination with NOFIRNO® filler sleeves and sealant eliminate interruption of thermal insulation. NOFIRNO® filler sleeves have to be applied around the RISE/ULTRA® crusher. NOFIRNO® sealant to be applied in a thickness of 20 mm at both sides of the penetration.

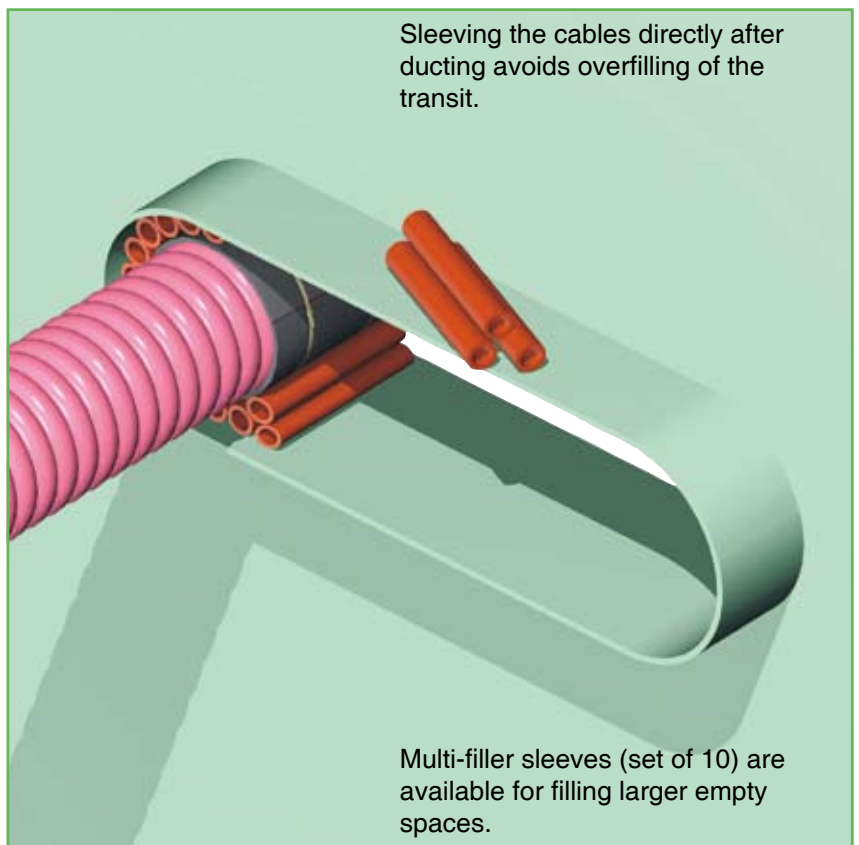
## NOFIRNO®/MULTI-ALL-MIX® CABLE/ PIPE TRANSIT SEALING SYSTEM

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 lengthwise and can therefore be fitted around the cables in front of the conduit.

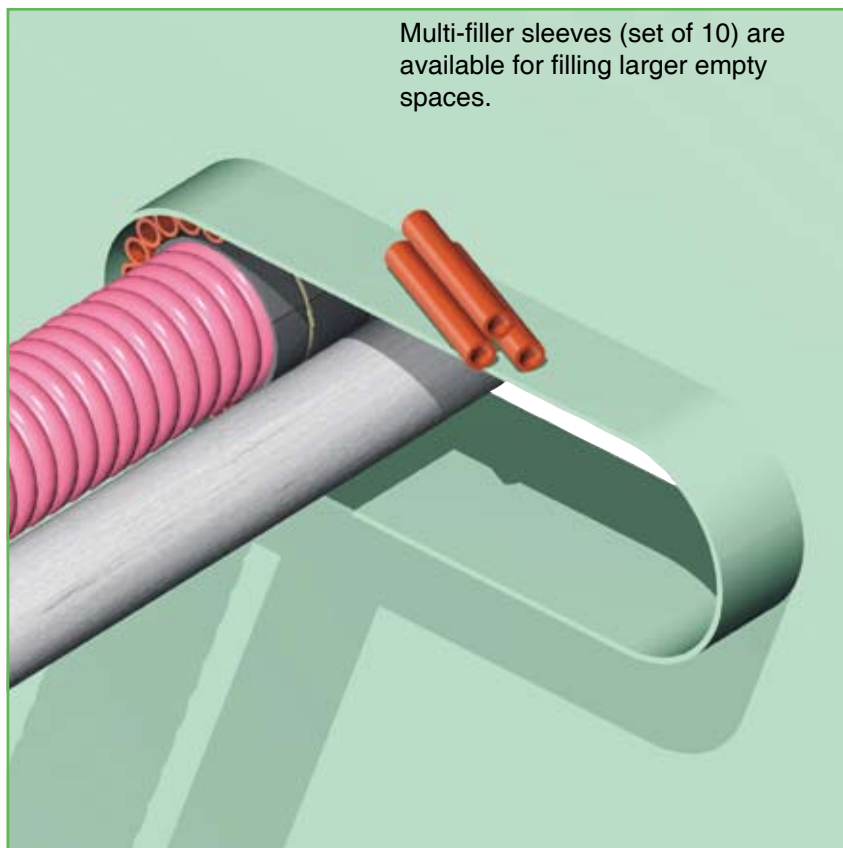
For cable sizes > 64 mm a RISE® wrap with thickness 5 mm is applied. The wraps can be fixed with a tie-wrap (or similar).



