

CATALOGUE



POLYTRON

SEWAGE SYSTEMS



proaqua.ru



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POLYTRON

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PRO AQUA[®]
PIPE SYSTEMS SINCE 1997

PP-R pipes and fittings,
PE-RT & PEX-A pipes
and fittings

POLYTRON
ProKan

Corrugated
sewage pipes

POLYTRON
STILTE

Low noise
sewage systems

POLYTRON
STILTE
P + S

Silent
sewage systems

POLYTRON
COMFORT

Internal
sewage systems

POLYTRON
TERRA

External
sewage systems

POLYTRON
PRODREN

Drainage
systems



These products were manufactured under the control established in the quality management system certified by Bureau Veritas Certification and complying with the requirements of ISO 9001: 2015, certificate no: RU229256Q-U

PRO AQUA Factory

PRO AQUA FACTORY

The PRO AQUA factory is one of the largest Russian manufacturers, producing PP and PE piping systems for internal and external utility networks since 2001. The company's production facility is equipped with modern high-precision European equipment. The factory has a certified laboratory which monitors the quality of all products manufactured at the factory. Thanks to constant monitoring, the products produced by the factory maintain consistently high quality. All products manufactured by the company have a warranty period of 10 years.

PRODUCTION LABORATORY

The production laboratory of the enterprise PRO AQUA LLC is a structural subdivision with the functions of conducting technical control at all stages of the production process. PRO AQUA factory is equipped with modern measuring instruments and equipment for testing polymer products from leading European manufacturers (ZWICK; BINDER; SCITEQ). The laboratory has been certified by FBU "The State Regional Centre for Standardization, Metrology and Testing in the Moscow Region" for the technical competence for a defined scope in accordance with the requirements of ISO / IEC 17025.



General information

Polytron Comfort is an insert joint drainage system made of polypropylene + reinforcing charges that has exceptional strength and is resistance to mechanical stress. The product line consists of multilayer pipes and fittings in PP, ranging from a diameter of 32 mm up to 110 mm. Pipes and fittings ø 50, 110 have a «double-lip» seal that ensures great hydraulic seal even during backflow. The PP copolymer is composed of a molecular chain of polypropylene and ethylene, whose combination gives greater elasticity. Laboratory tests demonstrate resistance to aging of over 50 years. Polytron Comfort pipes and fittings are compliant with standard EN 1451-1.

Mechanical and technical characteristics

	Norms	Units	Value
Density	ISO 1183	g/cm ³	> 0,91
Longitudal reversion	EN 743	%	< 2
Tensile strength	ISO 557-2	MPa	25-28
Tensile strength at break	ISO 557-2	MPa	28-35
Elongation at break	ISO 557-2	%	> 100
Thermal conductivity	ISO 22007-2	W/m °C	0,26

Benefits of polytron comfort

- + Excellent elasticity even at low temperatures.
- + Excellent resistance to low temperatures and very hot water
- + Pipes made of pp with reinforcing charges for increased strength
- + «Double lip» seal for a perfect hydraulic seal even during backflow
- + Resistant to very large number of chemicals in accordance with ISO/TR 10358

Fields of use

Polytron Comfort is designed for internal drainage systems of civil and industrial buildings, in the following areas of application:

- ♦ Sanitary fixtures drainage
- ♦ Washing machine and dishwasher drainage
- ♦ Prolonged waste water drainage (large kitchens, laundries, industrial systems)
- ♦ Aggressive fluid drainage in schools, laboratories and industrial plants (in this case, the chemical resistance of the material at operating temperature can be found indicatively in ISO/TR 10358)
- ♦ Rainwater run-off inside buildings
- ♦ Ventilation branches and columns (DIN 1986/4)

Operating conditions

Maximum temperature of conveyed fluids not under pressure: 95°C.

