



Austrian Institute of Construction Engineering
Schenkenstrasse 4 | T+43 1 533 65 50
1010 Vienna | Austria | F+43 1 533 64 23
www.oib.or.at | mail@oib.or.at



European Technical Assessment

ETA-17/0862
of 12.12.2017

General part

Technical Assessment Body issuing the ETA

Austrian Institute of Construction Engineering (OIB)

Trade name of the construction product

PROMASTOP®-M

Product family to which the construction product belongs

Fire Stopping and Fire Sealing Product:
Penetration seal

Manufacturer

Promat International NV
Bormstraat 24
2830 Tiselt
Belgium

Manufacturing plant

Production plant 22 and 24

This European Technical Assessment contains

48 pages including Annexes 1 to 4 which form an integral part of this assessment

This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of

Guideline for European technical approval (ETAG) No. 026-2 Fire Stopping and Fire Sealing Products – Part 2: Penetration Seals, edition August 2011, used as European Assessment Document (EAD)

General part

This European Technical Assessment is not to be transferred to manufacturers or agents of manufacturer other than those indicated on page 1, or manufacturing plants other than those laid down in the context of this European Technical Assessment.

Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and should be identified as such.

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Specific parts

1. Technical description of the product

1.1 Definition of the construction product

PROMASTOP®-M is a cement based firestop mortar to form a penetration seal to reinstate the fire resistance performance of floor and wall constructions, where they have been provided with apertures for the penetration of different installations.

The firestop mortar PROMASTOP®-M is grey coloured and supplied in bags and buckets.

PROMASTOP®-M – type of penetration seal (acc. to ETAG 026-2, cl. 1.1, table 1-1): Mortar.

A detailed specification of the product PROMASTOP®-M is a non-public part of this European technical assessment, and deposited at the Österreichisches Institut für Bautechnik.

2. Specification of the intended use(s) in accordance with the applicable European Assessment Document (hereinafter EAD)

2.1 Intended use

The intended use of PROMASTOP®-M firestop mortar is to reinstate the fire resistance performance of flexible wall, rigid wall and rigid floor constructions where they are penetrated by different installations.

In the following specified constructions PROMASTOP®-M is also used in conjunction with the firestop collar PROMASTOP®-FC, the firestop block PROMASTOP®-B and the intumescent firestop sealant PROMASEAL®-AG, if applicable.

(1) The specific elements of construction that PROMASTOP®-M may be used to provide a penetration seal in, are as follows (details see Annex 3):

- A) Flexible walls: The wall must have a minimum thickness of 100 mm and comprise timber or steel studs lined on both faces with minimum 2 layers of minimum 12,5 mm thick boards. For flexible walls with a minimum thickness of 110 mm and comprise timber or steel studs lined on both faces with minimum 2 layers of minimum 15 mm thick boards. For timber stud walls there must be a minimum distance of 100 mm of the seal to any stud and the cavity between stud and seal must be closed and minimum 100 mm insulation of class A1 or A2 (in accordance with EN 13501-1) in the cavity between stud and seal.

The aperture lining shall be made from steel studs with a thickness of minimum 0,6 mm and / or boards of the same specification as those used in the wall in practice.

- B) Rigid walls: The wall must have a minimum thickness of 100 mm and 150 mm and consist of concrete, aerated concrete or masonry, with a minimum density of 500 kg/m³.
- C) Rigid floors: The floor must have a minimum thickness of 150 mm and consist of aerated concrete or concrete with a minimum density of 650 kg/m³.

This ETA does not cover the use of this product as a penetration seal in sandwich panel constructions.

- (2) PROMASTOP®-M may be used as a penetration seal with the following specific installations or as blank seal:

Cables:	For further details see Annex 3.
PP-H and PP-R pipes:	For further details see Annex 3.
PE pipes:	For further details see Annex 3.
Multilayer-composite pipes:	For further details see Annex 3.
Aluminium-composite pipes:	For further details see Annex 3.
Metal pipes:	For further details see Annex 3.

The maximum seal sizes in the different compartments (see 2.1.) are given in Annex 3 of the ETA.

- (3) Distances:

Specimen	Minimum distance (mm)
Firestop collar PROMASTOP®-FC – Firestop collar PROMASTOP®-FC	0
Firestop collar PROMASTOP®-FC – Firestop block PROMASTOP®-B	10
Firestop collar PROMASTOP®-FC – Cable, cabletray	0
Firestop collar PROMASTOP®-FC – Seal edge	10
Non-combustible insulations – non-combustible insulations	0
Non-combustible insulations – Seal edge	10
Cable, cabletray – Cable, cabletray	0
Cable, cabletray – Seal edge	0
Firestop block PROMASTOP®-B – Seal edge	0

To all other installations: minimum 100 mm
For further details see Annex 3.

- (4) Supporting distance on both faces of wall constructions: minimum 400 mm for pipes and minimum 275 mm cables/cable trays
Supporting distance on the upper face of floor constructions: minimum 320 mm

2.2 Use category

The use category of PROMASTOP®-M is Type X. Since the requirements for type X are met, also the requirements for type Z₂, Z₁, Y₂ and Y₁ are fulfilled.

Type X:	Products intended for use in conditions exposed to weathering.
Type Y ₁ :	Products intended for use at temperatures between -20°C and +70°C, with exposure to UV but no exposure to rain.
Type Y ₂ :	Products intended for use at temperatures between -20°C and +70°C, but with no exposure to rain nor UV.
Type Z ₁ :	Products intended for use at internal conditions with high humidity, excluding temperatures below 0°C ¹ , without exposure to rain or UV.
Type Z ₂ :	Products intended for uses at internal conditions with humidity classes other than Z ₁ , excluding temperatures below 0°C, without exposure to rain or UV.

¹ These uses apply for internal humidity class 5 in acc. with EN ISO 13788

2.3 General assumptions

It is assumed that

- a) damages to the penetration seal are repaired accordingly,
- b) the installation of the penetration seal does not effect the stability of the adjacent building element – even in case of fire,
- c) the lintel or floor above the penetration seal is designed structurally and in terms of fire protection such that no additional mechanical load (other than its own weight) is imposed on the penetration seal,
- d) the aperture lining within a flexible wall is supported by the studs (transoms and mullions) in such a way that the mechanical load imposed to the aperture lining by the penetration seal does not affect the stability of the aperture lining and the flexible wall,
- e) the thermal movement in the pipe work will be accommodated in such way that it does not impose a load on the penetration seal,
- f) the installations are fixed to the adjacent building element in accordance with the relevant regulations in such a way that, in case of fire, no additional mechanical load is imposed to the penetration seal,
- g) the support of the installations is maintained for the required period of fire resistance and
- h) pneumatic dispatch systems, compressed air systems, etc. are switched off by additional means in case of fire (for sealing off plastic composite pipes).

This European Technical Assessment does not address any risks associated with the emission of dangerous liquids or gases caused by failure of the pipe(s) in case of fire nor does it prove the prevention of the transmission of fire through heat transfer via the medium in the pipes.

This European Technical Assessment does not verify the prevention of destruction of adjacent building elements with fire separating function or of the pipes themselves due to distortion forces caused by extreme temperatures. These risks shall be accounted for by taking appropriate measures when designing or installing the pipe work.

The mounting or hanging of the cables/pipes or the layout of the pipe work shall be implemented in such a way that the cables/pipes and the fire resistant building elements shall remain functional within a period of time which corresponds to the fire resistance period required.

The risk of downward spread of fire caused by burning material which drips through a pipe to floors below is not considered in this European Technical Assessment.

The durability assessment does not take account of the possible effect on the penetration seal of substances permeating through the pipe walls.

The assessment does not cover the avoidance of destruction of the penetration seal or of the adjacent building element(s) by forces caused by temperature changes in case of fire. This has to be considered when designing the piping system.

2.4 Manufacturing

The European Technical Assessment is issued for the product on the basis of agreed data/information, deposited with the Österreichisches Institut für Bautechnik, which identifies the product that has been assessed and judged. Changes to the product or production process, which could result in this deposited data/information being incorrect, should be notified to the Österreichisches Institut für Bautechnik before the changes are introduced. The Österreichisches Institut für Bautechnik will decide whether or not such changes affect the European Technical Assessment and consequently the validity of the CE marking on the basis of the European Technical Assessment and if so whether further assessment or alterations to the European Technical Assessment, shall be necessary.

2.5 Installation

The product shall be installed and used as described in this European Technical Assessment. Additional marking of the penetration seal shall be done in case of national requirements.

The arrangement and installation of PROMASTOP®-M shall be done in accordance with the details given here and in Annex 2 and 3 for the penetration seal(s).

The installation of PROMASTOP®-M should be conducted according to the installation manuals as follows:

- Compare the installations with the installations manual if the type is sealable
- Absorbent substrate should be pre wetted with water
- For building penetration seals in floors, include reinforcement with iron rods or screws into the reveal
- Recommended mixing ratio 5 : 2,4 (mortar : water)
- For cable and cable bundle use additional PROMASEAL®-AG (thickness 5 mm, 20 mm length) around the cables, centred in the firestop mortar seal or use additional protection (see Annex 3).
- After plastering the mortar in the compartment, smooth the surface of the penetration seal.
- Depending on the installations, use the other mentioned firestop materials e.g. the firestop collar PROMASTOP®-FC for pipes on the penetration seal or insulation for metal pipes. See Annex 3 and 4.

For fixing the collars on the surface of the PROMASTOP®-M firestop mortar seal use the added fastening materials.

The insulation for metal pipes shall be placed in the center of the PROMASTOP®-M penetration seal and fixed with steel wire (minimum thickness 0,6 mm).

3. Performance of the product and references to the methods used for its assessment

Basic requirements for construction works	Essential characteristics	Method of verification	Performance
BWR 2	Reaction to fire	EN 13501-1:2007+A1:2009	See 3.2.1
	Resistance to fire	EN 13501-2:2016	See 3.2.2 and Annex 3
BWR 3	Air permeability (material property)	No Performance Assessed	
	Water permeability (material property)	No Performance Assessed	
	Content and/or release of dangerous substances	European Council Directive 67/548/EEC- Dangerous Substances Directive and Regulation (EC) No 1272/2008	Declaration of conformity by the manufacturer
BWR 4	Mechanical resistance and stability	No Performance Assessed	
	Resistance to impact / movement	No Performance Assessed	
	Adhesion	No Performance Assessed	
BWR 5	Airborne sound insulation	No Performance Assessed	
BWR 6	Thermal properties	No Performance Assessed	
	Water vapour permeability	No Performance Assessed	
BWR 7	No Performance Assessed		

3.1 Safety in case of fire (BWR 2)

3.1.1 Reaction to fire

The components of construction product PROMASTOP®-M were assessed according to ETAG 026-Part 2 used as EAD clause 2.4.1 and classified according to EN 13501-1:2007+A1:2009.

Component	Class according to EN 13501-1
PROMASTOP®-M firestop mortar	A1
PROMASTOP®-FC firestop collar (additional component)	E
PROMASTOP®-B firestop block (additional component)	E
PROMASEAL®-AG intumescent firestop sealant (additional component)	E

3.1.2 Resistance to fire

PROMASTOP®-M has been tested in accordance with EN 1366-3:2009 installed within apertures in flexible walls, rigid walls and floors, in conjunction with PROMASTOP®-FC firestop collars (for plastic pipes), with PROMASTOP®-B firestop block (for cables and conduits) and PROMASEAL®-AG intumescent firestop sealant (for cables if not stated otherwise in Annex 3). For more details of installations see clause 2.1 and Annex 3 of the ETA.

The apertures were penetrated by different installations listed in Annex 3 of the ETA.

As shown in Annex 3, the test results and the direct field of application (acc. to EN 1366-3:2009) PROMASTOP®-M has been classified in accordance with EN 13501-2:2016.

The seals may only be penetrated by the services described in Annex 3. Other parts must not penetrate the seal.

Appropriate wall and floor constructions for penetration seals see clause 2.1.

The service support construction must be fixed to the building element containing the penetration seal or a suitable adjacent building element, on both sides of the penetration in such a manner that in the case of fire, no additional load is imposed on the seal. Furthermore it is assumed that this support is maintained on the unexposed side, for the required period of fire resistance.

Information on ancillary products, which were tested within the framework of this European Technical Assessment for evaluating resistance to fire is given in Annex 2.

Specific considerations:

- Plastic pipes with pipe closure devices must be perpendicular to the seal surface.
- It's assumed that compressed air systems are switched off by other means in case of fire.
- The function of the pipe seal in case of pneumatic dispatch systems, pressurised air systems etc. is guaranteed only when the systems are shut off in case of fire.
- The assessment does not address any risks associated with leakage of dangerous liquids or gases caused by failure of the pipe(s) in case of fire.
- The durability assessment does not take account of the possible effect of substances permeating through the pipe on the penetration seal.
- The classifications relate to U/U (uncapped on both sides) and U/C (uncapped inside the furnace/capped outside).
- The risk of spread of fire downwards caused by burning material, which drips through a pipe downwards to floors below, cannot be assessed with tests according to EN 1366-3 and is therefore not part of the assessment of this ETA.

3.2 Hygiene, health and environment (BWR 3)

3.2.1 Air permeability

No performance assessed.

3.2.2 Water permeability

No performance assessed.

3.2.3 Release of dangerous substances

According to the manufacturer's declaration "PROMASTOP®-M" does not contain dangerous substances detailed in Council Directive 67/548/EEC and Regulation (EC) no 1272/2008 as well as EOTA TR 034 (General BWR 3 Checklist for EADs/ETAs – Dangerous substances), edition October 2015 above the acceptable limits.

A written declaration in this respect was submitted by the ETA-holder.

In addition to the specific clauses relating to dangerous substances contained in this European Technical Assessment, there may be other requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the Construction Product Regulation, these requirements need also to be complied with, when and where they apply.

3.3 Safety and accessibility in use (BWR 4)

3.3.1 Mechanical resistance and stability

No performance assessed.

3.3.2 Resistance to impact / movement

No performance assessed.

3.3.3 Adhesion

No performance assessed.

3.4 Protection against noise (BWR 5)

3.4.1 Airborne sound insulation

No performance assessed.

3.5 Energy economy and heat retention (BWR 6)

3.5.1 Thermal properties

No performance assessed.

3.5.2 Water vapour permeability

No performance assessed.

3.6 Sustainable use of natural resources (BWR 7)

No performance assessed.

3.7 General aspects relating to fitness for use

3.7.1 Durability

PROMASTOP®-M has been tested in acc. to EOTA TR 024, Table 4.2.4 for the X use category specified in EOTA ETAG 026-2 and the results of the test have demonstrated suitability for penetration seals intended for use at external condition.

3.7.2 Serviceability

No performance assessed.

4 Assessment and verification of constancy of performance (hereinafter AVCP) system applied, with reference to its legal base

4.1 AVCP system

According to the Decision 1999/454/EC², amended by Decision 2001/596/EC³ of the European Commission, as amended, the system(s) of assessment and verification of constancy of performance (see Annex V of Regulation (EU) No 305/2011) is 1.

5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD

5.1 Tasks of the manufacturer

5.1.1 Factory production control

The manufacturer shall exercise permanent internal control of production. All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures, including records of results performed. This production control system shall insure that the product is in conformity with this European Technical Assessment.

The manufacturer may only use initial/raw/constituent materials stated in the Technical documentation⁴ of this European Technical Assessment.

For the components, which the ETA-holder does not manufacture by himself, he shall make sure that factory production control carried out by the other manufacturers gives the guarantee of the components compliance with the European Technical Assessment.

The factory production control and the provisions taken by the ETA-holder for components not produced by himself shall be in accordance with the control plan⁵ relating to this European Technical Assessment, which is a confidential part of the Technical documentation of this European Technical Assessment.

The results and details of the extent, nature and frequency of controls be performed within the factory production control shall be recorded and evaluated in accordance with the provisions of the control plan.

² Official Journal of the European Communities no. L 178, 14.7.1999, p. 52

³ Official Journal of the European Communities no. L 209, 2.8.2001, p. 33

⁴ The technical documentation of this European Technical Assessment has been deposited at the Österreichisches Institut für Bautechnik and, as far as relevant for the tasks of the notified product certification body involved in the assessment and verification of constancy of performance, is handed over to the notified product certification body.

⁵ The control plan has been deposited at Österreichisches Institut für Bautechnik and is handed over only to the notified product certification body involved in the assessment and verification of constancy of performance.

5.1.2 Other tasks of the manufacturer

The manufacturer shall provide a Technical data sheet and an installation instruction with the following minimum information:

Technical data sheet:

- a) Field of application:
 - 1) Building elements for which the penetration seal is suitable, type and properties of the building elements like minimum thickness, density, and – in case of lightweight constructions – the construction requirements
 - 2) Services which may pass through the penetration seal, type and properties of the services like material, diameter, thickness etc. in case of pipes including insulation materials; necessary/allowed supports/fixings
 - 3) Limits in size, minimum thickness etc. of the penetration seal
 - 4) Environmental conditions covered by this European Technical Assessment
- b) Construction of the penetration seal including the necessary components and additional products (e.g. backfilling material) with clear indication whether they are generic or specific.

Installation instruction:

- a) Steps to be followed
- b) Stipulations on maintenance, repair and replacement

The manufacturer shall, based on a contract, involve a notified product certification body, which is notified for the tasks referred to in clause 4.1 of the ETA in the field of Assessment product. For this purpose, the control plan referred to in clause 5.1 and 5.2 of the ETA shall be handed over by the manufacturer to the notified product certification body involved.

The manufacturer shall make a declaration of performance, stating that the construction product is in conformity with the provisions of this European Technical Assessment.

5.1.3 Further testing of samples taken at the factory

Testing of samples taken at the factory by the manufacturer is not required.

5.2 Tasks of notified product certification body

The notified product certification body shall retain the essential points of its actions referred to clause 5.2.1 to 5.2.3, state the results obtained and conclusions drawn in written report.

These tasks shall be performed in accordance with the provisions laid down in the control plan of this European Technical Assessment.

5.2.1 Determination of the product type

Notified product certification bodies undertaking tasks under Systems 1 shall consider the European Technical Assessment issued for the construction product in question as the assessment of the performance of that product. Notified bodies shall therefore not undertake the tasks referred to in point 1.2 (b)(i), in Annex V of Regulation (EU) No 305/2011, unless there are changes in the manufacture or manufacturing plant. In such cases, the necessary initial type testing has to be agreed between the Österreichisches Institut für Bautechnik and notified product certification body involved.

5.2.2 Initial inspection of the manufacturing plant and of factory production control

The notified product certification body shall ascertain that, in accordance with the control plan, the manufacturing plant, in particular personnel and equipment, and the factory production control are suitable to ensure a continuous and orderly manufacturing of the kit according to the specifications given in clause 2 and in the Annexes of the European Technical Assessment.

5.2.3 Continuous surveillance, assessment and evaluation of factory production control

The notified product certification body shall visit the factory at least once a year for surveillance of the manufacturer.

It has to be verified that the system of factory production control and the specified manufacturing process are maintained taking into account the control plan.

Continuous surveillance and assessment of factory production control have to be performed according to the control plan.

The results of continuous surveillance shall be made available on demand by the notified product certification body or the Österreichisches Institut für Bautechnik. In cases where the provisions of the European Technical Assessment and the control plan are no longer fulfilled, the certificate of constancy of performance shall be withdrawn.

