

UL-EU CERTIFICATE

Certificate No. UL-EU-00913-CPR
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Date of Issue 2015-10-09
Revised 2023-06-29

Certificate Holder Polyseam Ltd
15. St. Andrews Road
Huddersfield,
West Yorkshire
HD1 6SB, UK

Manufacturer Polyseam Ltd
15 St Andrews Road
Huddersfield, West Yorkshire
HD1 6SB, UK

Certified Product Type Fire Stop – Pipe Collar
Product Trade Name Protecta FR Collar
Trademark N/A
Rating/Classification See Appendix

Harmonised Technical Specifications EAD 350454-00-1104 / EN 13501-2
Supporting Documentation 0843-UKTA-22/0026, UK – CERTIFICATE OF
CONSTANCY OF PERFORMANCE - 0843 – CPR – 1222,
Classification Report No. 4787998110, Classification
Report No. 4788672817, Classification Report No.
4789552551 & Classification Report No. 4790591976
Additional information N/A
Expiry date 2025-10-08



A blue ink signature of Chris Johnson.

Authorized Certification Decision Maker
Chris Johnson

This is to certify that representative samples of the Certified Product listed above have been investigated by Underwriters Laboratories to the Standard(s) indicated on this Certificate, in accordance with the UL Global Services Agreement and the UL-EU Mark Service Terms and Conditions ("Agreement"). The Certificate Holder is entitled to use the UL-EU Mark for the Certified Product listed on the certificate and manufactured at the production site(s) listed, in accordance with the terms of the Agreement. Only those products bearing the UL-EU Mark for Europe should be considered as being covered by UL's UL-EU Mark Service. This Certificate shall remain valid through the Expiration date, unless a Standard identified on this Certificate is amended or withdrawn prior to that date or there is a non-compliance with the Agreement.



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This certificate relates to the use of Protecta FR Collar for fire stopping where there are service penetrations through floors and walls. The detailed scope is given in pages 3 to 90 of this Certificate. This shows the thickness and acceptable dimensions, substrates and orientations required to provide fire resistance periods of up to 240 minutes for differing services and wall/floor constructions.

The products are certificated on the basis of:

- i) UKTA 22/0026
- ii) UK – CERTIFICATE OF CONSTANCY OF PERFORMANCE 0843 – CPR – 1222
- iii) Inspection and surveillance of factory production control by UL
- iv) Fire resistance test data in accordance with EN 1366-3: 2009
- v) Classification in accordance with EN 13501-2
- vi) Durability and Servicability as defined in EAD 350454-00-1104

The durability class of Protecta FR Collar is Z₂ - intended for use at internal conditions with humidity classes other than Z₁, excluding temperatures below 0°C.

The Protecta FR Collar may be supplied with powder coated steel or stainless steel shells.



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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	See pages 4 - 90
BWR 3 Hygiene, health and environment		
EN 1026	Air permeability	See page 91
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/W2 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	R _w (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



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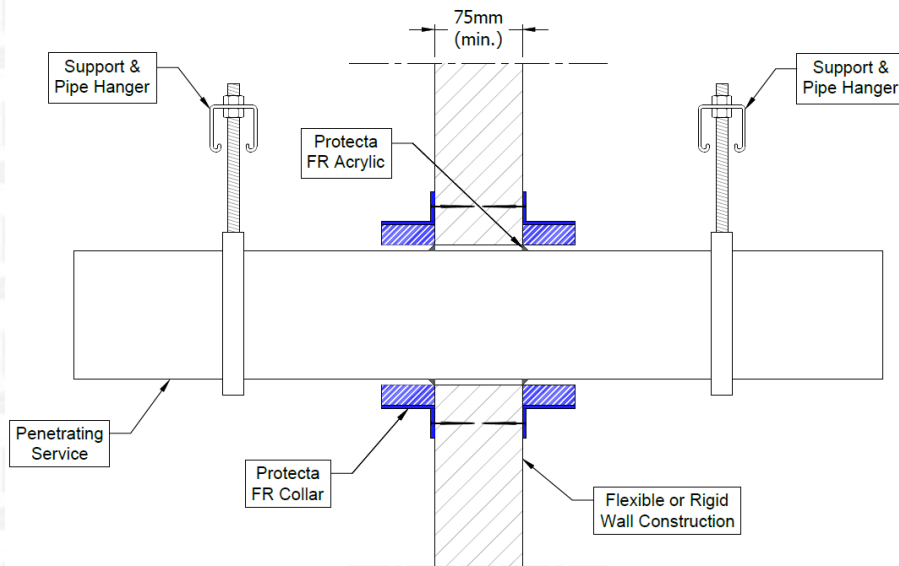
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Flexible or rigid wall constructions with wall thickness of minimum 75 mm

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:



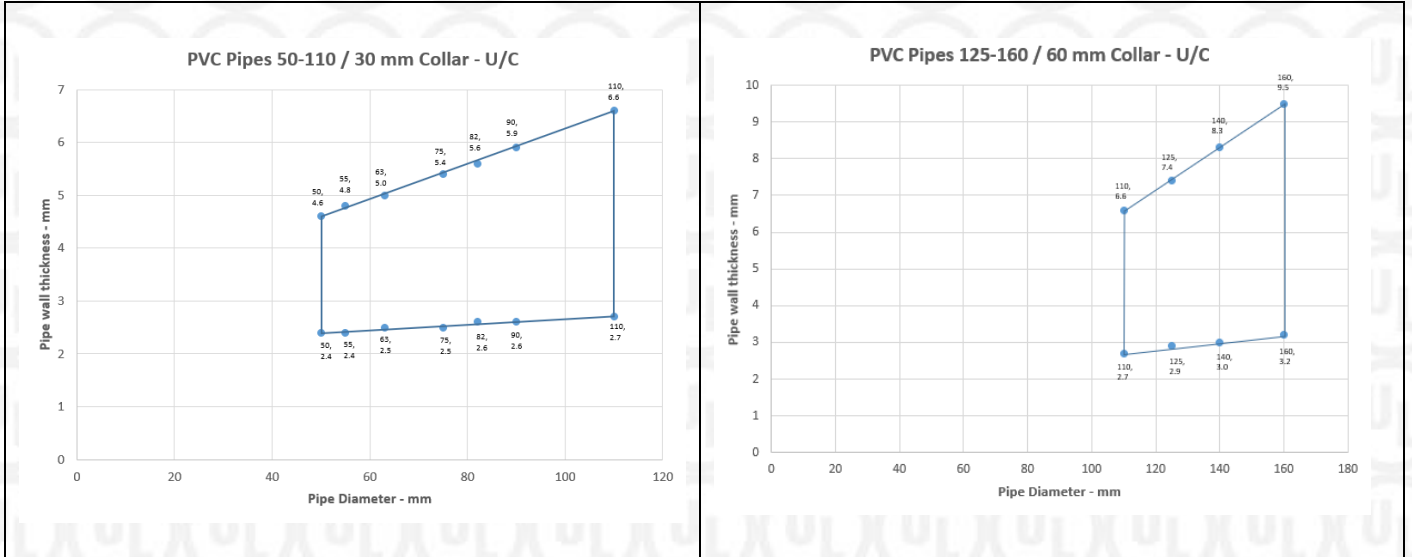
Services	Collar Inlay	Classification
PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1		
Diameter 32 mm, wall thickness 2.4-4.6 mm	30 x 3.0 mm	E 60 U/U, E 60 C/U, E 60 U/C, E 60 C/C EI 30 U/U, EI 30 C/U, EI 30 U/C, EI 30 C/C
Diameter 40 mm, wall thickness 2.4-4.6 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 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 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



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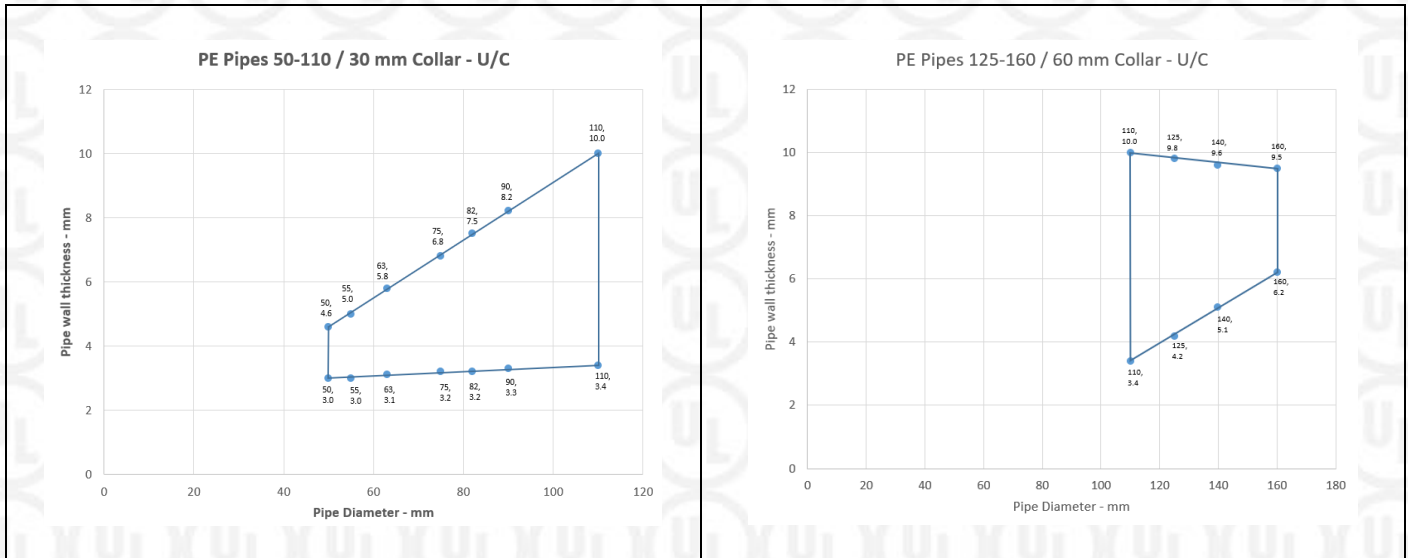


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Services	Collar Inlay	Classification
PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1		
Diameter 32 mm, wall thickness 3.0-4.6 mm	30 x 3.0 mm	E 60 U/C, E 60 C/C 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*		
Diameter 63 mm, wall thickness 3.1-5.8 mm*		
Diameter 75 mm, wall thickness 3.2-6.8 mm*		
Diameter 82 mm, wall thickness 3.2-7.5 mm*		
Diameter 90 mm, wall thickness 3.3-8.2 mm*		
Diameter 110 mm, wall thickness 3.4-10.0 mm*	30 x 6.0 mm	EI 60 U/C, EI 60 C/C
Diameter 125 mm, wall thickness 4.2-9.8 mm*	60 x 8.8 mm	E 60 U/C, E 60 C/C 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

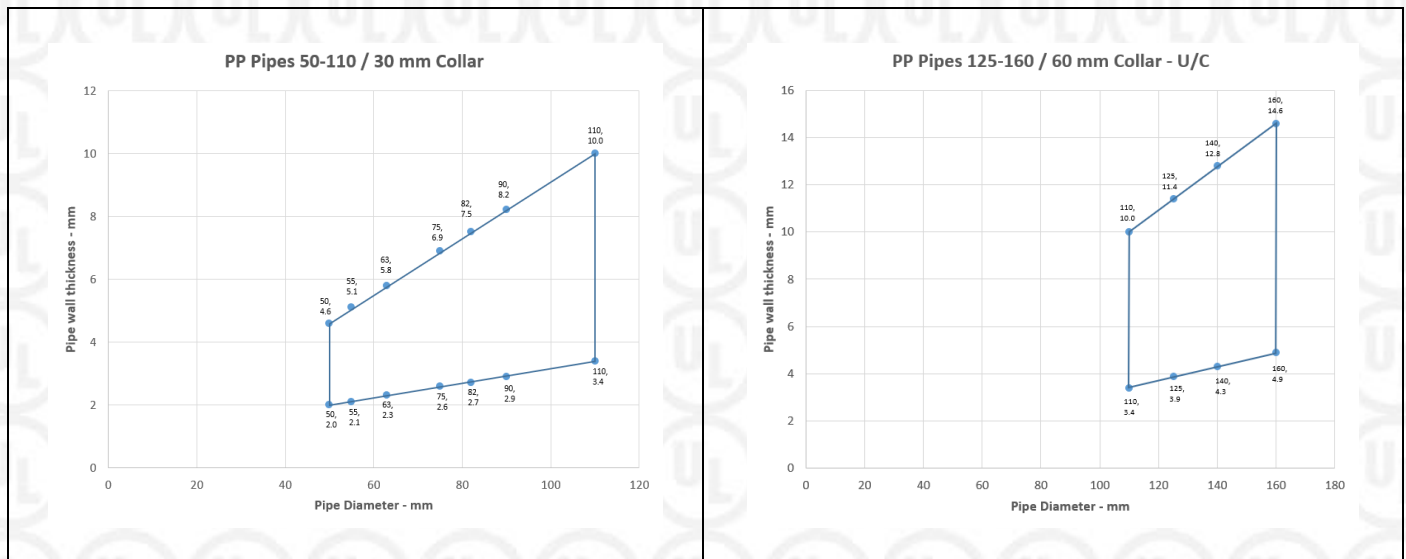


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Services	Collar Inlay	Classification
PP pipe according to EN 1451-1		
Diameter 32 mm, wall thickness 2.0-4.6 mm	30 x 3.0 mm	E 60 U/U, E 60 C/U, E 60 U/C, E 60 C/C EI 30 U/U, EI 30 C/U, EI 30 U/C, EI 30 C/C
Diameter 40 mm, wall thickness 2.0-4.6 mm		
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 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 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



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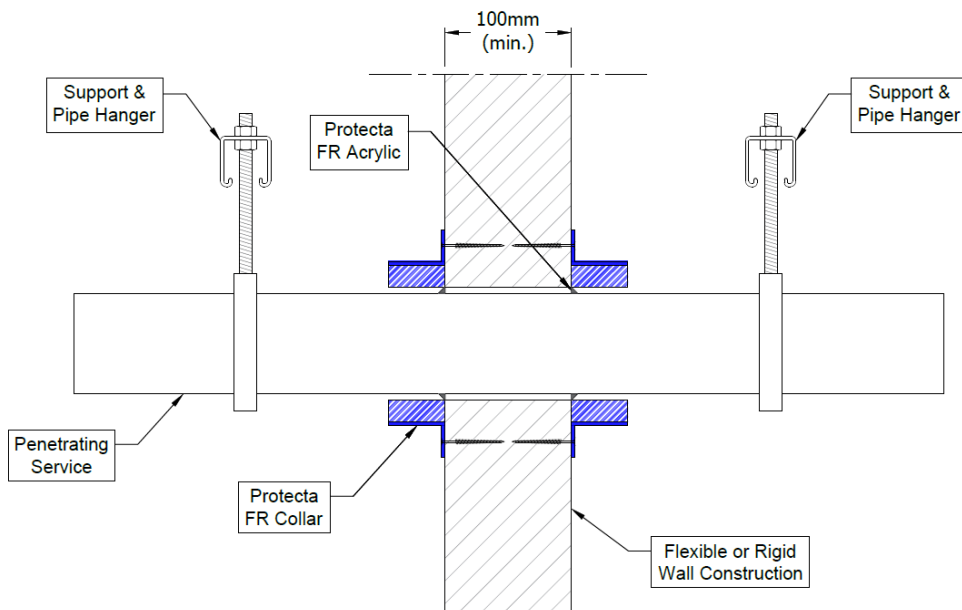
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Flexible or rigid wall constructions with wall thickness of minimum 100 mm

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:



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*	30 x 3.2 mm	EI 60 U/C, EI 60 C/C
Diameter 55 mm, wall thickness 1.3-4.7 mm*	30 x 3.6 mm	
Diameter 63 mm, wall thickness 1.5-5.0 mm*	30 x 4.2 mm	
Diameter 75 mm, wall thickness 1.8-5.4 mm*	30 x 4.6 mm	
Diameter 82 mm, wall thickness 2.0-5.6 mm*	30 x 5.0 mm	
Diameter 90 mm, wall thickness 2.2-5.9 mm*	30 x 6.0 mm	
Diameter 110 mm, wall thickness 2.7-6.6 mm*		

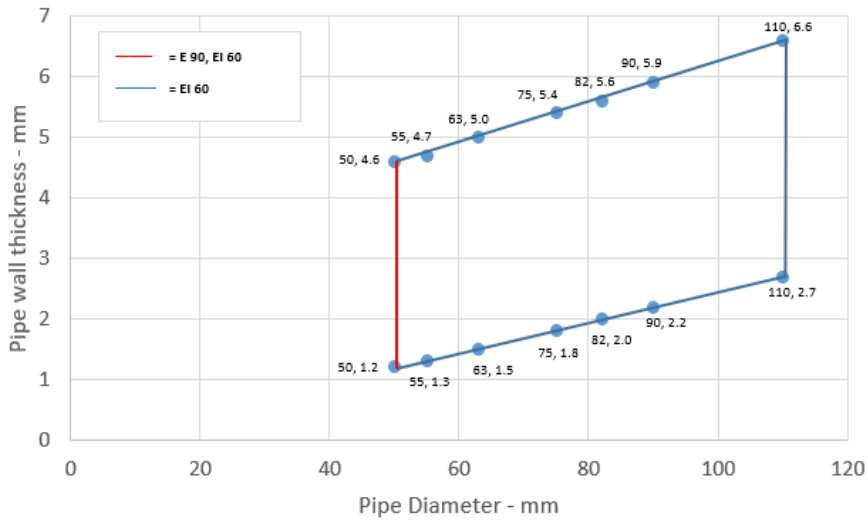
* Typical pipe diameters shown, see below graph for intermediate sizes



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

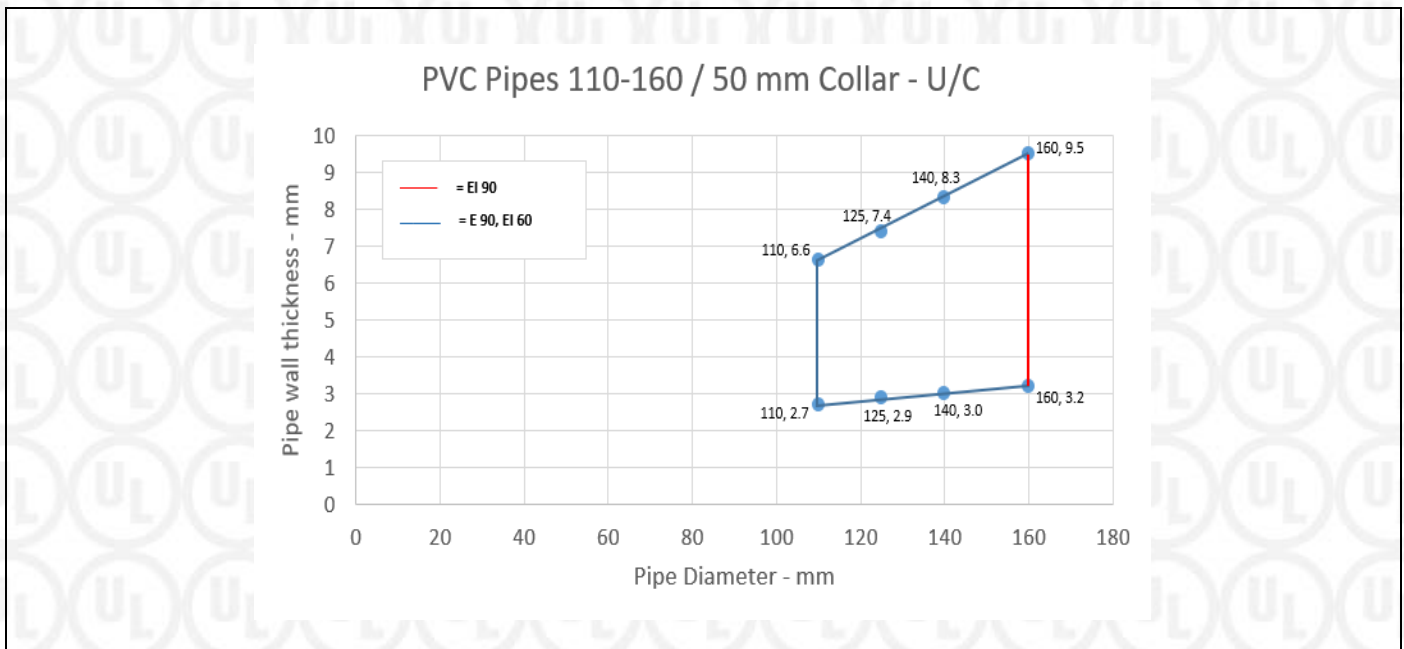


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Services	Collar Inlay	Classification
PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1		
Diameter 110 mm, wall thickness 2.7-6.6 mm*	50 x 6.0 mm	E 90 U/U, E 90 C/U, E 90 U/C, E 90 C/C EI 60 U/U, EI 60 C/U, 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

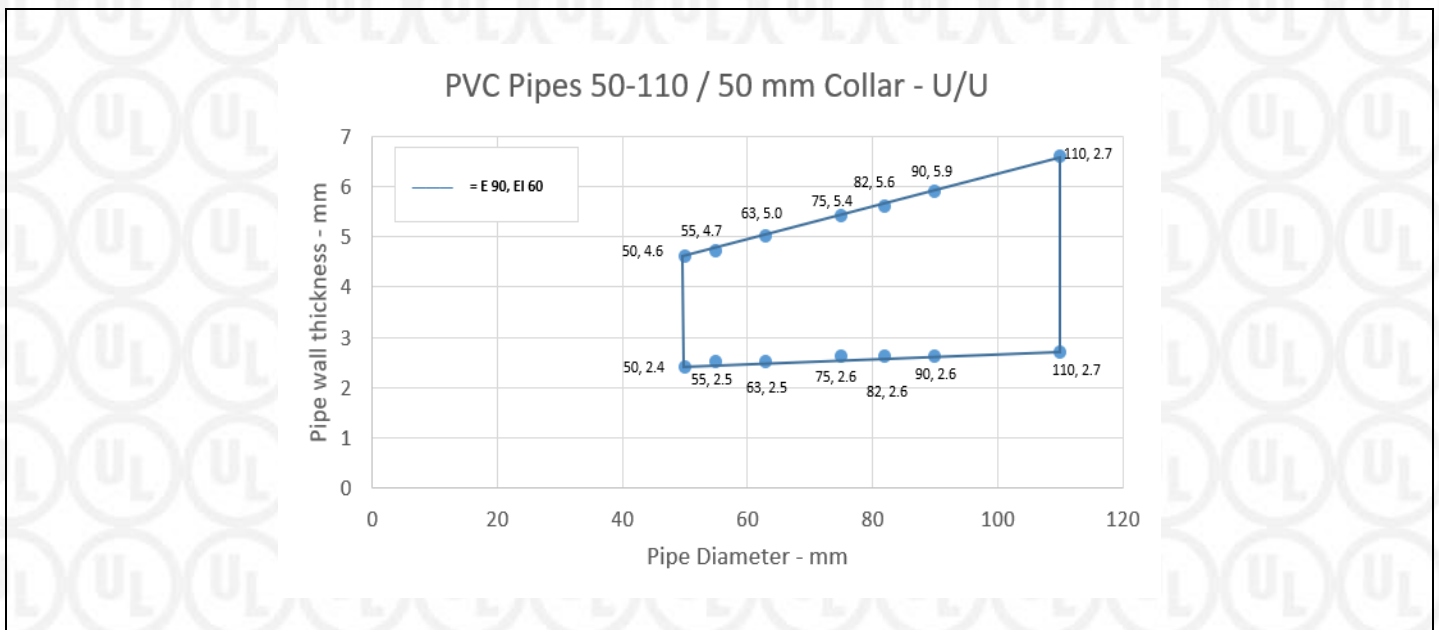


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Services	Collar Inlay	Classification
PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1		
Diameter 32 mm, wall thickness 2.4-4.6 mm	30 x 3.0 mm	E 90 U/U, E 90 C/U, E 90 U/C, E 90 C/C EI 60 U/U, EI 60 C/U, EI 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

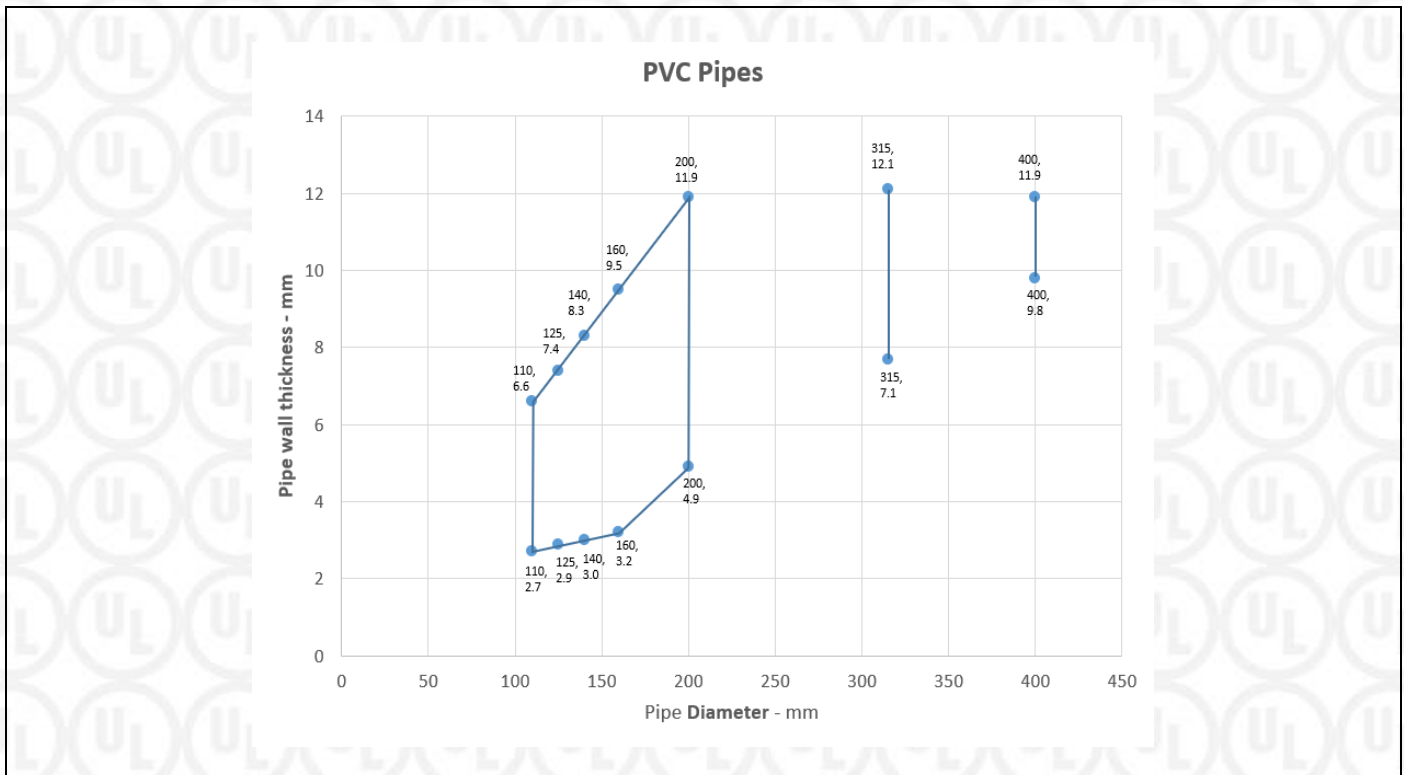


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Services	Collar Inlay	Classification
PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1		
Diameter 110 mm, wall thickness 2.7-6.6 mm*	60 x 6.0 mm	E 90 U/U, E 90 C/U, E 90 U/C, E 90 C/C EI 60 U/U, EI 60 C/U, 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 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 7.7-12.1 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 EI 90 C/C

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

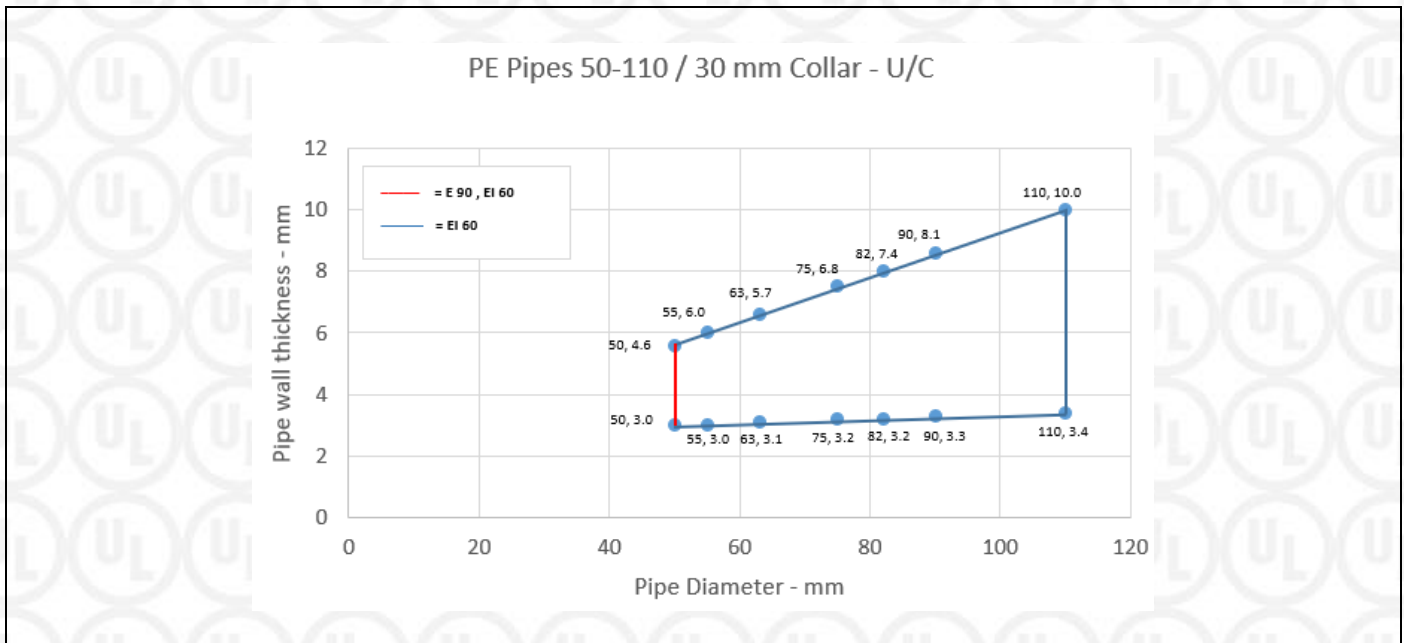


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Services	Collar Inlay	Classification
PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1		
Diameter 32 mm, wall thickness 3.0-4.6 mm	30 x 3.0 mm	E 90 U/U, E 90 C/U, 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		
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	E 90 U/C, E 90 C/C 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

