UL INTERNATIONAL (UK) LTD
Wonersh House, Building C,
The Guildway,
Old Portsmouth Road,
Guildford. GU3 1LR.
United Kingdom.

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

Member of EOTA
www.eota.eu

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

European Technical Assessment

ETA 18/0854 of 18/04/2019

Technical Assessment Body issuing the ETA and designated according to Article 29 of the Regulation (EU) No 305/2011:	**UL International (UK) Ltd**
Trade name of the construction product	Protecta FR Collar
Product family to which the construction product belongs	Fire Stopping and Sealing Product: • Penetration Seals
Manufacturer	Polyseam Ltd 15. St. Andrews Road Huddersfield, West Yorkshire HD1 6SB, UK http://www.polyseam.com
Manufacturing plant(s)	A/007
This European Technical Assessment contains	78 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.
Corrigendum No. 1	

DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and should be identified as such.

Communication of this European Technical Assessment, including transmission by electronic means, shall be in full. However, partial reproduction may be made, with the written consent of the issuing Technical Assessment Body. Any partial reproduction has to be identified as such.

Table of Contents

I. SPECIFIC PARTS OF THE EUROPEAN TECHNICAL ASSESSMENT 3

1 Technical description of the product 3

2 Specification of the intended uses of the product in accordance with the applicable European Assessment Document (Hereinafter EAD): EAD 350454-00-1104 3

3 Performance of the product and references to the methods used for its assessment 5

4 ASSESSMENT AND VERIFICATION OF CONSTANCY OF PERFORMANCE (HEREINAFTER AVCP) SYSTEM APPLIED, WITH REFERENCE TO ITS LEGAL BASE 6

5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD 6

6 Issued on: 7

ANNEX A – Resistance to Fire Classification – Protecta FR Collar 8

A.1 Flexible or rigid wall constructions with wall thickness of minimum 100 mm 8

A.1.1 Penetration seals, in drywalls and concrete/masonry walls 8

A.2 Flexible or rigid wall constructions with wall thickness of minimum 120 mm 23

A.2.1 Penetration seals, in drywalls and concrete/masonry walls 23

A.2.2 Penetration seals, in drywalls and concrete/masonry walls 30

A.2.3 Penetration seals, in drywalls and concrete/masonry walls 31

A.2.4 Penetration seals, in drywalls and concrete/masonry walls 32

A.2.5 Penetration seals, in drywalls and concrete/masonry walls 33

A.3 Rigid walls constructions with wall thickness of minimum 150 mm 36

A.3.1 Penetration seals, in concrete/masonry walls 36

A.4 Rigid floor constructions with floor thickness of minimum 150 mm 47

A.4.1 Penetration seals, surface mounted in concrete floors 47

A.4.2 Penetration seals, surface mounted in concrete floors 68

A.4.3 Penetration seals, surface mounted in concrete floors 73

A.4.4 Penetration seals, surface mounted in concrete floors 74

A.4.5 Penetration seals, surface mounted in concrete floors 75

DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

I. SPECIFIC PARTS OF THE EUROPEAN TECHNICAL ASSESSMENT

1 Technical description of the product

1) Protecta FR Collar 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 Protecta FR Collar 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 Protecta FR Collar 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 Protecta FR Acrylic to cover the opening, and for gaps 8mm or above, the seal must be plugged with 25mm deep FR Acrylic.

   In rigid walls, gaps between the pipe and the construction below 8mm must have a bead of Protecta FR Acrylic to cover the opening, and for gaps 8mm or above, the seal must be plugged with 20mm deep FR Acrylic on 20mm deep backing of stonewool.

   In floors, gaps between the pipe and the construction below 10mm must have 20mm deep stonewool to plug the opening, and for gaps 10mm or above, the seal must be plugged with 10mm deep FR Acrylic on 40mm deep backing of stonewool. For collars installed on top side of floors, gaps between the pipe and the top side of the collar must have a bead of Protecta FR Acrylic to cover the opening.

   Protecta FR Collar 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 Protecta FR Collar in relation to BWR 3 (Hygiene, health and environment) is IA1, S/W3

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

Detailed information and data is given in Annex A.

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

DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

1) The specific elements of construction that the system Protecta FR Collar may be used to provide a penetration seal in, are as follows:

Flexible walls:	The wall must have a minimum thickness of 100 mm and comprise steel studs lined on both faces with minimum 2 layers of 12.5 mm thick boards.
Rigid walls:	The wall must have a minimum thickness of 100 mm and comprise concrete, aerated concrete or masonry, with a minimum density of 650 kg/m3.
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/m3.

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

2) The system Protecta FR Collar may be used to provide a penetration seal with specific supporting constructions and substrates (for details see Annex A).

3) The provisions made in this European Technical Assessment are based on an assumed working life of the Protecta FR Collar of 30 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.

4) Type Z_2: intended for use at internal conditions with humidity classes other than Z_1, excluding temperatures below 0°C.

DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

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
BWR 2 Safety in case of fire		
EN 13501-1	Reaction to fire	Performance not assessed
EN 13501-2	Resistance to fire	Annex A
BWR 3 Hygiene, health and environment		
EN 1026	Air permeability	No performance determined
EAD 350454-00-1104, Annex C	Water permeability	No performance determined
Declaration of manufacturer & EN 16516	Content, emission and/or release of dangerous substances	Use categories: IA1, S/W3 Declaration of manufacturer
BWR 4 Safety in use		
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, Clause 2.2.9	Durability	Z_2
BWR 5 Protection against noise		
EN 10140-1,2,4,5/ EN ISO 717-1	Airborne sound insulation	Rw (C;Ctr): 58 (-1;-7)
BWR 6 Energy economy and heat retention		
EN 12664, EN 12667, EN 12939, EN ISO 8990, EN ISO 6946, EN ISO 14683, EN ISO 10211, EN ISO 10456	Thermal properties	No performance determined
EN ISO 12572, EN 12086, EN ISO 10456	Water vapour permeability	No performance determined

DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

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 http://eur-lex.europa.eu/JOIndex.do) of the European Commission[1], 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 5th June 2017 relating to the European Technical Assessment ETA 18/0854 issued on 18/04/19 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 (UK) Ltd.

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

DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

[1] 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.

(b) Installation instruction:

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

6 Issued on:

18th April 2019

Report by:

D. Yates
Project Engineer
Building and Life Safety Technologies

Reviewed by:

C. Johnson
Staff Engineer
Building and Life Safety Technologies

For and on behalf of UL International (UK) Ltd.

DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

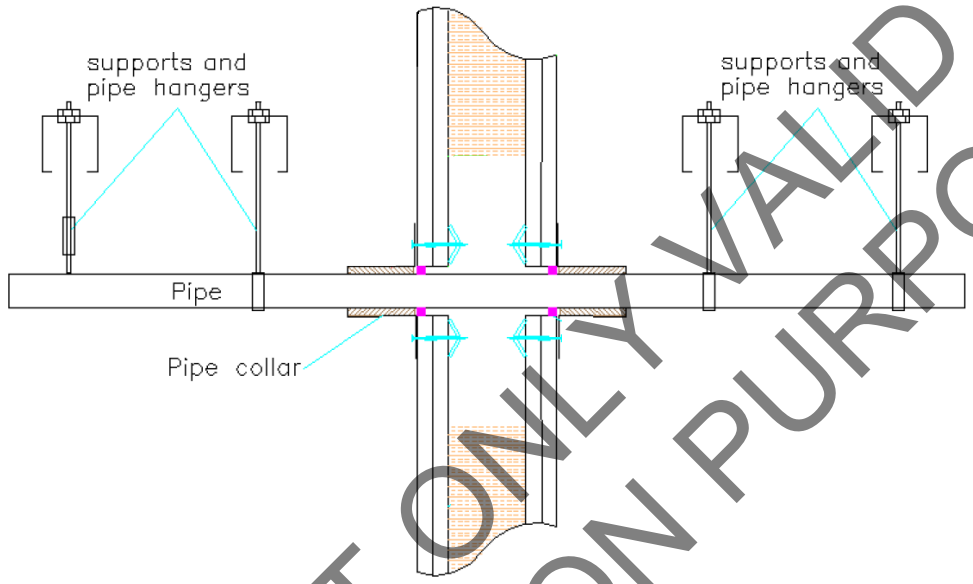
ANNEX A – Resistance to Fire Classification – Protecta FR Collar

A.1 Flexible or rigid wall constructions with wall thickness of minimum 100 mm

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

Penetration Seal: Combustible pipes fitted with Protecta FR Collar, to both sides of the wall.

Construction details:

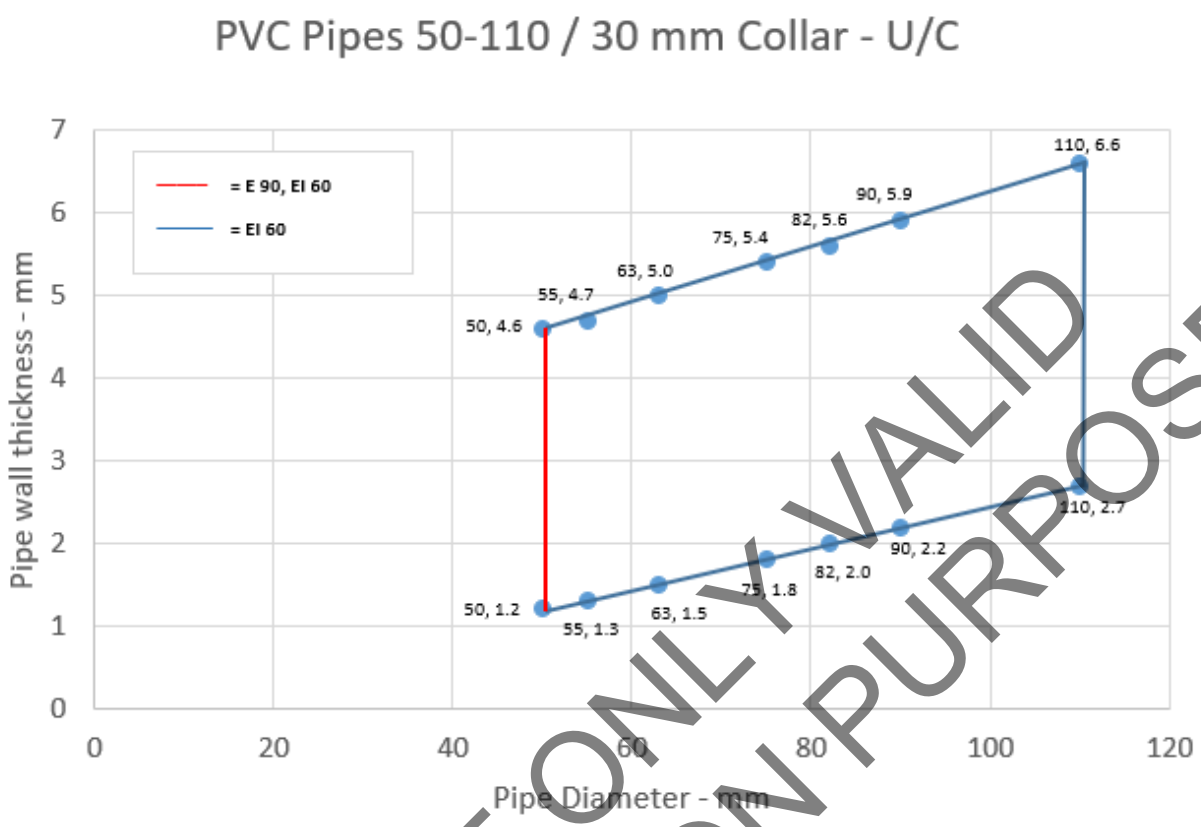


A.1.1.1

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 1.2-3.7 mm	30 x 3.0 mm	**E 90 U/C, E 90 C/C 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

DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

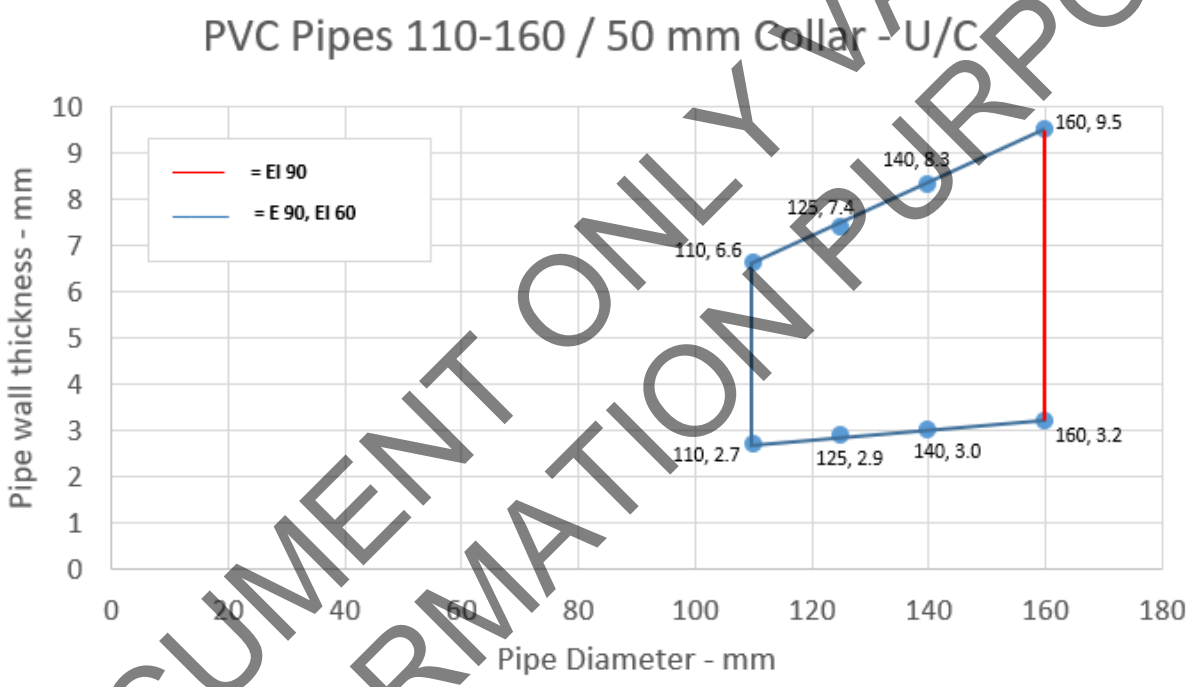


DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

A.1.1.1.1

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	**E 90 U/U, E 90 C/U, E 90 U/C, E 90 C/C EI 60 U/U, EI 60 C/U, 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

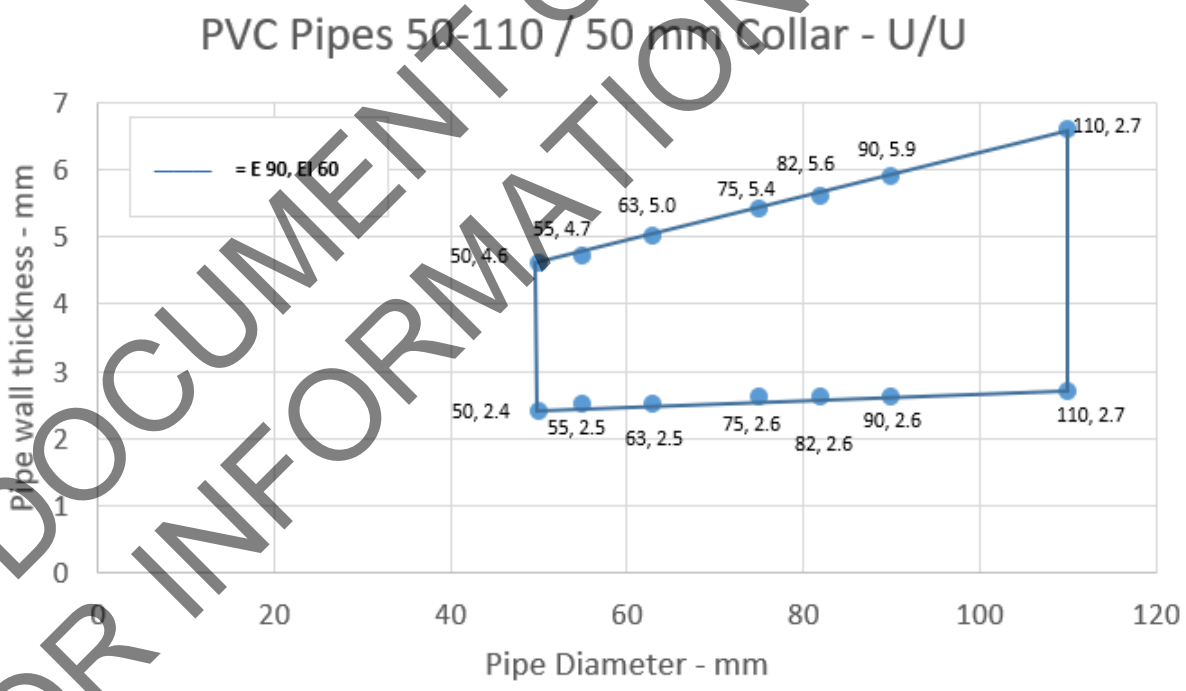


DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

A.1.1.1.2

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 32 mm, wall thickness 2.4-4.6 mm	30 x 3.0 mm	**E 90 U/U, E 90 C/U, E 90 U/C, E 90 C/C EI 60 U/U, EI 60 C/U, EI 60 U/C, EI 60 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 2.5-4.7 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

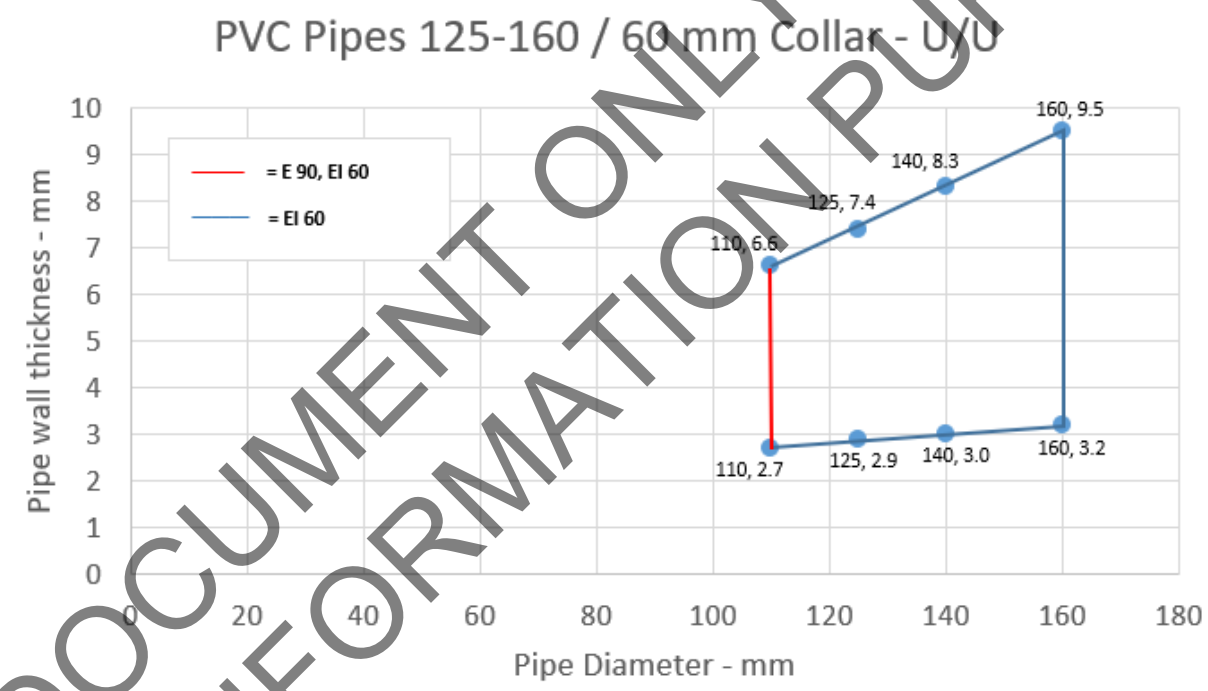


DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

A.1.1.1.3

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 2.7-6.6 mm*	60 x 6.0 mm	**E 90 U/U, E 90 C/U, E 90 U/C, E 90 C/C EI 60 U/U, EI 60 C/U, 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 315 mm, wall thickness 9.2 mm	75 x 18 mm	**EI 60 C/C**

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

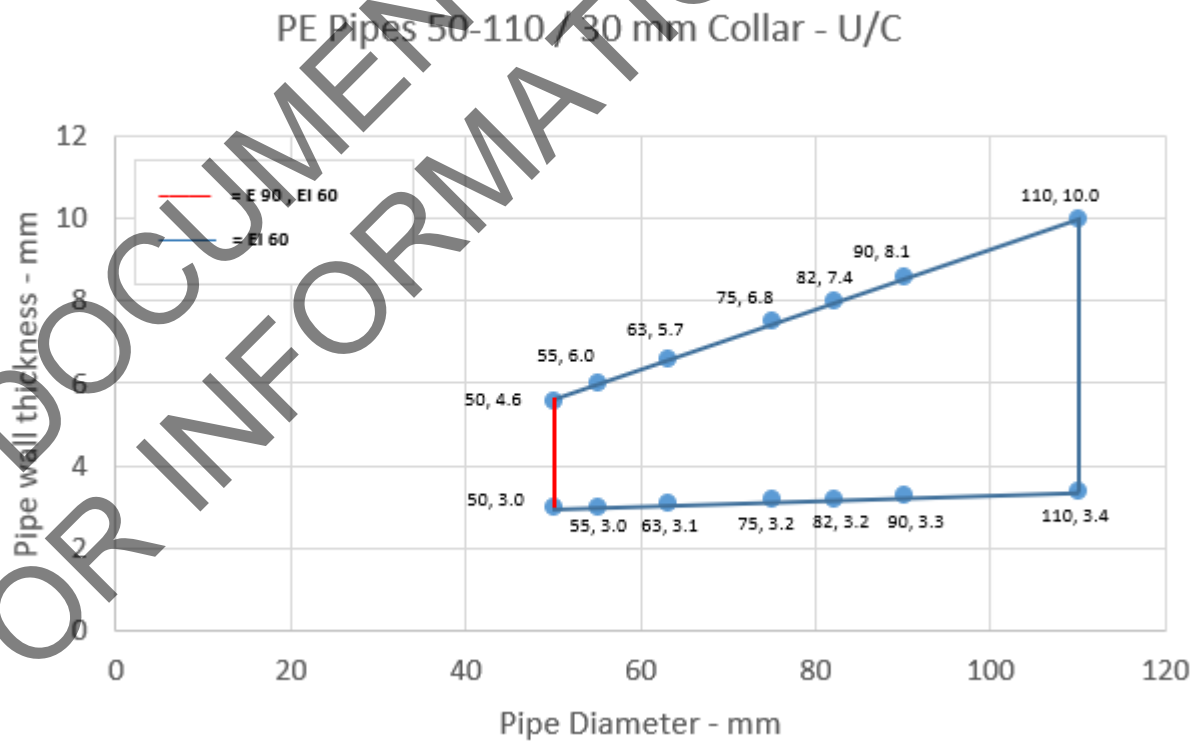


DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

A.1.1.2

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, E 90 U/C, E 90 C/C EI 45 U/U, EI 45 C/U, 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 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

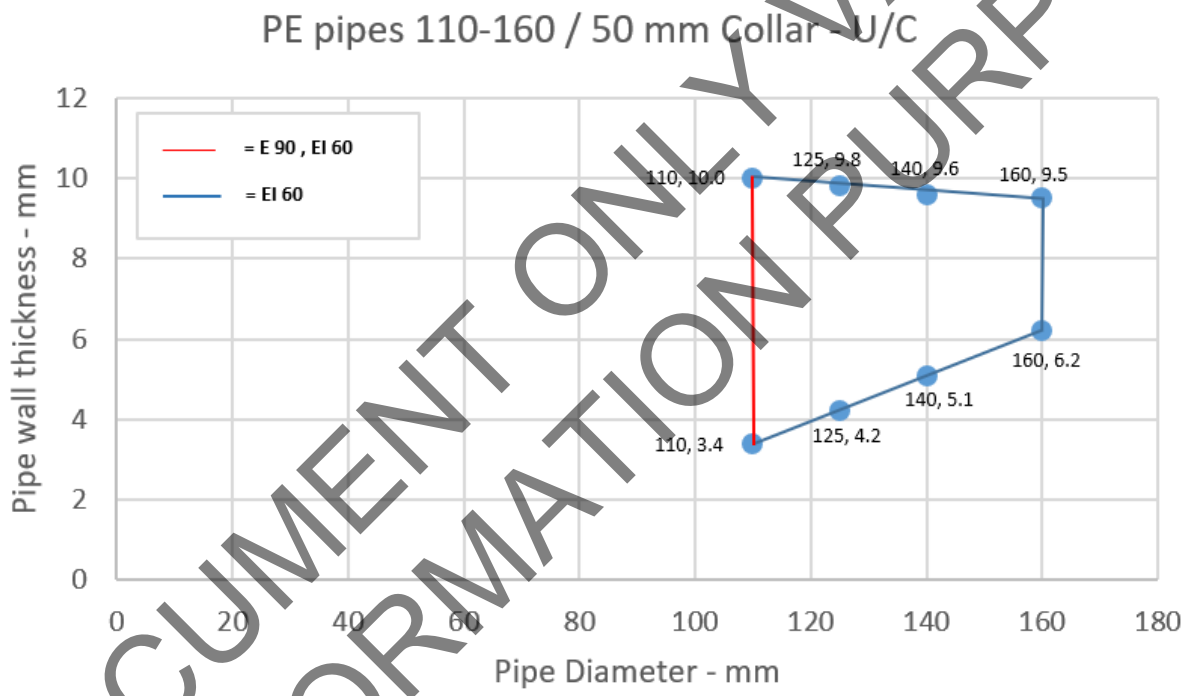


DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

A.1.1.2.1

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, E 90 U/C, E 90 C/C EI 60 U/U, EI 60 C/U, 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.