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by Österreichisches Institut für Bautechnik

Rainer Mikulits
Managing Director

ANNEX 1

Reference documents and list of abbreviations

1.1 Reference to standards mentioned in this ETA:

ETAG 026-2 (2011)	Fire stopping and fire sealing products - Part 2: Penetration Seals
EN 13501-1:2007+A1:2009	Fire classification of construction products and building elements - Part 1: Classification using test data from reaction to fire tests
EN 13501-2:2016	Fire classification of construction products and building elements - Part 2: Classification using data from fire resistance tests, excluding ventilation
EN 1363-1:2012	Fire resistance tests - Part 1: General requirements
EN 1366-3:2009	Fire resistance tests for service installations - Part 3: Penetration seals

1.2 Other reference documents:

EOTA TR 024 (2009)	Characterisation, Aspects of Durability and Factory Production Control for Reactive Materials, Components and Products
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ANNEX 2

DESCRIPTION OF PRODUCT(S) & PRODUCT LITERATURE

2.1 Product:

Product name	Description
PROMASTOP®-M	firestop mortar
PROMASTOP®-FC (additional component)	firestop collar
PROMASTOP®-B (additional component)	firestop block
PROMASEAL®-AG (additional component)	Intumescent firestop sealant

Suitable insulation products – reaction to fire	
Non-combustible insulation (mineral wool)	minimum A2-s1, d0 / A2 _L -s1, d0 (acc. to EN 13501-1)
Combustible insulation (closed cell, flexible elastomeric foam, e.g. AF/Armaflex, Kaiflex ST)	minimum B-s3, d0 (acc. to EN 13501-1)
Combustible insulation for sound decoupling (elastomeric foam made from PE, e.g. Kaiflex PE-AB Abflusisolisierung)	minimum E (acc. to EN 13501-1)

2.2 Fixing details:

For fixing the collars on the surface of the PROMASTOP®-M firestop mortar seal use suitable or the added fastening materials.

The non-combustible insulation for metal pipes shall be placed in the center of the PROMASTOP®-M penetration seal and fixed with steel wire (minimum thickness 0,6 mm).

The additional protection for defined cable groups (see Annex 3) which is placed around the cables/cabletray shall be also fixed with steel wire (minimum thickness 0,6 mm).

For application of PROMASTOP®-M in floor application use additional iron rods or screws in the reveal (minimum depth 50 mm in the mortar and in the reveal). The distance shall be not more than 300 mm.

Sound decoupling:

Sound decoupling based on PE (foam, 1 layer, minimum class E acc. to EN 13501-1:2007+A1) may be used to a maximum thickness of 5 mm (only used for plastic pipes).

2.3 Technical product literature:

- Product data sheet of PROMASTOP®-M
- Product data sheet of PROMASTOP®-FC
- Product data sheet of PROMASTOP®-B
- Product data sheet of PROMASEAL®-AG
- Installation manual of PROMASTOP®-M
- Detailed sketches for PROMASTOP®-M

ANNEX 3

RESISTANCE TO FIRE CLASSIFICATION OF PROMASTOP®-M

3.1 Classification acc. to EN 13501-2 for PROMASTOP®-M firestop mortar

Minimum thickness of the PROMASTOP®-M firestop mortar seal:

Supporting construction	Minimum thickness
Flexible walls	150 mm
Rigid walls	150 mm
Rigid floors	150 mm

Seal sizes of the PROMASTOP®-M in dependence with the supporting construction (see ETA 2.1):

Supporting construction	Seal size
Flexible walls	≤ 3,0 m ²
Rigid walls	≤ 3,0 m ²
Rigid floors	≤ 3,0 m ²

Classification of the PROMASTOP®-M blank seals in dependence with the supporting construction (see ETA 2.1):

Supporting construction	Classification
Flexible walls	EI 120
Rigid walls	EI 120
Rigid floors	EI 120

Installations supports may penetrate the penetration seal:

Specimen
Steel cable trays (perforated or non-perforated)
Steel ladders
Steel cable trays (perforated or non-perforated) and steel ladders with organic coatings shall at least be classified A2-s1, d0 according to EN 13501-1:2007

Installations may penetrate the penetration seal (details are given in the specific parts in Annex 3):

Specimen
Plastic pipes made of PE, PP-H, PP-R
Aluminium-composite pipes Geberit Mepla, Geberit PushFit
Metal pipes (with insulation) made of steel, copper, cast iron, Ni-alloys
Cables and cable bundles (sheathed and non-sheathed)
Small conduits and tubes made of plastic or steel

Supporting distances for cables, cabletrays:

Orientation	Maximum distance (mm)
Distance on both faces of wall constructions	275
Distance on the upper face of floor constructions	320

Supporting distances for pipes:

Orientation	Maximum distance (mm)
Distance on both faces of wall constructions	400
Distance on the upper face of floor constructions	320

Pipe end configurations:

<i>Tested and classified for plastic pipes, small conduits and tubes made of plastic</i>	Applicable
U/U	U/U, C/U, U/C, C/C
<i>Tested and classified for small conduits and tubes made of steel</i>	Applicable
U/C	C/U, U/C, C/C
<i>Tested and classified for metal pipes</i>	Applicable
U/C	C/U, U/C, C/C

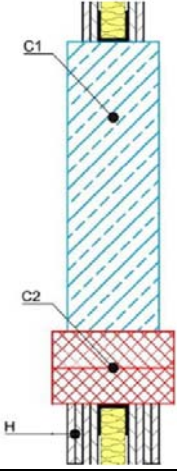
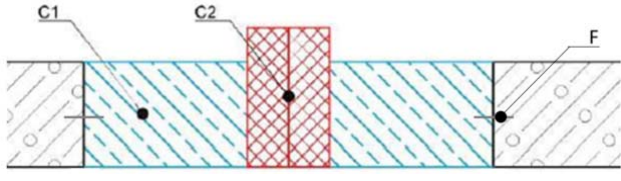
For retrospective installation in the PROMASTOP®-M penetration seal, PROMASTOP®-B firestop blocks may be used.

Seal sizes of the PROMASTOP®-B in the PROMASTOP®-M penetration seal:

PROMASTOP®-M in the supporting construction	PROMASTOP®-B seal size
Flexible walls	≤ 0,12 m ²
Rigid walls	≤ 0,12 m ²
Rigid floors	≤ 0,12 m ²

Classification of the PROMASTOP®-B blank seal in the PROMASTOP®-M penetration seal in dependence with the supporting construction (see ETA 2.1):

Supporting construction	Classification
Flexible walls	EI 120
Rigid walls	EI 120
Rigid floors	EI 120

Detail of PROMASTOP®-B firestop block for retrospective installation in the PROMASTOP®-M penetration seal	
	<p>C1: PROMASTOP®-M firestop mortar C2: PROMASTOP®-B firestop blocks H: additional aperture framing (fire resistance board e.g. PROMATECT®) if needed</p>
	<p>C1: PROMASTOP®-M firestop mortar C2: PROMASTOP®-B firestop blocks F: iron rods or screws</p>

The PROMASTOP®-B firestop blocks must be covered at least with minimum 150 mm of PROMASTOP®-M firestop mortar.

For application of PROMASTOP®-M in floor application use additional iron rods or screws (see F above) in the reveal (minimum depth 50 mm in the mortar and in the reveal) as reinforcement. The distance shall be not more than 300 mm.

See Annex 2 for additional information.

3.2 Classification acc. to EN 13501-2 for the PROMASTOP®-M firestop mortar for cables, cable bundles, small conduits and tubes

All sheathed cable:

All sheathed cable types currently and commonly used in building practice in Europe (e.g. control, power, data, optical fibre cables, signal, telecommunication, with or without cable supports).

All non-sheathed cable:

All non-sheathed cables (wires) currently and commonly used in building practice in Europe (with or without cable supports).

Tied cable bundle:

Tied cable bundle (maximum diameter 100 mm), maximum diameter of single cable 21 mm (with or without cable supports).

Cable trays and cable ladders may penetrate the seal.

In some cases (see the classification tables below), additional protection is necessary:

PROMASEAL®-AG in the PROMASTOP®-M firestop mortar seal, used as additional protection:

The intumescent firestop sealant PROMASEAL®-AG shall be applied around cables and cable bundles, centred in the mortar penetration seal. Minimum thickness 3 mm, minimum length 20 mm.

Aluminium faced stone wool, used as additional protection:

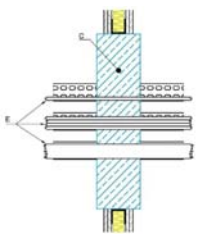
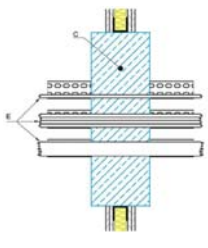
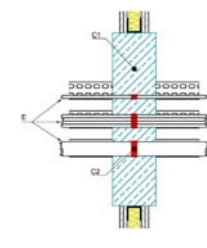
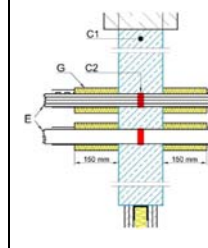
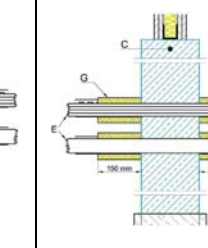
An additional aluminium faced stone wool insulation shall be wrapped around the cables, cable bundles and cable trays and fixed with steel wire (minimum thickness 0,6 mm).

Specification of the insulation	
Reaction to fire	A2 _L -s1, d0 or A2-s1, d0 according to EN 13501-1 or higher rated
Thickness	≥ 20 mm
Density	≥ 35 kg/m ³
Insulation length	≥ 150 mm
Insulation configuration	LI according to EN 1366-3

For application of the stone wool, on walls – on both sides, and for floors only on the top side of the PROMASTOP®-M penetration seal.

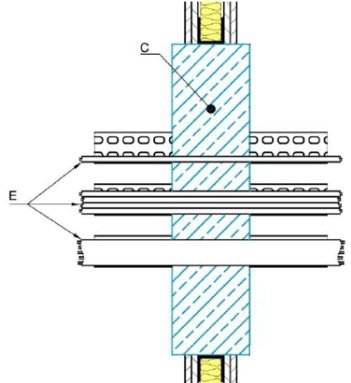
Classification in wall application:

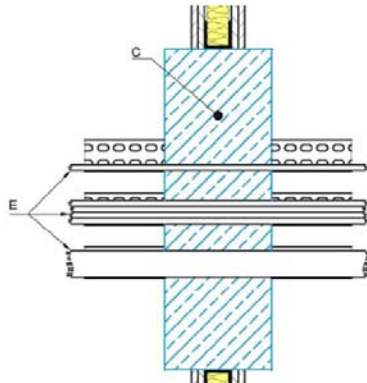
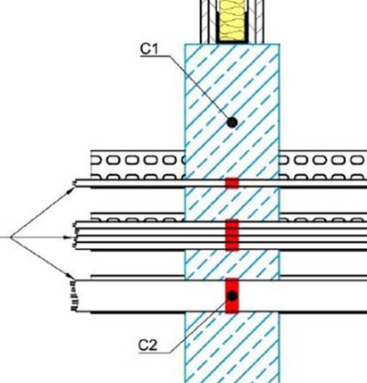
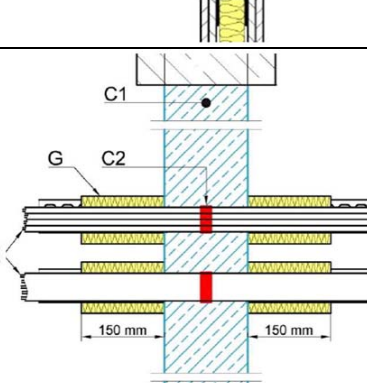
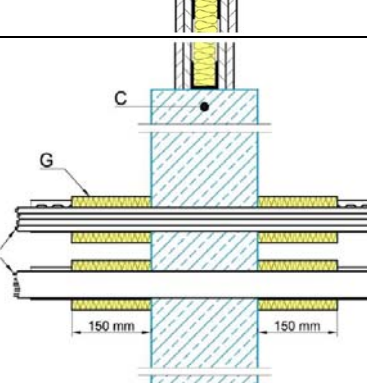
Classification for cable penetrations with PROMASTOP®-M firestop mortar in walls depending on the different mortar applications

					
	Details Figure 1	Details Figure 2	Details Figure 3	Details Figure 4	Details Figure 5
Thickness mortar	≥ 150 mm	≥ 200 mm	≥ 150 mm	≥ 150 mm	≥ 200 mm
Additional protection (if necessary)	not needed	not needed	PROMASEAL®-AG	PROMASEAL®-AG + stone wool	Stone wool
(CG1) All sheathed cable types Ø ≤ 21 mm	E 120 EI 90	EI 120	EI 120	EI 120	EI 120
(CG2) All sheathed cable types 21 ≤ Ø ≤ 50 mm	E 120 EI 60	E 120 EI 90	E 120 EI 90	EI 120	EI 120
(CG3) All sheathed cable types 50 ≤ Ø ≤ 80 mm	E 120 EI 60	E 120 EI 90	E 120 EI 90	EI 120	EI 120
(CG4) Tied cable bundle Ø ≤ 100 mm	E 120 EI 90	EI 120	E 120 EI 90	E 120 EI 90	EI 120
(CG5) Non sheathed cable types Ø ≤ 24 mm	E 120 EI 60	EI 120	E 120 EI 60	EI 120	EI 120
(CG6) Small conduits and tubes, made of plastic, copper or steel Ø ≤ 16 mm	-	-	EI 120-U/C	EI 120-U/C	EI 120-U/C

Cable Group CG compliant according to EN 1366-3:2009

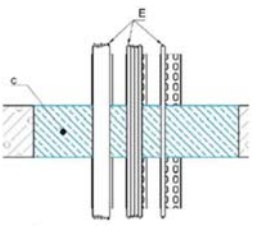
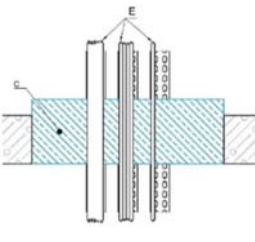
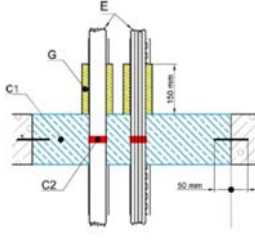
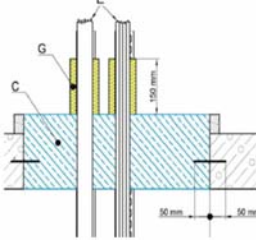
Installation details of PROMASTOP®-M penetration seals for Figures 1 – 5

Figure 1		<p>C: PROMASTOP®-M firestop mortar E: Cables, cable bundles and cable trays</p>
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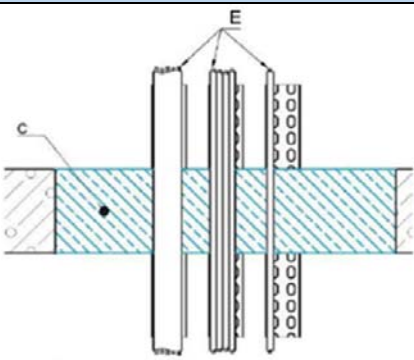
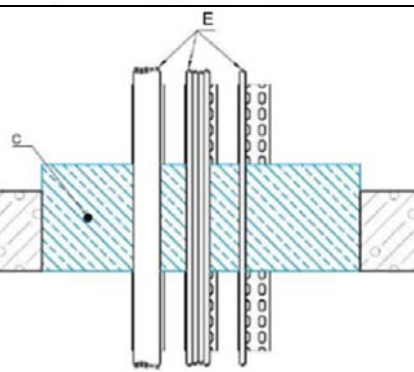
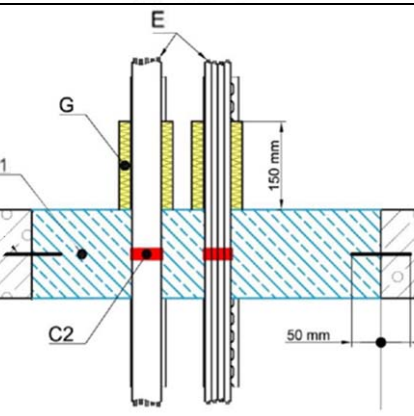
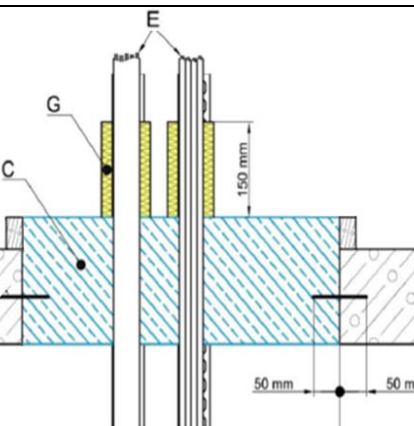
Installation details of PROMASTOP®-M penetration seals for Figures 1 – 5	
Figure 2	 <p>C: PROMASTOP®-M firestop mortar E: Cables, cable bundles and cable trays</p>
Figure 3	 <p>C1: PROMASTOP®-M firestop mortar C2: PROMASEAL®-AG firestop sealant (additional protection) E: Cables, cable bundles and cable trays</p>
Figure 4	 <p>C1: PROMASTOP®-M firestop mortar C2: PROMASEAL®-AG firestop sealant (additional protection) E: Cables, cable bundles and cable trays G: Stone wool (additional protection)</p>
Figure 5	 <p>C: PROMASTOP®-M firestop mortar E: Cables, cable bundles and cable trays G: Stone wool (additional protection)</p>

Classification in floor application:

Classification for cable penetrations with PROMASTOP®-M firestop mortar in floor depending on the different mortar applications

				
	Details Figure 6	Details Figure 7	Details Figure 8	Details Figure 9
Thickness mortar	≥ 150 mm	≥ 200 mm	≥ 150 mm	≥ 200 mm
Additional protection (if necessary)	not needed	not needed	PROMASEAL®-AG + stone wool	Stone wool
(CG1) All sheathed cable types $\varnothing \leq 21$ mm	E 120 EI 90	EI 120	E 120 EI 90	EI 120
(CG2) All sheathed cable types $21 \leq \varnothing \leq 50$ mm	E 120 EI 90	EI 120	E 120 EI 90	EI 120
(CG3) All sheathed cable types $50 \leq \varnothing \leq 80$ mm	E 120 EI 90	EI 120	EI 120	EI 120
(CG4) Tied cable bundle $\varnothing \leq 100$ mm	E 120 EI 90	EI 120	E 120 EI 90	EI 120
(CG5) Non sheathed cable types $\varnothing \leq 24$ mm	E 120 EI 90	EI 120	EI 120	EI 120
(CG6) Small conduits and tubes, made of plastic, copper or steel $\varnothing \leq 16$ mm	-	-	EI 120-U/C	EI 120-U/C

Cable Group CG compliant according to EN 1366-3:2009

Installation details of PROMASTOP®-M penetration seals for Figures 6 – 9		
<p>Figure 6</p>		<p>C: PROMASTOP®-M firestop mortar E: Cables, cable bundles and cable trays</p>
<p>Figure 7</p>		<p>C: PROMASTOP®-M firestop mortar E: Cables, cable bundles and cable trays</p>
<p>Figure 8</p>		<p>C1: PROMASTOP®-M firestop mortar C2: PROMASEAL®-AG firestop sealant (additional protection) E: Cables, cable bundles and cable trays G: Stone wool (additional protection)</p>
<p>Figure 9</p>		<p>C: PROMASTOP®-M firestop mortar E: Cables, cable bundles and cable trays G: Stone wool (additional protection)</p>

3.3 Classification acc. to EN 13501-2 for the PROMASTOP®-M firestop mortar for metal pipes with non-combustible insulation

Steel and copper pipes with non-combustible insulation may penetrate the PROMASTOP®-M penetration seal.