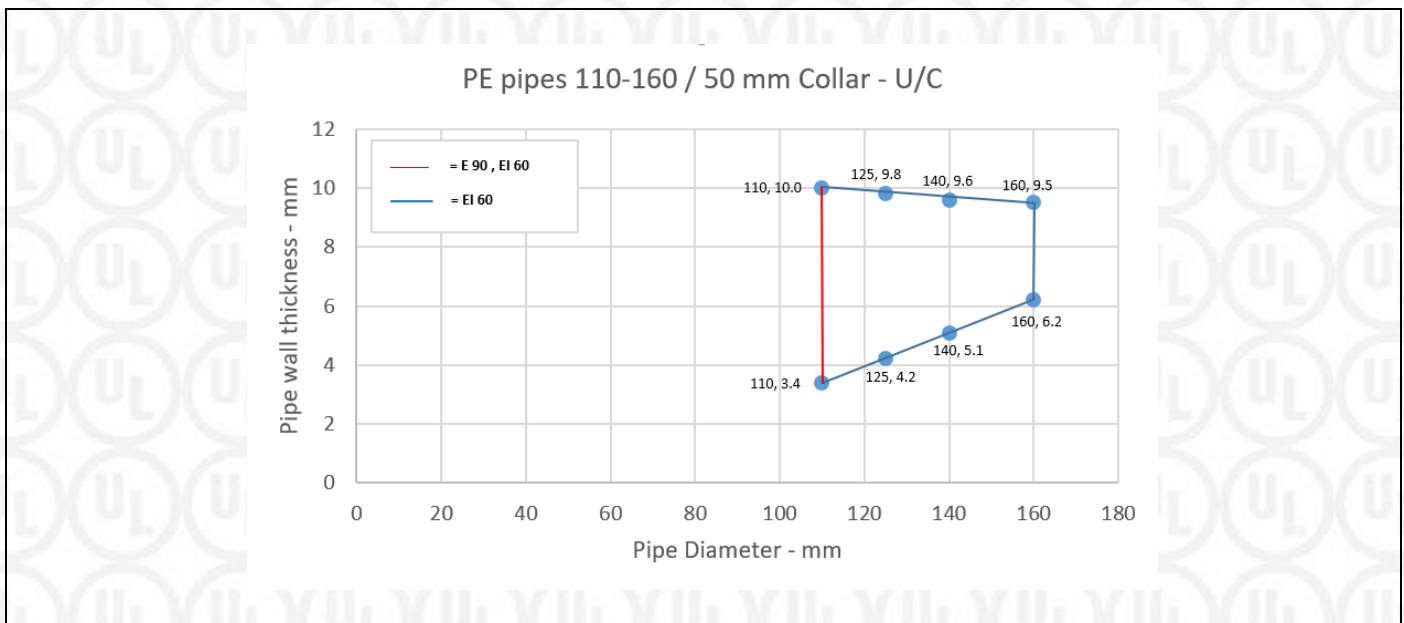


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Services	Collar Inlay	Classification
PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1		
Diameter 110 mm, wall thickness 3.4-10.0 mm*	50 x 6.0 mm	E 90 U/U, E 90 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

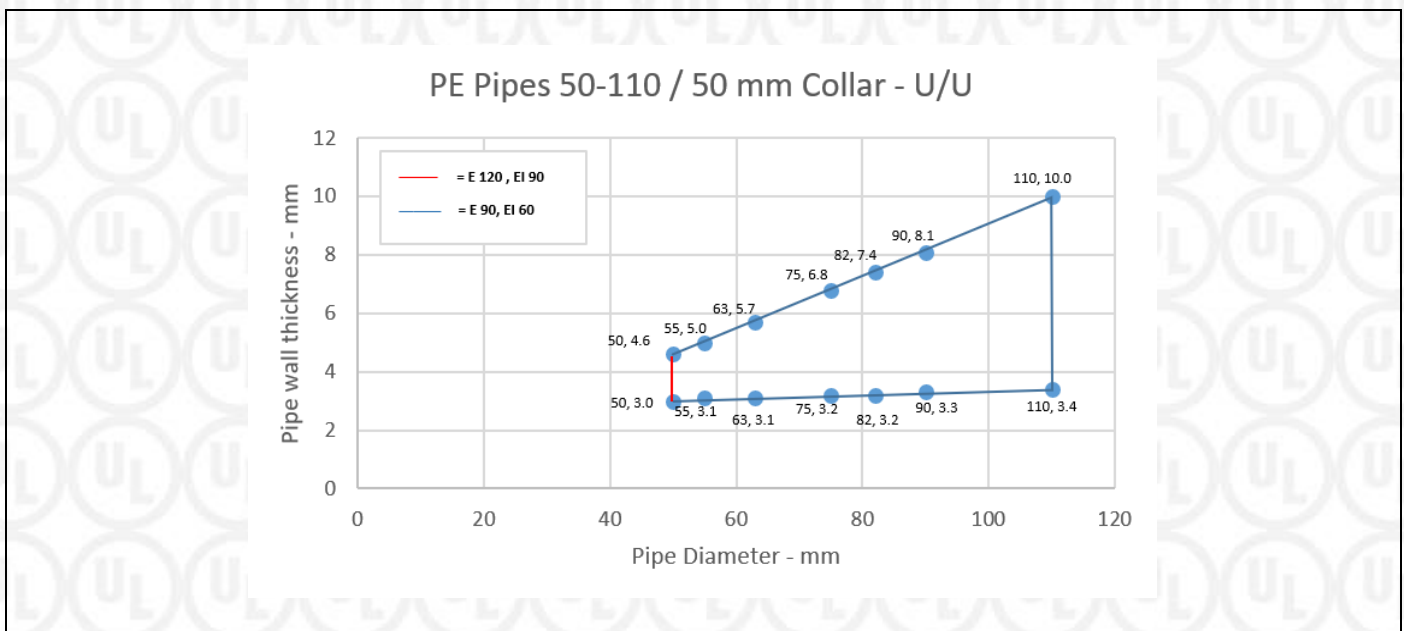


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Services	Collar Inlay	Classification
PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1		
Diameter 32 mm, wall thickness 3.0-4.6 mm		E 120 U/U, EI 90 U/U
Diameter 40 mm, wall thickness 3.0-4.6 mm	50 x 3.0 mm	
Diameter 50 mm, wall thickness 3.0-4.6 mm*		
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

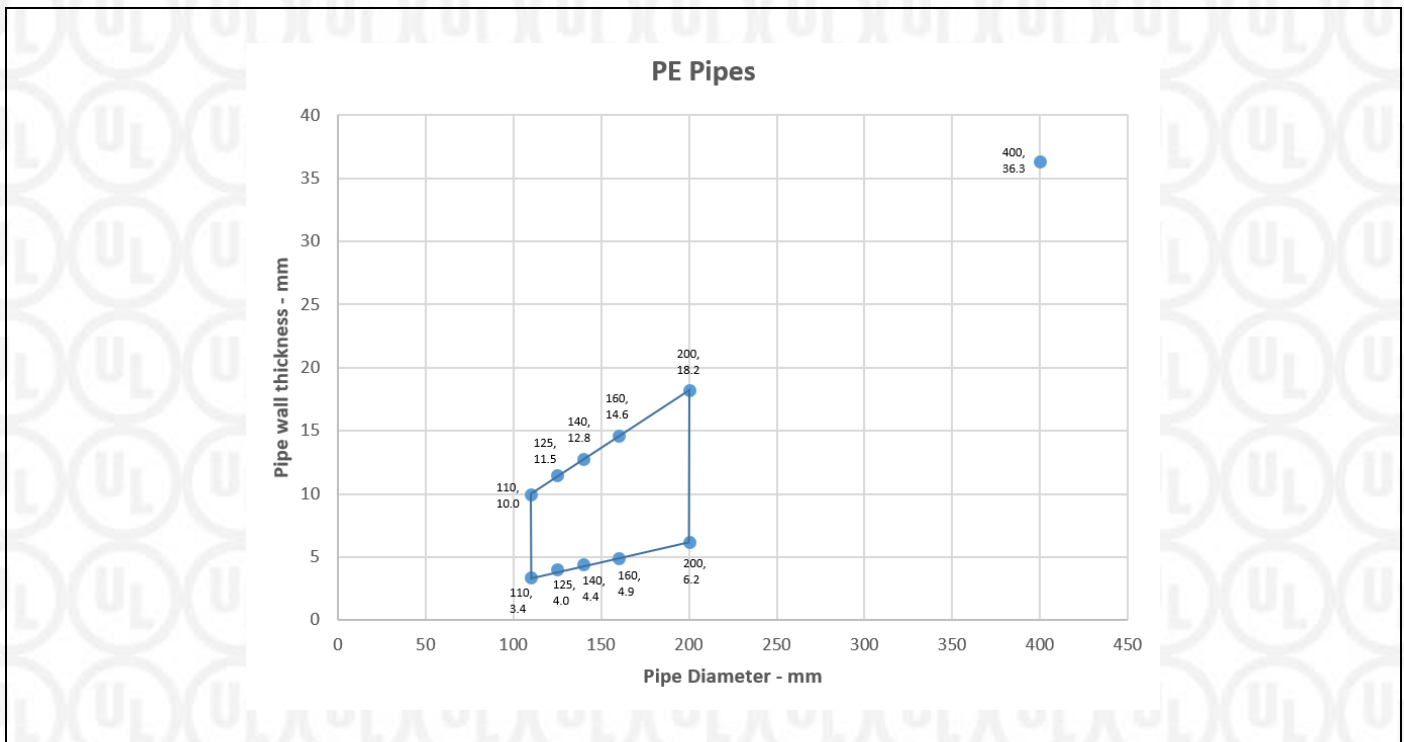


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Services	Collar Inlay	Classification
PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1		
Diameter 110 mm, wall thickness 3.4-10.0 mm*	60 x 6.0 mm	E 90 U/U, E 90 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 6.2-18.2 mm*	60 x 18.0 mm	E 120 U/C, E 120 C/C 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

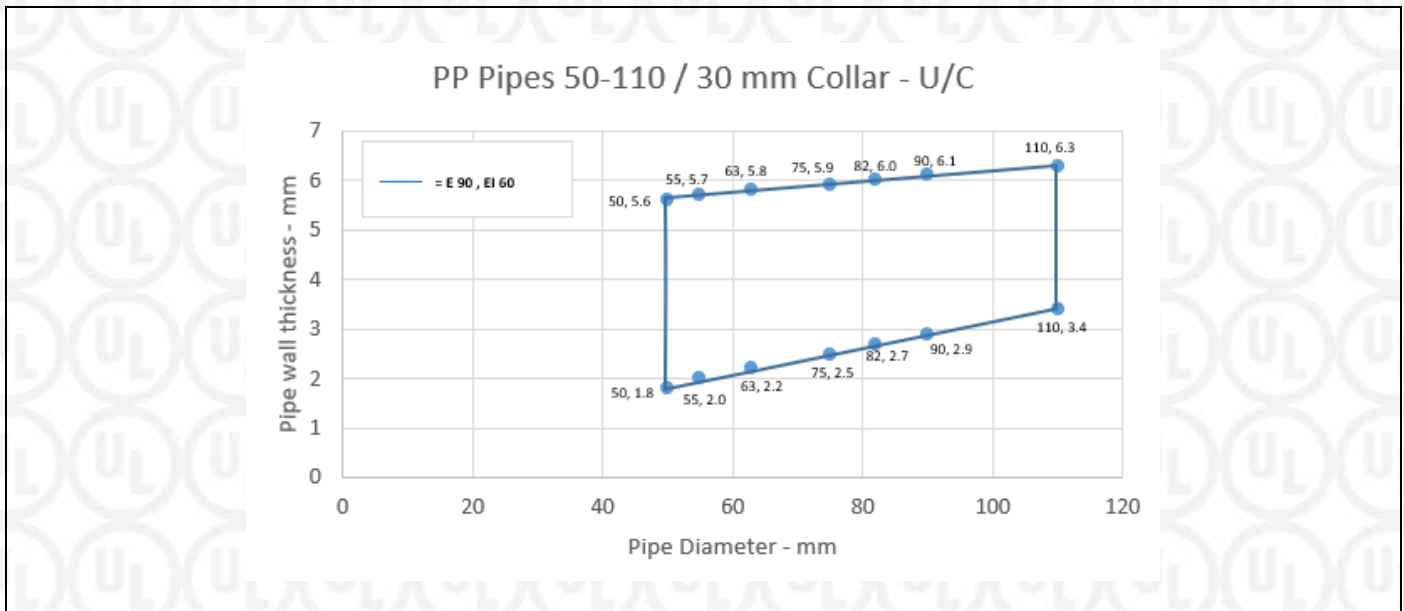


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Services	Collar Inlay	Classification
PP pipe according to EN 1451-1		
Diameter 32 mm, wall thickness 3.0-5.6 mm	30 x 3.0 mm	E 90 U/C, E 90 C/C EI 60 U/C, EI 60 C/C
Diameter 40 mm, wall thickness 3.0-5.6 mm		
Diameter 50 mm, wall thickness 3.0-5.6 mm		
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

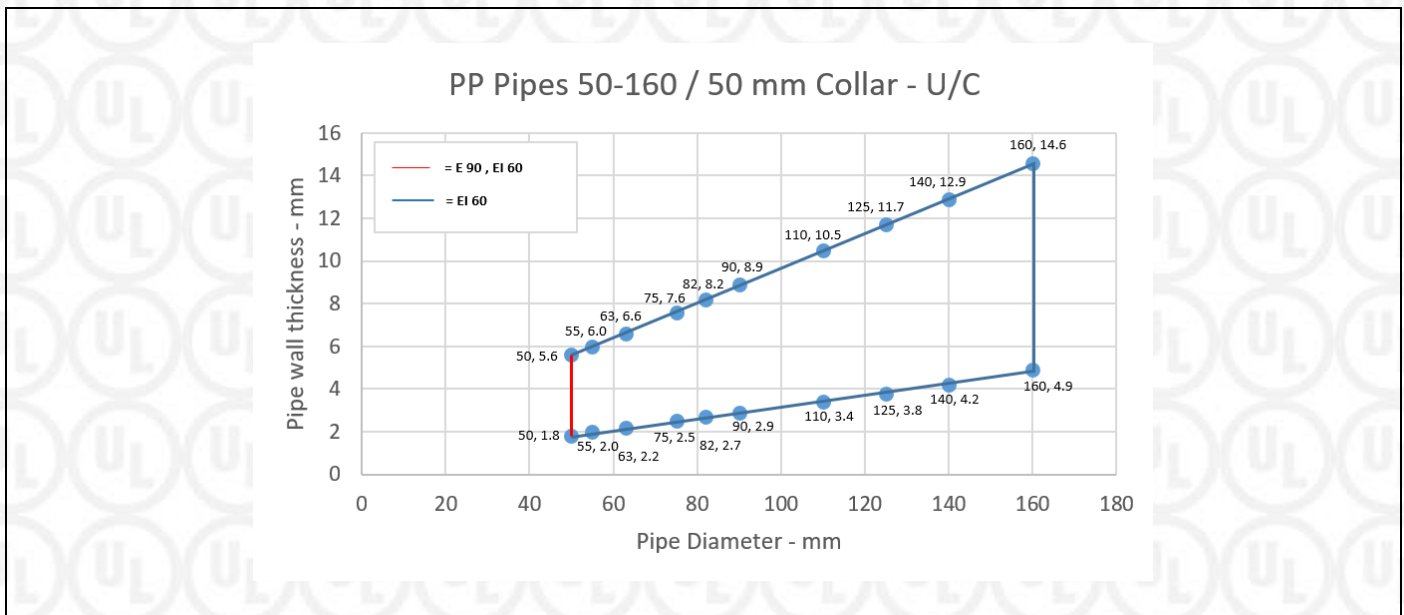


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Services	Collar Inlay	Classification
PP pipe according to EN 1451-1		
Diameter 50 mm, wall thickness 1.8-5.6 mm*	50 x 3.0 mm	E 90 U/C, E 90 C/C EI 60 U/C, EI 60 C/C
Diameter 55 mm, wall thickness 2.0-6.0 mm*	50 x 3.2 mm	EI 60 U/C, EI 60 C/C
Diameter 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

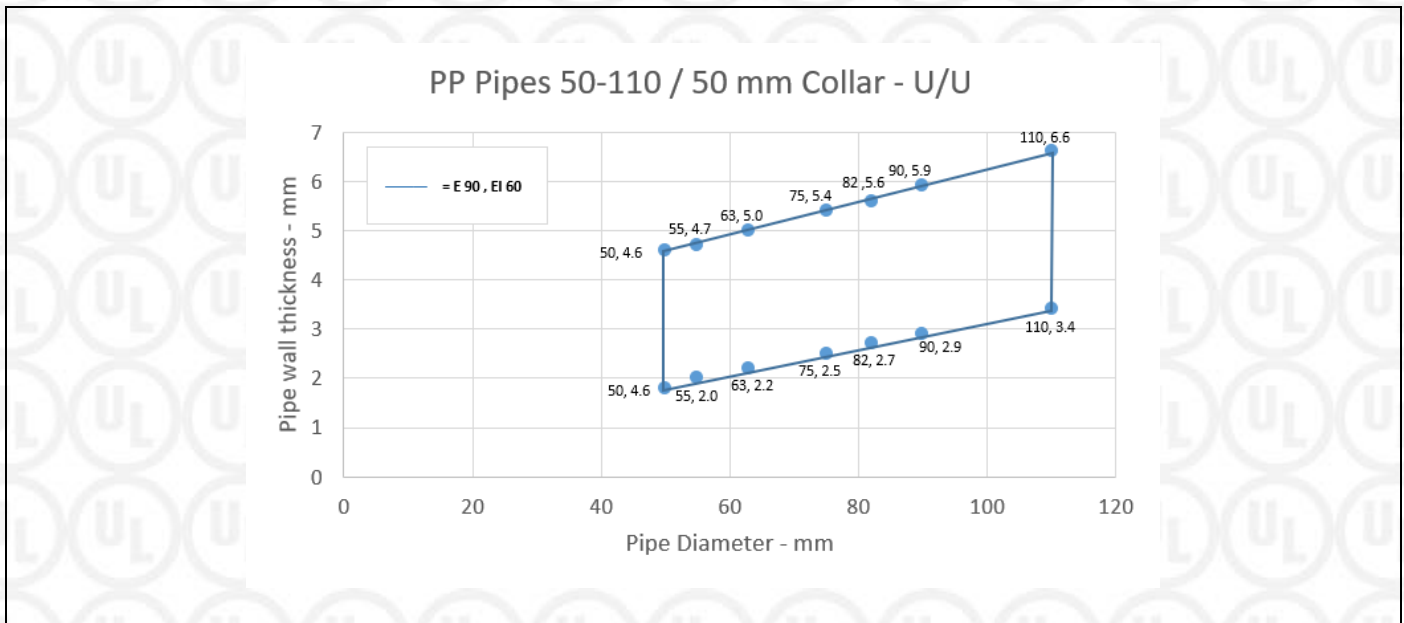


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Services	Collar Inlay	Classification
PP pipe according to EN 1451-1		
Diameter 50 mm, wall thickness 1.8-4.6 mm*	50 x 3.0 mm	E 90 U/U, E 90 C/U, E 90 U/C, E 90 C/C EI 60 U/U, EI 60 C/U, EI 60 U/C, EI 60 C/C
Diameter 55 mm, wall thickness 2.0-4.7 mm*	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

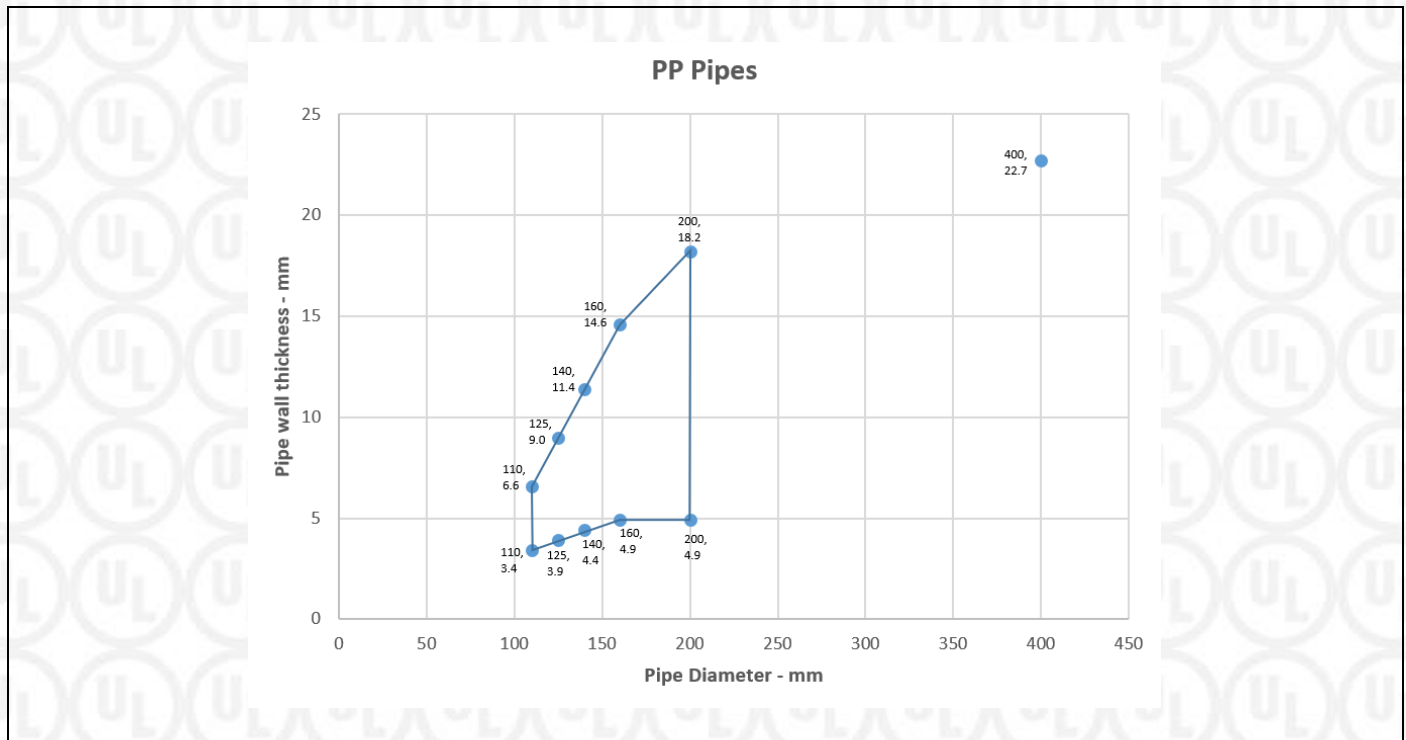


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Services	Collar Inlay	Classification
PP pipe according to EN 1451-1		
Diameter 110 mm, wall thickness 3.4-6.6 mm*	60 x 6.0 mm	E 90 U/U, E 90 C/U, E 90 U/C, E 90 C/C EI 60 U/U, EI 60 C/U, EI 60 U/C, EI 60 C/C
Diameter 125 mm, wall thickness 3.9-9.0 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	
Diameter 200 mm, wall thickness 4.9-18.2 mm*	60 x 18.0 mm	E 120 U/C, E 120 C/C 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



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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



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Services	Collar Inlay	Classification
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	
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	
200 mm diameter / 6.0 mm wall thickness	60 x 18.0 mm	E 120 U/C, EI 90 U/C
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



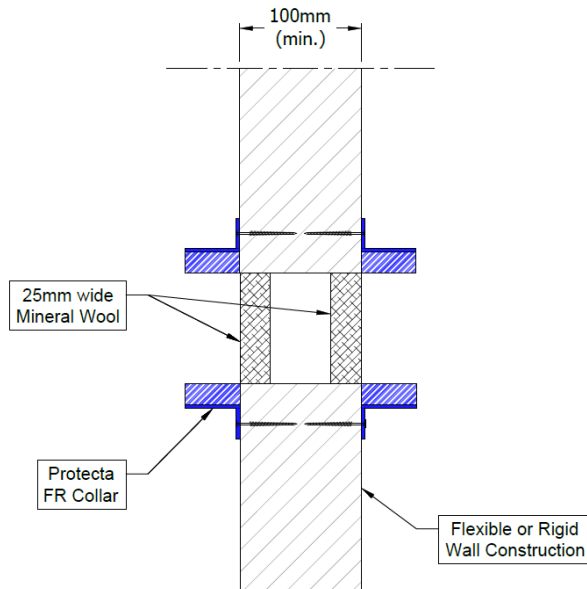
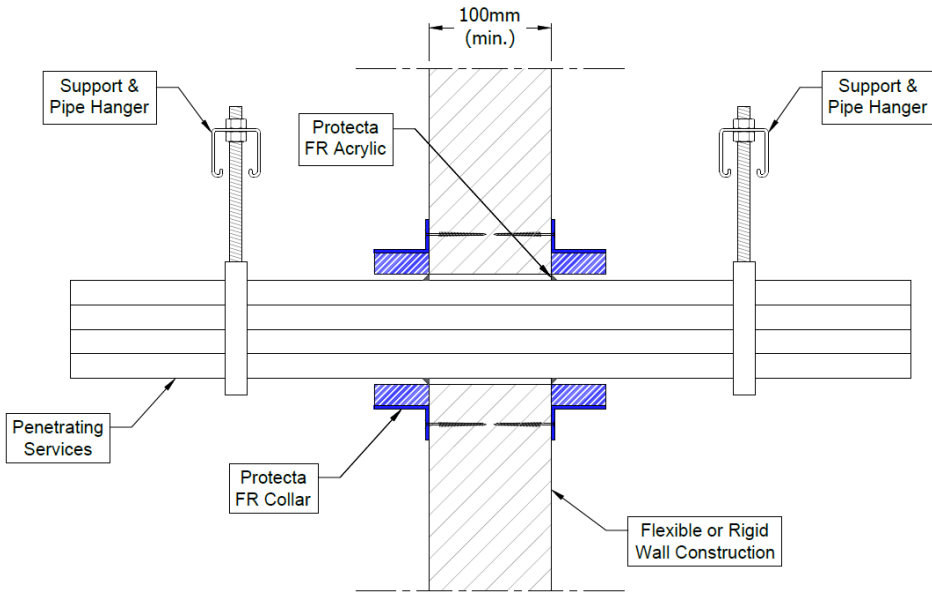
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Penetration seals, in drywalls and concrete/masonry walls

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

Construction details:



Form-ULID-006104 (DCS:27-CP-F0855) 6.0



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

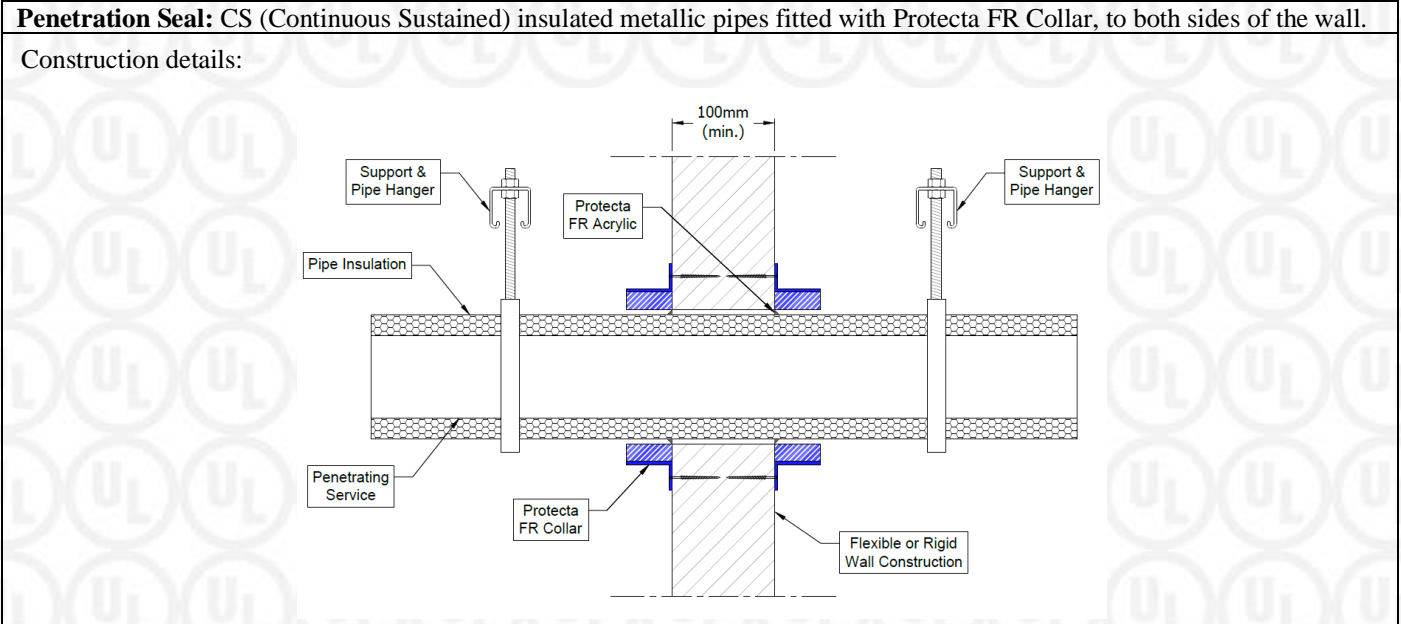
PVC, PE and PP pipes can be mixed in the same bundle.



