



designated according to Article 29 of the Regulation (EU) No 305/2011 and member of EOTA (European Organisation for Technical Assessment, [www.eota.eu](http://www.eota.eu))

## European Technical Assessment

**ETA 24/0640**  
**of 26/09/2024**

**Technical Assessment Body issuing the ETA and designated according to Article 29 of the Regulation (EU) No 305/2011: UL International (Netherlands) B.V.**

**Trade name of the construction product**

SOUDACOLLAR P FR

**Product family to which the construction product belongs**

Fire Stopping and Sealing Product:  
• Penetration Seals

**Manufacturer**

Soudal N.V.  
Everdongengenlaan 18-20  
Turnhout,  
Belgium

**Manufacturing plant(s)**

A/003

**This European Technical Assessment contains**

105 pages including 1 Annex which forms an integral part of this assessment.

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

EAD 350454-00-1104, September 2017.

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## **I. SPECIFIC PARTS OF THE EUROPEAN TECHNICAL ASSESSMENT**

### **1 Technical description of the product**

- 1) SOUDACOLLAR P FR is a pipe closure device used to form penetration seals where combustible pipes, cables and metal pipes with insulation penetrate walls and floors.
- 2) The SOUDACOLLAR P FR is supplied with intumescent liner complete within metal steel shell, to be clamped around the service and screw fixed back to the supporting element. The SOUDACOLLAR P FR may be supplied with powder coated steel or stainless steel shells.
- 3) In flexible walls, gaps between the pipe and the construction below 8mm must have a bead of ACRYRUB FR PS to cover the opening, and for gaps 8mm or above, the seal must be plugged with 25mm deep ACRYRUB FR PS.

In rigid walls, gaps between the pipe and the construction below 8mm must have a bead of ACRYRUB FR PS to cover the opening, and for gaps 8mm or above, the seal must be plugged with 20mm deep ACRYRUB FR PS on 20mm deep backing of stonewool, alternatively 40 mm deep ACRYRUB FR PS with no backing.

In floors, gaps between the pipe and the construction below 10mm must have 20mm deep stonewool to plug the opening, alternatively 20 mm deep ACRYRUB FR PS with no backing, and for gaps 10mm or above, the seal must be plugged with 10mm deep ACRYRUB FR PS on 40mm deep backing of stonewool, alternatively 50 mm deep ACRYRUB FR PS with no backing. For collars installed on top side of floors, gaps between the pipe and the top side of the collar must have a bead of ACRYRUB FR PS to cover the opening.

SOUDACOLLAR P FR are oversized to allow for the natural gradient of pipework for flow purposes and inconsistencies of pipe installation.

- 4) The applicant has submitted a written declaration that the product and/or constituents of the product contains no substances which have been classified as dangerous according to Directive 67/548/EEC and Regulation (EC) No. 1272/2008 and listed in the 'indicative list on dangerous substances' of the EGDS – taking into account the installation conditions of the construction product and the release scenarios resulting from there.

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

- 5) The use category of SOUDACOLLAR P FR in relation to BWR 3 (Hygiene, health and environment) is IA1, S/W2

### **2 Specification of the intended uses of the product in accordance with the applicable European Assessment Document (Hereinafter EAD): EAD 350454-00-1104: 2017**

Detailed information and data is given in Annex A.

The intended use of system SOUDACOLLAR P FR is to reinstate the fire resistance performance of flexible wall and rigid wall and floor constructions, where they are penetrated by services.

- 1) The specific elements of construction that the system SOUDACOLLAR P FR may be used to provide a penetration seal in, are as follows:
- a. Flexible walls: The wall must have a minimum thickness of 75 mm and comprise steel studs or timber studs\* lined on both faces with minimum 1 layer of 12.5 mm thick boards. Flexible wall solutions may also be used in rigid walls, with a minimum density of 350 kg/m<sup>3</sup>.
  - b. Timber walls: The wall must have a minimum thickness of 100 mm and comprise solid wood or cross-laminated timber.
  - c. Rigid walls: The wall must have a minimum thickness of 75 mm and comprise concrete, aerated concrete or masonry, with a minimum density of 650 kg/m<sup>3</sup>.
  - d. Rigid floors: The floor must have a minimum thickness of 150 mm and comprise aerated concrete or concrete with a minimum density of 650 kg/m<sup>3</sup>.
  - e. Timber floors: The floor must have a minimum thickness of 150 mm and comprise solid wood or cross-laminated timber.

\* no part of the penetration seal may be closer than 100 mm to a stud, the cavity must be closed between the penetration seal and the stud, and minimum 100 mm of insulation of class A1 or A2 according to EN 13501-1 must be provided within the cavity between the penetration seal and the stud.

The supporting construction must be classified in accordance with EN 13501-2 for the required fire resistance period.

Soudal N.V. Fire Protection Systems which involve services penetrating both sides of a flexible wall may also be used in the situation where the services penetrates one side of the wall only and the remaining side of the wall is not penetrated at the same point (i.e. the services continues on the inside of the wall). All fire integrity and thermal insulation ratings for such single-sided penetrations remain the same as for the equivalent double-sided penetration.

- 2) The system SOUDACOLLAR P FR may be used to provide a penetration seal with specific supporting constructions and substrates (for details see Annex A).
- 3) Where single sided top face seals are described in Annex A, these can also be used in composite floors.
- 4) Where PP pipes are mentioned in Annex A, this includes PP-MV, PP-H, PP-R and similar if the pipe is according to EN 1451-1 or DIN 8077/8078. Where PE pipes are mentioned, this includes PE-LD, PE-MD, PE-HD, PE-X and similar according to EN 1519-1, EN 12201-2 or EN 12666-1.
- 5) Solutions in Annex A for 100 mm thick flexible walls and 150 mm thick rigid floors, can be used in timber walls limited to EI 90, and in timber floors limited to EI 120 (see 2.1). In timber walls and floors, gaps between the pipe and the construction must be plugged with 25 mm deep ACRYRUB FR PS on 25 mm deep backing of stone-wool on both sides before collars are attached, with minimum 80 mm long wood screws in walls, and 100 mm long wood screws in floors. The minimum annular gap must be 10 mm wide, and the maximum aperture sizes must be Ø 180 mm in walls and Ø 220 mm in floors. For larger apertures, the annular gap must be 10 mm (+/- 2 mm).
- 6) The system SOUDACOLLAR P FR may be used in all angles between 90° and 45° in all directions for pipes with maximum diameter of 50 mm, combined with oversized collars with maximum size of 160 mm.

- 7) Where pipes are placed against a wall or a floor, so a collar can not be installed in practical, half a collar shell of the double diameter than the pipe can be used. The half collar shell must be placed towards the surface of the wall or floor, and the maximum allowed pipe diameter is 160 mm, with a maximum collar size of 315 mm.
- 8) In places where it is impossible to use screws, it is allowed to use screws on one half of a collar shell, with Soudabond FR fixing the other half of the collar shell without screws, with a maximum allowed collar size of 200 mm. The half of a collar shell which locks the other half in place, must be the half where screws are used.
- 9) The provisions made in this European Technical Assessment are based on an assumed working life of the SOUDACOLLAR P FR of 25 years, provided that the conditions laid down in the manufacturers datasheet and instructions for the packaging/transport/storage/installation/ use/repair are met. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.
- 10) Type Z<sub>2</sub>: intended for uses in internal conditions with humidity lower than 85% RH excluding temperatures below 0°C, without exposure to rain or UV.

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

| Product-type: Pipe Collar                                                                                 |                                                             | Intended use: Penetration Seal                           |
|-----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|----------------------------------------------------------|
| Assessment method                                                                                         | Essential characteristic                                    | Product Performance                                      |
| <b>BWR 2 Safety in case of fire</b>                                                                       |                                                             |                                                          |
| EN 13501-1                                                                                                | Reaction to fire                                            | No performance determined                                |
| EN 13501-2                                                                                                | Resistance to fire                                          | Annex A                                                  |
| <b>BWR 3 Hygiene, health and environment</b>                                                              |                                                             |                                                          |
| EN 1026                                                                                                   | Air permeability                                            | Annex B                                                  |
| EAD 350454-00-1104,<br>Annex C                                                                            | Water permeability                                          | No performance determined                                |
| Declaration of manufacturer<br>& EN 16516                                                                 | Content, emission and/or release of<br>dangerous substances | Use categories: IA1, S/W2<br>Declaration of manufacturer |
| <b>BWR 4 Safety in use</b>                                                                                |                                                             |                                                          |
| EOTA TR 001:2003                                                                                          | Mechanical resistance and stability                         | No performance determined                                |
| EOTA TR 001:2003                                                                                          | Resistance to impact/movement                               | No performance determined                                |
| EOTA TR 001:2003                                                                                          | Adhesion                                                    | No performance determined                                |
| EAD 350454-00-1104,<br>Clause 2.2.9                                                                       | Durability                                                  | Z <sub>2</sub>                                           |
| <b>BWR 5 Protection against noise</b>                                                                     |                                                             |                                                          |
| EN 10140-1,2,4,5/ EN ISO<br>717-1                                                                         | Airborne sound insulation                                   | R <sub>w</sub> (C;Ctr): 58 (-1;-7)                       |
| <b>BWR 6 Energy economy and heat retention</b>                                                            |                                                             |                                                          |
| EN 12664, EN 12667, EN<br>12939, EN ISO 8990, EN ISO<br>6946, EN ISO 14683, EN ISO<br>10211, EN ISO 10456 | Thermal properties                                          | No performance determined                                |
| EN ISO 12572, EN 12086, EN<br>ISO 10456                                                                   | Water vapour permeability                                   | No performance determined                                |

**4 ASSESSMENT AND VERIFICATION OF CONSTANCY OF PERFORMANCE (HEREINAFTER AVCP) SYSTEM APPLIED, WITH REFERENCE TO ITS LEGAL BASE**

According to the decision 1999/454/EC – Commission Decision of date 22nd June 1999 on the procedure for attesting the conformity of construction products pursuant to Article 20(2) of Council Directive 89/106/EEC as regards fire stopping, fire sealing and fire protective products, published in the Official Journal of the European Union (OJEU) L178/52 of 14/07/1999, (see <https://eur-lex.europa.eu/oj/direct-access.html>) of the European Commission<sup>1</sup>, as amended, the system(s) of assessment and verification of constancy of performance (see Annex V to Regulation (EU) No 305/2011) given in the following table(s) applies (apply).

| Product(s)                              | Intended use(s)                                                      | Level(s) or class(es) | System(s) |
|-----------------------------------------|----------------------------------------------------------------------|-----------------------|-----------|
| Fire stopping and Fire Sealing Products | For fire compartmentation and/or fire protection or fire performance | Any                   | 1         |

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

**Tasks of the manufacturer:**

**Factory production control**

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

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

The factory production control shall be in accordance with the Control Plan of 25<sup>th</sup> June 2024 relating to the European Technical Assessment ETA 24/0640 issued on 26/09/2024 which is part of the technical documentation of this European Technical Assessment. The "Control Plan" is laid down in the context of the factory production control system operated by the manufacturer and deposited at UL International (Netherlands) B.V.

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

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<sup>1</sup> Official Journal of the European Communities L178/52 of 14/7/1999

**Other tasks of the manufacturer:**

Additional information

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

(a) Technical data sheet:

- Field of application:
- Building elements for which the penetration seal is suitable, type and properties of the building elements like minimum thickness, density, and - in case of lightweight constructions – the construction requirements.
- Limits in size, minimum thickness etc. of the penetration seal
- Construction of the penetration seal including the necessary components and additional products (e.g. backfilling material) with clear indication whether they are generic or specific.
- Services which the penetration seal is suitable, type and properties of the services like material, diameter, thickness etc. in case of pipes including insulation materials; necessary/allowed supports/fixings (e.g. pipe trays)

(b) Installation instruction:

- Steps to be followed
- Procedure in case of retrofitting
- Stipulations on maintenance, repair and replacement

**6 Issued on:**

**26 September 2024**

Report by:



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Staff Engineer  
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Verified by:



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Validated by:



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Head of TAB  
Built Environment

For and on behalf of UL International (Netherlands) B.V.

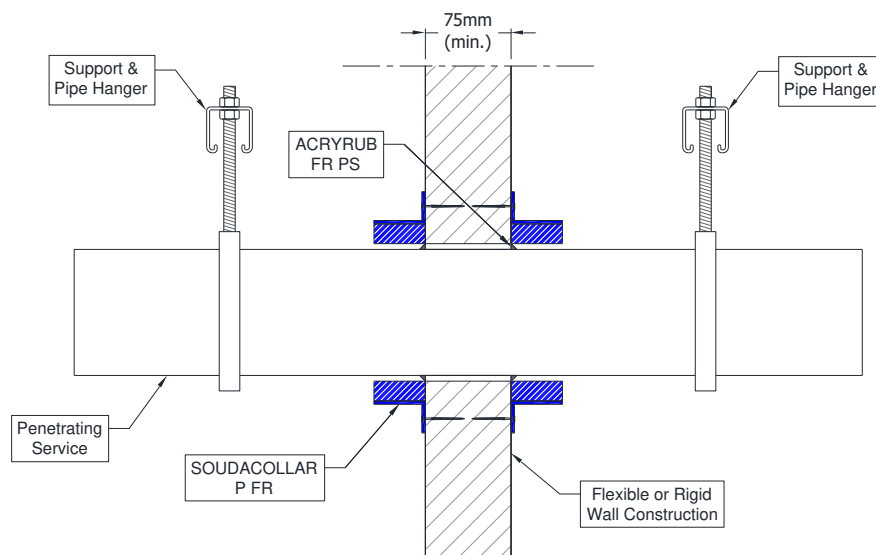
## ANNEX A – Resistance to Fire Classification – SOUDACOLLAR P FR

### A.1 Flexible or rigid wall constructions with wall thickness of minimum 75 mm

#### A.1.1 Penetration seals, in drywalls and concrete/masonry walls

**Penetration Seal:** Combustible pipes fitted with SOUDACOLLAR P FR, to both sides of the wall.

Construction details:

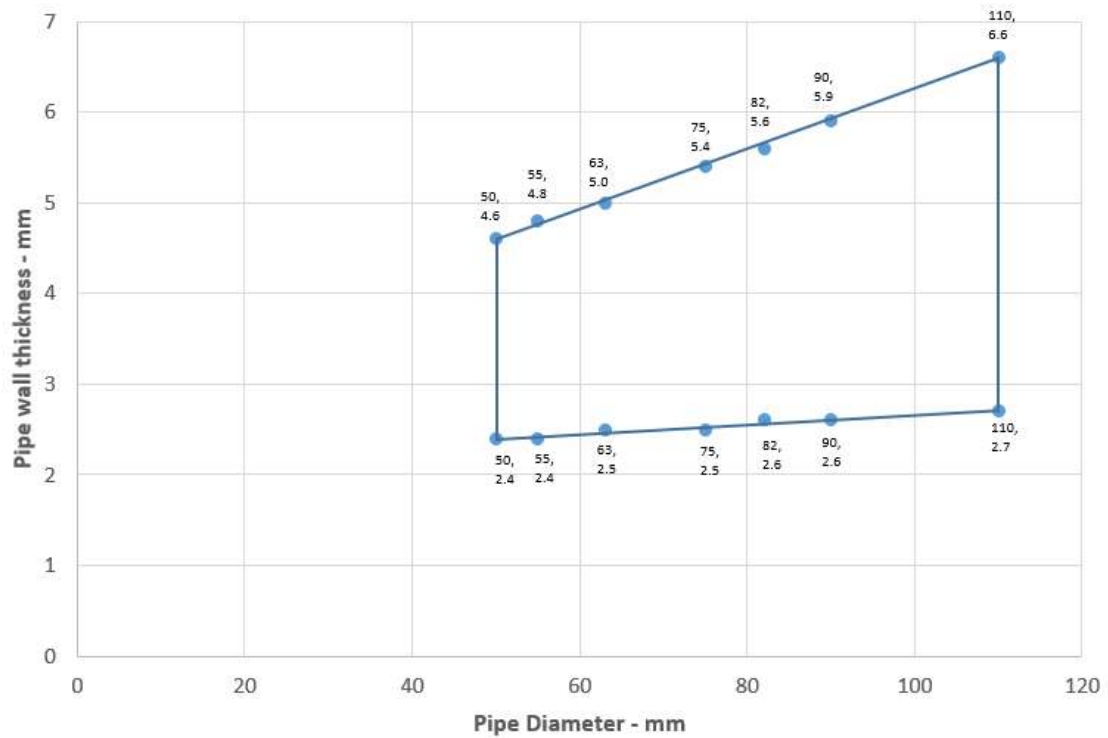


##### A.1.1.1

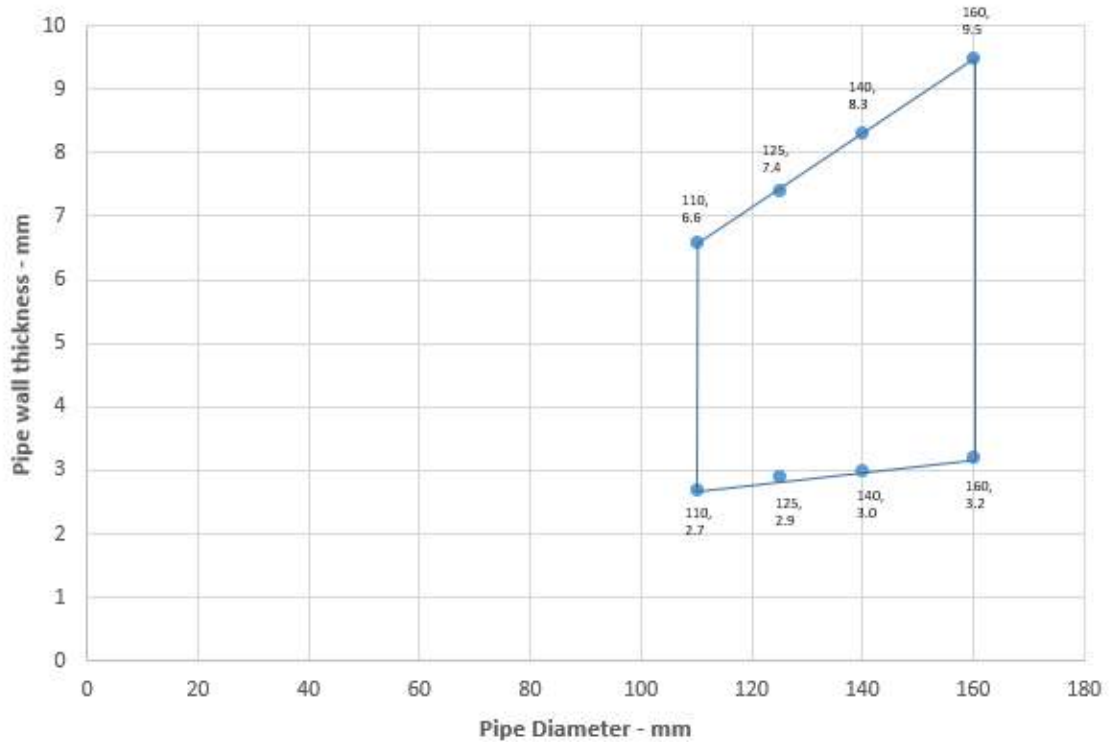
| Services                                                                                    | Collar Inlay | Classification                                                                             |
|---------------------------------------------------------------------------------------------|--------------|--------------------------------------------------------------------------------------------|
| PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1 |              |                                                                                            |
| Diameter 32 mm, wall thickness 2.4-4.6 mm                                                   | 30 x 3.0 mm  | E 60 U/U, E 60 C/U,<br>E 60 U/C, E 60 C/C<br>EI 30 U/U, EI 30 C/U,<br>EI 30 U/C, EI 30 C/C |
| Diameter 40 mm, wall thickness 2.4-4.6 mm                                                   |              |                                                                                            |
| Diameter 50 mm, wall thickness 2.4-4.6 mm*                                                  |              |                                                                                            |
| Diameter 55 mm, wall thickness 2.4-4.8 mm*                                                  | 30 x 3.2 mm  | E 60 U/C, E 60 C/C<br>EI 30 U/C, EI 30 C/C                                                 |
| Diameter 63 mm, wall thickness 2.5-5.0 mm*                                                  | 30 x 3.6 mm  |                                                                                            |
| Diameter 75 mm, wall thickness 2.5-5.4 mm*                                                  | 30 x 4.2 mm  |                                                                                            |
| Diameter 82 mm, wall thickness 2.6-5.6 mm*                                                  | 30 x 4.6 mm  |                                                                                            |
| Diameter 90 mm, wall thickness 2.6-5.9 mm*                                                  | 30 x 5.0 mm  |                                                                                            |
| Diameter 110 mm, wall thickness 2.7-6.6 mm*                                                 | 30 x 6.0 mm  | E 60 U/C, E 60 C/C<br>EI 45 U/C, EI 45 C/C                                                 |
| Diameter 125 mm, wall thickness 2.9-7.4 mm*                                                 | 60 x 8.8 mm  |                                                                                            |
| Diameter 140 mm, wall thickness 3.0-8.3 mm*                                                 | 60 x 11.5 mm |                                                                                            |
| Diameter 160 mm, wall thickness 3.2-9.5 mm*                                                 | 60 x 15.0 mm |                                                                                            |

\* Typical pipe diameters shown, see below graph for intermediate sizes

PVC Pipes 50-110 / 30 mm Collar - U/C



PVC Pipes 125-160 / 60 mm Collar - U/C

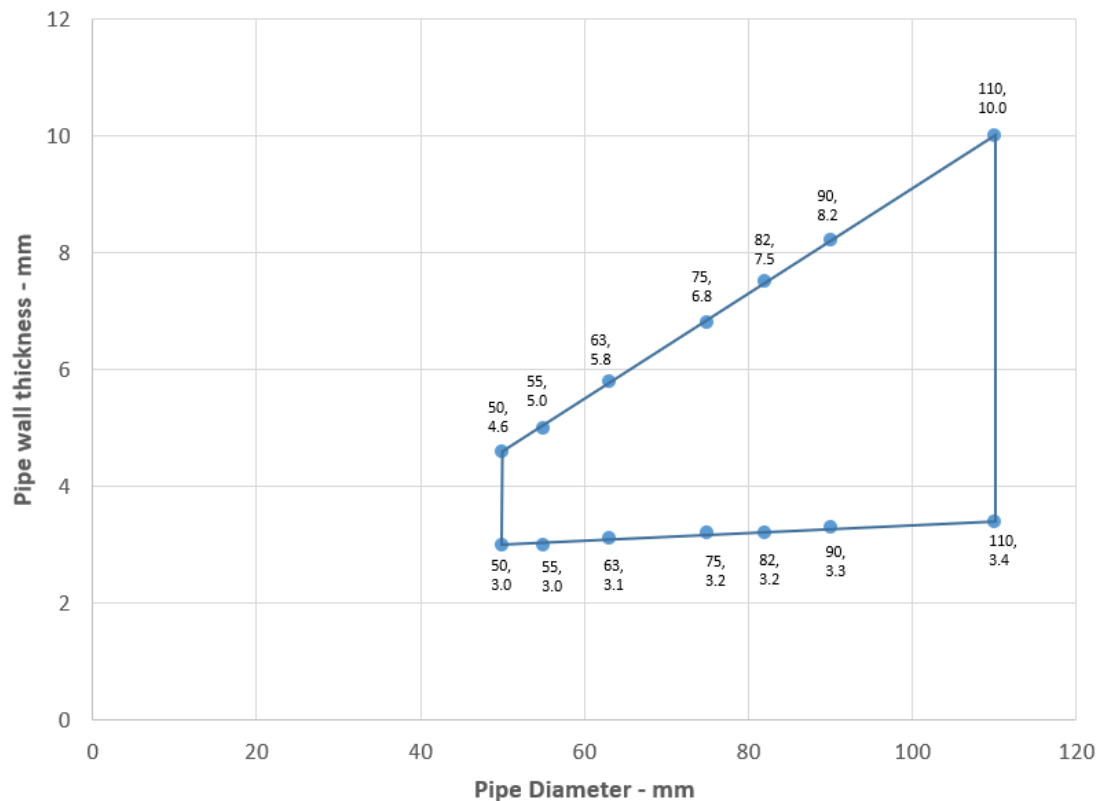


### A.1.2

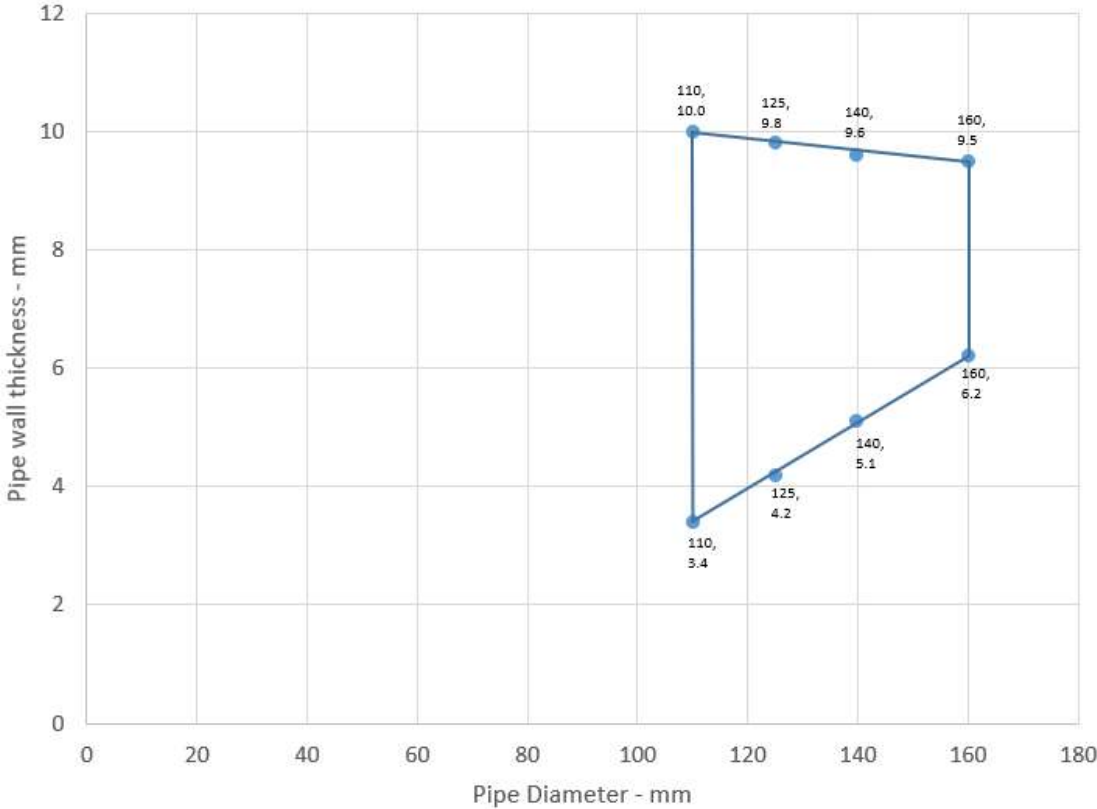
| Services                                                                                                                                 | Collar Inlay | Classification                             |
|------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------------------------------------|
| PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1 |              |                                            |
| Diameter 32 mm, wall thickness 3.0-4.6 mm                                                                                                | 30 x 3.0 mm  | E 60 U/C, E 60 C/C<br>EI 30 U/C, EI 30 C/C |
| Diameter 40 mm, wall thickness 3.0-4.6 mm                                                                                                |              |                                            |
| Diameter 50 mm, wall thickness 3.0-4.6 mm                                                                                                |              |                                            |
| Diameter 55 mm, wall thickness 3.0-5.0 mm*                                                                                               | 30 x 3.2 mm  |                                            |
| Diameter 63 mm, wall thickness 3.1-5.8 mm*                                                                                               | 30 x 3.6 mm  |                                            |
| Diameter 75 mm, wall thickness 3.2-6.8 mm*                                                                                               | 30 x 4.2 mm  |                                            |
| Diameter 82 mm, wall thickness 3.2-7.5 mm*                                                                                               | 30 x 4.6 mm  |                                            |
| Diameter 90 mm, wall thickness 3.3-8.2 mm*                                                                                               | 30 x 5.0 mm  | EI 60 U/C, EI 60 C/C                       |
| Diameter 110 mm, wall thickness 3.4-10.0 mm*                                                                                             | 30 x 6.0 mm  |                                            |
| Diameter 125 mm, wall thickness 4.2-9.8 mm*                                                                                              | 60 x 8.8 mm  | E 60 U/C, E 60 C/C<br>EI 45 U/C, EI 45 C/C |
| Diameter 140 mm, wall thickness 5.1-9.6 mm*                                                                                              | 60 x 11.5 mm |                                            |
| Diameter 160 mm, wall thickness 6.2-9.5 mm*                                                                                              | 60 x 15.0 mm |                                            |

\* Typical pipe diameters shown, see below graph for intermediate sizes

**PE Pipes 50-110 / 30 mm Collar - U/C**



PE Pipes 125-160 / 60 mm Collar - U/C

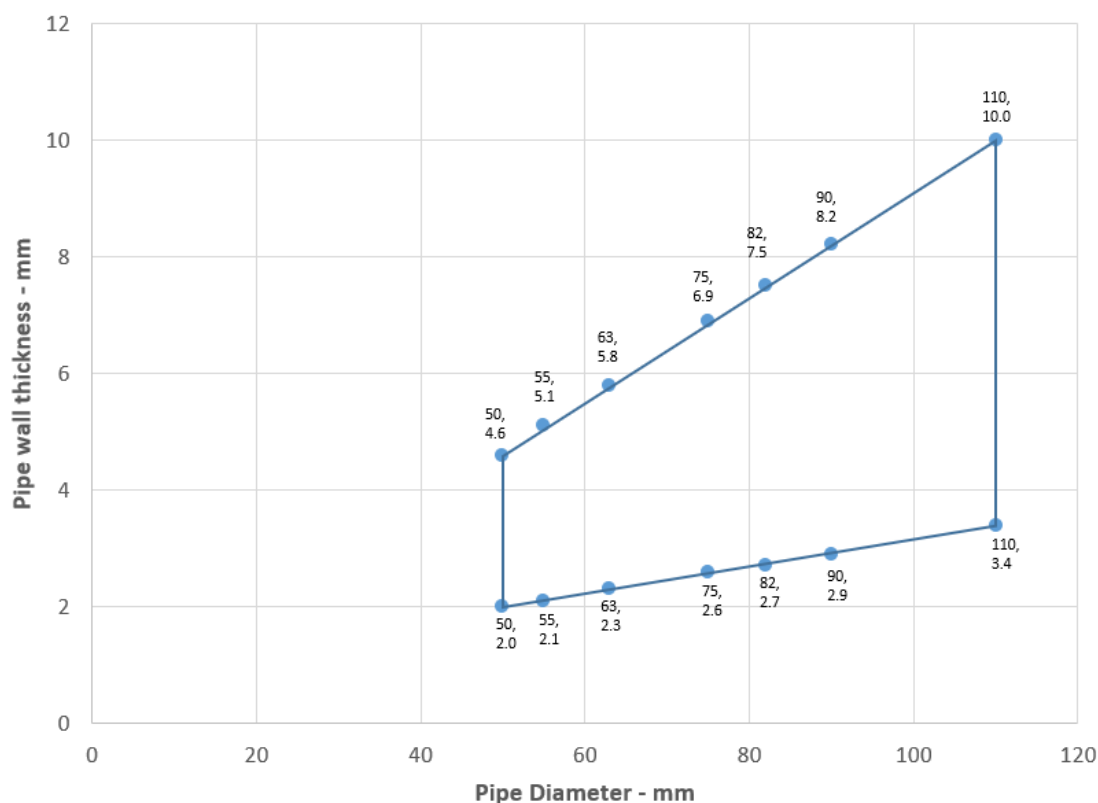


### A.1.3

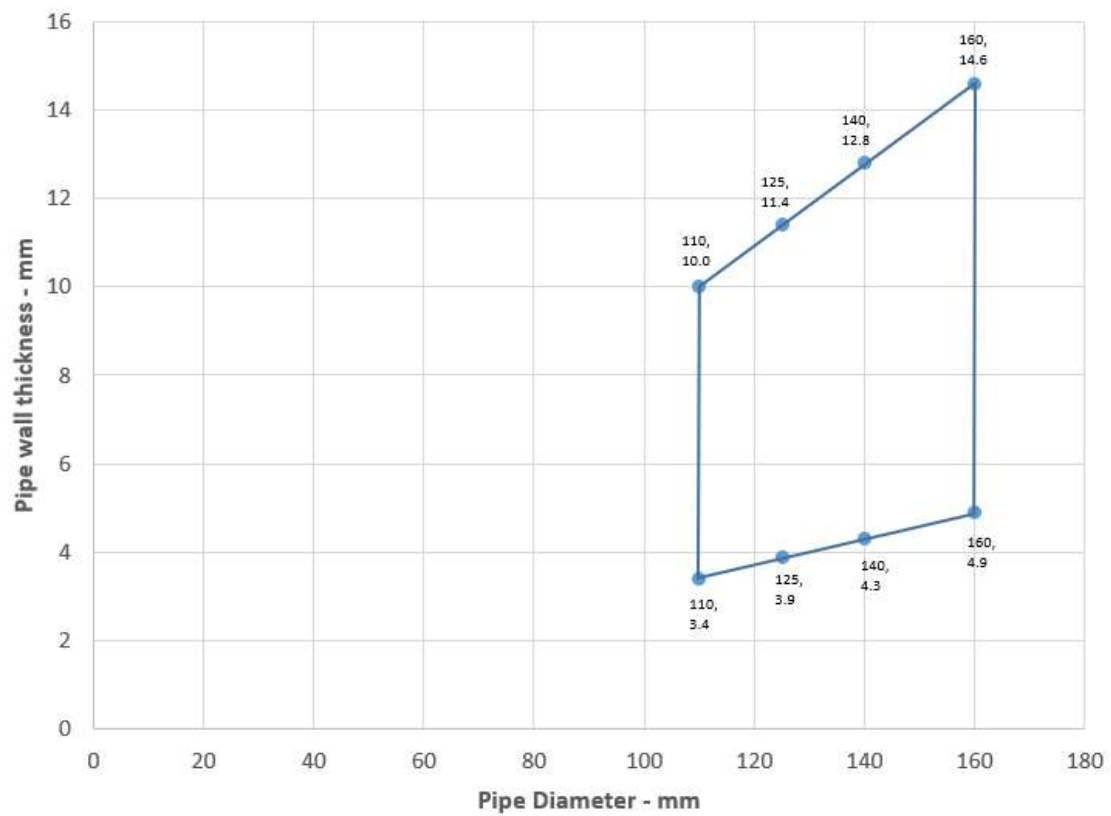
| Services                                     | Collar Inlay | Classification                                                                             |
|----------------------------------------------|--------------|--------------------------------------------------------------------------------------------|
| PP pipe according to EN 1451-1               |              |                                                                                            |
| Diameter 32 mm, wall thickness 2.0-4.6 mm    | 30 x 3.0 mm  | E 60 U/U, E 60 C/U,<br>E 60 U/C, E 60 C/C<br>EI 30 U/U, EI 30 C/U,<br>EI 30 U/C, EI 30 C/C |
| Diameter 40 mm, wall thickness 2.0-4.6 mm    |              |                                                                                            |
| Diameter 50 mm, wall thickness 2.0-4.6 mm    |              |                                                                                            |
| Diameter 55 mm, wall thickness 2.1-5.1 mm*   | 30 x 3.2 mm  | E 60 U/C, E 60 C/C<br>EI 30 U/C, EI 30 C/C                                                 |
| Diameter 63 mm, wall thickness 2.3-5.8 mm*   | 30 x 3.6 mm  |                                                                                            |
| Diameter 75 mm, wall thickness 2.6-6.9 mm*   | 30 x 4.2 mm  |                                                                                            |
| Diameter 82 mm, wall thickness 2.7-7.5 mm*   | 30 x 4.6 mm  |                                                                                            |
| Diameter 90 mm, wall thickness 2.9-8.2 mm*   | 30 x 5.0 mm  |                                                                                            |
| Diameter 110 mm, wall thickness 3.4-10.0 mm* | 30 x 6.0 mm  | E 60 U/C, E 60 C/C<br>EI 45 U/C, EI 45 C/C                                                 |
| Diameter 125 mm, wall thickness 3.9-11.4 mm* | 60 x 8.8 mm  |                                                                                            |
| Diameter 140 mm, wall thickness 4.3-12.8 mm* | 60 x 11.5 mm |                                                                                            |
| Diameter 160 mm, wall thickness 4.9-14.6 mm* | 60 x 15.0 mm | EI 60 U/C, EI 60 C/C                                                                       |

\* Typical pipe diameters shown, see below graph for intermediate sizes

**PP Pipes 50-110 / 30 mm Collar**



### PP Pipes 125-160 / 60 mm Collar - U/C

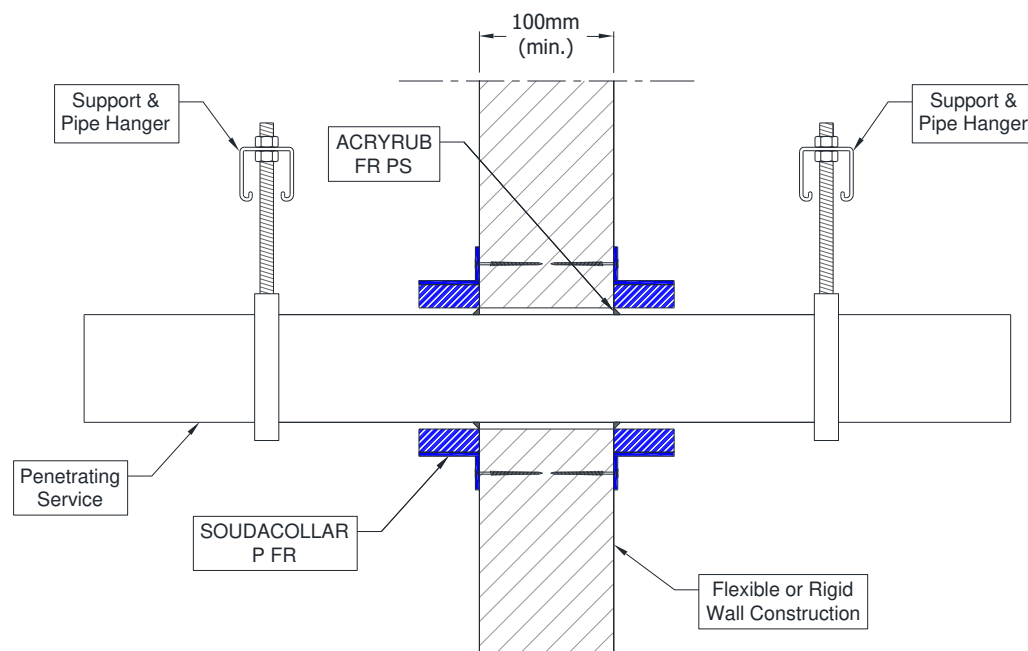


## A.2 Flexible or rigid wall constructions with wall thickness of minimum 100 mm

### A.2.1 Penetration seals, in drywalls and concrete/masonry walls

**Penetration Seal:** Combustible pipes fitted with SOUDACOLLAR P FR, to both sides of the wall.

Construction details:

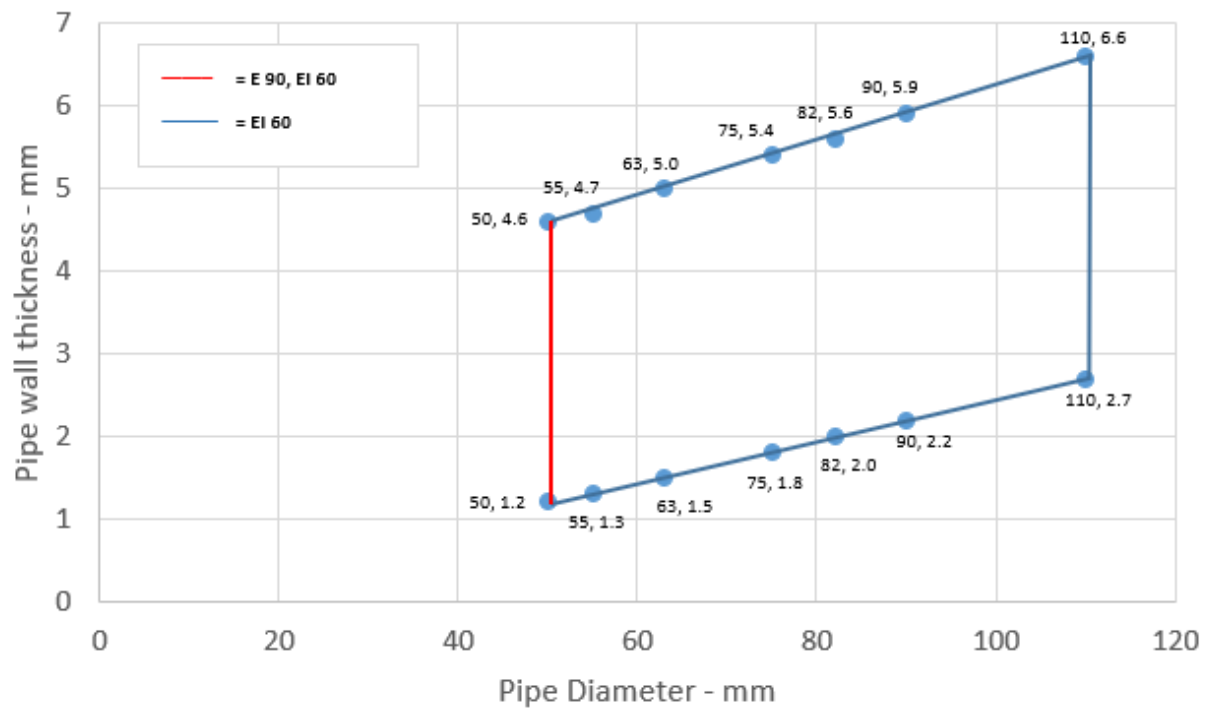


#### A.2.1.1.1

| Services                                                                                    | Collar Inlay | Classification                             |
|---------------------------------------------------------------------------------------------|--------------|--------------------------------------------|
| PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1 |              |                                            |
| Diameter 32 mm, wall thickness 1.2-3.7 mm                                                   | 30 x 3.0 mm  | E 90 U/C, E 90 C/C<br>EI 60 U/C, EI 60 C/C |
| Diameter 40 mm, wall thickness 1.2-3.7 mm                                                   |              |                                            |
| Diameter 50 mm, wall thickness 1.2-4.6 mm*                                                  |              |                                            |
| Diameter 55 mm, wall thickness 1.3-4.7 mm*                                                  | 30 x 3.2 mm  | EI 60 U/C, EI 60 C/C                       |
| Diameter 63 mm, wall thickness 1.5-5.0 mm*                                                  | 30 x 3.6 mm  |                                            |
| Diameter 75 mm, wall thickness 1.8-5.4 mm*                                                  | 30 x 4.2 mm  |                                            |
| Diameter 82 mm, wall thickness 2.0-5.6 mm*                                                  | 30 x 4.6 mm  |                                            |
| Diameter 90 mm, wall thickness 2.2-5.9 mm*                                                  | 30 x 5.0 mm  |                                            |
| Diameter 110 mm, wall thickness 2.7-6.6 mm*                                                 | 30 x 6.0 mm  |                                            |

\* Typical pipe diameters shown, see below graph for intermediate sizes

## PVC Pipes 50-110 / 30 mm Collar - U/C

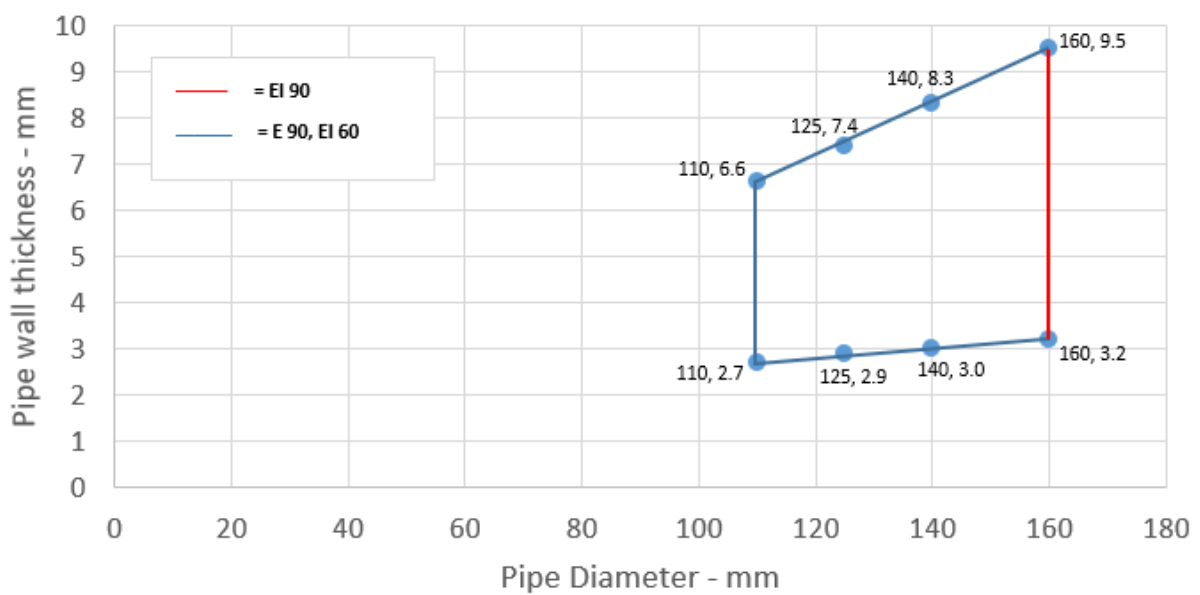


### A.2.1.1.2

| Services                                                                                    | Collar Inlay | Classification                                                                             |
|---------------------------------------------------------------------------------------------|--------------|--------------------------------------------------------------------------------------------|
| PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1 |              |                                                                                            |
| Diameter 110 mm, wall thickness 2.7-6.6 mm*                                                 | 50 x 6.0 mm  | E 90 U/U, E 90 C/U,<br>E 90 U/C, E 90 C/C<br>EI 60 U/U, EI 60 C/U,<br>EI 60 U/C, EI 60 C/C |
| Diameter 125 mm, wall thickness 2.9-7.4 mm*                                                 | 50 x 8.8 mm  |                                                                                            |
| Diameter 140 mm, wall thickness 3.0-8.3 mm*                                                 | 50 x 11.5 mm |                                                                                            |
| Diameter 160 mm, wall thickness 3.2-9.5 mm*                                                 | 50 x 15.0 mm | EI 90 U/C, EI 90 C/C                                                                       |

