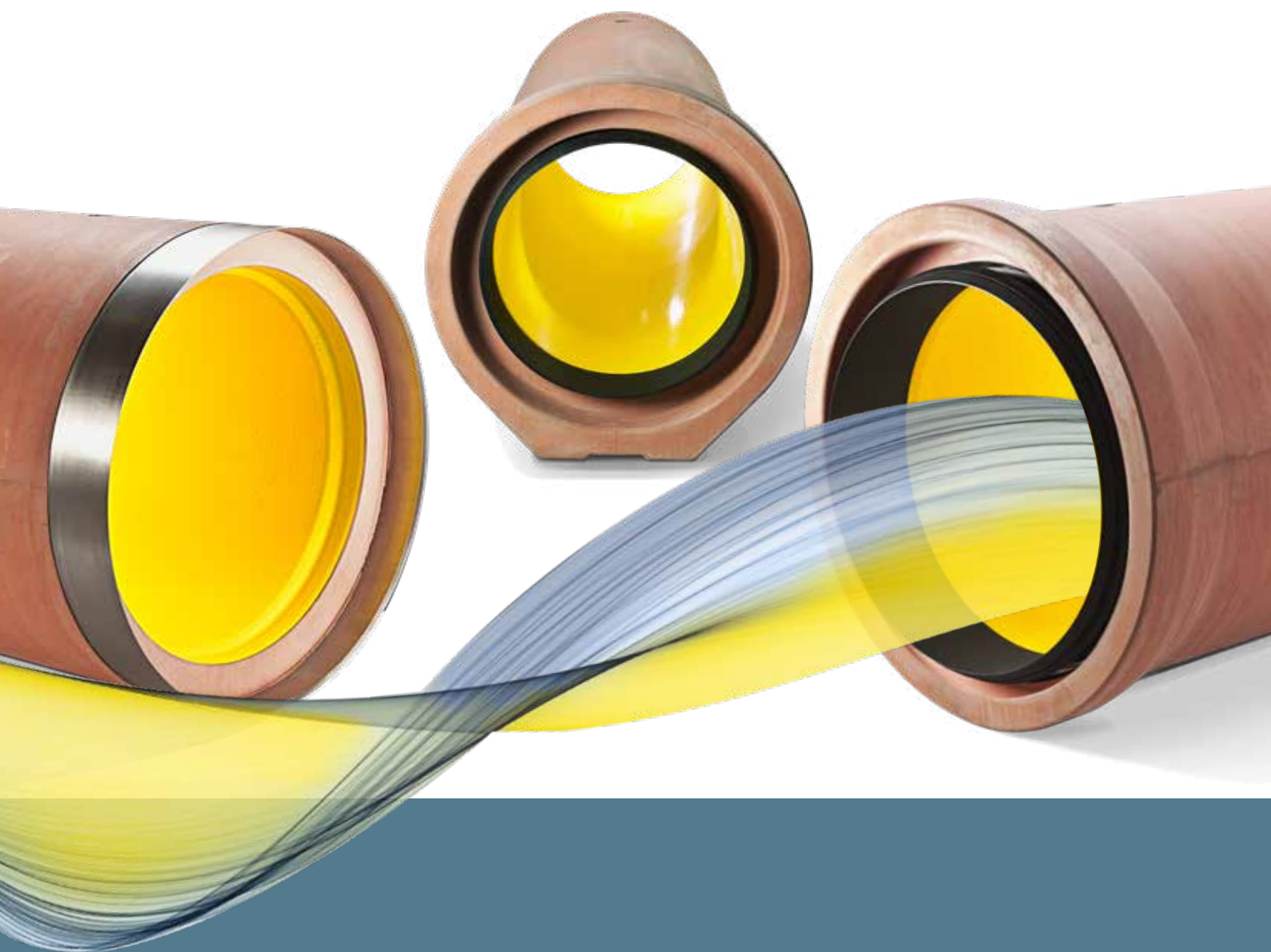


PERFECT PIPE

PANTA RHEI – ALLES FLIESST – EVERYTHING FLOWS – TODO FLUYE – LES EAUX VIVES



TECHNICAL DATA

PERFECT  PIPE

www.perfectsystem.eu

PERFECT Pipe System

Different pipe geometries – one connection system

The introduction of PERFECT Pipe Technology sets a new quality standard in pipeline construction. Concrete-HDPE composite pipes offer three significant benefits:

- High corrosion resistance
- Static load capacity even under high traffic loads
- Easy to install

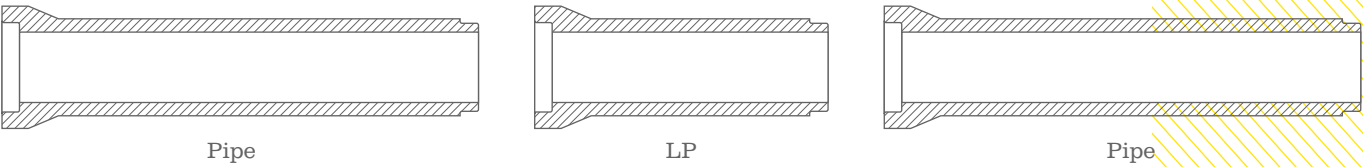
Dimensions of PERFECT Pipe System

Inside diameter (mm)	Standard open trench length (mm)	Standard microtunneling length (mm)
250	2990 / 990 *	1990
300	2990 / 990 *	1990
400	2990 / 990 *	1990
500	2990 / 990 *	1990
600	2990 / 990 *	2990 / 1990
700	2990 / 990 *	2990 / 1990
800	2990 / 990 *	2990
900	2990 / 990 *	2990
1000	2990 / 990 *	2990
1100	2990 / 990 *	2990
1200	2990 / 990 *	2990

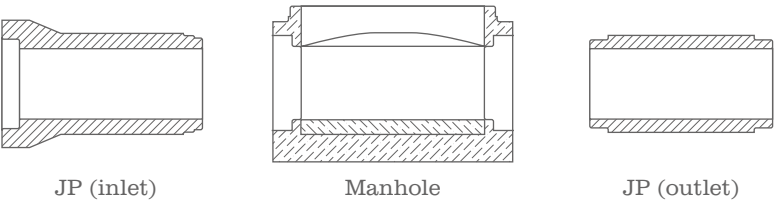
* Adjustable Double Spigot Link Pipe, Adjustable Bell-Spigot Link Pipe

Differentiation of link pipes and joint pipes

- **Link pipes (LP):** for installation, if section lengths must be strictly observed

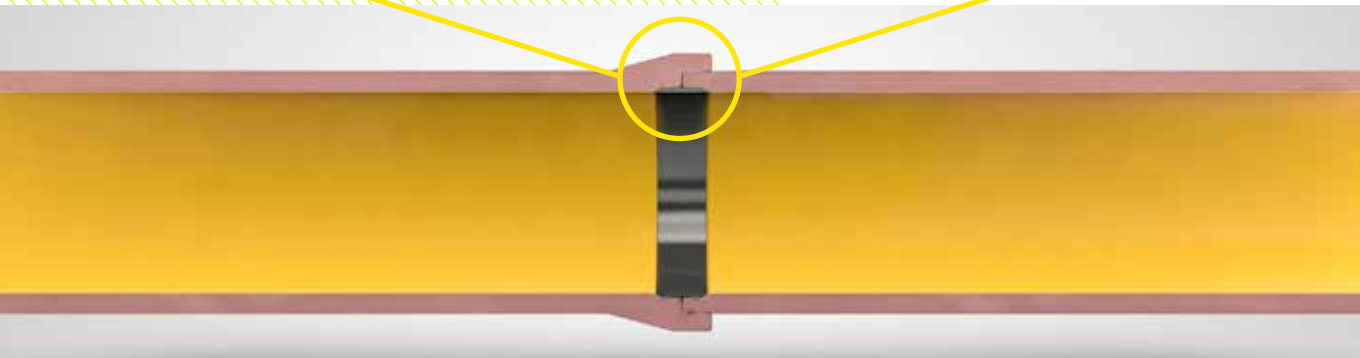
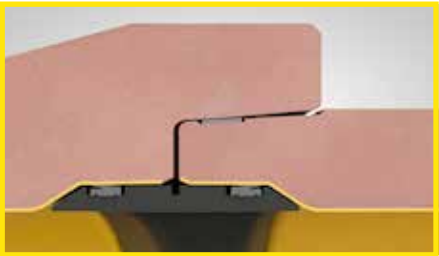
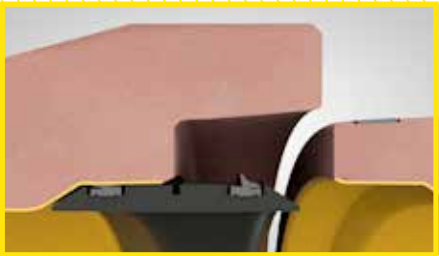


