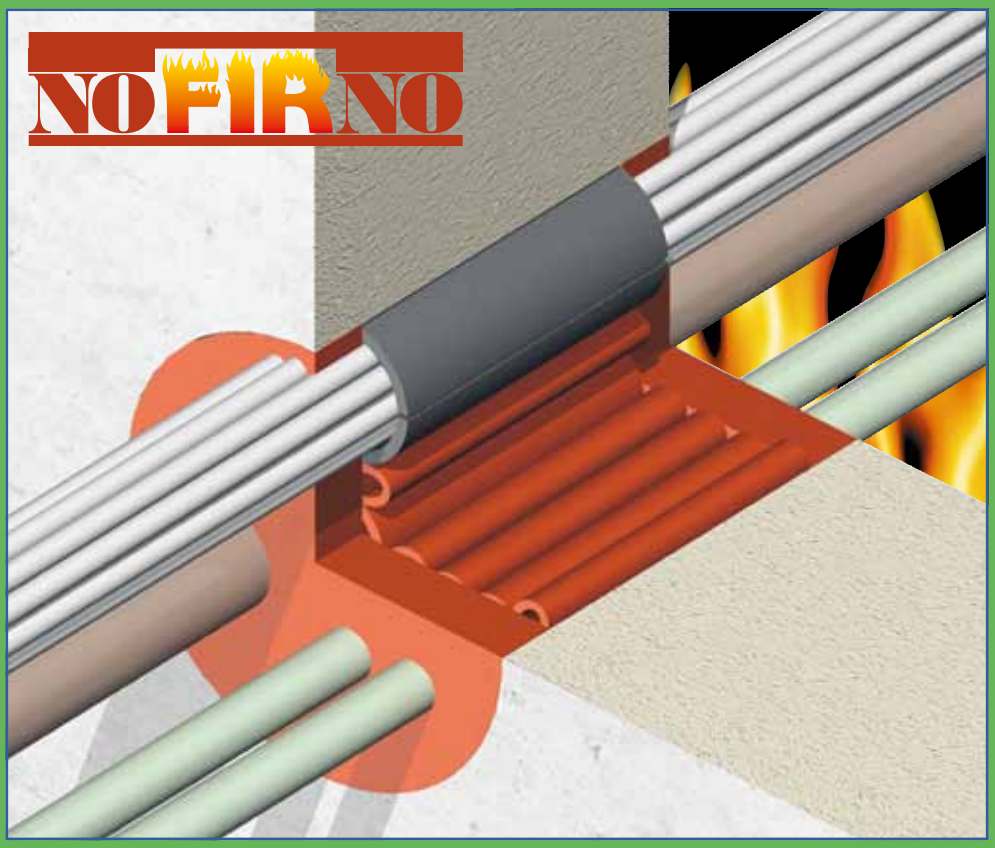
INSTALLATION INSTRUCTIONS NOFIRNO® SEALING SYSTEM FOR MULTI-CABLE TRANSITS



TESTED ACCORDING TO EN 1366-3:2004; FIRE RESISTANCE EI-90/E-120 ACCORDING TO EN 13501-2:2003 CERTIFICATES 2008-EFECTIS-R0633-36

WE CARE

BEELE ENGINEERING

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

NOFIRNO RISE

WE CARE

NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM - FIRESAFE/GAS & WATERTIGHT

RISE® cable sleeves

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

cable sleeves are supplied split lengthwise

NOFIRNO® filler sleeves

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

filler sleeves are supplied non-split

NOFIRNO® multi-filler sleeves

filler sleeves are supplied in multi-sets of 10 sleeves

RISE® cable sleeve	cable diameter		sleeve length	article number
12/6	5 - 7		210	80.2000
14/8	7 - 9		210	80.2001
16/10	9 - 11		210	80.2002
18/12	11 - 13		210	80.2003
20/14	13 - 15		210	80.2004
22/16	15 - 17		210	80.2005
27/19	17 - 21		210	80.2006
31/23	21 - 25		210	80.2007
35/27	25 - 29		210	80.2008
39/31	29 - 33		210	80.2009
46/36	33 - 39		210	80.2010
52/42	39 - 45		210	80.2011
58/48	45 - 51		210	80.2012
64/54	51 - 57		210	80.2013
70/60	57 - 63		210	80.2014
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
12/6	5 - 7		160	80.0100
14/8	7 - 9		160	80.0101
16/10	9 - 11		160	80.0102
18/12	11 - 13		160	80.0103
20/14	13 - 15		160	80.0104
22/16	15 - 17		160	80.0105
27/19	17 - 21		160	80.0106
31/23	21 - 25		160	80.0107
35/27	25 - 29		160	80.0108
39/31	29 - 33		160	80.0109
46/36	33 - 39		160	80.0110
52/42	39 - 45		160	80.0111
58/48	45 - 51		160	80.0112
64/54	51 - 57		160	80.0113
70/60	57 - 63		160	80.0114

all dimensions in mm

NOFIRNO® filler sleeve		sleeve length	article number
18/12 single		110	80.5001
18/12 single		140	80.5002
18/12 multi		140	80.5052
18/12 single		160	80.5003
18/12 multi		160	80.5053
27/19 single		110	80.5011
27/19 single		140	80.5012
27/19 multi		140	80.5062
27/19 single		160	80.5013
27/19 multi		160	80.5063

all dimensions in mm

WE CARE

RISE NOFIRNO

NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM - FIRESAFE/GAS & WATERTIGHT

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 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.