\* Typical pipe diameters shown, see below graph for intermediate sizes

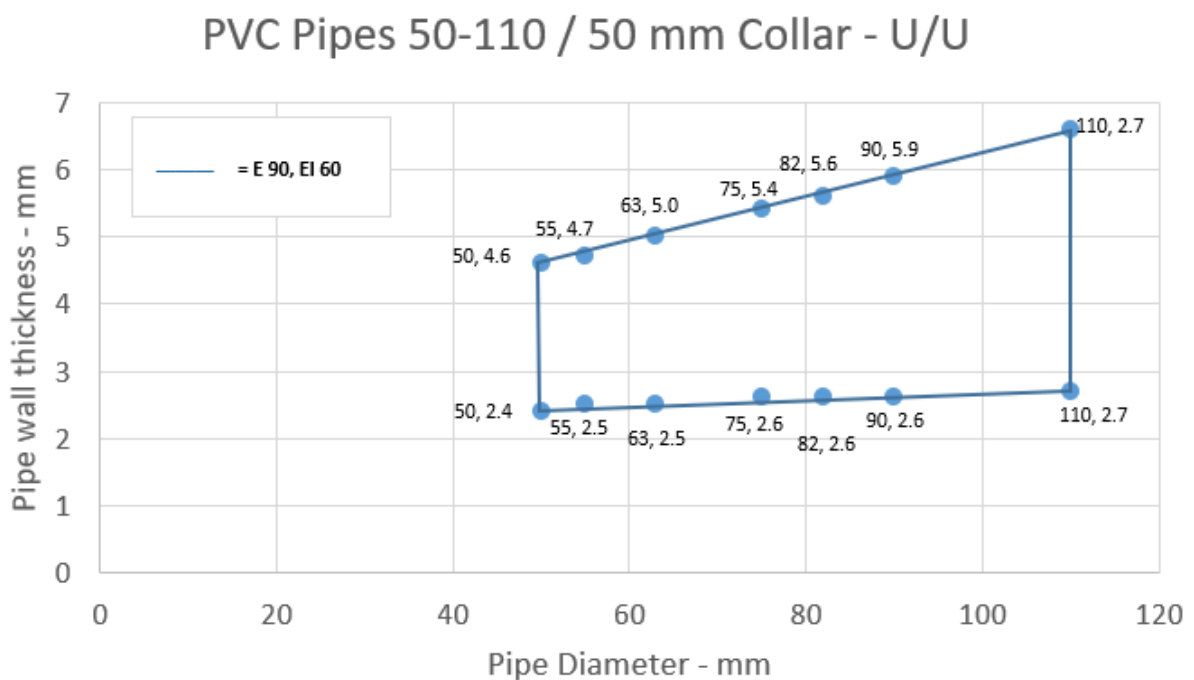
PVC Pipes 110-160 / 50 mm Collar - U/C



### A.2.1.1.3

| Services                                                                                    | Collar Inlay | Classification                                                                                       |
|---------------------------------------------------------------------------------------------|--------------|------------------------------------------------------------------------------------------------------|
| PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1 |              |                                                                                                      |
| Diameter 32 mm, wall thickness 2.4-4.6 mm                                                   | 30 x 3.0 mm  | <b>E 90 U/U, E 90 C/U,<br/>E 90 U/C, E 90 C/C<br/>EI 60 U/U, EI 60 C/U,<br/>EI 60 U/C, EI 60 C/C</b> |
| Diameter 40 mm, wall thickness 2.4-4.6 mm                                                   |              |                                                                                                      |
| Diameter 50 mm, wall thickness 2.4-4.6 mm                                                   |              |                                                                                                      |
| Diameter 55 mm, wall thickness 2.5-4.7 mm*                                                  | 50 x 3.2 mm  |                                                                                                      |
| Diameter 63 mm, wall thickness 2.5-5.0 mm*                                                  | 50 x 3.6 mm  |                                                                                                      |
| Diameter 75 mm, wall thickness 2.6-5.4 mm*                                                  | 50 x 4.2 mm  |                                                                                                      |
| Diameter 82 mm, wall thickness 2.6-5.6 mm*                                                  | 50 x 4.6 mm  |                                                                                                      |
| Diameter 90 mm, wall thickness 2.6-5.9 mm*                                                  | 50 x 5.0 mm  |                                                                                                      |
| Diameter 110 mm, wall thickness 2.7-6.6 mm*                                                 | 50 x 6.0 mm  |                                                                                                      |

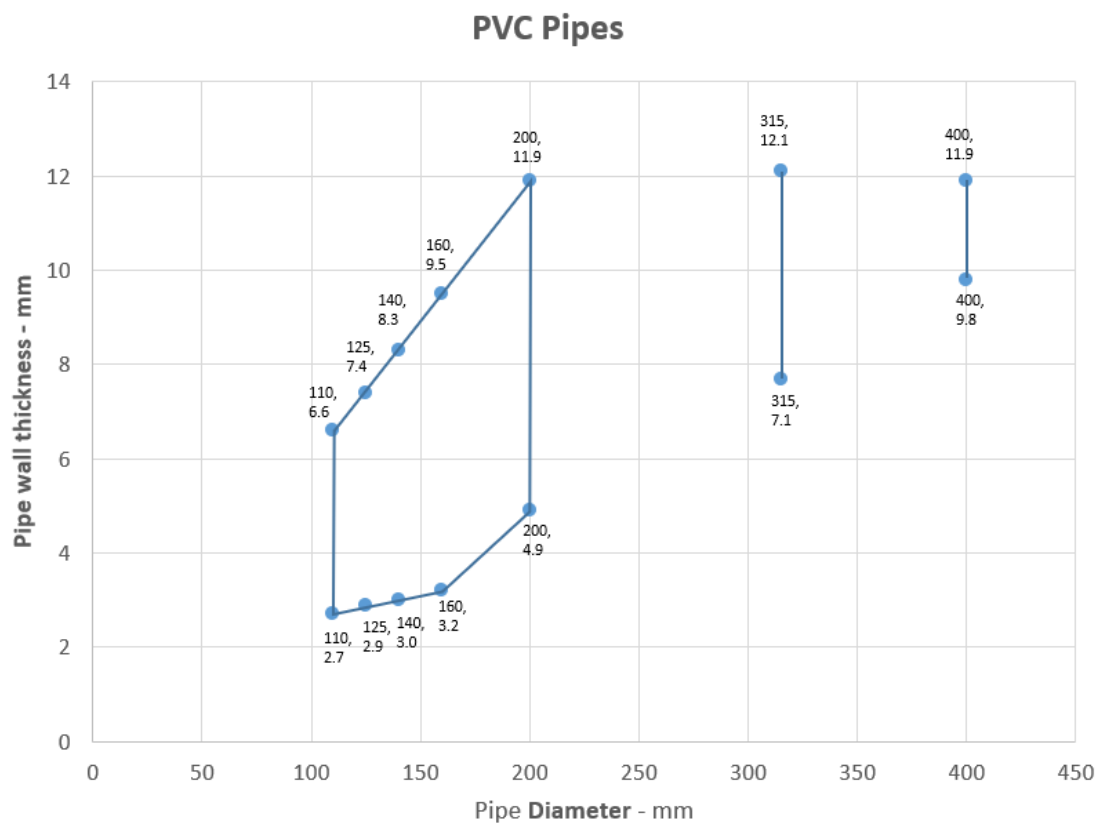
\* Typical pipe diameters shown, see below graph for intermediate sizes



#### A.2.1.1.4

| Services                                                                                    | Collar Inlay | Classification                                                                             |
|---------------------------------------------------------------------------------------------|--------------|--------------------------------------------------------------------------------------------|
| PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1 |              |                                                                                            |
| Diameter 110 mm, wall thickness 2.7-6.6 mm*                                                 | 60 x 6.0 mm  | E 90 U/U, E 90 C/U,<br>E 90 U/C, E 90 C/C<br>EI 60 U/U, EI 60 C/U,<br>EI 60 U/C, EI 60 C/C |
| Diameter 125 mm, wall thickness 2.9-7.4 mm*                                                 | 60 x 9.0 mm  | EI 60 U/U, EI 60 C/U                                                                       |
| Diameter 140 mm, wall thickness 3.0-8.3 mm*                                                 | 60 x 11.5 mm |                                                                                            |
| Diameter 160 mm, wall thickness 3.2-9.5 mm*                                                 | 60 x 15.0 mm |                                                                                            |
| Diameter 200 mm, wall thickness 4.9-11.9 mm*                                                | 60 x 18 mm   | EI 120 U/C, EI 120 C/C                                                                     |
| Diameter 315 mm, wall thickness 7.1-12.1 mm*                                                | 75 x 30 mm   | EI 90 C/C                                                                                  |
| Diameter 400 mm, wall thickness 9.8-11.9 mm*                                                | 100 x 40 mm  | E 120 C/C<br>EI 90 C/C                                                                     |

\* Typical pipe diameters shown, see below graphs for intermediate sizes

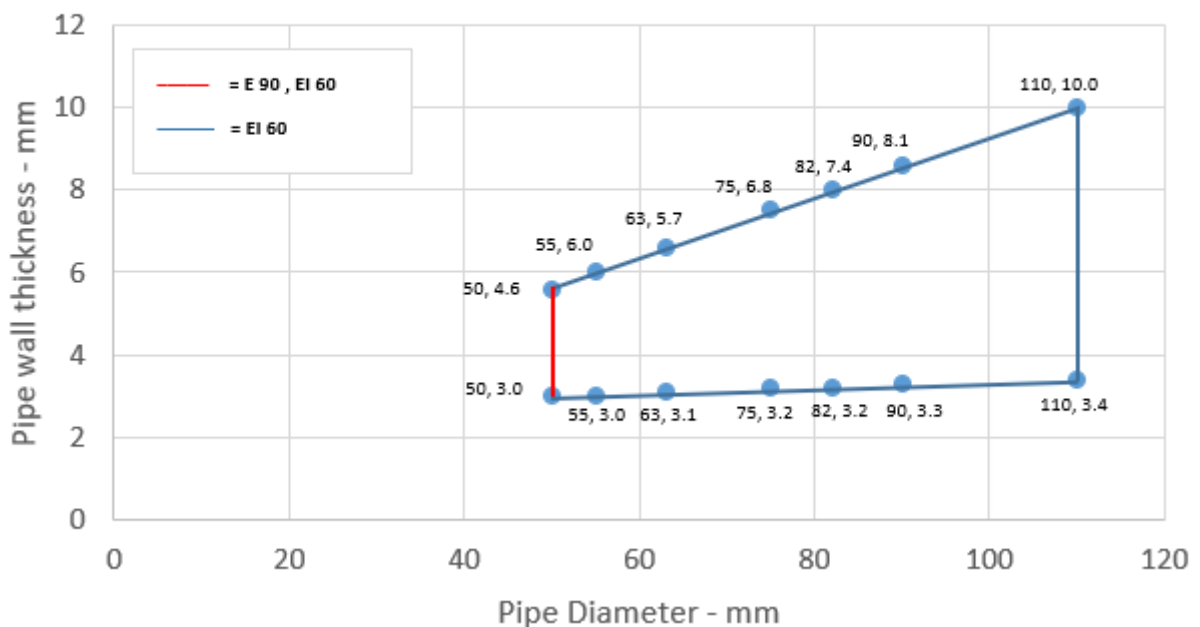


### A.2.1.2

| Services                                                                                                                                 | Collar Inlay | Classification                                                                             |
|------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------------------------------------------------------------------------------------|
| PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1 |              |                                                                                            |
| Diameter 32 mm, wall thickness 3.0-4.6 mm                                                                                                | 30 x 3.0 mm  | E 90 U/U, E 90 C/U,<br>E 90 U/C, E 90 C/C<br>EI 45 U/U, EI 45 C/U,<br>EI 45 U/C, EI 45 C/C |
| Diameter 40 mm, wall thickness 3.0-4.6 mm                                                                                                |              |                                                                                            |
| Diameter 50 mm, wall thickness 3.0-4.6 mm                                                                                                |              |                                                                                            |
| Diameter 32 mm, wall thickness 3.0-5.6 mm                                                                                                |              | E 90 U/C, E 90 C/C<br>EI 60 U/C, EI 60 C/C                                                 |
| Diameter 40 mm, wall thickness 3.0-5.6 mm                                                                                                |              |                                                                                            |
| Diameter 50 mm, wall thickness 3.0-5.6 mm*                                                                                               |              |                                                                                            |
| Diameter 55 mm, wall thickness 3.0-6.0 mm*                                                                                               | 30 x 3.2 mm  | EI 60 U/C, EI 60 C/C                                                                       |
| Diameter 63 mm, wall thickness 3.1-6.6 mm*                                                                                               | 30 x 3.6 mm  |                                                                                            |
| Diameter 75 mm, wall thickness 3.2-7.5 mm*                                                                                               | 30 x 4.2 mm  |                                                                                            |
| Diameter 82 mm, wall thickness 3.2-8.0 mm*                                                                                               | 30 x 4.6 mm  |                                                                                            |
| Diameter 90 mm, wall thickness 3.3-8.6 mm*                                                                                               | 30 x 5.0 mm  |                                                                                            |
| Diameter 110 mm, wall thickness 3.4-10.0 mm*                                                                                             | 30 x 6.0 mm  |                                                                                            |

\* Typical pipe diameters shown, see below graph for intermediate sizes

PE Pipes 50-110 / 30 mm Collar - U/C

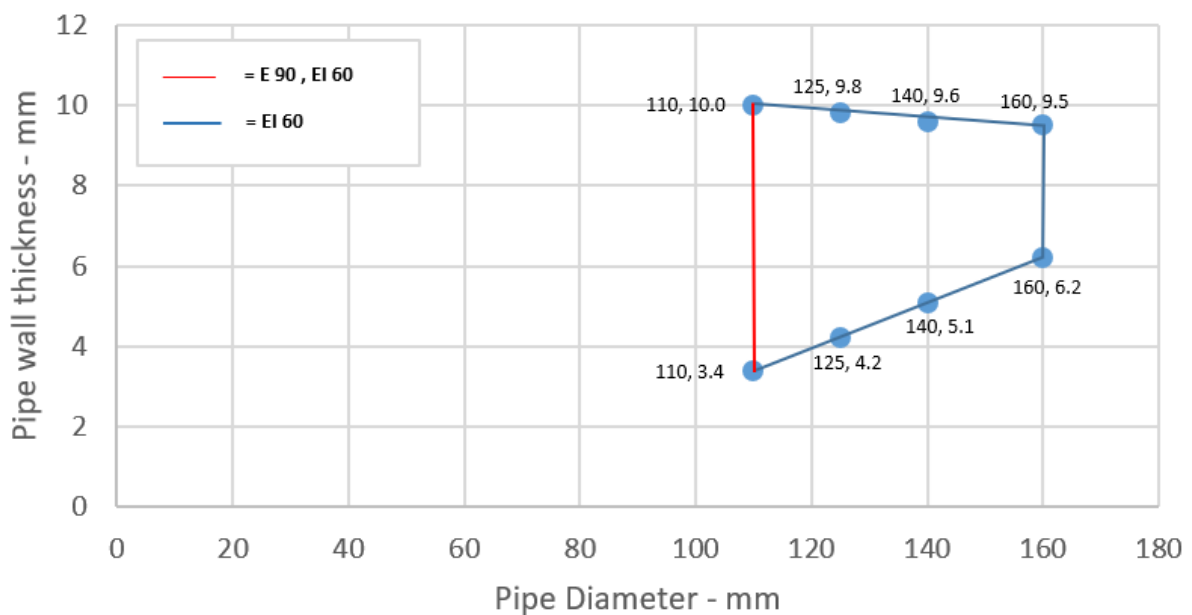


### A.2.1.2.1

| Services                                                                                                                                 | Collar Inlay | Classification                                                                             |
|------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------------------------------------------------------------------------------------|
| PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1 |              |                                                                                            |
| Diameter 110 mm, wall thickness 3.4-10.0 mm*                                                                                             | 50 x 6.0 mm  | E 90 U/U, E 90 C/U,<br>E 90 U/C, E 90 C/C<br>EI 60 U/U, EI 60 C/U,<br>EI 60 U/C, EI 60 C/C |
| Diameter 125 mm, wall thickness 4.2-9.8 mm*                                                                                              | 50 x 9.0 mm  | EI 60 U/C, EI 60 C/C                                                                       |
| Diameter 140 mm, wall thickness 5.1-9.6 mm*                                                                                              | 50 x 11.5 mm |                                                                                            |
| Diameter 160 mm, wall thickness 6.2-9.5 mm*                                                                                              | 50 x 15.0 mm |                                                                                            |

\* Typical pipe diameters shown, see below graph for intermediate sizes

PE pipes 110-160 / 50 mm Collar - U/C

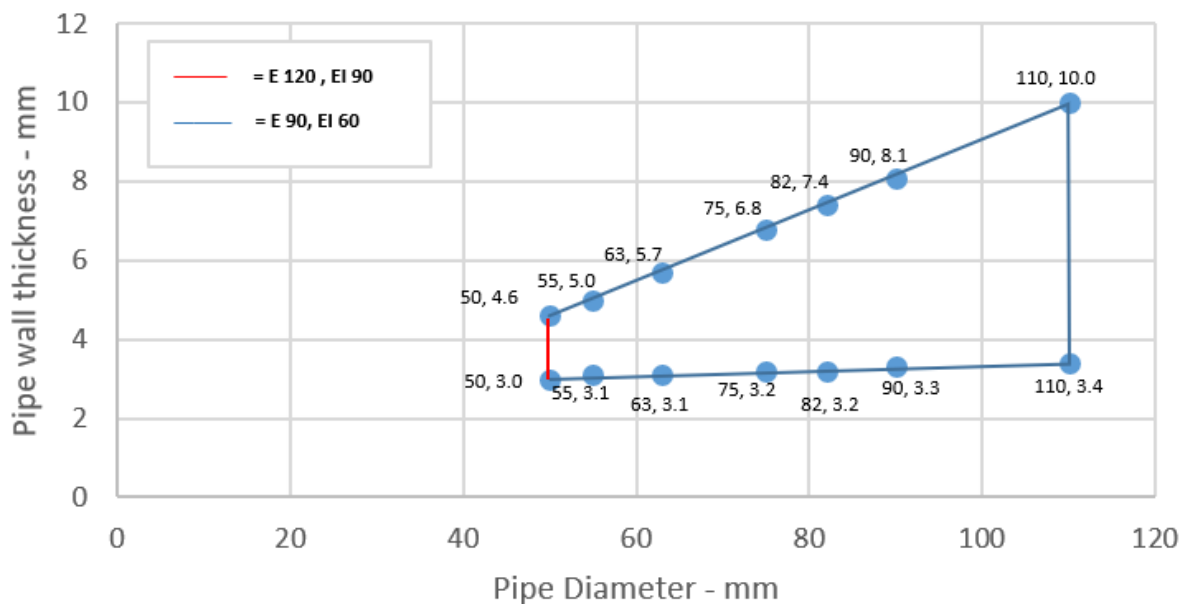


### A.2.1.2.2

| Services                                                                                                                                 | Collar Inlay | Classification                                                                                       |
|------------------------------------------------------------------------------------------------------------------------------------------|--------------|------------------------------------------------------------------------------------------------------|
| PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1 |              |                                                                                                      |
| Diameter 32 mm, wall thickness 3.0-4.6 mm                                                                                                | 50 x 3.0 mm  | <b>E 120 U/U, EI 90 U/U</b>                                                                          |
| Diameter 40 mm, wall thickness 3.0-4.6 mm                                                                                                |              |                                                                                                      |
| Diameter 50 mm, wall thickness 3.0-4.6 mm*                                                                                               |              |                                                                                                      |
| Diameter 55 mm, wall thickness 3.1-5.0 mm*                                                                                               | 50 x 3.2 mm  | <b>E 90 U/U, E 90 C/U,<br/>E 90 U/C, E 90 C/C<br/>EI 60 U/U, EI 60 C/U,<br/>EI 60 U/C, EI 60 C/C</b> |
| Diameter 63 mm, wall thickness 3.1-5.7 mm*                                                                                               | 50 x 3.6 mm  |                                                                                                      |
| Diameter 75 mm, wall thickness 3.2-6.8 mm*                                                                                               | 50 x 4.2 mm  |                                                                                                      |
| Diameter 82 mm, wall thickness 3.2-7.4 mm*                                                                                               | 50 x 4.6 mm  |                                                                                                      |
| Diameter 90 mm, wall thickness 3.3-8.1 mm*                                                                                               | 50 x 5.0 mm  |                                                                                                      |
| Diameter 110 mm, wall thickness 3.4-10.0 mm*                                                                                             | 50 x 6.0 mm  |                                                                                                      |

\* Typical pipe diameters shown, see below graph for intermediate sizes

PE Pipes 50-110 / 50 mm Collar - U/U

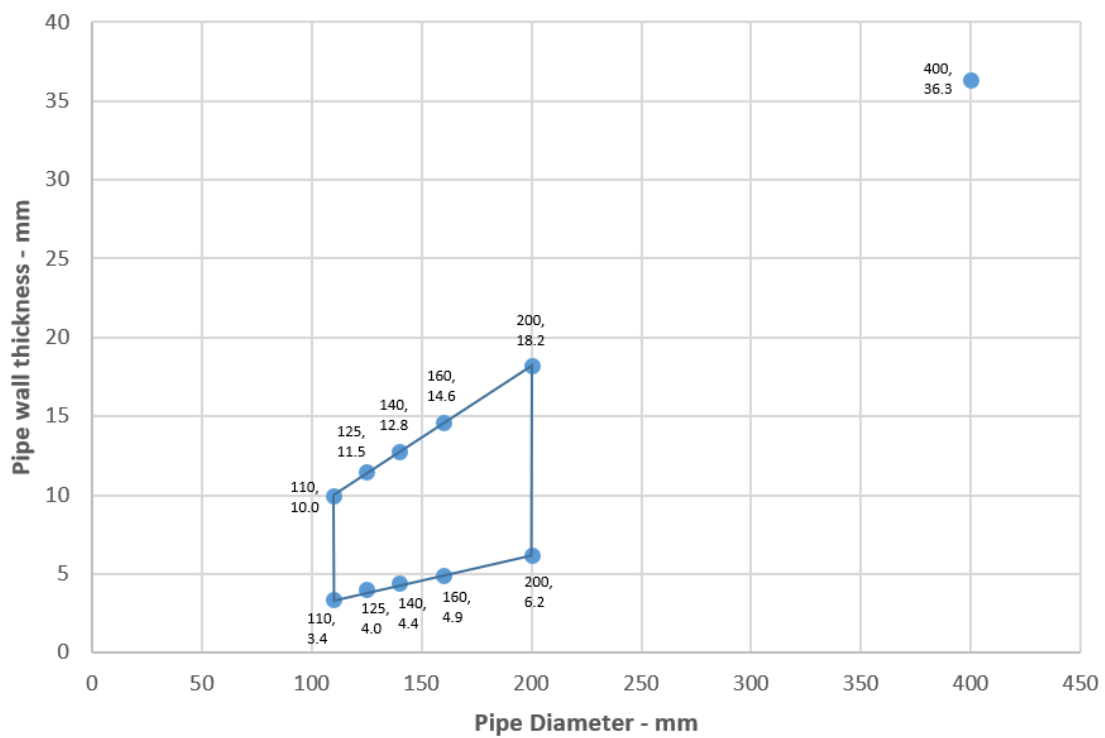


### A.2.1.2.3

| Services                                                                                                                                 | Collar Inlay  | Classification                                                                             |
|------------------------------------------------------------------------------------------------------------------------------------------|---------------|--------------------------------------------------------------------------------------------|
| PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1 |               |                                                                                            |
| Diameter 110 mm, wall thickness 3.4-10.0 mm*                                                                                             | 60 x 6.0 mm   | E 90 U/U, E 90 C/U,<br>E 90 U/C, E 90 C/C<br>EI 60 U/U, EI 60 C/U,<br>EI 60 U/C, EI 60 C/C |
| Diameter 125 mm, wall thickness 4.0-11.5 mm*                                                                                             | 60 x 8.8 mm   |                                                                                            |
| Diameter 140 mm, wall thickness 4.4-12.8 mm*                                                                                             | 60 x 11.5 mm  |                                                                                            |
| Diameter 160 mm, wall thickness 4.9-14.6 mm*                                                                                             | 60 x 15.0 mm  | EI 90 U/U, EI 90 C/U,<br>EI 90 U/C, EI 90 C/C                                              |
| Diameter 200 mm, wall thickness 6.2-18.2 mm*                                                                                             | 60 x 18.0 mm  | E 120 U/C, E 120 C/C<br>EI 90 U/C, EI 90 C/C                                               |
| Diameter 400 mm, wall thickness 36.3 mm*                                                                                                 | 100 x 40.0 mm | EI 90 C/C                                                                                  |

\* Typical pipe diameters shown, see below graphs for intermediate sizes

### PE Pipes

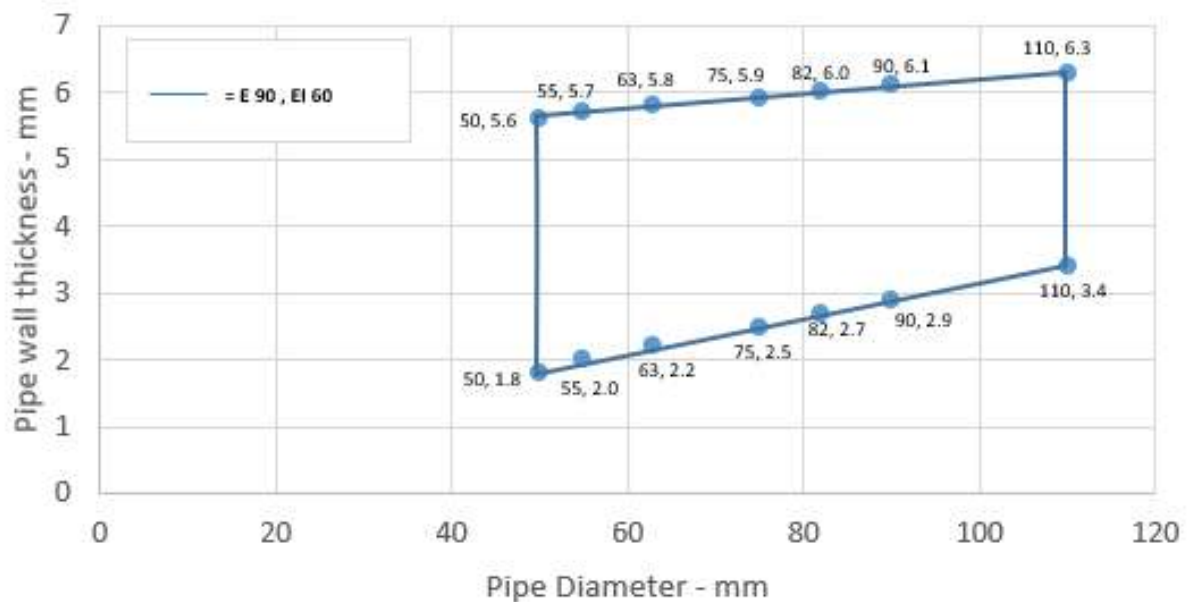


### A.2.1.3

| Services                                    | Collar Inlay | Classification                                                                             |
|---------------------------------------------|--------------|--------------------------------------------------------------------------------------------|
| PP pipe according to EN 1451-1              |              |                                                                                            |
| Diameter 32 mm, wall thickness 3.0-5.6 mm   | 30 x 3.0 mm  | E 90 U/C, E 90 C/C<br>EI 60 U/C, EI 60 C/C                                                 |
| Diameter 40 mm, wall thickness 3.0-5.6 mm   |              |                                                                                            |
| Diameter 50 mm, wall thickness 3.0-5.6 mm   |              |                                                                                            |
| Diameter 32 mm, wall thickness 1.8-4.6 mm   | 30 x 3.0 mm  | E 90 U/U, E 90 C/U,<br>E 90 U/C, E 90 C/C<br>EI 60 U/U, EI 60 C/U,<br>EI 60 U/C, EI 60 C/C |
| Diameter 40 mm, wall thickness 1.8-4.6 mm   |              |                                                                                            |
| Diameter 50 mm, wall thickness 1.8-4.6 mm   |              |                                                                                            |
| Diameter 50 mm, wall thickness 1.8-5.6 mm*  | 30 x 3.0 mm  | E 90 U/C, E 90 C/C<br>EI 60 U/C, EI 60 C/C                                                 |
| Diameter 55 mm, wall thickness 2.0-5.7 mm*  | 30 x 3.2 mm  |                                                                                            |
| Diameter 63 mm, wall thickness 2.2-5.8 mm*  | 30 x 3.6 mm  |                                                                                            |
| Diameter 75 mm, wall thickness 2.5-5.9 mm*  | 30 x 4.2 mm  |                                                                                            |
| Diameter 82 mm, wall thickness 2.7-6.0 mm*  | 30 x 4.6 mm  |                                                                                            |
| Diameter 90 mm, wall thickness 2.9-6.1 mm*  | 30 x 5.0 mm  |                                                                                            |
| Diameter 110 mm, wall thickness 3.4-6.3 mm* | 30 x 6.0 mm  |                                                                                            |

\* Typical pipe diameters shown, see below graph for intermediate sizes

PP Pipes 50-110 / 30 mm Collar - U/C

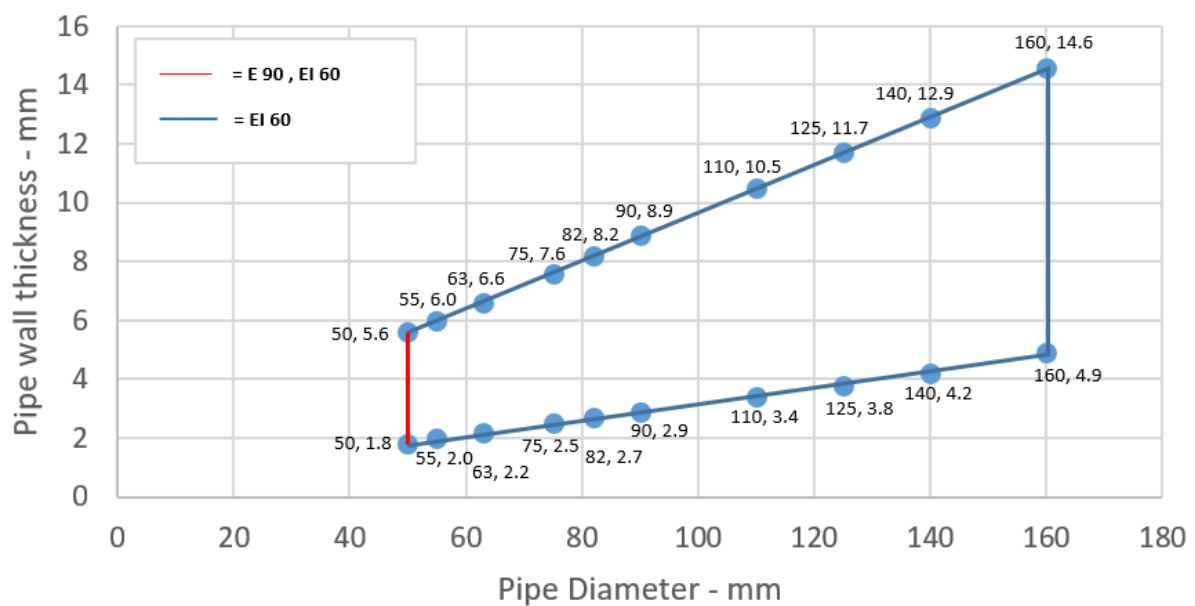


### A.2.1.3.1

| Services                                     | Collar Inlay | Classification                             |
|----------------------------------------------|--------------|--------------------------------------------|
| PP pipe according to EN 1451-1               |              |                                            |
| Diameter 50 mm, wall thickness 1.8-5.6 mm*   | 50 x 3.0 mm  | E 90 U/C, E 90 C/C<br>EI 60 U/C, EI 60 C/C |
| Diameter 55 mm, wall thickness 2.0-6.0 mm*   | 50 x 3.2 mm  | EI 60 U/C, EI 60 C/C                       |
| Diameter 63 mm, wall thickness 2.2-6.6 mm*   | 50 x 3.6 mm  |                                            |
| Diameter 75 mm, wall thickness 2.5-7.6 mm*   | 50 x 4.2 mm  |                                            |
| Diameter 82 mm, wall thickness 2.7-8.2 mm*   | 50 x 4.6 mm  |                                            |
| Diameter 90 mm, wall thickness 2.9-8.9 mm*   | 50 x 5.0 mm  |                                            |
| Diameter 110 mm, wall thickness 3.4-10.5 mm* | 50 x 6.0 mm  |                                            |
| Diameter 125 mm, wall thickness 3.8-11.7 mm* | 50 x 8.8 mm  |                                            |
| Diameter 140 mm, wall thickness 4.2-12.9 mm* | 50 x 11.5 mm |                                            |
| Diameter 160 mm, wall thickness 4.9-14.6 mm* | 50 x 15.0 mm |                                            |

\* Typical pipe diameters shown, see below graph for intermediate sizes

PP Pipes 50-160 / 50 mm Collar - U/C

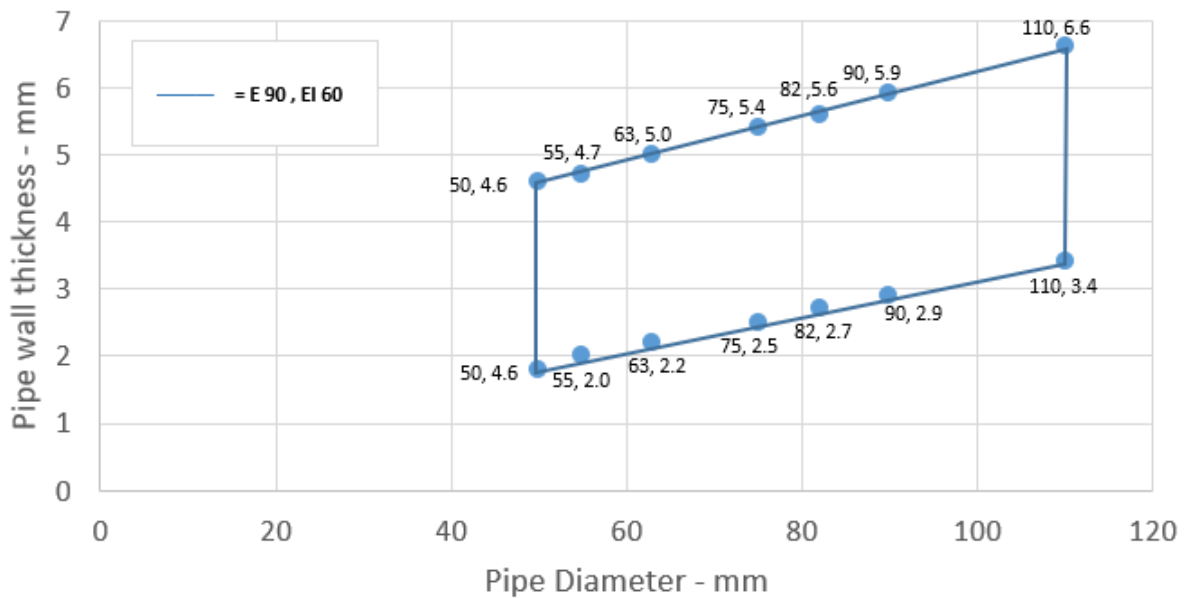


### A.2.1.3.2

| Services                                    | Collar Inlay | Classification                                                                                       |
|---------------------------------------------|--------------|------------------------------------------------------------------------------------------------------|
| PP pipe according to EN 1451-1              |              |                                                                                                      |
| Diameter 50 mm, wall thickness 1.8-4.6 mm*  | 50 x 3.0 mm  | <b>E 90 U/U, E 90 C/U,<br/>E 90 U/C, E 90 C/C<br/>EI 60 U/U, EI 60 C/U,<br/>EI 60 U/C, EI 60 C/C</b> |
| Diameter 55 mm, wall thickness 2.0-4.7 mm*  | 50 x 3.2 mm  |                                                                                                      |
| Diameter 63 mm, wall thickness 2.2-5.0 mm*  | 50 x 3.6 mm  |                                                                                                      |
| Diameter 75 mm, wall thickness 2.5-5.4 mm*  | 50 x 4.2 mm  |                                                                                                      |
| Diameter 82 mm, wall thickness 2.7-5.6 mm*  | 50 x 4.6 mm  |                                                                                                      |
| Diameter 90 mm, wall thickness 2.9-5.9 mm*  | 50 x 5.0 mm  |                                                                                                      |
| Diameter 110 mm, wall thickness 3.4-6.6 mm* | 50 x 6.0 mm  |                                                                                                      |

\* Typical pipe diameters shown, see below graph for intermediate sizes

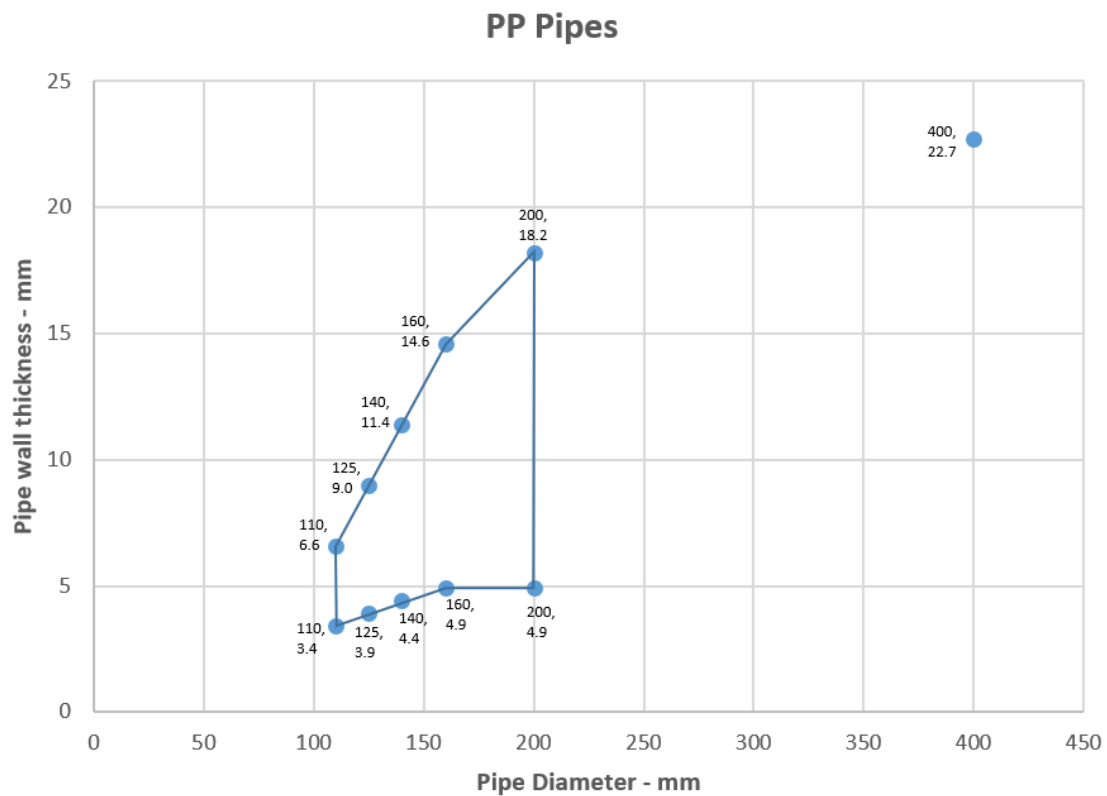
PP Pipes 50-110 / 50 mm Collar - U/U



### A.2.1.3.3

| Services                                     | Collar Inlay  | Classification                                                                             |
|----------------------------------------------|---------------|--------------------------------------------------------------------------------------------|
| PP pipe according to EN 1451-1               |               |                                                                                            |
| Diameter 110 mm, wall thickness 3.4-6.6 mm*  | 60 x 6.0 mm   | E 90 U/U, E 90 C/U,<br>E 90 U/C, E 90 C/C<br>EI 60 U/U, EI 60 C/U,<br>EI 60 U/C, EI 60 C/C |
| Diameter 125 mm, wall thickness 3.9-9.0 mm*  | 60 x 9.0 mm   | EI 60 U/U, EI 60 C/U, EI 60<br>U/C, EI 60 C/C                                              |
| Diameter 140 mm, wall thickness 4.4-11.4 mm* | 60 x 11.5 mm  |                                                                                            |
| Diameter 160 mm, wall thickness 4.9-14.6 mm* | 60 x 15.0 mm  |                                                                                            |
| Diameter 200 mm, wall thickness 4.9-18.2 mm* | 60 x 18.0 mm  | E 120 U/C, E 120 C/C<br>EI 90 U/C, EI 90 C/C                                               |
| Diameter 400 mm, wall thickness 22.7 mm*     | 100 x 40.0 mm | EI 60 C/C                                                                                  |

\* Typical pipe diameters shown, see below graphs for intermediate sizes



#### A.2.1.4.1

| Services                                             | Collar Inlay | Classification        |
|------------------------------------------------------|--------------|-----------------------|
| Wavin SiTech + PP-M B according to EN 13501-1        |              |                       |
| 32-40 mm diameter/ 1.8 mm wall thickness             | 50 x 3.0 mm  | EI 120 U/U            |
| 50 mm diameter/ 1.8 mm wall thickness                | 50 x 3.2 mm  |                       |
| 75 mm diameter/ 1.8-2.5 mm wall thickness            | 50 x 4.2 mm  | E 120 U/U, EI 60 U/U  |
| 90 mm diameter/ 1.8-2.9 mm wall thickness            | 50 x 5.0 mm  |                       |
| 110 mm diameter/ 1.8-3.4 mm wall thickness           | 50 x 6.0 mm  |                       |
| Aquatherm Green SDR9 MF PP-RP according to ISO 21003 |              |                       |
| 32 mm diameter/3.0-5.6 mm wall thickness             | 30 x 3.0 mm  | EI 120 C/C            |
| 40 mm diameter/3.0-5.6 mm wall thickness             | 50 x 3.0 mm  |                       |
| 50 mm diameter/3.0-5.6 mm wall thickness             | 50 x 3.2 mm  |                       |
| 63 diameter/3.6-7.0 mm wall thickness                | 50 x 3.6 mm  | E 120 C/C, EI 60 C/C  |
| 75 diameter/4.1-8.4 mm wall thickness                | 50 x 4.2 mm  |                       |
| 90 diameter/4.7-10.1 mm wall thickness               | 50 x 5.0 mm  |                       |
| 110 diameter/5.6-12.3 mm wall thickness              | 50 x 6.0 mm  |                       |
| Geberit Silent PP according to DIN 4102              |              |                       |
| 32-50 mm diameter/ 1.8 mm wall thickness             | 50 x 3.0 mm  | EI 120 U/U            |
| 75 mm diameter/1.8-2.5 mm wall thickness             | 50 x 4.2 mm  | E 120 U/U, EI 60 U/U  |
| 90 mm diameter/1.8-2.9 mm wall thickness             | 50 x 5.0 mm  |                       |
| 110 mm diameter/1.8-3.4 mm wall thickness            | 50 x 6.0 mm  |                       |
| 160 mm diameter/1.8-4.9 mm wall thickness            | 60 x 15.0 mm | EI 90 U/C             |
| Polo-Kal NG Poloplast PP-MV according to DIN 4102    |              |                       |
| 32-40 mm diameter/1.8-2.0 mm wall thickness          | 50 x 3.0 mm  | EI 120 U/U            |
| 50 mm diameter/1.8-2.0 mm wall thickness             | 50 x 3.2 mm  |                       |
| 75 mm diameter/1.9-2.6 mm wall thickness             | 50 x 4.2 mm  | E 120 U/U, EI 90 U/U  |
| 90 mm diameter/1.9-2.9 mm wall thickness             | 50 x 5.0 mm  |                       |
| 110 mm diameter/2.0-3.4 wall thickness               | 50 x 6.0 mm  |                       |
| Diameter 125 mm, wall thickness 3.9 mm               | 60 x 9.0 mm  | E 120 U/U, EI 120 U/C |
| Diameter 160 mm, wall thickness 4.9 mm               | 60 x 15 mm   | EI 120 U/U            |
| Rehau Raupiano Plus PP-DD according to DIN 4102      |              |                       |
| 40 mm diameter/1.8 mm wall thickness                 | 50 x 3.0 mm  | E 120 U/U, EI 90 U/U  |
| 50 mm diameter/1.8 mm wall thickness                 | 50 x 3.2 mm  |                       |
| 75 mm diameter/1.8-2.2 mm wall thickness             | 50 x 4.2 mm  | E 120 U/U, EI 60 U/U  |
| 90 mm diameter/1.8-2.4 mm wall thickness             | 50 x 5.0 mm  |                       |
| 110 mm diameter/1.8-2.7 mm wall thickness            | 50 x 6.0 mm  |                       |
| Diameter 125 mm, wall thickness 3.1 mm               | 60 x 9.0 mm  | EI 120 U/U            |
| Diameter 160 mm, wall thickness 3.9 mm               | 60 x 15.0 mm |                       |