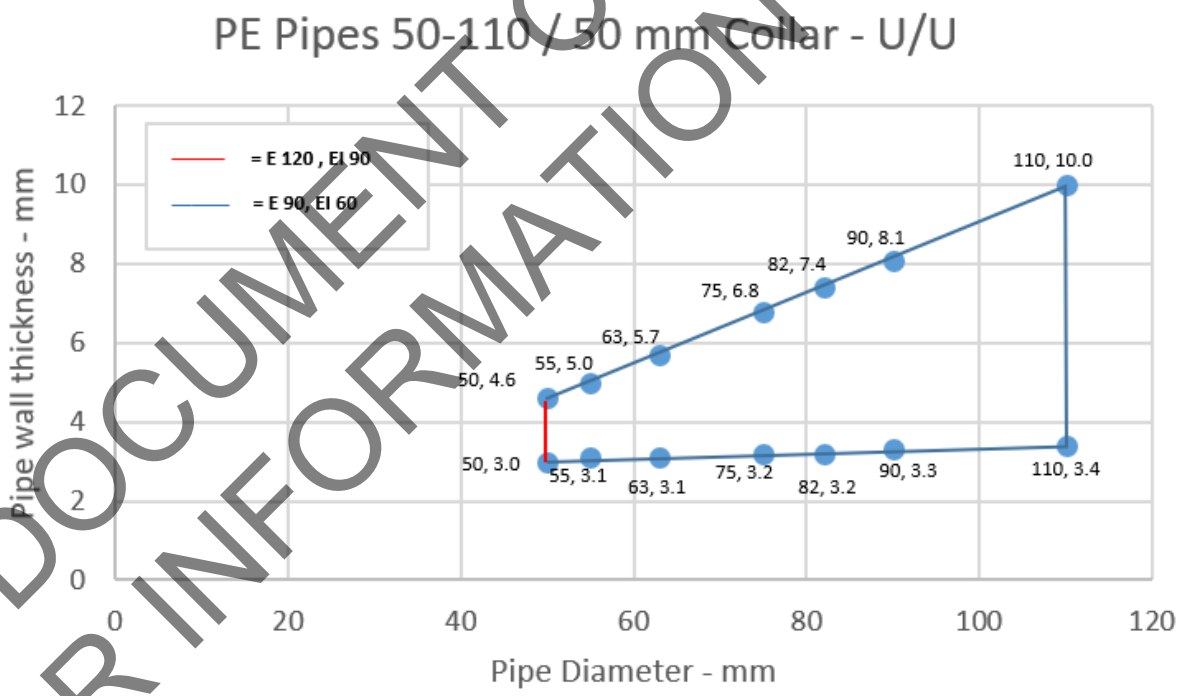


DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

A.1.1.2.2

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	**E 120 U/U, EI 90 U/U**
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	**E 90 U/U, E 90 C/U, E 90 U/C, E 90 C/C EI 60 U/U, EI 60 C/U, EI 60 U/C, EI 60 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 3.2-7.4 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

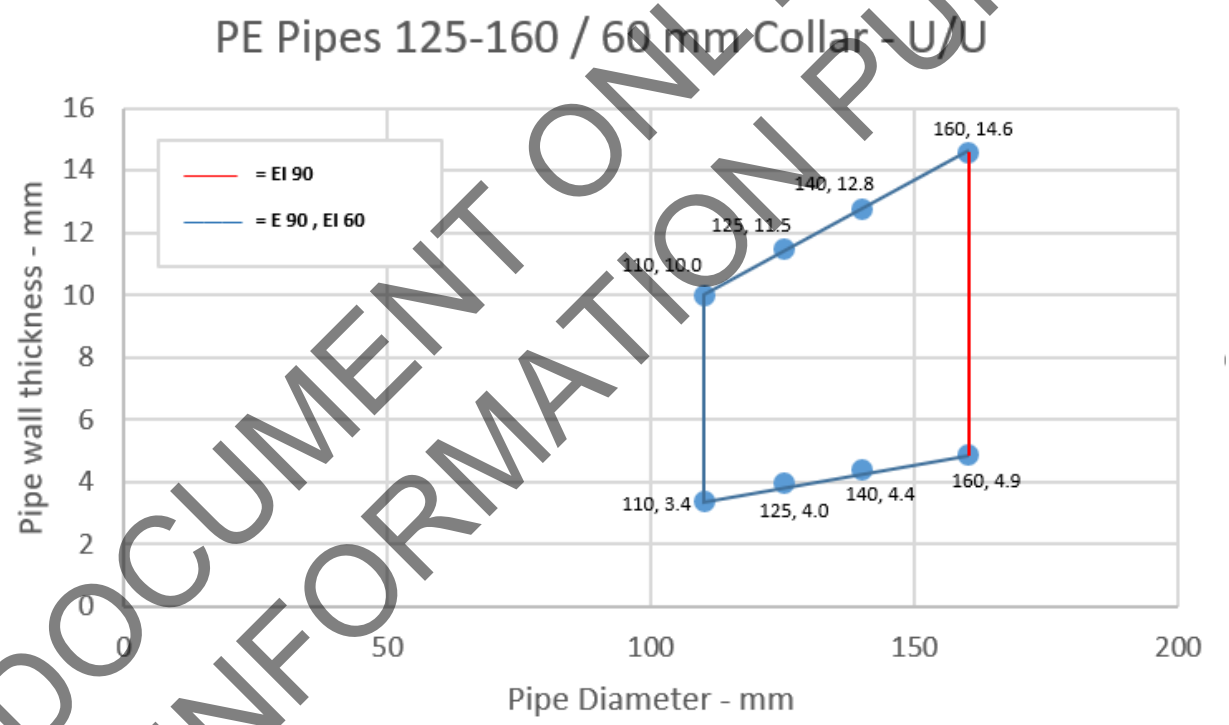


DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

A.1.1.2.3

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, E 90 U/C, E 90 C/C EI 60 U/U, EI 60 C/U, 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, EI 90 U/C, EI 90 C/C**
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	

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

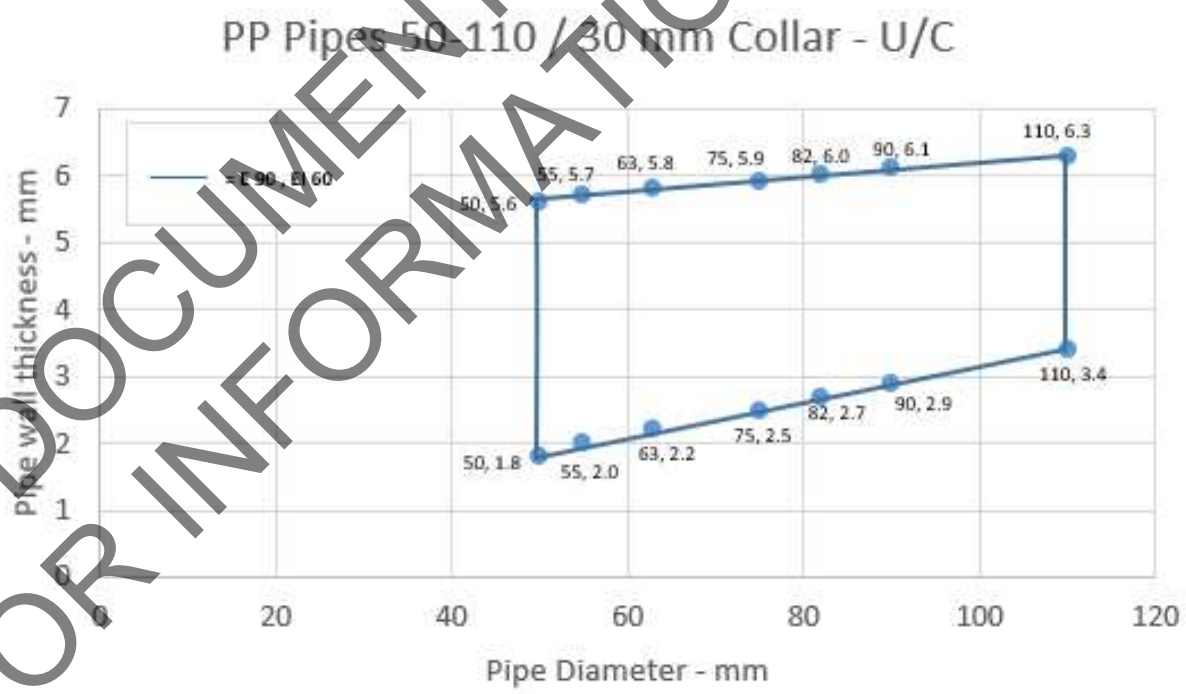


DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

A.1.1.3

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 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, E 90 U/C, E 90 C/C EI 60 U/U, EI 60 C/U, 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 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

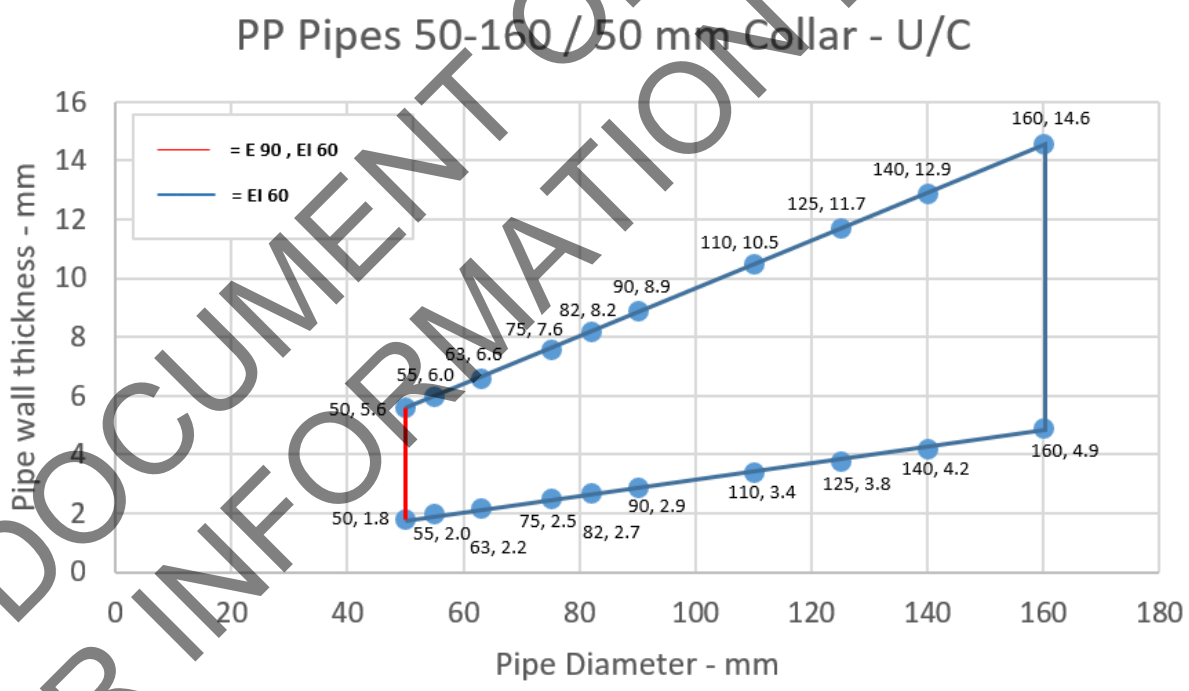


DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

A.1.1.3.1

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 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

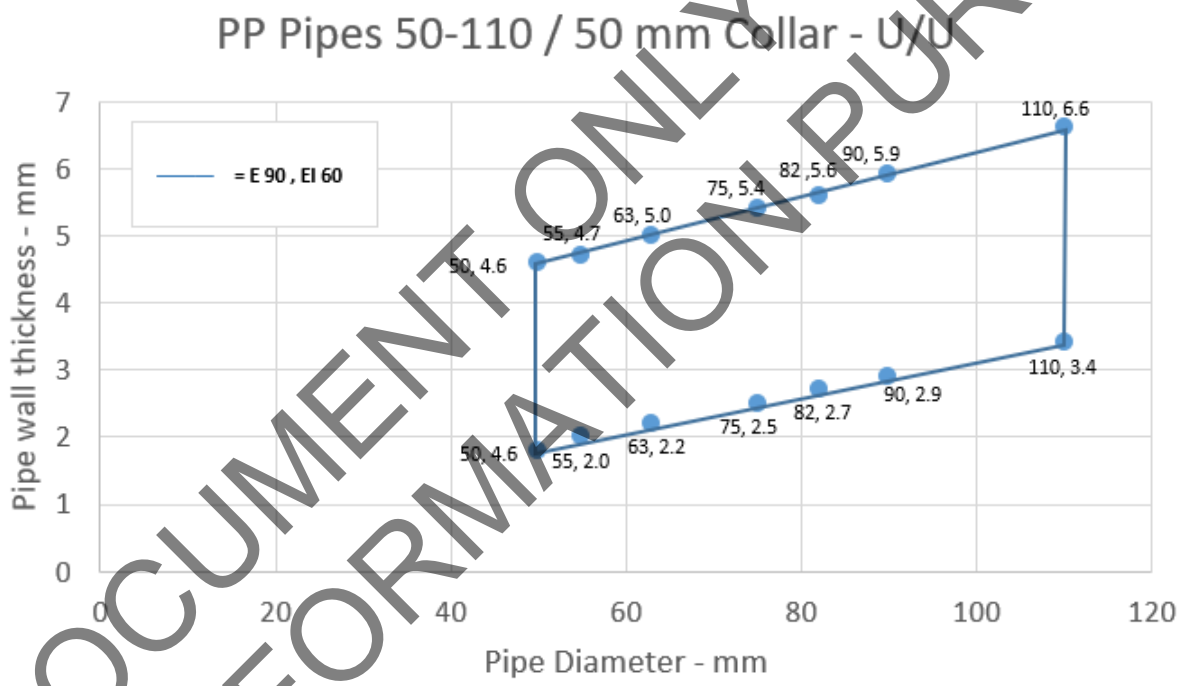


DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

A.1.1.3.2

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	**E 90 U/U, E 90 C/U, E 90 U/C, E 90 C/C EI 60 U/U, EI 60 C/U, EI 60 U/C, EI 60 C/C**
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

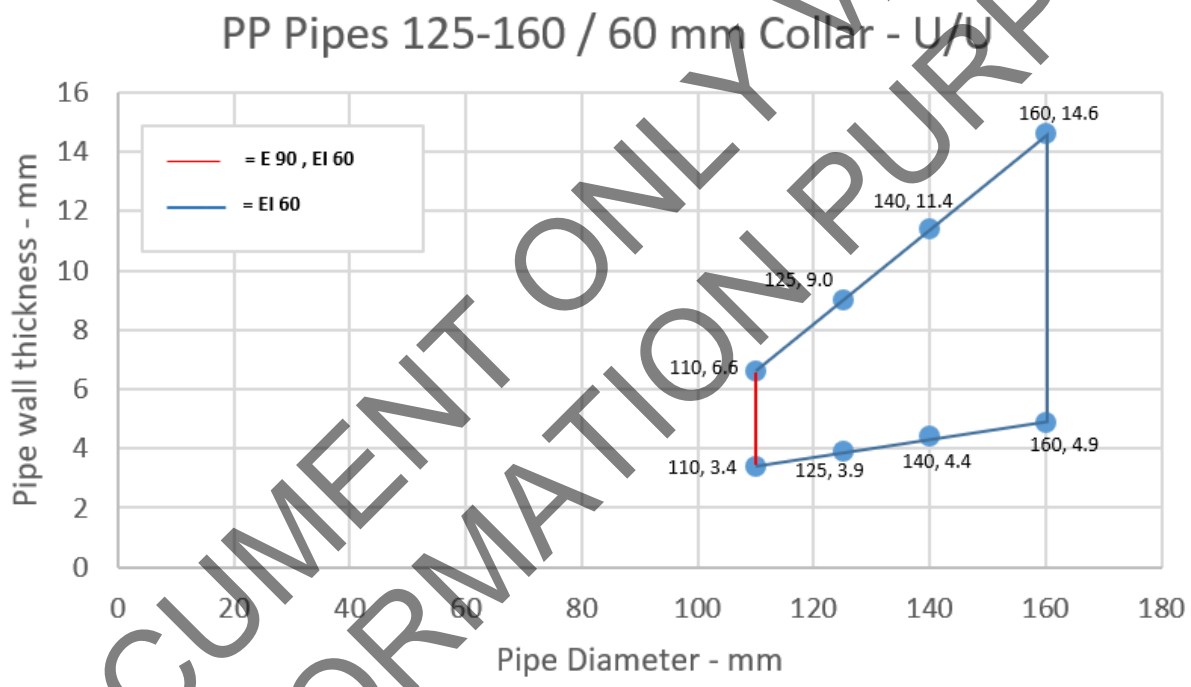


DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

A.1.1.3.3

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, E 90 U/C, E 90 C/C EI 60 U/U, EI 60 C/U, 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 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	

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



DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

A.1.1.4

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 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	
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	

DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

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**

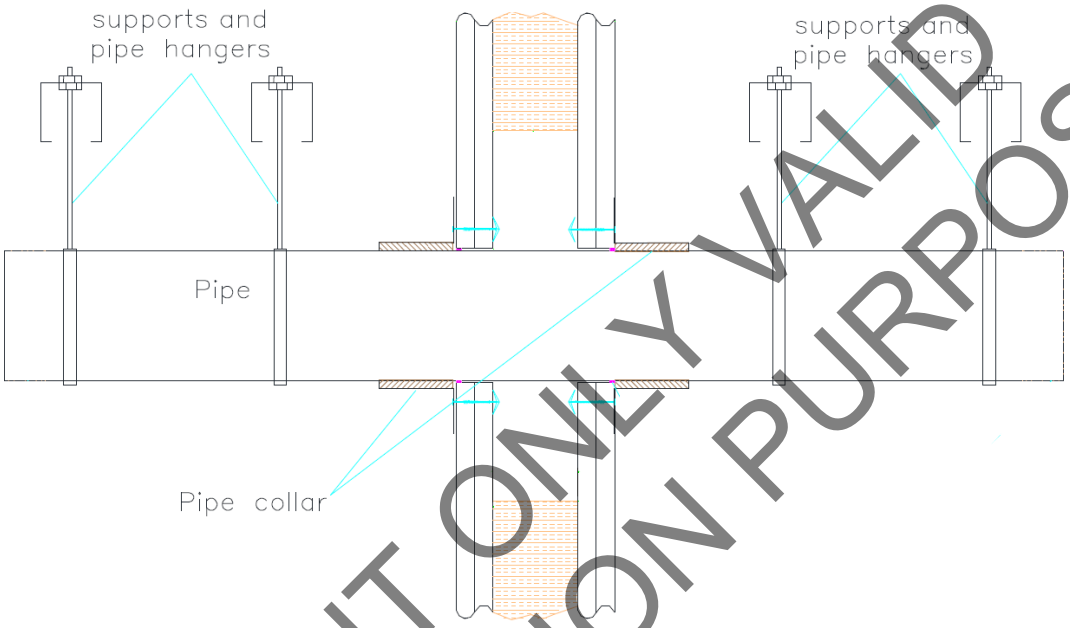
DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

A.2 Flexible or rigid wall constructions with wall thickness of minimum 120 mm

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

Penetration Seal: Combustible pipes fitted with Protecta FR Collar, to both sides of the wall.