PRODUCT INFORMATION PUTTY

01)	colour	black
02)	specific gravity	1.30 ± 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 +160 °C
05)	tensile strength	0.80 MPa
06)	elongation at break	40%
07)	hardness	35 Shore A
08)	elastic deformation	approx. 25%
09)	electrical resistance	< 100 Ω
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 80.0910

CONDUCTON® putty is an electrically conductive sealing putty based on a single component silicone compound.

CONDUCTON® has been developed for the RISE/EMC multi-cable and pipe transits.

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

article number 80.0932

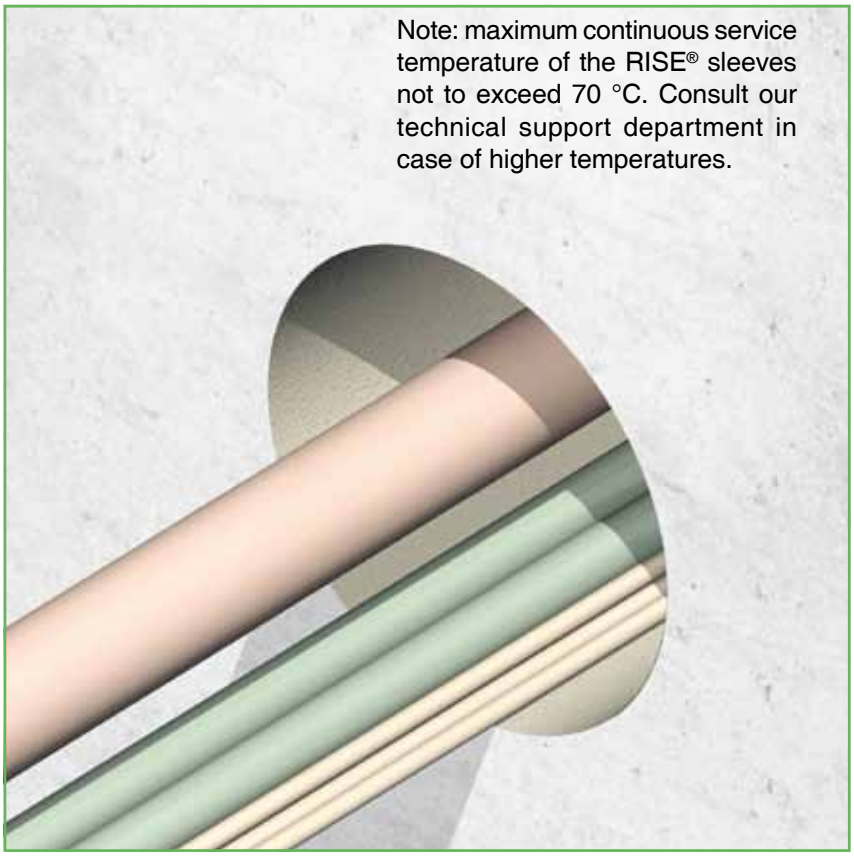
CONDUCTON® flexible rubber has been developed for the RISE®/EMC multi-cable transits and is used to fill the cavity around the ducted cables in the conduit sleeve, instead of making use of the putty. This rubber can be molded by hand and offers the highest attenuation.

CONDUCTON® flexible rubber is absolutely HALOGEN FREE and has a toxicity index of 0,00 (tested according to Naval Engineering Standard NES 713: Issue 3).
Furthermore CONDUCTON® has a low smoke index (NES 711: Issue 2: 1981), an oxygen index of 38,2% (ISO 4589-2: 1996), and a temperature index of 294 °C (ISO 4589-3: 1996).

CONDUCTON® flexible rubber fullfils the criteria for use on board of UK Navy vessels for EMP/EMI penetrations.

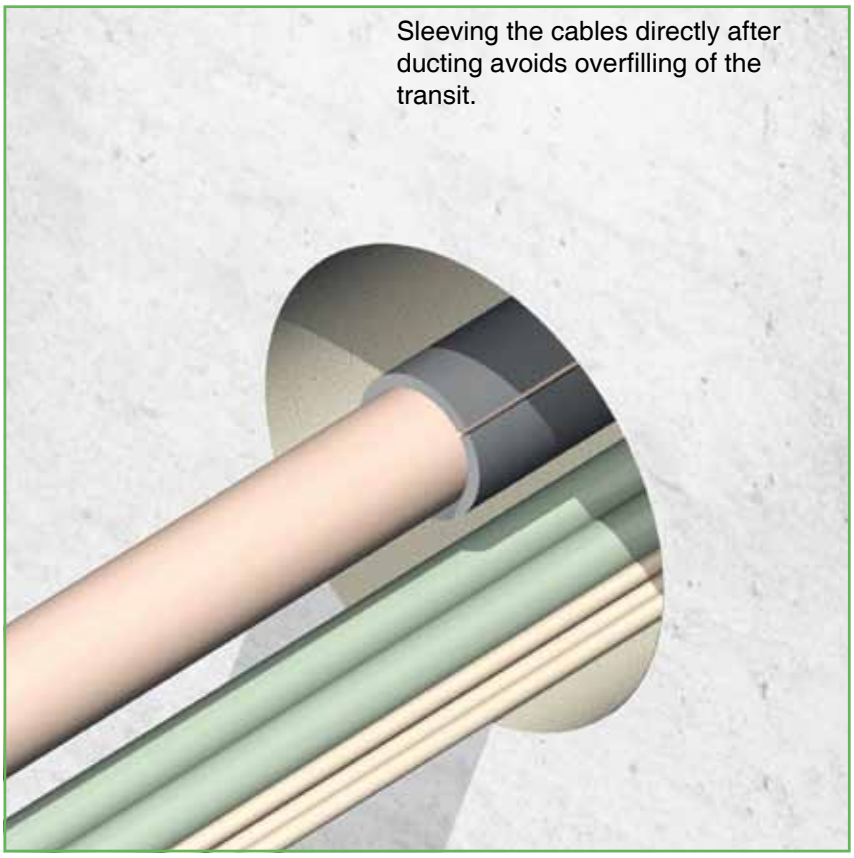
NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM - FIRESAFE/GAS & WATERTIGHT

1) The cables can be ducted through the conduit opening in random order.
It is most important that they are not pulled too tight so as not to hamper their separation when RISE® insert sleeves are inserted.



