



European Technical Assessment **ETA 15/0411** of 8/1/2016

I General Part

Technical Assessment Body issuing the ETA	VTT Expert Services LTD
Trade name of the construction product	Sewatek penetration seal
Product family to which the construction product belongs	Fire stopping and Fire Sealing Products
Manufacturer	Sewatek Oy Sepäntie 4 FI-07230 Monninkylä Finland
Manufacturing plant	Sewatek Oy Sepäntie 4 FI-07230 Monninkylä Finland
This European Technical Assessment contains	11 pages including 1 Annex 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 of "Fire stopping and Fire Sealing Products ", ETAG 026, part 1 (edition September 2012) and part 2 (edition August 2011), used as European Assessment Document (EAD).
This ETA replaces	ETA 15/0411 issued on July 15, 2015

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II Specific Part

1 Technical description of the product

The penetration seal D-series includes two types of pipe closure products; the smaller pipe closure devices are manufactured in sizes D42, D62 and D92. The smaller seal consists of NBR cellular rubber pipe surrounded by PVC plastic pipe and have an aluminium end caps on both ends with a fire expandable materials inside of the cap. PVC pipe diameters can vary from 40 mm to 90 mm and wall thickness is 1,5 or 2,0mm. The wall thicknesses of the NBR cellular rubber is 9, 13 or 19 mm.

In the larger penetration seals, sizes D105 and D140, the parts are assembled around the service tube starting with a fire expandable strip. The set of materials is attached around the sewage tube at the time of installation. A cellular rubber rings are used to ensure the tightness of the penetration. On both sides there are steel plates in order to attach them to the support structure. The penetration seals D105 and D140 are designed for plastic and metallic sewage tubes sized 75 and 110 mm.

The Sewatek pipe closure devices are installed into exact drilled holes.

Minimum distance between penetration seals is presented in Annex 1. Distances are measured from the outer edge of the penetration seal device.

2 Specification of the intended uses in accordance with the applicable EAD

Intended uses

The Penetration seal is intended to be used to temporarily or permanent reinstate the fire resistance performance in massive-wood wall and roof/floor constructions made of cross laminated timber which are provided with apertures which are penetrated by various cables or metallic or plastic pipes.

The minimum thickness of the massive-wood wall constructions made of cross laminated timber is 80 mm and floor slab 60 mm.

The provisions made in this European Technical Assessment are based on assumed intended working life of the product for the intended use of 25 years when installed in the works, provided that the product is subjected to appropriate use and maintenance.

Use category

The penetration seal is intended for internal use also at temperatures below 0 °C, and can therefore according to ETAG 026 Part 2 clause 2.4.12.1.3.3.be categorize as Type Y₂. The product meets also requirements of types Z₁ and Z₂.

Design

This European technical assessment is based on the assumption that all plans needed have been made correctly according to the regulations valid on the building site.

Execution of construction works

It is the responsibility of the manufacturer to ensure that proper information for the use of the Sewatek penetration seal is enclosed to each delivery, including general guidance on the basis of this ETA and the specific installation instructions and construction details. With regard to the assumed working life regular maintenance is necessary. The manufacturer

shall provide with written documents which contain descriptions about type and frequency of the maintenance.

The completed building (the works) shall comply with the building regulations (regulations on the works) applicable in the Member States in which the building is to be constructed. The procedures foreseen in the Member State for demonstrating compliance with the building regulations shall also be followed by the entity held responsible for this act. An ETA for Sewatek penetration seal does not amend this process in any way.

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

Table 1. Basic requirements for construction works and essential characteristics

Basic requirement and essential characteristics	Performance
BWR 1. Mechanical resistance and stability	
Not relevant	
BWR 2. Safety in case of fire	
Reaction to fire of materials and components, EN 13501-1	Euroclass F (not assessed)
Resistance to fire, EN 13501-2	EI 30 – EI 60 (in end uses and with the provisions presented in the Annex 1)
BWR 3. Hygiene, health and the environment	
Vapour permeability and moisture resistance	No performance assessed
Watertightness	No performance assessed
Content, emission and/or release of dangerous substances	Declaration of the manufacturer
BWR 4. Safety and accessibility in use	No performance assessed
BWR 5. Protection against noise	
Air sound insulation, EN ISO 717-1	No performance assessed
BWR 6. Energy economy and heat retention	No performance assessed
BWR 7. Sustainable use of natural resources	No performance assessed
General aspects	
Aspects of durability, ISO 188 and ISO 2440	Clause 3.3

3.1 Safety in case of fire, BWR 2

Reaction to fire

The classification of the main materials with regard to reaction to fire is not assessed.