- **Joint pipes (JP):** for a joint connection to precast manhole bases

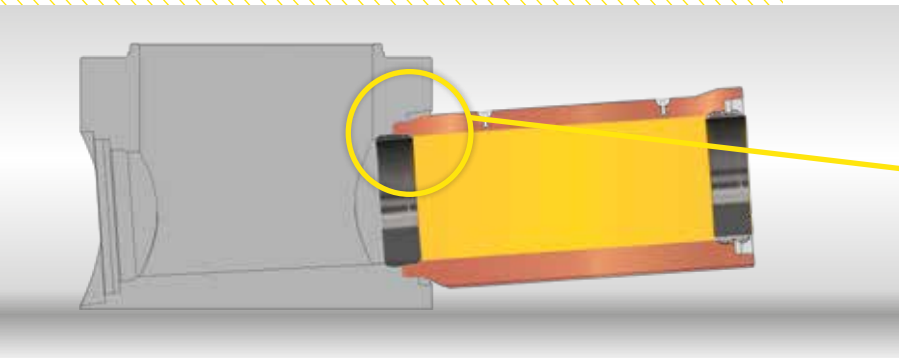


- LP: link pipe with socket
- JP (inlet): joint pipe with socket
- JP (outlet): joint pipe without socket

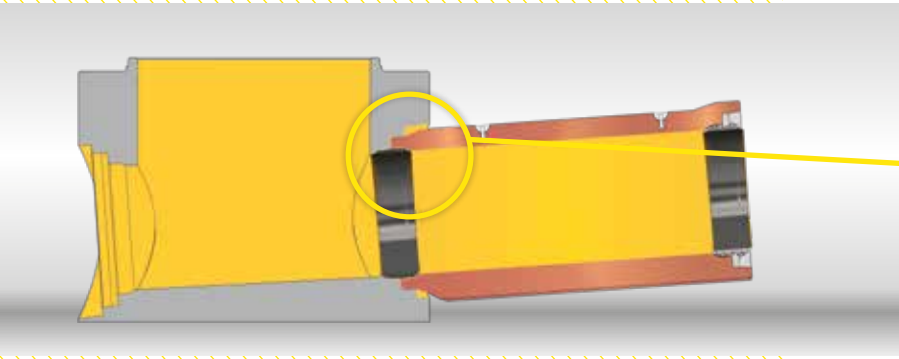
Connection Pipe/Pipe



Connection Pipe/Manhole



1 Connector connection of PERFECT Pipe to the concrete manhole base



2 Connector connection of PERFECT Pipe to the lined manhole base

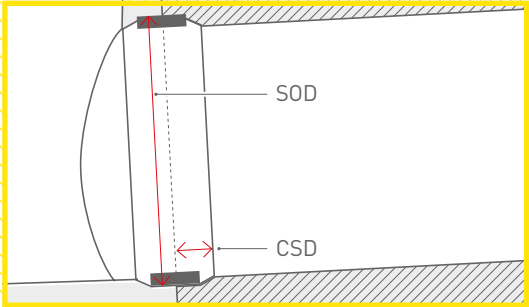
Test results of HDPE liner and connector

