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Designated according to Article 29 of Regulation (EU) No 305/2011

Member of EOTA
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European Technical Assessment ETA 12/0045 of 26/08/2024

I General Part

Technical Assessment Body issuing the ETA and designated according to Article 29 of the Regulation (EU) No 305/2011:	**Eurofins Expert Services Oy**
Trade name of the construction product	**Sewatek Penetration Seals with LVP-pipe**
Product family to which the construction product belongs	**Fire Stopping and Fire Sealing Products**
Manufacturer	**Sewatek Oy Sepäntie 4 FI-07230 Askola Finland**
Manufacturing plant	**Sewatek Oy Sepäntie 4 FI-07230 Askola Finland**
This European Technical Assessment contains	**32 pages including 3 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	**European Assessment Document EAD 350454-00-1104, edition September 2017**
This ETA replaces	**ETA 12/0045 issued on March 15, 2023**

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II Specific Part

1 Technical description of the products

Sewatek penetration seals are designed to be fire stops around different kind of pipe or cables in different kind of constructions. Sewatek penetration seals can be mounted as a single unit or as a group. Fire resistance class of a cluster is allowed to extend to an equivalent single penetration seal or to a group with larger annular space but not vice versa. Minimum distances between penetration devices are given in Annex 1.

1.1 Sewatek penetration pipe (LVP-series)

Sewatek penetration pipe consist of NBR cellular rubber pipe surrounded by PVC or ABS plastic pipe, together known as “Sewatek penetration pipe”. Sewatek penetration pipe can be used as such installed in the drilled hole or casted into the construction with or without installing frame. Products are designed to be used with copper, zinc-plated carbon steel, steel and composite pipes.

The Sewatek penetration pipe can be fastened mechanically inside the ABS plastic or steel frame (S-, D2- and H-series). Purpose of the frame is to keep penetration seal in its planned position, also during casting of concrete wall or floor. At both ends of the frame there are protective and removable cellular foam or TPE plugs during the casting.

1.2 Sewatek penetration pipes with pipe closure devices (LVP + fire band)

The Sewatek penetration pipe can be equipped with intumescent fire band and called “Sewatek penetration pipes with pipe closure device”. These penetration pipes are mounted as products in the chapter 1.1. Products with fire band are designed to be used in flexible wall and massive wood constructions, and for plastic pipes and cables in concrete constructions.

2 Specification of the intended uses in accordance with the applicable European Assessment Document, EAD

2.1 Intended uses

The Penetration seals with LVP are intended to be used temporarily or permanent reinstate the fire resistance performance of constructions.

The minimum thickness of the concrete wall is 92 mm and roof/floor slab 150 mm. The density of concrete wall shall be at least 650 kg/m^3 ± 200 kg/m^3 and roof/floor slab at least 850 kg/m^3. In case of standardized flexible wall, thickness of the wall shall be at least 95 mm. The minimum thickness for unprotected CLT/LVL wooden construction is 100 mm. The thickness of the wood can be lower if the wood construction has a non-flammable surface (e.g. gypsum) and the thickness of the construction is at least 100 mm. The detailed properties are given in Annex 1.

The provisions made in this European Technical Assessment are based on an assumed intended working life of 25 years provided that the product is subjected to appropriate use and maintenance[1].

2.2 Use category

The penetration seal is intended for internal use also at temperatures below 0 °C, and can therefore according to EAD 350454-00-1104 clause 1.2 be categorize as Type Y2. The product also meets requirements of types Z1 and Z2.

Products mentioned in this document are after installing mainly inside the construction and thus the products are not susceptible to UV radiation.

2.3 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.

2.4 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 based on this ETA and the specific installation instructions and construction details. Regarding 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.

[1] *This means that it is expected that when this working life has elapsed, the real working life may be, in normal use conditions, considerably longer without major degradation affecting the essential requirements of the works. The indications given as to the working life of Sewatek penetration system cannot be interpreted as a guarantee given by the producer or the assessment body. They should only be regarded as a means for the specifiers to choose the appropriate criteria for penetration seals in relation to the expected, economically reasonable working life of the works.*

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	No performance assessed
Resistance to fire, EN 13501-2	EI 30 – EI 120 (in end uses and with the provisions presented in the Annex 1)
BWR 3. Hygiene, health and the environment	
Air permeability	No performance assessed
Water permeability	No performance assessed
Content, emission and/or release of dangerous substances	No performance assessed
BWR 4. Safety and accessibility in use	
Mechanical resistance and stability	No performance assessed
Resistance to impact / movement	No performance assessed
Adhesion	No performance assessed
Durability	Clause 3.3.1
BWR 5. Protection against noise	
Airborne sound insulation	Clause 3.2.1
BWR 6. Energy economy and heat retention	No performance assessed
Thermal properties	No performance assessed
Water vapour permeability	No performance assessed
General aspects	
Aspects of durability	Clause 3.3.1

3.1 Safety in case of fire, BWR 2

3.1.1 Reaction to fire

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

3.1.2 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. Fire resistance classes are presented in Annex 1. Hygiene, health and environment, BWR 3.

3.1.3 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.

3.2 Protection against noise, BWR 5

3.2.1 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.

- R: EN ISO 10140-1:2016, EN ISO 10140-2:2010
- Rw: EN ISO 717-1:2013

3.3 General aspects

3.3.1 Aspects of durability

Durability has been assessed according to document EOTA TR 24 Clause 4.2.5.
According to EAD 350454-00-1104 clause 1.2 penetration seal is categorized as Type Y2.

3.3.2 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 Eurofins Expert Services Oy.

Espoo on August 26, 2024
by Eurofins Expert Services Oy

Katja Vahtikari
Manager, Certification and Inspection

Heli Välimäki
Senior Expert

Annex 1 - Products

Low-Density Rigid Wall

1a - Sewatek LVP (Sewatek penetration pipe)

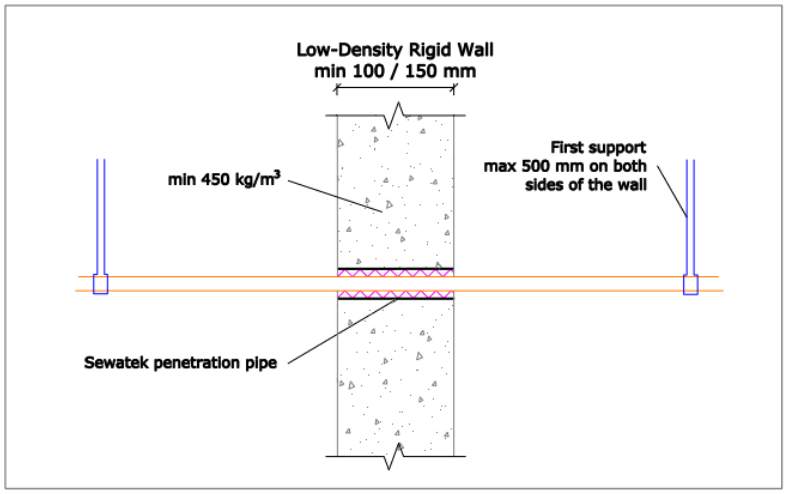

Table 1a. Sewatek LVP (Sewatek penetration pipe) mounted in **100 mm or 150 mm thick low-density rigid wall**	
Insulation markings (See Annex 2)	**Markings (See Annex 3)**
LI – Local and Interrupted CI – Continuous and Interrupted sw – Stone wool insulation cr – Cellular rubber insulation ***sw insulation thickness*** *- 20 mm (Pipes < 54 mm)* *- 30 mm (Pipes >= 54 mm)*	e_n – Pipe wall thickness a_1 – Thickness of LVP-pipe a_2 – Distance between LVP-pipes When tested as a single, a_2 – distance is 100 mm (”/ -” in the table)

Type of the pipe	Insulation (thickness / length)	a_1 / a_2 [mm]	Fire resistance class
Copper pipes			
Mounted into the low-density rigid wall of 100 mm			
Ø ≤ 10 mm, e_n ≤ 1,0 mm	not required	20 / -	EI 120 - U/C
Ø ≤ 22 mm, e_n ≤ 1,0 mm	CI (cr 13 mm / -)	10 / 59	EI 60 - U/C
Ø ≤ 28 mm, e_n ≤ 1,2 mm	LI (cr 13 mm / -)	11 / -	EI 90 - U/C
Ø ≤ 35 mm, e_n ≤ 1,5 mm	LI (cr 13 mm / 350 mm)	13 / 10	EI 30 - U/C
Ø ≤ 35 mm, e_n ≤ 1,5 mm	LI (sw 20 mm / 350 mm)	13 / 100	EI 120 - U/C
Ø ≤ 42 mm, e_n ≤ 1,5 mm	LI (sw 20 mm / 350 mm)	17 / 25	EI 60 - U/C
Ø ≤ 54 mm, e_n ≤ 1,5 mm	CI (sw 30 mm / -)	11 / 44	EI 90 - U/C
Ø ≤ 64 mm, e_n ≤ 2,0 mm	LI (sw 30 mm / 500 mm)	13 / 70	EI 60 - U/C
Ø ≤ 89 mm, e_n ≤ 2,5 mm	CI (sw 30 mm / -)	18 / -	EI 90 - U/C