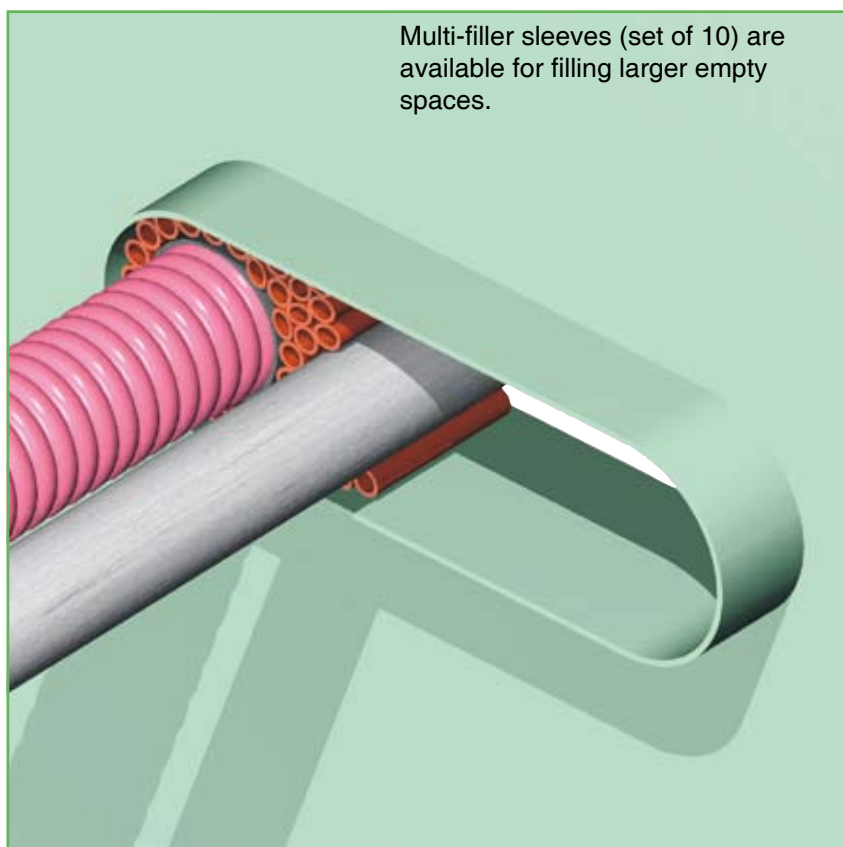


## NOFIRNO®/MULTI-ALL-MIX® CABLE/ PIPE TRANSIT SEALING SYSTEM

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

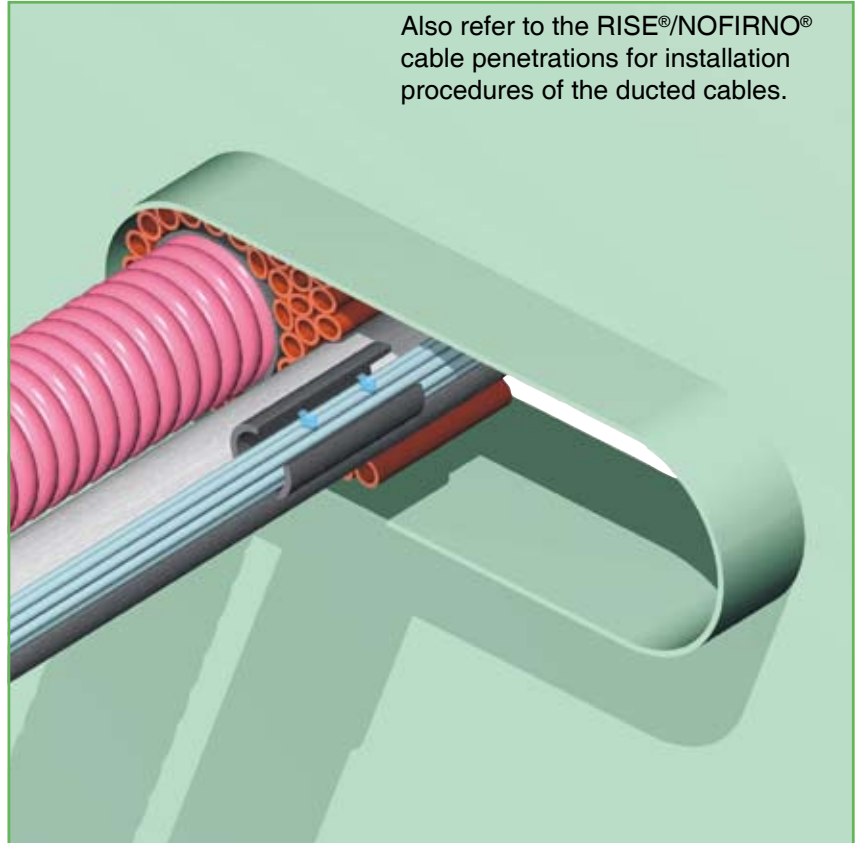


4) Separation of the metallic pipes is provided by NOFIRNO® filler sleeves all around the ducted pipe(s). NOFIRNO® filler sleeves are available in sizes 18/12 and 27/19 and are non-split for ease of installation.

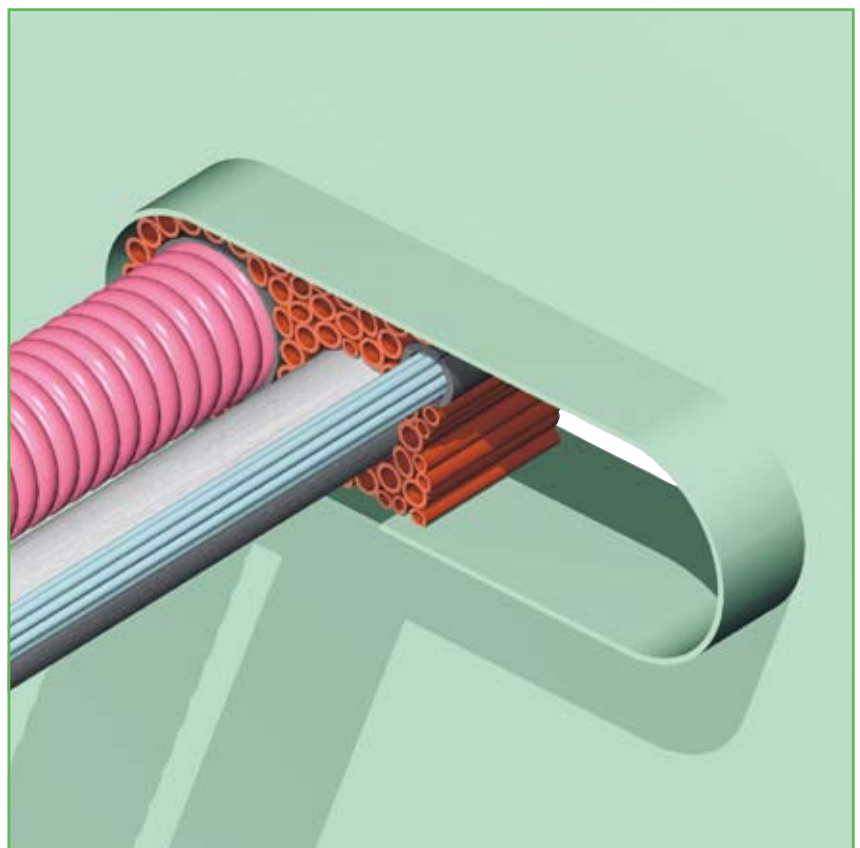


## NOFIRNO®/MULTI-ALL-MIX® CABLE/ PIPE TRANSIT SEALING SYSTEM

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



6) Open spaces in the conduit are afterwards filled with NOFIRNO® filler sleeves type 27/19 and 18/12. The ratio 27/19 to 18/12 should be about 2:1. NOFIRNO® multi-filler sleeves can be used for filling the larger open spaces.