POLYTRON
COMFORT

PP SEWAGE SYSTEMS



Sewage pipe with socket

Diameter					Diameter						
DN	L, mm	S, mm	t, mm	Package quantity (pcs)	Code	DN	L, mm	S, mm	t, mm	Package quantity (pcs)	Code
32	150	1,8	48	64	113015	50	250	1,8	58	60	500043
32	250	1,8	48	60	113025	50	500	1,8	58	60	500045
32	500	1,8	48	32	113050	50	750	1,8	58	50	500047
32	750	1,8	48	60	113075	50	1000	1,8	58	50	500049
32	1000	1,8	48	60	113100	50	1500	1,8	58	50	500051
32	1500	1,8	48	60	113150	50	2000	1,8	58	50	500053
32	2000	1,8	48	60	113200	50	3000	1,8	58	50	500055
40	150	1,8	58	84	114015	110	150	2,7	72	30	500081
40	250	1,8	58	84	114025	110	250	2,7	72	30	500083
40	500	1,8	58	84	114050	110	500	2,7	72	20	500085
40	750	1,8	58	60	114075	110	750	2,7	72	20	500087
40	1000	1,8	58	60	114100	110	1000	2,7	72	20	500089
40	1500	1,8	58	60	114150	110	1500	2,7	72	20	500091
40	2000	1,8	58	60	114200	110	2000	2,7	72	20	500093
50	150	1,8	58	60	500041	110	3000	2,7	72	20	500095

Elbow with right exit 45°

Diameter DN	Package quantity (pcs)	Code
110x50x45	1	10010545R

Elbow with right exit 87,5°

Diameter DN	Package quantity (pcs)	Code
110x50x87,5	28	10010587R

Elbow with left exit 45°

Diameter DN	Package quantity (pcs)	Code
110x50x45	1	10010545L

Elbow with left exit 87,5°

Diameter DN	Package quantity (pcs)	Code
110x50x87,5	28	10010587L

Retraction left/right

Diameter DN	Package quantity (pcs)	Code
110x50x50x45	1	10010545LR

Elbow with direct exit

Diameter DN	Package quantity (pcs)	Code
110x50x87,5	28	10010587U

Elbow with frontal exit

Diameter DN	Package quantity (pcs)	Code
110x50x87,5	28	10010587F

Adjustable Elbow

Diameter DN	Package quantity (pcs)	Code
50	1	M0912
110	1	M0902

Elbow

Diameter DN	α°	Z1, mm	l, mm	Package quantity (pcs)	Code
32	45	5	53	100	100345
32	87,5	12	57	90	110387
40	45	10	47	60	110445
40	87,5	23	47	50	110487
50	15	9	54	40	100515
50	30	17	68	40	100530
50	45	12	48	40	100545
50	67	28	77	40	100567
50	87,5	28	48	30	100587
110	15	9	72	40	100115
110	30	20	58	40	100130
110	45	25	58	40	100145
110	67	44	58	35	100167
110	87,5	57	58	30	100187

Double socket coupling

Diameter DN	l, mm	Package quantity (pcs)	Code
32	80	100	300320P
40	90	75	300421
50	105	45	300520
110	128	60	301120

Double socket sliding coupling

Diameter DN	l, mm	Package quantity (pcs)	Code
32	100	100	300310P
40	101	75	300411
50	103	45	300510
110	125	60	301110

Cast iron pipe adaptor with socket

Diameter DN	d ₆ , mm	h, mm	l, mm	Package quantity (pcs)	Code
50/72	72	140	70	30	920050
110/123	124	129	67	40	920110

Cast iron pipe adaptor

Diameter DN	Package quantity (pcs)	Code
50/72	1	150075
110/123	1	124110

Seal for transition cast iron

Diameter DN	Package quantity (pcs)	Code
50/72	1	150075s
110/123	1	124110s

Eccentric reducer

Diameter DN	Z1, mm	t _e , mm	Package quantity (pcs)	Code
32/40	13	42	100	504032
32/50	17	42	100	505032
50/40	16	48	50	515040
110/50	40	58	12	511050



Eccentric reducer short

Diameter DN, mm	Package quantity (pcs)	Code
110/50	60	511050k



WC connection 110mm

Diameter α°, mm	Package quantity (pcs)	Code
direct	1	540100
45	1	498043
87,5	1	498044