ANNEX 1

Type of the pipe	Insulation (thickness / length)	a_1 / a_2 [mm]	Fire resistance class
Steel pipes			
Mounted into the low-density rigid wall of 100 mm			
Ø ≤ 27 mm (DN20), e_n ≤ 2,3 mm	not required	7 / 30	EI 120 - U/C
Ø ≤ 33,7 mm (DN25), e_n ≤ 3,0 mm	not required	13 / 25	EI 30 - U/C
Ø ≤ 77 mm (DN65), e_n ≤ 2,9 mm	LI (sw 30 mm / 350 mm)	7 / 35	EI 120 - U/C
Ø ≤ 89 mm (DN80), e_n ≤ 3,2 mm	CI (sw 30 mm / -)	18 / 35	EI 120 - U/C
Mounted into the low-density rigid wall of 150 mm			
Ø ≤ 42,4 mm (DN32), e_n ≤ 3,8 mm	not required	17 / 44	EI 60 - U/C
Ø ≤ 42,4 mm (DN32), e_n ≤ 3,8 mm	not required	9 / -	EI 120 - U/C
Zinc-plated carbon steel pipes			
Mounted into the low-density rigid wall of 100 mm			
Ø ≤ 22 mm, e_n ≤ 1,5 mm	not required	9 / 30	EI 120 - U/C
Ø ≤ 28 mm, e_n ≤ 1,5 mm	not required	11 / -	EI 60 - U/C
Ø ≤ 54 mm, e_n ≤ 1,5 mm	LI (sw 30 mm / 350 mm)	11 / 25	EI 120 - U/C
Ø ≤ 64 mm, e_n ≤ 2,0 mm	LI (sw 30 mm / 500 mm)	13 / 70	EI 60 - U/C
Ø ≤ 89 mm, e_n ≤ 2,5 mm	CI (sw 30 mm / -)	18 / -	EI 90 - U/C
Composite pipes			
Mounted into the low-density rigid wall of 100 mm			
Ø ≤ 25 mm, e_n ≤ 2,5 mm	not required	8 / 30	EI 120 - U/C
Ø ≤ 32 mm, e_n ≤ 3,0 mm	LI (cr 13 mm / 350 mm)	14 / 10	EI 60 - U/C
Ø ≤ 40 mm, e_n ≤ 4,0 mm	LI (sw 20 mm / 350 mm)	10 / 10	EI 120 - U/C
Ø ≤ 40 mm, e_n ≤ 4,0 mm	not required	10 / -	EI 60 - U/C
Ø ≤ 50 mm, e_n ≤ 4,0 mm	not required	13 / -	EI 30 - U/C
Ø ≤ 63 mm, e_n ≤ 6,0 mm	LI (sw 30 mm / 350 mm)	14 / 30	EI 120 - U/C
Mounted into the low-density rigid wall of 150 mm			
Ø ≤ 40, e_n ≤ 4,0 mm	not required	10 / -	EI 120 - U/C

Low-Density Rigid Wall

1b - Sewatek LVP with S-series installation frame

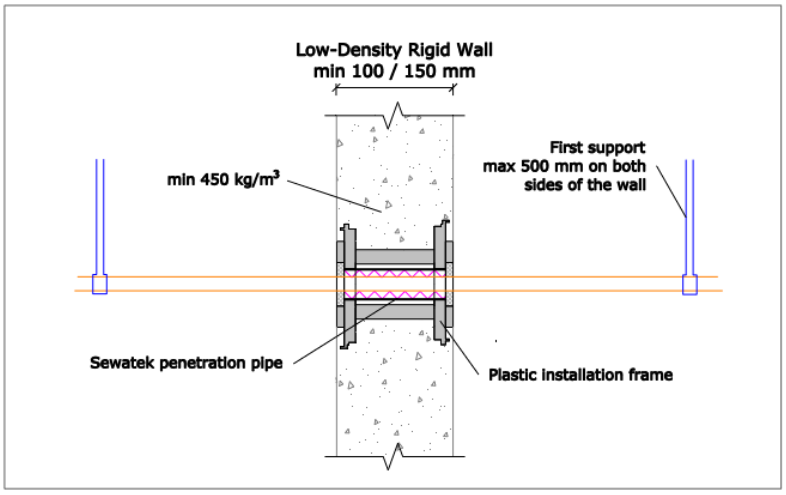

Table 1b. Sewatek LVP with S-series installation frame mounted in **100 mm or 150 mm thick low-density rigid wall**	
Insulation markings (See Annex 2)	**Markings (See Annex 3)**
LI – Local and Interrupted CI – Continuous and Interrupted sw – Stone wool insulation cr – Cellular rubber insulation ***sw insulation thickness*** *- 20 mm (Pipes < 54 mm)* *- 30 mm (Pipes >= 54 mm)*	e_n – Pipe wall thickness a_1 – Thickness of LVP-pipe a_2 – Distance between LVP-pipes When tested as a single, a_2 – distance is 100 mm (”/ -” in the table)

Type of the pipe	Insulation (thickness / length)	a_1 / a_2 (mm)	Fire resistance class
Copper pipes			
Mounted into the low-density rigid wall of 100 mm			
Ø ≤ 10 mm, e_n ≤ 1,0 mm	not required	20 / -	EI 120 - U/C
Ø ≤ 22 mm, e_n ≤ 1,0 mm	CI (cr 13 mm / -)	10 / 59	EI 60 - U/C
Ø ≤ 28 mm, e_n ≤ 1,2 mm	LI (cr 13 mm / -)	11 / -	EI 90 - U/C
Ø ≤ 35 mm, e_n ≤ 1,5 mm	LI (cr 13 mm / 350 mm)	13 / 10	EI 30 - U/C
Ø ≤ 35 mm, e_n ≤ 1,5 mm	LI (sw 20 mm / 350 mm)	13 / 100	EI 120 - U/C
Ø ≤ 42 mm, e_n ≤ 1,5 mm	LI (sw 20 mm / 350 mm)	17 / 25	EI 60 - U/C
Ø ≤ 54 mm, e_n ≤ 1,5 mm	CI (sw 30 mm / -)	11 / 44	EI 90 - U/C
Ø ≤ 64 mm, e_n ≤ 2,0 mm	LI (sw 30 mm / 500 mm)	13 / 70	EI 60 - U/C
Ø ≤ 89 mm, e_n ≤ 2,5 mm	CI (sw 30 mm / -)	18 / -	EI 90 - U/C

ANNEX 1

Type of the pipe	Insulation (thickness / length)	a_1 / a_2 (mm)	Fire resistance class
Steel pipes			
Mounted into the low-density rigid wall of 100 mm			
Ø ≤ 27 mm (DN20), e_n ≤ 2,3 mm	not required	7 / 30	EI 120 - U/C
Ø ≤ 33,7 mm (DN25), e_n ≤ 3,0 mm	not required	13 / 25	EI 30 - U/C
Ø ≤ 77 mm (DN65), e_n ≤ 2,9 mm	LI (sw 30 mm / 350 mm)	7 / 35	EI 120 - U/C
Ø ≤ 89 mm (DN80), e_n ≤ 3,2 mm	CI (sw 30 mm / -)	18 / 35	EI 120 - U/C
Mounted into the low-density rigid wall of 150 mm			
Ø ≤ 42,4 mm (DN32), e_n ≤ 3,8 mm	not required	17 / 44	EI 60 - U/C
Ø ≤ 42,4 mm (DN32), e_n ≤ 3,8 mm	not required	9 / -	EI 120 - U/C
Zinc-plated carbon steel pipes			
Mounted into the low-density rigid wall of 100 mm			
Ø ≤ 22 mm, e_n ≤ 1,5 mm	not required	9 / 30	EI 120 - U/C
Ø ≤ 28 mm, e_n ≤ 1,5 mm	not required	11 / -	EI 60 - U/C
Ø ≤ 54 mm, e_n ≤ 1,5 mm	LI (sw 30 mm / 350 mm)	11 / 25	EI 120 - U/C
Ø ≤ 64 mm, e_n ≤ 2,0 mm	LI (sw 30 mm/ 500 mm)	13 / 70	EI 60 - U/C
Ø ≤ 89 mm, e_n ≤ 2,5 mm	CI (sw 30 mm / -)	18 / -	EI 90 - U/C
Composite pipes			
Mounted into the low-density rigid wall of 100 mm			
Ø ≤ 25 mm, e_n ≤ 2,5 mm	not required	8 / 30	EI 120 - U/C
Ø ≤ 32 mm, e_n ≤ 3,0 mm	LI (cr 13 mm / 350 mm)	14 / 10	EI 60 - U/C
Ø ≤ 40 mm, e_n ≤ 4,0 mm	LI (sw 20 mm / 350 mm)	10 / 10	EI 120 - U/C
Ø ≤ 40 mm, e_n ≤ 4,0 mm	not required	10 / -	EI 60 - U/C
Ø ≤ 50 mm, e_n ≤ 4,0 mm	not required	13 / -	EI 30 - U/C
Ø ≤ 63 mm, e_n ≤ 6,0 mm	LI (sw 30 mm / 350 mm)	14 / 30	EI 120 - U/C
Mounted into the low-density rigid wall of 150 mm			
Ø ≤ 40, e_n ≤ 4,0 mm	not required	10 / -	EI 120 - U/C

Low-Density Rigid Wall

1c - Sewatek LVP with S-series installation frame including fire band

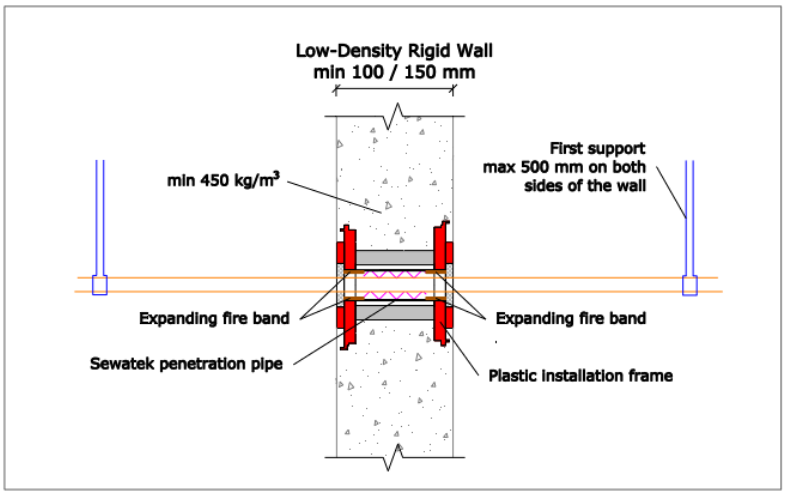

Table 1c. Sewatek LVP with S-series installation frame including fire band mounted in **100 mm or 150 mm thick low-density rigid wall**	
Insulation markings (See Annex 2)	**Markings (See Annex 3)**
LI – Local and Interrupted CI – Continuous and Interrupted sw – Stone wool insulation cr – Cellular rubber insulation ***sw insulation thickness*** *- 20 mm (Pipes < 54 mm)* *- 30 mm (Pipes >= 54 mm)*	e_n – Pipe wall thickness a_1 – Thickness of LVP-pipe a_2 – Distance between LVP-pipes When tested as a single, a_2 – distance is 100 mm (”/ -” in the table)

