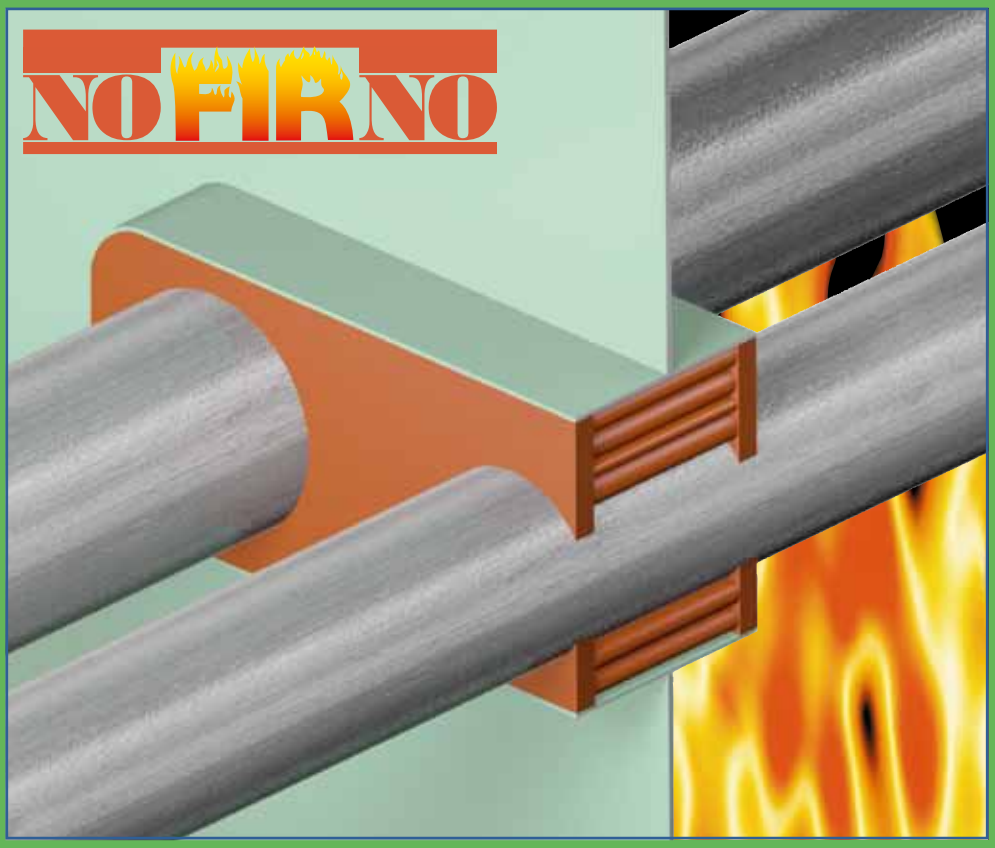
INSTALLATION INSTRUCTIONS NOFIRNO® SEALING SYSTEM FOR MULTI-PIPE TRANSITS



TESTED TO IMO RESOLUTION A.754(18); FIRE CLASS A0-A60 EC (MED) CERTIFICATE MED-B-4908 ISSUED BY DNV

WE CARE

NOFIRNO

PLEASE ALSO REFER TO THE STAMPED INSTALLATION DRAWINGS ATTACHED TO OUR MED AND TYPE APPROVAL CERTIFICATES

brochure code : nofirno pipe/installation/en/mar

WE CARE

NOFIRNO® (MULTI-) PIPE TRANSIT SEALING SYSTEM

NOFIRNO® filler sleeves

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

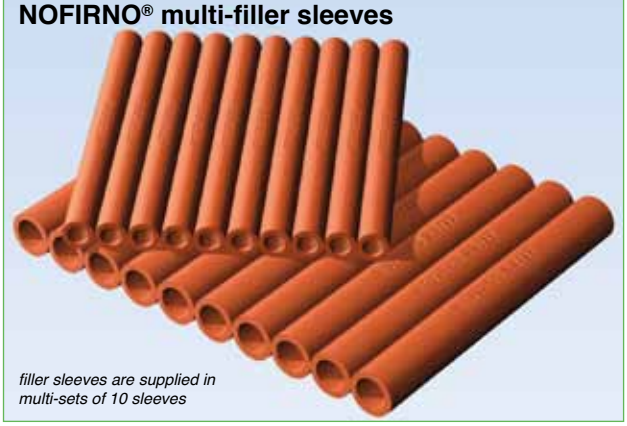
filler sleeves are supplied non-split

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/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

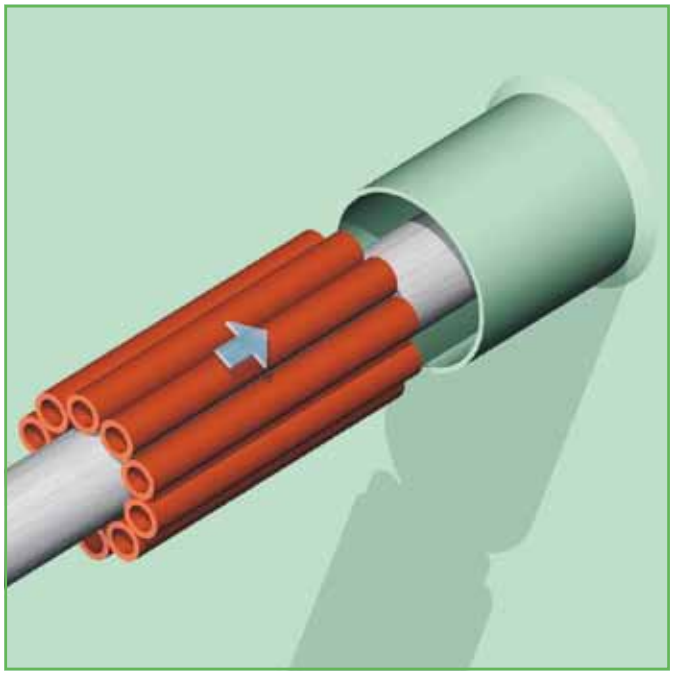
article number 50.0102

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.