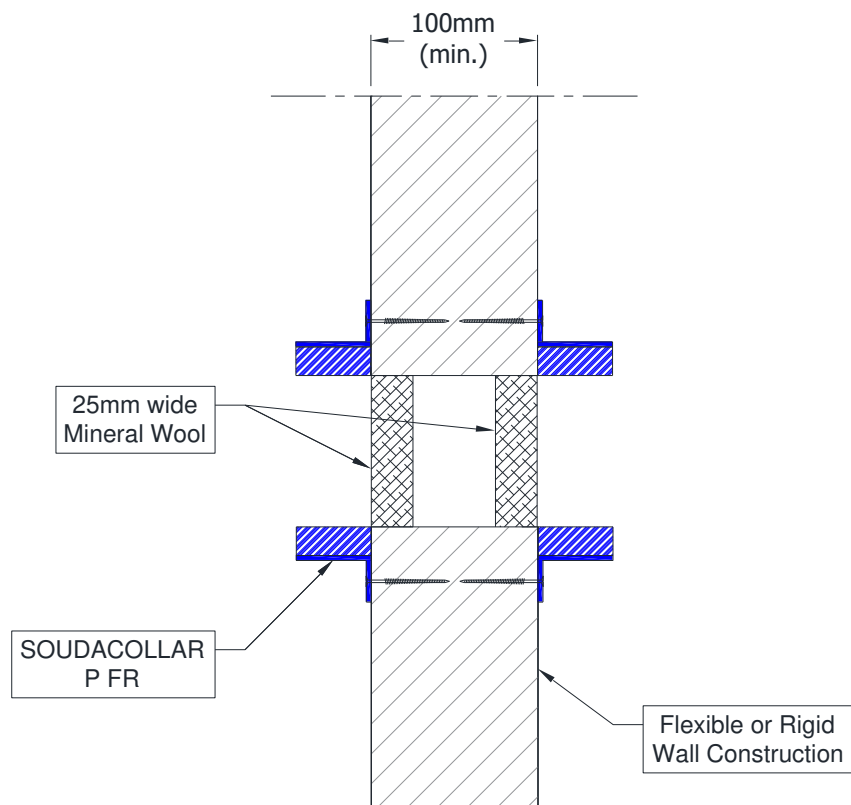
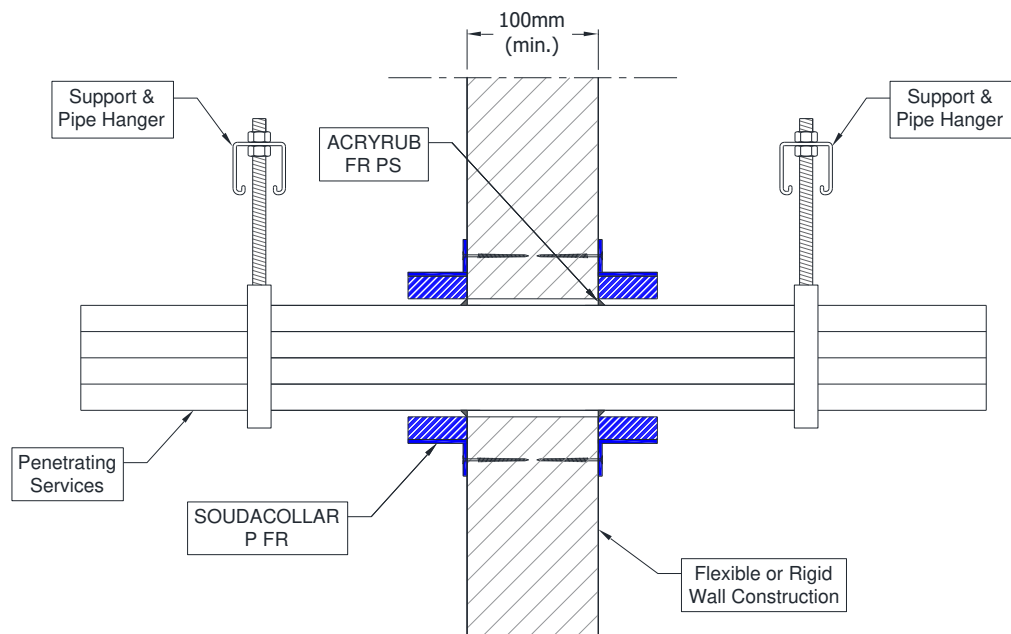
#### A.2.1.4.1

| Services                                                   | Collar Inlay | Classification       |
|------------------------------------------------------------|--------------|----------------------|
| BluePower Multilayer pipe – TR02-PP according to EN 1451-1 |              |                      |
| 32-40 mm diameter/1.8 mm wall thickness                    | 50 x 3.0 mm  | E 120 U/U, EI 90 U/U |
| 50 mm diameter/1.8 mm wall thickness                       | 50 x 3.2 mm  |                      |
| 75 mm diameter/1.8-2.5 mm wall thickness                   | 50 x 4.2 mm  | E 120 C/U, EI 60 C/U |
| 90 mm diameter/1.8-2.9 mm wall thickness                   | 50 x 5.0 mm  |                      |
| 110 mm diameter/1.8-3.4 mm wall thickness                  | 50 x 6.0 mm  |                      |
| 125 mm diameter/2.3-3.8 mm wall thickness                  | 60 x 9.0 mm  | EI 60 C/U            |
| 160 mm diameter/3.4-4.9 mm wall thickness                  | 60 x 15.0 mm | EI 90 C/U            |
| Uponor Decibel according to EN 1451-1                      |              |                      |
| 50 mm diameter/ 2.0 mm wall thickness                      | 50 x 3.0 mm  | E 120 U/U, EI 60 U/U |
| 75 mm diameter/ 2.6 mm wall thickness                      | 50 x 4.2 mm  |                      |
| 110 mm diameter/ 3.8 mm wall thickness                     | 50 x 6.0 mm  |                      |
| Wavin AS+ pipes according to EN 12056 and DIN 1986-100     |              |                      |
| 50 mm diameter / 3.0 mm wall thickness                     | 50 x 3.0 mm  | E 120 U/U, EI 90 U/U |
| 75 mm diameter / 3.5 mm wall thickness                     | 50 x 4.2 mm  | E 120 U/C, EI 60 U/C |
| 90 mm diameter / 4.6 mm wall thickness                     | 50 x 5.0 mm  |                      |
| 110 mm diameter / 5.3 mm wall thickness                    | 50 x 6.0 mm  |                      |
| 125 mm diameter / 5.3 mm wall thickness                    | 60 x 9.0 mm  |                      |
| 160 mm diameter / 5.6 mm wall thickness                    | 60 x 15.0 mm | E 120 U/C, EI 90 U/C |
| 200 mm diameter / 6.0 mm wall thickness                    | 60 x 18.0 mm |                      |
| PVC rectangular duct                                       |              |                      |
| 110 mm x 54 mm / approx. 2.0mm wall thickness              | 60 x 9.0mm   | E 120 U/U, EI 60 U/U |

### A.2.2 Penetration seals, in drywalls and concrete/masonry walls

**Penetration Seal:** Cables and pipes fitted with SOUDACOLLAR P FR, to both sides of the wall.

Construction details:



### A.2.2.1

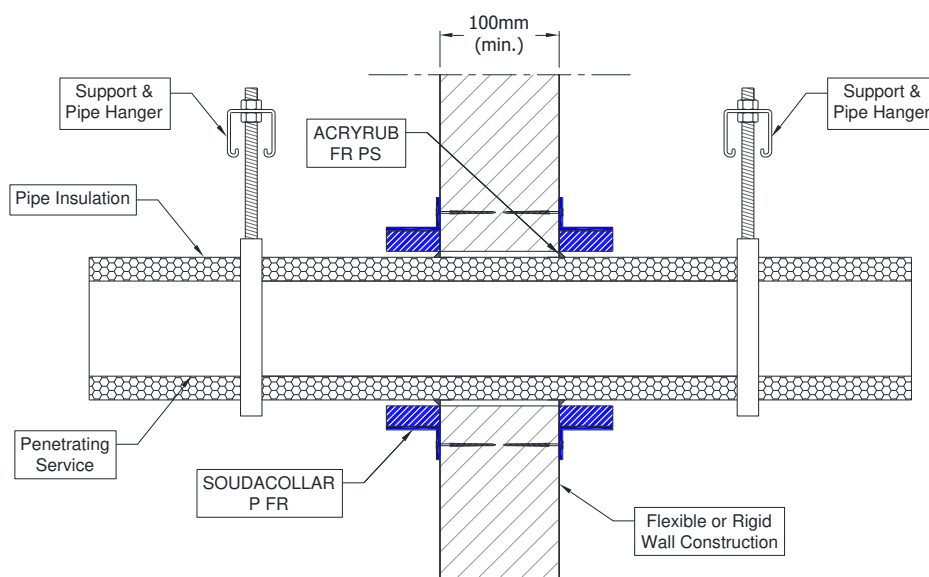
| Services                                                                                                                                        | Collar                                                          | Collar Inlay            | Classification              |
|-------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|-------------------------|-----------------------------|
| Cables up to 21 mm Ø, in partial or fully filled tied bundles up to 110 mm Ø (Collar internal diameter to match cable bundle size)              | Up to 110 mm collar at 30 mm height                             | Between 3.0 and 6.0 mm  | <b>E 120, EI 60</b>         |
| Cables up to 80 mm Ø, in partial or fully filled tied bundles up to 160 mm Ø (Collar internal diameter to match cable bundle size)              | Up to 110 mm collar at 50 mm height, 125-160 mm at 60 mm height | Between 3.0 and 15.0 mm | <b>E 120, EI 60</b>         |
| PVC pipes up to 40 mm Ø, wall thickness 1.0-3.7 mm with or without cables up to 21 mm Ø, in partial or fully filled pipe bundles up to 160 mm Ø | Up to 110 mm collar at 50 mm height, 125-160 mm at 60 mm height | Between 3.0 and 15.0 mm | <b>EI 90 U/C</b>            |
| PE pipes up to 40 mm Ø, wall thickness 2.0-3.7 mm with or without cables up to 21 mm Ø, in partial or fully filled pipe bundles up to 160 mm Ø  |                                                                 |                         |                             |
| PP pipes up to 40 mm Ø, wall thickness 1.8-3.7 mm with or without cables up to 21 mm Ø, in partial or fully filled pipe bundles up to 160 mm Ø  |                                                                 |                         |                             |
| None (blank). Hole behind collar to be fitted with minimum 25 mm thick stone mineral wool insulation at minimum 33 kg/m <sup>3</sup> .          | Up to 110 mm collar at 30 mm height                             | Between 3.0 and 6.0 mm  | <b>E 120, EI 60</b>         |
| None (blank). Hole behind collar to be fitted with minimum 25 mm thick stone mineral wool insulation at minimum 33 kg/m <sup>3</sup> .          | 160 mm collar at 60 mm height                                   | 15.0 mm                 | <b>EI 120</b>               |
| PEX pipe in pipe system                                                                                                                         |                                                                 |                         |                             |
| Diameter up to 25 mm pipes, wall thickness 0.6 mm, in bundles up to 55 mm                                                                       | 55 mm collar at 30 mm height                                    | 3.2 mm                  | <b>E 120 C/C, EI 90 C/C</b> |
| Diameter up to 42 mm pipes, wall thickness up to 1.0 mm, in bundles up to 160 mm                                                                | Up to 110 mm collar at 50 mm height, 125-160 mm at 60 mm height | Between 3.0 and 15.0 mm | <b>EI 60 C/C</b>            |

PVC, PE and PP pipes can be mixed in the same bundle.

### A.2.3 Penetration seals, in drywalls and concrete/masonry walls

**Penetration Seal:** CS (Continuous Sustained) insulated metallic pipes fitted with SOUDACOLLAR P FR, to both sides of the wall.

Construction details:

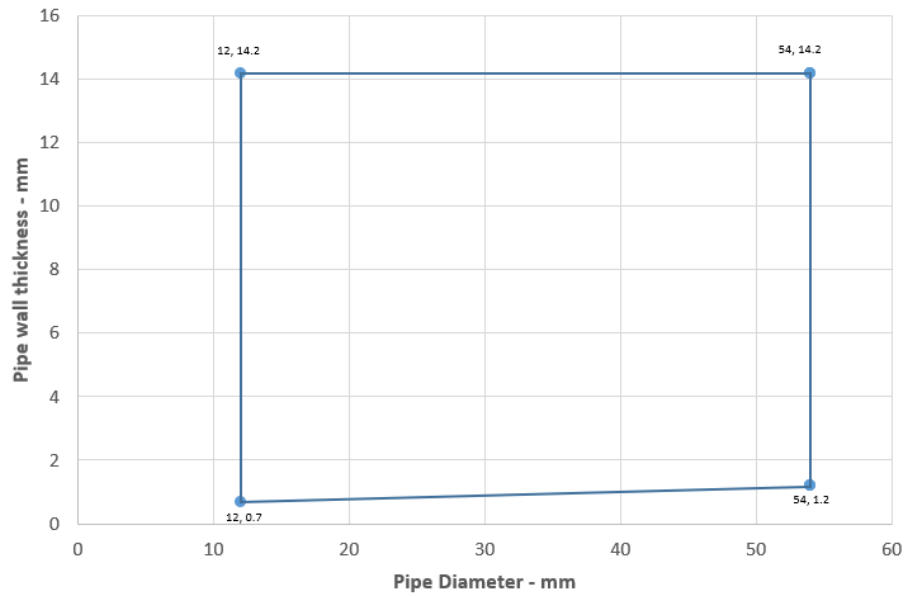


#### A.2.3.1

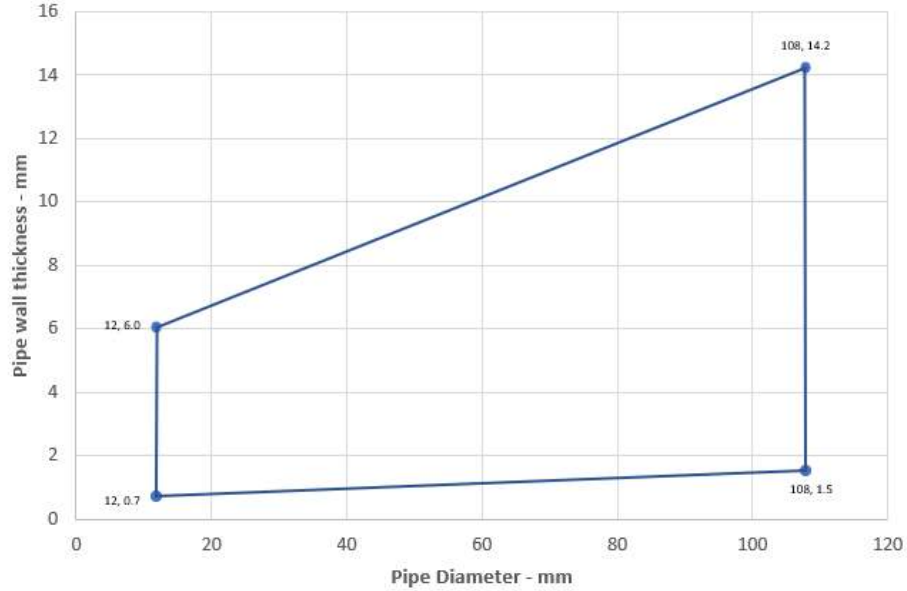
| Services                                             | Insulation                                                  | Collar                                                                                      | Classification       |
|------------------------------------------------------|-------------------------------------------------------------|---------------------------------------------------------------------------------------------|----------------------|
| Copper pipe or mild steel                            |                                                             |                                                                                             |                      |
| Maximum diameter 54 mm, wall thickness 0.7-14.2 mm*  | 9-50 mm thick Elastomeric insulation minimum class B-s3, d0 | Up to 110 mm collar at 50 mm height, 125-160 mm at 60 mm height                             | E 90 C/C, EI 60 C/C  |
| Maximum diameter 12 mm, wall thickness 0.7-6.0 mm    | 15 mm thick Phenolic Foam insulation                        | Up to 50 mm collar at 50 mm height                                                          | EI 120 C/C           |
| Maximum diameter 108 mm, wall thickness 0.7-14.2 mm* | 25 mm thick Phenolic Foam insulation                        | Up to 110 mm collar at 50 mm height, 125-200 mm at 60 mm height, 250-315 mm at 75 mm height | E 120 C/C, EI 90 C/C |
| Maximum diameter 108 mm, wall thickness 0.7-14.2 mm* | 26-100 mm thick Phenolic Foam insulation                    |                                                                                             | EI 60 C/C            |
| Maximum diameter 159 mm, wall thickness 0.7-14.2 mm* | 25 mm thick Phenolic Foam insulation                        | Up to 200 mm collar at 60 mm height, 250-315 mm at 75 mm height, 400 mm at 100 mm height    | EI 60 C/C            |
| Maximum diameter 159 mm, wall thickness 0.7-14.2 mm* | 26-100 mm thick Phenolic Foam insulation                    |                                                                                             | EI 45 C/C            |
| Diameter 54 mm, wall thickness 1.2 mm                | 20 mm thick PE foam insulation                              | Ø 110 x 50 x 6.0 mm                                                                         | E 120 C/C, EI 90 C/C |
| Diameter 54 mm, wall thickness 1.2 mm                | 40 mm thick PU foam insulation                              | Ø 160 x 60 x 15.0 mm                                                                        | E 120 C/C, EI 60 C/C |
| Alupex pipe                                          |                                                             |                                                                                             |                      |
| Maximum diameter 75 mm, wall thickness 2.25-4.6 mm*  | 9-50 mm thick Elastomeric insulation minimum class B-s3, d0 | Up to 110 mm collar at 50 mm height, 125-200 mm at 60 mm height                             | E 90 C/C, EI 60 C/C  |

\* Typical pipe diameters shown, see below graphs for intermediate sizes

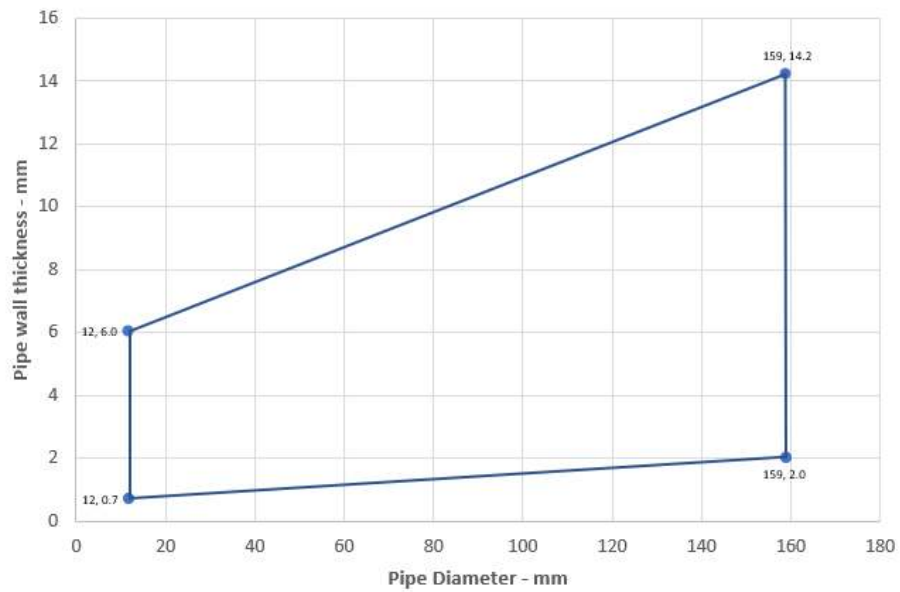
### Copper or Steel Pipes 32-54 / 9-50 mm Elastomeric Insulation



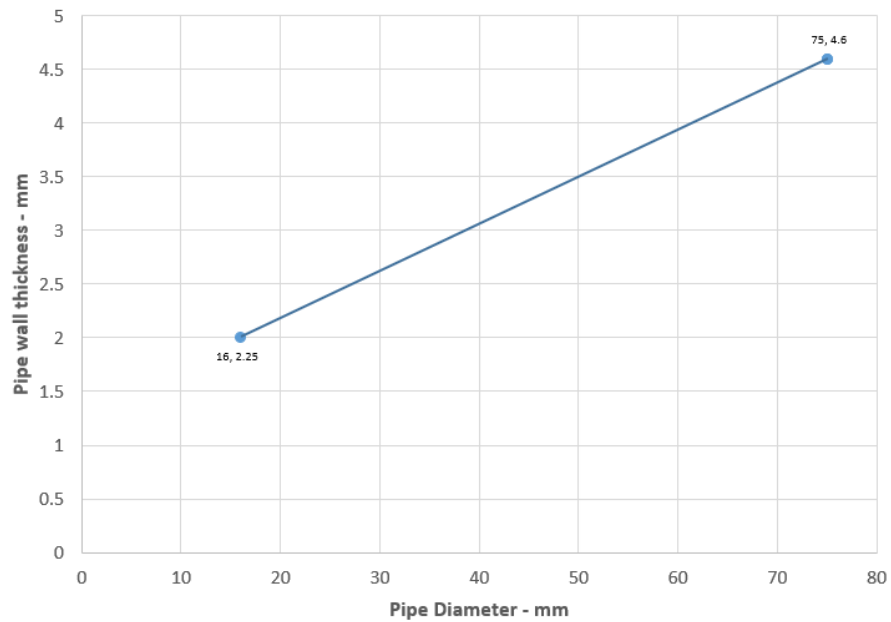
### Copper or Steel Pipes 12-108 / 25-100 mm Phenolic Foam Insulation



### Copper or Steel Pipes 12-159 / 25 or 26-100 mm Phenolic Foam Insulation



### Alupex Pipes 16-75 / 9-50 mm Elastomeric Insulation - C/C

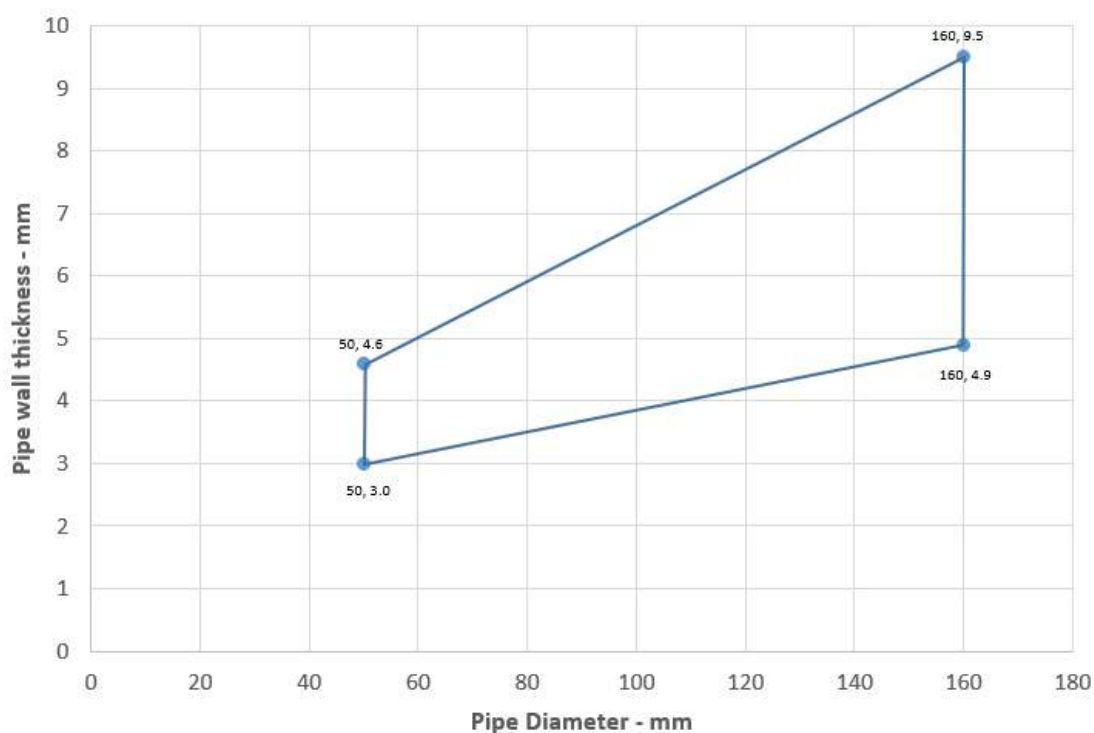


### A.2.3.1.1

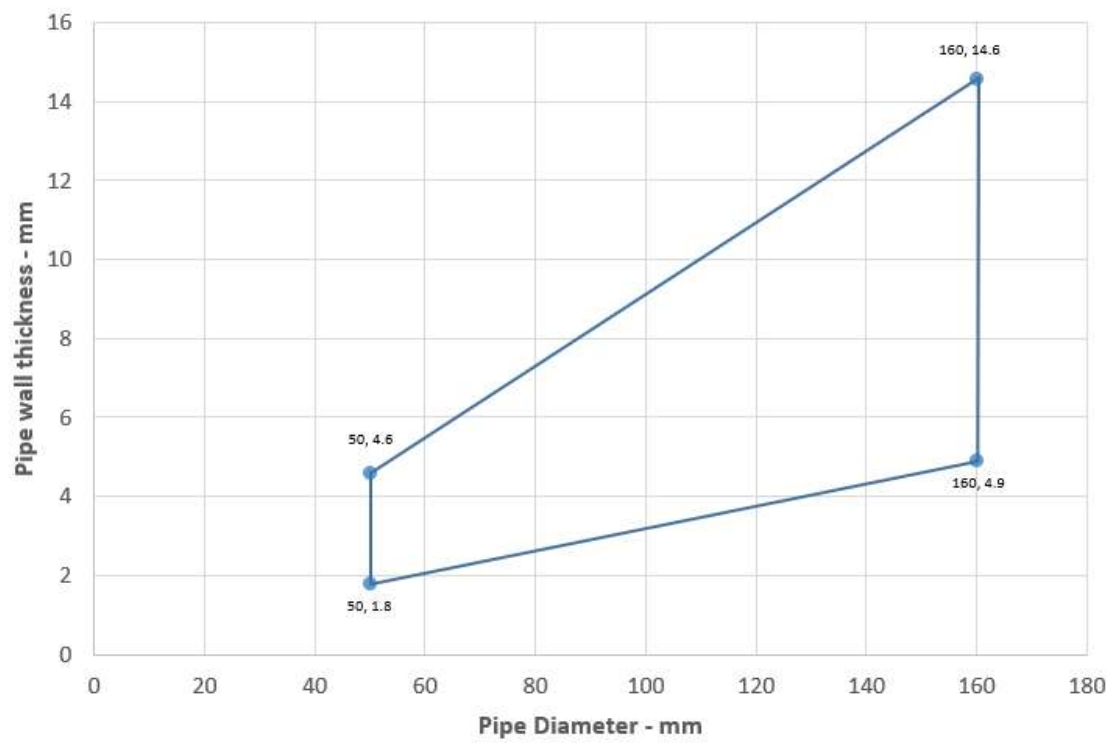
| Services                                                                                                                                 | Insulation                                                        | Collar                                                                                      | Classification |
|------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|---------------------------------------------------------------------------------------------|----------------|
| PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1 |                                                                   |                                                                                             |                |
| Maximum diameter 160 mm, wall thickness 3.0-9.5 mm*                                                                                      | 9-50 mm thick<br>Elastomeric insulation<br>minimum class D-s3, d0 | Up to 110 mm collar at 50 mm height, 125-200 mm at 60 mm height, 250-315 mm at 75 mm height | EI 90 C/C      |
| Diameter 160 mm, wall thickness 4.9-9.5 mm                                                                                               |                                                                   |                                                                                             | EI 120 C/C     |
| PP pipe according to EN 1451-1                                                                                                           |                                                                   |                                                                                             |                |
| Maximum diameter 160 mm, wall thickness 1.8-14.6 mm*                                                                                     | 9-50 mm thick<br>Elastomeric insulation<br>minimum class D-s3, d0 | Up to 110 mm collar at 50 mm height, 125-200 mm at 60 mm height, 250-315 mm at 75 mm height | EI 90 C/C      |
| Diameter 160 mm, wall thickness 4.9-14.6 mm                                                                                              |                                                                   |                                                                                             | EI 120 C/C     |

\* Typical pipe diameters shown, see below graphs for intermediate sizes

**PE Pipes 50-160 with Elastomeric Insulation - C/C**



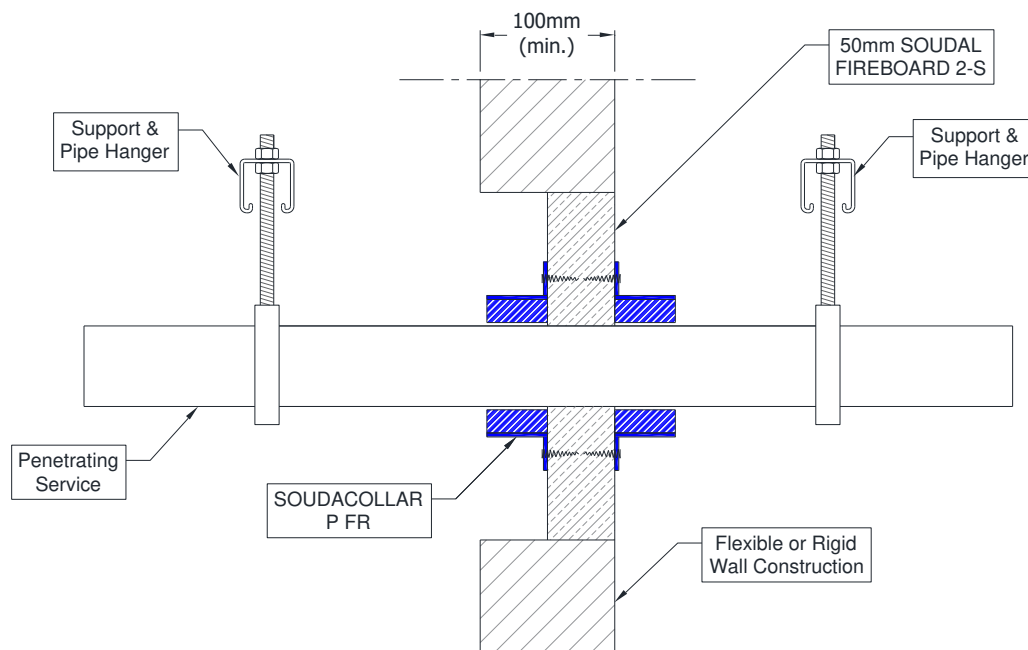
### PP Pipes 50-160 with Elastomeric Insulation - C/C



#### A.2.4 Penetration seals, in drywalls and concrete/masonry walls

**Penetration Seal:** Combustible pipes fitted with SOUDACOLLAR P FR, to both sides of the SOUDAL FIREBOARD. Minimum separation between penetration seals and seal edges of 50 mm (Configuration 1 & 2). Maximum seal size 1200 mm wide x 600 mm high.

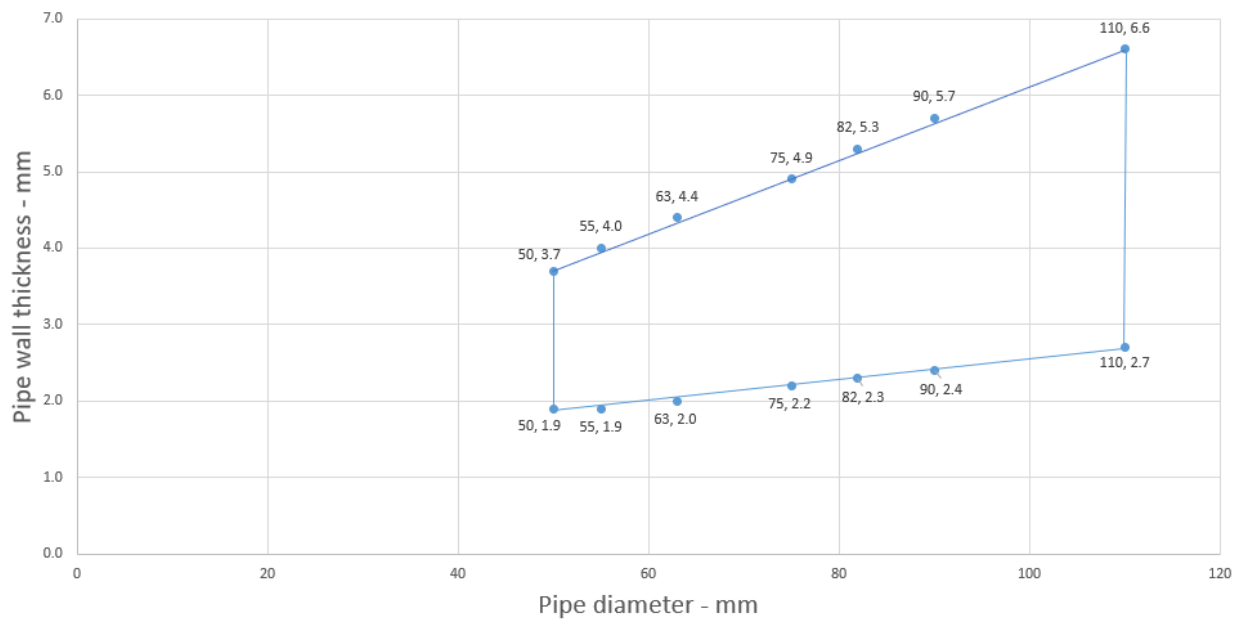
Construction details:



##### A.2.4.1

| Services                                                                                    | Collar Inlay | Classification       |
|---------------------------------------------------------------------------------------------|--------------|----------------------|
| PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1 |              |                      |
| 32-50 mm diameter / 1.9-3.7 mm wall thickness                                               | 50 x 3.0 mm  | E 120 U/C, EI 60 U/C |
| 55 mm, / 1.9-4.0 mm wall thickness                                                          | 50 x 3.2 mm  | E 90 U/C, EI 60 U/C  |
| 63 mm, / 2.0-4.4 mm wall thickness                                                          | 50 x 3.6 mm  |                      |
| 75 mm, / 2.2-4.9 mm wall thickness                                                          | 50 x 4.2 mm  |                      |
| 82 mm, / 2.3-5.3 mm wall thickness                                                          | 50 x 4.6 mm  |                      |
| 90 mm, / 2.4-5.7 mm wall thickness                                                          | 50 x 5.0 mm  |                      |
| 110 mm diameter / 2.7-6.6 mm wall thickness                                                 | 50 x 6.0 mm  |                      |

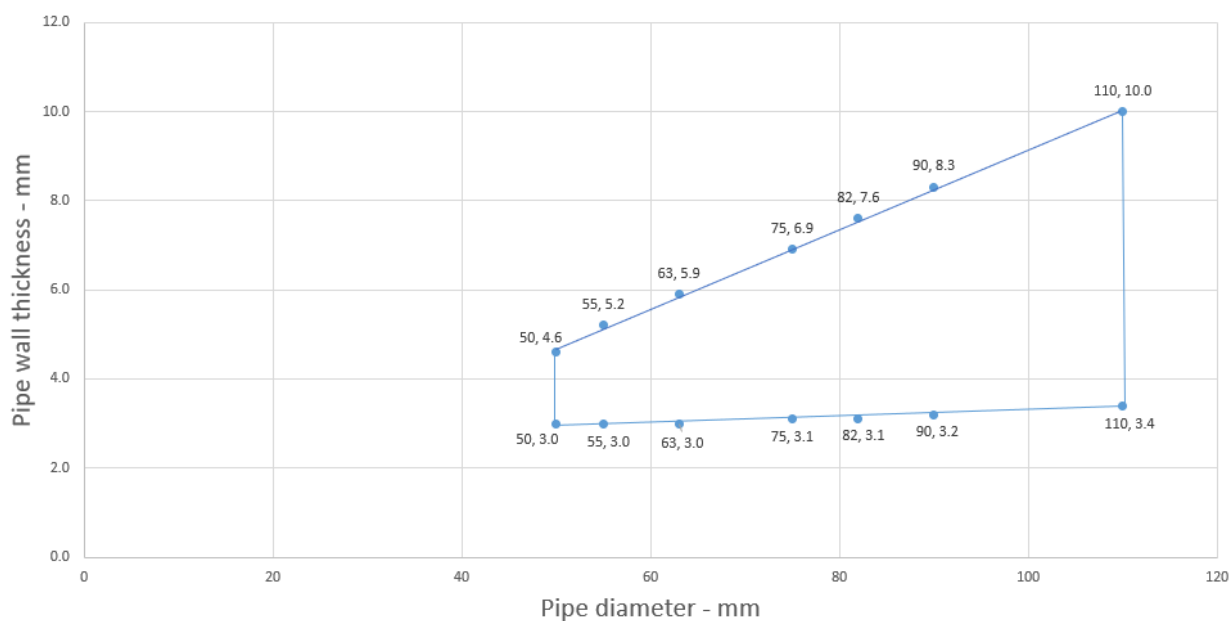
## PVC pipes 50-110 / 50 mm Collar - U/C



#### A.2.4.2

| Services                                                                                                                                 | Collar Inlay | Classification       |
|------------------------------------------------------------------------------------------------------------------------------------------|--------------|----------------------|
| PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1 |              |                      |
| 32-50 mm diameter / 3.0-4.6 mm wall thickness                                                                                            | 50 x 3.0 mm  | E 120 U/C, EI 60 U/C |
| 55 mm, / 3.0-5.2 mm wall thickness                                                                                                       | 50 x 3.2 mm  | E 90 C/C, EI 60 C/C  |
| 63 mm, / 3.0-5.9 mm wall thickness                                                                                                       | 50 x 3.6 mm  |                      |
| 75 mm, / 3.1-6.9 mm wall thickness                                                                                                       | 50 x 4.2 mm  |                      |
| 82 mm, / 3.1-7.6 mm wall thickness                                                                                                       | 50 x 4.6 mm  |                      |
| 90 mm, / 3.2-8.3 mm wall thickness                                                                                                       | 50 x 5.0 mm  |                      |
| 110 mm, / 3.4-10.0 mm wall thickness                                                                                                     | 50 x 6.0 mm  |                      |

PE pipes 50-110 / 50 mm Collar - C/C

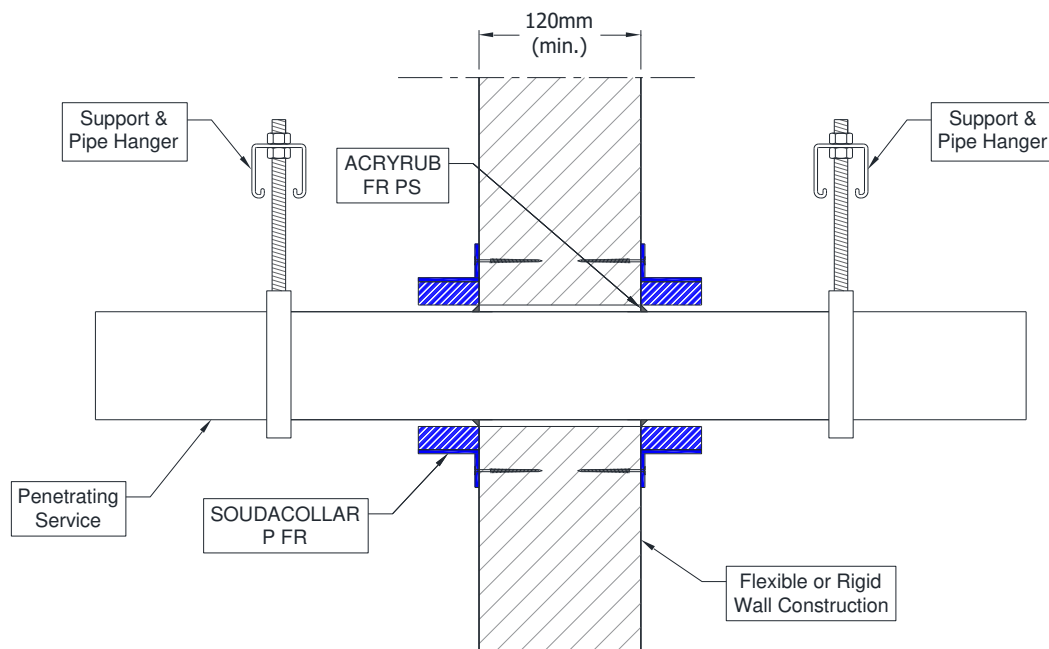


### A.3 Flexible or rigid wall constructions with wall thickness of minimum 120 mm

#### A.3.1 Penetration seals, in drywalls and concrete/masonry walls

**Penetration Seal:** Combustible pipes fitted with SOUDACOLLAR P FR, to both sides of the wall.

Construction details:

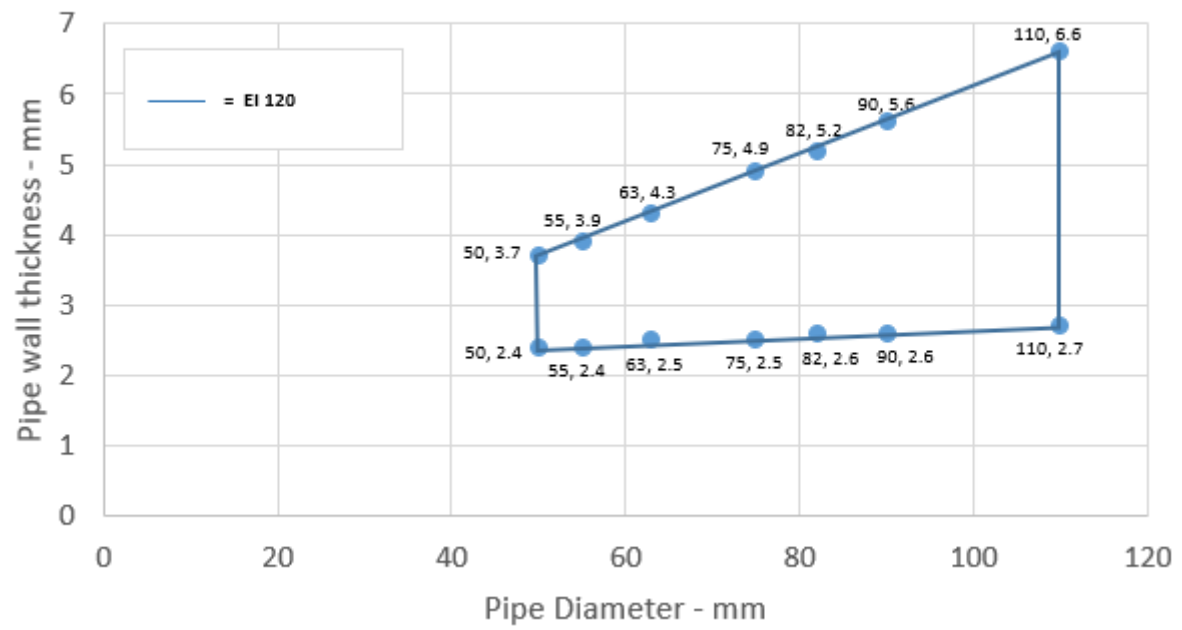


##### A.3.1.1

| Services                                                                                    | Collar Inlay | Classification |
|---------------------------------------------------------------------------------------------|--------------|----------------|
| PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1 |              |                |
| Diameter 32-50 mm, wall thickness 2.4-3.7 mm*                                               | 50 x 3.0 mm  | EI 120 C/C     |
| Diameter 55 mm, wall thickness 2.4-3.9 mm*                                                  | 50 x 3.2 mm  |                |
| Diameter 63 mm, wall thickness 2.5-4.3 mm*                                                  | 50 x 3.6 mm  |                |
| Diameter 75 mm, wall thickness 2.5-4.9 mm*                                                  | 50 x 4.2 mm  |                |
| Diameter 82 mm, wall thickness 2.6-5.2 mm*                                                  | 50 x 4.6 mm  |                |
| Diameter 90 mm, wall thickness 2.6-5.6 mm*                                                  | 50 x 5.0 mm  |                |
| Diameter 110 mm, wall thickness 2.7-6.6 mm*                                                 | 50 x 6.0 mm  |                |

\* Typical pipe diameters shown, see below graph for intermediate sizes

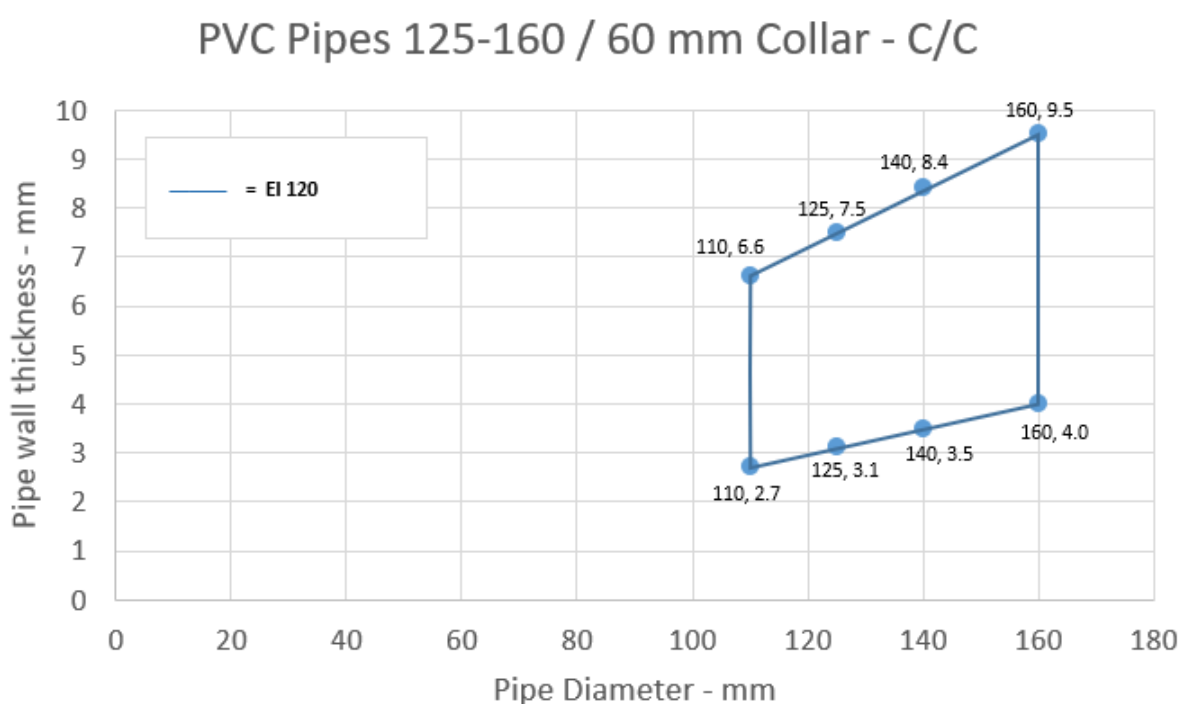
## PVC Pipes 50-110 / 50 mm Collar -C/C



### A.3.1.1.1

| Services                                                                                    | Collar Inlay | Classification    |
|---------------------------------------------------------------------------------------------|--------------|-------------------|
| PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1 |              |                   |
| Diameter 110 mm, wall thickness 2.7-6.6 mm*                                                 | 50 x 6.0 mm  | <b>EI 120 C/C</b> |
| Diameter 125 mm, wall thickness 3.1-7.5 mm*                                                 | 60 x 8.8 mm  |                   |
| Diameter 140 mm, wall thickness 3.5-8.4 mm*                                                 | 60 x 11.5 mm |                   |
| Diameter 160 mm, wall thickness 4.0-9.5 mm*                                                 | 60 x 15.0 mm |                   |