Type of the pipe	Insulation	a_1 / a_2 (mm)	Fire resistance class
Mounted into the low-density rigid wall of 100 mm			
Composite pipes			
Ø ≤ 75, e_n ≤ 7,5 mm	not required	25 / 35	EI 30 - U/C
Other plastic pipes			
PEX Ø ≤ 22/34 mm, e_n ≤ 3,0 mm	not required	13 / 60	EI 60 - U/C
Mounted into wall of 150 mm			
PEX bundle Ø ≤ 70 mm - singular pipe / cover pipe Ø ≤ 28 mm, e_n ≤ 2,5 mm	not required	8 / -	EI 120 - U/C
Plastic (Polypropylene) sewer pipes (EN 1451-1)			
Ø ≤ 75, e_n ≤ 3,0 mm	not required	25 / -	EI 90 - U/C
Cables			
Cable conduit Ø ≤ 25 mm (plastic) - singular cable Ø ≤ 13 mm	not required	8 / 60	EI 120
Cable conduit Ø ≤ 40 mm (plastic) - cable bundle Ø ≤ 35 mm - singular cable Ø ≤ 17 mm	not required	18 / 50	EI 120
Cable conduit (plastic) Ø ≤ 50 mm without cables	not required	20 / 70	EI 120
Bundle of cable conduits (plastic) Ø ≤ 70 mm - singular cable Ø ≤ 13 mm - singular conduit Ø ≤ 32 mm	not required	15 / 70	EI 120

Low-Density Rigid Wall

1d - Sewatek LVP with D2-series end pieces

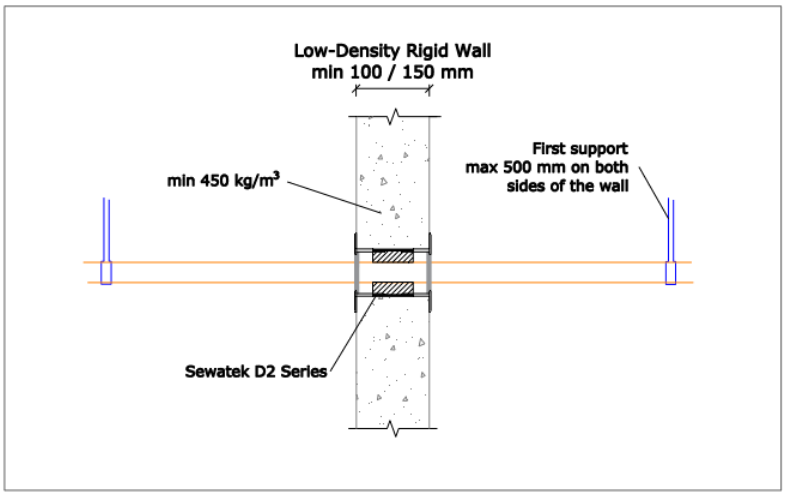

Table 1d. Sewatek LVP with D2-series end pieces mounted in **100 mm or 150 mm thick low-density rigid wall**

Insulation markings (See Annex 2)		**Markings (See Annex 3)**
LI – Local and Interrupted CI – Continuous and Interrupted sw – Stone wool insulation cr – Cellular rubber insulation	***sw insulation thickness*** - *20 mm (Pipes < 54 mm)* - *30 mm (Pipes >= 54 mm)*	e_n – Pipe wall thickness a_1 – Thickness of LVP-pipe a_2 – Distance between LVP-pipes When tested as a single, a_2 – distance is 100 mm (”/ -” in the table)

Type of the pipe	Insulation (thickness / length)	a_1 / a_2 (mm)	Fire resistance class
Copper pipes			
Mounted into the low-density rigid wall of 100 mm			
Ø ≤ 10 mm, e_n ≤ 1,0 mm	not required	20 / -	EI 120 - U/C
Ø ≤ 22 mm, e_n ≤ 1,0 mm	CI (cr 13 mm / -)	10 / 59	EI 60 - U/C
Ø ≤ 28 mm, e_n ≤ 1,2 mm	LI (cr 13 mm / -)	11 / -	EI 90 - U/C
Ø ≤ 35 mm, e_n ≤ 1,5 mm	LI (sw 20 mm / 350 mm)	13 / 100	EI 120 - U/C
Ø ≤ 42 mm, e_n ≤ 1,5 mm	LI (sw 20 mm / 350 mm)	17 / 25	EI 60 - U/C
Ø ≤ 54 mm, e_n ≤ 1,5 mm	CI (sw 30 mm / -)	11 / 44	EI 90 - U/C
Ø ≤ 64 mm, e_n ≤ 2,0 mm	LI (sw 30 mm / 500 mm)	13 / 70	EI 60 - U/C
Steel pipes			
Mounted into the low-density rigid wall of 100 mm			
Ø ≤ 27 mm (DN20), e_n ≤ 2,3 mm	not required	7 / 30	EI 120 - U/C
Ø ≤ 33,7 mm (DN25), e_n ≤ 3,0 mm	not required	13 / 25	EI 30 - U/C
Ø ≤ 60,3 mm (DN50), e_n ≤ 2,9 mm	LI (sw 30 mm / 350 mm)	7 / 35	EI 120 - U/C
Mounted into the low-density rigid wall of 150 mm			
Ø ≤ 42,4 mm (DN32), e_n ≤ 3,8 mm	not required	17 / 44	EI 60 - U/C
Ø ≤ 42,4 mm (DN32), e_n ≤ 3,8 mm	not required	9 / -	EI 120 - U/C

ANNEX 1

Type of the pipe	Insulation (thickness / length)	a_1 / a_2 (mm)	Fire resistance class
Zinc-plated carbon steel pipes			
Mounted into the low-density rigid wall of 100 mm			
Ø ≤ 22 mm, e_n ≤ 1,5 mm	not required	9 / 30	EI 120 - U/C
Ø ≤ 28 mm, e_n ≤ 1,5 mm	not required	11 / -	EI 60 - U/C
Ø ≤ 54 mm, e_n ≤ 1,5 mm	LI (sw 30 mm / 350 mm)	11 / 25	EI 120 - U/C
Ø ≤ 64 mm, e_n ≤ 2,0 mm	LI (sw 30 mm/ 500 mm)	13 / 70	EI 60 - U/C
Composite pipes			
Mounted into the low-density rigid wall of 100 mm			
Ø ≤ 25 mm, e_n ≤ 2,5 mm	not required	8 / 30	EI 120 - U/C
Ø ≤ 32 mm, e_n ≤ 3,0 mm	LI (cr 13 mm / 350 mm)	14 / 10	EI 60 - U/C
Ø ≤ 40 mm, e_n ≤ 4,0 mm	LI (sw 20 mm / 350 mm)	10 / 10	EI 120 - U/C
Ø ≤ 40 mm, e_n ≤ 4,0 mm	not required	10 / -	EI 60 - U/C
Ø ≤ 50 mm, e_n ≤ 4,0 mm	not required	13 / -	EI 30 - U/C
Ø ≤ 63 mm, e_n ≤ 6,0 mm	LI (sw 30 mm / 350 mm)	14 / 30	EI 120 - U/C
Mounted into the low-density rigid wall of 150 mm			
Ø ≤ 40, e_n ≤ 4,0 mm	not required	10 / -	EI 120 - U/C

Low-Density Rigid Wall

1e - Sewatek LVP with D2-series end pieces including fire band

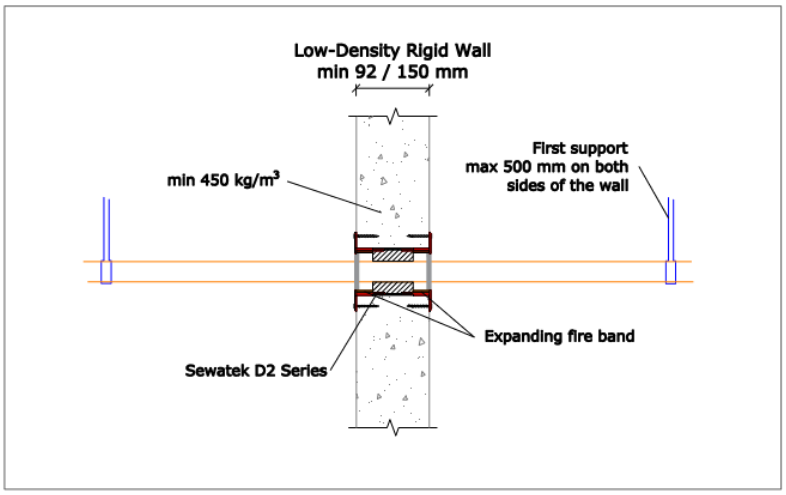

Table 1e. Sewatek LVP with D2-series end pieces including fire band mounted in **92 mm or 150 mm thick low-density rigid wall**	
Insulation markings (See Annex 2)	**Markings (See Annex 3)**
LI – Local and Interrupted CI – Continuous and Interrupted sw – Stone wool insulation cr – Cellular rubber insulation ***sw insulation thickness*** *- 20 mm (Pipes < 54 mm)* *- 30 mm (Pipes >= 54 mm)*	e_n – Pipe wall thickness a_1 – Thickness of LVP-pipe a_2 – Distance between LVP-pipes When tested as a single, a_2 – distance is 100 mm (”/ -” in the table)

