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European Technical Assessment

ETA-14/0446
of 23/12/2014

General part

Technical Assessment Body issuing the ETA

Österreichisches Institut für Bautechnik

Trade name of the construction product

PROMASTOP®-I

Product family to which the construction product belongs

Fire Stopping and Fire Sealing Products:
Penetration Seals

Manufacturer

Promat GmbH
St.-Peter-Straße 25
4021 Linz
AUSTRIA

Manufacturing plant

Production plant 16

This European Technical Assessment contains

68 pages including Annexes 1 to 5 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 for “Fire Stopping and Fire Sealing Products”, ETAG 026 Part 2: “Penetration Seals”, edition August 2011, used as European Assessment Document (EAD)

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Specific part

1 Technical description of the product

PROMASTOP®-I (also available under the trade name Intumex®-CSP) is a water based intumescent firestop coating used in combination with mineral wool boards. PROMASTOP®-I is intended to be used to form a cable- and/or pipe penetration seal (mixed penetration seal). The firestop coating is ready for use and can be diluted by adding max. 5 % water, if needed. The application can be done by spray (airless), rolls or brush. All visible surfaces of the mineral wool boards shall be coated single sided.

The firestop coating PROMASTOP®-I is available in two different viscosities:

- > PROMASTOP®-I liquid (paint)
- > PROMASTOP®-I paste (mastic)

For specification of suitable mineral wool boards see Annex 2 of the ETA.

The detailed specification of the product PROMASTOP®-I is a non-public part of this European Technical Assessment, which has been deposited at Österreichisches Institut für Bautechnik.

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

2.1 Intended use

The firestop coating PROMASTOP®-I is intended to be used to form a cable- and/or pipe penetration seal (mixed penetration seal) to temporarily or permanently reinstate the fire resistance performance of flexible wall constructions, rigid wall constructions and rigid floor constructions where they have been provided with apertures which are penetrated by various cables, conduits / tubes, metal pipes, plastic pipes, multi-layer composite pipes, aluminium-composite pipes and cable support constructions (perforated or non-perforated steel cable trays and steel ladders).

The fire stop coating PROMASTOP®-I shall be used in conjunction with the following additional components (for details see Annex 3 of the ETA):

- > Firestop collar PROMASTOP®-FC
- > Firestop acrylate PROMASEAL®-A
- > Firestop wrap PROMASTOP®-W
- > Firestop flexible cable jacket PROMASTOP®-IM-CJ21
- > Intumescent firestop sealant PROMASEAL®-AG

The cable- and/or pipe penetration seal made from fire stop coating PROMASTOP®-I and mineral wool boards as well as additional components can be installed only in the types of separating elements as specified in the following table (for details see Annex 3 of the ETA).

The maximum seal sizes of the penetration seal in the different separating elements are given in Annex 3 of the ETA.

Separating element	Construction
Flexible walls	<ul style="list-style-type: none"> > Steel studs or timber studs lined on both faces with minimum 2 layer of boards (minimum thickness 12,5 mm) with classification A2-s1,d0 or A1 according to EN 13501-1 > For timber stud walls there shall be a minimum distance of 100 mm of the penetration seal to any timber stud. The cavity between the penetration seal and the timber stud has to be closed with minimum 100 mm of insulation with classification A1 or A2 according to EN 13501-1 > Minimum thickness 100 mm > Classification according to EN 13501-2: $\geq EI 90$ > 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 > This European Technical Assessment does not cover sandwich panel constructions and flexible walls were the lining does not cover studs on both sides. Penetrations in such constructions shall be tested on a case by case basis
Rigid walls	<ul style="list-style-type: none"> > Aerated concrete, concrete, masonry > Minimum density 450 kg/m³ > Minimum thickness 100 mm > The rigid wall shall be classified in accordance with EN 13501-2 for the required fire resistance period
Rigid floors	<ul style="list-style-type: none"> > Aerated concrete, concrete > Minimum density 450 kg/m³ > Minimum thickness 150 mm > The rigid floor shall be classified in accordance with EN 13501-2 for the required fire resistance period

PROMASTOP®-I may be used as a penetration seal with the following specific installations or as blank seal (For further details see Annex 3 of the ETA):

- > Plastic pipes made of PVC-U, PE-HD, PP-H, PP-R
- > Aluminium-composite pipe, type Pipelife Radopress
- > Metal pipes (with insulations) made of steel, copper, cast iron, Ni-alloys
- > Multilayer-composite pipes from manufacturer Rehau, Poloplast, Geberit, Friatec, Pipelife
- > Cables and cable bundles (sheathed and non-sheathed)
- > Small conduits and tubes ($\varnothing \leq 16$ mm) made of plastic or steel
- > Flexible and rigid conduits according to EN 61386-21 and EN 61386-22
- > Bundles of flexible and rigid conduits according to EN 61386-21 and EN 61386-22
- > Cable support constructions (perforated or non-perforated steel cable trays and steel ladders)

Other parts or service support constructions shall not penetrate the penetration seal.

2.2 Use category

PROMASTOP®-I is intended for use in internal conditions with humidity lower than 85 % RH excluding temperatures below 0 °C, without exposure to rain or UV, and can therefore – according to ETAG 026-Part 2 clause 2.4.12.1.3.3 – be categorized as Type Z₂.

Although a penetration seal is intended for indoor applications only, the construction process may result in it being subjected to more exposed conditions for a period before the building envelope is closed. For this case provisions shall be made to protect temporarily exposed penetration seals according to the ETA-holder's installation instructions.

2.3 Working life

The provisions made in this European Technical Assessment are based on an assumed working life of PROMASTOP®-I of 10 years, provided the conditions laid down in the technical literature of the manufacturer relating to packaging, transport, storage, installation, use and repair are met.

The indications given on the intended working life cannot be interpreted as a guarantee given by the producer or the Technical Assessment Body, but are to be regarded only as a means for selecting the appropriate product in relation to the expected economically reasonable working life of the works.

The real working life might be, in normal use conditions, considerably longer without major degradation affecting the Basic requirements for construction works.

2.4 General assumptions

2.4.1 It is assumed that

- > damages to the penetration seal are repaired accordingly,
- > the installation of the penetration seal does not effect the stability of the adjacent building element – even in case of fire,
- > 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,
- > the thermal movement in the pipe work will be accommodated in such way that it does not impose a load on the penetration seal,
- > 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,
- > the support of the installations is maintained for the required period of fire resistance and
- > pneumatic dispatch systems, compressed air systems, etc. are switched off by additional means in case of fire.

2.4.2 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.

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

2.4.4 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 (see EN 1366-3:2009, clause 1).

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

2.4.6 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.

2.5 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.

2.6 Installation

The product shall be installed and used as described in this European Technical Assessment (for further details see Annex 2 to Annex 5 of the ETA) as well as the ETA-holder's installation instructions.

Additional marking of the penetration seal shall be done in case of national requirements.

The indications of the manufacturer regarding transport and storage (minimum and maximum storing temperature, maximum duration of storage) have to be followed.

The fire resistance of the penetration seal shall not be negatively affected by future changes to buildings or building elements.

The assessment of the fitness for use is based on the assumption that necessary maintenance and repair if required is carried out in accordance with the manufacturer's instructions during the assumed intended working life.

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

Basic requirements for construction works	Essential characteristic	Method of verification	Performance
BWR 1	None	Not relevant	
BWR 2	Reaction to fire	EN 13501-1: 2007+A1:2009	Clause 3.2.1 of the ETA
	Resistance to fire	EN 13501-2: 2007+A1:2009	Clause 3.2.2 of the ETA and Annex 3 of the ETA
BWR 3	Air permeability (material property)	No Performance Determined (NPD)	
	Water permeability (material property)	No Performance Determined (NPD)	
	Content and/or release of dangerous substances	European Council Directive 67/548/EEC- Dangerous Substances Directive and Regulation (EC) No 1272/2008 as well as EOTA TR 034, edition March 2012	Declaration of conformity by the manufacturer
BWR 4	Mechanical resistance and stability	No Performance Determined (NPD)	
	Resistance to impact / movement	No Performance Determined (NPD)	
	Adhesion	No Performance Determined (NPD)	
BWR 5	Airborne sound insulation	No Performance Determined (NPD)	
BWR 6	Thermal properties	No Performance Determined (NPD)	
	Water vapour permeability	No Performance Determined (NPD)	
BWR 7	No Performance Determined (NPD)		

3.1 Mechanical resistance and stability (BWR 1)

Not relevant.

3.2 Safety in case of fire (BWR 2)

3.2.1 Reaction to fire

The construction product PROMASTOP®-I was assessed according to ETAG 026-Part 2 clause 2.4.1 and classified according to EN 13501-1.

Component	Class according to EN 13501-1: 2007+A1:2009
PROMASTOP®-I	C-s2, d0

3.2.2 Resistance to fire

PROMASTOP®-I was tested according to ETAG 026-Part 2 clause 2.4.2 and EN 1366-3:2009, in conjunction with EN 1363-1:1999 and EN 1363-1:2012.

Based upon the gained test results and the field of application specified within EN 1366-3:2009 the cable- and/or pipe penetration seal (mixed penetration seal) PROMASTOP®-I has been classified according to EN 13501-2:2007+A1:2009. The individual fire resistance classes are listed in Annex 3 of the ETA.

The maximum fire resistance class of the penetration seal in vertical or horizontal separating element depends on the fire resistance class of the penetrating elements. The fire resistance class of the penetration seal is reduced to the fire resistance class of the penetrating element with the lowest fire resistance classification.

The resistance to fire classification listed in Annex 3 of the ETA is only valid if PROMASTOP®-I is installed according to Annex 3 and Annex 4 of the ETA.

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.

3.3 Hygiene, health and environment (BWR 3)

3.3.1 Air permeability

No Performance Determined.

3.3.2 Water permeability

No Performance Determined.

3.3.3 Release of dangerous substances

According to the manufacturer's declaration the components of PROMASTOP®-I 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 ER 3 Checklist for ETAGs/CUAPs/ETAs-Content and/or release of dangerous substances in products/kits), edition March 2012.

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 Directive, these requirements need also to be complied with, when and where they apply.

3.4 Safety in use (BWR 4)

3.4.1 Mechanical resistance and stability

No Performance Determined.

3.4.2 Resistance to impact / movement

No Performance Determined.

Provisions shall be taken to prevent a person from stepping onto a horizontal penetration seal or falling against a vertical penetration seal (e.g. by covering with a wire mesh).

3.4.3 Adhesion

No Performance Determined.

3.5 Protection against noise (BWR 5)

3.5.1 Airborne sound insulation

No Performance Determined.

3.6 Energy economy and heat retention (BWR 6)

3.6.1 Thermal properties

No Performance Determined.

3.6.2 Water vapour permeability

No Performance Determined.

3.7 General aspects relating to fitness for use

PROMASTOP®-I fulfils the requirements for the intended use category.

PROMASTOP®-I is therefore appropriate for use in internal conditions with humidity lower than 85 % RH excluding temperatures below 0 °C, without exposure to rain or UV, and can – according to ETAG 026-Part 2 clause 2.4.12.1.3.3 – be categorized as Type Z₂.

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/EC¹, amended by Decision 2001/596/EC² of the European Commission the system(s) of assessment and verification of constancy of performance (see Annex V of Regulation (EU) No 305/2011) is given in the following table.

Product(s)	Intended use(s)	Level(s) or class(es) (resistance to fire)	System of assessment and verification of constancy of performance
Fire Stopping and Fire Sealing Products	for fire compartmentation and/or fire protection or fire performance	any	1

5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable European Assessment Document

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 documentation³ 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 guaranty 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 plan⁴ relating to this European Technical Assessment, which is part of the technical documentation of this European Technical Assessment.

The results of factory production control shall be recorded and evaluated in accordance with the provisions of the control plan.

5.1.2 Further testing of samples taken at the factory

Testing of samples taken at the factory by the manufacturer shall be performed according to the control plan referred to in clause 5.1.1 of the European Technical Assessment.

¹ Official Journal of the European Communities no. L 178, 14.7.1999, p. 52

² Official Journal of the European Communities no. L 209, 2.8.2001, p. 33

³ 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 only to the notified product certification body.

⁴ 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.

5.1.3 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 (e.g. cable trays)
 - 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

In the accompanying document and/or on the packaging the manufacturer shall give information as to transport and storage (minimum and maximum storing temperature, maximum duration of storage)

The packaging of the product shall contain the trade name or trademark or other symbol identifying the product and the date of manufacture (day, month, year or coded information).

The product shall be packaged for delivery in compliance with the usual delivery conditions and providing sufficient protection against the effects of normal handling.

The manufacturer shall, on the basis of a contract, involve a notified product certification body which is notified for the tasks referred to in clause 5.2 of the ETA in the field of penetration seals in order to undertake the actions laid down in clause 5.2 of the ETA. 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.

5.2 Tasks of the notified product certification body

The Notified body shall retain the essential points of its actions referred to clause 5.2.1 to 5.2.3 of the ETA, 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 bodies undertaking tasks under System 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 the 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 product according to the specifications given in this 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

The original document is signed by:

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	Fire classification of construction products and building elements - Part 1: Classification using test data from reaction to fire tests
EN 13501-2:2007+A1:2009	Fire classification of construction products and building elements - Part 2: Classification using data from fire resistance tests, excluding ventilation
EN 1363-1:1999	Fire resistance tests - Part 1: General requirements
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®-I	firestop coating
PROMASTOP®-FC (additional component)	firestop collar
PROMASTOP®-W (additional component)	firestop wrap
PROMASTOP®-IM-CJ21 (additional component)	flexible firestop cable jacket
PROMASEAL®-A (additional component)	firestop acrylic sealant
PROMASEAL®-AG (additional component)	intumescent firestop sealant

Suitable mineral wool products used for mineral wool board penetration seal

Manufacturer	Product designation
Rockwool	RP-XV, Hardrock II, Rockwool 360, Taurox D-C, Taurox Duo NP, Rockwool Paneel 755
Knauf Insulations	Knauf Insulations DP-15, Knauf Insulations FDB D150
Paroc OY AB	Pyrotech slab 140 – 180, Paroc Pro Roof Slab
Isover	Orsil T-N

Suitable insulation products – reaction to fire

Combustible insulation (closed cell, flexible elastomeric foam, e.g. AF/Armaflex)	minimum B-s3,d0 (acc. to EN 13501-1)
Combustible insulation for sound decoupling (elastomeric foam, e.g. PE)	minimum E (acc. to EN 13501-1)
Non-combustible insulation (mineral wool) (e.g. Rockwool 800, Rockwool Klimarock, Conlit 150U, Heralan Lam-040-AR)	minimum A2-s1,d0 / A2L-s1,d0 (acc. to EN 13501-1)

For backfilling (annular gaps) if necessary, mineral wool with a melting point ≥ 1000 °C and classification A1 according to EN 13501-1 shall be used.

2.2 Fixing details

Threaded steel rods M6 or M8 with nuts and washers for fixing the firestop collars through penetration seals made of mineral wool boards shall be used. For the built in situation of the collar, fastening hooks in between the mineral wool boards shall be used.

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

2.3 Technical product literature

Product data sheets for PROMASTOP®-I, PROMASTOP®-FC, PROMASTOP®-W, PROMASTOP®-IM-CJ21, PROMASEAL®-A and PROMASEAL®-AG

Detailed sketches for the firestop coating PROMASTOP®-I in conjunction with PROMASTOP®-FC, PROMASTOP®-W, PROMASTOP®-IM-CJ21, PROMASEAL®-A and PROMASEAL®-AG

ANNEX 3

RESISTANCE TO FIRE CLASSIFICATION OF PROMASTOP®-I

3.1 Classification acc. to EN 13501-2 for the PROMASTOP®-I firestop coating with mineral wool boards

Thickness of the mineral wool board penetration seals with PROMASTOP®-I firestop coating:

Mineral wool boards (number of layers x thickness)	2 x 50 mm
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Maximum seal dimension depending on the separating element (see clause 2.1 of the ETA):

Supporting construction	Mineral wool boards 2 x 50 mm
Flexible walls	1200 mm x 1200 mm
Rigid walls	1200 mm x 1200 mm
Rigid floors	see Annex 5 of the ETA

Mineral wool boards thickness see table above, minimum density 140 kg/m³, melting point ≥ 1000°C and class A1 acc. to EN 13501-1 (possible products see Annex 2, clause 2.1 of the ETA).

Classification of the PROMASTOP®-I blank seals depending on the separating element (see clause 2.1 of the ETA):

Supporting construction	Classification
Flexible walls	EI 120 / E 120
Rigid walls	EI 120 / E 120
Rigid floors	EI 90 / E 90

Distance between the two layers of mineral wool boards:

Supporting construction	Distance (mm)
Flexible walls	0
Rigid walls	0 – 150
Rigid floors	0 – 50

Thickness of PROMASTOP®-I firestop coating (dry layer thickness):

Specimen	Minimum thickness (mm)
On the surface of the penetration seal	1,0
On cable trays, cable ladders (plate and flanges)	1,0
All sheathed and non-sheathed cables and tied cable bundles	1,0
Small conduits and tubes (Ø ≤ 16 mm) made of plastic or steel	2,0

Length of PROMASTOP®-I firestop coating (measured from the surface of the penetration seal):

Specimen	Minimum length (mm)
On the surface of the adjacent separating element (wall, floor)	0
On cable trays, cable ladders (plate and flanges)	100
All sheathed and non-sheathed cables and tied cable bundles	100
Small conduits and tubes ($\varnothing \leq 16$ mm) made of plastic or steel	100

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

Lidded cable trays / trunkings must not pass through the penetration seal.

In flexible wall constructions an aperture framing made from boards may be omitted in case the aperture is lined with metal studs.

PROMASTOP®-I firestop coating shall be applied on the visible surface of the penetration seal, cutting edges and the reveal.

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

Specimen
Plastic pipes made of PVC-U, PE-HD, PP-H, PP-R
Aluminium-composite pipe, type Pipelife Radopress
Metal pipes (with insulations) made of steel, copper, cast iron, Ni-alloys
Multilayer-composite pipes from manufacturer Rehau, Poloplast, Geberit, Friatec, Pipelife
Cables and cable bundles (sheathed and non-sheathed)
Small conduits and tubes ($\varnothing \leq 16$ mm) made of plastic or steel
Flexible and rigid conduits according to EN 61386-21 and EN 61386-22
Bundles of flexible and rigid conduits according to EN 61386-21 and EN 61386-22

The total cross sections of the installations (including insulations and cable support constructions) must not be more than 60 % of the opening size of the penetration seal.

The gap between the installations and the mineral wool boards has to be completely filled with mineral wool (stone wool with a melting point $\geq 1000^{\circ}\text{C}$, class A1 acc. to EN 13501-1 and a minimum apparent density of 40 kg/m^3) and afterwards coated with PROMASTOP®-I paste firestop coating or PROMASEAL®-A firestop acrylic sealant on both sides of the penetration seal. In rigid floors PROMASTOP®-I paste firestop coating or PROMASEAL®-A firestop acrylic sealant only needs to be applied on the bottom side of the floor.

Supporting distances (measured from the surface of the penetration seal):

Orientation	Maximum distance (mm)
Distance on both sides of wall constructions	250
Distance on the top side of floor constructions	250

Pipe end configurations:

<i>Tested and classified for plastic pipes</i>	Applicable
U/U	U/U, C/U, U/C, C/C
U/C	U/C, C/C
<i>Tested and classified for metal pipes</i>	Applicable
U/C	C/U, U/C, C/C

Conduits made of plastic were tested U/C.
Conduits made of steel were tested U/C.

Small conduits and tubes ($\varnothing \leq 16$ mm) made of plastic or steel shall be sealed with PROMASEAL®-AG acrylic sealant or PROMASEAL®-A acrylic sealant and if need be mineral wool (stone wool with a melting point $\geq 1000^{\circ}\text{C}$, class A1 acc. to EN 13501-1 and a minimum apparent density of 40 kg/m^3) as backfilling material.

Sound decoupling:

Sound decoupling (e.g. Kaiflex PE-AB Abflusisolierung from manufacturer Kaiman) based on PE (closed-cell elastomeric foam, maximum thickness 5 mm, class E acc. to EN 13501-1, maximum one layer) may be used (only to be used for plastic pipes).

Sockets:

The diameter of the tested sockets can be reduced, but not increased. For this application PROMASTOP®-FC6 collar shall be used.

Conduits / tubes, metal pipes, plastic pipes, multi-layer composite pipes and aluminium-composite pipes shall be installed perpendicular to the surface of the penetration seal.

3.2 Classification acc. to EN 13501-2 for the PROMASTOP®-I firestop coating on cables, cable bundles, small conduits and tubes ($\varnothing \leq 16$ mm)

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).

All non-sheathed cable:

All non-sheathed cables (wires) currently and commonly used in building practice in Europe.

Tied cable bundle:

Tied cable bundle (maximum diameter 100 mm), maximum diameter of single cable 21 mm.

The gap (max. width 10 mm) between the installations and the mineral wool boards has to be completely filled with mineral wool (stone wool with a melting point $\geq 1000^{\circ}\text{C}$, class A1 acc. to EN 13501-1 and a minimum apparent density of 40 kg/m^3) and afterwards coated with PROMASTOP®-I paste firestop coating or PROMASEAL®-A firestop acrylic sealant on both sides of the penetration seal. In rigid floors PROMASTOP®-I paste firestop coating or PROMASEAL®-A firestop acrylic sealant only needs to be applied on the bottom side of the floor.”

Classification depending on the separating element:

Installation	Mineral wool board thicknesses (coated with PROMASTOP®-I) and orientation	
	Wall	Floor
All sheathed cable types: $\varnothing \leq 21$ mm	EI 120 E 120	EI 90 E 90
All sheathed cable types: $21 \text{ mm} \leq \varnothing \leq 50$ mm	EI 90 E 120	EI 90 E 90
All sheathed cable types: $50 \text{ mm} \leq \varnothing \leq 80$ mm	EI 90 E 120	EI 90 E 90
Tied cable bundles: $\varnothing \leq 100$ mm	EI 120 EI 120	EI 90 E 90
All non-sheathed cable types: $\varnothing \leq 24$ mm	EI 90 E 120	EI 90 E 90
Small conduits and tubes, made of plastic or steel: $\varnothing \leq 16$ mm	EI 120 E 120	EI 90 E 90

Thickness and length of PROMASTOP®-I on cables, cable bundles, cable trays:

Installation	Thickness (mm)	Length (mm)
All sheathed and non-sheathed cable types	1	100
Small conduits and tubes, made of plastic or steel $\varnothing \leq 16$ mm	2	
Cable trays and cable ladders (perforated or non-perforated)	1	

Cable trays and cable ladders may penetrate the penetration seal.

3.3 Classification acc. to EN 13501-2 for the PROMASTOP®-I firestop coating and the flexible firestop cable jacket PROMASTOP®-IM-CJ21 for cables, conduits and tubes

All sheathed cables:

All sheathed cable types currently and commonly used in building practice in Europe (e.g. control, power, data, optical fibre cables, signal, telecommunication).

Application of the PROMASTOP®-IM-CJ21 in the PROMASTOP®-I penetration seal:

Orientation	Application
Wall and floor	On both sides in the penetration seal

PROMASTOP®-IM-CJ21 and cables need not be coated with PROMASTOP®-I.

PROMASTOP®-IM-CJ21 flexible firestop cable jacket shall only be used to seal-off a single cable or a single conduit.

Classification depending on the separating element:

Installation	Classification	
	Wall	Floor
All sheathed cable types Ø ≤ 21 mm	EI 90 E 90	EI 90 E 90
Flexible and rigid conduits according to EN 61386-21 and EN 61386-22, with or without cables (tested U/U) Ø ≤ 20 mm	EI 120 E 120	EI 90 E 90
Blank seal	EI 120 E 120	EI 90 E 90

Distances:

Specimen	Minimum distance (mm)
Cable jacket – Firestop cable jacket PROMASTOP®-IM-CJ21	0
Cable jacket – Firestop collar PROMASTOP®-FC	0
Cable jacket – Firestop wrap PROMASTOP®-W	0
Cable jacket – combustible insulations	0
Cable jacket – non-combustible insulations	0
Cable jacket – Cable tray, cable ladders (perforated or non-perforated)	0
Cable jacket – Cable bundles	0
Cable jacket – Intumescent firestop sealant PROMASEAL®-AG	0
Cable jacket – Reveal	0
Cable jacket – All other installations	100

3.4 Classification acc. to EN 13501-2 for the PROMASTOP®-I firestop coating and PROMASEAL®-AG intumescent firestop sealant for plastic pipes, cable bundles, plastic conduits and tubes

The annular gap around cable bundles, conduits and plastic pipes shall be sealed with PROMASEAL®-AG acrylic sealant and mineral wool (stone wool with a melting point $\geq 1000^{\circ}\text{C}$, class A1 acc. to EN 13501-1 and a minimum apparent density of 40 kg/m^3) as backfilling material.

Application of the PROMASEAL®-AG in the PROMASTOP®-I penetration seal:

Orientation	Application
Wall	On both sides in the penetration seal
Floor	On the bottom side of the floor in the penetration seal

Classification depending on the separating element:

Name	Dimensions \varnothing ...Diameter (mm) t_D ...pipe wall thickness (mm)	Orien- tation Wall...W Floor...F	Annular gap* max. width x min. depth (mm)	Classification
PVC-U pipe acc. to EN 1452-2, DIN 8061, DIN 8062	$\varnothing 50 / t_D 1,8$	W	20 x 15	EI 120-U/C E 120-U/C
PVC-U pipe acc. to EN 1452-2, DIN 8061, DIN 8062	$\varnothing 50 / t_D 1,8$	F	20 x 15	EI 120-U/C E 120-U/C
PP pipe acc. to EN ISO 15494, DIN 8077, DIN 8078	$\varnothing 50 / t_D 1,8$	W	20 x 15	EI 120-U/C E 120-U/C
PP pipe acc. to EN ISO 15494, DIN 8077, DIN 8078	$\varnothing 50 / t_D 1,8$	F	20 x 15	EI 120-U/C E 120-U/C
PE-HD pipe acc. to EN 12201-2, DIN 8074, DIN 8075	$\varnothing 50 / t_D 1,8$	W	20 x 15	EI 120-U/C E 120-U/C
PE-HD pipe acc. to EN 12201-2, DIN 8074, DIN 8075	$\varnothing 50 / t_D 1,8$	F	20 x 15	EI 120-U/C E 120-U/C
Cable bundle (single cables $\varnothing \leq 21 \text{ mm}$)	$\varnothing \leq 160$	W	20 x 15	EI 120 E 120
Cable bundle (single cables $\varnothing \leq 21 \text{ mm}$)	$\varnothing \leq 160$	F	20 x 15	EI 120 E 120
Flexible and rigid conduits acc. to EN 61386-21 and EN 61386-22 (tested U/C), with or without cables $\varnothing \leq 20 \text{ mm}$	$\varnothing_{\text{max.}} \leq 50$ $t_D 0,4 - 2,85$	W	20 x 15	EI 120 E 120
Bundle of flexible and rigid conduits acc. to EN 61386-21 and EN 61386-22 (tested U/C), with or without cables $\varnothing \leq 20 \text{ mm}$	$\varnothing_{\text{max.}} \leq 5 \times 50$ $t_D 0,4 - 2,85$	W	20 x 15	EI 120 E 120

*filled with PROMASEAL®-AG

Distances:

Specimen	Minimum distance (mm)
Plastic pipe – plastic pipe, cable bundle, bundle of conduits / conduits	40
Cable bundle – plastic pipe, cable bundle, bundle of conduits / conduits	40
Conduits / bundle of conduits – plastic pipe, cable bundle, bundle of conduits / conduits	40
PROMASEAL® AG – all other installations	100

3.5 Classification acc. to EN 13501-2 for the PROMASTOP®-I firestop coating for metal pipes with non-combustible insulation

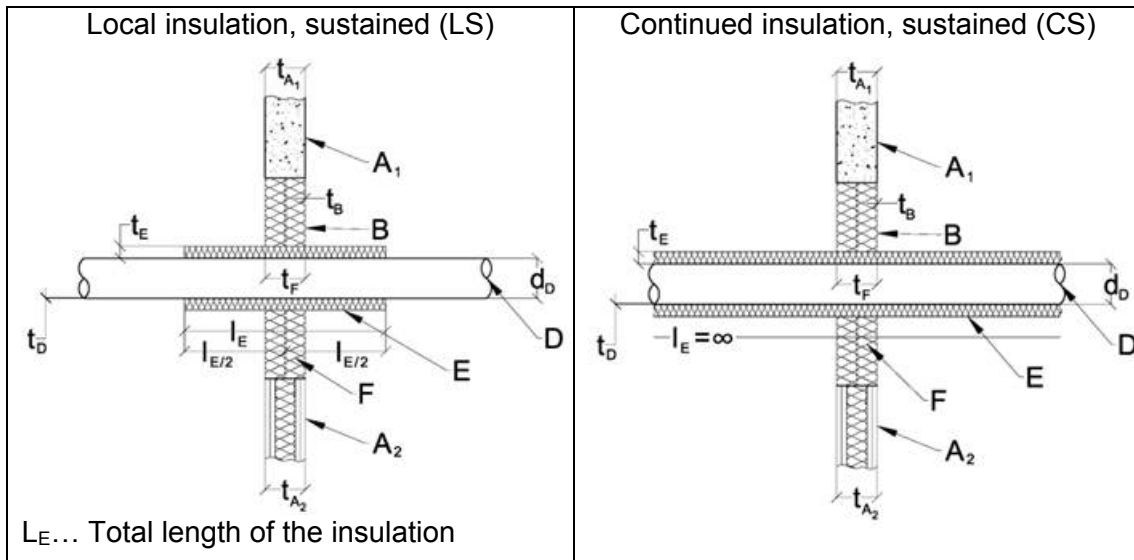
Steel and copper pipes with non-combustible insulation may penetrate the PROMASTOP®-I penetration seal.