\* Typical pipe diameters shown, see below graph for intermediate sizes

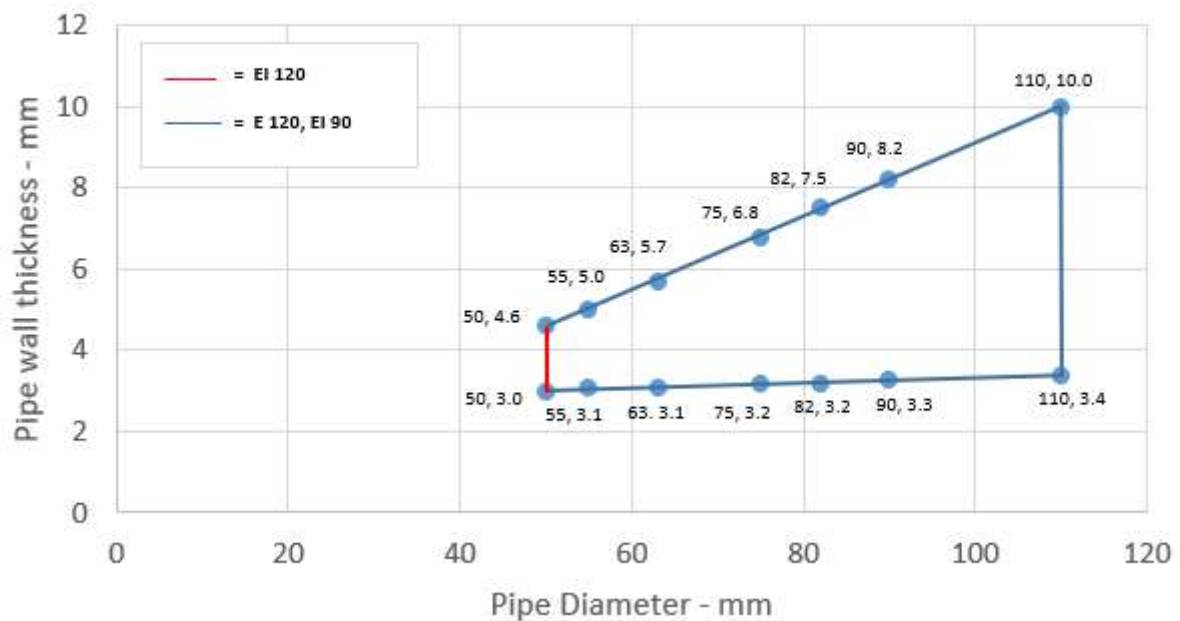


### A.3.1.2

| Services                                                                                                                                 | Collar Inlay | Classification       |
|------------------------------------------------------------------------------------------------------------------------------------------|--------------|----------------------|
| PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1 |              |                      |
| Diameter 32-50 mm, wall thickness 3.0-4.6 mm*                                                                                            | 50 x 3.0 mm  | EI 120 C/C           |
| Diameter 55 mm, wall thickness 3.1-5.0 mm*                                                                                               | 50 x 3.2 mm  | E 120 C/C, EI 90 C/C |
| Diameter 63 mm, wall thickness 3.1-5.7 mm*                                                                                               | 50 x 3.6 mm  |                      |
| Diameter 75 mm, wall thickness 3.2-6.8 mm*                                                                                               | 50 x 4.2 mm  |                      |
| Diameter 82 mm, wall thickness 3.2-7.5 mm*                                                                                               | 50 x 4.6 mm  |                      |
| Diameter 90 mm, wall thickness 3.3-8.2 mm*                                                                                               | 50 x 5.0 mm  |                      |
| Diameter 110 mm, wall thickness 3.4-10.0 mm*                                                                                             | 50 x 6.0 mm  | EI 120 C/C           |
| Diameter 110 mm, wall thickness 3.4 mm*                                                                                                  | 50 x 6.0 mm  |                      |

\* Typical pipe diameters shown, see below graph for intermediate sizes

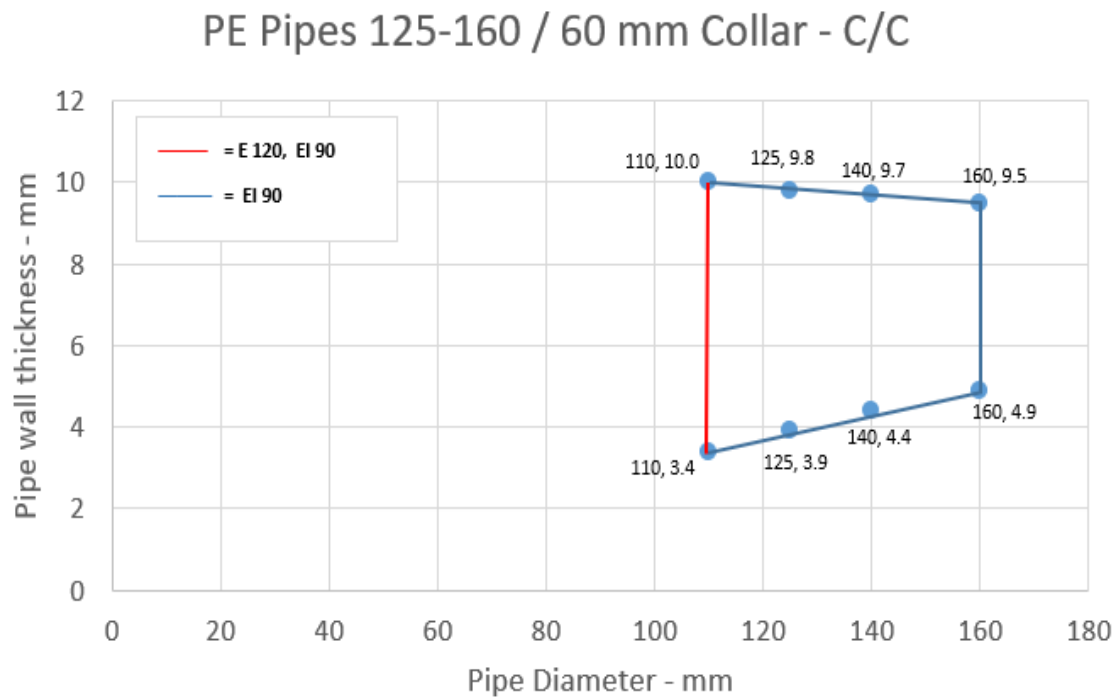
PE Pipes 50-110 / 50 mm Collar - C/C



### A.3.1.2.1

| Services                                                                                                                                 | Collar Inlay | Classification       |
|------------------------------------------------------------------------------------------------------------------------------------------|--------------|----------------------|
| PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1 |              |                      |
| Diameter 110 mm, wall thickness 3.4-10.0 mm*                                                                                             | 50 x 6.0 mm  | E 120 C/C, EI 90 C/C |
| Diameter 125 mm, wall thickness 3.9-9.8 mm*                                                                                              | 60 x 8.8 mm  | EI 90 C/C            |
| Diameter 140 mm, wall thickness 4.4-9.7 mm*                                                                                              | 60 x 11.5 mm |                      |
| Diameter 160 mm, wall thickness 4.9-9.5 mm*                                                                                              | 60 x 15.0 mm | EI 120 C/C           |

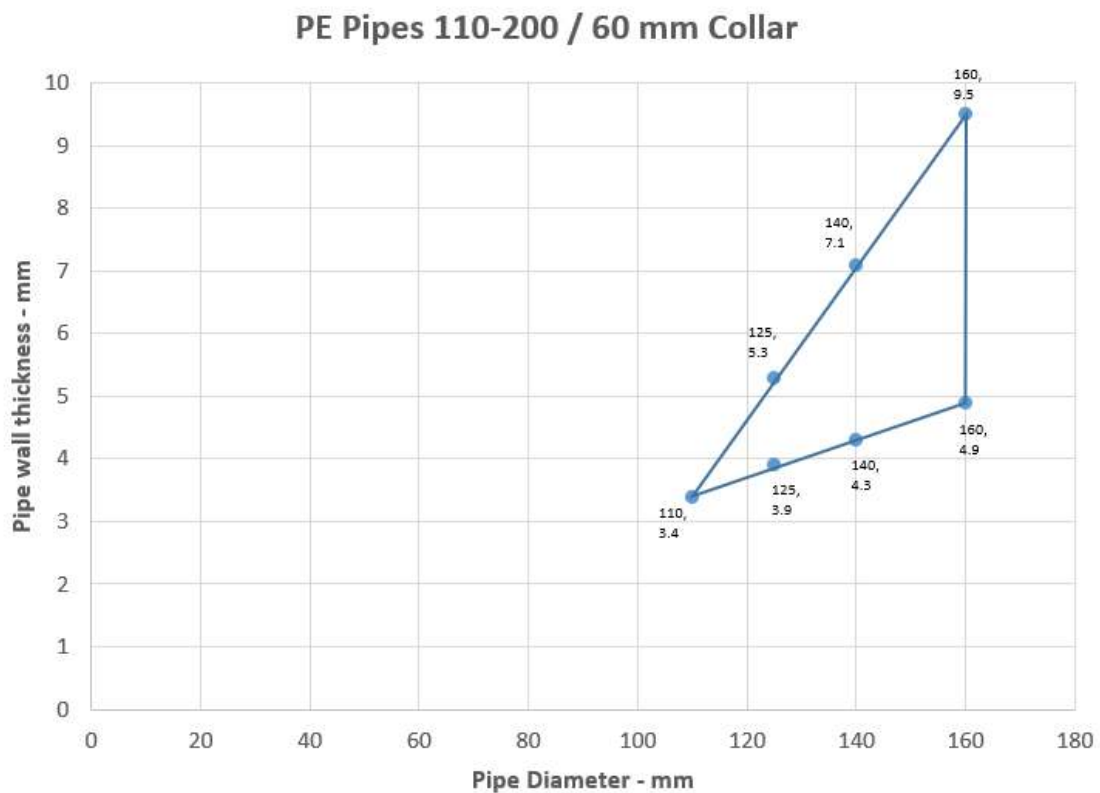
\* Typical pipe diameters shown, see below graph for intermediate sizes



### A.3.1.2.2

| Services                                                                                                                                 | Collar Inlay | Classification    |
|------------------------------------------------------------------------------------------------------------------------------------------|--------------|-------------------|
| PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1 |              |                   |
| Diameter 110 mm, wall thickness 3.4 mm*                                                                                                  | 50 x 6.0 mm  | <b>EI 120 C/C</b> |
| Diameter 125 mm, wall thickness 3.9-5.3 mm*                                                                                              | 60 x 8.8 mm  |                   |
| Diameter 140 mm, wall thickness 4.3-7.1 mm*                                                                                              | 60 x 11.5 mm |                   |
| Diameter 160 mm, wall thickness 4.9-9.5 mm*                                                                                              | 60 x 15.0 mm |                   |

\* Typical pipe diameters shown, see below graph for intermediate sizes

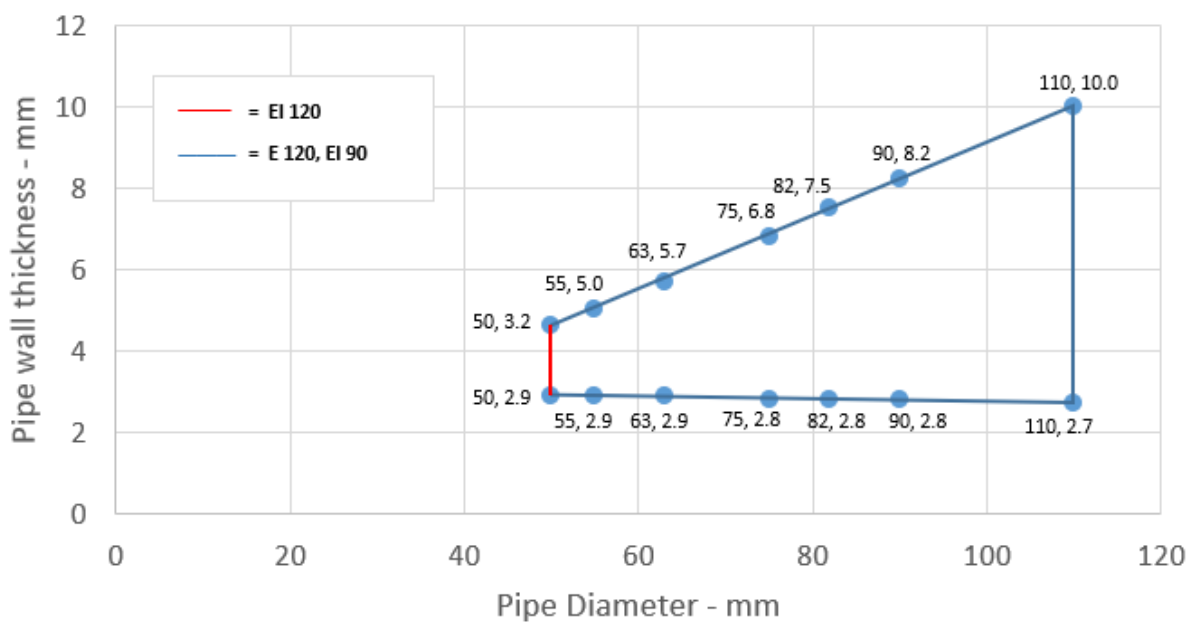


### A.3.1.3

| Services                                     | Collar Inlay | Classification       |
|----------------------------------------------|--------------|----------------------|
| PP pipe according to DIN 8077/8078           |              |                      |
| Diameter 32-50 mm, wall thickness 2.9-4.6 mm | 50 x 3.0 mm  | EI 120 C/C           |
| Diameter 55 mm, wall thickness 2.9-5.0 mm*   | 50 x 3.2 mm  | E 120 C/C, EI 90 C/C |
| Diameter 63 mm, wall thickness 2.9-5.7 mm*   | 50 x 3.6 mm  |                      |
| Diameter 75 mm, wall thickness 2.8-6.8 mm*   | 50 x 4.2 mm  |                      |
| Diameter 82 mm, wall thickness 2.8-7.5 mm*   | 50 x 4.6 mm  |                      |
| Diameter 90 mm, wall thickness 2.8-8.2 mm*   | 50 x 5.0 mm  |                      |
| Diameter 110 mm, wall thickness 2.7-10 mm*   | 50 x 6.0 mm  |                      |

\* Typical pipe diameters shown, see below graph for intermediate sizes

PP Pipes 50-110 / 50 mm Collar - C/C

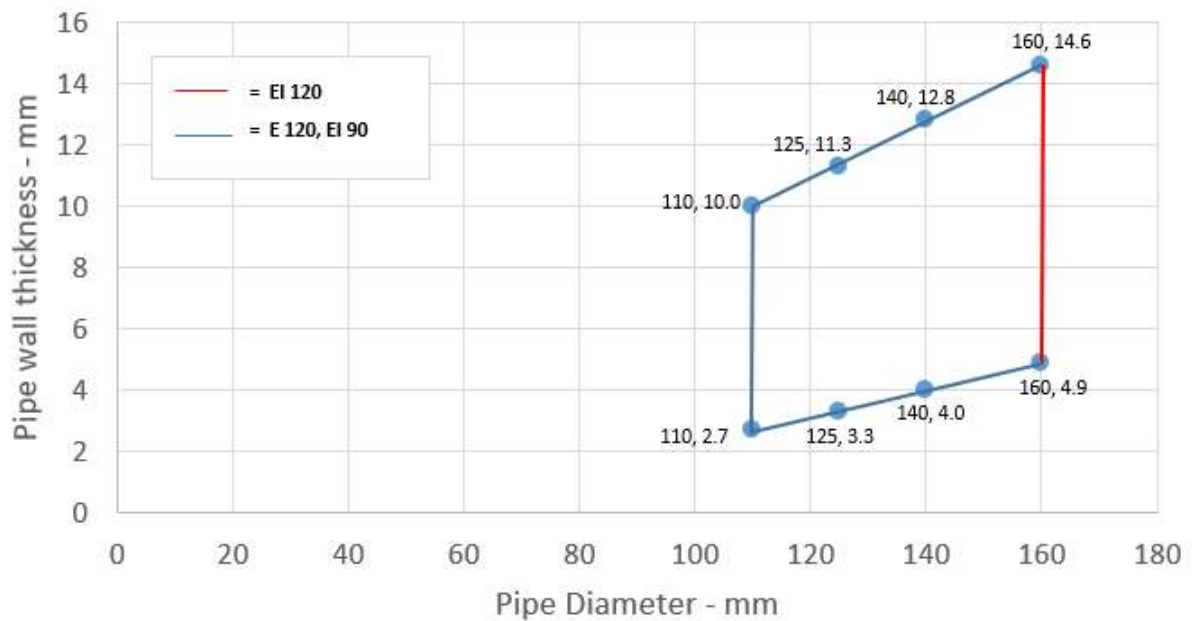


### A.3.1.3.1

| Services                                     | Collar Inlay | Classification       |
|----------------------------------------------|--------------|----------------------|
| PP pipe according to DIN 8077/8078           |              |                      |
| Diameter 110 mm, wall thickness 2.7-10 mm*   | 50 x 6.0 mm  | E 120 C/C, EI 90 C/C |
| Diameter 125 mm, wall thickness 3.3-11.3 mm* | 60 x 8.8 mm  |                      |
| Diameter 140 mm, wall thickness 4.0-12.8 mm* | 60 x 11.5 mm |                      |
| Diameter 160 mm, wall thickness 4.9-14.6 mm* | 60 x 15.0 mm | EI 120 C/C           |

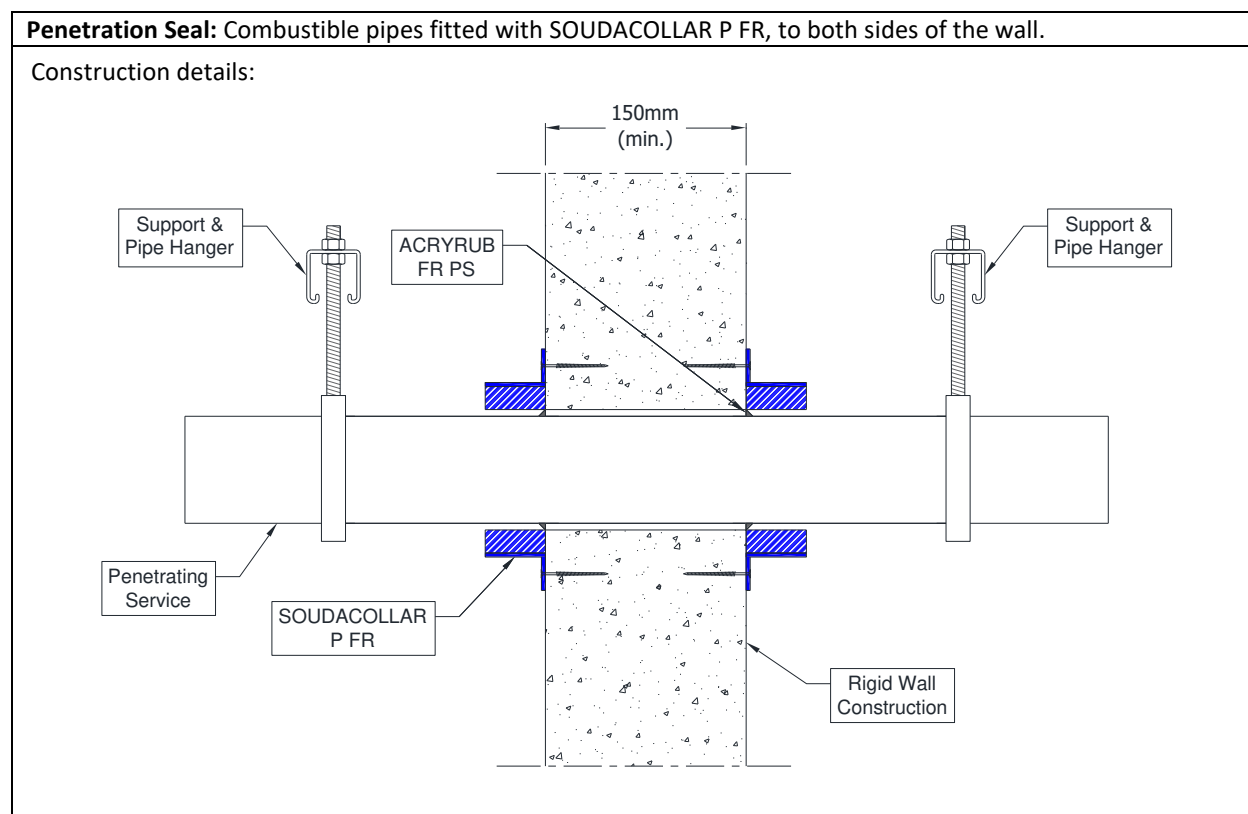
\* Typical pipe diameters shown, see below graph for intermediate sizes

PP Pipes 125-160 / 60 mm collar - C/C



## A.4 Rigid walls constructions with wall thickness of minimum 150 mm

### A.4.1 Penetration seals, in concrete/masonry walls

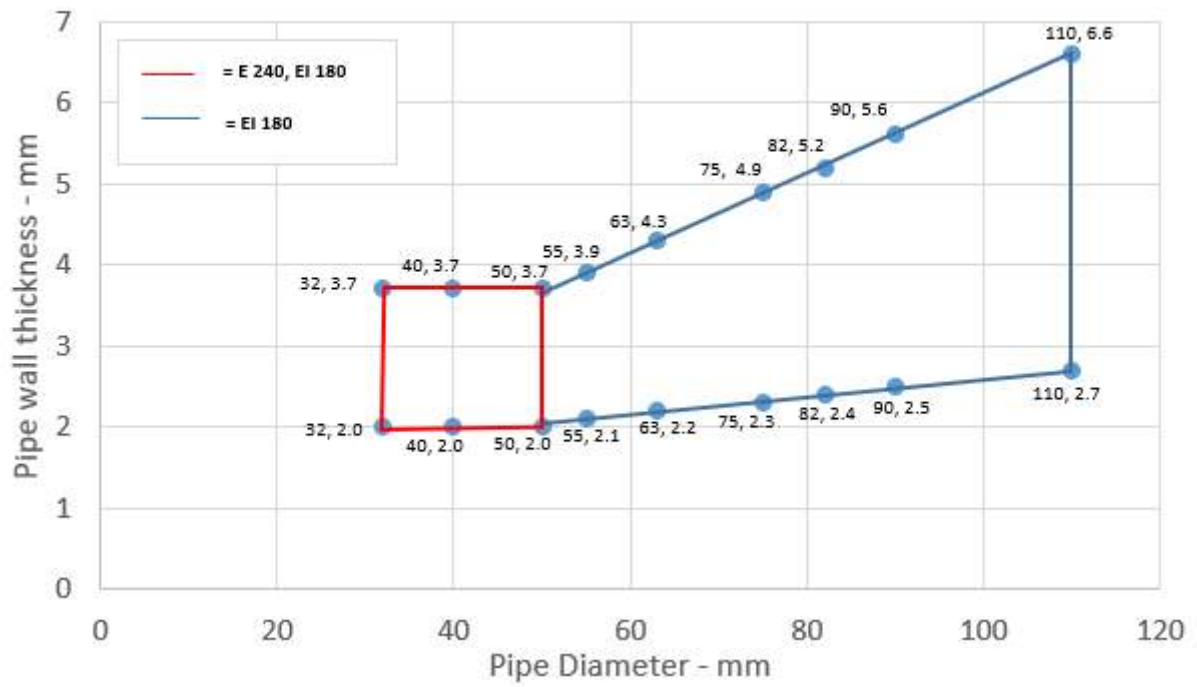


#### A.4.1.1

| Services                                                                                    | Collar Inlay | Classification                                                                                     |
|---------------------------------------------------------------------------------------------|--------------|----------------------------------------------------------------------------------------------------|
| PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1 |              |                                                                                                    |
| Diameter 32 mm, wall thickness 2.0-3.7 mm*                                                  | 50 x 3.0 mm  | E 240 U/U, E 240 C/U,<br>E 240 U/C, E 240 C/C<br>EI 180 U/U, EI 180 C/U,<br>EI 180 U/C, EI 180 C/C |
| Diameter 40 mm, wall thickness 2.0-3.7 mm*                                                  |              |                                                                                                    |
| Diameter 50 mm, wall thickness 2.0-3.7 mm*                                                  |              |                                                                                                    |
| Diameter 55 mm, wall thickness 2.1-3.9 mm*                                                  | 50 x 3.2 mm  | EI 180 U/U, EI 180 C/U,<br>EI 180 U/C, EI 180 C/C                                                  |
| Diameter 63 mm, wall thickness 2.2-4.3 mm*                                                  | 50 x 3.6 mm  |                                                                                                    |
| Diameter 75 mm, wall thickness 2.3-4.9 mm*                                                  | 50 x 4.2 mm  |                                                                                                    |
| Diameter 82 mm, wall thickness 2.4-5.2 mm*                                                  | 50 x 4.6 mm  |                                                                                                    |
| Diameter 90 mm, wall thickness 2.5-5.6 mm*                                                  | 50 x 5.0 mm  |                                                                                                    |
| Diameter 110 mm, wall thickness 2.7-6.6 mm*                                                 | 50 x 6.0 mm  |                                                                                                    |

\* Typical pipe diameters shown, see below graph for intermediate sizes

## PVC Pipes 32-110 / 50 mm Collar - U/U

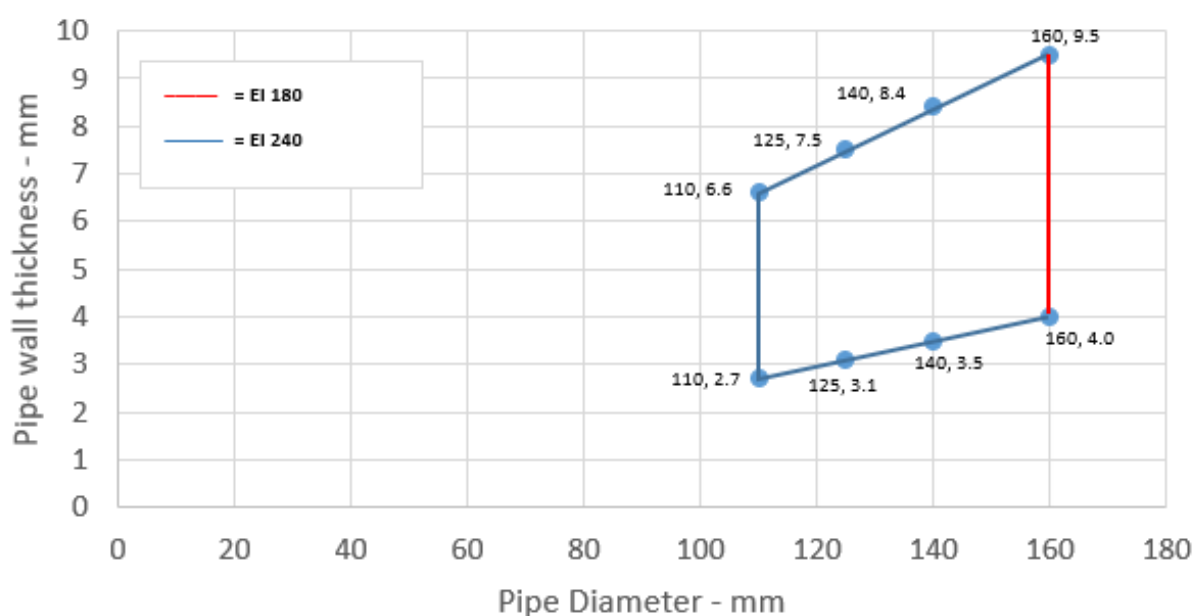


#### A.4.1.1.1

| Services                                                                                    | Collar Inlay | Classification                                    |
|---------------------------------------------------------------------------------------------|--------------|---------------------------------------------------|
| PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1 |              |                                                   |
| Diameter 110 mm, wall thickness 2.7-6.6 mm*                                                 | 50 x 6.0 mm  | EI 180 U/U, EI 180 C/U,<br>EI 180 U/C, EI 180 C/C |
| Diameter 125 mm, wall thickness 3.1-7.5 mm*                                                 | 60 x 8.8 mm  | EI 240 U/U, EI 240 C/U,<br>EI 240 U/C, EI 240 C/C |
| Diameter 140 mm, wall thickness 3.5-8.4 mm*                                                 | 60 x 11.5 mm |                                                   |
| Diameter 160 mm, wall thickness 4.0-9.5 mm*                                                 | 60 x 15.0 mm |                                                   |
| Diameter 315 mm, wall thickness 9.2 mm                                                      | 75 x 18 mm   | EI 120 C/C                                        |

\* Typical pipe diameters shown, see below graph for intermediate sizes

PVC Pipes 125-160 / 60 mm Collar - U/U

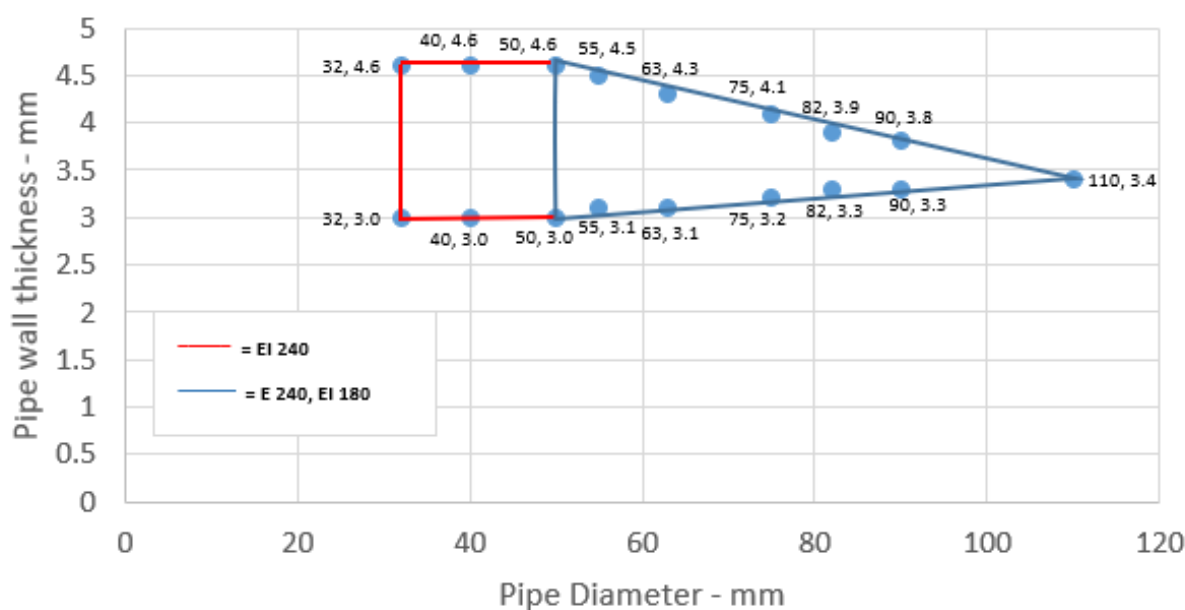


#### A.4.1.2

| Services                                                                                                                                 | Collar Inlay | Classification                                                                                     |
|------------------------------------------------------------------------------------------------------------------------------------------|--------------|----------------------------------------------------------------------------------------------------|
| PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1 |              |                                                                                                    |
| Diameter 32 mm, wall thickness 3.0-4.6 mm*                                                                                               | 50 x 3.0 mm  | EI 240 U/U, EI 240 C/U,<br>EI 240 U/C, EI 240 C/C                                                  |
| Diameter 40 mm, wall thickness 3.0-4.6 mm*                                                                                               |              |                                                                                                    |
| Diameter 50 mm, wall thickness 3.0-4.6 mm*                                                                                               |              |                                                                                                    |
| Diameter 55 mm, wall thickness 3.1-4.5 mm*                                                                                               | 50 x 3.2 mm  | E 240 U/U, E 240 C/U,<br>E 240 U/C, E 240 C/C<br>EI 180 U/U, EI 180 C/U,<br>EI 180 U/C, EI 180 C/C |
| Diameter 63 mm, wall thickness 3.1-4.3 mm*                                                                                               | 50 x 3.6 mm  |                                                                                                    |
| Diameter 75 mm, wall thickness 3.2-4.1 mm*                                                                                               | 50 x 4.2 mm  |                                                                                                    |
| Diameter 82 mm, wall thickness 3.3-3.9 mm*                                                                                               | 50 x 4.6 mm  |                                                                                                    |
| Diameter 90 mm, wall thickness 3.3-3.8 mm*                                                                                               | 50 x 5.0 mm  |                                                                                                    |
| Diameter 110 mm, wall thickness 3.4 mm*                                                                                                  | 50 x 6.0 mm  |                                                                                                    |

\* Typical pipe diameters shown, see below graph for intermediate sizes

PE Pipes 32-110 / 50 mm Collar-U/U

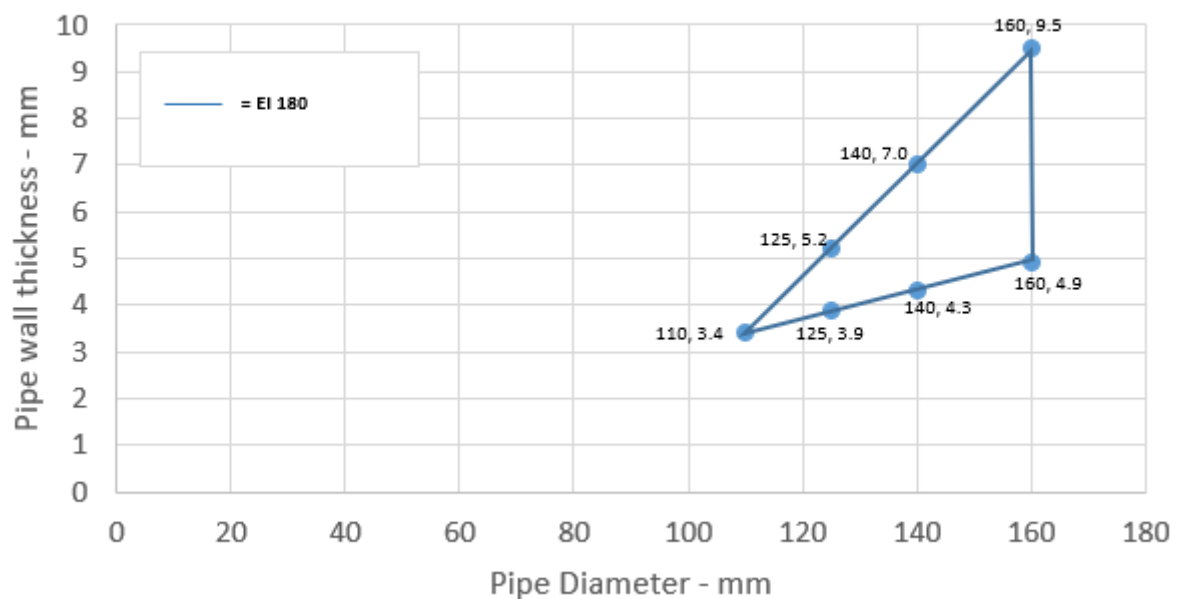


#### A.4.1.2.1

| Services                                                                                                                                 | Collar Inlay | Classification                                                                                     |
|------------------------------------------------------------------------------------------------------------------------------------------|--------------|----------------------------------------------------------------------------------------------------|
| PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1 |              |                                                                                                    |
| Diameter 110 mm, wall thickness 3.4 mm*                                                                                                  | 50 x 6.0 mm  | E 240 U/U, E 240 C/U,<br>E 240 U/C, E 240 C/C<br>EI 180 U/U, EI 180 C/U,<br>EI 180 U/C, EI 180 C/C |
| Diameter 125 mm, wall thickness 3.9-5.2 mm*                                                                                              | 60 x 9.0 mm  | EI 180 U/U, EI 180 C/U,<br>EI 180 U/C, EI 180 C/C                                                  |
| Diameter 140 mm, wall thickness 4.3-7.0 mm*                                                                                              | 60 x 11.5 mm |                                                                                                    |
| Diameter 160 mm, wall thickness 4.9-9.5 mm*                                                                                              | 60 x 15.0 mm |                                                                                                    |
| Diameter 200 mm, wall thickness 18.2 mm                                                                                                  | 75 x 10.8 mm | EI 60 C/C                                                                                          |
| Diameter 250 mm, wall thickness 22.7 mm                                                                                                  | 75 x 12.6 mm | E 120 C/C<br>EI 90 C/C                                                                             |

\* Typical pipe diameters shown, see below graph for intermediate sizes

PE Pipes 125-160 / 60 mm Pipes - U/U

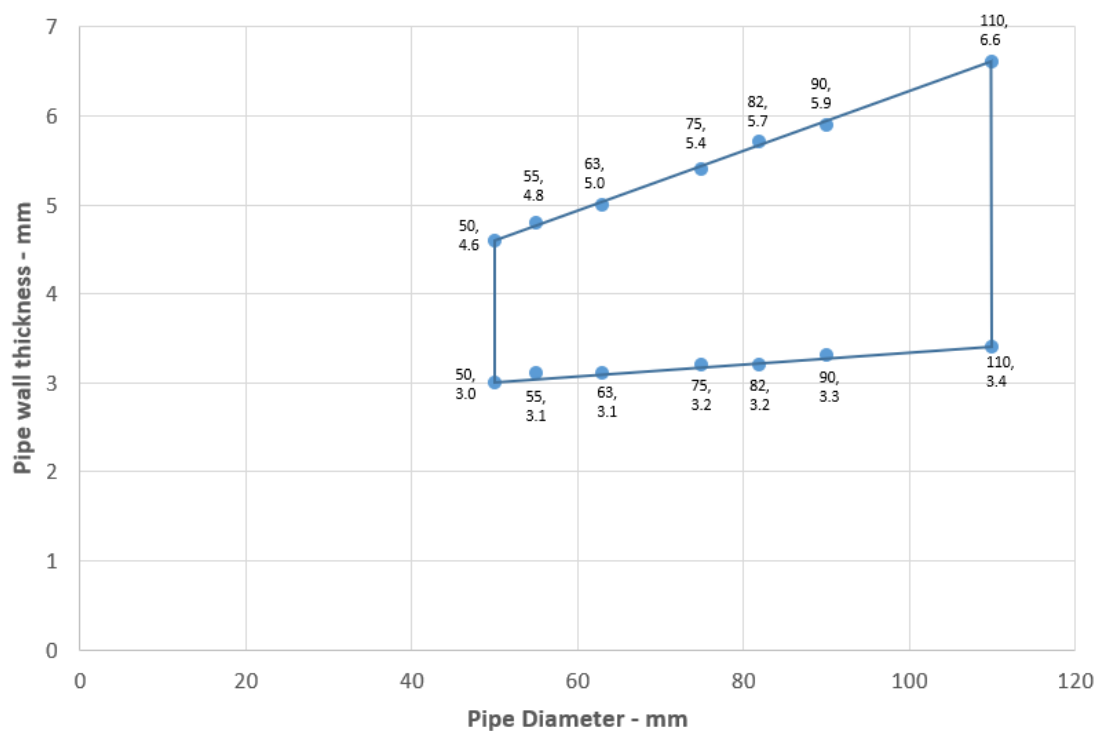


#### A.4.1.2.2

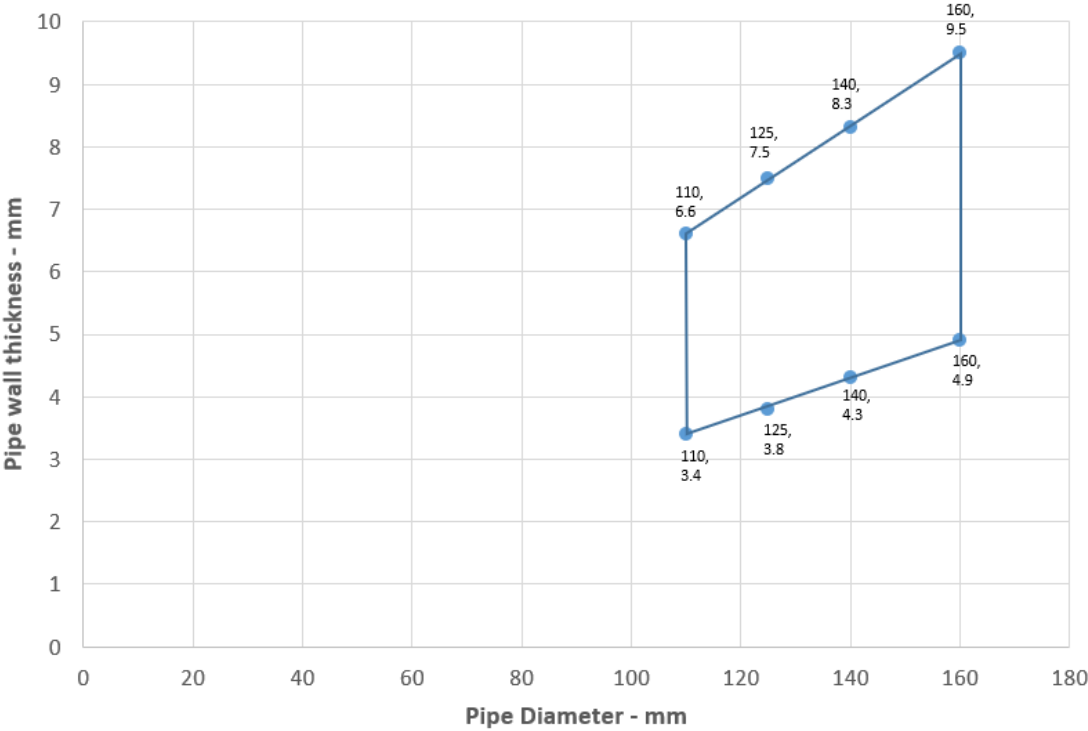
| Services                                                                                                                                 | Collar Inlay | Classification                                    |
|------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------------------------------------------|
| PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1 |              |                                                   |
| Diameter 50 mm, wall thickness 3.0-4.6 mm*                                                                                               | 50 x 3.0 mm  | EI 240 U/U, EI 240 C/U,<br>EI 240 U/C, EI 240 C/C |
| Diameter 55 mm, wall thickness 3.1-4.8 mm*                                                                                               | 50 x 3.2 mm  | E 180 U/C, E 180 C/C<br>EI 120 U/C, EI 120 C/C    |
| Diameter 63 mm, wall thickness 3.1-5.0 mm*                                                                                               | 50 x 3.6 mm  |                                                   |
| Diameter 75 mm, wall thickness 3.2-5.4 mm*                                                                                               | 50 x 4.2 mm  |                                                   |
| Diameter 82 mm, wall thickness 3.2-5.7 mm*                                                                                               | 50 x 4.6 mm  |                                                   |
| Diameter 90 mm, wall thickness 3.3-5.9 mm*                                                                                               | 50 x 5.0 mm  |                                                   |
| Diameter 110 mm, wall thickness 3.4-6.6 mm*                                                                                              | 50 x 6.0 mm  |                                                   |
| Diameter 125 mm, wall thickness 3.8-7.5 mm*                                                                                              | 60 x 9.0 mm  |                                                   |
| Diameter 140 mm, wall thickness 4.3-8.3 mm*                                                                                              | 60 x 11.5 mm |                                                   |
| Diameter 160 mm, wall thickness 4.9-9.5 mm*                                                                                              | 60 x 15.0 mm | EI 180 U/U, EI 180 C/U,<br>EI 180 U/C, EI 180 C/C |

