



THINK CONVENIENT.
 THINK FAST.
 THINK CHEAP.

THINK PINK.



**HANDBOOK FOR
 PENETRATION SEALING**



+GF+



Henkel Quality for Professionals

Tangit

M 3000
Expansionsharz • Expansiehars
Résine d'expansion

D • Zur Befestigung von Gas- und Wasser-Hausanschlüssen in Mauerwerk und Beton. Geprüft nach DVGW-VP 601
NL • Voor het water- en gasdicht maken van buisdoorvoeren in steen en beton. Getest volgens DVGW-VP 601
F • Pour rendre les canalisations pour tuyaux, en briques et en béton, étanches à l'eau et au gaz. Testé suivant DVGW-VP 601



Henkel QUALITÄT FÜR HANDWERKER

Tangit

M 4082
DICHTSCHLAUCH

- zur dauerhaften Abdichtung gegen drückendes Wasser an Gas- und Wasser-Hausanschlüssen
- für alle Rohrmaterialien, auch PE
- Geprüft nach DVGW-VP 601

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GENERAL INFORMATION AND LEGAL NOTES

The installation instructions included in this manual are not a substitute for full installation and operating instructions. Users can obtain detailed up-to-date installation and operating instructions and the current safety information either directly from the product manufacturers or via the links (QR codes) and must be familiar with the relevant instructions and information before transporting, installing and putting these products and systems into service.

We expressly state that no liability is assumed for any consequential damage incurred as a result of deviation from the information given in installation instructions or improper use of the products mentioned in this manual or their combination with third-party products.

We also state that no liability whatsoever (either technical or otherwise) can be assumed for the content of external web links.

All copyrights to the images, photos, illustrations and product names contained in this document belong to the respective manufacturers and the stated elements may not be used or duplicated without obtaining their express prior permission. The manufacturers of the wall ducts for connection of house service lines are responsible for the content of their installation instructions.

You would like further information? Simply get in touch with us by using the contact form at www.tangit.de:





PRODUCT DESCRIPTION

TANGIT M 3000

EXPANSION RESIN



Tangit M 3000 ist ein innovatives
2K-Expansionsharz zur Abdichtung von:

- Ein- und Mehrsparten-Hauseinführungen
- Reparatur undichter Durchführungen
- Abwasser- und Kabel-Wanddurchführungen
- Brunnenbau

(siehe Technisches Merkblatt Seite 20)



**Selbstverfüllend -
kein Anrühren notwendig**

Funktionsfest nach 5 Minuten

Endfest nach 30 Minuten

Auszugssicher: 30 kN

Torsionssicher: 240 Nm

Gas- und wasserdicht: 1 bar – kein Anstrich notwendig

Thermisch belastbar: 650° C für 30 Min.



INSTRUCTIONS

INSTRUCTIONS FOR INSTALLATION IN WET CONDITIONS

Load case 4 (DIN 18195) with Tangit M 3000

Service lines and protective ducts or conduits can be sealed off against **non-pressing water** in all single-shell wall structures made of brickwork or concrete, in accordance with DIN 18195, load case 4.

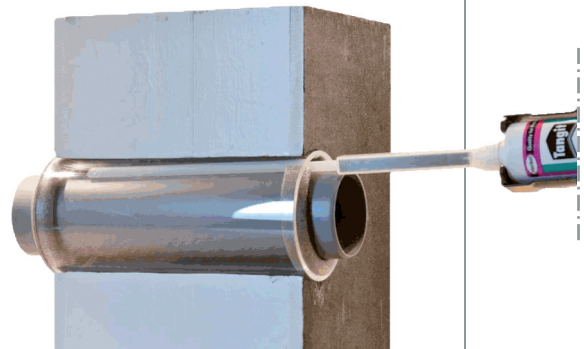


1. Clean out the bore



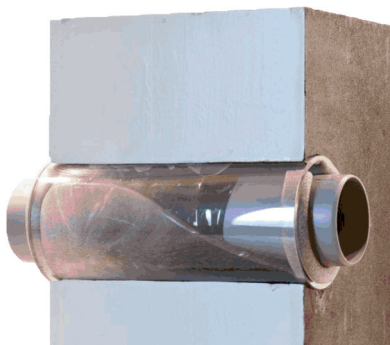
- ▶ Brush out dust and dirt
- ▶ Mop up moisture
- ▶ Residual moisture can be tolerated

2. Inject the expansion resin



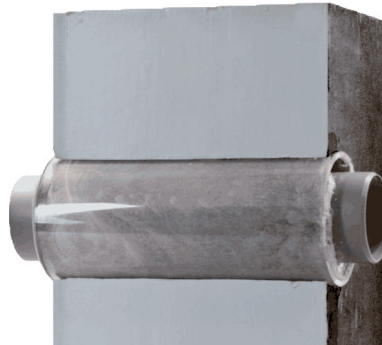
- ▶ Seal off annular gap (cord)
- ▶ Insert extension as far as possible
- ▶ Inject resin at the topmost, deepest point

3. Monitor resin expansion



- ▶ Check for emergence of resin at opening
- ▶ If no resin emerges at top of annular gap, inject more resin into remaining cavity.

4. Full load capability after 30 min



- ▶ Remove cord
- ▶ Trim off excess resin
- ▶ Fabricate wall sealant



Email contact address



Application video

Phone contact no.: +49 211 797-0

Service lines and protective ducts or conduits can be sealed off against **pressing water** in all single-shell wall structures made of brickwork or concrete, in accordance with DIN 18195, load case 6.

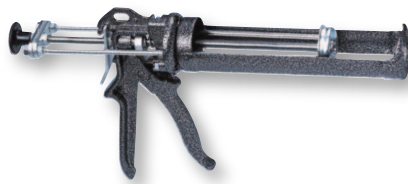
REQUIRED MATERIALS



Tangit M 3000, 300 mL



Tangit M 4082



Tangit 2C Pistol PP6

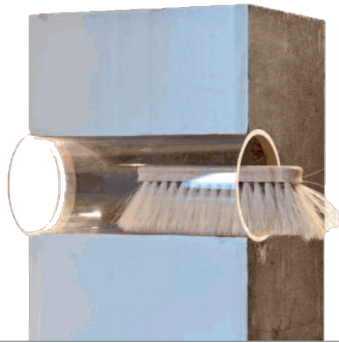


PE cord

EXTRACT FROM THE INSTRUCTIONS FOR INSTALLATION IN WET CONDITIONS

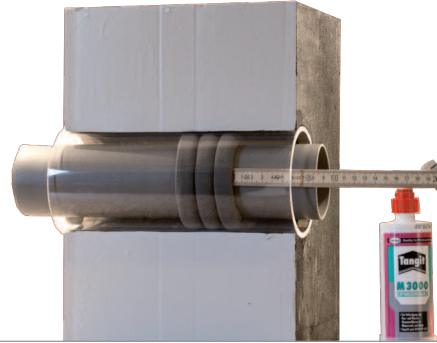
▶ Load case 6 (DIN 18195) with Tangit M 3000 and Tangit M 4082

1. Clean out the bore



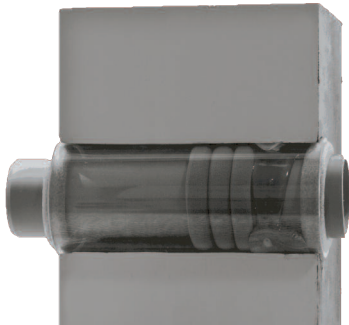
- ▶ Brush out dust and dirt
- ▶ Mop up moisture
- ▶ Residual moisture can be tolerated

2. Position the sealing hose



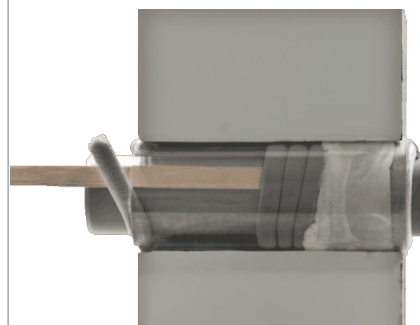
- ▶ Insert the triple wrapped sealing hose into the annular gap.
- ▶ Ensure insertion to a depth of 50 mm from outer wall
- ▶ Seal off the annular gap (cord)

3. Build up external resin packing



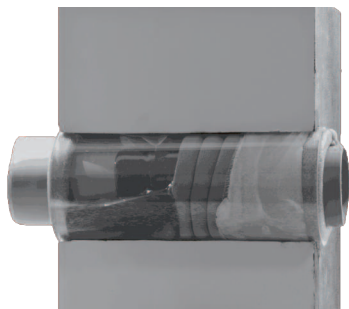
- ▶ Check for emergence of resin at opening
- ▶ If no resin emerges at top of annular gap, inject more resin into remaining cavity.