Resistance to fire

For floors and walls, classification with regard to resistance to fire is based on full scale testing as specified in EN 13501-2.

3.2 Hygiene, health and environment, BWR 3

Dangerous substances

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

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

3.3 Protection against noise, BWR 5

Airborne sound insulation of walls and floors

Influence of single penetration seal on R_w highest is 0-2 dB, when concrete thickness ≥ 200 mm

3.4 General aspects

Aspects of durability

Test results of exposed specimens show no big changes in properties compared to unexposed ones.

Identification

The components and materials are identified as being of a generic type or giving a brand name, as described in Annex 1 and specified in the manufacturer's Contents of delivery list. The component under a given brand name may be changed by the manufacturer to another with corresponding performance.

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

EC Decision for AVCP is System 1. 1999/0454/EC.

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

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at VTT Expert Services Ltd.

Issued in Espoo on January 8, 2016
by VTT Expert Services Ltd


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Assessor

ANNEX 1

TABLE 2. FIRE RESISTANCES OF PENETRATION SEALS INSTALLED IN 80 MM THICK WALL STRUCTURE, D-PENETRATIONS (D42, D62, D92, D105, D140)

Type of the penetrating product	Group/s inle	Dimensions e_n =wall thickness of pipe	Insulation*	single/a ₂ **	Fire resistance
Copper pipes	Group	$\varnothing \leq 35$ mm, $e_n \leq 1,5$ mm	LI	8 mm	EI 45 - U/C
Copper pipes	single	$\varnothing \leq 35$ mm, $e_n \leq 1,5$ mm	LI	single	EI 60 - U/C
Zinc-plated carbon steel pipes	group	$\varnothing \leq 35$ mm, $e_n \leq 1,5$ mm	LI	8 mm	EI 45 - U/C
Zinc-plated carbon steel pipes	single	$\varnothing \leq 35$ mm, $e_n \leq 1,5$ mm	LI	single	EI 60 - U/C
Steel pipes	group	$\varnothing < 43$ mm, $e_n \leq 2,6$ mm	not required	8 mm	EI 45 - U/C
Steel pipes	group	$\varnothing < 61$ mm, $e_n \leq 2,9$ mm	LI	28 mm	EI 60 - U/C
Steel pipes	single	D105/140 $\varnothing < 110$ mm, $e_n \leq 4,5$ mm	CI	single	EI 60 - U/C
Composite pipes	group	$\varnothing \leq 25$ mm, $e_n \leq 2,5$ mm	not required	8 mm	EI 45 - U/C
Composite pipes	group	$\varnothing \leq 40$ mm, $e_n \leq 4,0$ mm	LI	8 mm	EI 60 - U/C
Composite pipes	single	$\varnothing \leq 16$ mm, $e_n \leq 2,0$ mm	not required	single	EI 60 - U/C
Composite pipes	single	$\varnothing \leq 50$ mm, $e_n \leq 4,5$ mm	LI	single	EI 60 - U/C
Other plastic pipes	group	Pex-pipe in covering pipe 15/25 - 28/54 mm, $e_n \leq 4,0$ / 3,0 mm	not allowed	8 mm	EI 60 - U/C
Other plastic pipes	single	Pex-pipe in covering pipe 15/25 (4 pcs in a D92-device), $e_n \leq 2,5/2,5$ mm	not allowed	single	EI 60 - U/C
Other plastic pipes	single	D105/140 Polypropylene $\varnothing \leq 110$ mm, $e_n \leq 3,8$ mm	CI	single	EI 60 - U/C
Cables	single	Singular cable in a bundle $\varnothing \leq 12,5$ mm, Cable bundle total $\varnothing \leq 64$ mm	none	single	EI 60 - U/C
Cables	single	Single cable $\varnothing \leq 21,5$ mm	none	single	EI 60 - U/C
Blank (no pipe or cable)	single	Blank D42/62/92, device sealed with TPE- or cellular rubber plug	none	single	EI 60 -C/C

* Insulation (stone wool 60 kg/m³)

The length of local insulation has been 350 on the both sides of the wall/floor structure.