\* Typical pipe diameters shown, see below graph for intermediate sizes

**PE Pipes 50-110 / 50 mm Collar**



PE Pipes 125-160 / 60 mm Collar

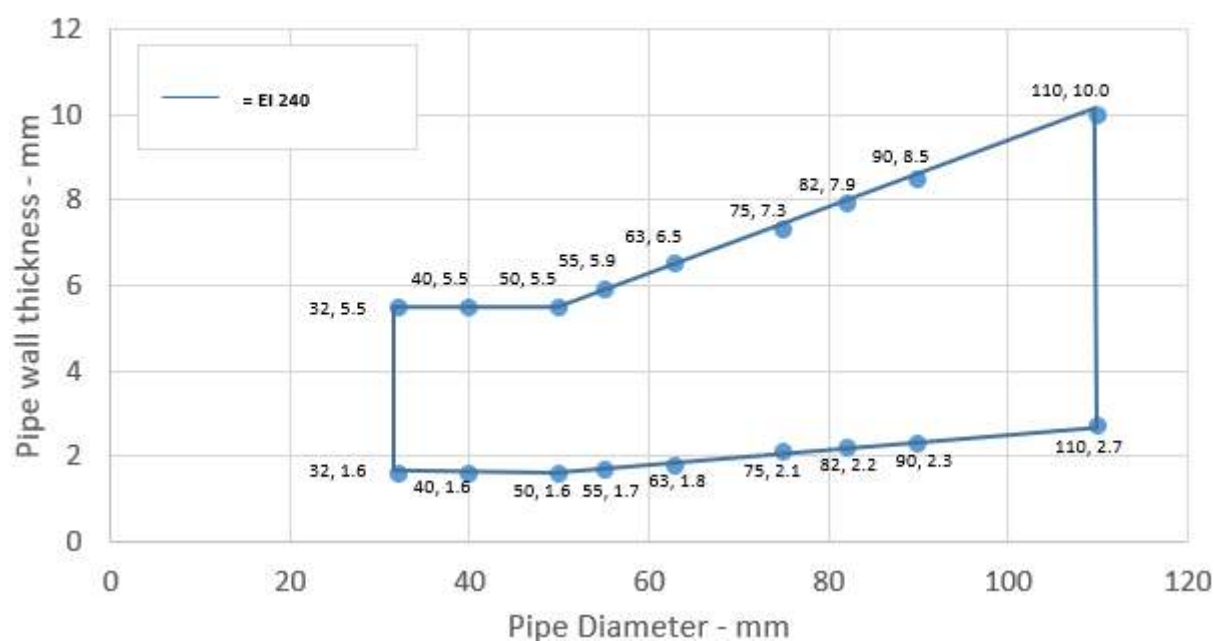


#### A.4.1.3

| Services                                     | Collar Inlay | Classification         |
|----------------------------------------------|--------------|------------------------|
| PP pipe according to EN 1451-1               |              |                        |
| Diameter 32 mm, wall thickness 1.6-5.5 mm*   | 30 x 3.0 mm  | EI 240 U/C, EI 240 C/C |
| Diameter 40 mm, wall thickness 1.6-5.5 mm*   |              |                        |
| Diameter 50 mm, wall thickness 1.6-5.5 mm*   |              |                        |
| Diameter 55 mm, wall thickness 1.7-5.9 mm*   | 50 x 3.2 mm  |                        |
| Diameter 63 mm, wall thickness 1.8-6.5 mm*   | 50 x 3.6 mm  |                        |
| Diameter 75 mm, wall thickness 2.1-7.3 mm*   | 50 x 4.2 mm  |                        |
| Diameter 82 mm, wall thickness 2.2-7.9 mm*   | 50 x 4.6 mm  |                        |
| Diameter 90 mm, wall thickness 2.3-8.5 mm*   | 50 x 5.0 mm  |                        |
| Diameter 110 mm, wall thickness 2.7-10.0 mm* | 50 x 6.0 mm  |                        |

\* Typical pipe diameters shown, see below graph for intermediate sizes

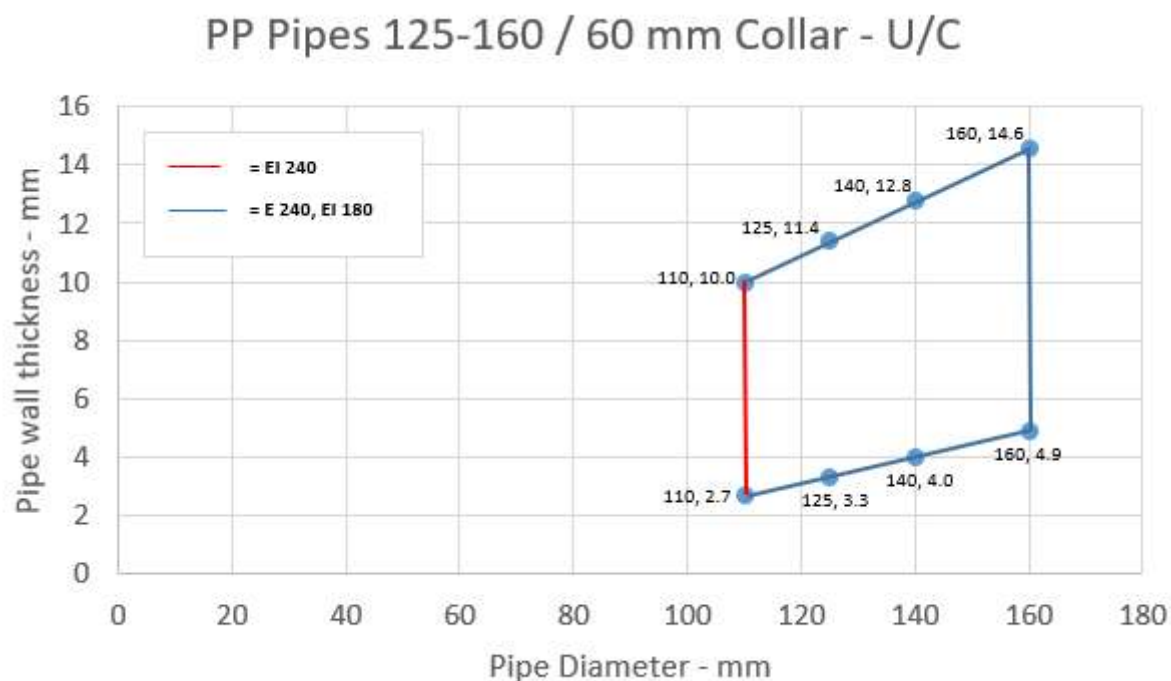
PP Pipes 32-110 / 50 mm Collar - U/C



#### A.4.1.3.1

| Services                                     | Collar Inlay | Classification                                 |
|----------------------------------------------|--------------|------------------------------------------------|
| PP pipe according to EN 1451-1               |              |                                                |
| Diameter 110 mm, wall thickness 2.7-10.0 mm* | 50 x 6.0 mm  | EI 240 U/C, EI 240 C/C                         |
| Diameter 125 mm, wall thickness 3.3-11.4 mm* | 60 x 9.0 mm  | E 240 U/C, E 240 C/C<br>EI 180 U/C, EI 180 C/C |
| Diameter 140 mm, wall thickness 4.0-12.8 mm* | 60 x 11.5 mm |                                                |
| Diameter 160 mm, wall thickness 4.9-14.6 mm* | 60 x 15.0 mm |                                                |

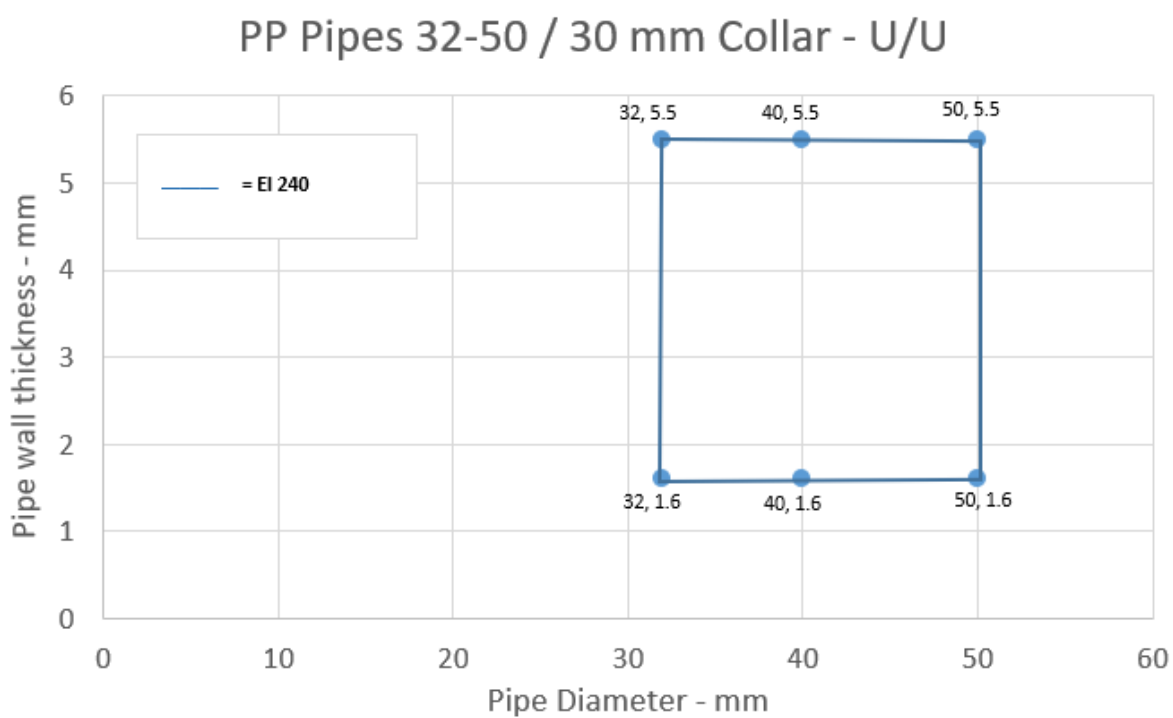
\* Typical pipe diameters shown, see below graph for intermediate sizes



#### A.4.1.3.2

| Services                                   | Collar Inlay | Classification                                    |
|--------------------------------------------|--------------|---------------------------------------------------|
| PP pipe according to EN 1451-1             |              |                                                   |
| Diameter 32 mm, wall thickness 1.6-5.5 mm* | 30 x 3.0 mm  | EI 240 U/U, EI 240 C/U,<br>EI 240 U/C, EI 240 C/C |
| Diameter 40 mm, wall thickness 1.6-5.5 mm* |              |                                                   |
| Diameter 50 mm, wall thickness 1.6-5.5 mm* |              |                                                   |

\* Typical pipe diameters shown, see below graph for intermediate sizes

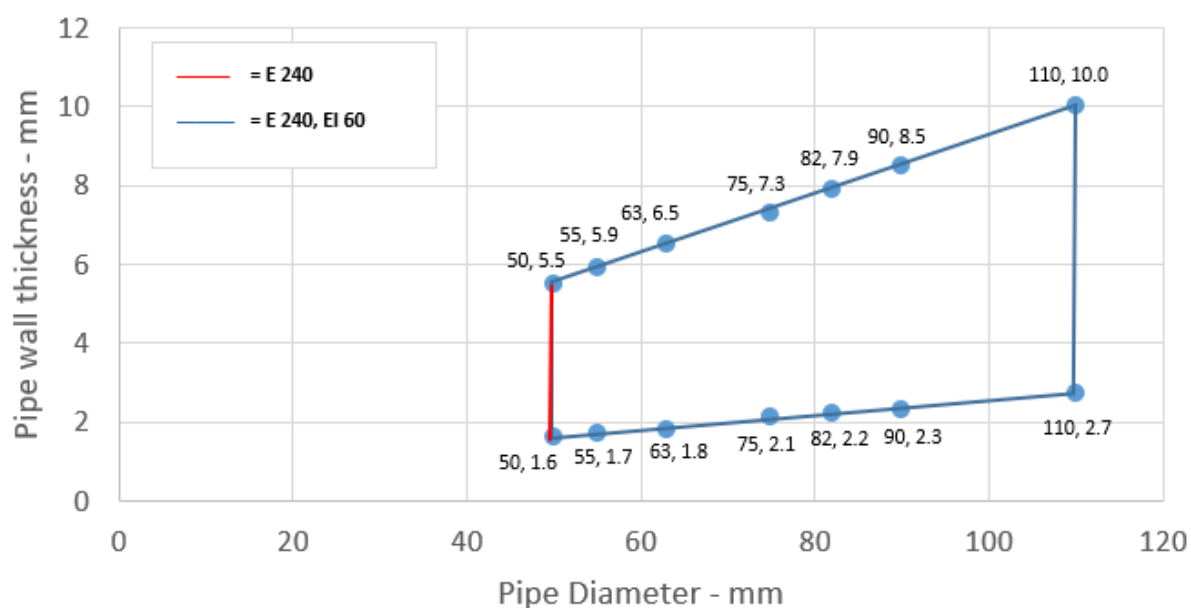


#### A.4.1.3.3

| Services                                     | Collar Inlay | Classification                                    |
|----------------------------------------------|--------------|---------------------------------------------------|
| PP pipe according to EN 1451-1               |              |                                                   |
| Diameter 50 mm, wall thickness 1.6-5.5 mm*   | 50 x 3.0 mm  | EI 240 U/U, EI 240 C/U,<br>EI 240 U/C, EI 240 C/C |
| Diameter 55 mm, wall thickness 1.7-5.9 mm*   | 50 x 3.2 mm  | E 240 U/U, E 240 C/U,<br>EI 60 U/U, EI 60 C/U     |
| Diameter 63 mm, wall thickness 1.8-6.5 mm*   | 50 x 3.6 mm  |                                                   |
| Diameter 75 mm, wall thickness 2.1-7.3 mm*   | 50 x 4.2 mm  |                                                   |
| Diameter 82 mm, wall thickness 2.2-7.9 mm*   | 50 x 4.6 mm  |                                                   |
| Diameter 90 mm, wall thickness 2.3-8.5 mm*   | 50 x 5.0 mm  |                                                   |
| Diameter 110 mm, wall thickness 2.7-10.0 mm* | 50 x 6.0 mm  |                                                   |

\* Typical pipe diameters shown, see below graph for intermediate sizes

PP Pipes 55-110 / 50 mm Collar - U/U

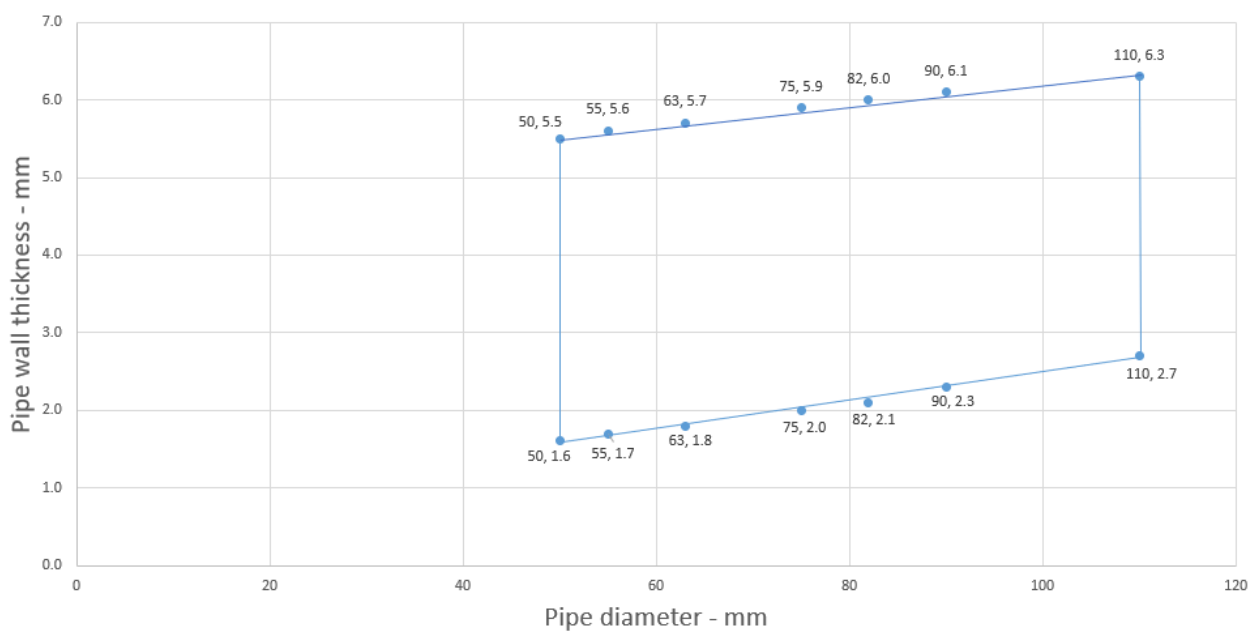


#### A.4.1.3.4

| Services                                   | Collar Inlay | Classification                                    |
|--------------------------------------------|--------------|---------------------------------------------------|
| PP pipe according to EN 1451-1             |              |                                                   |
| Diameter 50 mm, wall thickness 1.6-5.5 mm* | 50 x 3.0 mm  | EI 240 U/U, EI 240 C/U,<br>EI 240 U/C, EI 240 C/C |
| Diameter 55 mm, wall thickness 1.7-5.6 mm* | 50 x 3.2 mm  | E 240 U/U, EI 90 U/U                              |
| Diameter 63 mm, wall thickness 1.8-5.7 mm* | 50 x 3.6 mm  |                                                   |
| Diameter 75 mm, wall thickness 2.0-5.9 mm* | 50 x 4.2 mm  |                                                   |
| Diameter 82 mm, wall thickness 2.1-6.0 mm* | 50 x 4.6 mm  |                                                   |
| Diameter 90 mm, wall thickness 2.3-6.1 mm* | 50 x 5.0 mm  |                                                   |
| Diameter 110 mm, wall thickness 2.7-6.3 mm | 50 x 6.0 mm  |                                                   |

\* Typical pipe diameters shown, see below graph for intermediate sizes

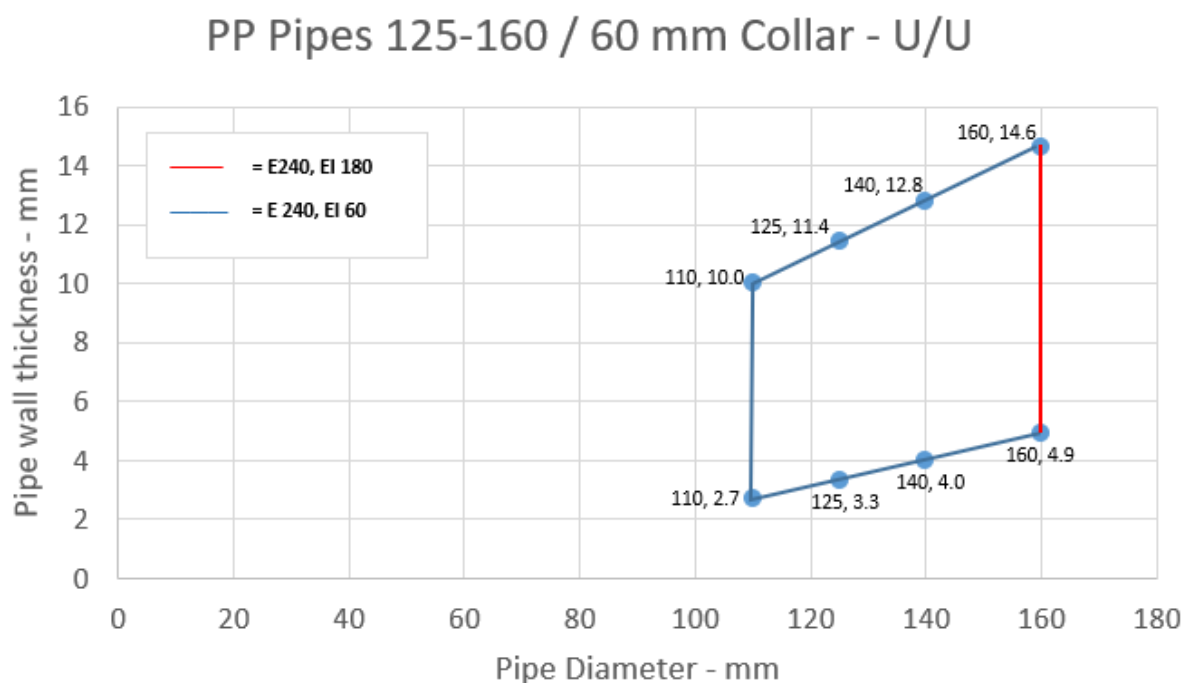
PP pipes 50-110 / 50 mm Collar - U/U



#### A.4.1.3.5

| Services                                     | Collar Inlay | Classification                                                                                     |
|----------------------------------------------|--------------|----------------------------------------------------------------------------------------------------|
| PP pipe according to EN 1451-1               |              |                                                                                                    |
| Diameter 110 mm, wall thickness 2.7-10.0 mm* | 60 x 6.0 mm  | E 240 U/U, E 240 C/U,<br>EI 60 U/U, EI 60 C/U                                                      |
| Diameter 125 mm, wall thickness 3.3-11.4 mm* | 60 x 8.8 mm  |                                                                                                    |
| Diameter 140 mm, wall thickness 4.0-12.8 mm* | 60 x 11.5 mm |                                                                                                    |
| Diameter 160 mm, wall thickness 4.9-14.6 mm* | 60 x 15.0 mm | E 240 U/U, E 240 C/U,<br>E 240 U/C, E 240 C/C<br>EI 180 U/U, EI 180 C/U,<br>EI 180 U/C, EI 180 C/C |

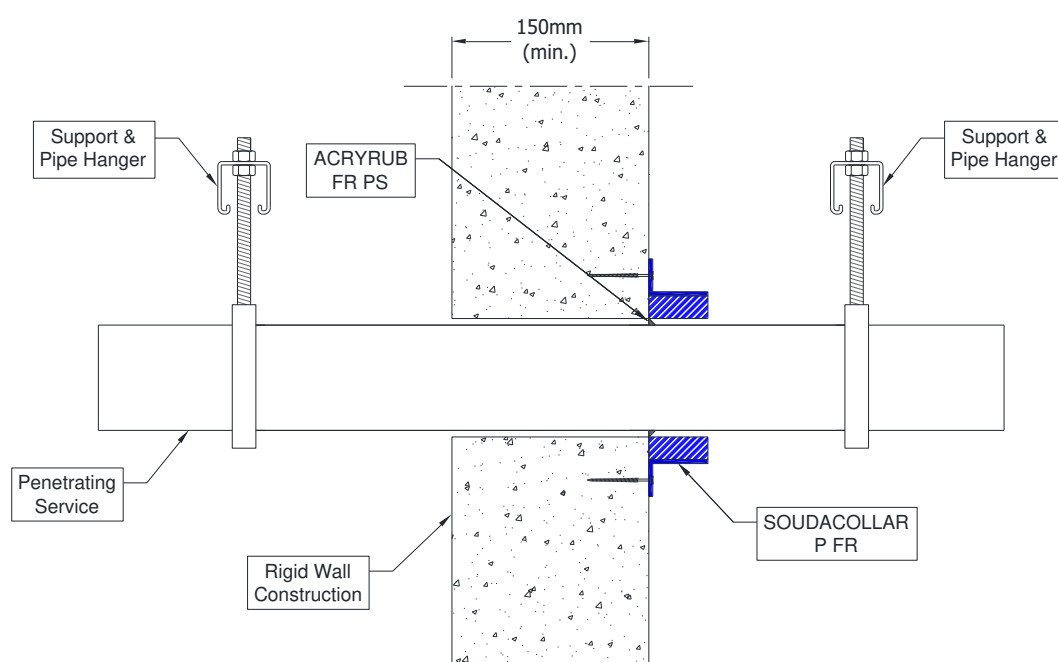
\* Typical pipe diameters shown, see below graph for intermediate sizes



#### A.4.2 Penetration seals, in concrete/masonry walls

**Penetration Seal:** Combustible pipes fitted with single SOUDACOLLAR P FR, to either side of the wall.

Construction details:

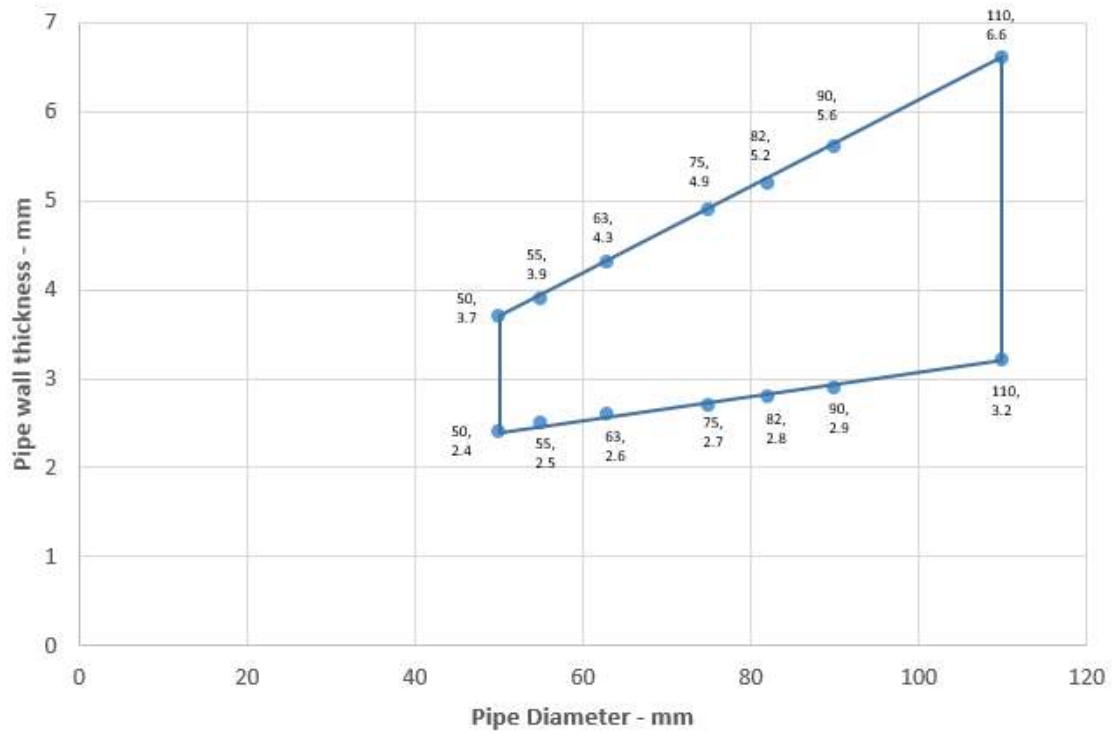


##### A.4.2.1

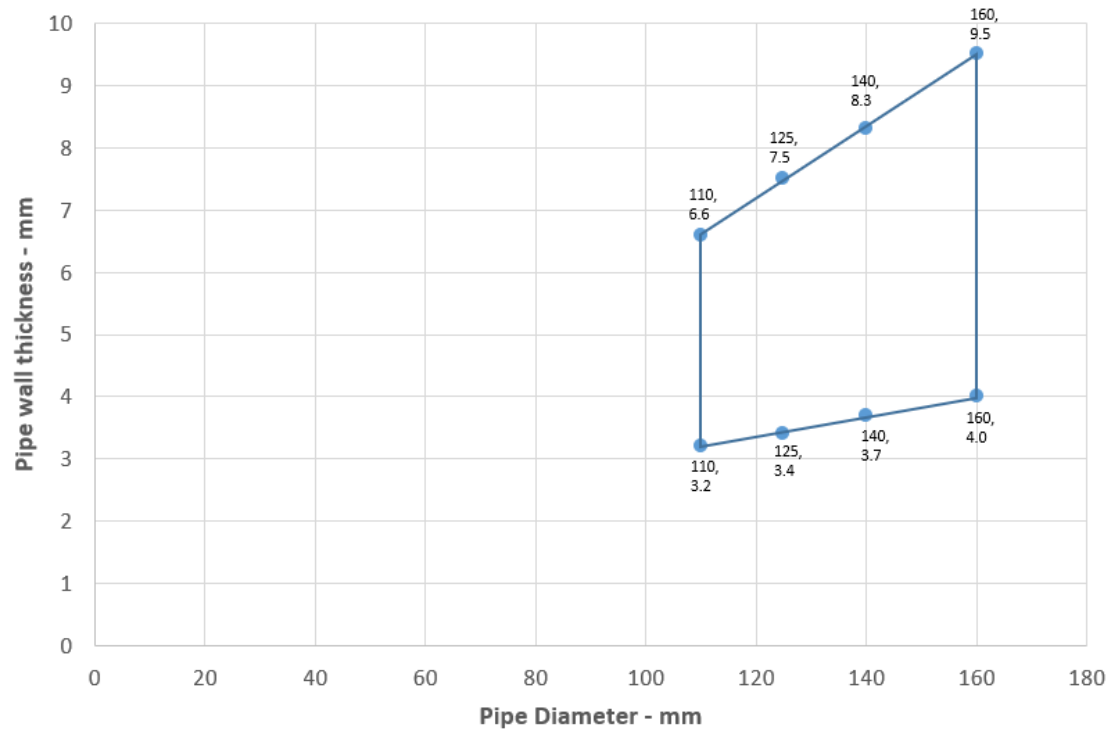
| Services                                                                                    | Collar Inlay | Classification                                 |
|---------------------------------------------------------------------------------------------|--------------|------------------------------------------------|
| PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1 |              |                                                |
| Diameter 32 mm, wall thickness 2.4-3.7 mm                                                   | 50 x 3.0 mm  | E 240 U/C, E 240 C/C<br>EI 180 U/C, EI 180 C/C |
| Diameter 40 mm, wall thickness 2.4-3.7 mm                                                   |              |                                                |
| Diameter 50 mm, wall thickness 2.4-3.7 mm*                                                  |              |                                                |
| Diameter 55 mm, wall thickness 2.5-3.9 mm*                                                  | 50 x 3.2 mm  | E 180 U/C, E 180 C/C<br>EI 120 U/C, EI 120 C/C |
| Diameter 63 mm, wall thickness 2.6-4.3 mm*                                                  | 50 x 3.6 mm  |                                                |
| Diameter 75 mm, wall thickness 2.7-4.9 mm*                                                  | 50 x 4.2 mm  |                                                |
| Diameter 82 mm, wall thickness 2.8-5.2 mm*                                                  | 50 x 4.6 mm  |                                                |
| Diameter 90 mm, wall thickness 2.9-5.6 mm*                                                  | 50 x 5.0 mm  |                                                |
| Diameter 110 mm, wall thickness 3.2-6.6 mm*                                                 | 50 x 6.0 mm  |                                                |
| Diameter 125 mm, wall thickness 3.4-7.5 mm*                                                 | 60 x 8.8 mm  | EI 120 U/C, EI 120 C/C                         |
| Diameter 140 mm, wall thickness 3.7-8.3 mm*                                                 | 60 x 11.5 mm |                                                |
| Diameter 160 mm, wall thickness 4.0-9.5 mm*                                                 | 60 x 15.0 mm |                                                |

\* Typical pipe diameters shown, see below graph for intermediate sizes

### PVC-U Pipes 50-110 / 50 mm Collar



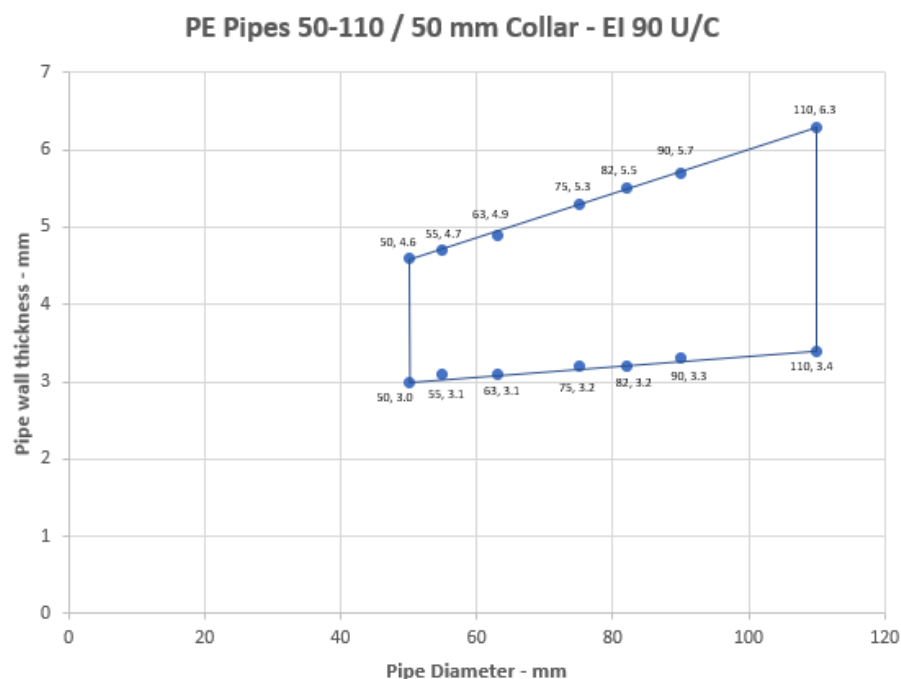
### PVC-U Pipes 125-160 / 60 mm Collar



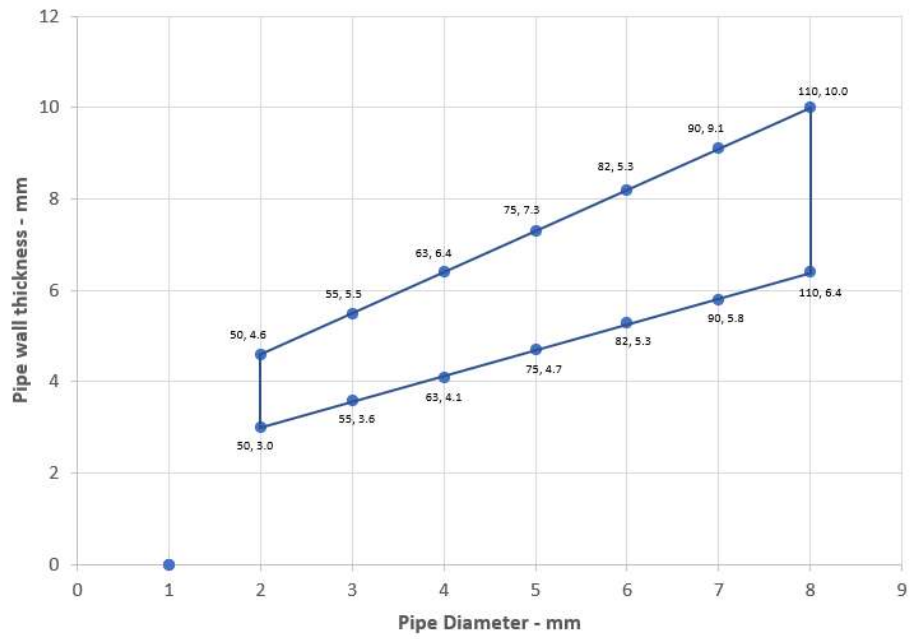
#### A.4.2.2

| Services                                                                                                                                 | Collar Inlay | Classification                                               |
|------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------------------------------------------------------|
| PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1 |              |                                                              |
| Diameter 32 mm, wall thickness 3.0-4.6 mm                                                                                                | 50 x 3.0 mm  | <b>E 180 U/C, E 180 C/C</b><br><b>EI 120 U/C, EI 120 C/C</b> |
| Diameter 40 mm, wall thickness 3.0-4.6 mm                                                                                                |              |                                                              |
| Diameter 50 mm, wall thickness 3.0-4.6 mm                                                                                                |              |                                                              |
| Diameter 55 mm, wall thickness 3.1-4.7 mm*                                                                                               | 50 x 3.2 mm  | <b>EI 90 U/C, EI 90 C/C</b>                                  |
| Diameter 63 mm, wall thickness 3.1-4.9 mm*                                                                                               | 50 x 3.6 mm  |                                                              |
| Diameter 75 mm, wall thickness 3.2-5.3 mm*                                                                                               | 50 x 4.2 mm  |                                                              |
| Diameter 82 mm, wall thickness 3.2-5.5 mm*                                                                                               | 50 x 4.6 mm  |                                                              |
| Diameter 90 mm, wall thickness 3.3-5.7 mm*                                                                                               | 50 x 5.0 mm  |                                                              |
| Diameter 110 mm, wall thickness 3.4-6.3 mm*                                                                                              | 50 x 6.0 mm  |                                                              |
| Diameter 55 mm, wall thickness 3.6-5.5 mm*                                                                                               | 50 x 3.2 mm  | <b>EI 60 U/C, EI 60 C/C</b>                                  |
| Diameter 63 mm, wall thickness 4.1-6.4 mm*                                                                                               | 50 x 3.6 mm  |                                                              |
| Diameter 75 mm, wall thickness 4.7-7.3 mm*                                                                                               | 50 x 4.2 mm  |                                                              |
| Diameter 82 mm, wall thickness 5.3-8.2 mm*                                                                                               | 50 x 4.6 mm  |                                                              |
| Diameter 90 mm, wall thickness 5.8-9.1 mm*                                                                                               | 50 x 5.0 mm  |                                                              |
| Diameter 110 mm, wall thickness 6.4-10.0 mm*                                                                                             | 50 x 6.0 mm  |                                                              |

\* Typical pipe diameters shown, see below graph for intermediate sizes



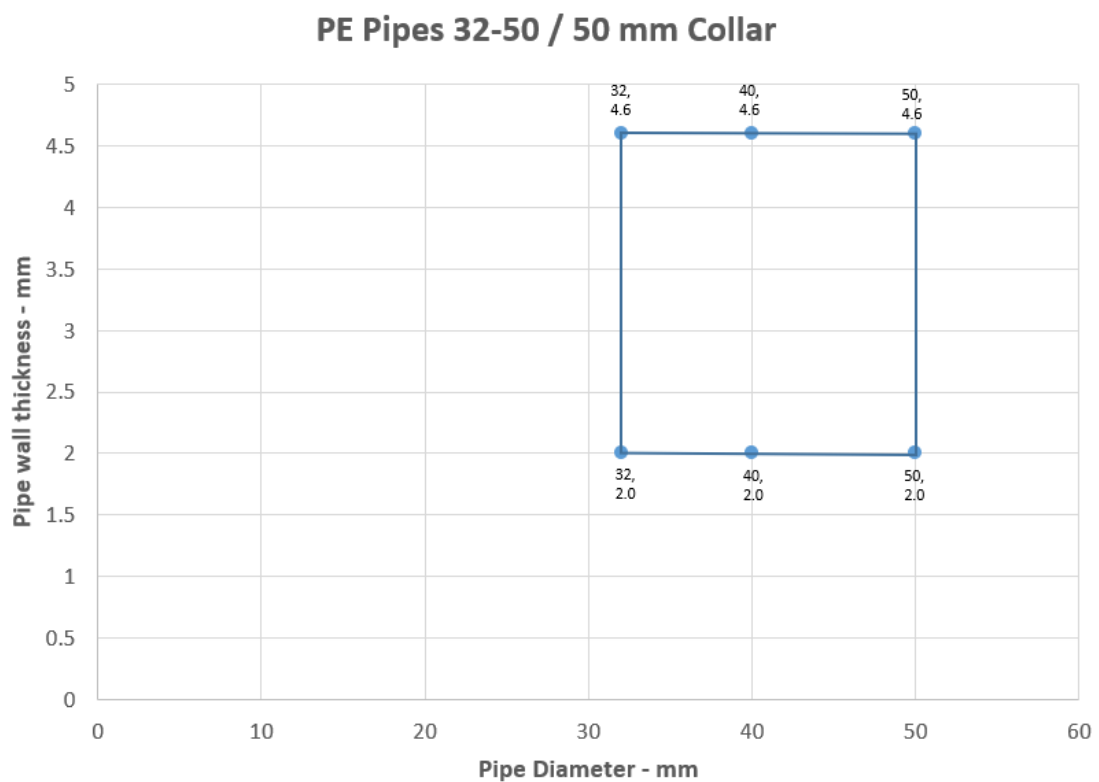
### PE Pipes 50-110 / 50 mm Collar - EI 60 U/C



### A.4.2.3

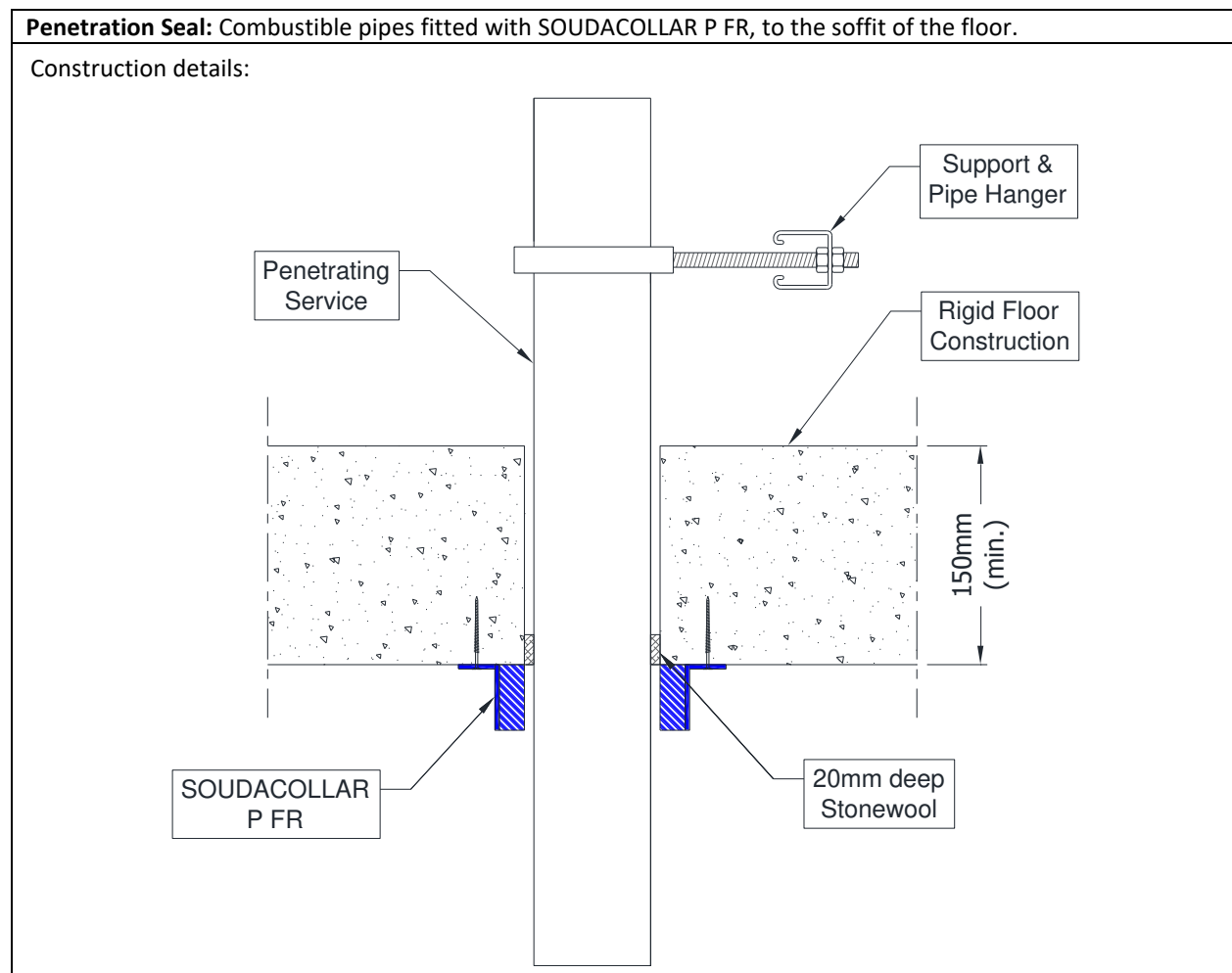
| Services                                  | Collar Inlay | Classification       |
|-------------------------------------------|--------------|----------------------|
| PP pipe according to EN 1451-1            |              |                      |
| Diameter 32 mm, wall thickness 2.0-4.6 mm | 50 x 3.0 mm  | EI 90 U/C, EI 90 C/C |
| Diameter 40 mm, wall thickness 2.0-4.6 mm |              |                      |
| Diameter 50 mm, wall thickness 2.0-4.6 mm |              |                      |

\* Typical pipe diameters shown, see below graph for intermediate sizes



## A.5 Rigid floor constructions with floor thickness of minimum 150 mm

### A.5.1 Penetration seals, surface mounted in concrete floors

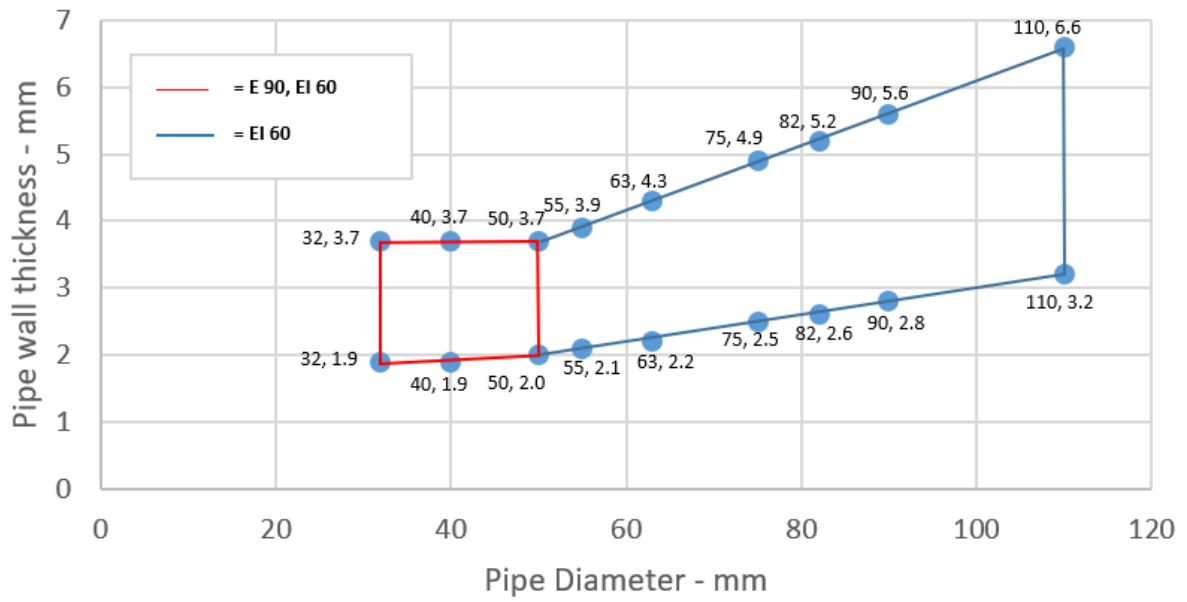


#### A.5.1.1

| Services                                                                                    | Collar Inlay | Classification                                                                             |
|---------------------------------------------------------------------------------------------|--------------|--------------------------------------------------------------------------------------------|
| PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1 |              |                                                                                            |
| Diameter 32 mm, wall thickness 1.9-3.7 mm*                                                  | 30 x 3.0 mm  | E 90 U/U, E 90 C/U,<br>E 90 U/C, E 90 C/C<br>EI 60 U/U, EI 60 C/U,<br>EI 60 U/C, EI 60 C/C |
| Diameter 40 mm, wall thickness 1.9-3.7 mm*                                                  |              |                                                                                            |
| Diameter 50 mm, wall thickness 2.0-3.7 mm*                                                  |              |                                                                                            |
| Diameter 55 mm, wall thickness 2.1-3.9 mm*                                                  | 30 x 3.2 mm  | EI 60 U/U, EI 60 C/U,<br>EI 60 U/C, EI 60 C/C                                              |
| Diameter 63 mm, wall thickness 2.2-4.3 mm*                                                  | 30 x 3.6 mm  |                                                                                            |
| Diameter 75 mm, wall thickness 2.5-4.9 mm*                                                  | 30 x 4.2 mm  |                                                                                            |
| Diameter 82 mm, wall thickness 2.6-5.2 mm*                                                  | 30 x 4.6 mm  |                                                                                            |
| Diameter 90 mm, wall thickness 2.8-5.6 mm*                                                  | 30 x 5.0 mm  |                                                                                            |
| Diameter 110 mm, wall thickness 3.2-6.6 mm*                                                 | 30 x 6.0 mm  |                                                                                            |