4. Compact sealing hose



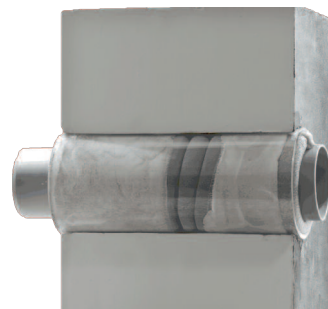
- ▶ Use suitable tool (yardstick or similar)
- ▶ Tamp down sealing hose well
- ▶ Take care not to damage hose

5. Build up internal resin packing



- ▶ Check for emergence of resin at opening
- ▶ If no resin emerges at top of annular gap, inject more resin into remaining cavity.

6. Full load capability after 30 min



- ▶ Remove cord
- ▶ Trim off excess resin
- ▶ Fabricate wall sealant



Email contact address



Application video

QUESTIONS & ANSWERS

REGARDING THE SAFE USE OF TANGIT M 3000

? Why does Tangit M 3000 contain MDI?

Tangit M 3000 is a propellant-free, two-component expansion resin used for fixing or repairing gas and water house service lines, sewage and cable ducts. The product is a self-expanding polyurethane foam, which is based on the reaction of methylenediphenyl diisocyanate (MDI) with polyols. Only by this polymerization reaction the ducts can be sealed reliably against water.



? Is MDI released from Tangit M 3000?

SHORT ANSWER:

Under intended use conditions, the release of MDI from Tangit M 3000 is very limited. Given the low vapor pressure, limited exit areas and high curing speed of Tangit M 3000, a relevant release of monomeric MDI is unlikely. No free MDI was determined analytically in a workplace measurement setting.



DETAILED ANSWER:

Under intended use conditions, the release of MDI from Tangit M 3000 is very limited.

The two-component product is mixed in an exact ratio in a static mixer, which excludes manual mixing processes. MDI is bound in a complex polymeric matrix which forms immediately upon contact of both components (already in the static mixer). Curing of the product leads to an inert polyurethane with practically no free MDI.

The vapor pressure of MDI is very low (< 10-5 hPa, 20°C). Due to its low volatility, free MDI is not enriched in the working atmosphere. In addition, Tangit M 3000 is neither aerosolized upon use nor is it applied to a large open surface. Instead, the foam is deeply fed into the annular slot in the wall by using the static mixer and extension. The potential exit for MDI is limited to a few square centimeters. Based on the low volatility of MDI and its high reactivity, which quickly leads to an inert polymer, relevant release of MDI is considered to be unlikely in particular in well-ventilated areas.

No MDI could be detected in workplace measurements which have been conducted at a specialized and experienced testing institute in Sweden in 2013 for the use of Tangit M 3000. A realistic but rather worst-case setting was chosen and air was sampled over different time points and in different locations.

Moreover, if the product is used as intended it is not expected that substances migrate to drinking water or other media, because the product forms a hard polymer and cannot penetrate the pipes.



? Is it safe to use Tangit M 3000?

SHORT ANSWER:

Our experts have conducted a toxicological risk assessment and concluded that the risk from hazardous properties of contained MDI when using Tangit M 3000 in accordance with the safety instructions provided on the cartridge and in the MSDS can be well controlled and is thus considered to be very low.

DETAILED ANSWER:

Our experts have conducted a toxicological risk assessment and concluded that the risk from hazardous properties of contained MDI when using Tangit M 3000 in accordance with the safety instructions provided on the cartridge and in the MSDS can be well controlled and is thus considered to be very low.

Release of MDI in the air

Based on low vapor pressure, low exit area and immediate polymerization reaction, a release of MDI in the air surrounding the worker is negligible, which was confirmed by workplace measurements. The determined limit of detection for potential exposure to MDI during application of Tangit M 3000 is clearly below the occupational exposure limit. The use of this product in accordance with the safety instructions provided on the cartridge and in the MSDS is thus considered to be safe.

Dermal contact

Risk from dermal contact is also low, as a cartridge gun is used and mixing of both components is done automatically in the static mixer. Skin contact with the foam is avoided by use of suitable gloves as recommended on the cartridge and in the MSDS.

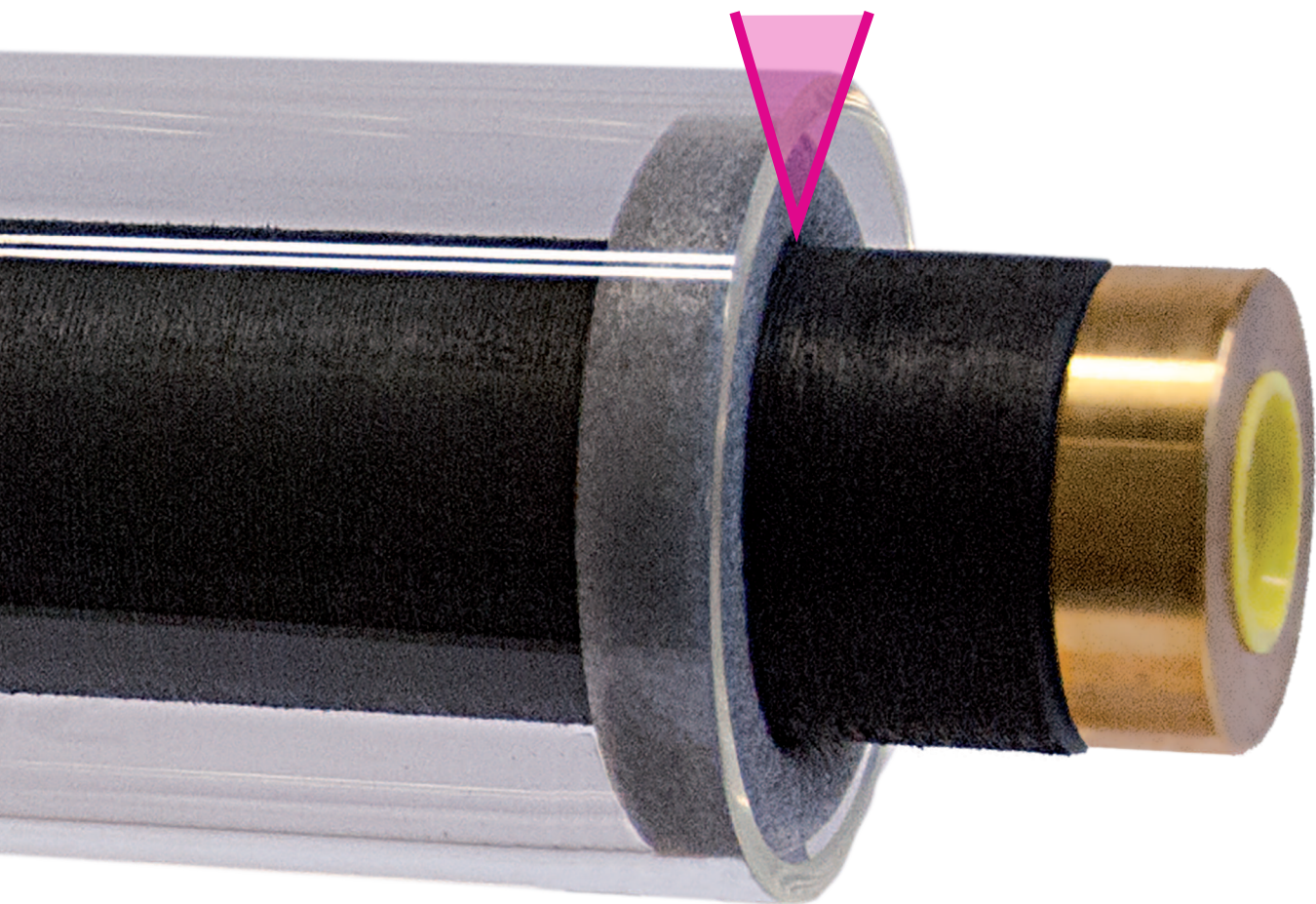
Precautionary advice

As a matter of precaution, it should be noted that persons already sensitized to diisocyanates may develop an allergic reaction when using this product. Persons suffering from asthma, eczema or skin problems should especially take care to avoid contact, including dermal contact, with this product.