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Penetration seals, in drywalls and concrete/masonry walls



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

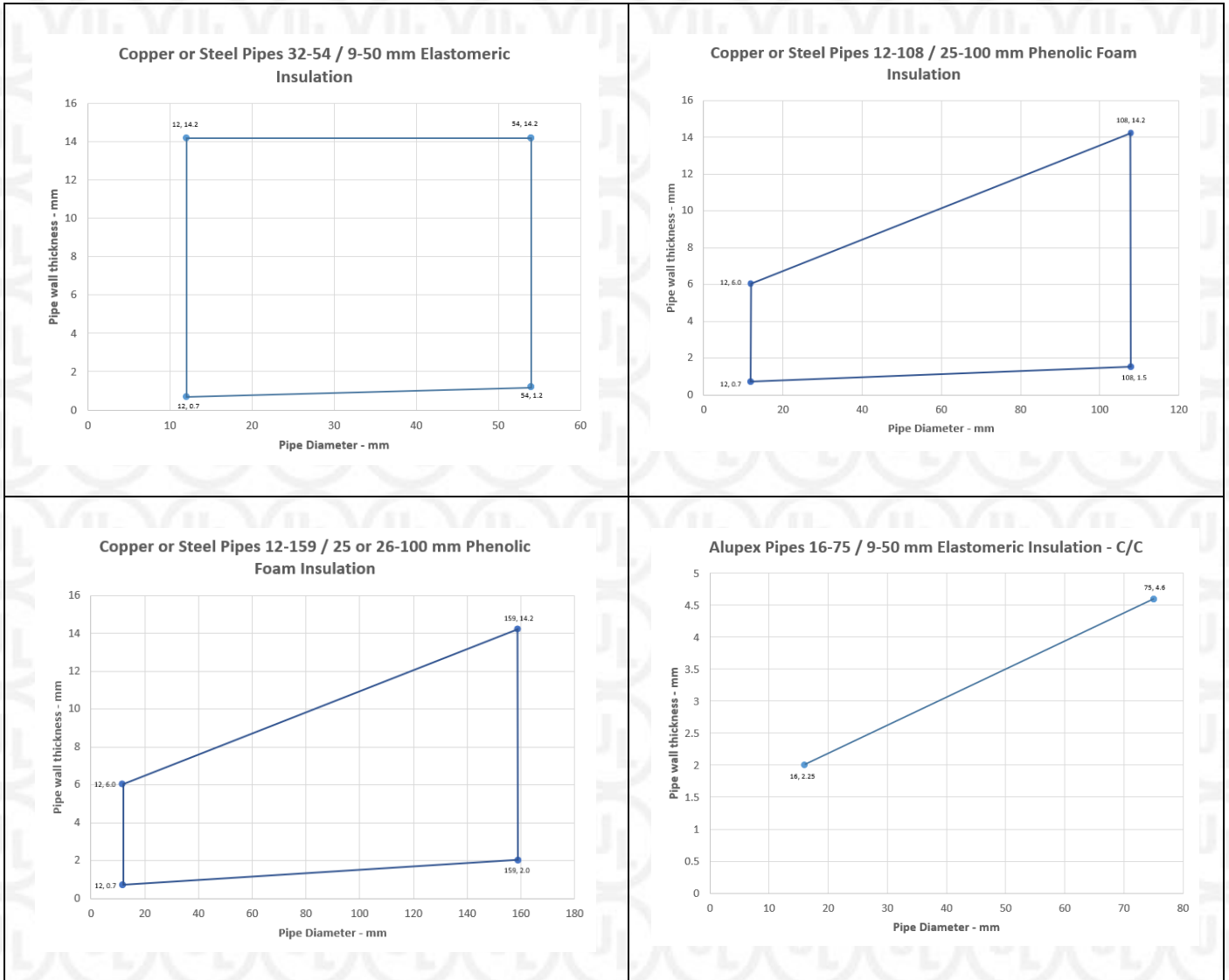
* Typical pipe diameters shown, see below graphs for intermediate sizes

Form-ULID-006104 (DCS:27-CP-F0855) 6.0



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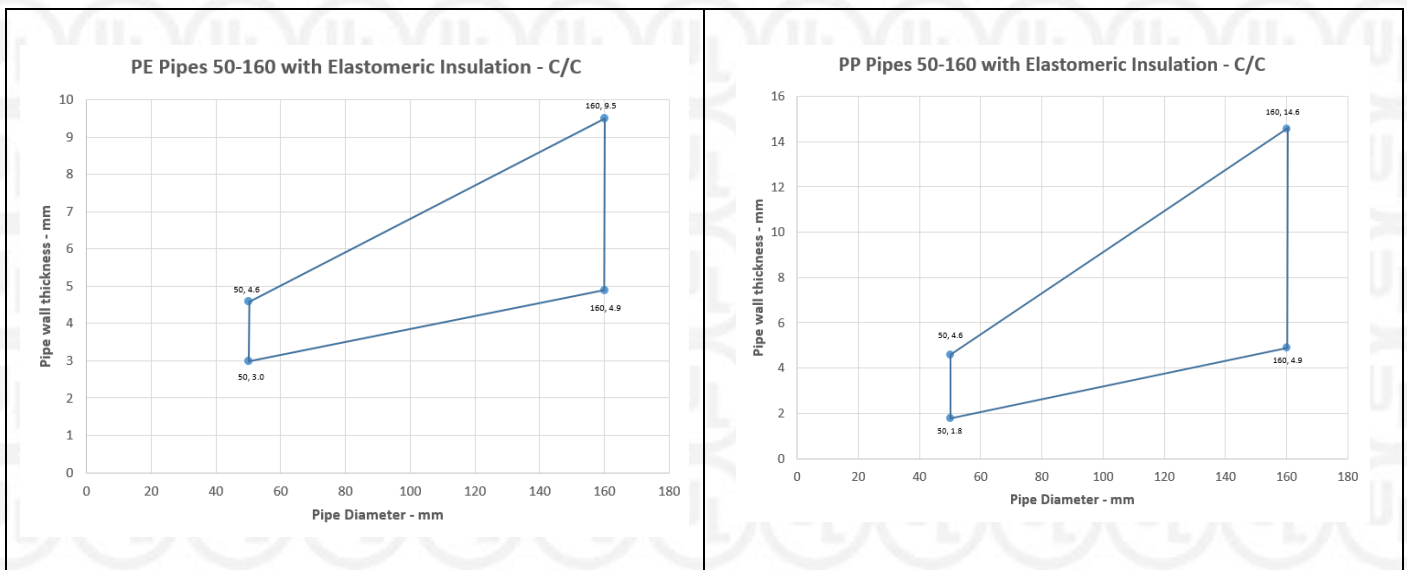


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Services	Insulation	Collar	Classification
PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1			
Maximum diameter 160 mm, wall thickness 3.0-9.5 mm*	9-50 mm thick Elastomeric insulation 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 Elastomeric insulation 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



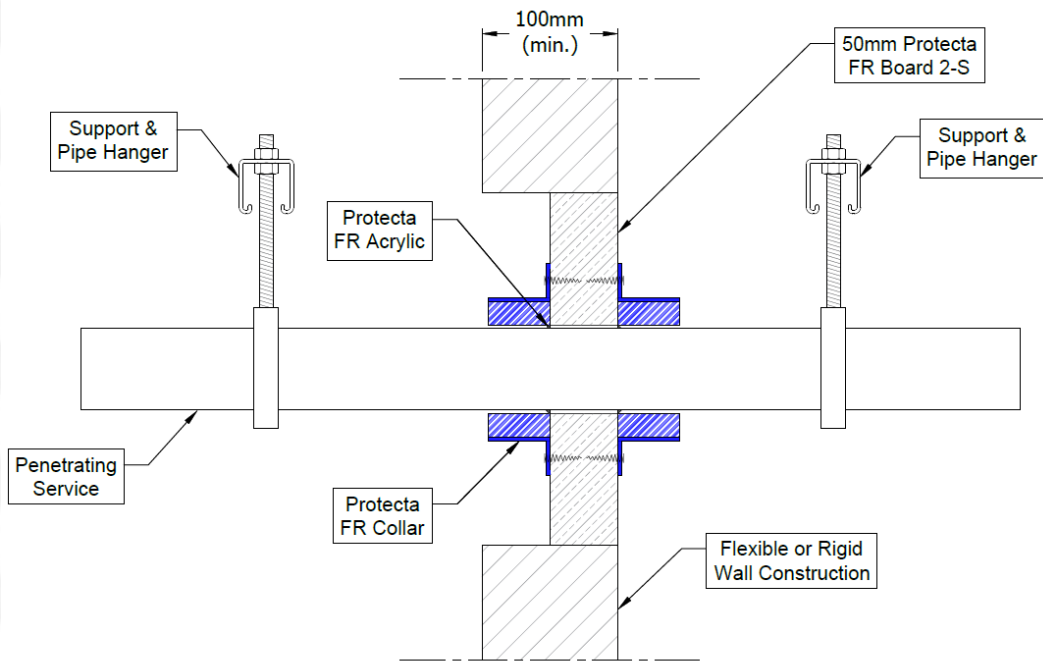
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Penetration seals, in drywalls and concrete/masonry walls

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:



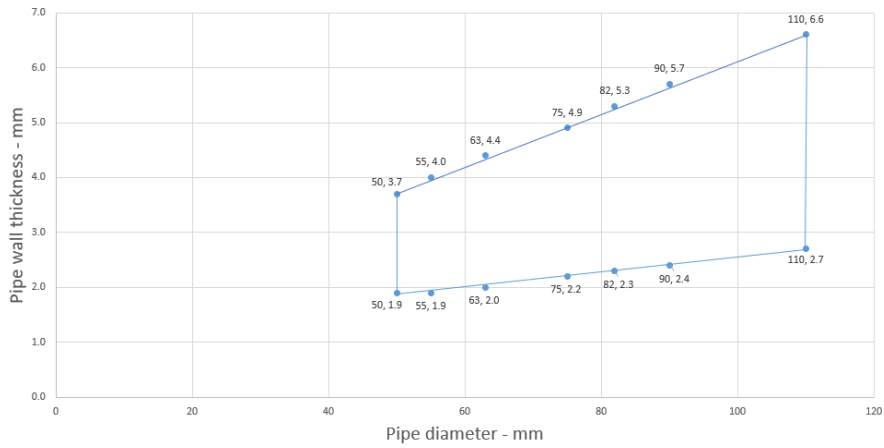
Services	Collar Inlay	Classification
PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1		
32-50 mm diameter / 1.9-3.7 mm wall thickness	50 x 3.0 mm	E 120 U/C, EI 60 U/C
55 mm, / 1.9-4.0 mm wall thickness	50 x 3.2 mm	
63 mm, / 2.0-4.4 mm wall thickness	50 x 3.6 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	



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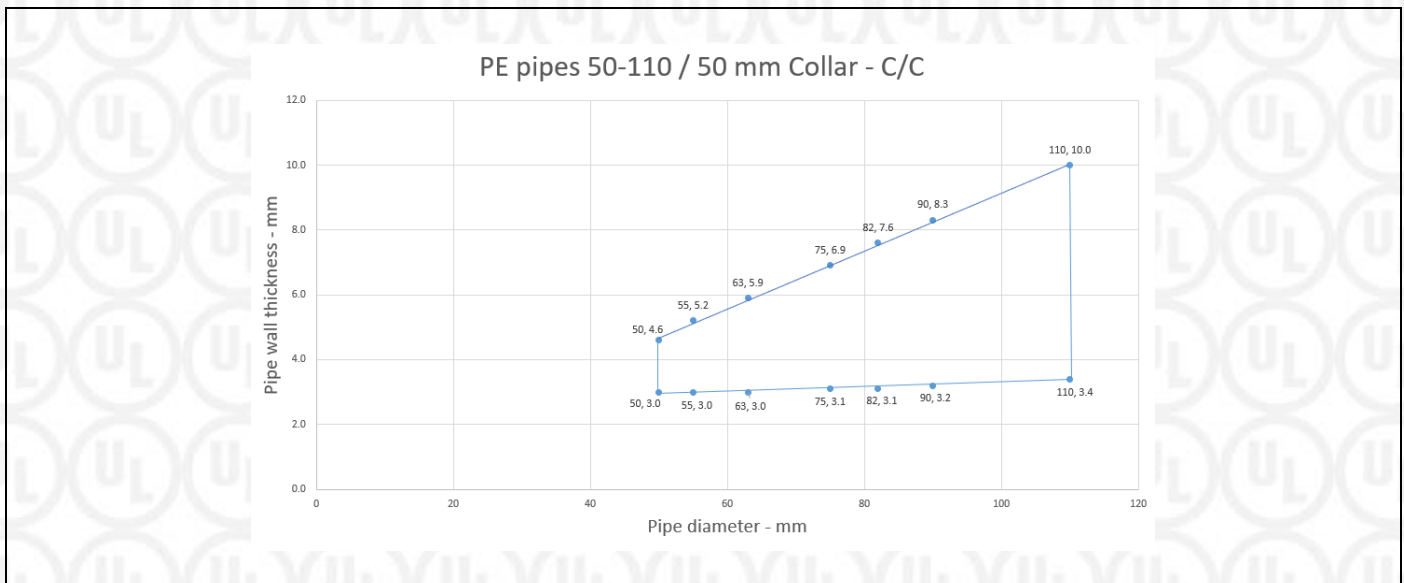
PVC pipes 50-110 / 50 mm Collar - U/C



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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	



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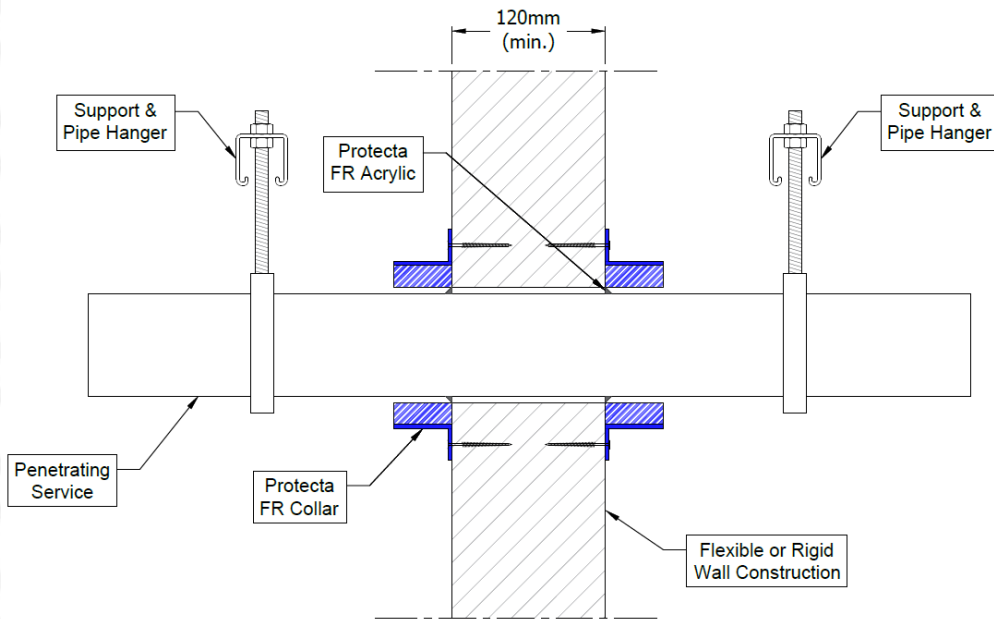
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Flexible or rigid wall constructions with wall thickness of minimum 120 mm

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:



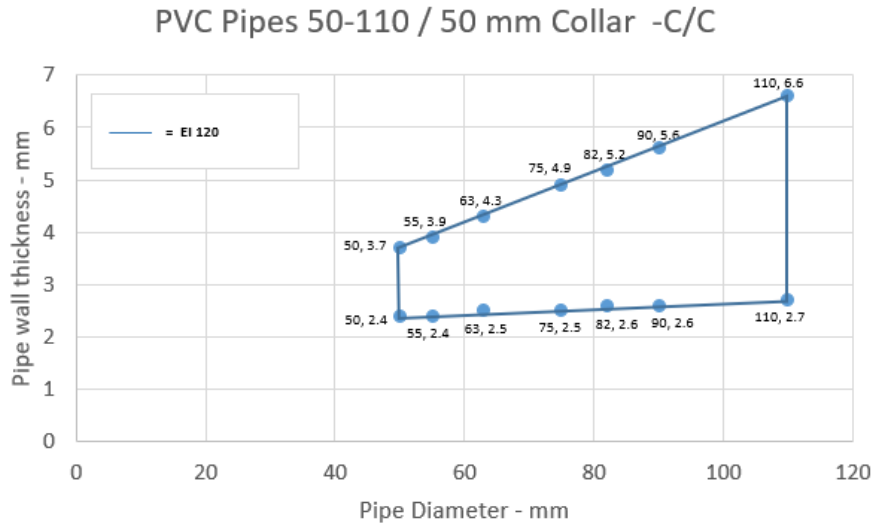
Services	Collar Inlay	Classification
PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1		
Diameter 32-50 mm, wall thickness 2.4-3.7 mm*	50 x 3.0 mm	EI 120 C/C
Diameter 55 mm, wall thickness 2.4-3.9 mm*	50 x 3.2 mm	
Diameter 63 mm, wall thickness 2.5-4.3 mm*	50 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



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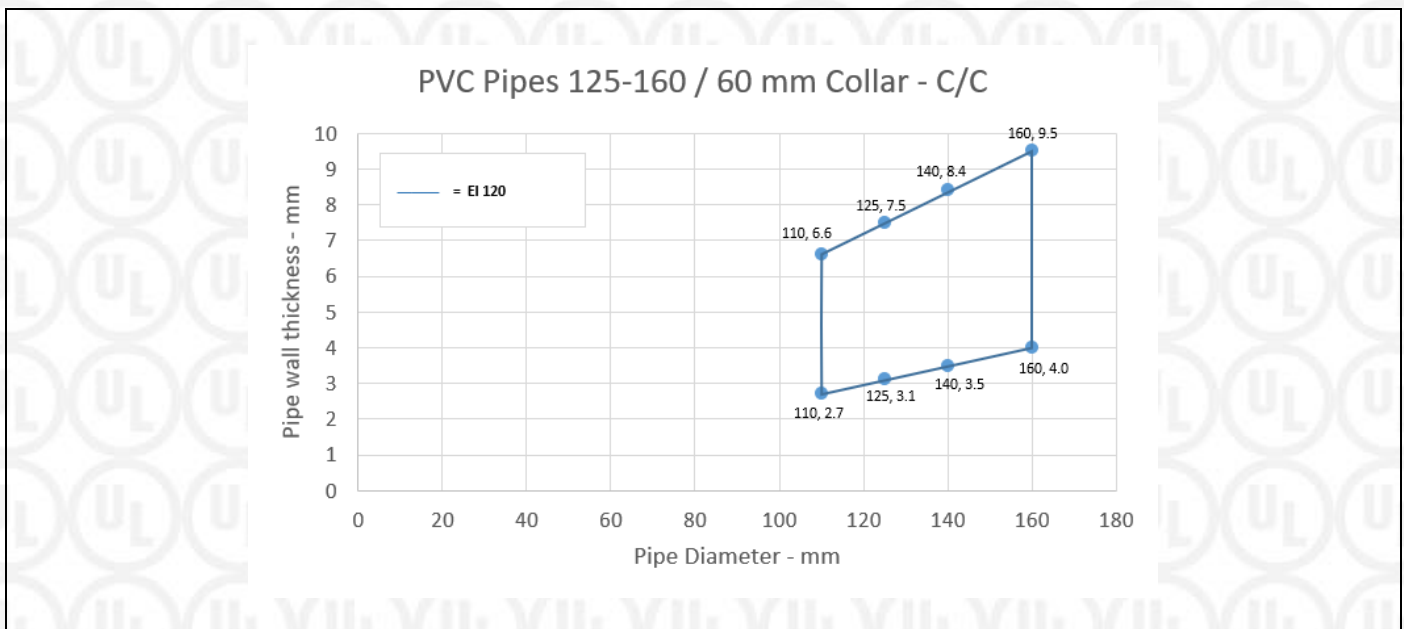


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Services	Collar Inlay	Classification
PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1		
Diameter 110 mm, wall thickness 2.7-6.6 mm*	50 x 6.0 mm	EI 120 C/C
Diameter 125 mm, wall thickness 3.1-7.5 mm*	60 x 8.8 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

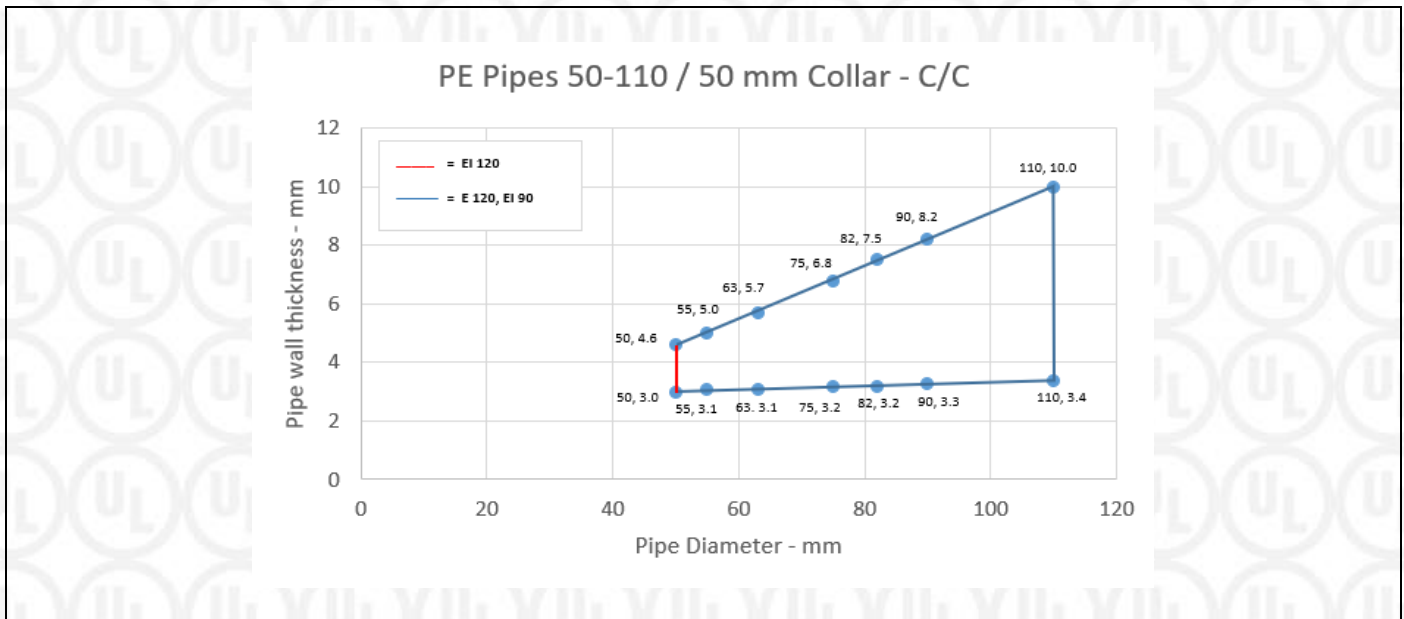


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Services	Collar Inlay	Classification
PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1		
Diameter 32-50 mm, wall thickness 3.0-4.6 mm*	50 x 3.0 mm	EI 120 C/C
Diameter 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

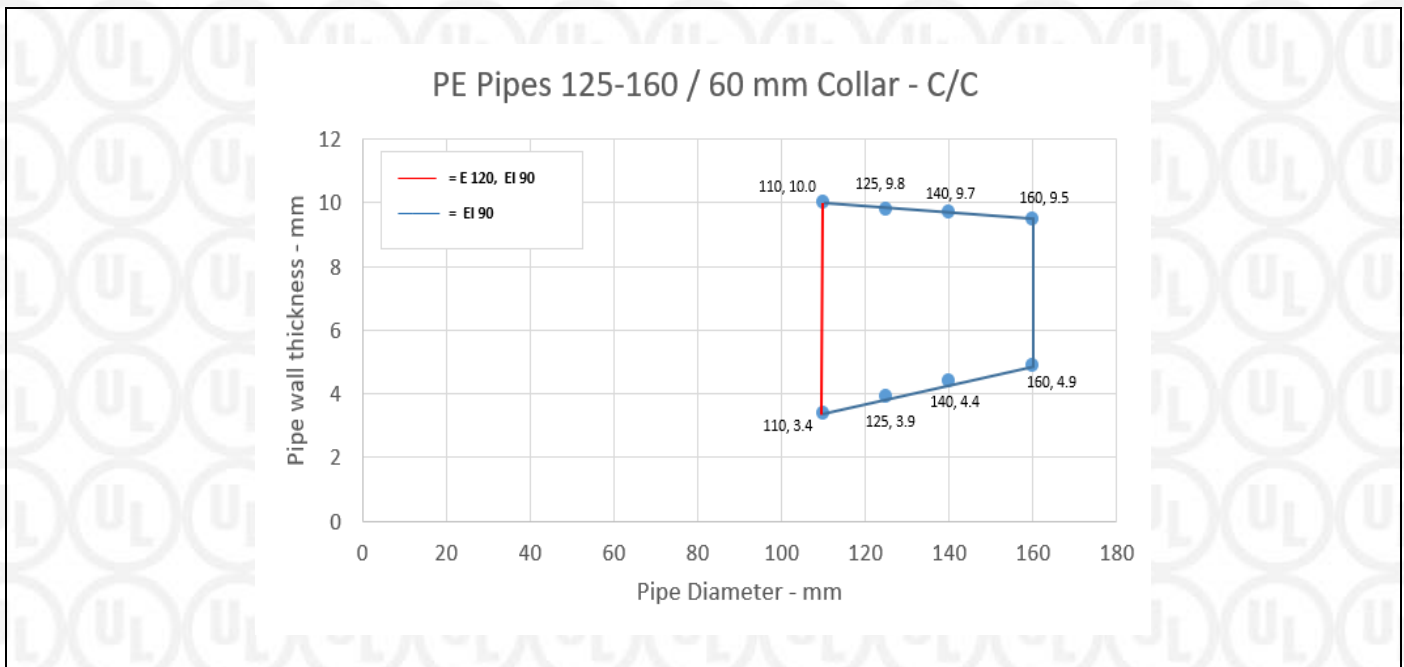


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Services	Collar Inlay	Classification
PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1		
Diameter 110 mm, wall thickness 3.4-10.0 mm*	50 x 6.0 mm	E 120 C/C, EI 90 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

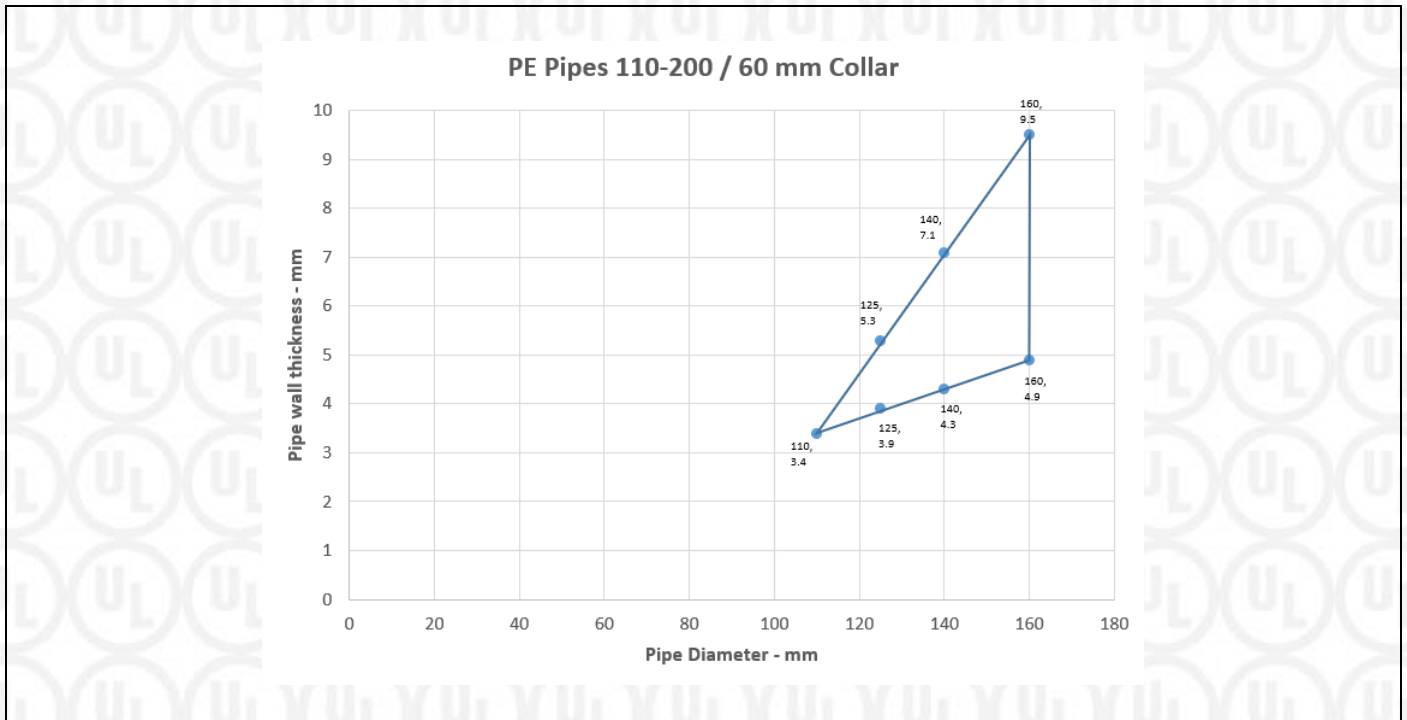


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Services	Collar Inlay	Classification
PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1		
Diameter 110 mm, wall thickness 3.4 mm*	50 x 6.0 mm	EI 120 C/C
Diameter 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