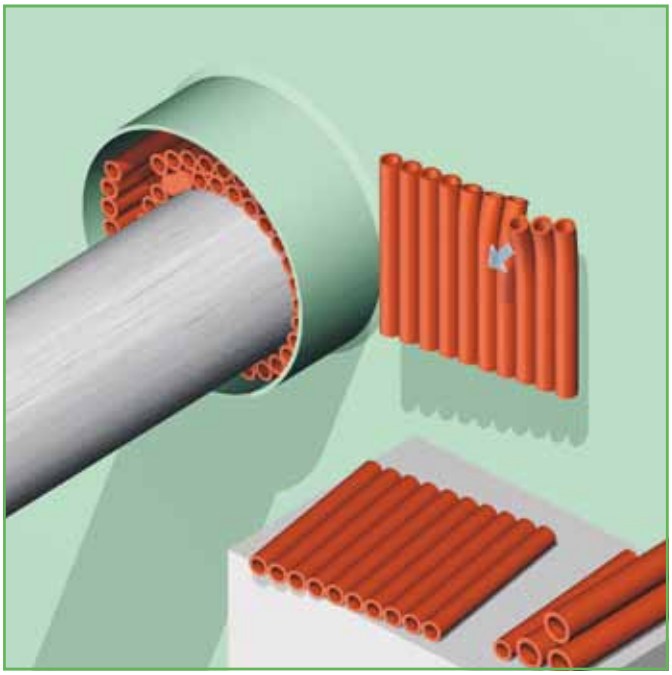
Shelf life is 12 months when stored properly. Since we have no control on storage, we can only guarantee for 6 months.

WE CARE

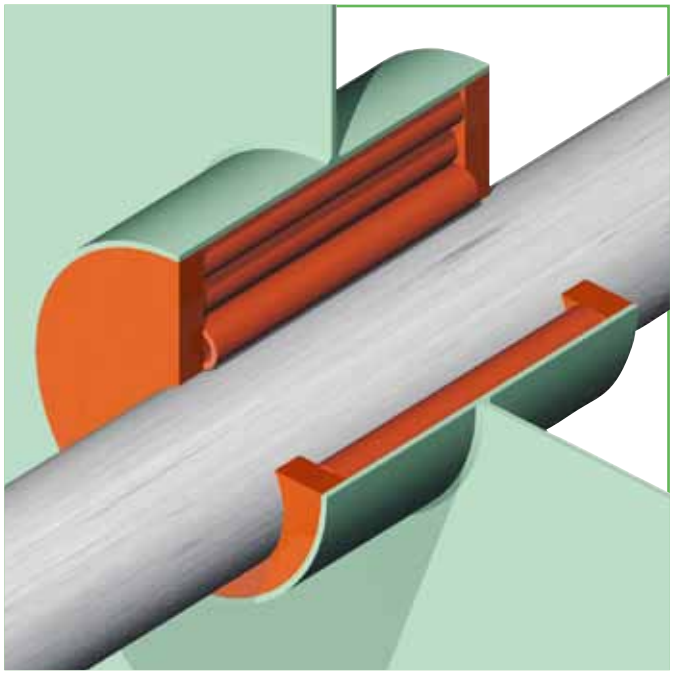
NOFIRNO® MULTI-METALLIC PIPE TRANSIT SEALING SYSTEM



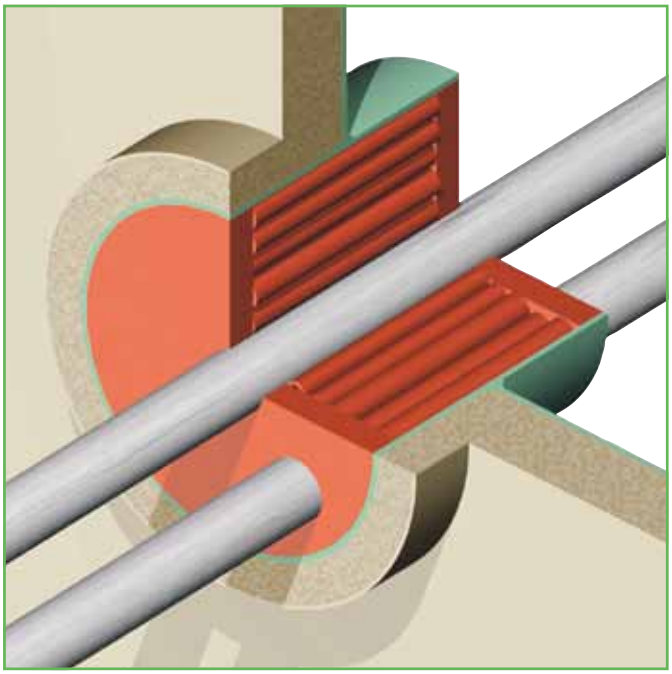
Several options are available with the NOFIRNO® sealing system. The most simple and cost effective solution is a fitting multi-filler sleeve applied in a conduit sleeve with an ID creating a tight fit. NOFIRNO® sealant with a thickness of minimum 20 mm to be applied at both sides.



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.