QUESTIONS AND ANSWERS ON HOW TO USE TANGIT M 3000

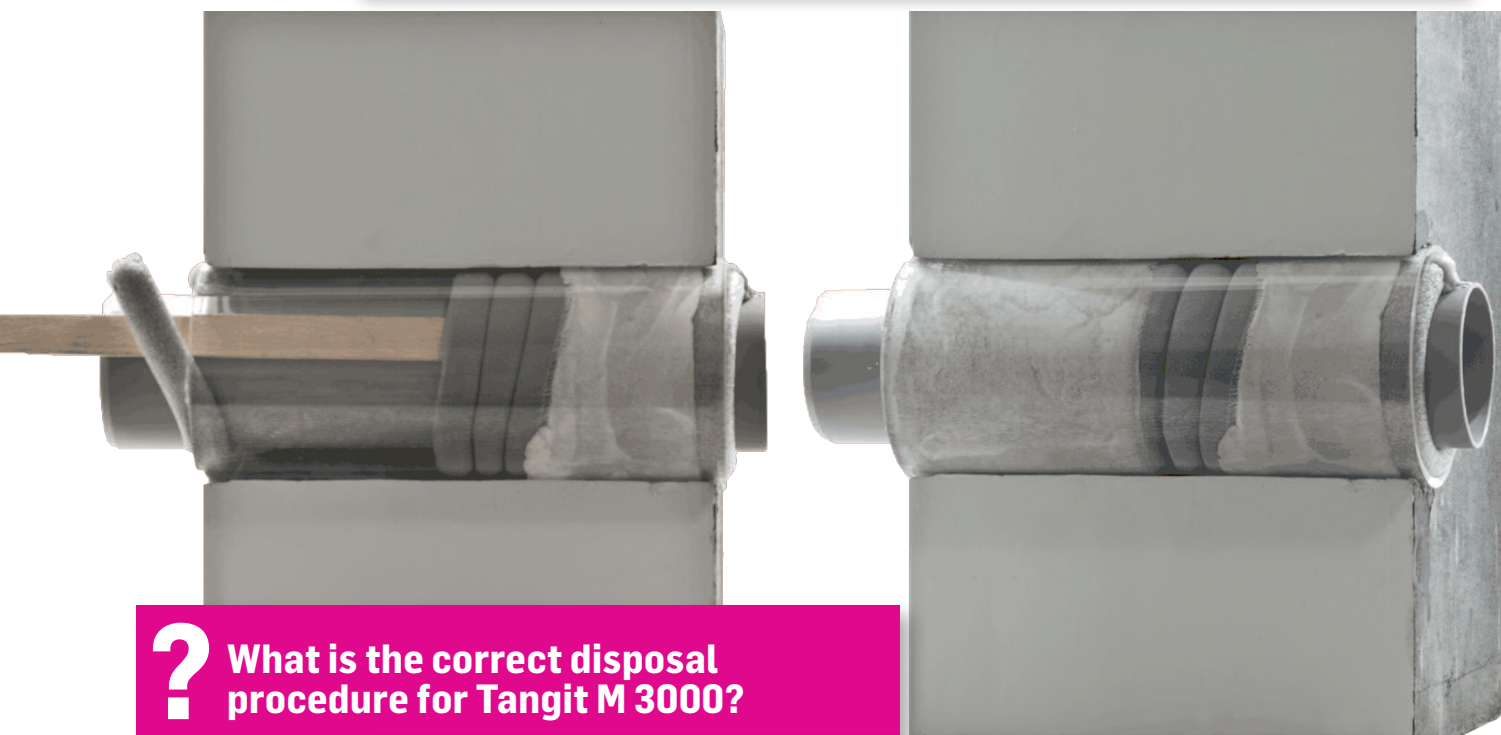
? What is the best way of sealing off the annular gap temporarily before injecting the resin?

In most installation scenarios, it is a good idea to seal off the annular gap temporarily before injecting the Tangit M 3000 2C expansion resin in order to avoid unwanted emergence of the resin. Basically, any kind of paper or sheeting to which the resin will not stick, or only slightly, will be suitable (rubber, siliconized paper, PE sheeting). It is sufficient to hold this material up against the annular gap while injecting the resin and wait a short while until the resin has set. Another possibility is to tape off the annular gap by applying adhesive tape tangentially around it. If the tape is transparent – like Tangit FP200, for example – one can get a good view of how the resin expands. A very easy method is to use a PE cord of appropriate diameter and press this into the cavity to fill the annular gap. Once the resin has set, the cord can be very easily removed. If centering rings are used, these not only hold the utility service line in position but provide a suitably sized opening for injection of the product. However, no matter what kind of temporary sealing is used for the annular gap, take care to ensure that the opening for injecting the product is always at the very top of the hole drilled through the wall.



? Can I use Tangit M 3000 to repair seepage around house wall ducts?

Seepage around house wall ducts through single-shell concrete or brickwork can be repaired with very good results using Tangit M 3000 in combination with our sealing hose Tangit M 4082. To do this, first clear the annular gap (clearance) around the wall duct on the cellar side to create a working depth in the drill hole of about 150 to 200 mm. Clean out this working space and wrap the sealing hose Tangit M 4082 three times around the service line. Using a suitable tool (yardstick, pipe end or similar) push the layers of sealing hose deep down into the working space and compact them so that the hose forms a firm packing around the service line. If the seepage has stopped, one can proceed to the next step. If not, the sealing hose packing has to be compacted further. As soon as the seepage has stopped, remove the dirt from the remaining clearance and mop up the moisture. Use a PE cord or alternative material to provisionally seal off the mouth of the clearance, then use Tangit M 3000 2C expansion resin to seal in the sealing hose packing and fill the clearance again. If the brickwork has been built with a black basement sump or painted with bitumen-type sealant, it is not enough to repair the actual duct clearance. The area outside has to be dug up to check that the sealing around the point of penetration through the house wall is intact. If not, it must be repaired professionally in compliance with DIN 18195 part 9 to avoid rising damp alongside the service line duct.



? What is the correct disposal procedure for Tangit M 3000?

The cured resin is chemically inert, i.e. it will not react with anything in its environment and can therefore be disposed of as household waste or recycled (yellow collection bag). Small quantities of cured product residues or completely emptied cartridges can be disposed of as household waste, or otherwise as normal commercial waste. For larger quantities of completely emptied cartridges, please contact your local authorities to ask for the correct disposal procedure. Unused cartridges which are past their shelf life should be emptied out onto paper by pumping them out through the attached mixer to ensure that the components fully react and the resulting mixture can be disposed of as described above. If this is not possible and the cartridges are to be disposed of while still full, these must be taken to a municipal waste collection point for professional disposal as hazardous waste.