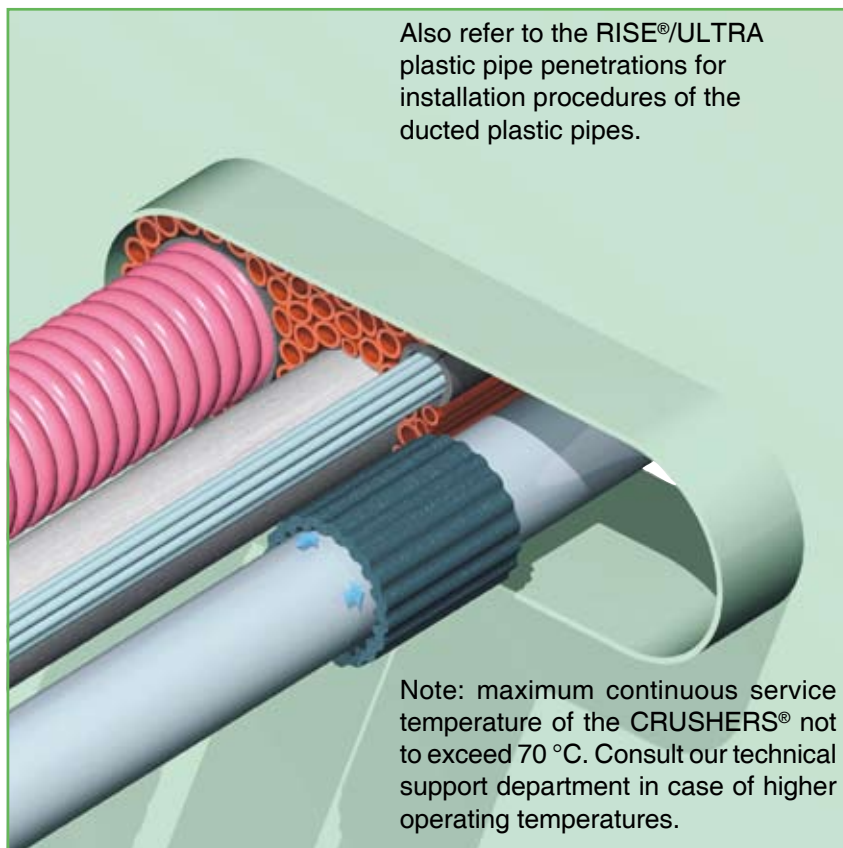




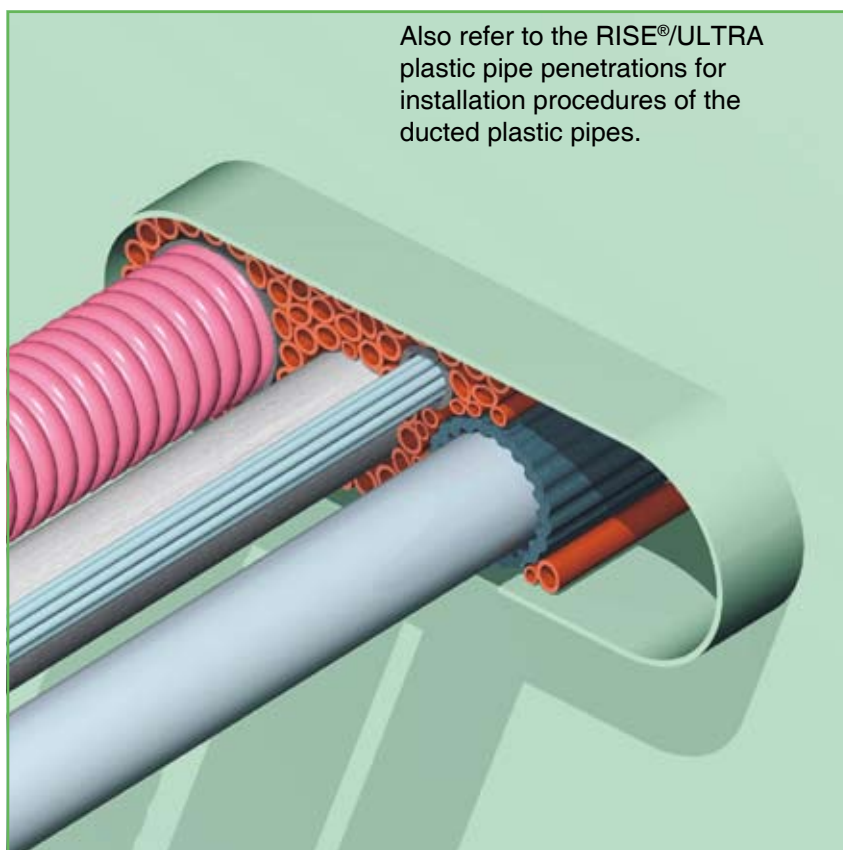


## NOFIRNO®/MULTI-ALL-MIX® CABLE/ PIPE TRANSIT SEALING SYSTEM

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.