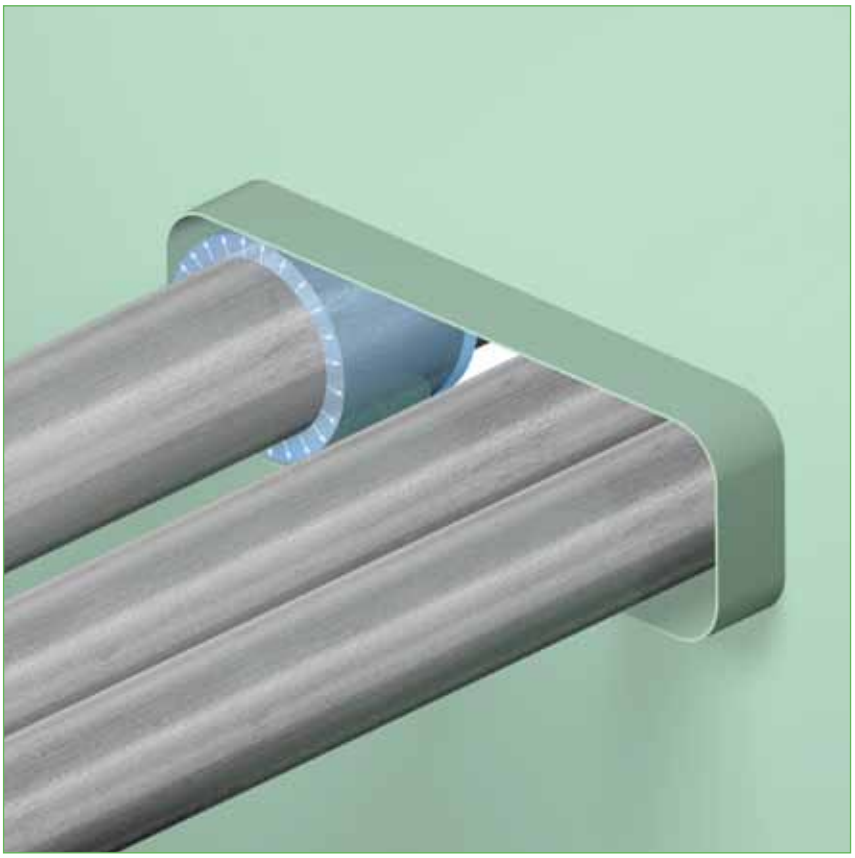


The NOFIRNO® sealing system is also approved for multi-pipe penetrations of steel, copper and GRP pipes to a transit size of 1000x300 mm with a depth of 180 mm only. Minimum separation of the pipes to be regarded. NOFIRNO® sealant with a thickness of minimum 20 mm to be applied at both sides.

NOFIRNO® MULTI-METALLIC PIPE TRANSIT SEALING SYSTEM

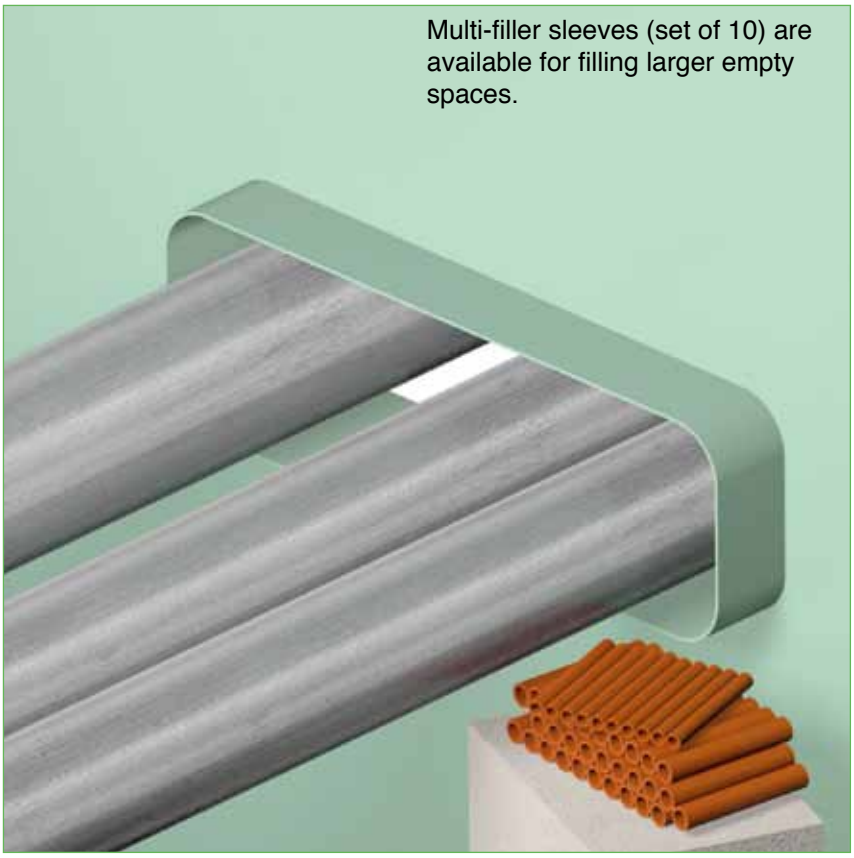
1) The metallic pipes can be passed through the conduit sleeve in any position, provided there is enough space between the conduit frame and between the ducted pipes (see next at 2).

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



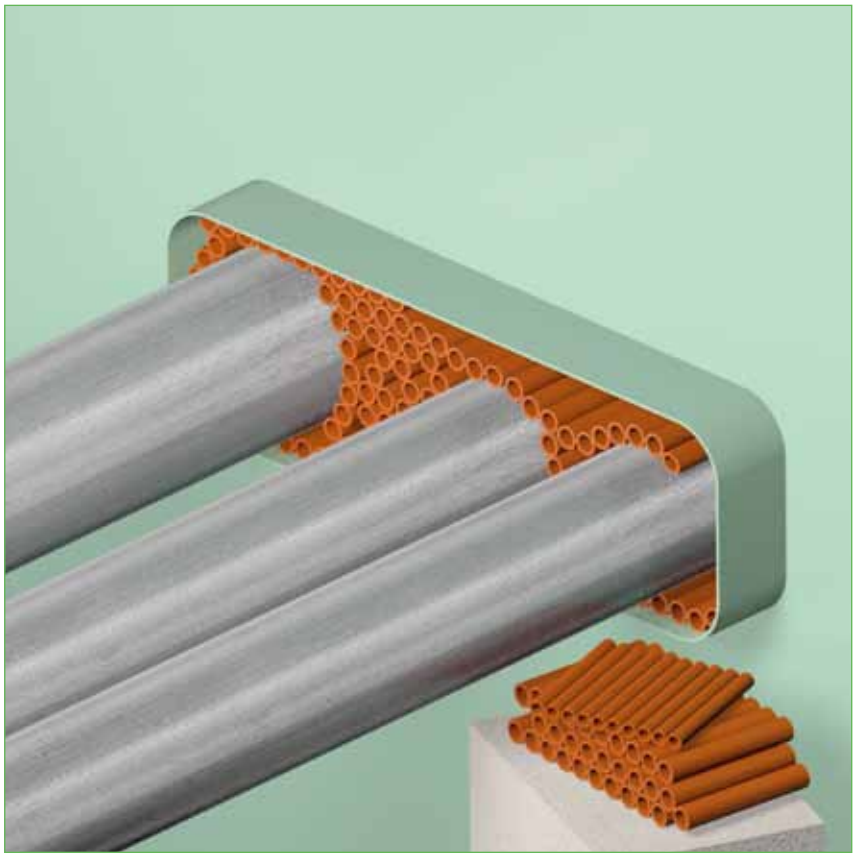
NOFIRNO® MULTI-METALLIC PIPE TRANSIT SEALING SYSTEM

3) The open free space in the conduit frame has to be 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 filling ratio 18/12 to 27/19 should be maximum 1:2.