TANGIT M 3000

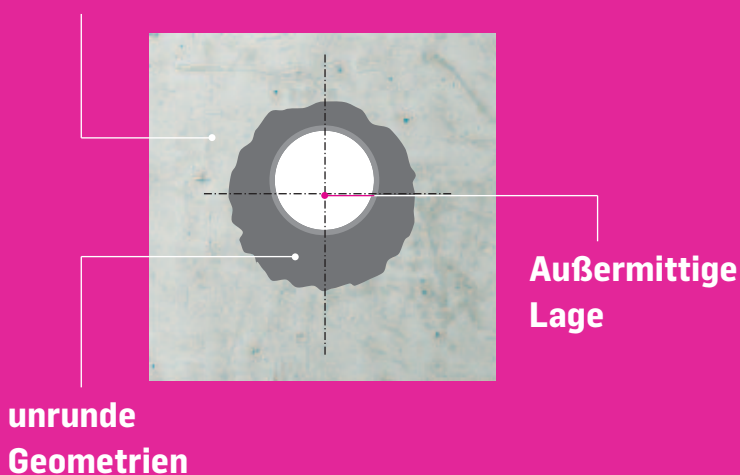
ANWENDUNGS- UND EFFIZIENZVORTEILE VON TANGIT M 3000



UNIVERSELLE EIGNUNG

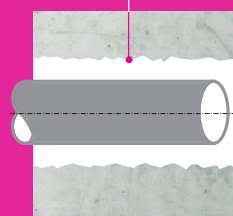
1 Optimale Ringspalttoleranz.

Passt immer

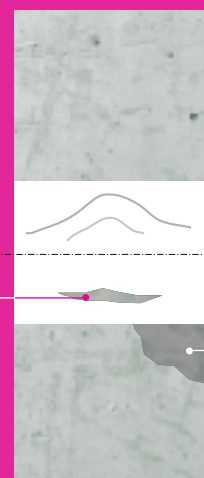


2 Optimale Untergrundtoleranz.

Oberflächen-
rauigkeiten



Fehlstellen/Riefen
in Leibeswandung



Feuchtetoleranz
bis Sättigung

3 Vielfältige Anwendungsfelder.

Wasser-HE



Telekommunikations-HE



Gas-HG



Kabel- und Elektro-HE



4 Zuverlässige Anwendung.

1 Sehr zuverlässig im Nachverdichten

2 Selbstverfüllend bis auf das 5-fache Volumen

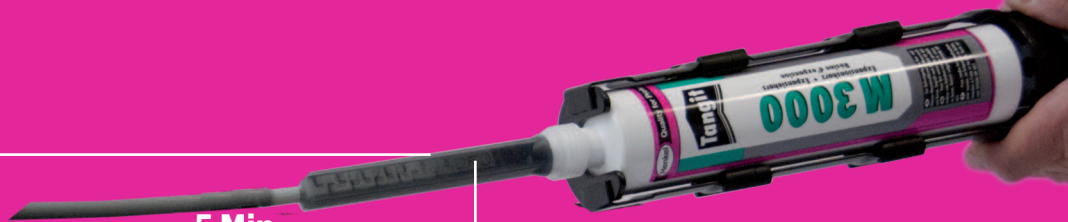
3 Kernspannungsfrei fürs Rohr

ZEITSPAREND

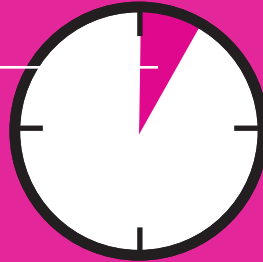
Kein lästiges Anrühren

Nach 5 Min. funktionsfest

5 Min.

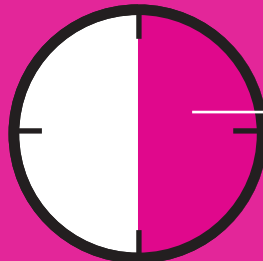


Kartusche sofort einsatzbereit

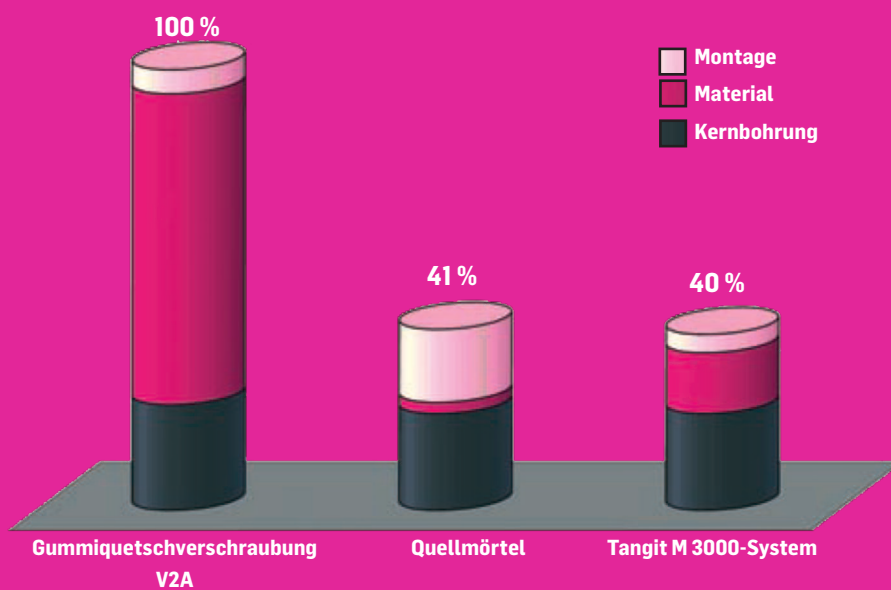


30 Min.

Nach 30 Min. endfest

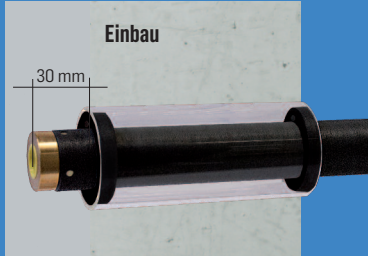


KOSTENSPAREND

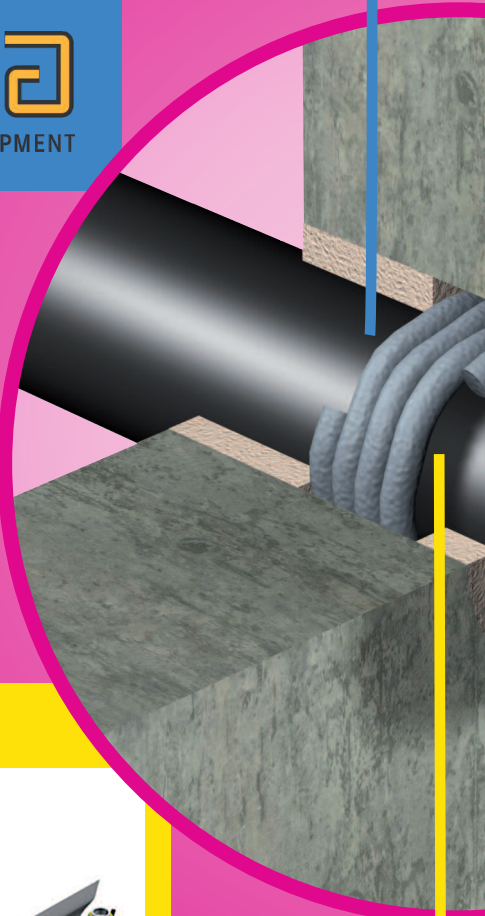


OVERVIEW OF REFERENCES

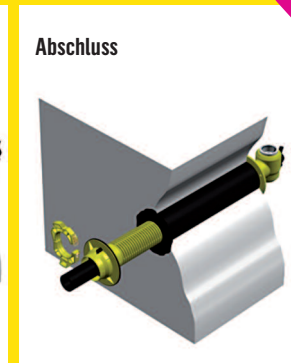
WATER HOUSE LEAD-IN



Example of RMA Pipeline Equipment.



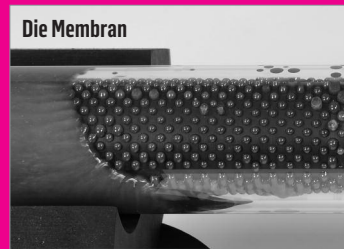
GAS HOUSE LEAD-IN.



Example of Schuck Group.



FTTH HOUSE LEAD-IN



Example of Hauff-Technik.

hauff
technik

House lead-in systems for water, gas and FTTH.
The mentioned suppliers of the house lead-in systems
have a broad range of various products besides the
showed applications in this handbook.