Specification of the non-combustible insulation:
See sections steel pipes and copper pipes

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

The annular gap (max. width 10 mm) around the non-combustible insulation shall be sealed with PROMASTOP®-I paste or PROMASEAL®-A acrylic sealant and mineral wool (stone wool with a melting point $\geq 1000^{\circ}\text{C}$, class A1 acc. to EN 13501-1 and a minimum apparent density of 40 kg/m^3) as backfilling material.

Metal pipes with mineral wool insulation according to following possibilities:

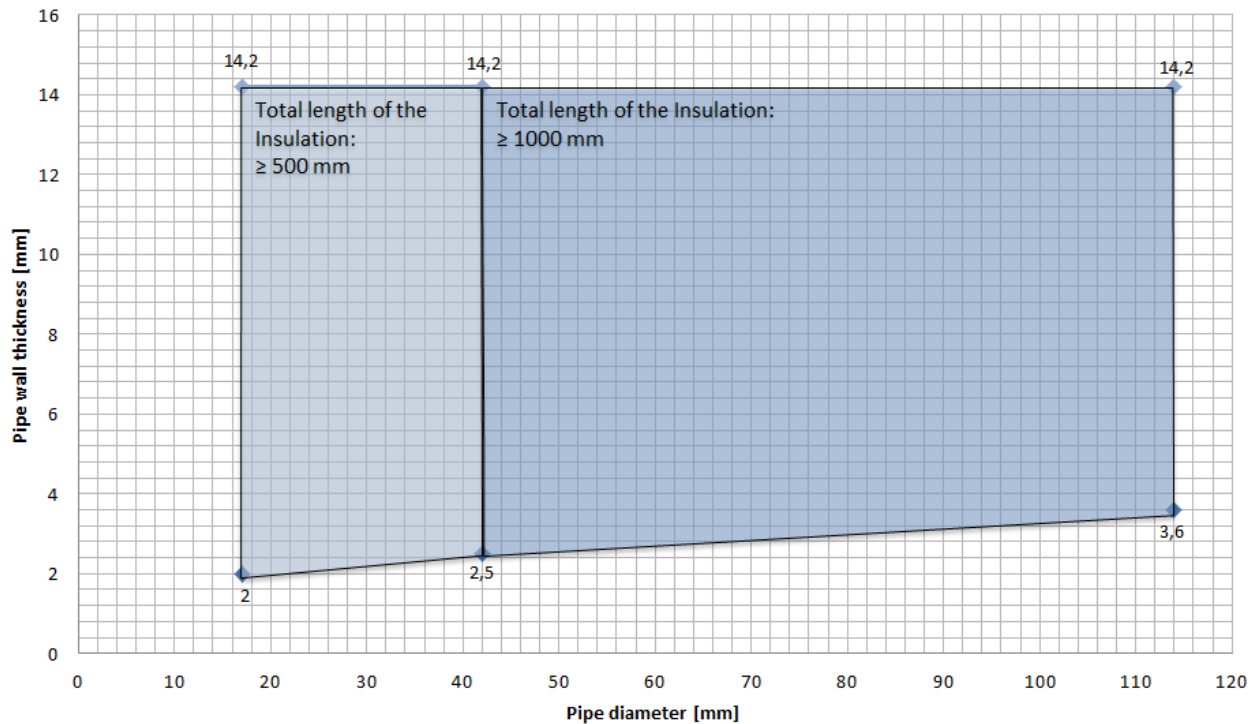


LS covers LS and CS

Steel pipes

Specification	Thresholds
Stone wool	Melting point $\geq 1000^{\circ}\text{C}$, reaction to fire minimum A2-s1, d0, A2L-s1, d0 according 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 $\leq 100 \text{ mm}$
Type of insulation	LS or CS
Length of insulation	See diagram below

Steel pipes with non-combustible insulation	Wall	Floor
Pipe diameter (mm)	$17 \leq 114$	$17 \leq 114$
Pipe wall thickness (mm)	$2,0 \leq 14,2$	$2,0 \leq 14,2$
Classification	EI 90-U/C E 90-U/C	EI 90-U/C E 90-U/C

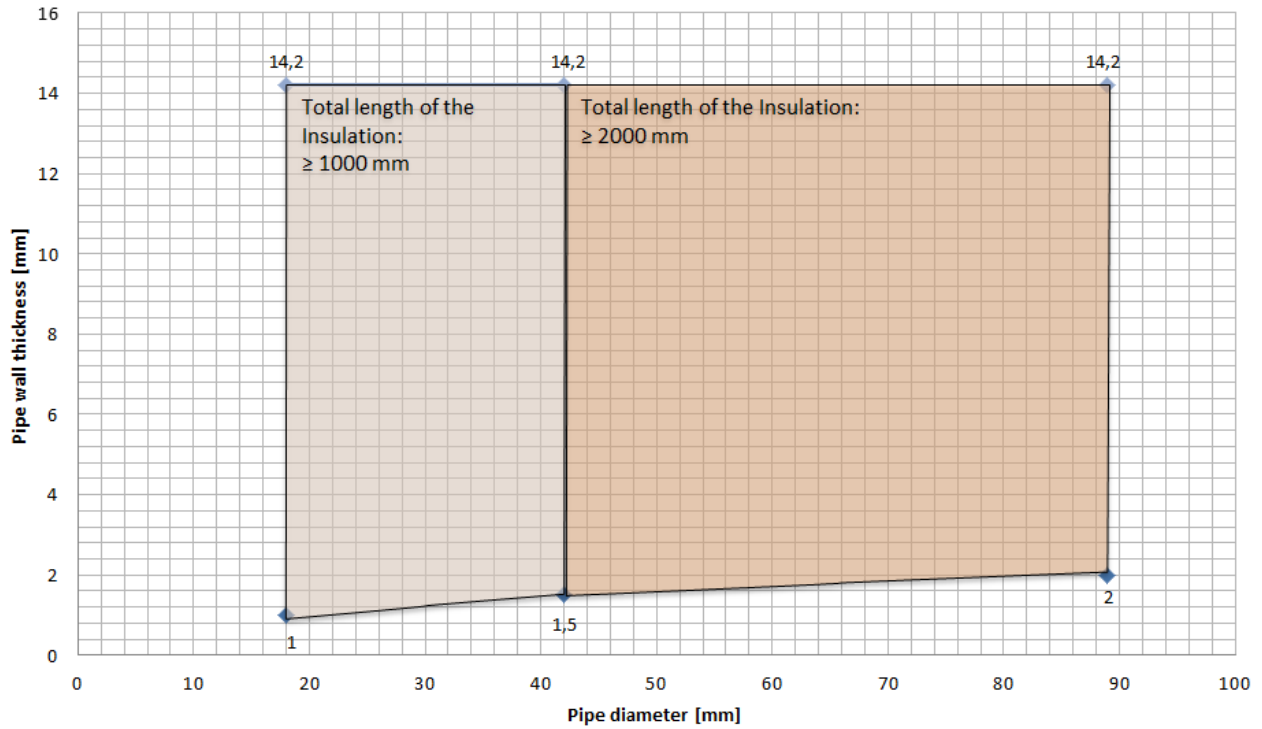


The field of application given for metal pipes with lower heat conductivity ($\lambda \leq 58$ W/mK) and a melting point of minimum 1100 °C (e.g. stainless steel, cast iron, Ni alloys (NiCr, NiMo and NiCu alloys) and Ni.

Copper pipes

Specification	Thresholds
Mineral wool	Melting point $\geq 1000^{\circ}\text{C}$, reaction to fire minimum A2-s1, d0, A2L-s1, d0 according to EN 13501-1
Density	≥ 40 kg/m ³ to ≤ 150 kg/m ³
Insulation thickness	≥ 30 mm to ≤ 100 mm
Type of insulation	LS or CS
Length of insulation	See diagram below

Copper pipes with non-combustible insulation	Wall	Floor
Pipe diameter (mm)	$18 \leq 88,9$	$18 \leq 88,9$
Pipe wall thickness (mm)	$1,0 \leq 14,2$	$1,0 \leq 14,2$
Classification	EI 90-U/C E 90-U/C	EI 90-U/C E 90-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.

3.6 Classification acc. to EN 13501-2 for the PROMASTOP®-I firestop coating and PROMASTOP®-W firestop wrap for metal pipes with combustible insulation

Steel and copper pipes with combustible insulation may penetrate the PROMASTOP®-I penetration seal. The firestop wrap PROMASTOP®-W shall be wrapped around the combustible insulation within the penetration seal (flushed to the surface of the penetration seal) and fixed by firestop coating PROMASTOP®-I, the firestop acrylic sealant PROMASEAL®-A or the intumescent firestop sealant PROMASEAL®-AG.

Application of the PROMASTOP®-W in the PROMASTOP®-I penetration seal:

Orientation	Application
Wall	On both sides of the penetration seal
Floor	On the bottom side of the penetration seal

Specification of the combustible insulation: See sections steel pipes and copper pipes

Steel pipes

Specification	Thresholds
Reaction to fire of the combustible insulation	Minimum B-s3, d0 accordance to EN 13501-1
Insulation thickness	≥ 6 mm to ≤ 32 mm
Type of insulation	LS or CS
One layer firestop wrap PROMASTOP®-W	

Steel pipes with combustible insulation	Wall	Floor
Pipe diameter (mm)	50 ≤ 220	50 ≤ 220
Pipe wall thickness (mm)	2,0 ≤ 14,2	1,0 ≤ 14,2
Classification	EI 90-U/C E 90-U/C	EI 90-U/C E 90-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
Reaction to fire of the combustible insulation	Minimum B-s3,d0 accordance to EN 13501-1
Insulation thickness	≥ 6 mm to ≤ 32 mm
Type of insulation	LS or CS
One layer firestop wrap PROMASTOP®-W	

Copper pipes with combustible insulation	Wall	Floor
Pipe diameter (mm)	20 ≤ 88,9	20 ≤ 88,9
Pipe wall thickness (mm)	2,0 ≤ 14,2	1,0 ≤ 14,2
Classification	EI 90-U/C E 90-U/C	EI 90-U/C E 90-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.

3.7 Classification acc. to EN 13501-2 for the PROMASTOP®-I firestop coating and PROMASTOP®-W firestop wrap for aluminium-composite pipes Pipelife Radopress with combustible insulation (B-s3,d0 and E)

Plastic-Aluminium-Plastic (PE-Xb/Al/PE-HD) composite pipes (Pipelife Radopress) with combustible insulation may penetrate the PROMASTOP®-I penetration seal. The firestop wrap PROMASTOP®-W shall be wrapped around the combustible insulation within the penetration seal (flushed to the surface of the penetration seal) and fixed by firestop coating PROMASTOP®-I, the firestop acrylic sealant PROMASEAL®-A or the intumescent firestop sealant PROMASEAL®-AG.

Application of the PROMASTOP®-W in the PROMASTOP®-I penetration seal:

Orientation	Application
Wall	On both sides of the penetration seal
Floor	On the bottom side of the penetration seal

Pipelife Radopress pipes with class B-s3,d0 insulation

Specification	Thresholds
Reaction to fire of the combustible insulation	Minimum B-s3, d0 accordance to EN 13501-1
Insulation thickness	≥ 6 mm to ≤ 32 mm
Type of insulation	LS or CS
One layer firestop wrap PROMASTOP®-W	

Pipe Specification	Classification	
	Wall	Floor
Pipelife Radopress Ø 16 mm / t _D 2,0 mm Ø 20 mm / t _D 2,0 mm Ø 26 mm / t _D 3,0 mm Ø 32 mm / t _D 3,0 mm Ø 40 mm / t _D 3,5 mm Ø 50 mm / t _D 4,0 mm	EI 120-U/C E 120-U/C	EI 120-U/C E 120-U/C
Pipelife Radopress Ø 63 mm / t _D 4,5 mm	EI 120-U/C E 120-U/C	EI 60-U/C E 120-U/C

Pipelife Radopress pipes with class E insulation

Specification	Thresholds
Reaction to fire of the combustible insulation	Minimum E accordance to EN 13501-1
Insulation thickness	≥ 4 mm to ≤ 9 mm
Type of insulation	CS
One layer firestop wrap PROMASTOP®-W	

Pipe Specification	Classification	
	Wall	Floor
Pipelife Radopress Ø 16 mm / t _D 2,0 mm Ø 20 mm / t _D 2,0 mm Ø 26 mm / t _D 3,0 mm Ø 32 mm / t _D 3,0 mm	EI 120-U/C E 120-U/C	EI 120-U/C E 120-U/C

3.8 Classification acc. to EN 13501-2 for the PROMASTOP®-I firestop coating and PROMASTOP®-W firestop wrap for plastic pipes

Plastic pipes may penetrate the PROMASTOP®-I penetration seal. The firestop wrap PROMASTOP®-W shall be wrapped around the pipe within the penetration seal (flushed to the surface of the penetration seal) and fixed by firestop coating PROMASTOP®-I, the firestop acrylic sealant PROMASEAL®-A or the intumescent firestop sealant PROMASEAL®-AG.

The number of layers depends on the pipe end configuration and pipe diameter.

Application of the PROMASTOP®-W in the PROMASTOP®-I penetration seal:

Orientation	Application
Wall	On both sides of the penetration seal
Floor	On the bottom side of the penetration seal

Name of pipe	Dimension scope Ø...Diameter (mm) t _b ...pipe wall thickness (mm)	Orien- tation Wall...W Floor...F	No. of Layers Ø (mm) → Layers	Classification
PVC-U	Ø 32 / t _b 1,8 - Ø 160 / t _b 11,8	W	32 – 63 → 1 75 – 110 → 2 125 → 3 140 – 160 → 4	EI 120-U/C E 120-U/C
PE-HD	Ø 32 / t _b 2,0 - Ø 160 / t _b 14,6	W	32 – 63 → 1 75 – 110 → 2 125 → 3 140 – 160 → 4	EI 120-U/C E 120-U/C
PP-H / PP-R	Ø 32 / t _b 1,8 - Ø 160 / t _b 14,6	W	32 – 63 → 1 75 – 110 → 2 125 → 3 140 – 160 → 4	EI 120-U/C E 120-U/C
Poloplast PoloKal NG	Ø 32 / t _b 1,8 Ø 40 / t _b 1,8 Ø 50 / t _b 2,0 Ø 75 / t _b 2,6 Ø 90 / t _b 3,0 Ø 110 / t _b 3,4 Ø 125 / t _b 3,9 Ø 160 / t _b 4,9	W	32 → 2 40 – 63 → 3 75 – 90 → 4 110 – 125 → 5 140 – 160 → 6	EI 90-U/U E 90-U/U
Poloplast PoloKal 3S	Ø 75 / t _b 3,8 Ø 90 / t _b 4,5 Ø 110 / t _b 4,8 Ø 125 / t _b 5,3 Ø 160 / t _b 7,5	W	75 – 90 → 4 110 – 125 → 5 140 – 160 → 6	EI 90-U/U E 90-U/U
Poloplast PoloKal XS	Ø 32 / t _b 1,8 Ø 40 / t _b 1,8 Ø 50 / t _b 2,0 Ø 75 / t _b 2,6 Ø 90 / t _b 3,0 Ø 110 / t _b 3,4 Ø 125 / t _b 3,9 Ø 160 / t _b 4,9	W	32 → 2 40 – 63 → 3 75 – 90 → 4 110 – 125 → 5 140 – 160 → 6	EI 90-U/U E 90-U/U
Geberit Silent-db20	Ø 56 / t _b 3,2 Ø 63 / t _b 3,2 Ø 75 / t _b 3,6 Ø 90 / t _b 5,5 Ø 110 / t _b 6,0 Ø 135 / t _b 6,0 Ø 160 / t _b 7,0	W	56 – 63 → 3 75 – 90 → 4 110 → 5 135 – 160 → 6	EI 90-U/U E 90-U/U

Name of pipe	Dimension scope Ø...Diameter (mm) t _D ...pipe wall thickness (mm)	Orien- tation Wall...W Floor...F	No. of Layers Ø (mm) → Layers	Classification
PVC-U	Ø 32 / t _D 1,8 - Ø 160 / t _D 11,8	F	32 – 63 → 1 75 – 110 → 2 125 → 3 140 – 160 → 4	EI 120-U/C E 120-U/C
PE-HD	Ø 32 / t _D 2,0 - Ø 160 / t _D 14,6	F	32 – 63 → 1 75 – 110 → 2 125 → 3 140 – 160 → 4	EI 120-U/C E 120-U/C
PP-H / PP-R	Ø 32 / t _D 1,8 - Ø 160 / t _D 14,6	F	32 – 63 → 1 75 – 110 → 2 125 → 3 140 – 160 → 4	EI 120-U/C E 120-U/C
PP-H / PP-R	Ø 32 / t _D 1,8 - Ø 40 / t _D 6,7 + combustible insulation (B-s3,d0; thickness 6-32 mm; Type of insulation CS)	F	32 – 40 → 1	EI 120-U/C E 120-U/C
Poloplast PoloKal NG	Ø 32 / t _D 1,8 Ø 40 / t _D 1,8 Ø 50 / t _D 2,0 Ø 75 / t _D 2,6 Ø 90 / t _D 3,0 Ø 110 / t _D 3,4 Ø 125 / t _D 3,9	F	32 → 2 40 – 63 → 3 75 – 90 → 4 110 – 125 → 5	EI 90-U/U E 90-U/U
Poloplast PoloKal XS	Ø 32 / t _D 1,8 Ø 40 / t _D 1,8 Ø 50 / t _D 2,0 Ø 75 / t _D 2,6 Ø 90 / t _D 3,0 Ø 110 / t _D 3,4 Ø 125 / t _D 3,9	F	32 → 2 40 – 63 → 3 75 – 90 → 4 110 – 125 → 5	EI 90-U/U E 90-U/U
Geberit Silent-db20	Ø 56 / t _D 3,2 Ø 63 / t _D 3,2 Ø 75 / t _D 3,6 Ø 90 / t _D 5,5 Ø 110 / t _D 6,0	F	63 → 3 75 – 90 → 4 110 → 5	EI 90-U/U E 90-U/U

Distances:

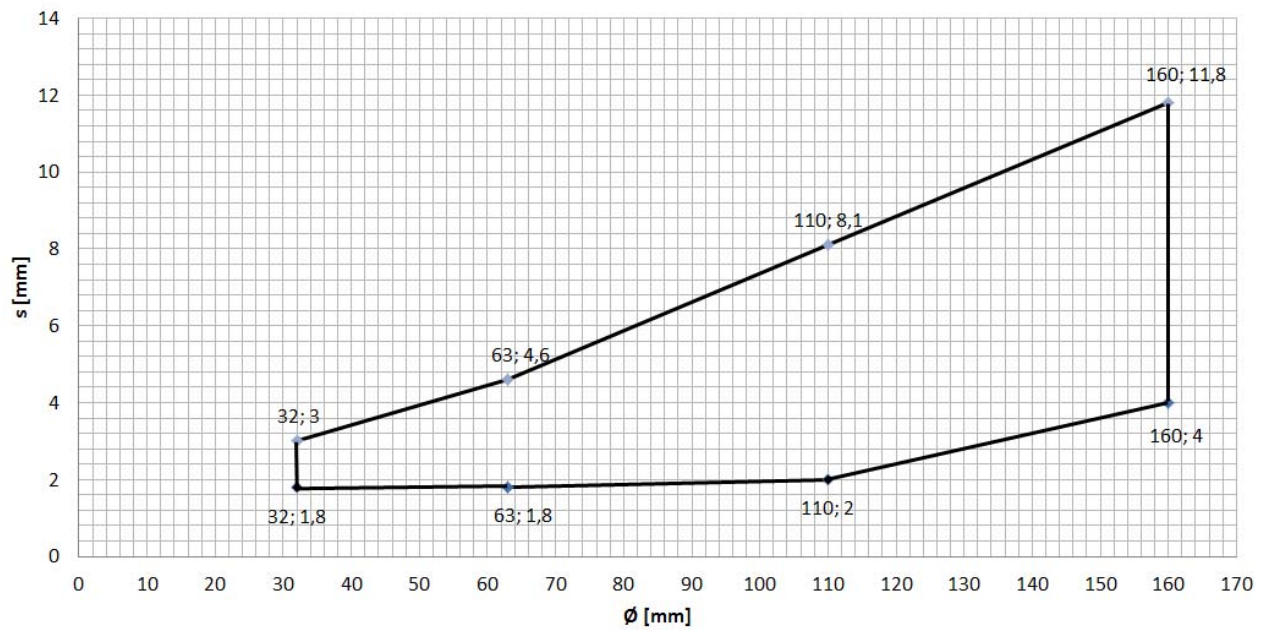
Specimen	Minimum distance (mm)
Wrap – Firestop cable jacket PROMASTOP®-IM-CJ21	0
Wrap – Firestop collar PROMASTOP®-FC	0
Wrap – Firestop wrap PROMASTOP®-W	0
Wrap – combustible insulations	0
Wrap – non-combustible insulations	0
Wrap – Cable tray, cable ladders	0
Wrap – Cable bundles	100
Wrap – Reveal	37
Wrap – All other installations	100

The classifications for PVC-U pipes are applicable for pipes acc. to EN 1452-1, DIN 8061, DIN 8062.

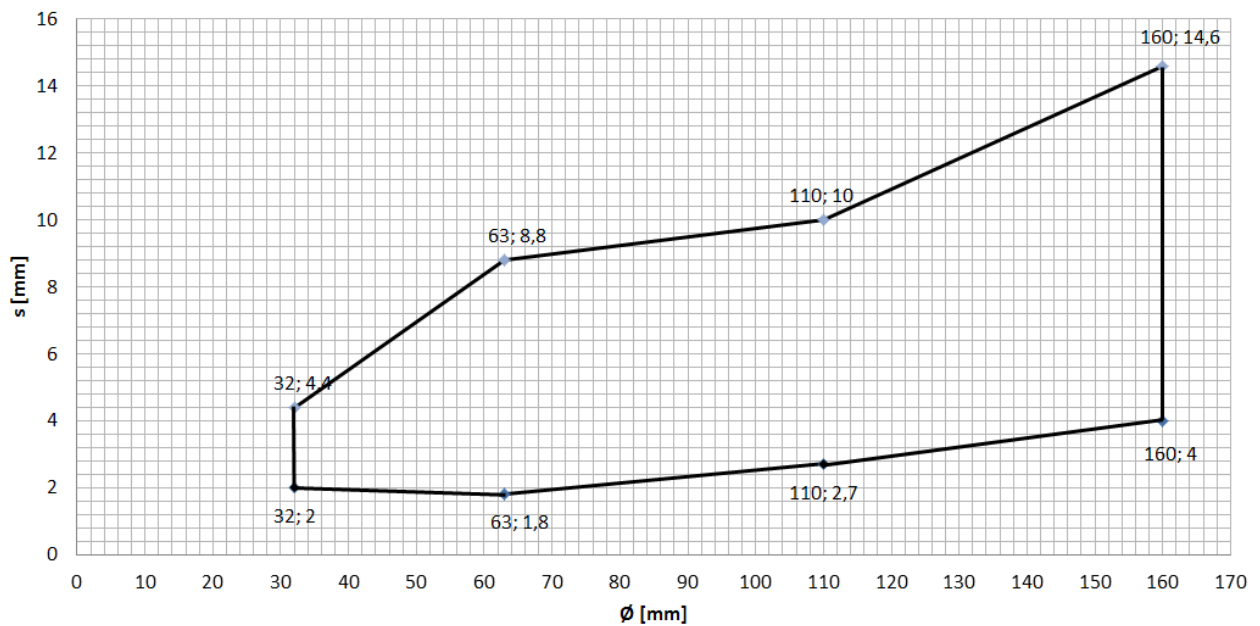
The classifications for PE-HD pipes are applicable for pipes on acc. to EN 12201-2, DIN 8074, DIN 8075.

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

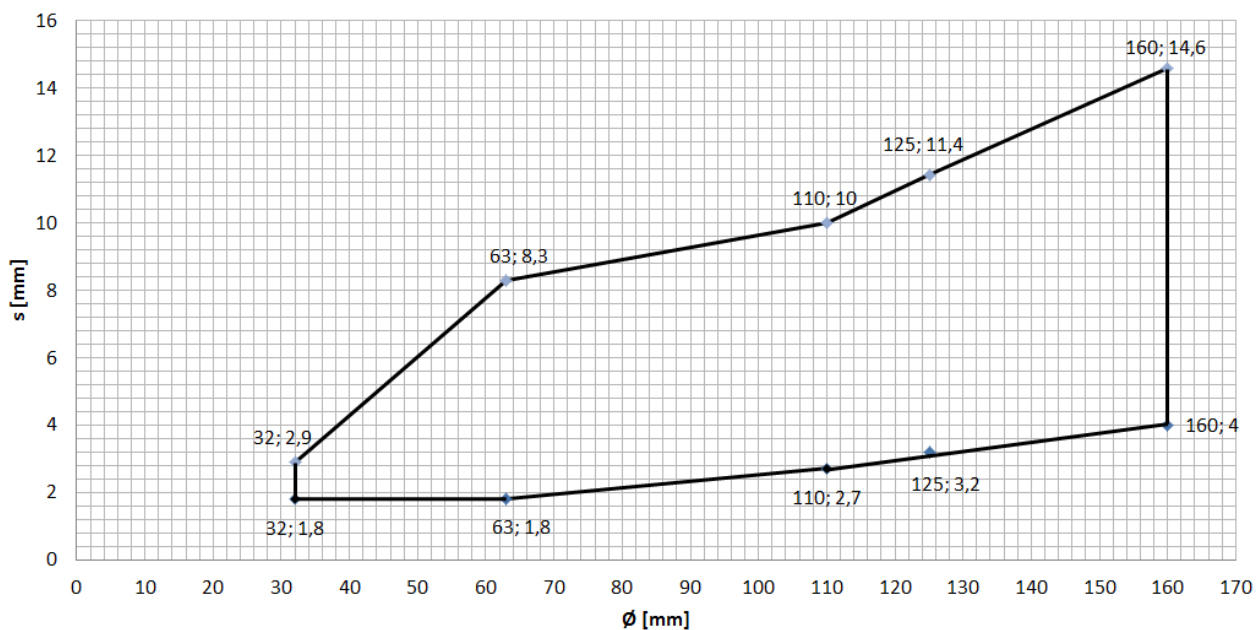
**PVC pipes with PROMASTOP-W firestop wrap in the PROMASTOP-I penetration seal
(2 x 50 mm) in wall and floor, EI 120-U/C**



**PE pipes with PROMASTOP-W firestop wrap in the PROMASTOP-I penetration seal
(2 x 50 mm) in wall and floor, EI 120-U/C**



**PP pipes with PROMASTOP-W firestop wrap in the PROMASTOP-I penetration seal
(2 x 50 mm) in wall and floor, EI 120-U/C**



3.9 Classification acc. to EN 13501-2 for the PROMASTOP®-I firestop coating and PROMASTOP®-FC firestop collar for plastic pipes

Plastic pipes may penetrate the PROMASTOP®-I penetration seal.