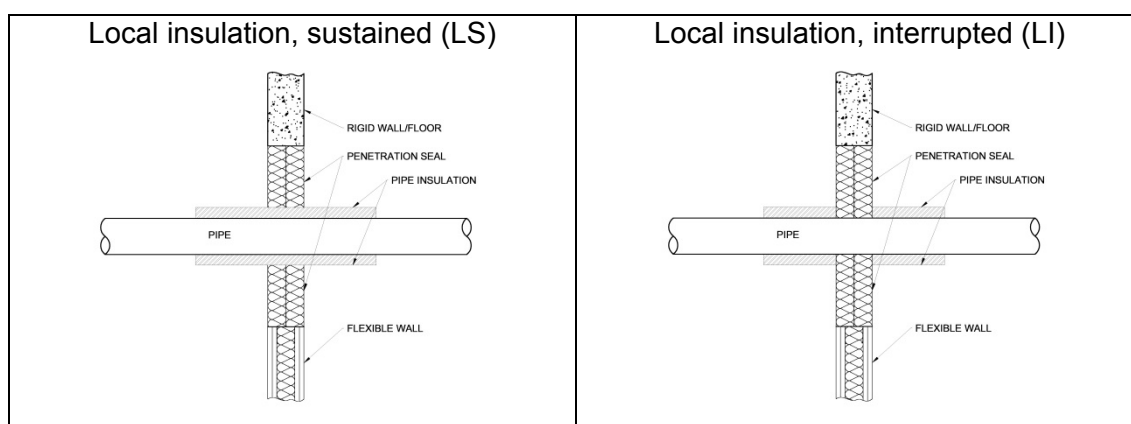
Specification of the non-combustible insulation:

See sections steel and copper below.

Fastening of the non-combustible insulation:

The insulation shall be placed in the center of the PROMASTOP®-M penetration seal and fixed with steel wire (minimum thickness 0,6 mm).

Metal pipes with mineral wool insulation according to following possibilities:



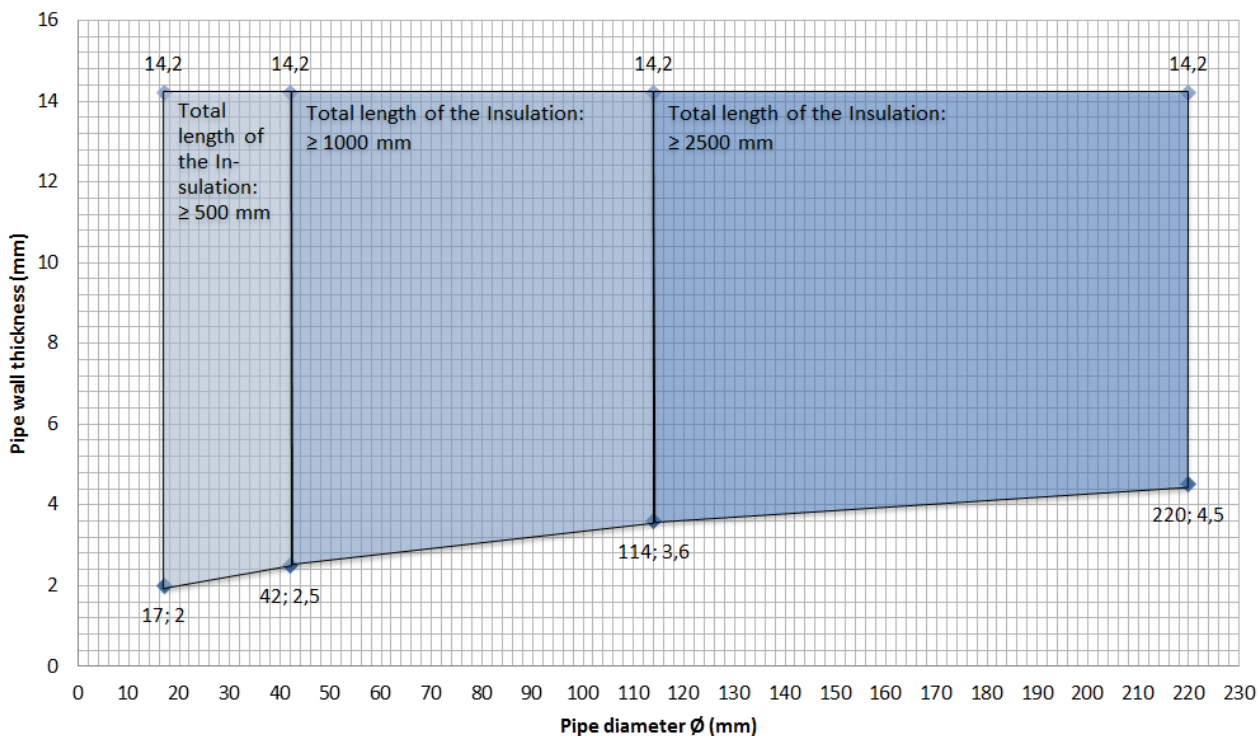
LS covers LS, LI.

Angles between 90° and 45° of the insulated pipes and the supporting construction are covered.

Steel pipes

Specification	Thresholds
Mineral wool	Melting point $\geq 1000^{\circ}\text{C}$, reaction to fire minimum A2-s1, d0, A2 _L -s1, d0 in accordance to EN 13501-1
Density	$\geq 40 \text{ kg/m}^3$ to $\leq 150 \text{ kg/m}^3$
Insulation thickness	$\geq 30 \text{ mm}$ to $\leq 100 \text{ mm}$
Case of insulation	LS, LI
Length of insulation	$\geq 500 \text{ mm}$ (see diagram)
PROMASTOP®-M thickness	$\geq 150 \text{ mm}$

Steel pipes with non-combustible insulation	Classification depending on the orientation	
	Wall	Floor
Pipe diameter (mm)	$17 \leq 220$	$17 \leq 220$
Pipe wall thickness (mm)	$2,0 \leq 14,2$	$2,0 \leq 14,2$
Classification	EI 120-U/C	EI 120-U/C

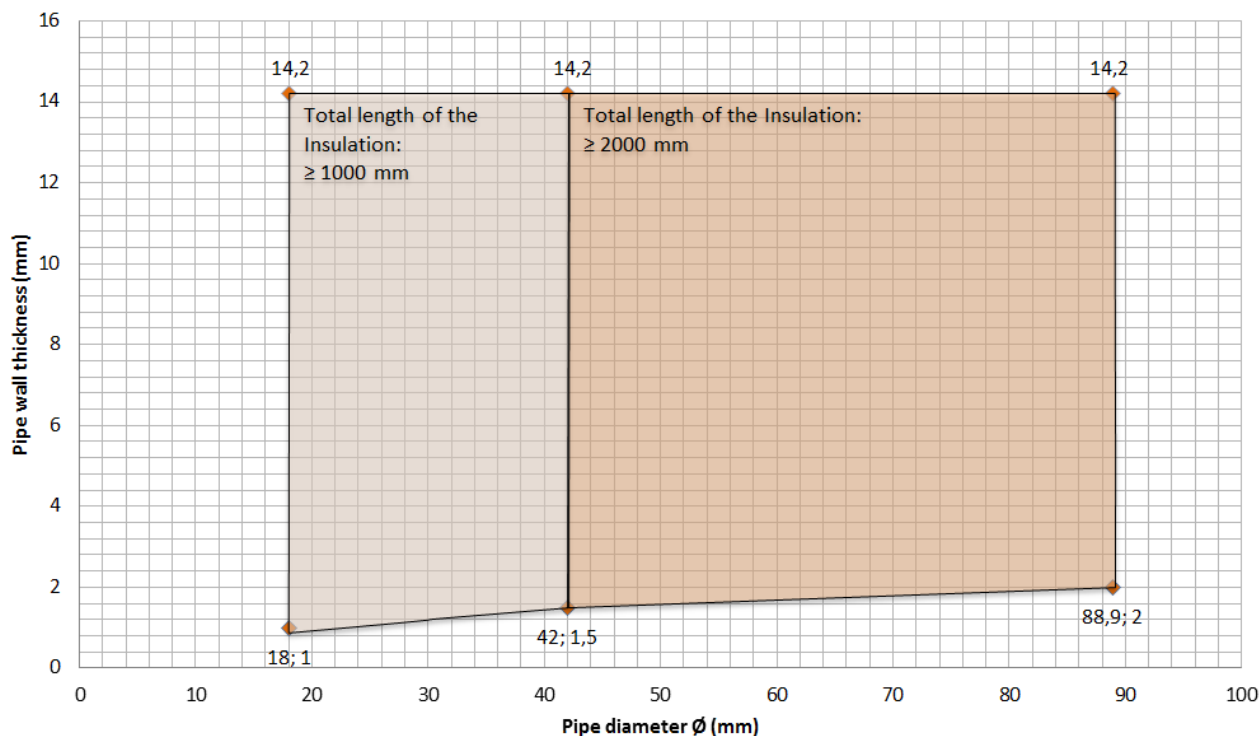


The field of application given for metal pipes with lower heat conductivity ($\lambda \leq 58$ W/mK) and a melting point of minimum 1100°C (e.g. stainless steel, cast iron, Ni alloys (NiCr, NiMo and NiCu alloys) and Ni.

Copper pipes

Specification	Thresholds
Mineral wool	Melting point $\geq 1000^{\circ}\text{C}$, reaction to fire minimum A2-s1, d0, A2 _L -s1, d0 in accordance to EN 13501-1
Density	≥ 40 kg/m ³ to ≤ 150 kg/m ³
Insulation thickness	≥ 30 mm to ≤ 100 mm
Case of insulation	LS, LI
Length of insulation	≥ 1000 mm (see diagram)
PROMASTOP®-M thickness	≥ 150 mm

Copper pipes with non-combustible insulation	Classification depending on the orientation	
	Wall	Floor
Pipe diameter (mm)	$17 \leq 88,9$	$17 \leq 88,9$
Pipe wall thickness (mm)	$1,0 \leq 14,2$	$1,0 \leq 14,2$
Classification	EI 90-U/C E 120-U/C	EI 120-U/C



The field of application given for copper pipes is also valid for other metal pipes with lower heat conductivity ($\lambda \leq 380$ W/mK) and a melting point of minimum 1083°C (e.g. stainless steel, cast iron, Ni alloys (NiCr, NiMo and NiCu alloys) and Ni).

3.4 Classification acc. to EN 13501-2 for the PROMASTOP®-M firestop mortar for aluminium composite pipes with non-combustible insulation

Plastic-Aluminium-Plastic composite pipes (Geberit Mepla and Geberit PushFit) may penetrate the PROMASTOP®-M penetration seal. Non-combustible insulation is used in combination with the PROMASTOP®-M firestop mortar.

Fastening of the non-combustible insulation:

The insulation shall be placed in the center of the PROMASTOP®-M penetration seal and fixed with steel wire (minimum thickness 0,6 mm).

Specifications:

Specification	Thresholds
Mineral wool	Melting point $\geq 1000^{\circ}\text{C}$, reaction to fire minimum A2-s1, d0, A2 _L -s1, d0 in accordance to EN 13501-1
Density	≥ 80 kg/m ³ to ≤ 150 kg/m ³
Insulation thickness	≥ 30 mm to ≤ 70 mm
Case of insulation	LS, CS
Length of insulation	≥ 500 mm (see table below)
PROMASTOP®-M thickness	≥ 150 mm

Pipe material	Thresholds
Geberit Mepla Ø 16 – 40 mm	≥ 500 mm
Geberit Mepla Ø 50 – 75 mm	≥ 1000 mm
Geberit PushFit Ø 16 – 25 mm	≥ 500 mm

Pipe material with non-combustible insulation	Classification
	Floor
Geberit Mepla Ø 16 – 75 mm	E 120-U/C EI 90-U/C
Geberit PushFit Ø 16 mm	EI 120-U/C
Geberit PushFit Ø 20 – 25 mm	E 120-U/C EI 90-U/C

3.5 Classification acc. to EN 13501-2 for the PROMASTOP®-M firestop mortar and PROMASTOP®-W firestop wrap for aluminium composite pipes with combustible insulation

Plastic-Aluminium-Plastic composite pipes (Geberit Mepla) may penetrate the PROMASTOP®-M penetration seal. Combustible insulation is used in combination with the PROMASTOP®-M firestop mortar. The PROMASTOP®-W firestop wrap shall be wrapped around the combustible insulation within the PROMASTOP®-M penetration seal.

The insulation shall be placed in the center of the PROMASTOP®-M penetration seal.

Specifications:

Specification	Thresholds
Synthetic rubber	Melting point $\geq 1000^{\circ}\text{C}$, reaction to fire minimum B-s3, d0 in accordance to EN 13501-1
Insulation thickness	≤ 32 mm
Case of insulation	LS, CS
Length of insulation	≥ 500 mm
PROMASTOP®-M thickness	≥ 150 mm

Application of 1 layer PROMASTOP®-W firestop wrap in the PROMASTOP®-M penetration seal:

Orientation	Application
Floor	Two-sided: On the top and the bottom side of the penetration seal

Pipe material with combustible insulation	Classification
	Floor
Geberit Mepla Ø 16 – 75 mm	EI 120-U/C

3.6 Classification acc. to EN 13501-2 for the PROMASTOP®-M firestop mortar and PROMASTOP®-FC firestop collar for plastic pipes

Plastic pipes may penetrate the PROMASTOP®-M penetration seal. The firestop collar PROMASTOP®-FC is used to form the penetration seal. Fixing of the collar shall be made by using the attached fastening material or suitable material. The firestop collar is covered by ETA-14/0089.

Sound decoupling:

Sound decoupling strips based on PE (closed-cell elastomeric foam, 1 layer, minimum class E acc. to EN 13501-1:2007+A1) may be used to a maximum thickness of 5 mm.

Application of the PROMASTOP®-FC in the PROMASTOP®-M penetration seal:

Orientation	Application
Wall	Two-sided: On both sides on the penetration seal
Floor	One-sided: Below of the floor under the penetration seal

The firestop collar is supplied in several sizes and three heights:

Name	Height of the collar
PROMASTOP®-FC3	30 mm
PROMASTOP®-FC6	60 mm
PROMASTOP®-FC15	150 mm

Specification of the plastic pipes and insulation if applicable including classification: See section below.

Name	Dimension scope Ø...Diameter (mm) t _D ...pipe wall thickness (mm)	Insulation			Orientation Wall...W Floor...F	Collar type	Classification
		Thick-ness* (mm)	Case	Length (mm)			
PVC-U	Ø 32 / t _D 3,6 - Ø 110 / t _D 3,2	6	CS	∞	F	FC6	EI 120-U/U
PVC-U	Ø 315 / t _D 6,2 - Ø 400 / t _D 9,8	4	LS	320	W	FC15	EI 120-U/U
PVC-U	Ø 125 / t _D 6,0	4	LS	320	F	FC6	EI 120-U/U
PVC-U	Ø 315 / t _D 15,0	4	LS	320	W	FC15	EI 120-U/C
PVC-U	Ø 110 / t _D 12,3	6	CS	∞	F	FC6	EI 120-U/C
PVC-U	Ø 180 / t _D 8,6	32	CS	∞	F	FC6	EI 120-U/C
PVC-U	Ø 180 / t _D 5,3	32	CS	∞	F	FC6	EI 60-U/U
PE-HD	Ø 180 / t _D 6,9 - Ø 180 / t _D 10,7	32	CS	∞	F	FC6	EI 60-U/U
PE-HD	Ø 90 / t _D 3,5 - Ø 110 / t _D 4,2	6	CS	∞	F	FC6	EI 120-U/U
PE-HD	Ø 180 / t _D 16,4	32	CS	∞	F	FC6	EI 90-U/C
PE-HD	Ø 110 / t _D 15,1	6	CS	∞	F	FC6	EI 90-U/C
PP-H / PP-R	Ø 160 / t _D 4,0	4	LS	210	F / W	FC3/6	EI 120-U/U
PP-H / PP-R	Ø 400 / t _D 36,3	4	LS	320	F	FC15	EI 90-U/C
PP-H / PP-R	Ø 315 / t _D 7,7	4	LS	320	W	FC15	EI 120-U/U
PP-H / PP-R	Ø 110 / t _D 4,2	6	CS	∞	F	FC6	EI 120-U/U
PP-H / PP-R	Ø 180 / t _D 10,7	32	CS	∞	F	FC6	EI 60-U/U
PP-H / PP-R	Ø 160 / t _D 21,9	32	CS	∞	F	FC6	EI 90-U/C
POLOPLAST POLO-KAL NG	Ø 125 / t _D 3,9 - Ø 160 / t _D 4,9	4	LS	210	F / W	FC3/6	EI 120-U/U
POLOPLAST POLO-KAL NG	Ø 32 / t _D 1,8 - Ø 110 / t _D 3,4	6	CS	∞	F	FC6	EI 120-U/U
POLOPLAST POLO-KAL NG	Ø 160 / t _D 4,9	32	CS	∞	F	FC6	EI 90-U/U
POLOPLAST POLO-KAL NG	Ø 250 / t _D 8,6	6	LS	600	W	FC15	EI 90-U/U
POLOPLAST POLO-KAL 3S	Ø 160 / t _D 7,5	32	CS	∞	F	FC6	EI 60-U/U
POLOPLAST POLO-ECO plus Premium 10	Ø 250 / t _D 9,1 - Ø 315 / t _D 10,9	32	LS	600	W	FC15	EI 120-U/U
POLOPLAST POLO-ECO plus Premium 10	Ø 250 / t _D 8,5 - Ø 250 / t _D 9,1	6	LS	600	W	FC15	EI 90-U/U
POLOPLAST POLO-ECO plus Premium 10	Ø 250 / t _D 9,1	6	LS	600	W	FC15	EI 120-U/C
POLOPLAST POLO-KAL XS	Ø 160 / t _D 4,9	32	CS	∞	F	FC6	EI 90-U/U
POLOPLAST POLO-KAL XS	Ø 250 / t _D 8,6	6	LS	600	W	FC15	EI 90-U/U
POLOPLAST POLO-KAL XS	Ø 32 / t _D 1,8 - Ø 110 / t _D 3,4	6	CS	∞	F	FC6	EI 120-U/U

POLOPLAST POLO-KAL XS	Ø 125 / t _D 3,9 - Ø 160 / t _D 4,9	4	LS	210	F / W	FC3/6	EI 120-U/U
Geberit Silent-PP	Ø 50 / t _D 1,8 - Ø 160 / t _D 5,2	4	LS	320	F	FC6	EI 120-U/U
Geberit Silent-PP	Ø 32 / t _D 1,8 - Ø 110 / t _D 3,4	6	CS	∞	F	FC6	EI 120-U/U
Geberit Silent-PP	Ø 160 / t _D 4,9	32	CS	∞	F	FC6	EI 60-U/U
Geberit Silent-db20	Ø 56 / t _D 3,2 - Ø 110 / t _D 6,0	6	CS	∞	F	FC6	EI 120-U/U
Geberit Silent-db20	Ø 160 / t _D 7,0	32	CS	∞	F	FC6	EI 120-U/U
Friatec Friaphon	Ø 52 / t _D 2,8 - Ø 160 / t _D 6,3	4	LS	320	F	FC6	EI 120-U/U
Rehau RAUPIANO PLUS	Ø 40 / t _D 1,8 - Ø 110 / t _D 2,7	6	CS	∞	F	FC6	EI 120-U/U
Rehau RAUPIANO PLUS	Ø 160 / t _D 3,9	32	CS	∞	F	FC6	EI 60-U/U

Sound decoupling strips were used for 4 mm insulation, from 6 – 32 mm, synthetic rubber.