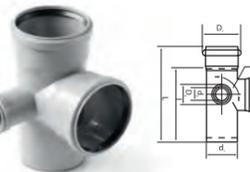
Branch

Diameter DN1	DN2	α°	Z1, mm	Z2, mm	Z3, mm	Package quantity (pcs)	Code
32	32	45	9	40	40	28	203245
32	32	87,5	16	20	20	28	203287
40	40	45	10	49	49	28	214445
40	40	87,5	23	25	25	28	214487
50	50	45	10	60	60	18	205545
50	50	87,5	25	30	30	18	205587
50	40	45	12	61	61	20	215445
50	40	87,5	28	30	30	28	215487
110	50	45	17	104	91	30	201545
110	50	87,5	57	62	32	30	201587
110	110	87,5	25	134	134	15	201187
110	110	45	57	62	62	20	201145



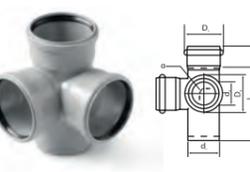
Corner Cross (right)

Diameter DN	α°	L, mm	I, mm	D1, mm	D2, mm	Package quantity (pcs)	Code
110x110x50	87,5	15	180	132	70	12	712587



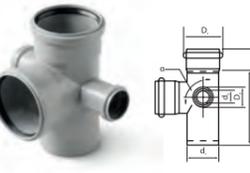
Corner Cross (left)

Diameter DN/α°	L, mm	I, mm	D1, mm	D2, mm	Package quantity (pcs)	Code	
110x110x50	87,5	241	180	132	70	15	711587



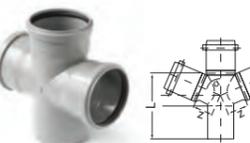
Equal Corner Cross

Diameter DN	α°	L, mm	I, mm	D1, mm	D2, mm	Package quantity (pcs)	Code
110x110x110	87,5	20	180	132	70	15	711187P



Combined Cross

Diameter DN	α°	L, mm	I, mm	D1, mm	D2, mm	Package quantity (pcs)	Code
110x50x50x110	87,5	45	180	132	70	12	715587



Cross

Diameter DN	α°	L, mm	Z, mm	Package quantity (pcs)	Code
50x50x50	45	-	-	40	855545
50x50x50	87,5	-	-	40	855587
110x50x50	87,5	135	85	26	805587P
110x50x50	45	-	-	1	805545
110x110x110	45	-	-	10	801145P
110x110x50	87,5	201	85	18	801587
110x110x110	87,5	201	85	12	801187



Inspection Tee

Diameter DN	d, mm	Z1, mm	Z2, mm	z3z1 ted2	Package quantity (pcs)	Code
50	38	57	62	58	25	605000
110	98	57	62	58	25	611000



Plug

Diameter DN	l, mm	Package quantity (pcs)	Code
32	-	400	403000
40	27	324	404000
50	31	200	405000
110	36	30	411000



Fire collar

Diameter DN	Package quantity (pcs)	Code
50	1	MPP50CT
110*	1	MPP110CT
160*	1	MPP150CT



Deflector

Diameter DN	Package quantity (pcs)	Code
50*	1	2910
110	1	940110



Air admittance valve

Diameter DN	Package quantity (pcs)	Code
50*	1	9-2705-050-00-01-03
110	1	950110



Compensation socket

Diameter DN	h, mm	l, mm	Package quantity (pcs)	Code
50*	-	-	25	905000P
110	255	185	27	911000



Check Valve

Diameter DN	Package quantity (pcs)	Code
50	1	930050
110	1	930110



O-ring sealing

Diameter DN	Package quantity (pcs)	Code
32	40	MOL0032
40*	35	MOL0040
50*	48	108P
110*	42	116P



Clamp

Diameter DN	Package quantity (pcs)	Code
32	50	PA18012PG
40	50	700040
50	25	700050
110	60	700100

POLYTRON
STILTE

LOW NOISE INTERNAL
SEWAGE SYSTEM



Polytron Stilte is a push-fit drainage system made of polypropylene + reinforcing charges. It is a low noise system and exceptionally resistant to impact and stress.