Construction details:

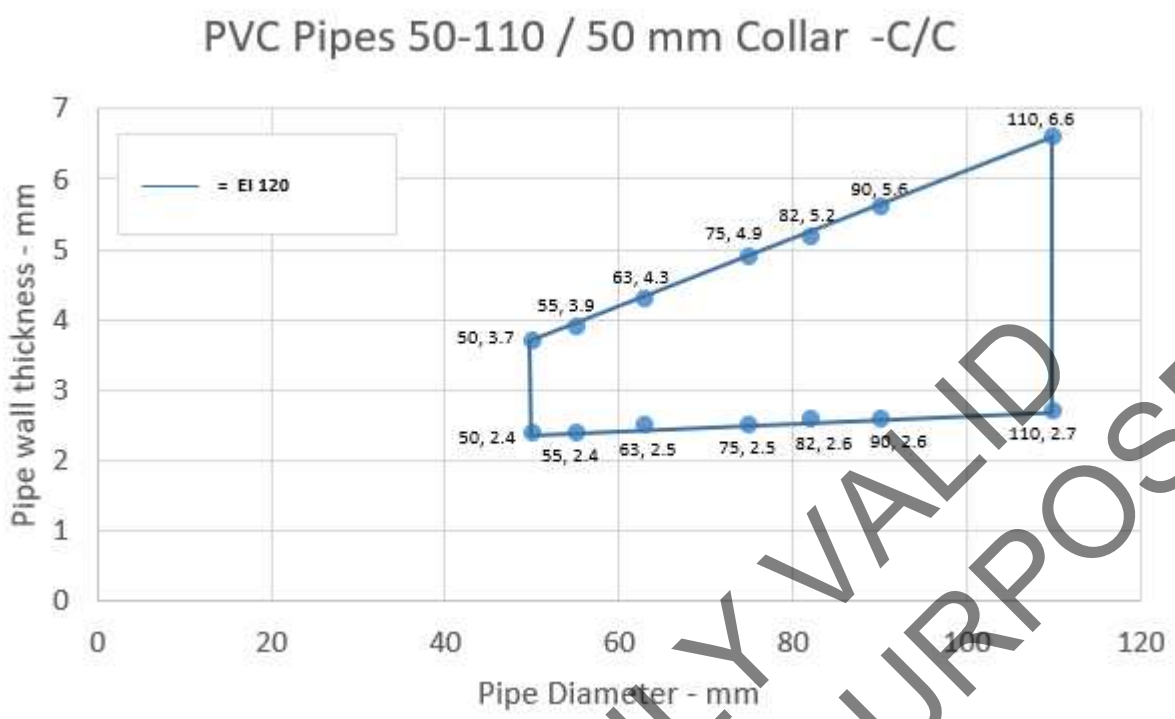


A.2.1.1

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		
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

DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

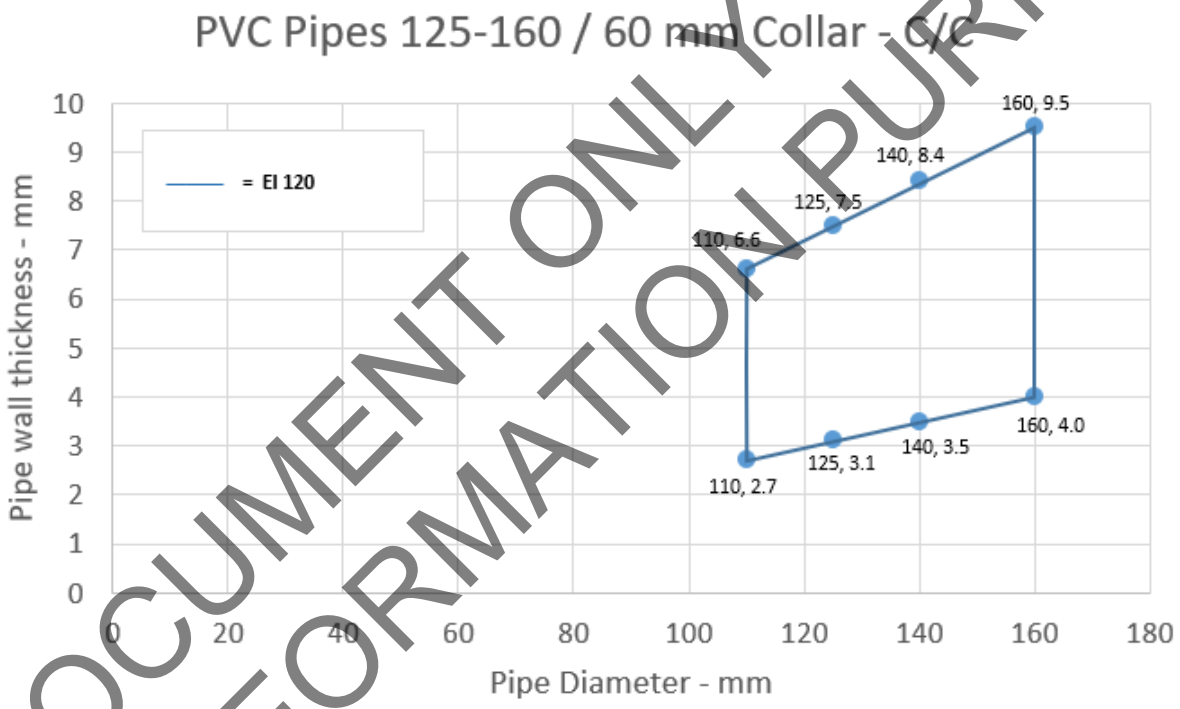


DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

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 110 mm, wall thickness 2.7-6.6 mm*	50 x 6.0 mm	**EI 120 C/C**
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

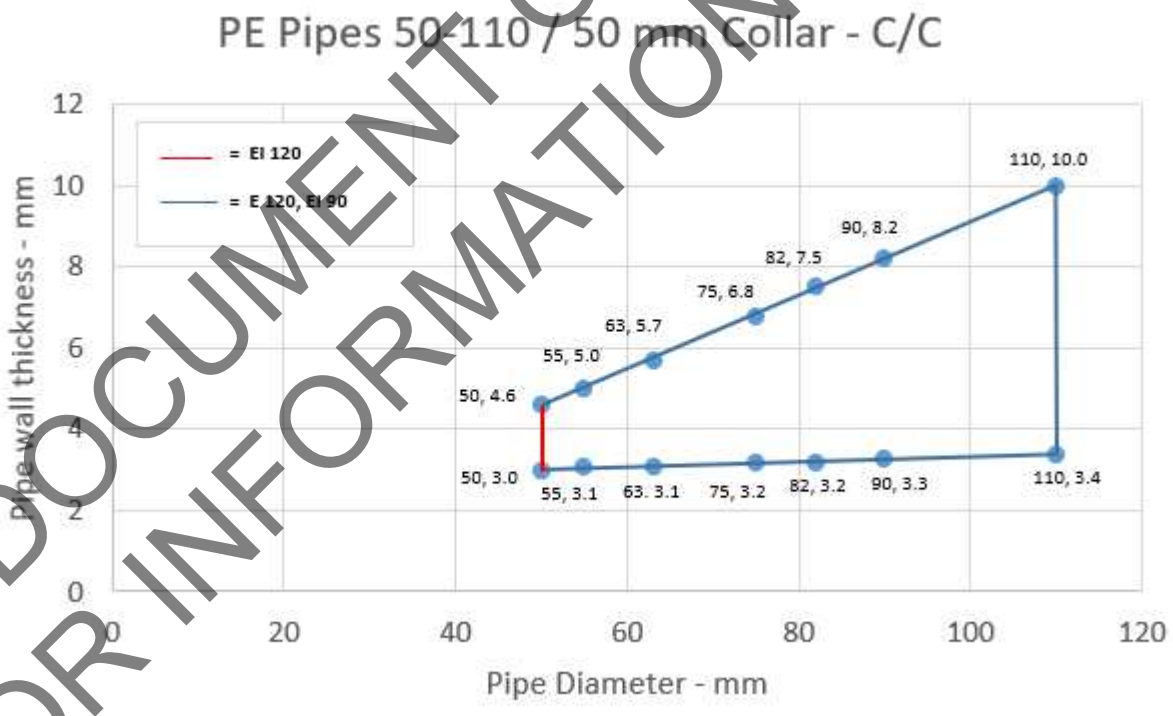


DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

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 32-50 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	
Diameter 110 mm, wall thickness 3.4 mm*	50 x 6.0 mm	**EI 120 C/C**

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

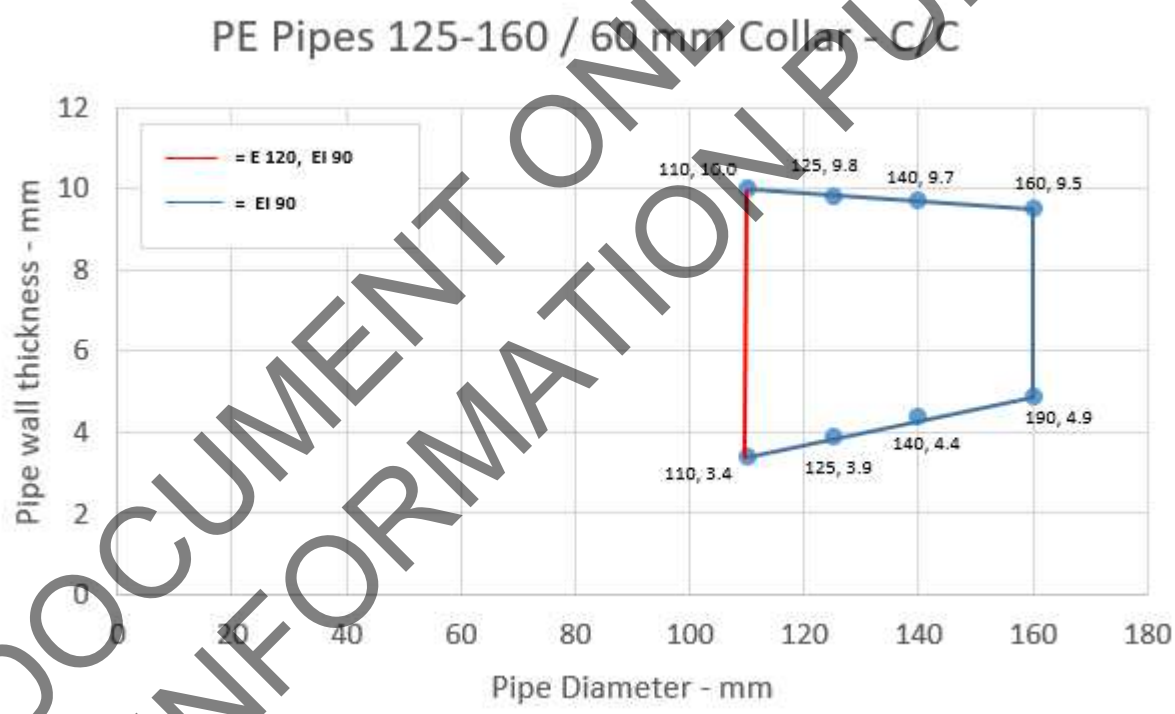


DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

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 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	
Diameter 160 mm, wall thickness 9.5 mm*	60 x 15.0 mm	**EI 120 C/C**

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

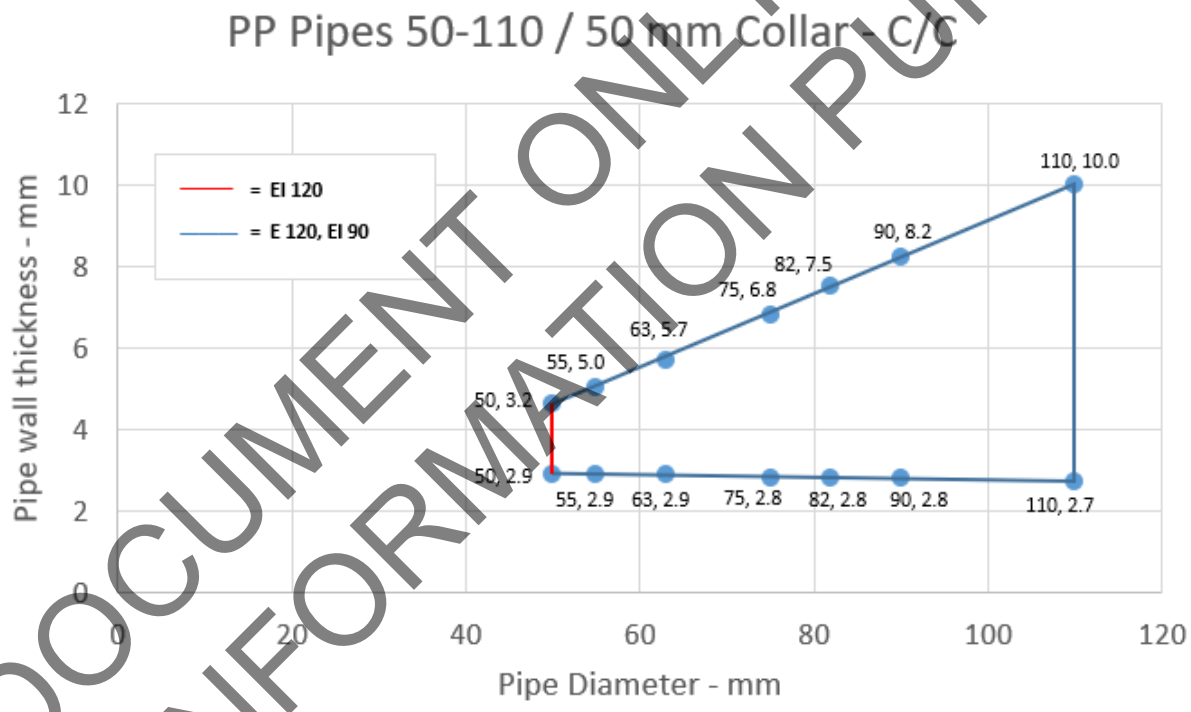


DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

A.2.1.3

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

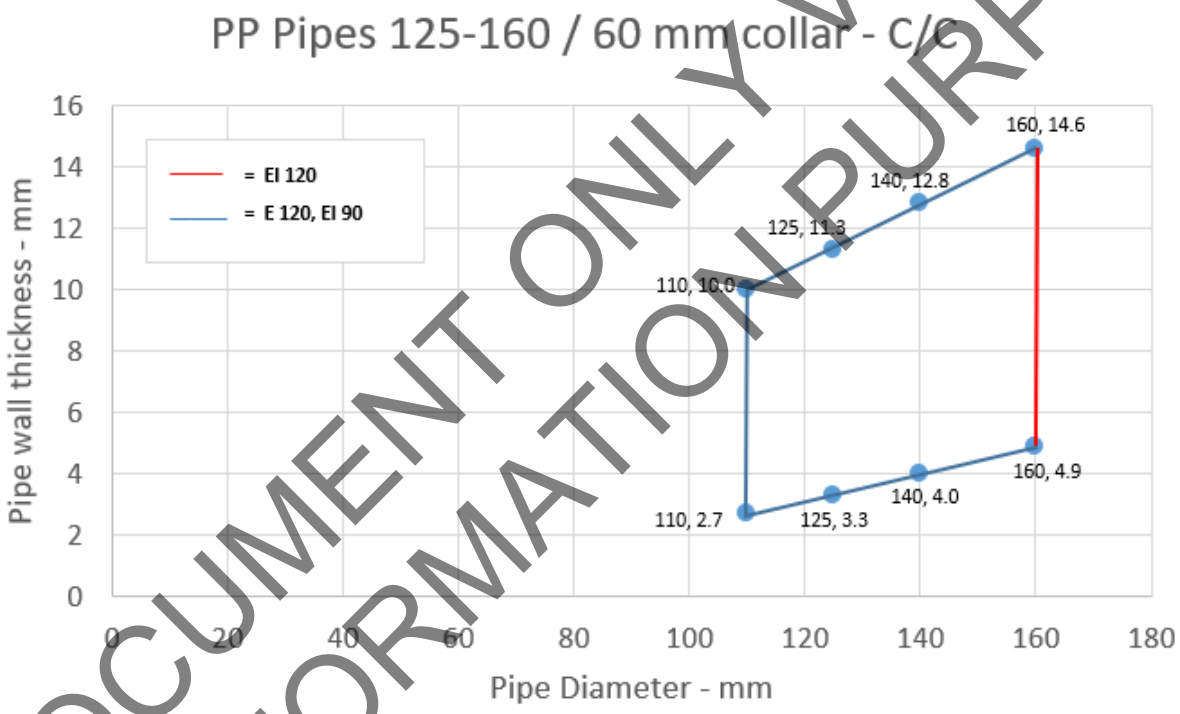


DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

A.2.1.3.1

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

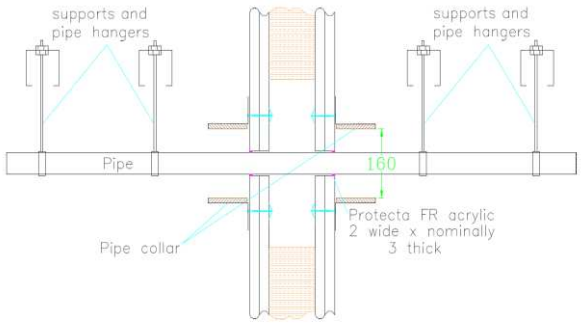


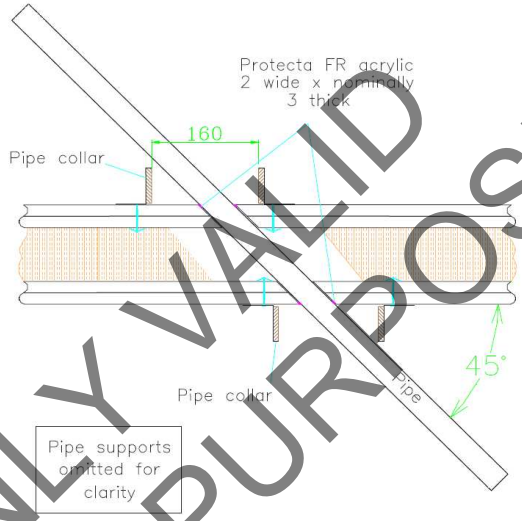
DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

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

Penetration Seal: Combustible pipes fitted with Protecta FR Collar, to both sides of the wall.

Construction details:





A.2.2.1

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 50 mm, wall thickness 2.4 mm #	60 x 15.0 mm	**EI 90 C/C**

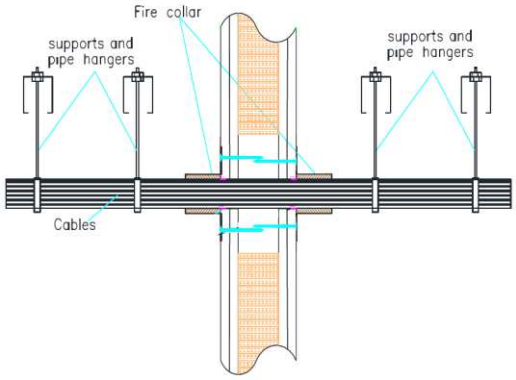
#Pipe fitted at 45° to the face of the partition in a horizontal plane

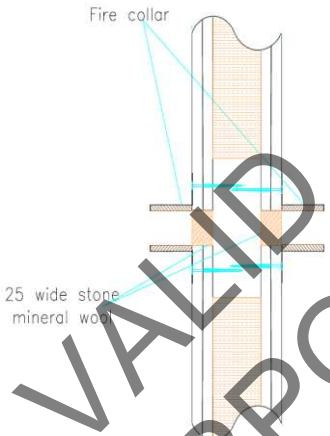
DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

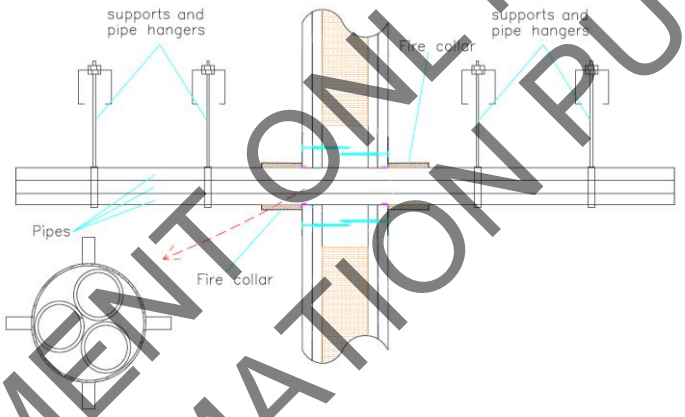
A.2.3 Penetration seals, in drywalls and concrete/masonry walls

Penetration Seal: Cables and pipes fitted with Protecta FR Collar, to both sides of the wall.

Construction details:







A.2.3.1

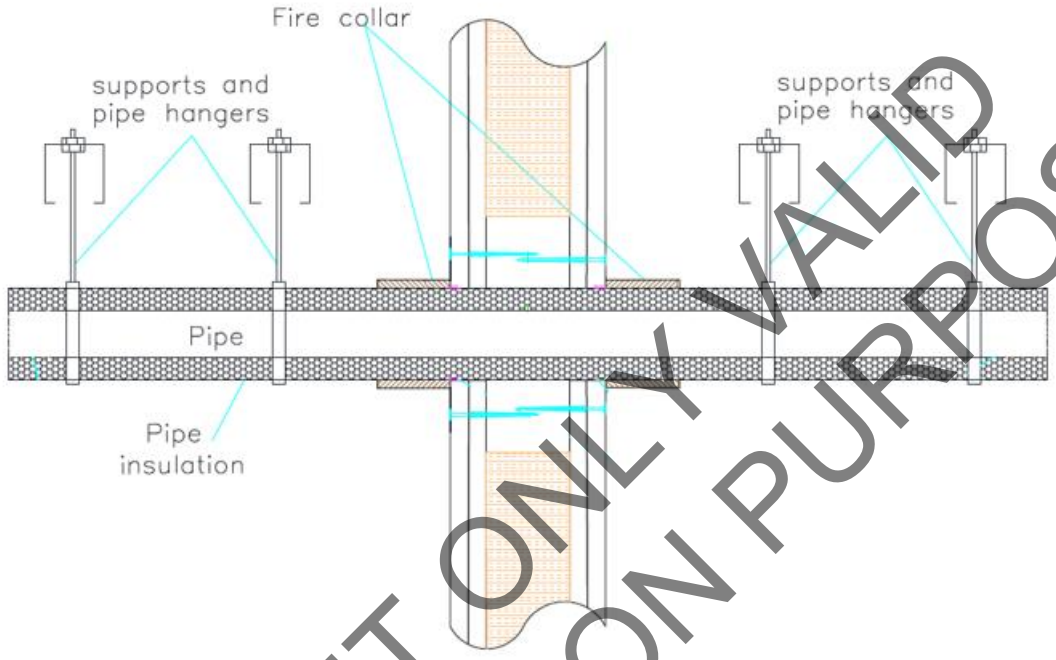
Services	Collar	Collar Inlay	Classification
Cables up to 21 mm Ø, in partial or fully filled tied bundles up to 110 mm Ø (Collar internal diameter to match cable bundle size)	Up to 110 mm collar at 30 mm height	Between 3.0 and 6.0 mm	**E 120, EI 60**
Cables up to 80 mm Ø, in partial or fully filled tied 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	**E 120, EI 60**
None (blank). Hole behind collar to be fitted with minimum 25 mm thick stone mineral wool insulation at minimum 33 kg/m^3.	Up to 110 mm collar at 30 mm height	Between 3.0 and 6.0 mm	**E 120, EI 60**
None (blank). Hole behind collar to be fitted with minimum 25 mm thick stone mineral wool insulation at minimum 33 kg/m^3.	160 mm collar at 60 mm height	15.0 mm	**EI 120**
Uponor Aqua 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	**E 120, EI 90 C/C**

DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

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

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

Construction details:

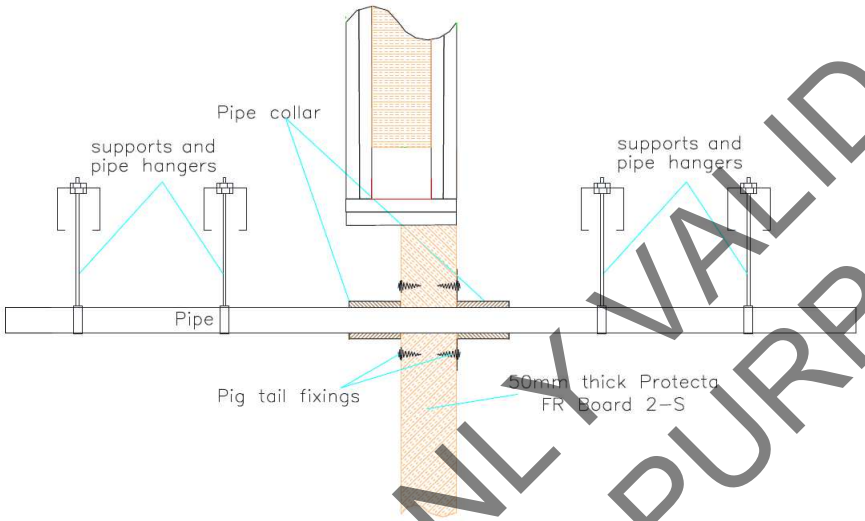


A.2.4.1

Services	Insulation	Collar	Classification
Copper pipe or mild steel			
Diameter 54 mm, wall thickness 1.2 mm	19 mm thick Elastomeric insulation minimum class B-s3,d0	Ø 110 x 50 x 6.0 mm	**E 120 C/C, EI 90 C/C**
Diameter 54 mm, wall thickness 1.2 mm	25 mm thick Phenolic Foam insulation	Ø 110 x 50 x 6.0 mm	**E 120 C/C, EI 60 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**

DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

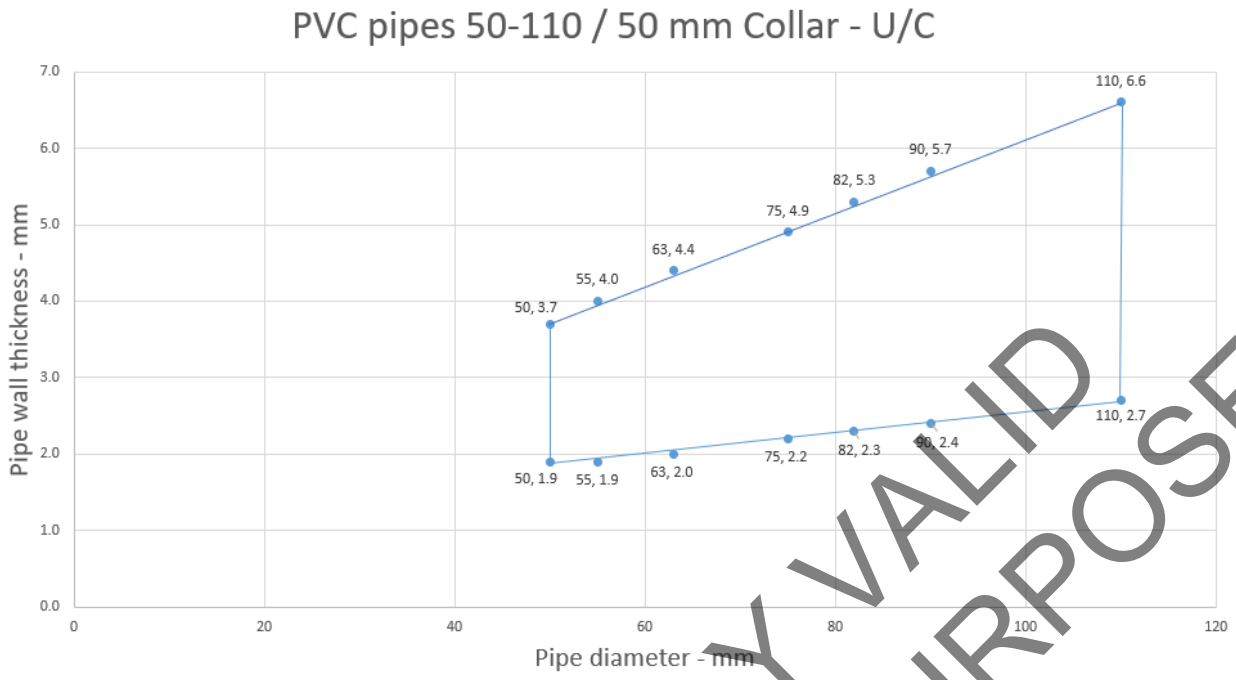
A.2.5 Penetration seals, in drywalls and concrete/masonry walls

Penetration Seal: Combustible pipes fitted with Protecta FR Collar, to both sides of the FR Board. 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.2.5.1

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	

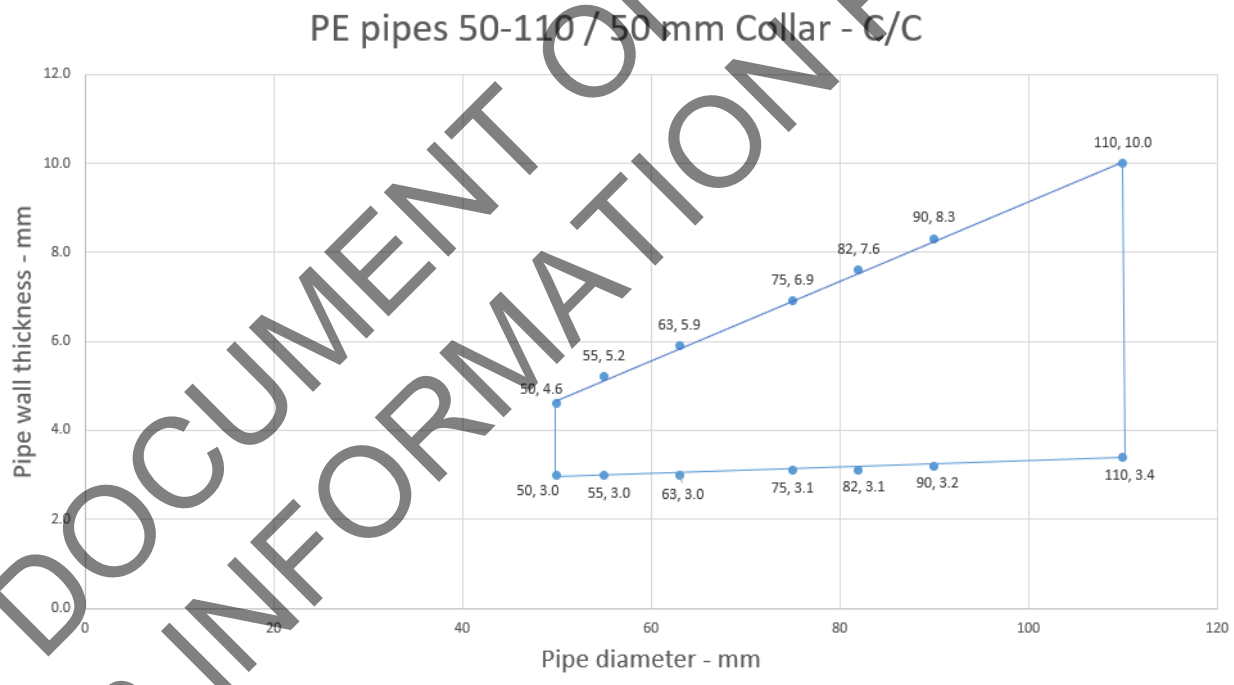
DOCUMENT ONLY VALID FOR INFORMATION PURPOSES



DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

A.2.5.2

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	



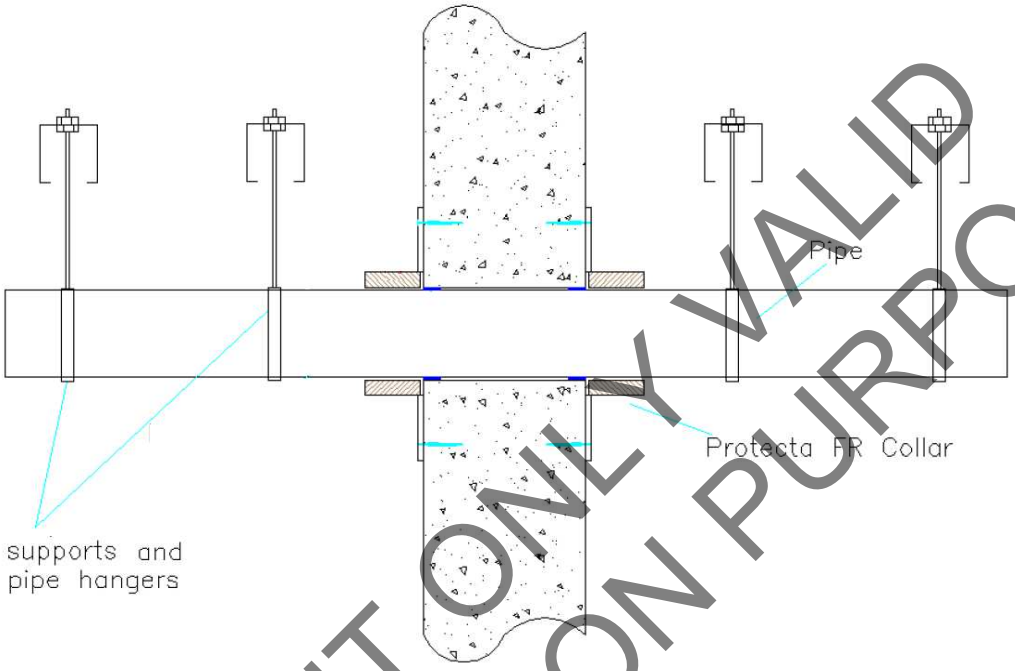
DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

A.3 Rigid walls constructions with wall thickness of minimum 150 mm

A.3.1 Penetration seals, in concrete/masonry walls

Penetration Seal: Combustible pipes fitted with Protecta FR Collar, to both sides of the wall.

Construction details:

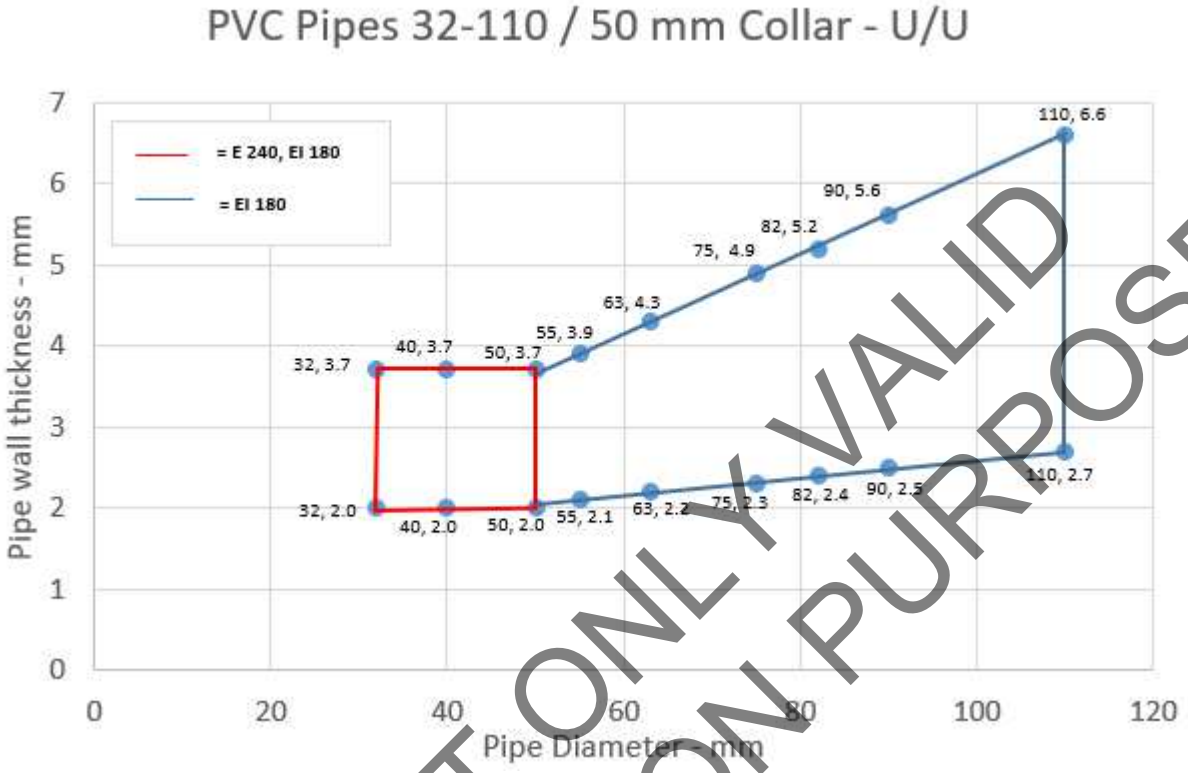


A.3.1.1

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 mm, wall thickness 2.0-3.7 mm*	50 x 3.0 mm	**E 240 U/U, E 240 C/U, E 240 U/C, E 240 C/C EI 180 U/U, EI 180 C/U, 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, 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

DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

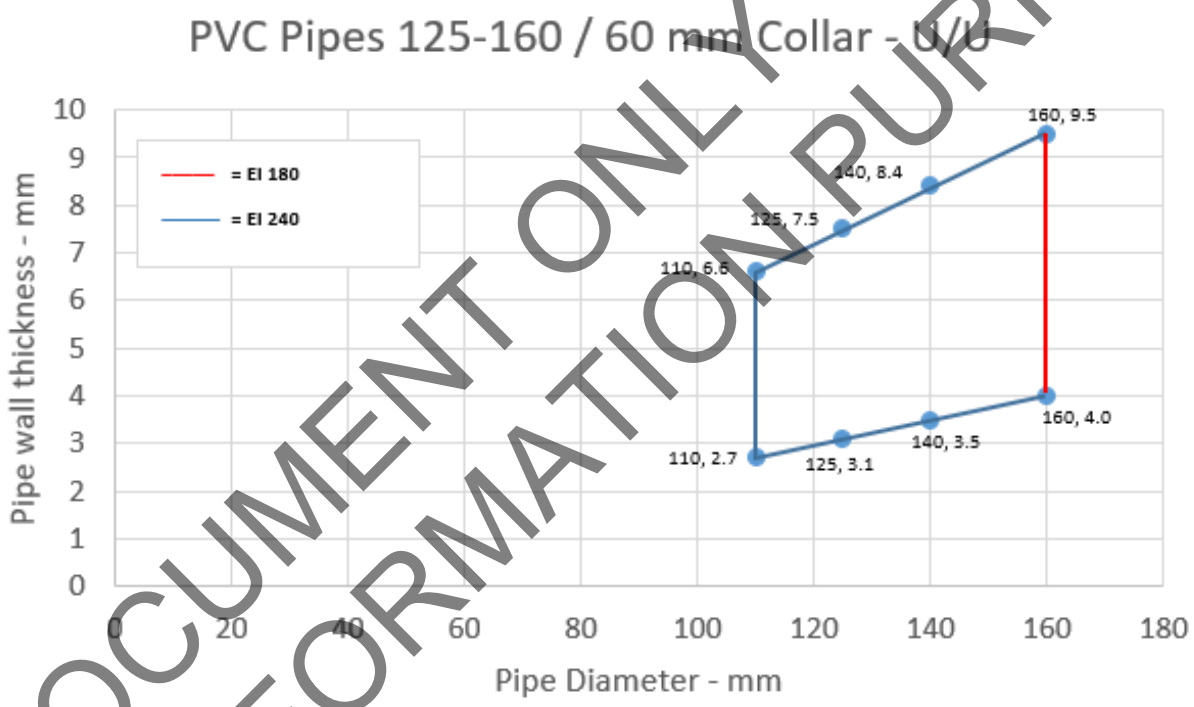


DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

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	**EI 180 U/U, EI 180 C/U, 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, 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

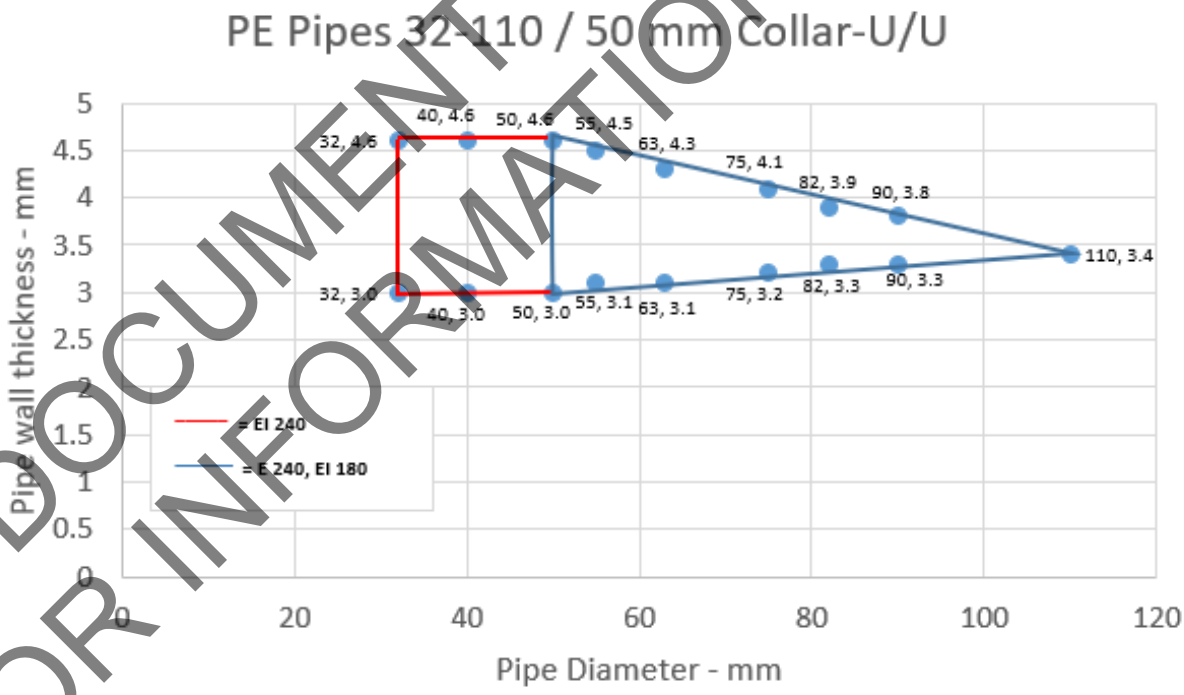


DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

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 mm, wall thickness 3.0-4.6 mm*	50 x 3.0 mm	**EI 240 U/U, EI 240 C/U, 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, E 240 U/C, E 240 C/C EI 180 U/U, EI 180 C/U, 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

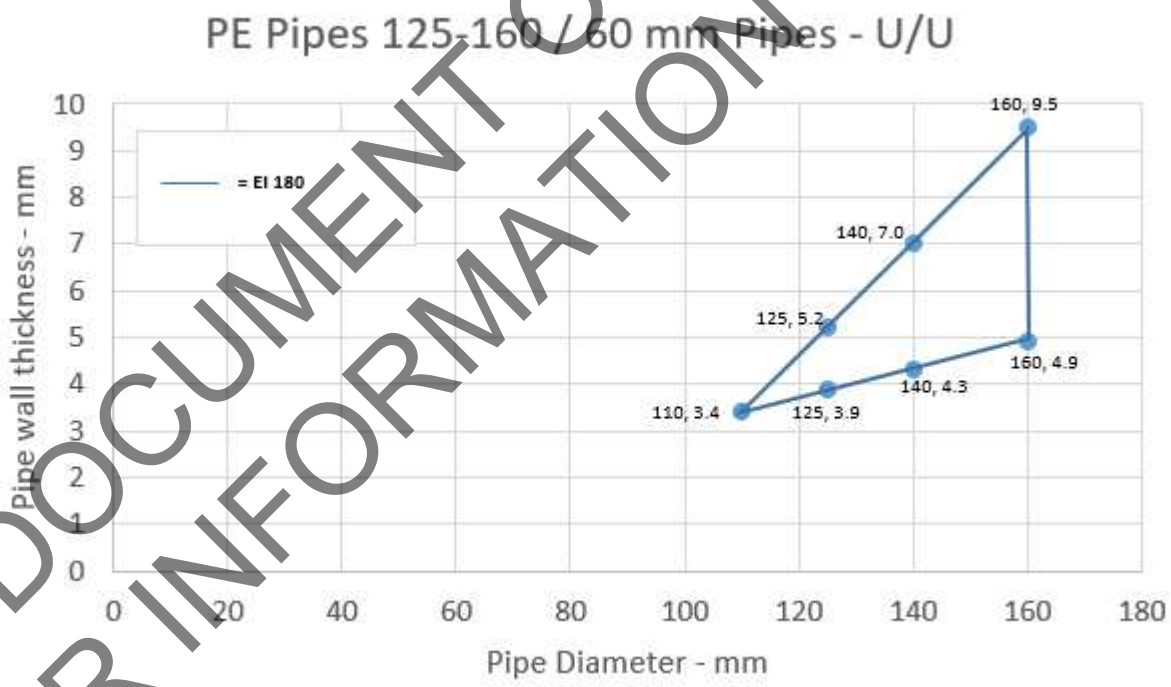


DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

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 mm*	50 x 6.0 mm	**E 240 U/U, E 240 C/U, E 240 U/C, E 240 C/C EI 180 U/U, EI 180 C/U, 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, 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 EI 90 C/C**

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

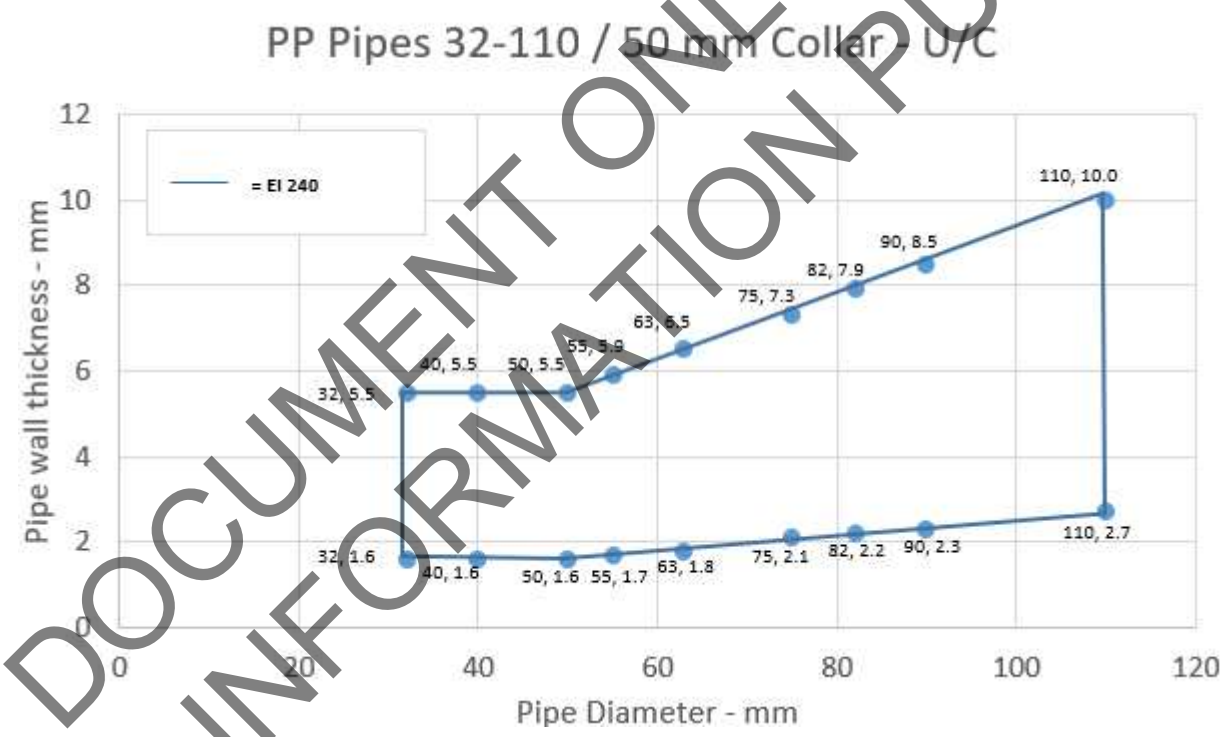


DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

A.3.1.3

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

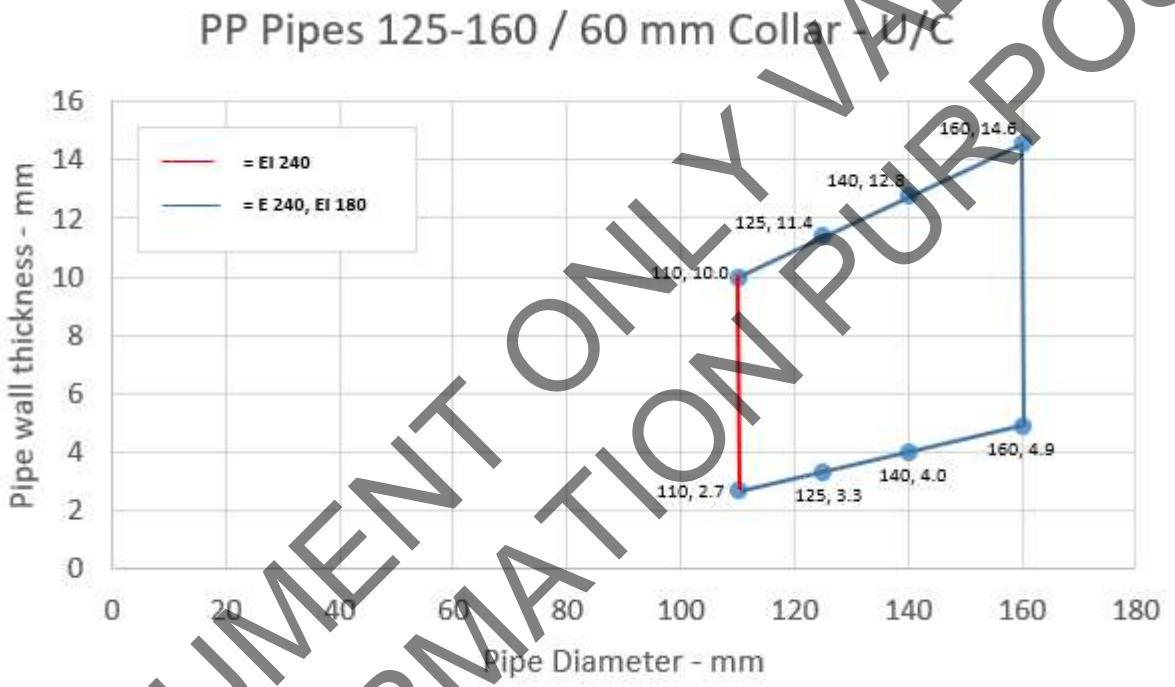


DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

A.3.1.3.1

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 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