Test Type	Description of the test	Standard	Test Results
Chemical Resistance	Shoulder pads in sodium hydroxide solution (2%), peroxide cleaner (5%), sulfuric acid (10%) or water, measurement after 28 days	DIN ISO 527-2	Change test body weight max. 0.2% (permissible: 2% maximum)
Abrasion Resistance	Measurement Abrasion depth in Darmstadt tipping channel (1.0 m long half shell) with 5 kg sand-gravel mixture at 200,000 load changes	DIN EN 295-3	Mean value abrasion: 0.22 mm Maximum value of abrasion: 0.36 mm
Bond Strength	Determination of tear strength Anchors made of concrete at 3 test points	In accordance with the repair guideline DAfStb	Tear strength: 0.5 N / mm² (minimum: 0.05 N / mm²)
Outside Water Pressure	External test pressure on 3 test specimens with 1.5 bar over 1,000 h, then 2.5 bar over 1 h	In accordance with the admission principles of the DIBT	Test of all test specimens tightly and without modifications existed.
High pressure jet resistance	Determination of surface change at rinse jet power density 450 W / mm² (+/- 15), test nozzle opening diameter 2.5 mm, spacer sole 10 mm (+/- 2), 3 test sections	DIN 19523	The smooth surface on all test sections was attested without any abnormalities. Passed the exam.
High pressure rinse resistance	Field test DN300 tubing including 6 connectors with 8-jet omnidirectional nozzle and spray jet power density 330 W / mm² (+/- 15); Pressure at the nozzle before test 120 bar; 60 Cleaning cycles	DIN 19523	No detectable changes in the test string after 60 cleaning cycles. Passed the exam.
Pipe Connection Seal	Test internal plug-in connection DN 300 with clamped tilting lip seals according to DIN EN 681-1, with angled and shear-load wine effect	DIN EN 1916	All examinations passed, leakage proved.
Pipe Connection Seal	Strand test 2 pipes DN300, overall length 3 m and internal plastic coupling body with clamped tipping lip seals with 1.0 bar, 2.5 bar, angulation, shear load short-term, shear load long-term	DIN EN 1916 DIN V 1201 FBS QR 5.6.2.2 FBS QR 5.6.2.3	All examinations passed, leakage proved.
Pipe Connection Seal	Strand testing 3 DN600 pipes, length 3 m and plastic couplings with clamping jaws with 1.0 bar, 2.5 bar, angled, shear load short-term, long-term shear load	DIN EN 1916 DIN V 1201 FBS QR 5.6.2.2 FBS QR 5.6.2.3	All examinations passed, leakage proved.
External pressure pipe connection	External water pressure test on plastic coupling body DN600 with clamped tilting lip seals at 1.0 bar for 3 months	In Anlehnung an Langzeit-Scherlastprüfung	All examinations passed, leakage proved.
Sealing pipes for water extraction areas	Strand test 3 pipes DN300, length 3 m and plastic couplings with clamping jaws with clamped tipping lip seals at 2.5 bar	DIN V 1201 Abschnitt 4.3.7.2.3 und 6.6.3	Tightness, Standard requirements for pipes for water extraction areas
Crush test concrete foot pipe	Test breaking strength and ring bending tensile strength on 3 concrete foot pipes DN600, overall length 3 m	DIN EN 1916:2003-04/ AC:2008 / DIN V 1201:2004-08	Average breaking force 185.2 kN / m Average ring bending tensile strength 5.53 N / mm²
Crush test reinforced concrete foot pipe	Test breaking strength and ring bending tensile strength on 3 steel reinforced concrete pipes DN600, overall length 3 m	DIN EN 1916:2003-04/ AC:2008 / DIN V 1201:2004-08	Average breaking force 331.3 kN / m Average ring bending tensile strength 6.19 N / mm²
Crush text reinforced round concrete pipe	Test on 3 steel reinforced concrete pipes DN500, overall length 3 m	DIN EN 1916	Average breaking force 188.0 kN / m
Crush text reinforced round concrete pipe	Testing on 3 reinforced concrete pipes DN600, overall length 3 m	DIN EN 1916	Average breaking force 173.0 kN / m

PERFECT Liner and Connector

Dimensions of PERFECT Pipe System

Inside diameter (mm)	Socket Outside Diameter SOD (mm)	Connector socket depth CSD (mm)
250	272.4	95.6
300	322.3	95.6
400	430.4	104
500	536.3	104
600	642.2	107
700	742	111.5
800	842	111.5
900	945	113.5
1000	1049	117
1100	1152	121
1200	1252.6	122



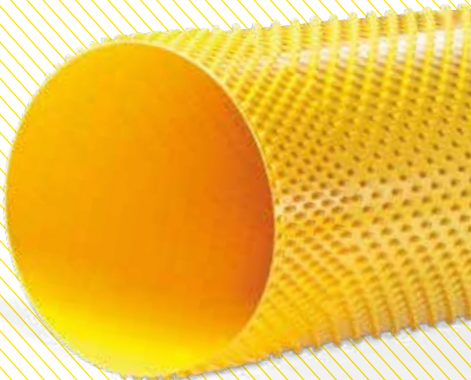
Technical data PERFECT Liner

Material	Polyethylen. PE100
Minimum thickness (mm)	1.65
Maximum thickness (mm)	2.5 (increased thickness if required)
Standard widths (mm)	980 / 2980
Standard colour	Yellow
Anchor length (mm)	7.5
Delivery unit / length (m per coil)	80
Weight (kg. per coil 1.65 x 2980 mm)	510

