



Classification Report

Pipe penetration seals

Name of sponsor: SAINT-GOBAIN ISOVER G+H AG
Product name: U Protect Pipe Section Alu2 and U Protect Roll 3.1 Alu1 sealing metal pipe penetrations
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Client information

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The results relate only to the items tested. The classification report should only be reproduced in extenso - in extracts only with a written agreement with this institute.

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Introduction

This classification report defines the classification assigned to the product in accordance with the procedures given in DS/EN 13501-2:2016.

This classification report includes the direct field of application of the test results.

Details of classified product

General

Producer of product: SAINT-GOBAIN ISOVER G+H AG

The products were designated: U Protect Pipe Section Alu2 and U Protect Roll 3.1 Alu1

The classification is valid for the following end use application: Sealing of metal pipe penetrations in fire compartmentation walls and floors with the configurations EI 30-C/U, EI 30-C/C, EI 60-C/U, EI 60-C/C, EI 90-C/U, EI 90-C/C, EI 120-C/U and EI 120-C/C. The insulation is sustained or interrupted through the penetration and can be either local or continued in the length.

Note:

The letters C/U in the classification refers to how the ends of the pipes were closed during the fire tests. C/U means Capped Inside the furnace and Uncapped Outside the furnace.

In EN 1366-3:2009 Annex H, the explanation of the closing of the pipes is explained as follows:

Metal pipes would normally be capped inside the furnace as they would not be expected to result in an open end situation in a fire scenario due to their high melting point. However, this depends on the supporting system staying in place. If fall down of the supporting system is a possibility, consideration can be given to an open ended scenario as shown in Table H.2.

Table H.2 – Metal pipe end configuration versus intended use

Use of pipe	Pipe-end condition	
	Inside the furnace	Outside the furnace
Supported by fire rated ^a suspension	Capped	Uncapped
Supported by non fire rated suspension	Uncapped	Capped
Waste disposal shafts made from pipes	Uncapped	Capped
^a Shown by test or calculation (e.g. Eurocodes)		

Product description

The product is a penetration seal system for non-combustible metal pipe services installed in vertical and horizontal direction, penetrating rigid and flexible walls and rigid floors.

Standard solution:

Drawings of the penetration system are shown on the attached Annexes

Penetration service

Pipes: Non combustible metal pipes, typically copper, steel, stainless steel or cast iron pipes.
Diameter range 8 mm – 219 mm

Pipe suspension system

Hangers: System made from non-combustible material fixing the service at maximum 600 mm from both sides of the wall construction and maximum 600 mm away from the upper side of a floor construction.

Cladding

Insulation:

Type 1:

U Protect Pipe Section Alu2
Resin-bonded mineral wool with a reinforced aluminium foil
EC Certificate of Conformity no. 0751-CPR.2-003.0-04
Thickness range from 20 mm to 139 mm
Nominal density range of 62 kg/m³ to 90 kg/m³
See also Annex C.

Reaction to fire classification A2L-s1,d0

The variations in the application of the insulation (e.g. thickness and length) are shown in the annexes

The minimum insulation length is measured from the center of the penetration, unless otherwise specified.

Type 2:

U Protect Roll 3.1 Alu1
Resin-bonded mineral wool with a reinforced aluminium foil
EC Certificate of Conformity no. 0751-CPR.2-003.0-07
Nominal density of 34 kg/m³
Reaction to fire classification A1

The variations in the application of the insulation (e.g. thickness and length) are shown in the annexes.

The minimum insulation length is measured from the center of the penetration, unless otherwise specified.

Fixing:

The insulation is wrapped around the pipes with a longitudinal butt-joint.
The alu-foil overlaps the joint with minimum 30 mm and is fixed using minimum 10 -20 mm wide self-adhesive tape.

Steel wires

with minimum thickness of 0.6 mm are used to maintain the insulation in position. The steel wires are positioned with a distance c/c of maximum 250 mm starting maximum 75 mm from the supporting construction or a lateral joint in the insulation.

Or

Steel band

Minimum dimensions $w \times t = 16 \text{ mm} \times 0.4 \text{ mm}$. The band and clamps are positioned with a distance c/c of maximum 250 mm starting maximum 75 mm from the supporting construction or a lateral joint in the insulation.

Penetration Type 1 Standard

Aperture: The distance from the surface of the pipe and the supporting construction shall be up to 50 mm.

Sealing material: The aperture in floors and rigid walls can be filled with: mortar or concrete.
The aperture in flexible walls can be filled with: gypsum plaster/render/filler.

Penetration Type 2 additional solution for small gap sizes

The additional solution for small gap sizes is valid for the configuration shown on Annex H1N and V1H

Aperture: The distance from the surface of the pipe section and the supporting construction shall be up to 15 mm for walls and up to 25 mm for floors.

Sealing material: The aperture in can be filled with a sealant/mastic:
Protect BSK, PROMASEAL-Mastic, SIBRALIT DX or Pyro-Safe Flammoplast KS3 in a depth of $\geq 25 \text{ mm}$ from both sides.
In between the fillings can be a void or a material of Euroclass E according EN 13501-1 or better.

Penetration Type 3 additional solution for large gap sizes

The additional solution for large gap sizes is valid for the configuration shown on Annex H1O and V1S

Aperture: The distance from the surface of the pipe section and the supporting construction shall be up to 100 mm

Sealing material: The aperture in floors and rigid walls can be filled with: mortar or concrete.
The aperture in flexible walls can be filled with: gypsum plaster/render/filler.

Penetration Type 4 additional solution for seals with sound insulation in floors

The additional solution sealing with sound insulation configuration shown on Annex V1I and V1J

Aperture: The distance from the surface of the pipe and the supporting construction shall be up to 50 mm.

Sealing material: The aperture in floors can be filled with: mortar or concrete.
With or without sound insulation of:
5mm Steinoflex 305R PE sound insulation strip, in full sealing thickness.
3.5mm Self-adhesive felt stripes in full sealing thickness.
Sleeve type BSM-S 89, 250 mm.

Penetration Type 5 additional solution for seals with sound insulation in walls

The additional solution sealing with sound insulation configuration shown on Annex H1K, H1L.

Aperture: The distance from the surface of the pipe and the supporting construction shall be up to 50 mm.

Sealing material: The aperture in floors and rigid walls can be filled with: mortar or concrete.

The aperture in flexible walls can be filled with: gypsum plaster/render/filler.

With or without sound insulation of:

5mm Steinoflex 305R PE sound insulation strip, in full sealing thickness.

3.5mm Self-adhesive felt stripes in full sealing thickness.

Sleeve type BSM-S 89, 250 mm.

Penetration Type 6 additional solution with precast pp-pipe in penetration.

The additional solution sealing with pp-pipe in penetration configuration shown on Annex V1U

Aperture: The distance from the surface of the pipe and the supporting construction shall be up to 50 mm.

Sealing material: A 110 mm "PP" pipe is cast into the floor flush with the floor on both sides.

The aperture in between the PP-Pipe and the insulation can be filled with: mortar or concrete.

Penetration Type 7 additional solution with compressed insulation in penetration.

The additional solution sealing with compressed insulation in penetration shown on Annex V1V –V1X

Aperture: The distance from the surface of the pipe and the supporting construction shall be up to 50 mm.

Sealing material: Loose stone wool compressed to a density of 120 kg/m³

Reports in support of the classification

Test report

The product was successfully tested in accordance with EN 1366-3:2009. The evidence for this is given in the table shown on Annex B.

Classification and field of application

Reference

This classification has been carried out in accordance with clause 7.5.8 of EN 13501-2:2016.

Classification

The product is classified according to the following combinations of performance and classes as appropriate.

Fire resistance classification: **EI 30-C/U, EI 30-C/C, EI 60-C/U, EI 60-C/C, EI 90-C/U, EI 90-C/C, EI 120-C/U and EI 120-C/C**

For specification of the classification of each specific seal configuration, see enclosures listed below.

Annexes for U Protect Pipe Section Alu2 - Vertical

Annex	Classification	Orientation	Pipe	Minimum length of insulation	Configuration	Pipe arrangement
V1A	EI 120	Vertical pipes	All metal pipes as specified	2x1200 mm	LS	Single pipe
V1B	EI 120	Vertical pipes	Stainless steel	2x1200 mm	LS	Single pipe
V1C	EI 120	Vertical pipes,	All metal pipes as specified	2x1200 mm	LS & CS	Cluster
V1D	EI 120	Vertical pipes	Steel, Stainless steel	2x1200 mm	LS & CS	Cluster
V1E	EI 120	Vertical pipes	All metal pipes as specified	2x600 mm	LS & CS	Single pipe
V1F	EI 120	Vertical pipes	All metal pipes as specified	Continued	CS	Single pipe
V1G	EI 120	Vertical pipes	Stainless steel	Continued	CS	Single pipe
V1H	EI120	Vertical pipes	All metal pipes as specified	2x600 mm	LS & CS Small gap filling	Single pipe
V1I	EI 120	Vertical pipes	All metal pipes as specified	2x 600 mm	LI	Single pipe
V1J	EI 120	Vertical pipes	All metal pipes as specified	Continued	CI	Single pipe
V1K	EI 120	Vertical pipes	All metal pipes as specified	1200 mm asymmetrical	LS	Single pipe
V1L	EI 120	Vertical pipes	All metal pipes as specified	Continued asymmetrical	CS	Single pipe
V1M	EI 90	Vertical pipes	All metal pipes as specified	2x1200 mm	LS	Single pipe
V1N	EI 90	Vertical pipes	Stainless steel	2x1200 mm	LS	Single pipe
V1O	EI 90	Vertical pipes,	All metal pipes as specified	2x1200 mm	LS & CS	Cluster
V1P	EI 90	Vertical pipes,	Stainless steel	2x1200 mm	LS & CS	Cluster
V1Q	EI 90	Vertical pipes	All metal pipes as specified	Continued	CS	Single pipe
V1R	EI 90	Vertical pipes	Stainless steel	Continued	CS	Single pipe

V1S	EI 90	Vertical pipes	All pipes as specified	2x1200 mm	LS & CS 100 mm residual gap	Single pipe
V1T	EI 90	Vertical pipes	Stainless steel	Continued	CS	Single pipe
V1U	EI 90	Vertical pipes	All metal pipes as specified	2x 600 mm	LI & CI	Single pipe
Annex	Classification	Orientation	Pipe	Minimum length of insulation	Configuration	Pipe arrangement
V1V	EI 60	Vertical pipes	Stainless steel	2x1200 mm	LS & CS	Single pipe
V1X	EI 30	Vertical pipes	All metal pipes as specified	1200 mm asymmetrical	LS & CS	Cluster

Annexes for U Protect Pipe Section Alu2 - Horizontal

Annex	Classification	Orientation	Pipe	Minimum length of insulation	Configuration	Pipe arrangement
H1A	EI 120	Horizontal pipes	All metal pipes as specified	2x1200 mm	LS	Single pipe
H1B	EI 120	Horizontal pipes	Stainless steel	2x1200 mm	LS & CS	Single pipe
H1C	EI 120	Horizontal pipes	All metal pipes as specified	Continued	CS	Single pipe
H1D	EI 90	Horizontal pipes	All metal pipes as specified	2x1200 mm	LS	Single pipe
H1E	EI 90	Horizontal pipes	Steel, Stainless steel	2x1200 mm	LS	Single pipe
H1F	EI 90	Horizontal pipes	All metal pipes as specified	2x1200 mm	LS & CS	Cluster
H1G	EI 90	Horizontal pipes	Steel, Stainless steel	2x1200 mm	LS & CS	Cluster
H1H	EI 90	Horizontal pipes	Stainless steel	2x1200 mm	LS & CS	Cluster
H1I	EI 90	Horizontal pipes	All metal pipes as specified	Continued	CS	Single pipe
H1J	EI 90	Horizontal pipes	Steel, Stainless steel	Continued	CS	Single pipe
H1K	EI 90	Horizontal pipes	All metal pipes as specified	2x1200 mm	LI	Single pipe
H1L	EI 90	Horizontal pipes	All metal pipes as specified	Continued	CI	Single pipe
H1M	EI 30	Horizontal pipes	All metal pipes as specified	1200 mm asymmetrical	LS & CS	Single pipe
H1N	EI90	Horizontal pipes	All metal pipes as specified	2x1200 mm	LS & CS Small gap filling	Single pipe
H1O	EI120	Horizontal pipes	All metal pipes as specified	2x1200 mm	LS & CS 100 mm residual gap	Single pipe
H1P	EI60	Horizontal pipes	All metal pipes as specified	2x1200 mm	LS & CS Loose stone wool	Single pipe

Annexes for U Protect Roll 3.1 Alu1

Annex	Classification	Orientation	Pipe	Minimum length of insulation	Configuration	Pipe arrangement
V2A	EI 120	Vertical pipes	All metal pipes as specified	2x1200 mm	LS	Single pipe
V2B	EI 120	Vertical pipes	All metal pipes as specified	Continued	CS	Single pipe
V2C	EI 60	Vertical pipes	All metal pipes as specified	2x1200 mm	LS	Single pipe
V2D	EI 60	Vertical pipes	Stainless steel	2x1200 mm	LS	Single pipe
V2E	EI 120	Vertical pipes	Stainless steel	Continued	CS	Single pipe
V2F	EI 30	Vertical pipes	Stainless steel	2x1200 mm	LS & CS	Single pipe
V2G	EI 90	Vertical pipes	All metal pipes as specified	2x1200 mm	LS	Single pipe
V2H	EI 90	Vertical pipes	Stainless steel	2x1200 mm	LS	Single pipe
V2I	EI 90	Vertical pipes	All metal pipes as specified	Continued	CS	Single pipe
V2J	EI 90	Vertical pipes	Stainless steel	Continued	CS	Single pipe
H2A	EI 90	Horizontal pipes	All metal pipes as specified	2x1200 mm	LS	Single pipe
H2B	EI 90	Horizontal pipes	All metal pipes as specified	Continued	CS	Single pipe
H2C	EI 60	Horizontal pipes	All metal pipes as specified	2x1200 mm	LS & CS	Single pipe
H2D	EI 60	Horizontal pipes	Stainless steel	2x1200 mm	LS & CS	Single pipe
H2E	EI 60	Horizontal pipes	Stainless steel	Continued	CS	Single pipe
H2F	EI 30	Horizontal pipes	Stainless steel	2x1200 mm	LS & CS	Single pipe

Explanations:

LS	=	Local, Sustained insulation
LI	=	Local, Interrupted insulation
CS	=	Continued, Sustained insulation
CI	=	Continued, Interrupted insulation

Field of application

This classification is valid for the following end use applications:

Orientation of penetration:

For protection of vertical and horizontal pipe penetrations.

Supporting construction:

For penetration through rigid floors (concrete, masonry or aerated concrete)
minimum density 475 kg/m³ (§13.2.1)
minimum thickness of 150 mm. (§13.2.1)

For penetration through rigid walls (concrete, masonry or aerated concrete)

Resistance to fire classification of minimum EI 60 for penetrations classified EI 60
minimum density 475 kg/m³ (§13.2.1)
minimum thickness of 94 mm. (§13.2.1)

Resistance to fire classification of minimum EI 90 for penetrations classified EI 90
minimum density 475 kg/m³ (§13.2.1)
minimum thickness of 94 mm. (§13.2.1)

Resistance to fire classification of minimum EI 120 for penetrations classified EI 120
minimum density 475 kg/m³ (§13.2.1)
minimum thickness of 100 mm. (§13.2.1)

For penetration through flexible walls (gypsum plasterboards walls)

Resistance to fire classification of minimum EI 60 for penetrations classified EI 60
Minimum thickness of 94 mm. (§13.2.2.1 2)
Minimum two board layers on each side (§13.2.2.1 3)
The overall board thickness is 50 mm or greater.

Resistance to fire classification of minimum EI 90 for penetrations classified EI 90
Minimum thickness of 94 mm. (§13.2.2.1 2)
Minimum two board layers on each side (§13.2.2.1 3)
The overall board thickness is 50 mm or greater.

Resistance to fire classification of minimum EI 120 for penetrations classified EI 120
Minimum thickness of 100 mm. (§13.2.2.1 2)
Minimum two board layers on each side (§13.2.2.1 3)
The overall board thickness is 50 mm or greater.

For penetration through flexible walls with timber studs (§13.2.2.1, 5)

Constructed as described for wall with steel studs, but with no part of the penetration closer than 100 mm to a stud, the cavity is closed between the penetration seal and the stud, and minimum 100 mm of insulation of class A1 or A2 according to EN 13501-1 is provided within the cavity between the penetration seal and the stud.

Position of support for the service:

The distance between the surface of the supporting construction and the first support for the service shall not exceed 600 mm for floors and walls. (§13.4.3)

Gap between supporting construction and insulation:

the distance shall not exceed 50 mm

Note: For processability/workability the preferably gap should be minimum 10 mm.

Sealing medium inside aperture:

For rigid constructions the aperture can be filled with:

Mortar

According to EN 15882-3 Mortar is defined as blend of gypsum or cement based powder, fillers, water and chemical modifiers, with or without reinforcement

Concrete

For flexible constructions the aperture can be filled with:

Gypsum plaster/render/filler

The filling has to be free of cavities.

Pipes:

Diameter range and wall thickness range is determined as shown on Annex tables listed in this report.

Materials - For service pipes made from:

Material	Thermal conductivity W/m·k	Melting point °C
Copper	386	1084
Cast iron	58	1127
Steel	43	1425
Stainless Steel	16	1510

Or other metals or alloys with a higher melting point and lower thermal conductivity than copper.

The pipes can be coated provided the overall classification is minimum A2 according to EN 13501-1.

Pipe end configuration

The classification is valid for the C/U and C/C configuration.

C/U = (Capped inside the furnace, Uncapped outside the furnace)

C/C = (Capped inside the furnace, Capped outside the furnace)

Orientation of the pipe

The service pipe can be installed in an angle between 90° – 45° to the supporting construction.

Distance between the services

Single pipes penetration seal systems:

Single pipe penetration seal systems have only one pipe per aperture.

Single pipe systems should have a separation distance of ≥ 100 mm. The separation distance between the pipes shall be measured from the outer edges of pipes or secondary parts of the penetration seal, as relevant. In this case the outer surface of the pipe insulation.

Multiple pipe penetration seal systems:

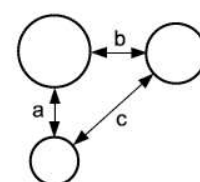
Multiple pipe penetration seal systems (cluster configuration) can have multiple pipes through one aperture.

The pipe can be of any type material as long as this pipe type is also classified for Multiple pipe penetration seal systems.

The multiple pipe systems can be classified for linear arrangement or cluster arrangement. The separation distances a, b and c are the distance measured from the outer edges of pipes or secondary parts of the penetration seal, as relevant. In this case the outer surface of the pipe insulation.



Linear arrangement



Cluster arrangement

The separation distance for multiple penetration seal systems should be minimum:

$$\begin{aligned} a \text{ and } b &\geq 0 \text{ mm} \\ c &\geq 22 \text{ mm} \end{aligned}$$

Multiple pipe penetration systems classified for linear arrangement (see annex table above) can be installed as single pipe systems and multiple pipe systems in linear configuration.

Multiple pipe systems classified for cluster arrangement (see annex table above) can be installed as single pipe systems and multiple pipe systems in both linear and cluster configurations.

A cluster or linear configuration can consist of services made from different materials eg. metal and plastic pipes together, on condition that all the service types have been tested in the that configuration.

Note: classification of plastic pipes is given in classification report PCA10524A.

The pipes can be positioned next to pipes with a penetration seal consisting of a pipe collar of one of the following types:

Producer	Product name	Approval
Doyma	Curaflam® System XS Pro;	AbZ Z-19.53-2182 ETA-11/0498
Firentis	FS-M R1	AbZ Z-19.53-2182 ETA-11/0498
Doyma	Curaflam® System ECO Pro;	ABZ Z-19.17-1089
Firentis	FS-M R2	ABZ Z-19.17-1089
Rolf Kuhn	System FSC	ABZ Z-19.17-1089
Conel	Flam Manschette	ABZ Z-19.17-1986
Wavin	System BM-R90	AbZ Z-19.17-1924
Poloplast	System POLO-BSM F	AbZ Z-19.17-1923

Insulation:

The thickness range of the insulation is shown on the annexes.

The thickness can be increased above the specification given in the annexes for pipes with continued insulation.

The density of the insulation may be increased but not reduced.

The length from the center of the supporting construction to the end of the insulation may be increased from the insulation length given in the annex tables listed in this report but not reduced.

The joint between 2 pipe sections can be closed using aluminum tape.

Limitations

This document does not represent type approval or certification of the element.

Danish Institute of Fire and Security Technology



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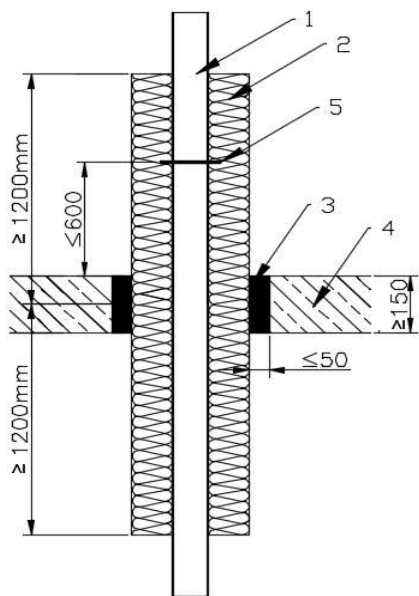


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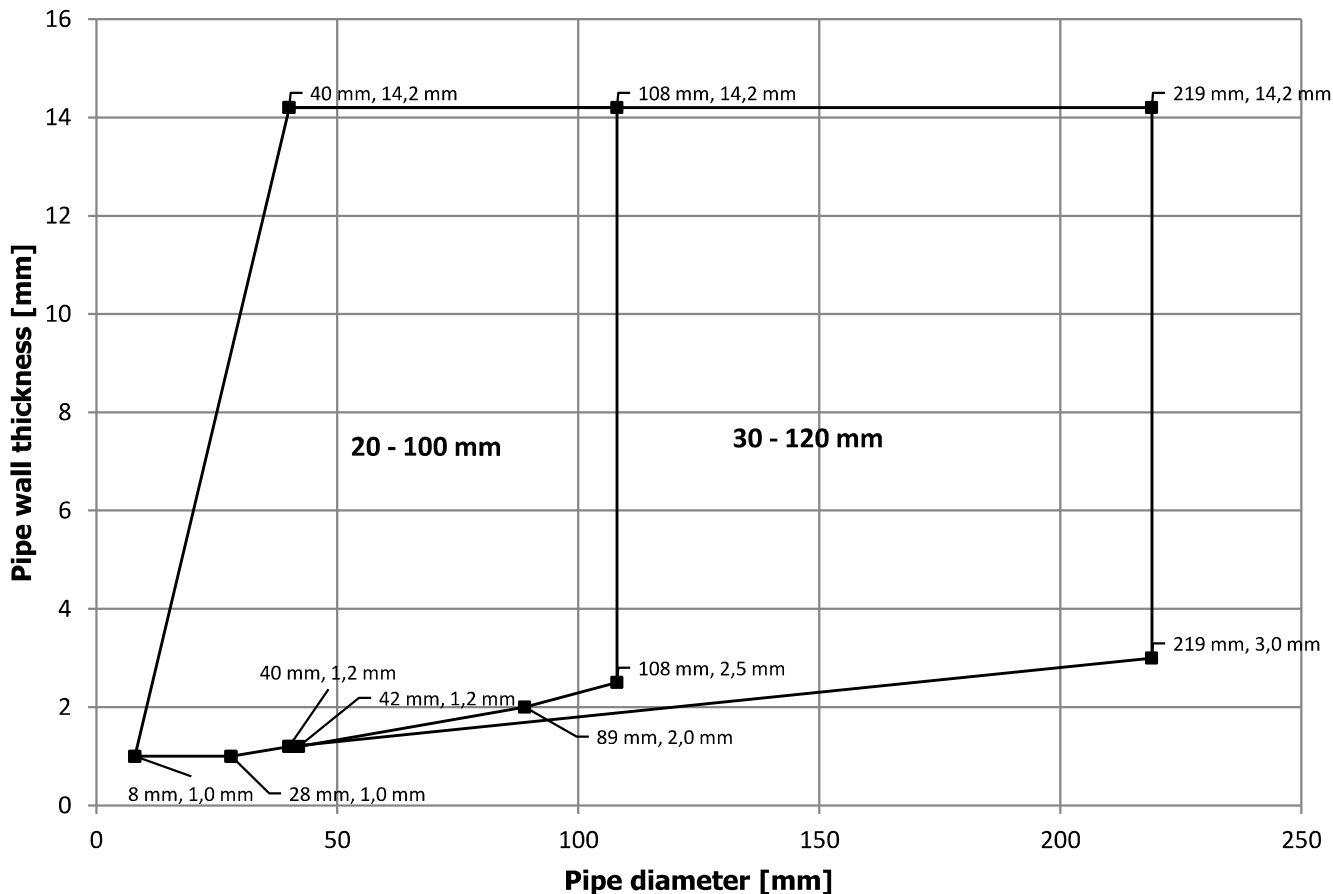
Bürgermeister-Grünzweig-Strasse 1
67059 Ludwigshafen
Germany

El120 - Vertical pipe direction
U Protect Pipe Section Alu2
Local, Sustained insulation
Copper, Cast iron, Steel and Stainless steel

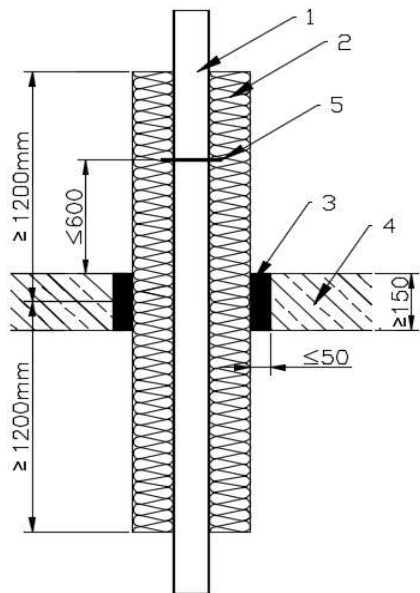


No.	Item	Description
1	Pipe	Copper, Cast iron, Steel and Stainless steel
2	Insulation	U Protect Pipe Section Alu2 fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with Mortar or Concrete
4	Ceiling	Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

Field of application for insulation thickness

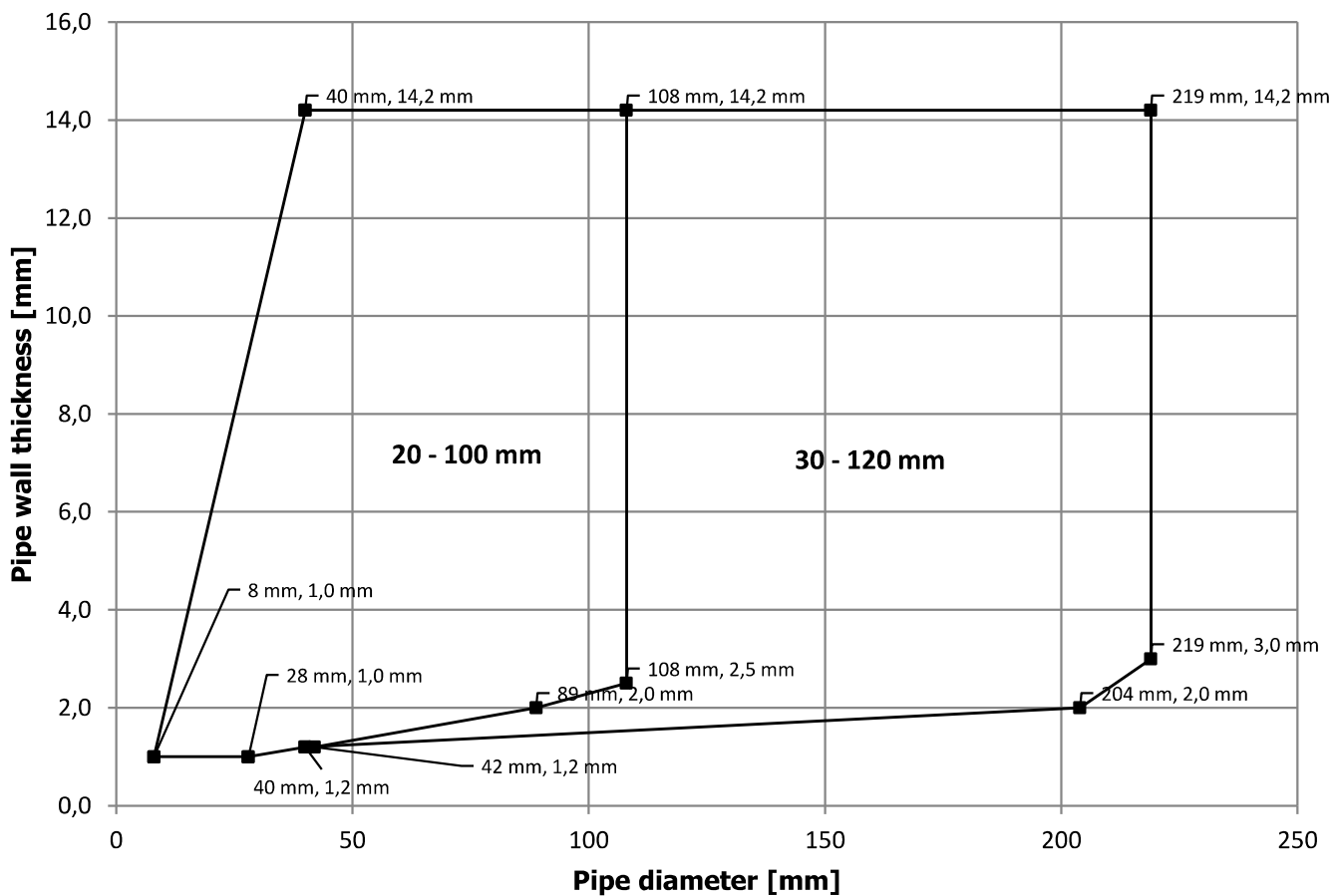


El120 - Vertical pipe direction
U Protect Pipe Section Alu2
Local, Sustained insulation
Stainless steel



No.	Item	Description
1	Pipe	Stainless steel
2	Insulation	U Protect Pipe Section Alu2 fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with Mortar or Concrete
4	Ceiling	Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

Field of application for insulation thickness

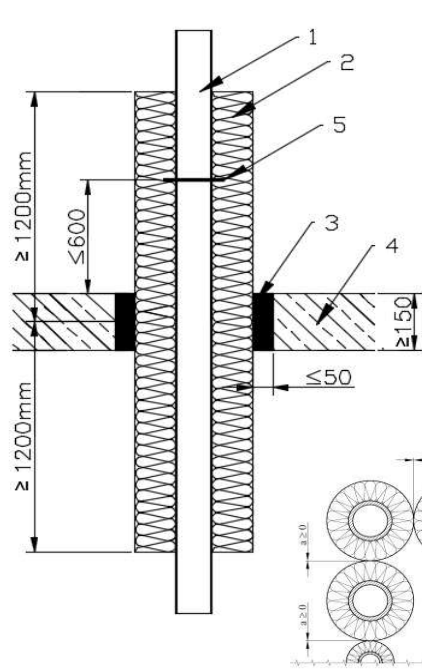


El120 - Vertical pipe direction

U Protect Pipe Section Alu2

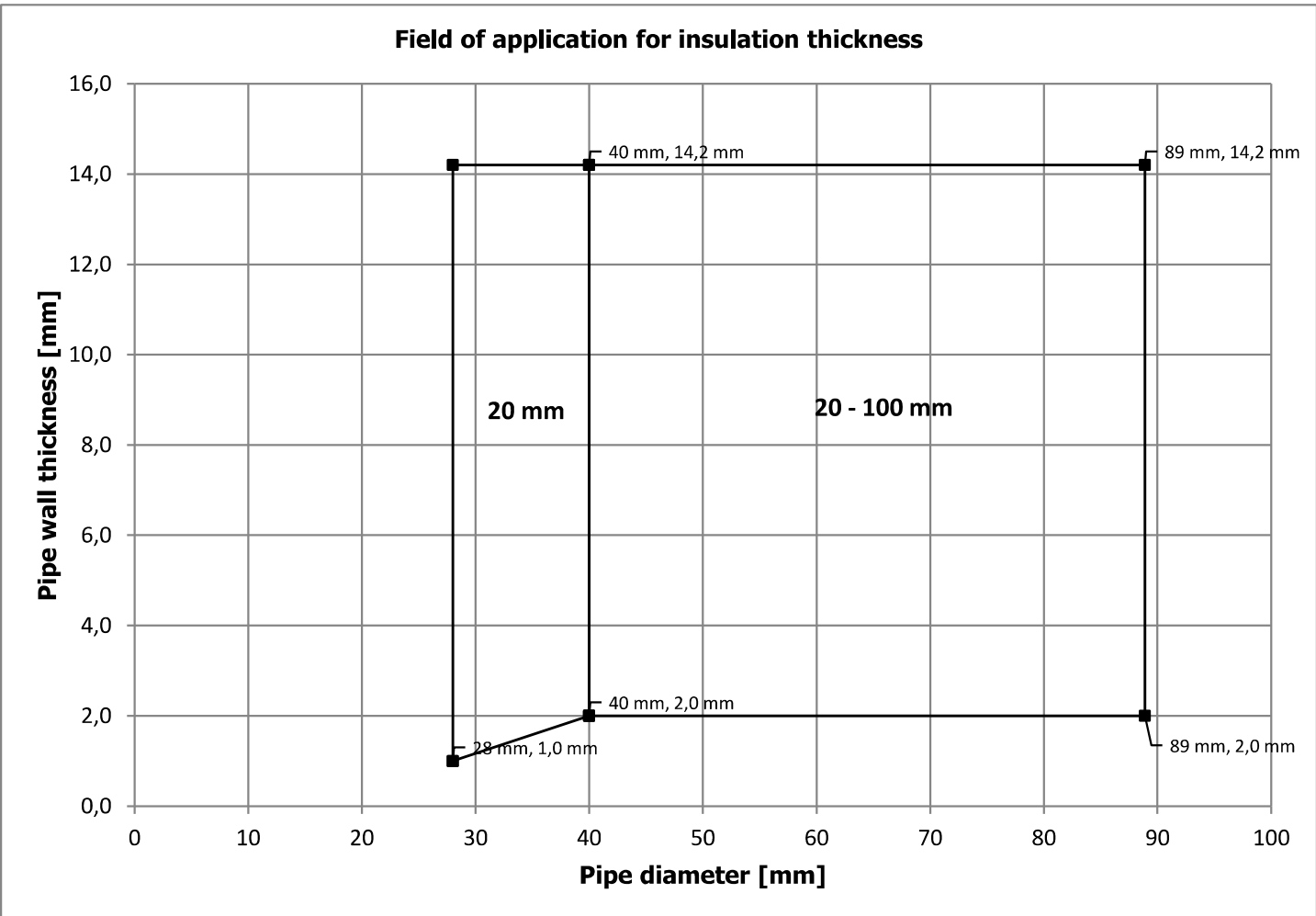
Local/Continued, Sustained insulation

Copper, Cast iron, Steel and Stainless steel, Cluster

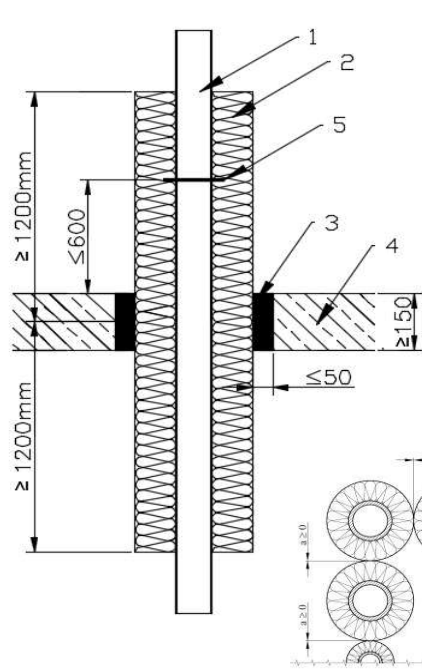


No.	Item	Description
1	Pipe	Copper, Cast iron, Steel and Stainless steel
2	Insulation	U Protect Pipe Section Alu2
		fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with Mortar or Concrete
4	Ceiling	Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