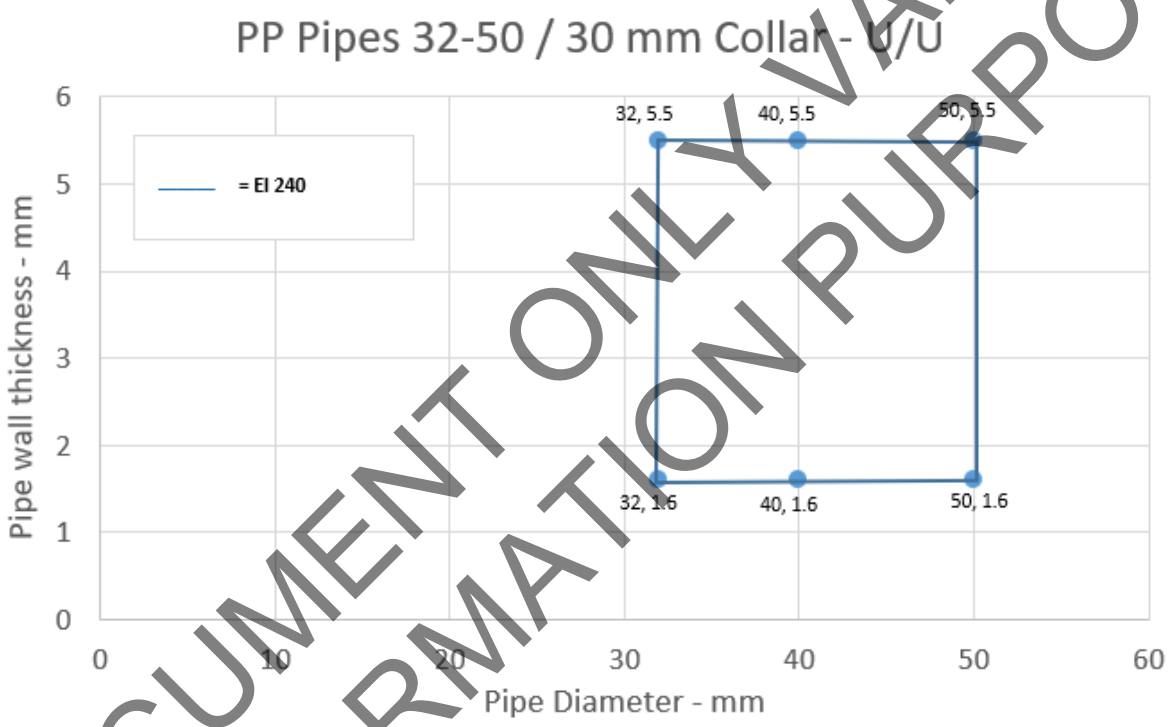


DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

A.3.1.3.2

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, 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

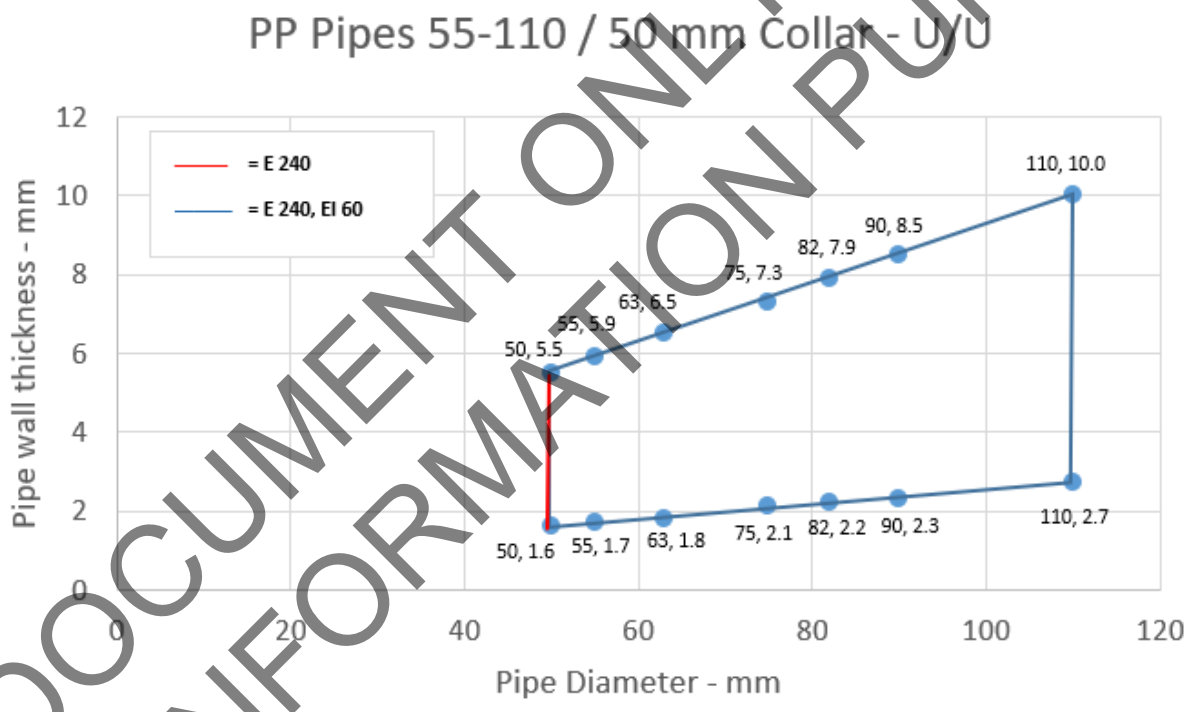


DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

A.3.1.3.3

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, 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, 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

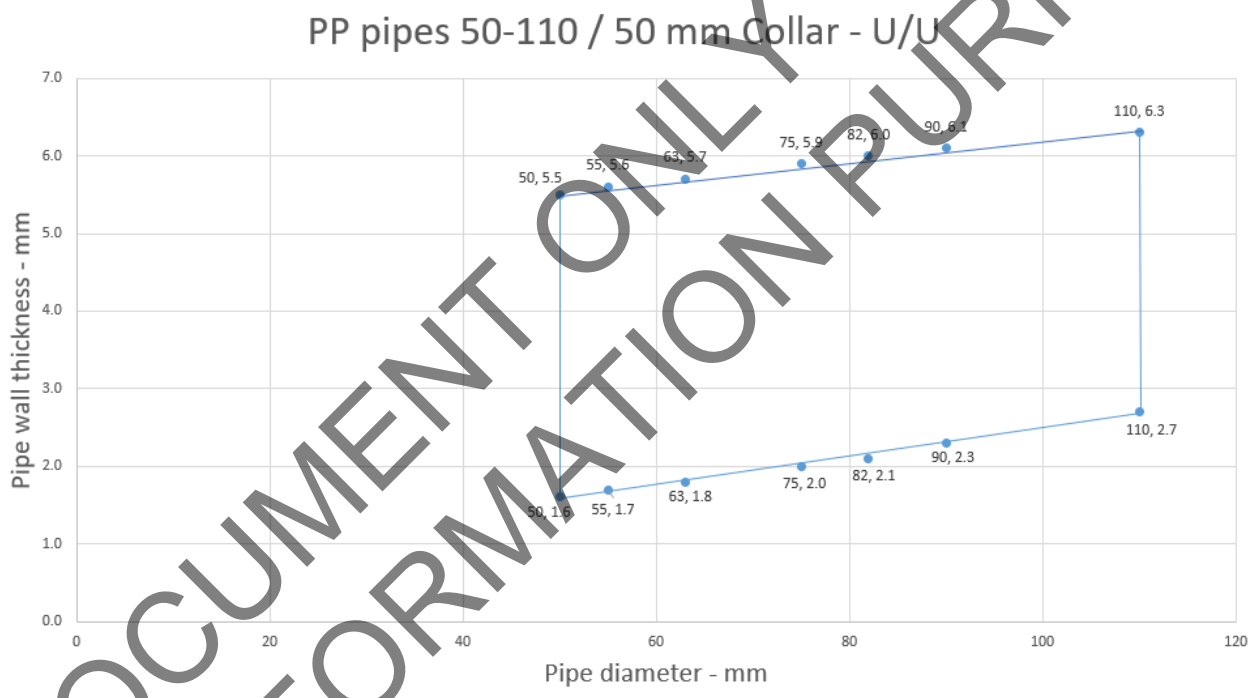


DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

A.3.1.3.4

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, 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

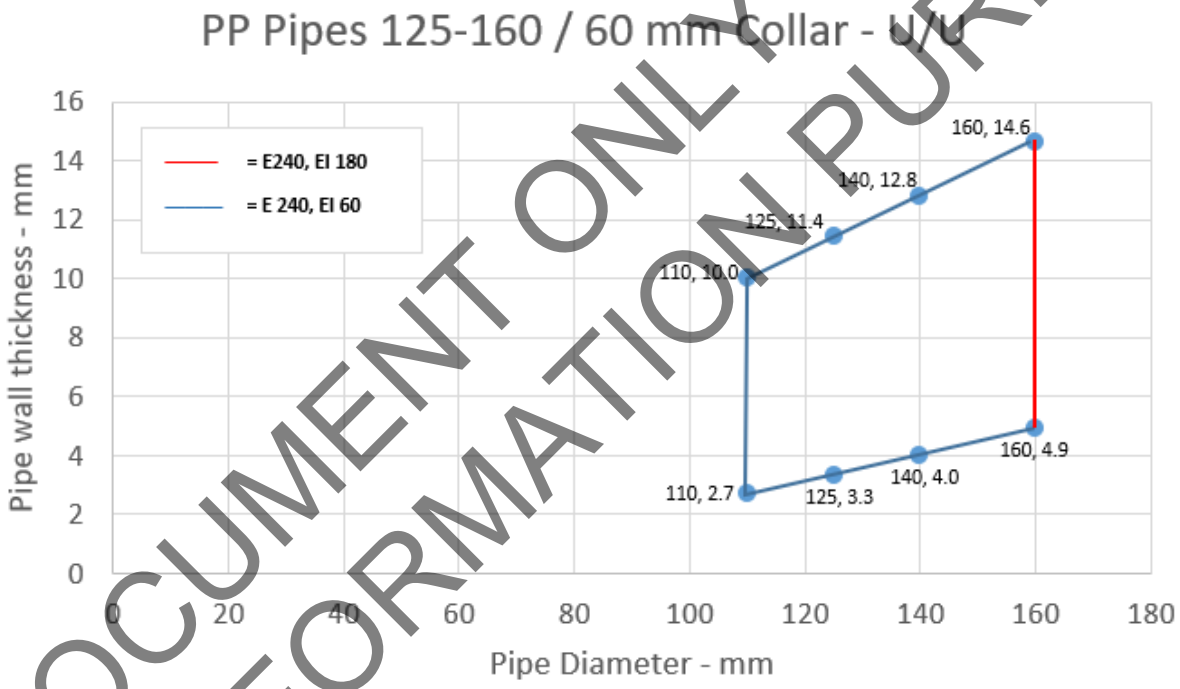


DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

A.3.1.3.5

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, EI 60 U/U, EI 60 C/U**
Diameter 125 mm, wall thickness 33-11.4 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, E 240 U/C, E 240 C/C EI 180 U/U, EI 180 C/U, EI 180 U/C, EI 180 C/C**

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



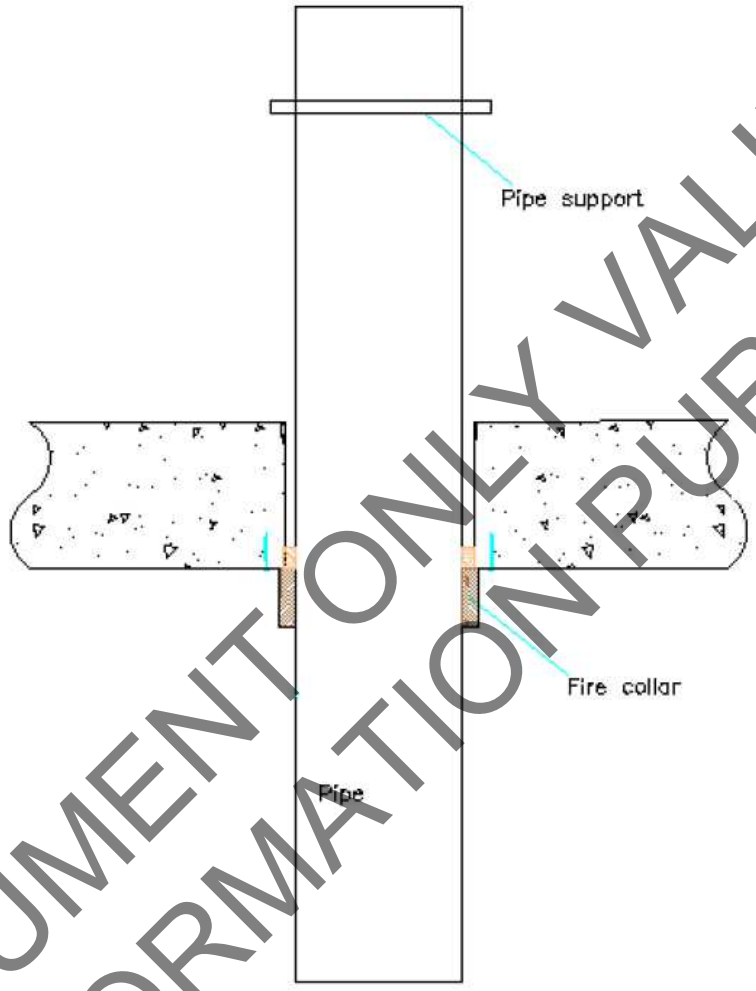
DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

A.4 Rigid floor constructions with floor thickness of minimum 150 mm

A.4.1 Penetration seals, surface mounted in concrete floors

Penetration Seal: Combustible pipes fitted with Protecta FR Collar, to the soffit of the floor.

Construction details:

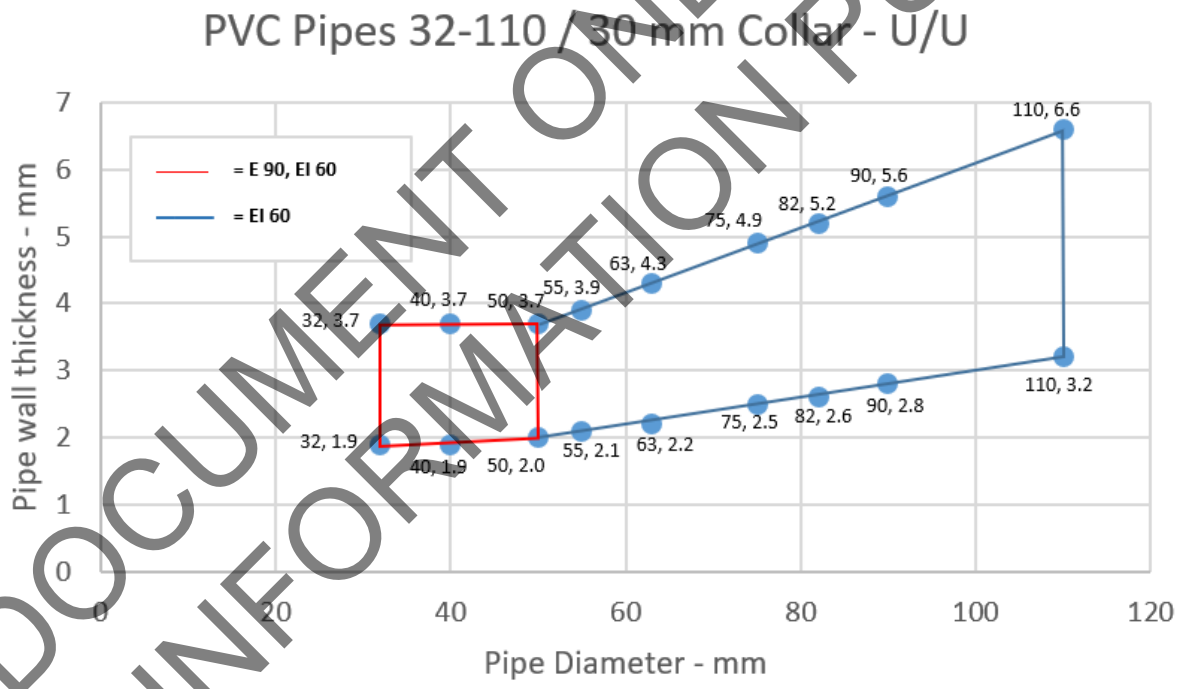


DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

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 1.9-3.7 mm*	30 x 3.0 mm	**E 90 U/U, E 90 C/U, E 90 U/C, E 90 C/C EI 60 U/U, EI 60 C/U, 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, EI 60 U/C, EI 60 C/C**
Diameter 63 mm, wall thickness2.2-4.3 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

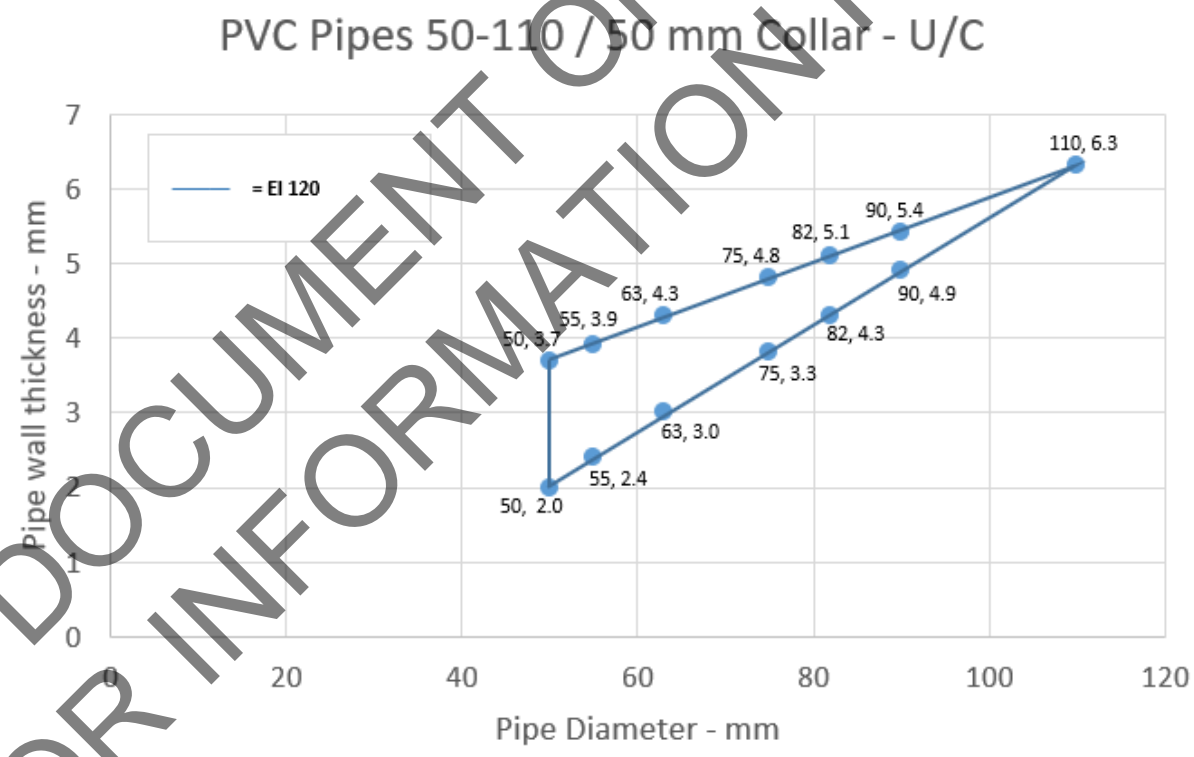


DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

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 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