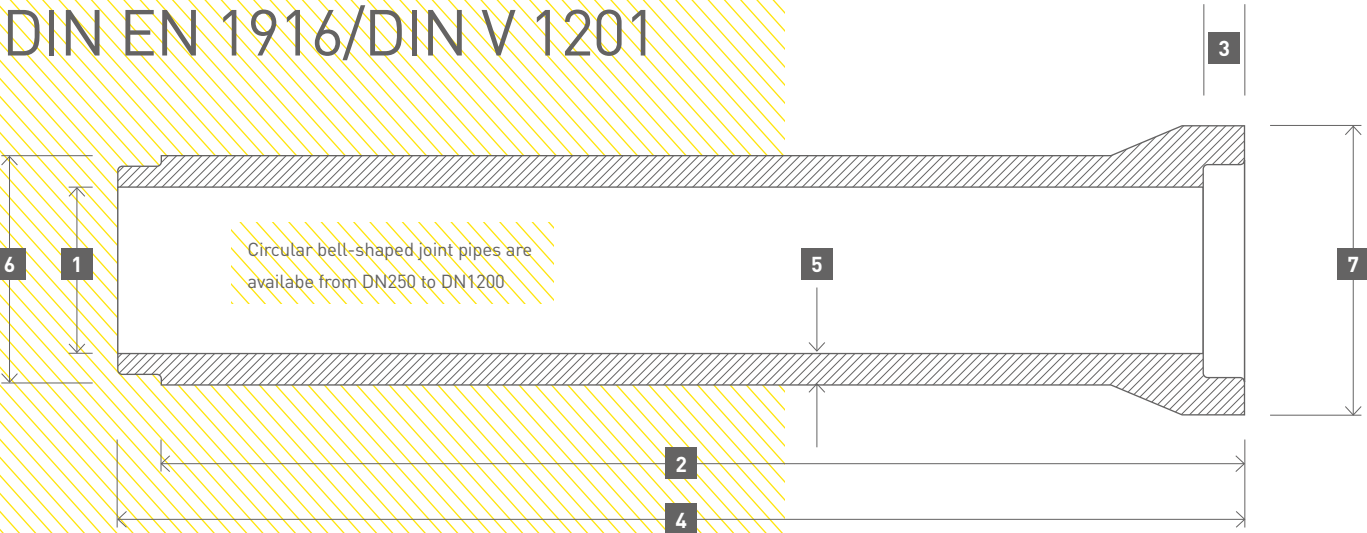
Technical data of PERFECT Connector

Inside diameter (mm)	Material	Gasket according to DIN4060 and DIN681	Standard colour
250	PP	KLP** 7x17	Black
300	PP	KLP** 7x17	Black
400	PP	KLP** 10x23	Black
500	PP	KLP** 10x23	Black
600	PP	KLP** 10x23	Black
700	PP GF *	KLP** 14x38	Black
800	PP GF *	KLP** 14x38	Black
900	PP GF *	KLP** 14x38	Black
1000	PP GF *	KLP** 14x38	Black
1100	PP GF *	KLP** 14x38	Black
1200	PP GF *	KLP** 14x38	Black