NB. For continued insulation the thickness of the insulation can be increased



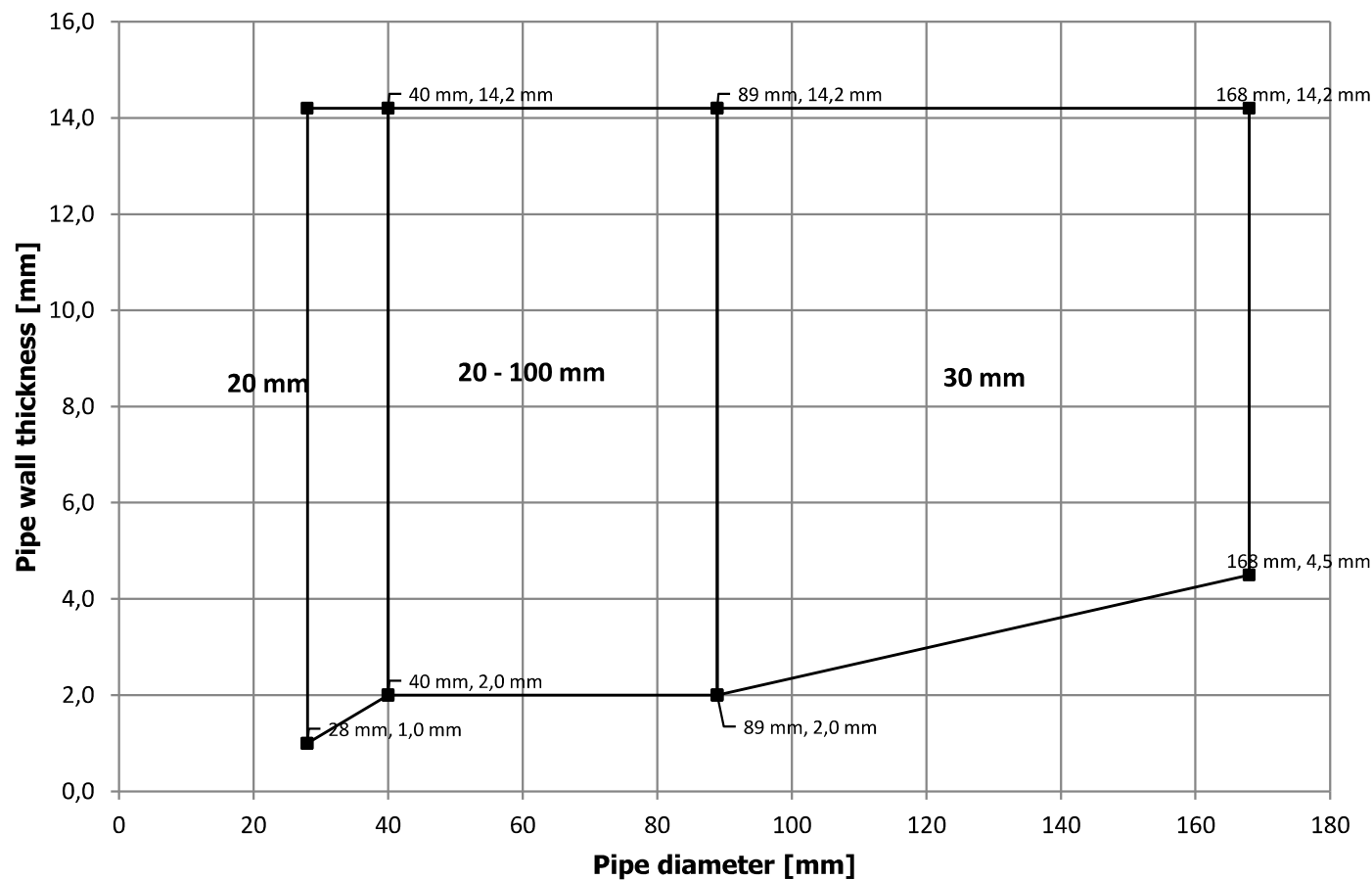
El120 - Vertical pipe direction
U Protect Pipe Section Alu2
Local/Continued, Sustained insulation
Steel, Stainless steel, Cluster



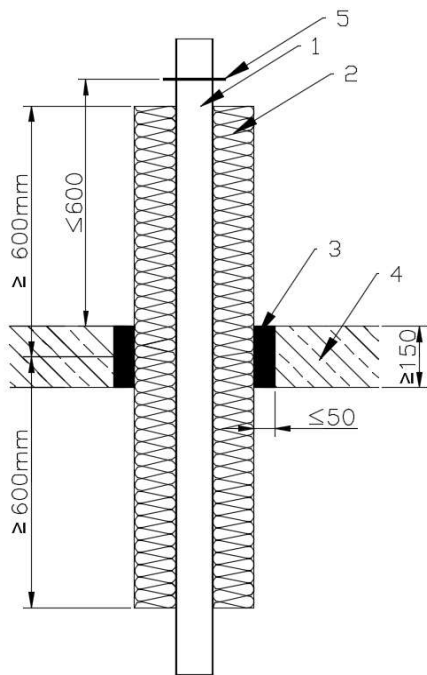
No.	Item	Description
1	Pipe	Steel, Stainless steel
2	Insulation	U Protect Pipe Section Alu2 fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with Mortar or Concrete
4	Ceiling	Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

NB. For continued insulation the thickness of the insulation can be increased

Field of application for insulation thickness



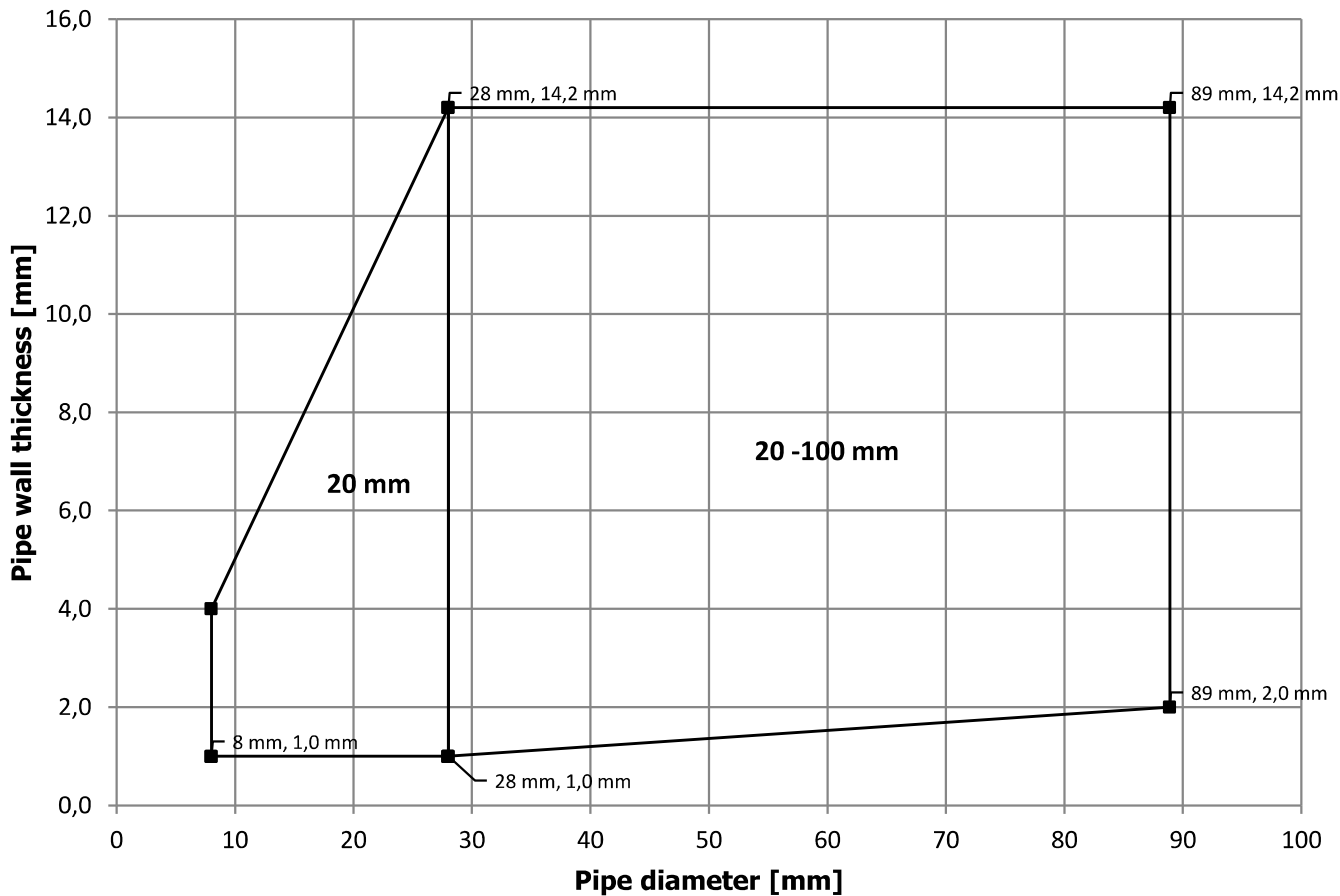
El120 - Vertical pipe direction
U Protect Pipe Section Alu2
Local/Continued, Sustained insulation
Copper, Cast iron, Steel and Stainless steel



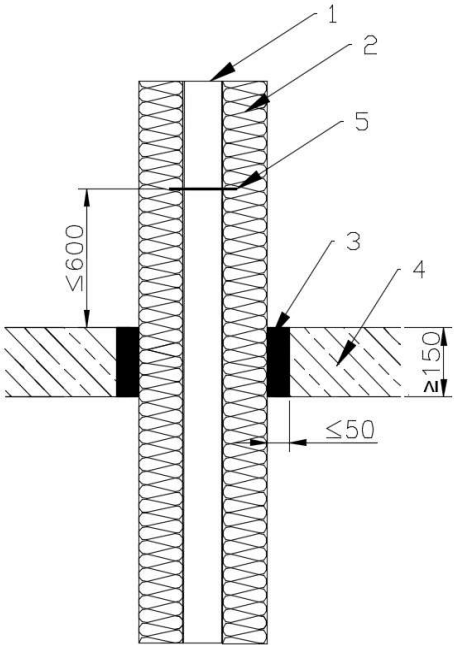
No.	Item	Description
1	Pipe	Copper, Cast iron, Steel and Stainless steel
2	Insulation	U Protect Pipe Section Alu2 fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with Mortar or Concrete
4	Ceiling	Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

NB. For continued insulation the thickness of
the insulation can be increased

Field of application for insulation thickness

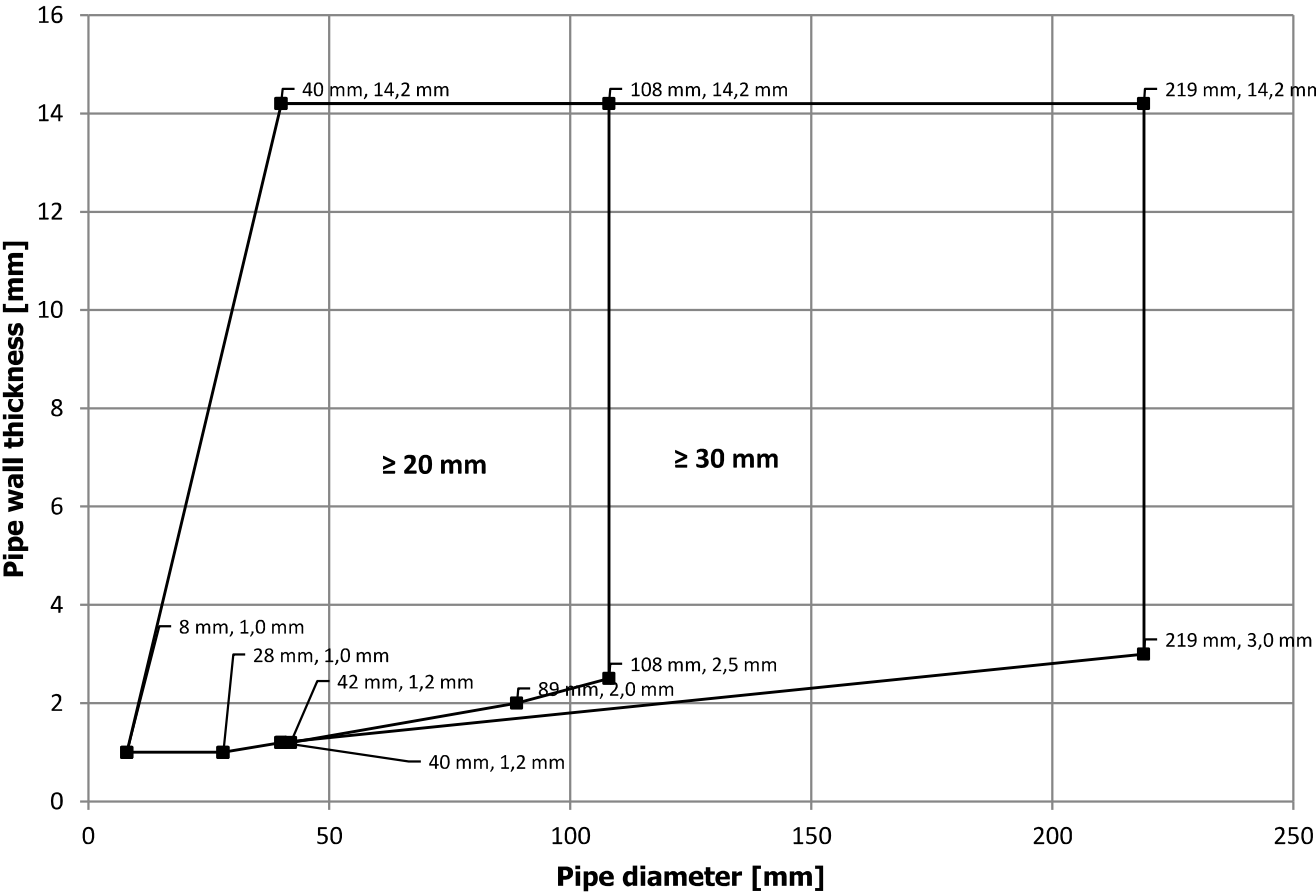


El120 - Vertical pipe direction
U Protect Pipe Section Alu2
Continued, Sustained insulation
Copper, Cast iron, Steel and Stainless steel

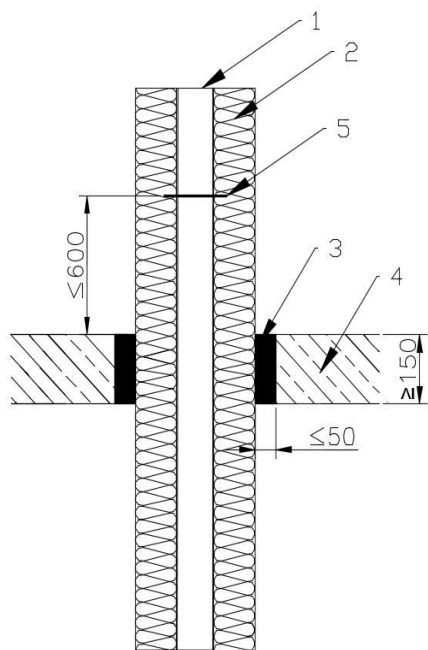


No.	Item	Description
1	Pipe	Copper, Cast iron, Steel and Stainless steel
2	Insulation	U Protect Pipe Section Alu2 fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with Mortar or Concrete
4	Ceiling	Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

Field of application for insulation thickness

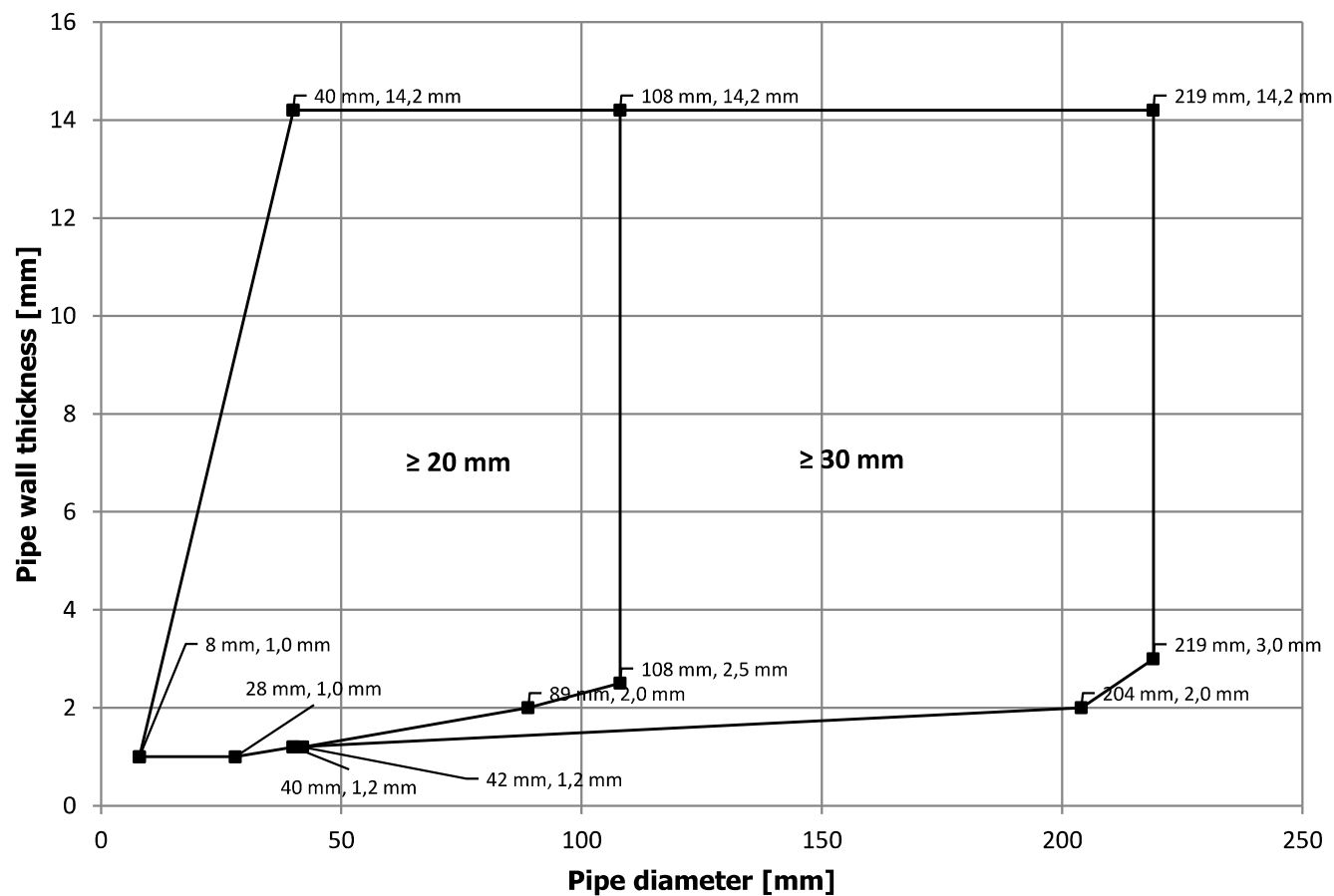


El120 - Vertical pipe direction
U Protect Pipe Section Alu2
Continued, Sustained insulation
Stainless steel



No.	Item	Description
1	Pipe	Stainless steel
2	Insulation	U Protect Pipe Section Alu2 fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with Mortar or Concrete
4	Ceiling	Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

Field of application for insulation thickness

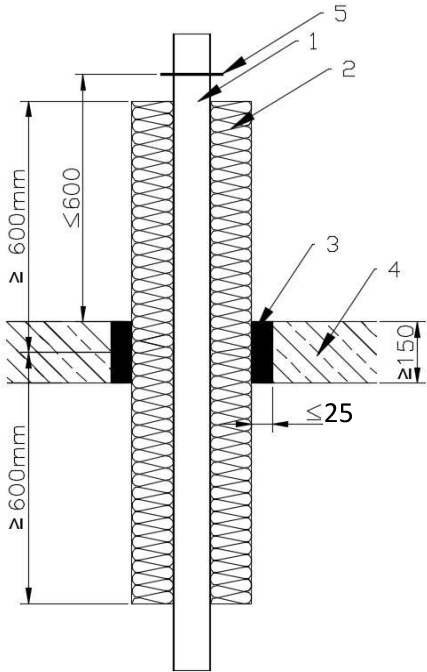


El120 - Vertical pipe direction

U Protect Pipe Section Alu2

Local/Continued, Sustained insulation, small gap filling

Copper, Cast iron, Steel and Stainless steel

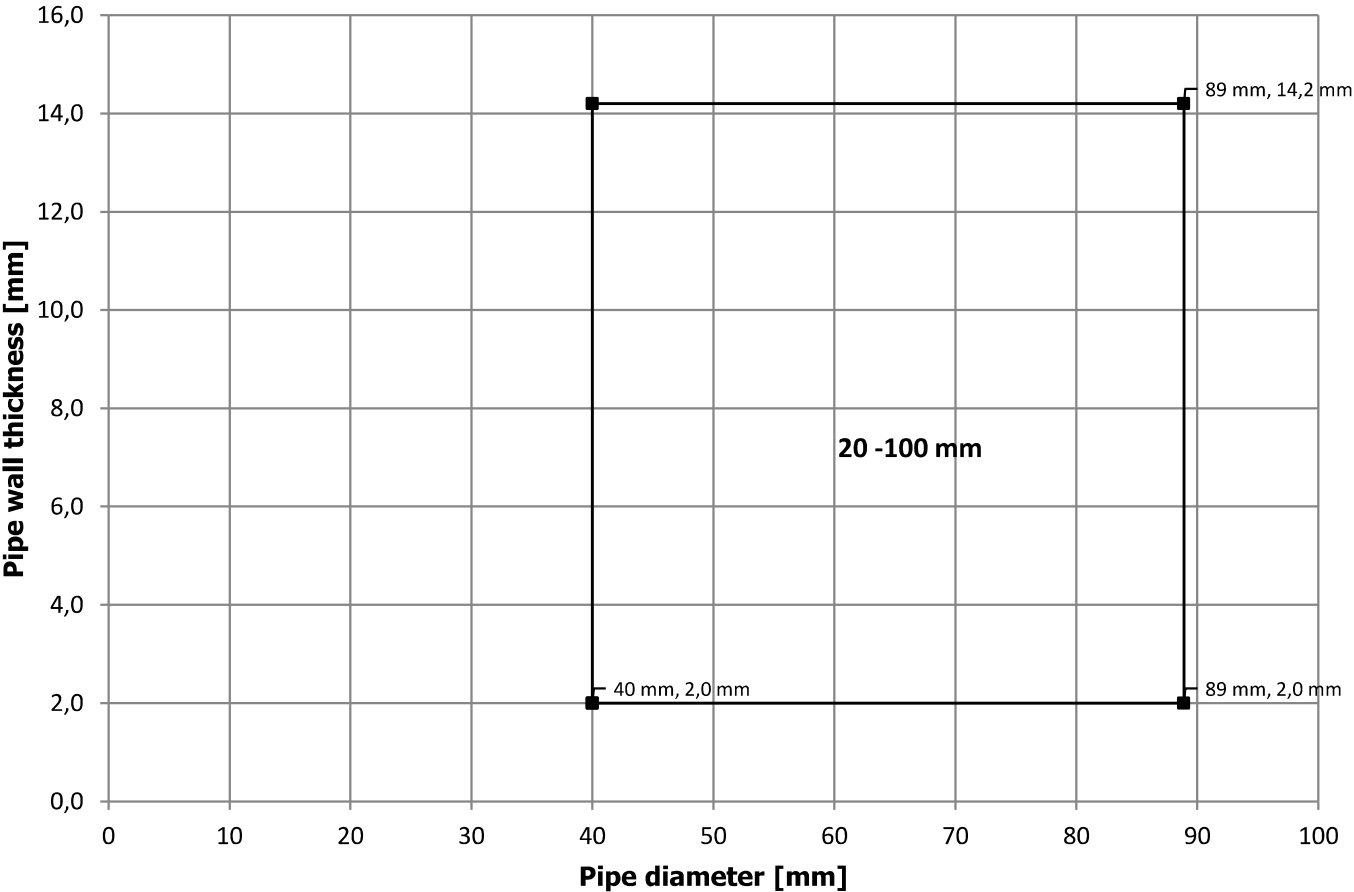


No.	Item	Description
1	Pipe	Copper, Cast iron, Steel and Stainless steel
2	Insulation	U Protect Pipe Section Alu2
3	Residual gap*	fixed with steel wire less or equal to c/c 250 mm Protect BSK, PROMASEAL-Mastic, Pyro-Safe Flammoplast KS3 or SIBRALIT DX in a depth of >= 25mm from both sides.
4	Ceiling	Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

NB. For continued insulation the thickness of the insulation can be increased

*Gap size of up 25 mm. In between the filling can be a void or material of Euroclass E or better.

Field of application for insulation thickness

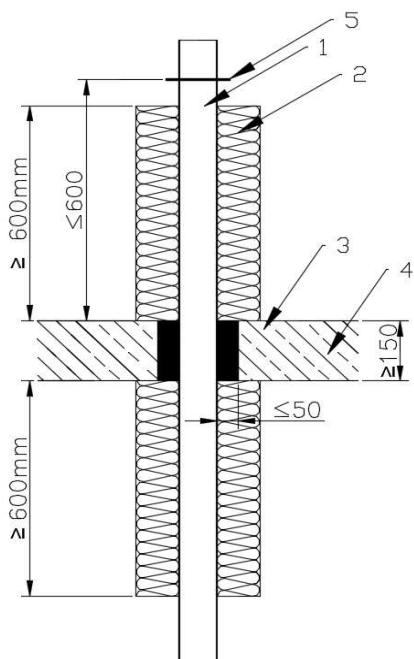


El120 - Vertical pipe direction

U Protect Pipe Section Alu2

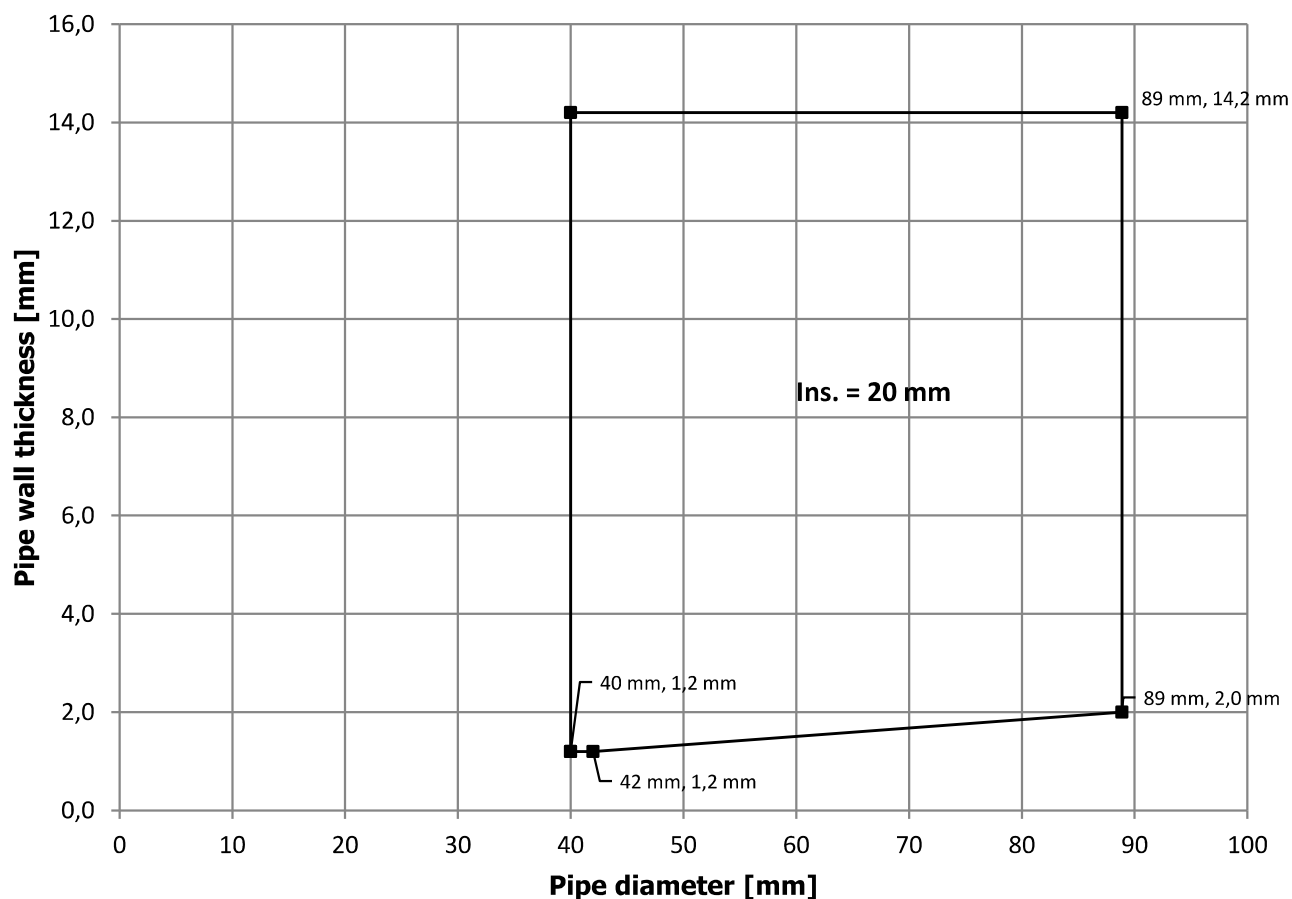
Local, Interrupted insulation

Copper, Cast iron, Steel and Stainless steel

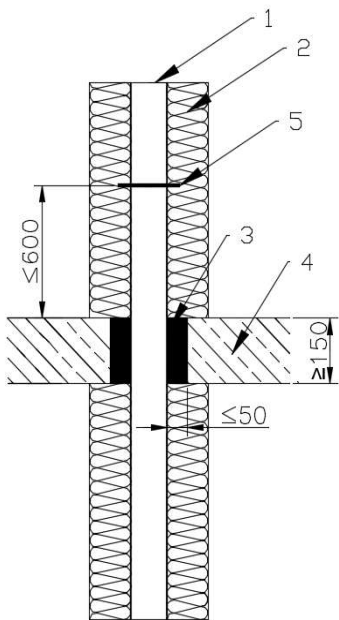


No.	Item	Description
1	Pipe	Copper, Cast iron, Steel and Stainless steel
2	Insulation	U Protect Pipe Section Alu2 fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with Mortar or Concrete
	With or without:	5 mm PE sound insulation strip 3.5 mm Self-adhesive felt stripes 250 mm Sleeve type BSM-S 89
4	Ceiling	Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

Field of application for insulation thickness

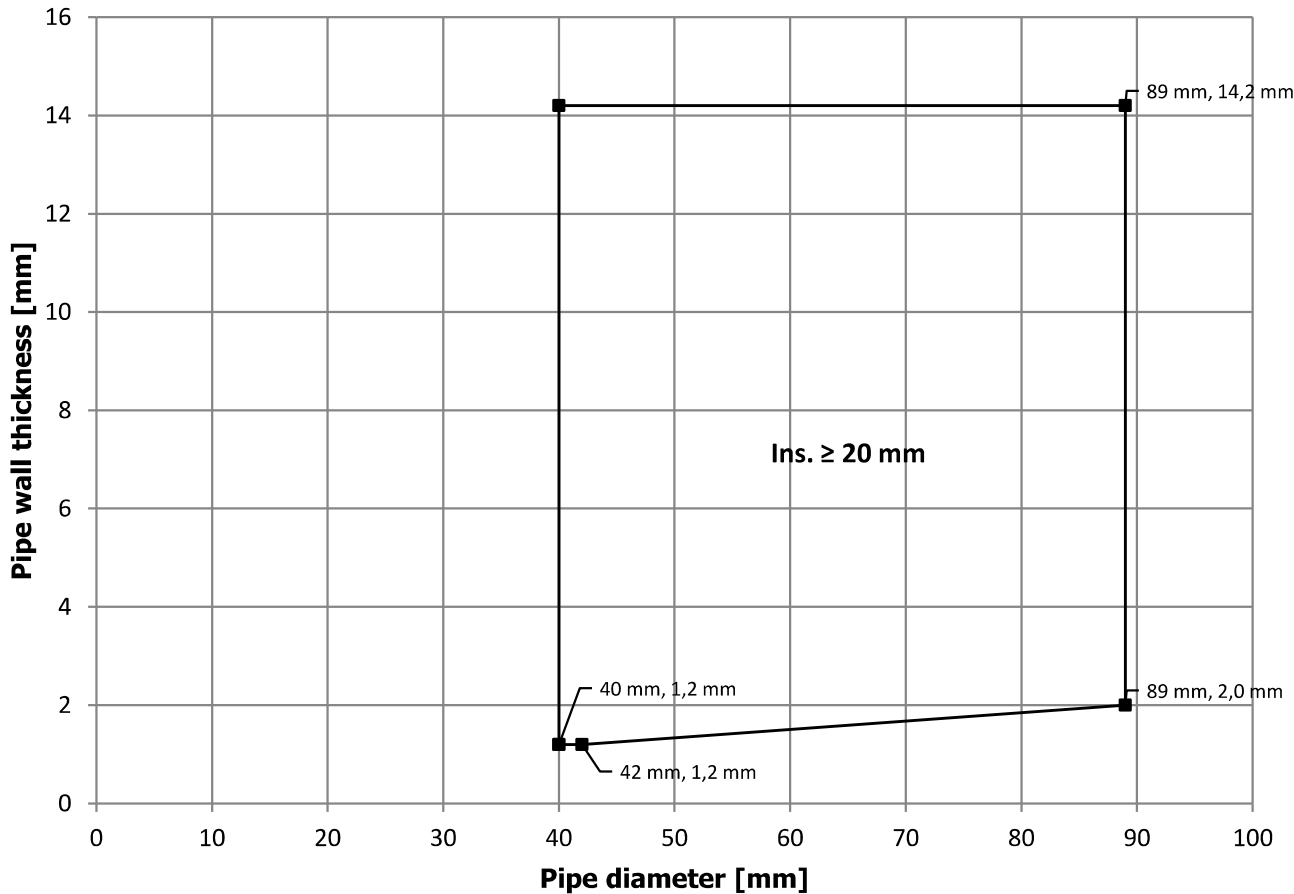


El120 - Vertical pipe direction
U Protect Pipe Section Alu2
Continued, Interrupted insulation
Copper, Cast iron, Steel and Stainless steel



No.	Item	Description
1	Pipe	Copper, Cast iron, Steel and Stainless steel
2	Insulation	U Protect Pipe Section Alu2 fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with Mortar or Concrete With or without: 5 mm PE sound insulation strip 3.5 mm Self-adhesive felt stripes 250 mm Sleeve type BSM-S 89
4	Ceiling	Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