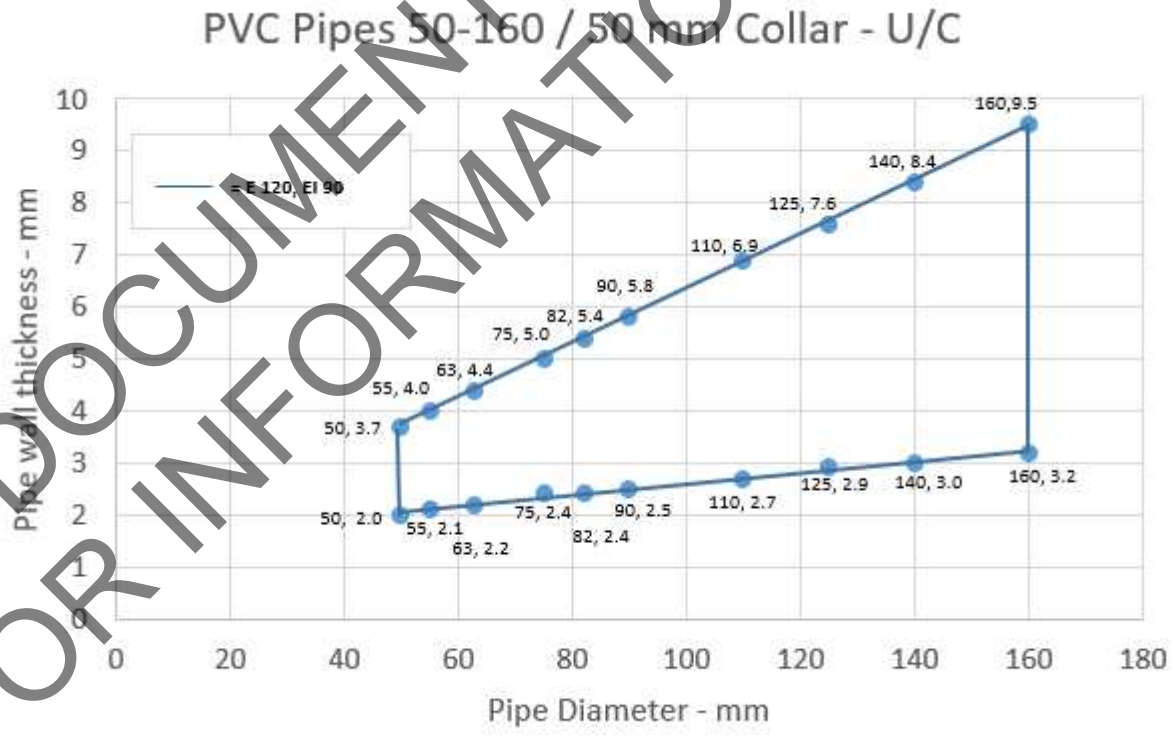


DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

A.4.1.1.2

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	
Diameter 160 mm, wall thickness 3.2-9.5 mm	50 x 15.0 mm	**E 180 U/C, E 180 C/C EI 90 U/C, EI 90 C/C**

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

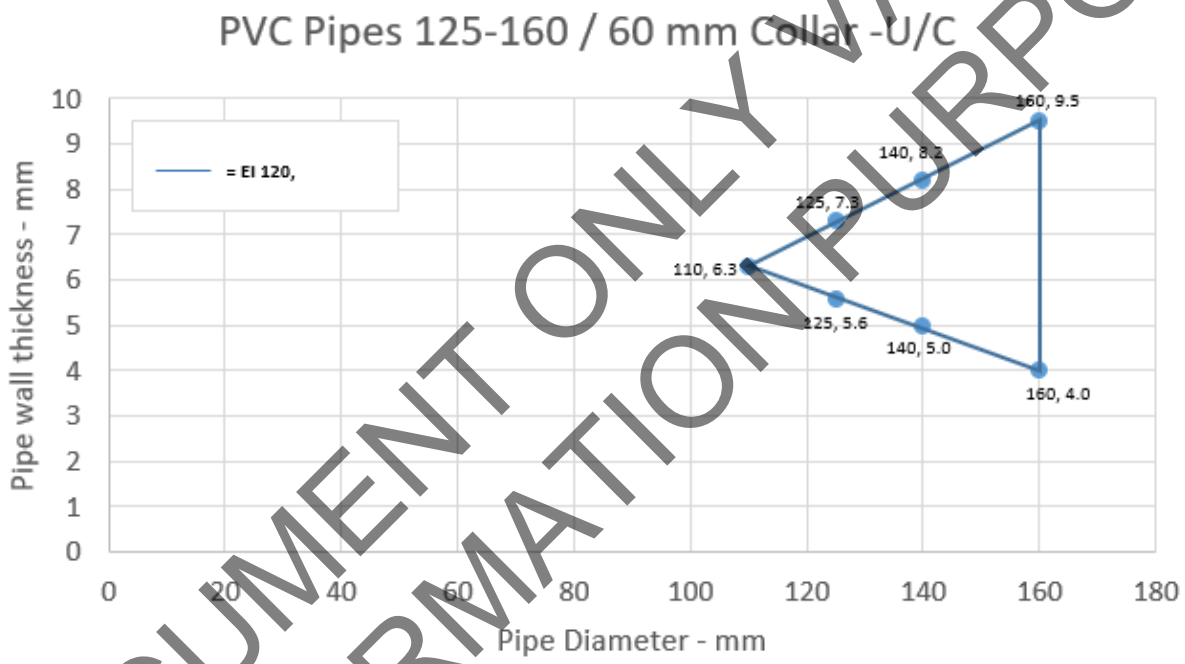


DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

A.4.1.1.3

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

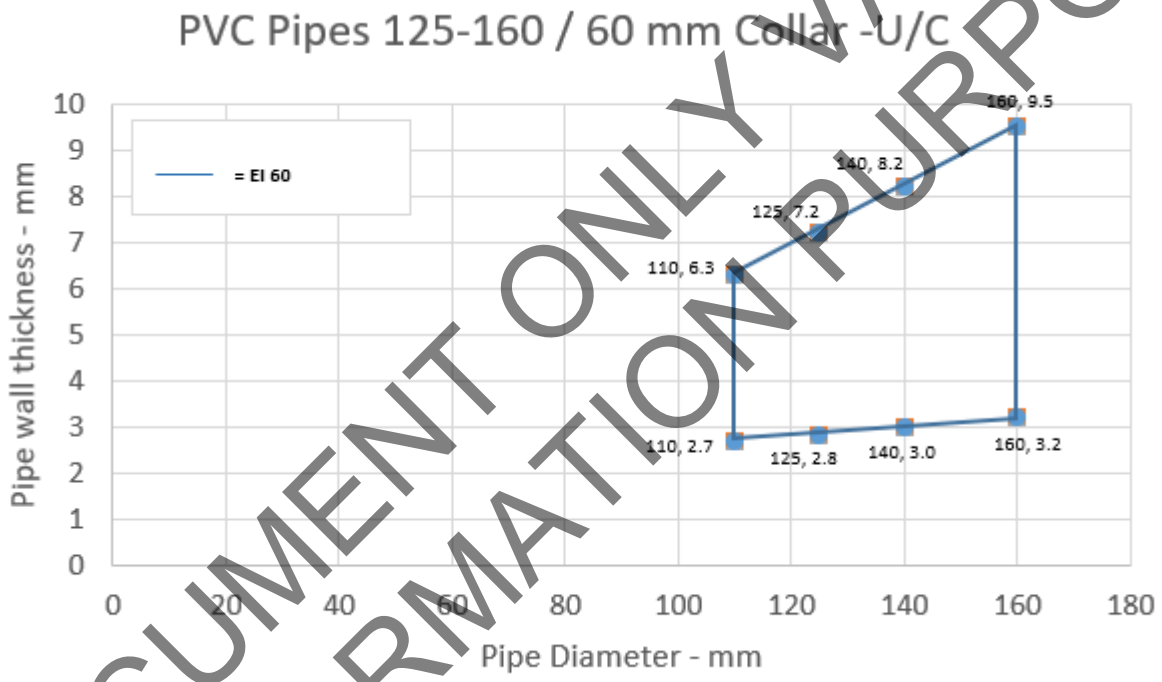


DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

A.4.1.1.4

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

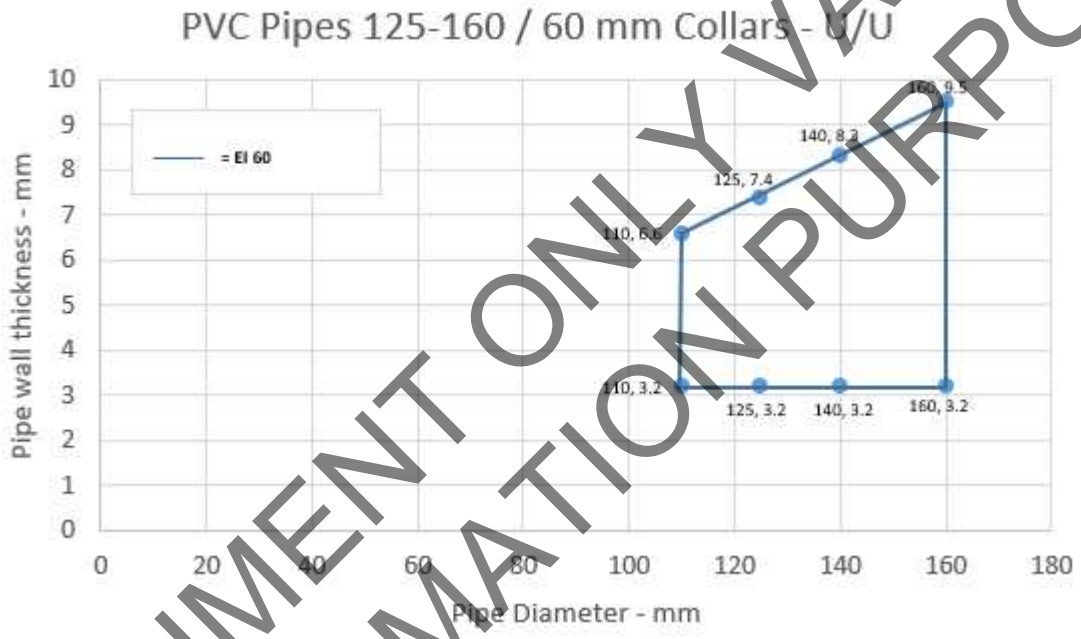


DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

A.4.1.1.5

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

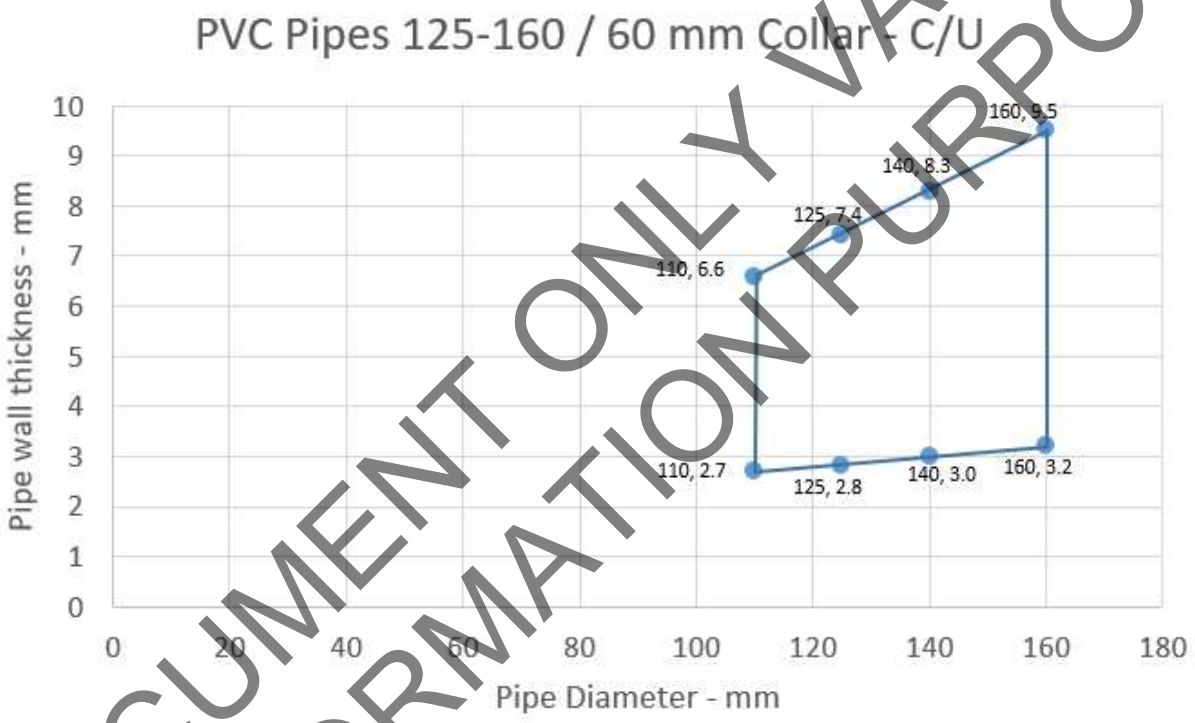


DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

A.4.1.1.6

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

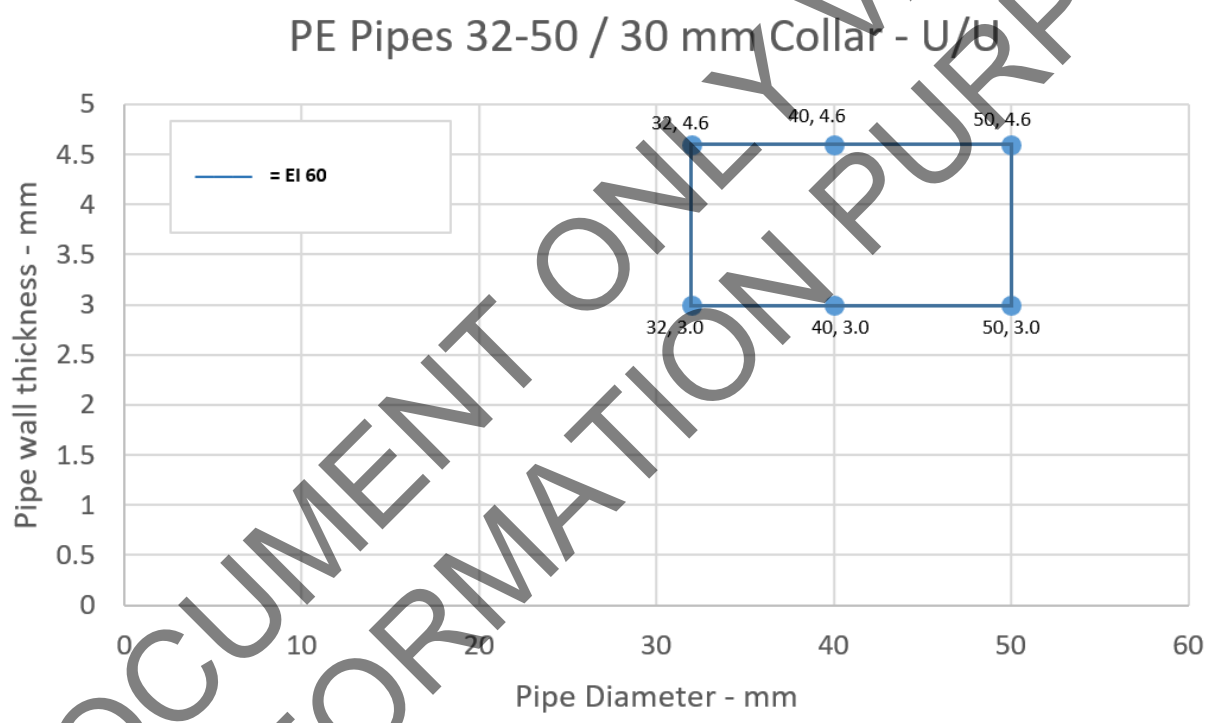


DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

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*	30 x 3.0 mm	**EI 60 U/U, EI 60 C/U, EI 60 U/C, EI 60 C/C**
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	**EI 180 U/C**

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

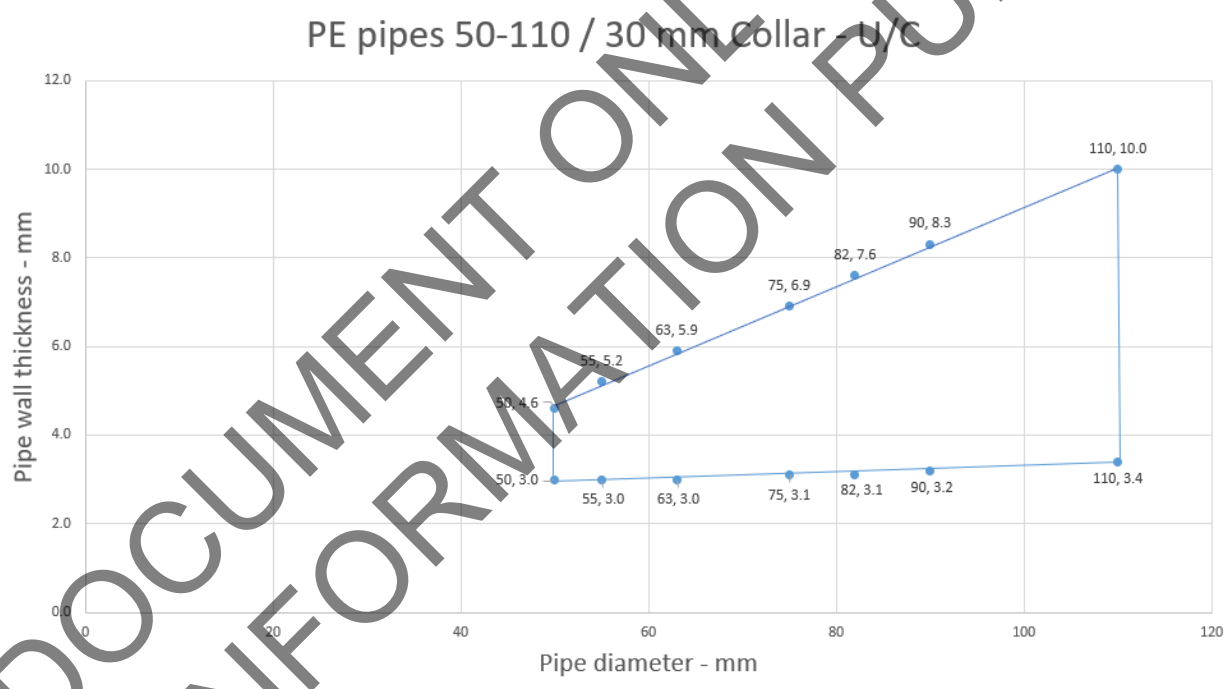


DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

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 50 mm, wall thickness 3.0-4.6 mm*	30 x 3.0 mm	**EI 60 U/U, EI 60 C/U, 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

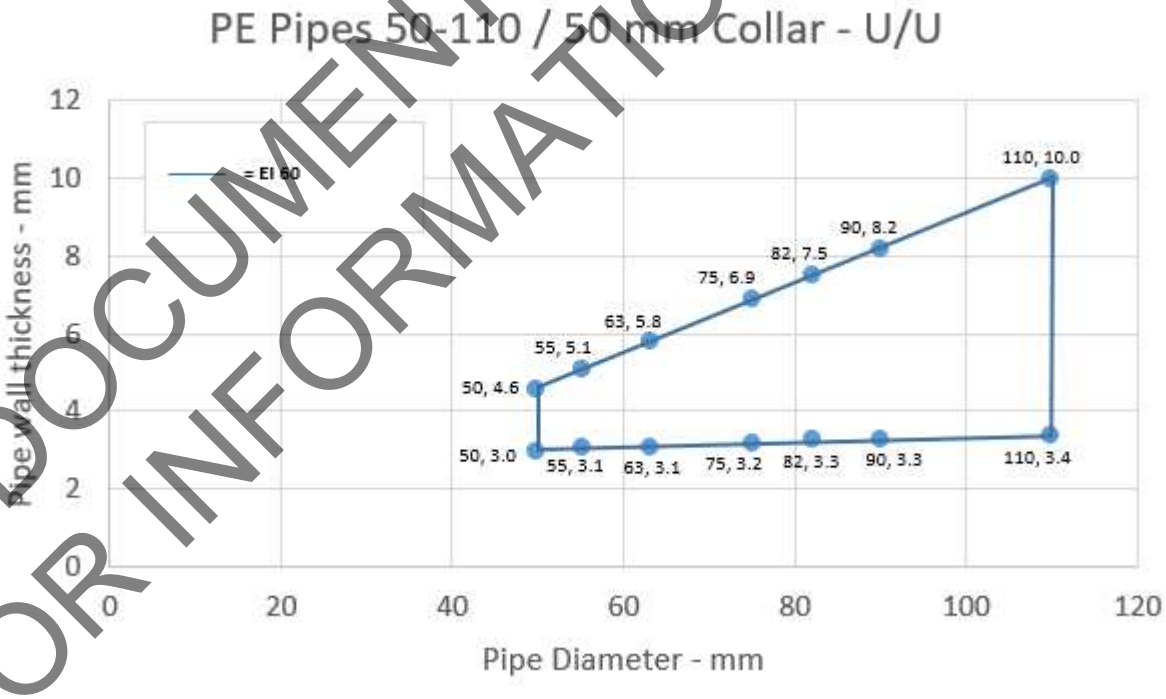


DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

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 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 3.0 mm	50 x 3.0 mm	**EI 240 U/U**
Diameter 50 mm, wall thickness 3.0 mm	50 x 3.2 mm	
Diameter 50 mm, wall thickness 3.0-4.6 mm*	50 x 3.0 mm	**EI 60 U/U, EI 60 C/U**
Diameter 55 mm, wall thickness 3.1-5.1 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	

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

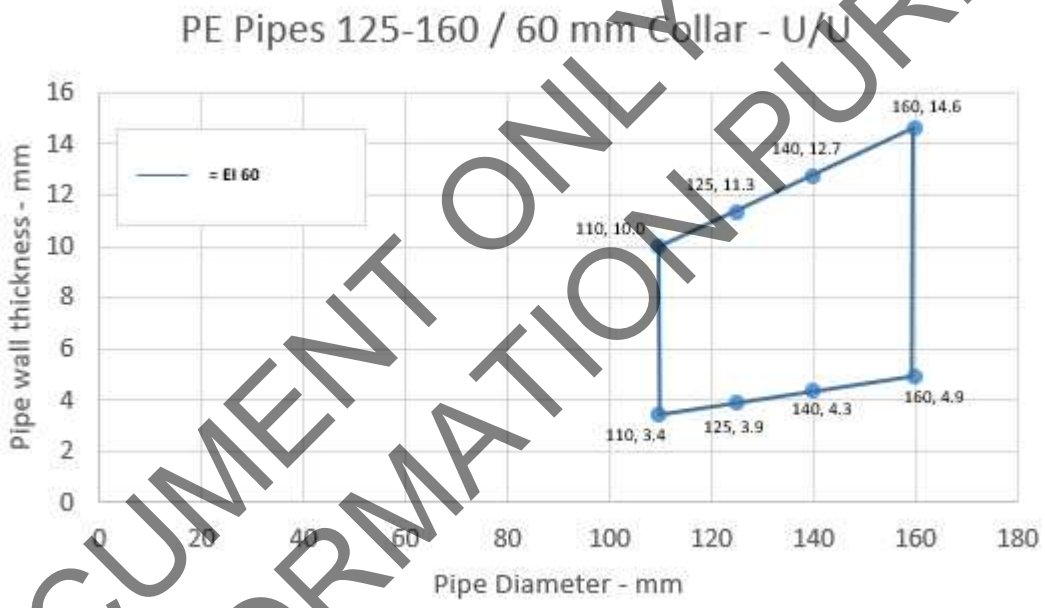


DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

A.4.1.2.3

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

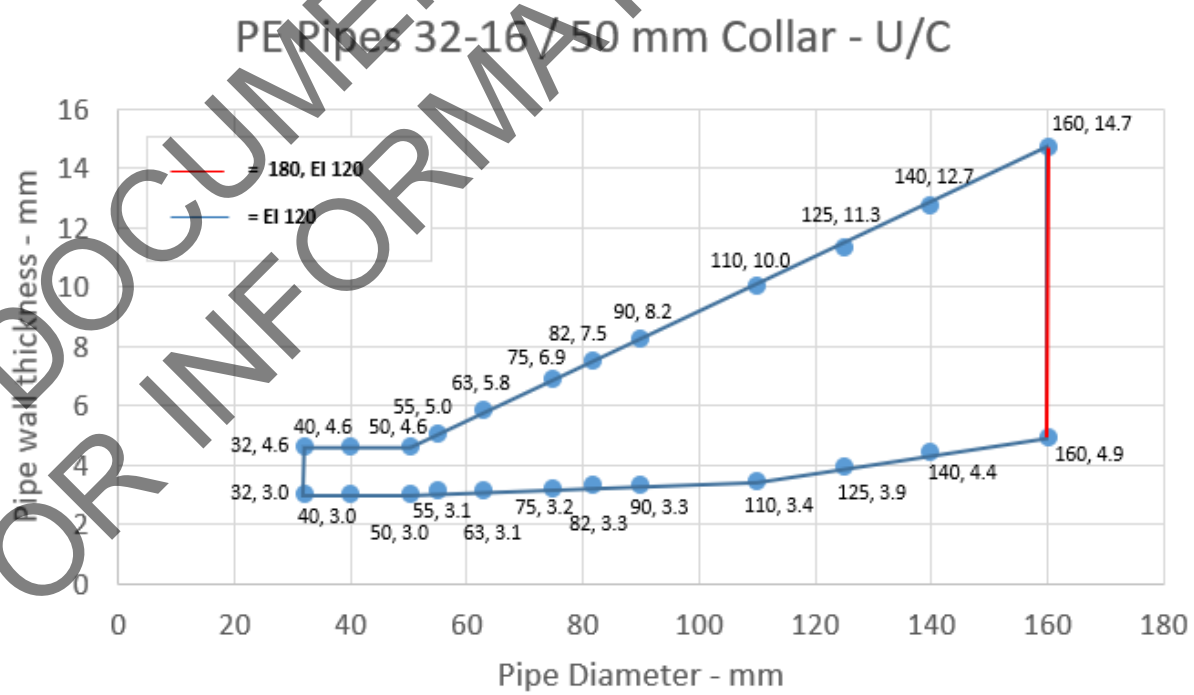


DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

A.4.1.2.4

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** **EI 120 U/C, EI 120 C/C**