The smallest pipe collar corresponding to the relevant outer diameter of the pipe to be sealed off shall be used. The number of fastening hooks shall not be reduced.

The firestop collar PROMASTOP®-FC shall be fixed by threaded steel rods (M6 or M8) with nuts and washers. For the built in situation the hooks of the collars are placed between the mineral wool boards.

The annular gap (max. width 16 mm) between the plastic pipe and the mineral wool board shall be sealed with mineral wool (stone wool with a melting point $\geq 1000^{\circ}\text{C}$, class A1 acc. to EN 13501-1 and a minimum apparent density of 40 kg/m^3).

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

Orientation	Application
Wall	On both sides of the penetration seal
Floor	On the bottom side of the penetration seal

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

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

Sound decoupling:

Sound decoupling (e.g. Kaiflex PE-AB Abflusisolierung from manufacturer Kaiman) based on PE (closed-cell elastomeric foam, maximum thickness 5 mm, class E acc. to EN 13501-1, maximum one layer) may be used (only to be used for plastic pipes).

Sockets:

On sockets the fire stop collar PROMASTOP®-FC6 shall be used. The diameter of the tested sockets can be reduced, but not increased.

Specification of the plastic pipes: See section below

Name	Dimension scope \varnothing ...Diameter (mm) t_b ...pipe wall thickness (mm)	Orien- tation Wall...W Floor...F	Collar type	Classification
Friatec Friaphon	$\varnothing 52 / t_b 2,8 - \varnothing 110 / t_b 5,3$	F	FC3	EI 90-U/U E 90-U/U
Friatec dBlue	$\varnothing 50 / t_b 1,8 - \varnothing 125 / t_b 3,9$	F	FC3	EI 90-U/U E 90-U/U
Geberit Silent-db20	$\varnothing 56 / t_b 3,2 - \varnothing 160 / t_b 7,0$	F	FC3	EI 90-U/U E 90-U/U
Geberit Silent-PP	$\varnothing 32 / t_b 2,0 - \varnothing 125 / t_b 4,2$	F	FC3	EI 90-U/U E 90-U/U
Geberit Silent-db20	$\varnothing 56 / t_b 3,2 - \varnothing 135 / t_b 6,0$	W	FC3	EI 90-U/U E 90-U/U
Pipelife Master3	$\varnothing 75 / t_b 2,1 - \varnothing 125 / t_b 3,5$	F	FC3	EI 90-U/U E 90-U/U
Pipelife Master3	$\varnothing 75 / t_b 2,1 - \varnothing 125 / t_b 3,5$	W	FC3	EI 120-U/U E 120-U/U

Name	Dimension scope Ø...Diameter (mm) t _b ...pipe wall thickness (mm)	Orien- tation Wall...W Floor...F	Collar type	Classification
Poloplast PoloKal NG	Ø 32 / t _b 1,8 - Ø 250 / t _b 8,6	F	FC3/6	EI 90-U/U E 90-U/U
Poloplast PoloKal NG	Ø 32 / t _b 1,8 - Ø 160 / t _b 4,9	W	FC3	EI 120-U/U E 120-U/U
Poloplast PoloKal NG	Ø 32 / t _b 1,8 - Ø 250 / t _b 8,6	W	FC3/6	EI 90-U/U E 90-U/U
Poloplast PoloKal XS	Ø 32 / t _b 1,8 - Ø 250 / t _b 8,6	F	FC3/6	EI 90-U/U E 90-U/U
Poloplast PoloKal XS	Ø 32 / t _b 1,8 - Ø 160 / t _b 4,9	W	FC3	EI 120-U/U E 120-U/U
Poloplast PoloKal XS	Ø 32 / t _b 1,8 - Ø 250 / t _b 8,6	W	FC3/6	EI 90-U/U E 90-U/U
Poloplast PoloKal 3S	Ø 75 / t _b 3,8 - Ø 160 / t _b 7,5	F	FC3	EI 90-U/U E 90-U/U
Poloplast PoloKal 3S	Ø 75 / t _b 3,8 - Ø 160 / t _b 7,5	W	FC3	EI 120-U/U E 120-U/U
PVC-U	Ø 32 / t _b 1,8 - Ø 250 / t _b 4,9	F	FC3/6	EI 90-U/U E 90-U/U
PVC-U	Ø 125 / t _b 3,2 - Ø 160 / t _b 3,6	F (built in)	FC3/6	EI 90-U/U E 90-U/U
PE-HD	Ø 32 / t _b 1,8 - Ø 200 / t _b 11,4	F	FC3/6	EI 90-U/U E 90-U/U
PE-HD	Ø 40 / t _b 1,8 - Ø 200 / t _b 11,4	W	FC3/6	EI 90-U/U E 90-U/U
PP-H / PP-R	Ø 32 / t _b 1,8 - Ø 200 / t _b 11,4	F	FC3/6	EI 90-U/U E 90-U/U
PP-H / PP-R	Ø 40 / t _b 1,8 - Ø 250 / t _b 14,2	W	FC3/6	EI 90-U/U E 90-U/U
PP-H / PP-R	Ø 75 / t _b 2,6 - Ø 90 / t _b 3,0	F (built in)	FC3/6	EI 90-U/U E 90-U/U
Rehau Raupiano Plus	Ø 40 / t _b 1,8 - Ø 200 / t _b 6,2	F	FC6	EI 90-U/U E 90-U/U
Rehau Raupiano Plus (+socket)	Ø 40 / t _b 1,8 - Ø 125 / t _b 3,1	F	FC6	EI 90-U/U E 90-U/U
Rehau Raupiano Plus (+socket)	Ø 40 / t _b 1,8 - Ø 125 / t _b 3,1	W	FC6	EI 120-U/U E 120-U/U

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

The classifications for PVC-U pipes are applicable for pipes acc. to EN 1452-1, DIN 8061, DIN 8062.

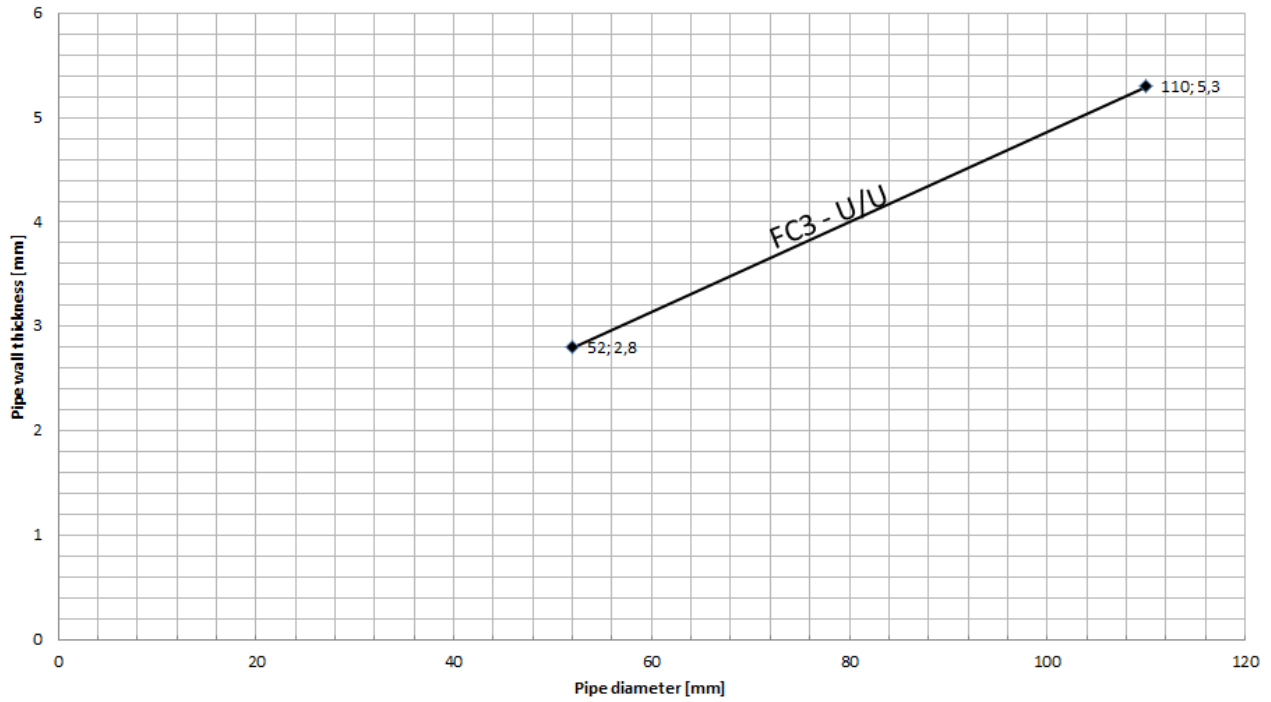
The classifications for PE-HD pipes are applicable for pipes on acc. to EN 12201-2, DIN 8074, DIN 8075.

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

Classification details

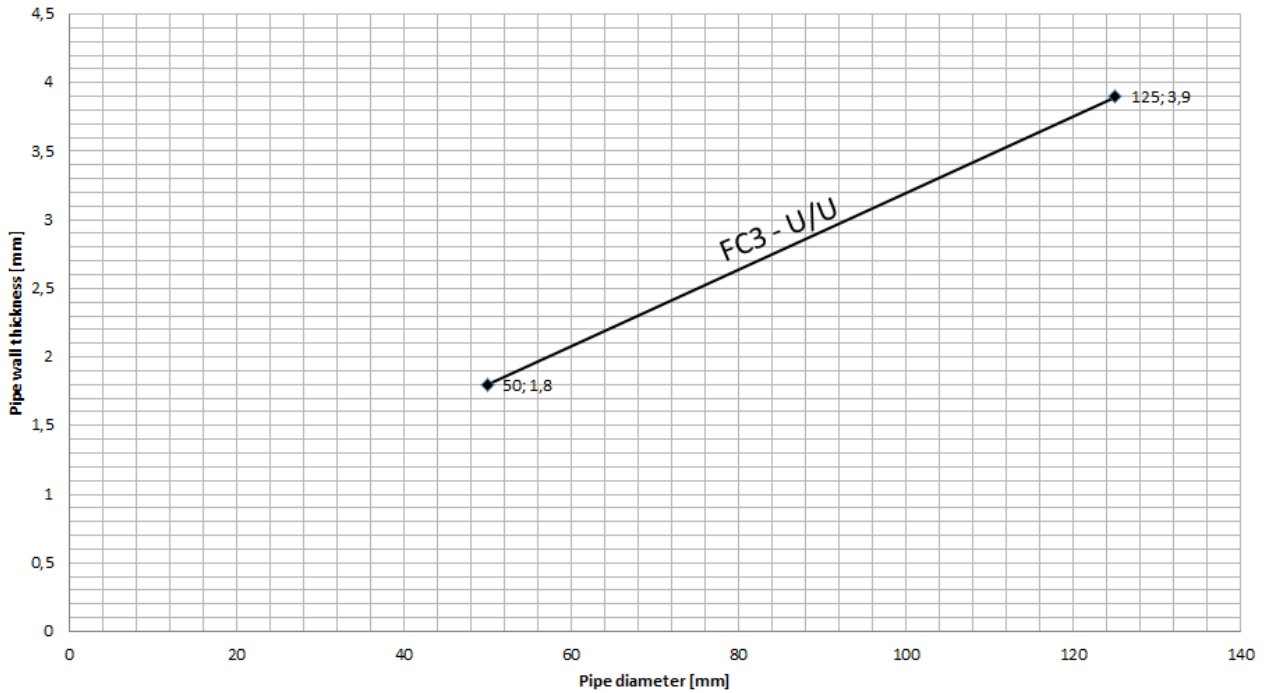
Friatec Friaphon	Ø 52 / t _D 2,8 - Ø 110 / t _D 5,3	Floor	FC3	EI 90-U/U E 90-U/U
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Friatec Friaphon pipes with PROMASTOP-FC collar on penetration seal PROMASTOP-I
(2 x 50 mm) in rigid floor construction (density $\geq 450 \text{ kg/m}^3$, thickness $\geq 150 \text{ mm}$)
EI90-U/U



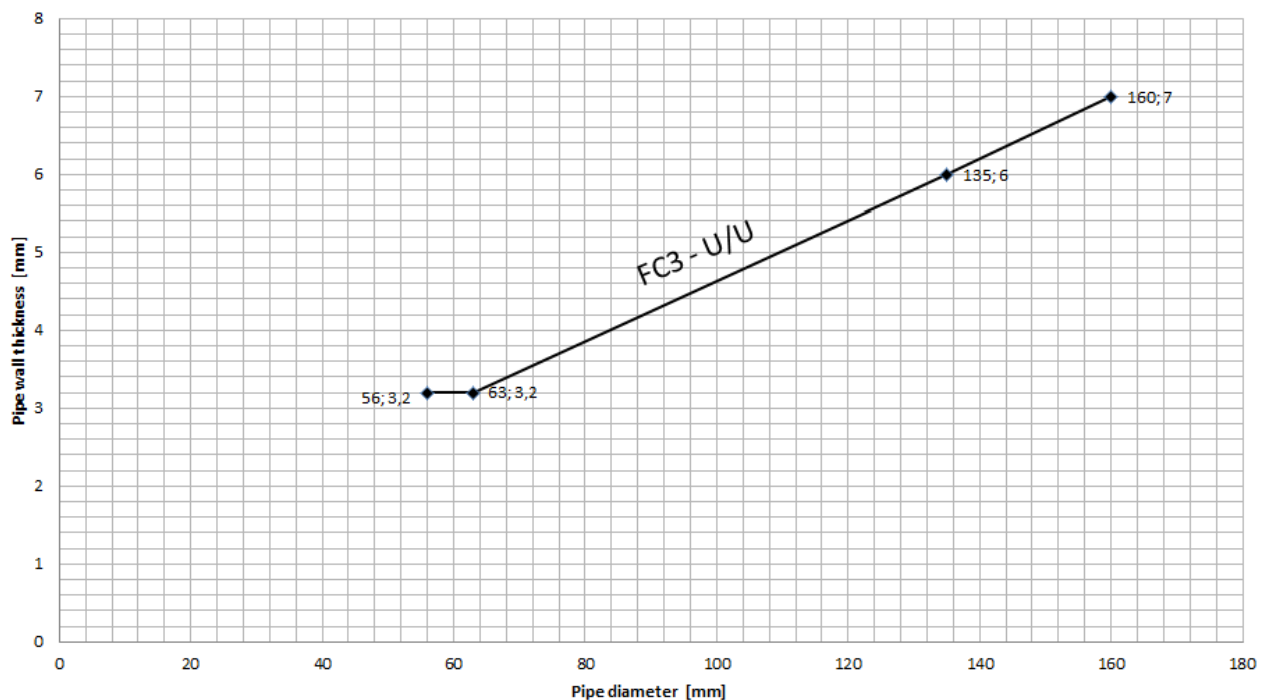
Friatec dBlue	Ø 50 / t _D 1,8 - Ø 125 / t _D 3,9	Floor	FC3	EI 90-U/U E 90 U/U
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Friatec dBlue pipes with PROMASTOP-FC collar on penetration seal PROMASTOP-I (2 x 50 mm) in rigid floor construction (density ≥ 450 kg/m³, thickness ≥ 150 mm) EI90-U/U



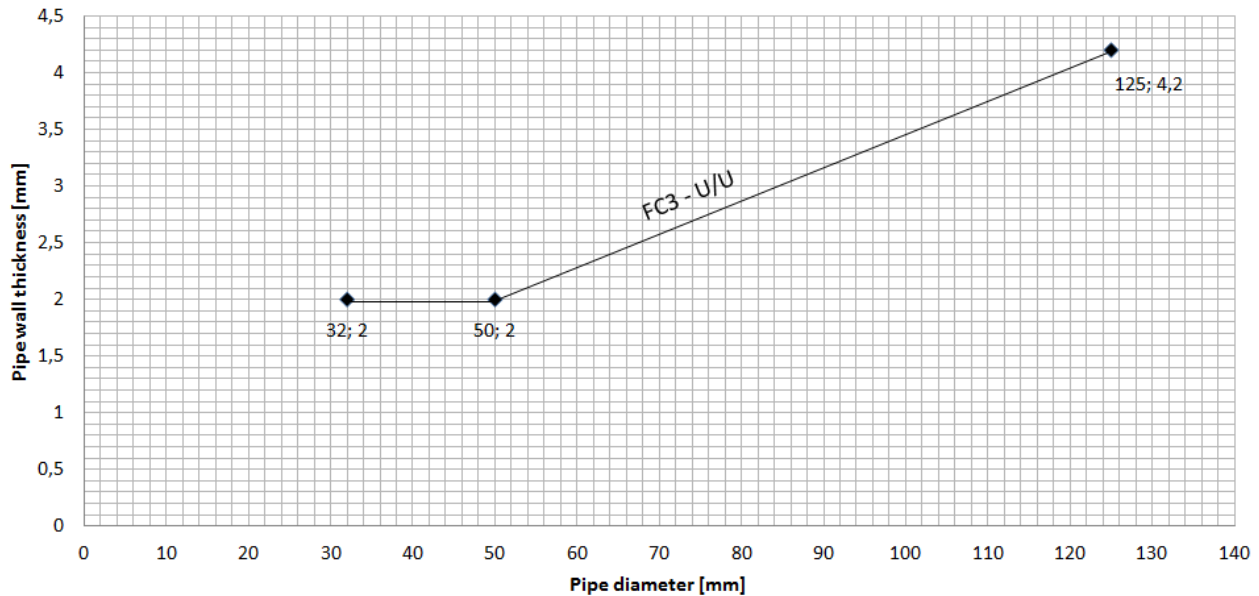
Geberit Silent db20	Ø 56 / t _D 3,2 - Ø 160 / t _D 7,0	Floor	FC3	EI 90-U/U E 90 U/U
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Geberit Silent db20 pipes with PROMASTOP-FC collar on penetration seal PROMASTOP-I (2 x 50 mm) in rigid floor construction (density ≥ 450 kg/m³, thickness ≥ 150 mm) EI90-U/U



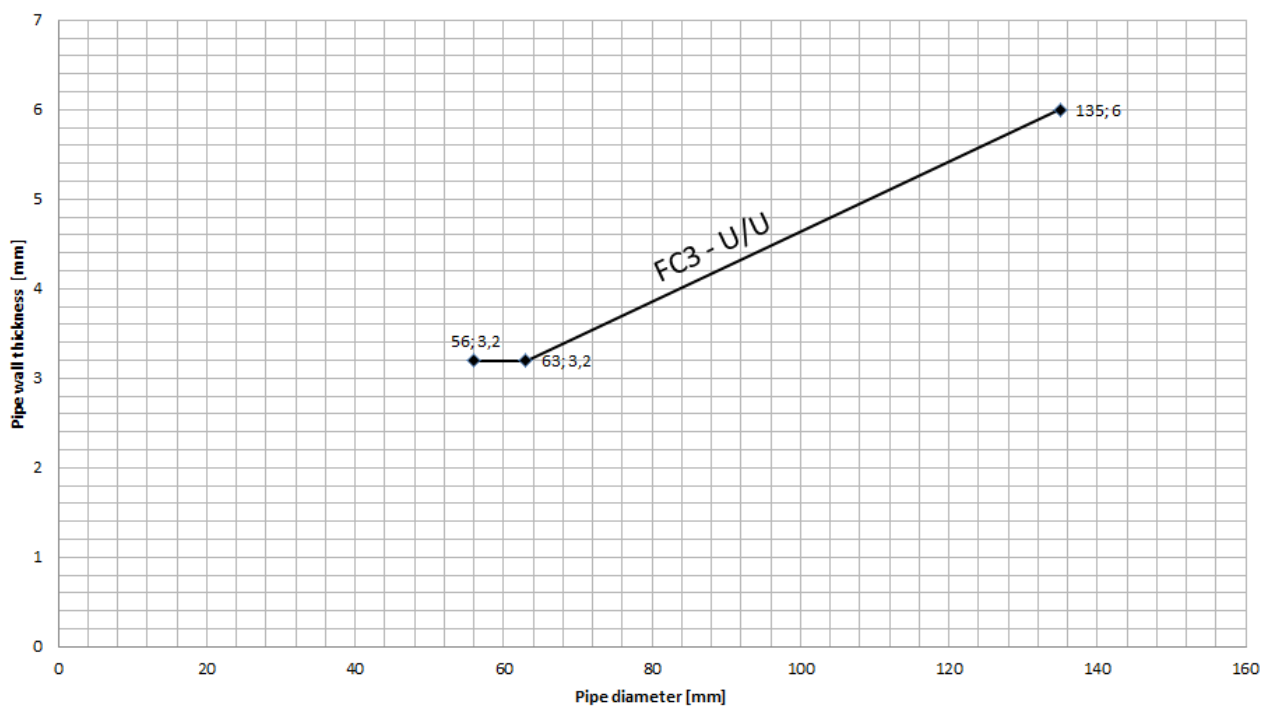
Geberit Silent PP	Ø 32 / t _D 2,0 - Ø 125 / t _D 4,2	Floor	FC3	EI 90-U/U E 90 U/U
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**Geberit Silent PP pipes with PROMASTOP-FC collar on penetration seal PROMASTOP-I
(2 x 50 mm) in rigid floor construction (density ≥ 450 kg/m³, thickness ≥ 150 mm)
EI90-U/U**



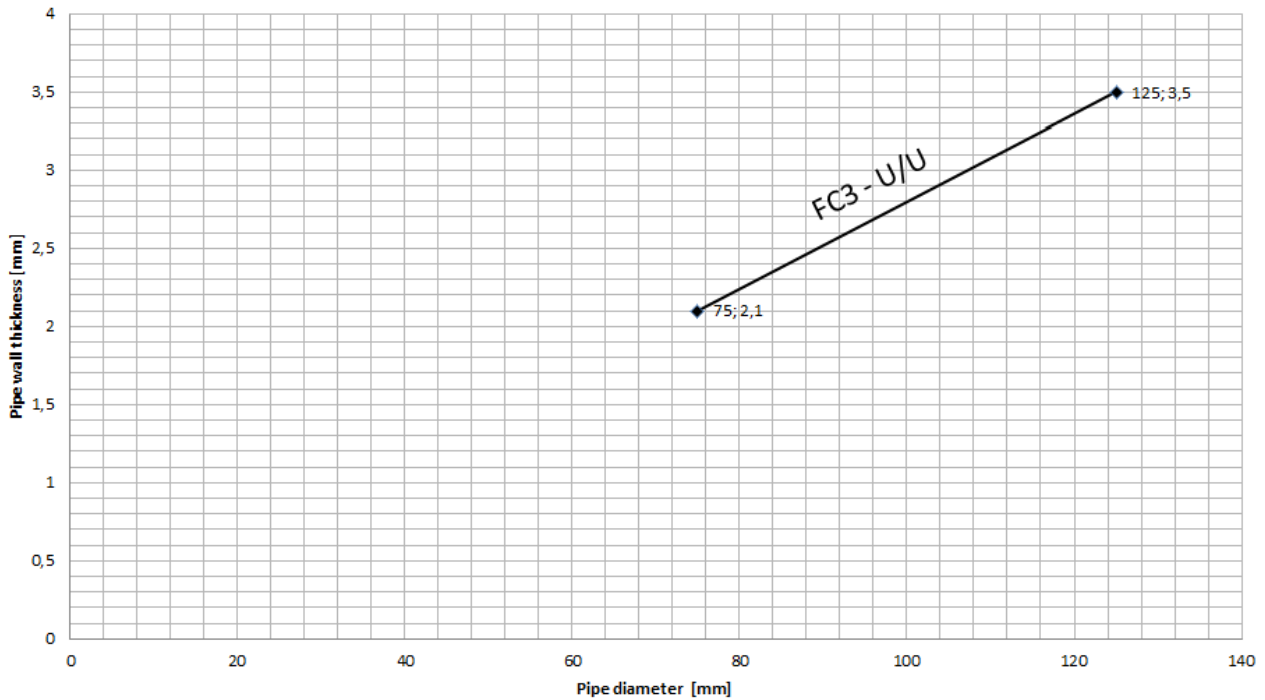
Geberit Silent db20	Ø 56 / t _D 3,2 - Ø 135 / t _D 6,0	Wall	FC3	EI 90-U/U E 90-U/U
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**Geberit Silent db20 pipes with PROMASTOP-FC collar on penetration seal PROMASTOP-I
(2 x 50 mm) in flexible wall and rigid wall construction (thickness ≥ 100 mm)
EI120-U/U**



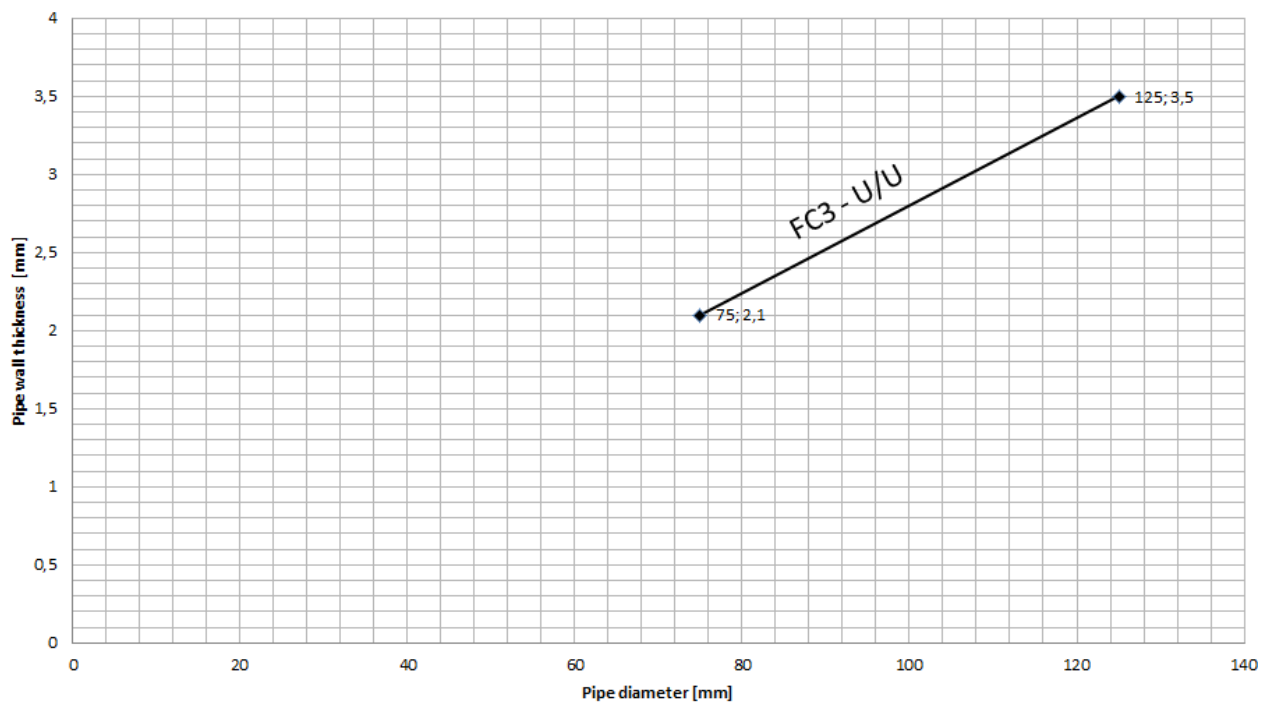
Pipelife Master3	Ø 75 / t _D 2,1 - Ø 125 / t _D 3,5	Floor	FC3	EI 90-U/U E 90-U/U
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**Pipelife Master3 pipes with PROMASTOP-FC collar on penetration seal PROMASTOP-I
(2 x 50 mm) in rigid floor construction (density ≥ 450 kg/m³, thickness ≥ 150 mm)
EI90-U/U**