Type of the pipe	Insulation (thickness / length)	a_1 / a_2 (mm)	Fire resistance class
Copper pipes			
Mounted into the low-density rigid wall of 92 mm			
Ø ≤ 18 mm and Ø ≤ 35 mm in a same device, e_n ≤ 1,0 mm and 1,5 mm	LI (sw 30 mm / 350 mm)	- / -	EI 120 - U/C
Mounted into the low-density rigid wall of 150 mm			
Ø ≤ 18 mm and Ø ≤ 35 mm in a same device, e_n ≤ 1,5 mm and 1,5 mm	LI (sw 30 mm / 350 mm)	- / 10	EI 120 - U/C
Steel pipes			
Mounted into the low-density rigid wall of 92 mm			
Ø ≤ 18 mm (DN10) and Ø ≤ 35 mm (DN25) in a same device, e_n ≤ 2,5 mm and 3,0 mm	LI (sw 30 mm / 350 mm)	- / -	EI 120 - U/C
Mounted into the low-density rigid wall of 150 mm			
Ø ≤ 18 mm (DN10) and Ø ≤ 35 mm (DN25) in a same device, e_n ≤ 2,5 mm and 3,0 mm	LI (sw 30 mm / 350 mm)	- / 10	EI 120 - U/C

ANNEX 1

Type of the pipe	Insulation (thickness / length)	a_1 / a_2 (mm)	Fire resistance class
Zinc-coated steel pipes			
Mounted into the low-density rigid wall of 92 mm			
Ø ≤ 18 mm and Ø ≤ 35 mm in a same device, e_n ≤ 1,5 mm and 1,5 mm	LI (sw 30 mm / 350 mm)	- / -	EI 120 - U/C
Mounted into the low-density rigid wall of 150 mm			
Ø ≤ 18 mm and Ø ≤ 35 mm in a same device, e_n ≤ 1,5 mm and 1,5 mm	LI (sw 30 mm / 350 mm)	- / 10	EI 120 - U/C
Composite pipes			
Mounted into the low-density rigid wall of 150 mm			
Ø ≤ 16 mm and Ø ≤ 32 mm in a same device, e_n ≤ 2,0 mm and 4,0 mm	LI (sw 30 mm / 350 mm)	- / 10	EI 120 - U/C
Plastic PEX-pipes			
Mounted into the low-density rigid wall of 92 mm			
PEX Ø ≤ 40 mm, e_n ≤ 3,7 mm	not required	10 / 60	EI 120 - U/C
PEX Ø ≤ 28/54 mm e_n ≤ 3,0 mm	not required	11 / 60	EI 90 – U/C
PEX Ø ≤ 28/54, e_n ≤ 4,0 mm	not required	18 / -	EI 120 - U/C
PEX bundle Ø ≤ 70 mm - singular PEX / cover pipe Ø ≤ 28 mm, e_n ≤ 2,5 mm	not required	7 / -	EI 120 - U/C
Plastic sewer pipes, PP (EN 1451-1)			
Mounted into the low-density rigid wall of 92 mm			
Ø ≤ 50 mm, e_n ≤ 1,8 mm	not required	20 / -	EI 120 - U/C
Cables			
Mounted into low-density rigid wall of 92 mm			
Singular cable Ø ≤ 22 mm	not required	10 / -	EI 120
Singular cable Ø ≤ 25 mm	not required	13 / 28	EI 60
Cable conduit Ø ≤ 50, e_n ≤ 1,5 mm - cable bundle Ø ≤ 47 mm - singular cable ≤ 22 mm	not required	20 / -	EI 90
Cable bundle Ø ≤ 66 mm - singular cable Ø ≤ 25 mm	not required	13 / 28	EI 60
Blank penetration			
Mounted into the low-density rigid wall of 92 mm			
Hole ≤ 90,0 mm, no services	not required	- / 70	EI 120 - U/C

ANNEX 1

High-Density Rigid Floor

2a - Sewatek LVP (Sewatek penetration pipe)

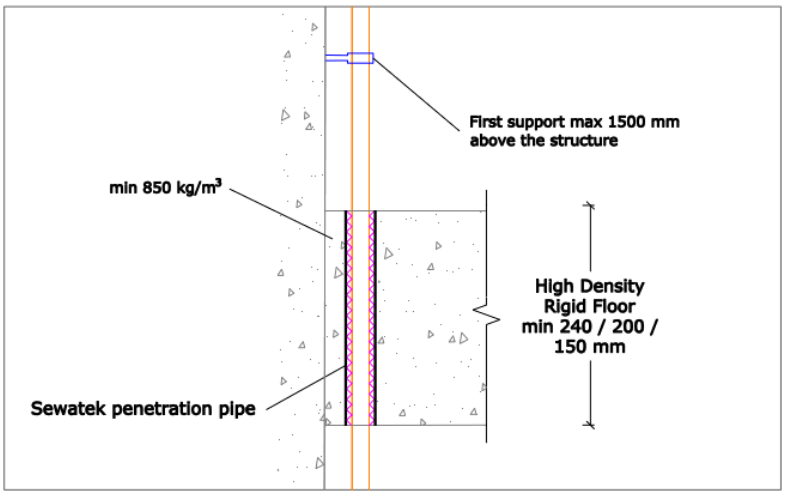

Table 2a. Sewatek LVP (Sewatek penetration pipes) mounted in **240 mm, 200 mm, or 150 mm thick high-density rigid floor**	
Insulation markings (See Annex 2)	**Markings (See Annex 3)**
LI – Local and Interrupted CI – Continuous and Interrupted sw – Stone wool insulation cr – Cellular rubber insulation ***sw insulation thickness*** *- 20 mm (Pipes < 54 mm)* *- 30 mm (Pipes >= 54 mm)*	e_n – Pipe wall thickness a_1 – Thickness of LVP-pipe a_2 – Distance between LVP-pipes When tested as a single, a_2 – distance is 100 mm (”/ -” in the table)

Type of the pipe	Insulation (thickness / length)	a_1 / a_2 (mm)	Fire resistance class
Copper pipes			
Mounted into the high-density rigid floor of 240 mm			
Ø ≤ 22 mm, e_n ≤ 1,0 mm	not required	9 / 30	EI 120 - U/C
Ø ≤ 28 mm, e_n ≤ 1,2 mm	not required	16 / 10	EI 60 - U/C
Ø ≤ 35 mm, e_n ≤ 1,5 mm	LI (cr 13 mm / 350 mm)	13 / 10	EI 120 - U/C
Ø ≤ 54 mm, e_n ≤ 1,5 mm	LI (sw 30 mm / 350 mm)	11 / 25	EI 90 - U/C
Mounted into the high-density rigid floor of 150 mm			
Ø ≤ 42 mm, e_n ≤ 1,5 mm	LI (sw 20 mm / 350 mm)	17 / 25	EI 120 - U/C
Ø ≤ 89 mm, e_n ≤ 2,0 mm	CI (sw 30 mm / -)	18 / 35	EI 120 - U/C
Steel pipes			
Mounted into the high-density rigid floor of 240 mm			
Ø ≤ 49 mm (DN40), e_n ≤ 2,6 mm	not required	13 / 25	EI 120 - U/C
Ø ≤ 61 mm (DN50), e_n ≤ 2,9 mm	LI (sw 30 mm / 350 mm)	15 / 30	EI 120 - U/C
Mounted into the high-density rigid floor of 200 mm			
Ø ≤ 33,8 mm (DN25), e_n ≤ 3,0 mm	not required	13 / 10 in line	EI 120 - U/C
Mounted into the high-density rigid floor of 150 mm			
Ø ≤ 43 mm (DN 32), e_n ≤ 2,6 mm	not required	9 / 10 in line	EI 60 - C/U
Ø ≤ 89 mm (DN 80), e_n ≤ 3,0 mm	CI (sw 30 mm / -)	18 / 35	EI 120 - U/C

ANNEX 1

Type of the pipe	Insulation (thickness / length)	a_1 / a_2 (mm)	Fire resistance class
Zinc-plated carbon steel pipes			
Mounted into the high-density rigid floor of 240 mm			
Ø ≤ 42 mm, e_n ≤ 1,5 mm	not required	9 / 10	EI 120 - U/C
Ø ≤ 54 mm, e_n ≤ 1,5 mm	not required	11 / 25	EI 120 - U/C
Ø ≤ 89 mm, e_n ≤ 2,0 mm	CI (sw 30 mm / -)	18 / 35	EI 120 - U/C
Mounted into the high-density rigid floor of 150 mm			
Ø ≤ 28 mm, e_n ≤ 1,5 mm	not required	12 / 20	EI 120 - U/C
Ø ≤ 42 mm, e_n ≤ 1,5 mm	LI (sw 20 mm / 350 mm)	17 / 25	EI 120 - U/C
Ø ≤ 89 mm, e_n ≤ 2,0 mm	CI (sw 30 mm / -)	18 / 35	EI 120 - U/C
Composite pipes			
Mounted into the high-density rigid floor of 240 mm			
Ø ≤ 32 mm, e_n ≤ 3,0 mm	not required	14 / 10	EI 120 - U/C
Ø ≤ 63 mm, e_n ≤ 6,0 mm	LI (sw 30 mm / 350 mm)	14 / 30	EI 120 - U/C
Mounted into the high-density rigid floor of 150 mm			
Ø ≤ 40 mm, e_n ≤ 4,0 mm	not required	18 / 25	EI 120 - U/C
Ø ≤ 75 mm, e_n ≤ 7,5 mm	CI (sw 30 mm / -)	25 / 30	EI 120 - U/C