\* Typical pipe diameters shown, see below graph for intermediate sizes

## PVC Pipes 32-110 / 30 mm Collar - U/U

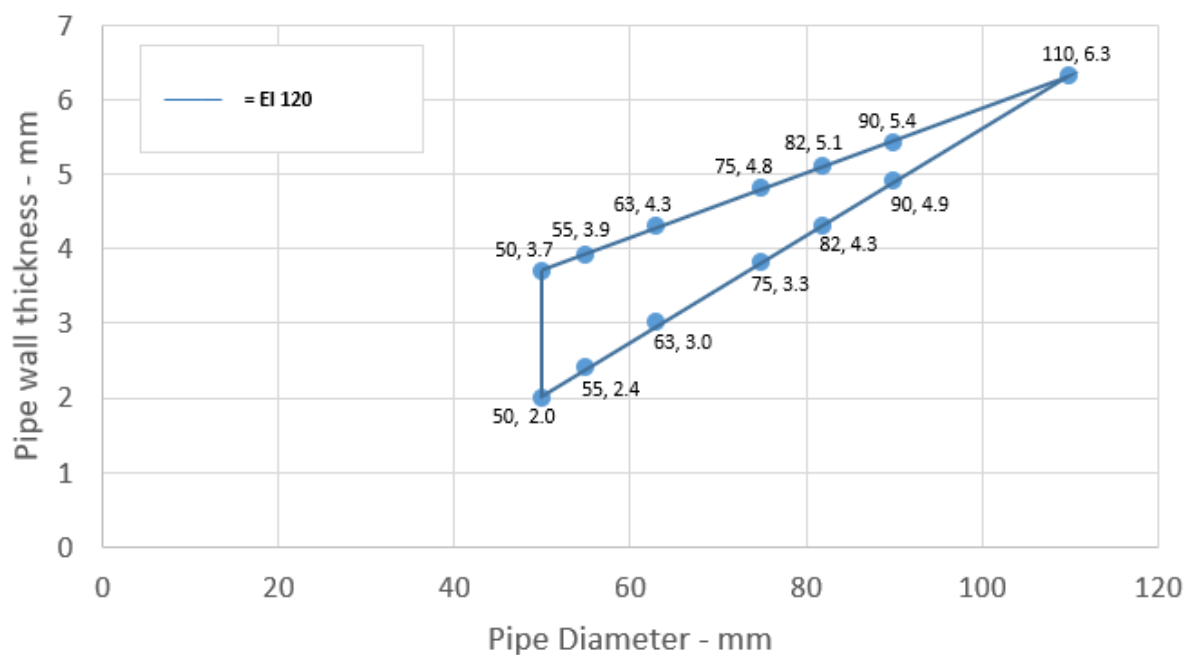


#### A.5.1.1.1

| Services                                                                                    | Collar Inlay | Classification         |
|---------------------------------------------------------------------------------------------|--------------|------------------------|
| PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1 |              |                        |
| Diameter 32 mm, wall thickness 2.0-3.7 mm                                                   | 50 x 3.0 mm  | EI 120 U/C, EI 120 C/C |
| Diameter 40 mm, wall thickness 2.0-3.7 mm                                                   |              |                        |
| Diameter 50 mm, wall thickness 2.0-3.7 mm*                                                  |              |                        |
| Diameter 55 mm, wall thickness 2.4-3.9 mm*                                                  | 50 x 3.2 mm  |                        |
| Diameter 63 mm, wall thickness 3.0-4.3 mm*                                                  | 50 x 3.6 mm  |                        |
| Diameter 75 mm, wall thickness 3.8-4.8 mm*                                                  | 50 x 4.2 mm  |                        |
| Diameter 82 mm, wall thickness 4.3-5.1 mm*                                                  | 50 x 4.6 mm  |                        |
| Diameter 90 mm, wall thickness 4.9-5.4 mm*                                                  | 50 x 5.0 mm  |                        |
| Diameter 110 mm, wall thickness 6.3 mm*                                                     | 50 x 6.0 mm  |                        |

\* Typical pipe diameters shown, see below graph for intermediate sizes

PVC Pipes 50-110 / 50 mm Collar - U/C

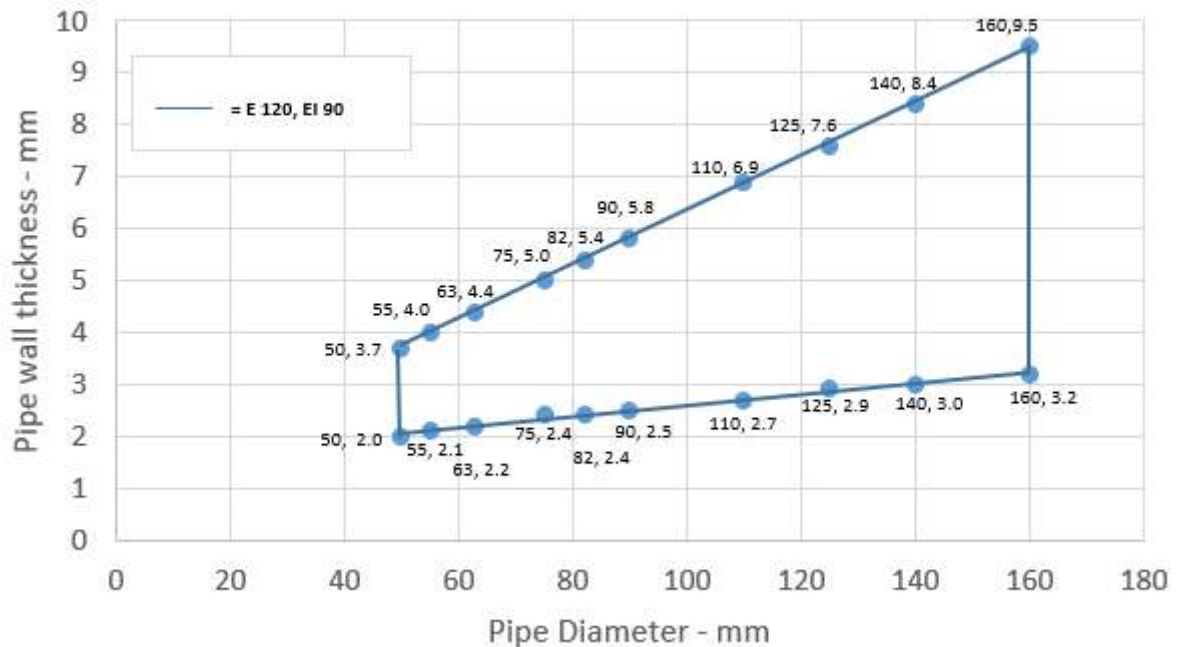


### A.5.1.1.2

| Services                                                                                    | Collar Inlay | Classification                               |
|---------------------------------------------------------------------------------------------|--------------|----------------------------------------------|
| PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1 |              |                                              |
| Diameter 50 mm, wall thickness 2.0-3.7 mm*                                                  | 50 x 3.0 mm  | E 120 U/C, EI 90 U/C                         |
| Diameter 55 mm, wall thickness 2.1-4.0 mm*                                                  | 50 x 3.2 mm  |                                              |
| Diameter 63 mm, wall thickness 2.2-4.4 mm*                                                  | 50 x 3.6 mm  |                                              |
| Diameter 75 mm, wall thickness 2.4-5.0 mm*                                                  | 50 x 4.2 mm  |                                              |
| Diameter 82 mm, wall thickness 2.4-5.4 mm*                                                  | 50 x 4.6 mm  |                                              |
| Diameter 90 mm, wall thickness 2.5-5.8 mm*                                                  | 50 x 5.0 mm  |                                              |
| Diameter 110 mm, wall thickness 2.7-6.9 mm*                                                 | 50 x 6.0 mm  |                                              |
| Diameter 125 mm, wall thickness 2.9-7.6 mm*                                                 | 50 x 8.8 mm  |                                              |
| Diameter 140 mm, wall thickness 3.0-8.4 mm*                                                 | 50 x 11.5 mm |                                              |
| Diameter 160 mm, wall thickness 3.2-9.5 mm*                                                 | 50 x 15.0 mm | E 180 U/C, E 180 C/C<br>EI 90 U/C, EI 90 C/C |
| Diameter 160 mm, wall thickness 3.2-9.5 mm                                                  | 50 x 15.0 mm |                                              |

\* Typical pipe diameters shown, see below graph for intermediate sizes

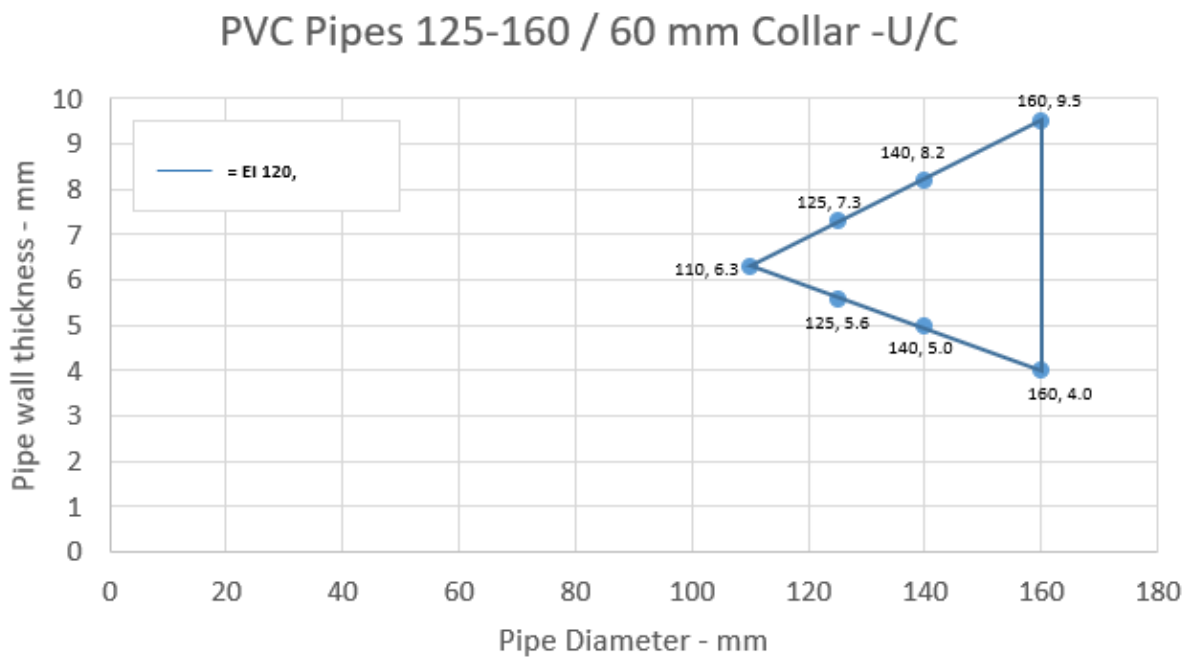
PVC Pipes 50-160 / 50 mm Collar - U/C



### A.5.1.1.3

| Services                                                                                    | Collar Inlay | Classification         |
|---------------------------------------------------------------------------------------------|--------------|------------------------|
| PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1 |              |                        |
| Diameter 110 mm, wall thickness 6.3 mm*                                                     | 60 x 6.0 mm  | EI 120 U/C, EI 120 C/C |
| Diameter 125 mm, wall thickness 5.6-7.3 mm*                                                 | 60 x 9.0 mm  |                        |
| Diameter 140 mm, wall thickness 5.0-8.2 mm*                                                 | 60 x 11.5 mm |                        |
| Diameter 160 mm, wall thickness 4.0-9.5 mm*                                                 | 60 x 15.0 mm |                        |

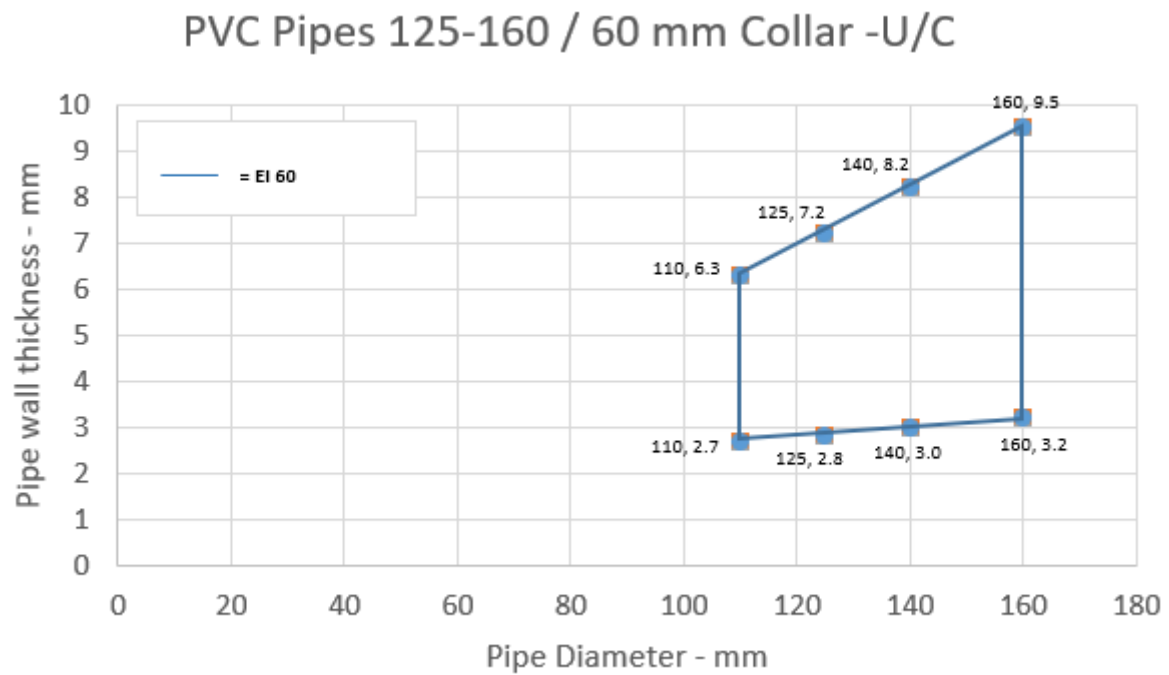
\* Typical pipe diameters shown, see below graph for intermediate sizes



#### A.5.1.1.4

| Services                                                                                    | Collar Inlay | Classification |
|---------------------------------------------------------------------------------------------|--------------|----------------|
| PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1 |              |                |
| Diameter 110 mm, wall thickness 2.7-6.3 mm*                                                 | 60 x 6.0 mm  | EI 60 U/C      |
| Diameter 125 mm, wall thickness 2.8-7.2 mm*                                                 | 60 x 8.7 mm  |                |
| Diameter 140 mm, wall thickness 3.0-8.2 mm*                                                 | 60 x 11.4 mm |                |
| Diameter 160 mm, wall thickness 3.2-9.5 mm*                                                 | 60 x 15.0 mm |                |

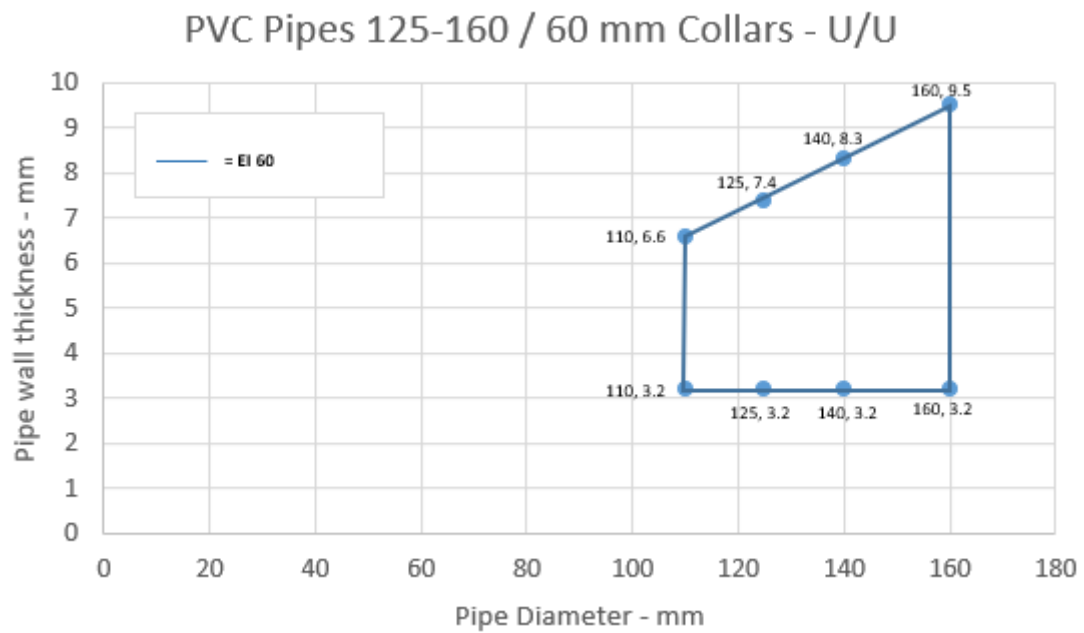
\* Typical pipe diameters shown, see below graph for intermediate sizes



#### A.5.1.1.5

| Services                                                                                    | Collar Inlay | Classification |
|---------------------------------------------------------------------------------------------|--------------|----------------|
| PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1 |              |                |
| Diameter 110 mm, wall thickness 3.2-6.6 mm*                                                 | 60 x 6.0 mm  | EI 60 U/U      |
| Diameter 125 mm, wall thickness 3.2-7.4 mm*                                                 | 60 x 8.7 mm  |                |
| Diameter 140 mm, wall thickness 3.2-8.3 mm*                                                 | 60 x 11.4 mm |                |
| Diameter 160 mm, wall thickness 3.2-9.5 mm*                                                 | 60 x 15.0 mm |                |

\* Typical pipe diameters shown, see below graph for intermediate sizes

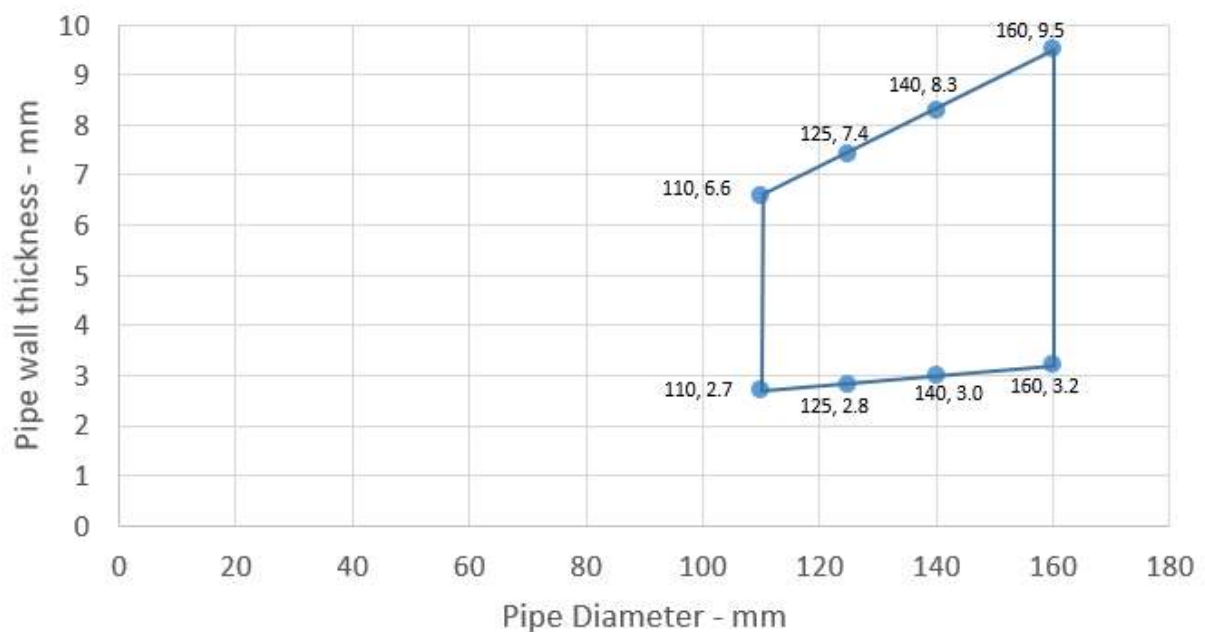


#### A.5.1.1.6

| Services                                                                                    | Collar Inlay | Classification |
|---------------------------------------------------------------------------------------------|--------------|----------------|
| PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1 |              |                |
| Diameter 110 mm, wall thickness 2.7-6.6 mm*                                                 | 50 x 6.0 mm  | EI 60 C/U      |
| Diameter 125 mm, wall thickness 2.8-7.4 mm*                                                 | 60 x 8.7 mm  |                |
| Diameter 140 mm, wall thickness 3.0-8.3 mm*                                                 | 60 x 11.4 mm |                |
| Diameter 160 mm, wall thickness 3.2-9.5 mm*                                                 | 60 x 15.0 mm |                |

\* Typical pipe diameters shown, see below graph for intermediate sizes

PVC Pipes 125-160 / 60 mm Collar - C/U

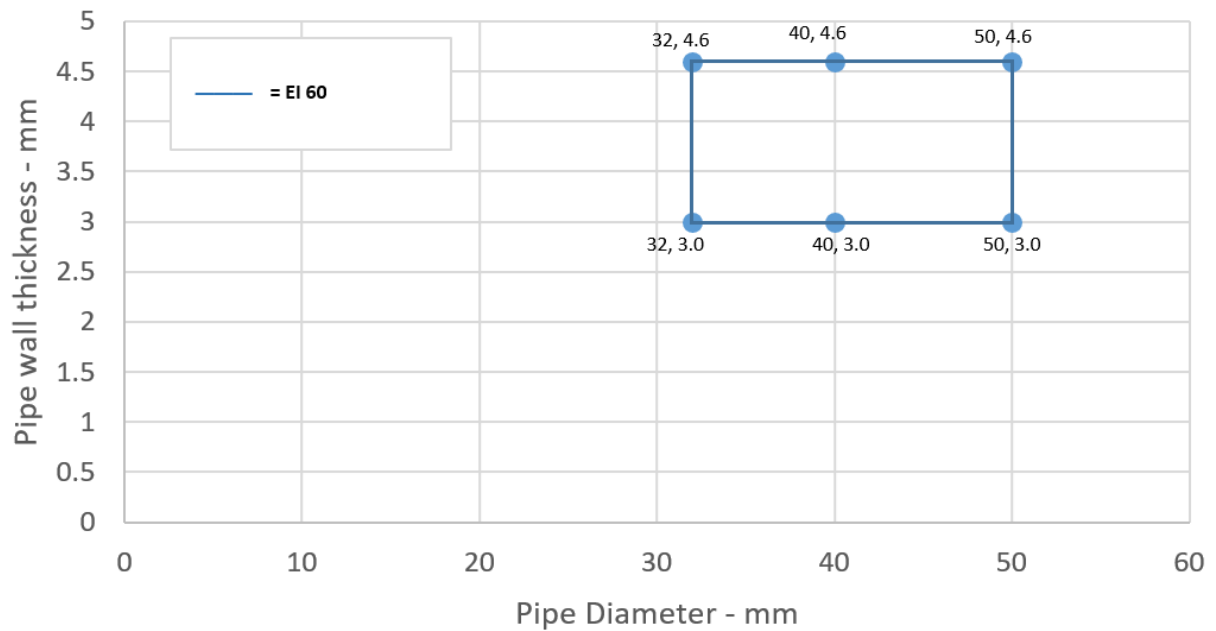


### A.5.1.2

| Services                                                                                                                                 | Collar Inlay | Classification                                        |
|------------------------------------------------------------------------------------------------------------------------------------------|--------------|-------------------------------------------------------|
| PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1 |              |                                                       |
| Diameter 32 mm, wall thickness 3.0-4.6 mm*                                                                                               | 30 x 3.0 mm  | <b>EI 60 U/U, EI 60 C/U,<br/>EI 60 U/C, EI 60 C/C</b> |
| Diameter 40 mm, wall thickness 3.0-4.6 mm*                                                                                               |              |                                                       |
| Diameter 50 mm, wall thickness 3.0-4.6 mm*                                                                                               |              |                                                       |
| Diameter 110 mm, wall thickness 10.0 mm                                                                                                  | 30 x 6.0 mm  | <b>EI 180 U/C</b>                                     |

\* Typical pipe diameters shown, see below graph for intermediate sizes

PE Pipes 32-50 / 30 mm Collar - U/U

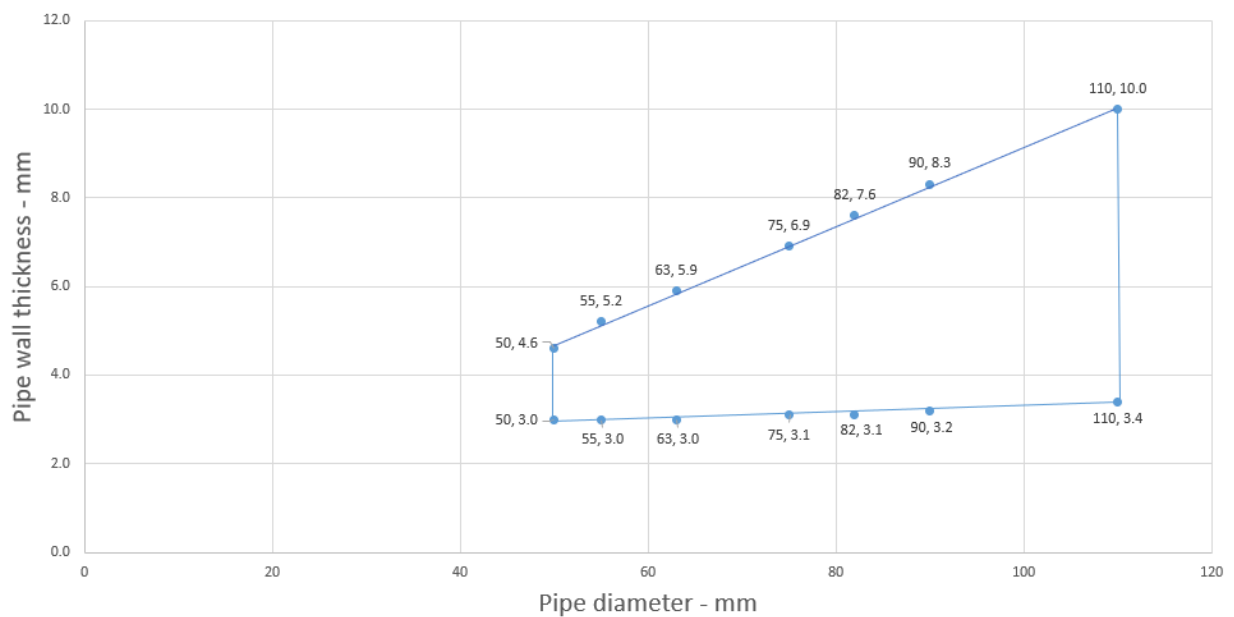


### A.5.1.2.1

| Services                                                                                                                                 | Collar Inlay | Classification                                |
|------------------------------------------------------------------------------------------------------------------------------------------|--------------|-----------------------------------------------|
| PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1 |              |                                               |
| Diameter 50 mm, wall thickness 3.0-4.6 mm*                                                                                               | 30 x 3.0 mm  | EI 60 U/U, EI 60 C/U,<br>EI 60 U/C, EI 60 C/C |
| Diameter 55 mm, wall thickness 3.0-5.2 mm*                                                                                               | 30 x 3.2 mm  |                                               |
| Diameter 63 mm, wall thickness 3.0-5.9 mm*                                                                                               | 30 x 3.6 mm  | EI 60 U/C, EI 60 C/C                          |
| Diameter 75 mm, wall thickness 3.1-6.9 mm*                                                                                               | 30 x 4.2 mm  |                                               |
| Diameter 82 mm, wall thickness 3.1-7.6 mm*                                                                                               | 30 x 4.6 mm  |                                               |
| Diameter 90 mm, wall thickness 3.2-8.3 mm*                                                                                               | 30 x 5.0 mm  |                                               |
| Diameter 110 mm, wall thickness 3.4-10.0 mm*                                                                                             | 30 x 6.0 mm  |                                               |

\* Typical pipe diameters shown, see below graph for intermediate sizes

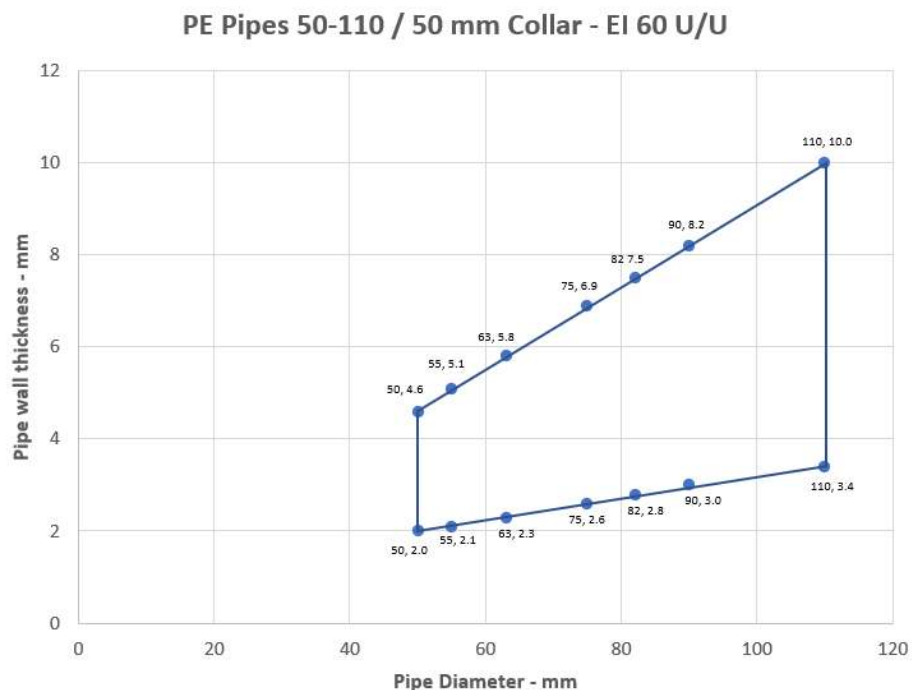
PE pipes 50-110 / 30 mm Collar - U/C



### A.5.1.2.2

| Services                                                                                                                                 | Collar Inlay | Classification       |
|------------------------------------------------------------------------------------------------------------------------------------------|--------------|----------------------|
| PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1 |              |                      |
| Diameter 32-40 mm, wall thickness 3.0-4.6 mm                                                                                             | 50 x 3.0 mm  | EI 240 U/C           |
| Diameter 50 mm, wall thickness 3.0-4.6 mm                                                                                                | 50 x 3.2 mm  |                      |
| Diameter 32-40 mm, wall thickness 2.0-3.0 mm                                                                                             | 50 x 3.0 mm  | EI 240 U/U           |
| Diameter 50 mm, wall thickness 2.0-3.0 mm                                                                                                | 50 x 3.2 mm  |                      |
| Diameter 50 mm, wall thickness 2.0-4.6 mm*                                                                                               | 50 x 3.0 mm  | EI 60 U/U, EI 60 C/U |
| Diameter 55 mm, wall thickness 2.1-5.1 mm*                                                                                               | 50 x 3.2 mm  |                      |
| Diameter 63 mm, wall thickness 2.3-5.8 mm*                                                                                               | 50 x 3.6 mm  |                      |
| Diameter 75 mm, wall thickness 2.6-6.9 mm*                                                                                               | 50 x 4.2 mm  |                      |
| Diameter 82 mm, wall thickness 2.8-7.5 mm*                                                                                               | 50 x 4.6 mm  |                      |
| Diameter 90 mm, wall thickness 3.0-8.2 mm*                                                                                               | 50 x 5.0 mm  |                      |
| Diameter 110 mm, wall thickness 3.4-10.0 mm*                                                                                             | 50 x 6.0 mm  |                      |

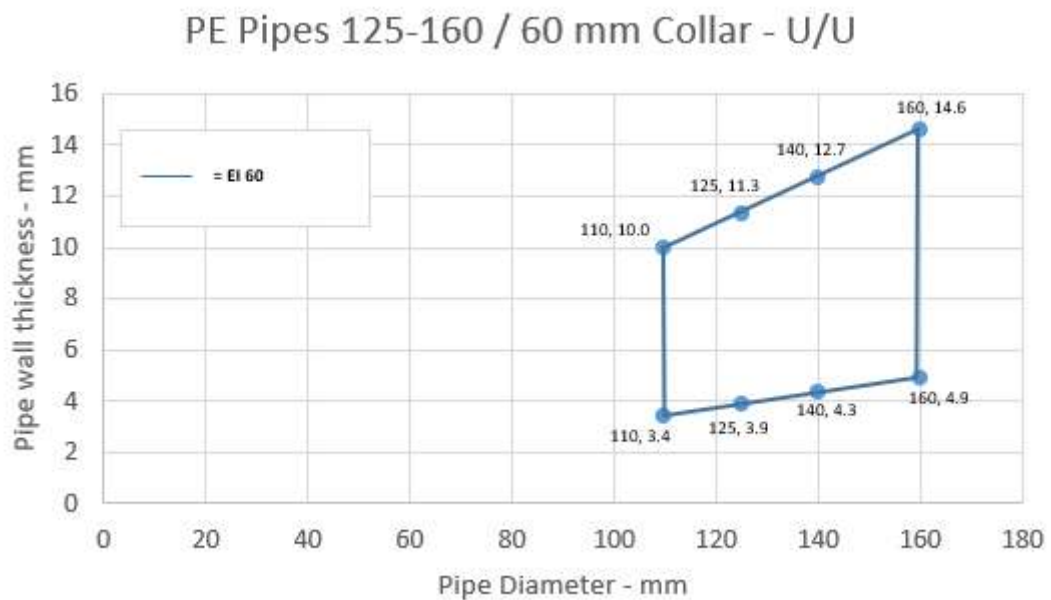
\* Typical pipe diameters shown, see below graph for intermediate sizes



### A.5.1.2.3

| Services                                                                                                                                 | Collar Inlay | Classification       |
|------------------------------------------------------------------------------------------------------------------------------------------|--------------|----------------------|
| PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1 |              |                      |
| Diameter 110 mm, wall thickness 3.4-10.0 mm*                                                                                             | 60 x 6.0 mm  | EI 60 U/U, EI 60 C/U |
| Diameter 125 mm, wall thickness 3.9-11.3 mm*                                                                                             | 60 x 8.8 mm  |                      |
| Diameter 140 mm, wall thickness 4.3-12.7 mm*                                                                                             | 60 x 11.5 mm |                      |
| Diameter 160 mm, wall thickness 4.9-14.6 mm*                                                                                             | 60 x 15.0 mm |                      |

\* Typical pipe diameters shown, see below graph for intermediate sizes

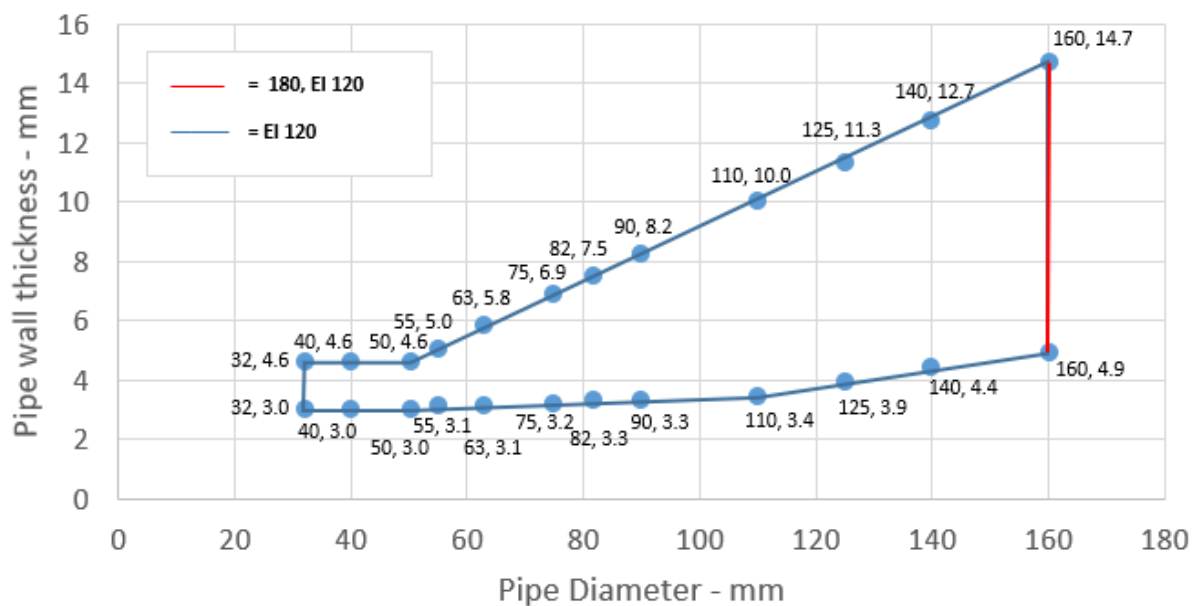


#### A.5.1.2.4

| Services                                                                                                                                 | Collar Inlay | Classification                                 |
|------------------------------------------------------------------------------------------------------------------------------------------|--------------|------------------------------------------------|
| PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1 |              |                                                |
| Diameter 32 mm, wall thickness 3.0-4.6 mm                                                                                                | 50 x 3.0 mm  | EI 120 U/C, EI 120 C/C                         |
| Diameter 40 mm, wall thickness 3.0-4.6 mm                                                                                                |              |                                                |
| Diameter 50 mm, wall thickness 3.0-4.6 mm                                                                                                |              |                                                |
| Diameter 55 mm, wall thickness 3.1-5.0 mm                                                                                                | 50 x 3.2 mm  |                                                |
| Diameter 63 mm, wall thickness 3.1-5.8 mm                                                                                                | 50 x 3.6 mm  |                                                |
| Diameter 75 mm, wall thickness 3.2-6.9 mm                                                                                                | 50 x 4.2 mm  |                                                |
| Diameter 82 mm, wall thickness 3.3-7.5 mm                                                                                                | 50 x 4.6 mm  |                                                |
| Diameter 90 mm, wall thickness 3.3-8.2 mm                                                                                                | 50 x 5.0 mm  |                                                |
| Diameter 110 mm, wall thickness 3.4-10.0 mm                                                                                              | 50 x 6.0 mm  |                                                |
| Diameter 125 mm, wall thickness 3.9-11.3 mm                                                                                              | 50 x 8.8 mm  |                                                |
| Diameter 140 mm, wall thickness 4.4-12.7 mm                                                                                              | 50 x 11.5 mm |                                                |
| Diameter 160 mm, wall thickness 4.9-14.7 mm                                                                                              | 50 x 15.0 mm | E 180 U/C, E 180 C/C<br>EI 120 U/C, EI 120 C/C |

\* Typical pipe diameters shown, see below graph for intermediate sizes

PE Pipes 32-16 / 50 mm Collar - U/C

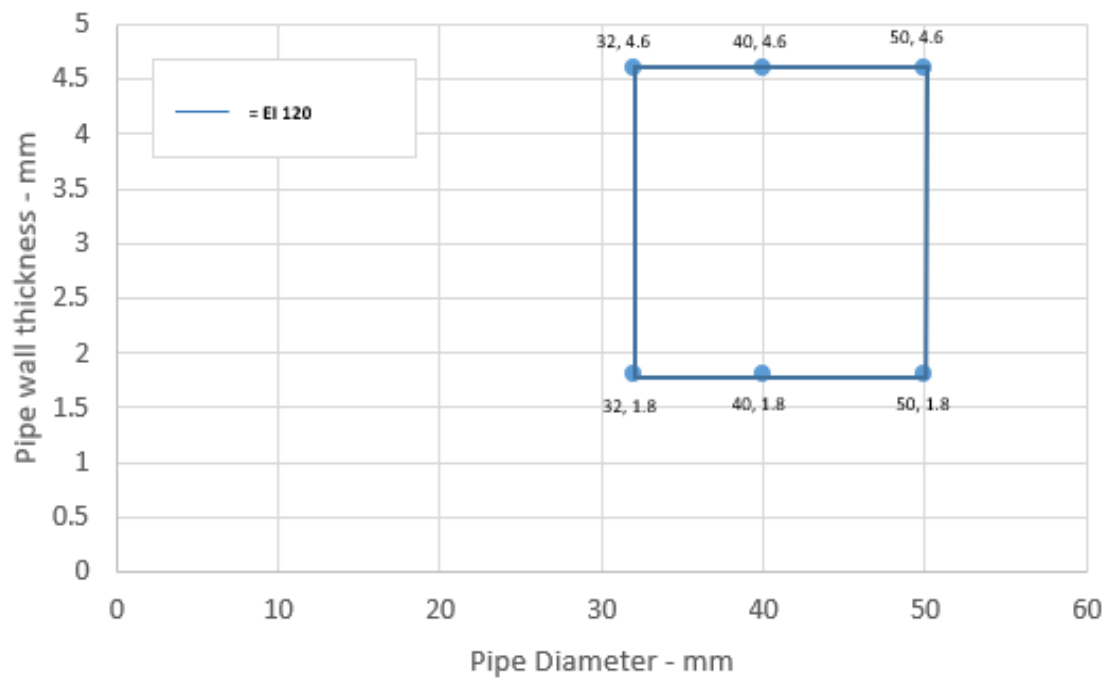


### A.5.1.3

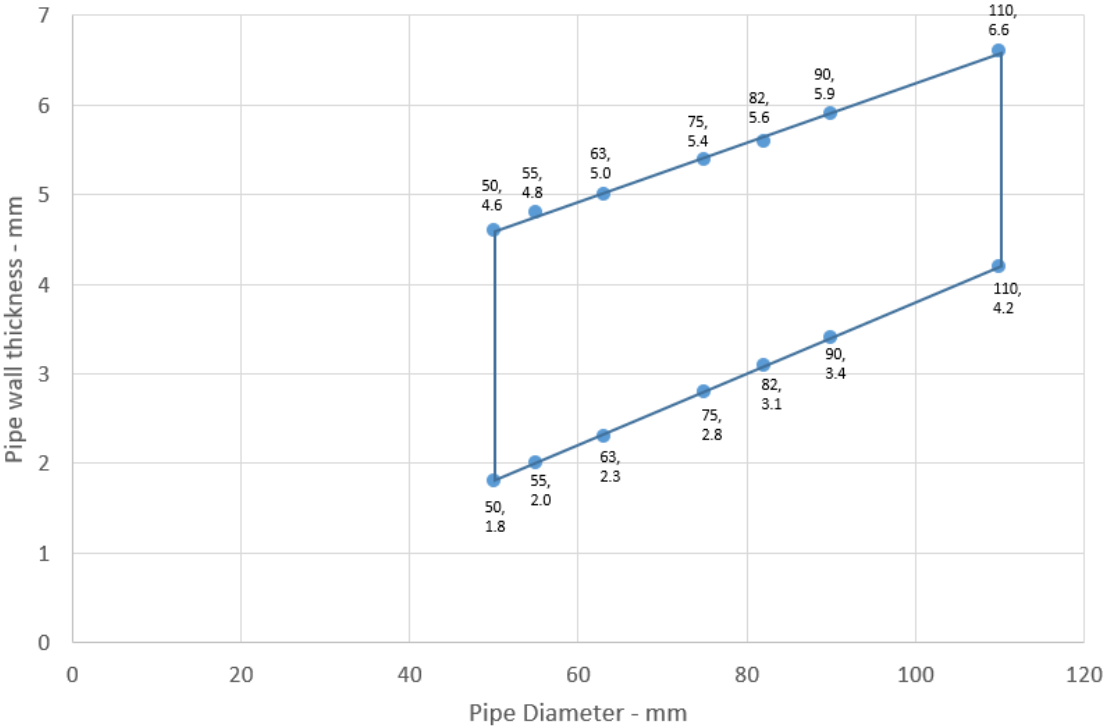
| Services                                    | Collar Inlay | Classification                                    |
|---------------------------------------------|--------------|---------------------------------------------------|
| PP pipe according to EN 1451-1              |              |                                                   |
| Diameter 32 mm, wall thickness 1.8-4.6 mm*  | 30 x 3.0 mm  | EI 120 U/U, EI 120 C/U,<br>EI 120 U/C, EI 120 C/C |
| Diameter 40 mm, wall thickness 1.8-4.6 mm*  |              |                                                   |
| Diameter 50 mm, wall thickness 1.8-4.6 mm*  |              |                                                   |
| Diameter 55 mm, wall thickness 2.0-4.8 mm*  | 30 x 3.2 mm  | EI 120 U/C, EI 120 C/C                            |
| Diameter 63 mm, wall thickness 2.3-5.5 mm*  | 30 x 3.6 mm  |                                                   |
| Diameter 75 mm, wall thickness 2.8-5.4 mm*  | 30 x 4.2 mm  |                                                   |
| Diameter 82 mm, wall thickness 3.1-5.6 mm*  | 30 x 4.6 mm  |                                                   |
| Diameter 90 mm, wall thickness 3.4-5.9 mm*  | 30 x 5.0 mm  |                                                   |
| Diameter 110 mm, wall thickness 4.2-6.6 mm* | 30 x 6.0 mm  | EI 180 U/C, EI 180 C/C                            |