Field of application for insulation thickness

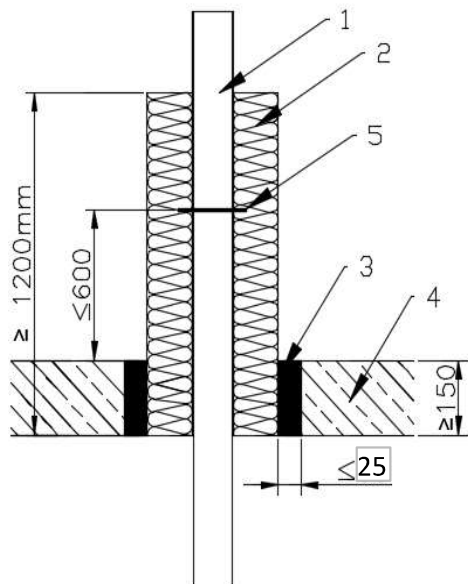


El120 - Vertical pipe direction

U Protect Pipe Section Alu2

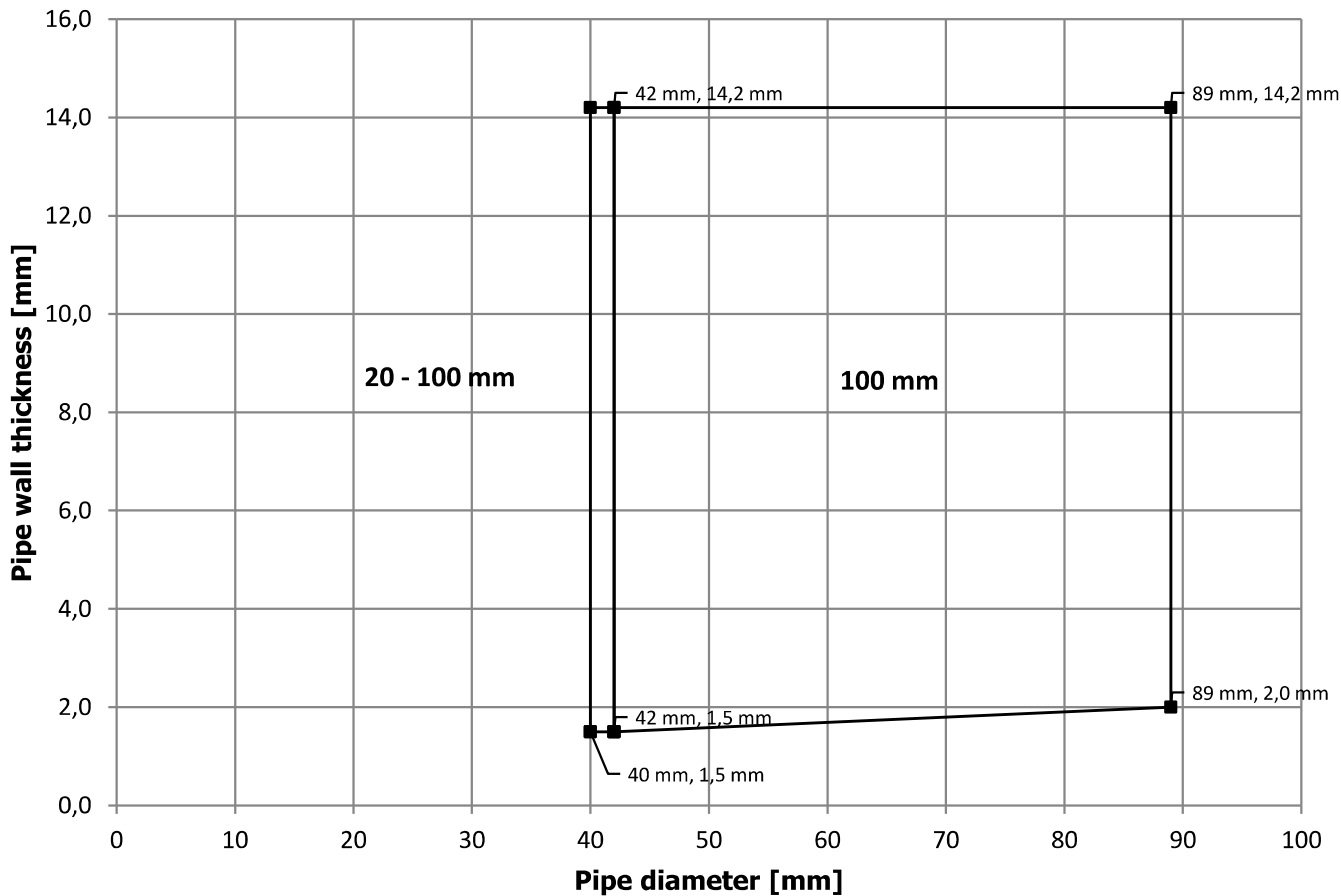
Local, Sustained asymmetrical insulation

Copper, Cast iron, Steel and Stainless steel



No.	Item	Description
1	Pipe	Copper, Cast iron, Steel and Stainless steel
2	Insulation	U Protect Pipe Section Alu2 fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with Mortar or Concrete
4	Ceiling	Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

Field of application for insulation thickness

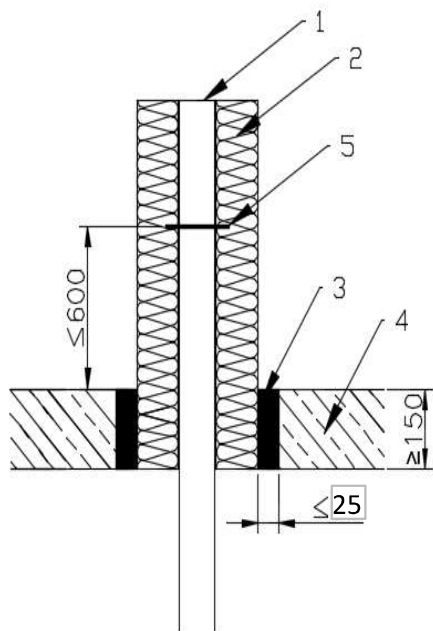


El120 - Vertical pipe direction

U Protect Pipe Section Alu2

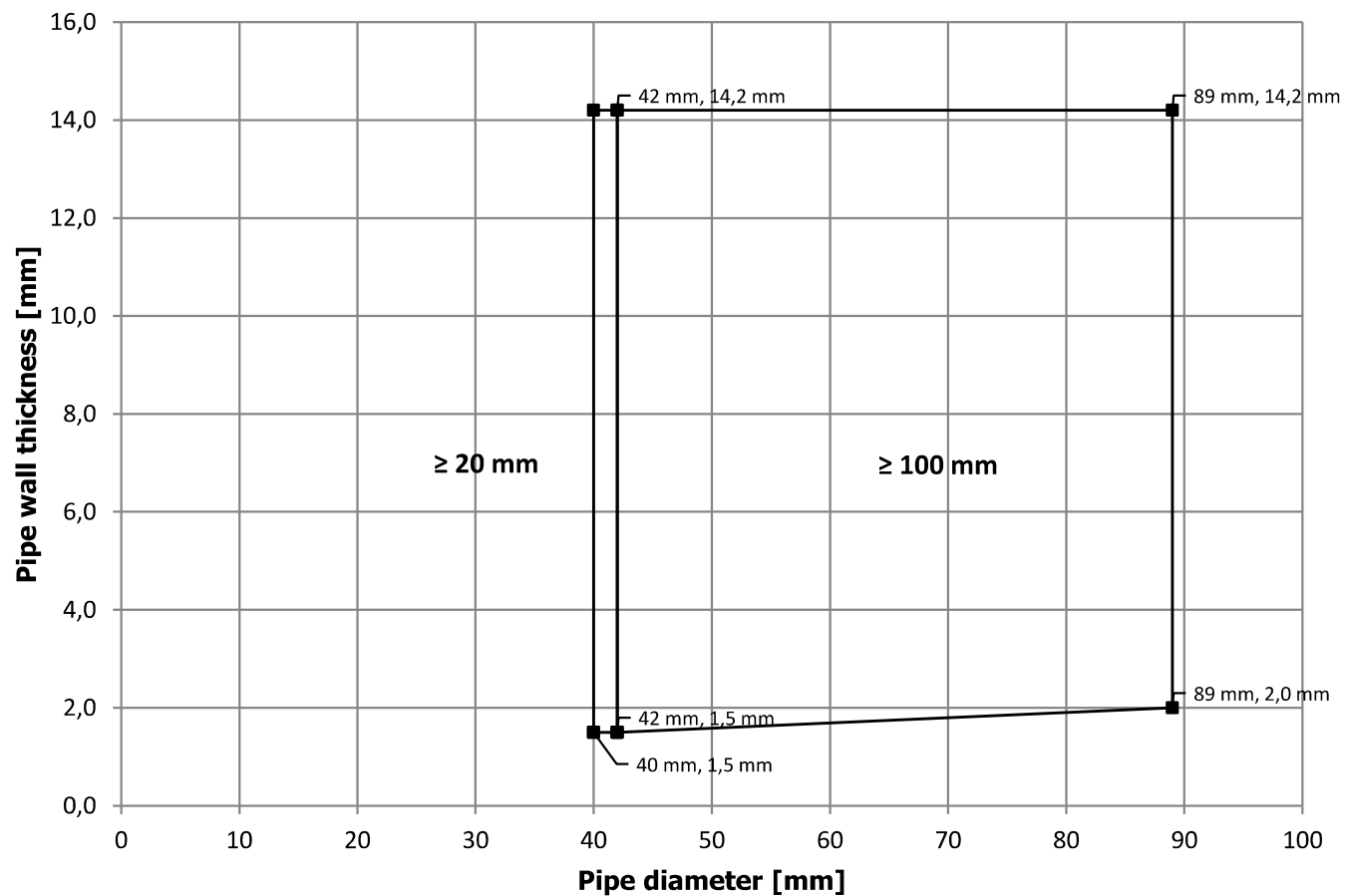
Continued, Sustained asymmetrical insulation

Copper, Cast iron, Steel and Stainless steel

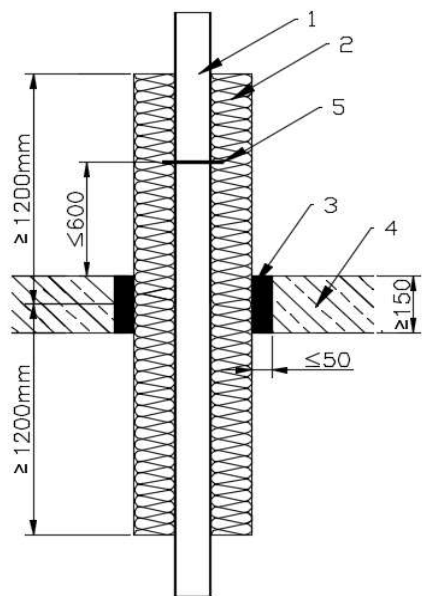


No.	Item	Description
1	Pipe	Copper, Cast iron, Steel and Stainless steel
2	Insulation	U Protect Pipe Section Alu2 fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with Mortar or Concrete
4	Ceiling	Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

Field of application for insulation thickness

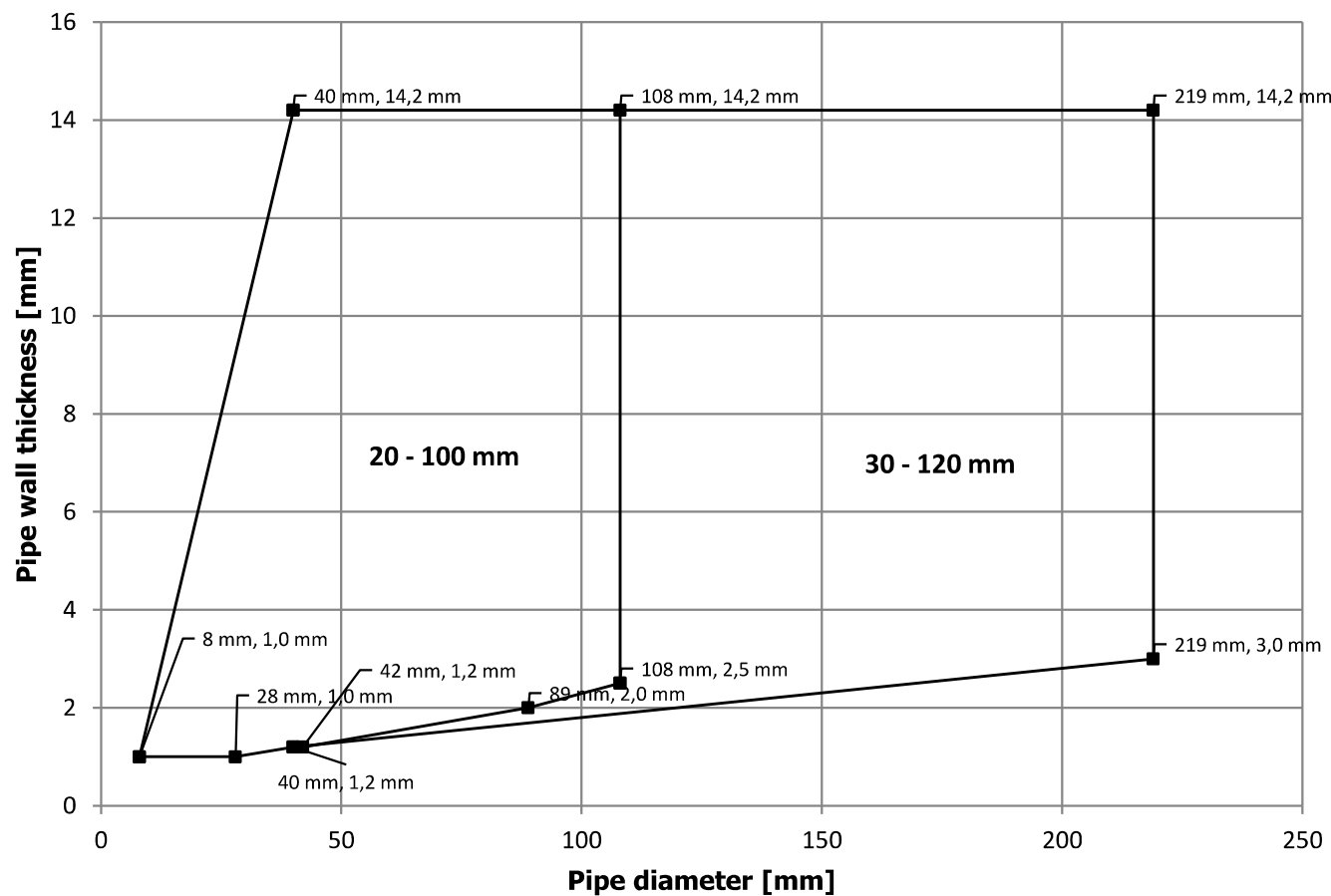


El90 - Vertical pipe direction
U Protect Pipe Section Alu2
Local, Sustained insulation
Copper, Cast iron, Steel and Stainless steel

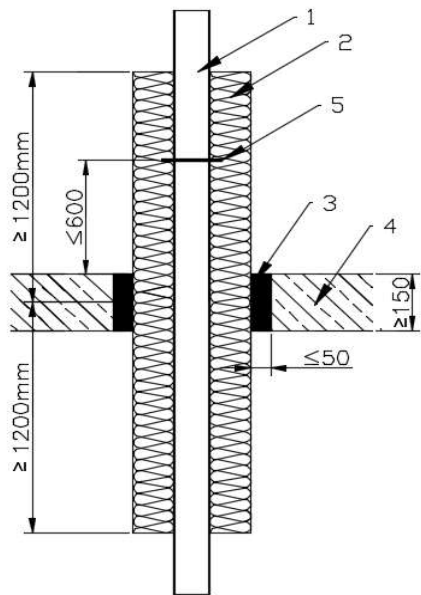


No.	Item	Description
1	Pipe	Copper, Cast iron, Steel and Stainless steel
2	Insulation	U Protect Pipe Section Alu2 fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with Mortar or Concrete
4	Ceiling	Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

Field of application for insulation thickness

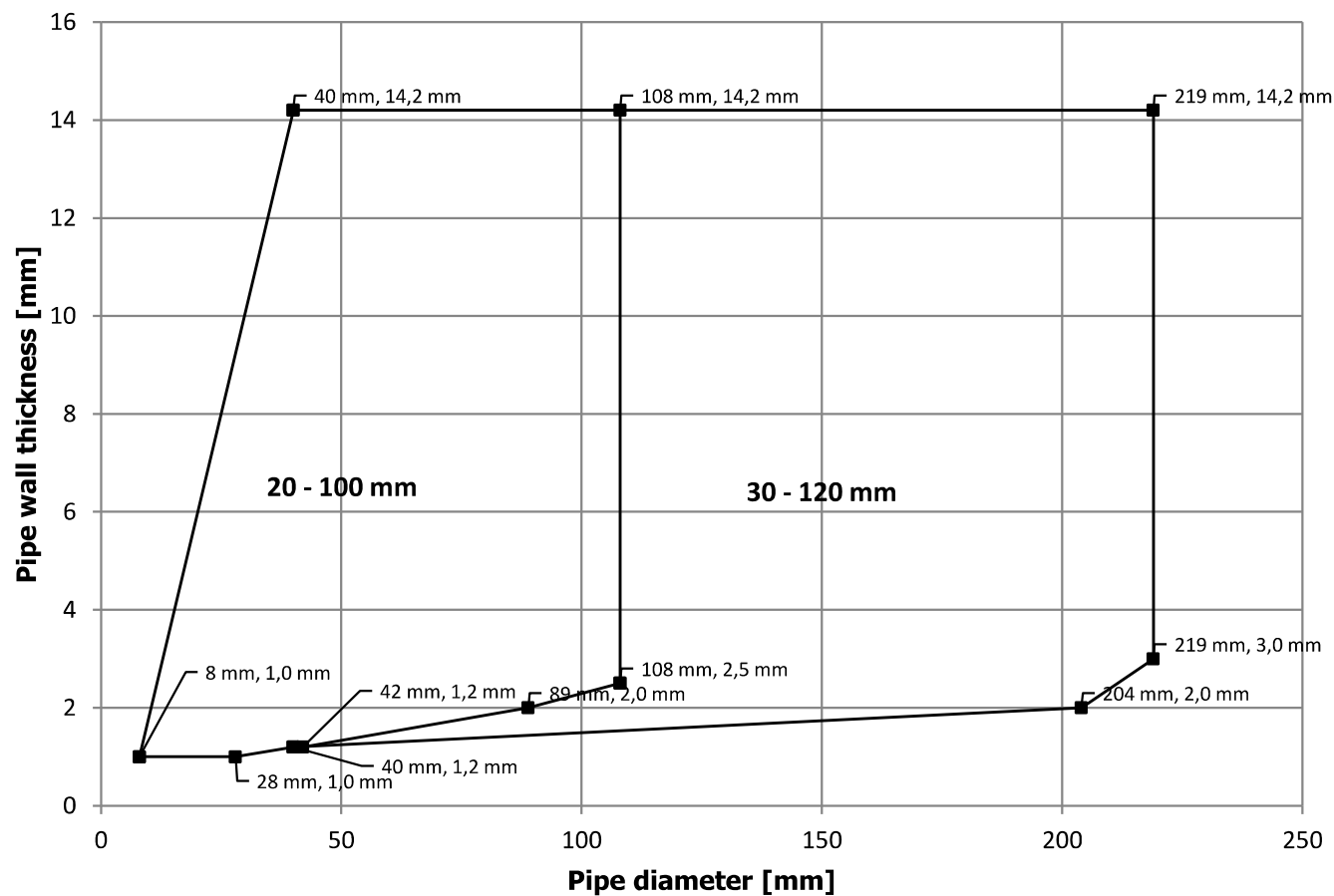


El90 - Vertical pipe direction
U Protect Pipe Section Alu2
Local, Sustained insulation
Stainless steel



No.	Item	Description
1	Pipe	Stainless steel
2	Insulation	U Protect Pipe Section Alu2
		fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with Mortar or Concrete
4	Ceiling	Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

Field of application for insulation thickness

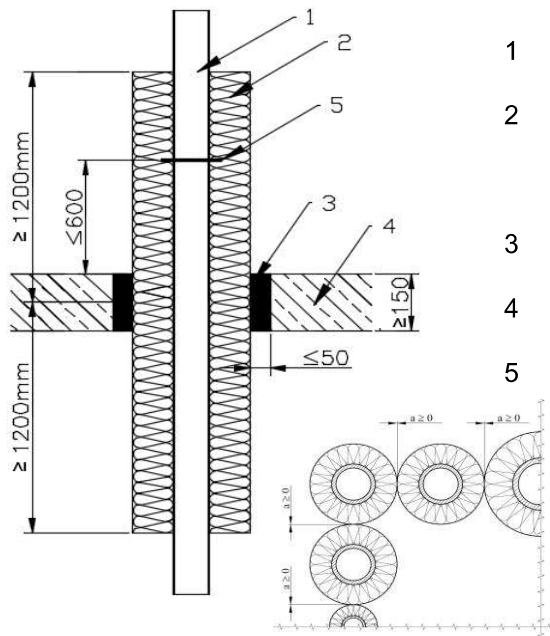


El90 - Vertical pipe direction

U Protect Pipe Section Alu2

Local/Continued, Sustained insulation

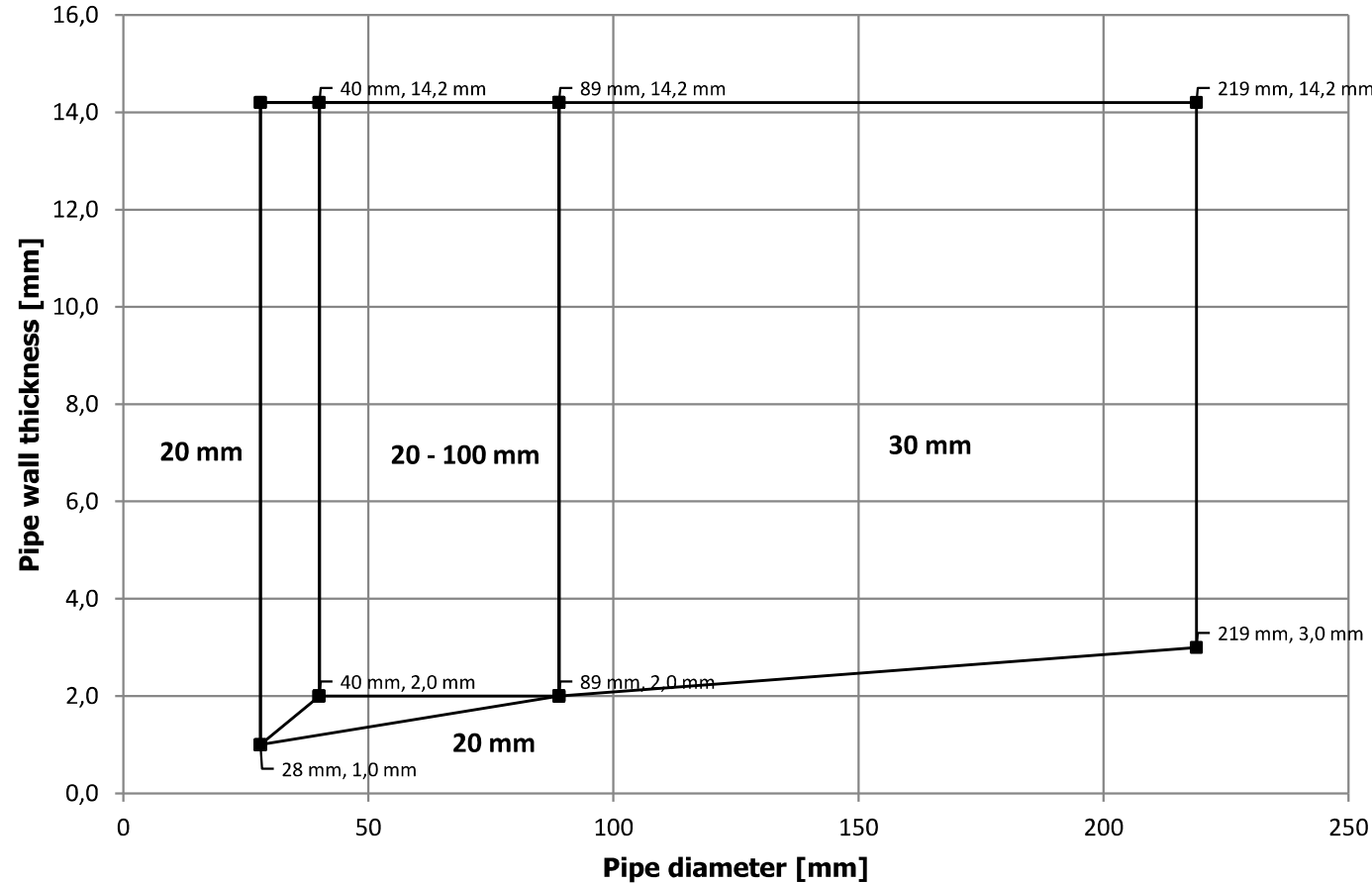
Copper, Cast iron, Steel and Stainless steel, Cluster



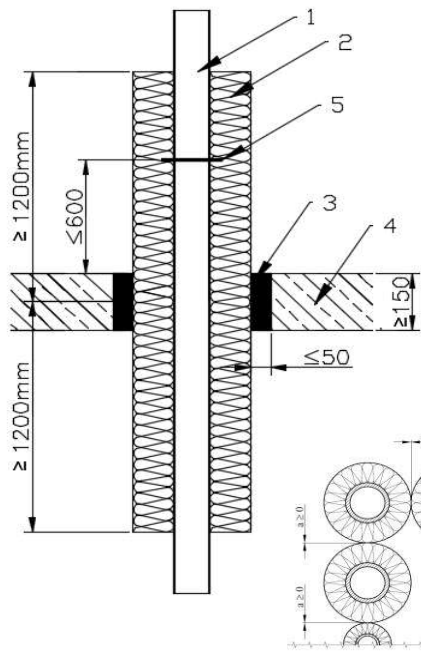
No.	Item	Description
1	Pipe	Copper, Cast iron, Steel and Stainless steel
2	Insulation	U Protect Pipe Section Alu2 fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with Mortar or Concrete
4	Ceiling	Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

NB. For continued insulation the thickness of the insulation can be increased

Field of application for insulation thickness



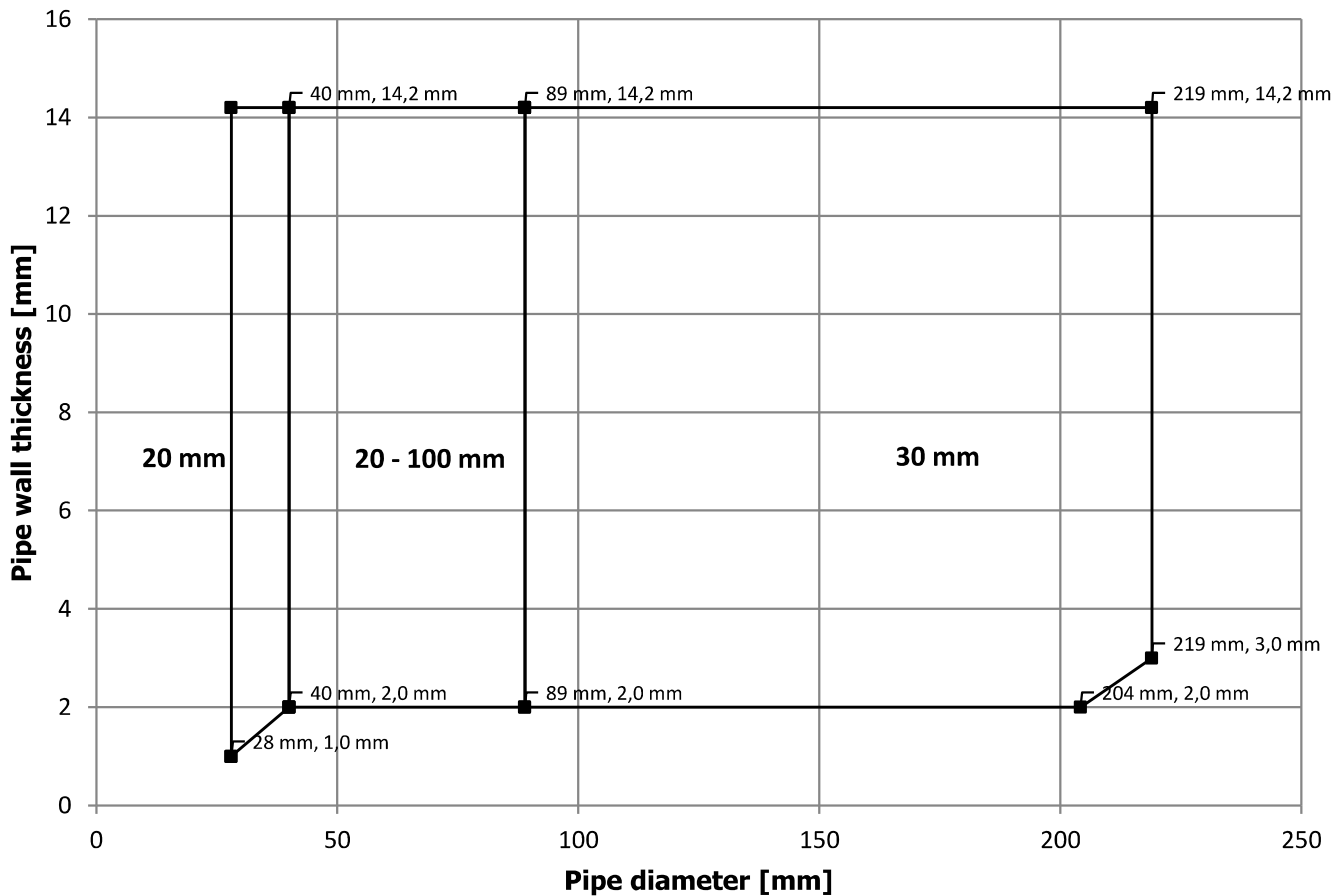
El90 - Vertical pipe direction
U Protect Pipe Section Alu2
Local/Continued, Sustained insulation
Stainless steel, Cluster



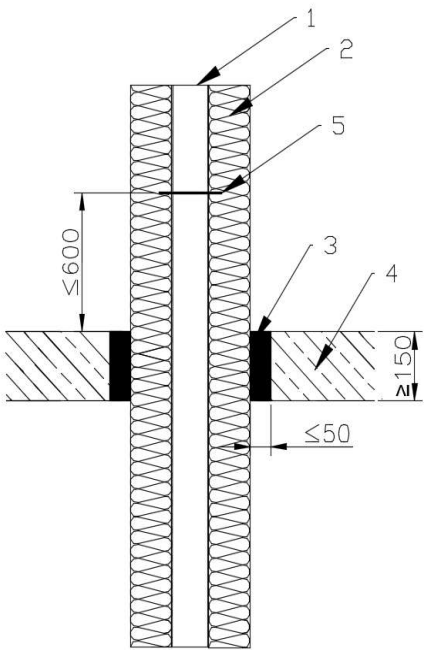
No.	Item	Description
1	Pipe	Stainless steel
2	Insulation	U Protect Pipe Section Alu2
		fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with Mortar or Concrete
4	Ceiling	Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

NB. For continued insulation the thickness of the insulation can be increased

Field of application for insulation thickness

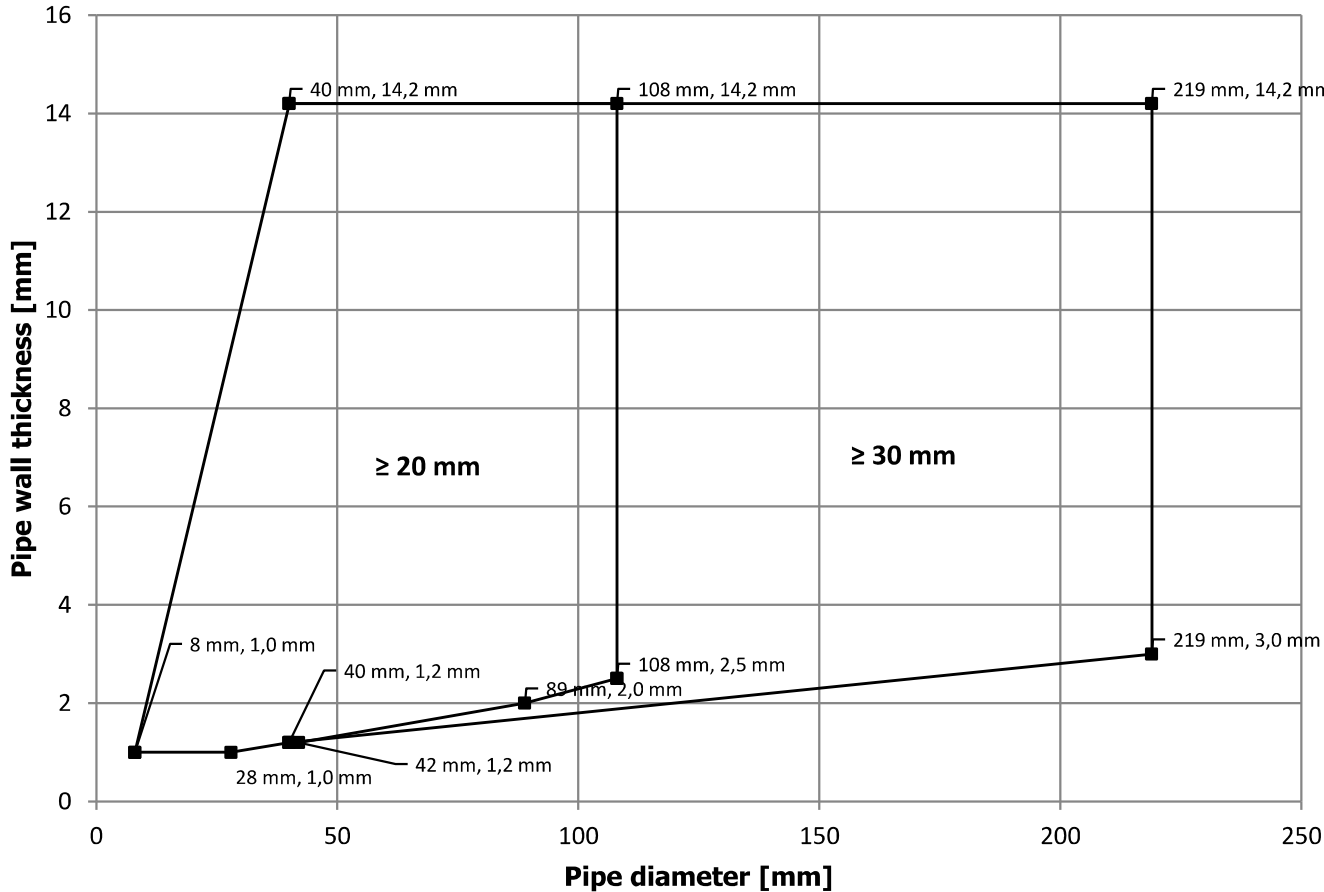


El90 - Vertical pipe direction
U Protect Pipe Section Alu2
Continued, Sustained insulation
Copper, Cast iron, Steel and Stainless steel

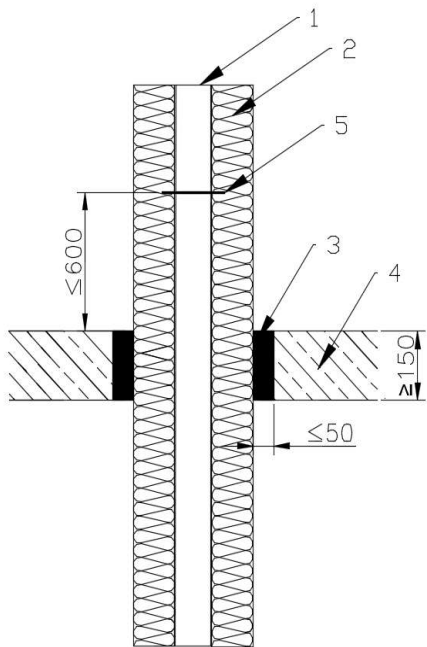


No.	Item	Description
1	Pipe	Copper, Cast iron, Steel and Stainless steel
2	Insulation	U Protect Pipe Section Alu2 fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with Mortar or Concrete
4	Ceiling	Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