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

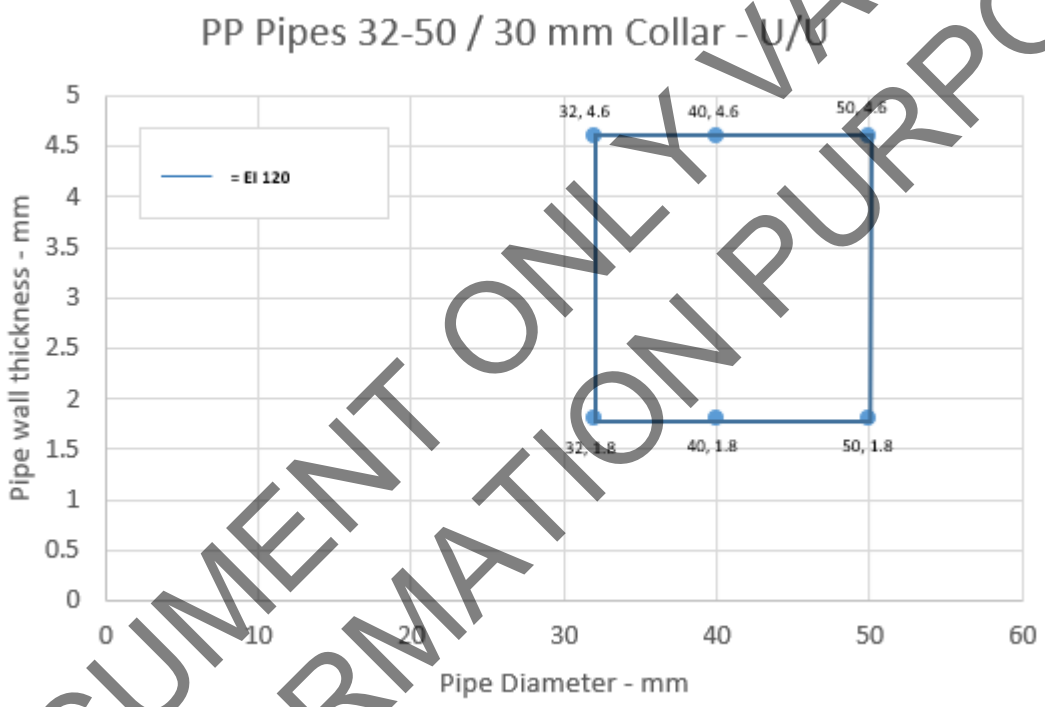


DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

A.4.1.3

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, 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*		

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

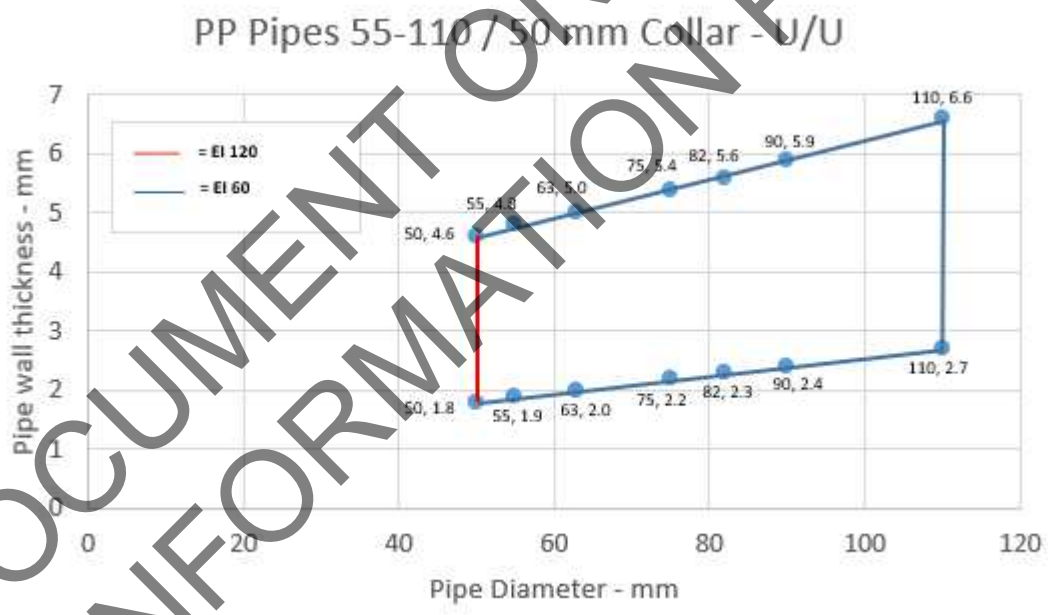


DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

A.4.1.3.1

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 1.8-4.6 mm*	50 x 3.0 mm	**EI 120 U/U, EI 120 C/U, 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

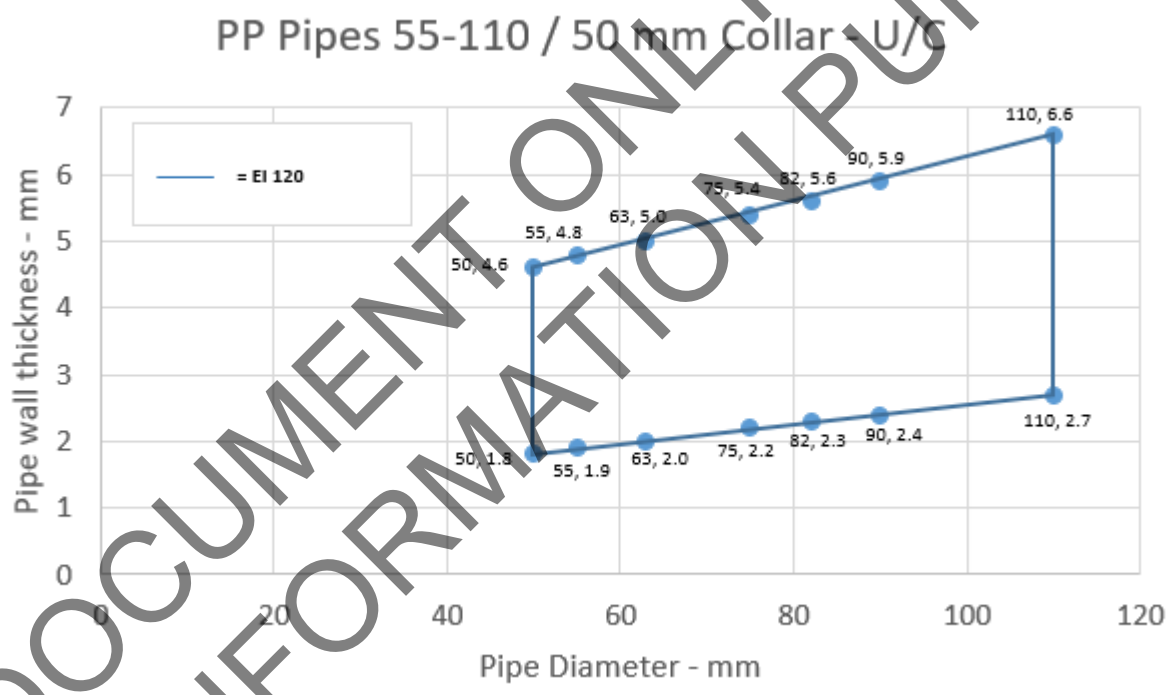


DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

A.4.1.3.2

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, 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

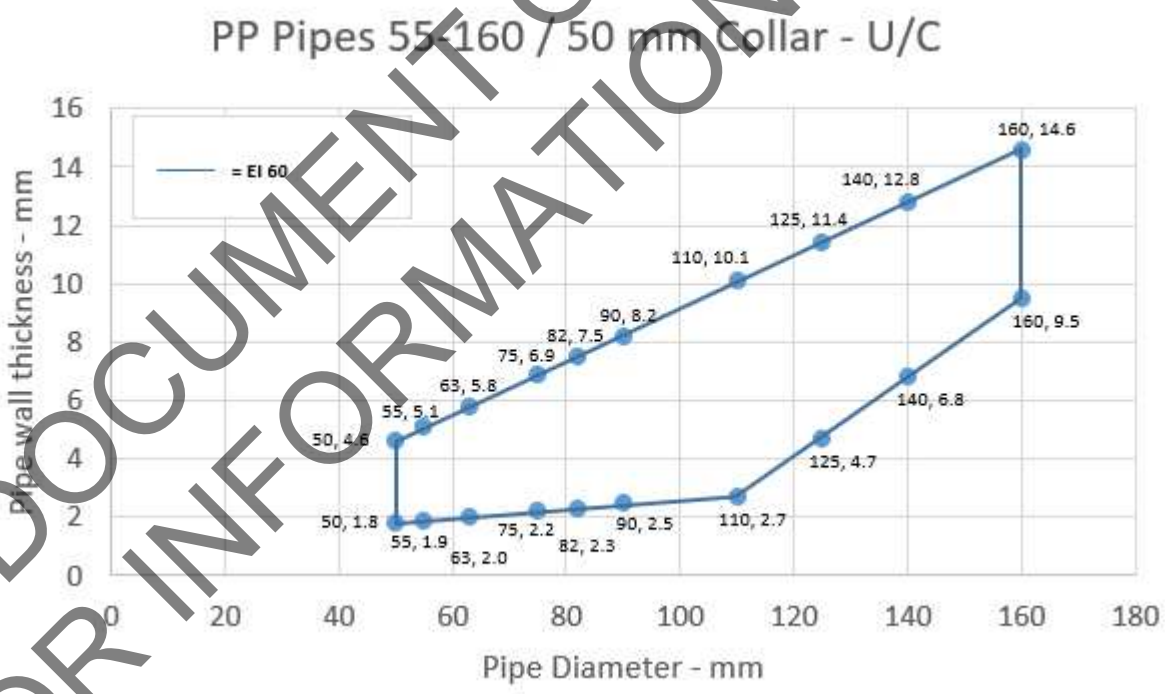


DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

A.4.1.3.3

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

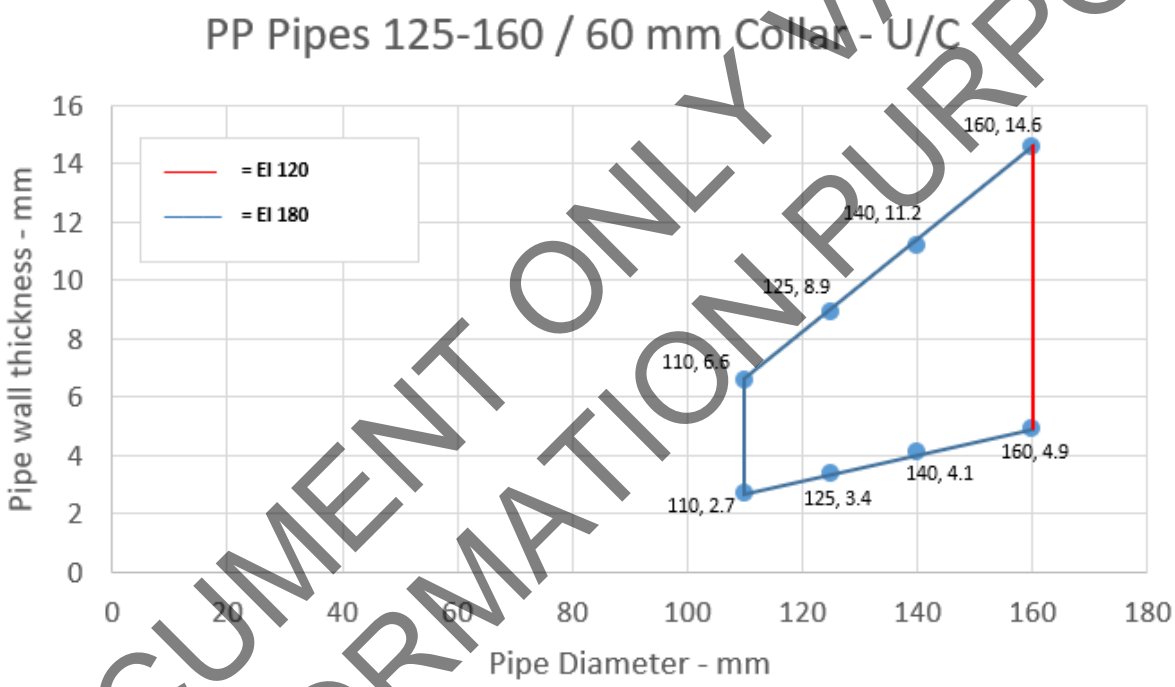


DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

A.4.1.3.4

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

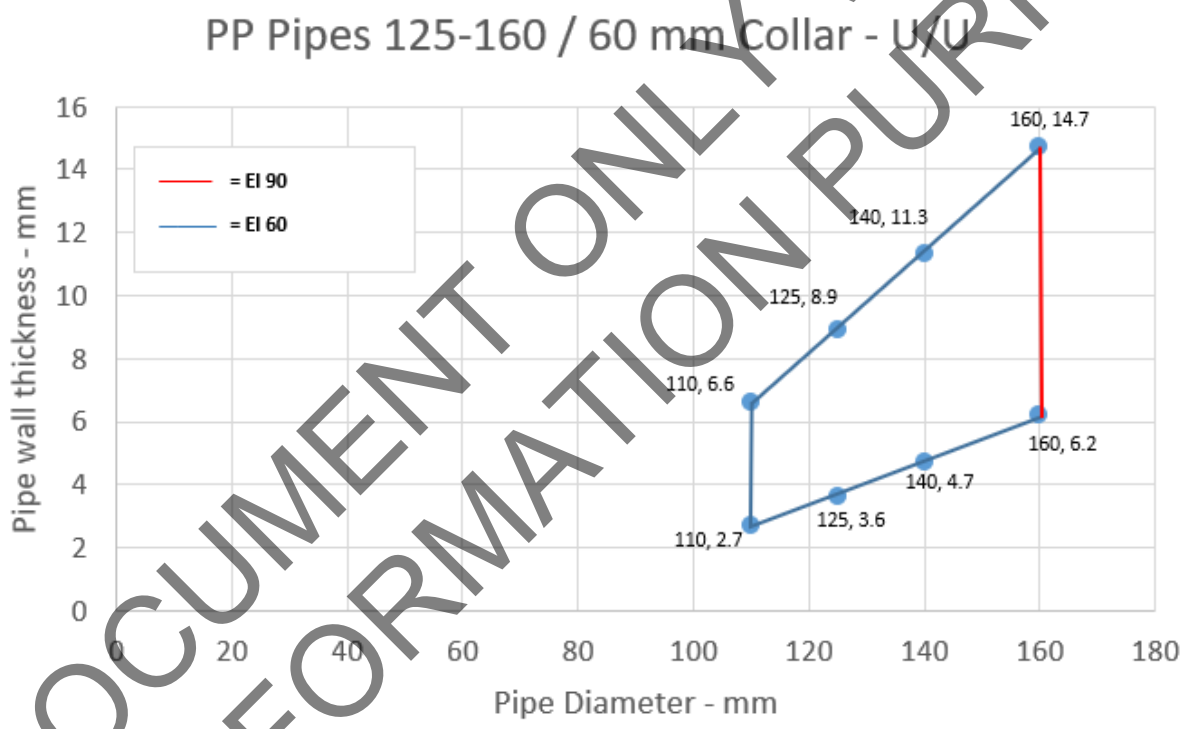


DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

A.4.1.3.5

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



DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

A.4.1.4

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**

DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

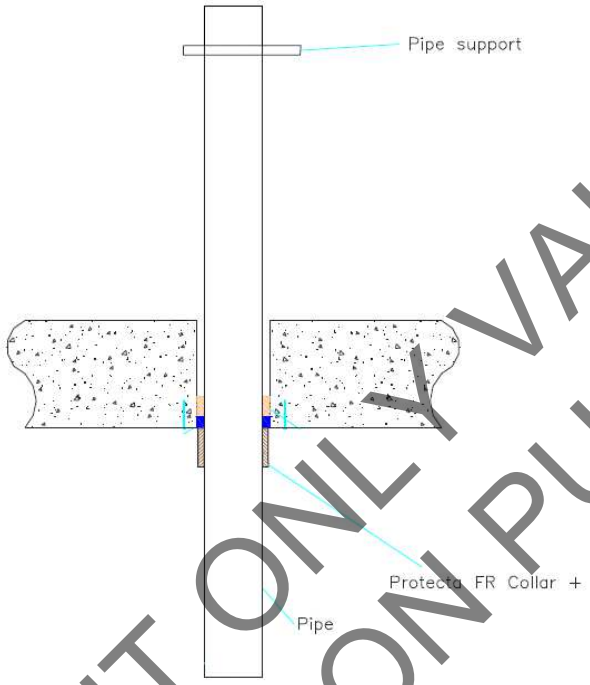
Services	Collar Inlay	Classification
Rehau Raupiano Plus PP-DD according to DIN 4102		
40 mm diameter/1.8 wall thickness	50 x 3.0 mm	**EI 240 U/U**
50 mm diameter/1.8 wall thickness	50 x 3.2 mm	
75 mm diameter/1.8-2.2 mm wall thickness	50 x 4.2 mm	**EI 120 C/U**
90 mm diameter/1.8-2.4 mm wall thickness	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**

DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

A.4.2 Penetration seals, surface mounted in concrete floors

Penetration Seal: Combustible pipes fitted with Protecta FR Collar, to the soffit of the floor.

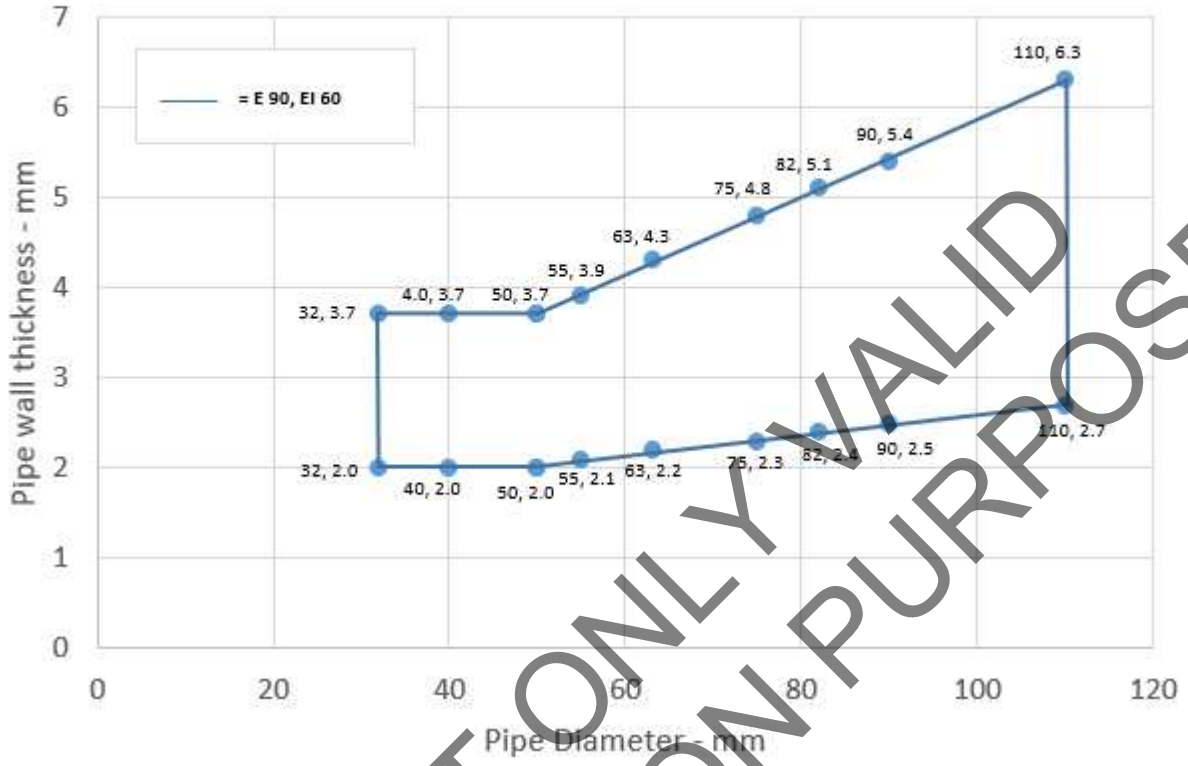
Construction details:



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 2.0-3.7 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	