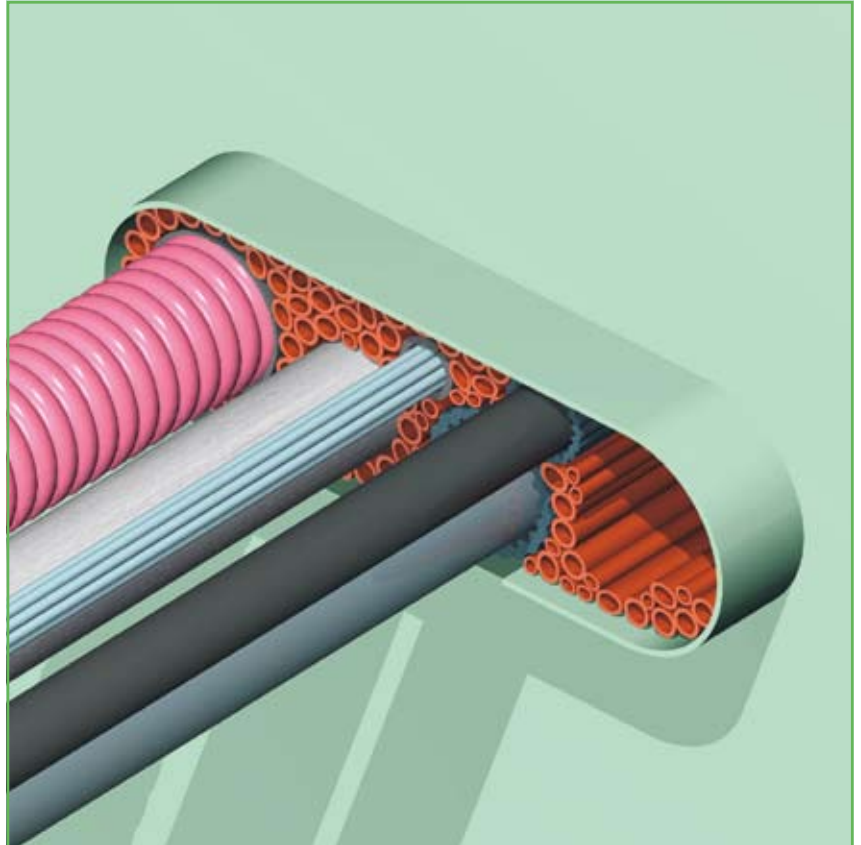
8) Push the insert/filler sleeves and the crusher into the conduit in such a way as to leave about 20 mm free space at both sides of the transit. This space is needed to apply the NOFIRNO® sealant at a later stage.



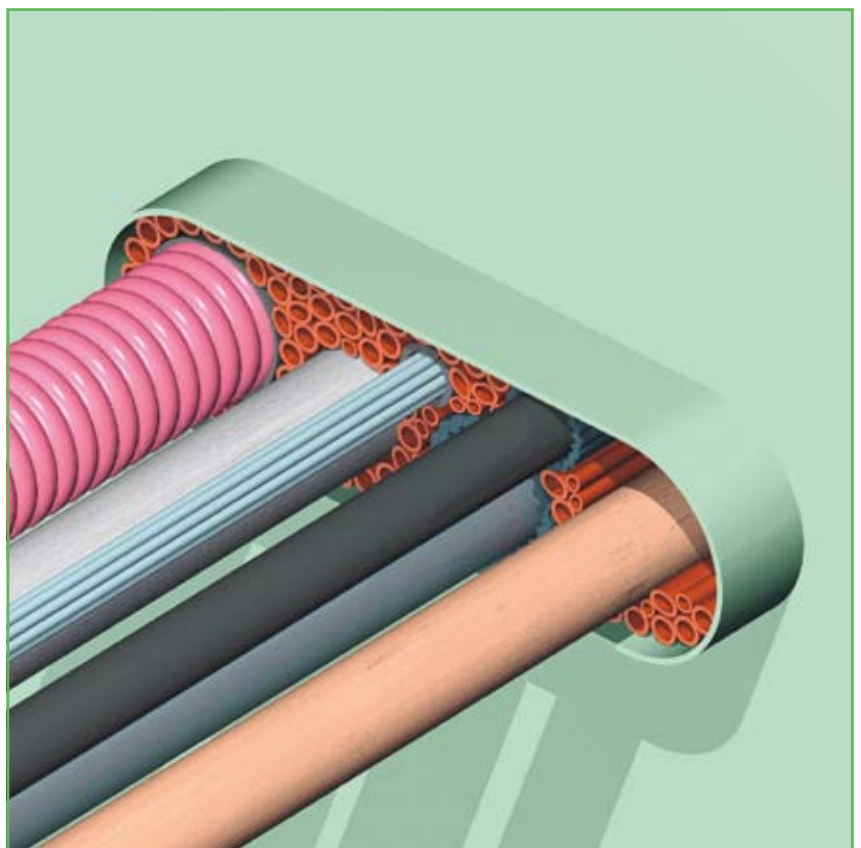
## NOFIRNO®/MULTI-ALL-MIX® CABLE/ PIPE TRANSIT SEALING SYSTEM

9) The system also allows for various types of plastic pipes and lines with can be regarded as plastic pipes (for instance multi-beverage lines).

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



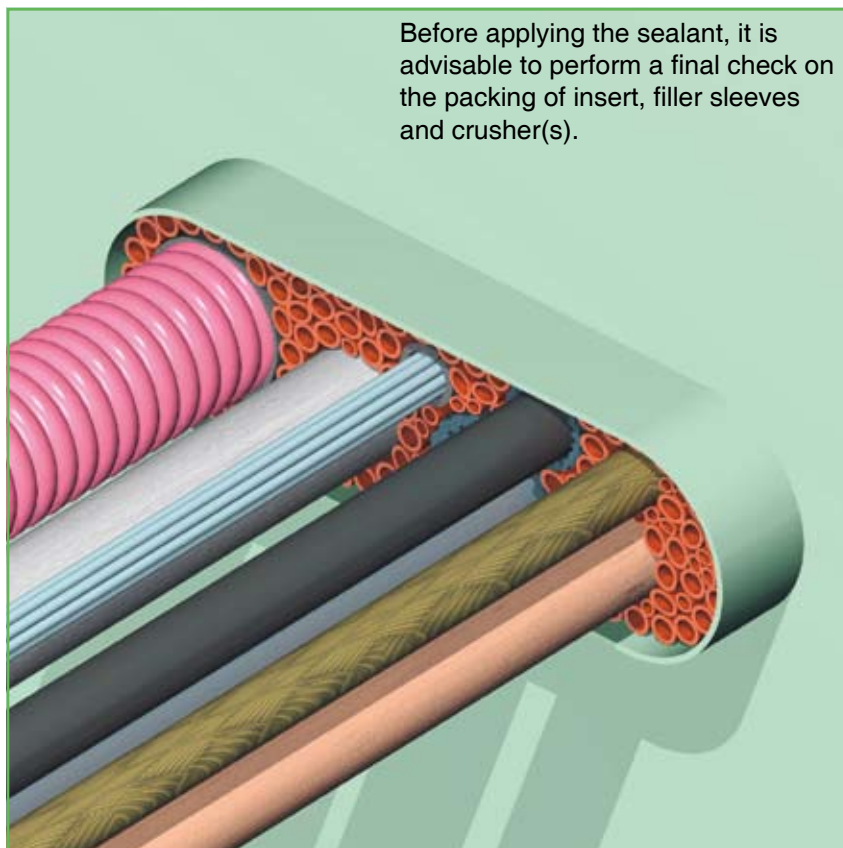
10) Copper/CuNi pipes can also be ducted through the multi-all-mix penetration. Separation of the metallic pipes is provided by NOFIRNO® filler sleeves all around the ducted pipe(s). The minimum interspacing should be followed according to the specifications on the approved installation drawings.