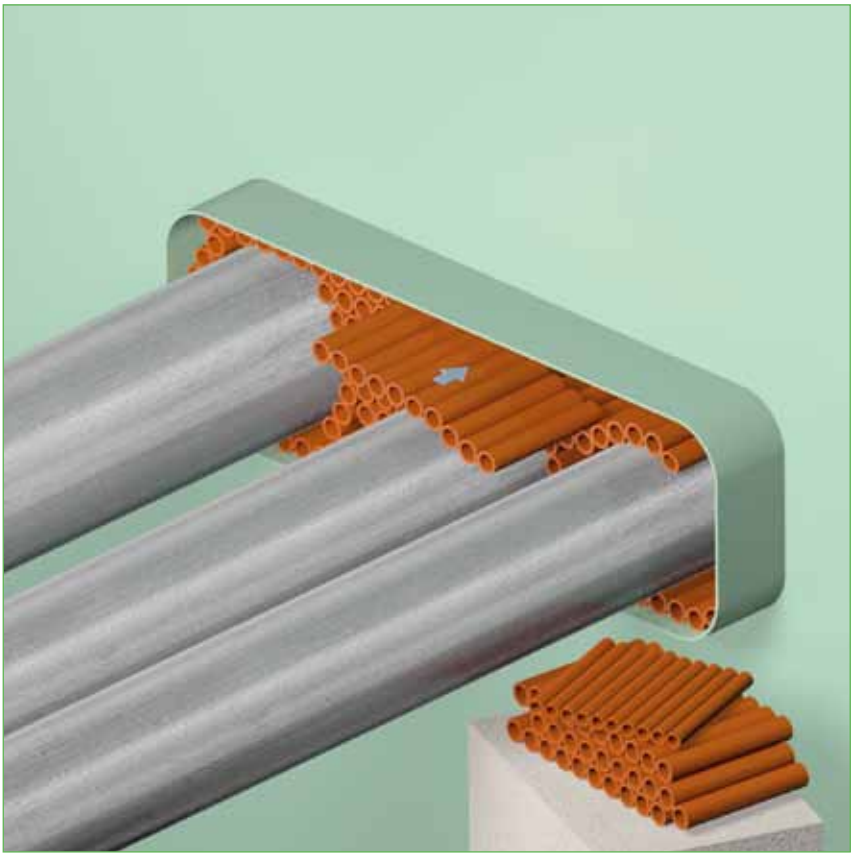
Multi-filler sleeves (set of 10) are available for filling larger empty spaces.

4) Before starting the installation work the ducted pipes and the wall of the conduit frame should be cleaned. Dirt, rust and oil residues should be removed.
Start filling the larger open spaces in the conduit frame by inserting the sets of multi-filler sleeves.



NOFIRNO® MULTI-METALLIC PIPE TRANSIT SEALING SYSTEM

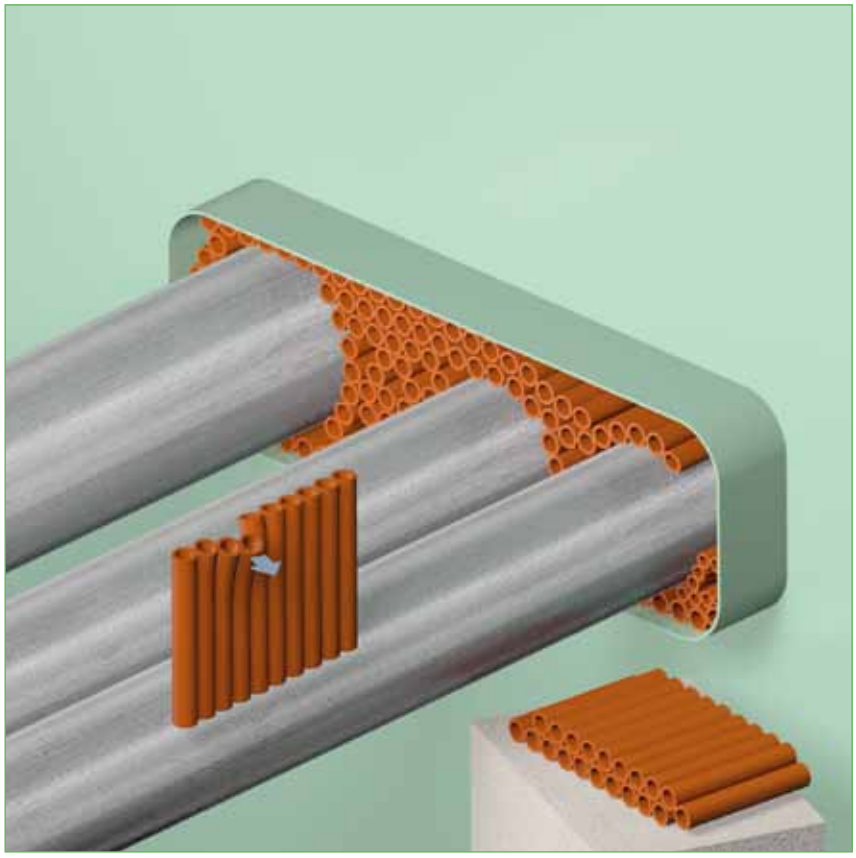
5) The installation of the NOFIRNO® sealing system is extremely fast when using the NOFIRNO® multi-filler sleeves. Besides, it makes it less complicated than using the single filler sleeves.