Hauff



RMA



Schuck

TECHNICAL DATA SHEET

TANGIT M 3000

2-COMPONENT EXPANSION RESIN



PROPERTIES

- ▶ Self-expanding
- ▶ Functional strength after 5 minutes
- ▶ Final strength after 30 minutes
- ▶ Tested to VP 601 by DVGW
- ▶ Gas tight (tested at 3 bar)
- High tensile and torsion resistance
- High thermal stability (650 °C/30 Min.)
- ▶ Waterproof in combination with Tangit M 4082
- ▶ sealing hose (tested at a pressure of 1 bar)
- ▶ Non-shrinking
- Durable
- Resistant to rotting
- Non-biodegradable
- Resistant to oil, water and solvents
- Compatible with all common building materials and plastics (e.g. PS-foam/Styrofoam)

AREAS OF APPLICATION

- ▶ Single and multiple service connections
- ▶ Repair of leaking ducts and passages
- ▶ Wall ducts for sewage pipes and cables
- ▶ Well sinking

TECHNICAL INSTRUCTIONS FOR USE

Preparation of the surfaces:

The surface must be firm, clean and free of any parting agents. PE surfaces must be cleaned with Tangit Cleaner PE/PB/PP/PVDF or Tangit Cleaning Tissues PE/PB/PP/PVDF. Afterwards, roughen the surface crosswise at least two times with abrasive paper (grit 240). Remove the sanding dust. Do not apply to dead water. Humid brickwork will not affect the product's performance.

Range of temperature:

- ▶ Minimum processing temperature: +5 °C
- ▶ Maximum processing temperature: +30 °C
- ▶ Optimum processing temperature: +15 °C to + 25 °C (product, ambient and workpiece/surface temperature)
- ▶ When processing product at low ambient temperatures (0 to 10 °C) heat product to room temperature before use if possible. Otherwise allow for a significantly longer curing time.

Application:

- ▶ Make sure that the gap between the pipe and the duct is at least 8 mm.
- ▶ Therefore you can temporarily seal off the openings on both sides between the pipe and the duct with a toroidal PE sealing ring so that the pipe is centered and the gap can be filled properly.
- ▶ Remove the cap from the cartridge and screw on the mixing nozzle.
- ▶ Insert the cartridge into the 2-component cartridge gun (Tangit/Ponal PP6).
- ▶ Squeeze a few cubic centimeters (5 – 15 cm³) onto a piece of paper or plastic until the emerging product has a uniform color.
- ▶ Insert mixing tubes into the holes of the rubber ring immediately, and evenly inject the contents of the cartridge.
- Resin leakage out of the opening signals a complete infilling; insert more resin if needed.
- ▶ If the contents are not used completely, close the cartridge. The remaining can be used later with a new static mixer.

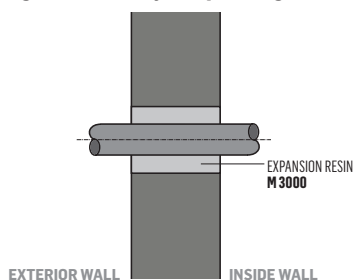
OTHER INFORMATION

Product code content

TE150	10 cartridges of 150 ml + 10 static mixers + 2 extension tubes + technical data sheet
TE300	6 cartridges of 300 ml +6 static mixers incl. extension tubes + technical data sheet

APPENDIX

For fasteing and permanently sealing transitions against humidity and pressing water: see graphic



For fasteing and permanently sealing transitions against humidity and pressing water: see graphic

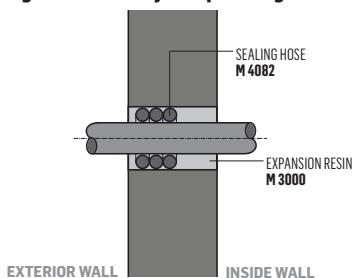


TABLE OF CONSUMPTION

I. Core drilling: 80 mm

Pipe diameters (d)	without Sealing hose		with Sealing hose	
	number of cartridges (150 ml)	number of cartridges (300 ml)	number of cartridges (150 ml)	number of cartridges (300 ml)
a) 52 mm	1,00	0,50	0,75	0,40
b) 60 mm	0,75	0,40	0,50	0,25

II. Core drilling: 100 mm

Pipe diameters (d)	without Sealing hose		with Sealing hose	
	number of cartridges (150 ml)	number of cartridges (300 ml)	number of cartridges (150 ml)	number of cartridges (300 ml)
a) 52 mm	2,00	1,00	1,70	0,85
b) 60 mm	1,75	0,90	1,50	0,75
c) 85 mm	0,75	0,40	0,50	0,25

III. Core drilling: 120 mm

Pipe diameters (d)	without Sealing hose		with Sealing hose	
	number of cartridges (150 ml)	number of cartridges (300 ml)	number of cartridges (150 ml)	number of cartridges (300 ml)
a) 52 mm	3,20	1,60	2,90	1,50
b) 60 mm	3,00	1,50	2,70	1,35
c) 85 mm	2,00	1,00	1,70 ^(1,20)	0,85 ^(0,40)

For I., II., III: Brickwork depth of 25 cm

IMPORTANT NOTE

Product safety:

People already sensitised to diisocyanates may develop allergic reactions when using this product. Persons suffering from asthma, eczema or skin problems should avoid contact, including dermal contact, with this product. This product should not be used under conditions of poor ventilation unless a protective mask with an appropriate gas filter (i.e. type A1 according to standard EN 14387) is used. For professional use only.

TECHNICAL DATA

Raw material basis:	2c-polyurethane
Thermal stability:	Short-term +650 °C, 30 min. Long-term stress -40 °C to +90 °C
Processing temperature:	min. +5 °C, max. +30 °C optimum +15 °C up +25 °C
Functional strength:	Reached after 5 min. (20 °C)
Final strength:	Reached after 30 min. (20 °C)
Tensile strength:	30 kN
Gas tight:	tested at 3 bar
Torsion resistance:	240 Nms
Waterproof:	Waterproof in connection with Tangit M 4082 1 sealing hose (tested at a pressure of 1 bar)
Consumption:	A 150 ml cartridge equals a volume of 750 ml resin A 300 ml cartridge equals a volume of 1.5 L resin
Storage:	15 months at 20° C, store in an upright position, in a cool, frost- protected and dry place

Apart from the information given in this technical data sheet, it is also important to observe the relevant guidelines and regulations of various organizations and trade associations as well as the applicable DIN standards. All data given was obtained at an ambient and material temperature of +23°C and 50 % relative humidity unless specified otherwise. Please note that under other climatic conditions hardening can be accelerated or delayed.

The above information, in particular recommendations for the handling and use of our products, is based on our professional knowledge and experience. As materials and conditions may vary with each intended application and thus are beyond our control, we strongly recommend that in each case sufficient tests are conducted to check the suitability of our products for the intended application method and use. Legal liability cannot be accepted on the basis of the contents of this technical data sheet or any verbal advice given unless there is evidence of wilful intent or gross negligence on our part. This technical data sheet supersedes all previous editions.

TECHNICAL DATA SHEET

TANGIT M 4082

SEALING HOSE



PROPERTIES

- ▶ Component of the Tangit M 3000 system
- ▶ Waterproof – including pressurised water (10 m water column = 1 bar)
- ▶ Self-sealing (expanding) on contact with water
- ▶ Easy installation

AREAS OF APPLICATION

- ▶ Use in combination with Tangit M 3000 expansion resin
- ▶ Household service lines exposed to pressurised water
- ▶ Wall ducts for sewage pipes and cables
- ▶ Repair of leaking ducts and passages
- ▶ Sealing of well heads (suitable also for PE surfaces)
- ▶ Suitable for clearances from 8 to 15 mm and pipe diameters from 40 to 90 mm
- ▶ To seal off tubes with wider diameters or clearance, use several Tangit M 4082 sealing hoses.

PREPARATION OF THE SURFACES

Residual moisture will not affect the product's performance. However, remove any standing water prior to application.