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

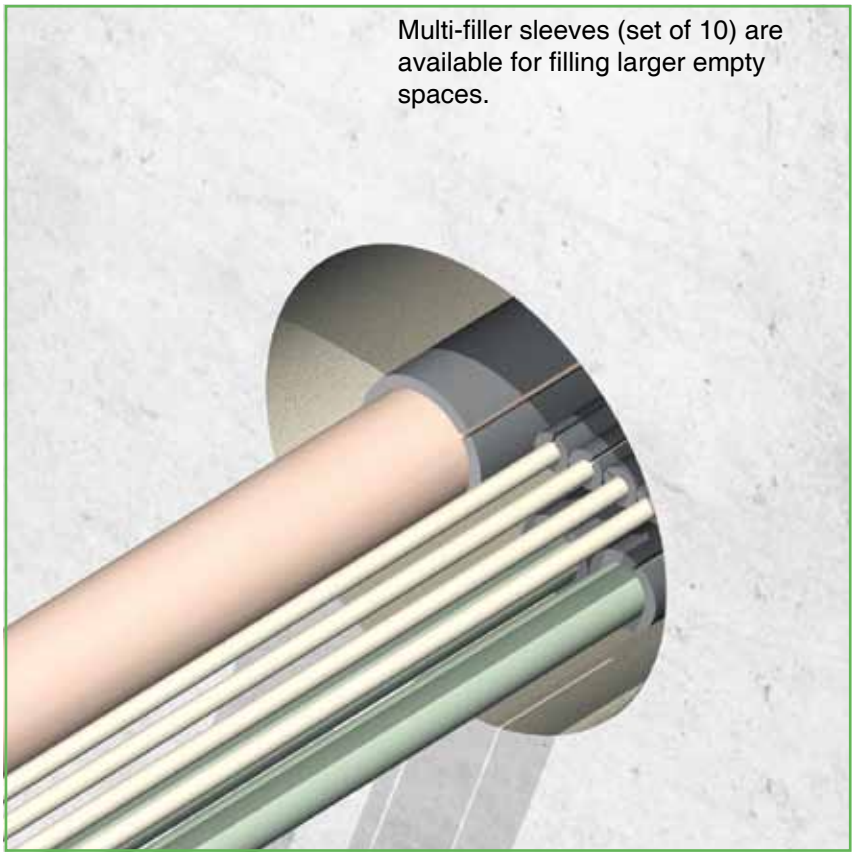
2) After the cables have been ducted, RISE® insert sleeves are applied around each cable.
The insert sleeves are split lengthwise and can therefore be placed around the cables in front of the conduit.



Sleeving the cables directly after ducting avoids overfilling of the transit.

NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM - FIRESAFE/GAS & WATERTIGHT

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 supplied non-split. 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 insert/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 insert and filler sleeves.

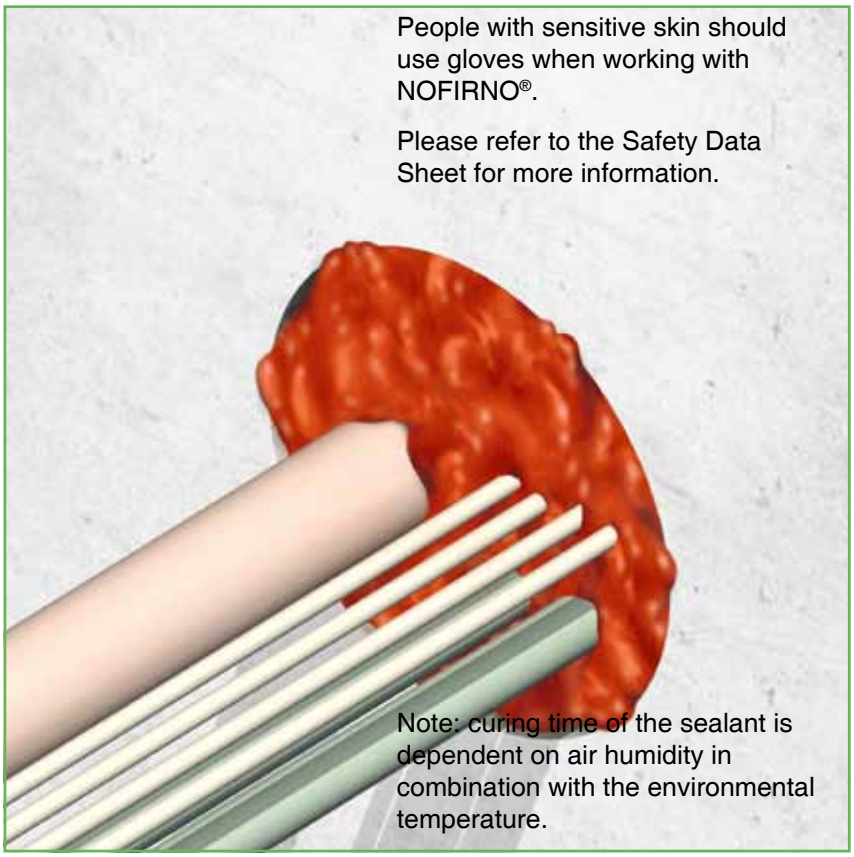
NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM - FIRESAFE/GAS & WATERTIGHT

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.