Field of application for insulation thickness

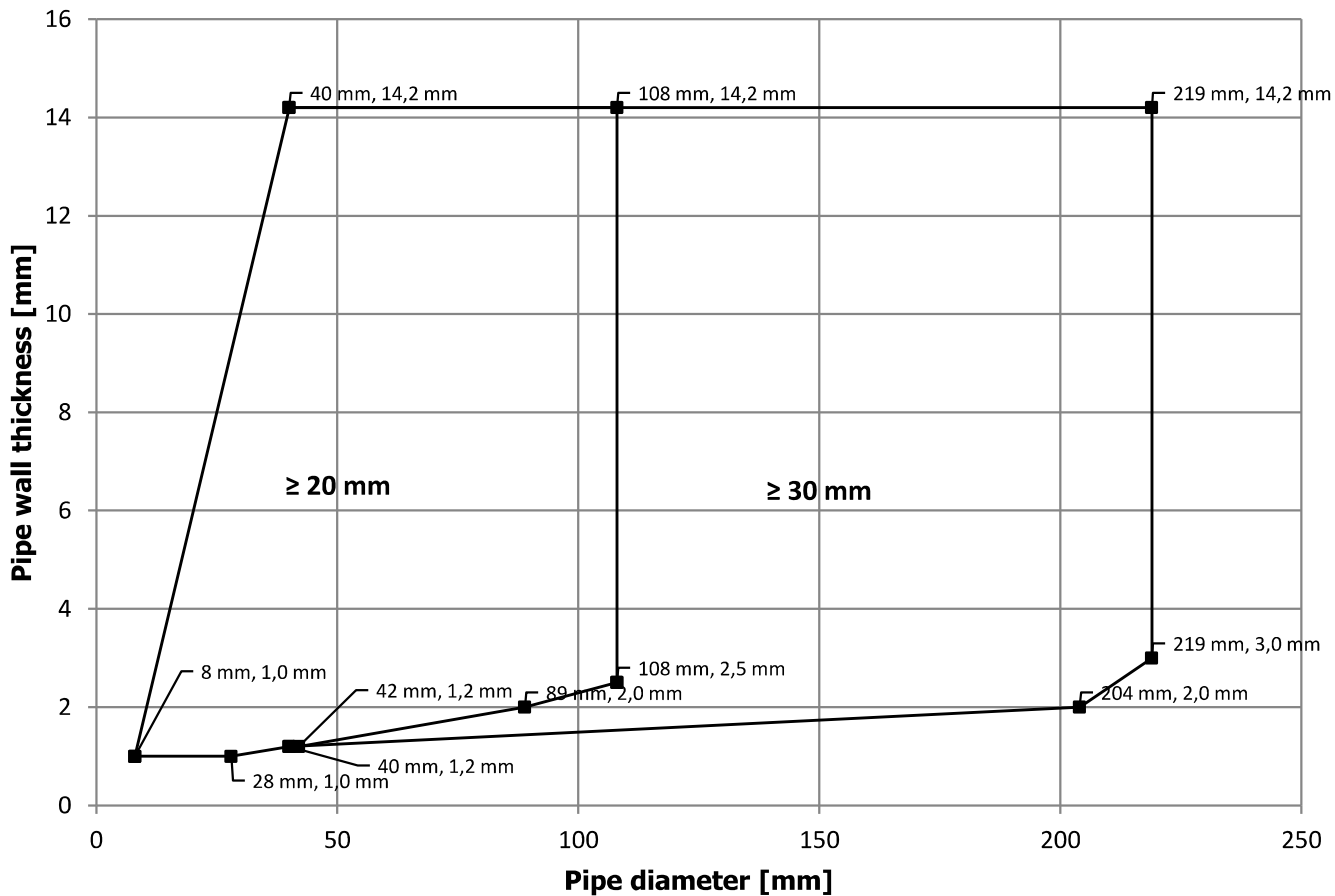


El90 - Vertical pipe direction
U Protect Pipe Section Alu2
Continued, Sustained insulation
Stainless steel



No.	Item	Description
1	Pipe	Stainless steel
2	Insulation	U Protect Pipe Section Alu2 fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with Mortar or Concrete
4	Ceiling	Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

Field of application for insulation thickness

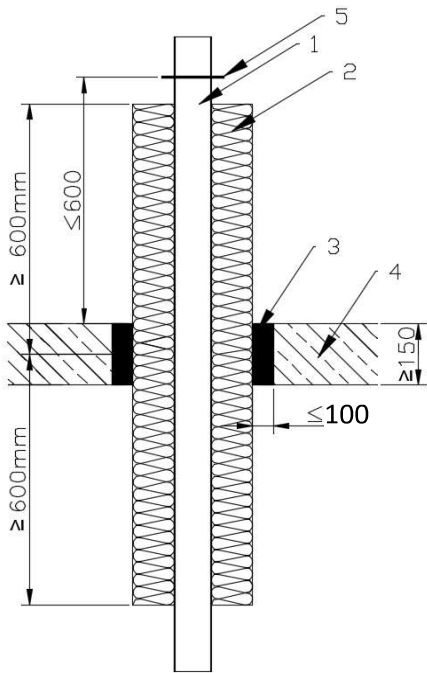


El90 - Vertical pipe direction

U Protect Pipe Section Alu2

Local/Continued, Sustained insulation, 100 mm residual gap

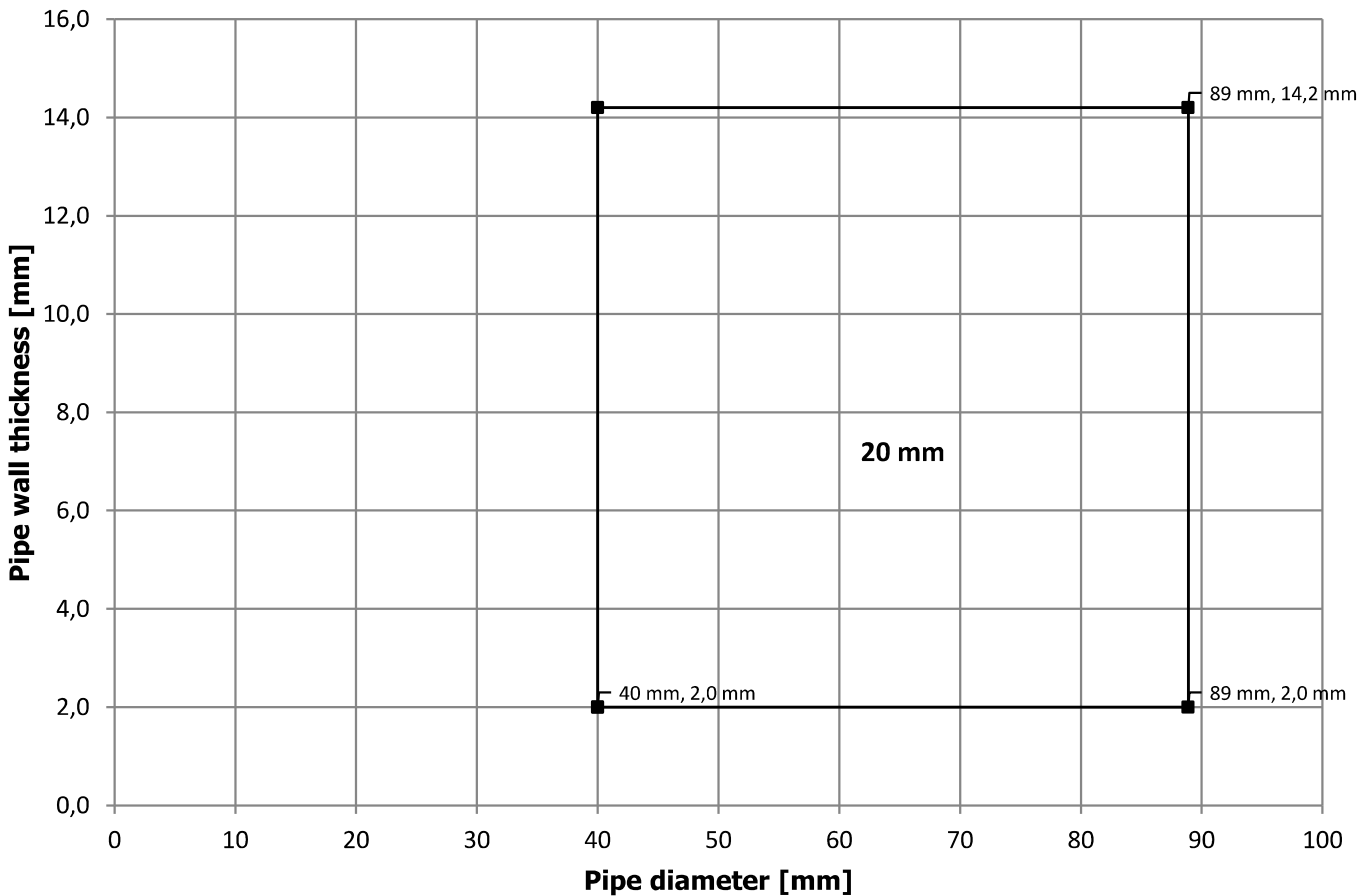
Copper, Cast iron, Steel and Stainless steel



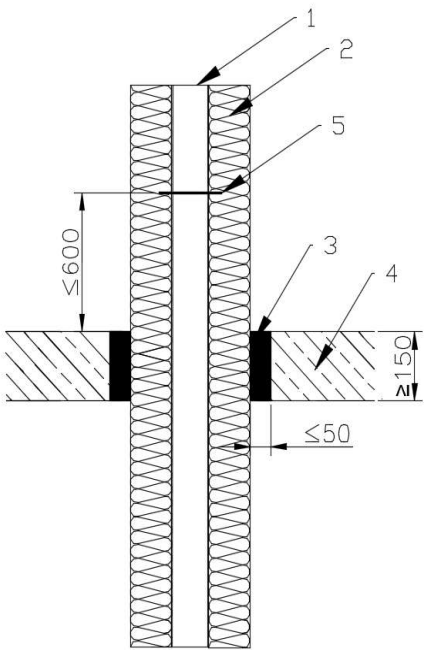
No.	Item	Description
1	Pipe	Copper, Cast iron, Steel and Stainless steel
2	Insulation	U Protect Pipe Section Alu2 fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Up to 100 mm filled with Mortar or Concrete
4	Ceiling	Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

NB. For continued insulation the thickness of the insulation can be increased

Field of application for insulation thickness

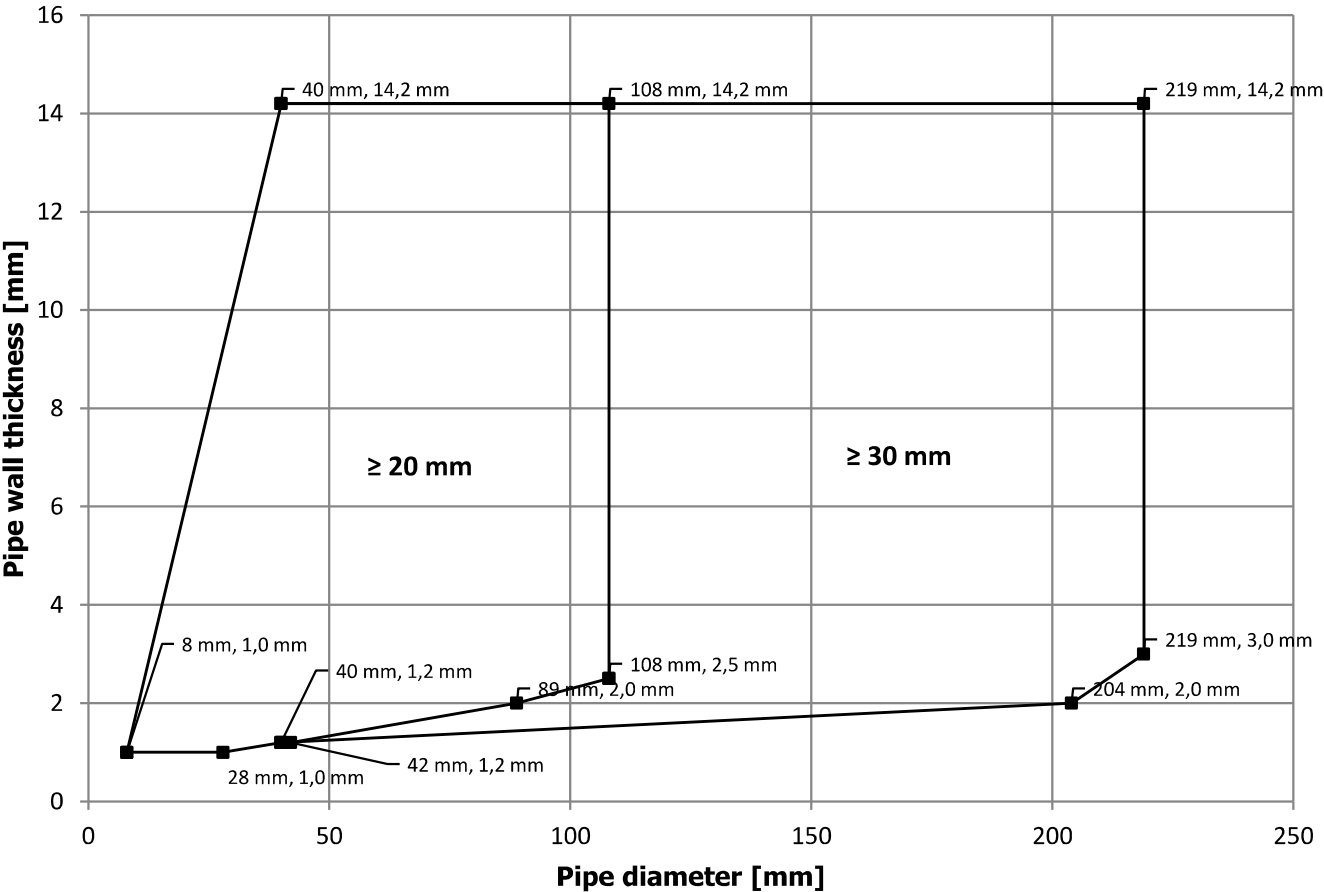


El90 - Vertical pipe direction
U Protect Pipe Section Alu2
Continued, Sustained insulation
Stainless steel



No.	Item	Description
1	Pipe	Stainless steel
2	Insulation	U Protect Pipe Section Alu2 fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with Mortar or Concrete
4	Ceiling	Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

Field of application for insulation thickness

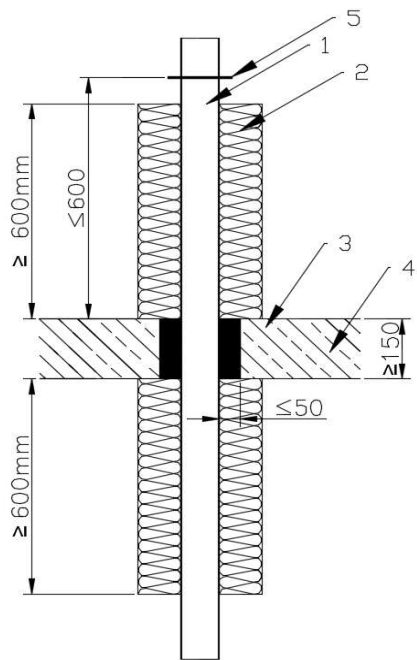


El90 - Vertical pipe direction

U Protect Pipe Section Alu2

Local, Interrupted insulation

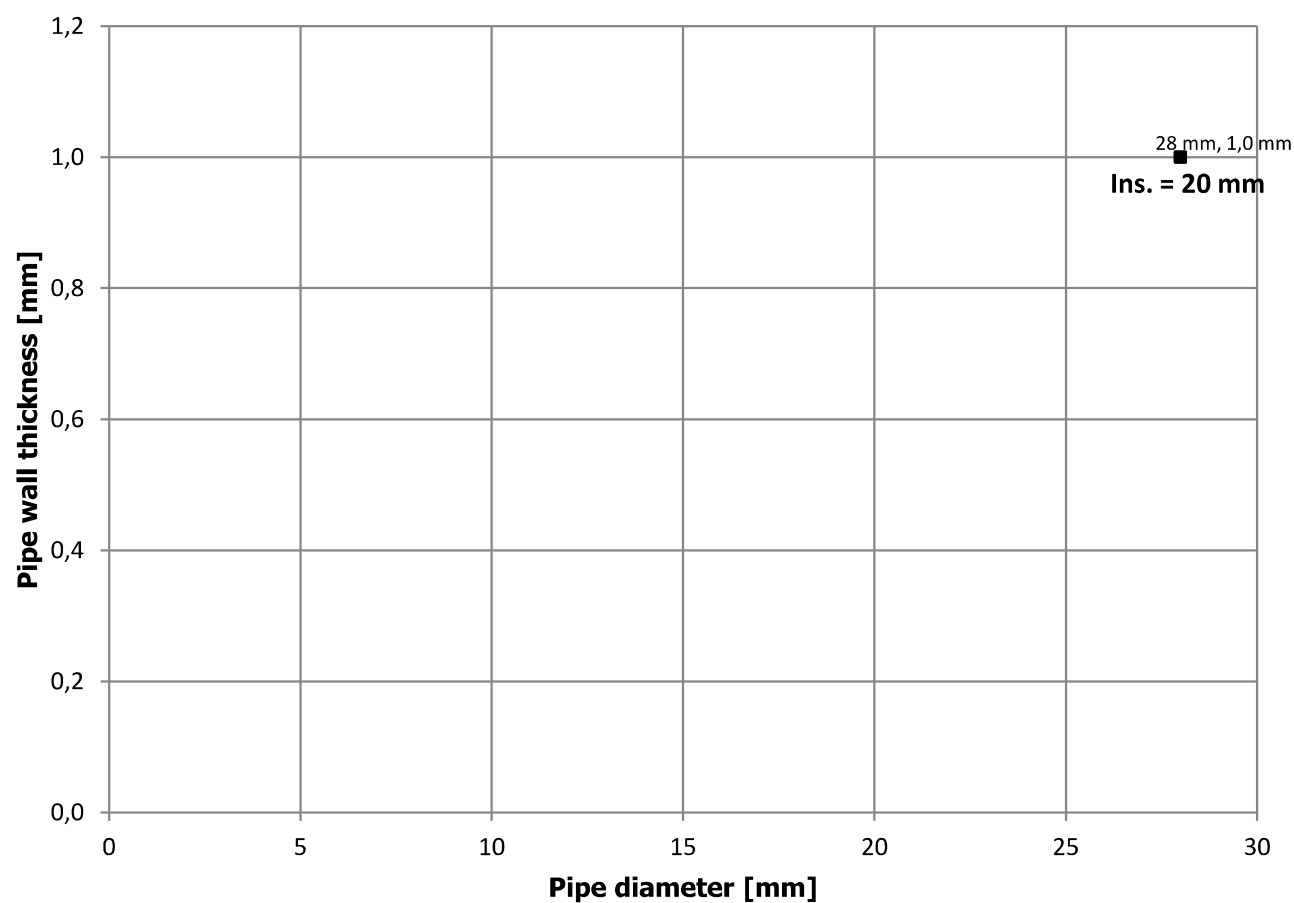
Copper, Cast iron, Steel and Stainless steel



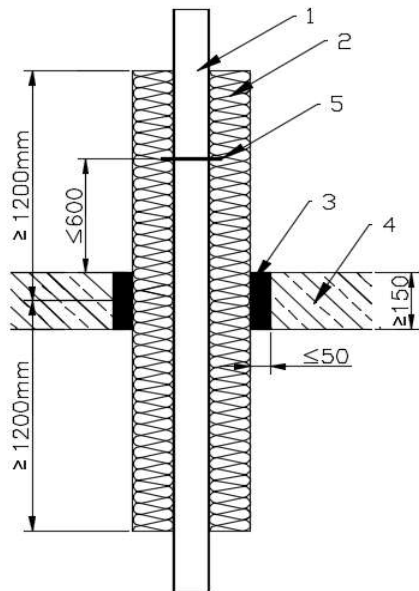
No.	Item	Description
1	Pipe	Copper, Cast iron, Steel and Stainless steel
2	Insulation	U Protect Pipe Section Alu2 fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with Mortar or Concrete Including: pp-pipe 110 mm
4	Ceiling	Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

NB. For continued insulation the thickness of the insulation can be increased

Field of application for insulation thickness



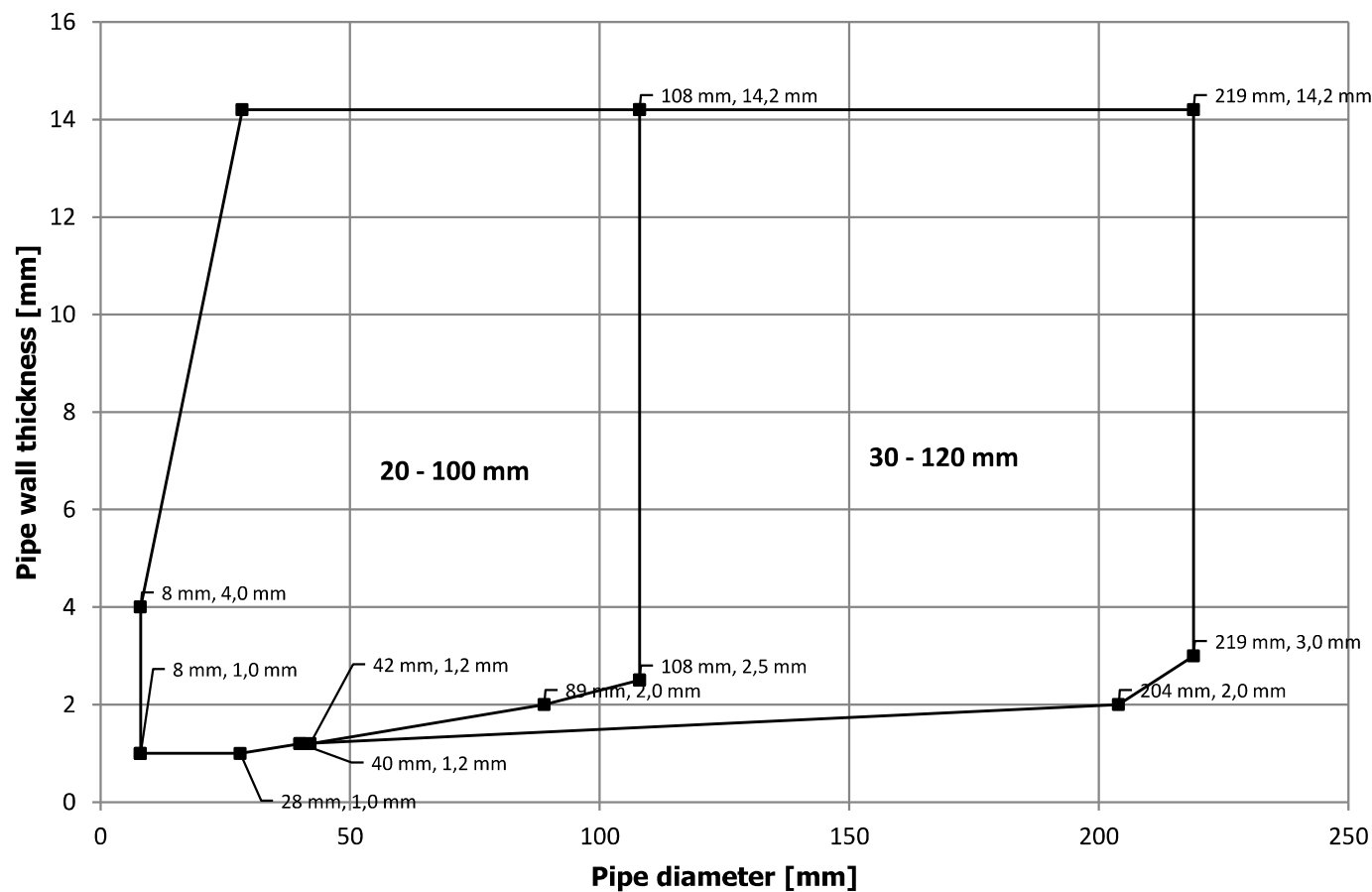
El60 - Vertical pipe direction
U Protect Pipe Section Alu2
Local, Sustained insulation
Stainless steel



No.	Item	Description
1	Pipe	Stainless steel
2	Insulation	U Protect Pipe Section Alu2 fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with loose stonewool minimum density 120 kg (compressed)
4	Ceiling	Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

NB. For continued insulation the thickness of the insulation can be increased

Field of application for insulation thickness

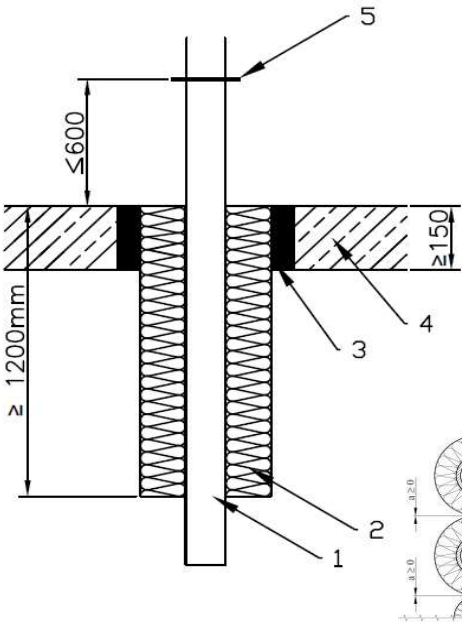


El30 - Vertical pipe direction

U Protect Pipe Section Alu2

Local, Sustained asymmetrical insulation

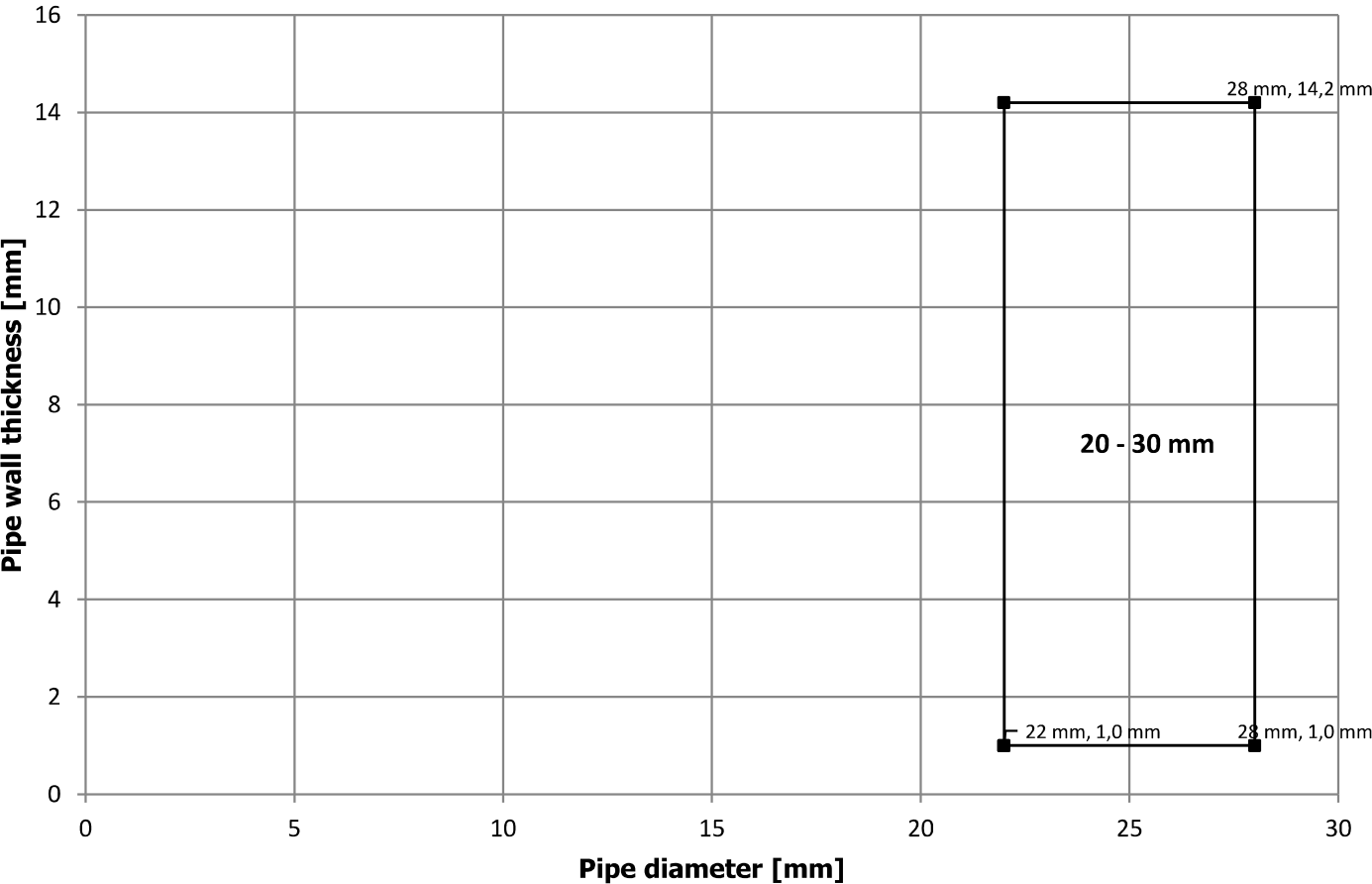
Copper, Cast iron, Steel and Stainless steel, Cluster



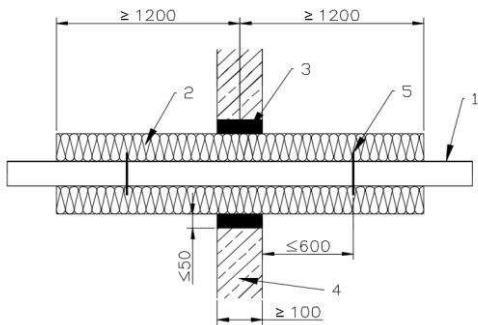
No.	Item	Description
1	Pipe	Copper, Cast iron, Steel and Stainless steel
2	Insulation	U Protect Pipe Section Alu2 fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with loose stonewool minimum density 120 kg/m ³
4	Ceiling	Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

NB. For continued insulation the thickness of the insulation can be increased

Field of application for insulation thickness

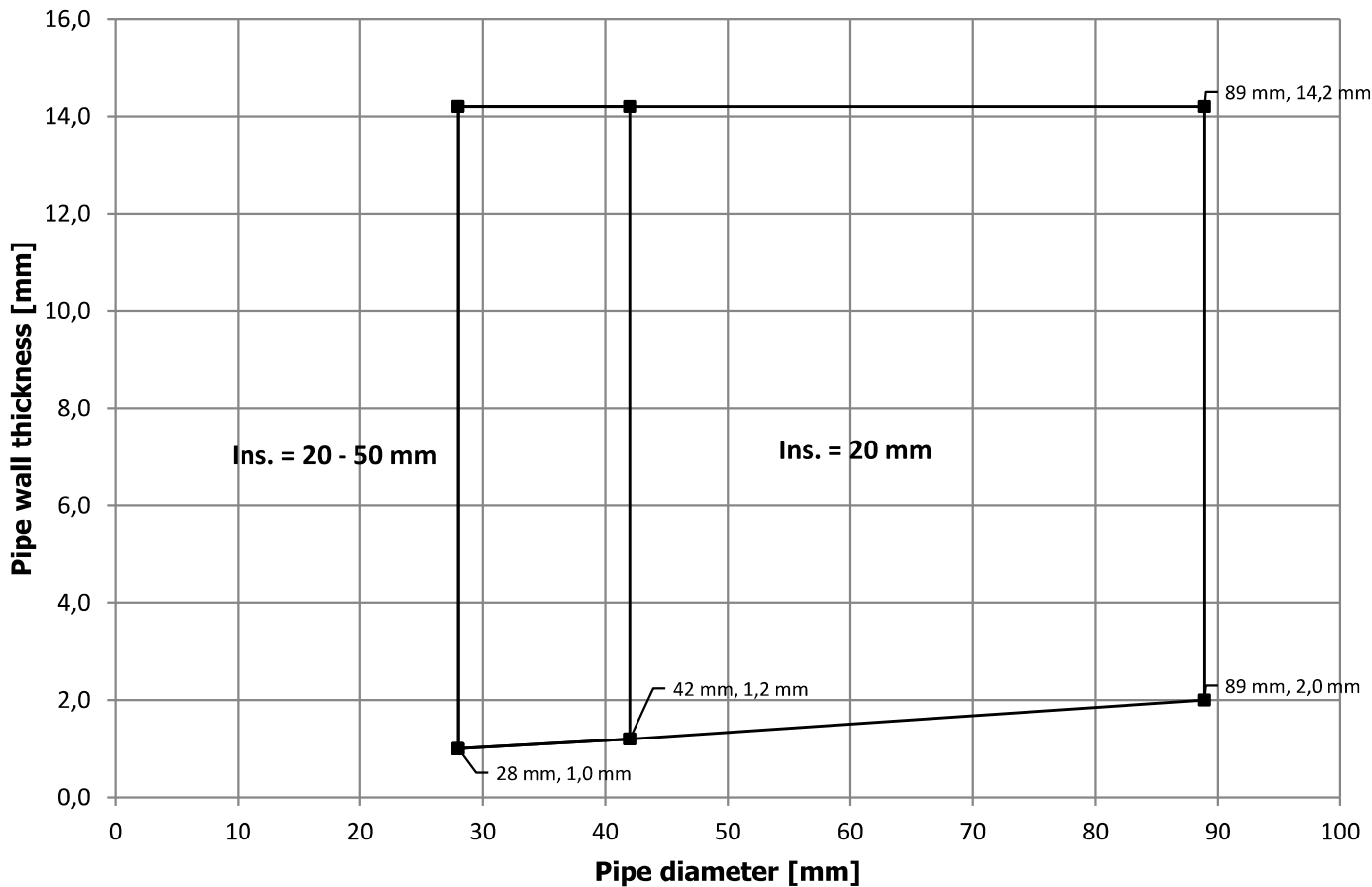


El120 - Horizontal pipe direction
U Protect Pipe Section Alu2
Local, Sustained insulation
Copper, Cast iron, Steel and Stainless steel

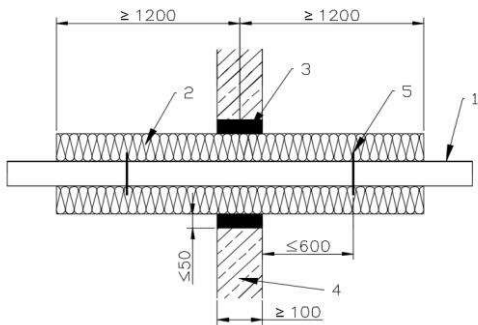


No.	Item	Description
1	Pipe	Copper, Cast iron, Steel and Stainless steel
2	Insulation	U Protect Pipe Section Alu2 fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with Mortar, Concrete or Gypsum filler
4	Wall	Flexible wall or Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