High-density Rigid Floor

2b - Sewatek LVP with H-series installation frames

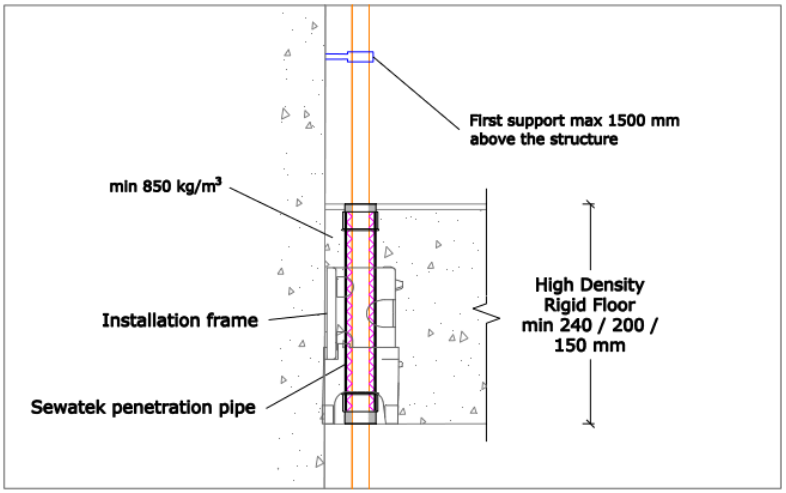

Table 2b. Sewatek LVP with H-series installation frames, mounted in **240 mm, 200 mm, or 150 mm thick high-density rigid floor**	
Insulation markings (See Annex 2)	**Markings (See Annex 3)**
LI – Local and Interrupted CI – Continuous and Interrupted sw – Stone wool insulation cr – Cellular rubber insulation ***sw insulation thickness*** *- 20 mm (Pipes < 54 mm)* *- 30 mm (Pipes >= 54 mm)*	e_n – Pipe wall thickness a_1 – Thickness of LVP-pipe a_2 – Distance between LVP-pipes When tested as a single, a_2 – distance is 100 mm (”/ -” in the table)

Type of the pipe	Insulation (thickness / length)	a_1 / a_2 (mm)	Fire resistance class
Copper pipes			
Mounted into the high-density rigid floor of 240 mm			
Ø ≤ 22 mm, e_n ≤ 1,0 mm	not required	9 / 30	EI 120 - U/C
Ø ≤ 28 mm, e_n ≤ 1,2 mm	not required	16 / 10	EI 60 - U/C
Ø ≤ 35 mm, e_n ≤ 1,5 mm	LI (cr 13 mm / 350 mm)	13 / 10	EI 120 - U/C
Ø ≤ 54 mm, e_n ≤ 1,5 mm	LI (sw 30 mm / 350 mm)	11 / 25	EI 90 - U/C
Mounted into the high-density rigid floor of 150 mm			
Ø ≤ 42 mm, e_n ≤ 1,5 mm	LI (sw 20 mm / 350 mm)	17 / 25	EI 120 - U/C
Ø ≤ 89 mm, e_n ≤ 2,0 mm	CI (sw 30 mm / -)	18 / 35	EI 120 - U/C
Steel pipes			
Mounted into the high-density rigid floor of 240 mm			
Ø ≤ 49 mm (DN40), e_n ≤ 2,6 mm	not required	13 / 25	EI 120 - U/C
Ø ≤ 61 mm (DN50), e_n ≤ 2,9 mm	LI (sw 30 mm / 350 mm)	15 / 30	EI 120 - U/C
Mounted into the high-density rigid floor of 200 mm			
Ø ≤ 33,8 mm (DN25), e_n ≤ 3,0 mm	not required	13 / 10 in line	EI 120 - U/C
Mounted into the high-density rigid floor of 150 mm			
Ø ≤ 43 mm (DN 32), e_n ≤ 2,6 mm	not required	9 / 10 in line	EI 60 - C/U
Ø ≤ 89 mm (DN 80), e_n ≤ 3,0 mm	CI (sw 30 mm / -)	18 / 35	EI 120 - U/C

ANNEX 1

Type of the pipe	Insulation (thickness / length)	a_1 / a_2 (mm)	Fire resistance class
Zinc-plated carbon steel pipes			
Mounted into the high-density rigid floor of 240 mm			
Ø ≤ 42 mm, e_n ≤ 1,5 mm	not required	9 / 10	EI 120 - U/C
Ø ≤ 54 mm, e_n ≤ 1,5 mm	not required	11 / 25	EI 120 - U/C
Ø ≤ 89 mm, e_n ≤ 2,0 mm	CI (sw 30 mm / -)	18 / 35	EI 120 - U/C
Mounted into the high-density rigid floor of 150 mm			
Ø ≤ 28 mm, e_n ≤ 1,5 mm	not required	12 / 20	EI 120 - U/C
Ø ≤ 42 mm, e_n ≤ 1,5 mm	LI (sw 20 mm / 350 mm)	17 / 25	EI 120 - U/C
Ø ≤ 89 mm, e_n ≤ 2,0 mm	CI (sw 30 mm / -)	18 / 35	EI 120 - U/C
Composite pipes			
Mounted into the high-density rigid floor of 240 mm			
Ø ≤ 32 mm, e_n ≤ 3,0 mm	not required	14 / 10	EI 120 - U/C
Ø ≤ 63 mm, e_n ≤ 6,0 mm	LI (sw 30 mm / 350 mm)	14 / 30	EI 120 - U/C
Mounted into the high-density rigid floor of 150 mm			
Ø ≤ 40 mm, e_n ≤ 4,0 mm	not required	18 / 25	EI 120 - U/C
Ø ≤ 75 mm, e_n ≤ 7,5 mm	CI (sw 30 mm / -)	25 / 30	EI 120 - U/C

High-density Rigid Floor

2c - Sewatek LVP with H-series installation frames including fire band

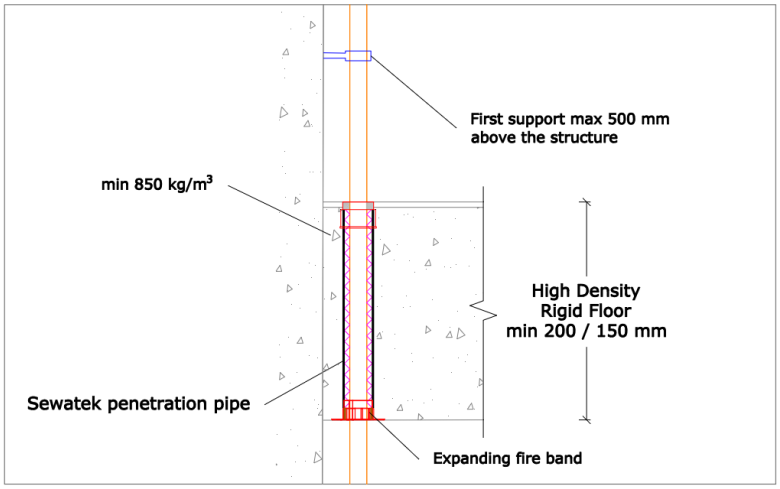

Table 2c. Sewatek LVP with H-series installation frames including fire band mounted in **200 mm, or 150 mm thick high-density rigid floor**

Insulation markings (See Annex 2)		**Markings (See Annex 3)**
LI – Local and Interrupted CI – Continuous and Interrupted sw – Stone wool insulation cr – Cellular rubber insulation	***sw insulation thickness*** *- 20 mm (Pipes < 54 mm)* *- 30 mm (Pipes >= 54 mm)*	e_n – Pipe wall thickness a_1 – Thickness of LVP-pipe a_2 – Distance between LVP-pipes When tested as a single, a_2 – distance is 100 mm ("/ -" in the table)

Type of the pipe	Insulation	a_1 / a_2 (mm)	Fire resistance class
Other plastic pipes			
Mounted into the high-density rigid floor of 150 mm			
PEX Ø ≤ 22/34 mm, e_n ≤ 3,0 mm	not required	14 / 10	EI 120 - U/C
PEX Ø ≤ 28/54 mm, e_n ≤ 3,0 mm	not required	19 / 40	EI 120 - U/C
PE Ø ≤ 40 mm, e_n ≤ 3,0 mm	not required	11 / 90	EI 120 - U/C
Cables			
Mounted into the floor of 200 mm			
Singular cable Ø ≤ 21,0 mm	not required	10 / 60	EI 120
Singular cable Ø ≤ 24,0 mm	not required	18 / -	EI 120
Cable bundle Ø ≤ 63 mm - singular cable Ø ≤ 21 mm	not required	9 / 30	EI 120
Mounted into the high-density rigid floor of 150 mm			
Singular cable Ø ≤ 22,0 mm	not required	12 / 30	EI 90
Singular cable Ø ≤ 25,0 mm	not required	13 / 10	EI 60
Cable bundle Ø ≤ 66 mm - singular cable Ø ≤ 22 mm	not required	12 / 30	EI 90
Cable bundle Ø ≤ 66 mm - singular cable Ø ≤ 25 mm	not required	13 / 10	EI 60

Massive Wood Wall

3a - Sewatek LVP with D2-series end pieces including fire band

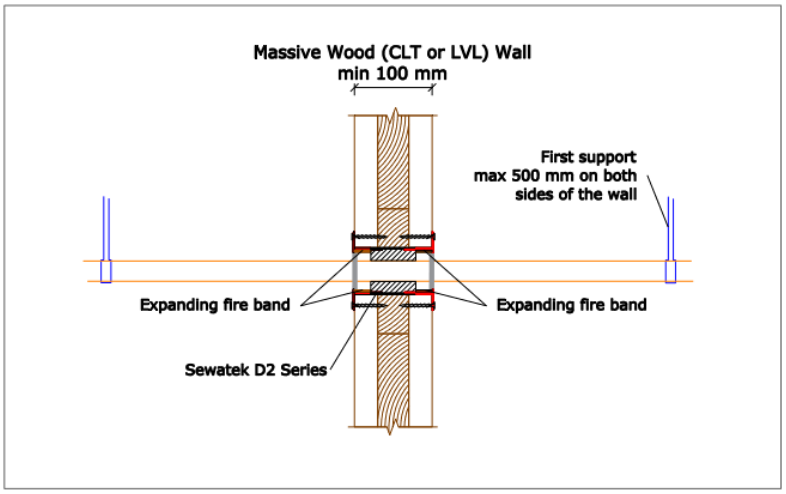

Table 3a. Sewatek LVP with D2-series end pieces including fire band mounted in **100 mm thick massive wood (CLT or LVL) wall**	
Insulation markings (See Annex 2)	**Markings (See Annex 3)**
LI – Local and Interrupted CI – Continuous and Interrupted sw – Stone wool insulation cr – Cellular rubber insulation ***sw insulation thickness*** *- 20 mm (Pipes < 54 mm)* *- 30 mm (Pipes >= 54 mm)*	e_n – Pipe wall thickness a_1 – Thickness of LVP-pipe a_2 – Distance between LVP-pipes When tested as a single, a_2 – distance is 100 mm (”/ -” in the table)