The thickness of stone wool insulation has been 20 mm (pipes $\varnothing \leq 54$ mm) and 30 mm (pipes $\varnothing > 54$ mm).

LI=Local and interrupted insulation

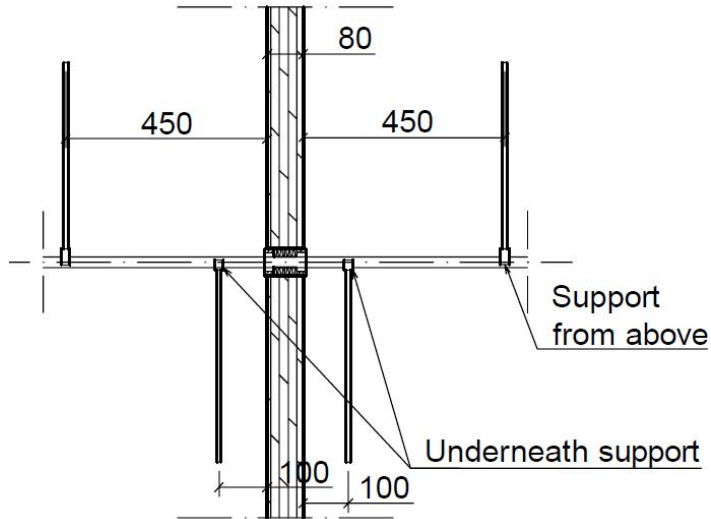
CI=Continued and interrupted insulation

** Minimum distance between penetration seals in clusters. In case a single penetration, minimum distance to another single penetration is 200 mm according to the test standard EN 1366. Distances are measured from the outer edge of the penetration seal device.

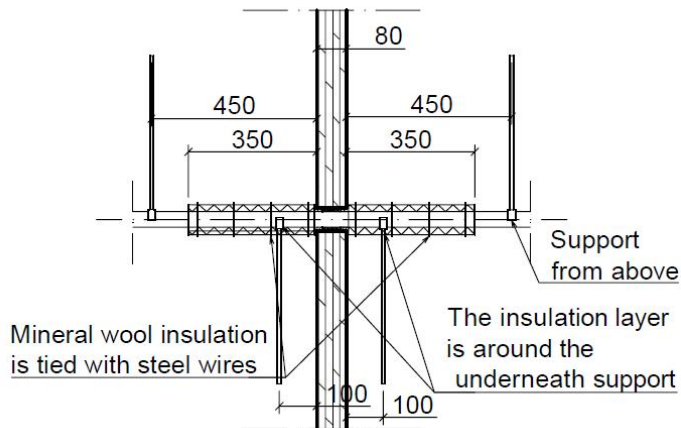
The result of as a group mounted penetration seal is allowed to extend to an equivalent single penetration seal but not vice versa.

ANNEX 1

Picture 1. Example of penetration type in the table 2, uninsulated pipes



Picture 2. Example of penetration type in the table 2, pipes with local insulation



Picture 3. Example of penetration type in the table 2, pipes with continuous insulation

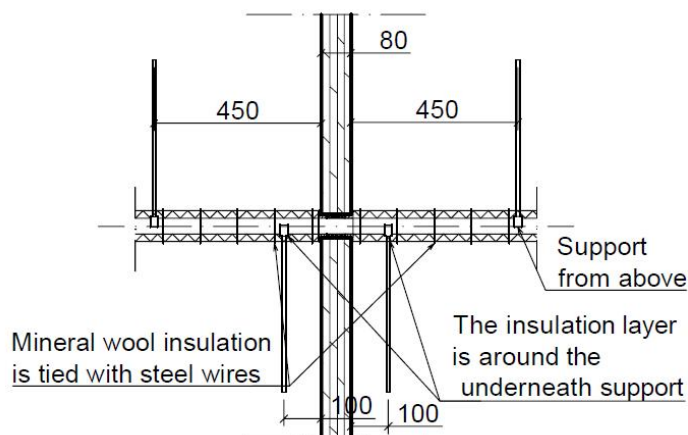


TABLE 3. FIRE RESISTANCES OF PENETRATION SEALS INSTALLED IN 60 MM THICK FLOOR STRUCTURE, D-PENETRATIONS (D42, D62, D92)