## NOFIRNO®/MULTI-ALL-MIX® CABLE/ PIPE TRANSIT SEALING SYSTEM

11) GRP pipes are also allowed. Separation of the GRP pipes is provided by NOFIRNO® filler sleeves all around the ducted pipe(s). The remaining open spaces in the transit are filled with NOFIRNO® single and multi-filler sleeves.



Before applying the sealant, it is advisable to perform a final check on the packing of insert, filler sleeves and crusher(s).



12) The whole set of crushers, insert and filler sleeves should tightly fit into the conduit. Clean and dry the inside of the conduit sleeve and the cables/pipes thoroughly, removing any dirt, rust or oil/lubricant residues before applying the sealant.



People with sensitive skin should use gloves when working with NOFIRNO®.

Please refer to the Safety Data Sheet for more information.

Note: due to the curing process, the sealant cannot be applied on hot surfaces. Maximum temperature is 60 °C (140 °F).





## NOFIRNO®/MULTI-ALL-MIX® CABLE/ PIPE TRANSIT SEALING SYSTEM

13) 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.



14) 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 soap water!



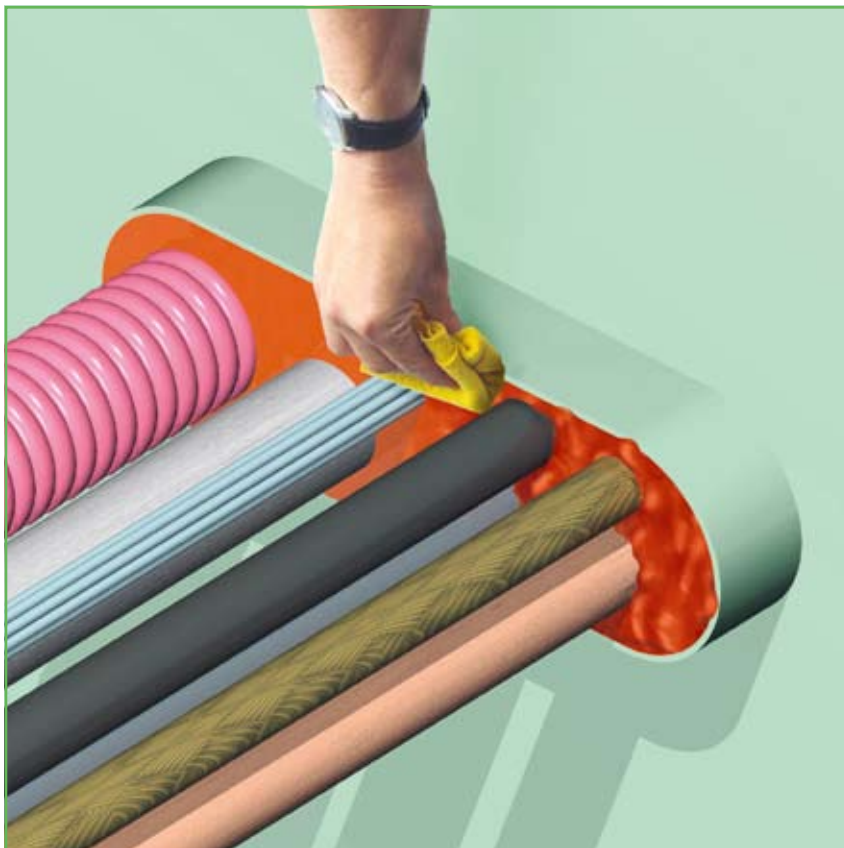




## NOFIRNO®/MULTI-ALL-MIX® CABLE/ PIPE TRANSIT SEALING SYSTEM

15) The cloth is then used to press down the sealant layer.

People with sensitive skin should use gloves when working with NOFIRNO®. Please refer to the Safety Data Sheet for more information.



16) The surface can be smoothed by hand. Just wet the hands thoroughly with soap and water. No dirty hands when working with NOFIRNO® and a very neat surface is the result.



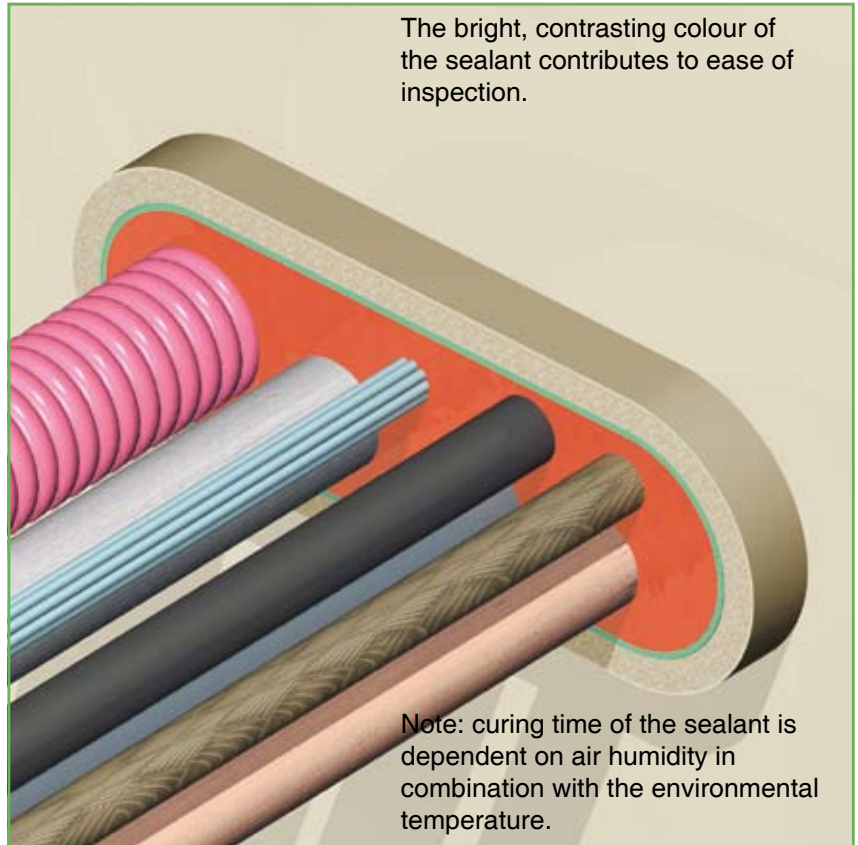
People with sensitive skin should use gloves when working with NOFIRNO®.