Field of application for insulation thickness



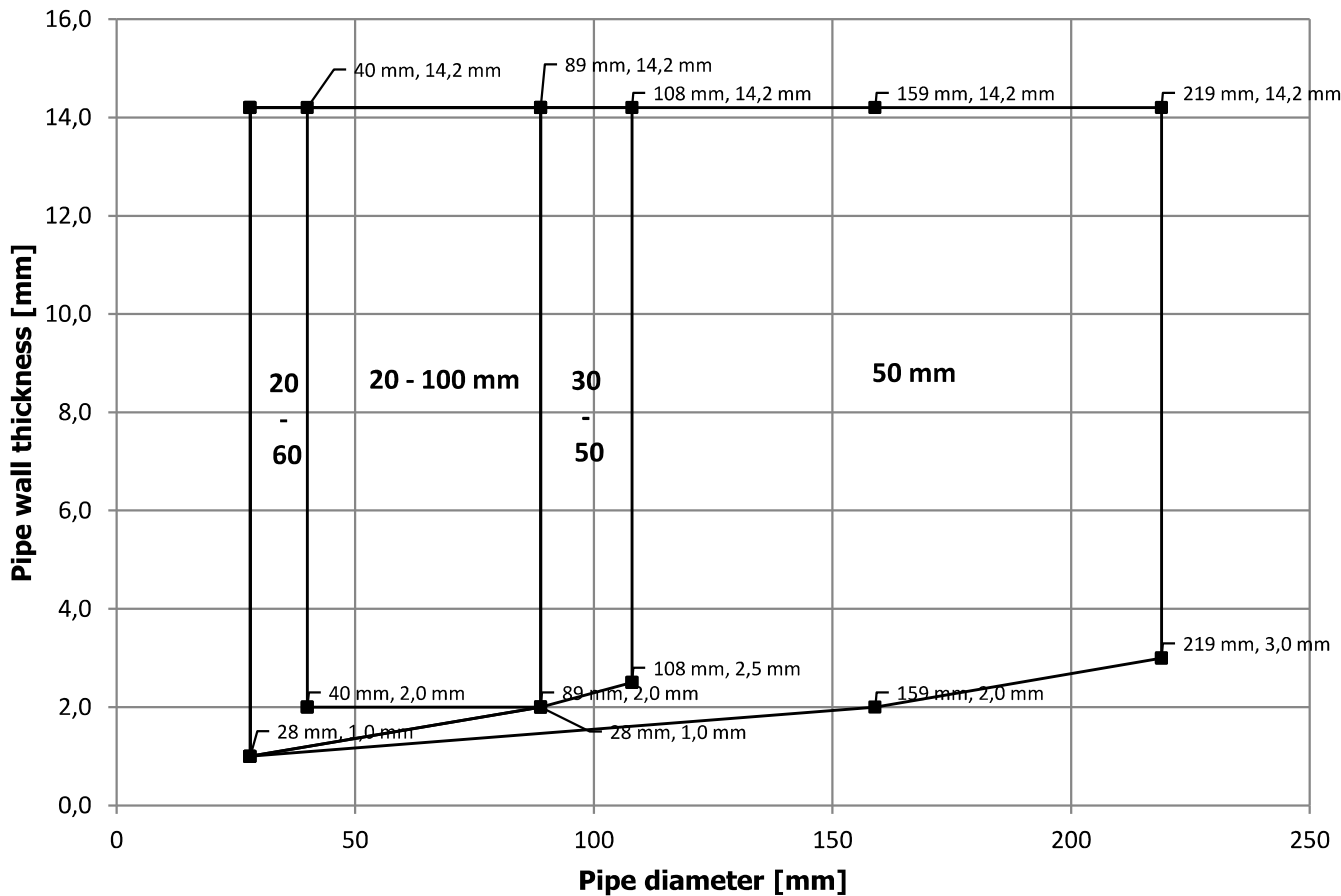
El90 - Horizontal pipe direction
U Protect Pipe Section Alu2
Local/Continued, Sustained insulation
Stainless steel



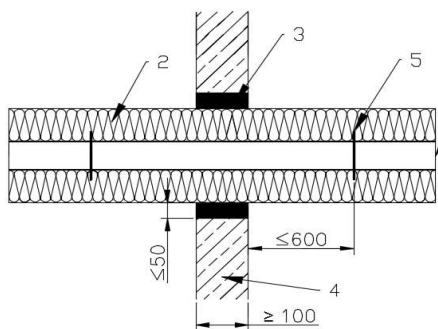
No.	Item	Description
1	Pipe	Stainless steel
2	Insulation	U Protect Pipe Section Alu2 fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with Mortar, Concrete or Gypsum filler
4	Wall	Flexible wall or Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

NB. For continued insulation the thickness of the insulation can be increased

Field of application for insulation thickness

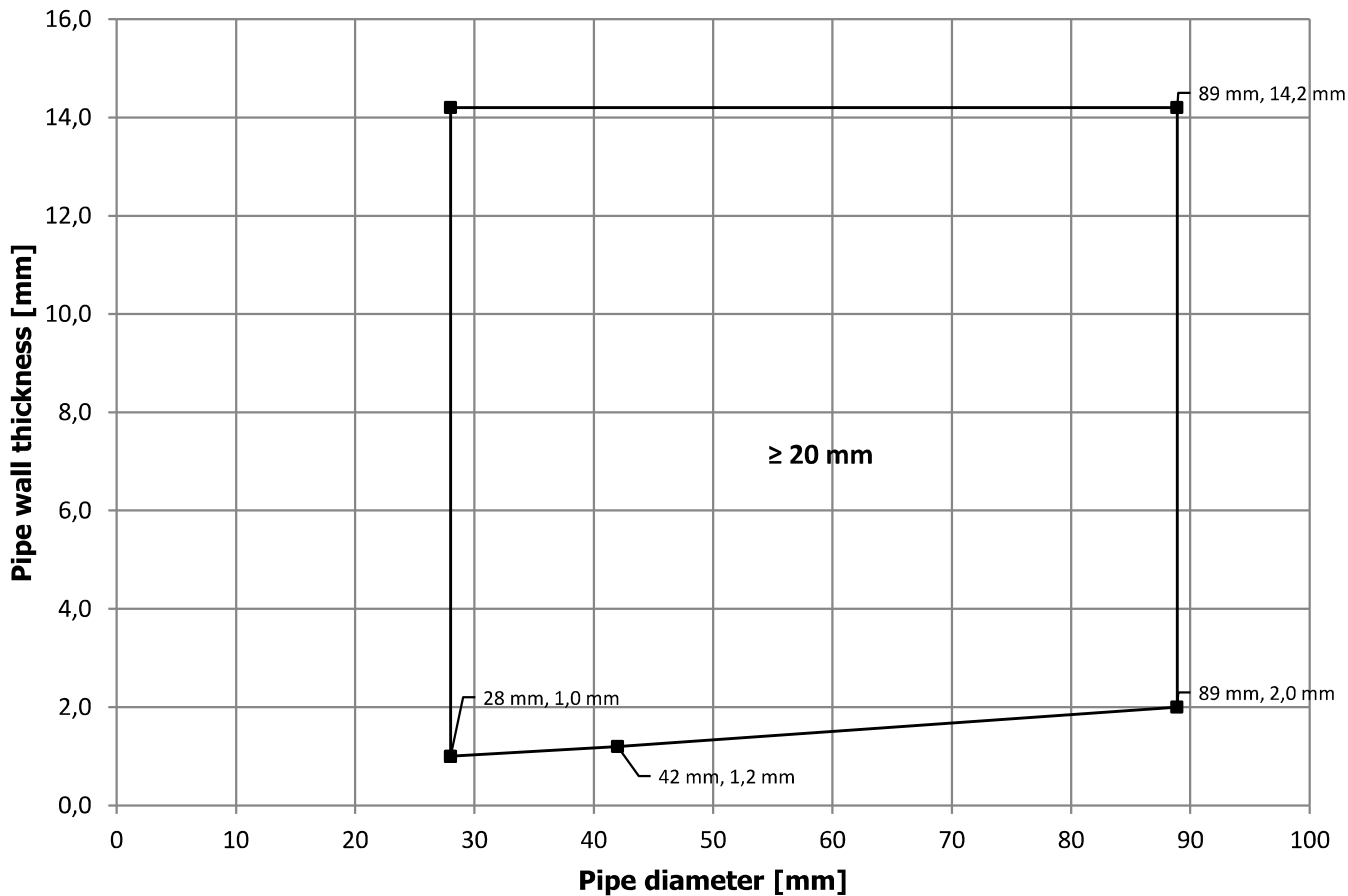


El120 - Horizontal pipe direction
U Protect Pipe Section Alu2
Continued, Sustained insulation
Copper, Cast iron, Steel and Stainless steel

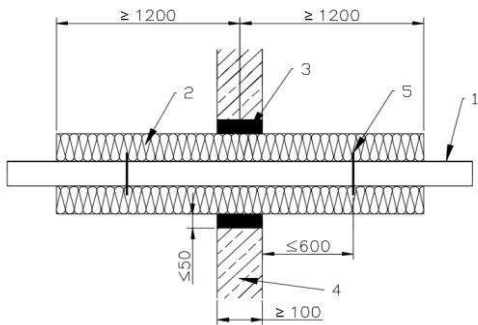


No.	Item	Description
1	Pipe	Copper, Cast iron, Steel and Stainless steel
2	Insulation	U Protect Pipe Section Alu2 fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with Mortar, Concrete or Gypsum filler
4	Wall	Flexible wall or Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

Field of application for insulation thickness

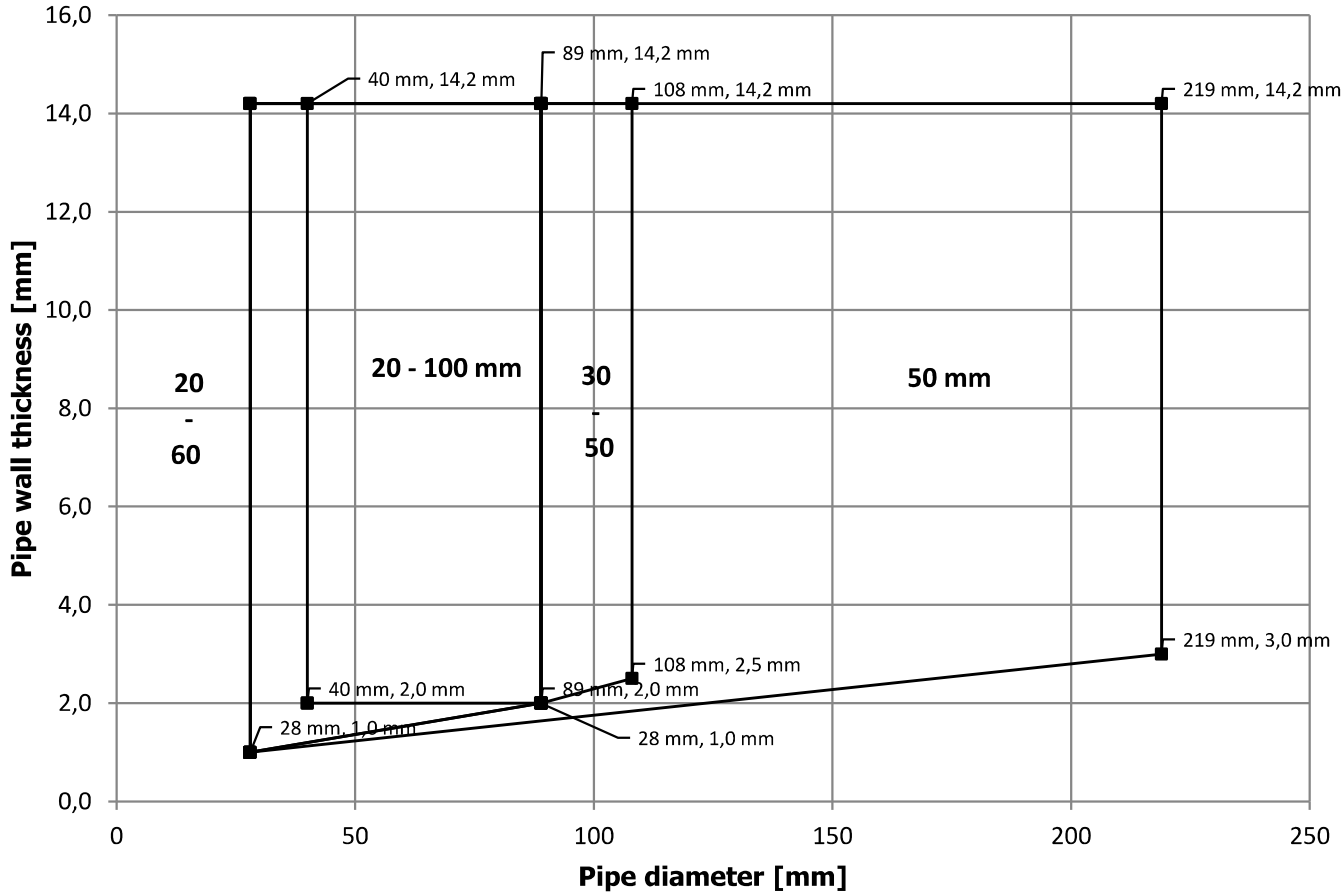


El90 - Horizontal pipe direction
U Protect Pipe Section Alu2
Local, Sustained insulation
Copper, Cast iron, Steel and Stainless steel

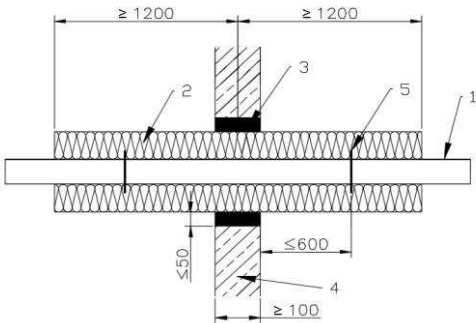


No.	Item	Description
1	Pipe	Copper, Cast iron, Steel and Stainless steel
2	Insulation	U Protect Pipe Section Alu2 fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with Mortar, Concrete or Gypsum filler
4	Wall	Flexible wall or Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

Field of application for insulation thickness

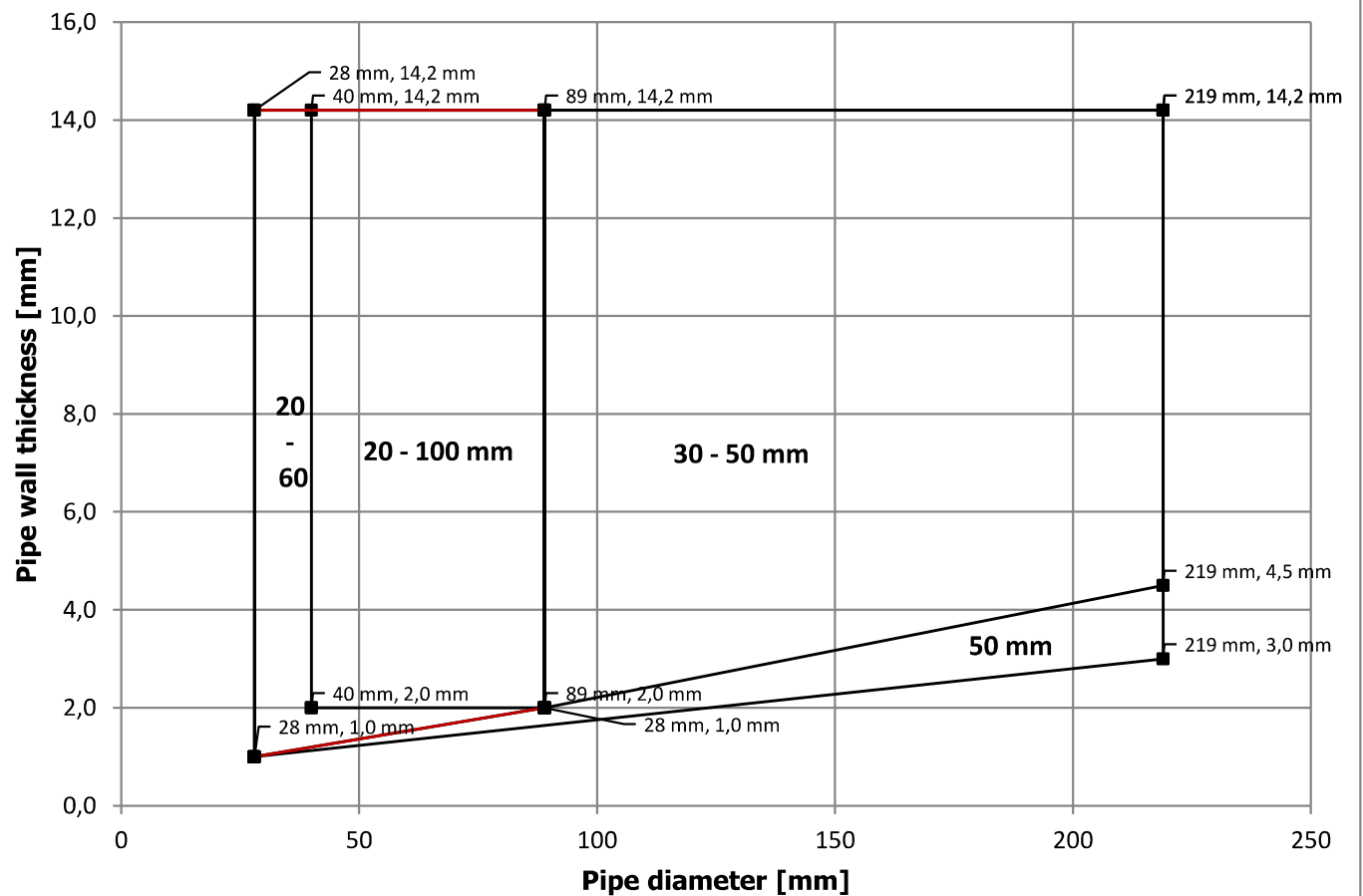


El90 - Horizontal pipe direction
U Protect Pipe Section Alu2
Local, Sustained insulation
Steel and Stainless steel

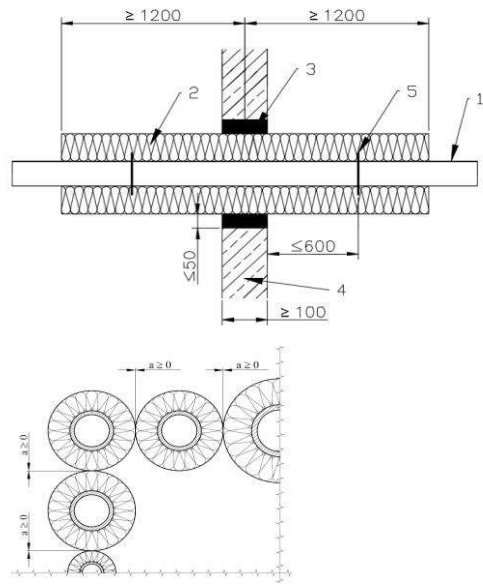


No.	Item	Description
1	Pipe	Steel and Stainless steel
2	Insulation	U Protect Pipe Section Alu2 fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with Mortar, Concrete or Gypsum filler
4	Wall	Flexible wall or Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

Field of application for insulation thickness



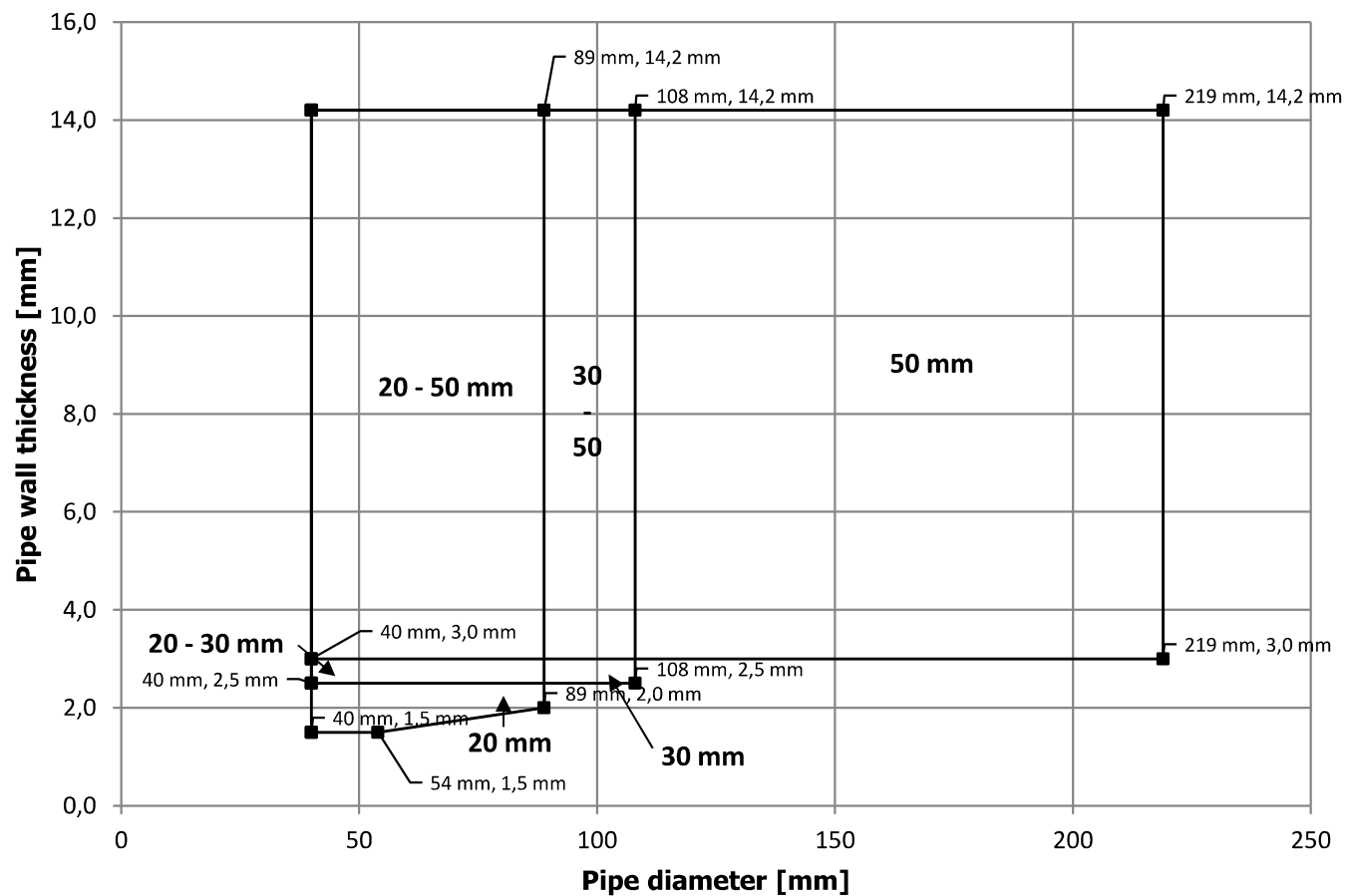
El90 - Horizontal pipe direction
U Protect Pipe Section Alu2
Local/Continued, Sustained insulation
Copper, Cast iron, Steel and Stainless steel, Cluster



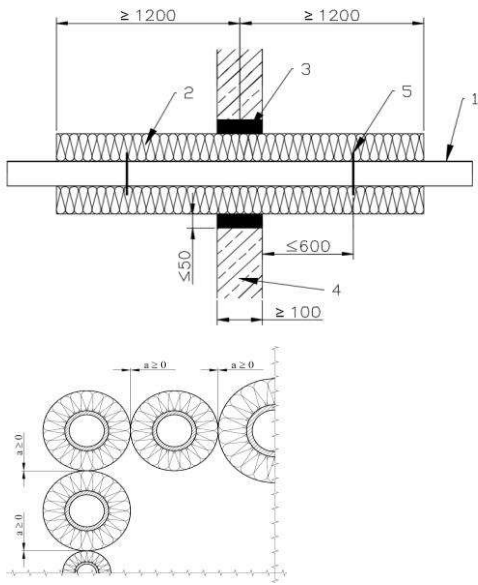
No.	Item	Description
1	Pipe	Copper, Cast iron, Steel and Stainless steel
2	Insulation	U Protect Pipe Section Alu2 fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with Mortar, Concrete or Gypsum filler
4	Wall	Flexible wall or Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

NB. For continued insulation the thickness of the insulation can be increased

Field of application for insulation thickness



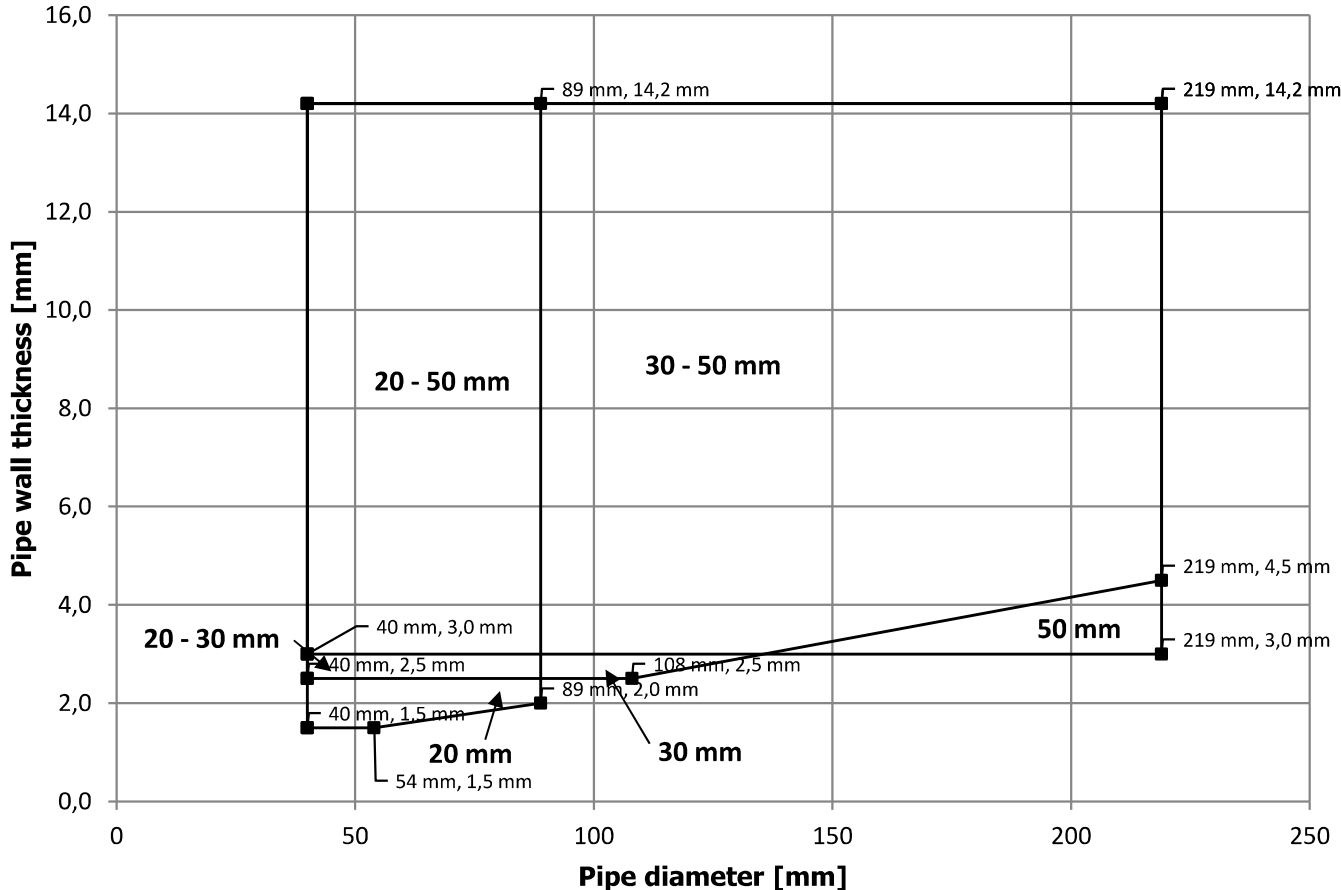
El90 - Horizontal pipe direction
U Protect Pipe Section Alu2
Local/Continued, Sustained insulation
Steel and Stainless steel, Cluster



No.	Item	Description
1	Pipe	Steel and Stainless steel
2	Insulation	U Protect Pipe Section Alu2 fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with Mortar, Concrete or Gypsum filler
4	Wall	Flexible wall or Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

NB. For continued insulation the thickness of the insulation can be increased

Field of application for insulation thickness

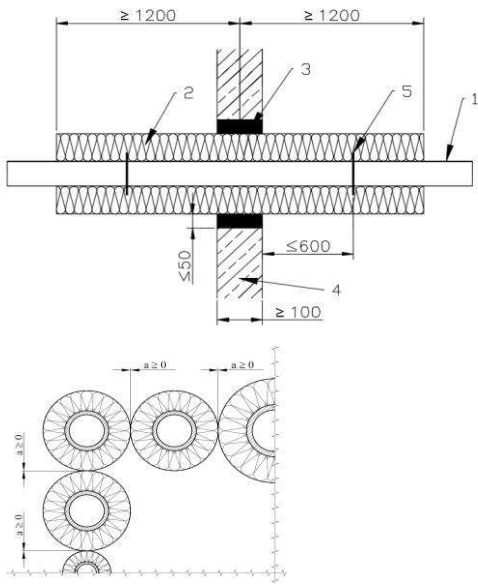


El90 - Horizontal pipe direction

U Protect Pipe Section Alu2

Local/Continued, Sustained insulation

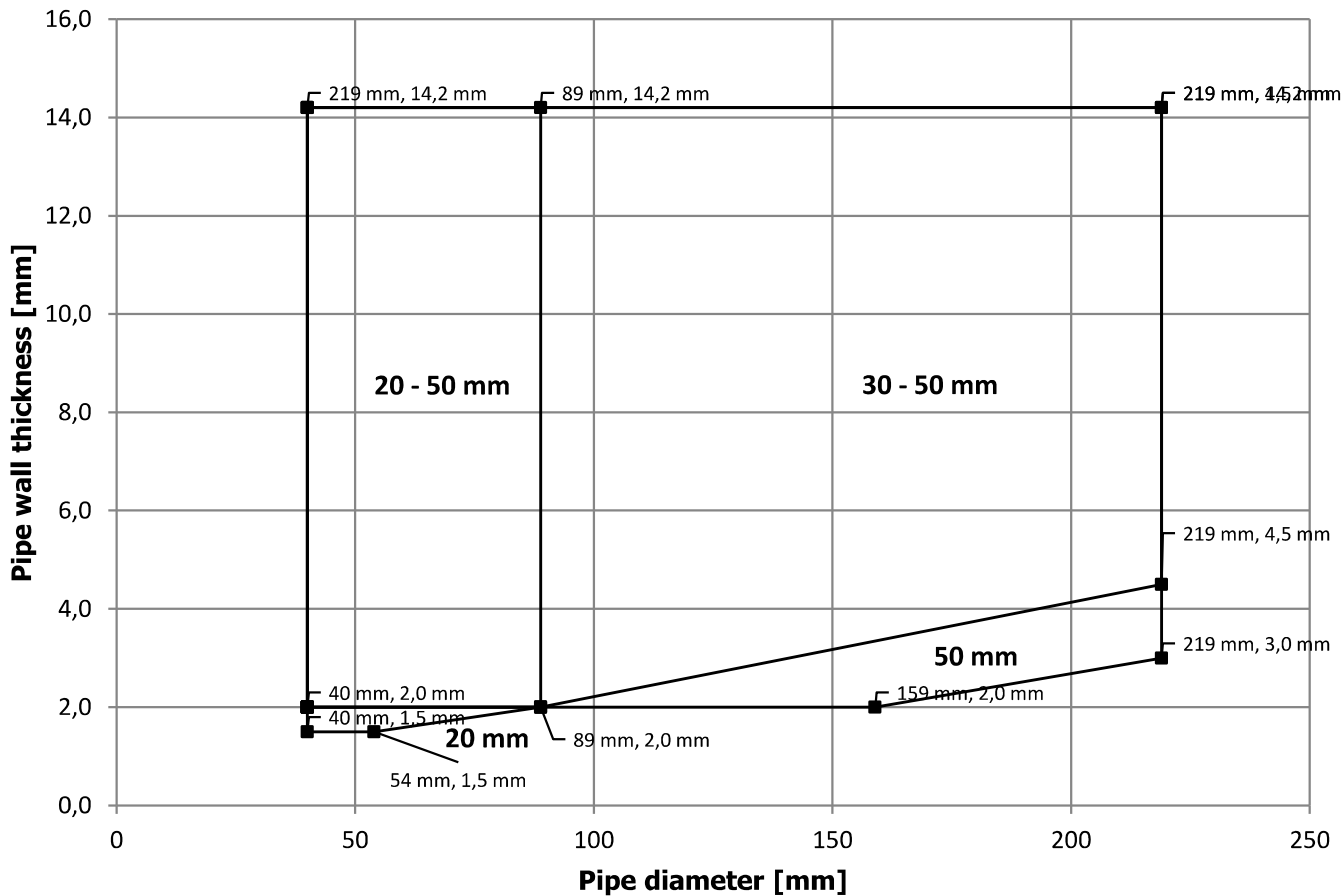
Stainless steel, Cluster



No.	Item	Description
1	Pipe	Stainless steel
2	Insulation	U Protect Pipe Section Alu2
3	Residual gap	fixed with steel wire less or equal to c/c 250 mm
4	Wall	Filled with Mortar, Concrete or Gypsum filler
5	Service support	Flexible wall or Aerated concrete, Concrete or Masonry
6	Service support	Metal hanger

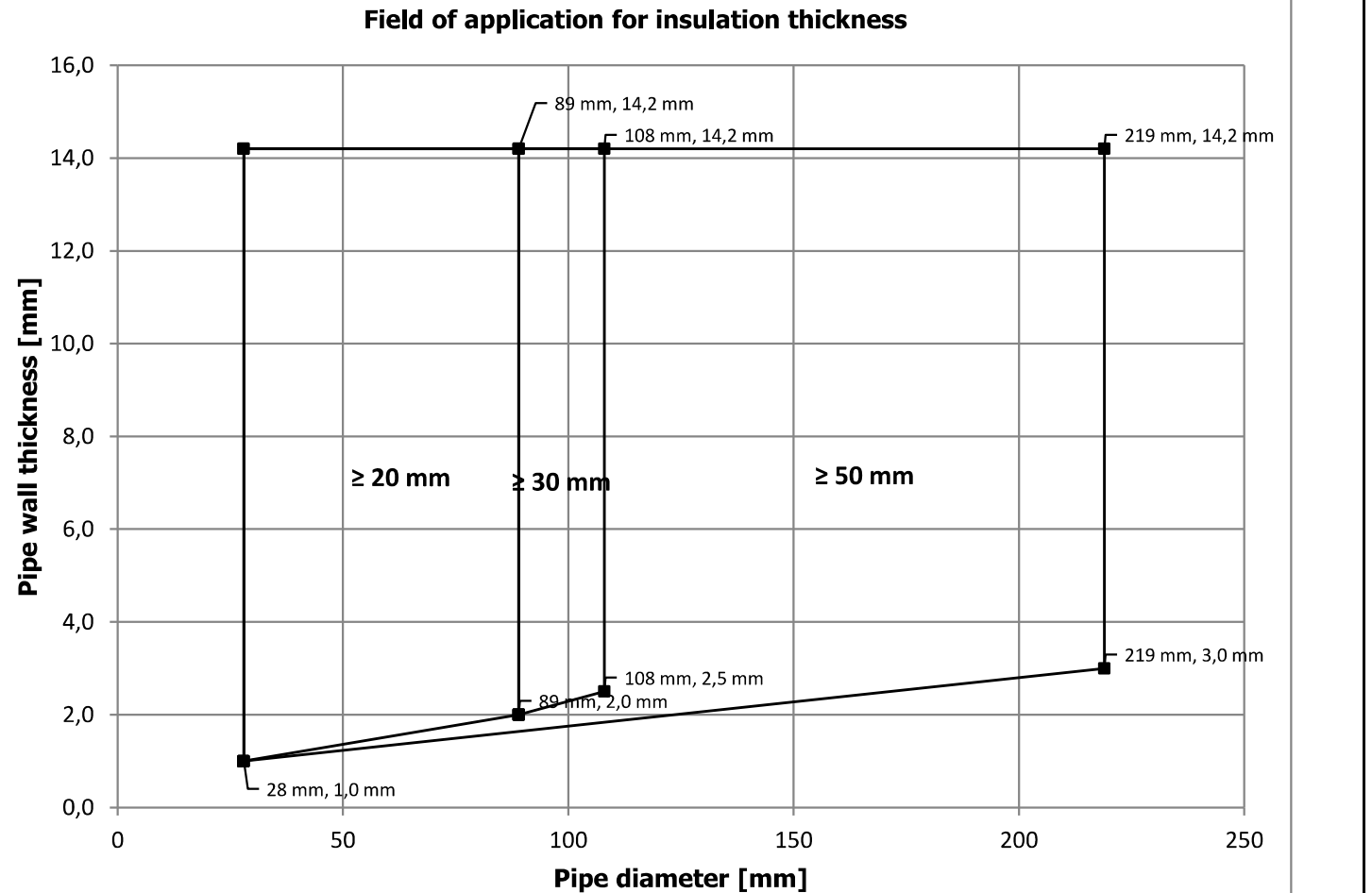
NB. For continued insulation the thickness of the insulation can be increased

Field of application for insulation thickness



El90 - Horizontal pipe direction
U Protect Pipe Section Alu2
Continued, Sustained insulation
Copper, Cast iron, Steel and Stainless steel

No.	Item	Description
1	Pipe	Copper, Cast iron, Steel and Stainless steel
2	Insulation	U Protect Pipe Section Alu2 fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with Mortar, Concrete or Gypsum filler
4	Wall	Flexible wall or Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