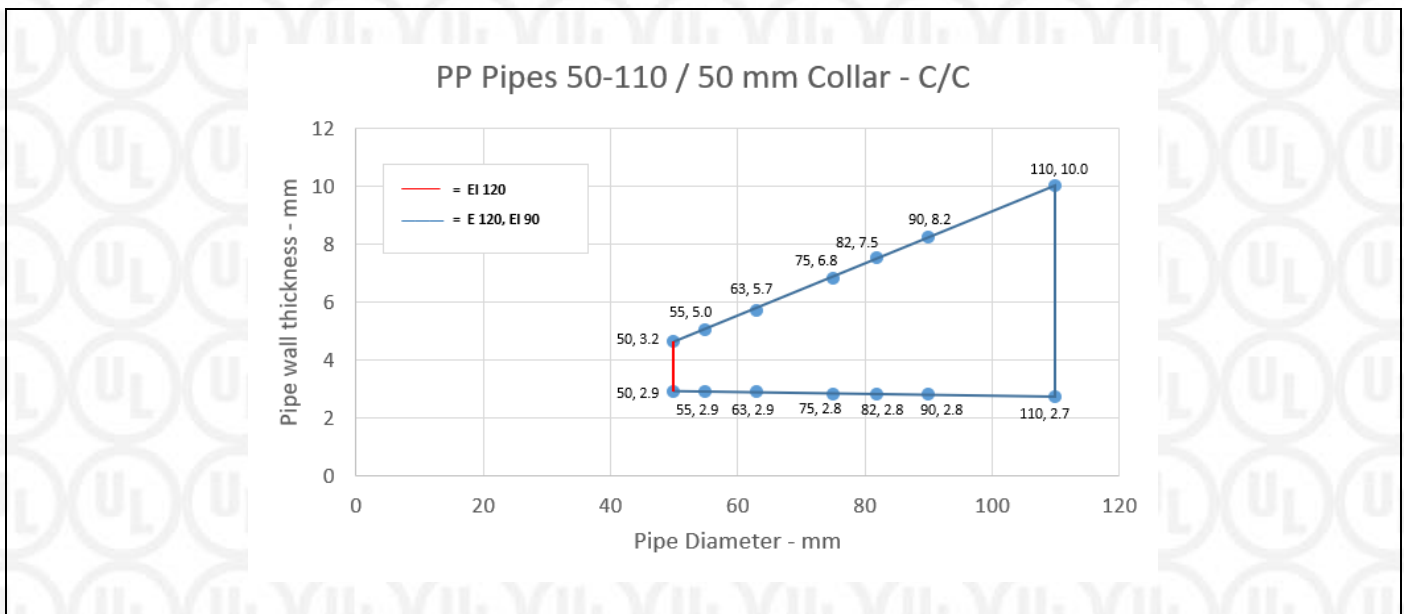


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Services	Collar Inlay	Classification
PP pipe according to DIN 8077/8078		
Diameter 32-50 mm, wall thickness 2.9-4.6 mm	50 x 3.0 mm	EI 120 C/C
Diameter 55 mm, wall thickness 2.9-5.0 mm*	50 x 3.2 mm	E 120 C/C, EI 90 C/C
Diameter 63 mm, wall thickness 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

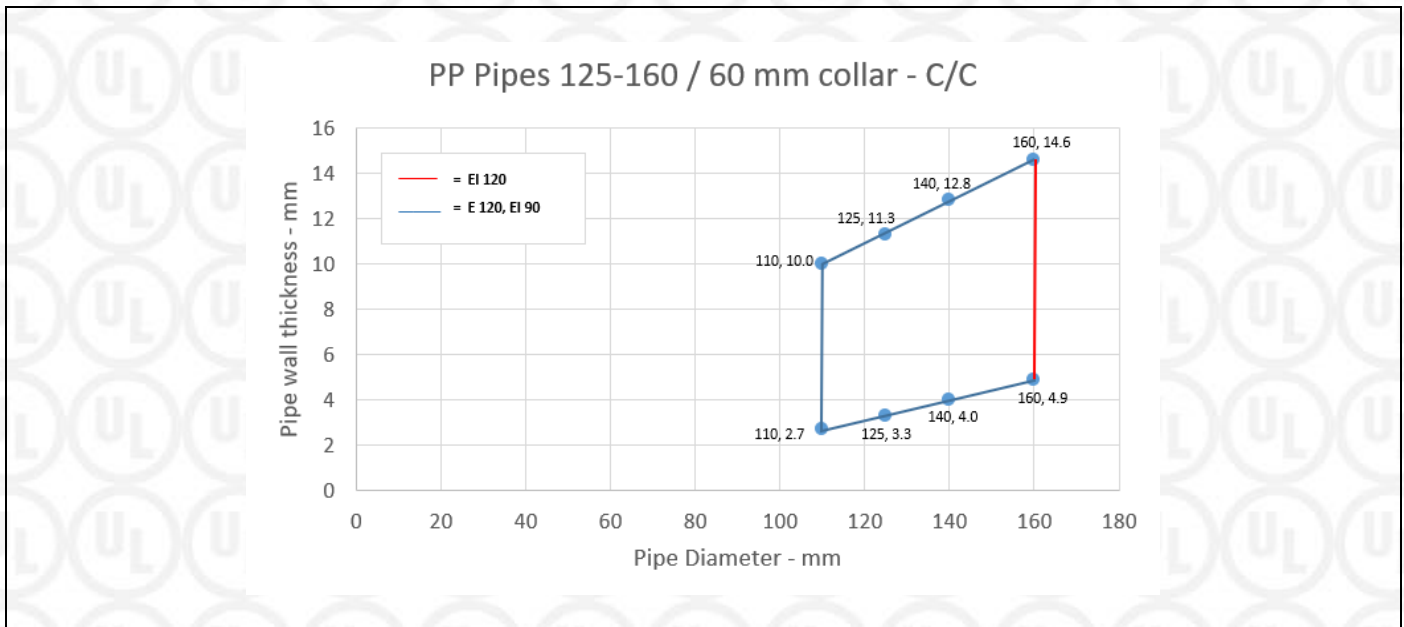


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Services	Collar Inlay	Classification
PP pipe according to DIN 8077/8078		
Diameter 110 mm, wall thickness 2.7-10 mm*	50 x 6.0 mm	E 120 C/C, EI 90 C/C
Diameter 125 mm, wall thickness 3.3-11.3 mm*	60 x 8.8 mm	
Diameter 140 mm, wall thickness 4.0-12.8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



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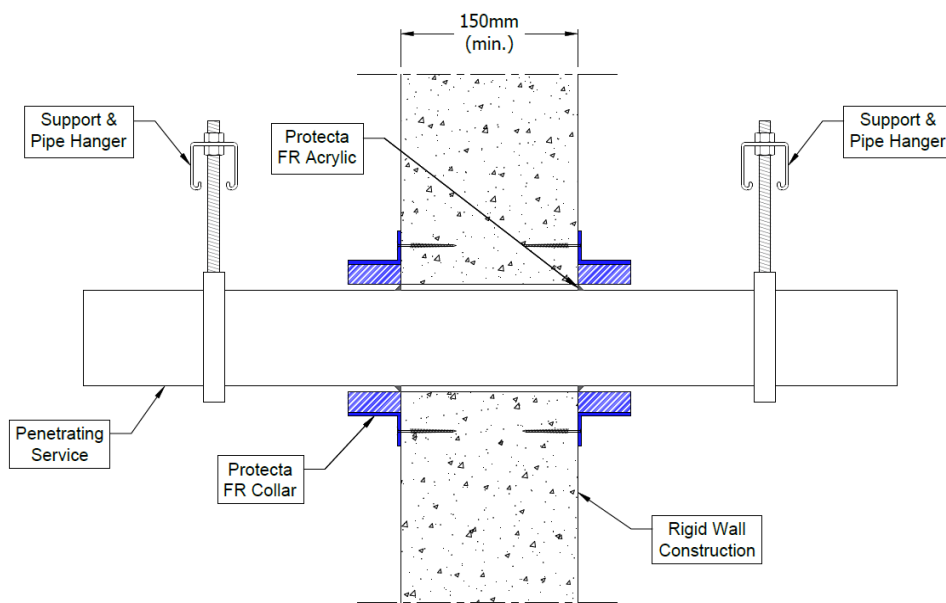
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Rigid walls constructions with wall thickness of minimum 150 mm

Penetration seals, in concrete/masonry walls

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

Construction details:



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	

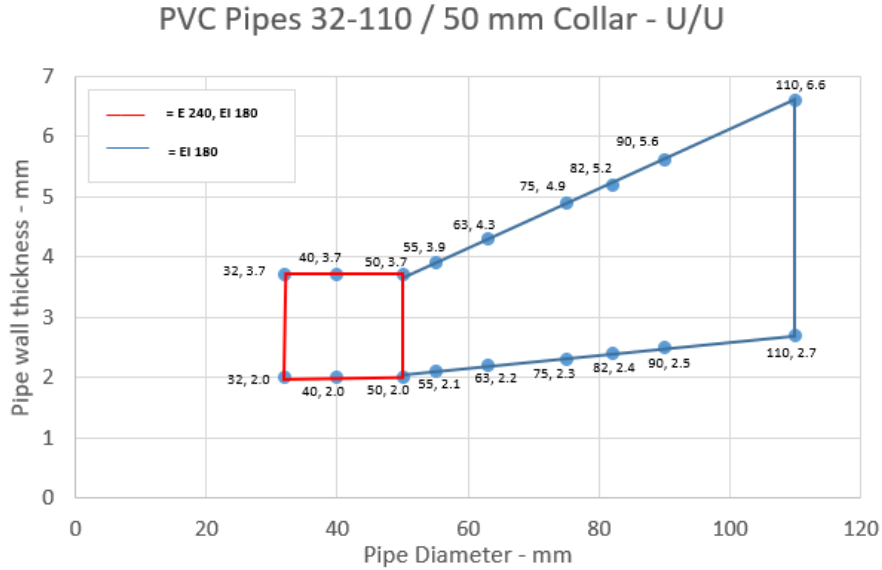
* Typical pipe diameters shown, see below graph for intermediate sizes

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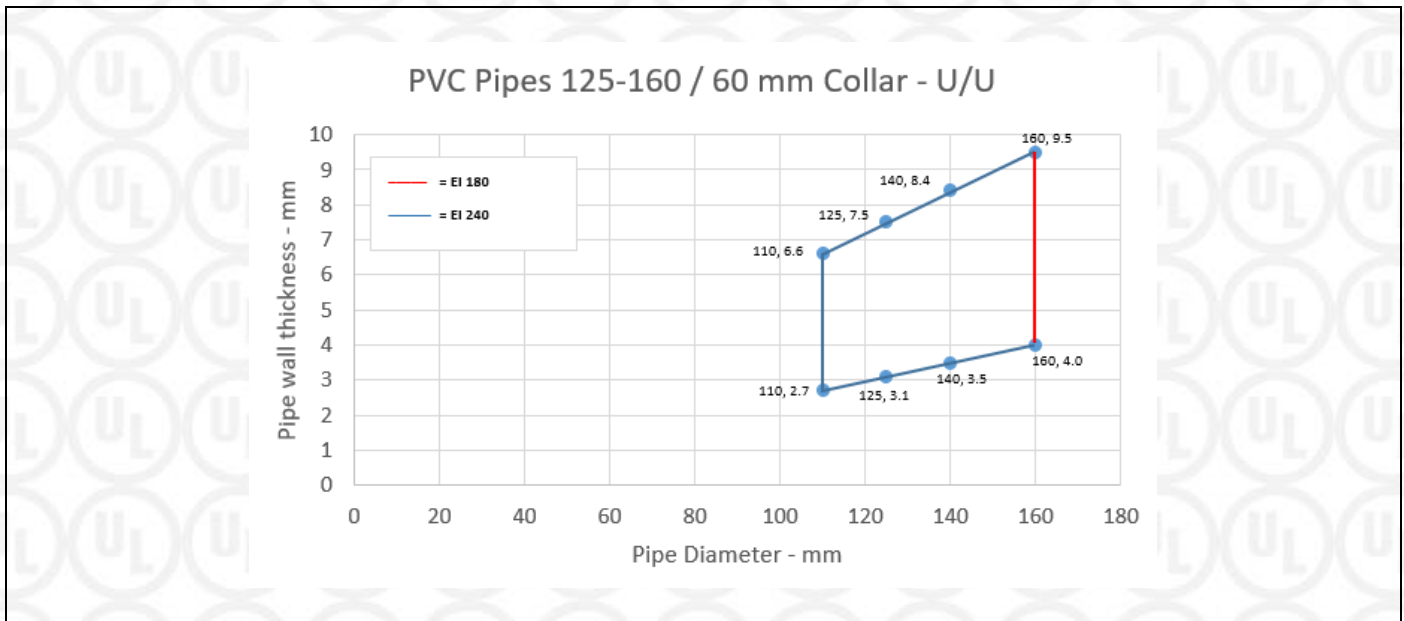


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Services	Collar Inlay	Classification
PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1		
Diameter 110 mm, wall thickness 2.7-6.6 mm*	50 x 6.0 mm	EI 180 U/U, EI 180 C/U, EI 180 U/C, EI 180 C/C
Diameter 125 mm, 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

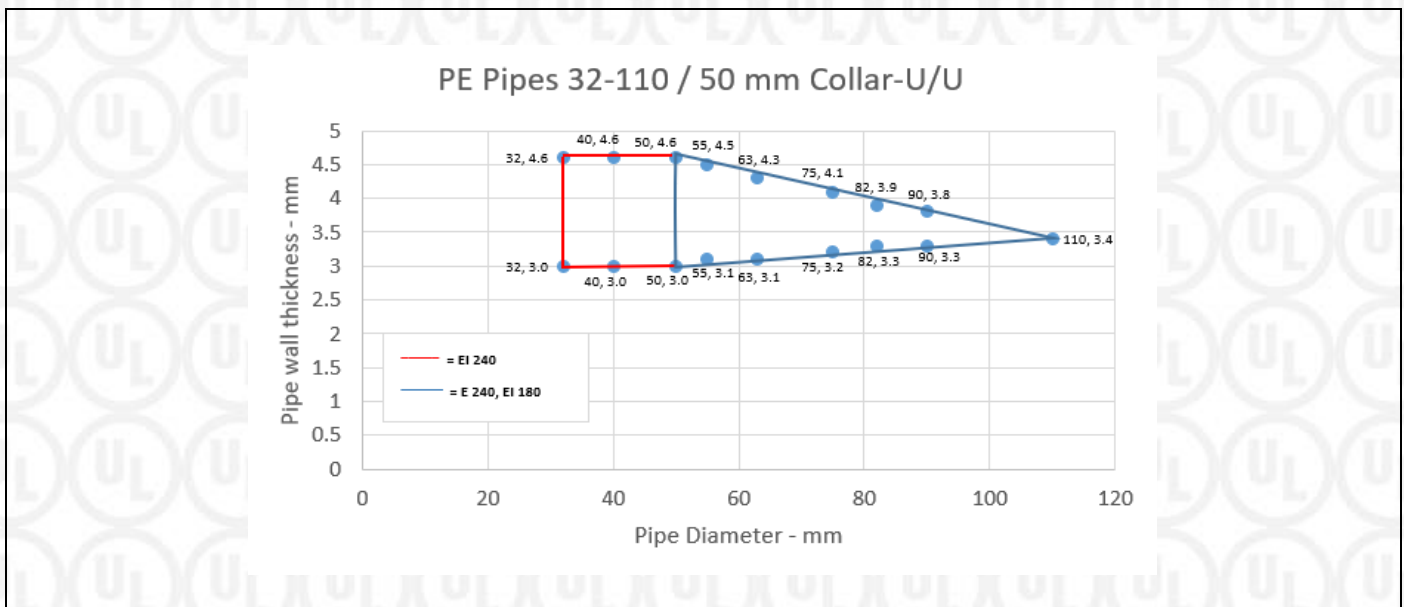


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Services	Collar Inlay	Classification
PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1		
Diameter 32 mm, wall thickness 3.0-4.6 mm*	50 x 3.0 mm	EI 240 U/U, EI 240 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

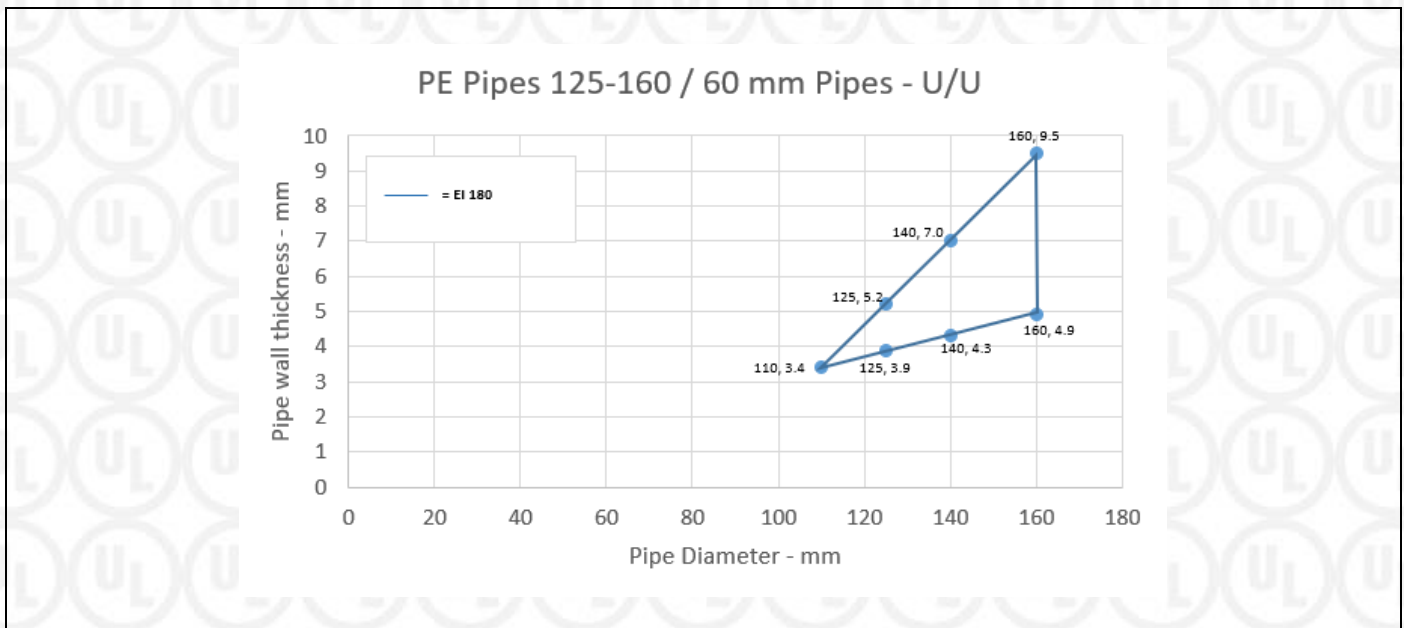


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Services	Collar Inlay	Classification
PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1		
Diameter 110 mm, wall thickness 3.4 mm*	50 x 6.0 mm	E 240 U/U, E 240 C/U, 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

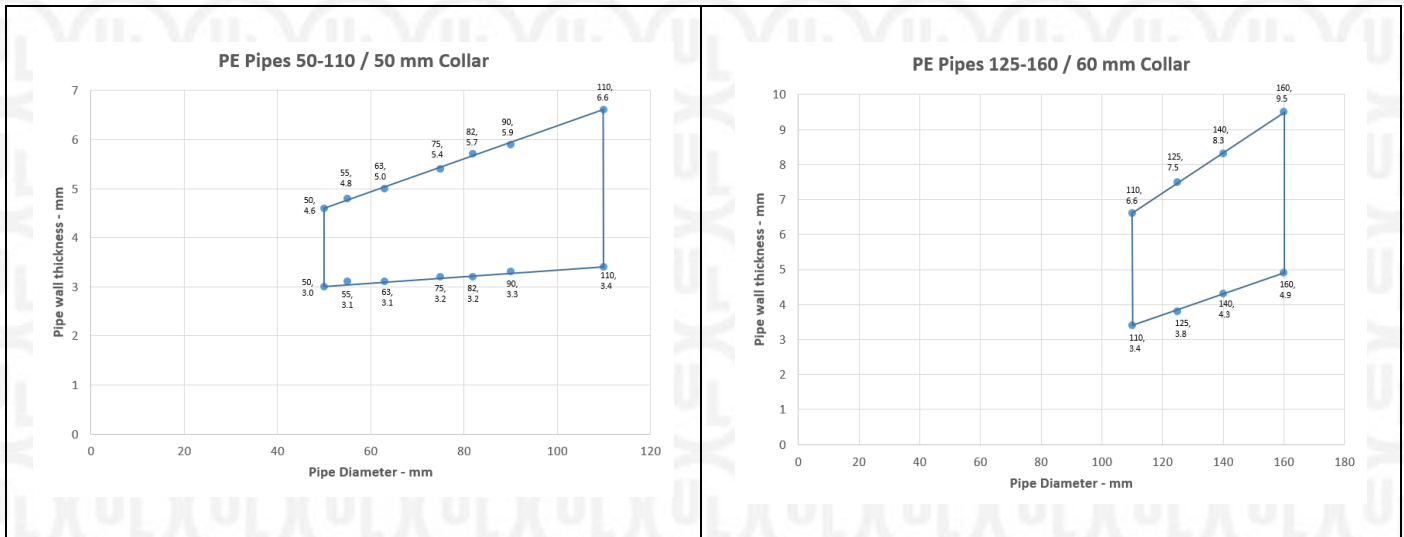


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Services	Collar Inlay	Classification
PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1		
Diameter 50 mm, wall thickness 3.0-4.6 mm*	50 x 3.0 mm	EI 240 U/U, EI 240 C/U, 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 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	EI 180 U/U, EI 180 C/U, EI 180 U/C, EI 180 C/C
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

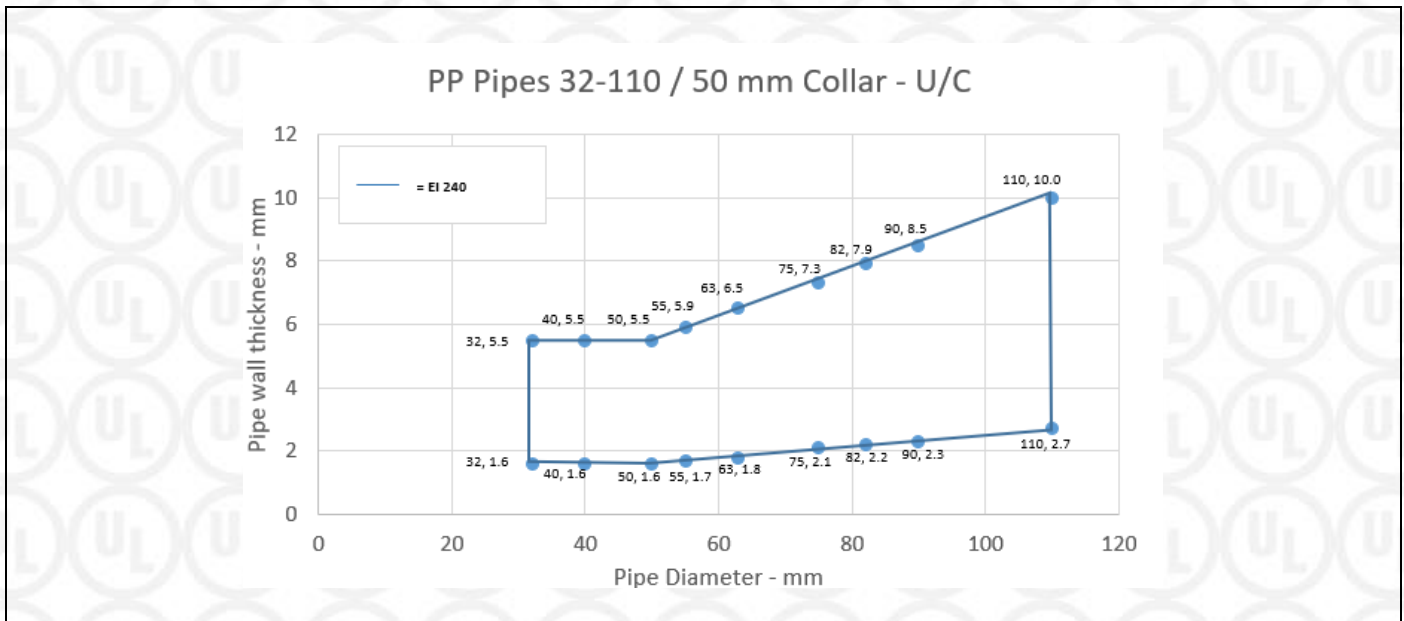


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Services	Collar Inlay	Classification
PP pipe according to EN 1451-1		
Diameter 32 mm, wall thickness 1.6-5.5 mm*	30 x 3.0 mm	EI 240 U/C, EI 240 C/C
Diameter 40 mm, wall thickness 1.6-5.5 mm*		
Diameter 50 mm, wall thickness 1.6-5.5 mm*		
Diameter 55 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

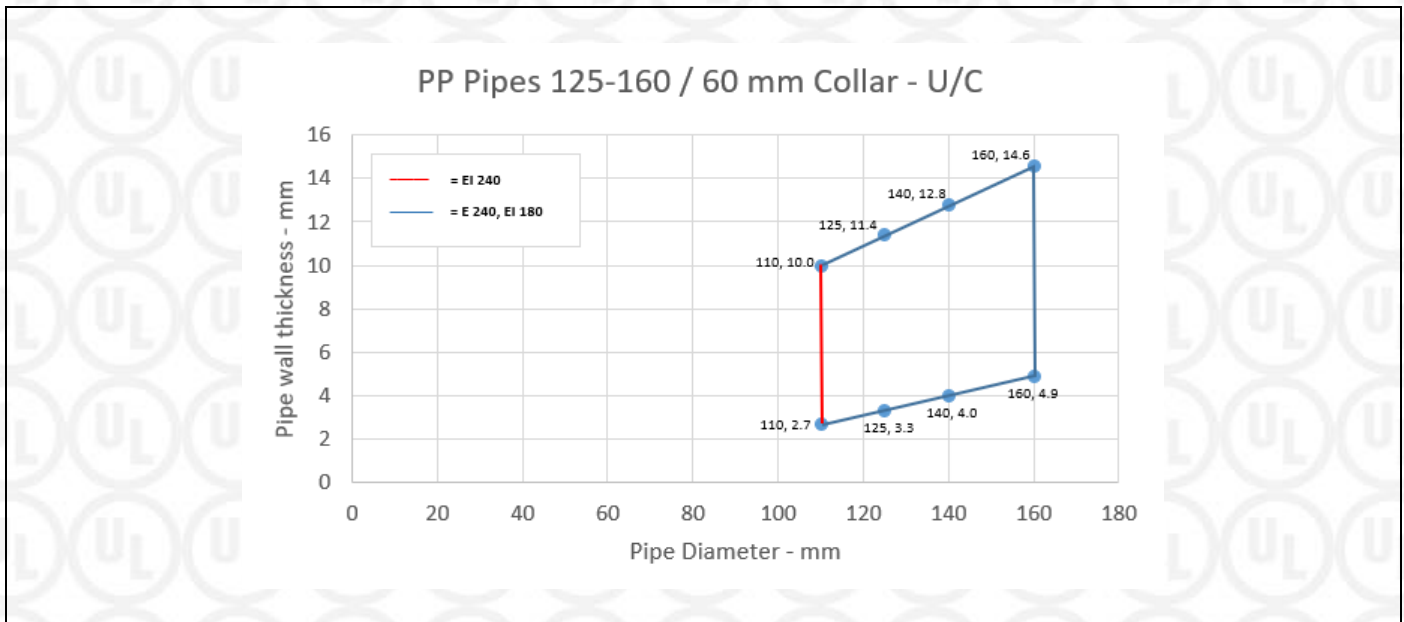


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Services	Collar Inlay	Classification
PP pipe according to EN 1451-1		
Diameter 110 mm, wall thickness 2.7-10.0 mm*	50 x 6.0 mm	EI 240 U/C, EI 240 C/C
Diameter 125 mm, wall thickness 3.3-11.4 mm*	60 x 9.0 mm	E 240 U/C, E 240 C/C EI 180 U/C, EI 180 C/C
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