Please refer to the Safety Data Sheet for more information.

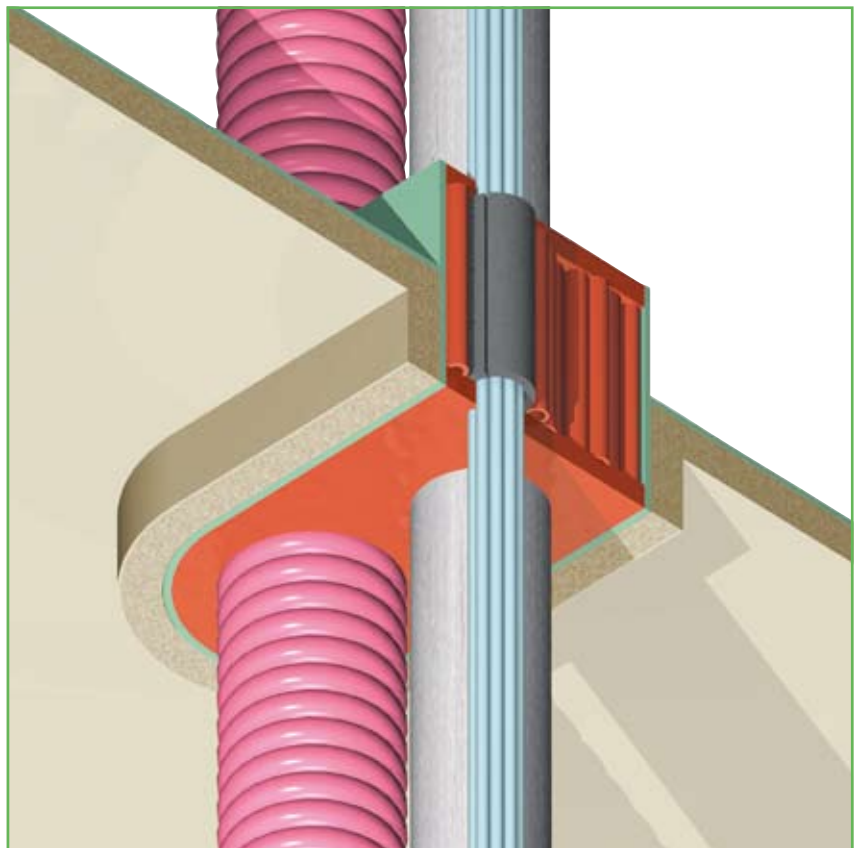


## NOFIRNO®/MULTI-ALL-MIX® CABLE/ PIPE TRANSIT SEALING SYSTEM

17) For A-class penetrations, the conduit sleeve/frame needs to be insulated only at the insulated side of the bulkhead or at the lower side of the deck.  
No extra insulation needed in front of the penetration for cables and plastic pipes.



18) The optimized viscosity and the superb adhesion properties of the NOFIRNO® sealant make applying the sealant overhead an easy matter. NOFIRNO® sealant does not sag and will not drip off.





## NOFIRNO®/MULTI-ALL-MIX® CABLE/ PIPE TRANSIT SEALING SYSTEM

Adding extra cables or pipes 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.

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



Place a RISE® sleeve around the newly ducted cable or a RISE®/ULTRA crusher around the newly ducted plastic pipe. Push the insert sleeve/crusher into the conduit.

Fill the remaining space with NOFIRNO® filler sleeves. Refill the opening with sufficient NOFIRNO® sealant at both sides of the penetration.



People with sensitive skin should use gloves when working with NOFIRNO®.

Please refer to the Safety Data Sheet for more information.

Note: curing time of the sealant is dependent on air humidity in combination with the environmental temperature.