APPLICATION

- ▶ Wind the tube around the transition/service junction at least three times, then press firmly into place to compact and fully fill the gap. The sealing tube should be located at a distance of approx. 50 mm from the outer wall.
- ▶ Make sure that the gap between the pipe and the duct is at least 8 mm.
- ▶ Temporarily seal off the openings on both sides between the pipe and the duct, by applying a doughnut shaped PE sealing ring. This will ensure that the pipe is centred and the gap properly filled
- ▶ Begin injecting the Tangit M 3000 expansion resin from outside the building.
- ▶ Insert the Tangit M3000 mixing tubes into the holes of the PE sealing ring and immediately inject the contents of the cartridge, ensuring an even application
- ▶ Ensure that the Tangit M 4082 sealing hose is still in position, by firmly repressing before commencing sealing from the outside of the building with Tangit M 3000.
- ▶ Seal from the outside by inserting the Tangit M 3000 mixing tubes into the holes of the PE sealing ring and immediately inject the contents of the cartridge, ensuring an even application
- ▶ Insert more Tangit M 3000 resin as required to completely fill the void. Resin seeping from the holes indicates that a complete fill has been achieved
- ▶ The Tangit M 4082 sealing hose must be completely embedded in the expansion resin on both sides.

OTHER INFORMATION

1 sealing hose

length: 80 cm

diameter: 2 cm

Article data Contents

TD082 6 Sealing hoses

APPENDIX

For fasteing and permanently sealing transitions against humidity and pressing water: see graphic

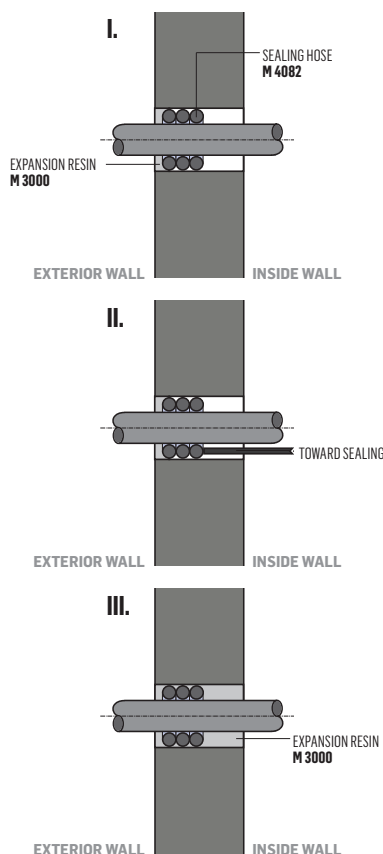


TABLE OF CONSUMPTION

I. Core drilling: 80 mm

Pipe diameters (d)	Consumption in piece
a) 52 mm	1
b) 60 mm	1

II. Core drilling: 100 mm

Pipe diameters (d)	Consumption in piece
a) 52 mm	2
b) 60 mm	2
c) 85 mm	-

III. Core drilling: 120 mm

Pipe diameters (d)	Consumption in piece
a) 52 mm	3
b) 60 mm	3
c) 85 mm	1 * (2)

Legend: - no installation possibly; * i.e. double after actual fact, winding number if necessary

IMPORTANT NOTE

Storage:

Store in cool dry conditions protected from frost and direct sunlight

Shelf life:

Unlimited in original unopened bag

TECHNICAL DATA

Raw material basis: Polyacrylate

Expansion rate: 50-fold volume increase after 20 min.

Consumption: 1 sealing hose per application

Storage: Unlimited shelf life in original unopened bag. Store in dry place and protected from light.

Apart from the information given in this technical data sheet, it is also important to observe the relevant guidelines and regulations of various organizations and trade associations as well as the applicable DIN standards. All data given was obtained at an ambient and material temperature of +23°C and 50 % relative humidity unless specified otherwise. Please note that under other climatic conditions hardening can be accelerated or delayed.

The above information, in particular recommendations for the handling and use of our products, is based on our professional knowledge and experience. As materials and conditions may vary with each intended application and thus are beyond our control, we strongly recommend that in each case sufficient tests are conducted to check the suitability of our products for the intended application method and use. Legal liability cannot be accepted on the basis of the contents of this technical data sheet or any verbal advice given unless there is evidence of wilful intent or gross negligence on our part. This technical data sheet supersedes all previous editions.

TESTS AND INSPECTION RESULTS

REGARDING THE RELIABILITY OF INSTALLED TANGIT M 3000

Test of Tangit Expansion Resin and Sealing Hose wet installation system for gas and water service line wall ducts

The wet installation system used in combination with DVGW-certified gas and water service line wall ducts fulfills the requirements of the DVGW-VP 601 test specification (October 2000).

DVGW test report AZ 00/244/0098/868 dated 15 November 2000



Supplementary test of wet installation system Tangit M 3000 Expansion Resin without Sealing Hose M 4082

If warranted by the application scenario and customer wishes, it is possible to do without the Tangit M 4082 system component since the supplementary tests showed that the wet installation system Tangit M 3000 used in combination with DVGW-certified gas and water service line wall ducts fulfills the requirements of the DVGW-VP 601 test specification (October 2000).

DVGW test report AZ 03/145/0098/868 dated 29 July 2003



Test for MDI emissions when working with Tangit M 3000 in enclosed space

When applying commonly used amounts of Tangit M 3000 Expansion Resin inside an enclosed unventilated chamber, no MDI or other isocyanates were detected in any of the air samples taken.

SP Technical Research Institute of Sweden Report
3F 014598 dated 13 August 2013



Test of the Tangit M 3000 system for wall ducts: air flow measurement

The Tangit M 3000 system for fixing and sealing of wall ducts was tested in a procedure based on the DVGW test specification DVGW-VP 601 (October 2000).

Within the meaning of the DVGW requirements according to VP 601, the sealing effect achieved with Tangit M 3000 Expansion Resin can be considered air-tight in the pressure range of 0 to 3 bar. Since this system also meets the limits stated in the VP 601 test specification, it can be assumed that it is also gas-tight.

Test report issued by the Fraunhofer Institute for Environmental, Safety, and Energy Technology UMSICHT on 3 November 2004



Sealing performance test of Tangit M 3000 for the application: wall ducts for FTTH microducts

Based on the results obtained, the sealing system Tangit M 3000 can be judged as providing a tight seal against water with a pressure equivalent to a 10 m column of water.

Test report issued by the Fraunhofer Institute for Environmental, Safety, and Energy Technology UMSICHT on 31 January 2008



Sealing performance test for Tangit Expansion Resin M 3000: renovation encapsulation case

The system is to be used to create a seal in the annular gap between the old line and the renovation encapsulation. The resin is introduced via a filling hole in the wall cover of the renovation encapsulation, expands in the interior annular gap between the old line and the renovation encapsulation, and cures in place. Based on the results obtained, the sealing system can be judged as providing a tight seal against water with a pressure equivalent to a 10 m column of water (1 bar).

Test report issued by the Fraunhofer Institute for Environmental, Safety, and Energy Technology UMSICHT on 9 April 2013



Fixing and sealing against pressing water

Tangit Expansion Resin M 3000 and Sealing Hose M 4082 from Henkel.

Through a wholesaler in Brandenburg who successfully does business with us, mainly in projects involving WAGA coupling systems, interest was generated regarding the use of Tangit Expansion Resin M 3000 and Tangit Sealing Hose M 4082. The owner of a local house-building company requested a demonstration on a detached house that had just been constructed.

The bores in the outer wall had already been drilled to accommodate several drain pipes. The PVC pipes were inserted and adjusted to the right gradient. Tangit M 4082 sealing hoses were inserted from the basement side and the exterior and taped off on each side with Hannoband 20 x 20 mm tape, which has proved excellently suited for this purpose. Before injecting Tangit M 3000 expansion resin, the gradient was checked once again.

The annular cavities thus produced were then filled from the inside (Fig. 1) and the outside (Fig. 2) using 300 mL cartridges. By slowly pulling the pistol trigger, the cavities were filled with Tangit M 3000 which developed its own heat. After a very short time the expansion resin had expanded and set, showing excellent results (Fig. 3).



1

Filling of the cavities on the inside.



2

Filling of the cavities on the outside.