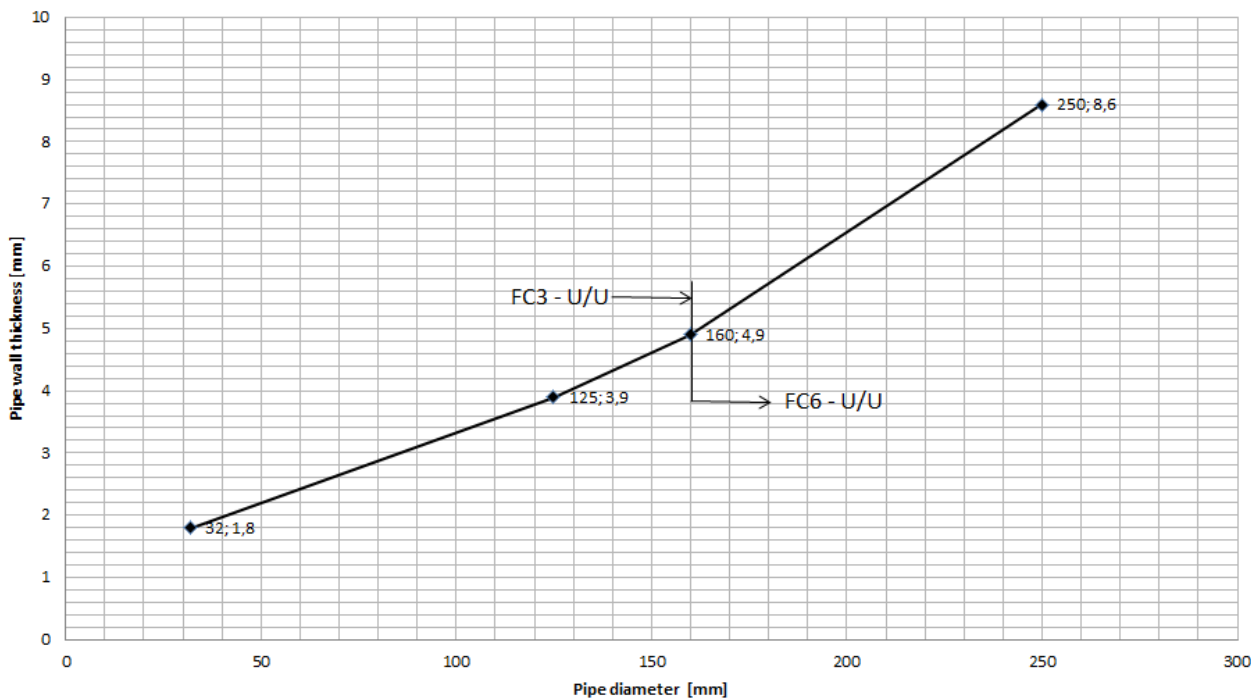
Pipelife Master3	Ø 75 / t _D 2,1 - Ø 125 / t _D 3,5	Wall	FC3	EI 120-U/U E 120-U/U
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**Pipelife Master3 pipes with PROMASTOP-FC collar on penetration seal PROMASTOP-I
(2 x 50 mm) in flexible wall and rigid wall construction (thickness ≥ 100 mm)
EI120-U/U**



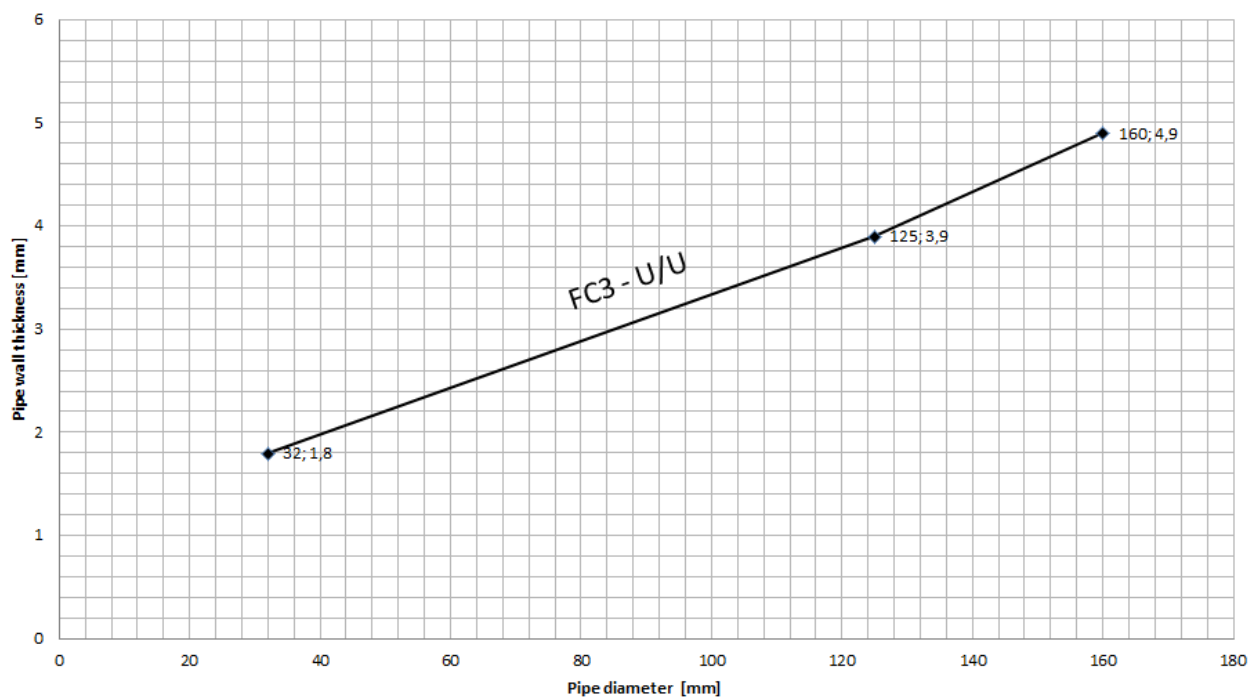
Poloplast PoloKal NG	Ø 32 / t _D 1,8 - Ø 250 / t _D 8,6	Floor	FC3/6	EI 90-U/U E 90-U/U
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**Poloplast PoloKal NG pipes with PROMASTOP-FC collar on penetration seal PROMASTOP-I
(2 x 50 mm) in rigid floor construction (density ≥ 450 kg/m³, thickness ≥ 150 mm)
EI90-U/U**



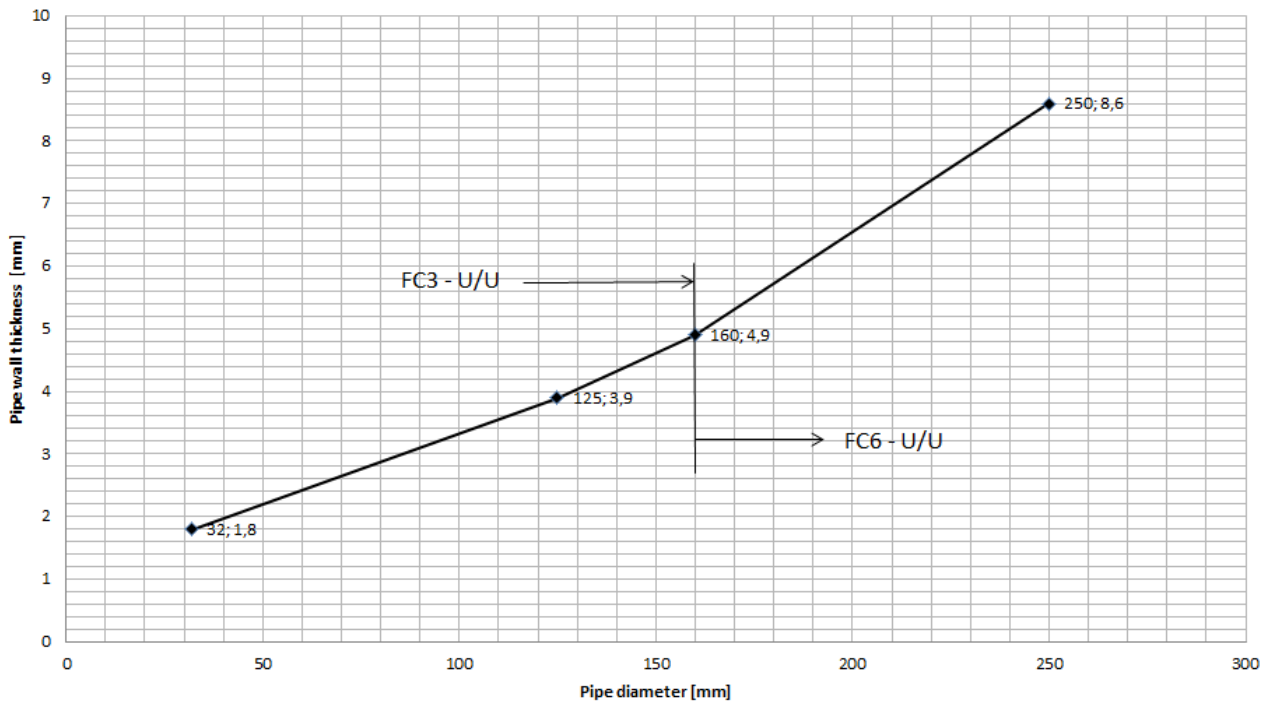
Poloplast PoloKal NG	Ø 32 / t _D 1,8 - Ø 160 / t _D 4,9	Wall	FC3	EI 120-U/U E 120-U/U
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**Poloplast PoloKal NG pipes with PROMASTOP-FC collar on penetration seal PROMASTOP-I
(2 x 50 mm) in flexible wall and rigid wall construction (thickness ≥ 100 mm)
EI120-U/U**



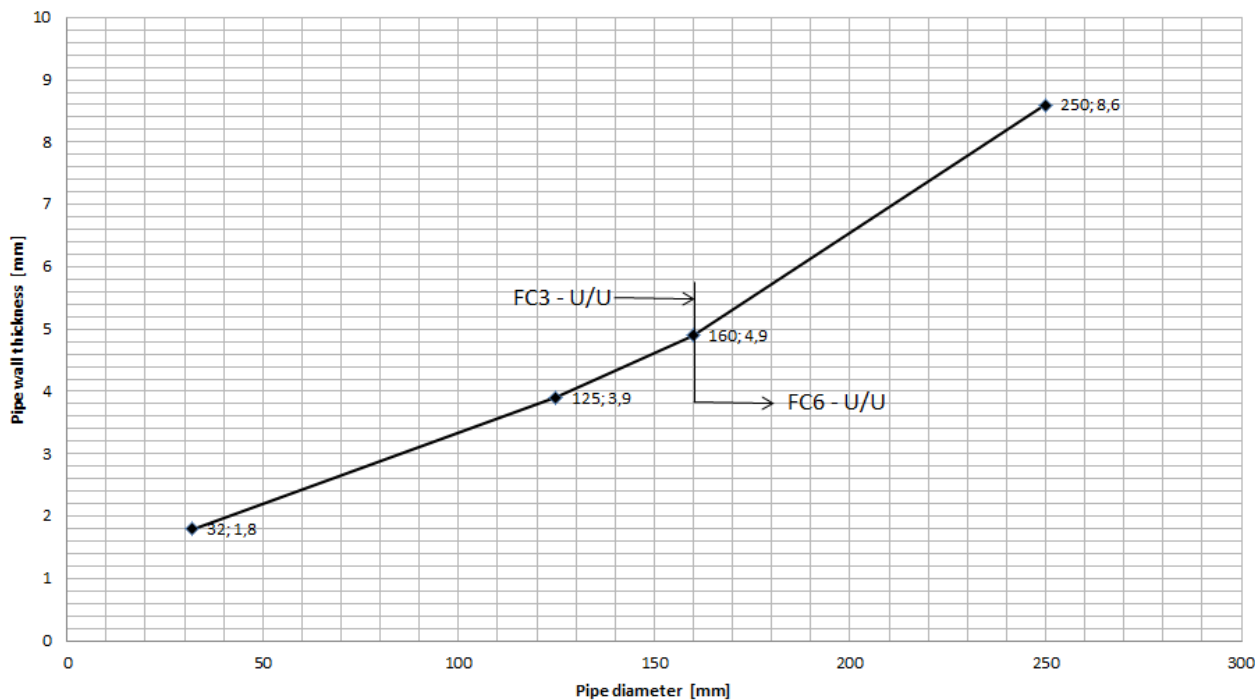
Poloplast PoloKal NG	Ø 32 / t _D 1,8 - Ø 250 / t _D 8,6	Wall	FC3/6	EI 90-U/U E 90-U/U
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Poloplast PoloKal NG pipes with PROMASTOP-FC collar on penetration seal PROMASTOP-I (2 x 50 mm) in flexible wall and rigid wall construction (thickness ≥ 100 mm) EI90-U/U



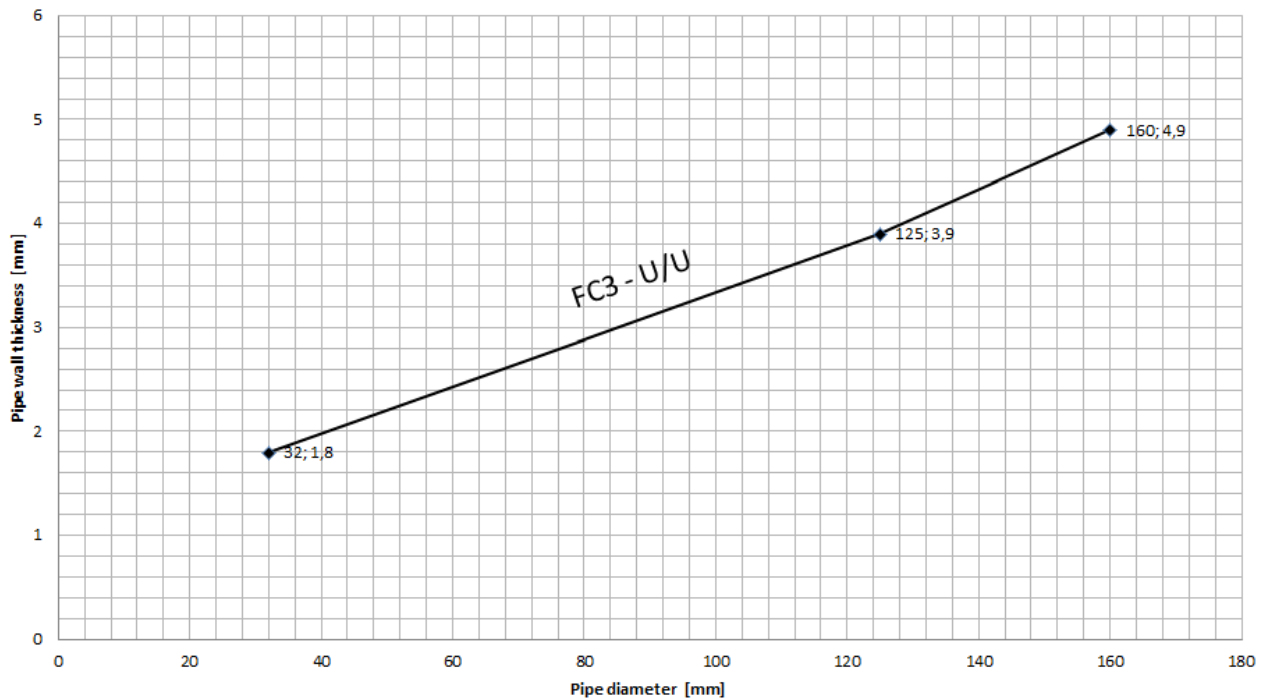
Poloplast PoloKal XS	Ø 32 / t _D 1,8 - Ø 250 / t _D 8,6	Floor	FC3/6	EI 90-U/U E 90-U/U
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Poloplast PoloKal XS pipes with PROMASTOP-FC collar on penetration seal PROMASTOP-I (2 x 50 mm) in rigid floor construction (density ≥ 450 kg/m³, thickness ≥ 150 mm) EI90-U/U



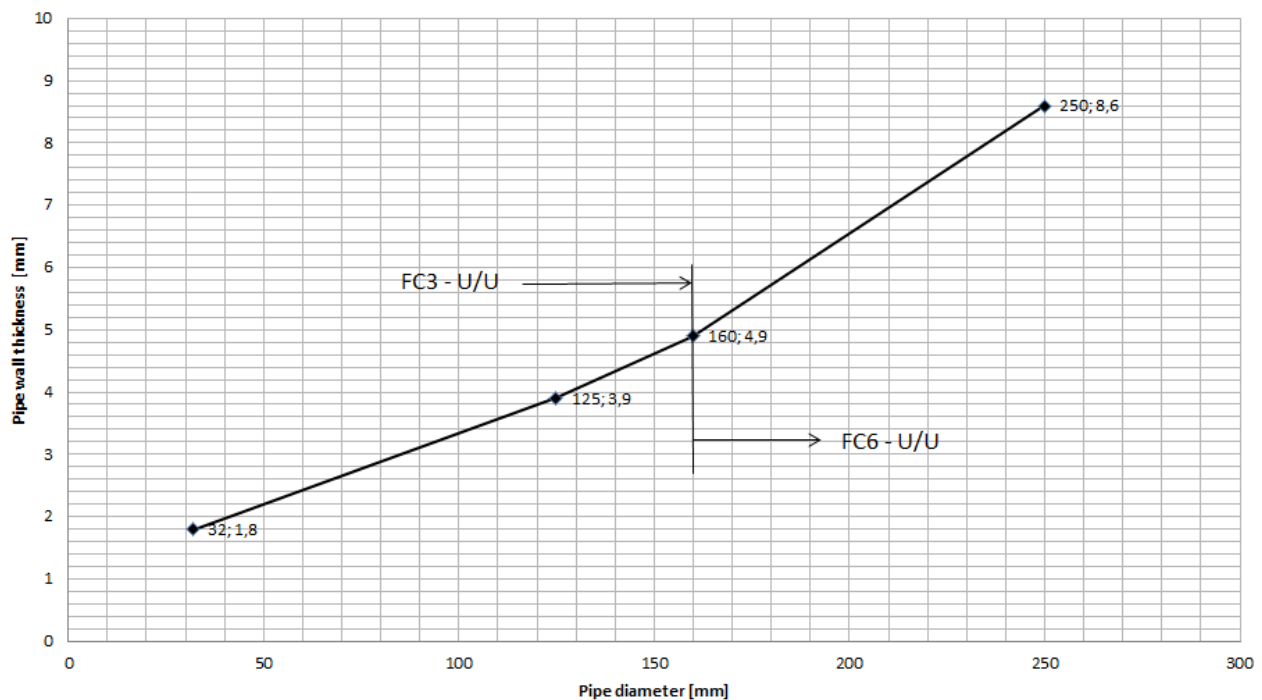
Poloplast PoloKal XS	Ø 32 / t _D 1,8 - Ø 160 / t _D 4,9	Wall	FC3	EI 120-U/U E 120-U/U
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Poloplast PoloKal XS pipes with PROMASTOP-FC collar on penetration seal PROMASTOP-I (2 x 50 mm) in flexible wall and rigid wall construction (thickness ≥ 100 mm)
EI120-U/U



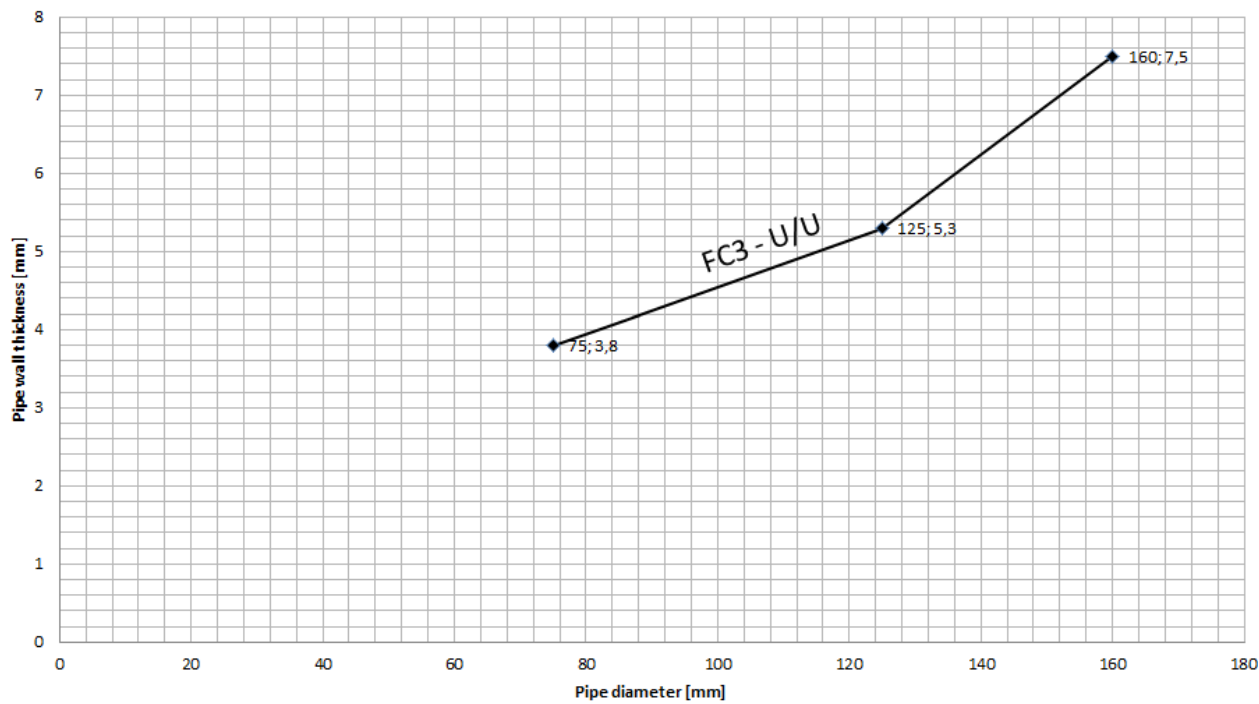
Poloplast PoloKal XS	Ø 32 / t _D 1,8 - Ø 250 / t _D 8,6	Wall	FC3/6	EI 90-U/U E-90-U/U
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Poloplast PoloKal XS pipes with PROMASTOP-FC collar on penetration seal PROMASTOP-I (2 x 50 mm) in flexible wall and rigid wall construction (thickness ≥ 100 mm)
EI90-U/U



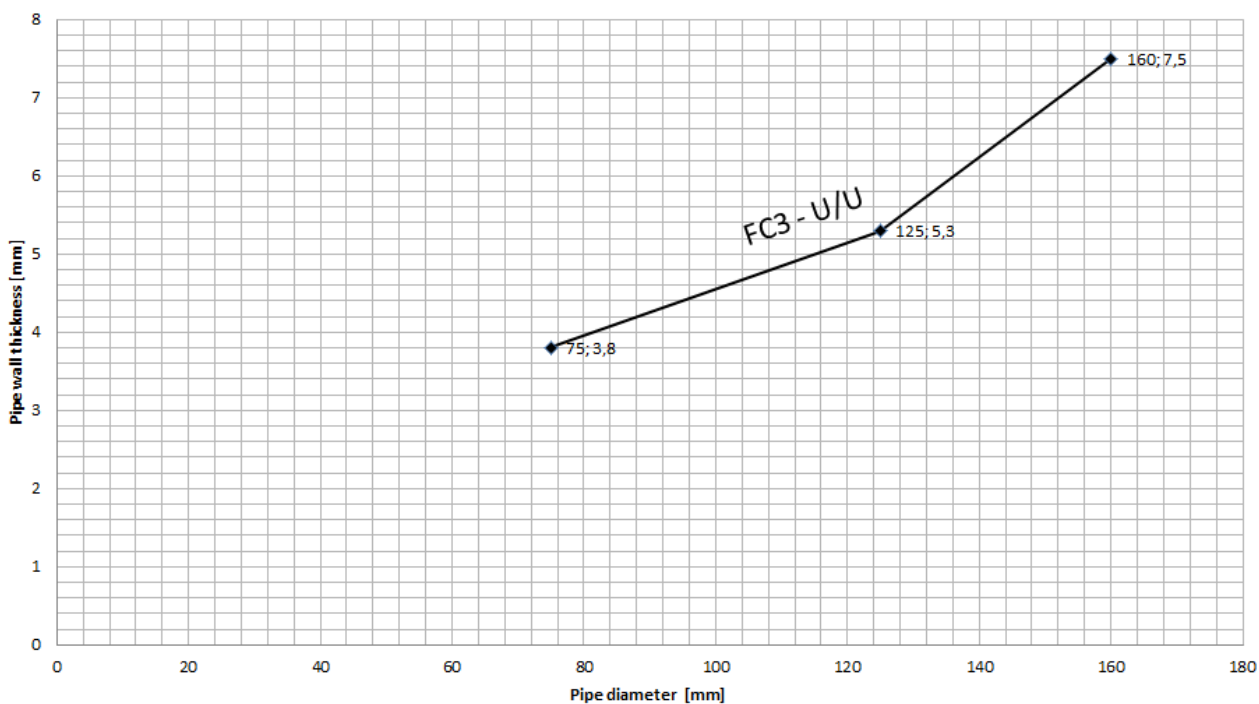
Poloplast PoloKal 3S	Ø 75 / t _D 3,8 - Ø 160 / t _D 7,5	Floor	FC3	EI 90-U/U E 90-U/U
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Poloplast PoloKal 3S pipes with PROMASTOP-FC collar on penetration seal PROMASTOP-I (2 x 50 mm) in rigid floor construction (density ≥ 450 kg/m³, thickness ≥ 150 mm)
EI90-U/U



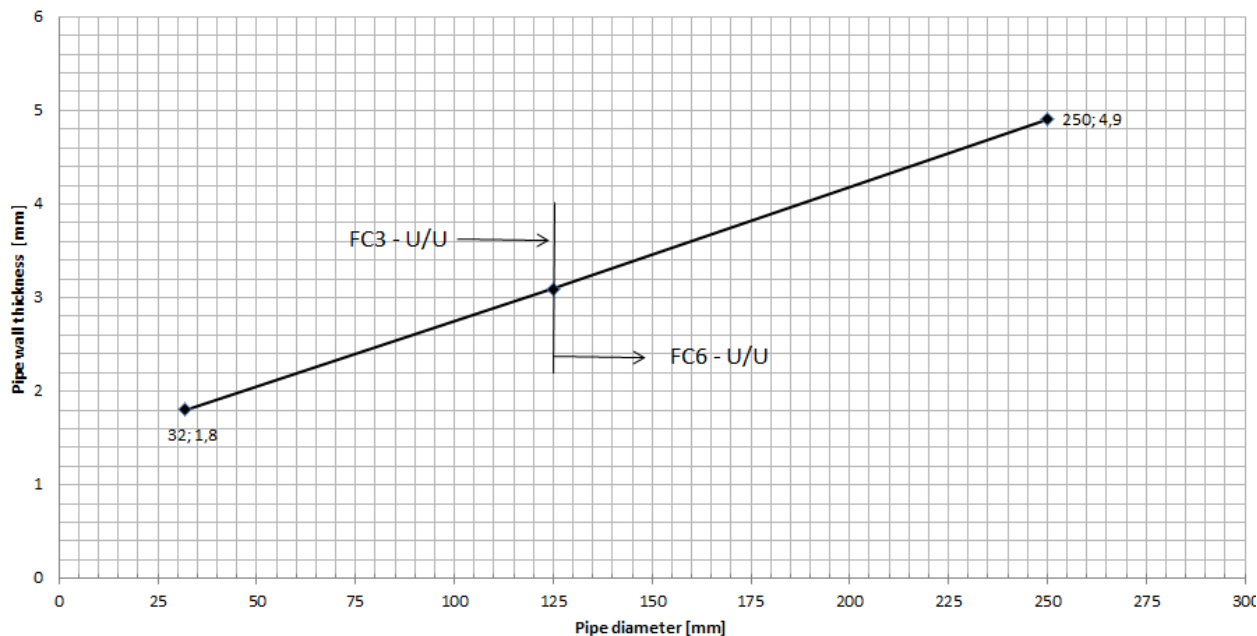
Poloplast PoloKal 3S	Ø 75 / t _D 3,8 - Ø 160 / t _D 7,5	Wall	FC3	EI 120-U/U E 120-U/U
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Poloplast PoloKal 3S pipes with PROMASTOP-FC collar on penetration seal PROMASTOP-I (2 x 50 mm) in flexible wall and rigid wall construction (thickness ≥ 100 mm)
EI120-U/U