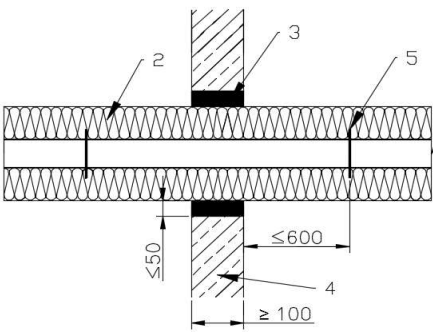


El90 - Horizontal pipe direction

U Protect Pipe Section Alu2

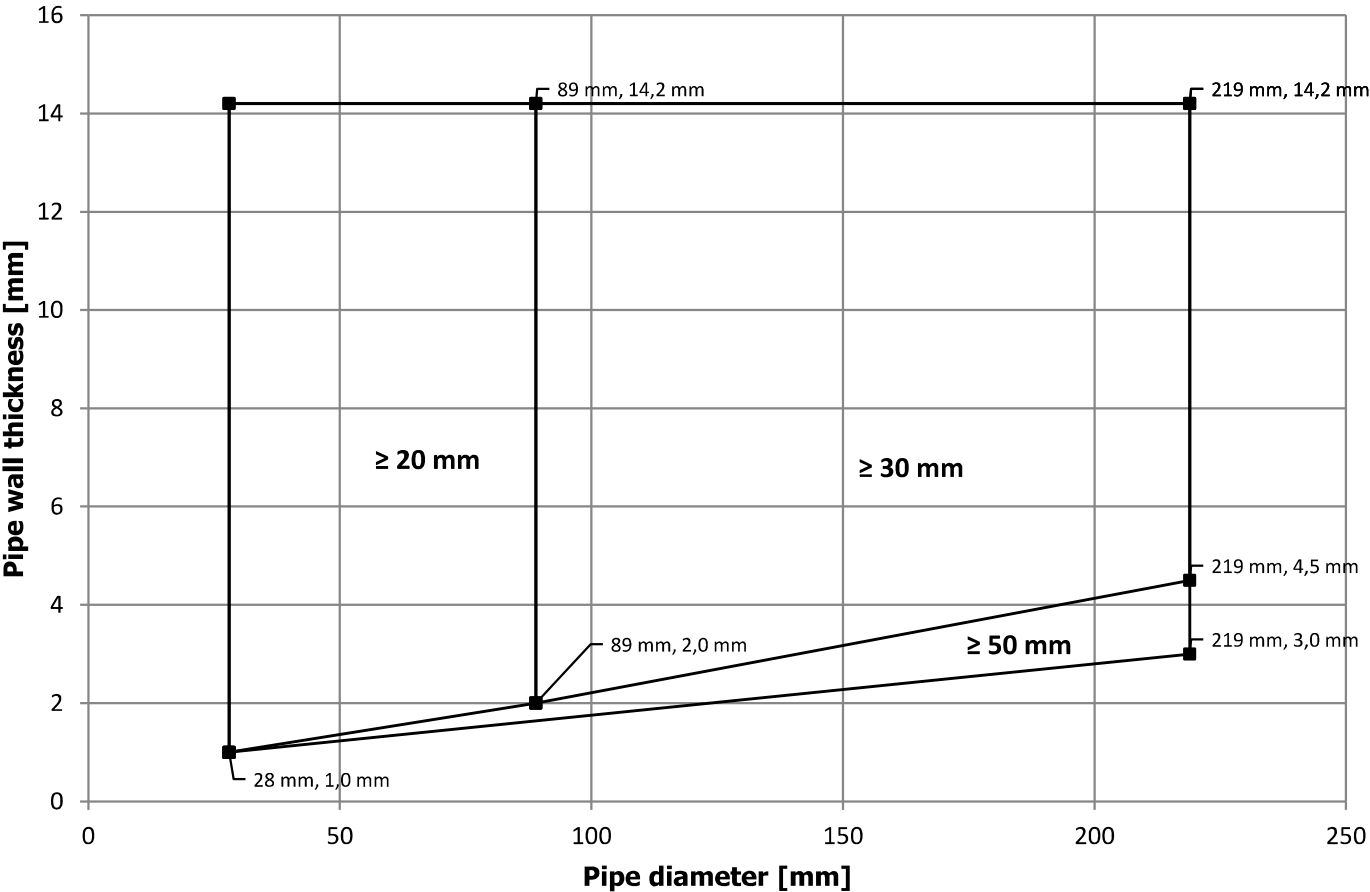
Continued, Sustained insulation

Steel and Stainless steel



No.	Item	Description
1	Pipe	Steel and Stainless steel
2	Insulation	U Protect Pipe Section Alu2 fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with Mortar, Concrete or Gypsum filler
4	Wall	Flexible wall or Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

Field of application for insulation thickness

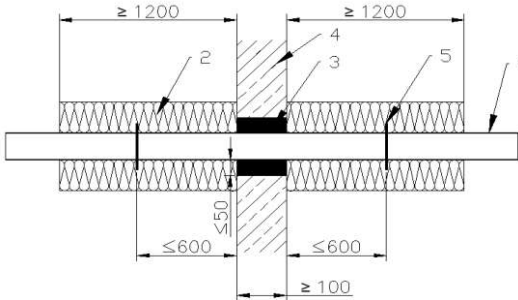


El90 - Horizontal pipe direction

U Protect Pipe Section Alu2

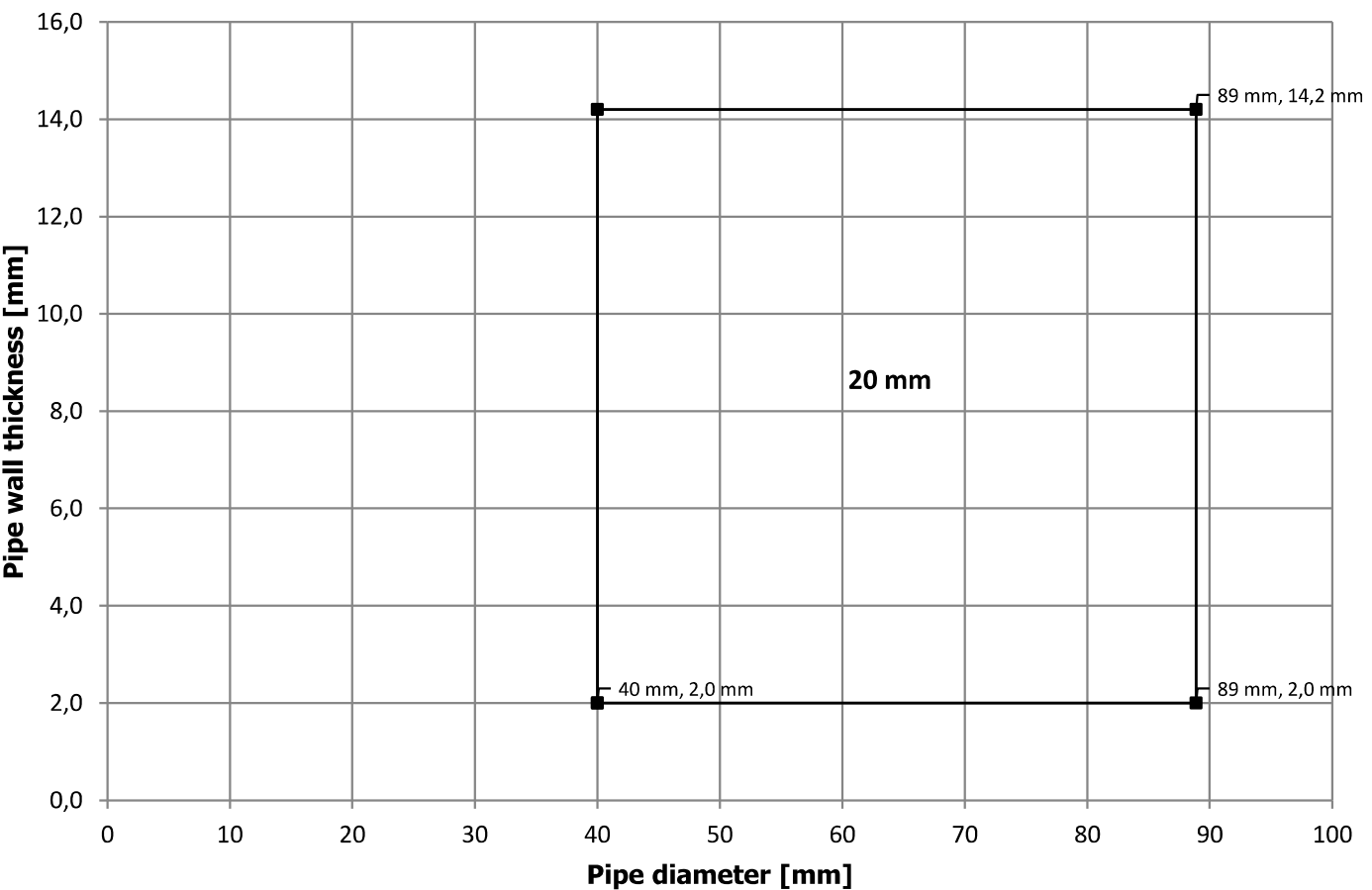
Local, Interrupted insulation

Copper, Cast iron, Steel and Stainless steel

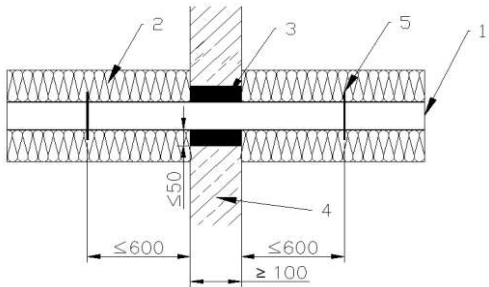


No.	Item	Description
1	Pipe	Copper, Cast iron, Steel and Stainless steel
2	Insulation	U Protect Pipe Section Alu2 fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with Mortar, Concrete or Gypsum filler Including: 5 mm PE sound insulation strip 3.5 mm Self-adhesive felt stripes
4	Wall	Flexible wall or Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

Field of application for insulation thickness

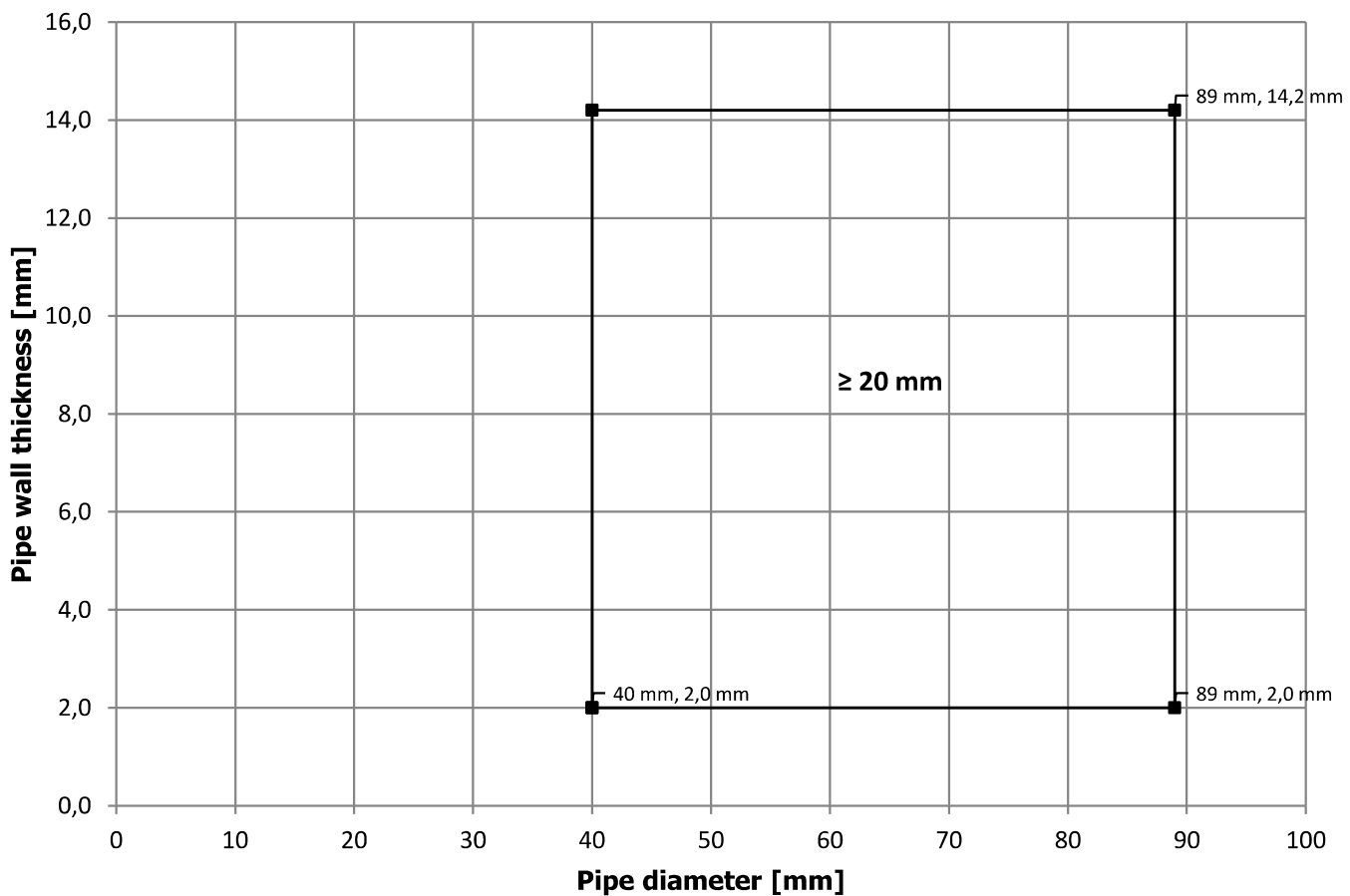


El90 - Horizontal pipe direction
U Protect Pipe Section Alu2
Continued, Interrupted insulation
Copper, Cast iron, Steel and Stainless steel



No.	Item	Description
1	Pipe	Copper, Cast iron, Steel and Stainless steel
2	Insulation	U Protect Pipe Section Alu2 fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with Mortar, Concrete or Gypsum filler Including: 5 mm PE sound insulation strip 3.5 mm Self-adhesive felt stripes
4	Wall	Flexible wall or Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

Field of application for insulation thickness

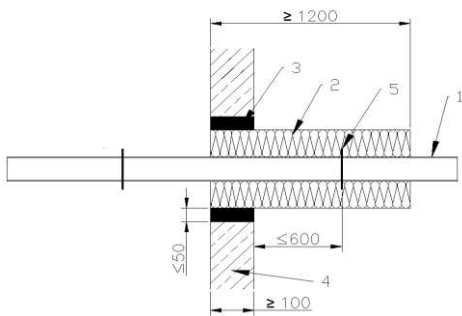


El30 - Horizontal pipe direction

U Protect Pipe Section Alu2

Local/Continued, Sustained asymmetrical insulation

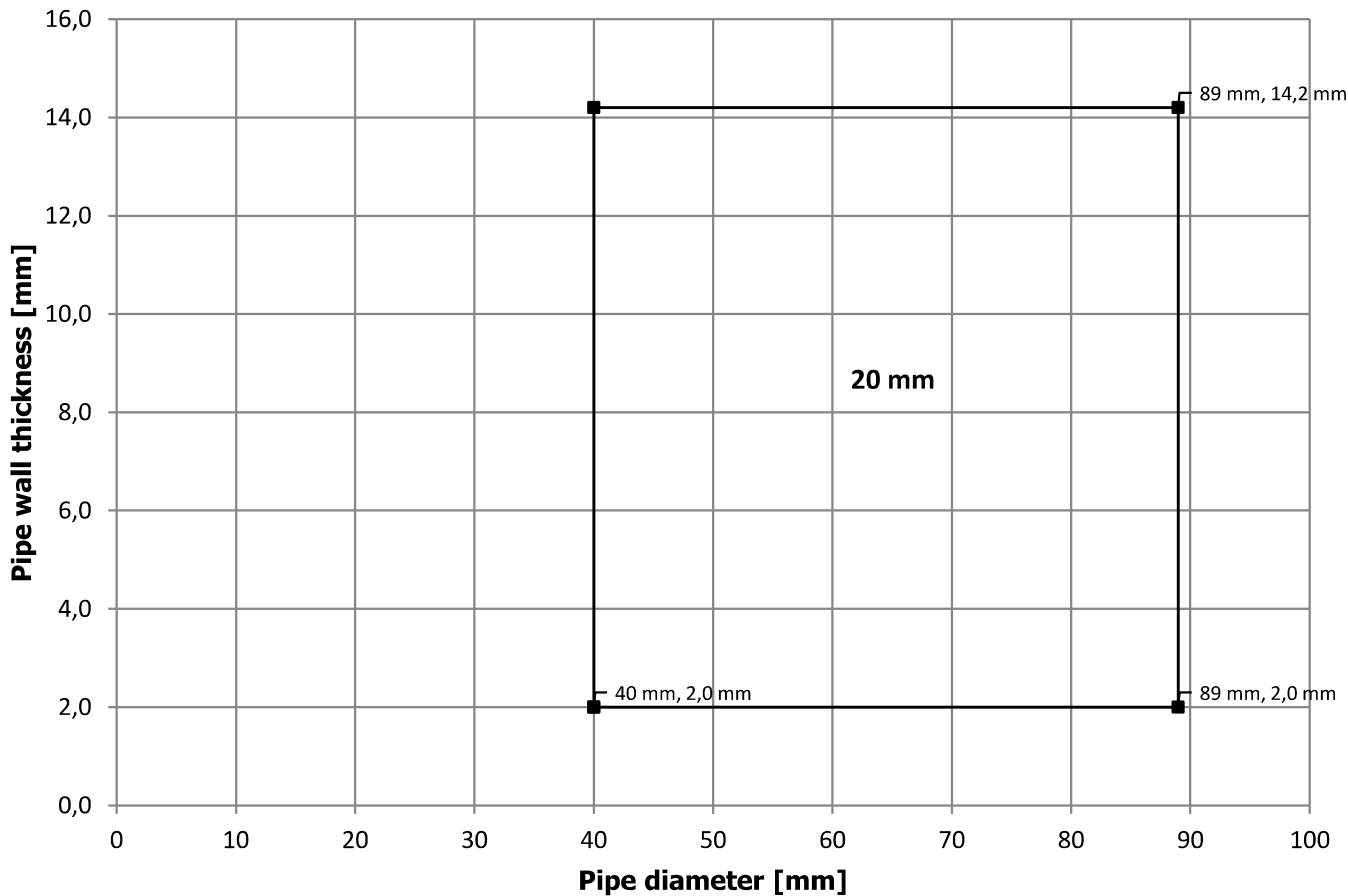
Copper, Cast iron, Steel and Stainless steel



No.	Item	Description
1	Pipe	Copper, Cast iron, Steel and Stainless steel
2	Insulation	U Protect Pipe Section Alu2 fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with Mortar, Concrete or Gypsum filler
4	Wall	Flexible wall or Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

NB. For continued insulation the thickness of the insulation can be increased

Field of application for insulation thickness

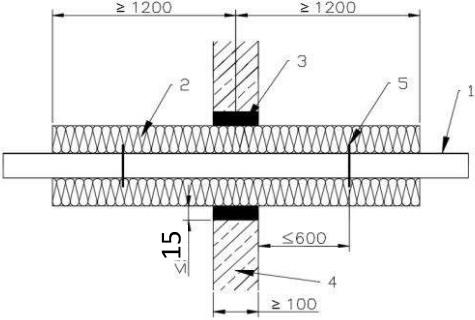


El90 - Horizontal pipe direction

U Protect Pipe Section Alu2

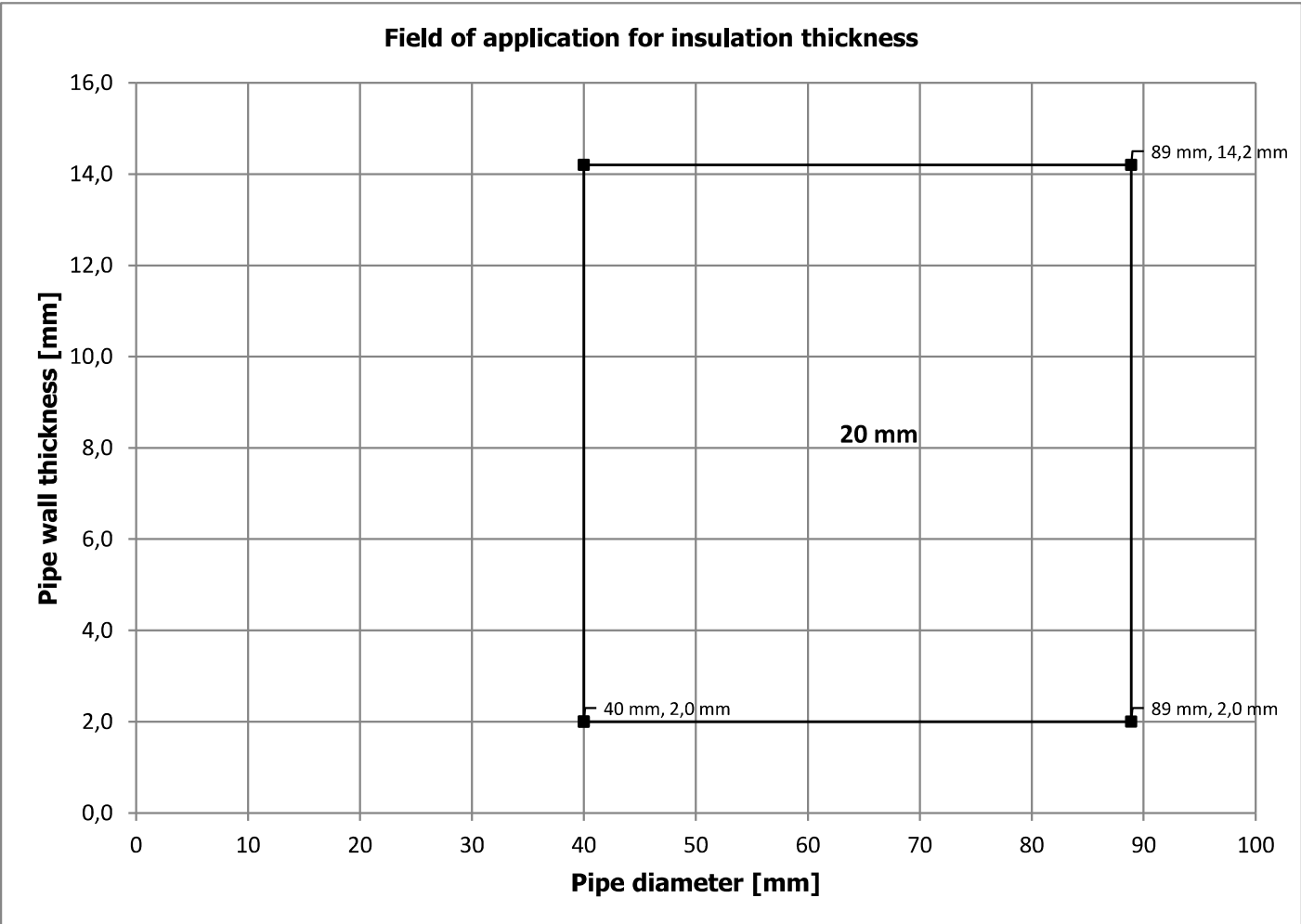
Local/Continued, Sustained insulation, Small gap filling

Copper, Cast iron, Steel and Stainless steel

No. Item		Description
	1	Pipe
	2	Insulation
	3	Residual gap*
	4	Wall
	5	Service support
		Copper, Cast iron, Steel and Stainless steel
		U Protect Pipe Section Alu2
		fixed with steel wire less or equal to c/c 250 mm
		Filled with Protect BSK, PROMASEAL-Mastic, Pyro-Safe Flammoplast KS3 or SIBRALIT DX
		in a depth of ≥ 25 mm from both sides.
		Flexible wall or
		Aerated concrete, Concrete or Masonry
		Metal hanger

NB. For continued insulation the thickness of the insulation can be increased

*Gap size up to 15mm. In between the filling can be a void or a Euroclass E filling

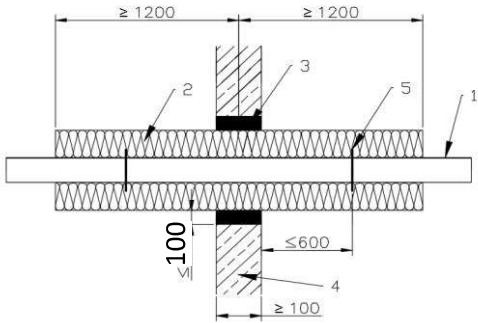


El120 - Horizontal pipe direction

U Protect Pipe Section Alu2

Local/Continued, Sustained insulation, 100 mm residual gap

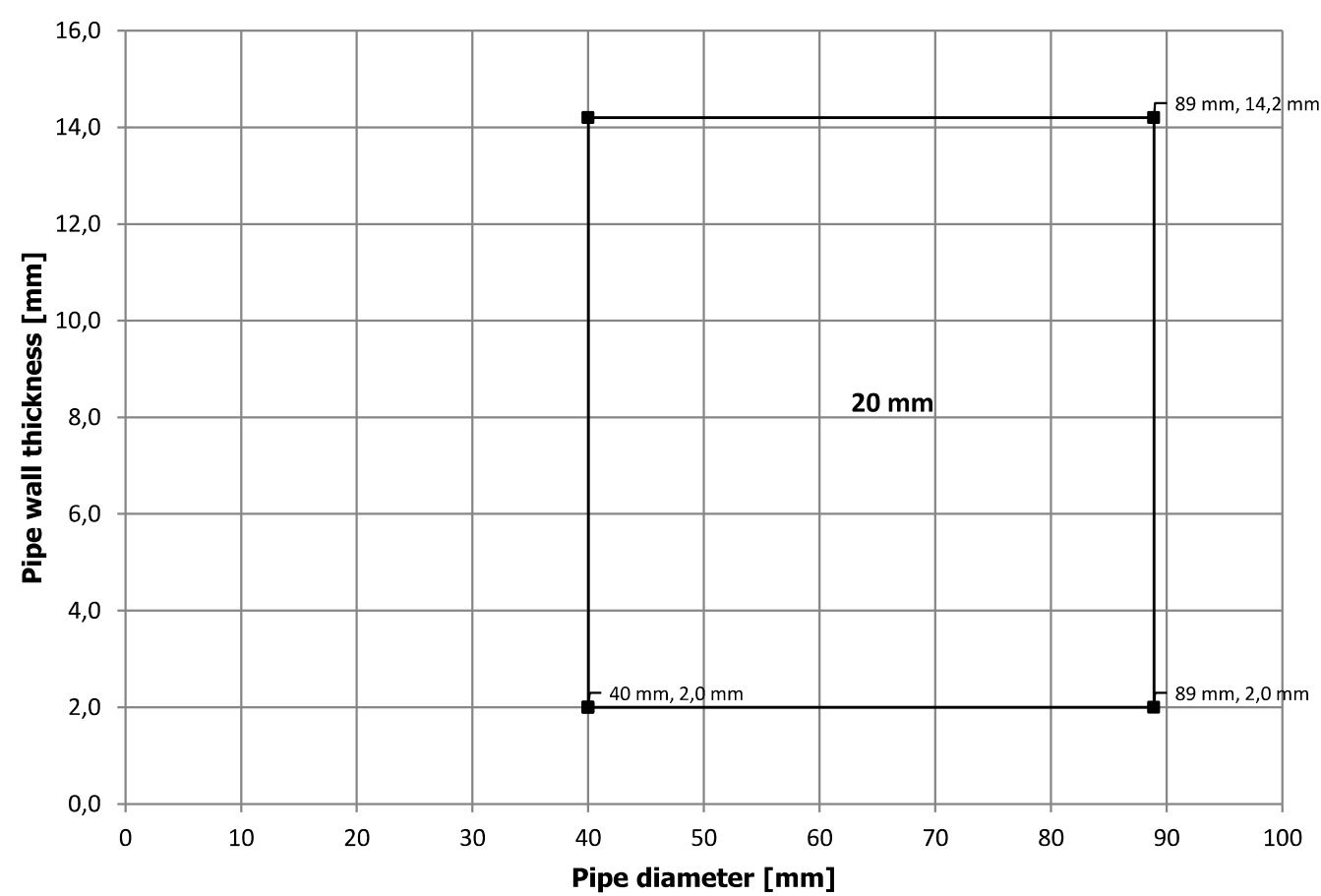
Copper, Cast iron, Steel and Stainless steel



No.	Item	Description
1	Pipe	Copper, Cast iron, Steel and Stainless steel
2	Insulation	U Protect Pipe Section Alu2 fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	100 mm filled with Mortar, Concrete or Gypsum filler
4	Wall	Flexible wall or Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

NB. For continued insulation the thickness of the insulation can be increased

Field of application for insulation thickness

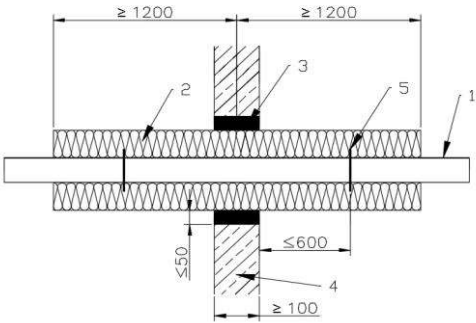


El60 - Horizontal pipe direction

U Protect Pipe Section Alu2

Local/Continued, Sustained insulation, Compress insulation

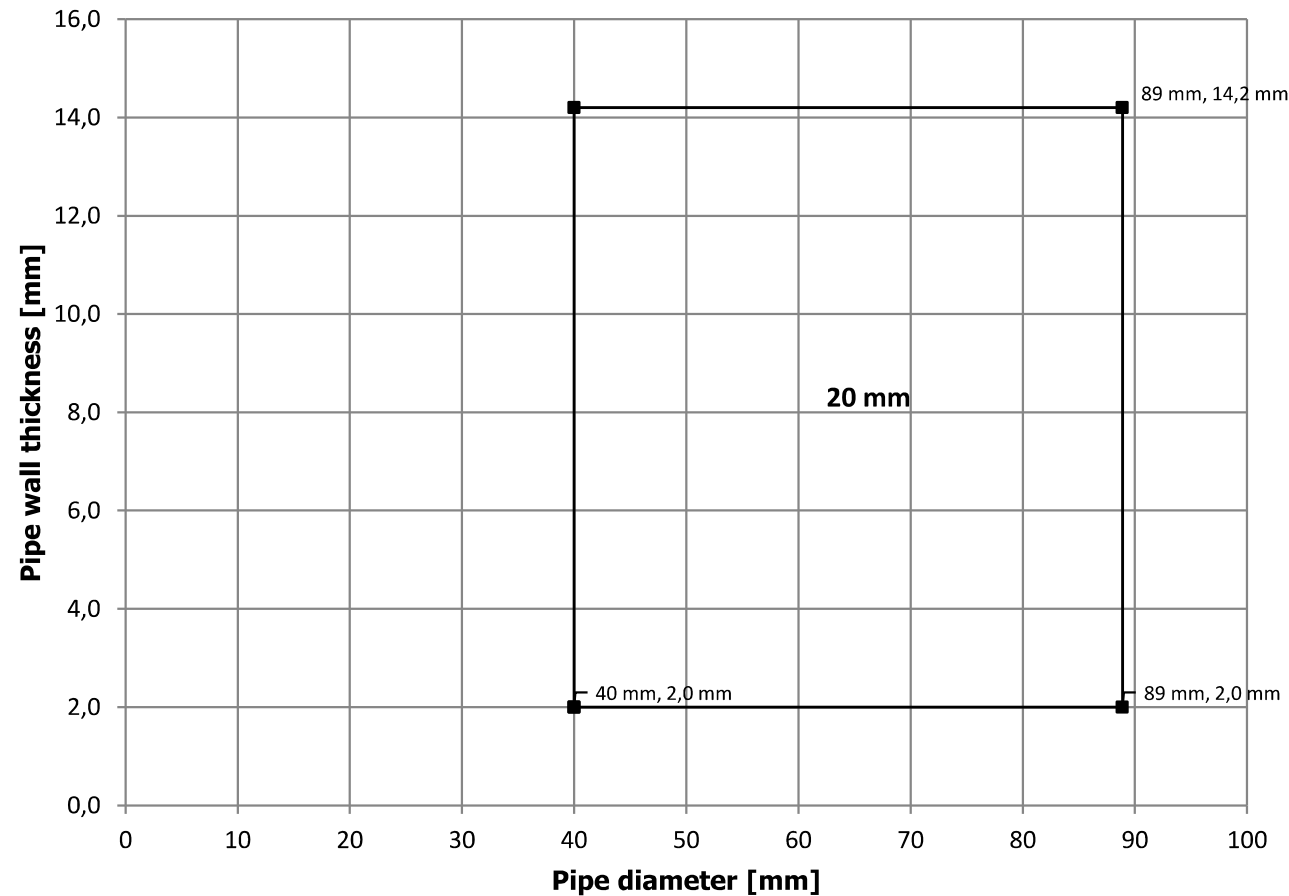
Copper, Cast iron, Steel and Stainless steel



No.	Item	Description
1	Pipe	Copper, Cast iron, Steel and Stainless steel
2	Insulation	U Protect Pipe Section Alu2 fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with loose Stone wool crompressed to 100 kg/m ³
4	Wall	Flexible wall or Aerated concrete, Concrete or Masonry
5	Service suppo	Metal hanger