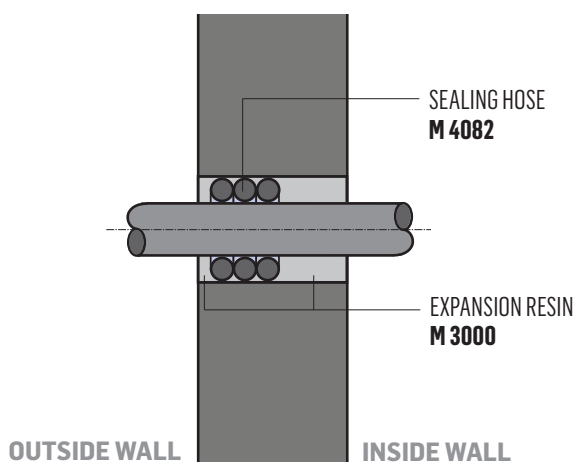
3 Cured expansion resin

To obtain a neat transition from the masonry to the PVC lead-through, Ceresit Blitz-Dicht instant sealant was used. This is a fiber-filled universal sealing compound that is recommended for all building material surfaces.

In the area where the PVC drain pipes emerged, the DELTA-MS panels that had been bonded on the outside had been partly cut open (Fig. 3). After the Ceresit Blitz-Dicht sealant had cured, it was recommended to fill the cut-outs in the DELTA-MS panels with Sista M 534 universal foam.

The owner of the house was satisfied with the demonstration, the material used and the cost involved.

Heiner Niedung



For fixing and permanent sealing against moisture and pressing water.

Tangit M 4082 Sealing Hose

For permanent sealing against moisture and pressing water

- Also suitable for PE surfaces
- Resistant to aging
- Does not biodegrade

Tangit M 3000 Expansion Resin

For rapid installation of gas and water service lines in house wall ducts

- Also suitable for PE surfaces
- Rigid after just 5 min, does not shrink
- Gas-tight
- Resistant to extraction and torsion

New installation of a transformer station in Oberhausen

Use of Tangit Expansion Resin M 3000 and Sealing Hose M 4082.

To allow connection of a transformer station in Oberhausen to the electric grid, three bores had been drilled at basement level in the outer wall of a building. The basement wall was made of water-impermeable concrete with a thickness of 150 mm.

A 90 mm bore had been drilled to accommodate the 63 mm corrugated PE duct. Gap widths of 8 mm to 15 mm are optimal. They allow easy and secure sealing of the annular clearance with a minimum of material usage when working with Tangit M 3000 expansion resin and Tangit M 4082 sealing hose.

1 Fig. 1 shows the outer view of the wall duct bores. The bores were to be cleaned to ensure maximum adhesion of the Tangit M 3000 expansion resin.

The Tangit M 4082 sealing hose is wound round the duct. By applying variable tension to the sealing hose, the width of the hose winding can be adjusted to suit the annular clearance.

2 be adjusted to suit the annular clearance.

The duct with its winding of Tangit M 4082 sealing hose is inserted into the bore in the wall. In this case, the sealing hose does the job of

3 fixing the duct centrally in the bore.



4 Insertion of the corrugated duct with Tangit M 4082 Sealing Hose



To avoid emergence of the Tangit M 3000 expansion resin it is recommended to install a "lost formwork" at the mouth of the annular gap. This can be either the "formwork template" provided along with the product or a flexible PUR cord.

5 Filling the cavity with Tangit M 3000 Expansion Resin



The annular cavity between the Tangit M 4082 sealing hose and the PUR cord is filled with Tangit M 3000 expansion resin in order to fix the duct in place in the masonry. It assures the strength levels required in the DVGW VP601 test specification. The Tangit expansion resin has fully set after 5 minutes and reaches full mechanical load-bearing capability after 30 minutes.

6 Finished gap sealing



After the expansion resin has cured, excess resin can be easily removed using a saw and the trench around the wall duct can be backfilled.

Ingo Pfirrmann

Seepage of water through a wall duct

Repair of an annular gap using Tangit M 4082 Sealing Hose and Tangit M 3000 Expansion Resin.

1 Leaking duct clearance filled with mortar.

2 Annular gap filled with Tangit M 4082 Sealing Hose

3 Filling the cavity with Tangit M 3000 Expansion Resin

4 Water-tightness test



Seepage was discovered at two wall ducts for ventilation pipes in a newly-built detached house in Oberhausen. Water pressing against the outside wall of the basement resulted in seepage into the basement itself. The annular gap with a width of approx. 50 mm had been filled with expansive cement mortar. Several attempts to plug the leak with mortar and bitumen still had not succeeded in achieving a proper seal (Fig. 1).

Prior to the repair, the annular cavity was cleaned out again. The bore had to be cleared of water and debris to provide a good substrate for adhesion. While the sealing hose itself can fix ducts centrally with smaller gap widths, the duct has to be supported and centered in the case of larger gap widths. Several layers of Tangit M 4082 sealing hose were laid in the annular cavity (Fig. 2). Three windings in the axial direction ensured that the sealing hoses would achieve a friction fit between the duct and the wall.

The annular gap was then filled with Tangit M 3000 expansion resin (Fig. 3). Formwork initially prevents the still-liquid expansion resin from running out of the gap.

After five minutes the expansion resin has become rigid and can be trimmed with a saw if necessary. To achieve a smooth transition at the duct entry point, the expansion resin was plastered over.

The thick bitumen coating on the outside wall which had been cut open was restored to protect the wall against pressing water.

Finally, the trench at the outside wall was filled with water for 48 hours (Fig. 4) to verify the sealing performance of the Tangit system.

Ingo Pfirrmann

Renovation of a swimming pool in Schwerte

Pipe sealing with Tangit M 4082 Sealing Hose and Tangit M 3000 Expansion Resin.

In the course of a renovation project on a swimming pool in Schwerte, all the supply lines were renewed. To seal off the new water inlet and outlet pipes in the pool walls, the Tangit system comprising the M 4082 Sealing Hose and the M 3000 Expansion Resin were used.

PVC pipes with an outer diameter of d63 mm, d75 mm and d90 mm were laid for the water inlet and outlet lines.

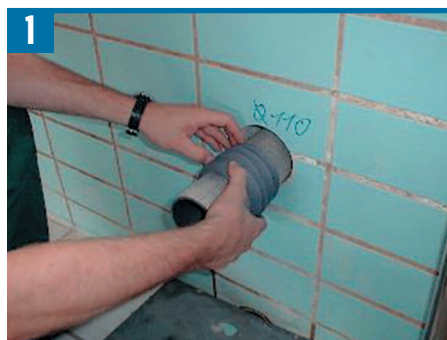
The pipes were sanded before installation. The pipes were inserted into bores with corresponding diameters of 90 mm, 100 mm, and 110 mm. The resulting clearance widths of approx. 10 mm are ideal for application of the Tangit system.

The first step was to wrap a triple winding of Tangit M 4082 sealing hose around the pipe. The pipe with its wrapping of sealing hose was then pushed into the bore (Fig. 1). For the wall thickness of 150 mm, the sealing hose winding was positioned on the pipe so that it lay at the center of the wall after the pipe had been pushed in.

The annular cavity on either side was closed off at the outside with a PE cord (diameter 15 mm). Then the Tangit M 3000 expansion resin was injected into the cavity on both sides (Fig. 2 and Fig. 3).

The expansion resin has fully set after 5 minutes and reaches full mechanical load-bearing capability after 30 minutes. After curing, the PE cords were removed. This completed the Tangit system installation procedure, and the wall duct was now sealed tight (Fig. 4).

As a protection against the chlorine in the water, an area of approx. 20 x 20 cm around the pipe was coated 5 mm thick with chlorine-resistant epoxy coating (Ceresit Cereflux CU 22, Henkel Bautechnik GmbH) before mounting the distributor jet with its grating.



1
Insertion of the pipe with its wrapping of Tangit M 4082 Sealing Hose



2
Injection of the Tangit M 3000 Expansion Resin from the inside of the pool wall.



3
Injection of the Tangit M 3000 Expansion Resin from the outside of the pool wall.



4
Finished state of the installed Tangit system

Cost-effective and secure sealing

Heiner Niedung, Distributor CDH

Sealing of the joint between tubular well lining and the well shaft floor using Tangit M 3000 Expansion Resin

In many places wells are sunk near lakes and rivers to access and convey water. After all parts of the wellhead, including the necessary submerged pump, have been installed the water is conveyed to the respective water works for treatment. After a variety of checks and controls, the water has reached drinking quality according to the EU standard and flows into the distribution grid.