\* Typical pipe diameters shown, see below graph for intermediate sizes

PP Pipes 32-50 / 30 mm Collar - U/U



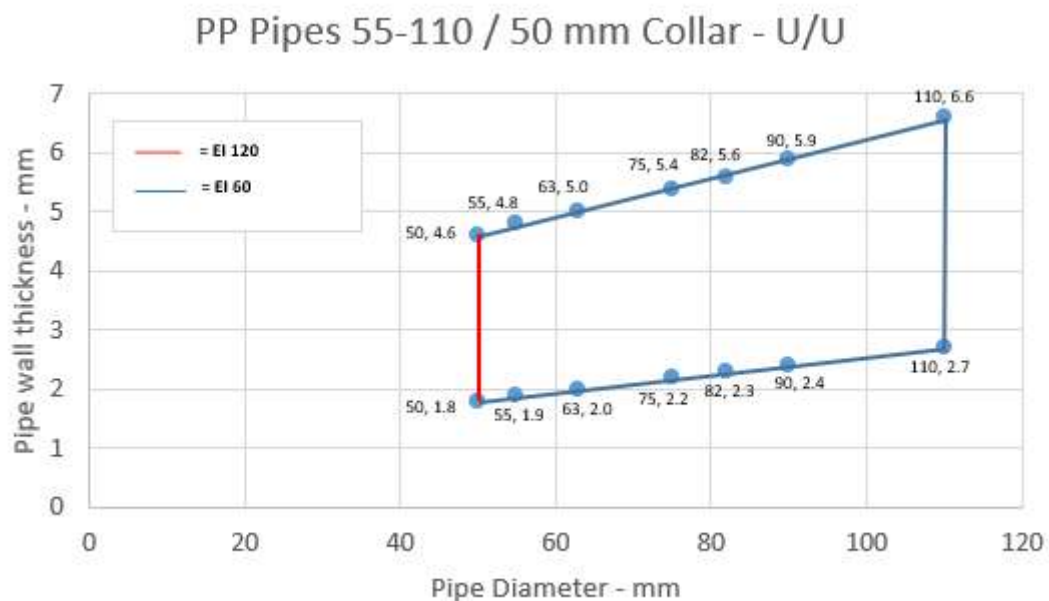
PP Pipes 50-110 / 30 mm Collar - U/C



### A.5.1.3.1

| Services                                    | Collar Inlay | Classification                                    |
|---------------------------------------------|--------------|---------------------------------------------------|
| PP pipe according to EN 1451-1              |              |                                                   |
| Diameter 50 mm, wall thickness 2.9 mm       | 50 x 3.2 mm  | EI 240 U/U                                        |
| Diameter 50 mm, wall thickness 2.9-4.6 mm   | 50 x 3.0 mm  | E 240 U/C, EI 180 U/C                             |
| Diameter 50 mm, wall thickness 1.8-4.6 mm*  | 50 x 3.0 mm  | EI 120 U/U, EI 120 C/U,<br>EI 120 U/C, EI 120 C/C |
| Diameter 55 mm, wall thickness 1.9-4.8 mm*  | 50 x 3.2 mm  | EI 60 U/U, EI 60 C/U                              |
| Diameter 63 mm, wall thickness 2.0-5.0 mm*  | 50 x 3.6 mm  |                                                   |
| Diameter 75 mm, wall thickness 2.2-5.4 mm*  | 50 x 4.2 mm  |                                                   |
| Diameter 82 mm, wall thickness 2.3-5.6 mm*  | 50 x 4.6 mm  |                                                   |
| Diameter 90 mm, wall thickness 2.4-5.9 mm*  | 50 x 5.0 mm  |                                                   |
| Diameter 110 mm, wall thickness 2.7-6.6 mm* | 50 x 6.0 mm  |                                                   |

\* Typical pipe diameters shown, see below graph for intermediate sizes

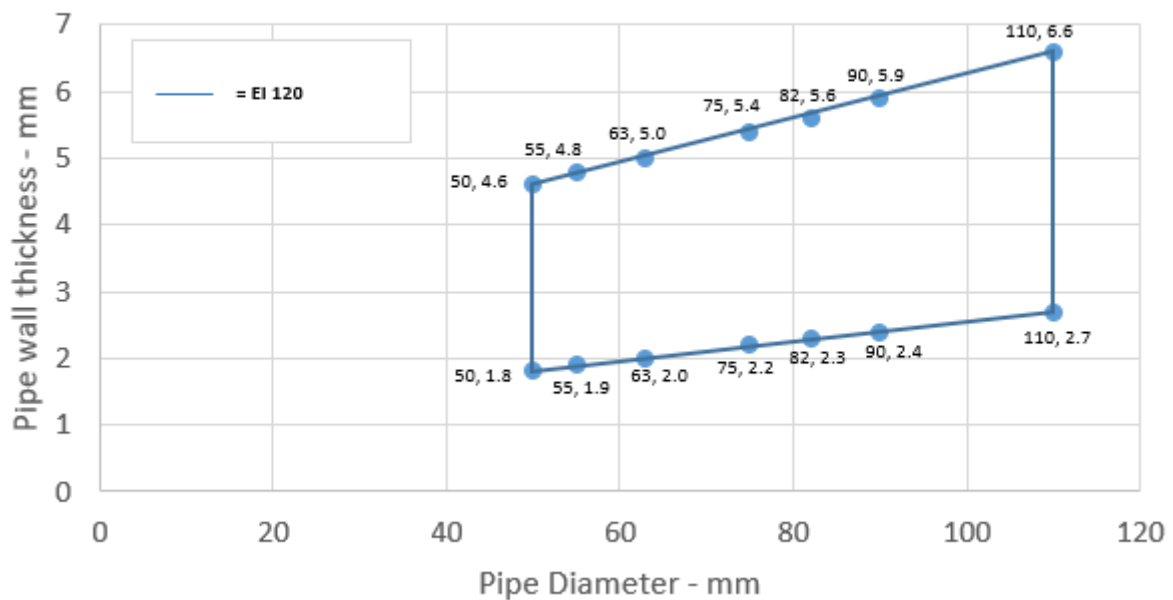


### A.5.1.3.2

| Services                                    | Collar Inlay | Classification                                    |
|---------------------------------------------|--------------|---------------------------------------------------|
| PP pipe according to EN 1451-1              |              |                                                   |
| Diameter 50 mm, wall thickness 1.8-4.6 mm*  | 50 x 3.0 mm  | EI 120 U/U, EI 120 C/U,<br>EI 120 U/C, EI 120 C/C |
| Diameter 55 mm, wall thickness 1.9-4.8 mm*  | 50 x 3.2 mm  | EI 120 U/C, EI 120 C/C                            |
| Diameter 63 mm, wall thickness 2.0-5.0 mm*  | 50 x 3.6 mm  |                                                   |
| Diameter 75 mm, wall thickness 2.2-5.4 mm*  | 50 x 4.2 mm  |                                                   |
| Diameter 82 mm, wall thickness 2.3-5.6 mm*  | 50 x 4.6 mm  |                                                   |
| Diameter 90 mm, wall thickness 2.4-5.9 mm*  | 50 x 5.0 mm  |                                                   |
| Diameter 110 mm, wall thickness 2.7-6.6 mm* | 50 x 6.0 mm  |                                                   |

\* Typical pipe diameters shown, see below graph for intermediate sizes

PP Pipes 55-110 / 50 mm Collar - U/C

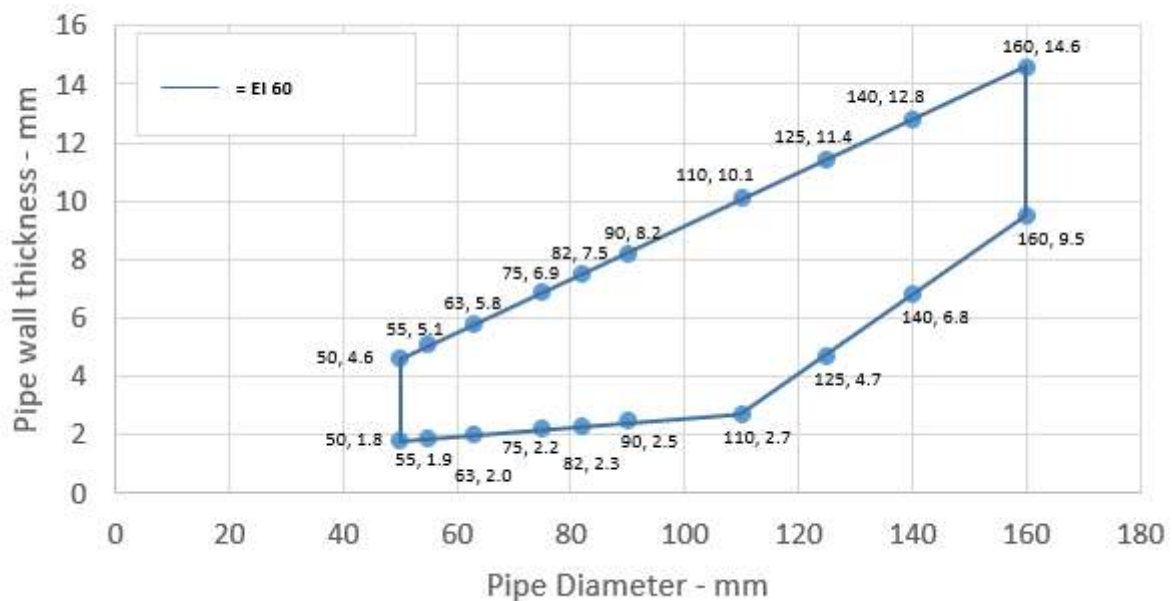


### A.5.1.3.3

| Services                                     | Collar Inlay | Classification       |
|----------------------------------------------|--------------|----------------------|
| PP pipe according to EN 1451-1               |              |                      |
| Diameter 50 mm, wall thickness 1.8-4.6 mm*   | 30 x 3.0 mm  | EI 60 U/C, EI 60 C/C |
| Diameter 55 mm, wall thickness 1.9-5.1 mm*   | 50 x 3.2 mm  |                      |
| Diameter 63 mm, wall thickness 2.0-5.8 mm*   | 50 x 3.6 mm  |                      |
| Diameter 75 mm, wall thickness 2.2-6.9 mm*   | 50 x 4.2 mm  |                      |
| Diameter 82 mm, wall thickness 2.3-7.5 mm*   | 50 x 4.6 mm  |                      |
| Diameter 90 mm, wall thickness 2.5-8.2 mm*   | 50 x 5.0 mm  |                      |
| Diameter 110 mm, wall thickness 2.7-10.1 mm* | 50 x 6.0 mm  |                      |
| Diameter 125 mm, wall thickness 4.7-11.4 mm* | 50 x 8.8 mm  |                      |
| Diameter 140 mm, wall thickness 6.8-12.8 mm* | 50 x 11.5 mm |                      |
| Diameter 160 mm, wall thickness 9.5-14.6 mm* | 50 x 15.0 mm |                      |

\* Typical pipe diameters shown, see below graph for intermediate sizes

PP Pipes 55-160 / 50 mm Collar - U/C

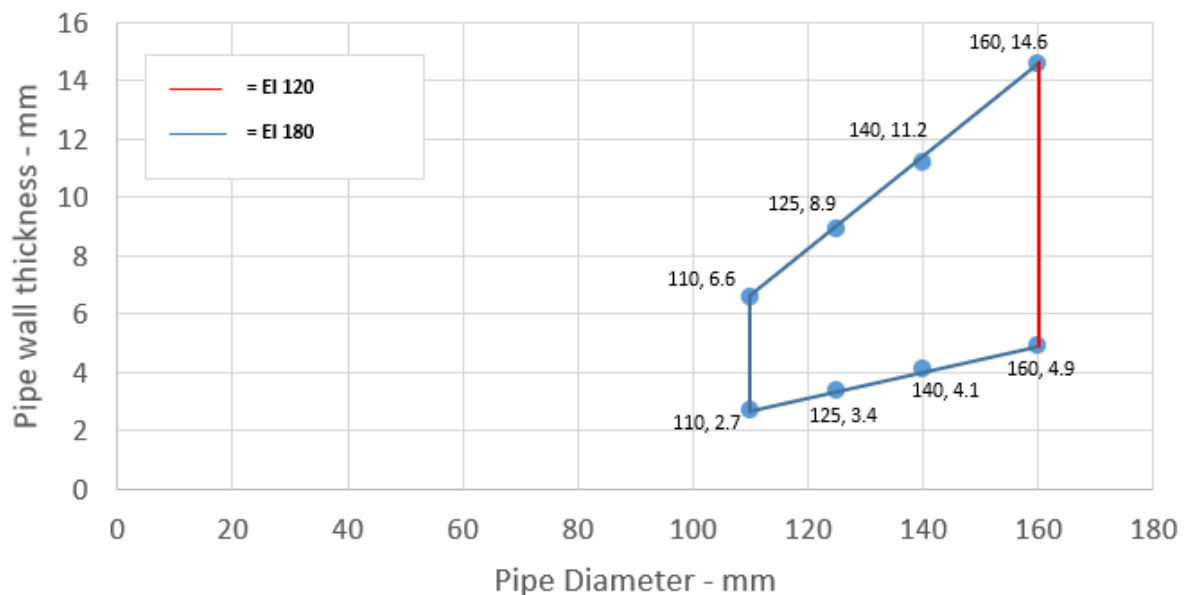


#### A.5.1.3.4

| Services                                     | Collar Inlay | Classification         |
|----------------------------------------------|--------------|------------------------|
| PP pipe according to EN 1451-1               |              |                        |
| Diameter 110 mm, wall thickness 2.7-6.6 mm*  | 60 x 6.0 mm  | EI 120 U/C, EI 120 C/C |
| Diameter 125 mm, wall thickness 3.4-8.9 mm*  | 60 x 8.8 mm  |                        |
| Diameter 140 mm, wall thickness 4.1-11.2 mm* | 60 x 11.5 mm |                        |
| Diameter 160 mm, wall thickness 4.9-14.6 mm* | 60 x 15.0 mm | EI 180 U/C, EI 180 C/C |

\* Typical pipe diameters shown, see below graph for intermediate sizes

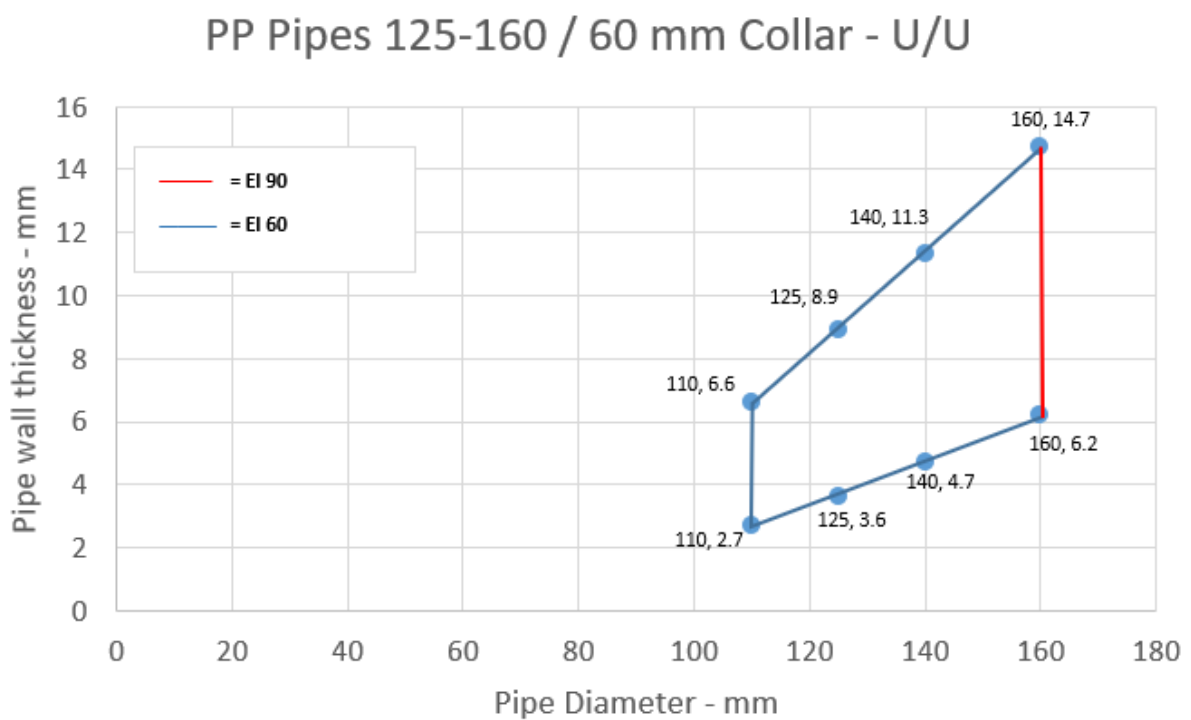
PP Pipes 125-160 / 60 mm Collar - U/C



### A.5.1.3.5

| Services                                     | Collar Inlay | Classification |
|----------------------------------------------|--------------|----------------|
| PP pipe according to EN 1451-1               |              |                |
| Diameter 110 mm, wall thickness 2.7-6.6 mm*  | 50 x 6.0 mm  | EI 60 U/U      |
| Diameter 125 mm, wall thickness 3.6-8.9 mm*  | 60 x 8.8 mm  |                |
| Diameter 140 mm, wall thickness 4.7-11.3 mm* | 60 x 11.5 mm |                |
| Diameter 160 mm, wall thickness 6.2-14.7 mm* | 60 x 15.0 mm |                |
| Diameter 160 mm, wall thickness 6.2 mm       | 60 x 15.0 mm | EI 90 U/U      |

\* Typical pipe diameters shown, see below graph for intermediate sizes



#### A.5.1.4

| Services                                             | Collar Inlay | Classification        |
|------------------------------------------------------|--------------|-----------------------|
| Wavin SiTech + PP-M B according to EN 13501-1        |              |                       |
| 32-40 mm diameter/ 1.8 mm wall thickness             | 50 x 3.0 mm  | EI 240 U/U            |
| 50 mm diameter/ 1.8 mm wall thickness                | 50 x 3.2 mm  |                       |
| 75 mm diameter/ 1.8-2.5 mm wall thickness            | 50 x 4.2 mm  | EI 180 C/U            |
| 90 mm diameter/ 1.8-2.9 mm wall thickness            | 50 x 5.0 mm  |                       |
| 110 mm diameter/ 1.8-3.4 mm wall thickness           | 50 x 6.0 mm  |                       |
| Aquatherm Green SDR9 MF PP-RP according to ISO 21003 |              |                       |
| 32 mm diameter/3.6-5.6 mm wall thickness             | 30 x 3.0 mm  | EI 240 C/C            |
| 40 mm diameter/3.6-5.6 mm wall thickness             | 50 x 3.0 mm  |                       |
| 50 mm diameter/3.6-5.6 mm wall thickness             | 50 x 3.2 mm  |                       |
| 63 diameter/5.6-12.3 mm wall thickness               | 50 x 3.6 mm  | EI 120 C/C            |
| 75 diameter/4.4-8.4 mm wall thickness                | 50 x 4.2 mm  |                       |
| 90 diameter/4.9-10.0 mm wall thickness               | 50 x 5.0 mm  |                       |
| 110 diameter/5.6-12.3 mm wall thickness              | 50 x 6.0 mm  |                       |
| Geberit Silent PP according to DIN 4102              |              |                       |
| 32-40 mm diameter/ 1.8 mm wall thickness             | 50 x 3.0 mm  | EI 240 U/U            |
| 50 mm diameter/ 1.8 mm wall thickness                | 50 x 3.2 mm  |                       |
| 75 mm diameter/1.8-2.4 mm wall thickness             | 50 x 4.2 mm  | EI 180 C/U            |
| 90 mm diameter/1.8-2.8 mm wall thickness             | 50 x 5.0 mm  |                       |
| 110 mm diameter/1.8-3.4 mm wall thickness            | 50 x 6.0 mm  |                       |
| Polo-Kal NG Poloplast PP-MV according to DIN 4102    |              |                       |
| 32-40 mm diameter/1.8-2.0 mm wall thickness          | 50 x 3.0 mm  | EI 240 U/U            |
| 50 mm diameter/1.8-2.0 mm wall thickness             | 50 x 3.2 mm  |                       |
| 75 mm diameter/1.9-2.6 wall thickness                | 50 x 4.2 mm  | EI 240 C/U            |
| 90 mm diameter/2.0-2.9 wall thickness                | 50 x 5.0 mm  |                       |
| 110 mm diameter/2.0-3.4 wall thickness               | 50 x 6.0 mm  |                       |
| Diameter 125 mm, wall thickness 3.9 mm               | 60 x 9.0 mm  | EI 240 U/C            |
| Diameter 160 mm, wall thickness 4.9 mm               | 60 x 15 mm   | E 240 C/U, EI 240 U/C |

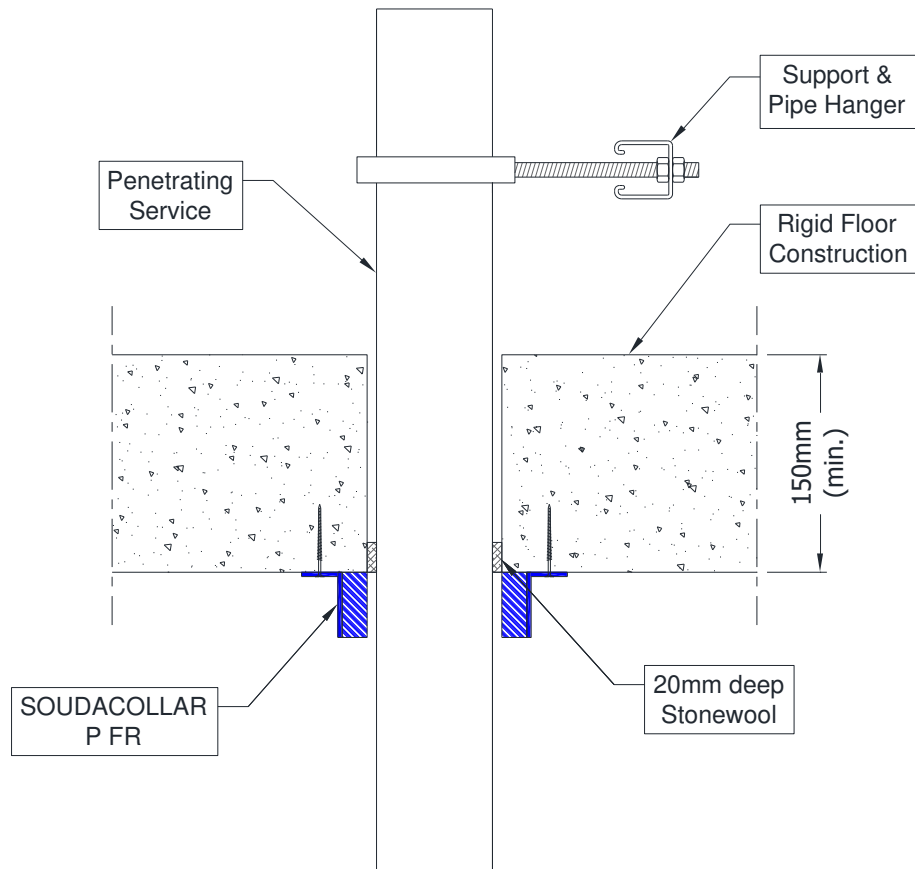
#### A.5.1.4.1

| Services                                                   | Collar Inlay | Classification        |
|------------------------------------------------------------|--------------|-----------------------|
| Rehau Raupiano Plus PP-DD according to DIN 4102            |              |                       |
| 40 mm diameter/1.8 wall thickness                          | 50 x 3.0 mm  | EI 240 U/U            |
| 50 mm diameter/1.8 wall thickness                          | 50 x 3.2 mm  |                       |
| 75 mm diameter/1.8-2.2 mm wall thickness                   | 50 x 4.2 mm  | EI 120 C/U            |
| 90 mm diameter/1.8-2.4 mm wall thickness                   | 50 x 5.0 mm  |                       |
| 110 mm diameter/1.8-2.7mm wall thickness                   | 50 x 6.0 mm  |                       |
| Diameter 125 mm, wall thickness 3.1 mm                     | 60 x 9.0 mm  | EI 180 C/U            |
| Diameter 160 mm, wall thickness 3.9 mm                     | 60 x 15.0 mm | E 240 C/U, EI 240 U/C |
| BluePower Multilayer pipe – TR02-PP according to EN 1451-1 |              |                       |
| 32-40 mm diameter/1.8 mm wall thickness                    | 50 x 3.0 mm  | EI 180 U/U            |
| 50 mm diameter/1.8 mm wall thickness                       | 50 x 3.2 mm  |                       |
| 75 mm diameter/1.8-3.4 mm wall thickness                   | 50 x 4.2 mm  | EI 180 C/U            |
| 90 mm diameter/1.8-3.4 mm wall thickness                   | 50 x 5.0 mm  |                       |
| 110 mm diameter/1.8-3.4 mm wall thickness                  | 50 x 6.0 mm  |                       |
| 125 mm diameter/3.4-4.9 mm wall thickness                  | 60 x 9.0 mm  |                       |
| 160 mm diameter/3.4-4.9 mm wall thickness                  | 60 x 15.0 mm | EI 240 C/U            |
| Uponor Decibel according to EN 14366                       |              |                       |
| 50 mm diameter/ 2.0 mm wall thickness                      | 50 x 3.0 mm  | EI 180 U/U            |
| 75 mm diameter/ 2.6 mm wall thickness                      | 50 x 4.2 mm  | EI 120 C/U            |
| 110 mm diameter/ 3.8 mm wall thickness                     | 50 x 6.0 mm  |                       |
| Wavin AS+ pipes according to EN 12056 and DIN 1986-100     |              |                       |
| 50 mm diameter / 3.0 mm wall thickness                     | 50 x 3.0 mm  | EI 240 U/U            |
| 75 mm diameter / 3.5 mm wall thickness                     | 50 x 4.2 mm  | EI 60 U/C             |
| 90 mm diameter / 4.6 mm wall thickness                     | 50 x 5.0 mm  |                       |
| 110 mm diameter / 5.3 mm wall thickness                    | 50 x 6.0 mm  |                       |
| 125 mm diameter / 5.3 mm wall thickness                    | 60 x 9.0 mm  |                       |
| 160 mm diameter / 5.6 mm wall thickness                    | 60 x 15.0 mm | EI 240 U/C            |
| 200 mm diameter / 6.0 mm wall thickness                    | 60 x 18.0 mm |                       |

### A.5.2 Penetration seals, surface mounted in concrete floors

**Penetration Seal:** Combustible pipes fitted with SOUDACOLLAR P FR, to the soffit of the floor.

Construction details:

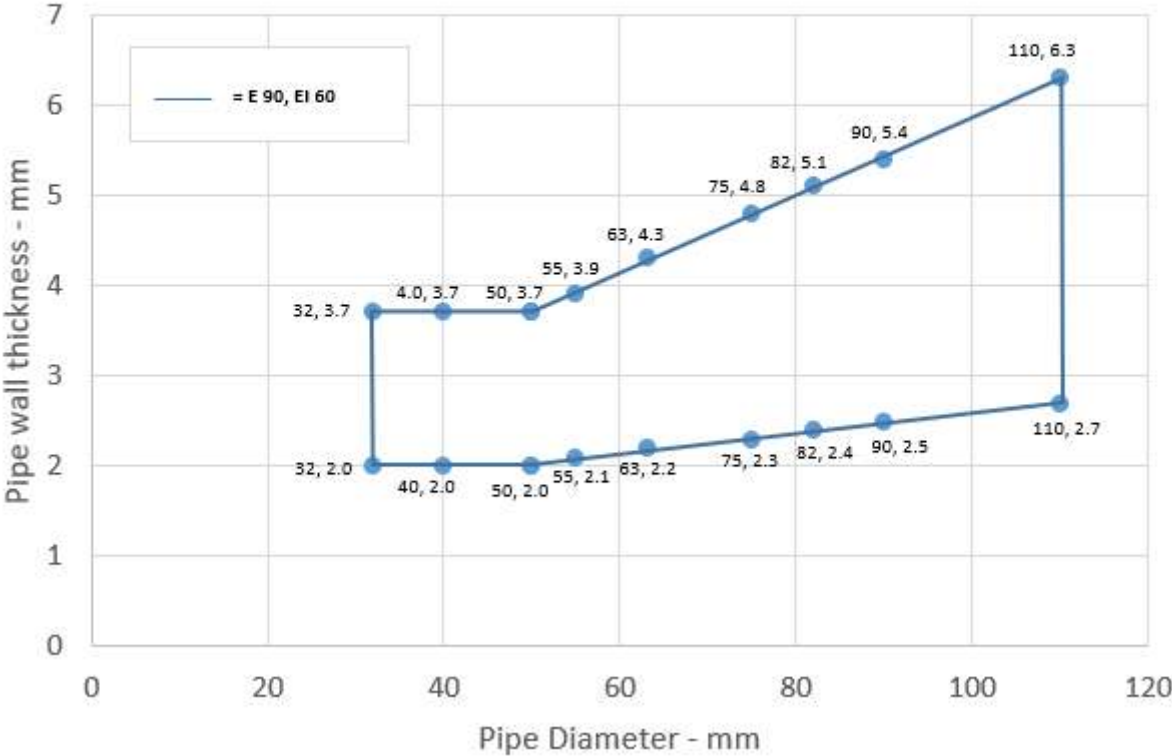


#### A.5.2.1

| Services                                                                                    | Collar Inlay | Classification        |
|---------------------------------------------------------------------------------------------|--------------|-----------------------|
| PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1 |              |                       |
| Diameter 32 mm, wall thickness 2.0-3.7 mm*                                                  | 50 x 3.0 mm  | EI 120 C/C, EI 60 C/U |
| Diameter 40 mm, wall thickness 2.0-3.7 mm*                                                  |              |                       |
| Diameter 50 mm, wall thickness 2.0-3.7 mm*                                                  |              |                       |
| Diameter 55 mm, wall thickness 2.1-3.9 mm*                                                  | 50 x 3.2 mm  |                       |
| Diameter 63 mm, wall thickness 2.2-4.3 mm*                                                  | 50 x 3.6 mm  |                       |
| Diameter 75 mm, wall thickness 2.3-4.8 mm*                                                  | 50 x 4.2 mm  |                       |
| Diameter 82 mm, wall thickness 2.4-5.1 mm*                                                  | 50 x 4.6 mm  |                       |
| Diameter 90 mm, wall thickness 2.5-5.4 mm*                                                  | 50 x 5.0 mm  |                       |
| Diameter 110 mm, wall thickness 2.7-6.3 mm*                                                 | 50 x 6.0 mm  |                       |

\* Typical pipe diameters shown, see below graph for intermediate sizes

PVC Pipes 32-110 / 50 mm Collar - C/C

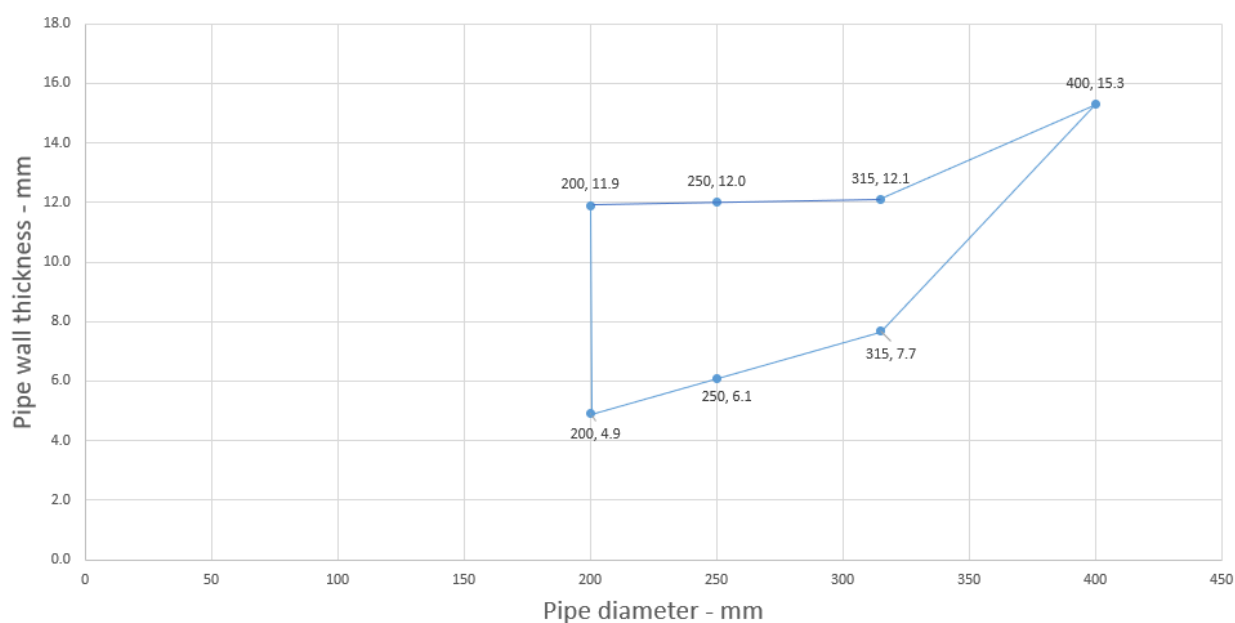


### A.5.2.1.1

| Services                                                                                    | Collar Inlay | Classification       |
|---------------------------------------------------------------------------------------------|--------------|----------------------|
| PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1 |              |                      |
| Up to 200 mm diameter / 4.9-11.9 mm wall thickness*                                         | 60 x 18 mm   | E 120 C/C, EI 60 C/C |
| Up to 250 mm diameter / 6.1-11.9 mm wall thickness*                                         | 75 x 24 mm   | EI 60 C/C            |
| Up to 315 mm diameter / 7.7-12.1 mm wall thickness*                                         | 75 x 30 mm   |                      |
| Up to 400 mm diameter / 15.3 mm wall thickness*                                             | 100 x 39 mm  |                      |

\* Typical pipe diameters shown, see below graph for intermediate sizes

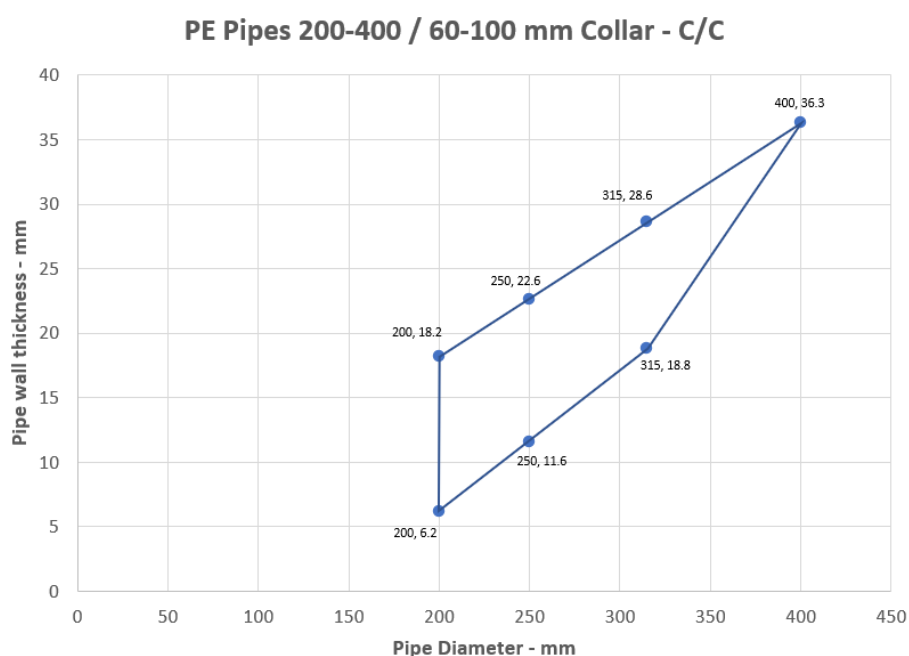
PVC pipes 200-400 / 60-100 mm Collar - C/C



### A.5.2.2

| Services                                                                                                                                 | Collar Inlay | Classification               |
|------------------------------------------------------------------------------------------------------------------------------------------|--------------|------------------------------|
| PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1 |              |                              |
| Up to 200 mm diameter / 6.2-18.2 mm wall thickness*                                                                                      | 60 x 18 mm   | <b>E 240 C/C, EI 120 C/C</b> |
| Up to 250 mm diameter / 11.5-18.4 mm wall thickness*                                                                                     | 75 x 24 mm   | <b>EI 240 C/C</b>            |
| Up to 315 mm diameter / 18.7 mm wall thickness*                                                                                          | 75 x 30 mm   |                              |
| Up to 315 mm diameter / 18.8-28.6 mm wall thickness*                                                                                     | 75 x 30 mm   | <b>EI 90 C/C</b>             |
| Up to 400 mm diameter / 36.3 mm wall thickness*                                                                                          | 100 x 39 mm  | <b>EI 90 C/C</b>             |

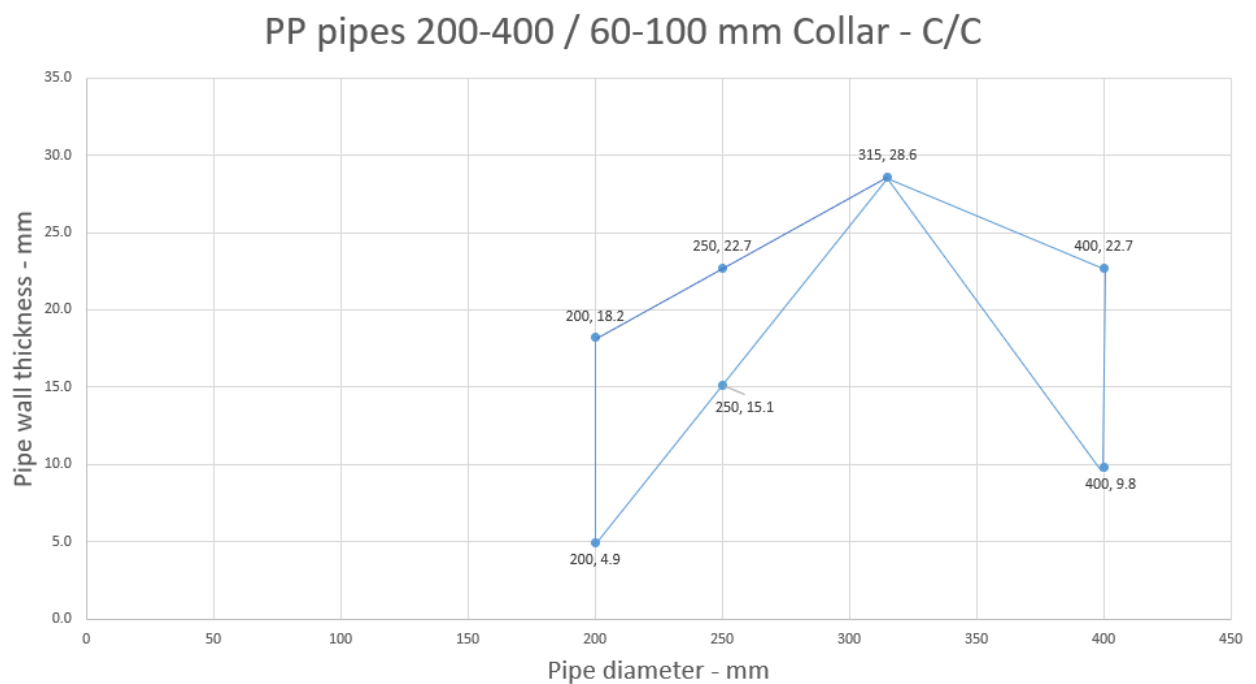
\* Typical pipe diameters shown, see below graph for intermediate sizes



### A.5.2.3

| Services                                             | Collar Inlay | Classification |
|------------------------------------------------------|--------------|----------------|
| PP pipe according to EN 1451-1                       |              |                |
| Up to 200 mm diameter / 4.9-18.2 mm wall thickness*  | 60 x 18 mm   | EI 120 C/C     |
| Up to 250 mm diameter / 15.1-22.7 mm wall thickness* | 75 x 24 mm   | EI 60 C/C      |
| Up to 315 mm diameter / 28.6 mm wall thickness*      | 75 x 30 mm   |                |
| Up to 400 mm diameter / 9.8-22.7 mm wall thickness*  | 100 x 39 mm  | EI 30 C/C      |

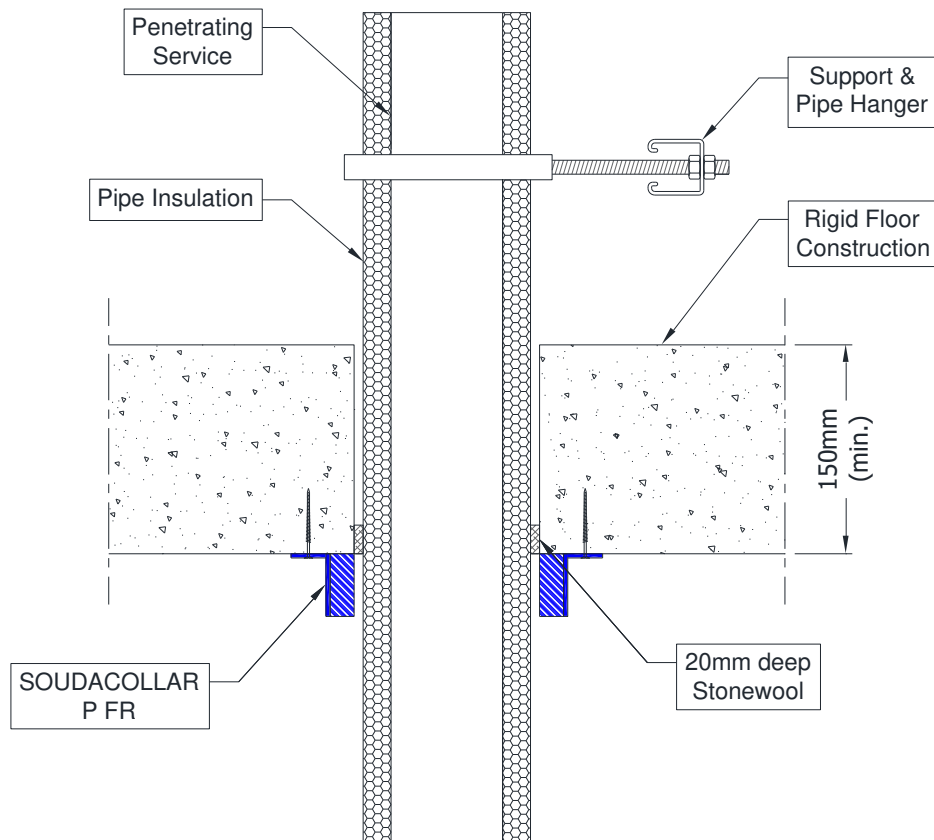
\* Typical pipe diameters shown, see below graph for intermediate sizes



### A.5.3 Penetration seals, surface mounted in concrete floors

**Penetration Seal:** Metallic pipes fitted with SOUDACOLLAR P FR, to the soffit of the floor.

Construction details:

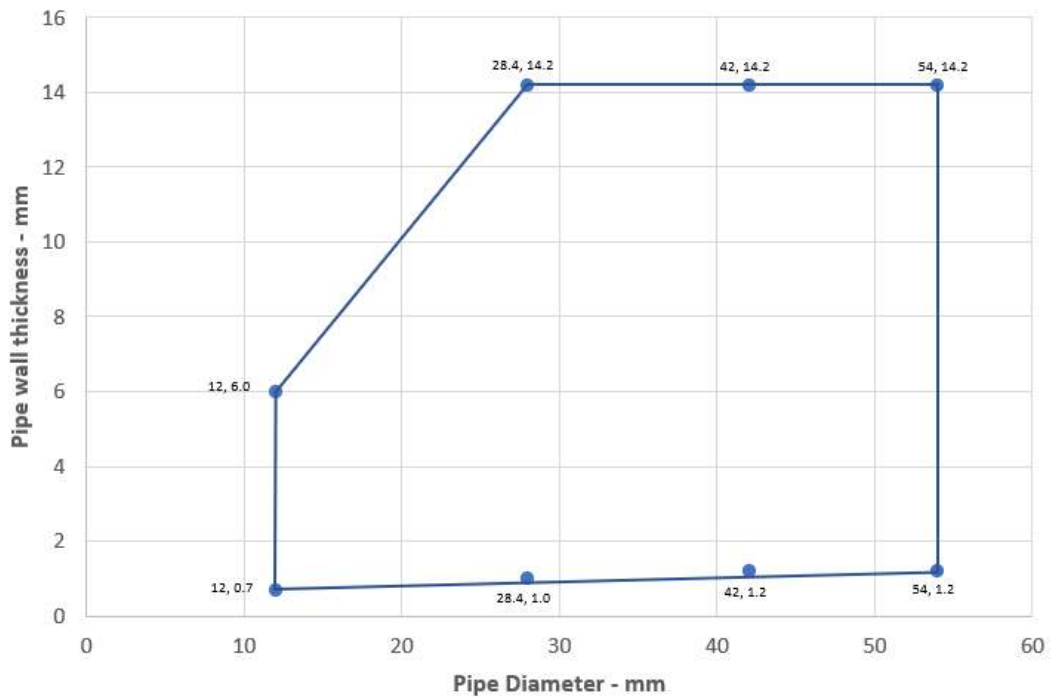


### A.5.3.1

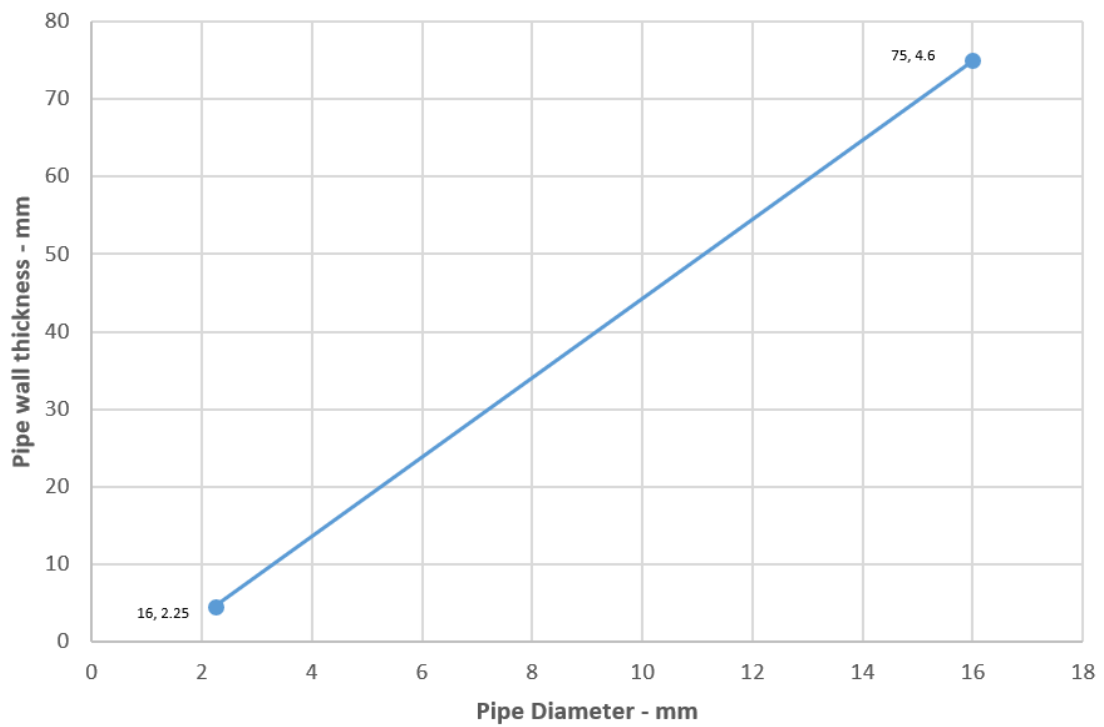
| Services                                                                                                                                 | Insulation                                                   | Collar                                                                                      | Classification        |
|------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|---------------------------------------------------------------------------------------------|-----------------------|
| Copper pipe or mild steel                                                                                                                |                                                              |                                                                                             |                       |
| Maximum diameter 42 mm, wall thickness 0.7-14.2 mm*                                                                                      | 9 mm thick Elastomeric insulation minimum class D-s3, d0     | Up to 63 mm collar at 50 mm height                                                          | EI 120 C/C            |
| Maximum diameter 42 mm, wall thickness 0.7-14.2 mm*                                                                                      | 10-50 mm thick Elastomeric insulation minimum class D-s3, d0 | Up to 110 mm collar at 50 mm height, 125-160 mm at 60 mm height                             | EI 60 C/C             |
| Maximum diameter 54 mm, wall thickness 0.7-14.2 mm*                                                                                      | 19 mm thick Elastomeric insulation minimum class B-s3, d0    | Up to 110 mm collar at 50 mm height                                                         | E 120 C/C, EI 60 C/C  |
| Maximum diameter 54 mm, wall thickness 0.7-14.2 mm*                                                                                      | 25 mm thick Phenolic insulation                              | Up to 110 mm collar at 50 mm height                                                         | E 120 C/C, EI 45 C/C  |
| Maximum diameter 54 mm, wall thickness 0.7-14.2 mm*                                                                                      | 20 mm thick PE foam insulation                               | Up to 110 mm collar at 50 mm height                                                         | E 120 C/C             |
| Maximum diameter 54 mm, wall thickness 0.7-14.2 mm*                                                                                      | 40 mm thick PU foam insulation                               | Up to 110 mm collar at 50 mm height, 125-160 mm at 60 mm height                             | EI 60 C/C             |
| Alupex pipe                                                                                                                              |                                                              |                                                                                             |                       |
| Maximum diameter 75 mm, wall thickness 2.25-4.6 mm                                                                                       | 9 mm thick Elastomeric insulation minimum class D-s3, d0     | Up to 110 mm collar at 50 mm height                                                         | EI 120 C/C            |
|                                                                                                                                          | 10-50 mm thick Elastomeric insulation minimum class B-s3, d0 | Up to 110 mm collar at 50 mm height, 125-200 mm at 60 mm height                             | E 120 C/C, EI 90 C/C  |
| PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1 |                                                              |                                                                                             |                       |
| Maximum diameter 160 mm, wall thickness 3.0-9.5 mm                                                                                       | 9 mm thick Elastomeric insulation minimum class BL-s3, d0    | Up to 110 mm collar at 50 mm height, 125-200 mm at 60 mm height                             | EI 180 C/C            |
|                                                                                                                                          | 10-50 mm thick Elastomeric insulation minimum class B-s3, d0 | Up to 110 mm collar at 50 mm height, 125-200 mm at 60 mm height, 250-315 mm at 75 mm height | EI 120 C/C            |
| PP pipe according to EN 1451-1                                                                                                           |                                                              |                                                                                             |                       |
| Maximum diameter 160 mm, wall thickness 1.8-9.1 mm                                                                                       | 9-25 mm thick Elastomeric insulation minimum class BL-s3,d0  | Up to 110 mm collar at 50 mm height, 125-200 mm at 60 mm height                             | E 180 C/C, EI 120 C/C |
|                                                                                                                                          | 26-50 mm thick Elastomeric insulation minimum class B-s3,d0  | Up to 110 mm collar at 50 mm height, 125-200 mm at 60 mm height, 250-315 mm at 75 mm height | EI 60 C/C             |

\* Typical pipe diameters shown, see below graph for intermediate sizes

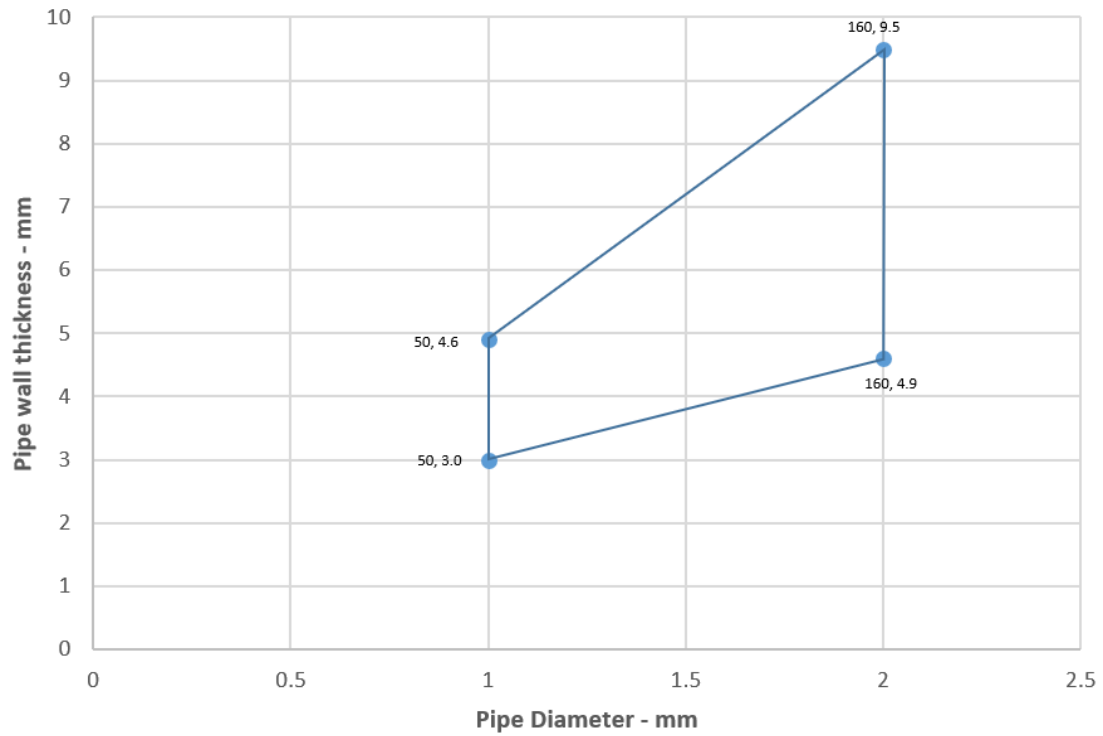
**Copper or Steel Pipes 12-54 / Insulated - C/C**



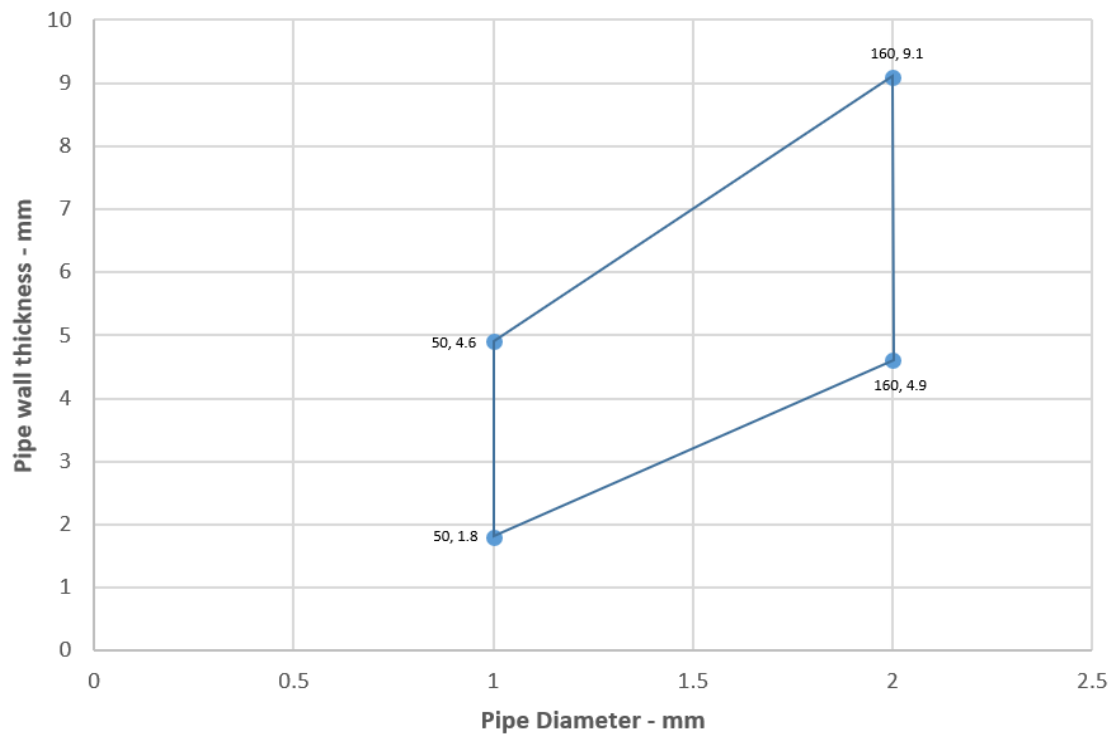
**Alupex Pipes with Elastomeric Pipe Insulation - C/C**



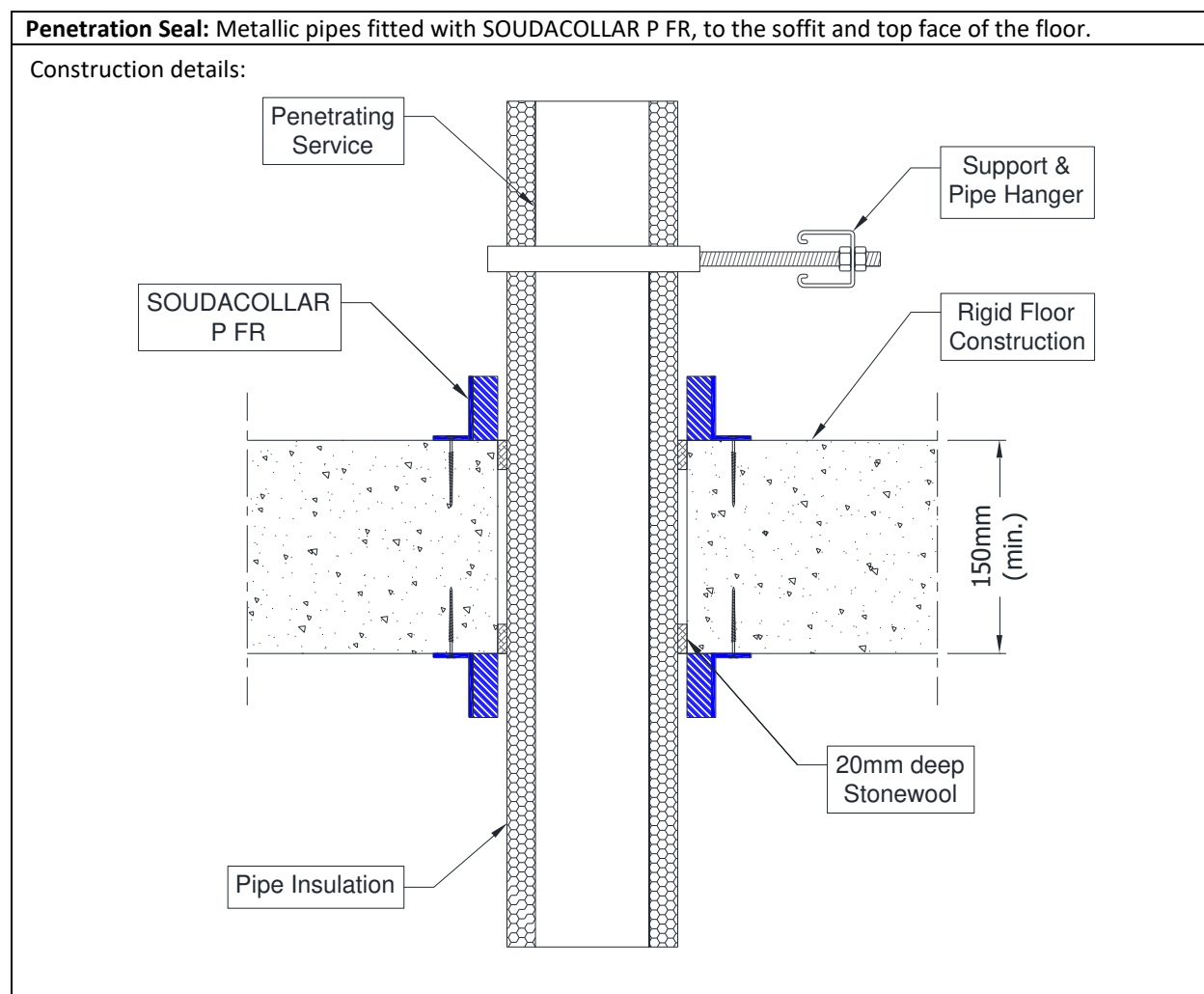
### PE Pipes with Elastomeric Pipe Insulation - C/C



### PP Pipes with Elastomeric Pipe Insulation - C/C



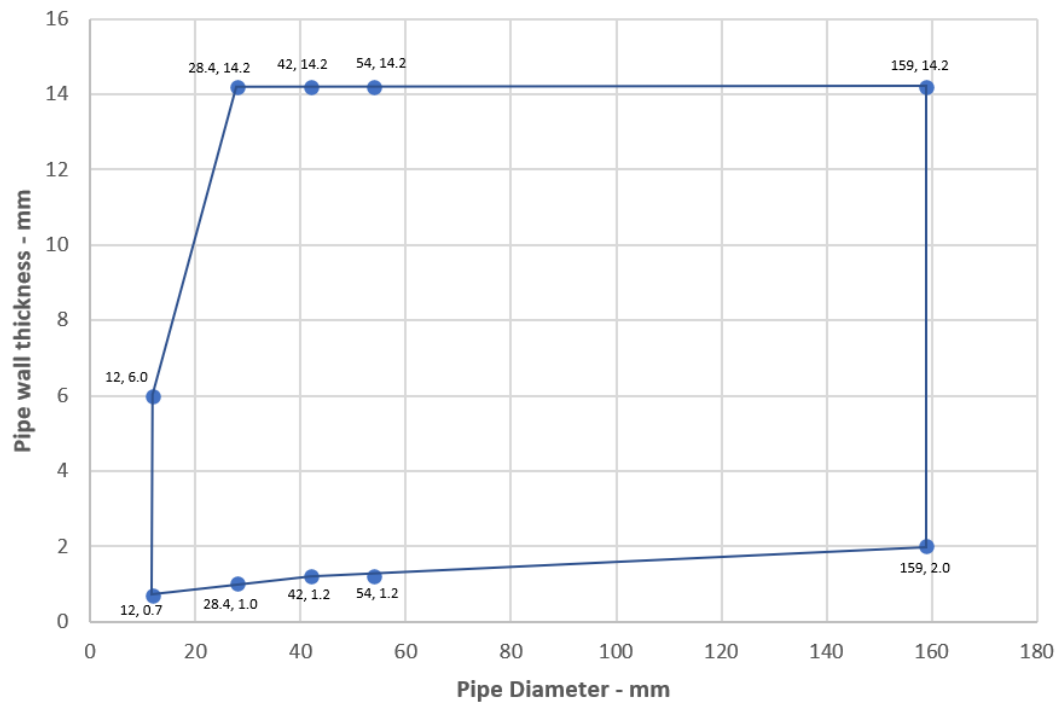
#### A.5.4 Penetration seals, surface mounted in concrete floors



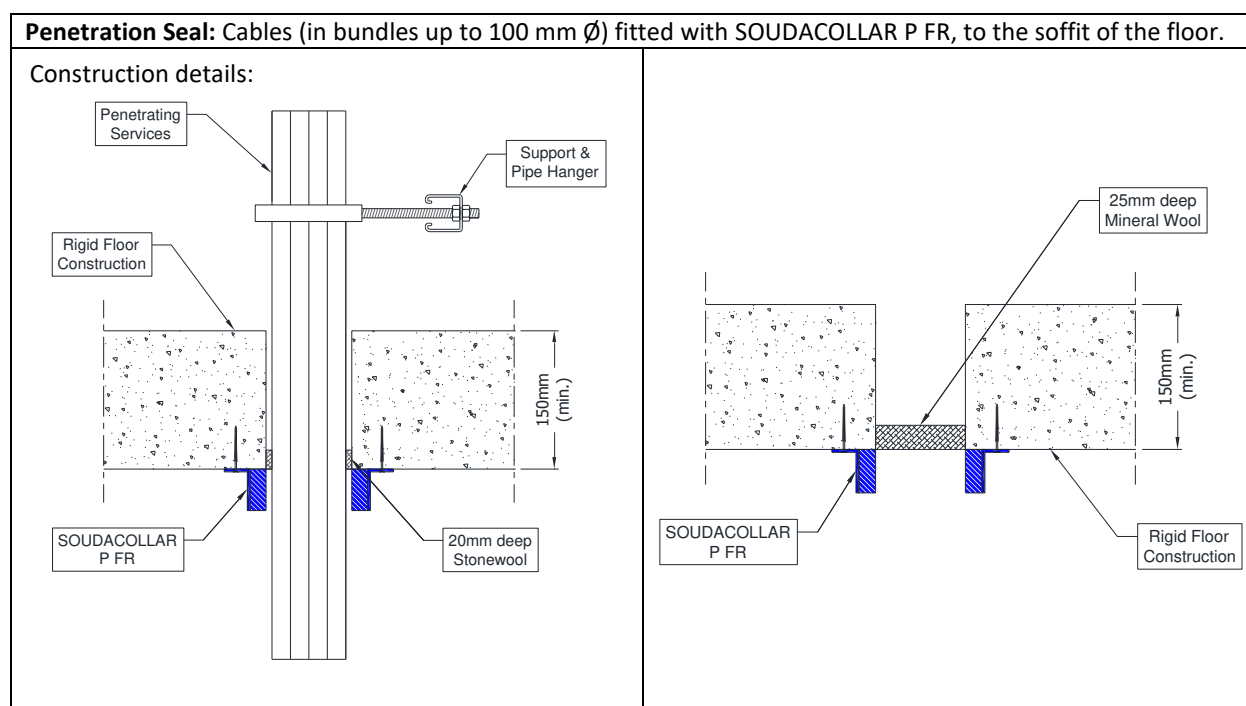
##### A.5.4.1

| Services                                             | Insulation                      | Collar                                                                                  | Classification       |
|------------------------------------------------------|---------------------------------|-----------------------------------------------------------------------------------------|----------------------|
| Copper pipe or mild steel                            |                                 |                                                                                         |                      |
| Maximum diameter 158 mm, wall thickness 0.7-14.2 mm* | 25 mm thick Phenolic insulation | Up to 110 mm collar at 50 mm height, 125-200 mm at 60 mm height, 250 mm at 75 mm height | E 120 C/C, EI 45 C/C |
| Diameter 159 mm, wall thickness 0.7-14.2 mm          | 25 mm thick Phenolic insulation | 200 mm at 60 mm height, or 250 mm at 75 mm height                                       | E 120 C/C, EI 60 C/C |

### Copper or Steel Pipes 12-159 / Insulated - C/C



### A.5.5 Penetration seals, surface mounted in concrete floors



#### A.5.5.1

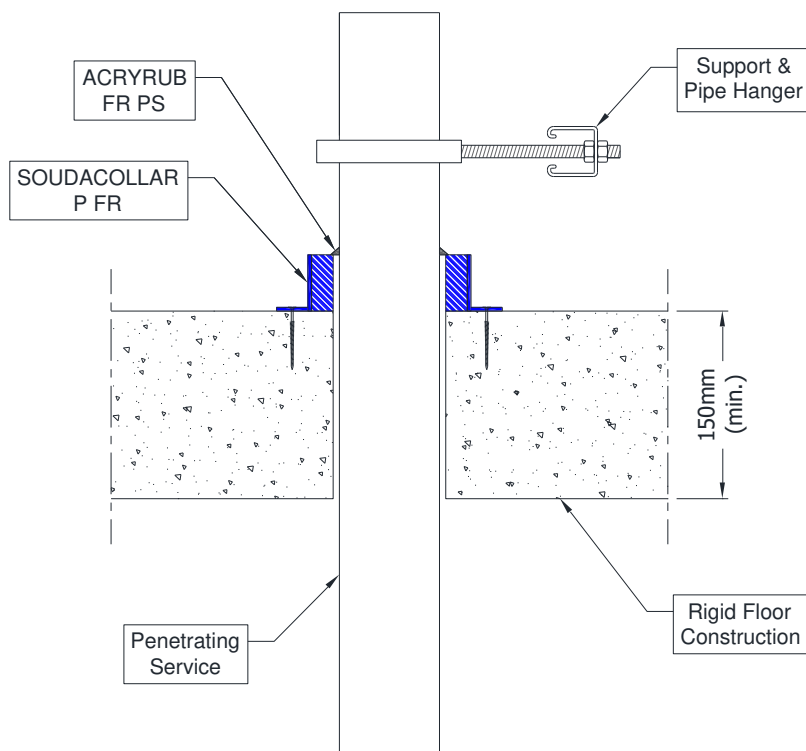
| Services                                                                                                                                          | Collar                                                          | Classification |
|---------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|----------------|
| None (blank)                                                                                                                                      | Ø 55 x 30 x 3.2 mm                                              | E 240, EI 60   |
| None (blank)                                                                                                                                      | Ø 160 x 60 x 15.0 mm                                            | EI 120         |
| Cables up to 21 mm Ø, in bundles up to 55 mm Ø                                                                                                    | Ø 55 x 30 x 3.2 mm                                              | EI 120         |
| Cables up to 21 mm Ø, in bundles up to 100 mm Ø                                                                                                   | Ø 110 x 50 x 6.0 mm                                             | EI 90          |
| Cables up to 21 mm Ø, in bundles up to 160 mm Ø                                                                                                   | Ø 160 x 60 x 15.0 mm                                            | EI 180         |
| Cables up to 80 mm Ø, in bundles up to 125 mm Ø                                                                                                   | Ø 125 x 60 x 9.0 mm                                             | E 90, EI 60    |
| PVC pipes up to 32 mm Ø, wall thickness 1.0-2.4 mm with or without cables up to 21 mm Ø, in partial or fully filled pipe bundles up to 160 mm Ø * | Up to 110 mm collar at 50 mm height, 125-160 mm at 60 mm height | EI 90 C/U      |
| PE pipes up to 32 mm Ø, wall thickness 2.0-3.0 mm with or without cables up to 21 mm Ø, in partial or fully filled pipe bundles up to 160 mm Ø *  |                                                                 |                |
| PP pipes up to 32 mm Ø, wall thickness 1.8-4.4 mm with or without cables up to 21 mm Ø, in partial or fully filled pipe bundles up to 160 mm Ø *  |                                                                 |                |
| PEX pipe-in-pipe system                                                                                                                           |                                                                 |                |
| Diameter up to 25 mm pipes, wall thicknesses 0.6 mm outer and 2.5 mm inner pipe, in bundle up to 50 mm                                            | 50 mm collar at 50 mm height                                    | EI 90 C/C      |
| Diameter up to 54 mm pipes, wall thicknesses 0.6-2.0 mm outer and 2.5-4.4 mm inner pipe, in bundle up to 160 mm                                   | Up to 110 mm collar at 50 mm height, 125-160 mm at 60 mm height | EI 60 C/C      |

\* PVC, PE and PP pipes can be mixed in the same bundle.

### A.5.6 Penetration seals, surface mounted in concrete floors

**Penetration Seal:** Combustible pipes fitted with SOUDACOLLAR P FR, to the top face of the floor.

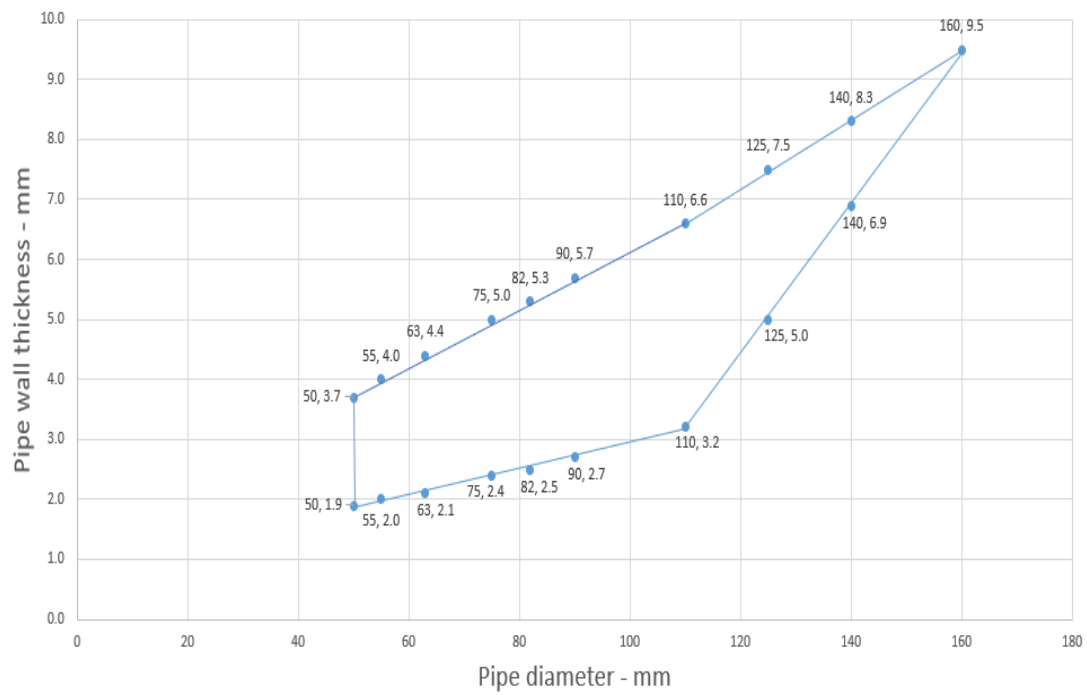
Construction details:



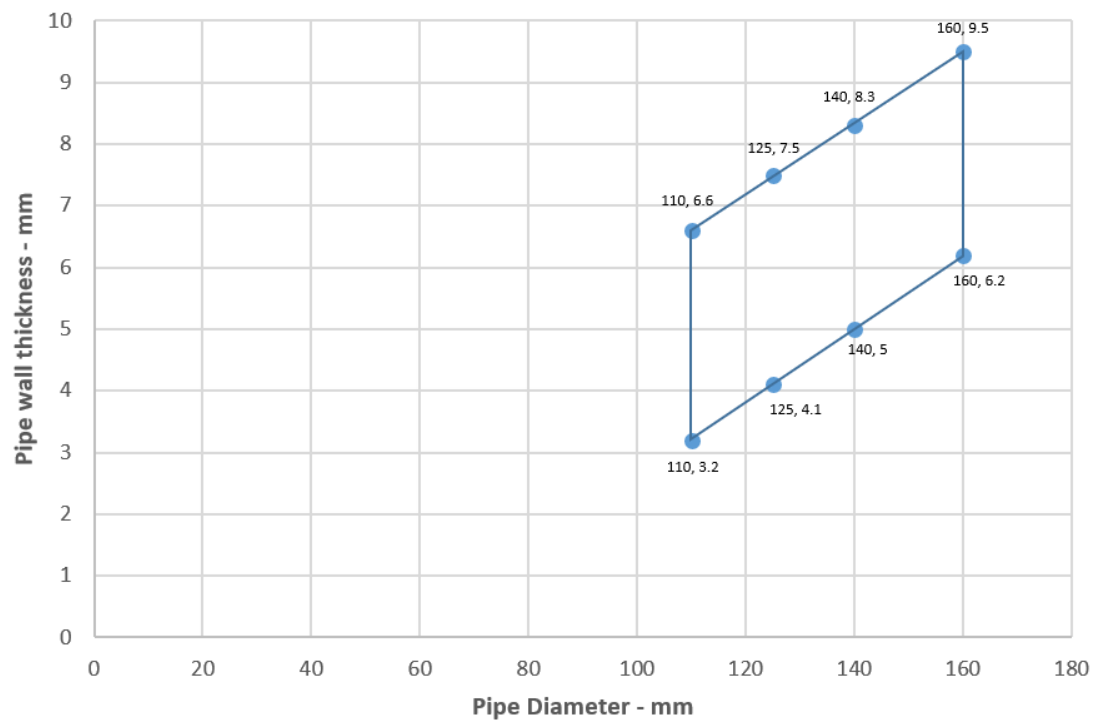
#### A.5.6.1

| Services                                                                                    | Collar Inlay | Classification        |
|---------------------------------------------------------------------------------------------|--------------|-----------------------|
| PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1 |              |                       |
| Diameter 32 mm, wall thickness 1.9-3.7 mm                                                   | 50 x 3.0 mm  | EI 240 U/C            |
| Diameter 40 mm, wall thickness 1.9-3.7 mm                                                   | 50 x 3.0 mm  |                       |
| Diameter 50 mm, wall thickness 1.9-3.7 mm                                                   | 50 x 3.2 mm  |                       |
| Diameter 55 mm, wall thickness 2.0-4.0 mm                                                   | 50 x 3.2 mm  | EI 120 U/C            |
| Diameter 63 mm, wall thickness 2.1-4.4 mm                                                   | 50 x 3.6 mm  |                       |
| Diameter 75 mm, wall thickness 2.4-5.0 mm                                                   | 50 x 4.2 mm  |                       |
| Diameter 82 mm, wall thickness 2.5-5.3 mm                                                   | 50 x 4.6 mm  |                       |
| Diameter 90 mm, wall thickness 2.7-5.7 mm                                                   | 50 x 5.0 mm  |                       |
| Diameter 110 mm, wall thickness 3.2-6.6 mm                                                  | 50 x 6.0 mm  | E 240 U/C, EI 180 U/C |
| Diameter 125 mm, wall thickness 5.0-7.5 mm                                                  | 60 x 8.8 mm  |                       |
| Diameter 140 mm, wall thickness 6.9-8.3 mm                                                  | 60 x 11.5 mm |                       |
| Diameter 160 mm, wall thickness 9.5 mm                                                      | 60 x 15 mm   | E 180 U/C, EI 90 U/C  |
| Diameter 125 mm, wall thickness 4.1-7.5 mm                                                  | 60 x 8.8 mm  |                       |
| Diameter 140 mm, wall thickness 5.0-8.3 mm                                                  | 60 x 11.5 mm |                       |
| Diameter 160 mm, wall thickness 6.2-9.5 mm                                                  | 60 x 15 mm   |                       |

### PVC pipes 50-160 / 50-60 mm Collar - U/C



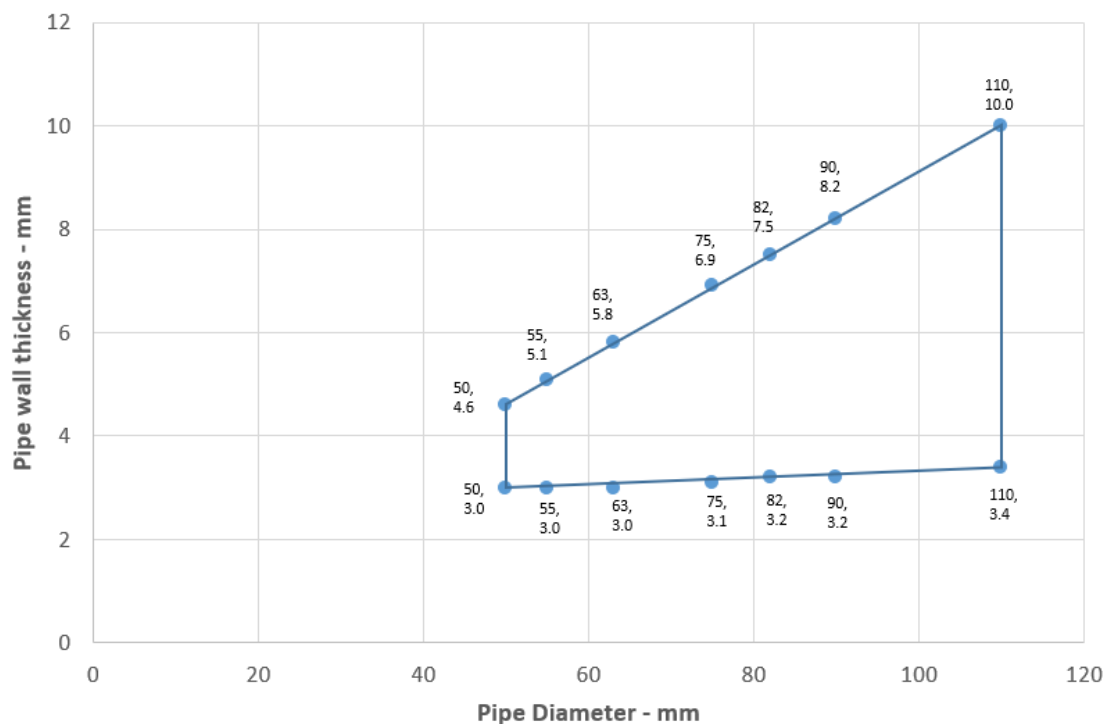
### PVC Pipes 110-160 - U/C



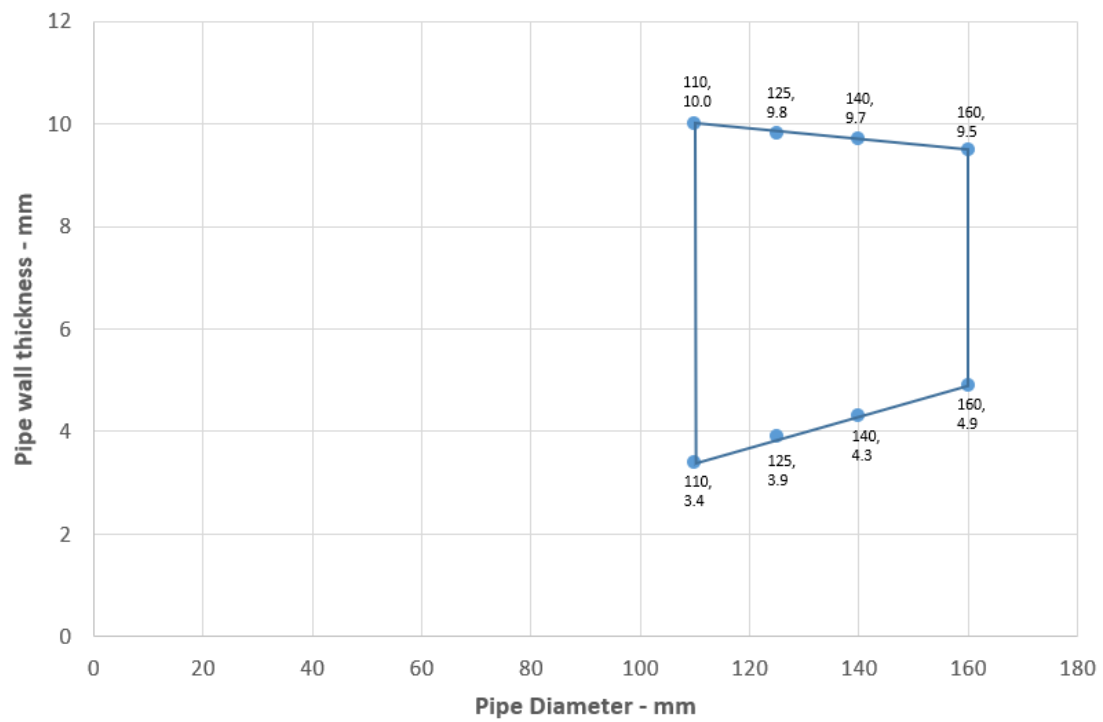
### A.5.6.2

| Services                                                                                                                                 | Collar Inlay | Classification       |
|------------------------------------------------------------------------------------------------------------------------------------------|--------------|----------------------|
| PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1 |              |                      |
| Diameter 32 mm, wall thickness 3.0-4.6 mm                                                                                                | 50 x 3.0 mm  | EI 240 U/C           |
| Diameter 40 mm, wall thickness 3.0-4.6 mm                                                                                                | 50 x 3.0 mm  |                      |
| Diameter 50 mm, wall thickness 3.0-4.6 mm                                                                                                | 50 x 3.2 mm  |                      |
| Diameter 55 mm, wall thickness 3.0-5.1 mm                                                                                                | 50 x 3.2 mm  | E 240 U/C, EI 60 U/C |
| Diameter 63 mm, wall thickness 3.0-5.8 mm                                                                                                | 50 x 3.6 mm  |                      |
| Diameter 75 mm, wall thickness 3.1-6.9 mm                                                                                                | 50 x 4.2 mm  |                      |
| Diameter 82 mm, wall thickness 3.2-7.5 mm                                                                                                | 50 x 4.6 mm  |                      |
| Diameter 90 mm, wall thickness 3.2-8.2 mm                                                                                                | 50 x 5.0 mm  |                      |
| Diameter 110 mm, wall thickness 3.4-10.0 mm                                                                                              | 50 x 6.0 mm  |                      |
| Diameter 125 mm, wall thickness 3.9-9.8 mm                                                                                               | 60 x 8.8 mm  | EI 60 U/C            |
| Diameter 140 mm, wall thickness 4.3-9.7 mm                                                                                               | 60 x 11.5 mm |                      |
| Diameter 160 mm, wall thickness 4.9-9.5 mm                                                                                               | 60 x 15 mm   |                      |

**PE Pipes 50-110 / 50 mm collar - U/C**



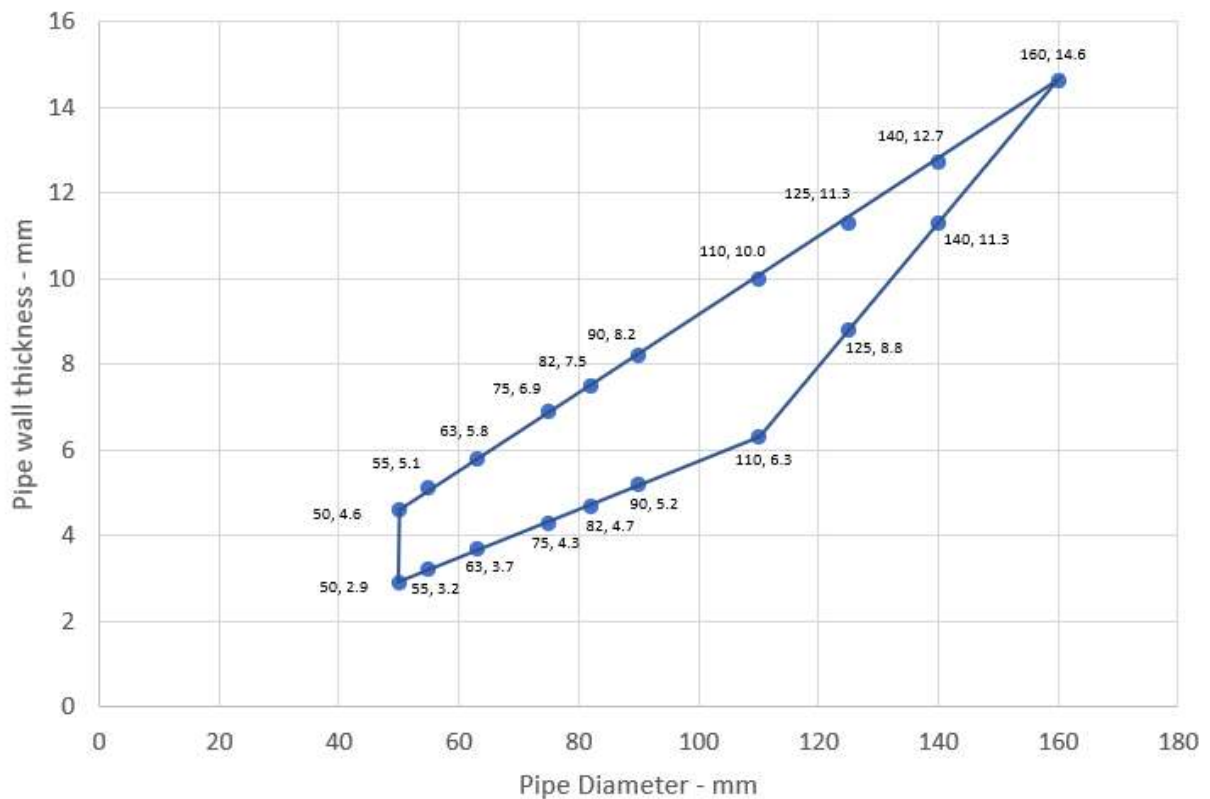
### PE Pipes 110-160 - U/C



### A.5.6.3

| Services                                     | Collar Inlay | Classification               |
|----------------------------------------------|--------------|------------------------------|
| PP pipe according to EN 1451-1               |              |                              |
| Diameter 32 mm, wall thickness 2.9-4.6 mm    | 50 x 3.0 mm  | <b>E 240 U/C, EI 180 U/C</b> |
| Diameter 40 mm, wall thickness 2.9-4.6 mm    | 50 x 3.0 mm  |                              |
| Diameter 50 mm, wall thickness 2.9-4.6 mm    | 50 x 3.2 mm  |                              |
| Diameter 55 mm, wall thickness 3.2-5.1 mm    | 50 x 3.2 mm  | <b>E 120 C/C, EI 90 C/C</b>  |
| Diameter 63 mm, wall thickness 3.7-5.8 mm    | 50 x 3.6 mm  |                              |
| Diameter 75 mm, wall thickness 4.3-6.9 mm    | 50 x 4.2 mm  |                              |
| Diameter 82 mm, wall thickness 4.7-7.5 mm    | 50 x 4.6 mm  |                              |
| Diameter 90 mm, wall thickness 5.2-8.2 mm    | 50 x 5.0 mm  |                              |
| Diameter 110 mm, wall thickness 6.3-10.0 mm  | 50 x 6.0 mm  |                              |
| Diameter 125 mm, wall thickness 8.8-11.3 mm  | 60 x 8.8 mm  | <b>E 240 U/C, EI 60 U/C</b>  |
| Diameter 140 mm, wall thickness 11.3-12.7 mm | 60 x 11.5 mm |                              |
| Diameter 160 mm, wall thickness 14.6 mm      | 60 x 15 mm   |                              |

PP Pipes 50-160 / 50-60 mm Collar



# ANNEX B – Air Permeability – SOUDACOLLAR P FR

| Product tested                          | 110mm SOUDACOLLAR P FR each face fixed with plasterboard anchors |                             |                                             |
|-----------------------------------------|------------------------------------------------------------------|-----------------------------|---------------------------------------------|
| Summary of testing procedure            |                                                                  |                             | Result                                      |
|                                         | Pressure (Pa)                                                    | Leakage (m <sup>3</sup> /h) | Leakage (m <sup>3</sup> /m <sup>2</sup> /h) |
| Results under negative chamber pressure | 25                                                               | 0.23                        | N/A                                         |
|                                         | 50                                                               | 0.43                        | N/A                                         |
|                                         | 100                                                              | 0.72                        | N/A                                         |
|                                         | 200                                                              | 1.17                        | N/A                                         |
|                                         | 300                                                              | 1.63                        | N/A                                         |
|                                         | 450                                                              | 1.9                         | N/A                                         |
|                                         | 600                                                              | 2.34                        | N/A                                         |
| Results under positive chamber pressure | 25                                                               | 0.2                         | N/A                                         |
|                                         | 50                                                               | 0.29                        | N/A                                         |
|                                         | 100                                                              | 0.49                        | N/A                                         |
|                                         | 200                                                              | 1.13                        | N/A                                         |
|                                         | 300                                                              | 1.75                        | N/A                                         |
|                                         | 450                                                              | 2.34                        | N/A                                         |
|                                         | 600                                                              | 3.01                        | N/A                                         |