More details are shown in the following diagrams. In the diagrams the pipe outer diameter is stated.

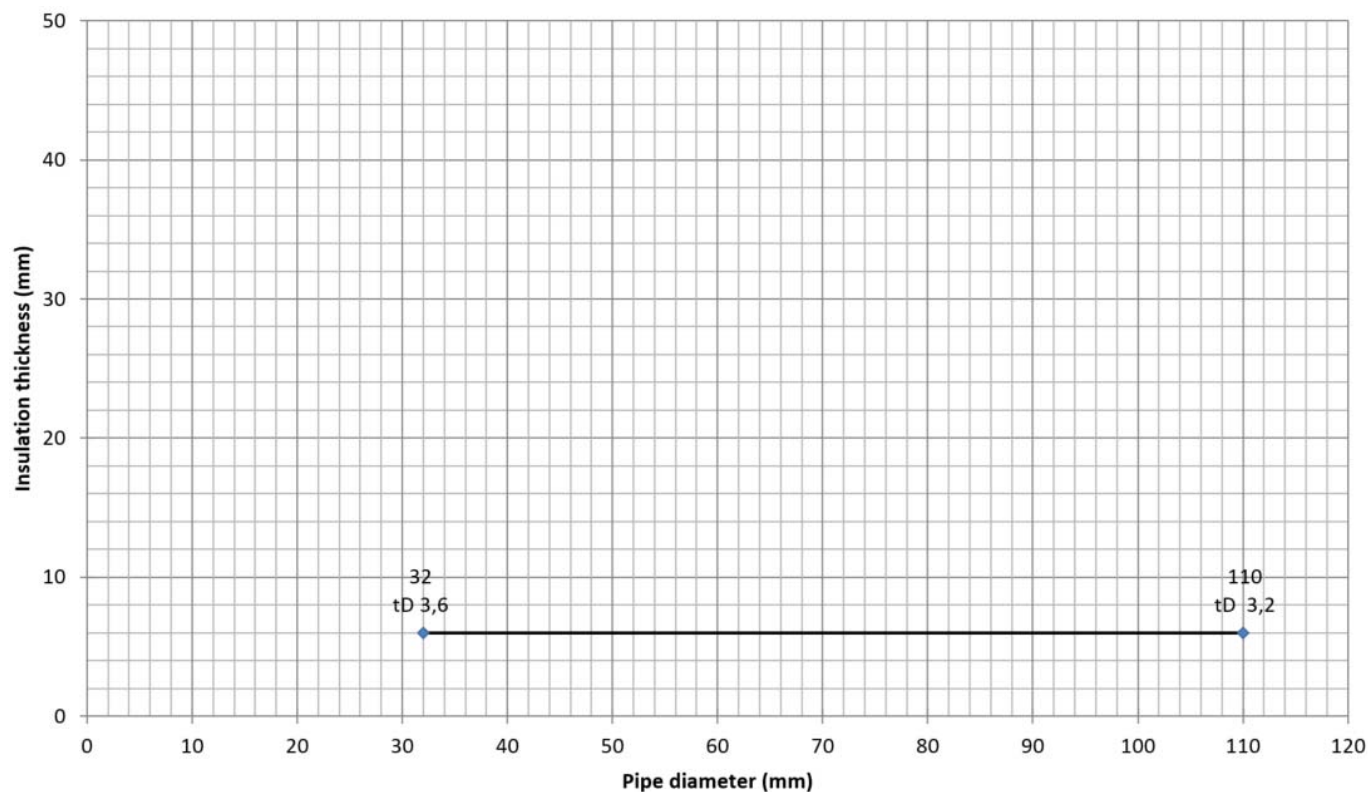
The classifications for PE pipes are applicable for pipes in acc. to EN 12201-2, EN 1519-1, EN 12666-1, DIN 8074, DIN 8075 and ABS-pipes in acc. to EN 1455-1 and SAN + PVC-pipes in acc. to EN 1565-1.

The classifications for PVC-U pipes are applicable for pipes acc. to EN 1452-1, EN 1329-1, EN 1453-1, DIN 8061, DIN 8062, EN 1329-1, EN 1453-1 and to PVC-C pipes acc. to EN 1566-1.

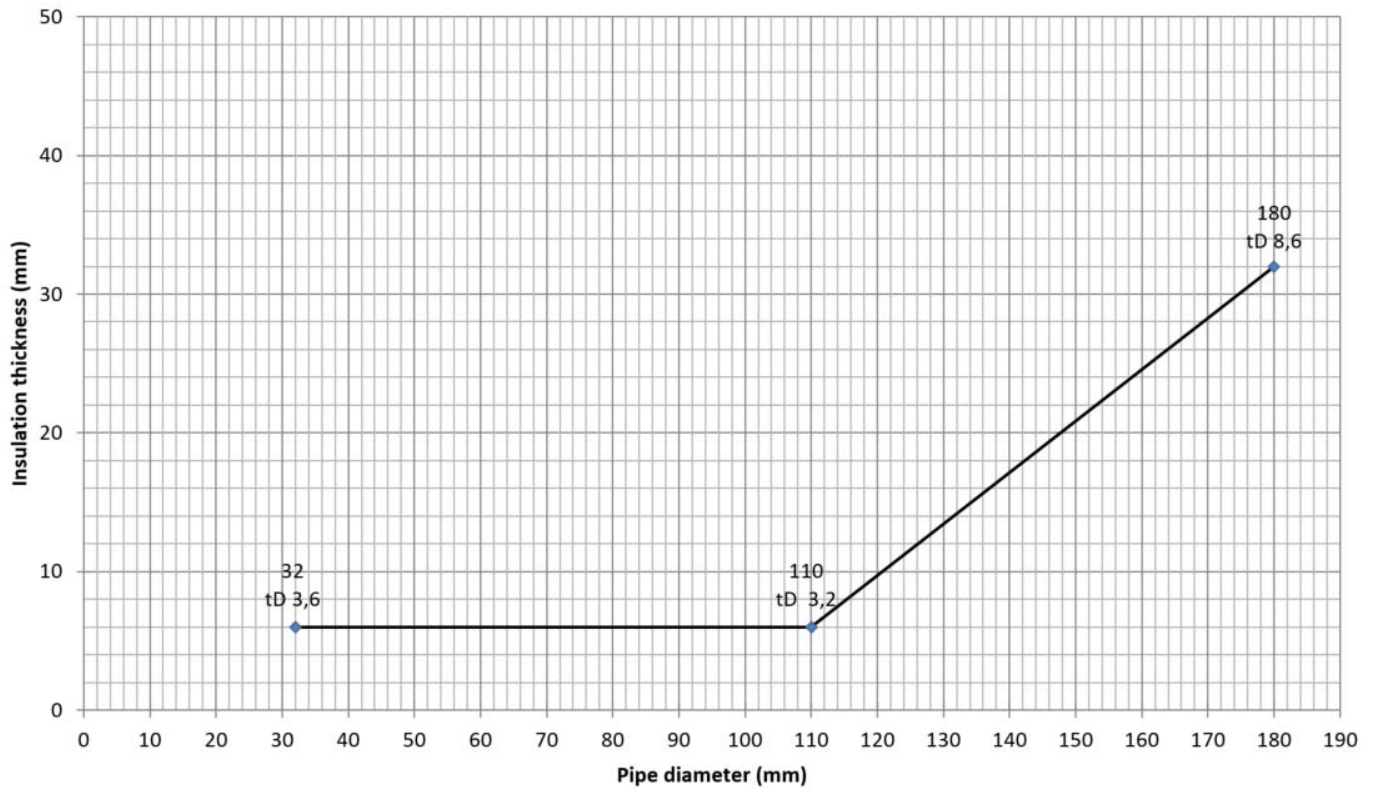
The classifications for PP-H and PP-R pipes are applicable for pipes in acc. to ÖNORM B 5174-1, DIN 8077, DIN 8078 and EN ISO 15494.

Additional classification details

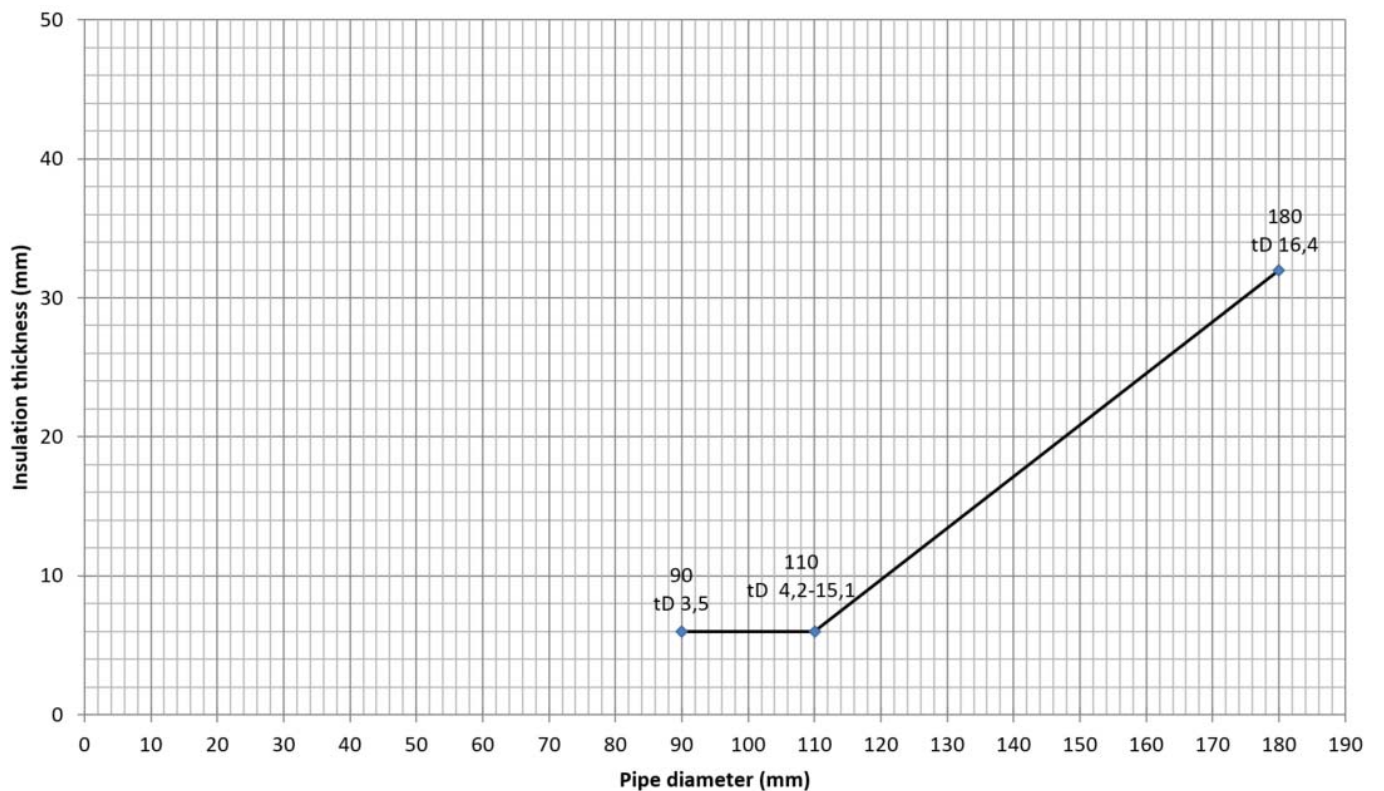
PVC-U	FLOOR	FC6	EI120-U/U
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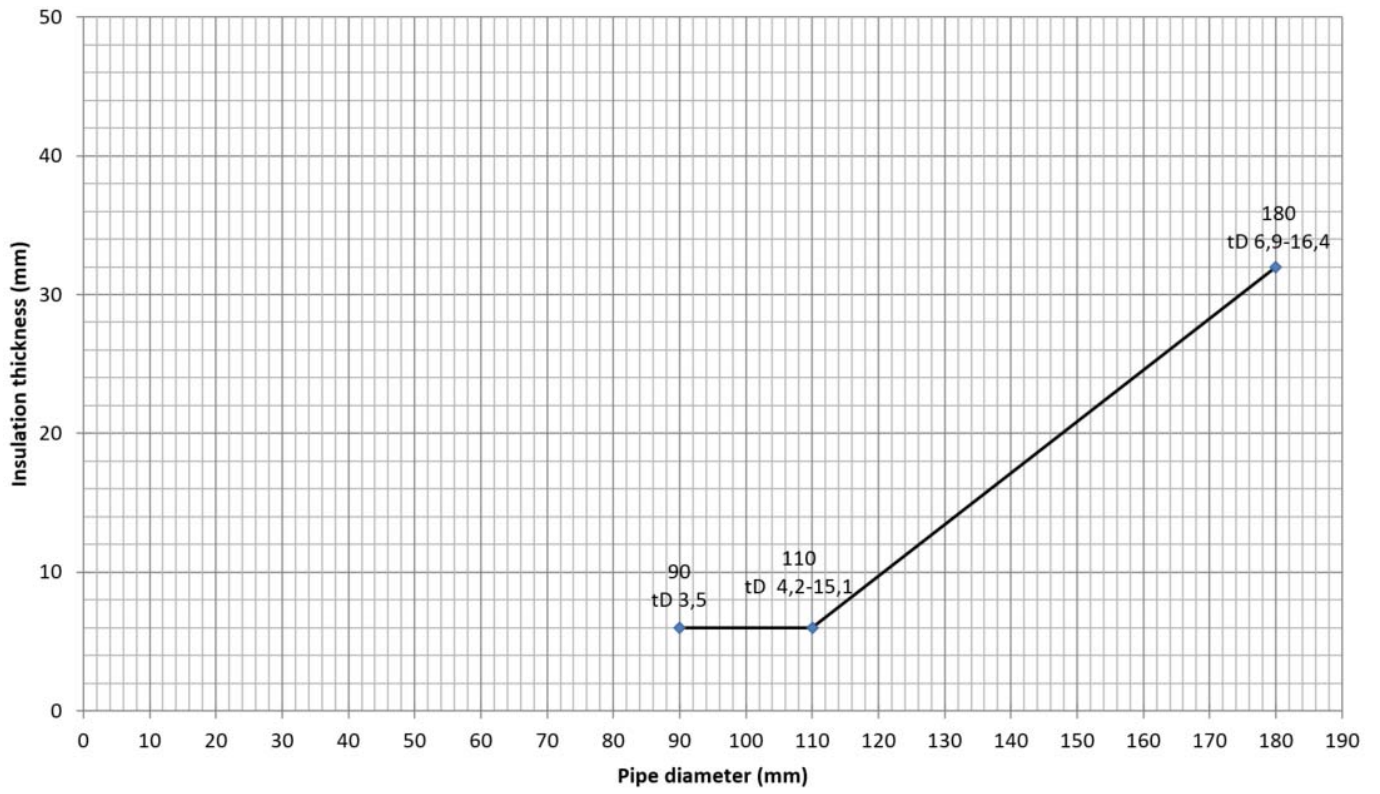
PVC-U	FLOOR	FC6	EI120-U/C
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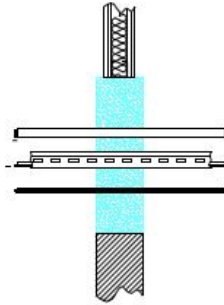
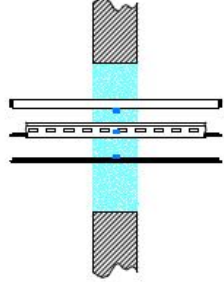
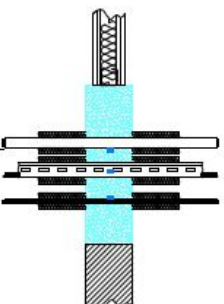
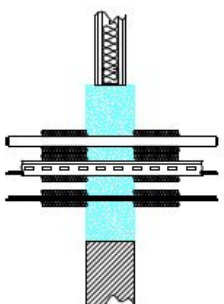
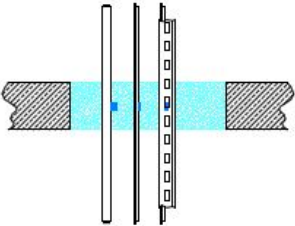
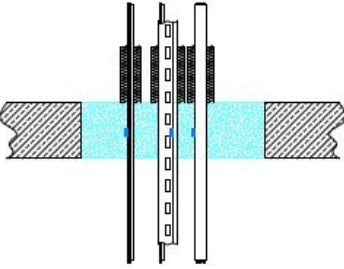
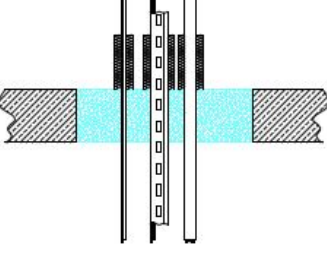
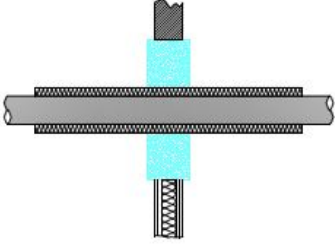
PE-HD	FLOOR	FC6	EI90-U/C
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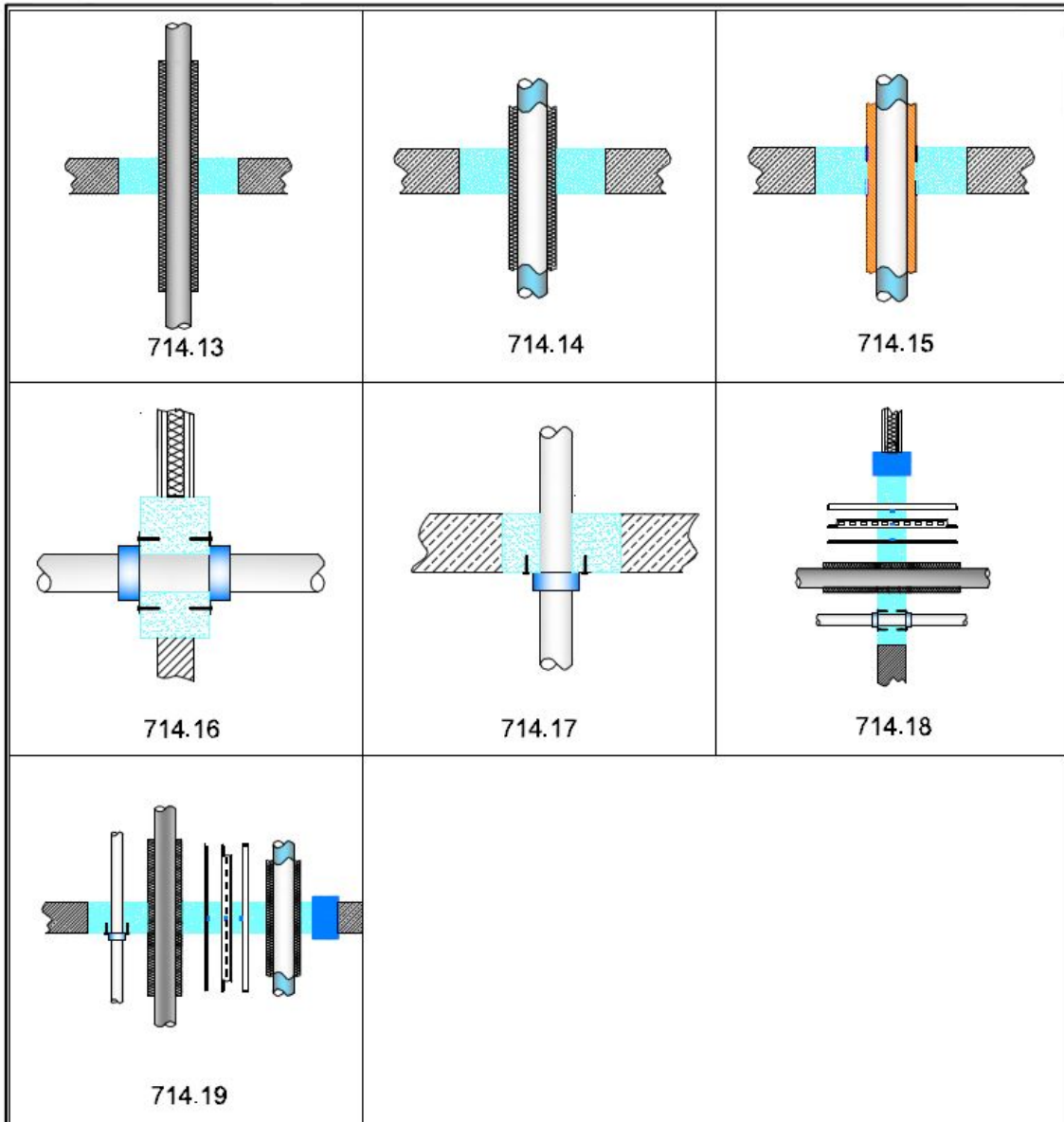
PE-HD	FLOOR	FC6	EI60-U/C
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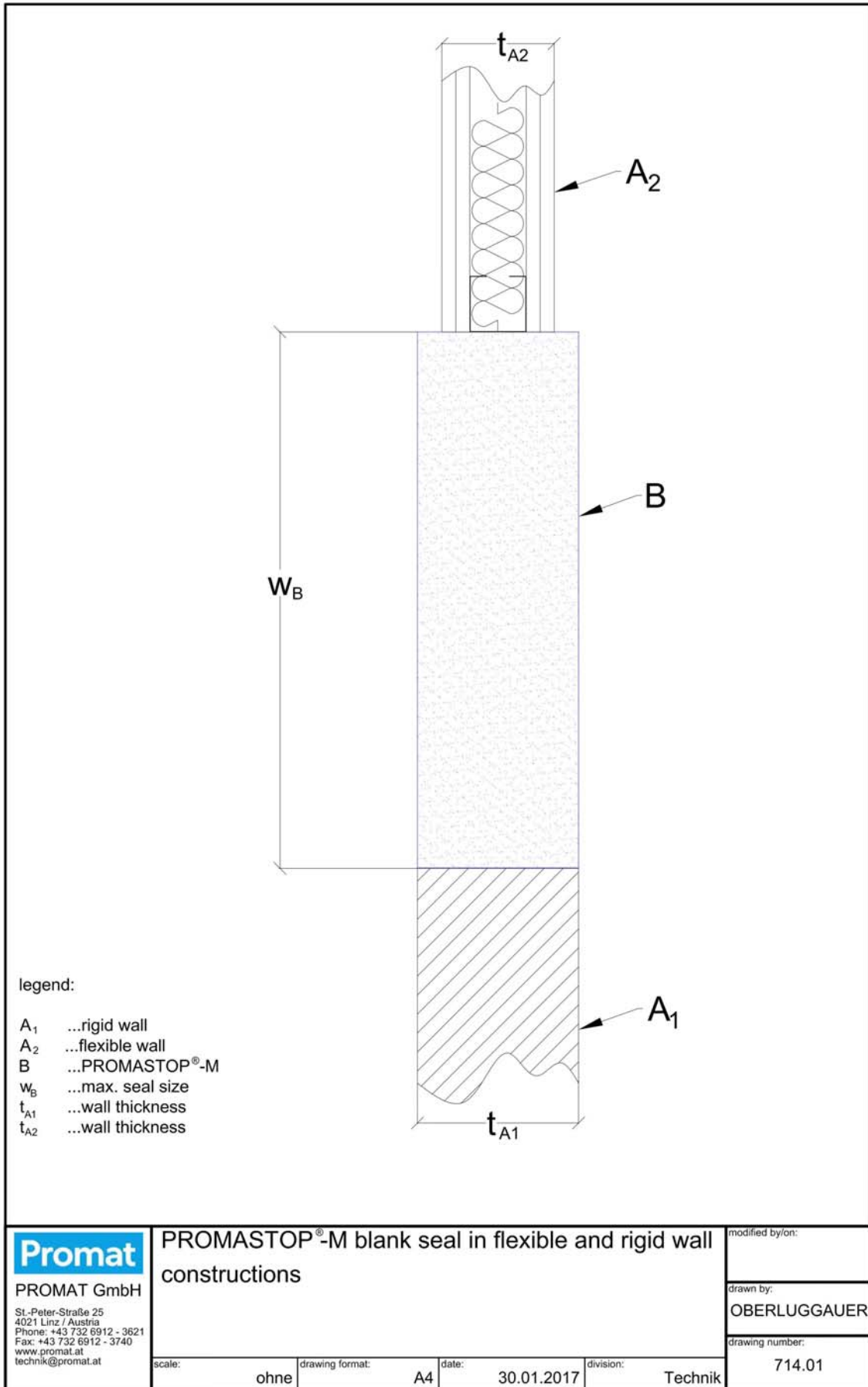
ANNEX 4
INSTALLATION DRAWINGS