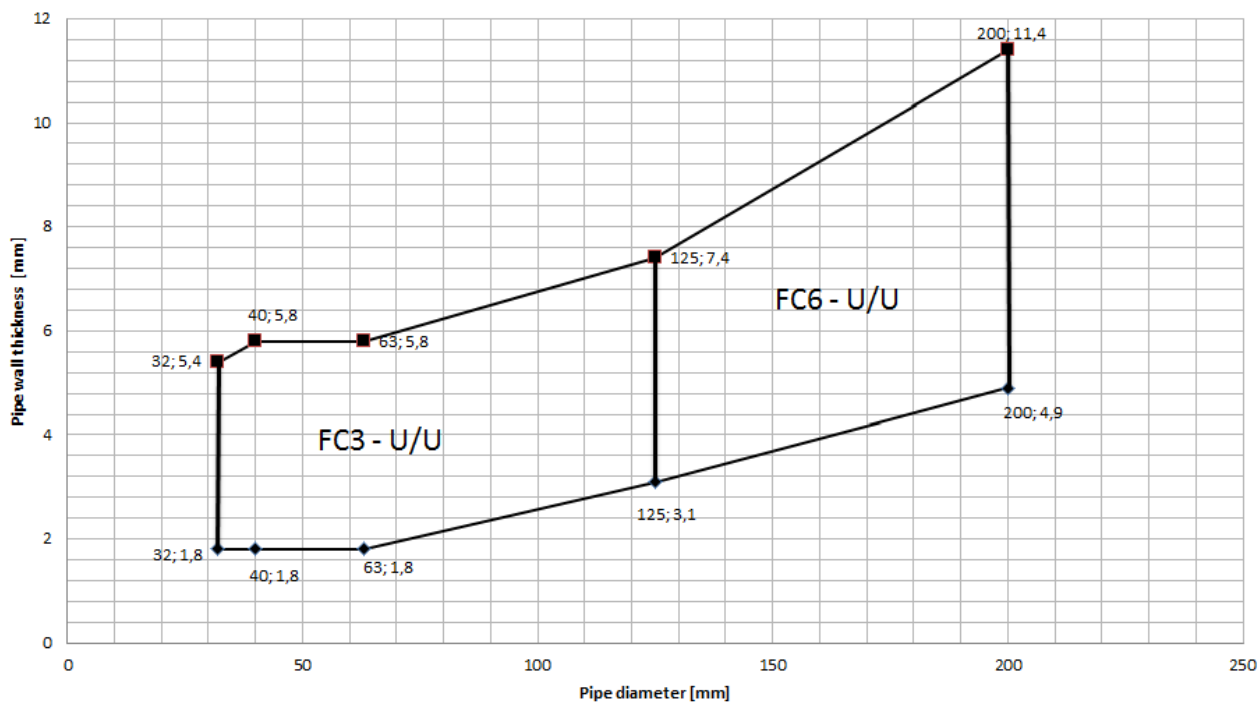
PVC-U	Ø 32 / t _D 1,8 - Ø 250 / t _D 4,9	Floor	FC3/6	EI 90-U/U E 90-U/U
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PVC-U pipes with PROMASTOP-FC collar on penetration seal PROMASTOP-I
(2 x 50 mm) in rigid floor construction (density ≥ 450 kg/m³, thickness ≥ 150 mm)
EI90-U/U



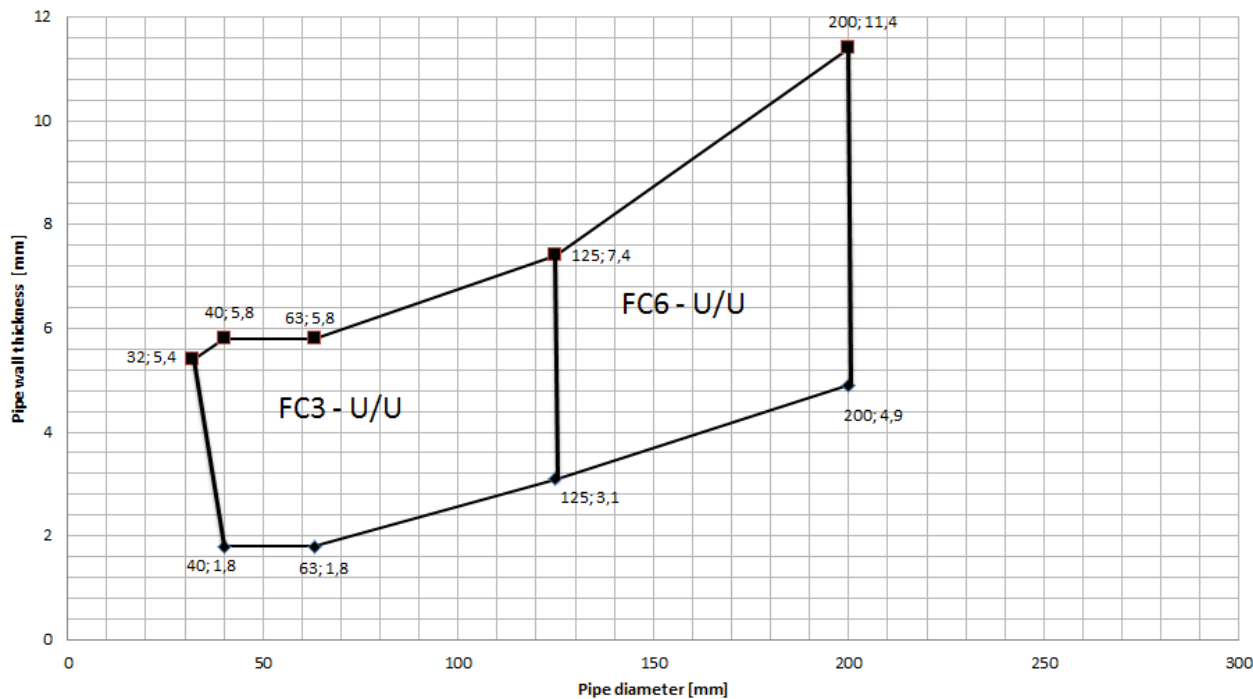
PE-HD	Ø 32 / t _D 1,8 - Ø 200 / t _D 11,4	Floor	FC3/6	EI 90-U/U E 90-U/U
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PE-HD pipes with PROMASTOP-FC collar on penetration seal PROMASTOP-I
(2 x 50 mm) in rigid floor construction (density ≥ 450 kg/m³, thickness ≥ 150 mm)
EI90-U/U



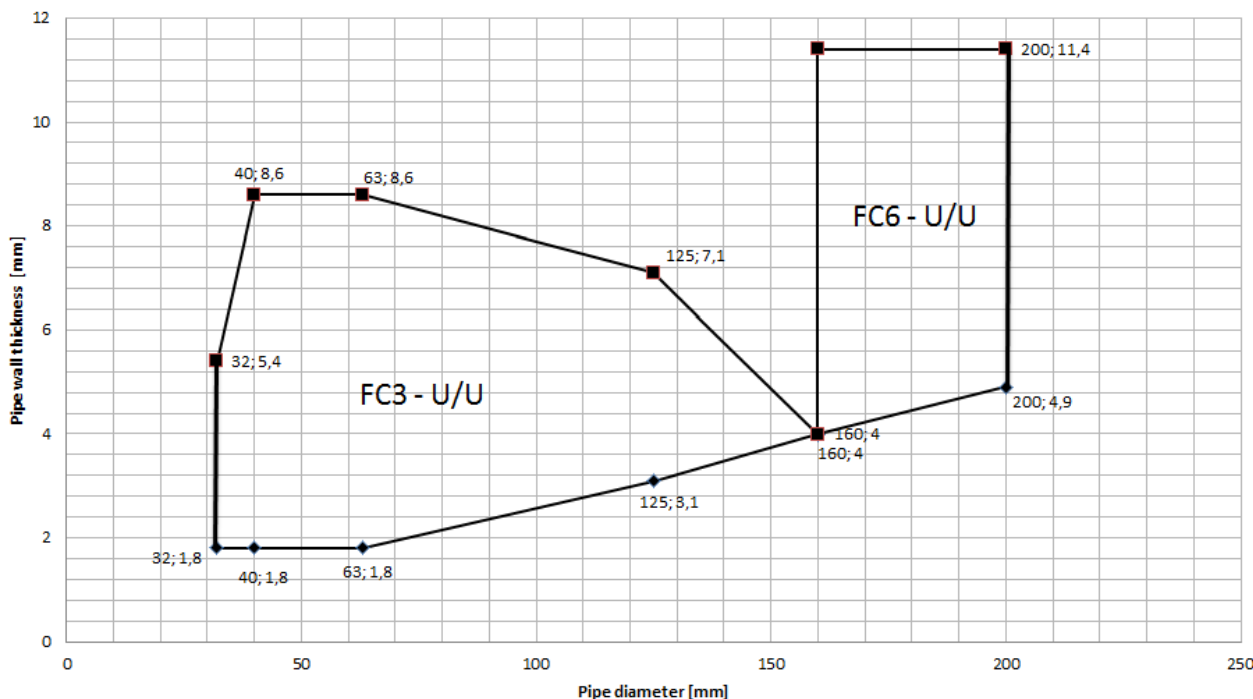
PE-HD	Ø 40 / t _b 1,8 - Ø 200 / t _b 11,4	Wall	FC3/6	EI 90-U/U E 90-U/U
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PE-HD pipes with PROMASTOP-FC collar on penetration seal PROMASTOP-I (2 x 50 mm) in flexible wall and rigid wall construction (thickness ≥ 100 mm)
EI90-U/U



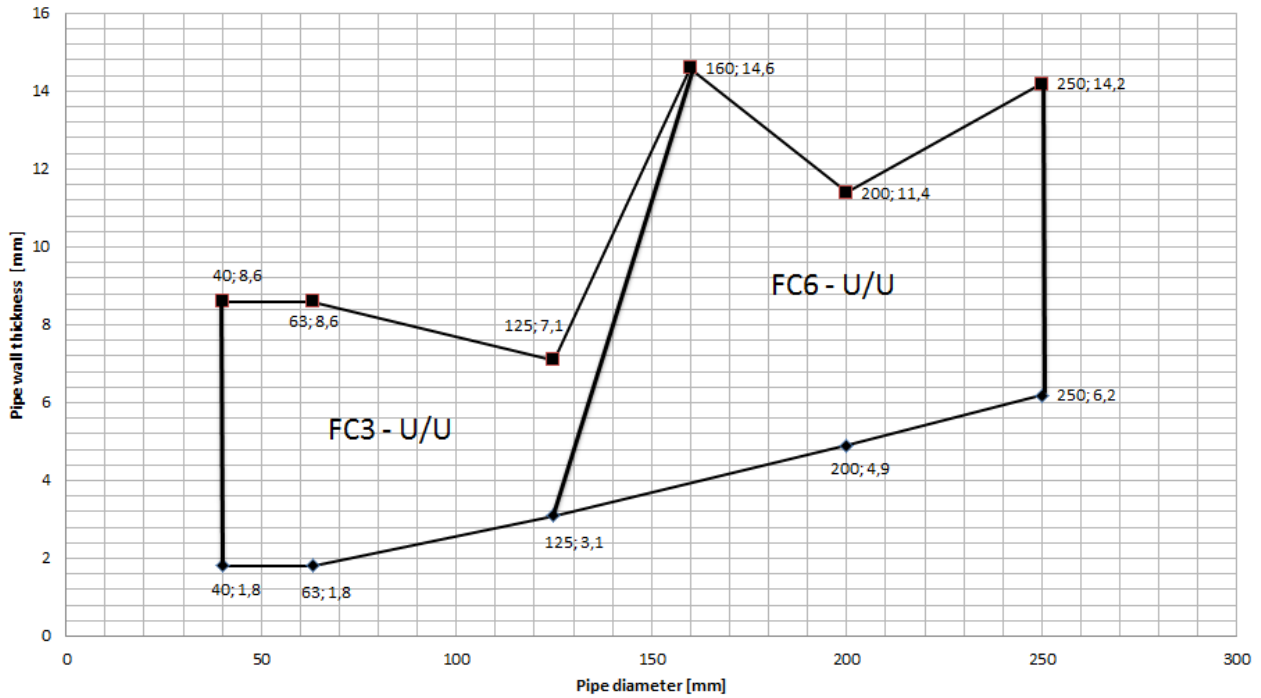
PP-H / PP-R	Ø 32 / t _b 1,8 - Ø 200 / t _b 11,4	Floor	FC3/6	EI 90-U/U E 90-U/U
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PP-H and PP-R pipes with PROMASTOP-FC collar on penetration seal PROMASTOP-I (2 x 50 mm) in rigid floor construction (density ≥ 450 kg/m³, thickness ≥ 150 mm)
EI90-U/U



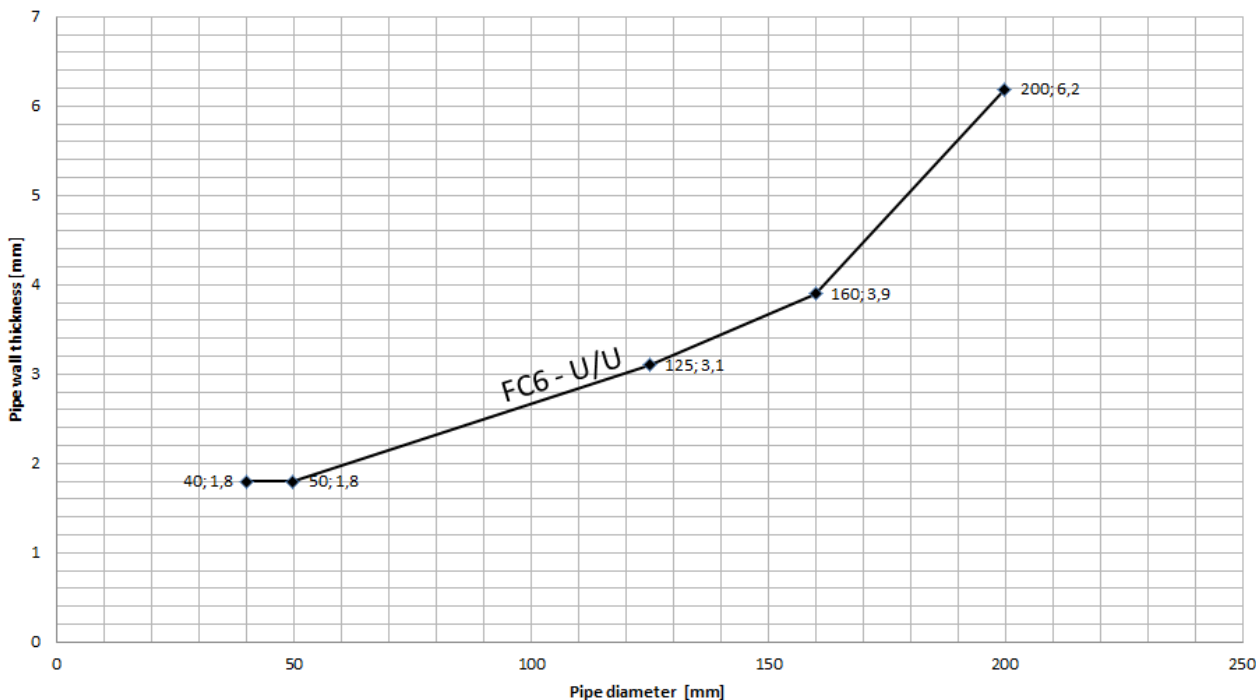
PP-H / PP-R	Ø 40 / t _D 1,8 - Ø 250 / t _D 14,2	Wall	FC3/6	EI 90-U/U E 90-U/U
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**PP-H and PP-R pipes with PROMASTOP-FC collar on penetration seal PROMASTOP-I
(2 x 50 mm) in flexible wall and rigid wall construction (thickness ≥ 100 mm)
EI90-U/U**



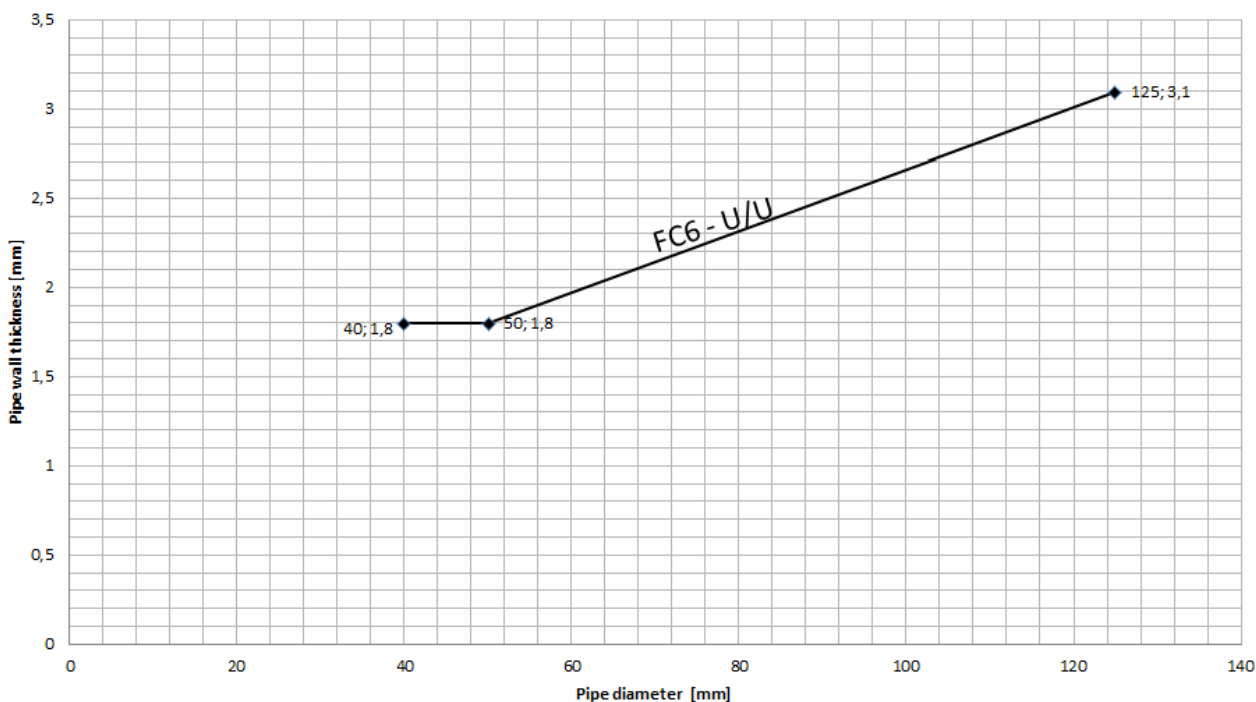
Rehau Raupiano Plus	Ø 40 / t _D 1,8 - Ø 200 / t _D 6,2	Floor	FC6	EI 90-U/U E 90-U/U
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Rehau Raupiano Plus pipes with PROMASTOP-FC collar on penetration seal PROMASTOP-I (2 x 50 mm) in rigid floor construction (density ≥ 450 kg/m³, thickness ≥ 150 mm) EI90-U/U



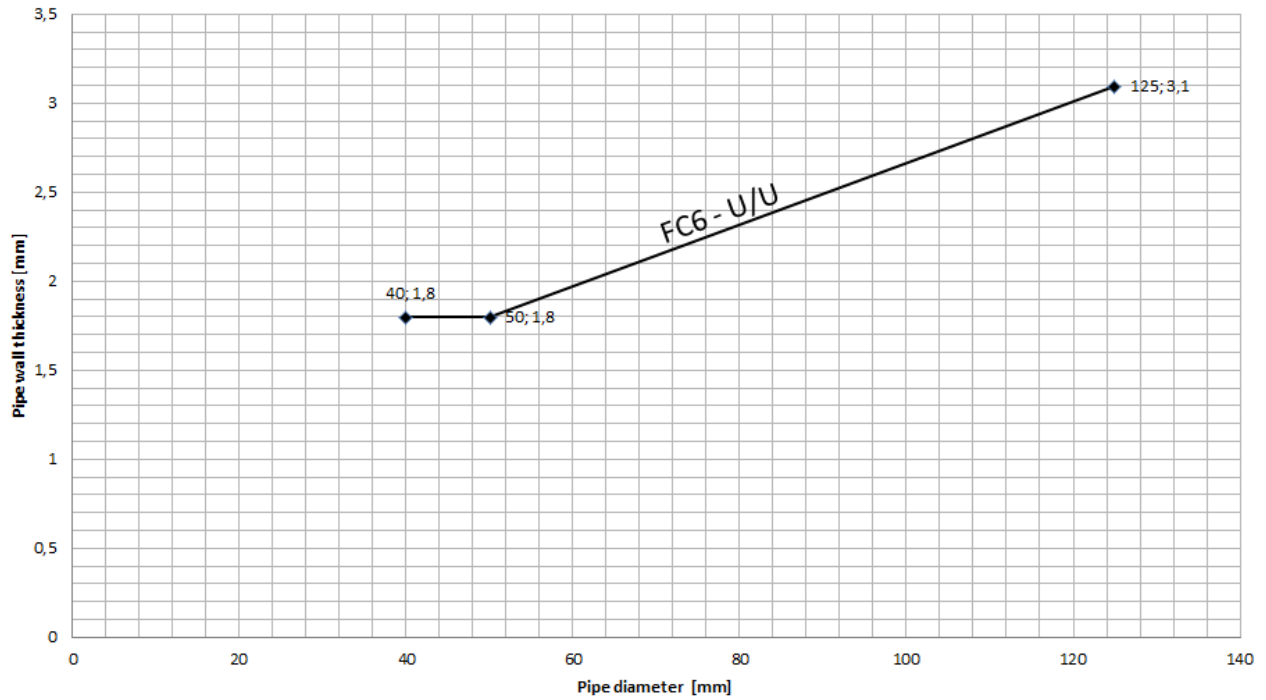
Rehau Raupiano Plus (+socket)	Ø 40 / t _D 1,8 - Ø 125 / t _D 3,1	Floor	FC6	EI 90-U/U E 90-U/U
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Rehau Raupiano Plus pipes with socket with PROMASTOP-FC collar on penetration seal PROMASTOP-I (2 x 50 mm) in rigid floor construction (density ≥ 450 kg/m³, thickness ≥ 150 mm) EI90-U/U


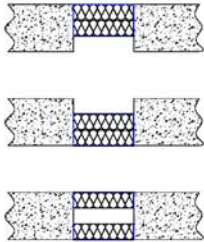
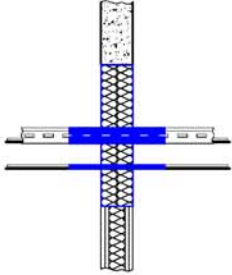
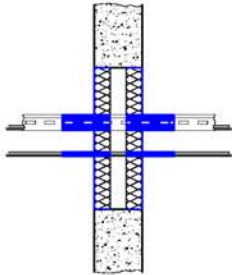
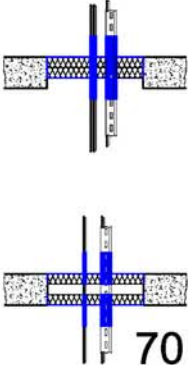
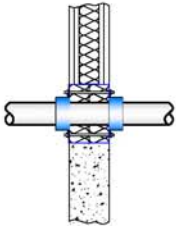
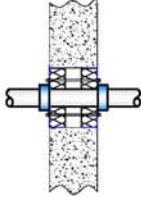
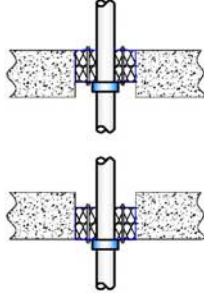
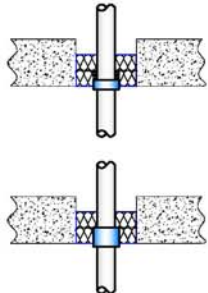
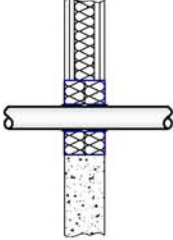
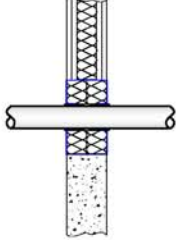
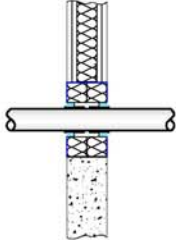


Rehau Raupiano Plus (+socket)	Ø 40 / t _D 1,8 - Ø 125 / t _D 3,1	Wall	FC6	EI 120-U/U E 120-U/U
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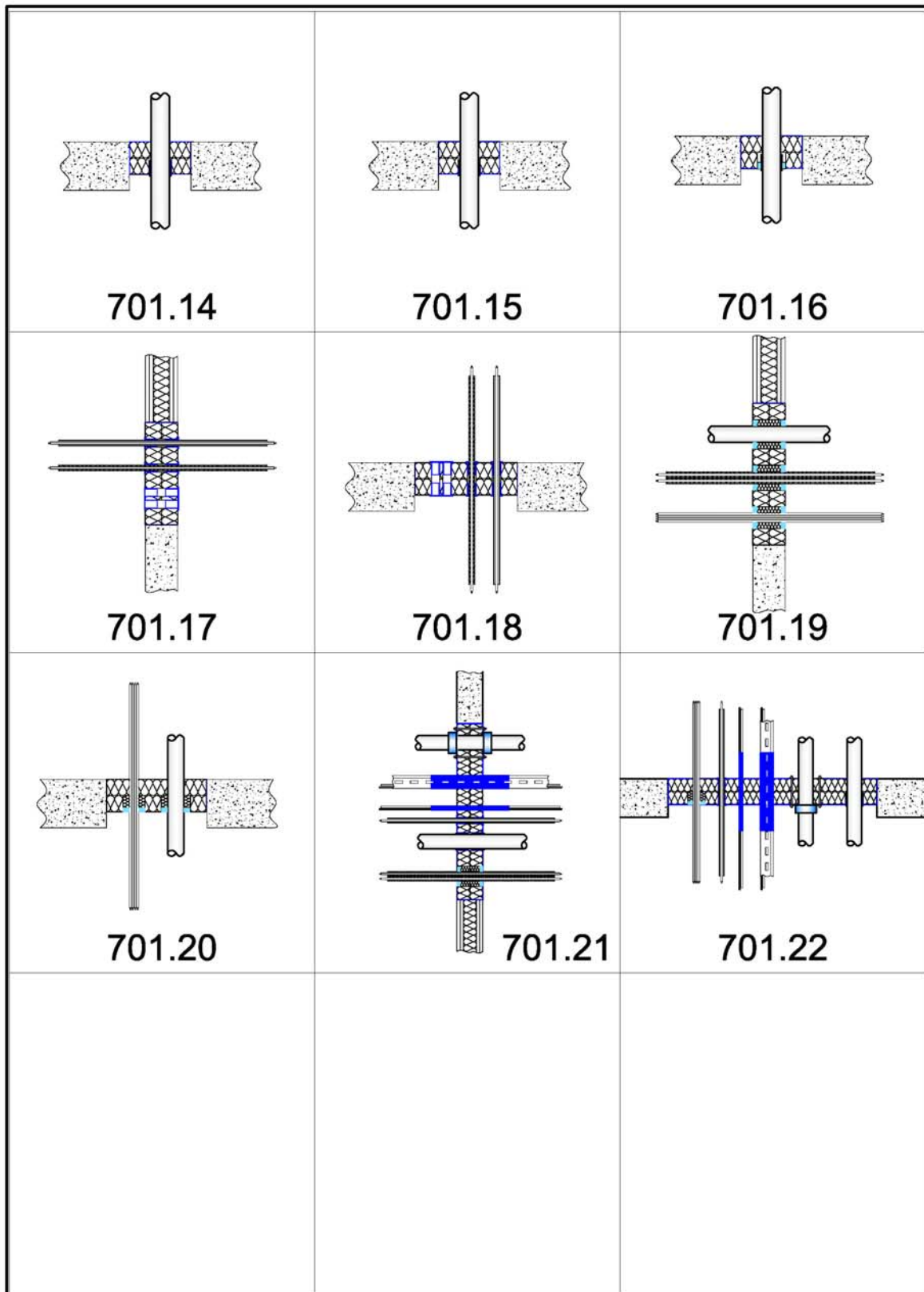
Rehau Raupiano Plus pipes with or without socket with PROMASTOP-FC collar on penetration seal
PROMASTOP-I (2 x 50 mm) in flexible wall and rigid wall construction (thickness ≥ 100 mm)
EI120-U/U