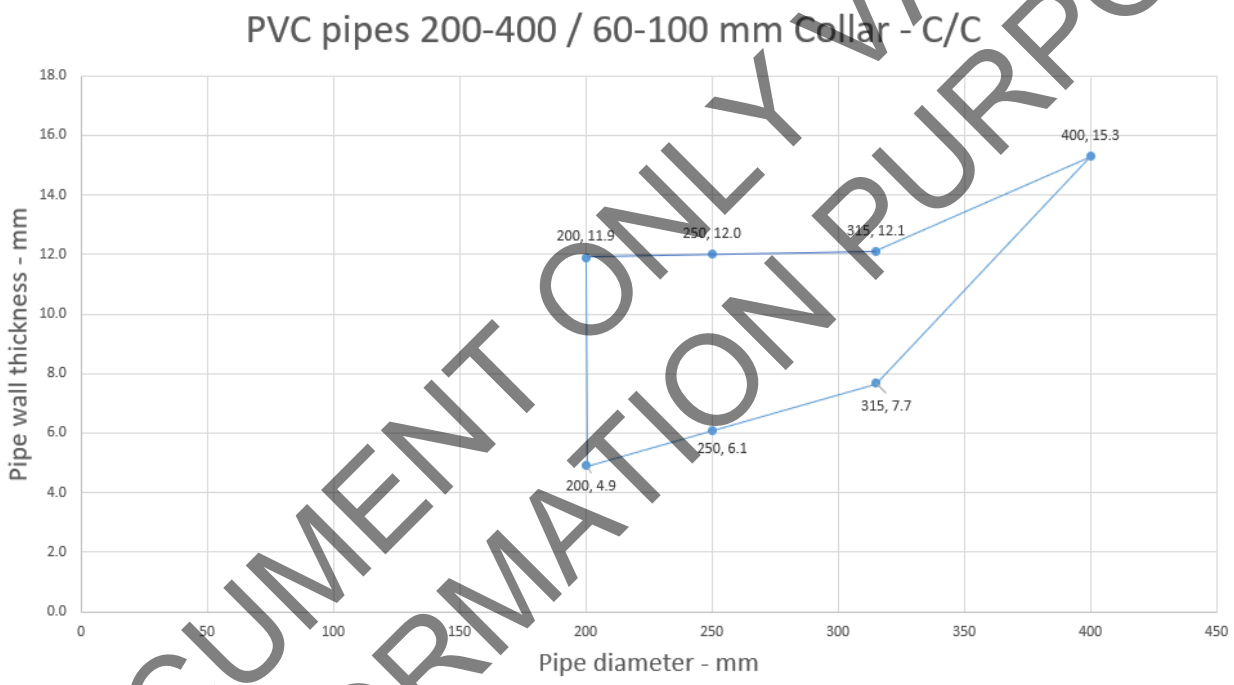
DOCUMENT ONLY VALID FOR INFORMATION PURPOSES



DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

A.4.2.2

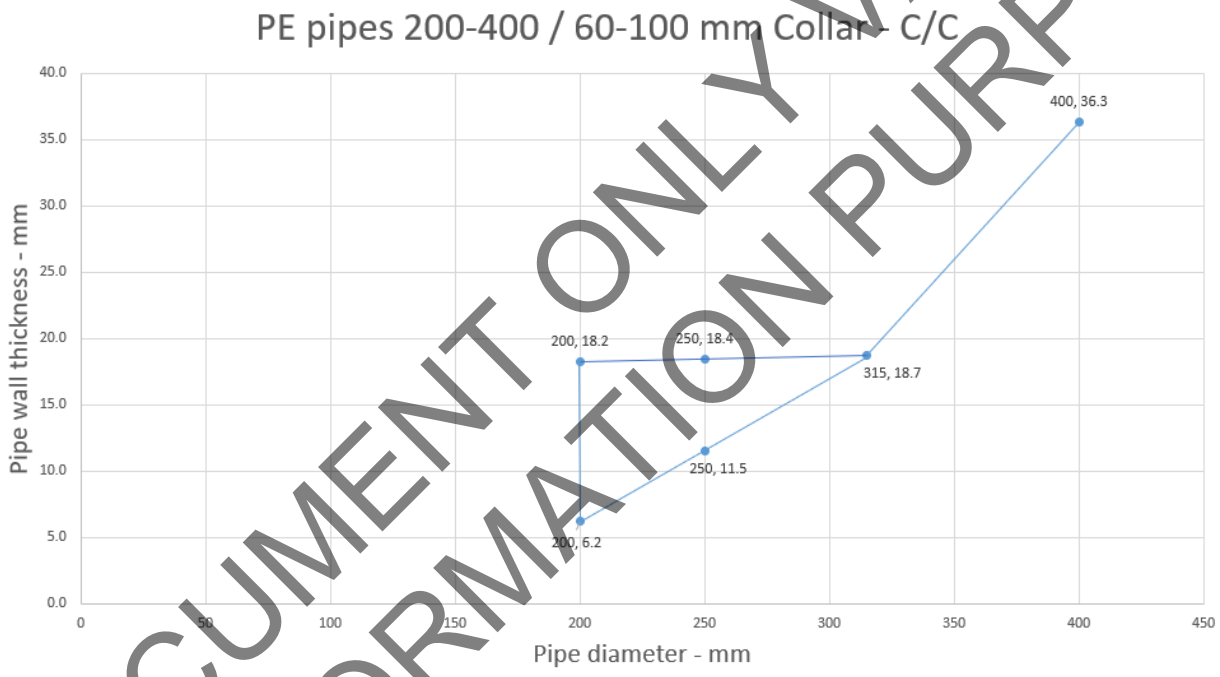
Services	Collar Inlay	Classification
PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1		
Up to 200 mm diameter / 4.9-11.9 mm wall thickness	60 x 18 mm	**E 120 C/C, EI 60 C/C**
Up to 250 mm diameter / 6.1-11.9 mm wall thickness	75 x 24 mm	**EI 60 C/C**
Up to 315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



DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

A.4.2.3

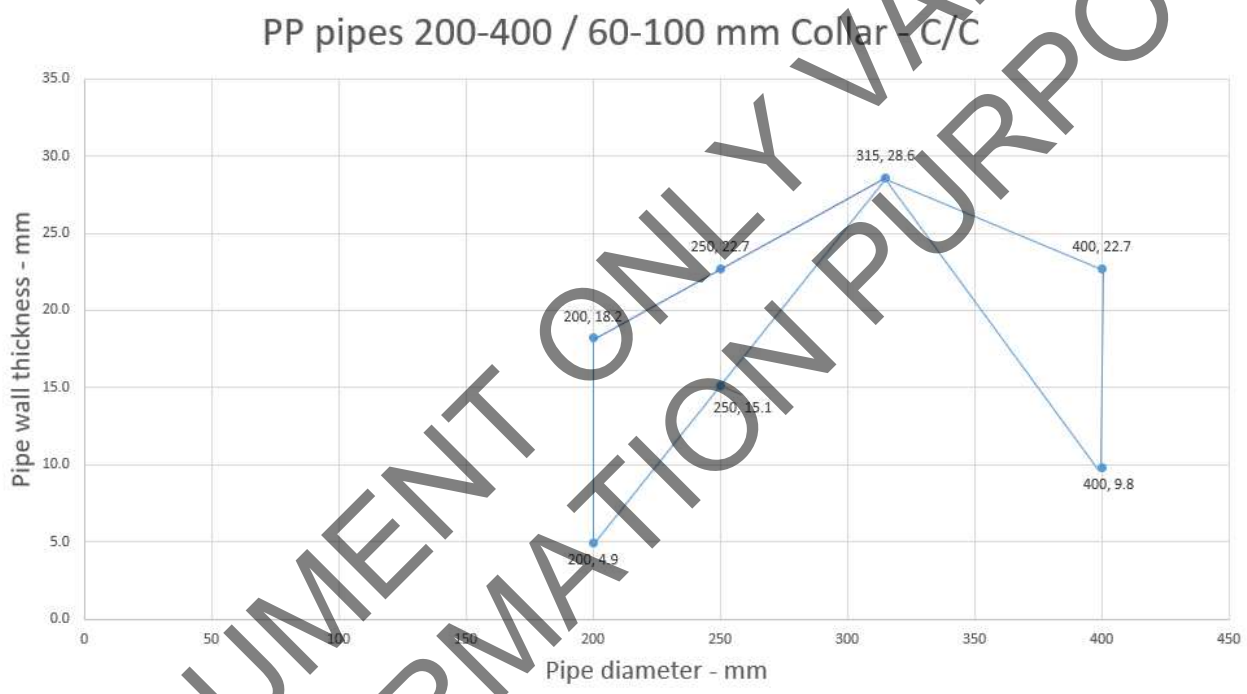
Services	Collar Inlay	Classification
PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1		
Up to 200 mm diameter / 6.2-18.2 mm wall thickness	60 x 18 mm	**E 240 C/C, EI 120 C/C**
Up to 250 mm diameter / 11.5-18.4 mm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



DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

A.4.2.4

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**

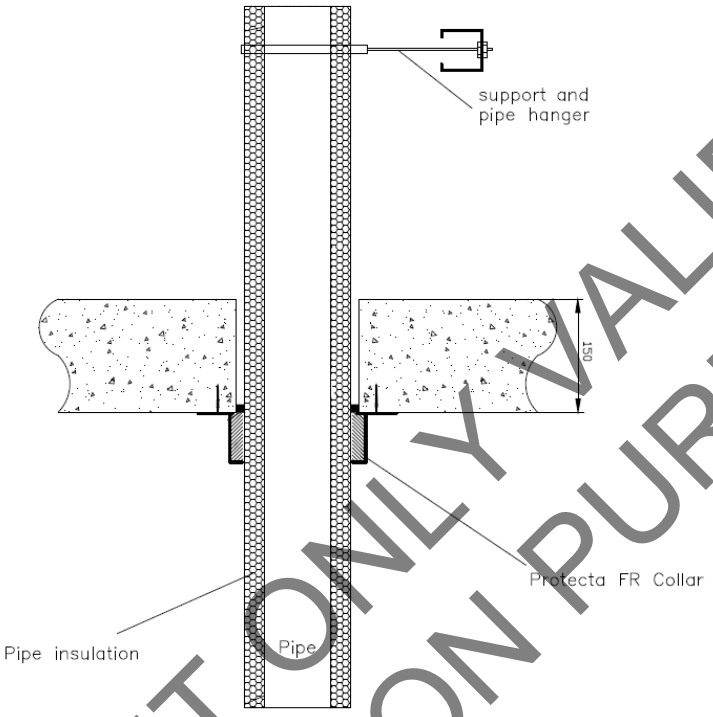


DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

A.4.3 Penetration seals, surface mounted in concrete floors

Penetration Seal: Metallic pipes fitted with Protecta FR Collar, to the soffit of the floor.

Construction details:



A.4.3.1

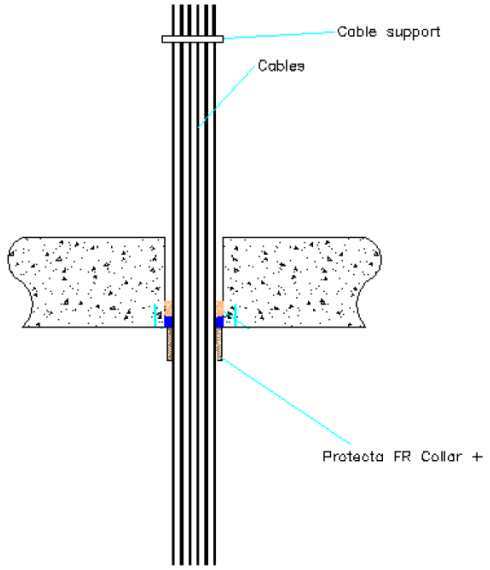
Services	Insulation	Collar	Classification
Copper pipe or mild steel			
Diameter 54 mm, wall thickness 1.2 mm	19 mm thick Elastomeric insulation minimum class B-s3,d0	Ø 110 x 50 x 6.0 mm	**E 240 C/C, EI 60 C/C**

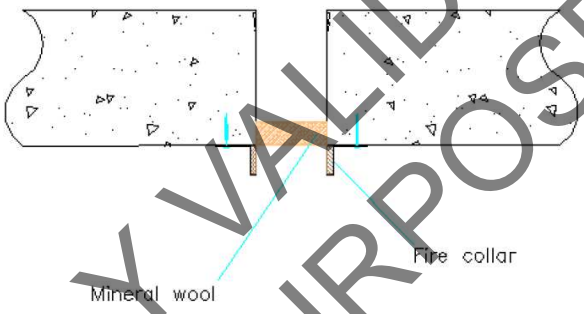
DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

A.4.4 Penetration seals, surface mounted in concrete floors

Penetration Seal: Cables (in bundles up to 100 mm Ø) fitted with Protecta FR Collar, to the soffit of the floor.

Construction details:





A.4.4.1

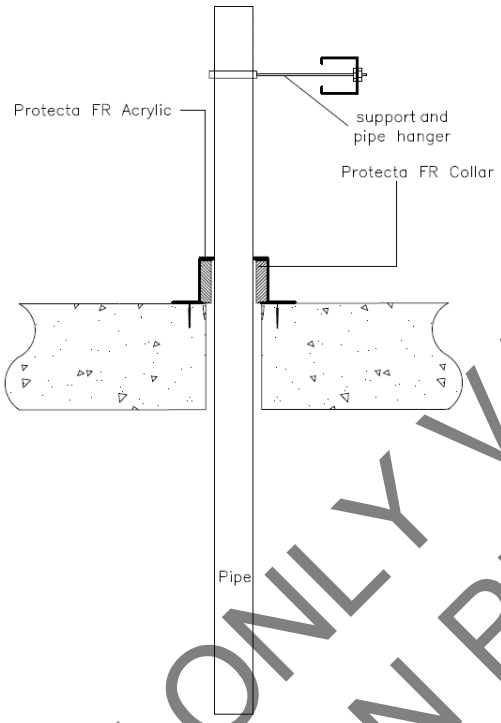
Services	Collar	Classification
None (blank)	Ø 55 x 30 x 3.2 mm	**E 240, EI 60**
None (blank)	Ø 160 x 60 x 15.0 mm	**EI 120**
Cables up to 21 mm Ø, in bundles up to 55 mm Ø	Ø 55 x 30 x 3.2 mm	**EI 120**
Cables up to 21 mm Ø, in bundles up to 100 mm Ø	Ø 110 x 50 x 6.0 mm	**EI 90**
Cables up to 21 mm Ø, in bundles up to 160 mm Ø	Ø 160 x 60 x 15.0 mm	**EI 180**

DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

A.4.5 Penetration seals, surface mounted in concrete floors

Penetration Seal: Combustible pipes fitted with Protecta FR Collar, to the top face of the floor.

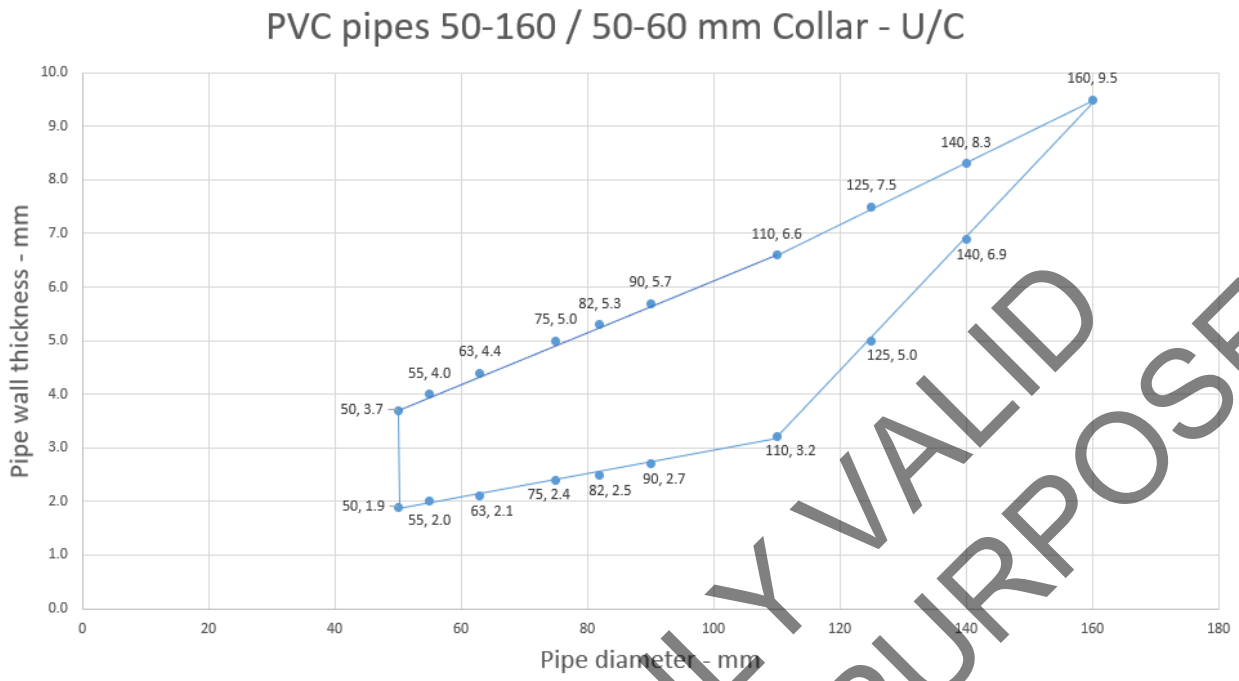
Construction details:



A.4.5.1

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	
Diameter 125 mm, wall thickness 5.0-7.5 mm	60 x 8.8 mm	**E240 U/C, EI 180 U/C**
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	

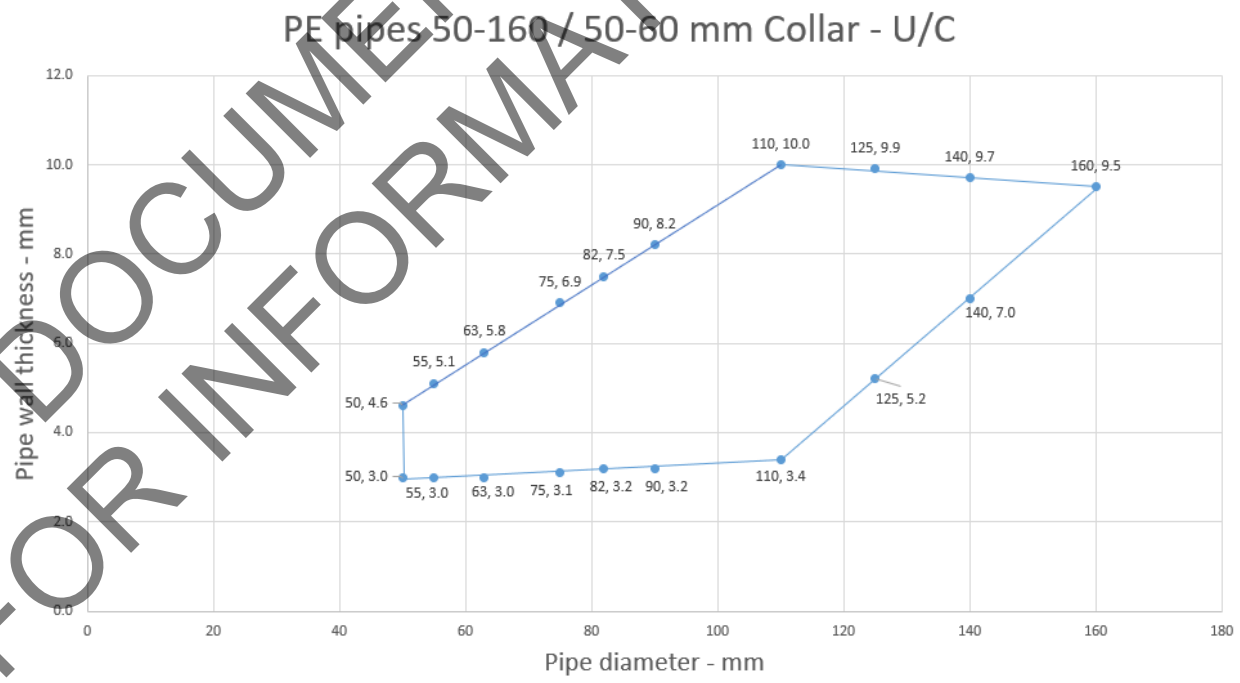
DOCUMENT ONLY VALID FOR INFORMATION PURPOSES



DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

A.4.5.2

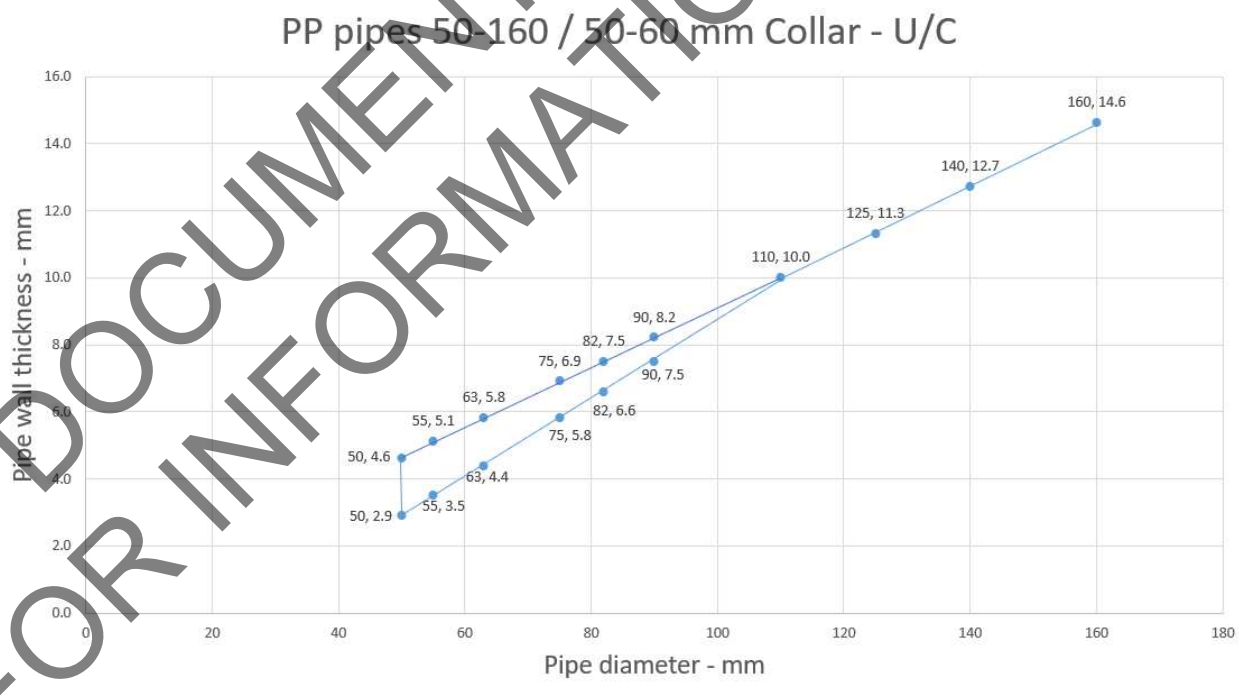
Services	Collar Inlay	Classification
PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1		
Diameter 32 mm, wall thickness 3.0-4.6 mm	50 x 3.0 mm	**EI 240 U/C**
Diameter 40 mm, wall thickness 3.0-4.6 mm	50 x 3.0 mm	
Diameter 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 5.2-9.9 mm	60 x 8.8 mm	**EI 60 U/C**
Diameter 140 mm, wall thickness 7.0-9.7 mm	60 x 11.5 mm	
Diameter 160 mm, wall thickness 9.5 mm	60 x 15 mm	



DOCUMENT ONLY VALID FOR INFORMATION PURPOSES

A.4.5.3

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	**E 240 U/C, EI 180 U/C**
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 3.5-5.1 mm	50 x 3.2 mm	**E 180 U/C, EI 90 U/C**
Diameter 63 mm, wall thickness 4.4-5.8 mm	50 x 3.6 mm	
Diameter 75 mm, wall thickness 5.8-6.9 mm	50 x 4.2 mm	
Diameter 82 mm, wall thickness 6.6-7.5 mm	50 x 4.6 mm	
Diameter 90 mm, wall thickness 7.5-8.2 mm	50 x 5.0 mm	
Diameter 110 mm, wall thickness 10.0 mm	50 x 6.0 mm	
Diameter 125 mm, wall thickness 11.3 mm	60 x 8.8 mm	**E 240 U/C, EI 60 U/C**
Diameter 140 mm, wall thickness 12.7 mm	60 x 11.5 mm	
Diameter 160 mm, wall thickness 14.6 mm	60 x 15 mm	



DOCUMENT ONLY VALID FOR INFORMATION PURPOSES