## RISE®/ULTRA - MULTI-PLASTIC/METALLIC PIPE TRANSIT SEALING SYSTEM

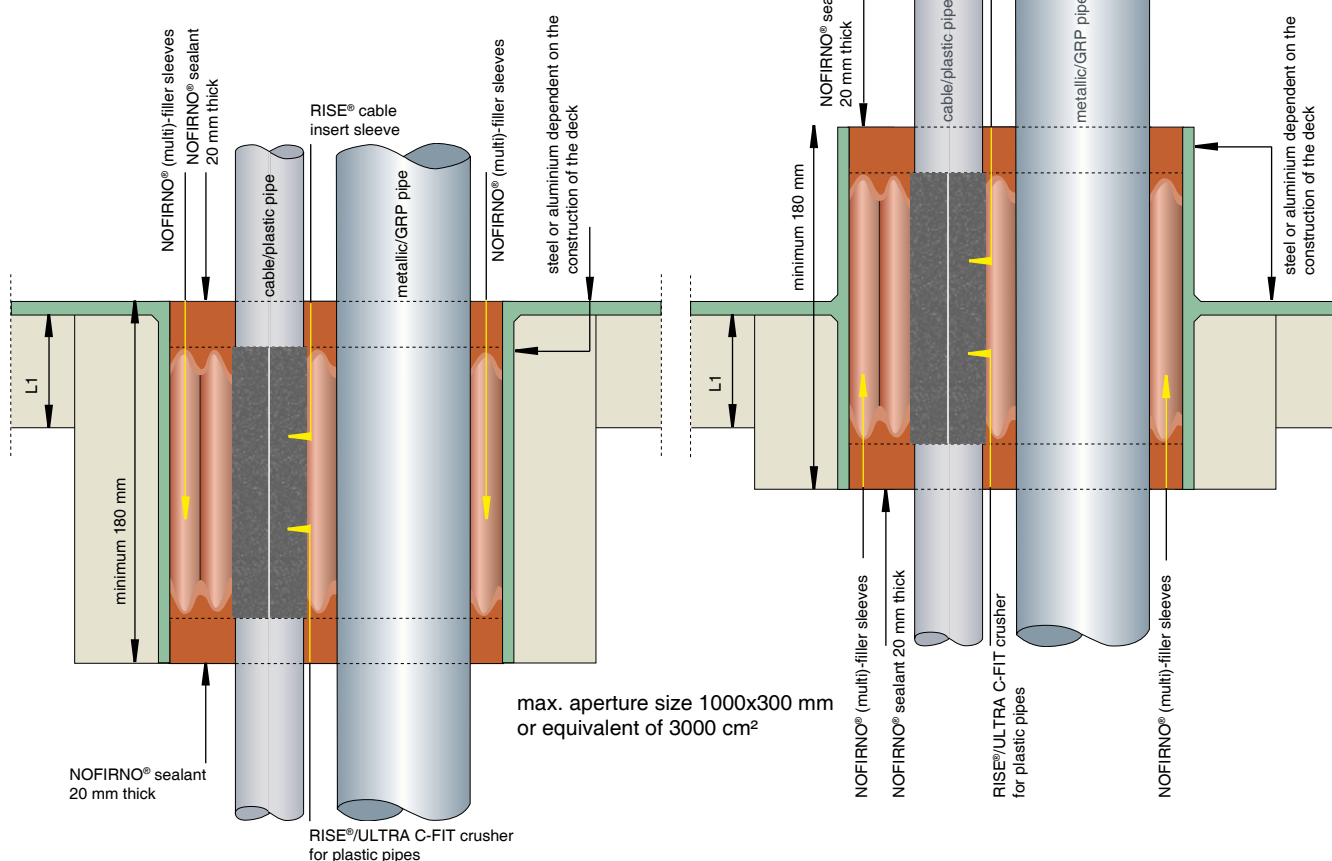
L1: A-60 approved deck insulation.

- APPROVED FOR STEEL/SS PIPES UP TO 168 MM OD
- APPROVED FOR COPPER/CuNi PIPES UP TO 108 MM OD
- APPROVED FOR PLASTIC PIPES UP TO 160 MM OD
- APPROVED FOR ALL TYPES OF CABLES INCL. LAN AND CLX
- APPROVED FOR CABLE SIZES UP TO 105 MM OD
- APPROVED FOR CABLE SETS OF MAX. 25 LAN CABLES 5-6 MM - MAX BUNDLE SIZE 35 MM

Bundling not allowed for watertight penetrations.

conduit sleeve/frame can be welded in non-symmetrically from totally below deck to totally above deck

**NO EXTRA INSULATION  
REQUIRED AT THE FRONT  
OF THE PENETRATION  
AND/OR IN BETWEEN THE  
CABLES OR PLASTIC PIPES**



conduit sleeve can be welded in or bolted to the construction. In case of bolting, a NOFIRNO® gasket has to be applied underneath the flange of the conduit sleeve.

ask for the MED certificate with the stamped and signed detailed installation drawings

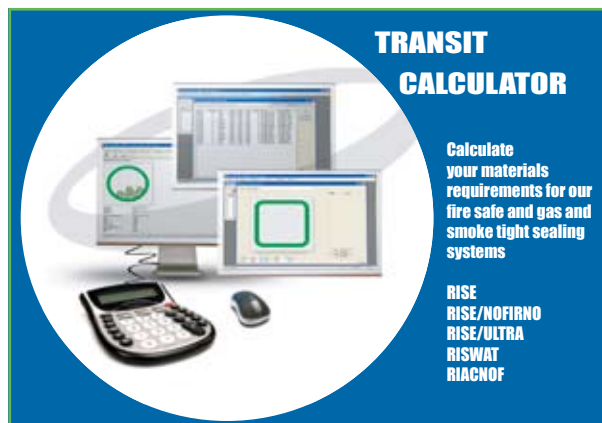
In case RISE®/ULTRA crushers are not available for conduit sleeves applied in the field, a CRUSHER® can be made to size by wrapping RISE®/ULTRA sheets around the ducted pipe.

**Note:** check the adhesive properties of the sealant with the ducted plastic pipe(s) before application in watertight penetrations.

Specifications for A-class according to EC (MED) certificate MED-B-5068 issued by Det Norske Veritas. Drawings N0015E, N0016E and N0017E

**A0-A60 MULTI-  
ALL-MIX® PIPE/  
CABLE TRANSIT**

## NOFIRNO®, RIACNOF®, RISE® AND RISE®/ULTRA CABLE/PIPE TRANSIT SEALING SYSTEM



Free material calculation software. Download at our web-site <http://www.beele.com>.

After entering 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 RISWAT® 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 entering 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.

The material list of a transit shows the options which can be entered to make a calculation of the materials needed:

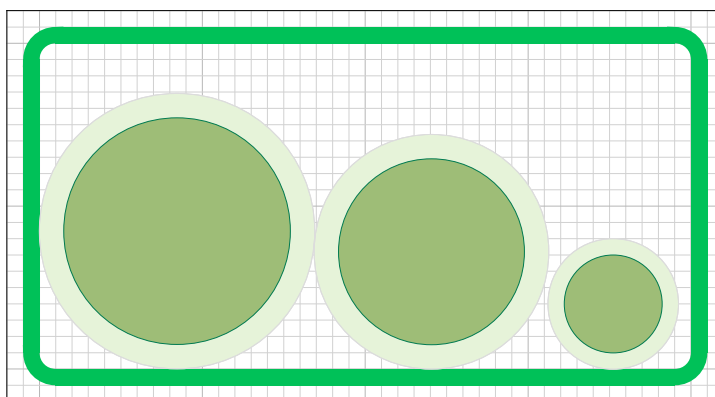
- 1) transit dimensions.
- 2) the depth of a transit is automatically selected based on the entered data at class (A, B, H-class or watertight) but can be changed. In this case, a warning appears that this is a deviation of the certification.
- 3) selection of the sealing system (cable, pipe).
- 4) the quantity of duplicate transits in the project.
- 5) the filling rate is calculated on the basis of the entered cable amounts and dimensions
- 6) percentage of spare for later extensions
- 7) where appropriate, a selection can be made for EMC rated penetrations
- 8) type of sealant can be selected (FIWA® or NOFIRNO® for fire rated transits and DRIFIL®, FIWA® or NOFIRNO® for watertight transits)

The material list displays the selected system, cable (or pipe) specifications, and the sealing material requirements. All transits in a project can be selected to create a similar list for all materials for the whole project.