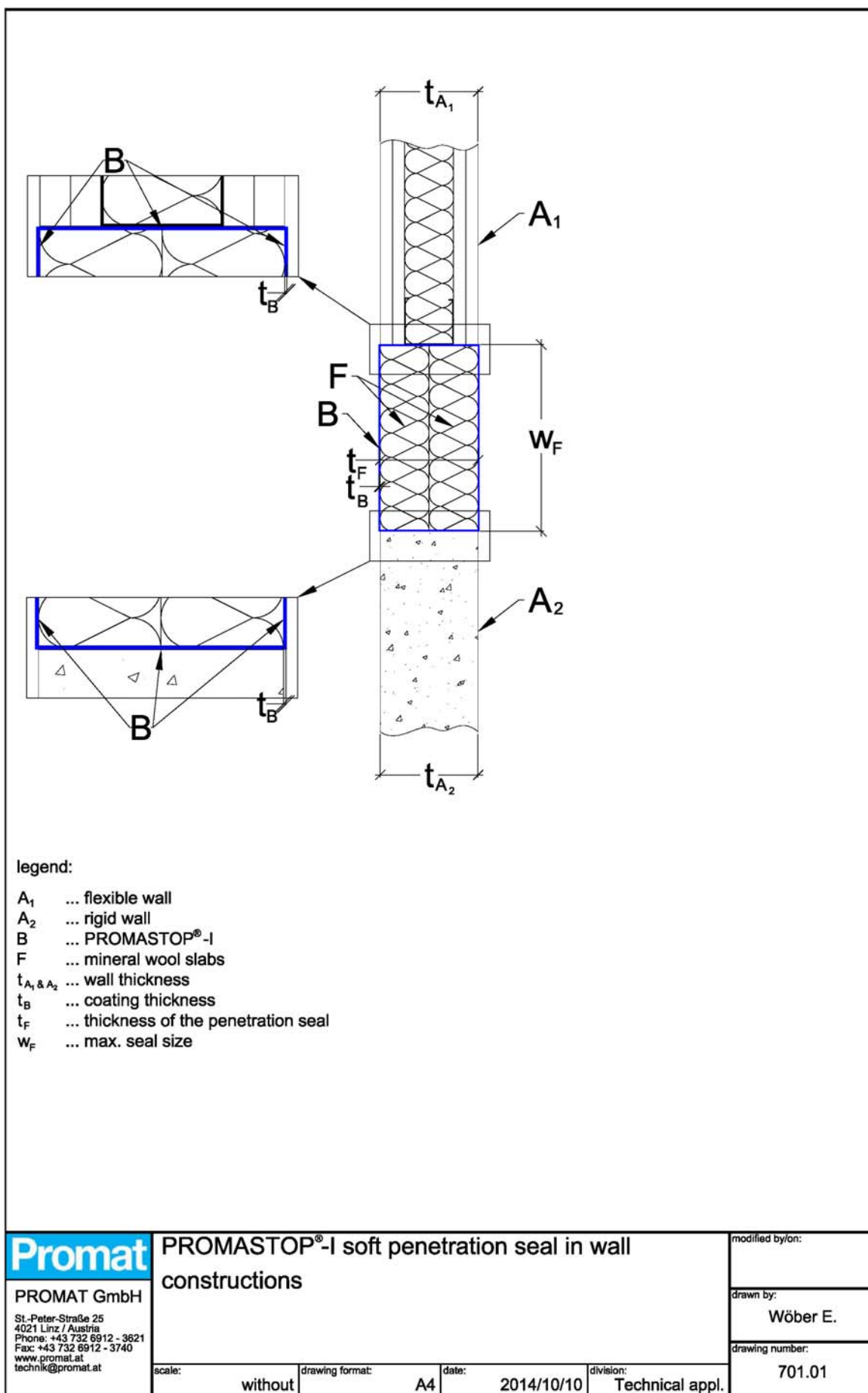
ANNEX 4 INSTALLATION DRAWINGS

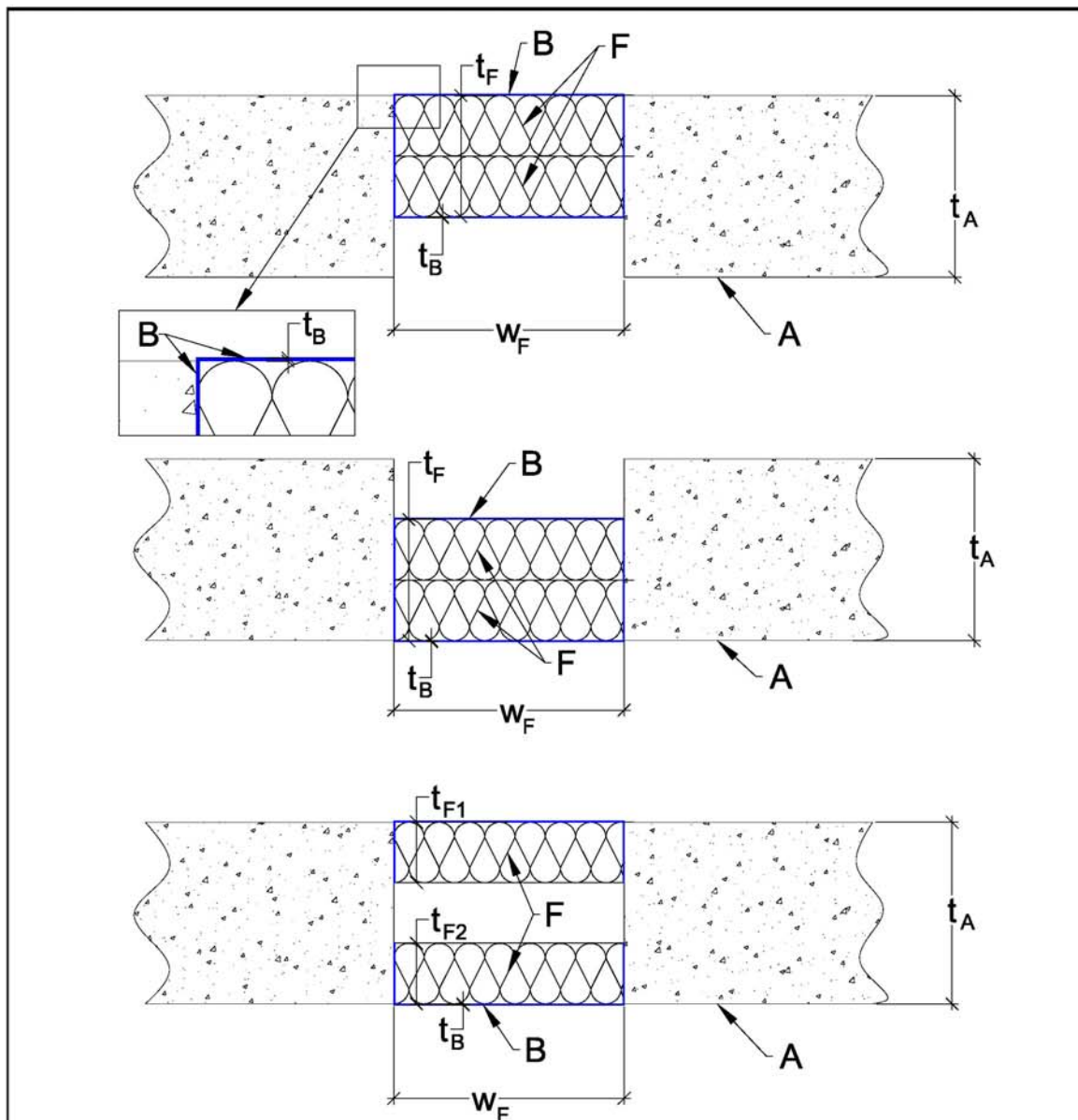
 <p>701.01</p>	 <p>701.02</p>	 <p>701.03</p>
 <p>701.04</p>	 <p>701.05</p>	 <p>701.06</p>
 <p>701.07</p>	 <p>701.08</p>	 <p>701.10</p>
 <p>701.11</p>	 <p>701.12</p>	 <p>701.13</p>

<p>Promat 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</p>	<p>Overview of PROMASTOP®-I penetration seal constructions</p> <p>part 1 of 2</p>	<p>modified by/on:</p>
	<p>scale: without drawing format: A4 date: 2014/10/10 division: Technical appl.</p>	<p>drawn by: Wöber E.</p>
	<p>drawing number: 701.00</p>	



Promat 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	Overview of PROMASTOP®-I penetration seal constructions part 2 of 2			modified by/for:
	scale: without	drawing format: A4	date: 2014/10/10	division: Technical appl.

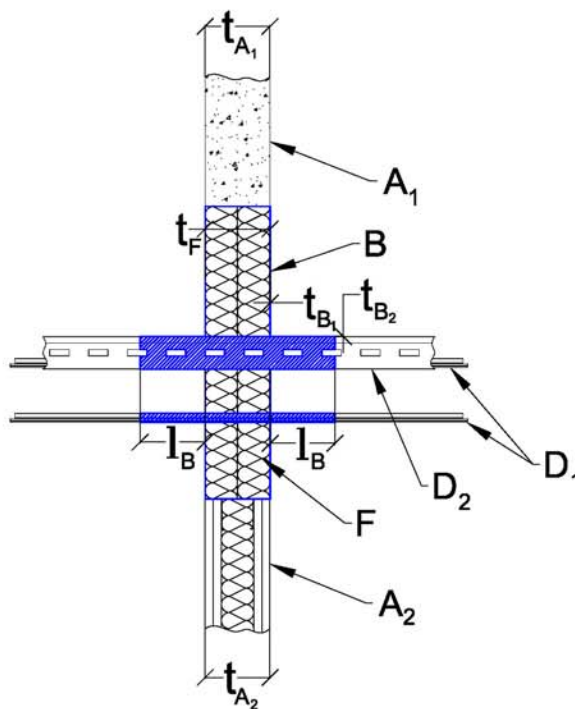




legend:

- A ... rigid floor
- B ... PROMASTOP®-I
- F ... mineral wool slabs
- t_A ... floor thickness
- t_B ... coating thickness
- t_F ... thickness of the penetration seal
- w_F ... max. seal size

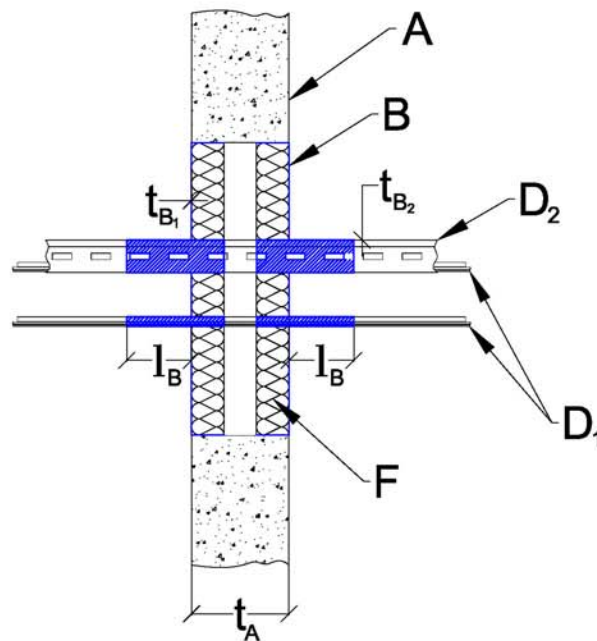
Promat PROMAT GmbH St.-Peter-Straße 25 4021 Linz / Austria Phone: +43 732 6912 - 3621 Fax: +43 732 6912 - 3740 www.promat.at technik@promat.at	PROMASTOP®-I soft penetration seal in rigid floor constructions			modified by/on:
	scale: without	drawing format: A4	date: 2014/10/10	division: Technical appl.
				drawing number: 701.02



legend:

- A₁ ... rigid wall
- A₂ ... flexible wall
- B ... PROMASTOP®-I
- D₁ ... cable, cable bundle
- D₂ ... cable tray
- F ... mineral wool slabs
- l_B ... coating length
- t_{A₁ & A₂} ... wall thickness
- t_{B_x} ... coating thickness
- t_F ... thickness of the penetration seal

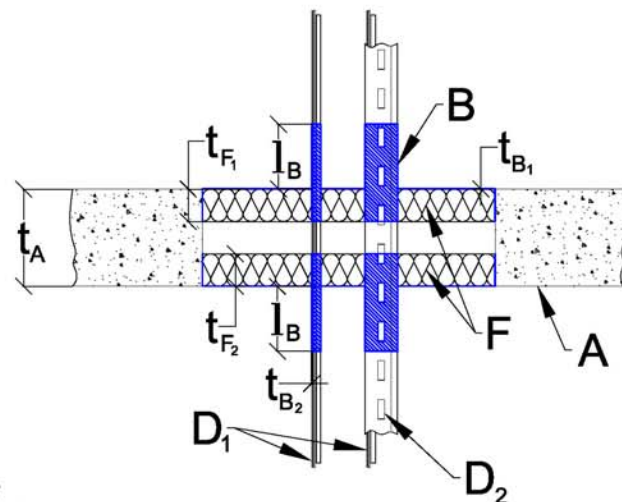
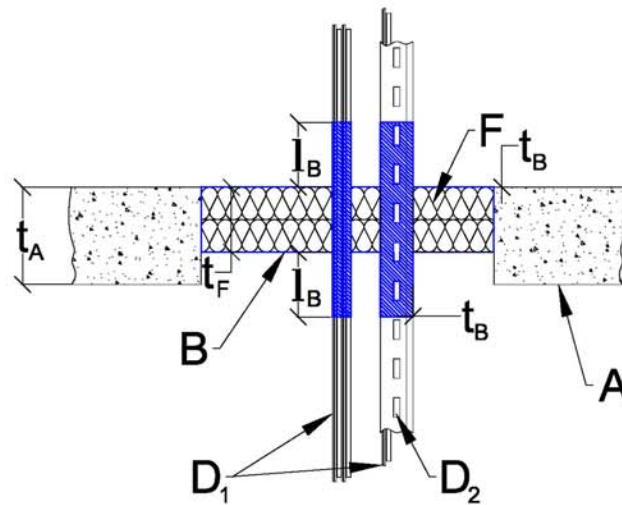
Promat PROMAT GmbH St.-Peter-Straße 25 4021 Linz / Austria Phone: +43 732 6912 - 3621 Fax: +43 732 6912 - 3740 www.promat.at technik@promat.at	cable, cable bundle and cable tray through PROMASTOP®-I penetration seal in wall constructions			modified by/on:
	scale: without	drawing format: A4	date: 2014/10/10	division: Technical appl.
				drawing number: 701.03



legend:

- A₁ ... rigid wall
- B ... PROMASTOP®-I
- D₁ ... cable, cable bundle
- D₂ ... cable tray
- F ... mineral wool slabs
- l_B ... coating length
- t_A ... wall thickness
- t_{Bx} ... coating thickness
- t_F ... thickness of the penetration seal

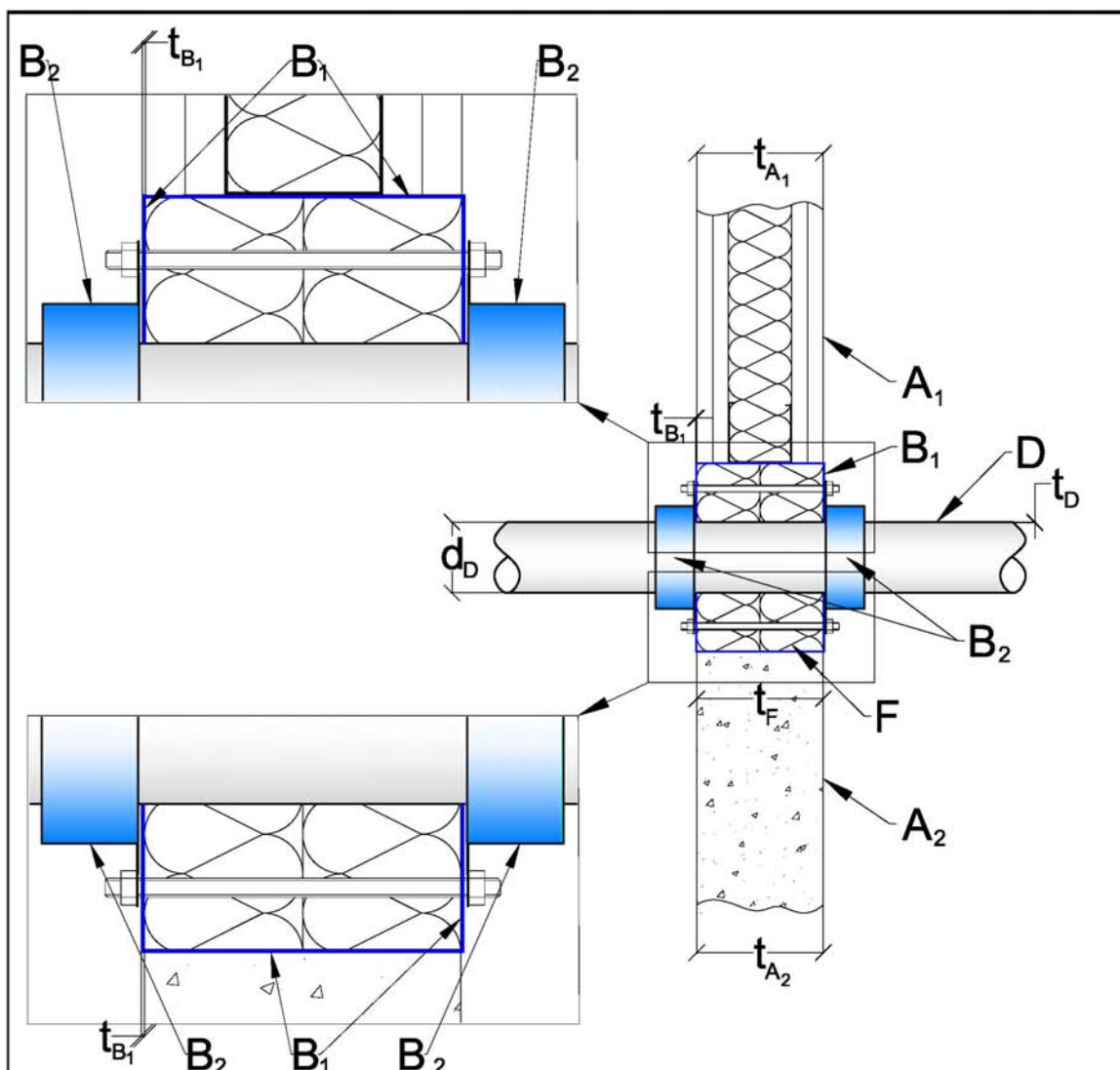
Promat PROMAT GmbH St.-Peter-Straße 25 4021 Linz / Austria Phone: +43 732 6912 - 3621 Fax: +43 732 6912 - 3740 www.promat.at technik@promat.at	cable, cable bundle and cable tray through PROMASTOP®-I penetration seal in possible wall construction ≥ 100 mm			modified by/on:
	scale: without	drawing format: A4	date: 2014/10/10	division: Technical appl.
				drawing number: 701.04



legend:

- A ... rigid floor
- B ... PROMASTOP®-I
- D₁ ... cable, cable bundle
- D₂ ... cable tray
- F ... mineral wool slabs
- l_B ... coating length
- t_A ... floor thickness
- t_{Bx} ... coating thickness
- t_{F/F₁&F₂} ... thickness of the penetration seal

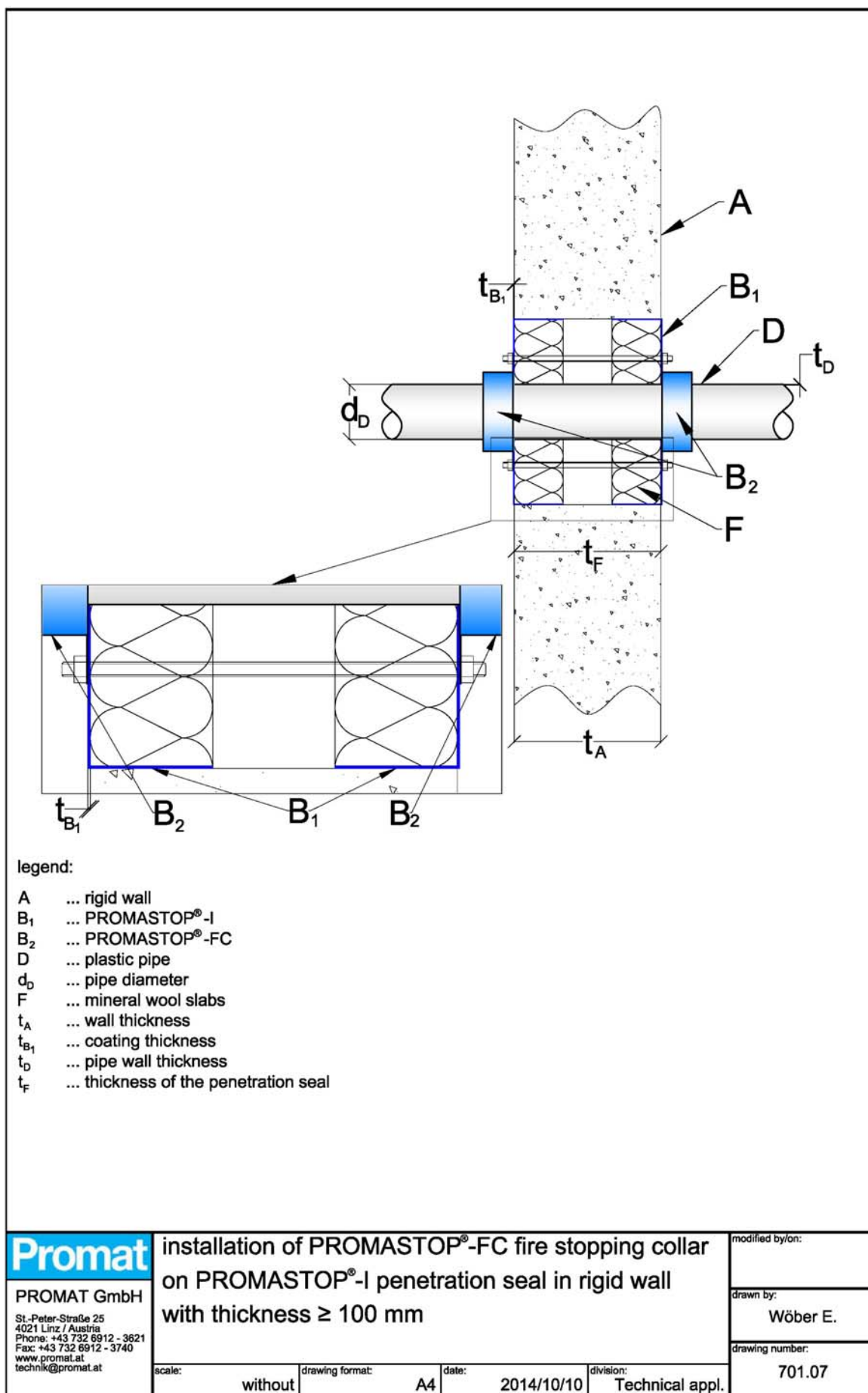
Promat PROMAT GmbH St.-Peter-Straße 25 4021 Linz / Austria Phone: +43 732 6912 - 3621 Fax: +43 732 6912 - 3740 www.promat.at technik@promat.at	cable, cable bundle and cable tray through PROMASTOP®-I penetration seal in floor construction			modified by/on:
	scale: without	drawing format: A4	date: 2014/10/10	division: Technical appl.
				drawing number: 701.05

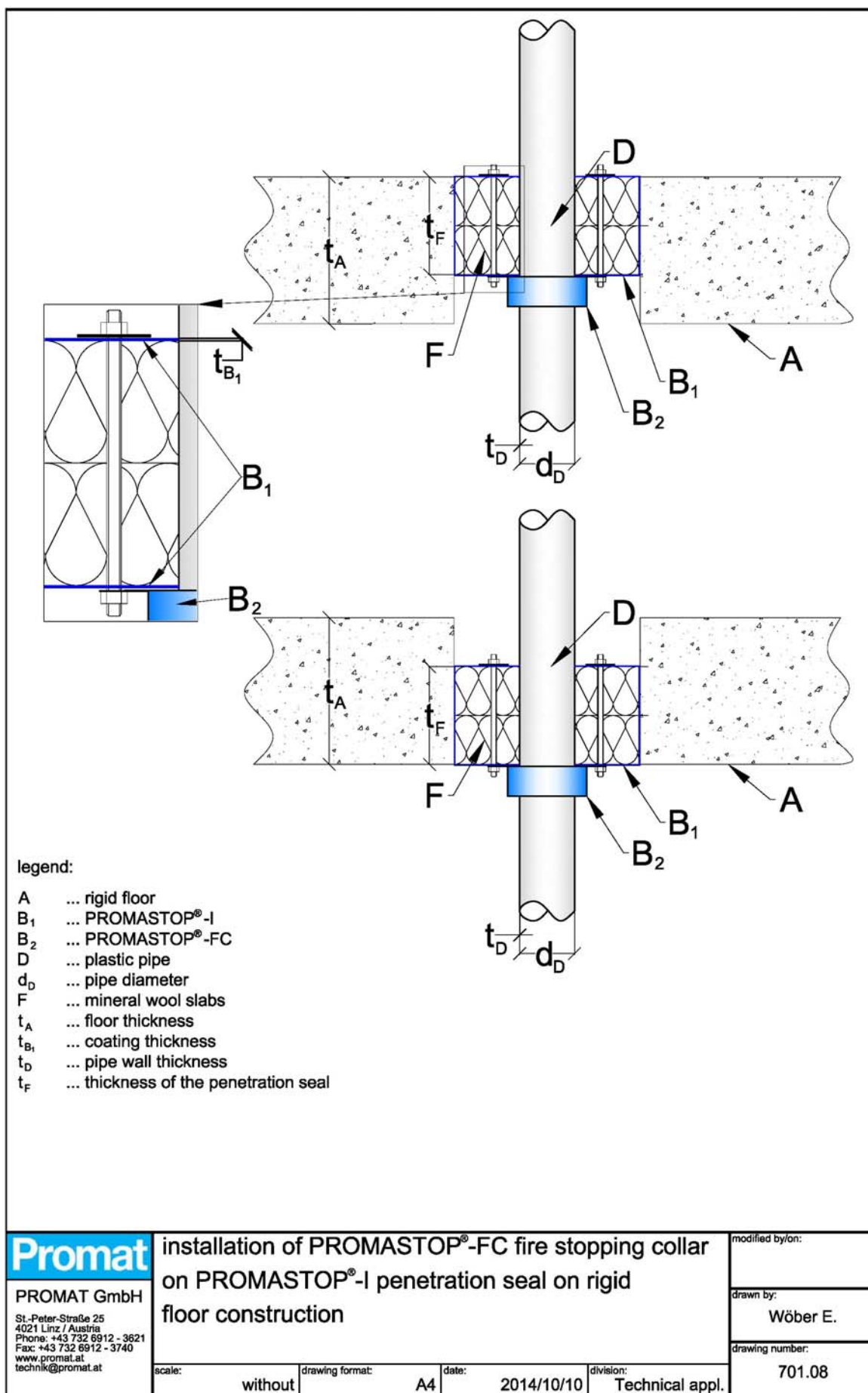


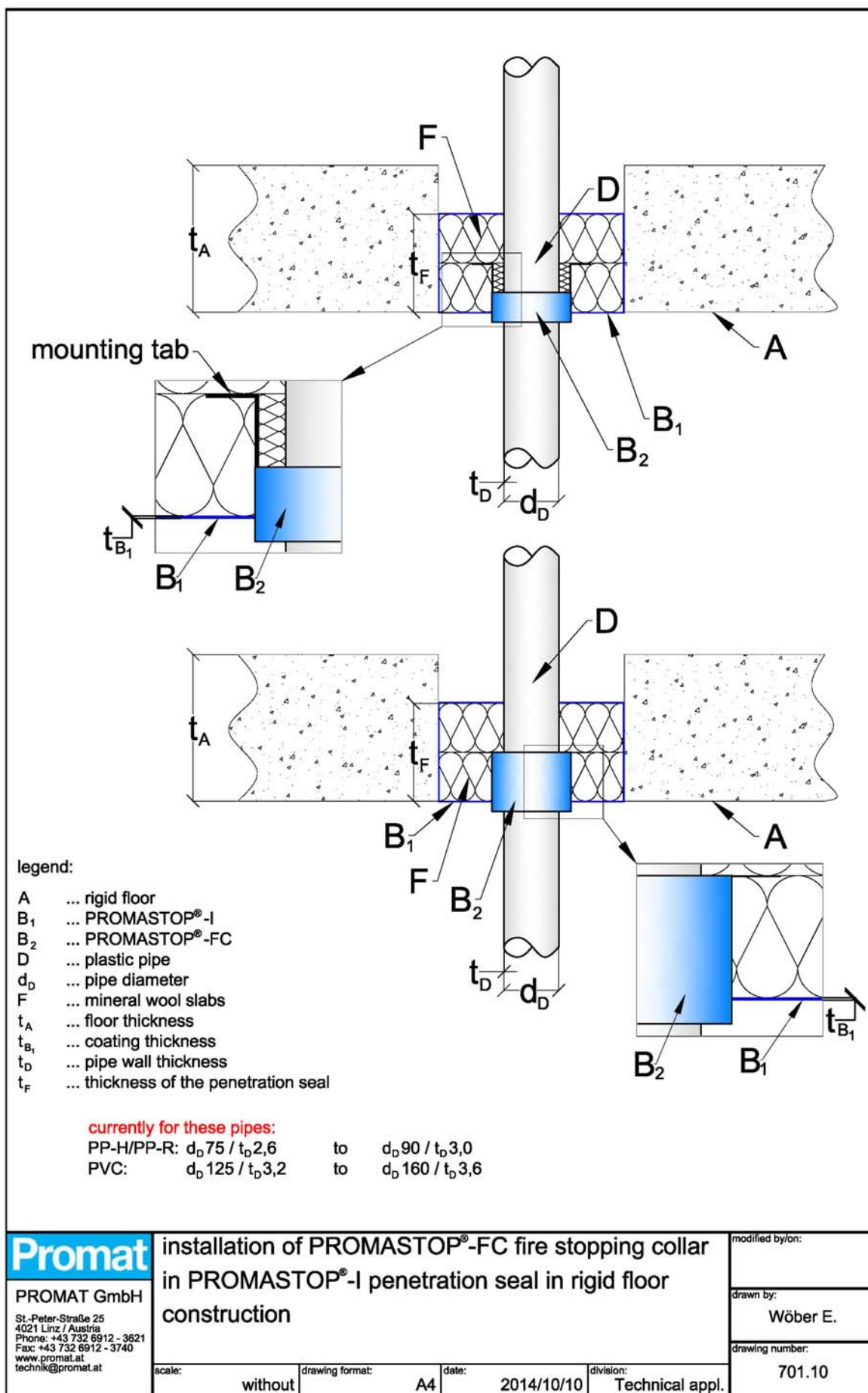
legend:

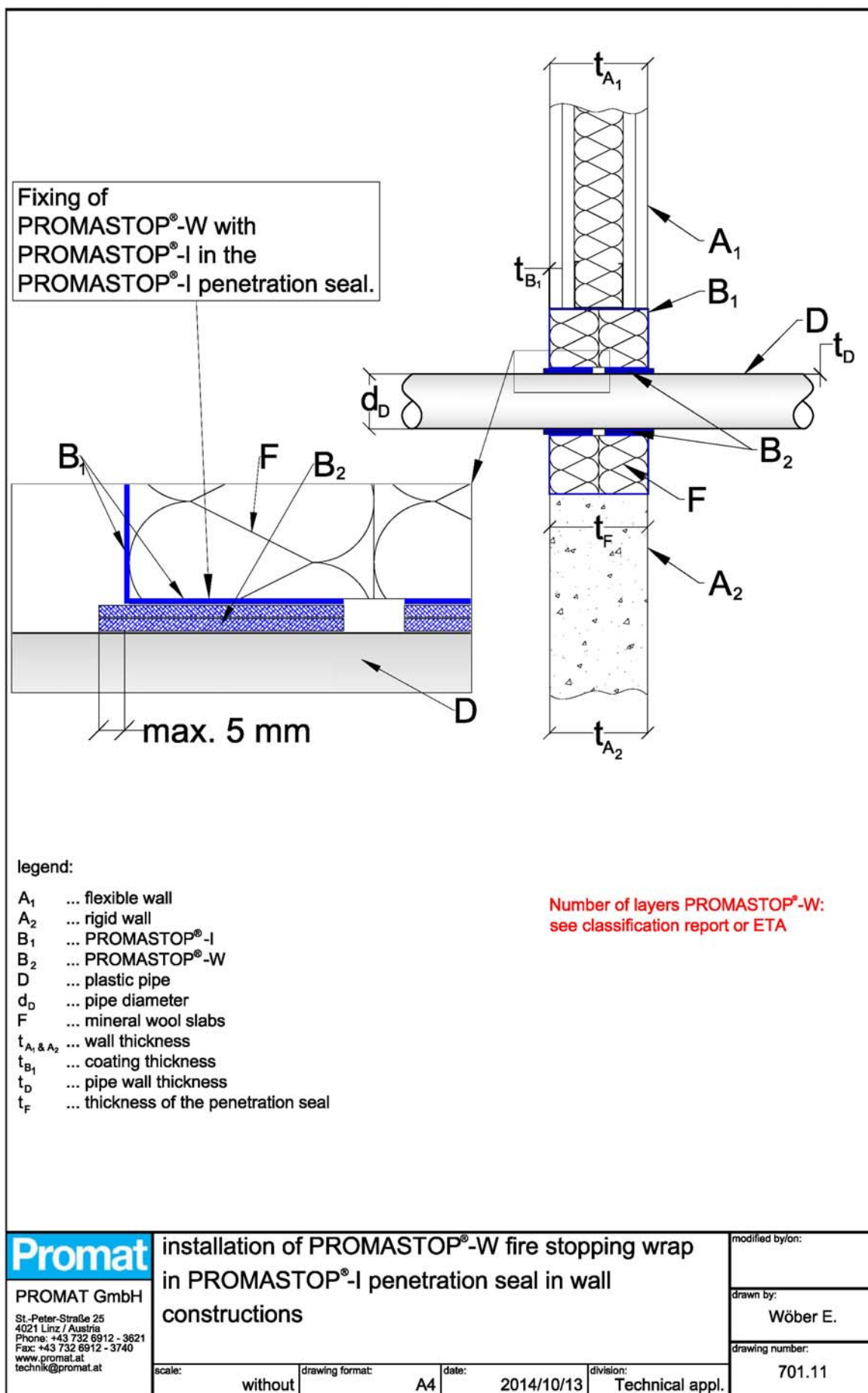
- A₁ ... flexible wall
- A₂ ... rigid wall
- B₁ ... PROMASTOP®-I
- B₂ ... PROMASTOP®-FC
- D ... plastic pipe
- d_D ... pipe diameter
- F ... mineral wool slabs
- t_{A₁ & A₂} ... wall thickness
- t_{B₁} ... coating thickness
- t_D ... pipe wall thickness
- t_F ... thickness of the penetration seal

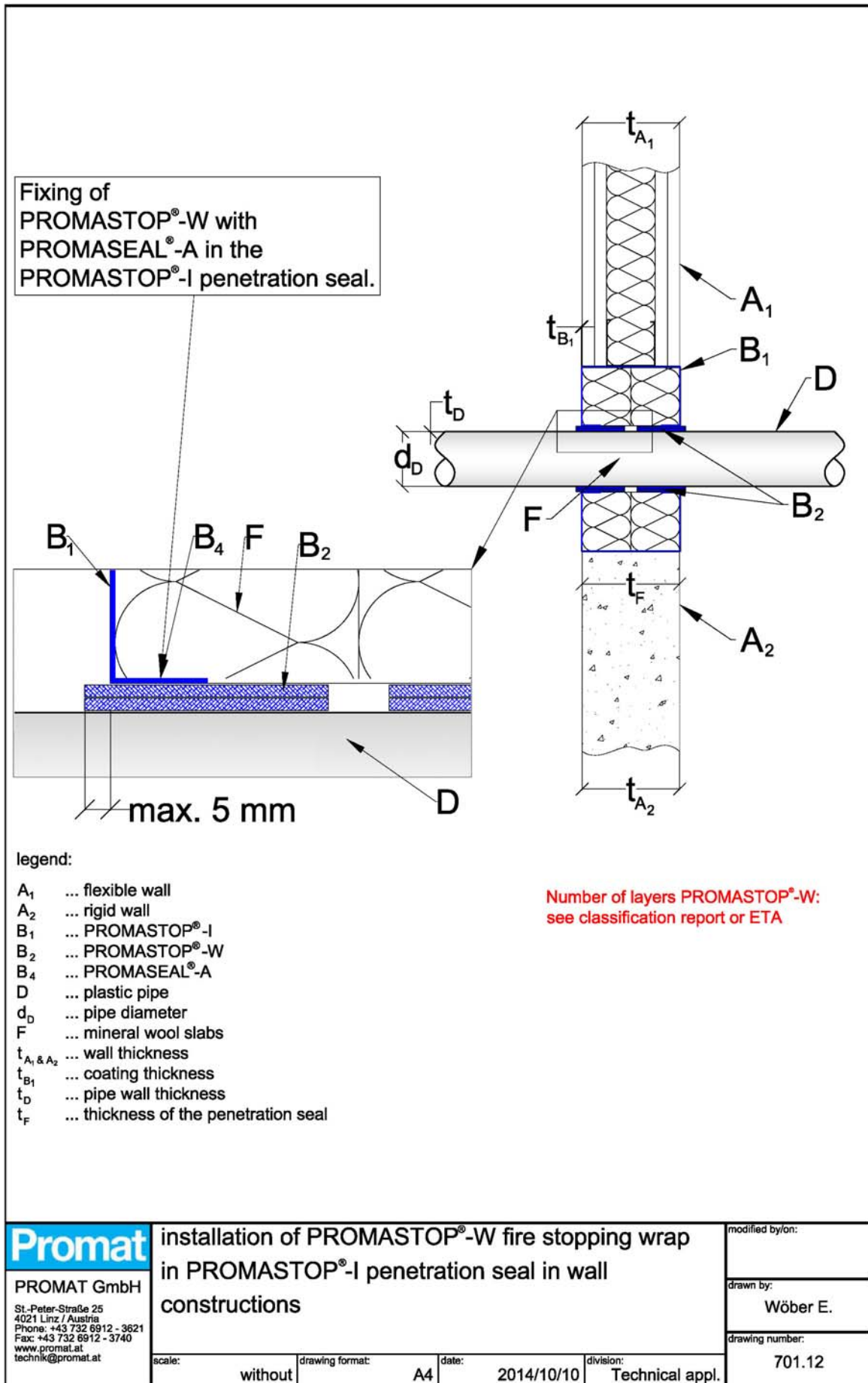
Promat PROMAT GmbH St.-Peter-Strasse 25 4021 Linz / Austria Phone: +43 732 6912 - 3621 Fax: +43 732 6912 - 3740 www.promat.at technik@promat.at	PROMASTOP®-I penetration seal with PROMASTOP®-FC fire stopping collar in flexible and rigid wall constructions			modified by/on:
				drawn by: Wöber E.
				drawing number: 701.06
scale: without	drawing format: A4	date: 2014/10/10	division: Technical appl.	

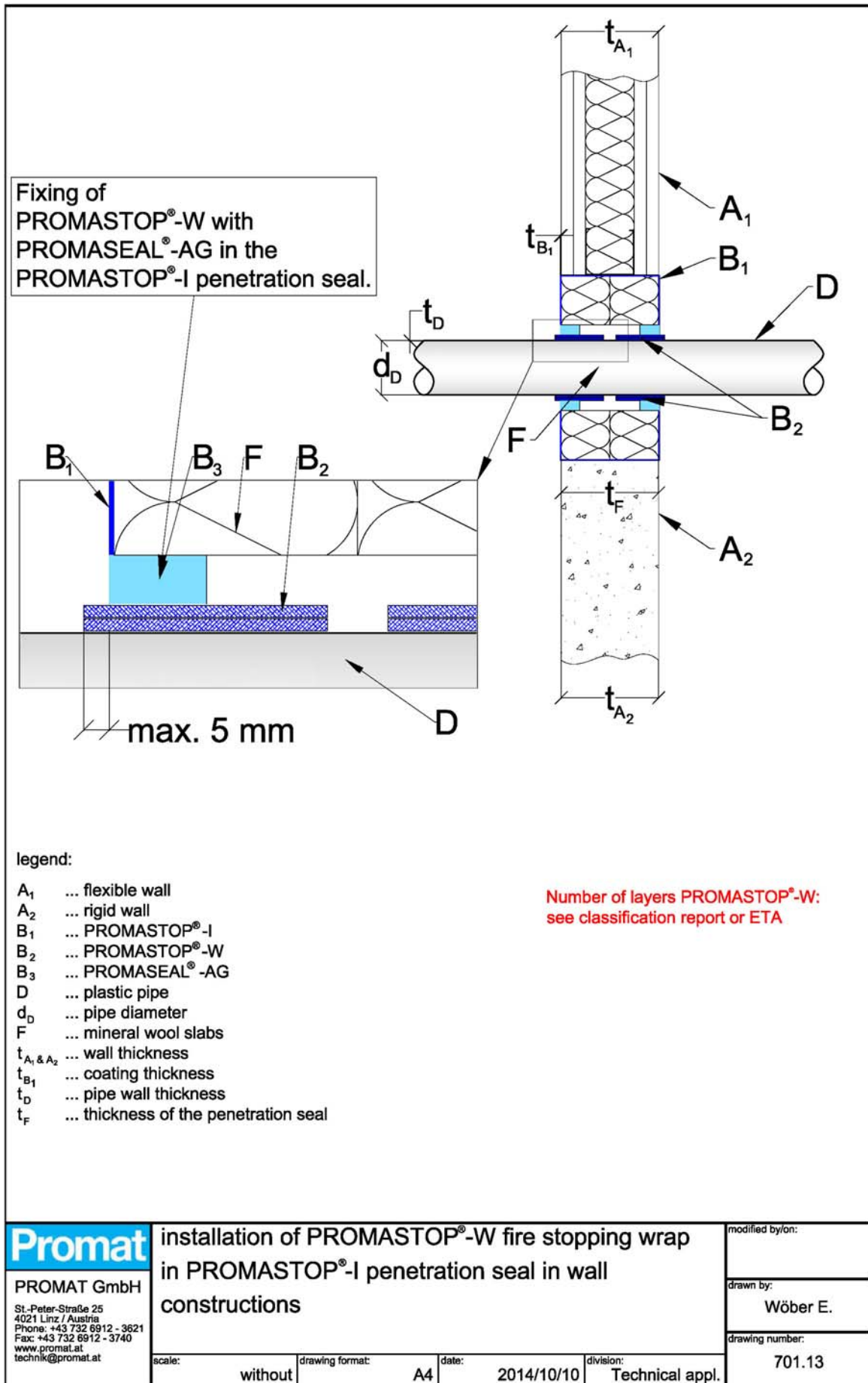


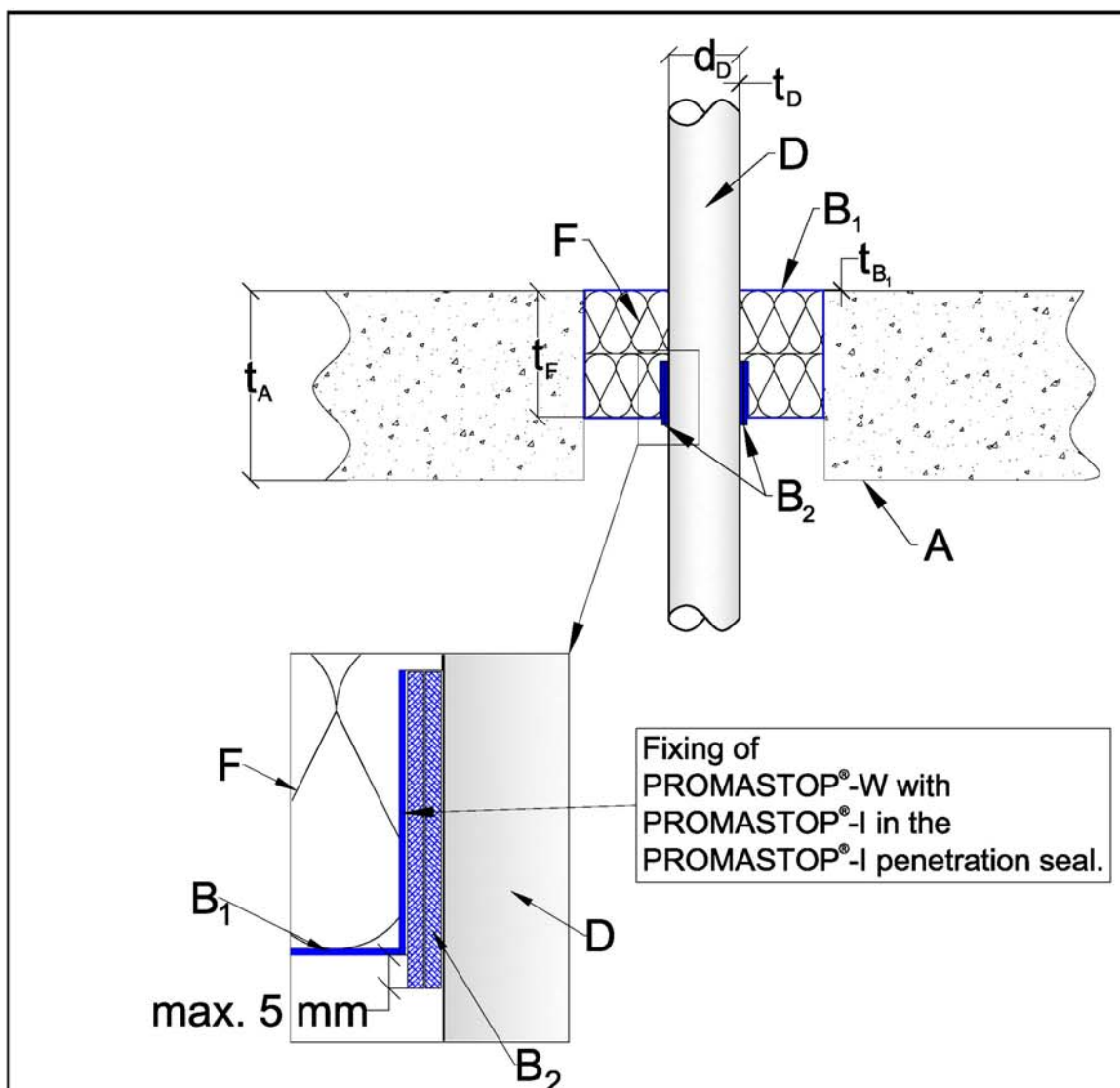










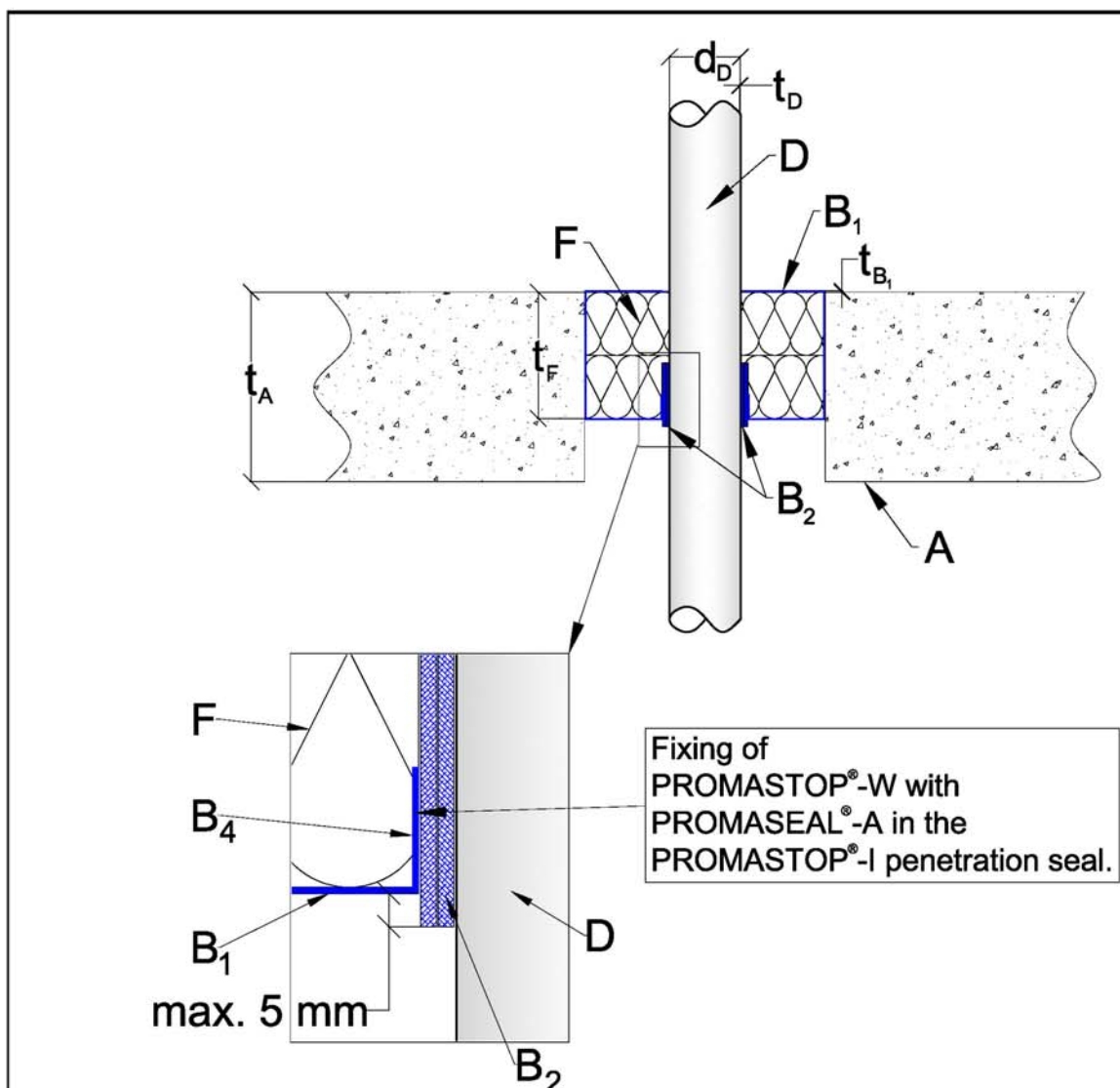


legend:

- A ... rigid floor
- B₁ ... PROMASTOP[®]-I
- B₂ ... PROMASTOP[®]-W
- D ... plastic pipe
- d_D ... pipe diameter
- F ... mineral wool slabs
- t_A ... floor thickness
- t_{B1} ... coating thickness
- t_D ... pipe wall thickness
- t_F ... thickness of the penetration seal

Number of layers PROMASTOP[®]-W:
see classification report or ETA

Promat 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	installation of PROMASTOP [®] -W fire stopping wrap in PROMASTOP [®] -I penetration seal in floor constructions			modified by/on:
	scale: without	drawing format: A4	date: 2014/10/10	division: Technical appl.
				drawing number: 701.14

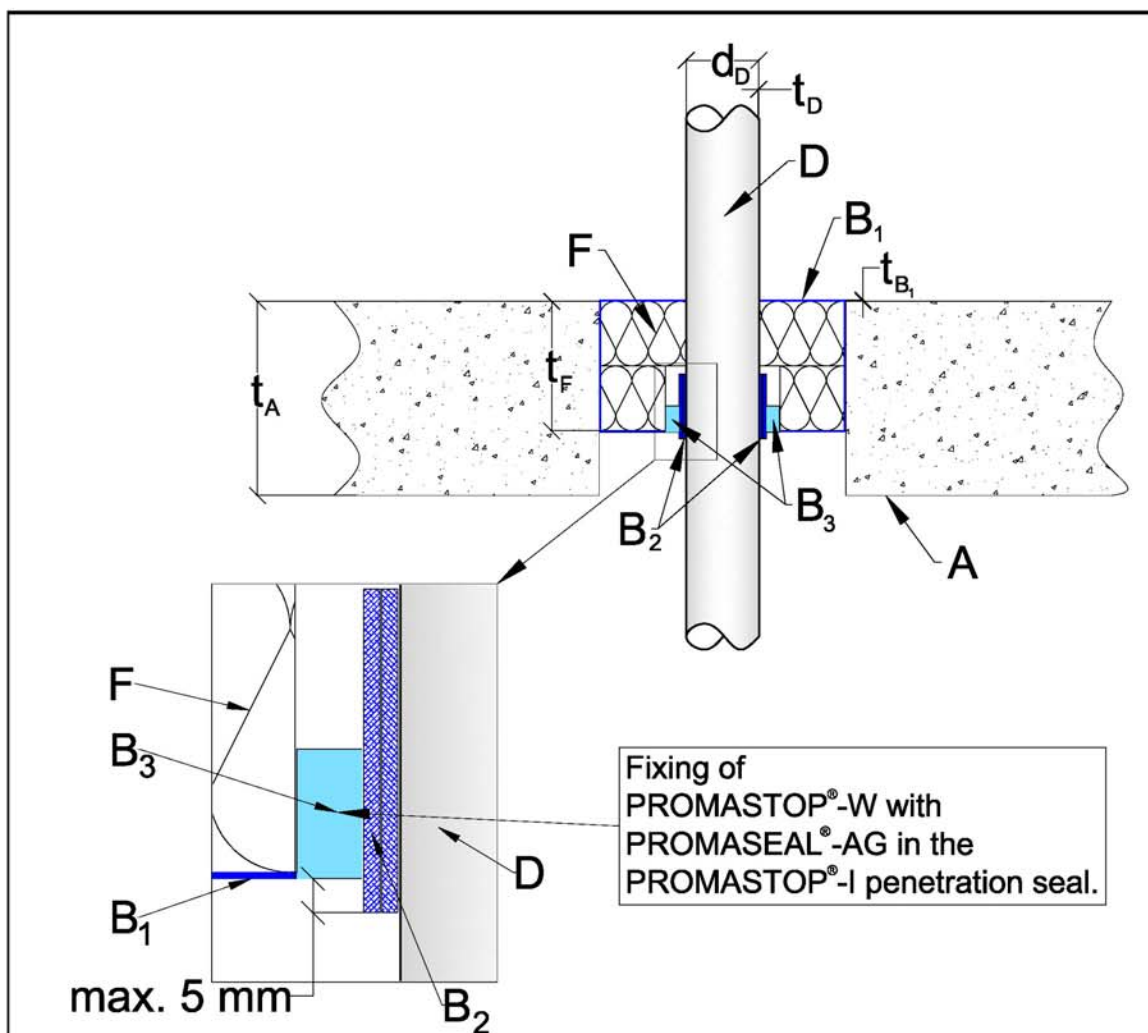


legend:

- A ... rigid floor
- B₁ ... PROMASTOP®-I
- B₂ ... PROMASTOP®-W
- B₄ ... PROMASEAL®-A
- D ... plastic pipe
- d_D ... pipe diameter
- F ... mineral wool slabs
- t_A ... floor thickness
- t_{B1} ... coating thickness
- t_D ... pipe wall thickness
- t_F ... thickness of the penetration seal

Number of layers PROMASTOP®-W:
see classification report or ETA

Promat 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	installation of PROMASTOP®-W fire stopping wrap in PROMASTOP®-I penetration seal in floor constructions			modified by/on:
	scale: without drawing format: A4 date: 2014/10/10 division: Technical appl.			drawn by: Wöber E.
				drawing number: 701.15