In the district around the Grunewald tower in Berlin there are several such wells and pumping stations on the banks of the Havel river. They supply the inhabitant of Berlin with drinking water. The wells have an average depth of 80 meters.

The city's water utility company, the Berliner Wasserbetriebe, regularly regenerates wells that have been in operation for some time, using different methods to do so. This gives them the opportunity to assess the state of the wells at the same time.

In the course of such regeneration work, the shaft manhole cover is removed, the workers climb down the ladder to the well head and remove components such as the well head, the pump riser pipes as well as the submerged pump itself. This exposes the joint between the tubular well lining, with a nominal diameter of DN 400, and the well shaft floor.

To seal off this joint against stratum water and rising groundwater, packing materials were used at the time of building the wells that had not been tested for long-term sealing performance. Due to fatigue caused by pumping operations, these materials can no longer fulfill their intended function as sealants.



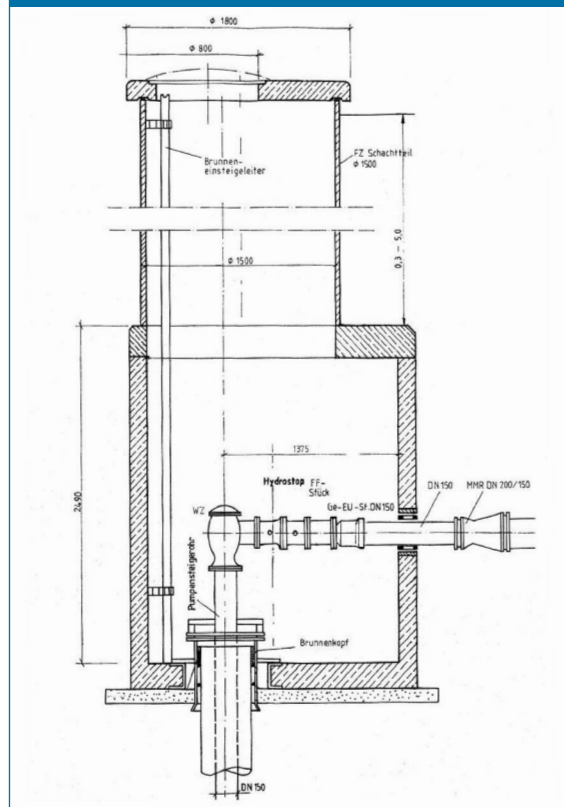
Insertion of the Tangit sealing hose

Procedure

- The existing packing material between the well head and the well shaft floor was pressed down approx. 10 cm.
- Loose debris and standing water in the joint were removed.
- A Tangit M 4082 sealing hose with a length of 1550 mm (hose can be manufactured in special lengths up to approx. 3000 mm) was inserted and pressed down on top of the previous packing.
- A cartridge of Tangit M 3000 expansion resin was inserted into the pistol, the mixing tube screwed on and the two-component expansion resin injected into the joint.
- Once cured, the Tangit M 3000 can be cut down to the same level as the tubular well lining – if so desired.

The usage of only 375 mL of Tangit M 3000 expansion resin and an M 4082 sealing hose in the special length of 1550 mm proved so attractive from the cost perspective that, in future, all wells managed by the Berliner Wasserbetriebe (BWB) will be sealed using these cost-effective and reliable Tangit sealing materials.

Cross-section of the well shaft



Injection of the expansion resin into the joint



Excess cured Tangit M 3000 is trimmed off.

Tangit Sealing Hose M 4082 and Tangit Expansion Resin M 3000

Field report – Installation of new district heating pipes, Gelsenkirchen

The Tangit system was used to connect a number of residential buildings to the municipal district heating grid.

The Tangit products had been selected as early as the planning phase for this construction project. Unlike the usual installation method (e.g. that used for gas service line wall ducts), in this case the Tangit system was to be installed without any fixed 'anchorage' points.

The pipes were to remain axially displaceable. This would eliminate the stresses that would be caused by thermal elongation and contraction between fixed anchorage points.

Bores were drilled in the building shell wall at basement level. The basement walls were made of water-impermeable concrete with a thickness of 240 mm in each case. The wall ducts to accommodate the plastic casing pipes (PCP) with an outer diameter of 110 mm were drilled with a diameter of 130 mm. The clearance of 10 mm that was specified during planning is optimal since the annular gap is easily accessible with this wall-to-tube distance, which ensures easy and secure sealing with Tangit M 3000 Expansion Resin and Tangit M 4082 Sealing Hose.

Fig. 1 shows the outside view of the wall ducts. The bores were cleaned (with a brush) to remove dust from drilling and other dirt before inserting the pipes, in order to give the Tangit M 3000 expansion resin a good substrate for adhesion on the concrete wall.

Fig. 1
PCP district heating
pipes in the trench



The Tangit M 4082 sealing hose is installed first (see Fig. 2). The triple wrapping of hose is pushed into the annular cavity until it is more or less in the center of the wall.

Fig. 2
Insertion of the Tangit
M 4082 sealing hose



Then the surface of the pipe is coated with Teflon. A conventional Teflon spray is used and the material is applied with a brush to the entire circumference of the pipe (see Fig. 3).

The Teflon spray coating prevents the Tangit M 3000 expansion resin that is applied next from bonding with the PCP pipe. The pipe can therefore slide along the expansion resin, thus remaining axially displaceable. The sealing action is provided by the Tangit M 4082 sealing hose which expands upon contact with water and thus ensures a permanently elastic and safe seal.

Fig. 3
Coating of the PCP
pipes with Teflon



The annular gap is then plugged at the outer side of the wall with a PE cord and the Tangit M 3000 expansion resin is injected into the cavity at the joint between the PE cord and the wall.

To avoid uncontrolled emergence of the Tangit M 3000 expansion resin it is always recommended to provide a "lost formwork" at the mouth of the annular gap before injecting the resin. This can be done using the formwork template provided with the Tangit M 3000 expansion resin or, as shown here, with a flexible PE cord.

Fig. 4
Injection of the Tangit
M 3000 Expansion
Resin.



After the resin has completely expanded (five minutes), only a small amount of resin has emerged at the joining point of the PE cord. The annular gap has therefore been optimally filled. This cured resin can be removed along with the cord (see Fig. 5). The installation work on the outside of the building wall is thus finished.

Fig. 5
Removing the Tangit M 3000 expansion resin and the PE cord (left), finished seal (right).



Inside the basement, the pipes are now also coated with Teflon up to the sealing hose, then the PE cord is applied and the Tangit expansion resin injected (see Fig. 6).

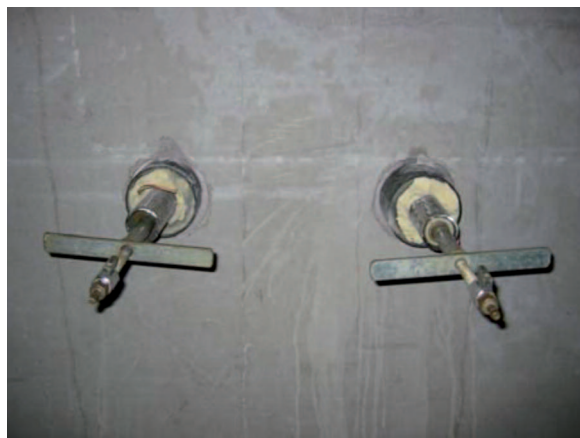
Fig. 6
Filling the cavity on the basement side with Tangit M 3000 expansion resin



The Tangit expansion resin has fully set after 5 minutes and reaches full mechanical load-bearing capability after 30 minutes. Once this time has passed, downstream work can begin.

Fig. 7 shows the completed sealing work on the basement side with the test equipment in place for the pressure test.

Fig. 7
Finished sealing work inside the building





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