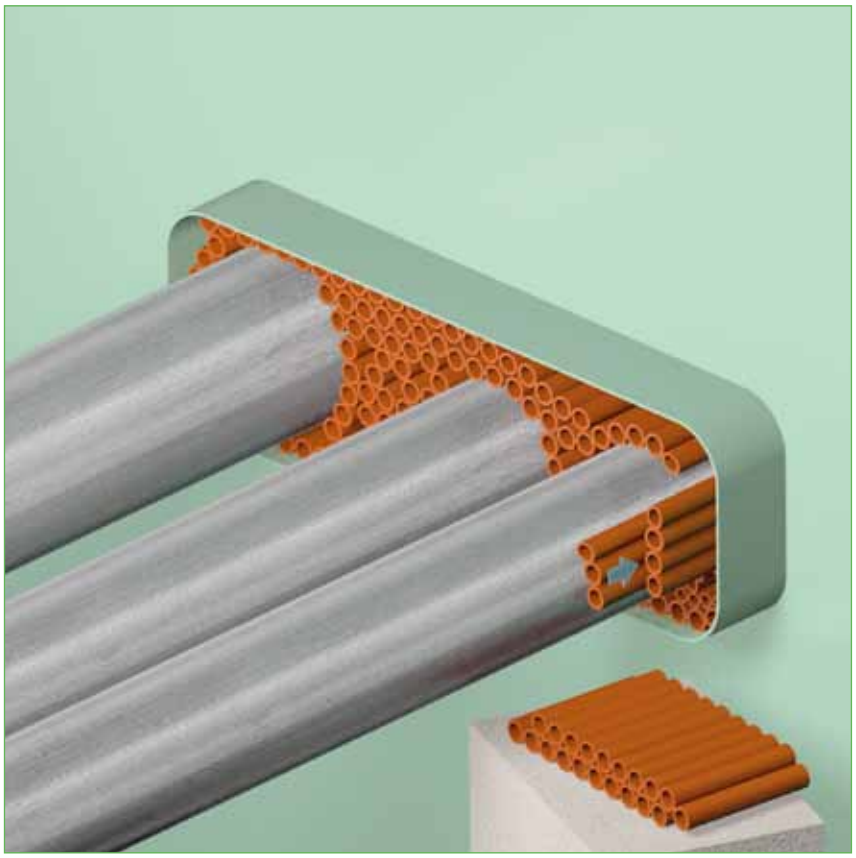
6) Due to the flexibility of the set of filler sleeves, the sets can be easily rolled up and then pushed into the narrow spaces.

NOFIRNO® MULTI-METALLIC PIPE TRANSIT SEALING SYSTEM

7) The smaller openings are now filled with parts of the sets of multi-filler sleeves. To tear off sleeves from the multi-set, the procedure is to do this backwards/ forwards and not sidewards. This is because of the strength of the intermediate rubber parts.



8) These parts of the sets of multi-filler sleeves are then pushed in the fitting remaining openings in the conduit frame.



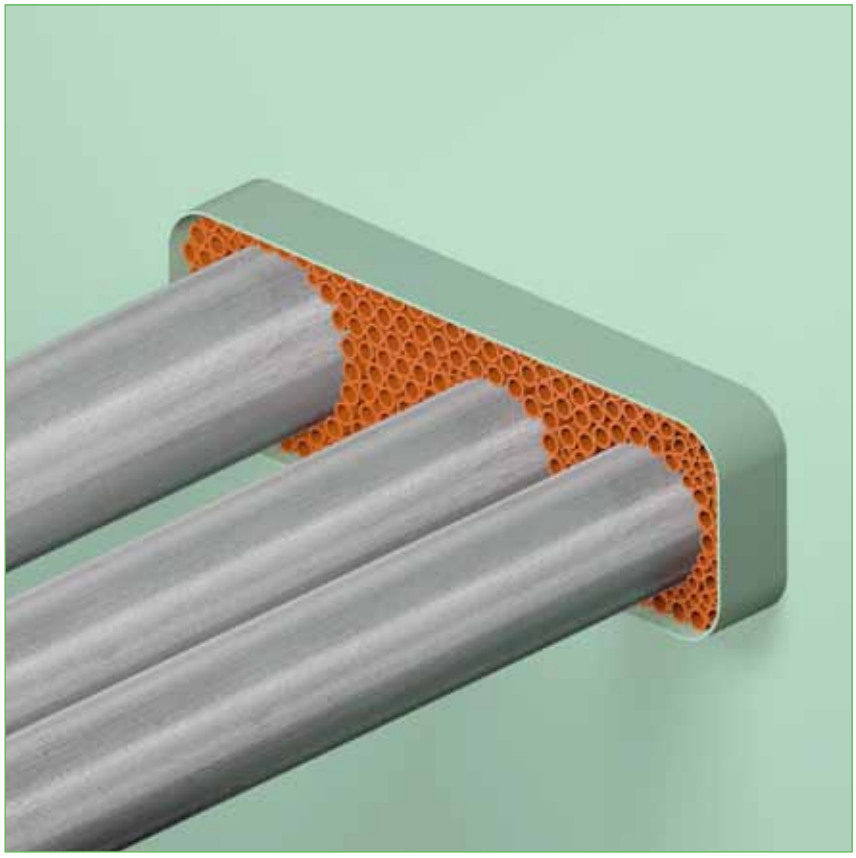
NOFIRNO® MULTI-METALLIC PIPE TRANSIT SEALING SYSTEM

9) Single filler sleeves are used to fill the remaining small spaces in the set of fillers. Filling these spaces is of utmost importance to obtain a very tight fit of the filling inside the conduit frame.