Type of the pipe	Insulation (thickness / length)	a_1 / a_2 (mm)	Fire resistance class
Copper pipes			
Ø ≤ 42 mm, e_n ≤ 1,5 mm	LI (sw 20 mm / 350 mm)	9 / 60	EI 90 - U/C
Ø ≤ 54 mm, e_n ≤ 1,5 mm	CI (sw 30 mm / -)	19 / 60	EI 60 - U/C
Ø ≤ 54 mm, e_n ≤ 1,5 mm	LI (sw 30 mm / -)	19 / -	EI 90 - U/C
Ø ≤ 18 mm and Ø ≤ 35 mm in a same device, e_n ≤ 1,0 mm and 1,5 mm	LI (sw 30 mm / 350 mm)	- / -	EI 90 - U/C
Steel pipes			
Ø ≤ 17,2 mm (DN10), e_n ≤ 2,5 mm	not required	11 / 80	EI 90 - U/C
Ø ≤ 26,9 mm (DN20), e_n ≤ 3,2 mm	not required	16 / 60	EI 60 - U/C
Ø ≤ 60,3 mm (DN50), e_n ≤ 4,0 mm	CI (sw 30 mm / -)	16 / 60	EI 90 - U/C
Ø ≤ 60,3 mm (DN50), e_n ≤ 3,5 mm	LI (sw 30 / 350 mm)	15 / 70	EI 90 - U/C
Ø ≤ 18 mm (DN10) and Ø ≤ 35 mm (DN25) in a same device, e_n ≤ 2,5 mm and 3,0 mm	LI (sw 30 mm / 350 mm)	- / -	EI 90 - U/C

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Type of the pipe	Insulation (thickness / length)	a_1 / a_2 (mm)	Fire resistance class
Zinc-coated steel pipes			
Ø ≤ 28 mm, e_n ≤ 1,8 mm	not required	16 / 60	EI 60 - U/C
Ø ≤ 42 mm, e_n ≤ 1,5 mm	LI (sw 20 mm / 350 mm)	9 / 60	EI 90 - U/C
Ø ≤ 54 mm, e_n ≤ 1,5 mm	CI (sw 30 mm / -)	19 / 60	EI 60 - U/C
Ø ≤ 54 mm, e_n ≤ 1,5 mm	LI (sw 30 mm / 350 mm)	19 / 70	EI 90 - U/C
Ø ≤ 18 mm and Ø ≤ 35 mm in a same device, e_n ≤ 1,0 mm and 1,5 mm	LI (sw 30 mm / 350 mm)	- / -	EI 90 - U/C
Composite pipes			
Ø ≤ 40 mm, e_n ≤ 4,0 mm	not required	10 / 60	EI 60 - U/C
Ø ≤ 40 mm, e_n ≤ 4,0 mm	LI (sw 20 mm / 350 mm)	10 / 60	EI 90 - U/C
Plastic PEX-pipes			
PEX 28/54 mm, e_n ≤ 3,0 mm	not required	11 / 60	EI 90 - U/C
PEX bundle Ø ≤ 70 mm - PEX / cover pipe Ø ≤ 28 mm, e_n ≤ 2,5 mm	not required	7 / -	EI 90 - U/C
Plastic sewer pipes, PP (EN 1451-1)			
Ø ≤ 50 mm, e_n ≤ 1,8 mm	not required	20 / -	EI 90 - U/C
Cables			
Singular cable Ø ≤ 17 mm	not required	13 / 60	EI 60
Singular cable Ø ≤ 22 mm	not required	10 / -	EI 90
Singular cable Ø ≤ 25 mm	not required	13 / 60	EI 45
Cable bundle Ø ≤ 66 mm - singular cable Ø ≤ 17 mm	not required	13 / 60	EI 60
Cable bundle Ø ≤ 47 mm - singular cable Ø ≤ 22 mm	not required	20 / -	EI 60
Cable conduit Ø ≤ 50 mm, e_n ≤ 1,5 mm - cable bundle Ø ≤ 47 mm - singular cable Ø ≤ 22 mm	not required	20 / -	EI 90
Blank penetration			
Hole ≤ 90,0 mm, no services	not required	- / 30	EI 60
Hole ≤ 90,0 mm, no services	not required	- / 70	EI 90

Massive Wood Floor

4a - Sewatek LVP with D2-series end pieces including fire band

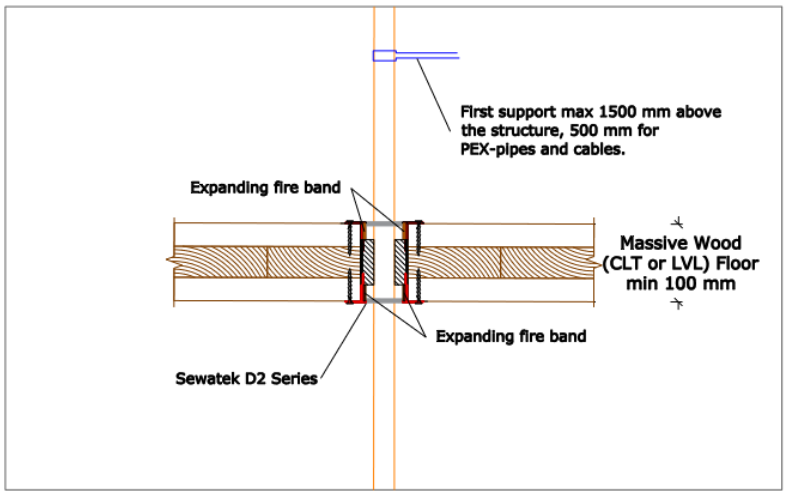


Table 4a. Sewatek LVP with D2-series end pieces including fire band mounted in **100 mm thick massive wood (CLT, LVL) floor**

Insulation markings (See Annex 2)		**Markings (See Annex 3)**
LI – Local and Interrupted CI – Continuous and Interrupted sw – Stone wool insulation cr – Cellular rubber insulation	***sw insulation thickness*** *- 20 mm (Pipes < 54 mm)* *- 30 mm (Pipes >= 54 mm)*	e_n – Pipe wall thickness a_1 – Thickness of LVP-pipe a_2 – Distance between LVP-pipes When tested as a single, a_2 – distance is 100 mm (”/ -” in the table)

Type of the pipe	Insulation (thickness / length)	a_1 / a_2 (mm)	Fire resistance class
Copper pipes			
Ø ≤ 42 mm, e_n ≤ 1,5 mm	LI (sw 20 mm / 350 mm)	9 / 30	EI 60 - U/C
Ø ≤ 54 mm, e_n ≤ 1,5 mm	CI (sw 30 mm / -)	19 / 30	EI 60 - U/C
Steel pipes			
Ø ≤ 26,9 mm (DN20), e_n ≤ 3,2 mm	not required	16 / 30	EI 90 - U/C
Ø ≤ 60,3 mm (DN50), e_n ≤ 4,0 mm	CI (sw 30 mm / -)	16 / 30	EI 90 - U/C
Zinc-coated steel pipes			
Ø ≤ 42 mm, e_n ≤ 1,5 mm	LI (sw 20 mm / 350 mm)	9 / 30	EI 60 - U/C
Ø ≤ 54 mm, e_n ≤ 1,5 mm	CI (sw 30 mm / -)	19 / 30	EI 60 - U/C
Composite pipes			
Ø ≤ 32 mm, e_n ≤ 3,0 mm	not required	15 / 30	EI 45 - U/C
Ø ≤ 40 mm, e_n ≤ 4,0 mm	LI (sw 20 mm / 350 mm)	10 / 30	EI 60 - U/C
Plastic PEX-pipes			
PEX 28/54 mm, e_n ≤ 3,0 mm	not required	11 / 30	EI 90 - U/C
PEX bundle Ø ≤ 60 mm - singular PEX / cover pipe Ø ≤ 40 mm, e_n ≤ 4,0 mm	not required	13 / 30	EI 90 - U/C

ANNEX 1

Type of the pipe	Insulation (thickness / length)	a_1 / a_2 (mm)	Fire resistance class
Cables			
Singular cable, Ø ≤ 17 mm	not required	13 / 30	EI 60
Singular cable Ø ≤ 22 mm	not required	11 / 30	EI 45
Cable bundle Ø ≤ 66 mm - singular cable Ø ≤ 17 mm	not required	13 / 30	EI 60
Cable bundle Ø ≤ 54 mm - singular cable Ø ≤ 22 mm	not required	11 / 30	EI 45
Blank penetration			
Hole ≤ 90,0 mm, no services	not required	- / 30	EI 60