* Glass fiber-reinforced polypropylene ** Double tilting edge EPDM gasket



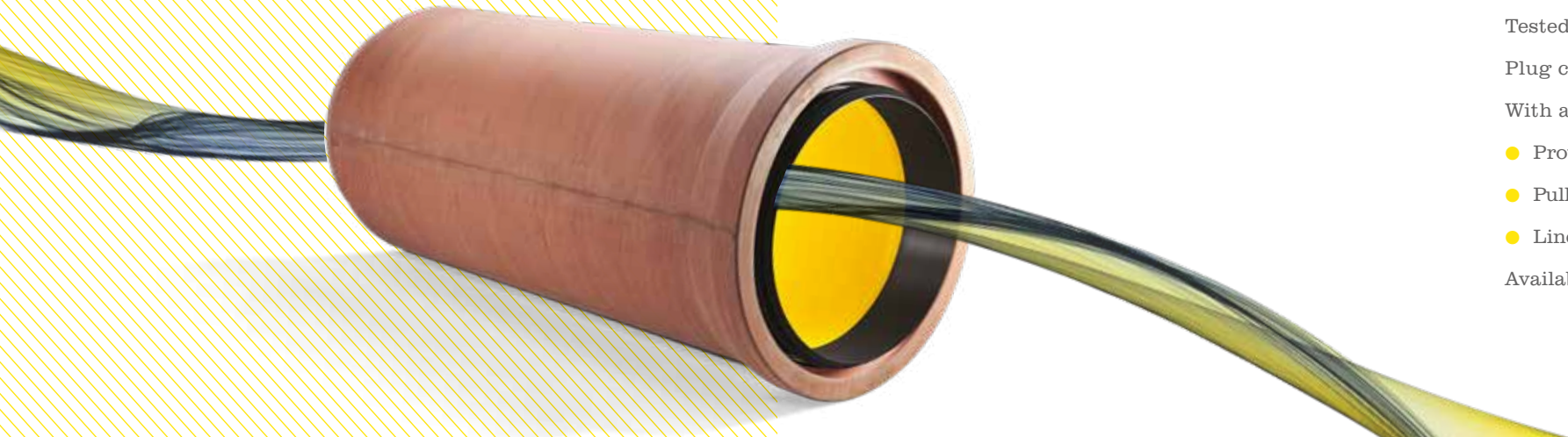
PERFECT PIPE as a reinforced concrete pipe after DIN EN 1916/DIN V 1201



Dimensions and permissible deflection

1	2	3	4	5	6	7	Admitted bending of the pipe		
Inside diameter (mm)	Laying length (mm)	Joint depth (mm)	Pipe length (mm)	Wall thickness (mm)	Pipe outer diameter (mm)	Bell outer diameter (mm)	(°)	(mm/lfm)	Radius**
	l	l so	L	t	da	dg			
250	2990	110	3100	75	400	544	3	50	57
300	2990	110	3100	75	450	594	2.4	41.6	71.6
400	2990	117	3107	75	550	694	1.8	31.2	95.5
500	2990	117	3107	75	650	794	1.5	25	114.6
600	2990	117	3107	80	760	894	1.2	20.8	143.3
700	2990	117	3107	90	880	1028	1	17.8	172
800	2990	117	3107	100	1000	1156	0.9	15.6	191
900	2990	117	3107	110	1120	1294	0.8	13.8	215
1000	2990	117	3107	120	1240	1422	0.72	12.5	239
1100	2990	122.5	3112.5	130	1360	1570	0.65	11.3	264.5
1200	2990	122.5	3112.5	145	1490	1708	0.6	10.4	286.6

*DIN EN 1916/DIN V 1201 **Radius (m) laying length 2990



Specification texts for PERFECT Pipe

PERFECT Pipe as foot pipe for increased static requirements

...m Perfect Pipe concrete-HDPE composite pipe diameter../3000 mm

Monolithically produced in a cast of flowable concrete C40 / 50 according to DIN 206-1 and DIN 1045-2 and in accordance with EN 1916 and DIN V 1201, and hardened in the mould

Tested for an internal pressure of 2.5 bar

Plug connection with double tilting edge EPDM gasket

With a fixed and concrete casted HDPE liner at the plant:

- Proven increased resistance of chemical attacks
- Pull-out strength of the dorsal anchored liner of 400 kN/sqm
- Liner wall thickness: 0.06 inch

Available diameters: 250, 300, 400, 500, 600, 700, 800, 900, 1000, 1100, 1200

PERFECT Pipe as concrete pipe K-GM after DIN EN 1916 / DIN V 1201

...m Perfect Pipe concrete-HDPE composite pipe diameter../3000 mm

Monolithically produced in a cast of flowable concrete C40 / 50 according to DIN 206-1 and DIN 1045-2 and in accordance with EN 1916 and DIN V 1201, and hardened in the mould

Tested for an internal pressure of 2.5 bar

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Available diameters: 250, 300, 400, 500, 600, 700, 800, 900, 1000, 1100, 1200



You will find a variety of specifications and producer information at www.perfectsystem.eu

Schlüsselbauer Technology GmbH & Co KG
Hörbach 4, 4673 Gaspoltshofen
Telephone: (+43) 7735 7144 0 | Fax: (+43) 7735 7144 55
e-mail: sbm@sbm.at | www.sbm.at

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