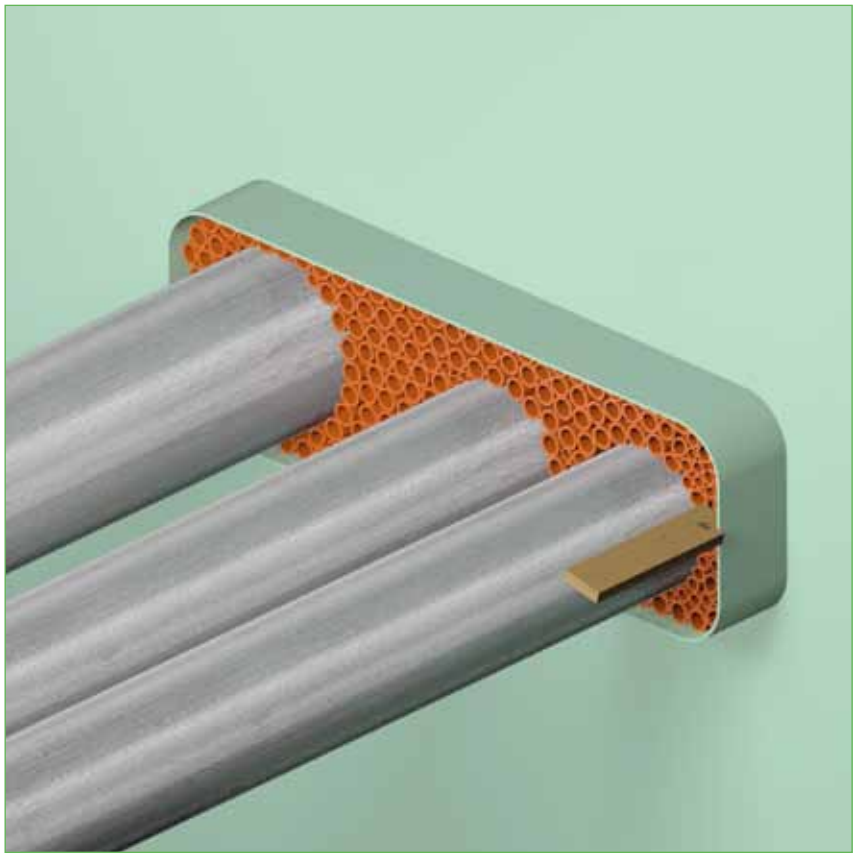
10) The single filler sleeves are inserted in the open spaces. At this stage they can generally be pushed in by hand. At the final stage to create a very tight fit of the whole set of fillers, the sleeves can be inserted with the help of a flat nose pliers.

NOFIRNO® MULTI-METALLIC PIPE TRANSIT SEALING SYSTEM

11) A tight fit of the filling with filler sleeves is essential for the overall mechanical stability and the ultimate tightness ratings.



12) Push the filler sleeves into the conduit frame 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.

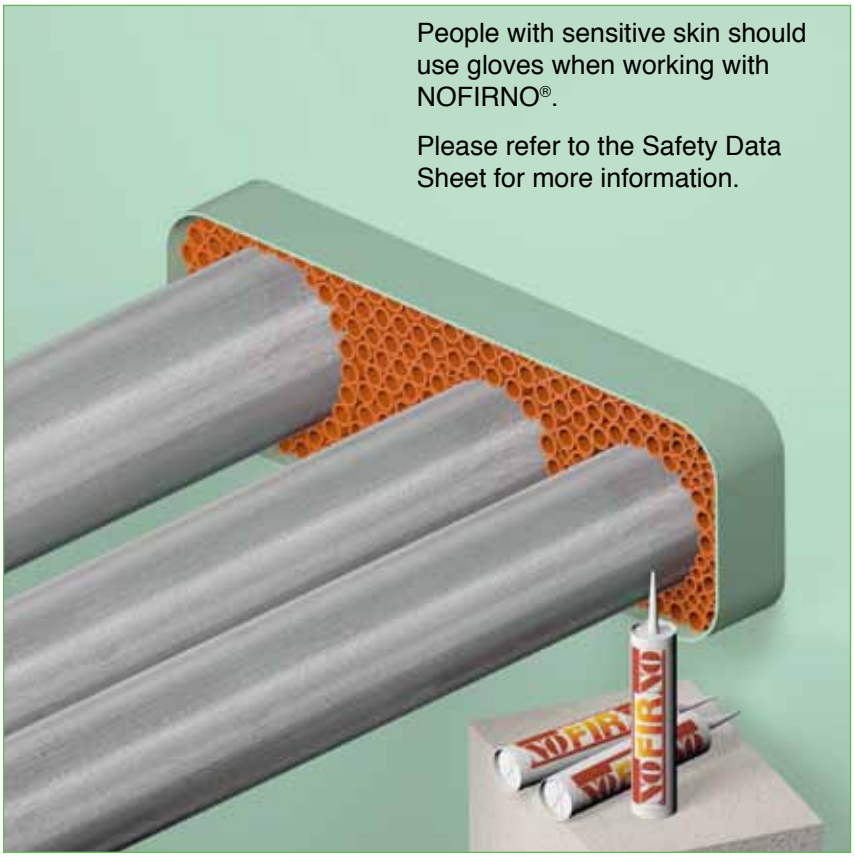


NOFIRNO® MULTI-METALLIC PIPE TRANSIT SEALING SYSTEM

13) The surface structure of the rubber of the sleeves makes it easy to pull NOFIRNO® filler sleeves back which are too deep inserted.

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

14) Before applying the sealant, it is advisable to perform a final check on the packing of filler sleeves. A 20 mm thick layer of NOFIRNO® sealant is applied at each side of the conduit. In case the application of the sealant is in a later stage, clean and dry the conduit opening as well as the pipe thoroughly, and remove any dirt, rust or oil residues before applying the sealant.