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).

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®.

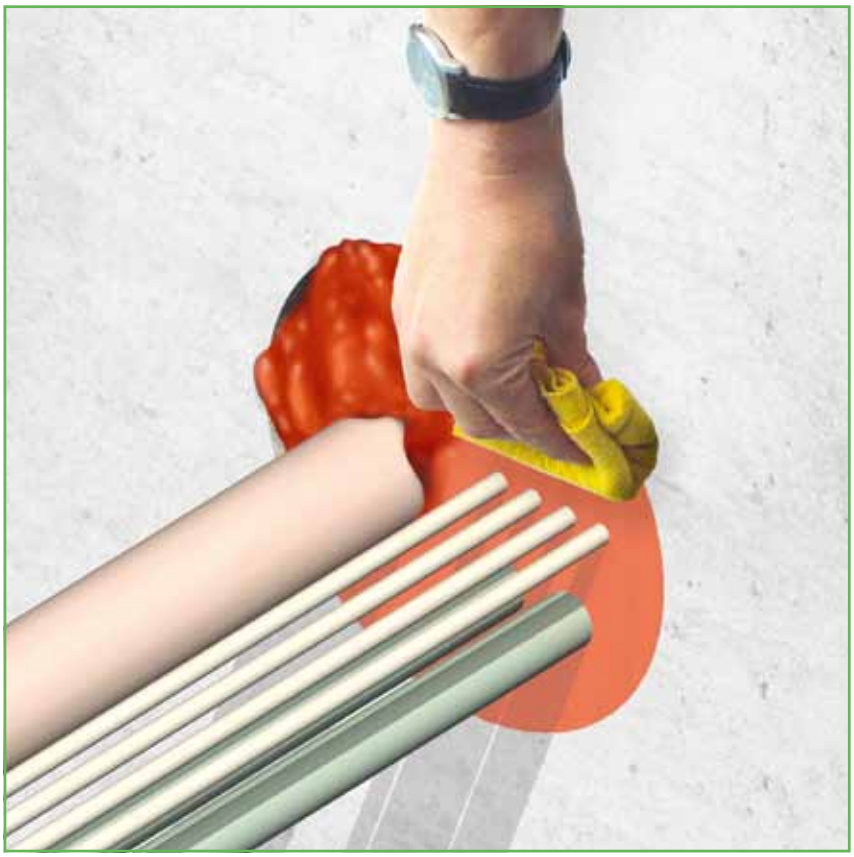
Please refer to the Safety Data Sheet for more information.

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

NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM - FIRESAFE/GAS & WATERTIGHT

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!

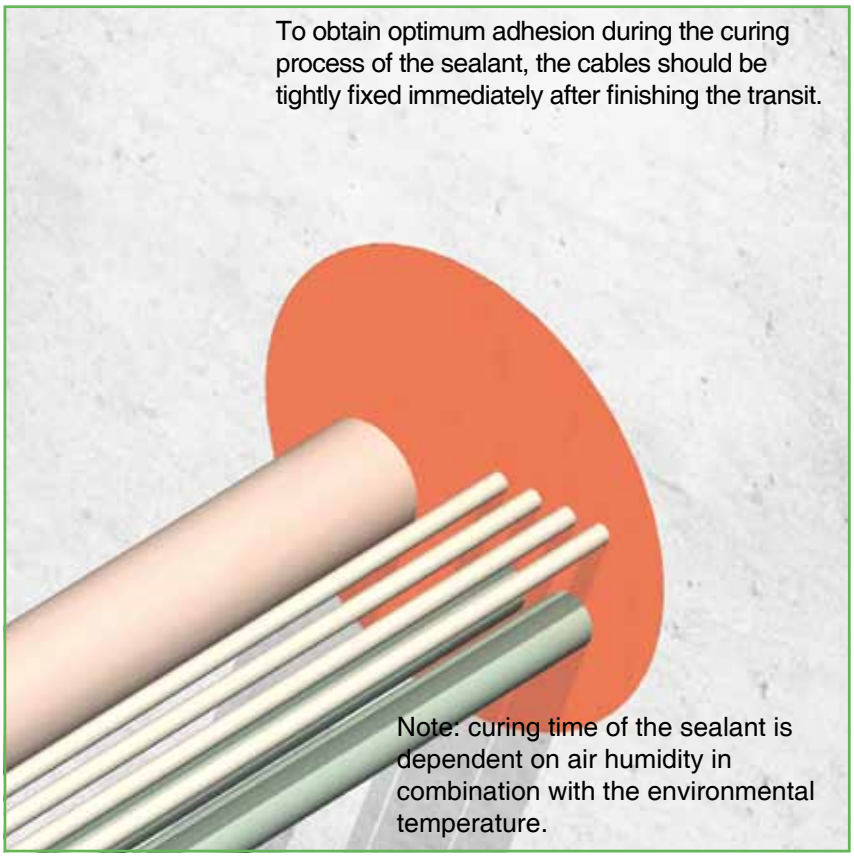
8) The cloth is then used to press down the sealant layer.
People with sensitive skin should use gloves when working with NOFIRNO®. Please refer to the Safety Data Sheet for more information.



NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM - FIRESAFE/GAS & WATERTIGHT

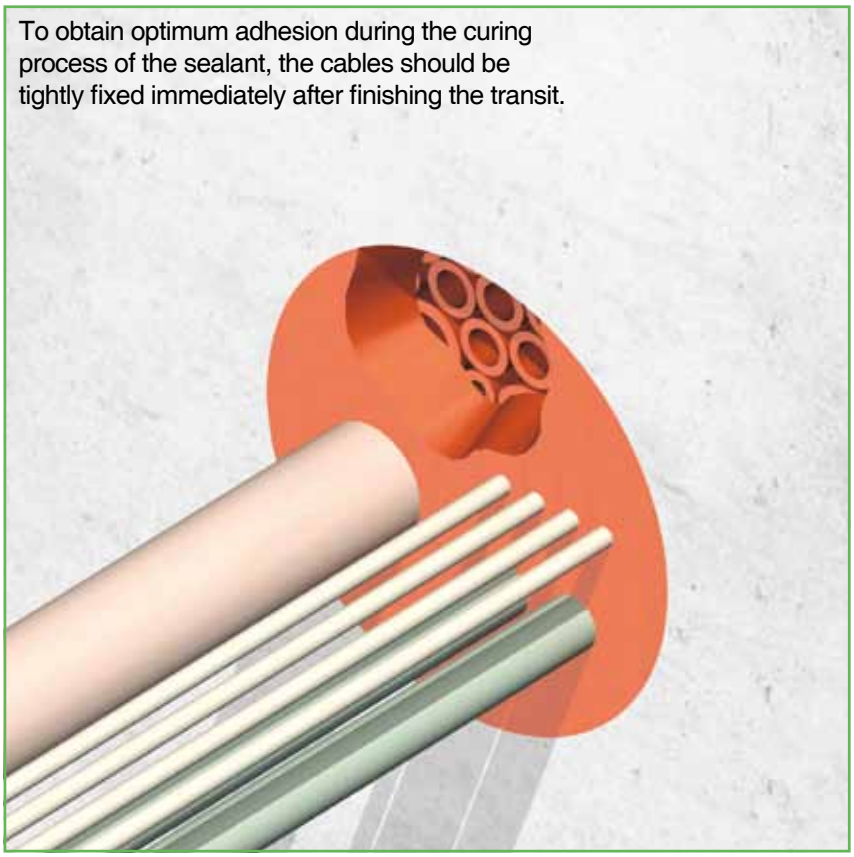
9) The surface can be smoothed by hand. Just wet the hands thoroughly with soap and water. No dirty hands when working with NOFIRNO® and a very neat surface is the result.

10) Successfully tested for >120 minutes (E120) fire integrity according to EN 1366-3:2004.
For EI classification (fire integrity plus thermal insulation), the penetrations with heavy conductor cables have an EI90 rating.

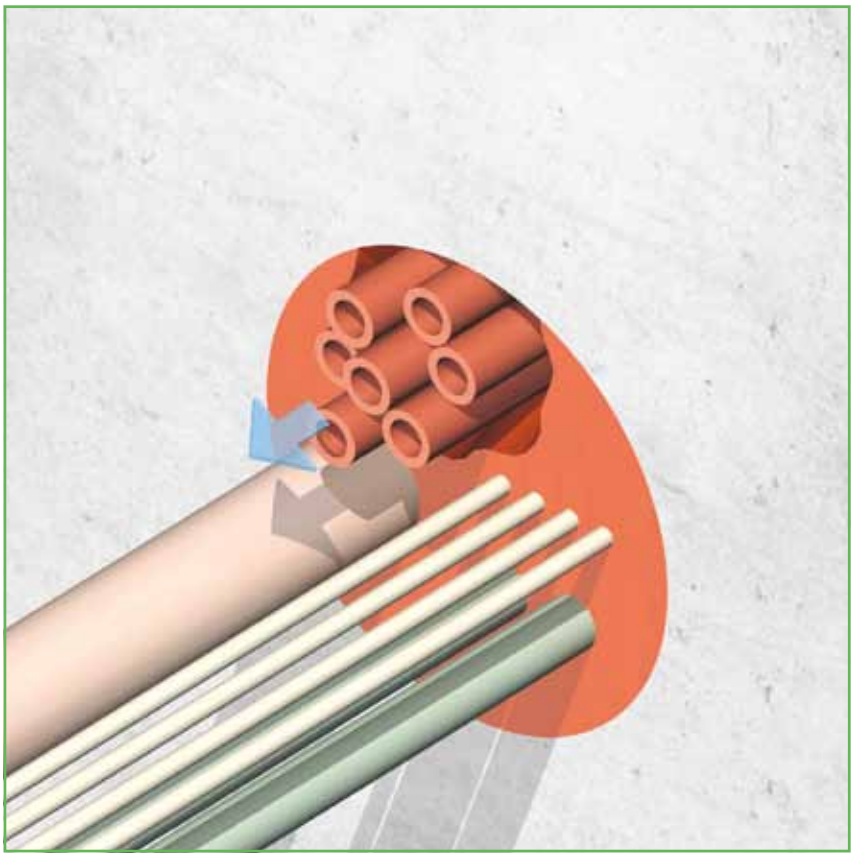


NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM - FIRESAFE/GAS & WATERTIGHT

11) 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.