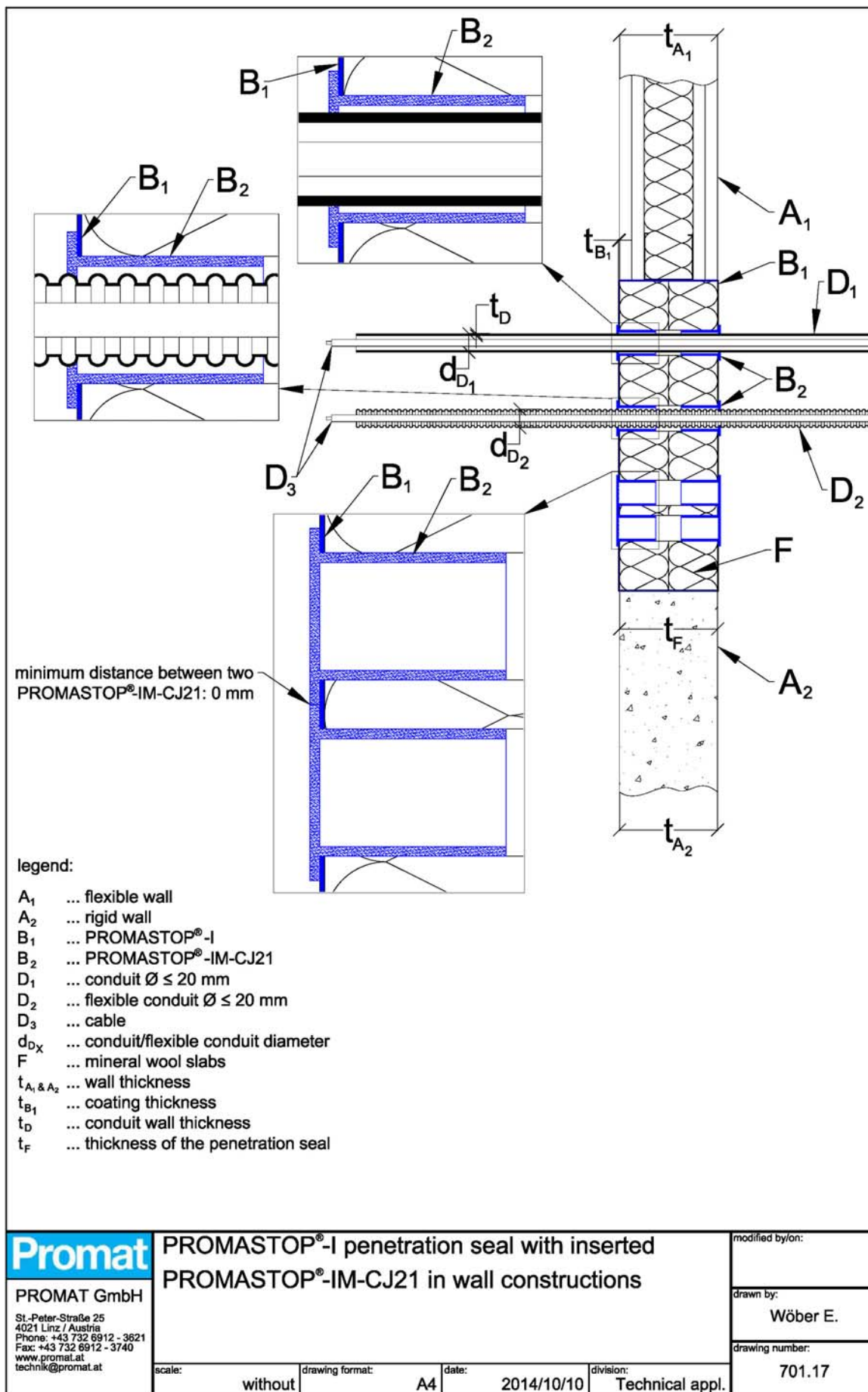


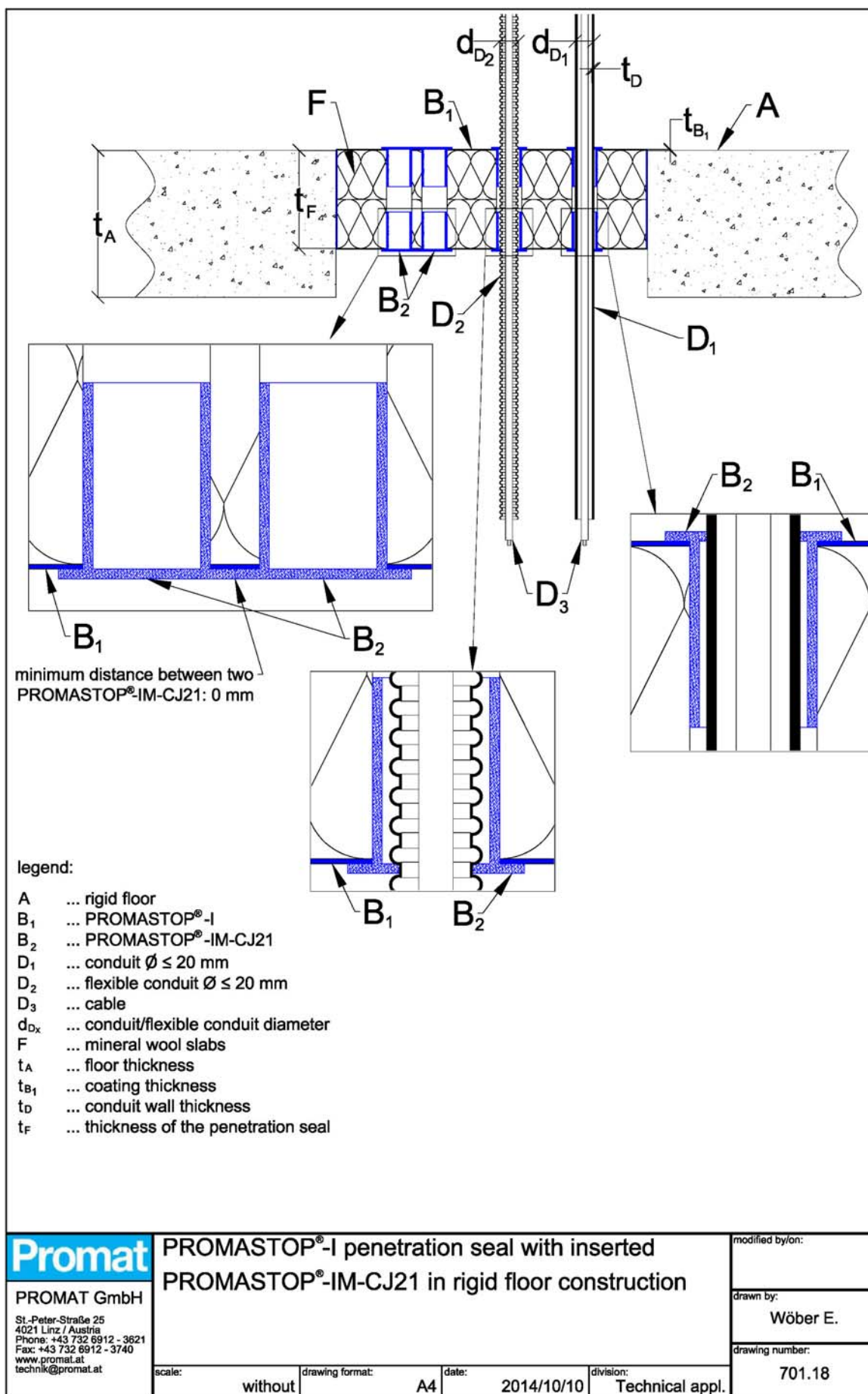
legend:

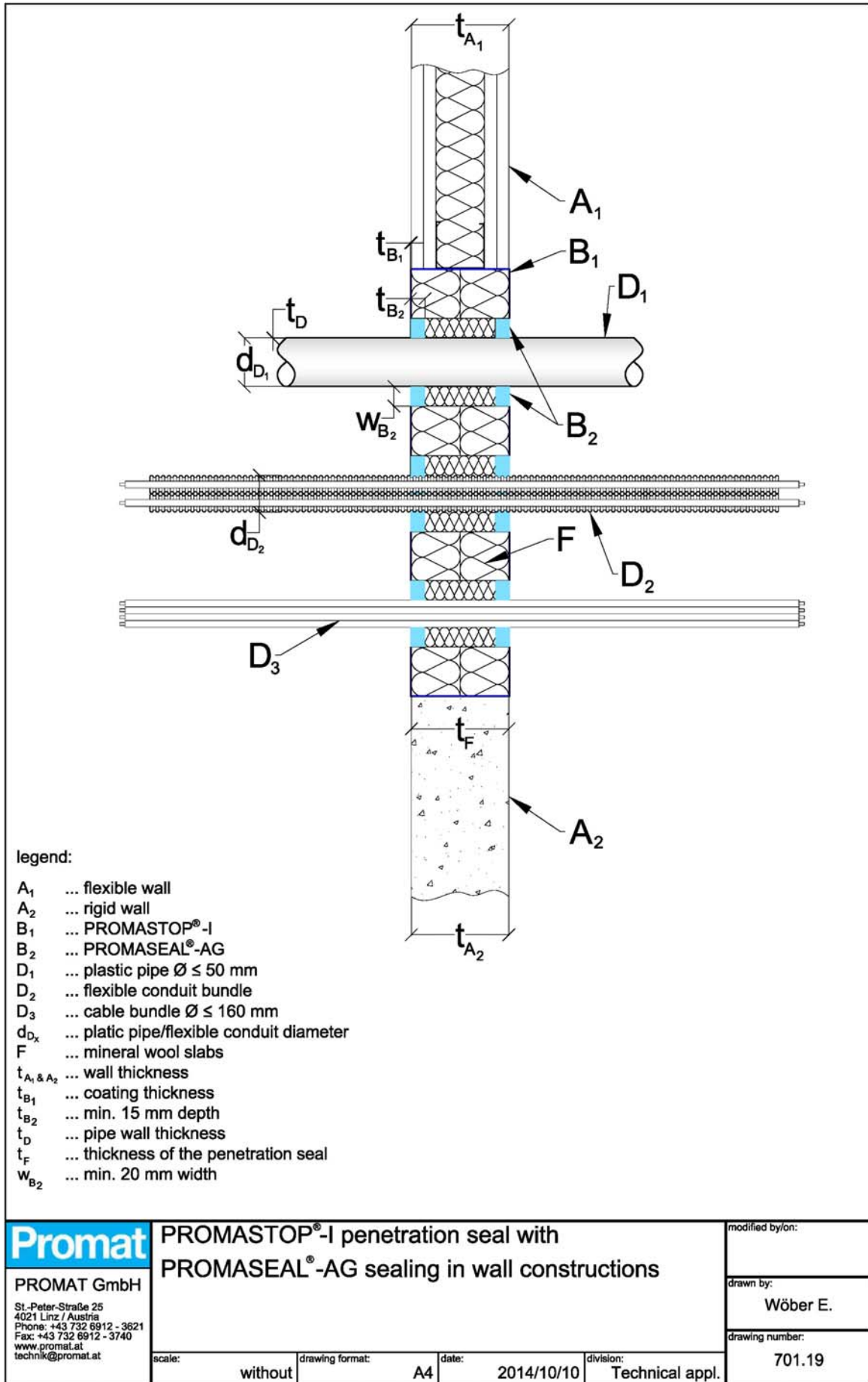
- A ... rigid floor
- B₁ ... PROMASTOP®-I
- B₂ ... PROMASTOP®-W
- B₃ ... PROMASEAL®-AG
- D ... plastic pipe
- d_D ... pipe diameter
- F ... mineral wool slabs
- t_A ... floor thickness
- t_{B1} ... coating thickness
- t_D ... pipe wall thickness
- t_F ... thickness of the penetration seal

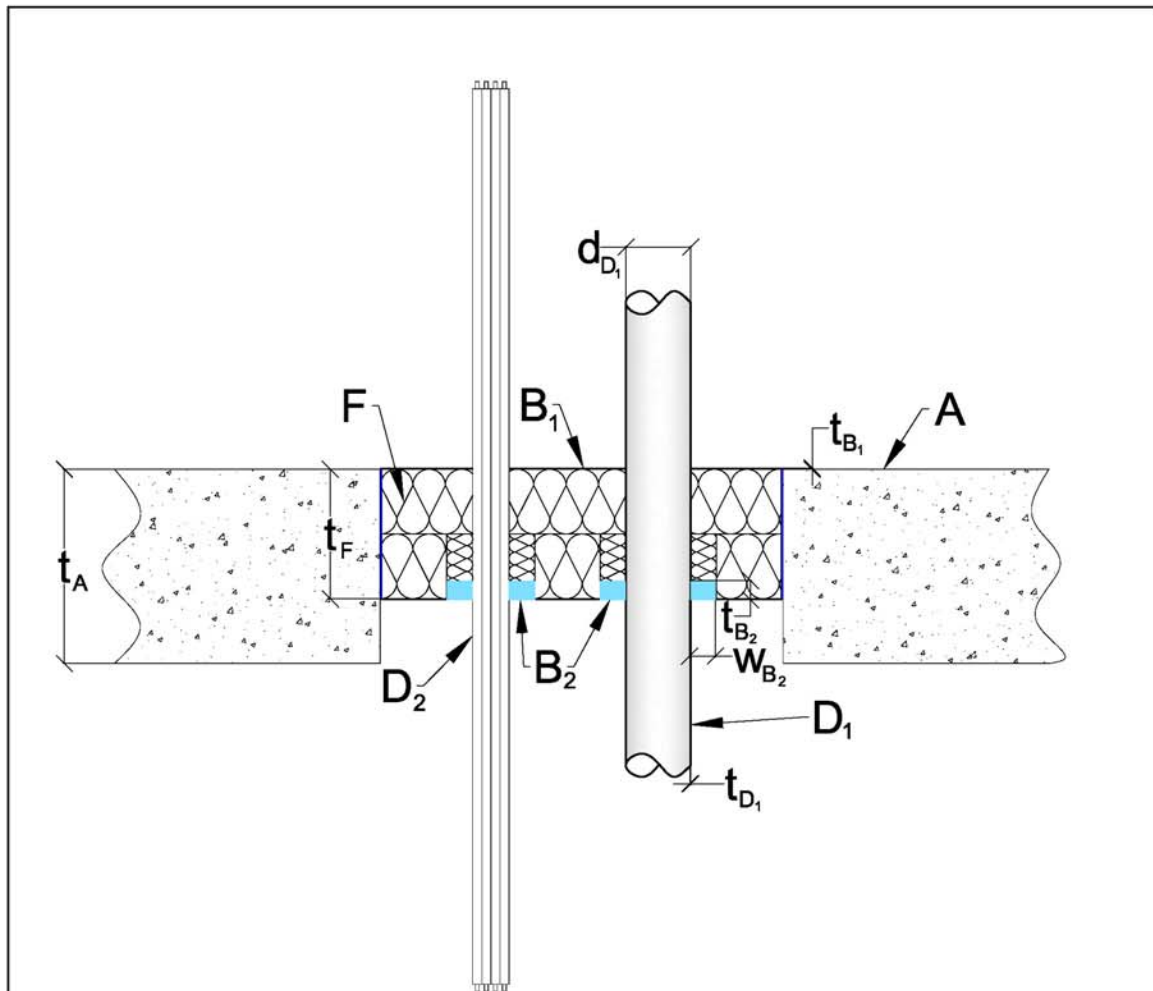
Number of layers PROMASTOP®-W:
see classification report or ETA

Promat 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	installation of PROMASTOP®-W fire stopping wrap in PROMASTOP®-I penetration seal in floor constructions			modified by/on:
	scale: without	drawing format: A4	date: 2014/10/10	division: Technical appl.
				drawing number: 701.16





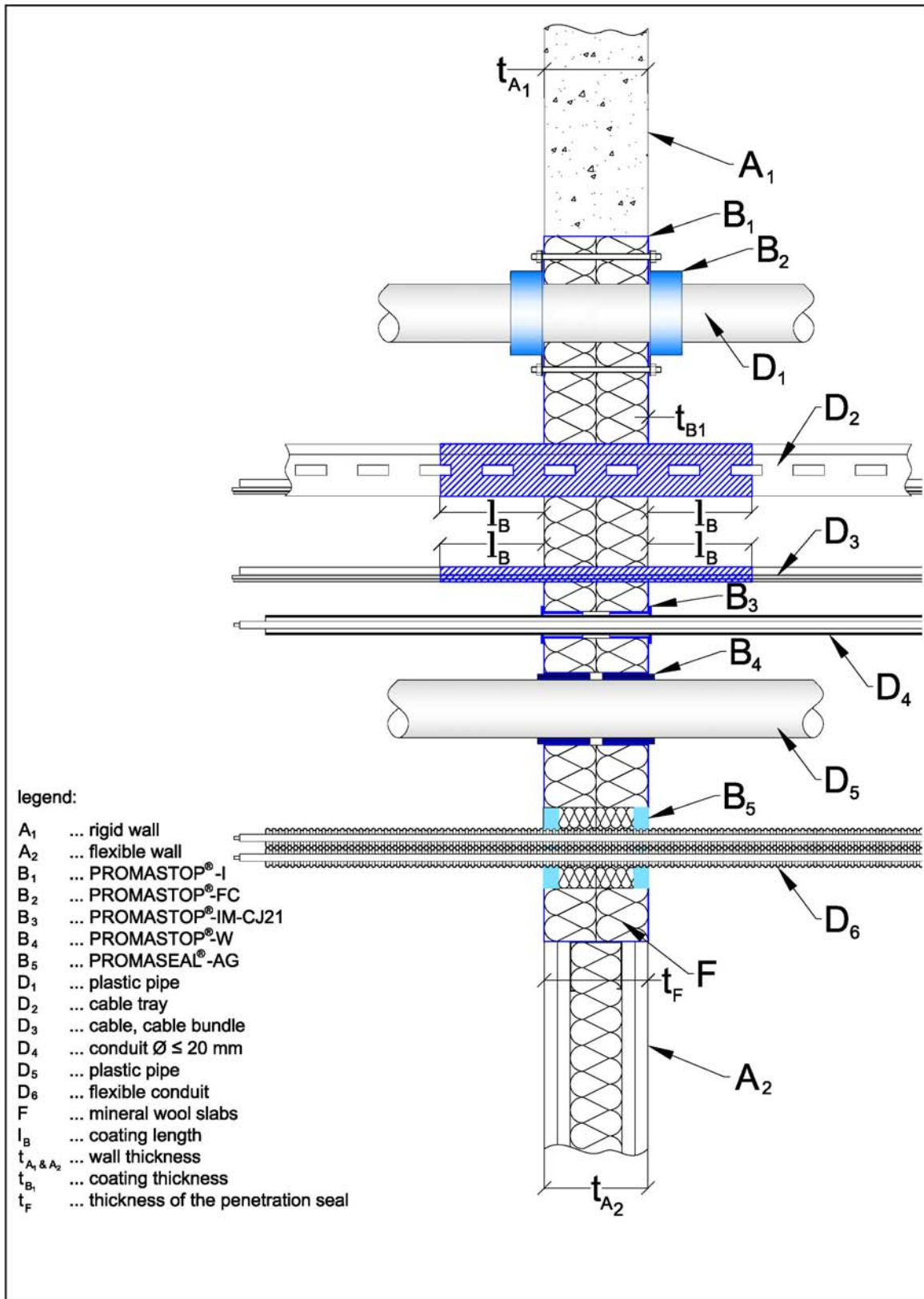




legend:


- A ... rigid floor
- B₁ ... PROMASTOP®-I
- B₂ ... PROMASEAL®-AG
- D₁ ... plastic pipe $\varnothing \leq 50$ mm
- D₂ ... cable bundle $\varnothing \leq 160$ mm
- d_{D1} ... plastic pipe diameter
- F ... mineral wool slabs
- t_A ... floor thickness
- t_{B1} ... coating thickness
- t_{B2} ... min. 15 mm depth
- t_{D1} ... pipe wall thickness
- t_F ... thickness of the penetration
- W_{B2} ... min. 20 mm width

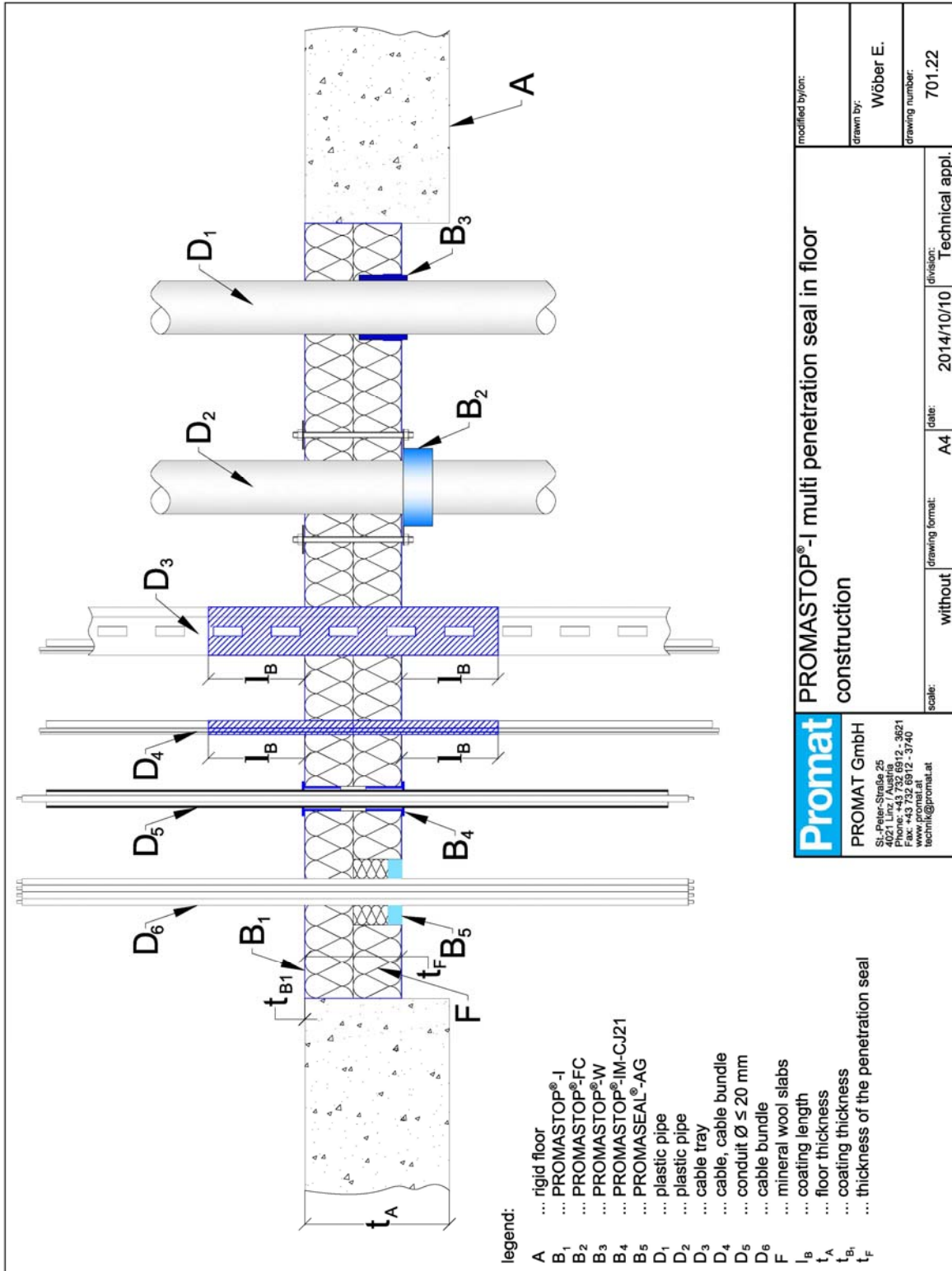
<p>Promat</p> <p>PROMAT GmbH</p> <p>St.-Peter-Straße 25 4021 Linz / Austria Phone: +43 732 6912 - 3821 Fax: +43 732 6912 - 3740 www.promat.at technik@promat.at</p>	<p>PROMASTOP®-I penetration seal with PROMASEAL®-AG sealing in floor construction</p>				<p>modified by/on:</p>
	<p>scale: without</p>	<p>drawing format: A4</p>	<p>date: 2014/10/10</p>	<p>division: Technical appl.</p>	<p>drawn by: Wöber E.</p>
				<p>drawing number: 701.20</p>	



legend:

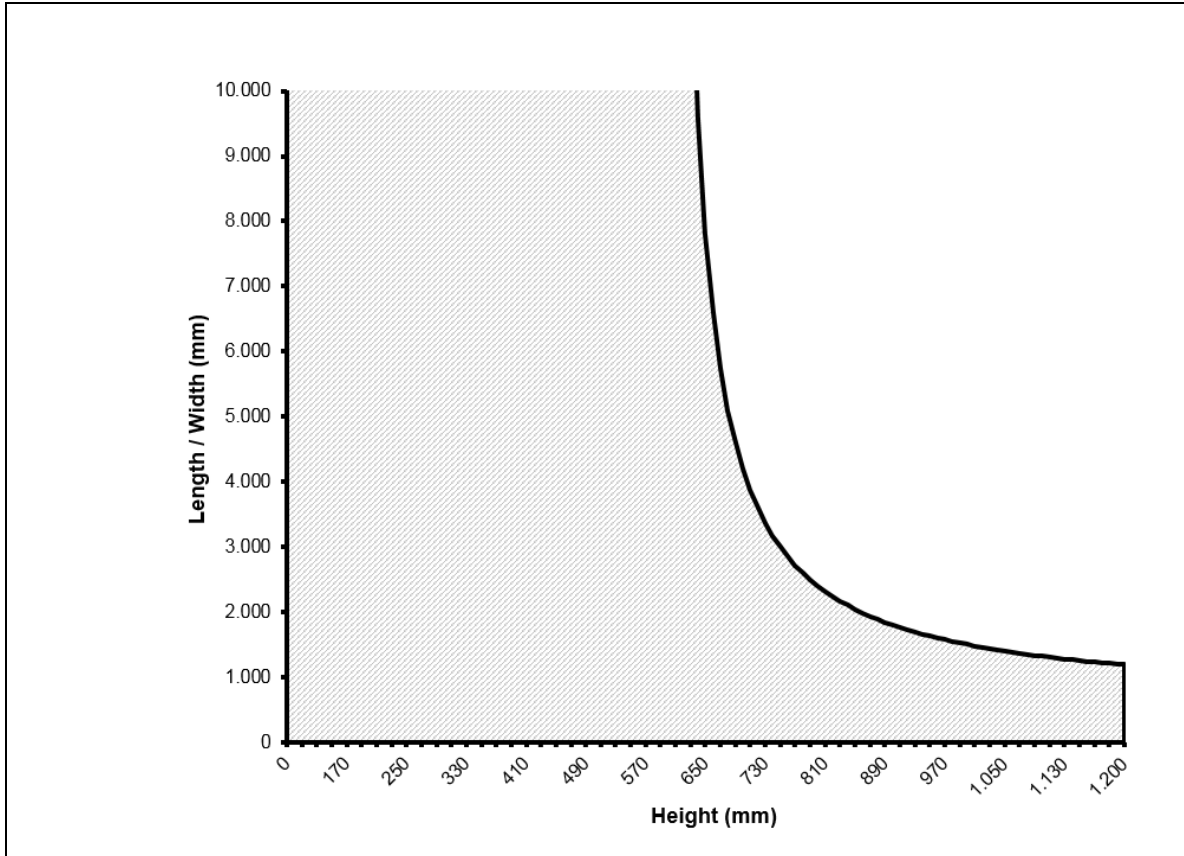
- A₁ ... rigid wall
- A₂ ... flexible wall
- B₁ ... PROMASTOP®-I
- B₂ ... PROMASTOP®-FC
- B₃ ... PROMASTOP®-IM-CJ21
- B₄ ... PROMASTOP®-W
- B₅ ... PROMASEAL®-AG
- D₁ ... plastic pipe
- D₂ ... cable tray
- D₃ ... cable, cable bundle
- D₄ ... conduit Ø ≤ 20 mm
- D₅ ... plastic pipe
- D₆ ... flexible conduit
- F ... mineral wool slabs
- l_B ... coating length
- t_{A₁ & A₂} ... wall thickness
- t_{B₁} ... coating thickness
- t_F ... thickness of the penetration seal

	PROMASTOP®-I multi penetration seal in wall constructions		modified by/on:	
	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		drawn by: Wöber E.	
scale: without	drawing format: A4	date: 2014/10/10	division: Technical appl.	drawing number: 701.21



Promat 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®-I multi penetration seal in floor construction		modified by/ont:
	drawn by: Wöbber E.	drawing number: 701.22	division: Technical appl.
scale: without	drawing format: A4	date: 2014/10/10	division: Technical appl.

ANNEX 5
MAXIMUM DIMENSIONS OF PROMASTOP®-I IN RIGID FLOORS



The maximum height of the penetration seal in rigid floors is 1200 mm.

The maximum length (width) of the penetration seal in rigid floors has to be calculated as follows:

$$Length \ (Width) = \frac{Height}{(((c_{tested} / 2) * Height) - 1)}$$

$$c_{tested} = \frac{Perimeter \ length_{tested}}{Seal \ area_{tested}} = 3,333 \ m / m^2; \ resp. \ 0,003333 \ mm / mm^2$$

The minimum perimeter length to seal area ratio of the penetration seal in rigid floors is 3,333 m/m², resp. 0,003333 mm/mm².

c_{tested} was calculated from the dimensions of the tested penetration seal (1200 mm x 1200 mm).

The area on the left side of the graph gives an overview of all possible combinations of length (width) and height where the minimum perimeter length to seal area ratio is ≥ c_{tested}.

For a length (width) of e.g. 1200 mm the allowed height is 1200 mm; for a length (width) of e.g. 2400 mm the allowed height is 800 mm.

For a height smaller than 601 mm no limitation of length (width) is required.

Note: The dimensions of the graph are not true to scale.