Type of the penetrating product	Group/s inle	Dimensions e_n =wall thickness of the pipe	Insulation*	single/ a_2 **	Fire resistance
Copper pipes	single	$\varnothing \leq 12$ mm, $e_n \leq 1,0$ mm	LI	single	EI 45 - U/C
Copper pipes	single	$\varnothing \leq 28$ mm, $e_n \leq 1,2$ mm	LI	single	EI 30 - U/C
Zinc-plated carbon steel pipes	single	$\varnothing \leq 12$ mm, $e_n \leq 1,2$ mm	LI	single	EI 45 - U/C
Zinc-plated carbon steel pipes	single	$\varnothing \leq 28$ mm, $e_n \leq 1,5$ mm	LI	single	EI 30 - U/C
Steel pipes	single	$\varnothing < 43$ mm, $e_n \leq 2,6$ mm	LI	single	EI 60 - U/C
Composite pipes	single	$\varnothing \leq 16$ mm, $e_n \leq 2,0$ mm	not required	single	EI 60 - U/C
Composite pipes	single	$\varnothing \leq 32$ mm, $e_n \leq 3,0$ mm	LI	single	EI 60 - U/C
Other plastic pipes	single	Pex-pipe in covering pipe $\varnothing \leq 15/25$, $e_n \leq 2,5/2,5$ mm	not allowed	single	EI 60 - U/C
Other plastic pipes	single	Pex-pipe in covering pipe 15/25 (4 pcs in a D92-device), $e_n \leq 2,5/2,5$ mm	not allowed	single	EI 60 - U/C
Cables	single	Single cable $\varnothing \leq 21,5$ mm	none	single	EI 45 -U/C

* Insulation (stone wool 60 kg/m³)

The length of local insulation has been 350 on the both sides of the wall/floor structure.

The thickness of stone wool insulation has been 20 mm (pipes $\varnothing \leq 54$ mm) and 30 mm (pipes $\varnothing > 54$ mm).

LI=Local and interrupted insulation

CI=Continued and interrupted insulation

** Minimum distance between penetration seals in clusters. In case a single penetration, minimum distance to another single penetration is 200 mm according to the test standard EN 1366. Distances are measured from the outer edge of the penetration seal device.

The result of as a group mounted penetration seal is allowed to extend to an equivalent single penetration seal but not vice versa.

ANNEX 1

TABLE 4. FIRE RESISTANCES OF PENETRATION SEALS INSTALLED IN 80 MM THICK FLOOR STRUCTURE, D-PENETRATIONS (D42, D62, D92, D105, D140)

Type of the penetrating product	Group/s ingle	Dimensions e_n =wall thickness of the pipe	Insulation*	single/ a_2 **	Fire resistance
Copper pipes	group	$\varnothing \leq 35$ mm, $e_n \leq 1,5$ mm	LI	8 mm	EI 45 - U/C
Copper pipes	single	$\varnothing \leq 28$ mm, $e_n \leq 1,2$ mm	LI	single	EI 60 - U/C
Zinc-plated carbon steel pipes	group	$\varnothing \leq 28$ mm, $e_n \leq 1,5$ mm	not required	8 mm	EI 60 - U/C
Zinc-plated carbon steel pipes	group	$\varnothing \leq 35$ mm, $e_n \leq 1,5$ mm	LI	8 mm	EI 45 - U/C
Steel pipes	group	$\varnothing < 43$ mm, $e_n \leq 2,6$ mm	not required	8 mm	EI 45 - U/C
Steel pipes	group	$\varnothing < 61$ mm, $e_n \leq 2,9$ mm	LI	28 mm	EI 60 - U/C
Steel pipes	single	$\varnothing < 61$ mm, $e_n \leq 2,9$ mm	LI	single	EI 60 - U/C
Steel pipes	single	D105/140 $\varnothing \leq 110$ mm, $e_n \leq 4,5$ mm	CI	single	EI 60 - U/C
Composite pipes	group	$\varnothing \leq 25$ mm, $e_n \leq 2,5$ mm	not required	8 mm	EI 60 - U/C
Composite pipes	group	$\varnothing \leq 40$ mm, $e_n \leq 4,0$ mm	LI	8 mm	EI 60 - U/C
Other plastic pipes	group	Pex-pipe in covering pipe 15/25 - 28/54 mm, $e_n \leq 4,0/3,0$	not allowed	8 mm	EI 60 - U/C
Other plastic pipes	single	Pex-pipe in covering pipe 15/25 (4 pcs in a D92-device), $e_n \leq 2,5/2,5$ mm	not allowed	single	EI 60 - U/C
Other plastic pipes	single	D105/140 Polypropylene $\varnothing \leq 110$ mm, $e_n \leq 3,8$ mm	CI	single	EI 60 - U/C
Cables	single	Single cable in a bundle $\varnothing \leq 12,5$ mm, Cable bundle total $\varnothing \leq 64$ mm	none	single	EI 60 - U/C
Cables	single	Singular cable $\varnothing \leq 21,5$ mm	none	single	EI 60 - U/C
Blank (no pipe or cable)	single	Blank D42/62/92, device sealed with TPE- or cellular rubber plug	none	single	EI 60 - C/C