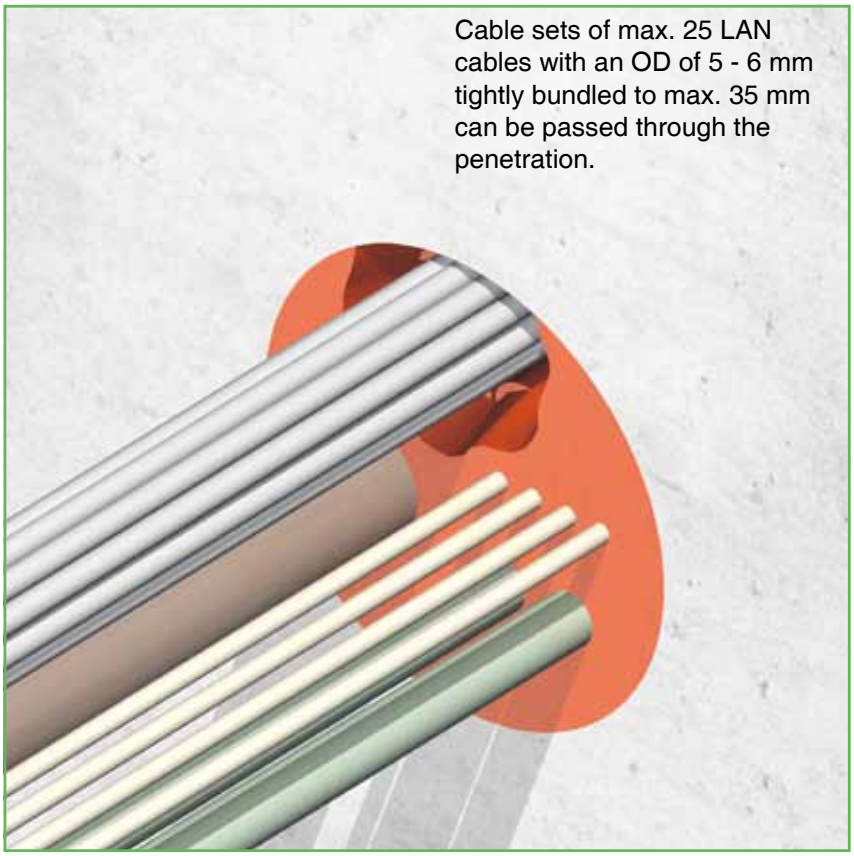


12) Remove one or more NOFIRNO® filler sleeves to create a fitting opening for the cable to be ducted.

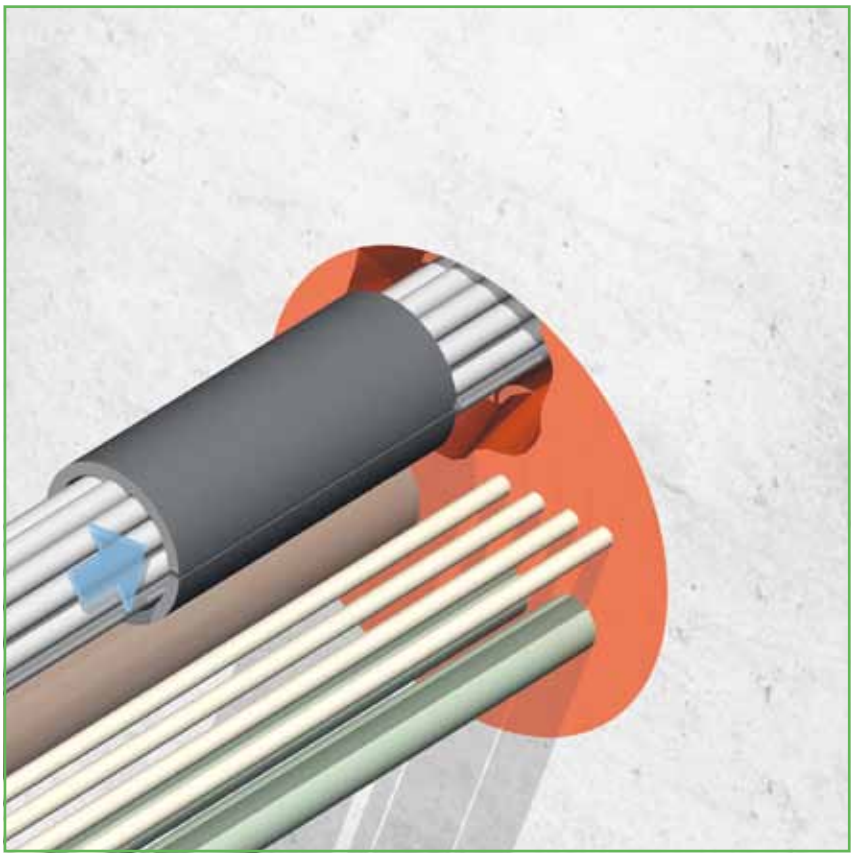


NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM - FIRESAFE/GAS & WATERTIGHT

13) Pull the new cable (even a set of bundled cables is allowed) through the conduit.
Note: bundled cables not approved for gas or water-tight penetrations!