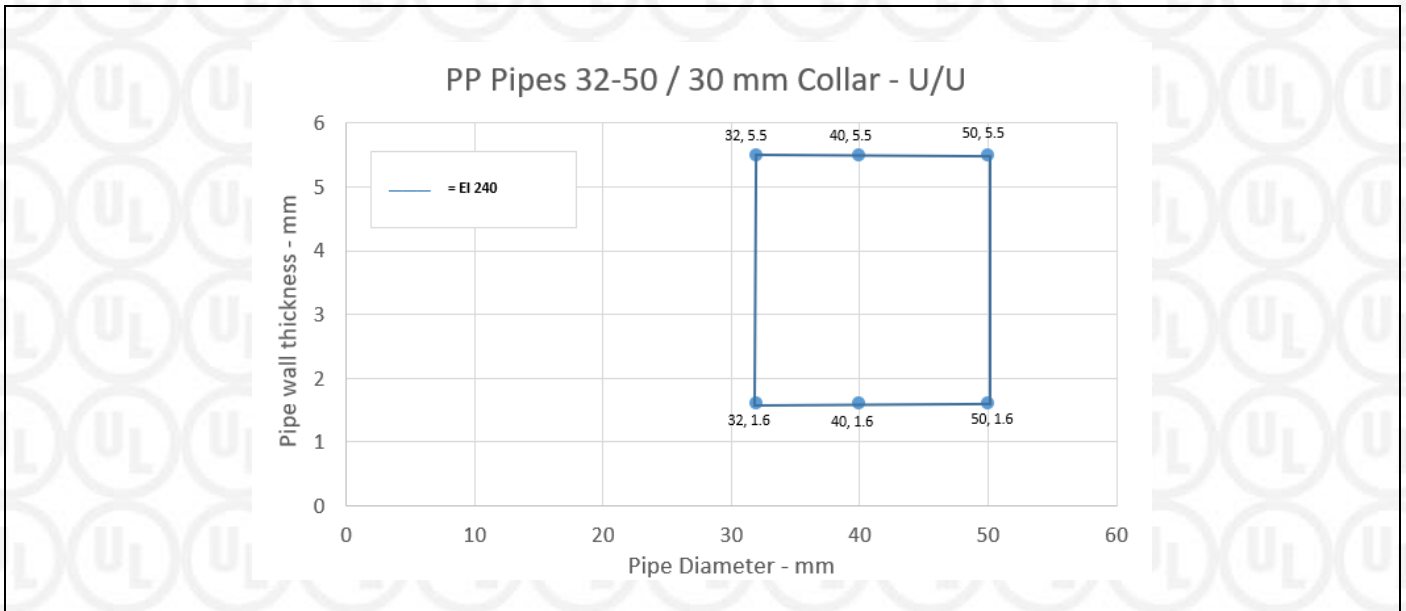


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Services	Collar Inlay	Classification
PP pipe according to EN 1451-1		
Diameter 32 mm, wall thickness 1.6-5.5 mm*	30 x 3.0 mm	EI 240 U/U, EI 240 C/U, EI 240 U/C, EI 240 C/C
Diameter 40 mm, wall thickness 1.6-5.5 mm*		
Diameter 50 mm, wall thickness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

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

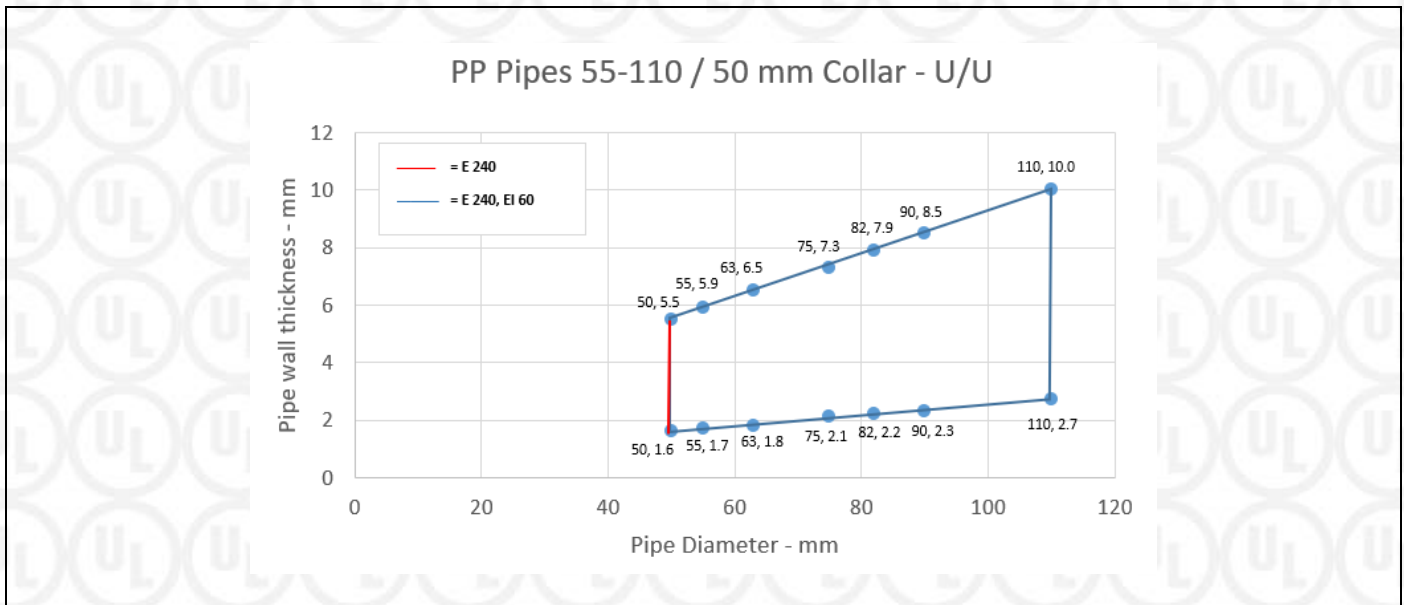


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Services	Collar Inlay	Classification
PP pipe according to EN 1451-1		
Diameter 50 mm, wall thickness 1.6-5.5 mm*	50 x 3.0 mm	EI 240 U/U, EI 240 C/U, EI 240 U/C, EI 240 C/C
Diameter 55 mm, wall thickness 1.7-5.9 mm*	50 x 3.2 mm	E 240 U/U, E 240 C/U, 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

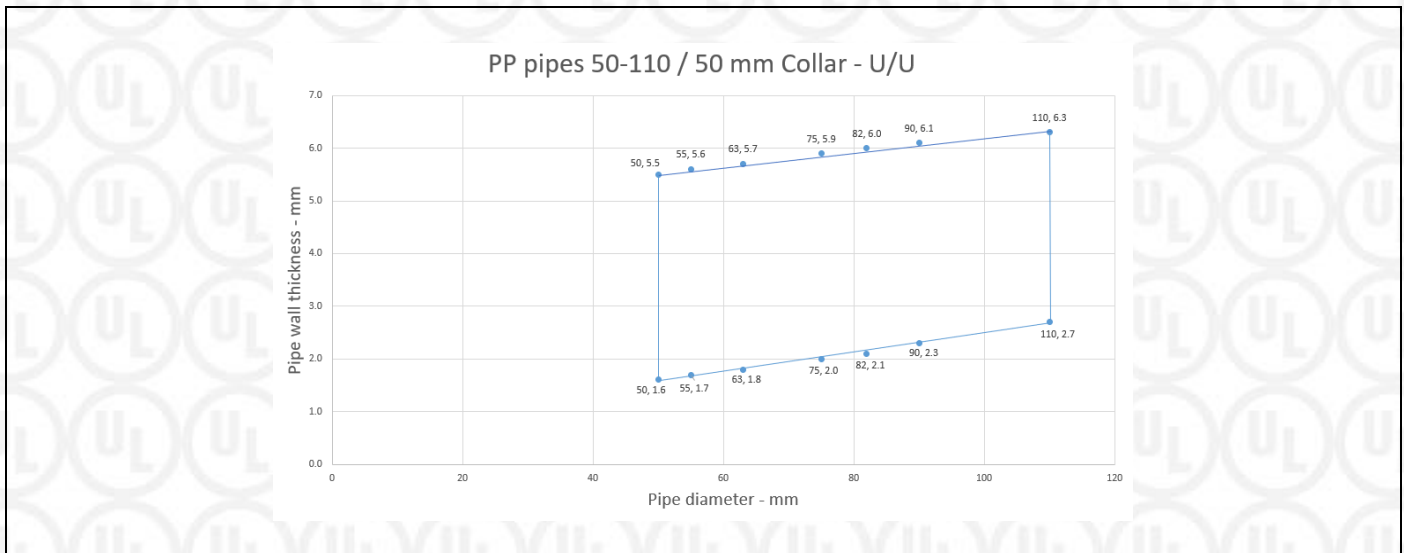


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Services	Collar Inlay	Classification
PP pipe according to EN 1451-1		
Diameter 50 mm, wall thickness 1.6-5.5 mm*	50 x 3.0 mm	EI 240 U/U, EI 240 C/U, EI 240 U/C, EI 240 C/C
Diameter 55 mm, wall thickness 1.7-5.6 mm*	50 x 3.2 mm	E 240 U/U, EI 90 U/U
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

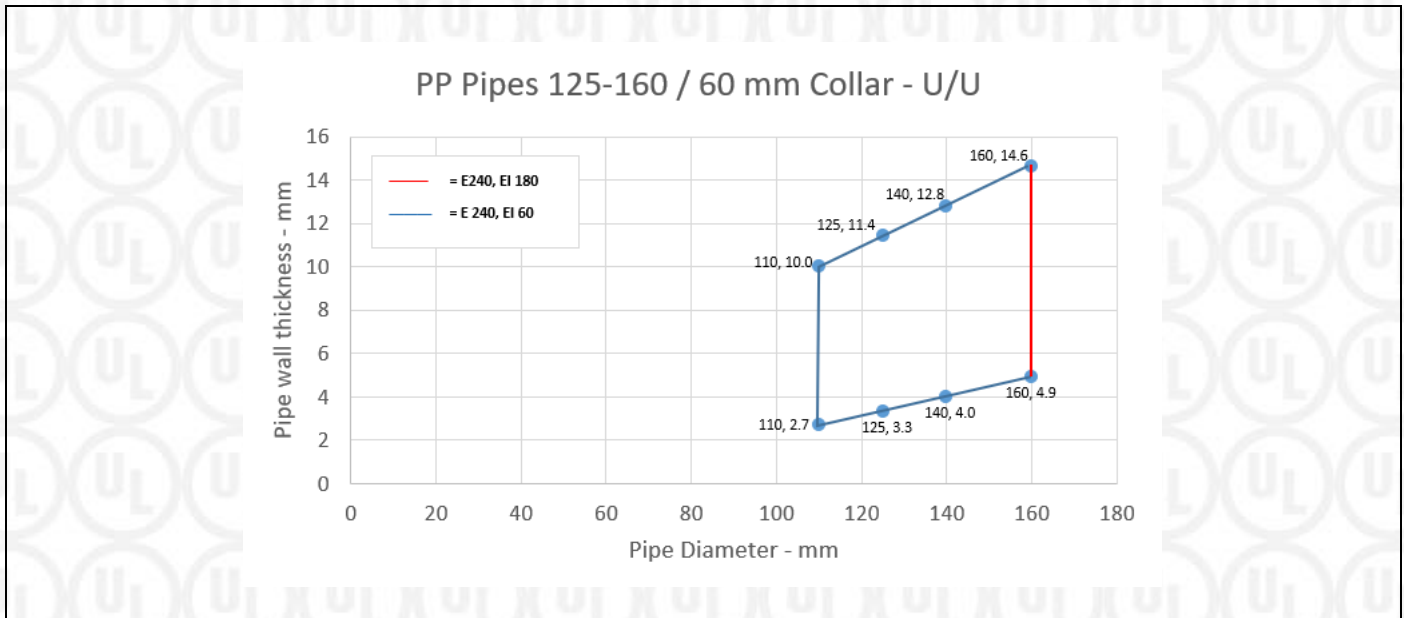


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Services	Collar Inlay	Classification
PP pipe according to EN 1451-1		
Diameter 110 mm, wall thickness 2.7-10.0 mm*	60 x 6.0 mm	E 240 U/U, E 240 C/U, EI 60 U/U, EI 60 C/U
Diameter 125 mm, wall thickness 3.3-11.4 mm*	60 x 8.8 mm	
Diameter 140 mm, wall 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, 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



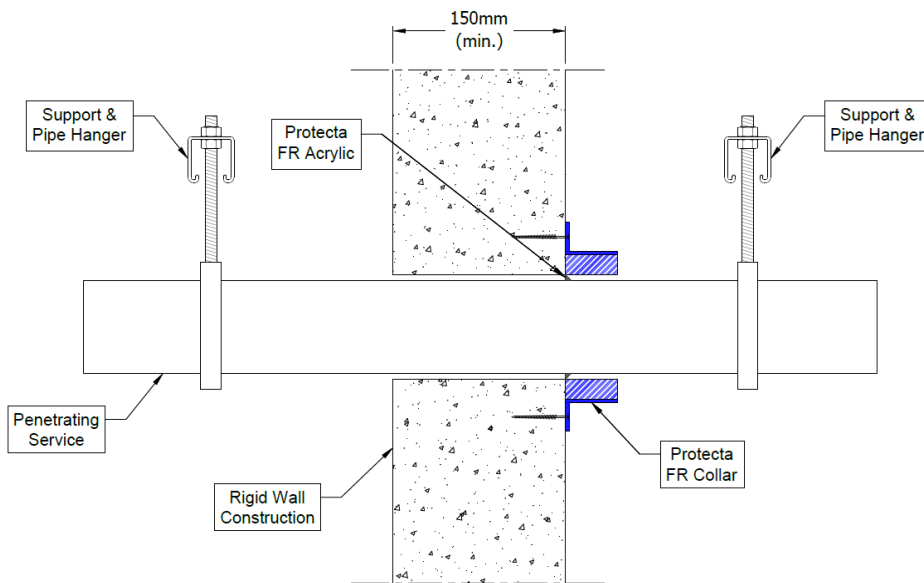
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Penetration seals, in concrete/masonry walls

Penetration Seal: Combustible pipes fitted with single Protecta FR Collar, to either side of the wall.

Construction details:



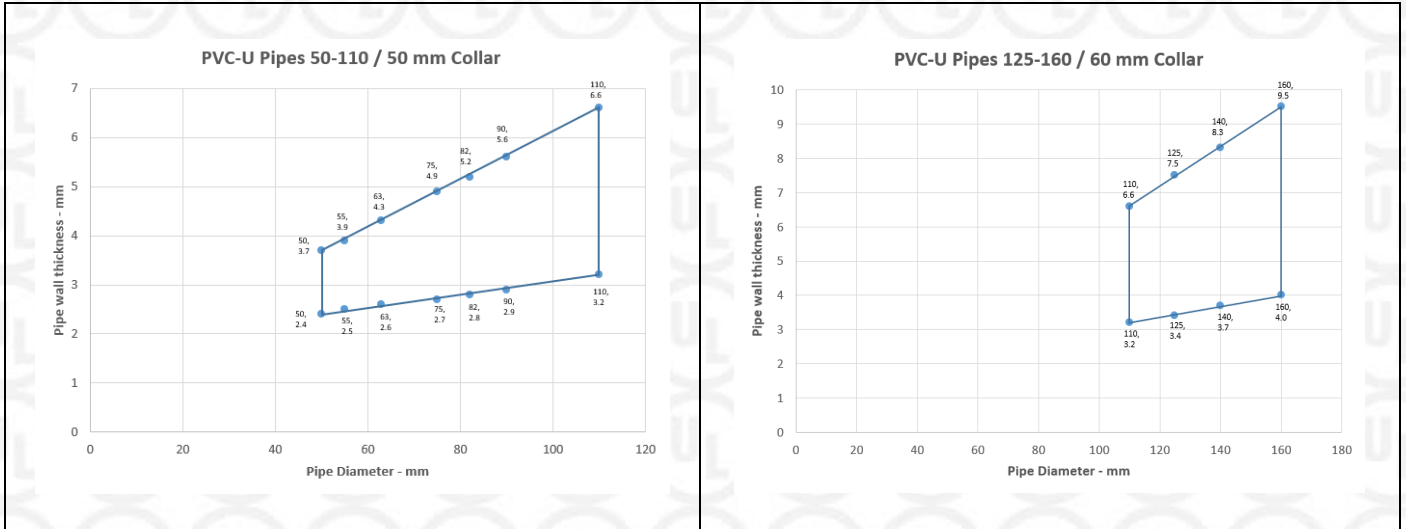
Services	Collar Inlay	Classification
PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1		
Diameter 32 mm, wall thickness 2.4-3.7 mm	50 x 3.0 mm	E 240 U/C, E 240 C/C EI 180 U/C, EI 180 C/C
Diameter 40 mm, wall thickness 2.4-3.7 mm		
Diameter 50 mm, wall thickness 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 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	EI 120 U/C, EI 120 C/C
Diameter 125 mm, wall thickness 3.4-7.5 mm*	60 x 8.8 mm	
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



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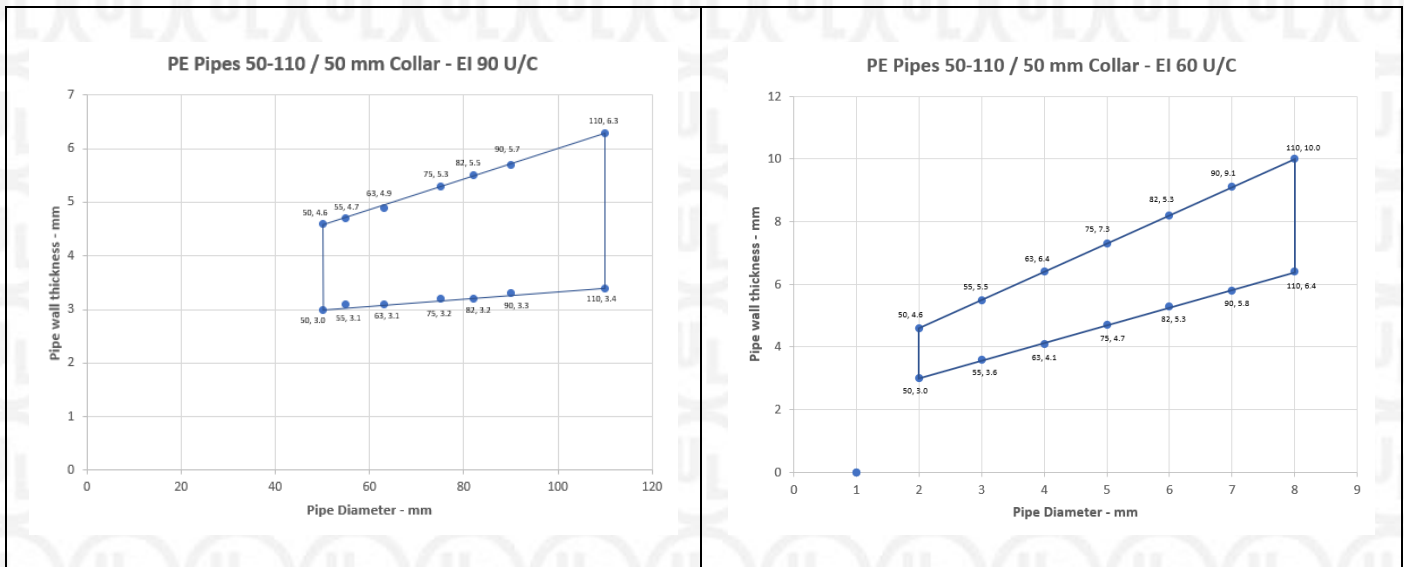


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Services	Collar Inlay	Classification
PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1		
Diameter 32 mm, wall thickness 3.0-4.6 mm	50 x 3.0 mm	E 180 U/C, E 180 C/C 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 3.1-4.7 mm*	50 x 3.2 mm	EI 90 U/C, EI 90 C/C
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	EI 60 U/C, EI 60 C/C
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

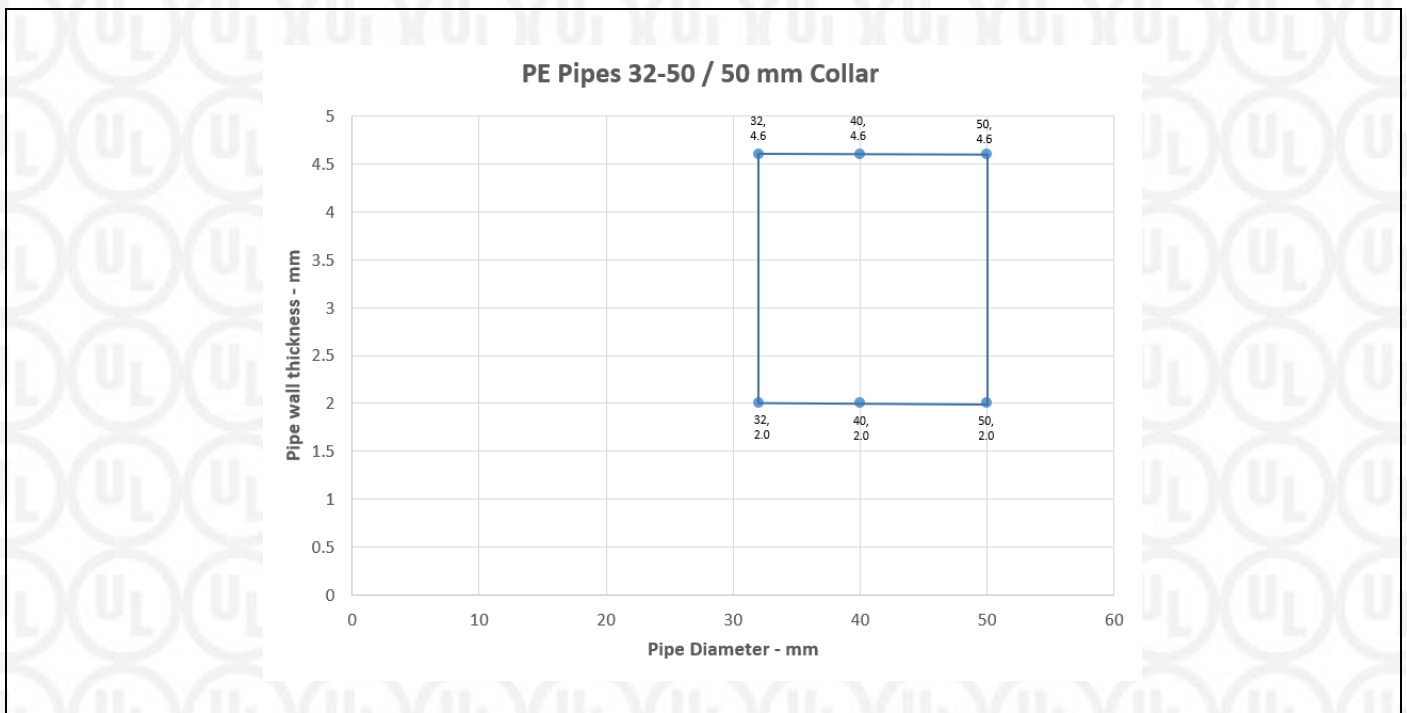


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Services	Collar Inlay	Classification
PP pipe according to EN 1451-1		
Diameter 32 mm, wall thickness 2.0-4.6 mm	50 x 3.0 mm	EI 90 U/C, EI 90 C/C
Diameter 40 mm, wall thickness 2.0-4.6 mm		
Diameter 50 mm, wall thickness 2.0-4.6 mm		

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



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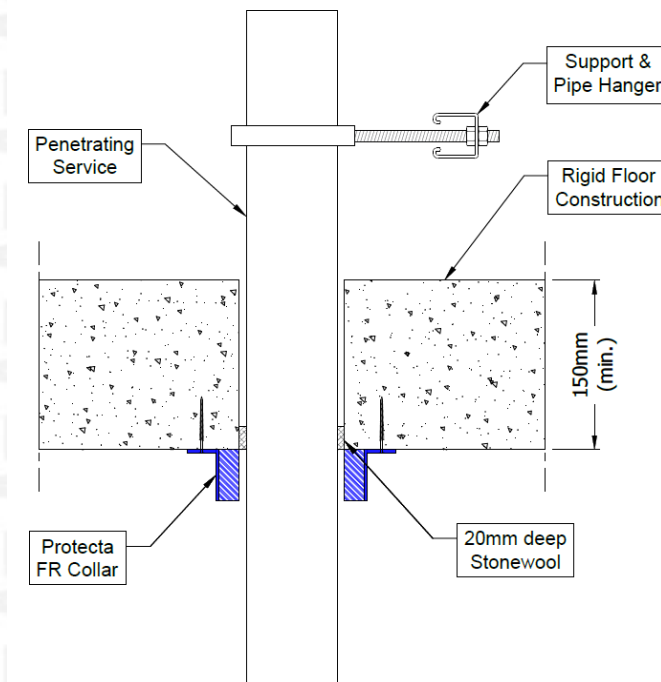
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Rigid floor constructions with floor thickness of minimum 150 mm

Penetration seals, surface mounted in concrete floors

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

Construction details:



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	
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	EI 60 U/U, EI 60 C/U, EI 60 U/C, EI 60 C/C

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

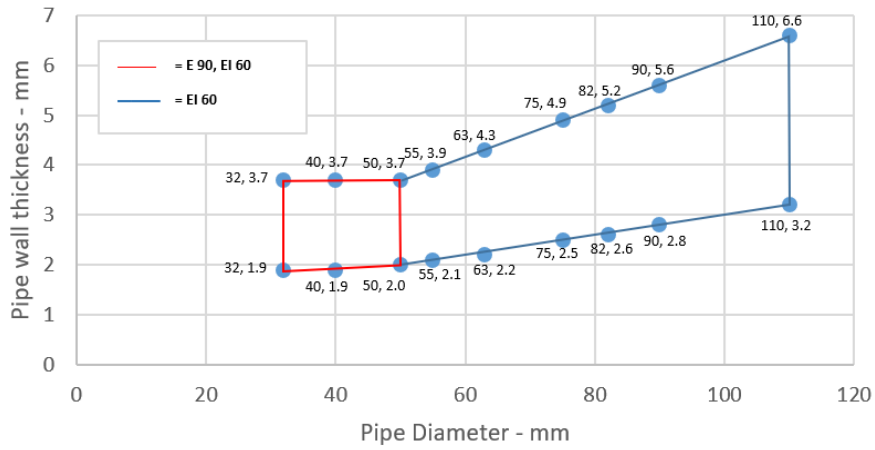
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PVC Pipes 32-110 / 30 mm Collar - U/U

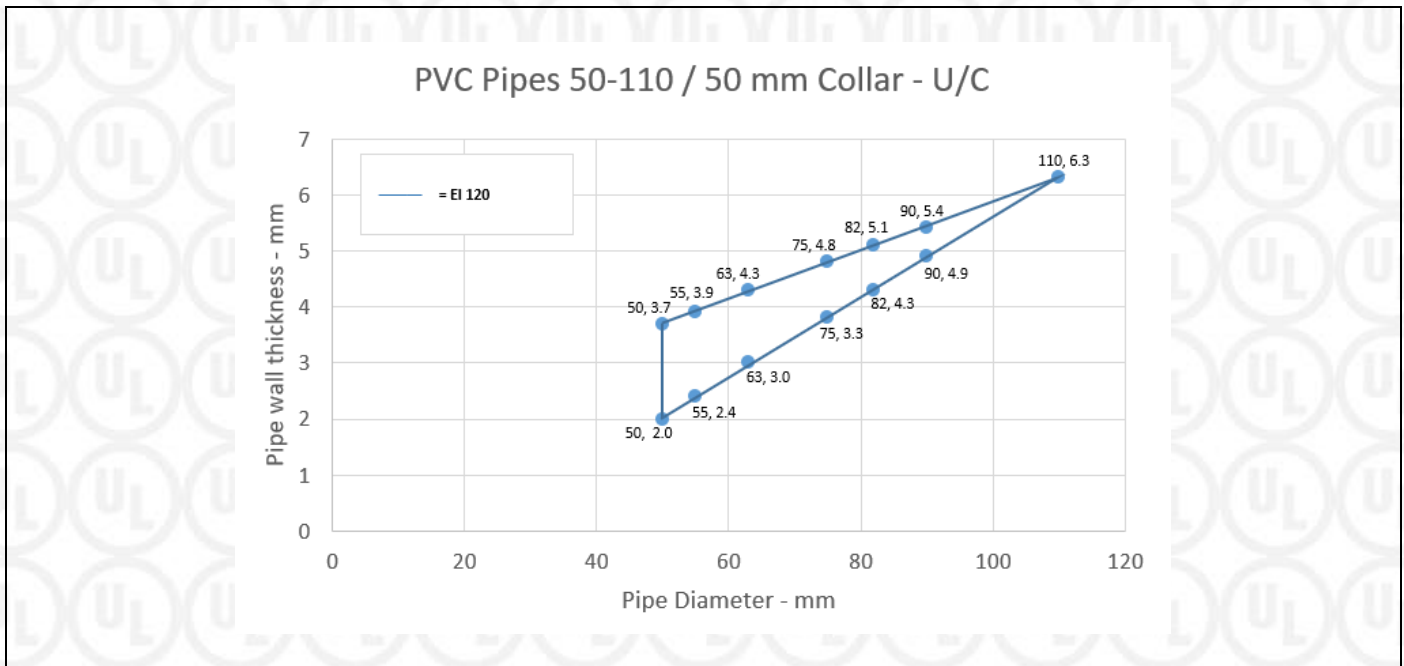


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Services	Collar Inlay	Classification
PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1		
Diameter 32 mm, wall thickness 2.0-3.7 mm		EI 120 U/C, EI 120 C/C
Diameter 40 mm, wall thickness 2.0-3.7 mm	50 x 3.0 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