* Insulation (stone wool 60 kg/m³)

The length of local insulation has been 350 on the both sides of the wall/floor structure.

The thickness of stone wool insulation has been 20 mm (pipes $\varnothing \leq 54$ mm) and 30 mm (pipes $\varnothing > 54$ mm).

LI=Local and interrupted insulation

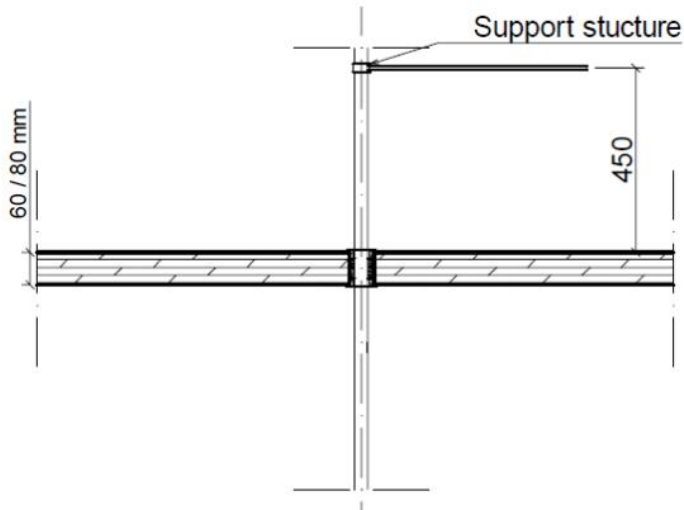
CI=Continued and interrupted insulation

** Minimum distance between penetration seals in clusters. In case a single penetration, minimum distance to another single penetration is 200 mm according to the test standard EN 1366. Distances are measured from the outer edge of the penetration seal device.

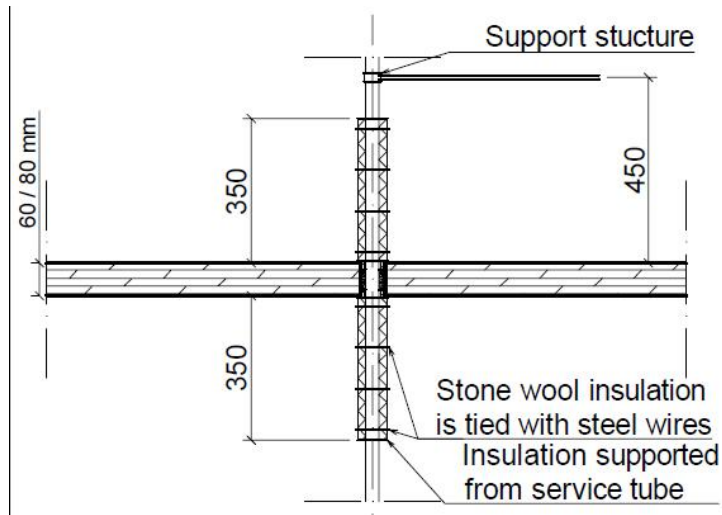
The result of as a group mounted penetration seal is allowed to extend to an equivalent single penetration seal but not vice versa.