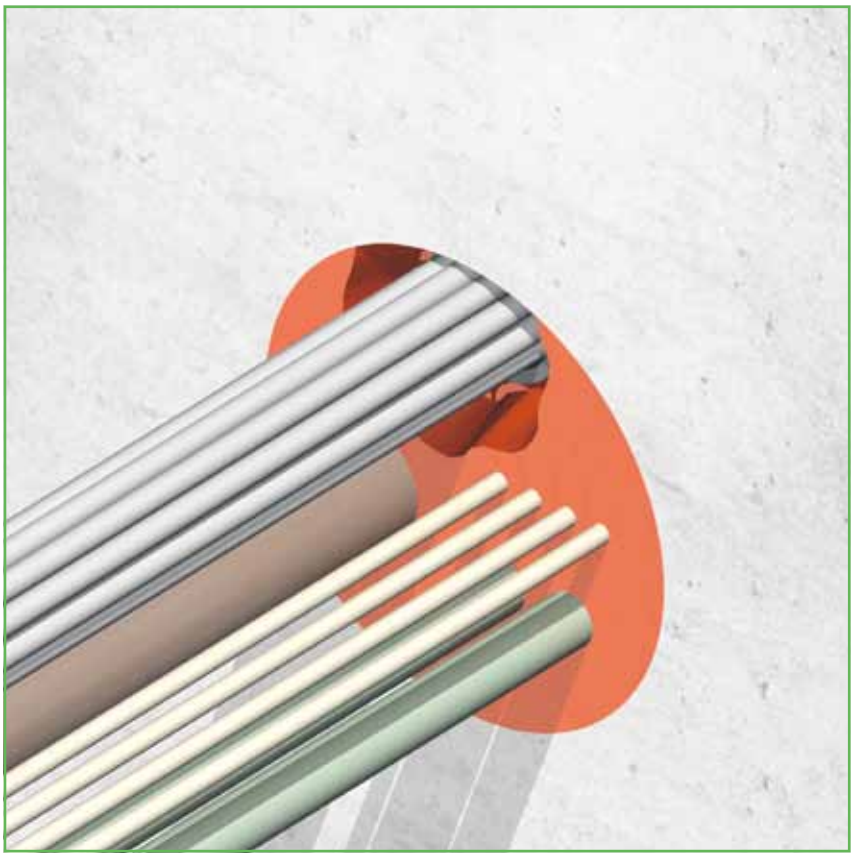


14) After the cable(s) have been ducted, place a RISE® insert sleeve around the cable or bundled set. Insert sleeves are split lengthwise and can therefore be placed around the cables in front of the conduit.



NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM - FIRESAFE/GAS & WATERTIGHT

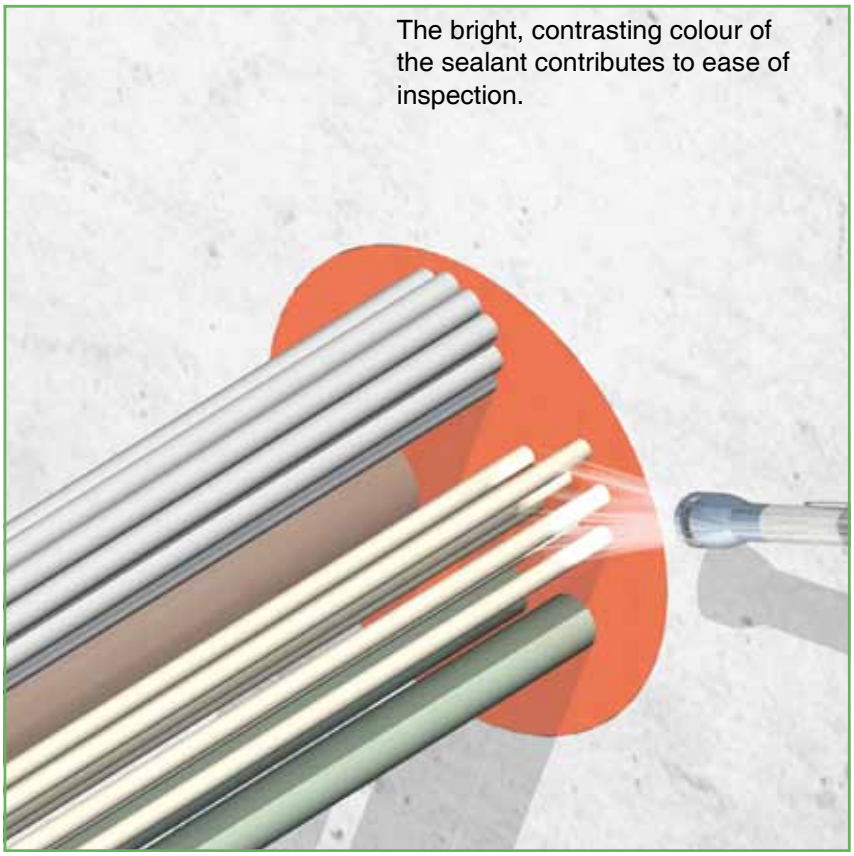
15) Push the insert sleeve into the conduit in such a way as to leave about 20 mm free space at the front and back and place, if necessary, NOFIRNO® filler sleeves back in the remaining open spaces.



16) Refill the opening in the sealant layer with sufficient NOFIRNO® sealant at both sides of the penetration. Finish the sealant layer as described before.