**Program-version of Transit-calculator: 3.9.2 (10 Dec 2009)**

*Always use the most recent version when creating a new material-list!*

**Material list for transit 'PDsteel'**



Created on:	20-1-2010 13:55:32
Created by:	Jansen
Last modified:	20-1-2010 13:55:32
Modified by:	Jansen

<b>Transit specifications:</b>	<b>(All dimensions in mm)</b>
Width:	400,00
Height:	200,00
Corner radius:	10,00
Depth:	250,00
Transit type:	Multi-pipe (metal)
Transit used in this project:	5 times
Class:	H-class
EMC:	None
Sealant:	20mm (both sides)

**Check the Type Approval Certificates for limitations in sizes !**

**Material specifications:**

Type of filler sleeves:	standard
NOFIRNO sealant:	cartridges 310 ml

**Pipe specifications:**

Pipes (OD)	Amount
60,00	1
114,00	1
139,00	1

Total amount of pipes: 3

**NOFIRNO materials needed:**

Filler sleeves	Amount	Length
18/12	32	210,00 mm
27/19	68	210,00 mm

**NOFIRNO sealant**

(incl. overfill)	3244 ml (11 cartridges)
------------------	-------------------------

## BEELE - RESEARCH & DEVELOPMENT PRODUCTS FOR SPECIAL APPLICATIONS

### NOFIRNO®

#### NEW TECHNOLOGY

- Approved for harshest fire ratings for pipe penetrations (A, H and Jet Fire class).
- Allows substantial movement of the ducted pipe within the conduit.
- High pressure ratings - designed for gas and/or watertight penetrations.
- Prevents corrosion inside the penetration.
- Longest service life and best Total Cost of Ownership on the market.
- NOFIRNO® rubber sleeves and sealant will remain stable and not be consumed by fire.
- **Breakthrough - MULTI-ALL-MIX SYSTEM®**
- Approved for any combination of cable and/or metallic, GRP or plastic pipes!



### NOFIRNO®

#### NEW TECHNOLOGY

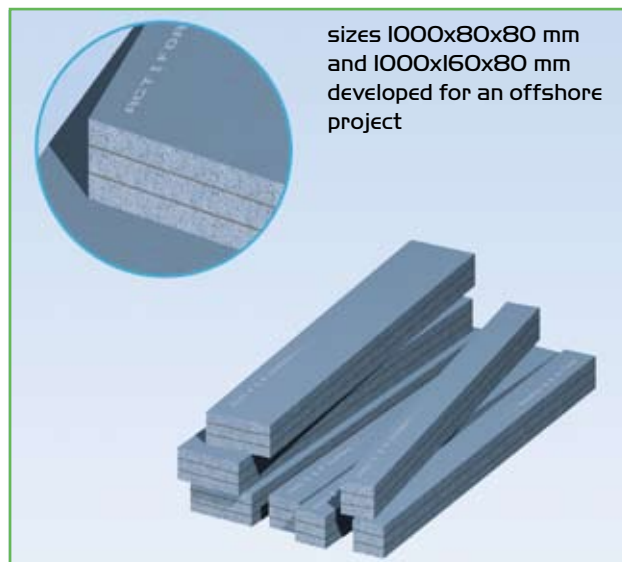
- Gaskets and rubber sheets for applications in which the transits, coamings or conduit sleeves are bolted to the partition.
- Successfully tested for A-class RISE®, RIACNOF® and NOFIRNO® sealing systems for multi-cable and pipe transits bolted to the partitions.
- NOFIRNO® rubber will remain stable and not be consumed by fire.
- NOFIRNO® rubber has excellent resistance against UV, Ozone and weathering.
- Wide temperature range: -50 °C up to +180 °C.
- **Proven - harshest fire exposure**
- Special sizes of gaskets upon request.
- Products made of NOFIRNO® rubber upon request.

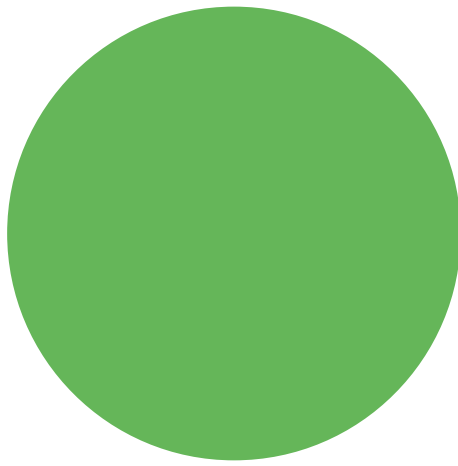


### ACTIFOAM®/ULTRA

#### NEWEST TECHNOLOGY

- Sealing of gaps and openings in constructions against the ingress of moisture and to avoid flame spread.
- ACTIFOAM® has high thermal insulation values due to the close cellular structure.
- RISE®/ULTRA - adhesive properties under fire load.
- **Breakthrough - ACTIFOAM® sheets can be layered with RISE/ULTRA sheets.**
- The sandwich construction acts as a "bridge bearing" enabling the carrying of very high loads.
- Highest fire ratings achievable due to the unique combination of the two rubber grades.
- Successfully subjected to two hour hydrocarbon fire.





***WE CARE***

**BEELE ENGINEERING:  
A COMPANY DEDICATED TO SAFETY  
FOR OVER 35 YEARS**



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**Tel. +31 543 461629 - Fax +31 543 461786 - E-mail: [info@beele.com](mailto:info@beele.com)**  
**Websites: <http://www.beele.com> (and/or [www.actifoam.com](http://www.actifoam.com), [www.firsto.com](http://www.firsto.com), [www.nofirno.com](http://www.nofirno.com),  
[www.rise-systems.com](http://www.rise-systems.com), [www.rise-nofirno.com](http://www.rise-nofirno.com), [www.riswat.com](http://www.riswat.com) and [www.slipsil.com](http://www.slipsil.com))**