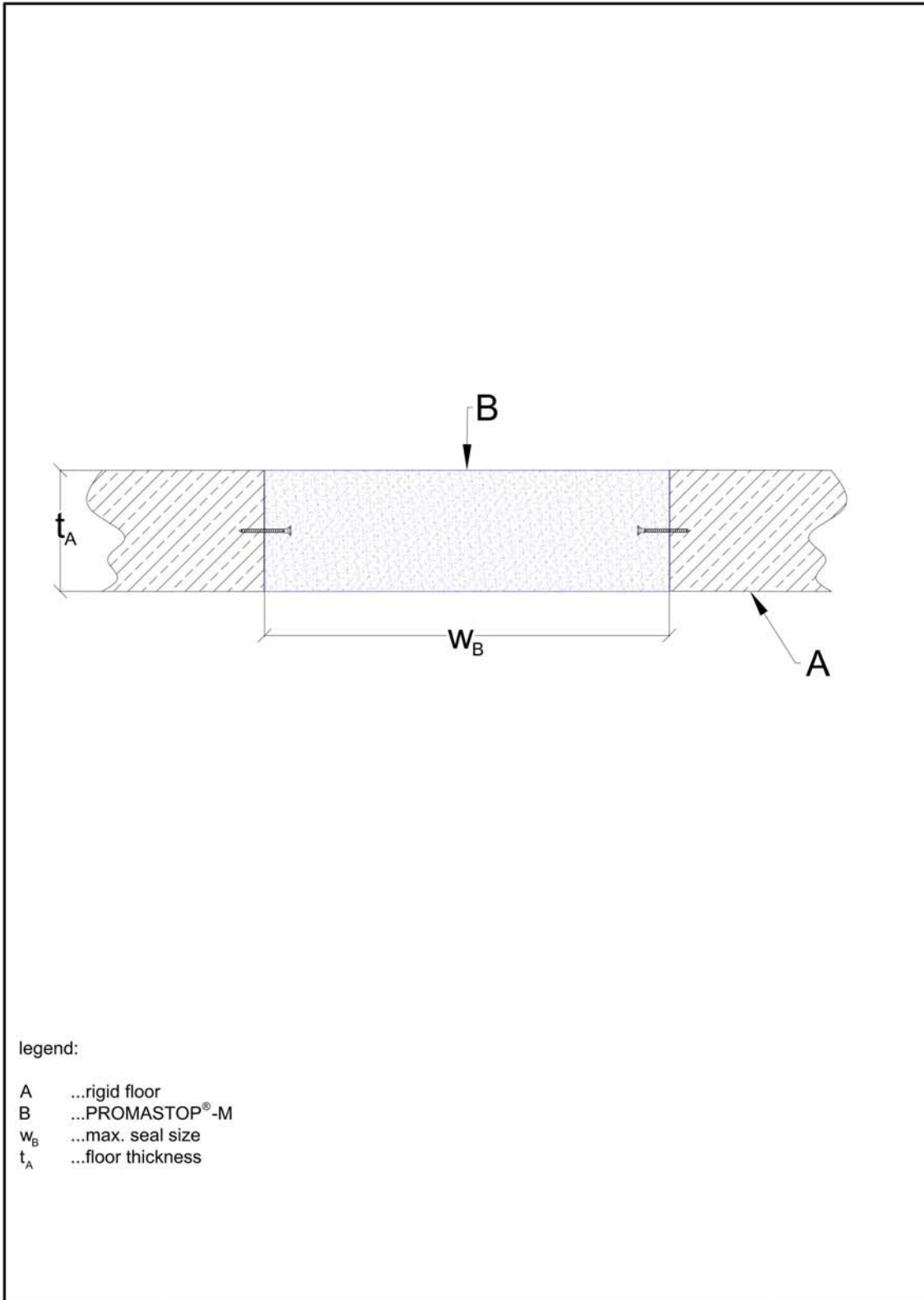
 <p>714.01</p>	 <p>714.02</p>	 <p>714.03</p>
 <p>714.04</p>	 <p>714.05</p>	 <p>714.06</p>
 <p>714.07</p>	 <p>714.08</p>	 <p>714.09</p>
 <p>714.10</p>	 <p>714.11</p>	 <p>714.12</p>

<p>Promat</p> <p>St.-Peter-Strasse 25 4021 Linz / Austria Phone: +43 732 8512 - 3821 Fax: +43 732 8512 - 3740 www.promat.at technik@promat.at</p>	<p>Overview of PROMASTOP[®]-M constructions part 1 of 2</p>	<p>modified by/on:</p> <hr/> <p>drawn by:</p> <p>OBERLUGGAUER</p> <hr/> <p>drawing number:</p> <p>714.001</p>			
<p>scale:</p>	<p>ohne</p>	<p>drawing format:</p> <p>A4</p>	<p>date:</p> <p>09.03.2017</p>	<p>division:</p> <p>Technik</p>	<p>714.001</p>




 <p>St.-Peter-Strasse 25 4021 Linz / Austria Phone: +43 732 3512 - 3801 Fax: +43 732 3512 - 3740 www.promat.at technik@promat.at</p>	Overview of PROMASTOP®-M constructions part 2 of 2				modified by/on:
					drawn by: OBERLUGGAUER
	scale: ohne	drawing format: A4	date: 09 03 2017	division: Technik	drawing number: 714.002

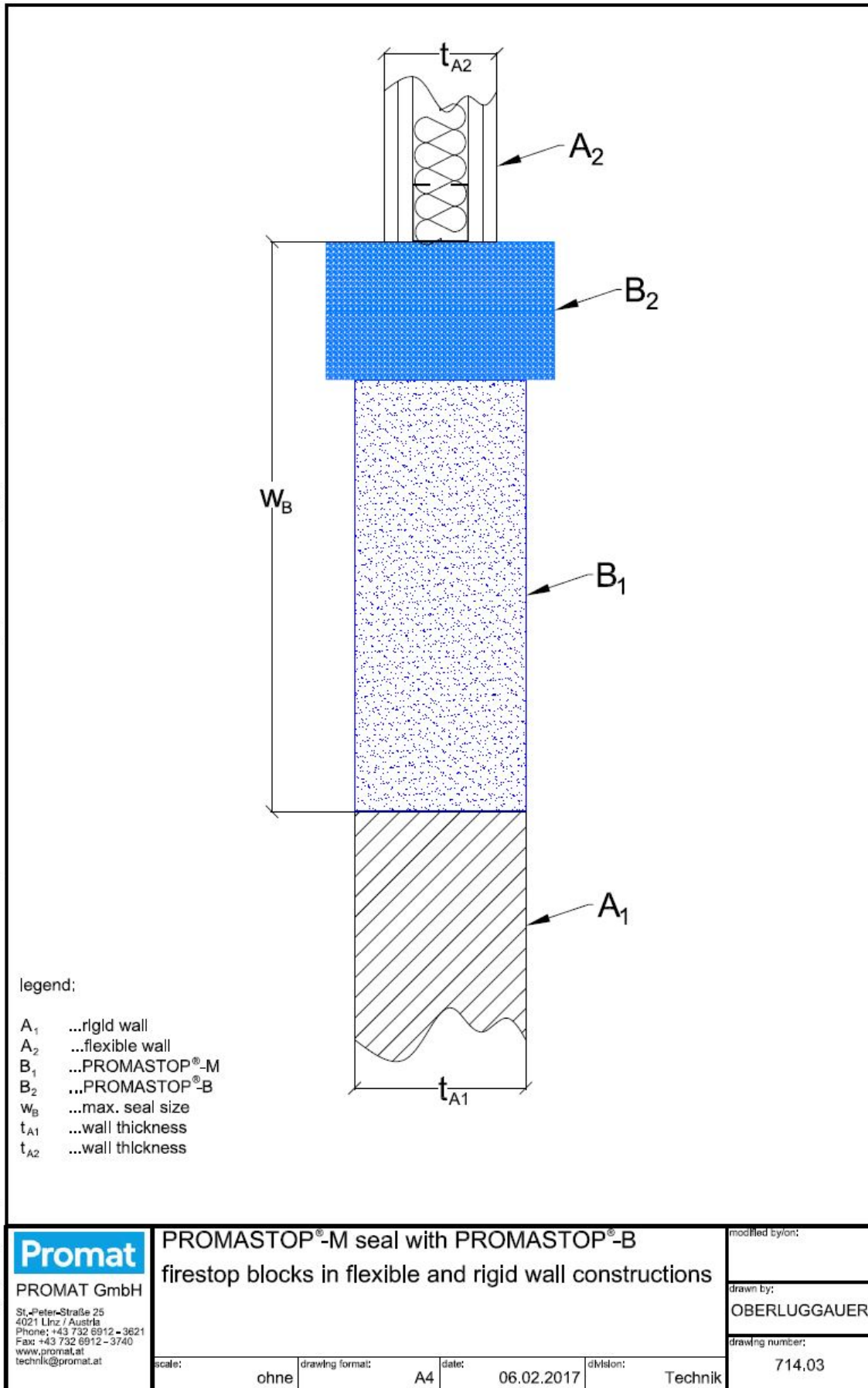


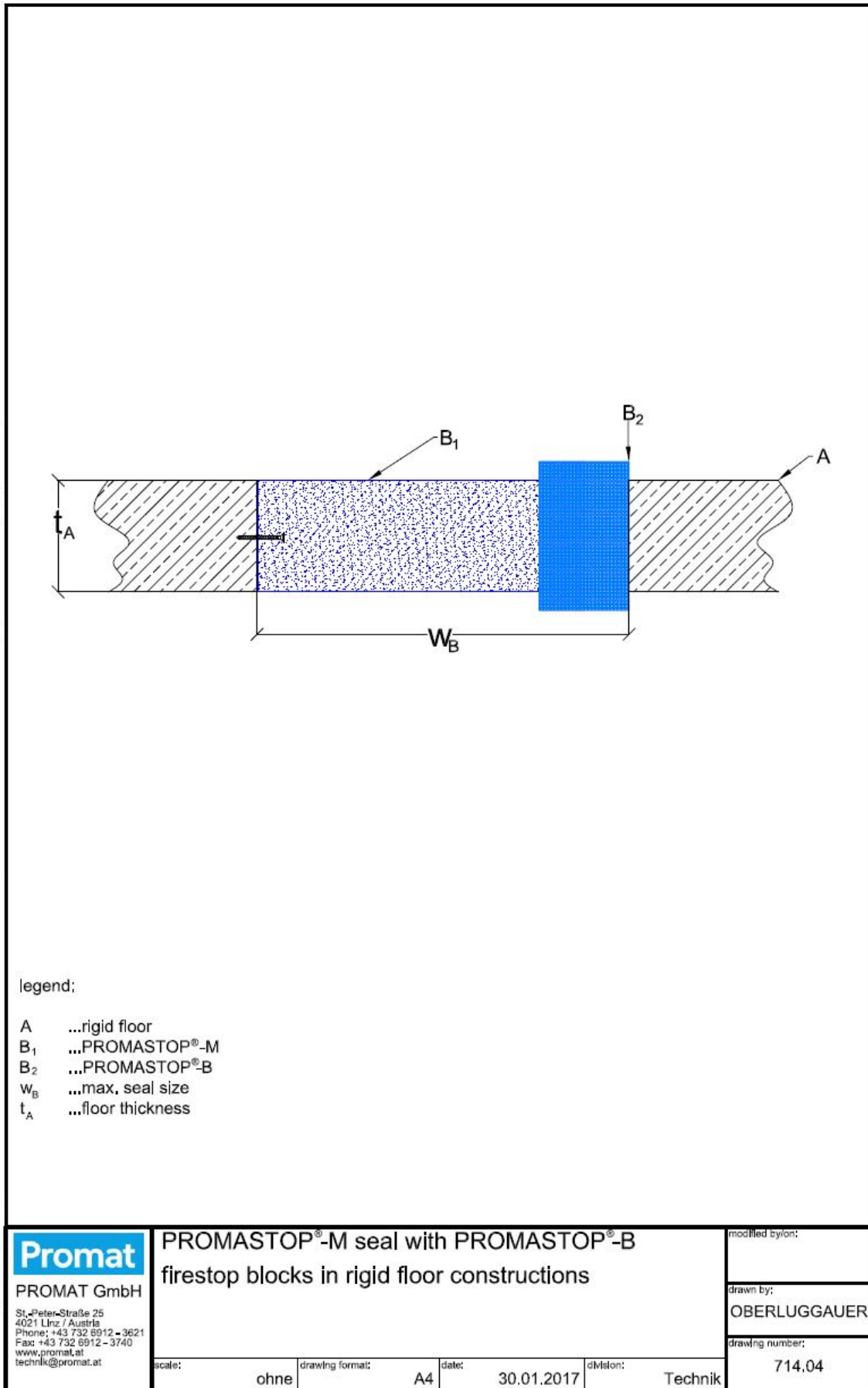


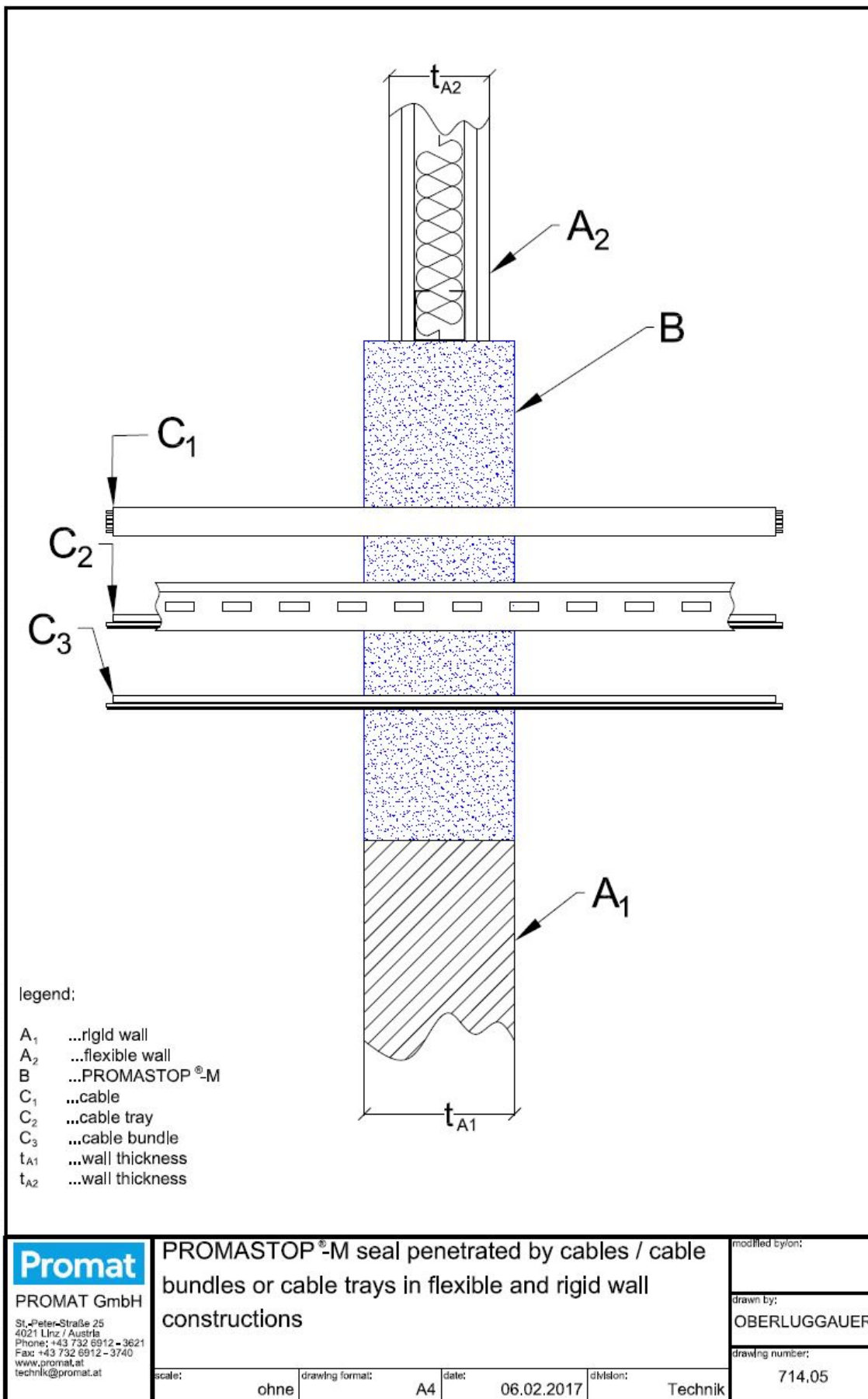
legend:

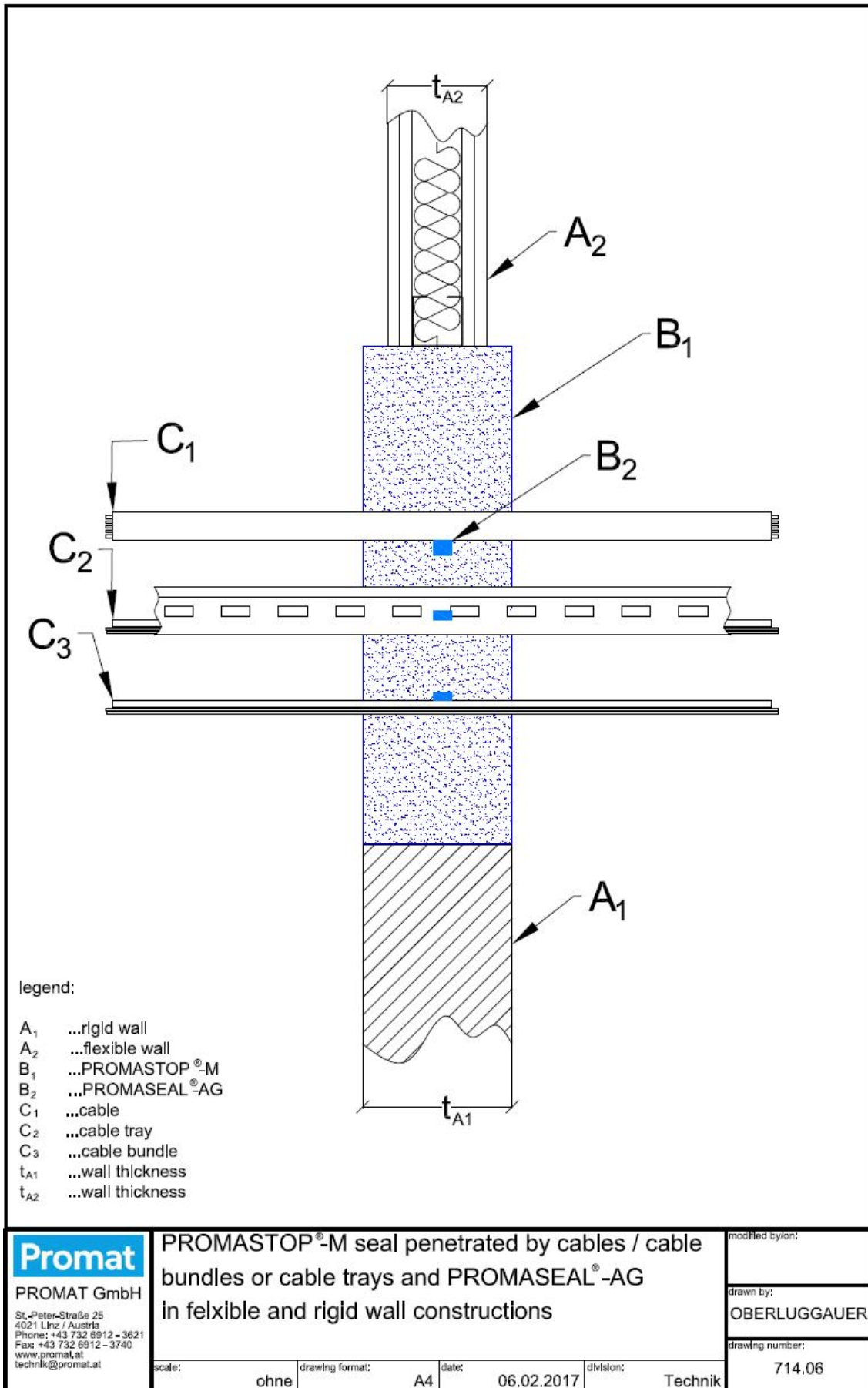
- A ...rigid floor
- B ...PROMASTOP®-M
- W_B ...max. seal size
- t_A ...floor thickness

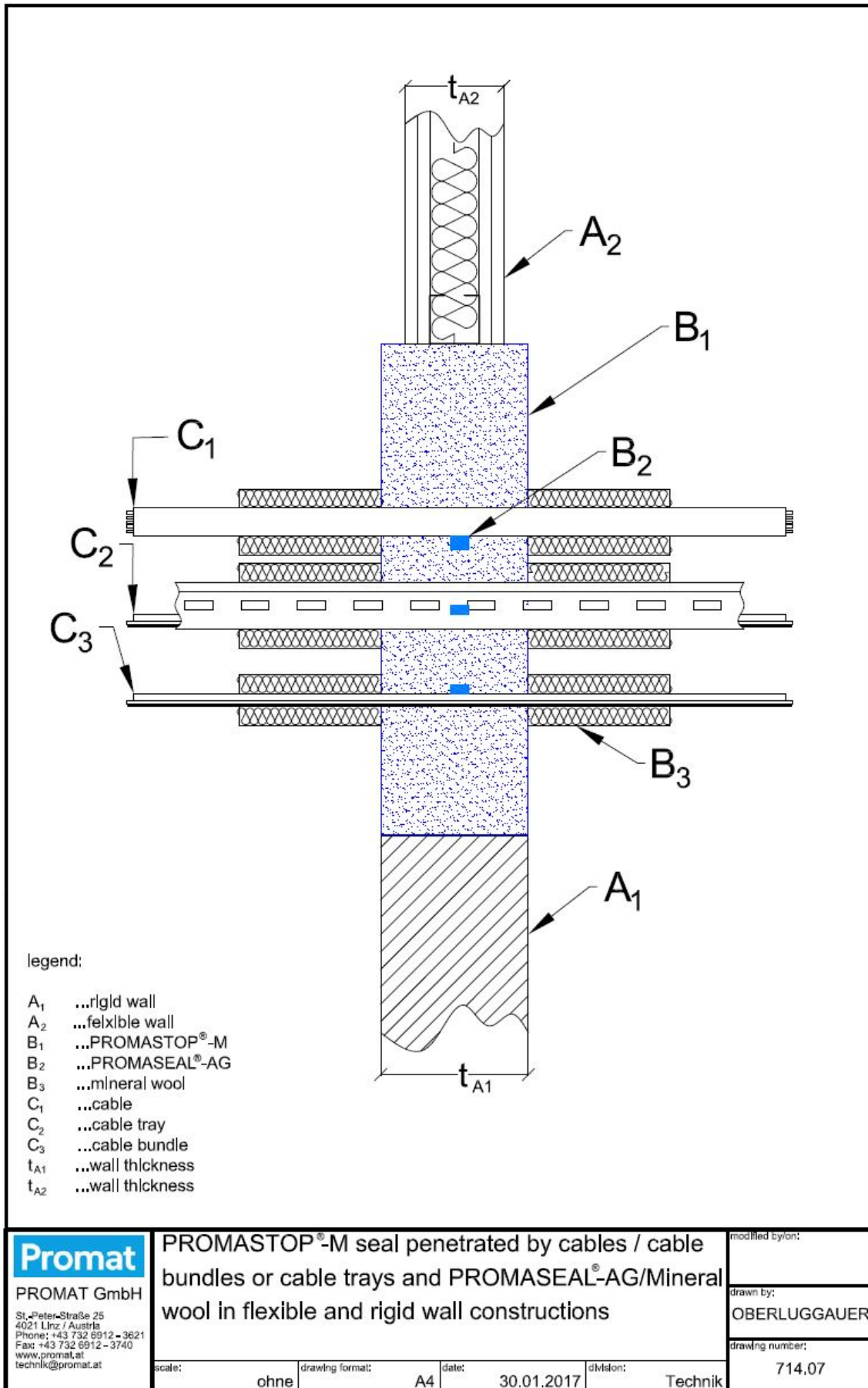
 PROMAT GmbH St.-Peter-Straße 25 4021 Linz / Austria Phone: +43 732 6912 - 3621 Fax: +43 732 6912 - 3740 www.promat.at technik@promat.at	PROMASTOP®-M blank seal in rigid floor constructions				modified by/on:
					drawn by: OBERLUGGAUER
	scale: ohne	drawing format: A4	date: 30.01.2017	division: Technik	drawing number: 714.02