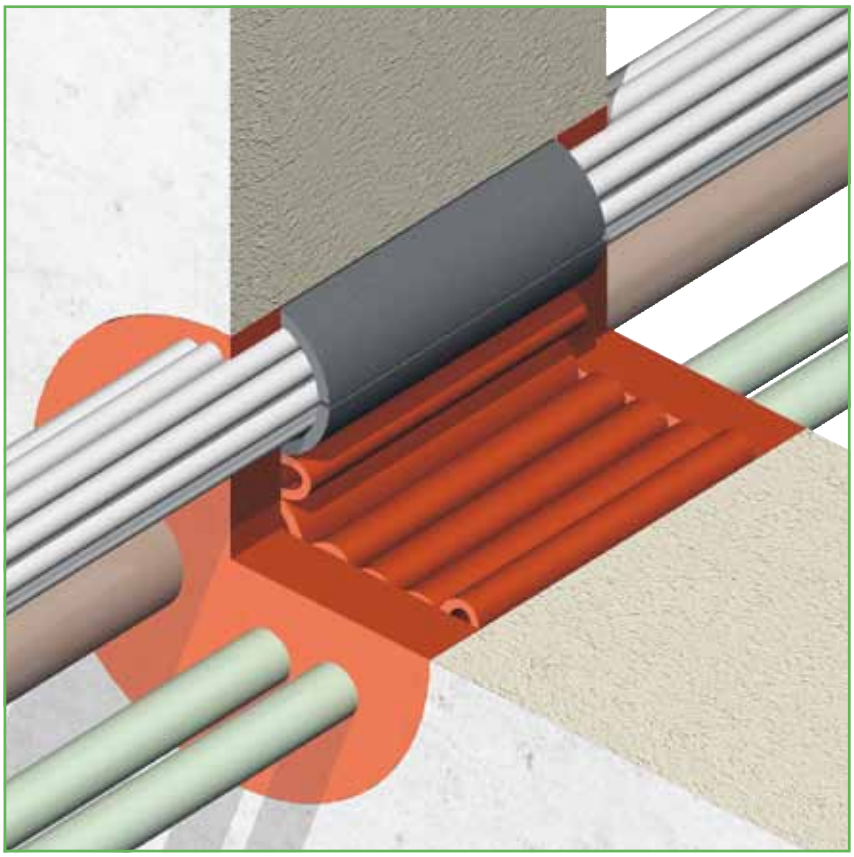
NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM - FIRESAFE/GAS & WATERTIGHT

17) After smoothing is finished, a last check should be made to ensure that sufficient sealant is applied in between the cables especially at penetrations with larger amounts of cables. This is most important, especially for water and gas tight penetrations.



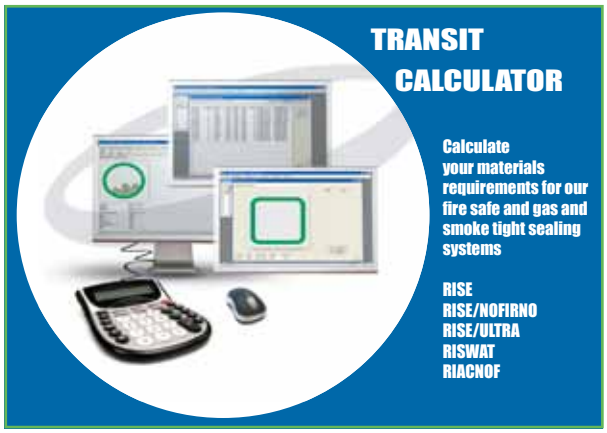
The bright, contrasting colour of the sealant contributes to ease of inspection.

18) For fire rated conduits, plastic conduit sleeves should not be used. This is not a problem for “watertight only” penetrations.



WE CARE

NOFIRNO® MULTI-CABLE TRANSIT SEALING SYSTEM - FIRESAFE/GAS & WATERTIGHT



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 NO-FIRNO® 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.

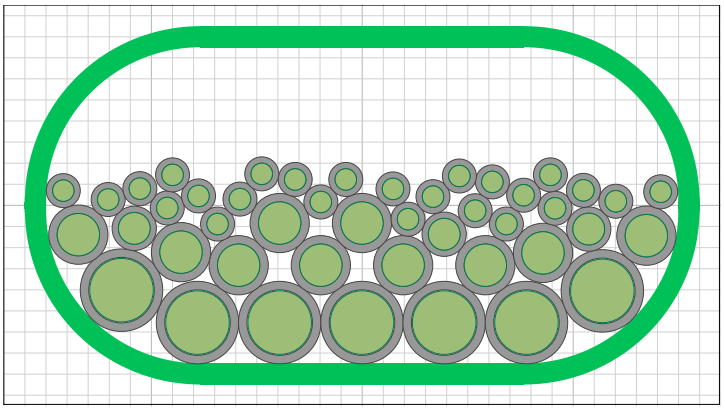
The material list of a transit shows the options which can be entered to make a calculation of the materials needed:

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 'transit E222CS'



Created on:	16-1-2010 11:37:17
Created by:	Smith
Last modified:	16-1-2010 11:40:00
Modified by:	Smith

Transit specifications:	**(All dimensions in mm)**
Width:	300,00
Height:	150,00
Corner radius:	73,50
Depth:	180,00
Transit type:	Cable
Transit used in this project:	1 time
Filling rate:	26,2%
Spare on cable set:	10,0%
Class:	A-class
EMC:	None
Sealant:	20mm (both sides)

Check the Type Approval Certificates for limitations in sizes !

Material specifications:

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

Cable specifications:

Cables (OD)	Amount
10,00	25
15,00	3
20,00	10
30,00	7

Total amount of cables: 45

RISE materials needed:

Insert sleeves	Amount	Length
16/10	25	140,00 mm
20/14	3	140,00 mm
27/19	10	140,00 mm
39/31	7	140,00 mm

Filler sleeves	Amount	Length
18/12	13	140,00 mm
27/19	26	140,00 mm

FIWA sealant
(incl. overfill) 1677 ml (6 cartridges)