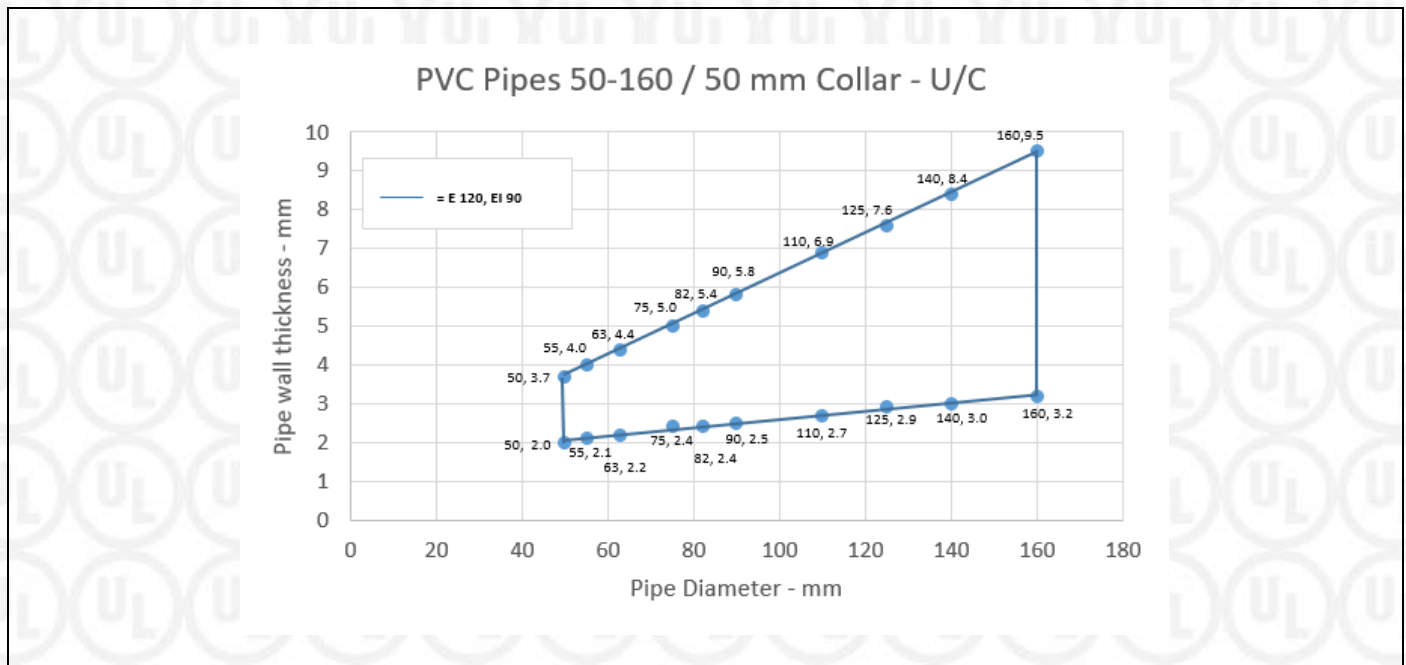


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Services	Collar Inlay	Classification
PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1		
Diameter 50 mm, wall thickness 2.0-3.7 mm*	50 x 3.0 mm	E 120 U/C, EI 90 U/C
Diameter 55 mm, wall thickness 2.1-4.0 mm*	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

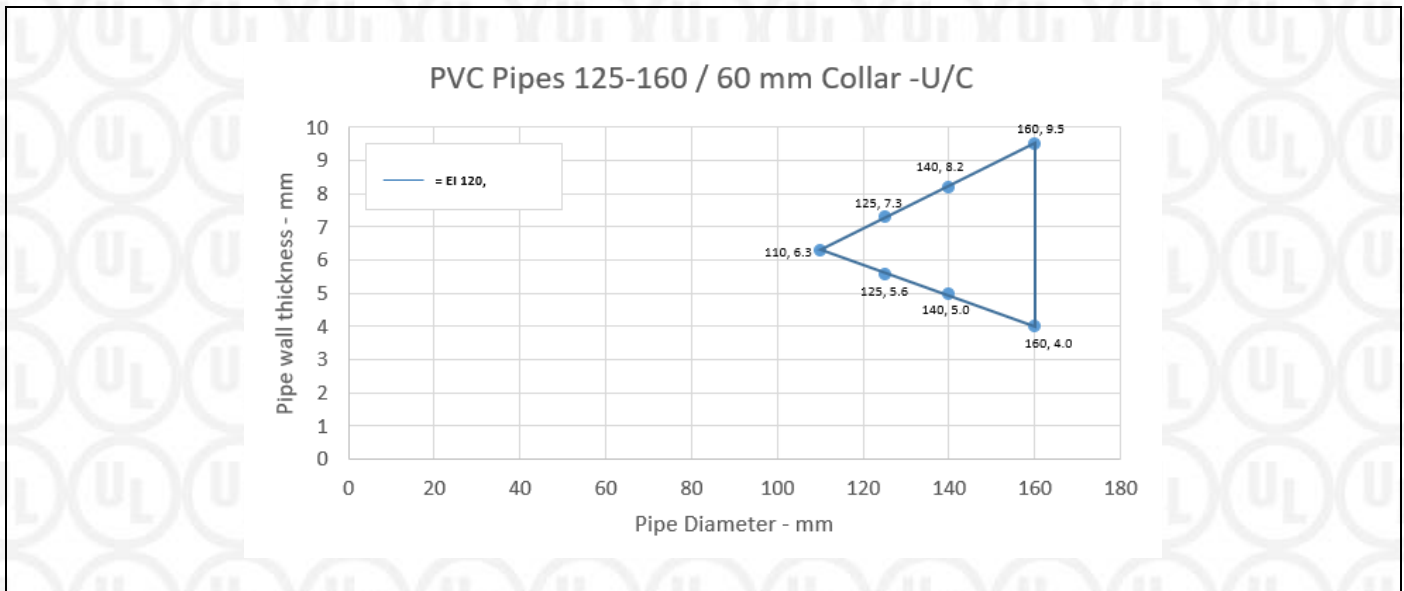


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Services	Collar Inlay	Classification
PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1		
Diameter 110 mm, wall thickness 6.3 mm*	60 x 6.0 mm	EI 120 U/C, EI 120 C/C
Diameter 125 mm, wall thickness 5.6-7.3 mm*	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

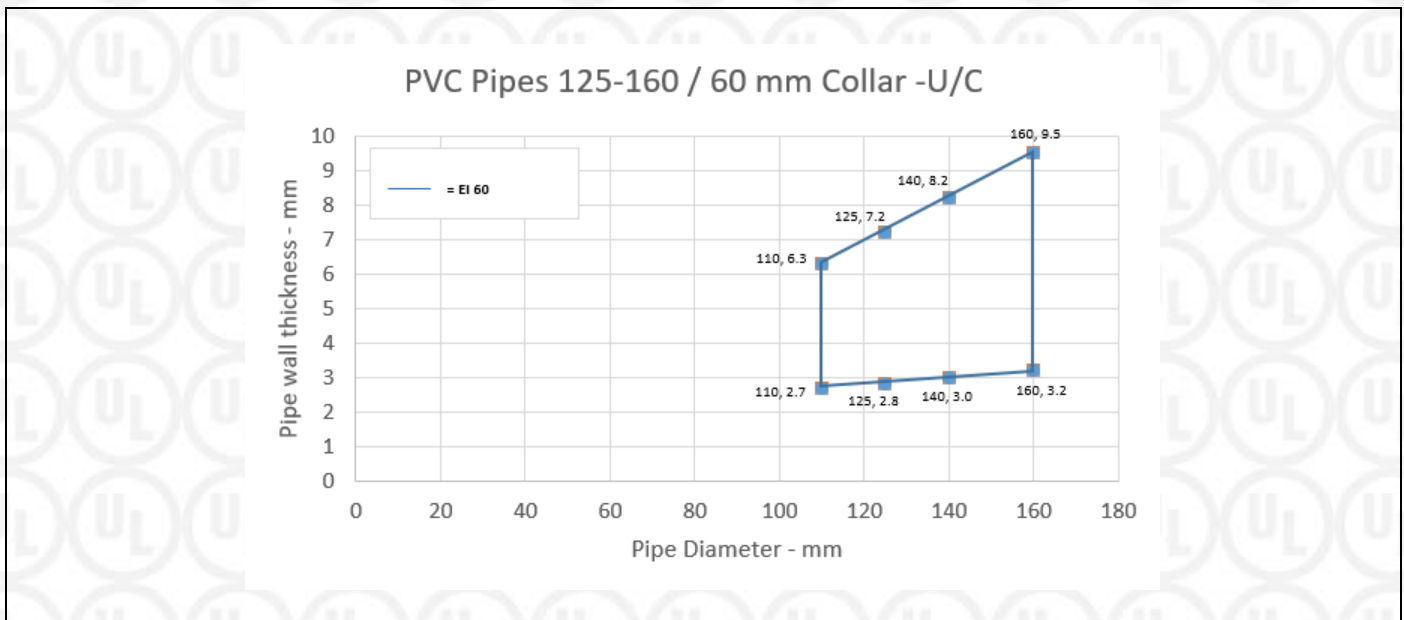


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Services	Collar Inlay	Classification
PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1		
Diameter 110 mm, wall thickness 2.7-6.3 mm*	60 x 6.0 mm	EI 60 U/C
Diameter 125 mm, wall thickness 2.8-7.2 mm*	60 x 8.7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

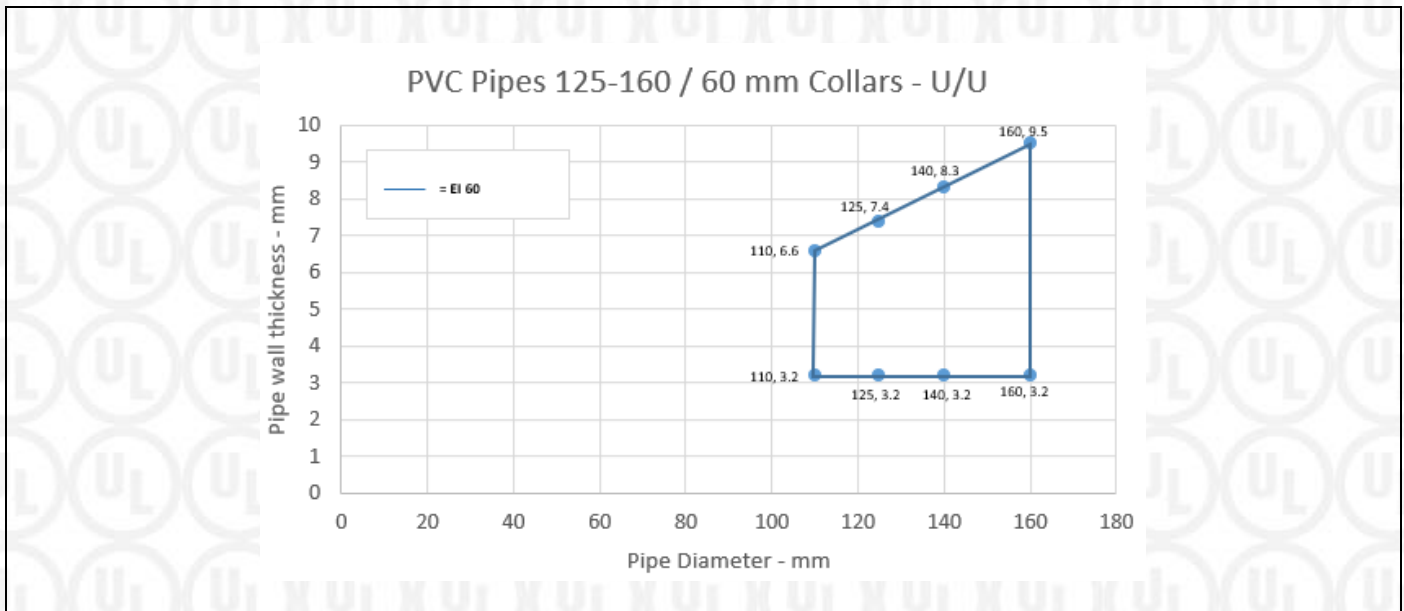


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Services	Collar Inlay	Classification
PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1		
Diameter 110 mm, wall thickness 3.2-6.6 mm*	60 x 6.0 mm	EI 60 U/U
Diameter 125 mm, wall thickness 3.2-7.4 mm*	60 x 8.7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

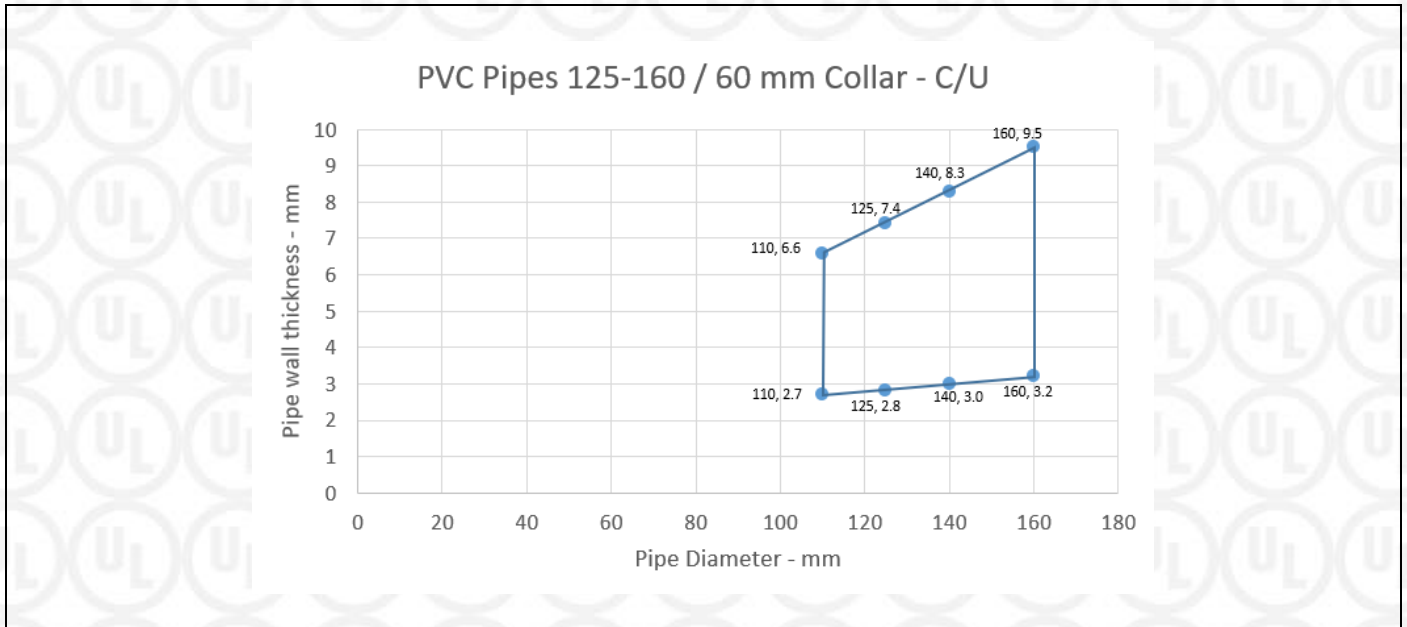


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Services	Collar Inlay	Classification
PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1		
Diameter 110 mm, wall thickness 2.7-6.6 mm*	50 x 6.0 mm	EI 60 C/U
Diameter 125 mm, wall thickness 2.8-7.4 mm*	60 x 8.7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

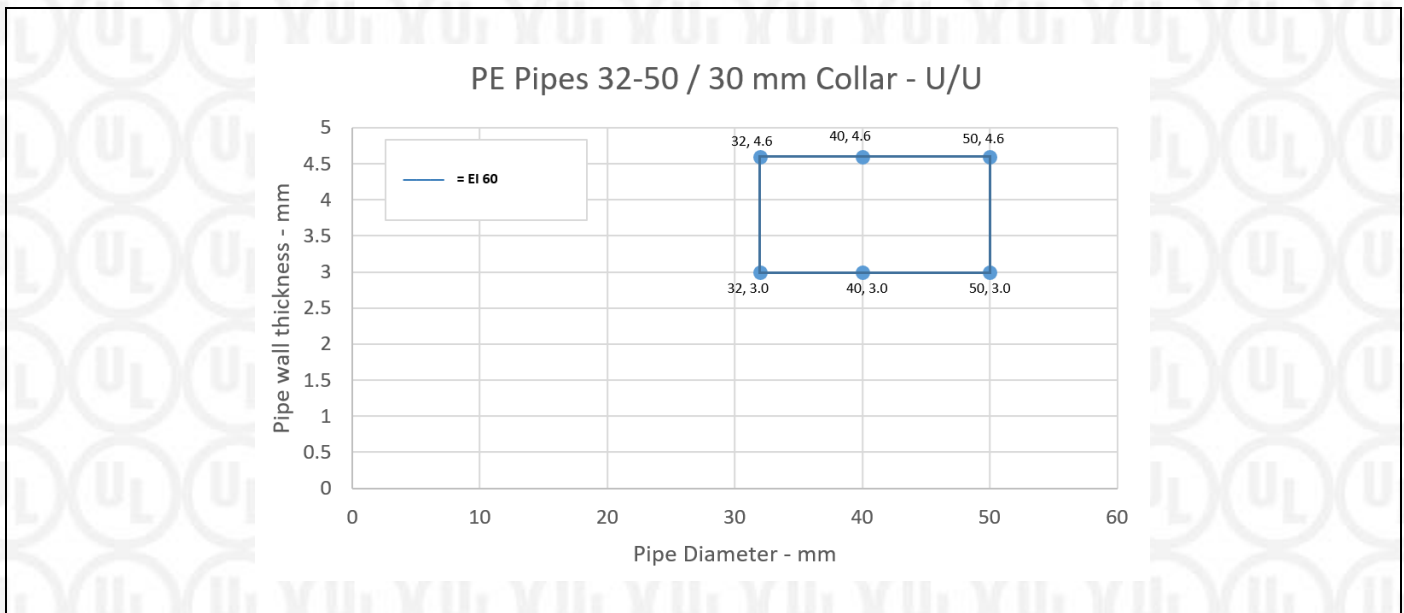


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Services	Collar Inlay	Classification
PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1		
Diameter 32 mm, wall thickness 3.0-4.6 mm*	30 x 3.0 mm	EI 60 U/U, EI 60 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

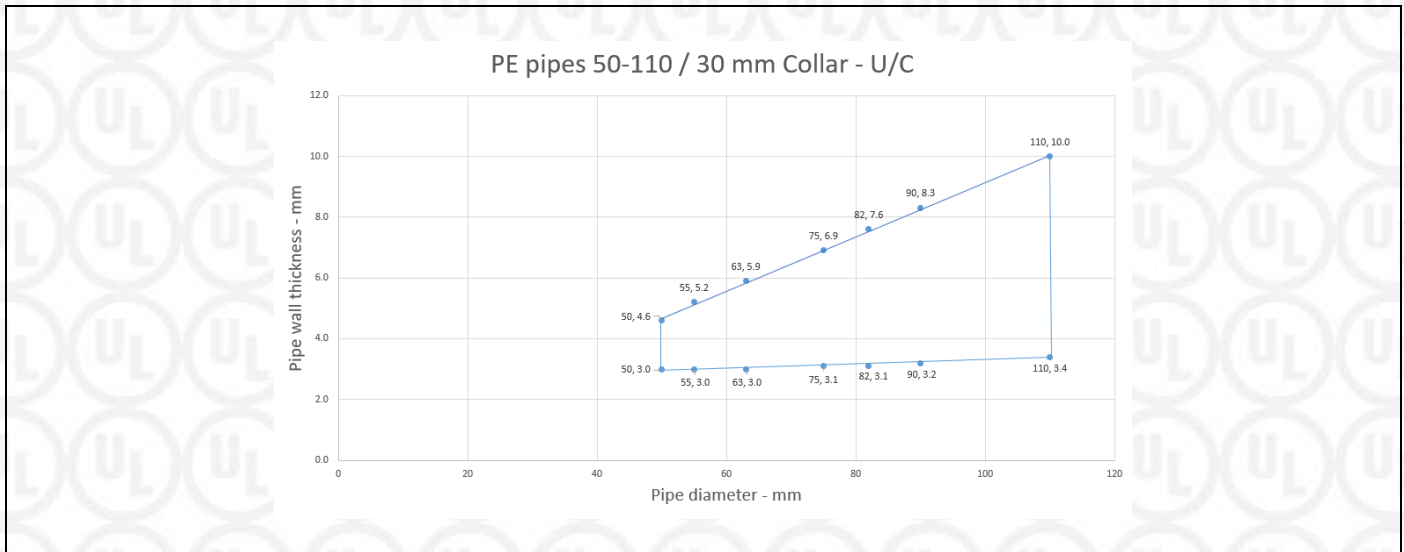


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Services	Collar Inlay	Classification
PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1		
Diameter 50 mm, wall thickness 3.0-4.6 mm*	30 x 3.0 mm	EI 60 U/U, EI 60 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

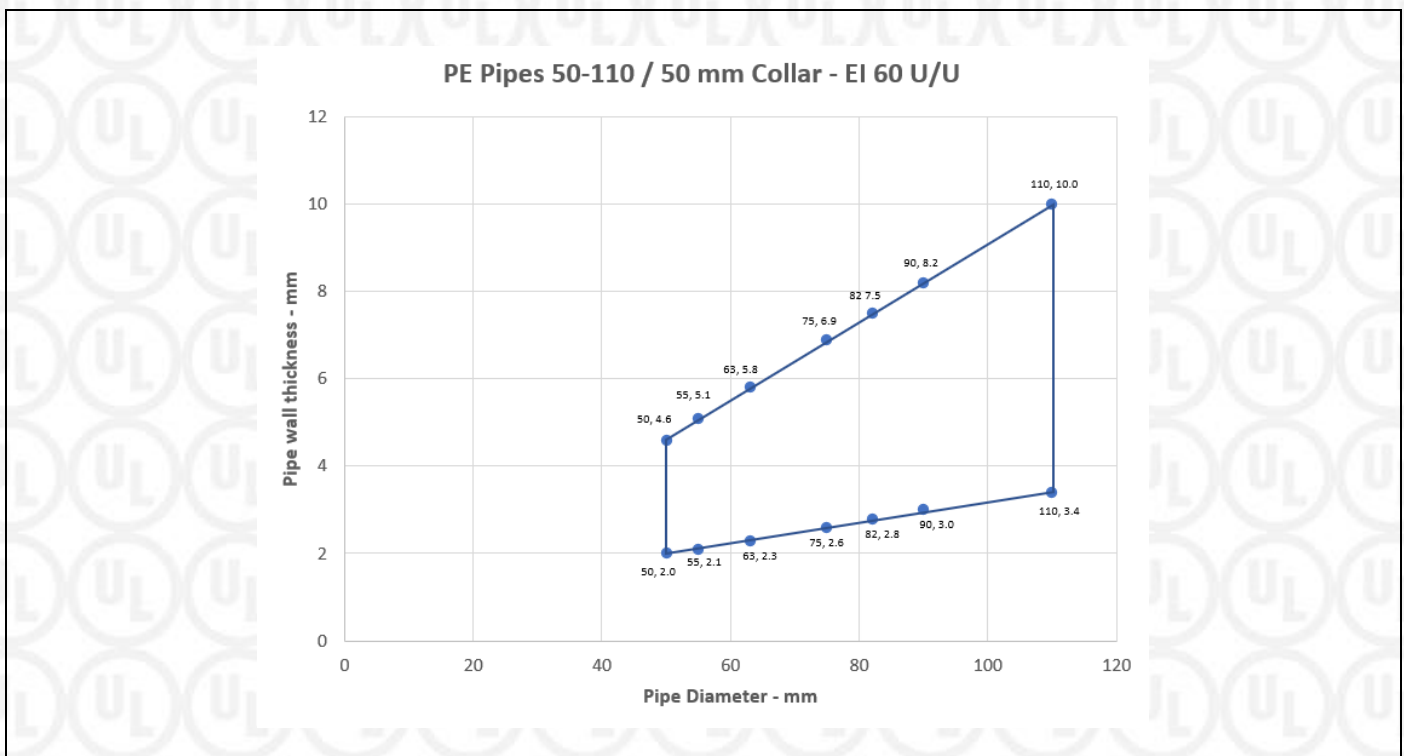


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Services	Collar Inlay	Classification
PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1		
Diameter 32-40 mm, wall thickness 3.0-4.6 mm	50 x 3.0 mm	EI 240 U/C
Diameter 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

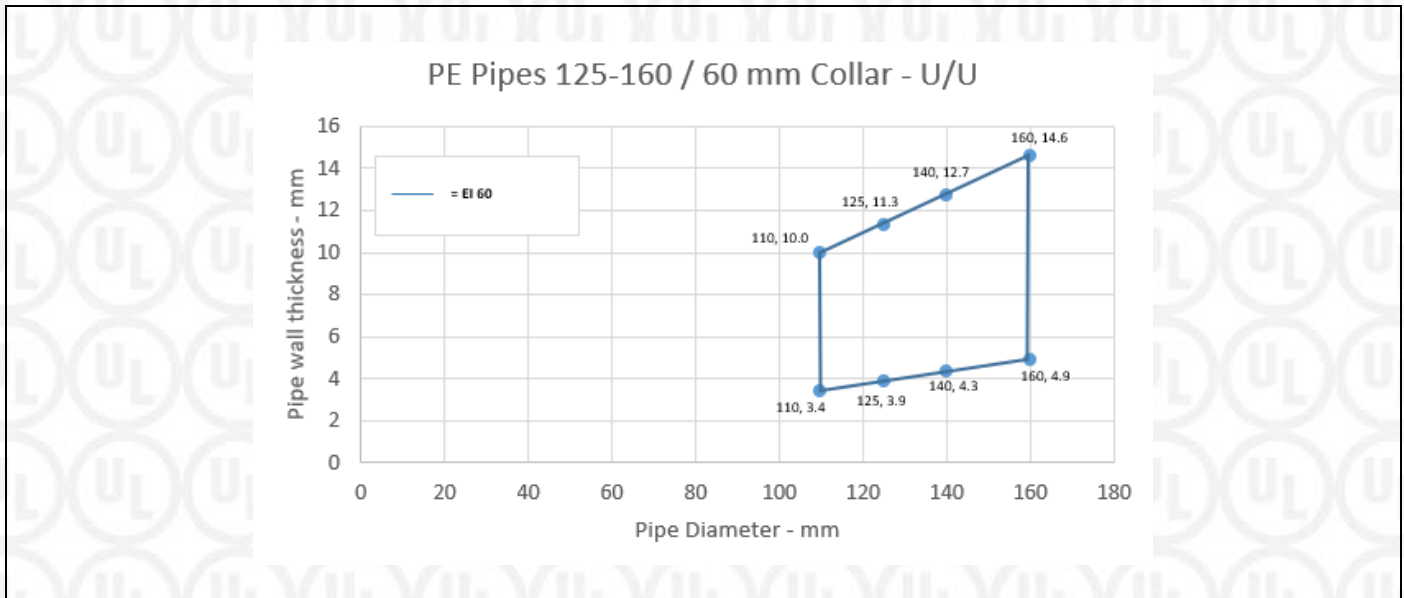


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Services	Collar Inlay	Classification
PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1		
Diameter 110 mm, wall thickness 3.4-10.0 mm*	60 x 6.0 mm	EI 60 U/U, EI 60 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

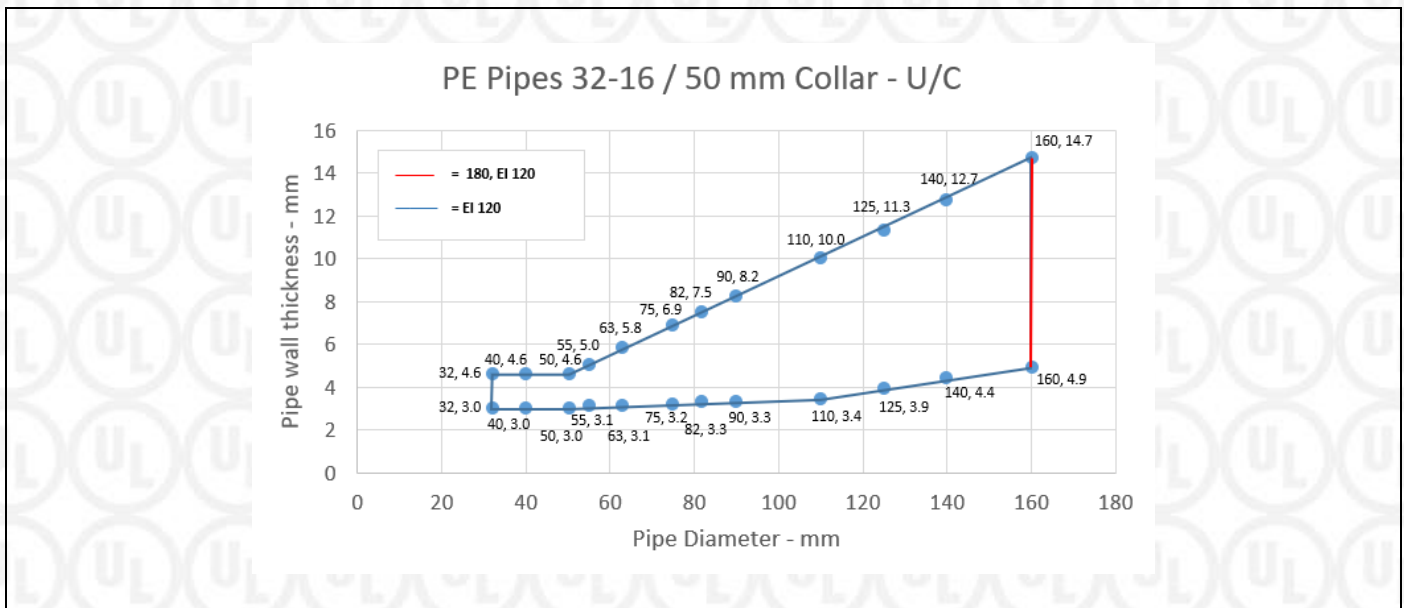


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Services	Collar Inlay	Classification
PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1		
Diameter 32 mm, wall thickness 3.0-4.6 mm	50 x 3.0 mm	EI 120 U/C, EI 120 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		
Diameter 63 mm, wall thickness 3.1-5.8 mm		
Diameter 75 mm, wall thickness 3.2-6.9 mm		
Diameter 82 mm, wall thickness 3.3-7.5 mm		
Diameter 90 mm, wall thickness 3.3-8.2 mm		
Diameter 110 mm, wall thickness 3.4-10.0 mm		
Diameter 125 mm, wall thickness 3.9-11.3 mm		
Diameter 140 mm, wall thickness 4.4-12.7 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