NB. For continued insulation the thickness of the insulation can be increased

Field of application for insulation thickness

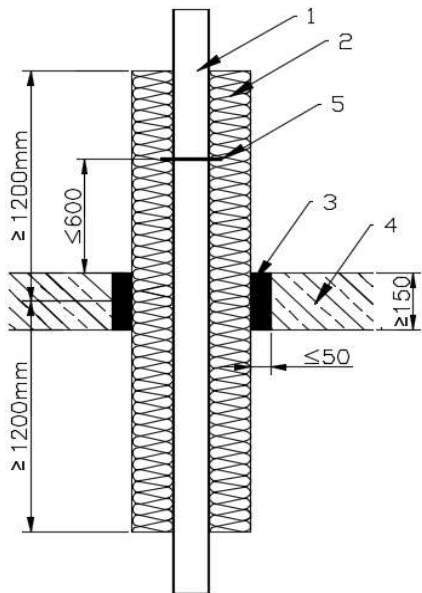


El120 - Vertical pipe direction

U Protect Roll 3.1 Alu1

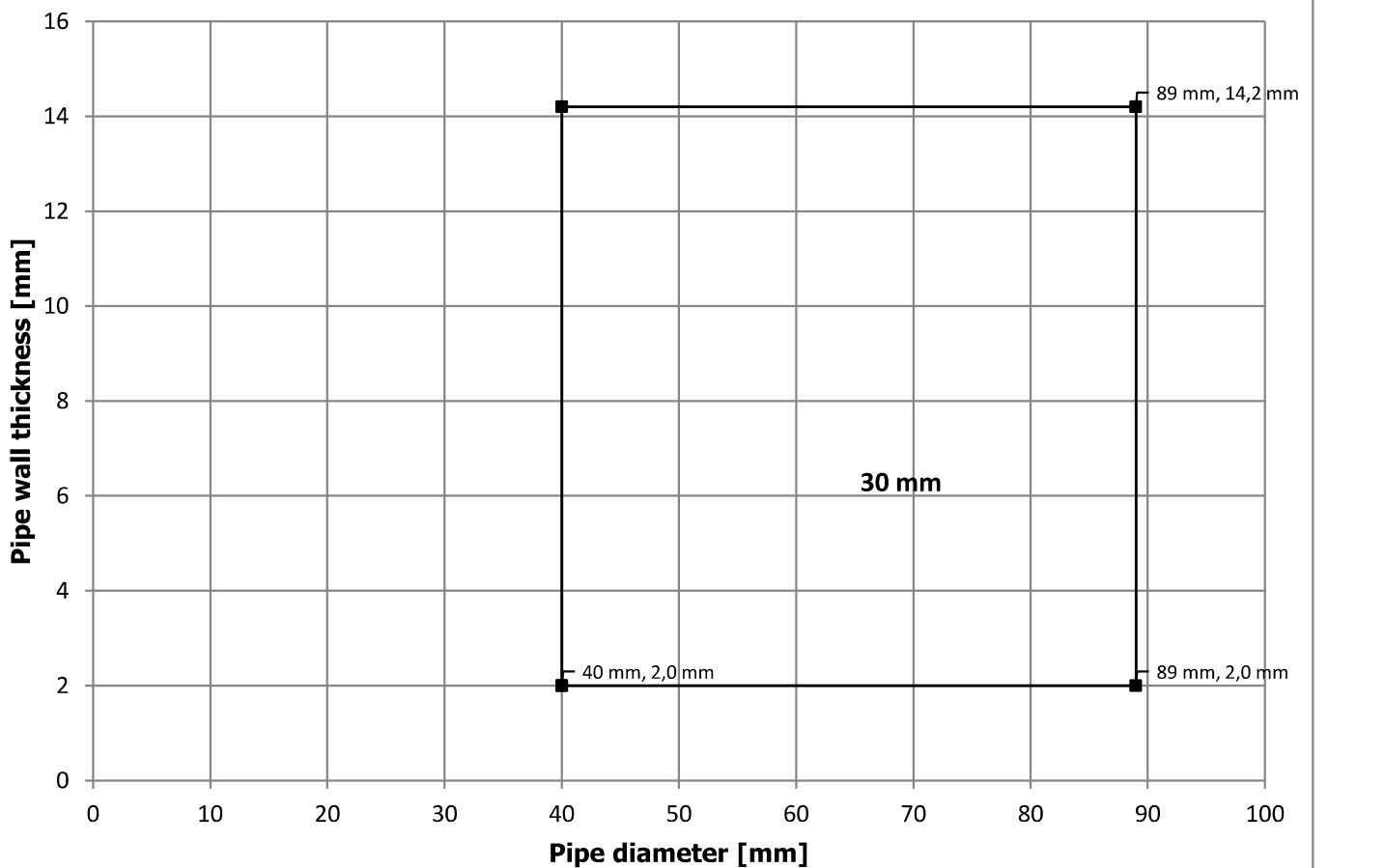
Local, Sustained insulation

Copper, Cast iron, Steel and Stainless steel

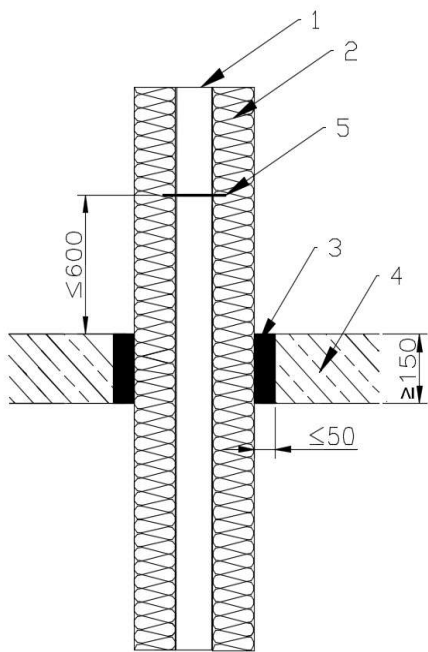


No.	Item	Description
1	Pipe	Copper, Cast iron, Steel and Stainless steel
2	Insulation	U Protect Roll 3.1 Alu1 fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with Mortar or Concrete
4	Ceiling	Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

Field of application for insulation thickness

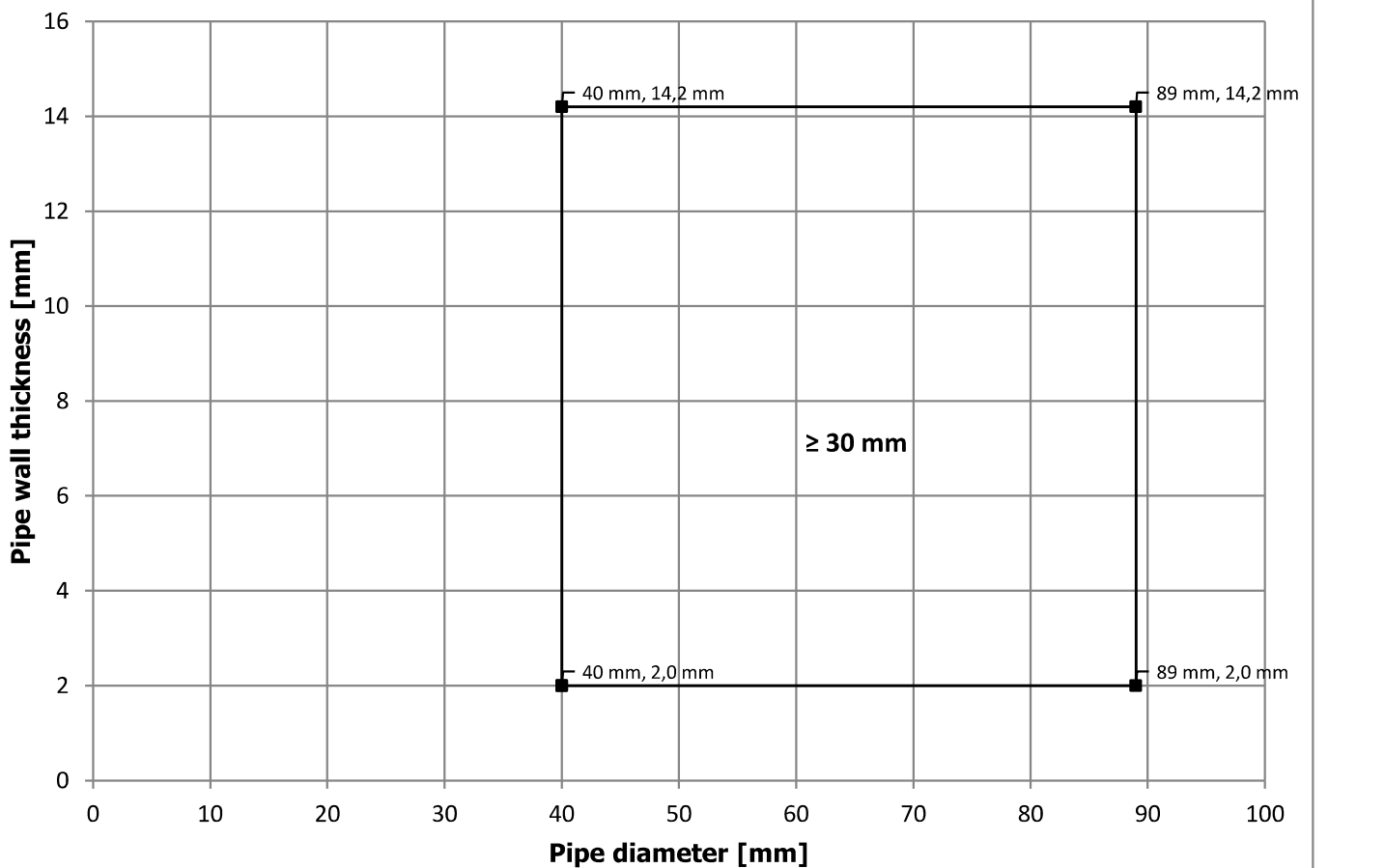


El120 - Vertical pipe direction
U Protect Roll 3.1 Alu1
Continued, Sustained insulation
Copper, Cast iron, Steel and Stainless steel



No.	Item	Description
1	Pipe	Copper, Cast iron, Steel and Stainless steel
2	Insulation	U Protect Roll 3.1 Alu1 fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with Mortar or Concrete
4	Ceiling	Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

Field of application for insulation thickness

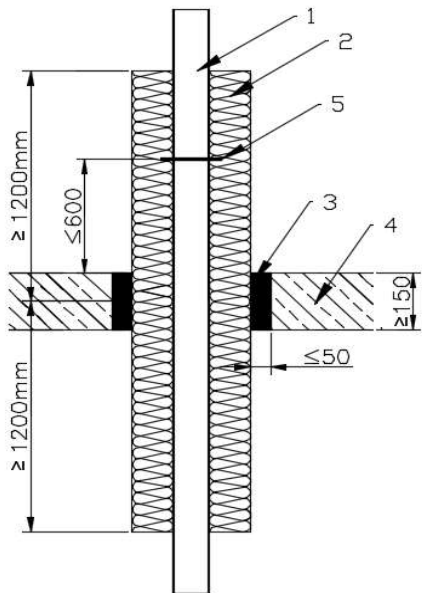


El60 - Vertical pipe direction

U Protect Roll 3.1 Alu1

Local, Sustained insulation

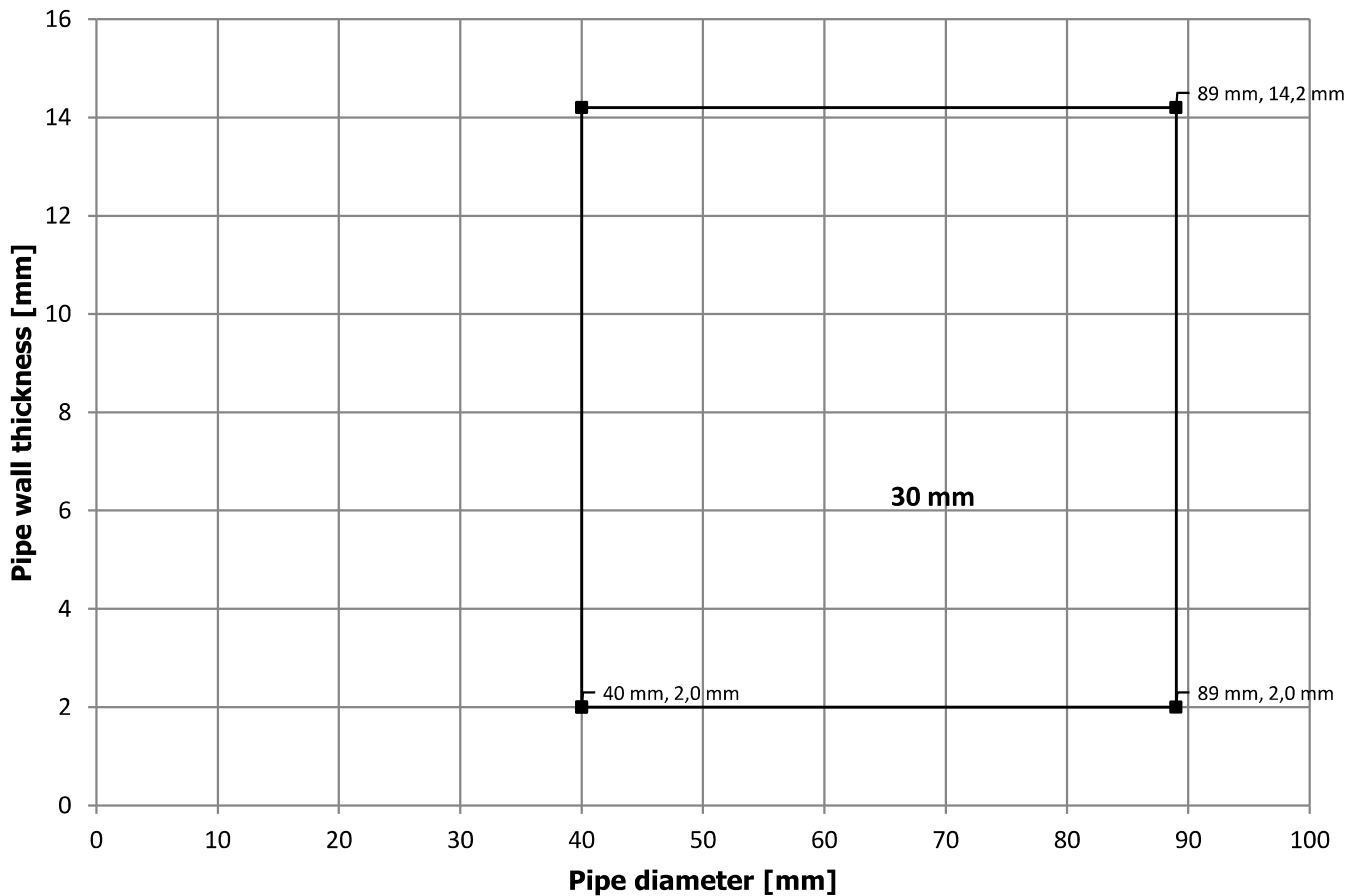
Copper, Cast iron, Steel and Stainless steel



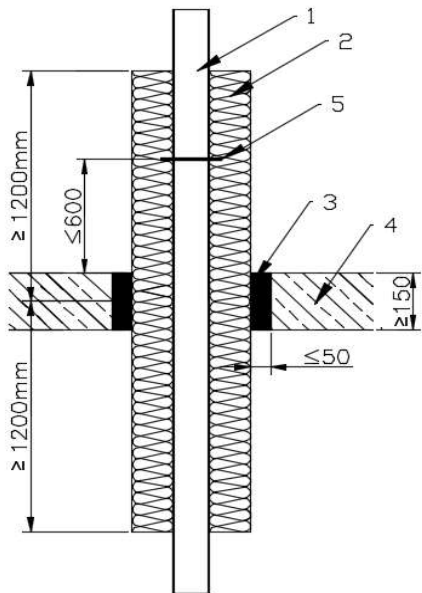
No.	Item	Description
1	Pipe	Copper, Cast iron, Steel and Stainless steel
2	Insulation	U Protect Roll 3.1 Alu1 fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with Mortar or Concrete
4	Ceiling	Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

NB. For continued insulation the thickness of the insulation can be increased

Field of application for insulation thickness



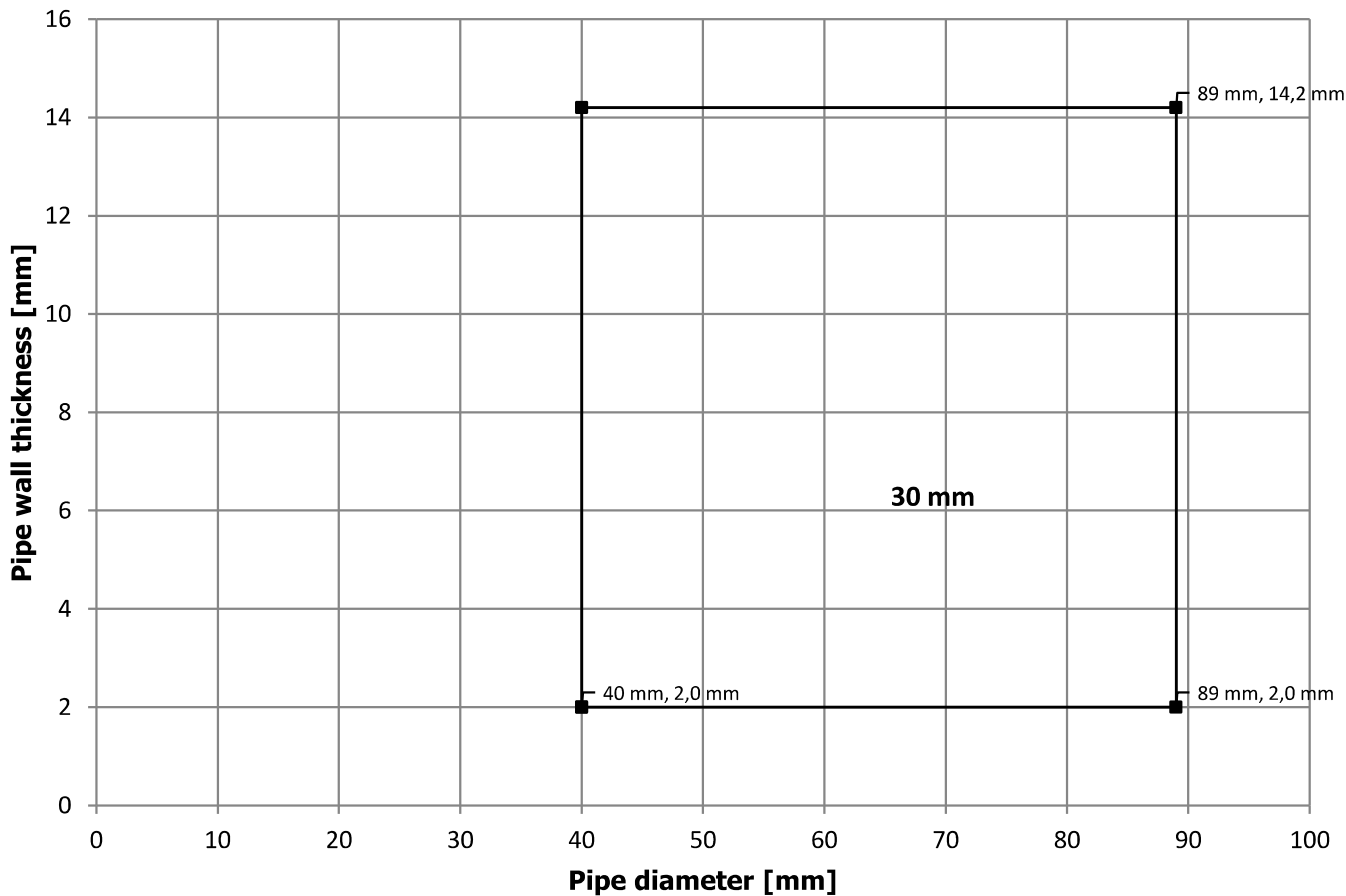
El60 - Vertical pipe direction
U Protect Roll 3.1 Alu1
Local, Sustained insulation
Stainless steel



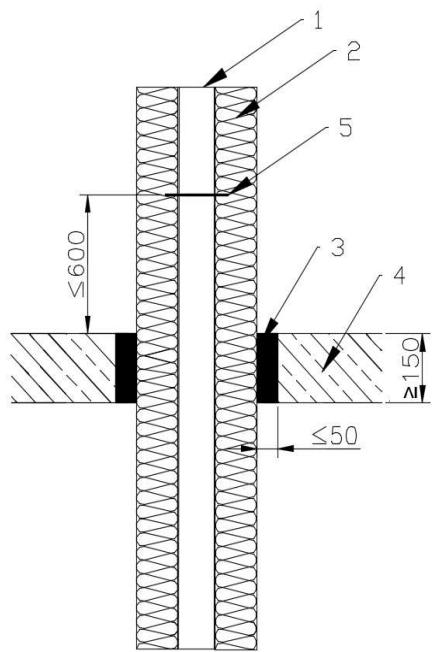
No.	Item	Description
1	Pipe	Stainless steel
2	Insulation	U Protect Roll 3.1 Alu1 fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with Mortar or Concrete
4	Ceiling	Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

NB. For continued insulation the thickness of the insulation can be increased

Field of application for insulation thickness

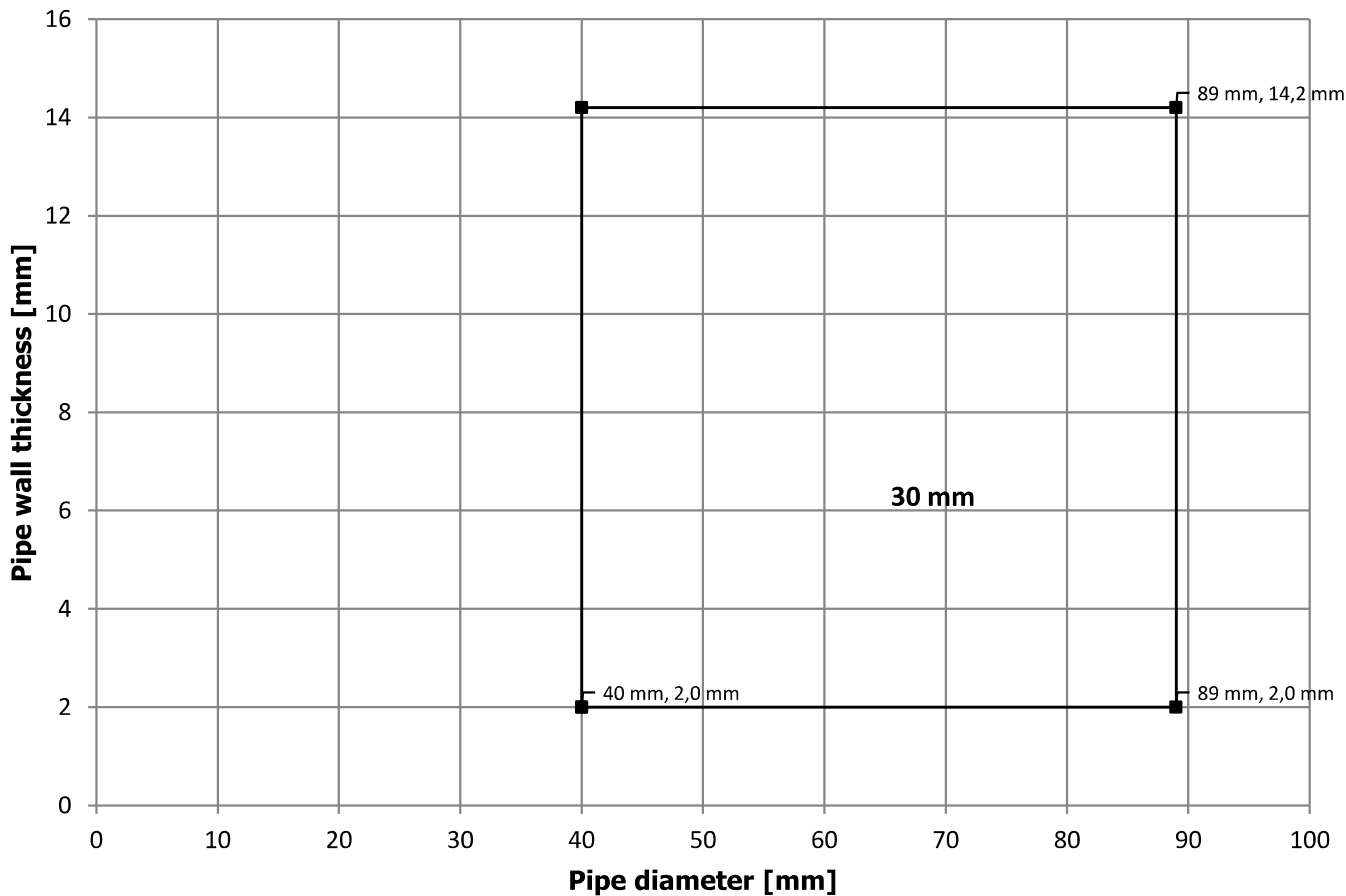


El120 - Vertical pipe direction
U Protect Roll 3.1 Alu1
Continued, Sustained insulation
Stainless steel



No.	Item	Description
1	Pipe	Stainless steel
2	Insulation	U Protect Roll 3.1 Alu1 fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with Mortar or Concrete
4	Ceiling	Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

Field of application for insulation thickness

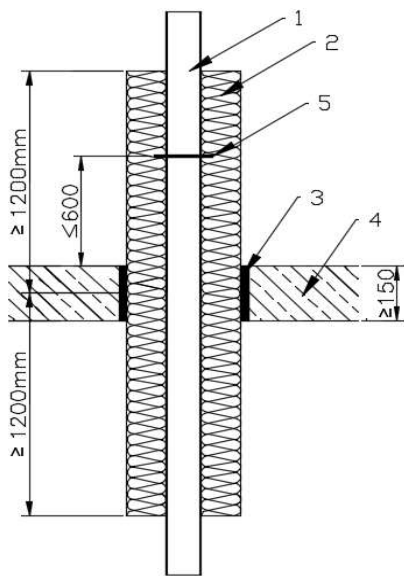


El30 - Vertical pipe direction

U Protect Roll 3.1 Alu1

Local/Continued, Sustained insulation

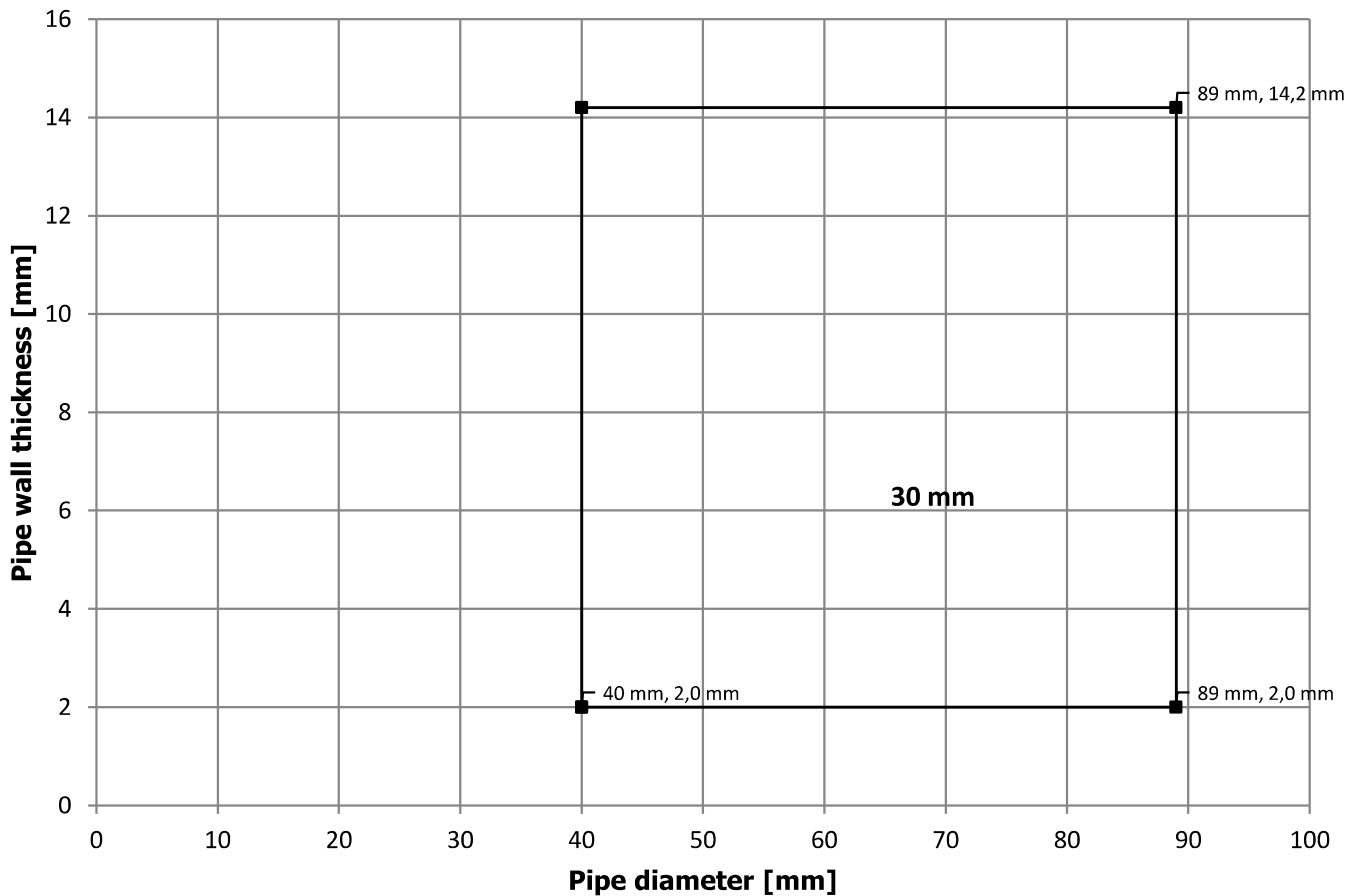
Stainless steel



No.	Item	Description
1	Pipe	Stainless steel
2	Insulation	U Protect Roll 3.1 Alu1 fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with Mortar or Concrete
4	Ceiling	Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

NB. For continued insulation the thickness of the insulation can be increased

Field of application for insulation thickness

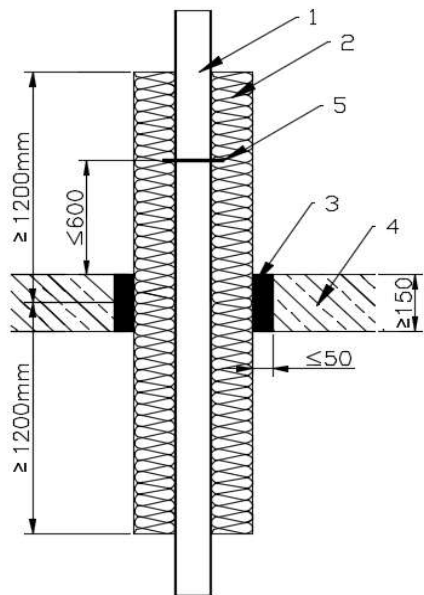


El90 - Vertical pipe direction

U Protect Roll 3.1 Alu1

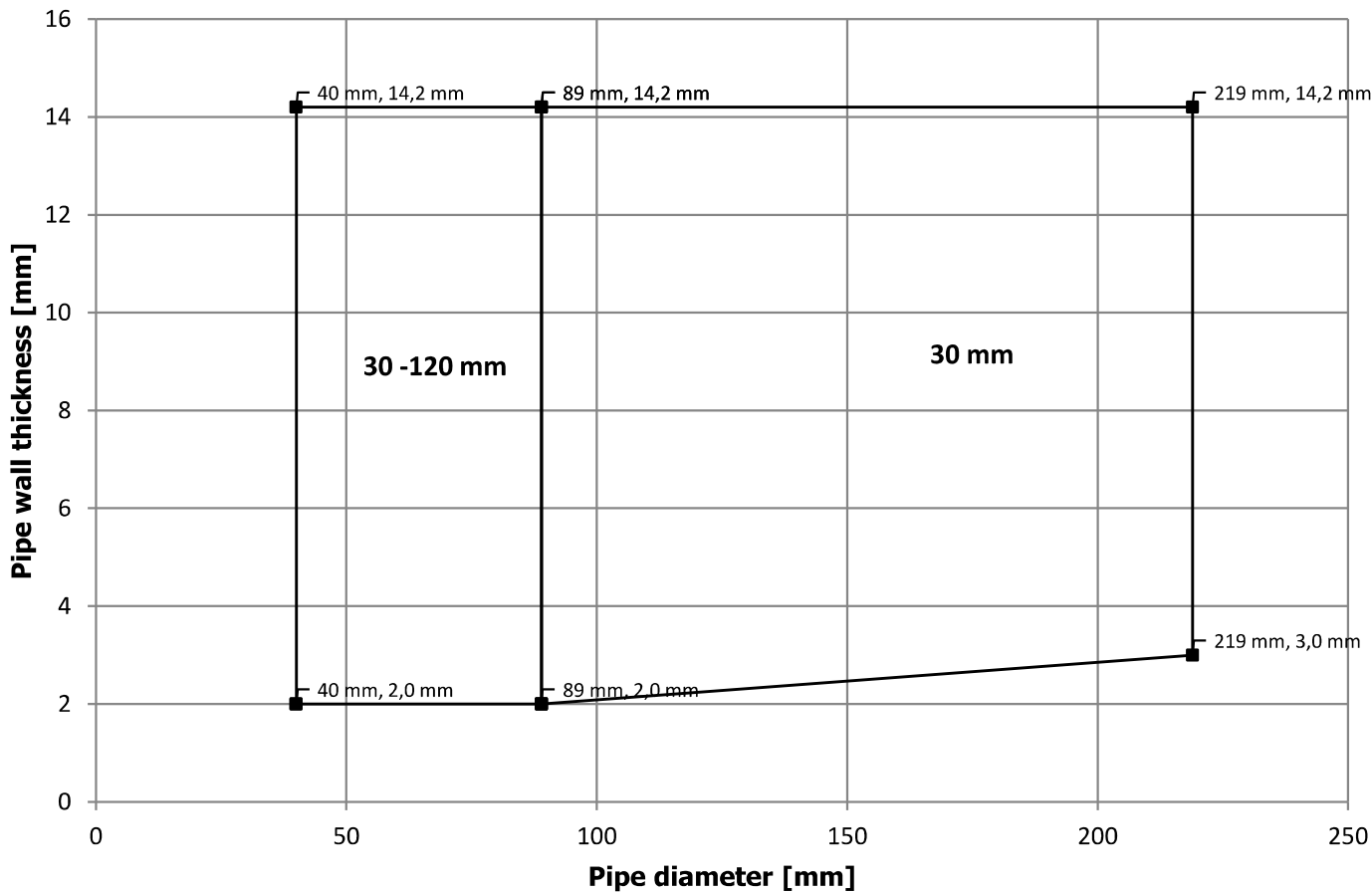
Local, Sustained insulation

Copper, Cast iron, Steel and Stainless steel

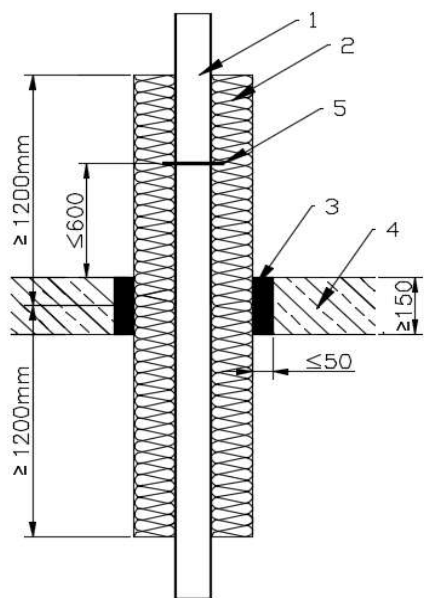


No.	Item	Description
1	Pipe	Copper, Cast iron, Steel and Stainless steel
2	Insulation	U Protect Roll 3.1 Alu1 fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with Mortar or Concrete
4	Ceiling	Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

Field of application for insulation thickness

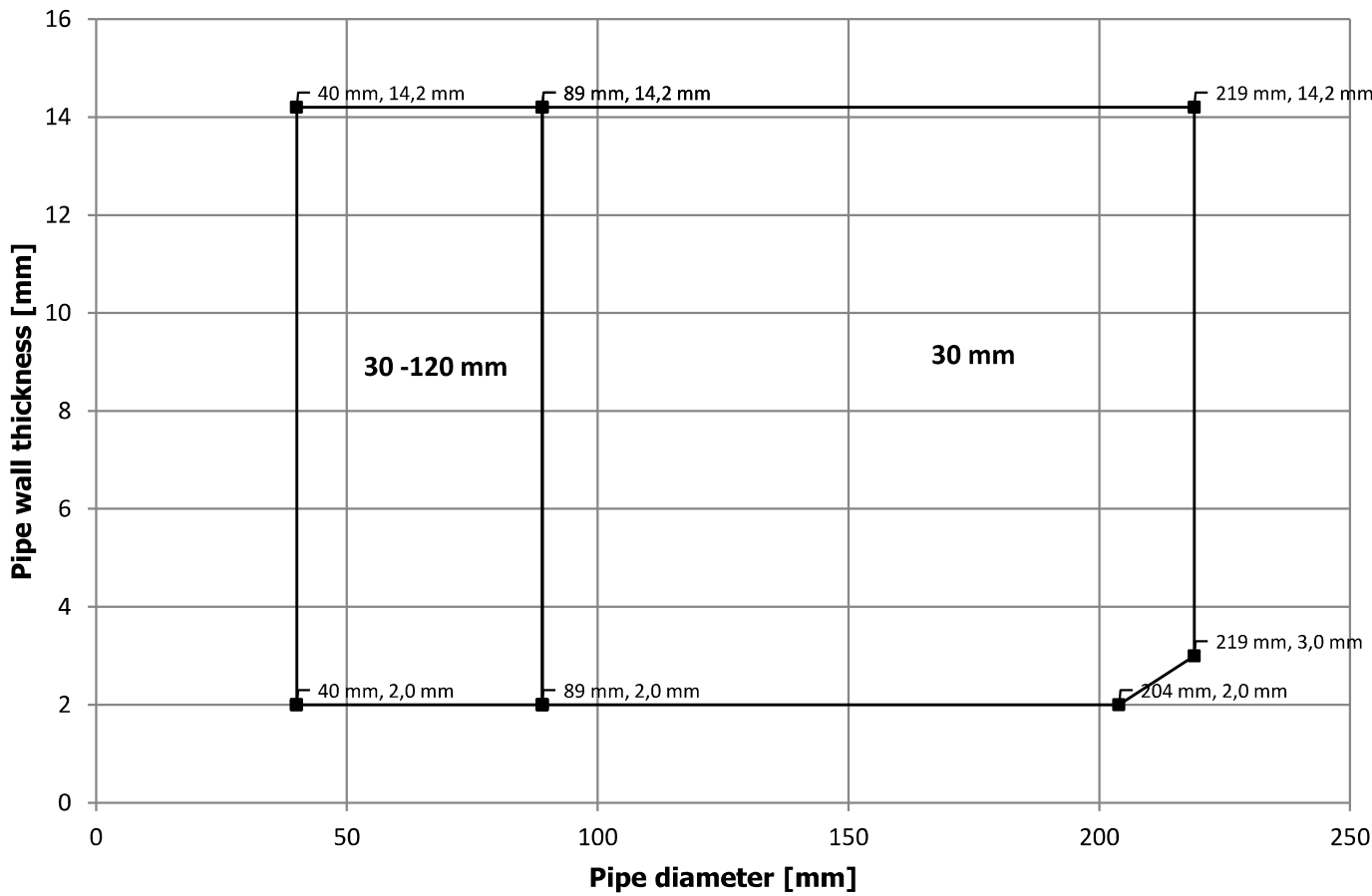


El90 - Vertical pipe direction
U Protect Roll 3.1 Alu1
Local, Sustained insulation
Stainless steel