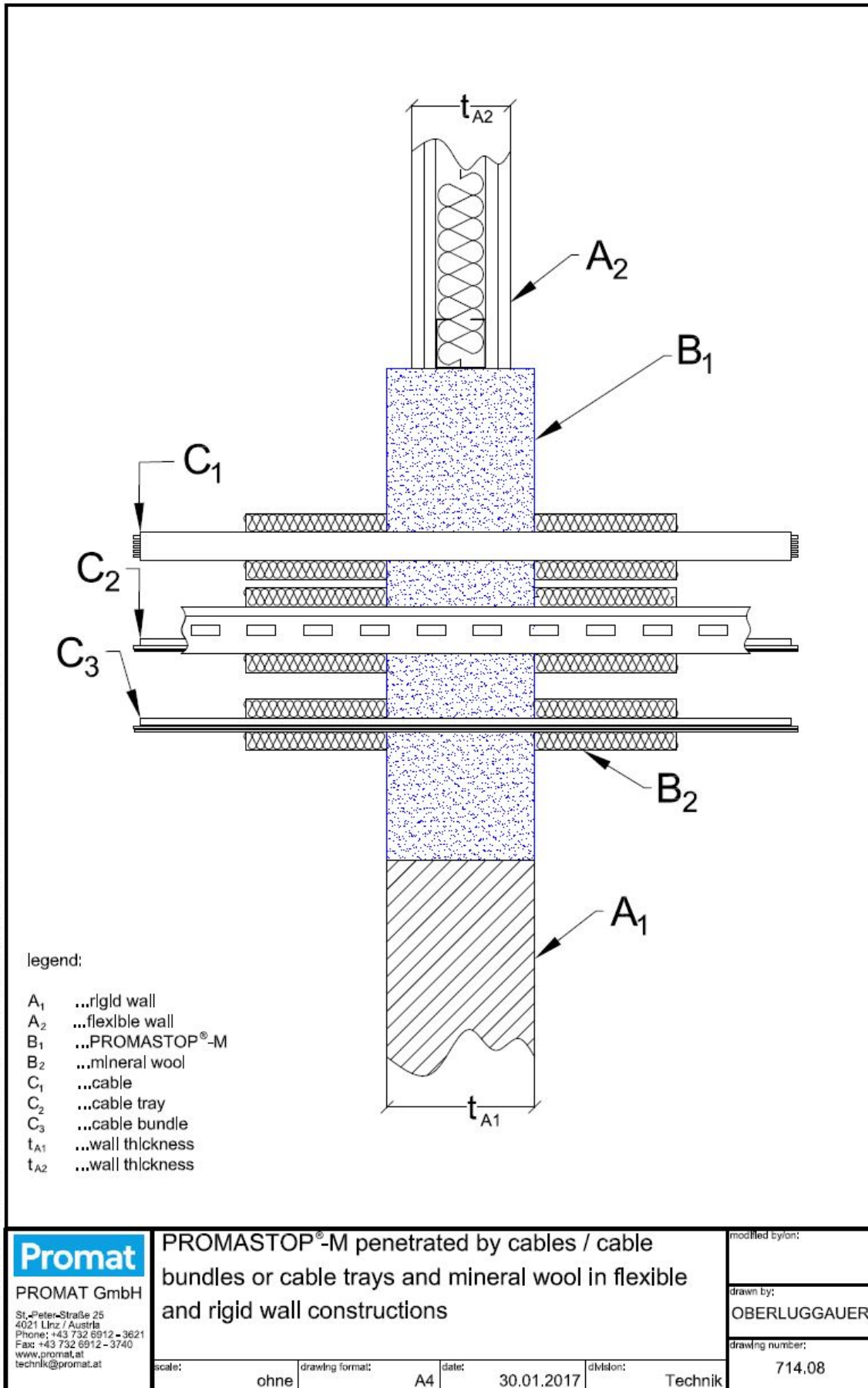


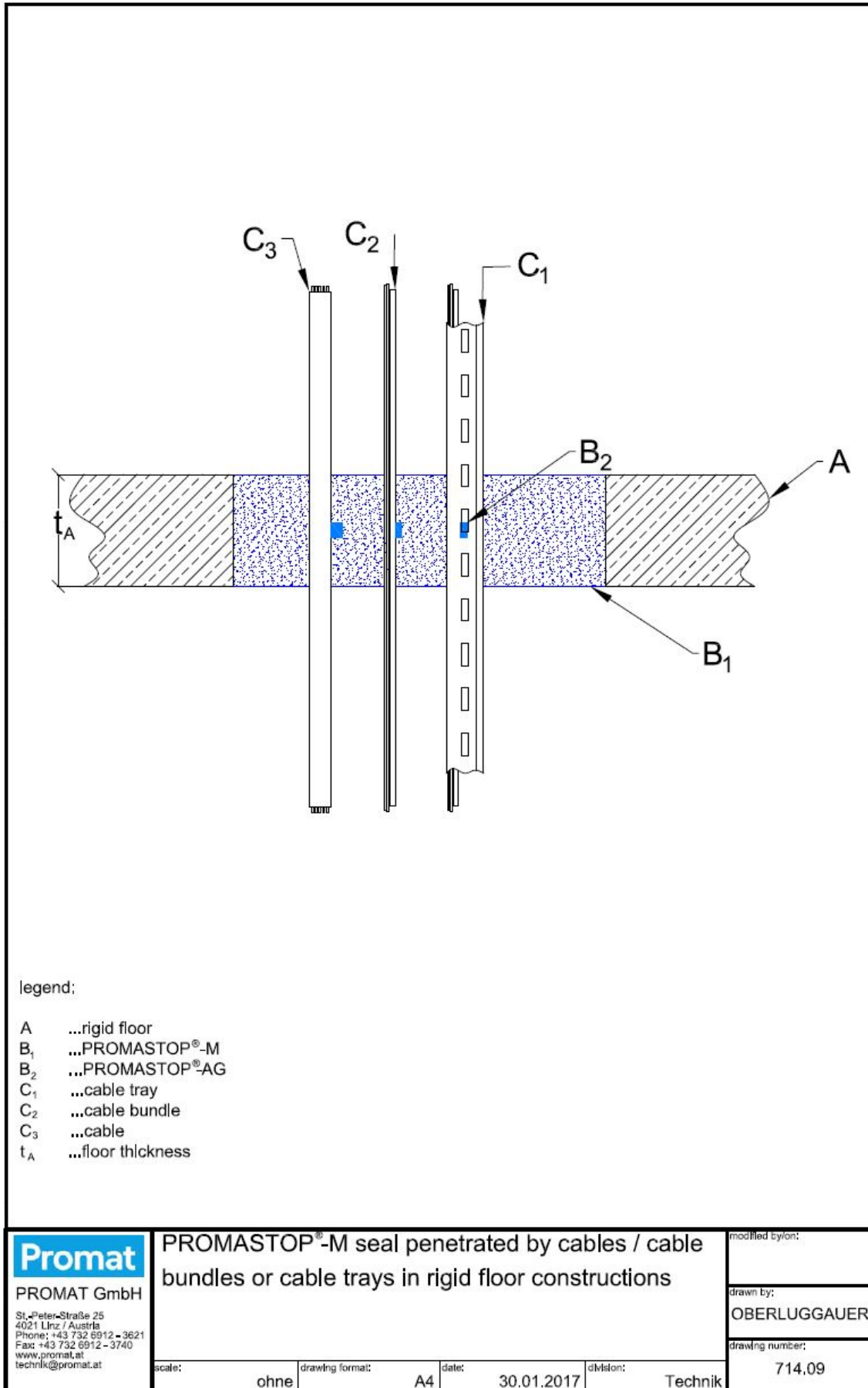


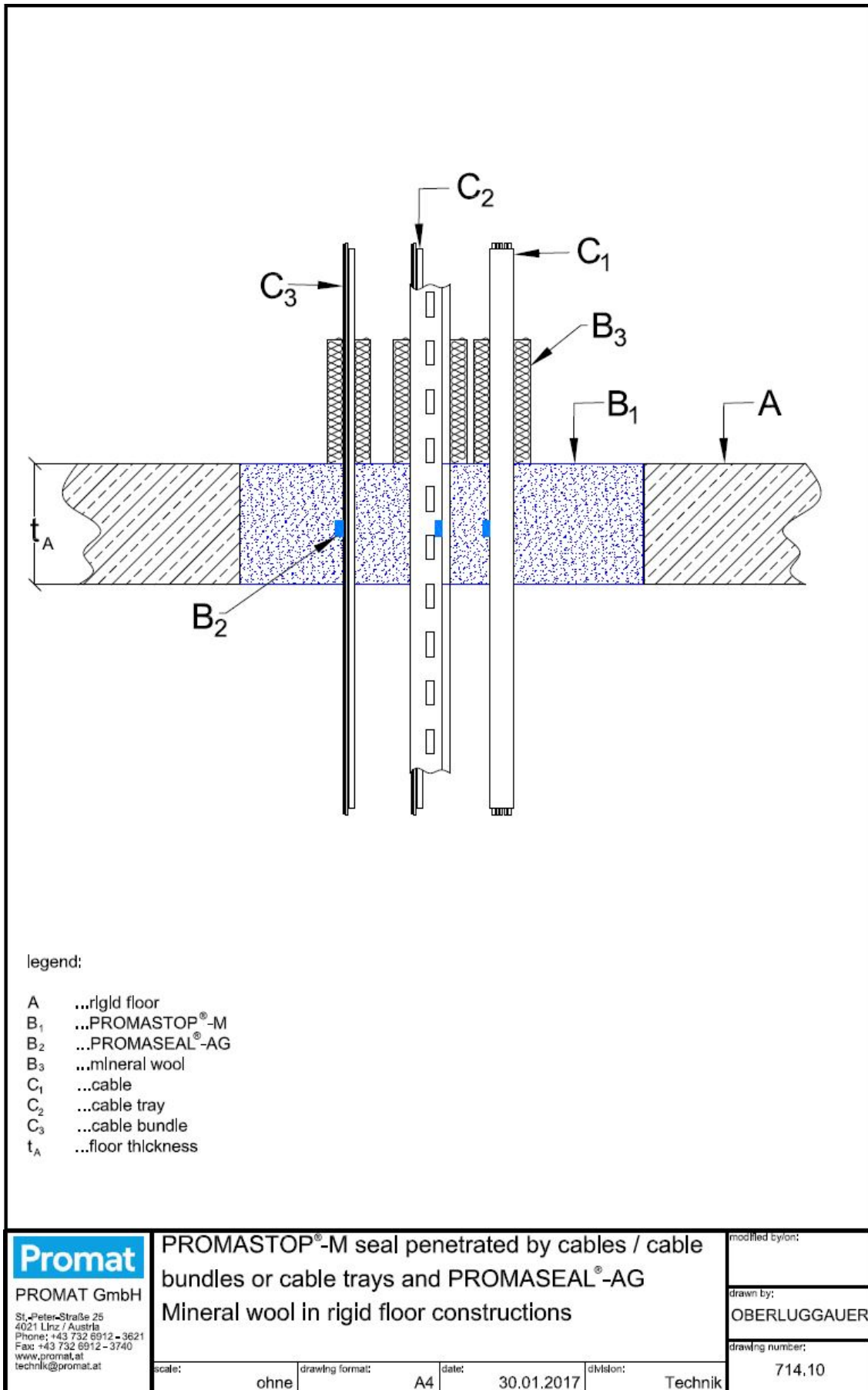


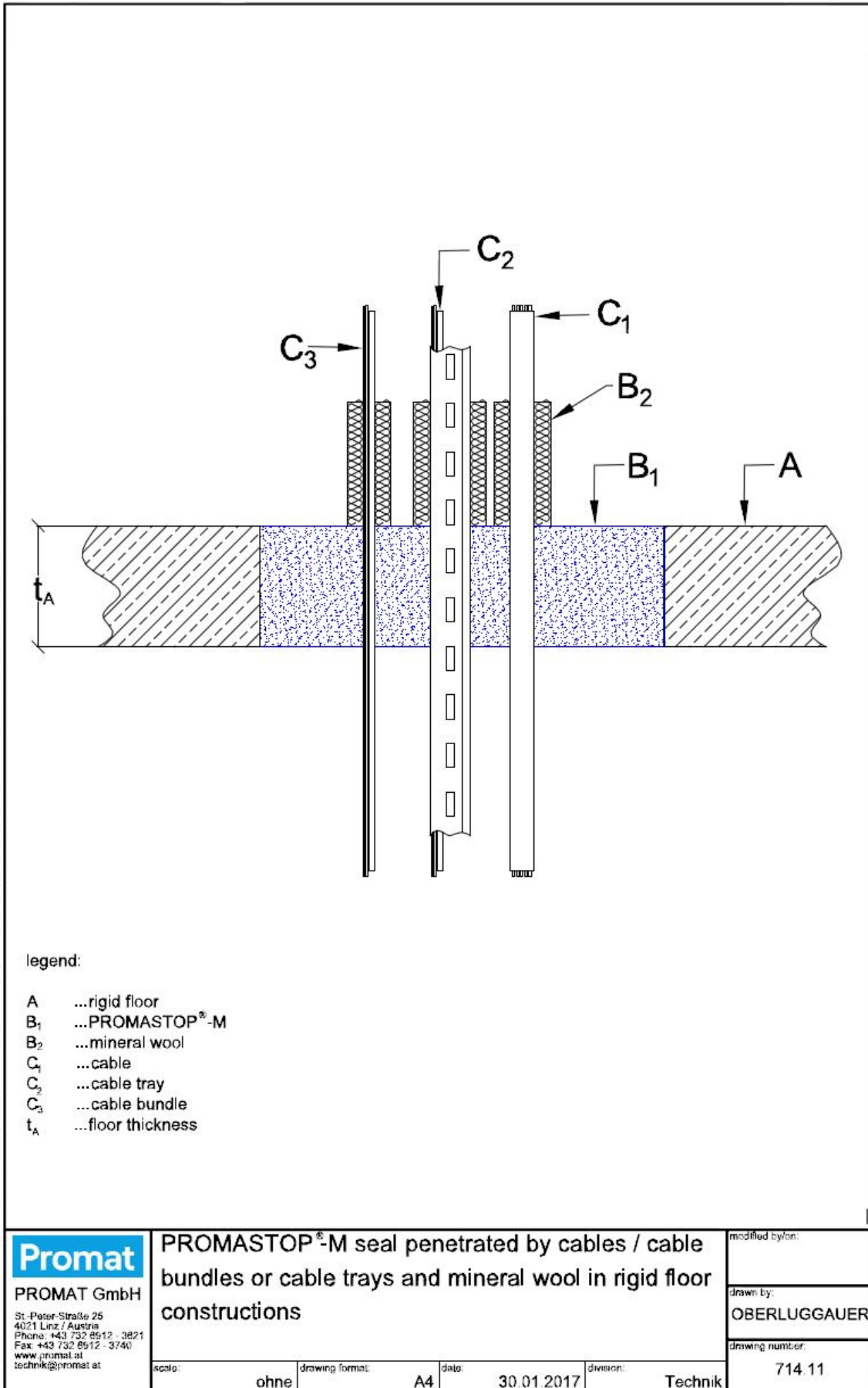


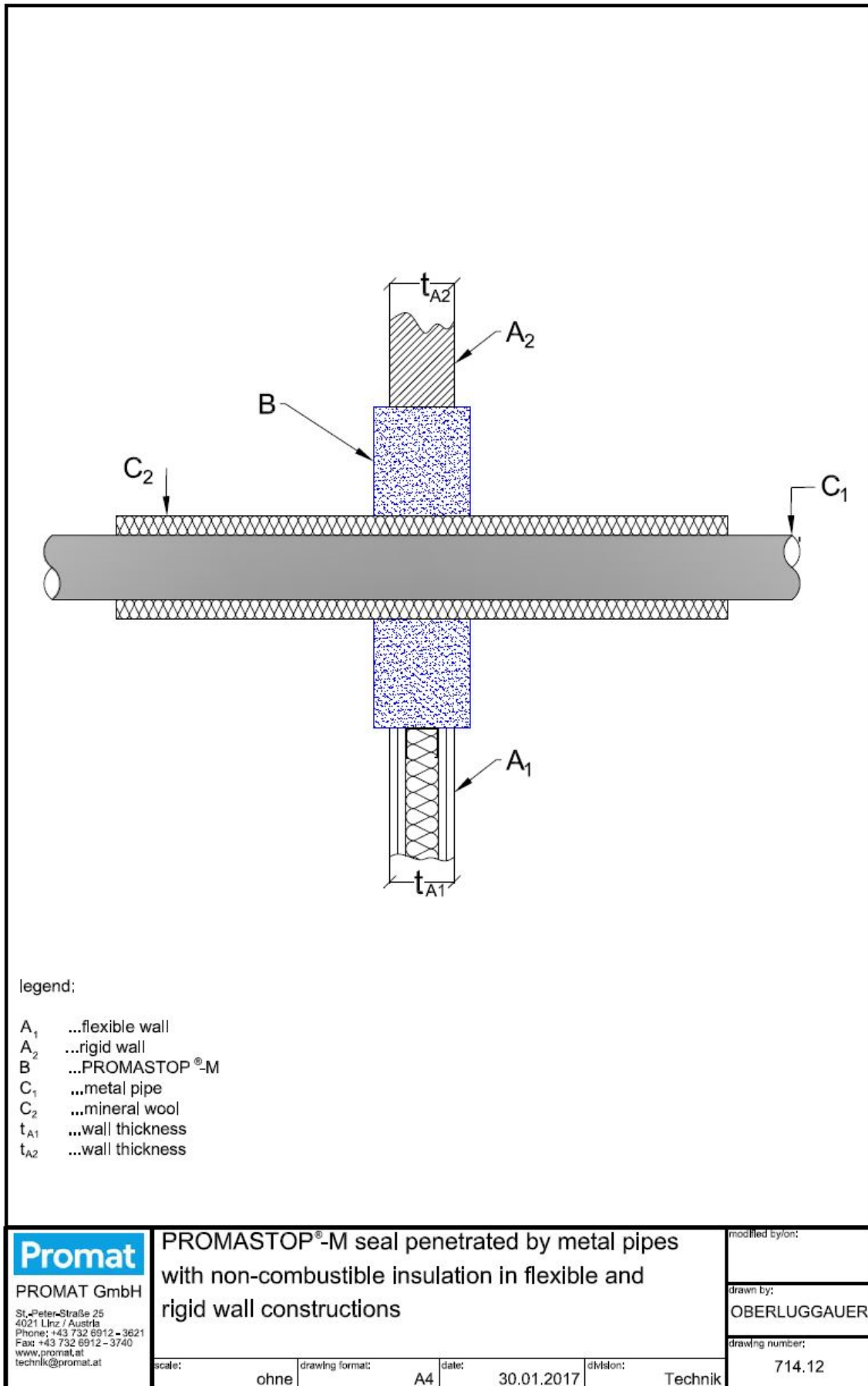


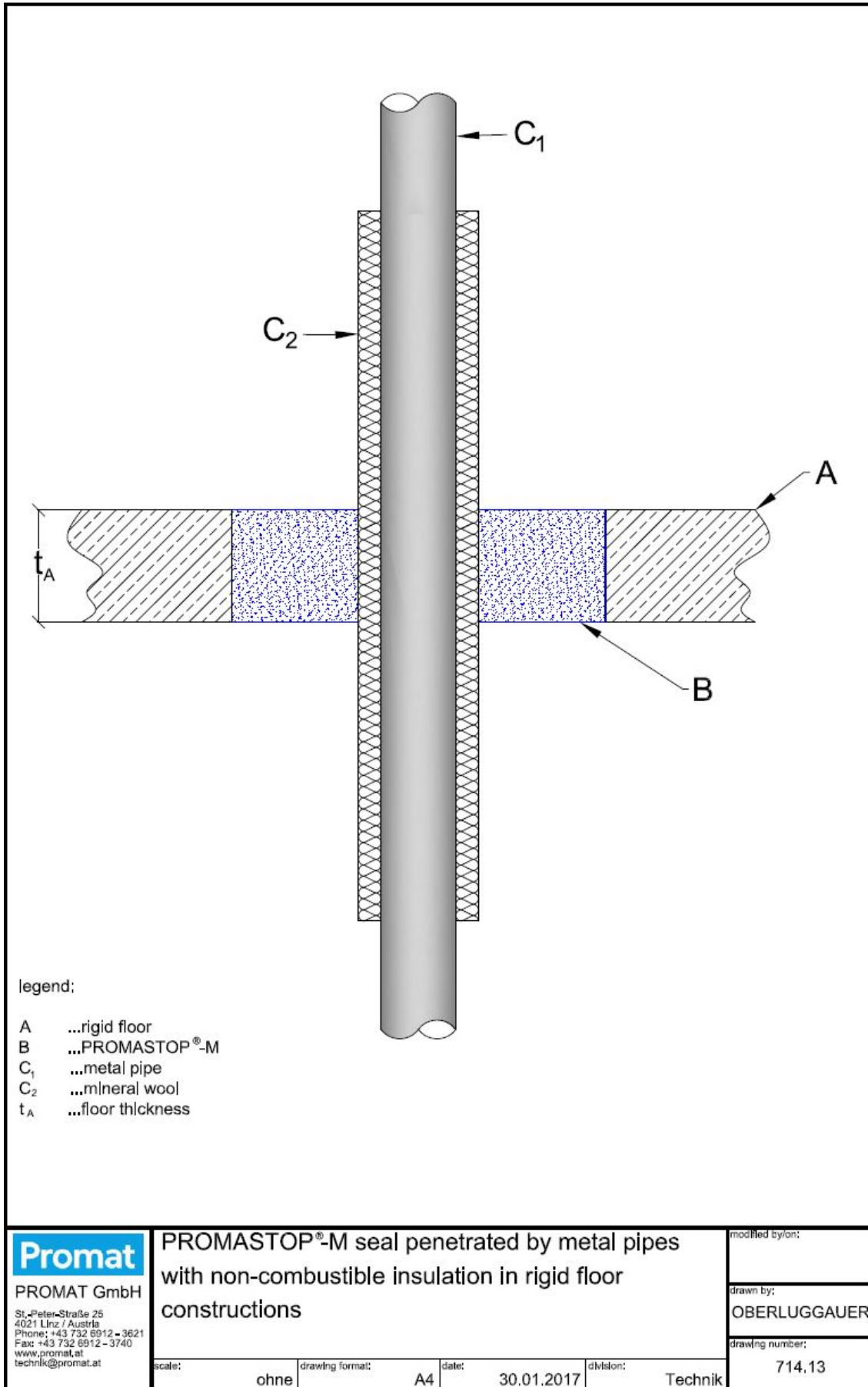


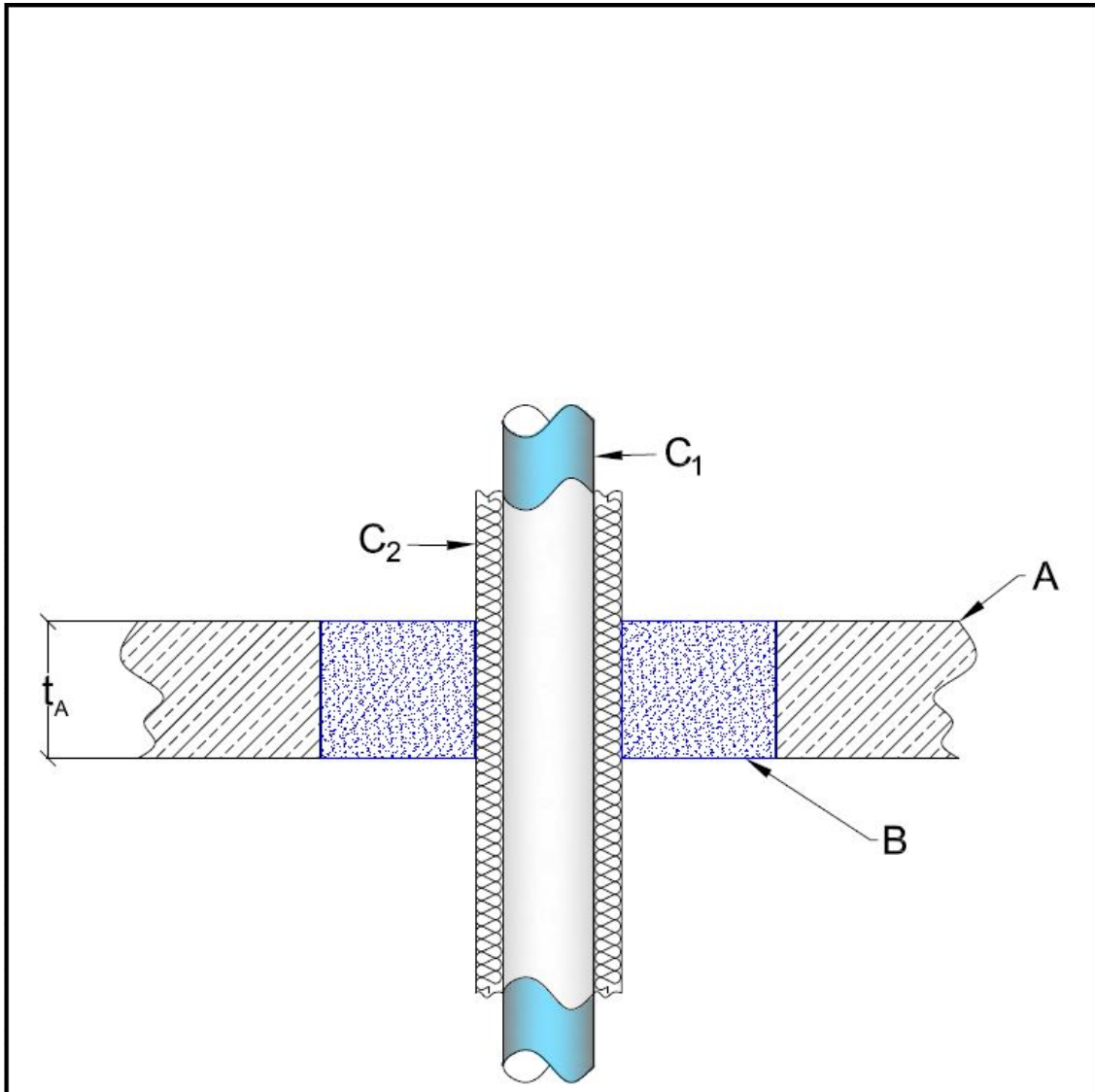









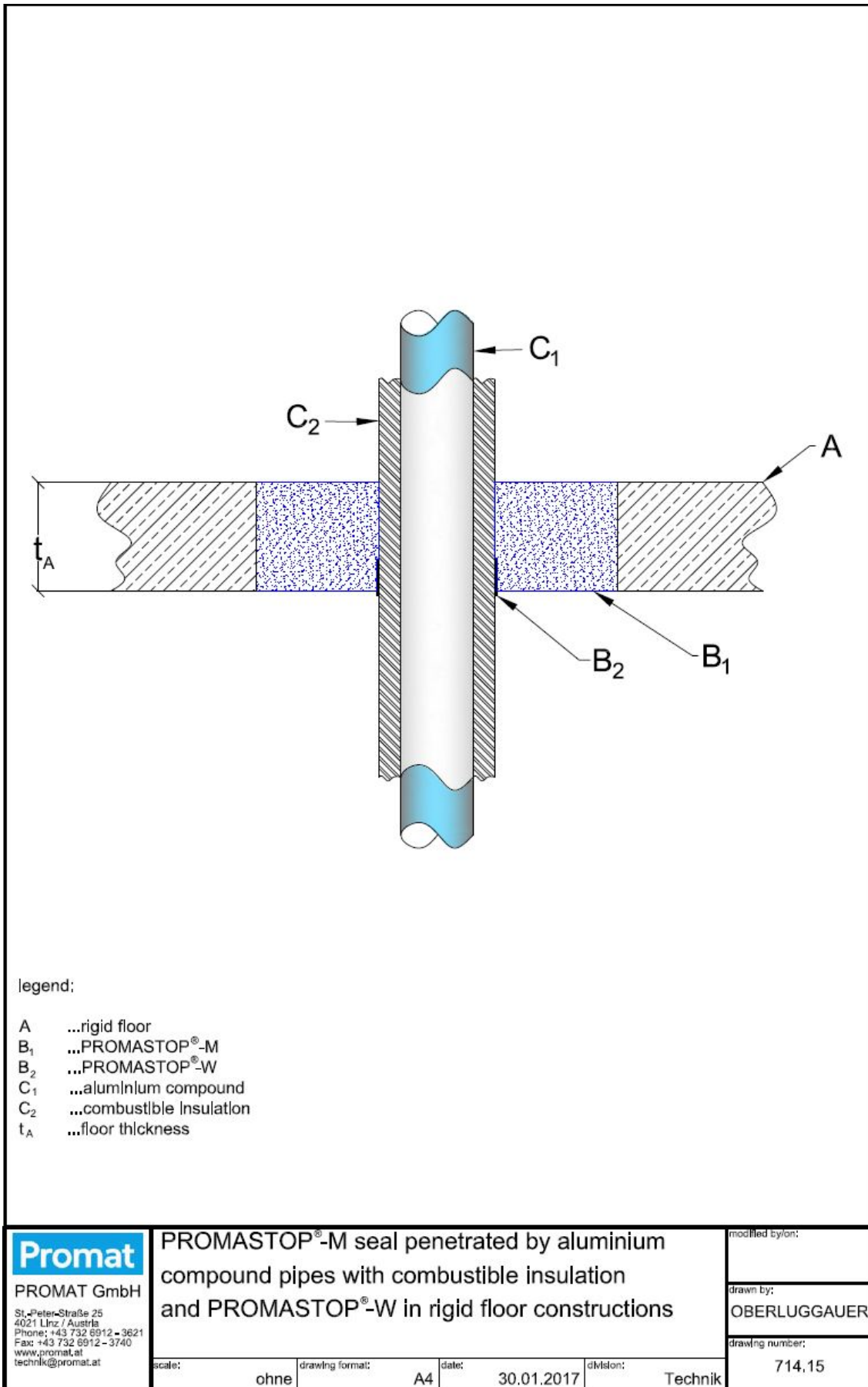


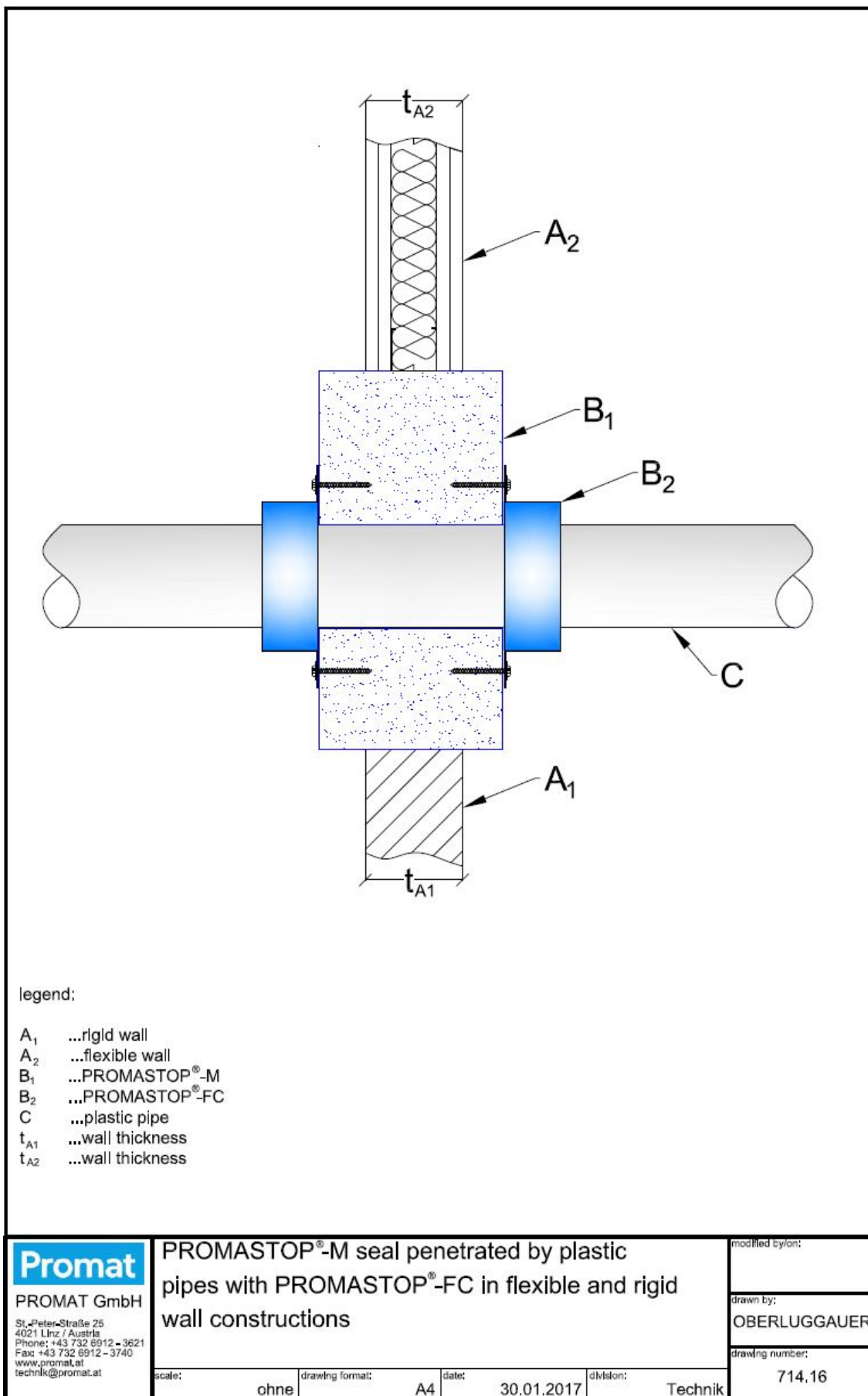


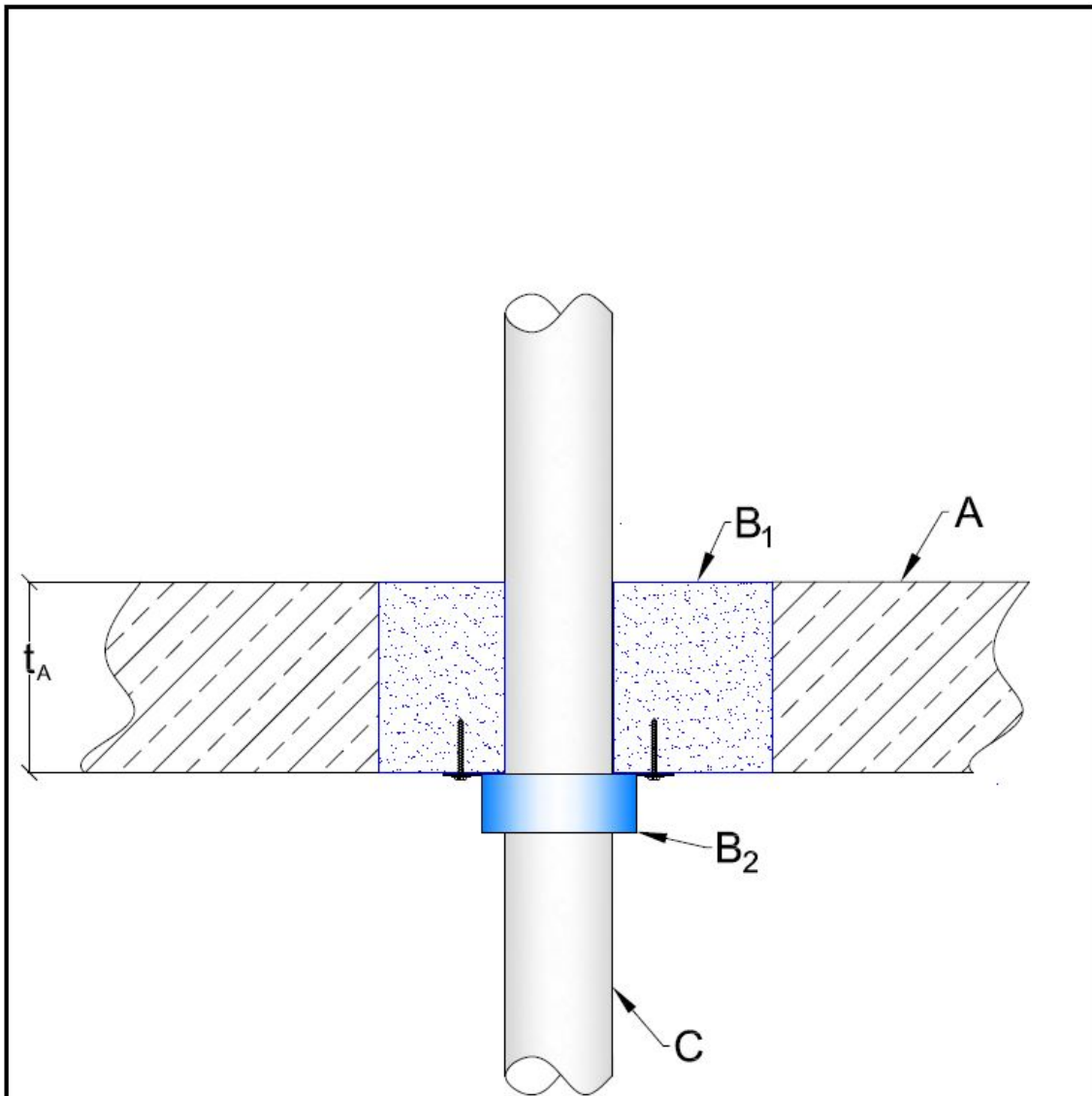
legend:

- A ...rigid floor
- B ...PROMASTOP®-M
- C₁ ...aluminium compound
- C₂ ...mineral wool
- t_A ...floor thickness

 PROMAT GmbH St. Peter-Straße 25 4021 Linz / Austria Phone: +43 732 6912 - 3621 Fax: +43 732 6912 - 3740 www.promat.at technik@promat.at	PROMASTOP®-M seal penetrated by aluminium compound pipes with non-combustible insulation in rigid floor constructions			modified by:			
				drawn by: OBERLUGGAUER			
				drawing number: 714.14			
scale:	ohne	drawing format:	A4	date:	30.01.2017	division:	Technik



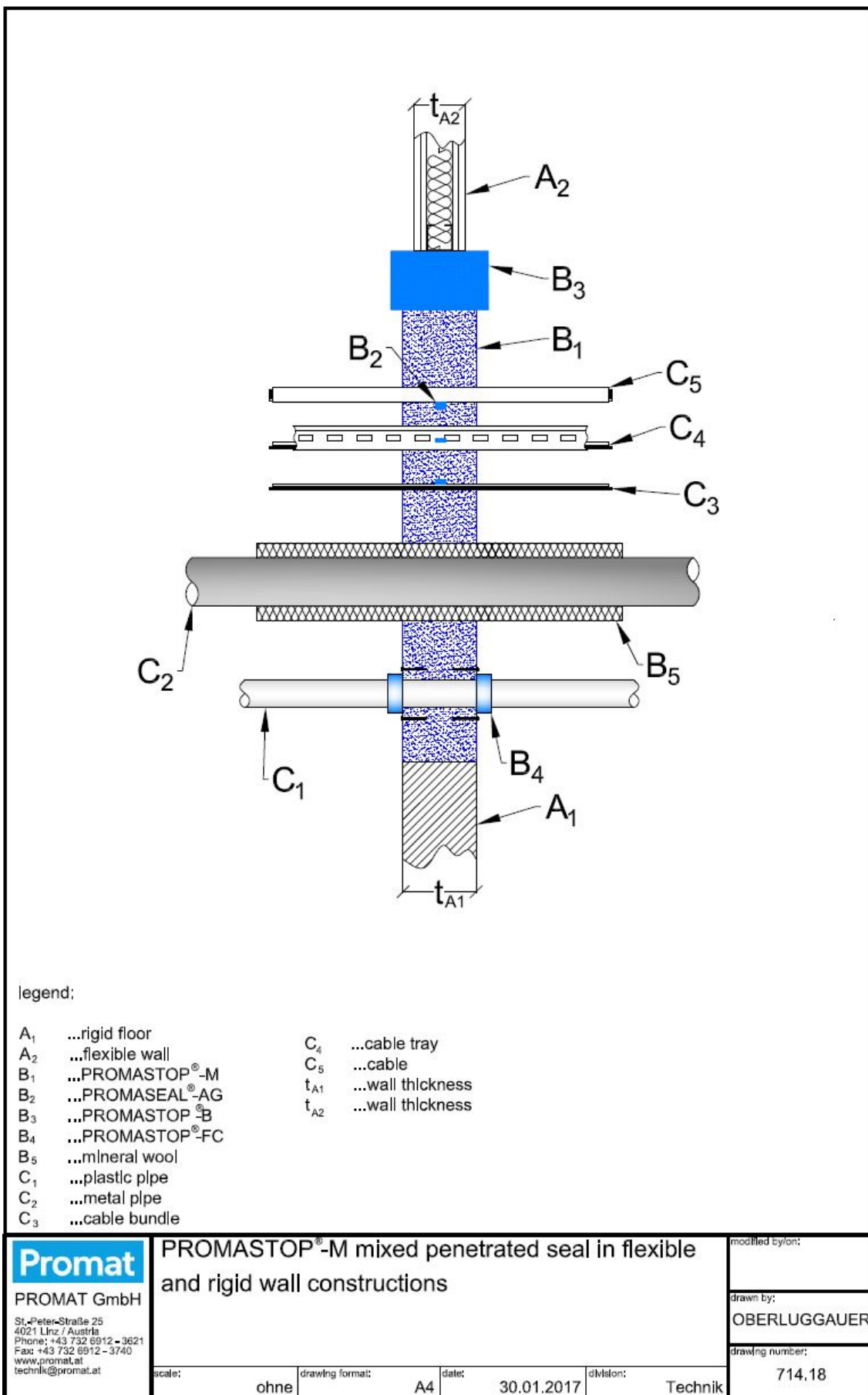


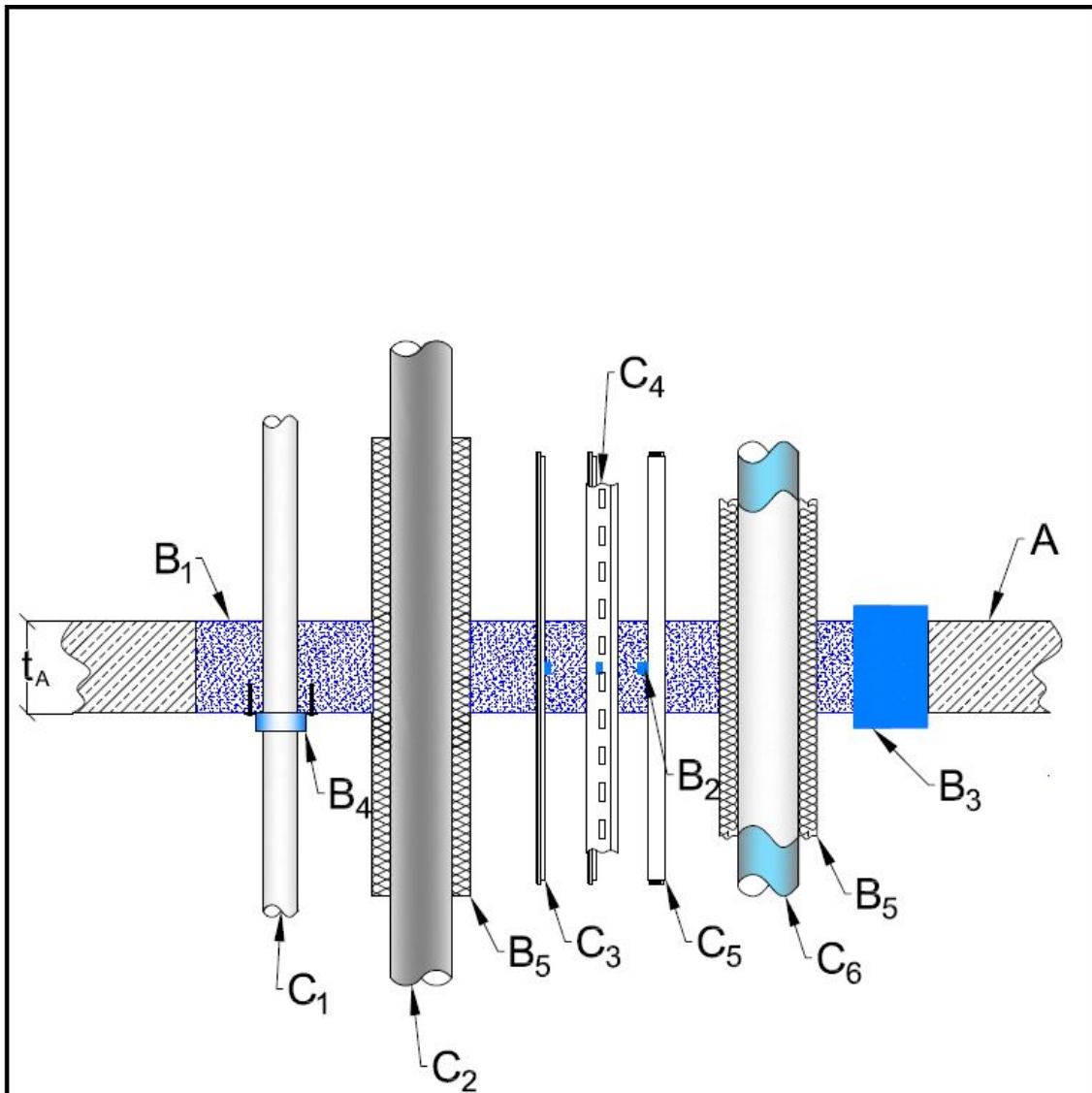


legend:

- A ...rigid floor
- B₁ ...PROMASTOP[®]-M