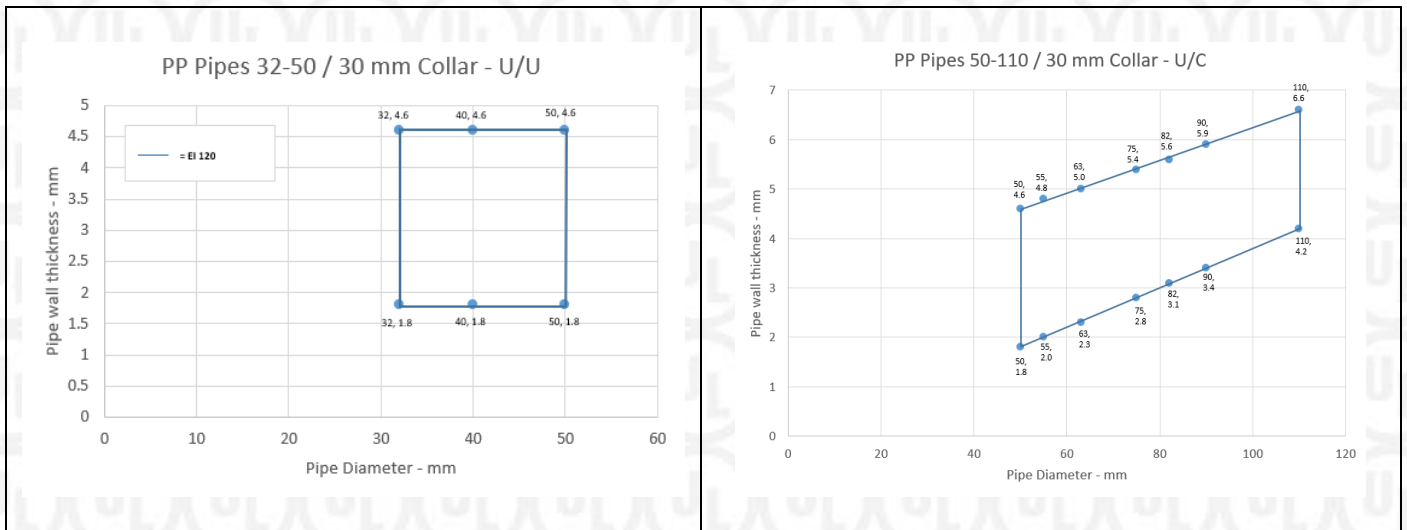


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Services	Collar Inlay	Classification
PP pipe according to EN 1451-1		
Diameter 32 mm, wall thickness 1.8-4.6 mm*	30 x 3.0 mm	EI 120 U/U, EI 120 C/U, EI 120 U/C, EI 120 C/C
Diameter 40 mm, wall thickness 1.8-4.6 mm*		
Diameter 50 mm, wall thickness 1.8-4.6 mm*		
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

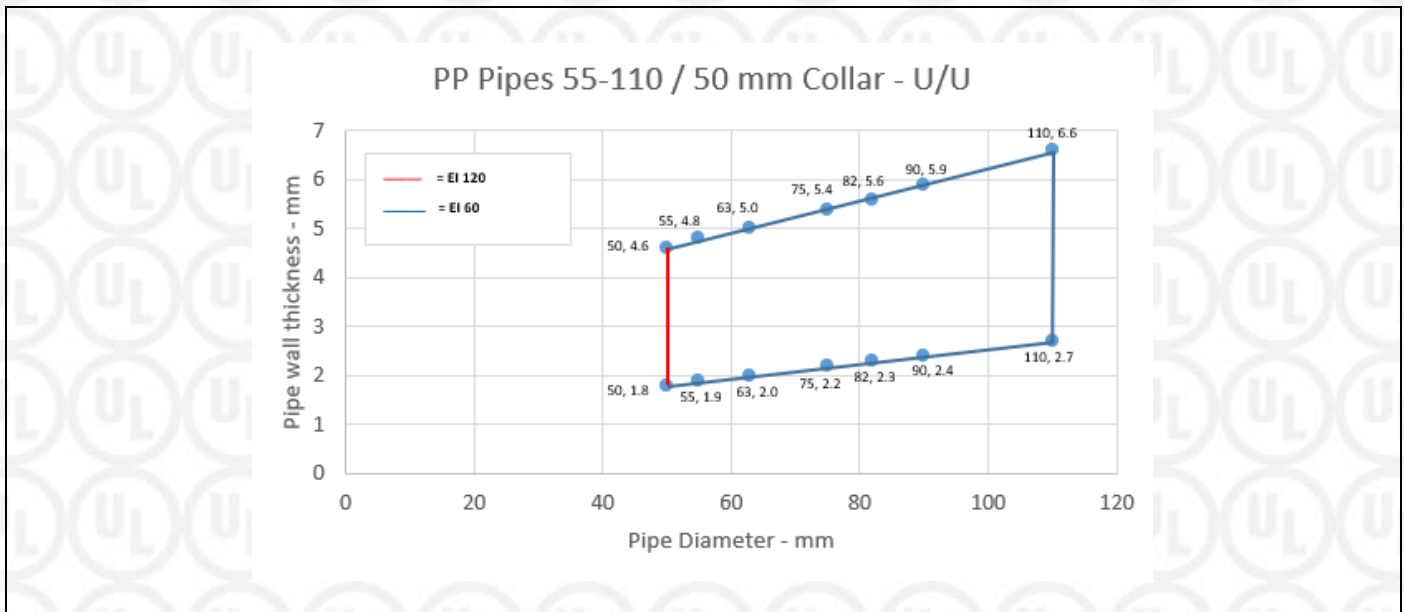


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Services	Collar Inlay	Classification
PP pipe according to EN 1451-1		
Diameter 50 mm, wall thickness 2.9 mm	50 x 3.2 mm	EI 240 U/U
Diameter 50 mm, wall thickness 2.9-4.6 mm	50 x 3.0 mm	E 240 U/C, EI 180 U/C
Diameter 50 mm, wall thickness 1.8-4.6 mm*	50 x 3.0 mm	EI 120 U/U, EI 120 C/U, 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

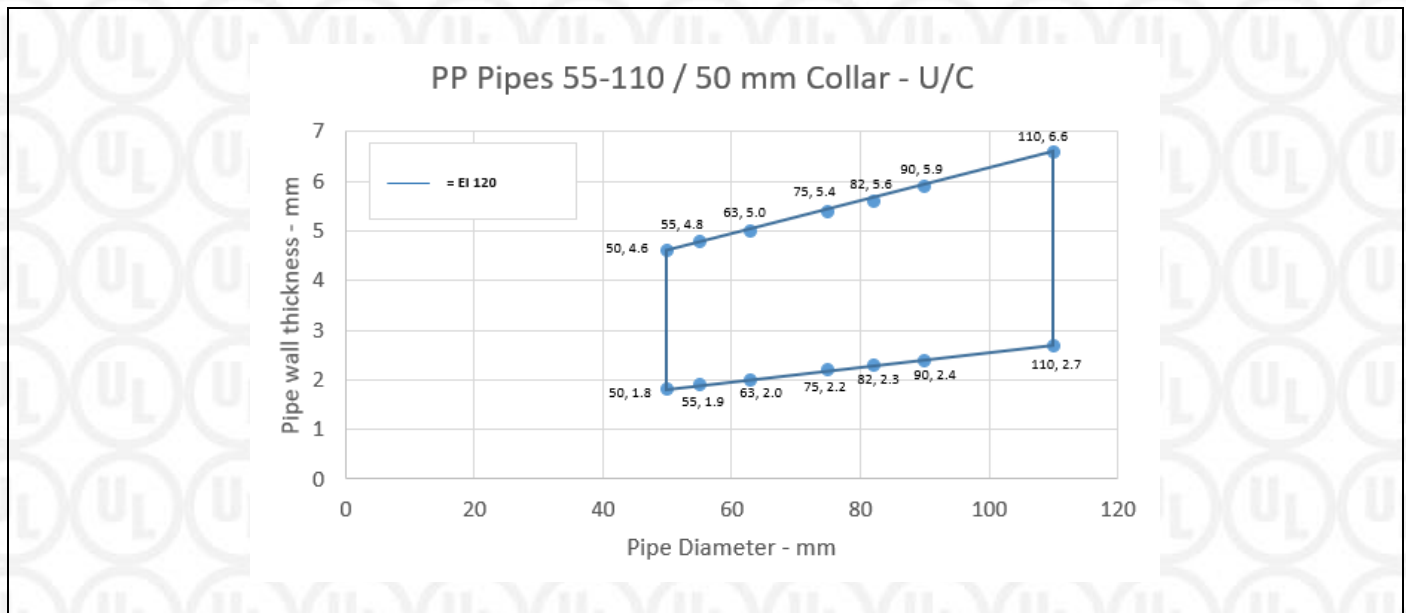


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Services	Collar Inlay	Classification
PP pipe according to EN 1451-1		
Diameter 50 mm, wall thickness 1.8-4.6 mm*	50 x 3.0 mm	EI 120 U/U, EI 120 C/U, EI 120 U/C, EI 120 C/C
Diameter 55 mm, wall thickness 1.9-4.8 mm*	50 x 3.2 mm	EI 120 U/C, EI 120 C/C
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

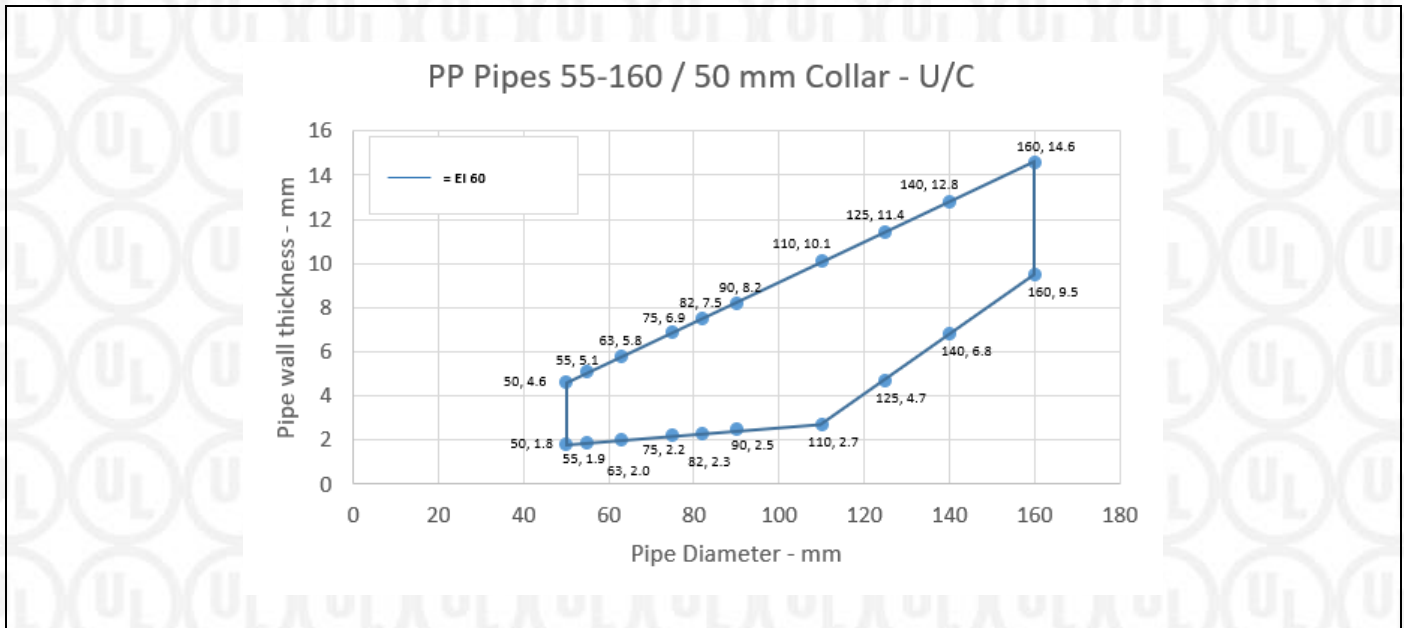


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Services	Collar Inlay	Classification
PP pipe according to EN 1451-1		
Diameter 50 mm, wall thickness 1.8-4.6 mm*	30 x 3.0 mm	EI 60 U/C, EI 60 C/C
Diameter 55 mm, wall thickness 1.9-5.1 mm*	50 x 3.2 mm	
Diameter 63 mm, wall thickness 2.0-5.8 mm*	50 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

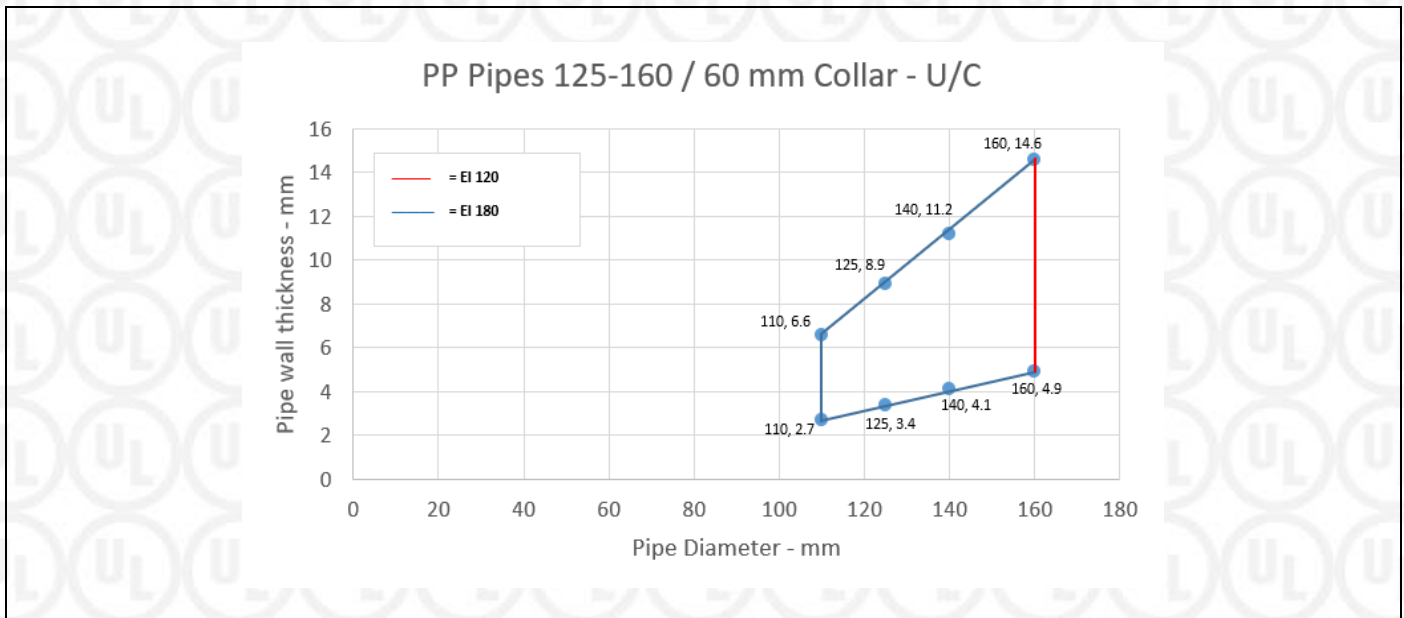


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Services	Collar Inlay	Classification
PP pipe according to EN 1451-1		
Diameter 110 mm, wall thickness 2.7-6.6 mm*	60 x 6.0 mm	EI 120 U/C, EI 120 C/C
Diameter 125 mm, wall thickness 3.4-8.9 mm*	60 x 8.8 mm	
Diameter 140 mm, wall thickness 4.1-11.2 mm*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

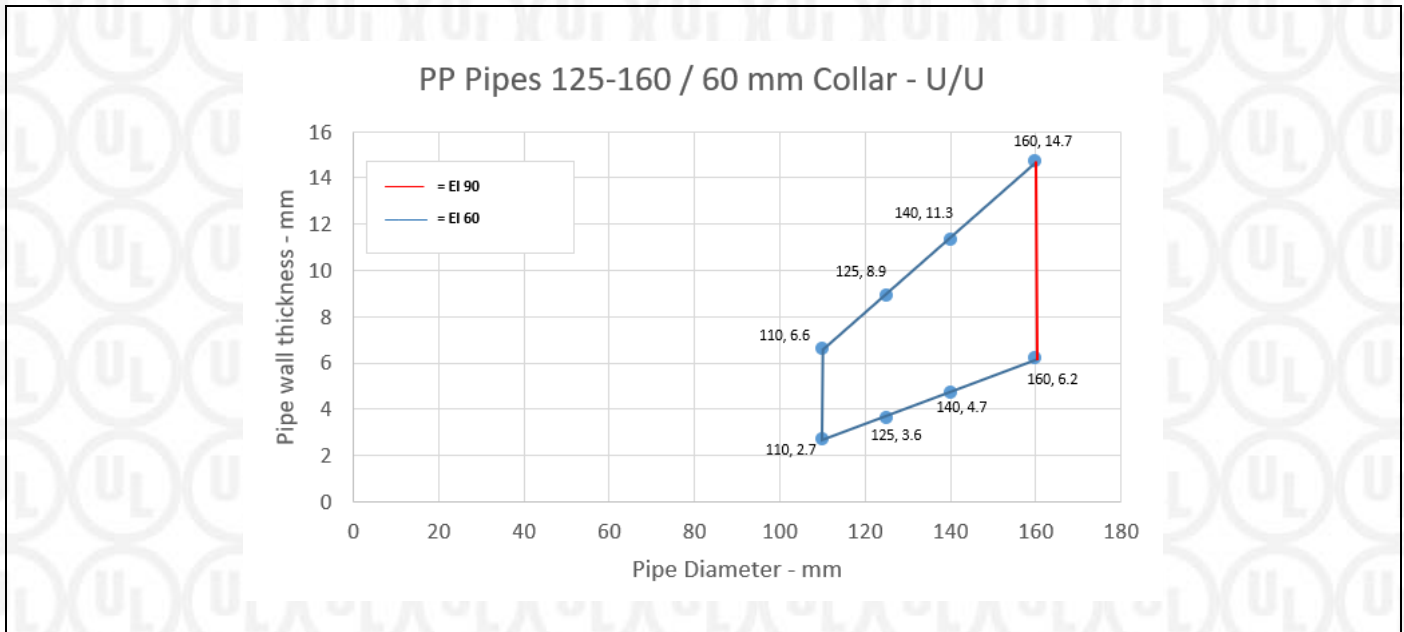


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Services	Collar Inlay	Classification
PP pipe according to EN 1451-1		
Diameter 110 mm, wall thickness 2.7-6.6 mm*	50 x 6.0 mm	EI 60 U/U
Diameter 125 mm, wall thickness 3.6-8.9 mm*	60 x 8.8 mm	
Diameter 140 mm, wall thickness 4.7-11.3 mm*	60 x 11.5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



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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



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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	EI 240 C/U
160 mm diameter/3.4-4.9 mm wall thickness	60 x 15.0 mm	
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	



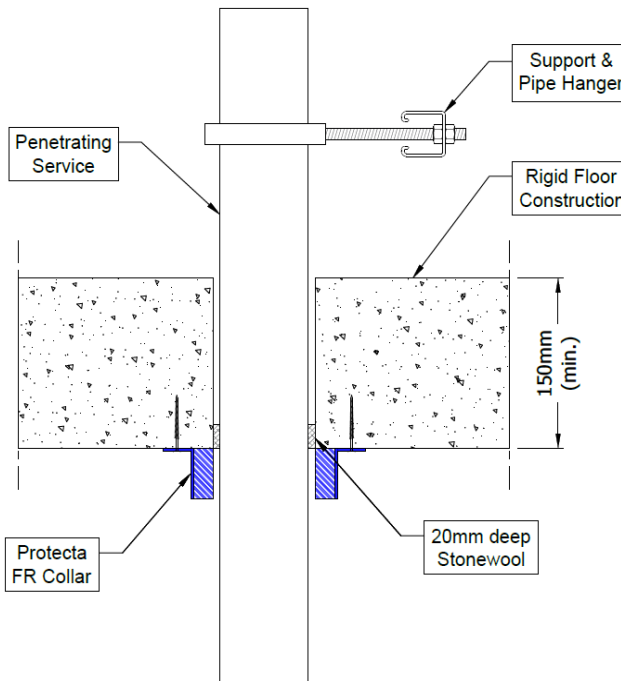
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Penetration seals, surface mounted in concrete floors

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

Construction details:



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*		EI 120 C/C, EI 60 C/U
Diameter 40 mm, wall thickness 2.0-3.7 mm*	50 x 3.0 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	

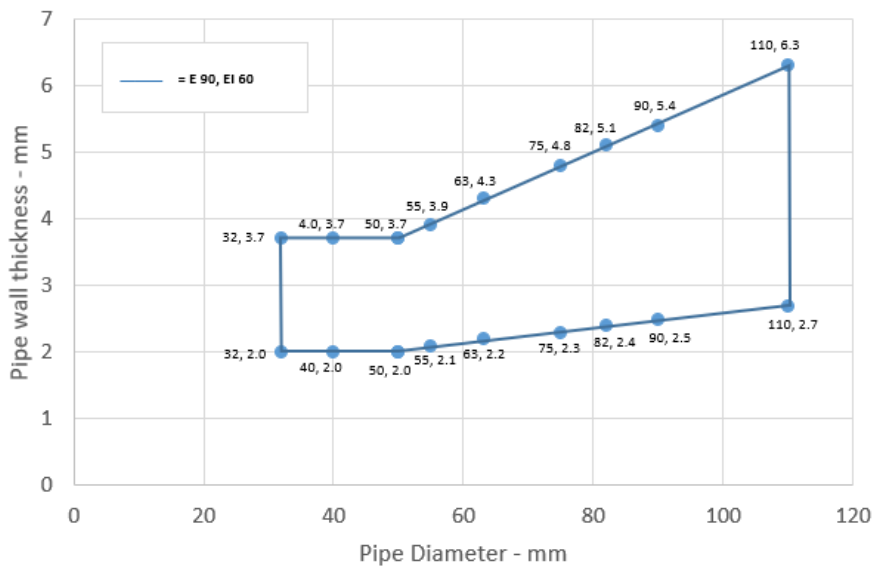
* Typical pipe diameters shown, see below graph for intermediate sizes



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

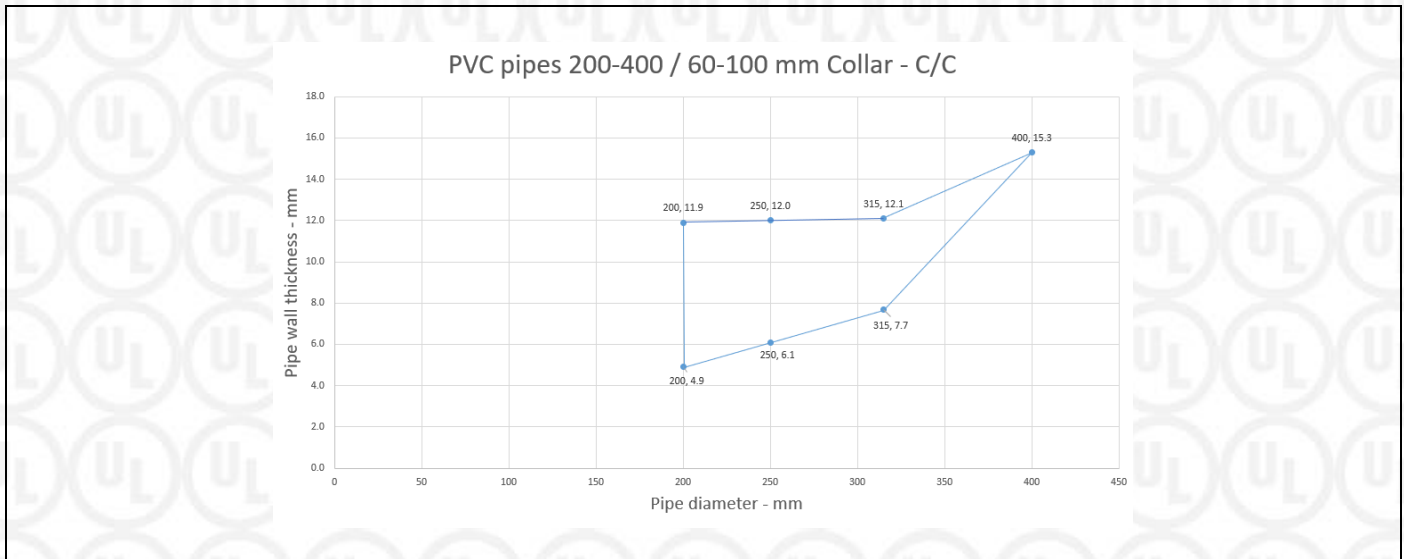


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Services	Collar Inlay	Classification
PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1		
Up to 200 mm diameter / 4.9-11.9 mm wall thickness*	60 x 18 mm	E 120 C/C, EI 60 C/C
Up to 250 mm diameter / 6.1-11.9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

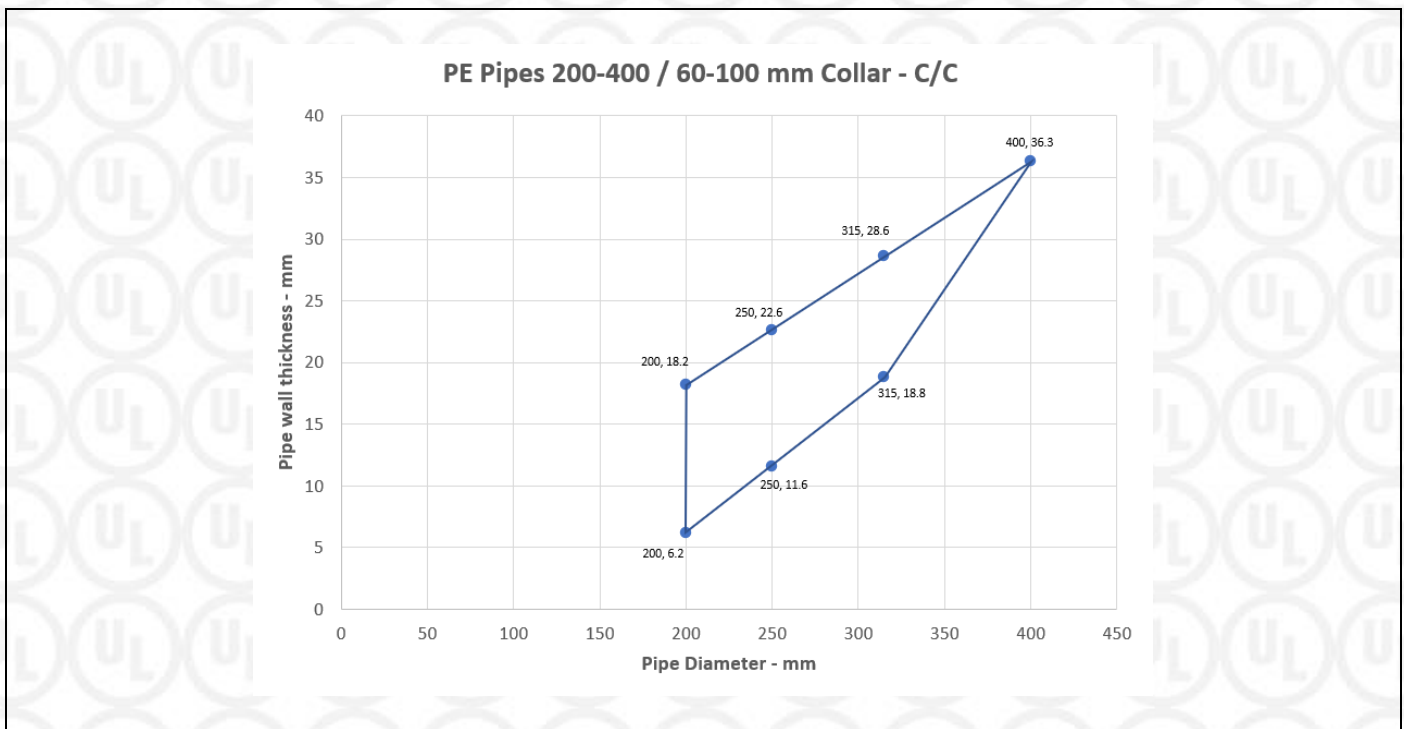


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Services	Collar Inlay	Classification
PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1		
Up to 200 mm diameter / 6.2-18.2 mm wall thickness*	60 x 18 mm	E 240 C/C,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

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

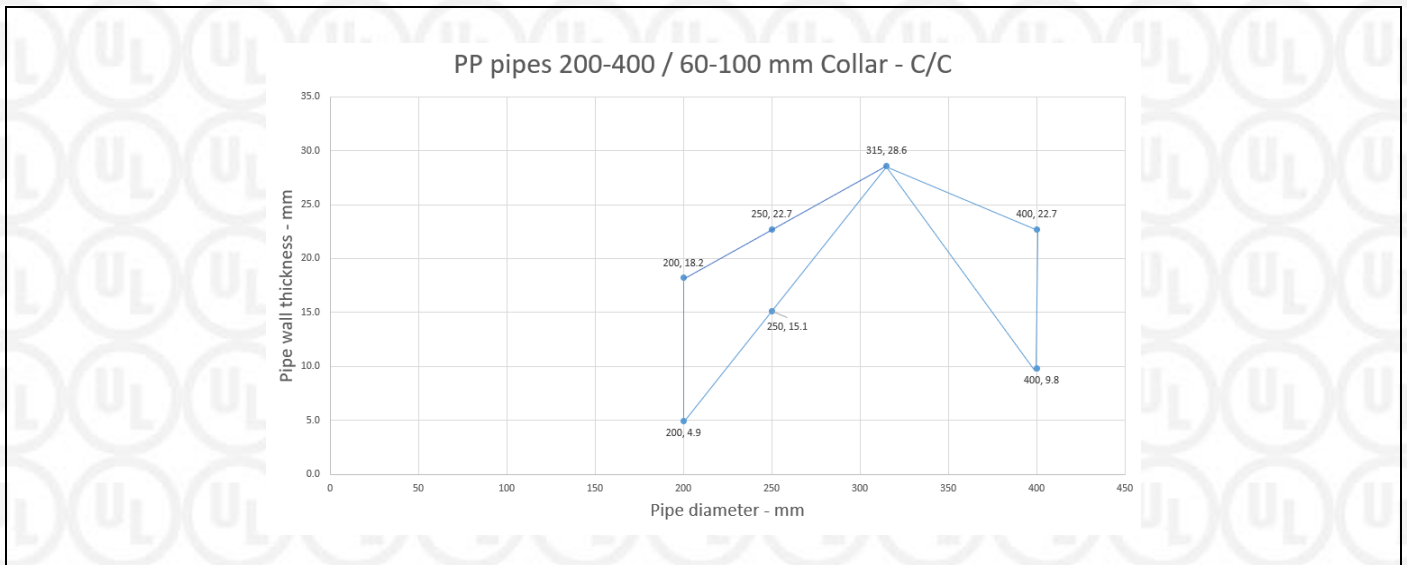


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Services	Collar Inlay	Classification
PP pipe according to EN 1451-1		
Up to 200 mm diameter / 4.9-18.2 mm wall thickness*	60 x 18 mm	EI 120 C/C
Up to 250 mm diameter / 15.1-22.7 mm wall thickness*	75 x 24 mm	EI 60 C/C
Up to 315 mm diameter / 28.6 mm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