No.	Item	Description
1	Pipe	Stainless steel
2	Insulation	U Protect Roll 3.1 Alu1 fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with Mortar or Concrete
4	Ceiling	Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

Field of application for insulation thickness

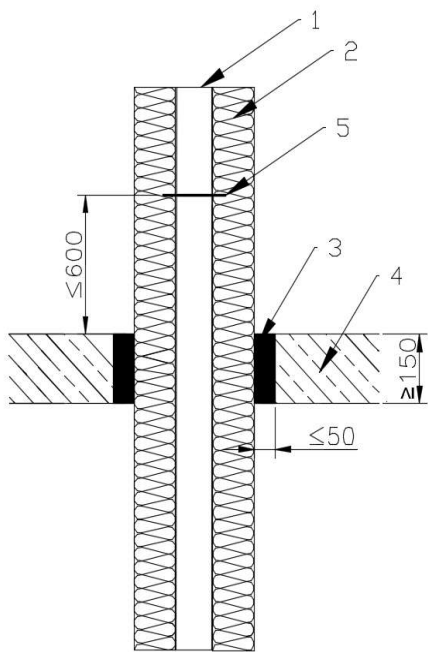


El90 - Vertical pipe direction

U Protect Roll 3.1 Alu1

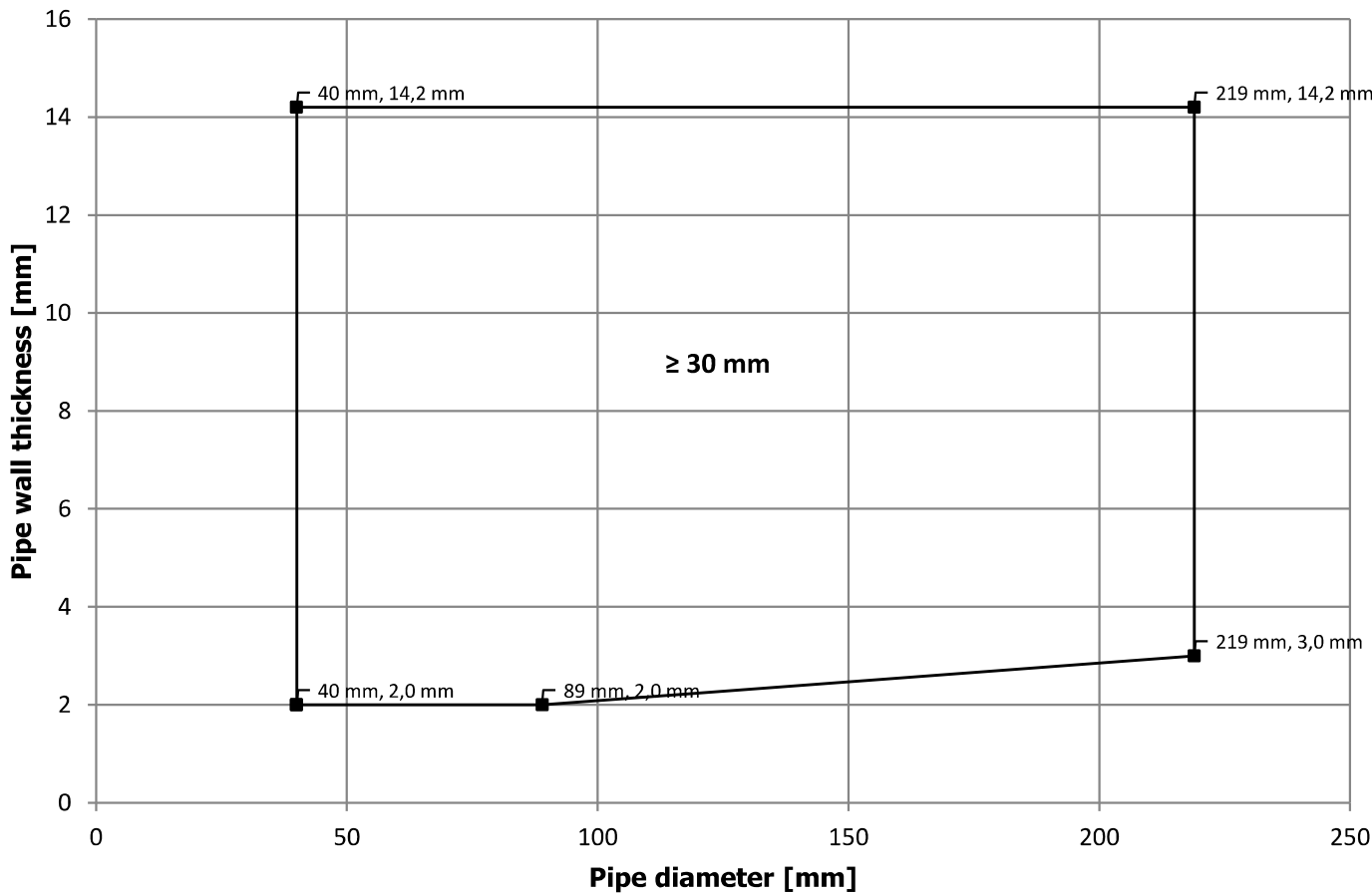
Continued, Sustained insulation

Copper, Cast iron, Steel and Stainless steel

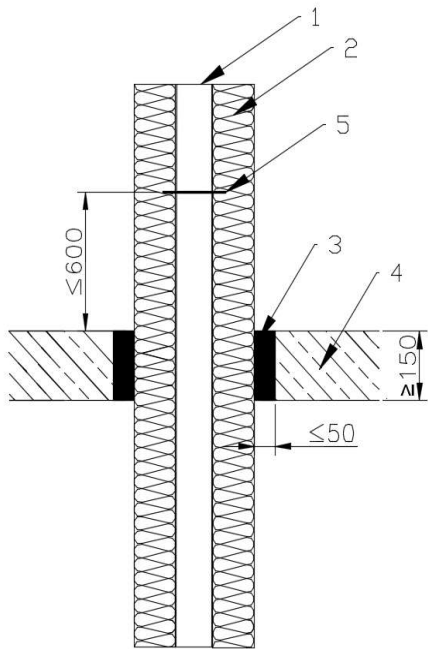


No.	Item	Description
1	Pipe	Copper, Cast iron, Steel and Stainless steel
2	Insulation	U Protect Roll 3.1 Alu1 fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with Mortar or Concrete
4	Ceiling	Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

Field of application for insulation thickness

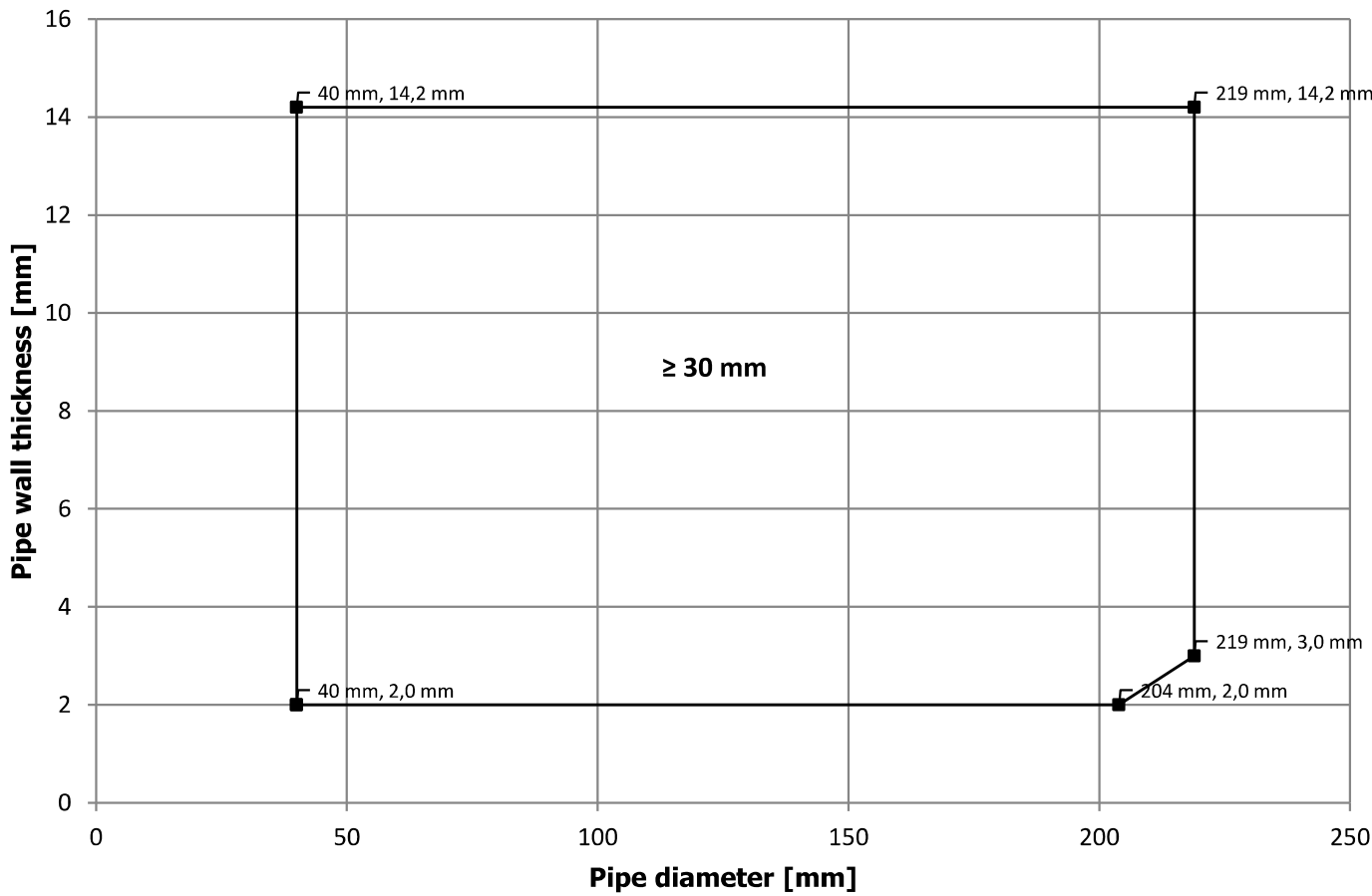


El90 - Vertical pipe direction
U Protect Roll 3.1 Alu1
Continued, Sustained insulation
Stainless steel



No.	Item	Description
1	Pipe	Stainless steel
2	Insulation	U Protect Roll 3.1 Alu1 fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with Mortar or Concrete
4	Ceiling	Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

Field of application for insulation thickness

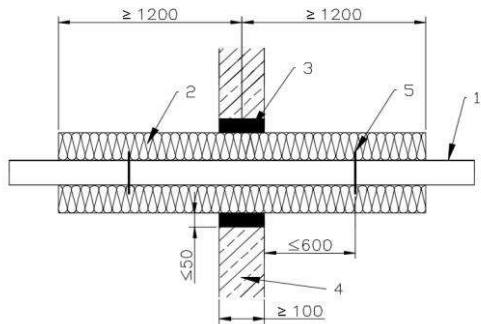


El90 - Horizontal pipe direction

U Protect Roll 3.1 Alu1

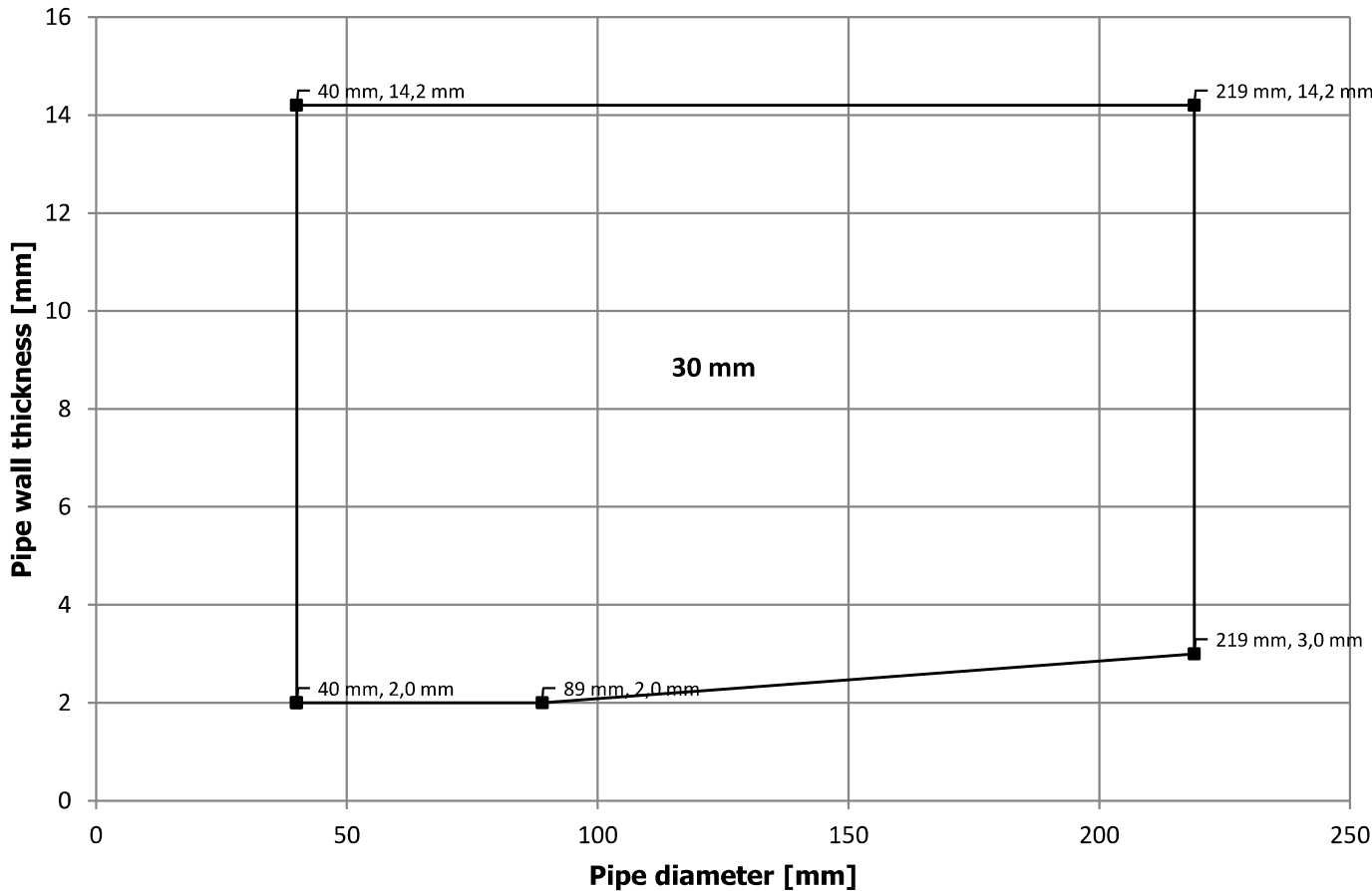
Local, Sustained insulation

Copper, Cast iron, Steel and Stainless steel



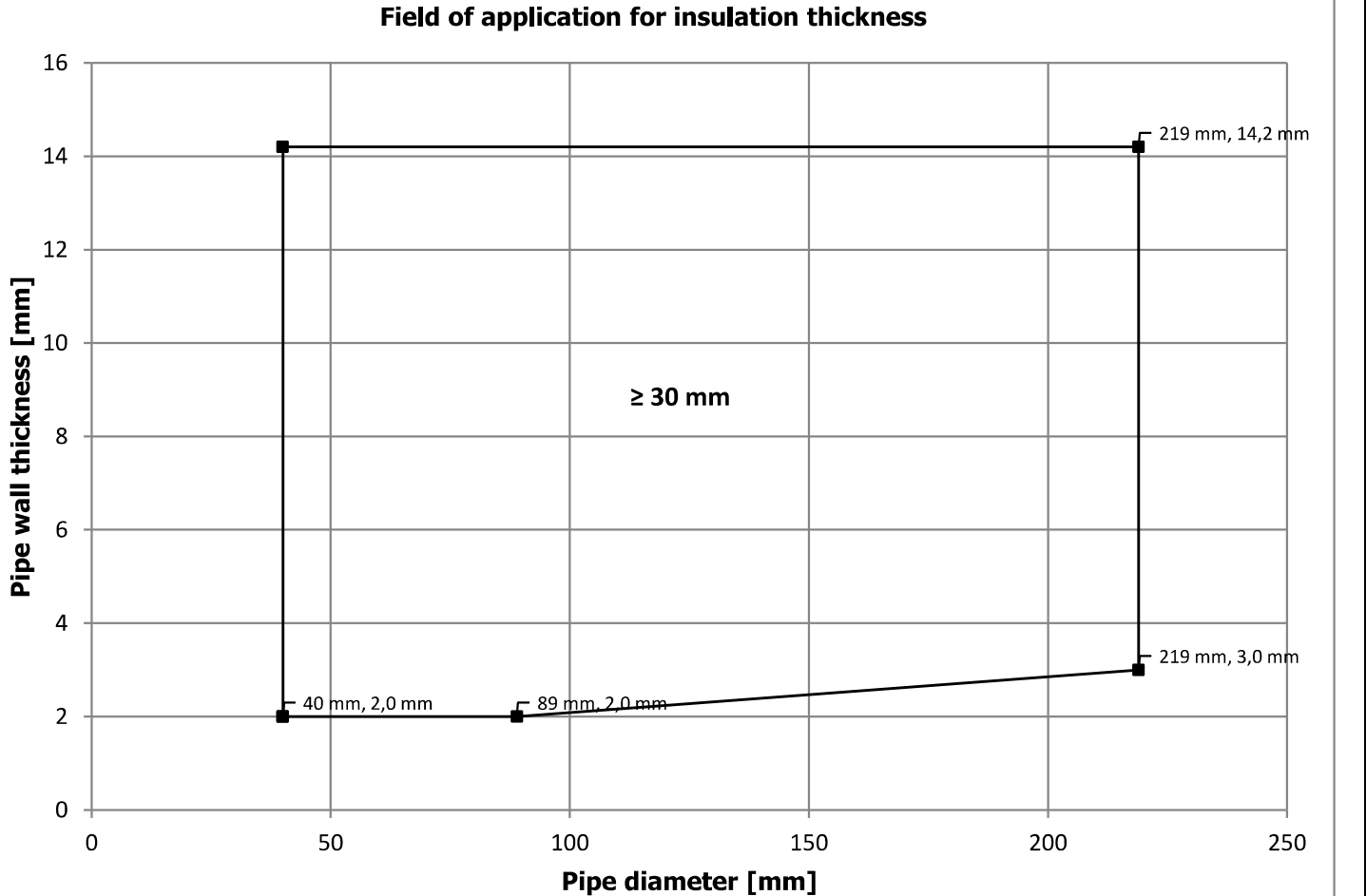
No.	Item	Description
1	Pipe	Copper, Cast iron, Steel and Stainless steel
2	Insulation	U Protect Roll 3.1 Alu1 fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with Mortar or Concrete
4	Wall	Flexible wall or Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

Field of application for insulation thickness



EI90 - Horizontal pipe direction
 U Protect Roll 3.1 Alu1
 Continued, Sustained insulation
 Copper, Cast iron, Steel and Stainless steel

No.	Item	Description
1	Pipe	Copper, Cast iron, Steel and Stainless steel
2	Insulation	U Protect Roll 3.1 Alu1 fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with Mortar or Concrete
4	Wall	Flexible wall or Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

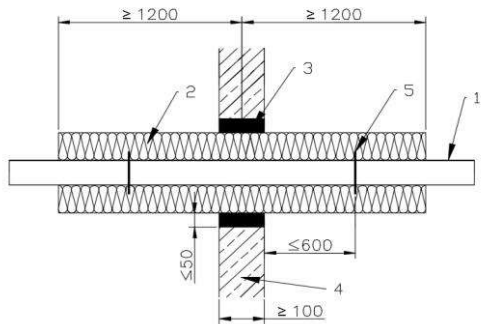


El60 - Horizontal pipe direction

U Protect Roll 3.1 Alu1

Local/Continued, Sustained insulation

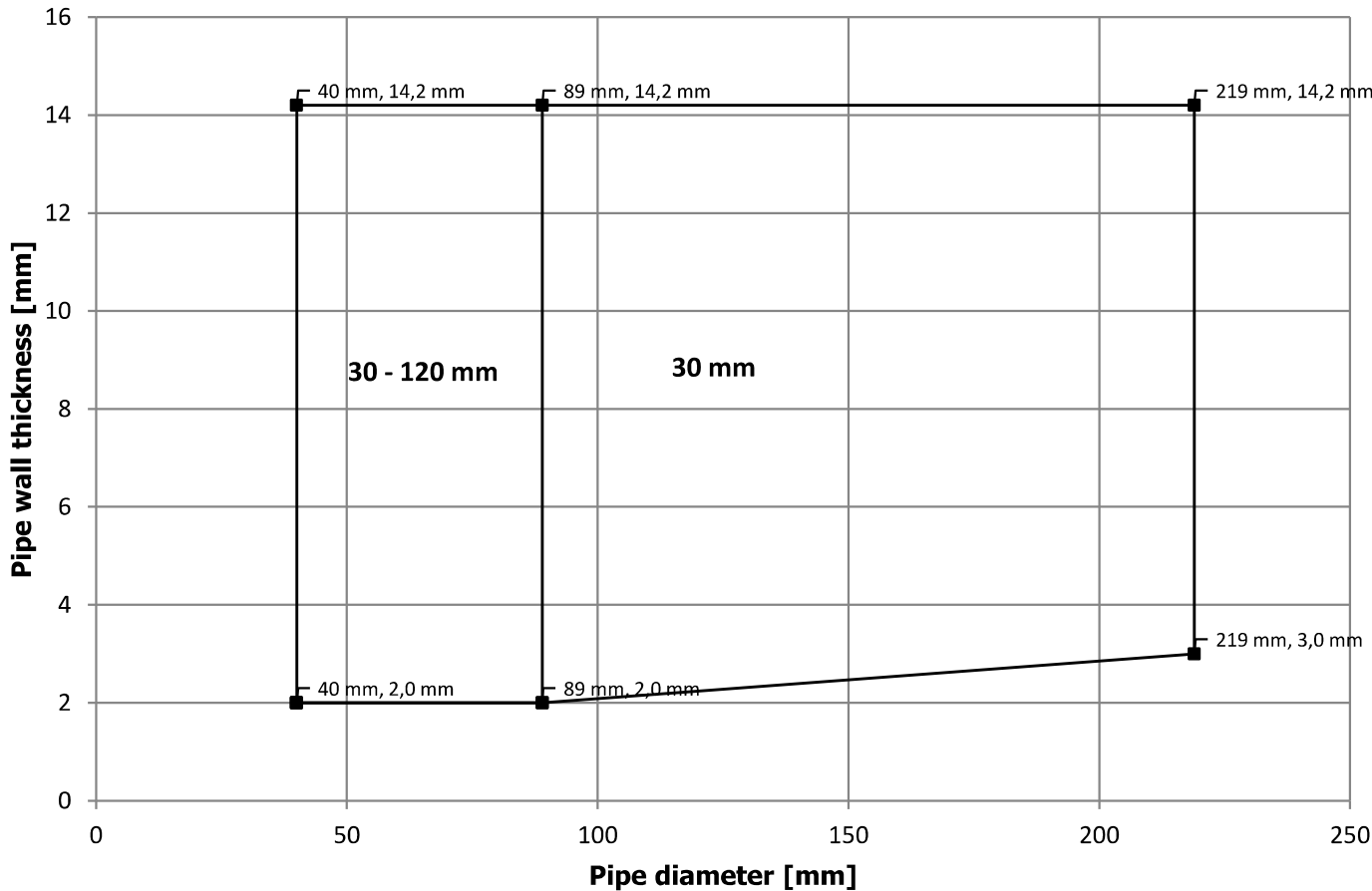
Copper, Cast iron, Steel and Stainless steel



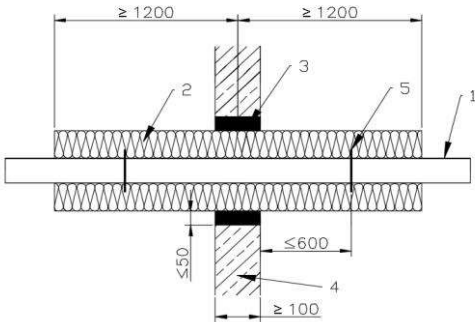
No.	Item	Description
1	Pipe	Copper, Cast iron, Steel and Stainless steel
2	Insulation	U Protect Roll 3.1 Alu1 fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with Mortar or Concrete
4	Wall	Flexible wall or Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

NB. For continued insulation the thickness of
the insulation can be increased

Field of application for insulation thickness



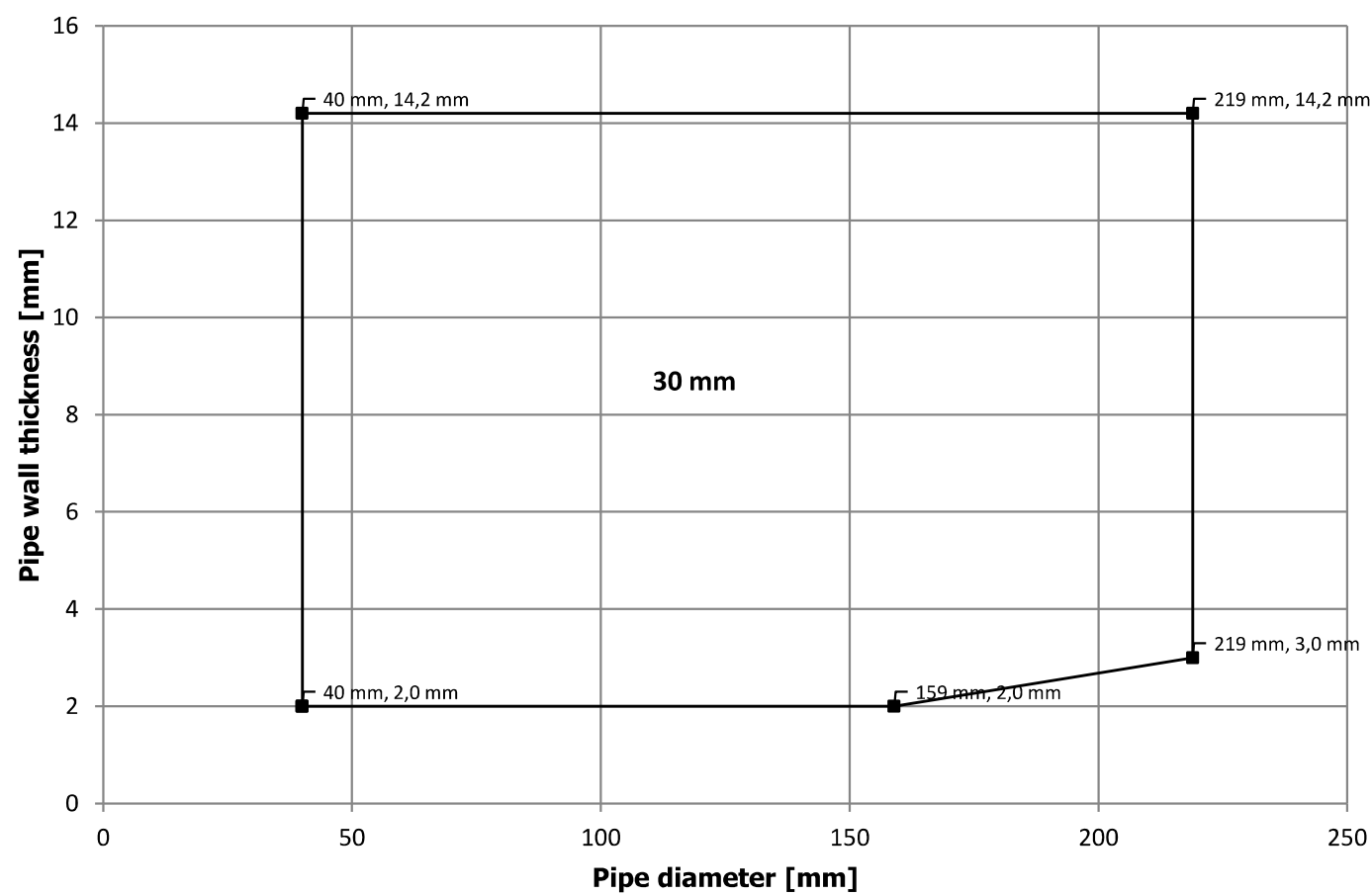
El60 - Horizontal pipe direction
U Protect Roll 3.1 Alu1
Local/Continued, Sustained insulation
Stainless steel



No.	Item	Description
1	Pipe	Stainless steel
2	Insulation	U Protect Roll 3.1 Alu1 fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with Mortar or Concrete
4	Wall	Flexible wall or Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

NB. For continued insulation the thickness of
the insulation can be increased

Field of application for insulation thickness

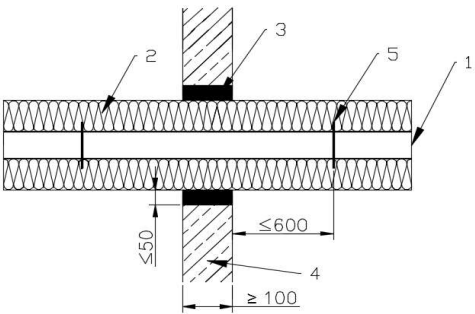


El60 - Horizontal pipe direction

U Protect Roll 3.1 Alu1

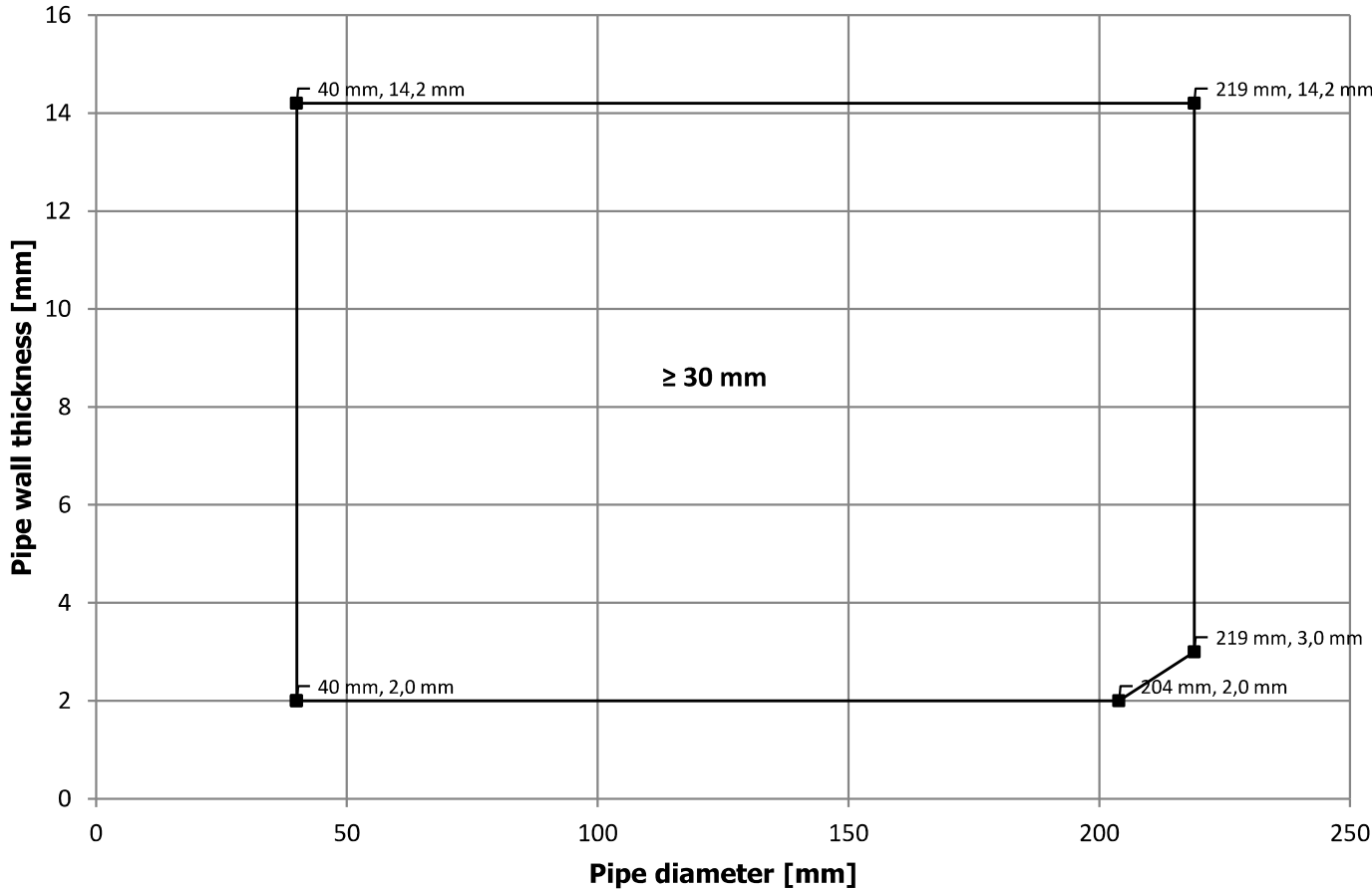
Continued, Sustained insulation

Stainless steel

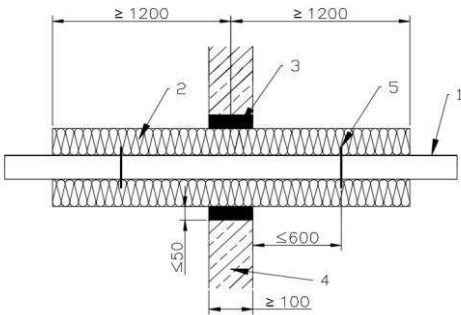


No.	Item	Description
1	Pipe	Stainless steel
2	Insulation	U Protect Roll 3.1 Alu1 fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with Mortar or Concrete
4	Wall	Flexible wall or Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

Field of application for insulation thickness



El30 - Horizontal pipe direction
U Protect Roll 3.1 Alu1
Local/Continued, Sustained insulation
Stainless steel



No.	Item	Description
1	Pipe	Stainless steel
2	Insulation	U Protect Roll 3.1 Alu1 fixed with steel wire less or equal to c/c 250 mm
3	Residual gap	Filled with Mortar or Concrete
4	Wall	Flexible wall or Aerated concrete, Concrete or Masonry
5	Service support	Metal hanger

NB. For continued insulation the thickness of
the insulation can be increased

Field of application for insulation thickness