Flexible Wall

5a - Sewatek LVP with D2-series end pieces including fire band

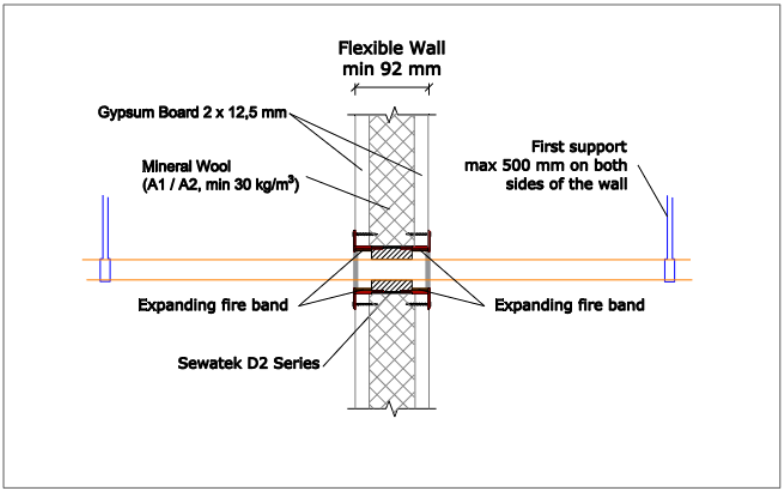


Table 5a. Sewatek LVP with D2-series end pieces including fire band mounted in **92 mm thick flexible wall**	
Insulation markings (See Annex 2)	**Markings (See Annex 3)**
LI – Local and Interrupted CI – Continuous and Interrupted sw – Stone wool insulation cr – Cellular rubber insulation ***sw insulation thickness*** *- 20 mm (Pipes < 54 mm)* *- 30 mm (Pipes >= 54 mm)*	e_n – Pipe wall thickness a_1 – Thickness of LVP-pipe a_2 – Distance between LVP-pipes When tested as a single, a_2 – distance is 100 mm (”/ -” in the table)

Type of the pipe	Insulation (thickness / length)	a_1 / a_2 (mm)	Fire resistance class
Copper pipes			
Ø ≤ 10 mm, e_n ≤ 1,0 mm	LI (sw 20 mm / 350 mm)	15 / 80	EI 120 - U/C
Ø ≤ 42 mm, e_n ≤ 1,5 mm	LI (sw 20 mm / 350 mm)	9 / 60	EI 60 - U/C
Ø ≤ 54 mm, e_n ≤ 1,5 mm	LI (sw 30 mm / 350 mm)	18 / 70	EI 60 - U/C
Ø ≤ 54 mm, e_n ≤ 1,5 mm	LI (sw 30 mm / 350 mm)	18 / -	EI 90 - U/C
Ø ≤ 18 mm (DN10) and Ø ≤ 35 mm (DN25) in a same device, e_n ≤ 1,0 mm and 1,5 mm	LI (sw 30 mm / 350 mm)	- / -	EI 120 - U/C
Steel pipes			
Ø ≤ 17,2 mm (DN10), e_n ≤ 2,5 mm	not required	11 / 80	EI 90 - U/C
Ø ≤ 27,8 mm (DN20), e_n ≤ 2,7 mm	not required	16 / 60	EI 60 - U/C
Ø ≤ 60,2 mm (DN50), e_n ≤ 3,5 mm	LI (sw 30 mm / 350 mm)	15 / 70	EI 120 - U/C
Ø ≤ 18 mm and Ø ≤ 35 mm in a same device, e_n ≤ 2,5 mm and 3,0 mm	LI (sw 30 mm / 350 mm)	- / -	EI 120 - U/C

ANNEX 1

Type of the pipe	Insulation (thickness / length)	a_1 / a_2 (mm)	Fire resistance class
Zinc-coated steel pipes			
Ø ≤ 12 mm, e_n ≤ 1,2 mm	not required	14 / 80	EI 120 - U/C
Ø ≤ 28 mm, e_n ≤ 1,8 mm	not required	16 / 60	EI 60 - U/C
Ø ≤ 54 mm, e_n ≤ 1,5 mm	LI (sw 30 mm / 350 mm)	18 / 70	EI 120 - U/C
Ø ≤ 18 mm and Ø ≤ 35 mm in a same device, e_n ≤ 1,0 mm and 1,5 mm	LI (sw 30 mm / 350 mm)	- / -	EI 120 - U/C
Composite pipes			
Ø ≤ 16 mm, e_n ≤ 2,0 mm	not required	12 / 80	EI 120 - U/C
Ø ≤ 40 mm, e_n ≤ 4,0 mm	not required	10 / 60	EI 60 - U/C
Ø ≤ 40 mm, e_n ≤ 4,0 mm	CI (sw 20 mm / -)	10 / 60	EI 120 - U/C
Plastic PEX-pipes			
PEX Ø ≤ 28/54 mm, e_n ≤ 4,0 mm	not required	18 / -	EI 120 - U/C
PEX Ø ≤ 40 mm, e_n ≤ 3,7 mm	not required	10 / 60	EI 120 - U/C
PEX bundle Ø ≤ 70 mm - singular PEX / cover pipe Ø ≤ 28 mm, e_n ≤ 2,5 mm	not required	7 / -	EI 120 - U/C
Plastic sewer pipes, PP (EN 1451-1)			
Ø ≤ 50 mm, e_n ≤ 1,8 mm	not required	20 / -	EI 120 - U/C
Cables			
Singular cable Ø ≤ 22 mm	not required	10 / -	EI 120
Cable bundle Ø ≤ 47 mm - singular cable Ø ≤ 22 mm	not required	20 / -	EI 60
Cable conduit Ø ≤ 50,0 mm, e_n ≤ 1,5 mm - cable bundle Ø ≤ 47 mm - singular cable Ø ≤ 22 mm	not required	20 / -	EI 90 - U/C
Blank penetration			
Hole ≤ 90,0 mm, no services	not required	- / 70	EI 120

Flexible Wall

5b - Sewatek Leak Detector including fire band

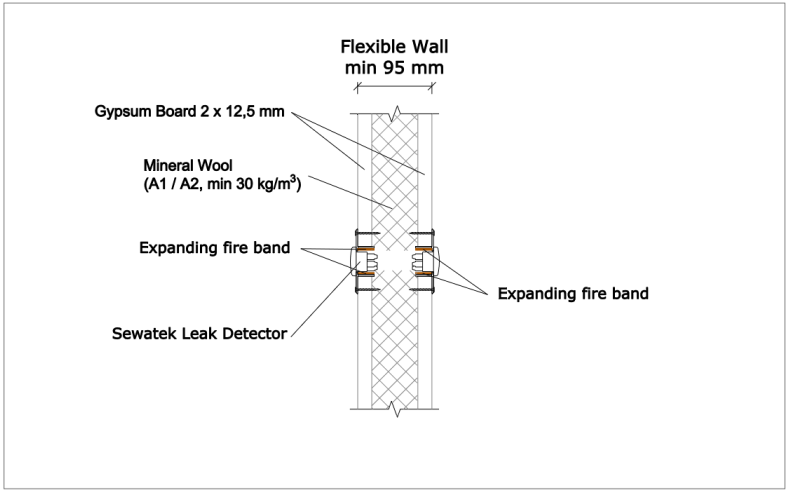


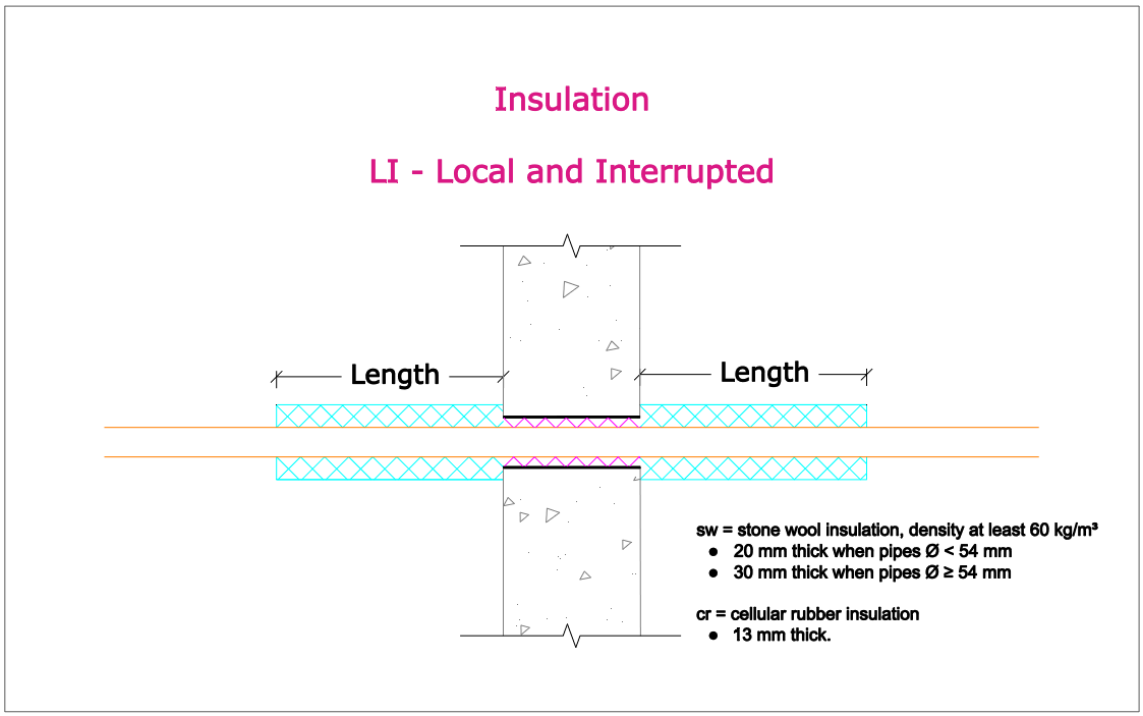
Table 5b. Sewatek Leak Detector mounted in **95 mm thick flexible wall**

Type of the pipe	Insulation (thickness / length)	a_1 / a_2 (mm)	Fire resistance class
Leak Detector			
Ø ≤ 40	not required	- / -	EI 120