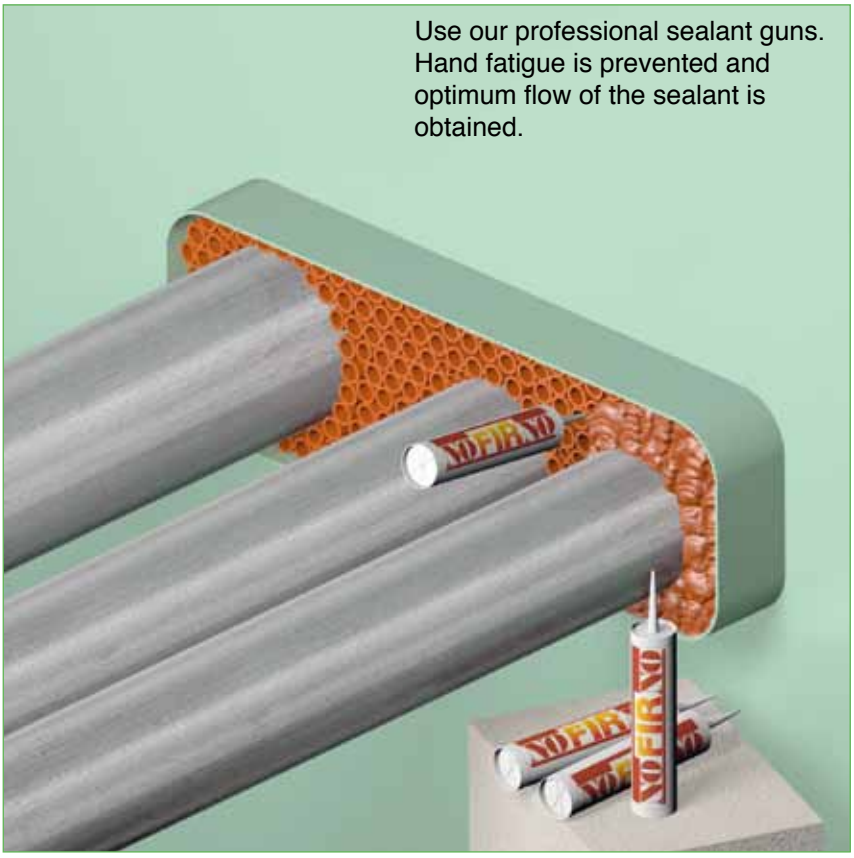


People with sensitive skin should use gloves when working with NOFIRNO®.

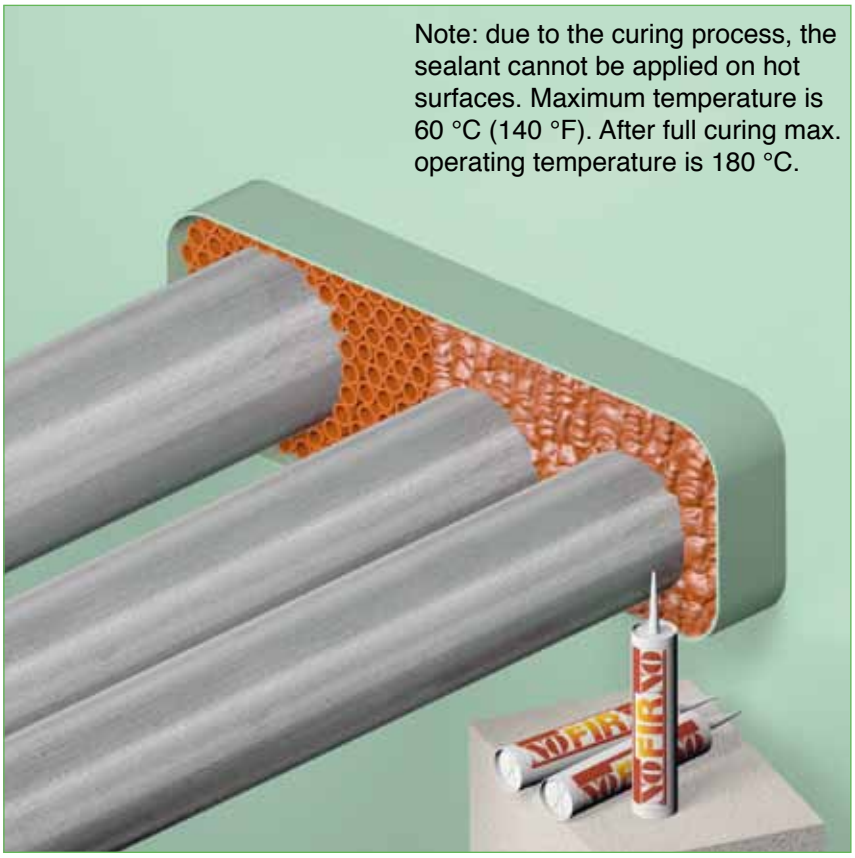
Please refer to the Safety Data Sheet for more information.

NOFIRNO® MULTI-METALLIC PIPE TRANSIT SEALING SYSTEM

15) When working on larger conduits, the sealant should be applied in two or more parts. Due to the fast curing of the top layer of the sealant, the amount of sealant should not be more than can be finished within 10 minutes.



16) 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.



NOFIRNO® MULTI-METALLIC PIPE TRANSIT SEALING SYSTEM

17) 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!

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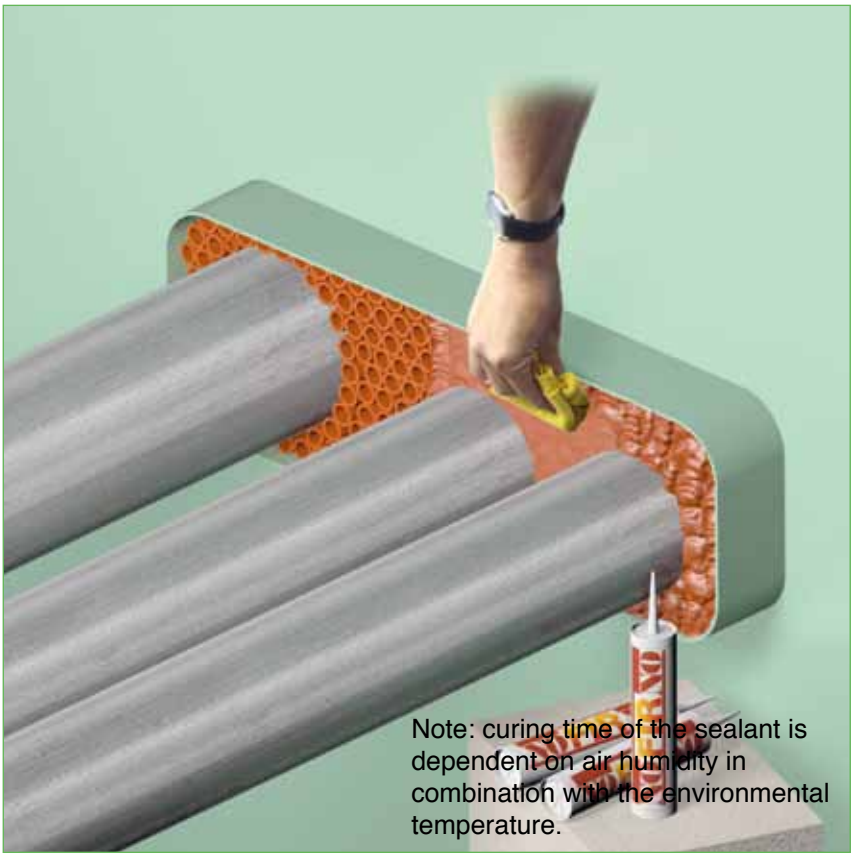
Please refer to the Safety Data Sheet for more information.