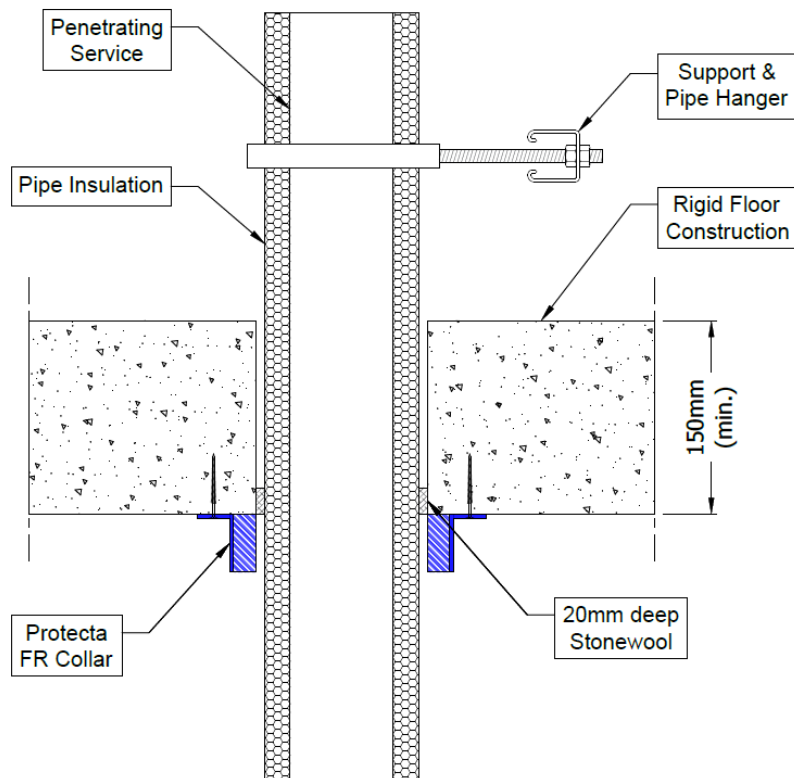
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Penetration seals, surface mounted in concrete floors

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

Construction details:



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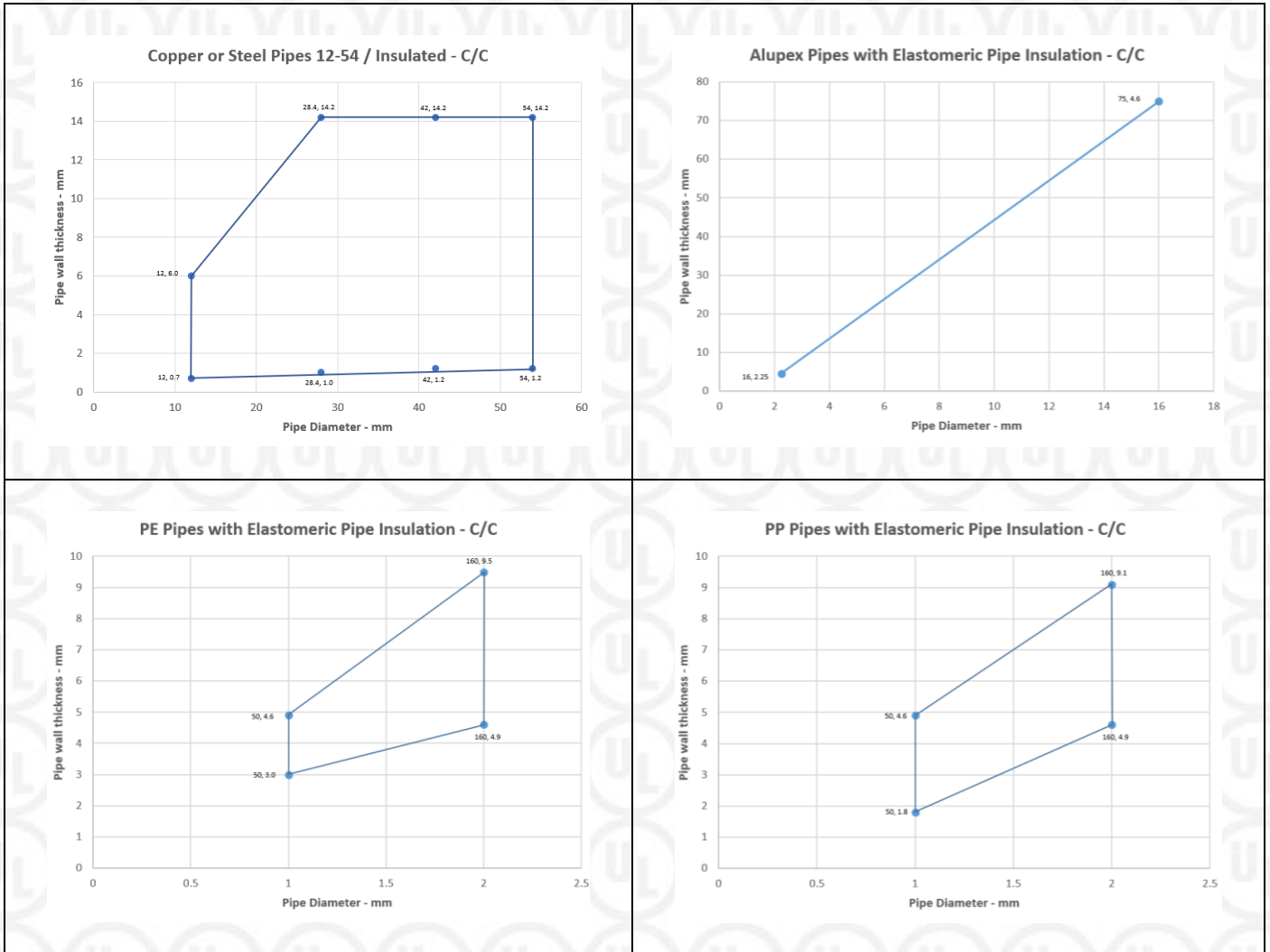
Services	Insulation	Collar	Classification
Copper pipe or mild steel			
Maximum diameter 42 mm, wall thickness 0.7-14.2 mm*	9 mm thick Elastomeric insulation minimum class D-s3, d0	Up to 63 mm collar at 50 mm height	EI 120 C/C
Maximum diameter 42 mm, wall thickness 0.7-14.2 mm*	10-50 mm thick Elastomeric 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



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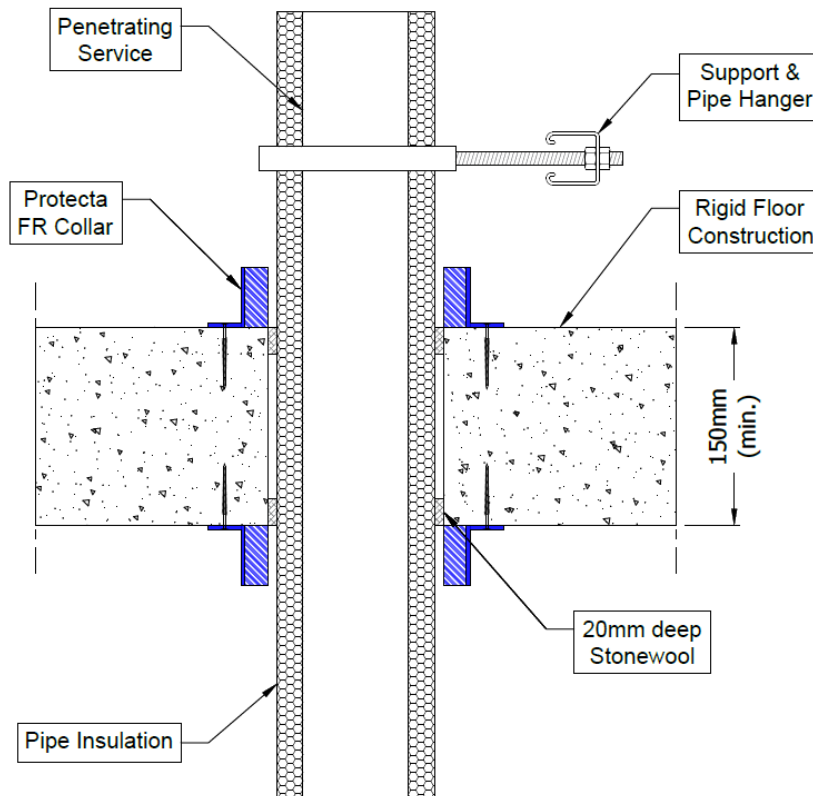
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Penetration seals, surface mounted in concrete floors

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

Construction details:

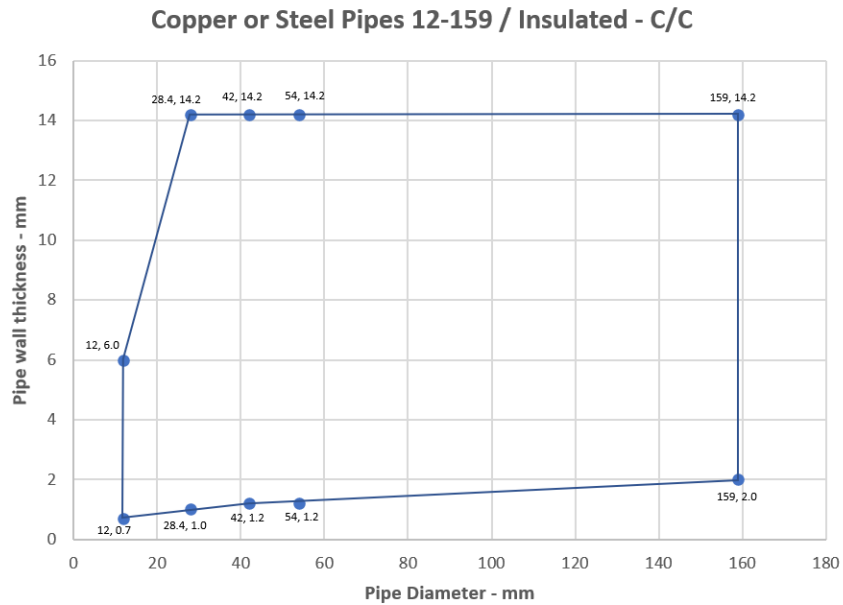


Services	Insulation	Collar	Classification
Copper pipe or mild steel			
Maximum diameter 158 mm, wall thickness 0.7-14.2 mm*	25 mm thick Phenolic insulation	Up to 110 mm collar at 50 mm height, 125-200 mm at 60 mm height, 250 mm at 75 mm height	E 120 C/C, EI 45 C/C
Diameter 159 mm, wall thickness 0.7-14.2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



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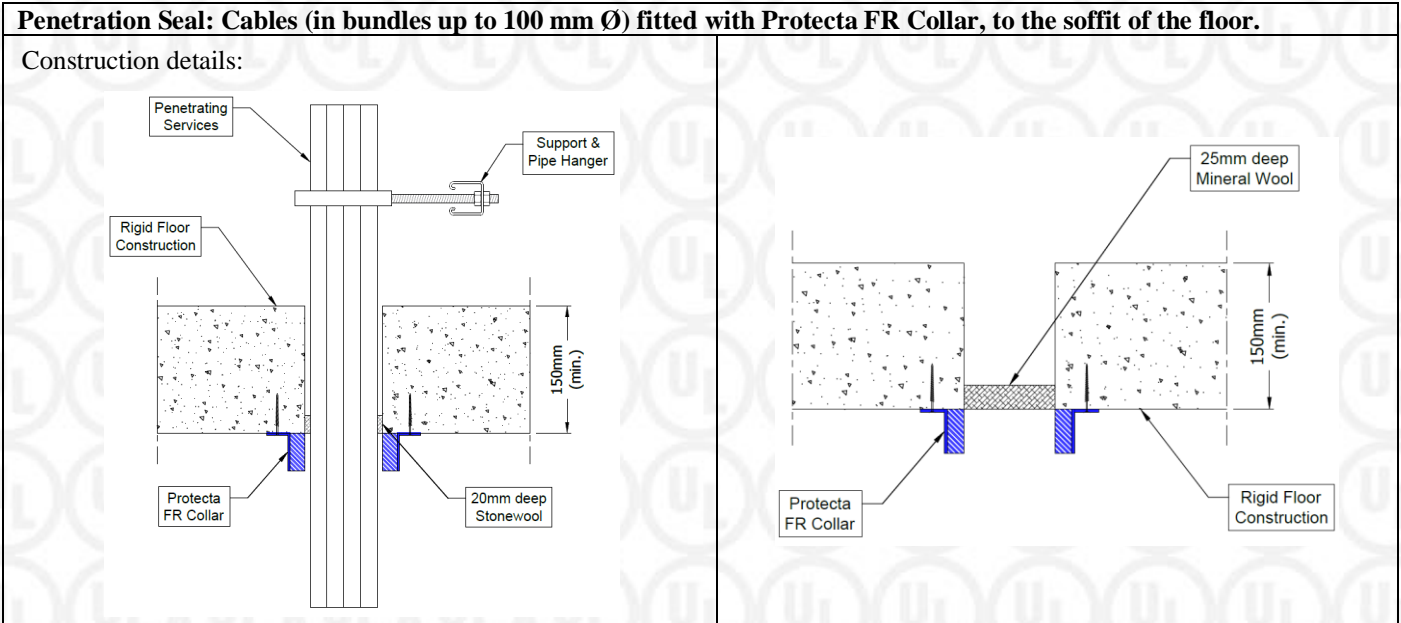
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Penetration seals, surface mounted in concrete floors



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.

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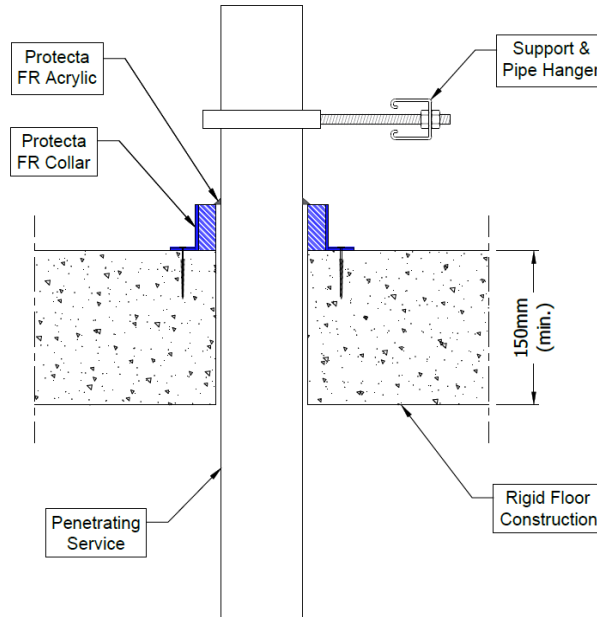
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Penetration seals, surface mounted in concrete floors

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

Construction details:

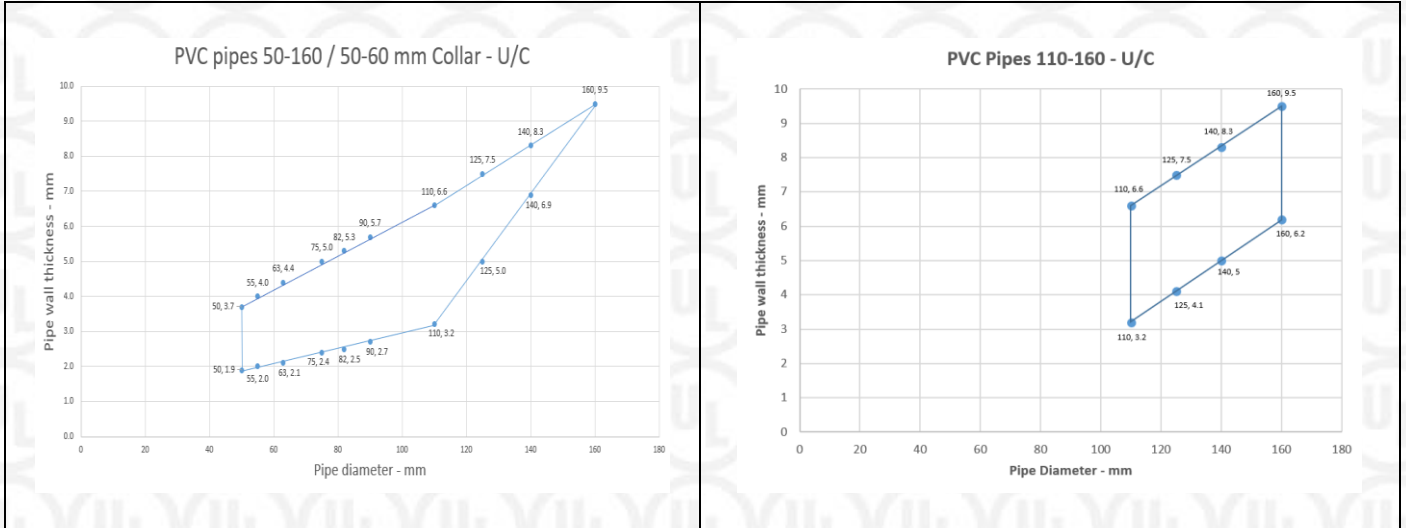


Services	Collar Inlay	Classification
PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1		
Diameter 32 mm, wall thickness 1.9-3.7 mm	50 x 3.0 mm	EI 240 U/C
Diameter 40 mm, wall thickness 1.9-3.7 mm	50 x 3.0 mm	
Diameter 50 mm, wall thickness 1.9-3.7 mm	50 x 3.2 mm	
Diameter 55 mm, wall thickness 2.0-4.0 mm	50 x 3.2 mm	
Diameter 63 mm, wall thickness 2.1-4.4 mm	50 x 3.6 mm	EI 120 U/C
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	E 240 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	
Diameter 125 mm, wall thickness 4.1-7.5 mm	60 x 8.8 mm	E 180 U/C, EI 90 U/C
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	



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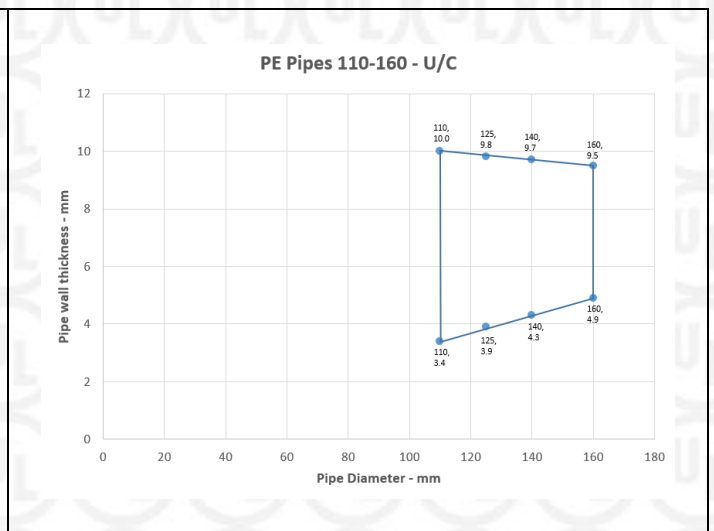
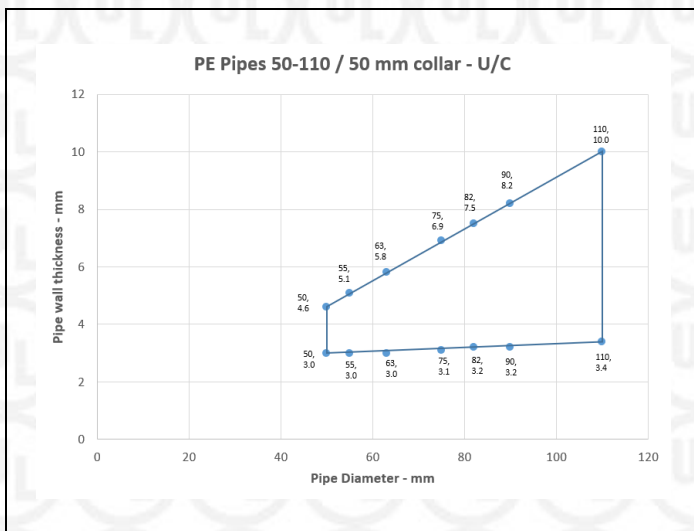
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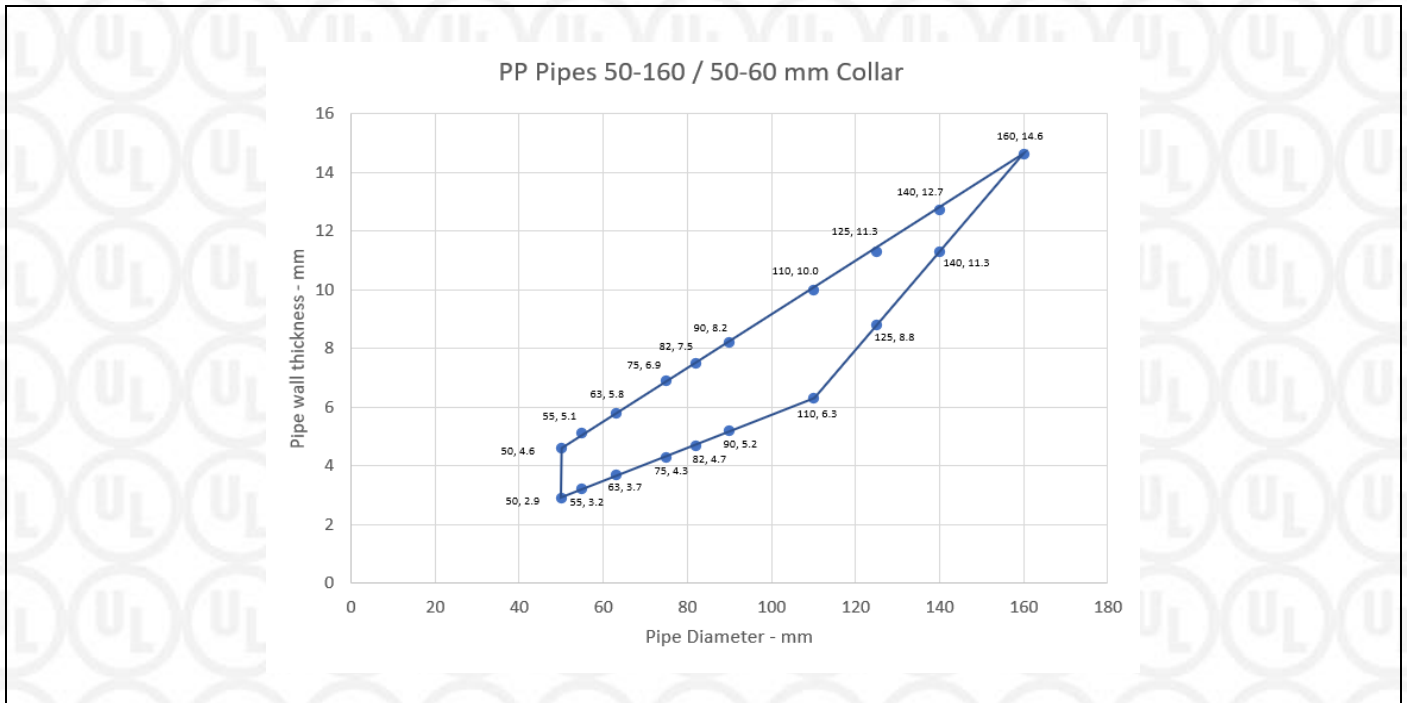
Services	Collar Inlay	Classification
PE pipe according to EN 1519-1, EN 12201-2 and EN 12666-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1		
Diameter 32 mm, wall thickness 3.0-4.6 mm	50 x 3.0 mm	EI 240 U/C
Diameter 40 mm, wall thickness 3.0-4.6 mm	50 x 3.0 mm	
Diameter 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	



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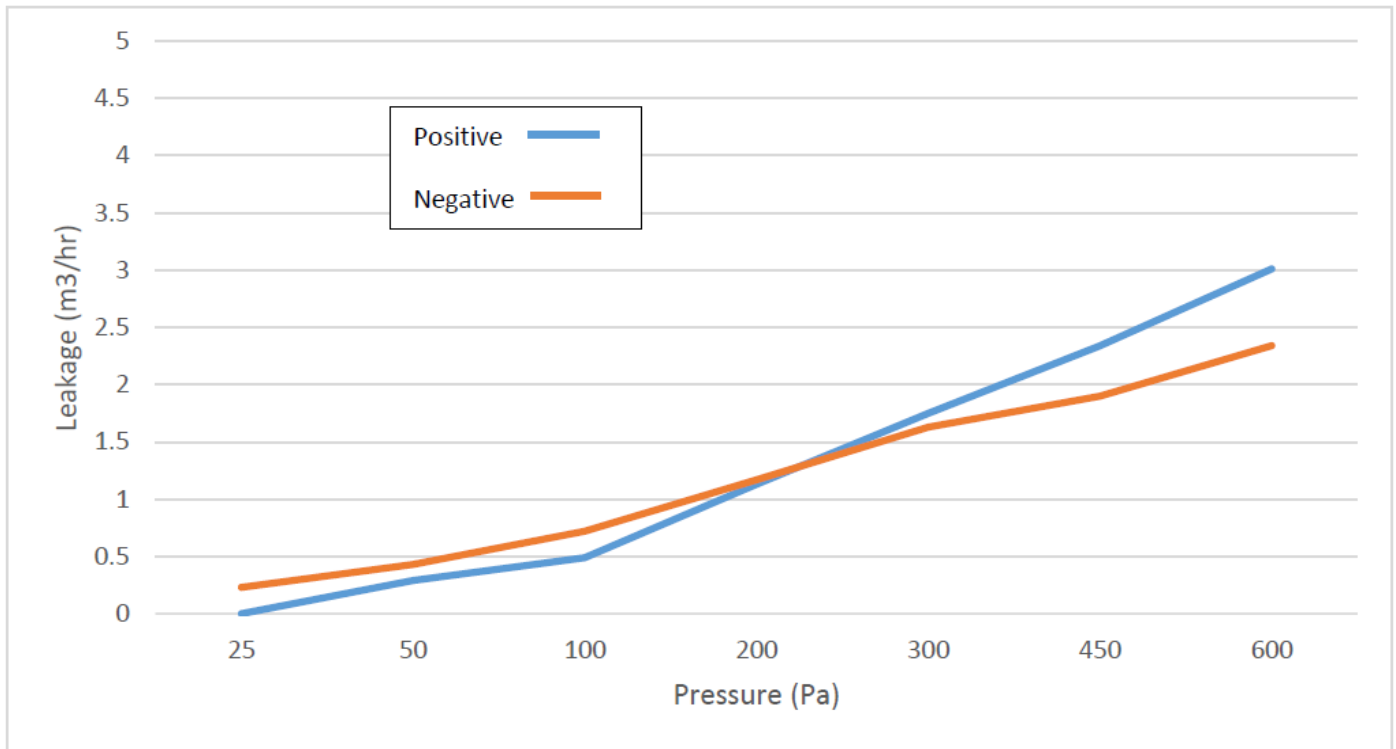
Services	Collar Inlay	Classification
PP pipe according to EN 1451-1		
Diameter 32 mm, wall thickness 2.9-4.6 mm	50 x 3.0 mm	E 240 U/C, EI 180 U/C
Diameter 40 mm, wall thickness 2.9-4.6 mm	50 x 3.0 mm	
Diameter 50 mm, wall thickness 2.9-4.6 mm	50 x 3.2 mm	
Diameter 55 mm, wall thickness 3.2-5.1 mm	50 x 3.2 mm	E 120 C/C, EI 90 C/C
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	E 240 U/C, EI 60 U/C
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	



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Product tested	110mm Protecta FR Collar each face fixed with plasterboard anchors		
	Summary of testing procedure		Result
	Pressure (Pa)	Leakage (m ³ /h)	Leakage (m ³ /m ² /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



Appendix UL-EU Certificate

Certification Mark	UL-EU mark
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The UL-EU Mark, as displayed below, shall appear on certified products only. Minimum size is not specified, as long as the Mark is legible. The following is suggested.



The minimum height of the registered trademark symbol ® shall be 1 mm. When the overall diameter of the UL-EU Mark is less than 9.5 mm, the trademark symbol may be omitted if it is not legible to the naked eye.

The UL-EU Mark may appear on a label, nameplate, or may be cast, stamped or molded into the product. When appearing on a label or nameplate, the Manufacturer's name or trademark along with a model number are also required on that same label or nameplate. If cast, stamped or molded, the Manufacturer's name or trademark and model number shall also appear elsewhere on the product.

All content shall be in accordance with the details provided on this UL-EU Certificate.

PROCUREMENT

The Production site may reproduce the Mark or obtain it from a UL authorized supplier. The list of UL authorized suppliers can be found on UL's online directory at www.ul.com.

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