- B₂ ...PROMASTOP[®]-FC
- C ...plastic pipe
- t_A ...floor thickness


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					drawn by: OBERLUGGAUER
	scale: ohne	drawing format: A4	date: 30.01.2017	division: Technik	drawing number: 714.17





legend:

- | | | | |
|----------------|-------------------------------|----------------|-----------------------|
| A | ...rigid floor | C ₅ | ...cable |
| B ₁ | ...PROMASTOP [®] -M | C ₆ | ...aluminium compound |
| B ₂ | ...PROMASEAL [®] -AG | t _A | ...floor thickness |
| B ₃ | ...PROMASTOP [®] -B | | |
| B ₄ | ...PROMASTOP [®] -FC | | |
| B ₅ | ...mineral wool | | |
| C ₁ | ...plastic pipe | | |
| C ₂ | ...metal pipe | | |
| C ₃ | ...cable bundle | | |
| C ₄ | ...cable tray | | |

 PROMAT GmbH St. Peter-Straße 25 4021 Linz / Austria Phone: +43 732 6912 - 3621 Fax: +43 732 6912 - 3740 www.promat.at technik@promat.at	PROMASTOP[®]-M mixed penetration seal in rigid floor constructions				modified by/on:
					drawn by: OBERLUGGAUER
					drawing number: 714.19
scale: ohne	drawing format: A4	date: 30.01.2017	division: Technik		