ANNEX 1

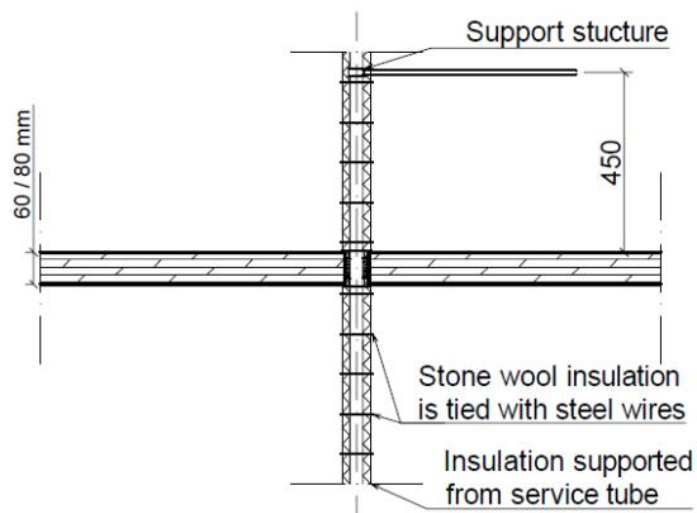
Picture 4. Example of penetration type in the table 3 and 4, uninsulated pipes



Picture 5. Example of penetration type in the table 3 and 4, pipes with local insulation

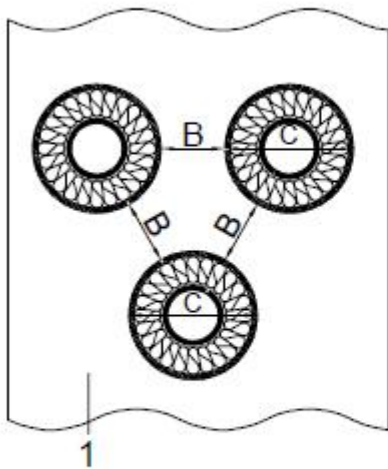


Picture 6. Example of penetration type in the table 3 and 4, pipes with continuous insulation



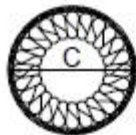
ANNEX 1

The principle of measurement of the seals in clusters and the area of the pipes diameter and wall thickness covered

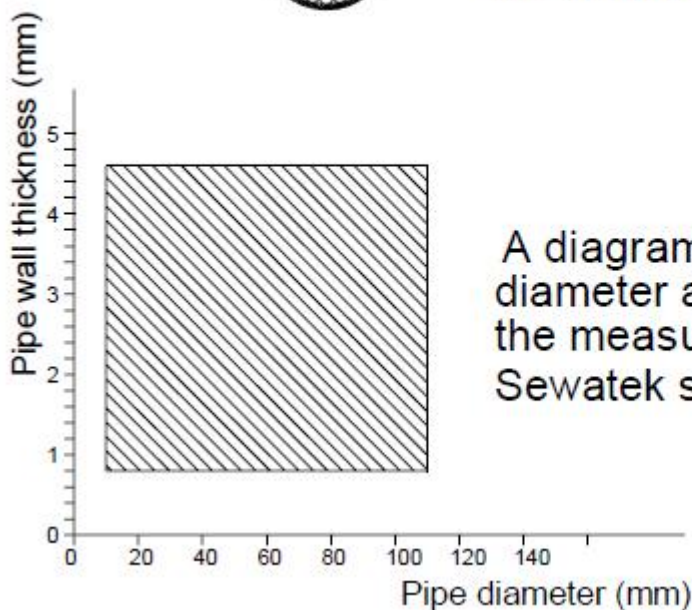


The method of defining the presented B measurements in cluster formation (refer to the a2 in EN 1366-3:2009)

- 1 Supporting construction
- B Separation between penetration seals
- C A Sewatek penetration seal diameter in total



A sectional draw of one of the Sewatek penetration seals without the service pipe inside of it.



A diagram for the pipe outside diameter and wall thickness shows the measurements for which Sewatek seals are manufactured.