18) The cloth is then used to press down the sealant layer. Pressing down the NOFIRNO® sealant in a stiff way is absolutely vital for the mechanical stability of the sealing system.

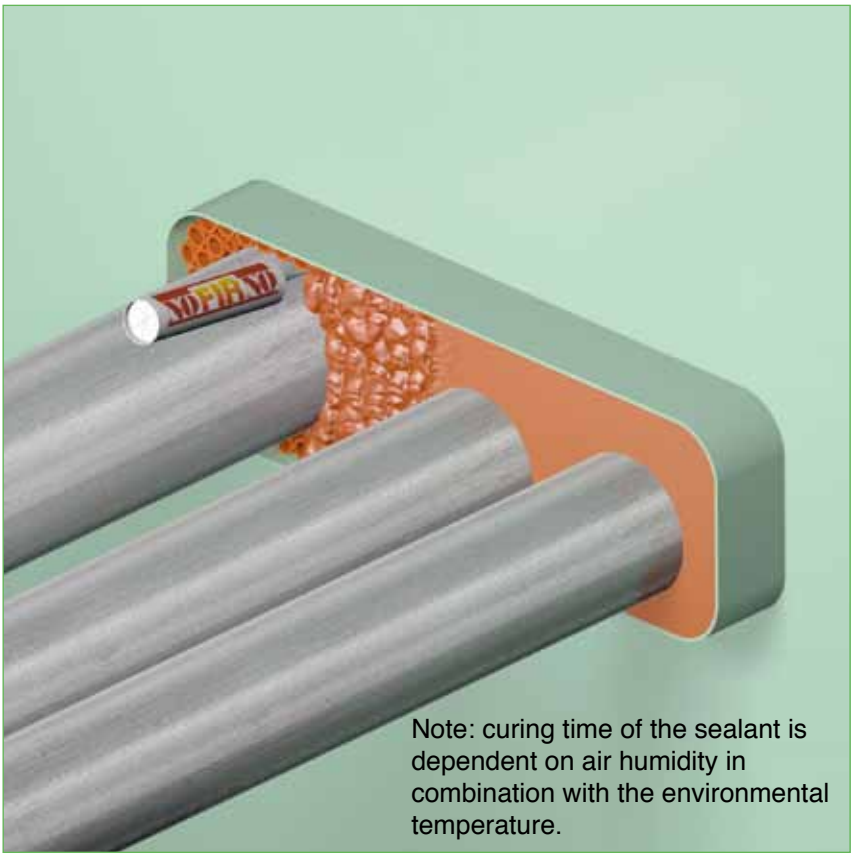


Note: curing time of the sealant is dependent on air humidity in combination with the environmental temperature.

NOFIRNO® MULTI-METALLIC PIPE TRANSIT SEALING SYSTEM

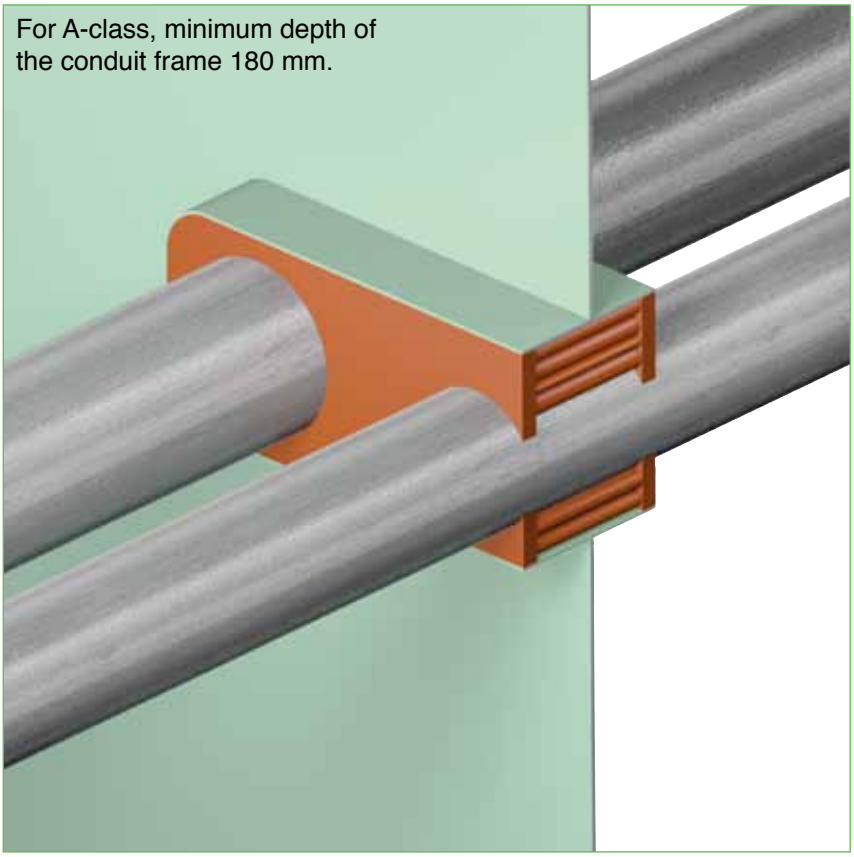
19) The surface can be smoothed by hand. Just wet the hands thoroughly with soap and water. No dirty hands when working with NOFIRNO® and a very neat surface is the result. Prevent soap water to be applied on the sealant surface on which the next sealant will be applied. The adhesion between both layers will then be minimized.

20) Then applying the sealant can be continued for the rest of the transit. Smoothing and finishing in the same way as for the first part of the sealant layer.



NOFIRNO® MULTI-METALLIC PIPE TRANSIT SEALING SYSTEM

21) For A-class conduits, the minimum depth of conduit frame is 180 mm.
For optimum fire safety, especially in the case of larger ducted pipes, we advise to use conduit frames with a depth of 200 mm.
The adhesive strength in combination with the flexibility of the cured sealant layer, any CUI (corrosion under insulation) inside the transit is avoided.



22) For A-class partitions (which are insulated), the conduit frame needs to be insulated only at the insulated side of the bulkhead or at the lower side of the deck.
The ducted pipes have to be insulated according to the specifications on the certified drawings.