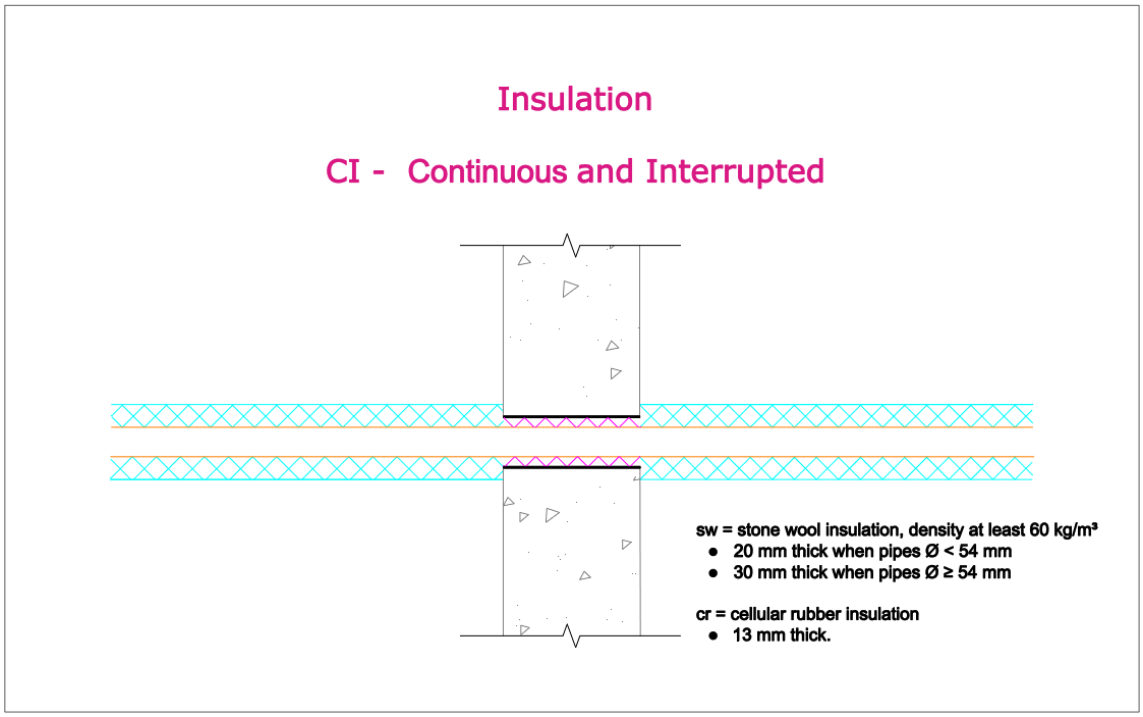
Annex 2 – Insulation

Wall structure

LI – Local and Interrupted

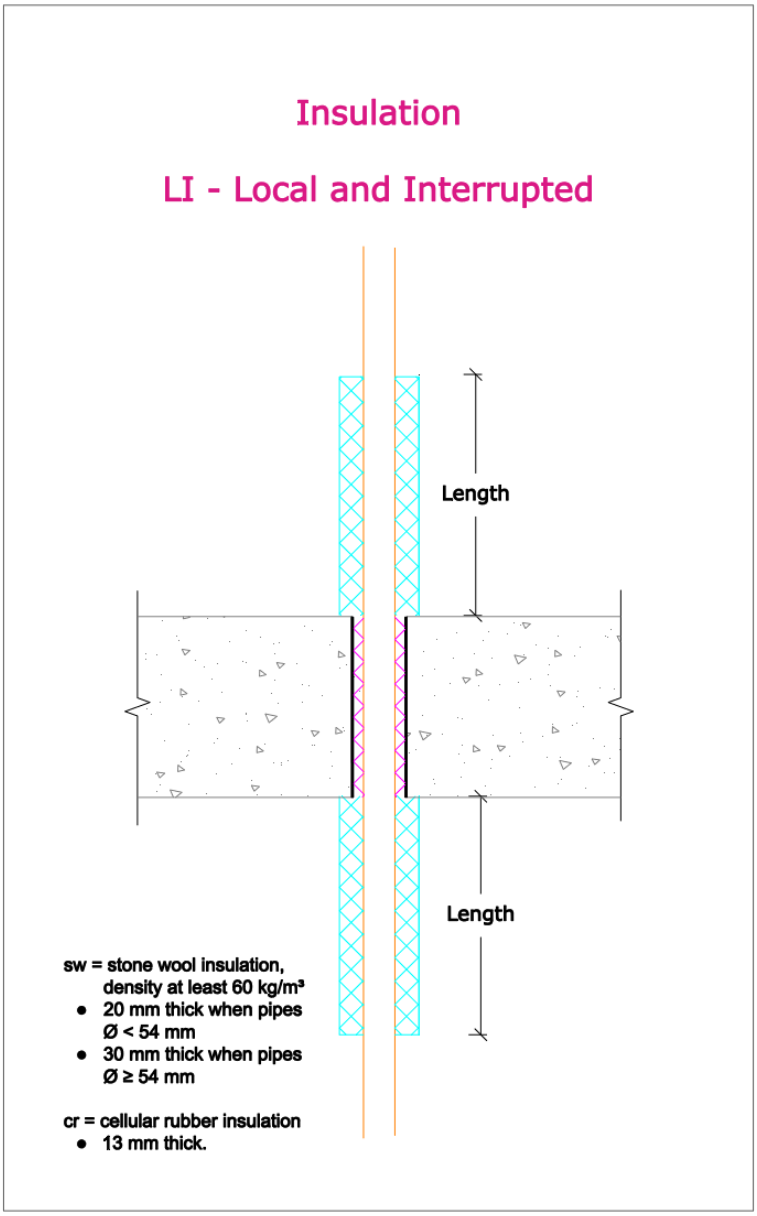


CI – Continuous and Interrupted

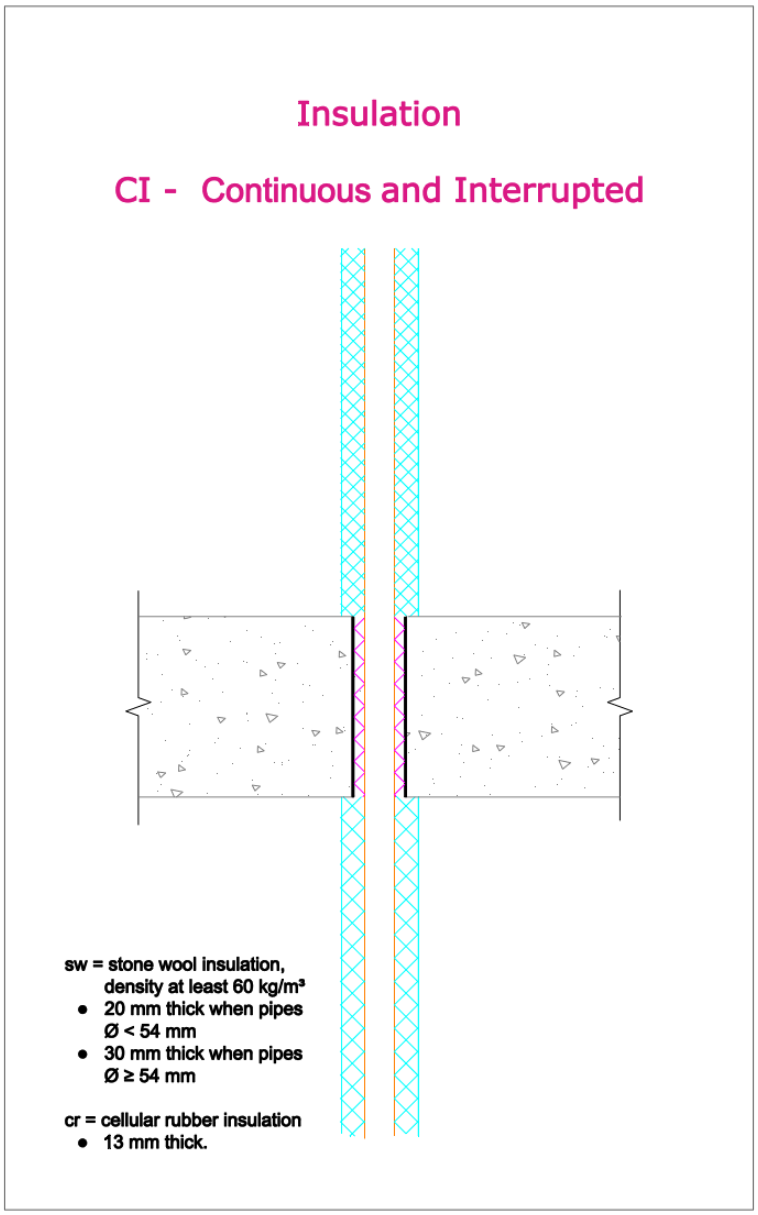


Floor structure

LI – Local and Interrupted

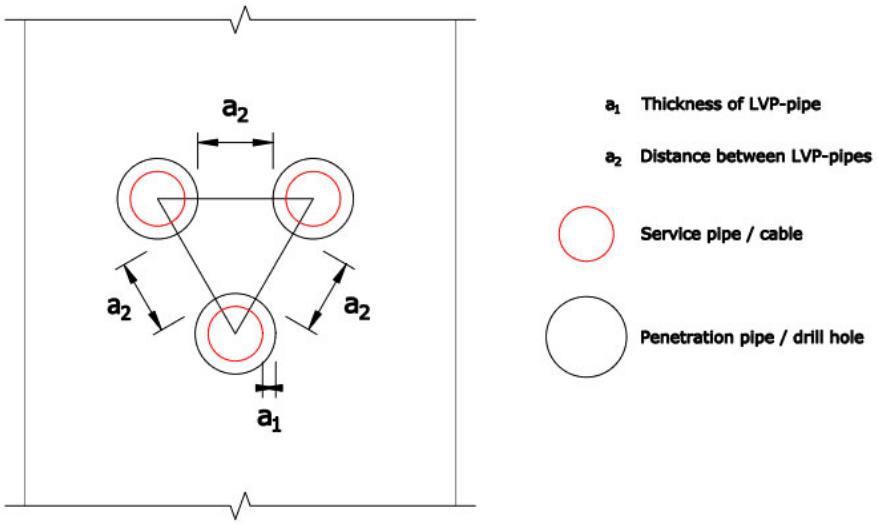


CI – Continuous and Interrupted



Annex 3 – The principle of measurement

Cluster Layout



In-Line Layout