The product line consists of a multilayer pipe with socket and fittings with diameters of 32, 40, 50, 110 and 160 mm. The system feature a very innovative design and include special and exclusive component configurations.

Polytron Stilte is particularly suitable for the following uses due to its outstanding strength and sound absorption:

- waste and sewage water drainage
- swimming pool drainage
- secondary water drainage
- downpipe for rain water

Production of Polytron Stilte pipes and fittings is carried out according to EN 1451-1.

Structure of Stilte multilayer pipe:

Outer layer: White color polypropylene material. High impact resistance even at lower temperatures.

Intermediate layer: Polypropylene-base compound with reinforcing charges. High strength and stiffness. High level of soundproofing.

Inner layer: White color polypropylene material. Smooth flow of fluid without fouling. Chemical resistance. Easy inner inspection thanks to the white color of the layer.



Multilayer pipe with socket

Diameter DN	S, mm	Code
32x150	1,8	ST113015W
32x250	1,8	ST113025W
32x500	1,8	ST113050W
32x750	1,8	ST113075W
32x1000	1,8	ST113100W
32x1500	1,8	ST113150W
32x2000	1,8	ST113200W
40x 150	1,8	ST114015W
40x 250	1,8	ST114025W
40x 500	1,8	ST114050W
40x 750	1,8	ST114075W
40x1000	1,8	ST114100W
40x1500	1,8	ST114150W
40x2000	1,8	ST114200W
50x 150	1,8	ST500041W
50x 250	1,8	ST500043W
50x 500	1,8	ST500045W
50x 750	1,8	ST500047W
50x1000	1,8	ST500049W
50x1500	1,8	ST500051W
50x2000	1,8	ST500053W
50x3000	1,8	ST500055W
110x 150	3,4	ST500081W
110x 250	3,4	ST500083W
110x 500	3,4	ST500085W
110x 750	3,4	ST500087W
110x1000	3,4	ST500089W
110x1500	3,4	ST500091W
110x2000	3,4	ST500093W
110x3000	3,4	ST500095W
160x 500	4,9	ST500685W
160x 750	4,9	ST500687W
160x1000	4,9	ST500689W
160x1500	4,9	ST500691W
160x2000	4,9	ST500693W
160x3000	4,9	ST500695W



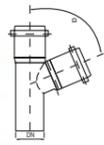
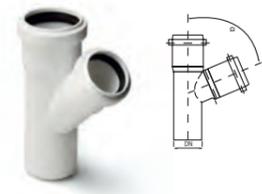
Elbow

Diameter DN	Code
32x45	ST100345W
32x87,5	ST100387W
40x45	ST110445W
40x87,5	ST110487W
50x15	ST100515W
50x30	ST100530W
50x45	ST100545W
50x67	ST100567W
50x87,5	ST100587W
110x15	ST100115W
110x30	ST100130W
110x45	ST100145W
110x67	ST100167W
110x87,5	ST100187W
160x45	ST100645W
160x87,5	ST100687W



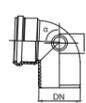
Elbow with left exit

Diameter DN	Code
110x50x87,5	ST10010587LW
110x50x45	ST10010545LW



Branch

Diameter DN/α°	Code
32x32x45	ST203245W
32x32x87,5	ST203287W
40x40x45	ST214445W
40x40x87,5	ST214487W
50x40x45	ST215445W
50x40x87,5	ST215487W
50x50x45	ST205545W
50x50x87,5	ST205587W
110x50x45	ST201545W
110x50x87,5	ST201587W
110x110x45	ST201145W
110x110x87,5	ST201187W
160x110x45	ST206145W
160x110x87,5	ST206187W
160x160x45	ST206645W
160x160x87,5	ST206687W



Elbow with right exit

Размер DN/α°	Code
110x50x87,5	ST10010587RW
110x50/45	T10010545RW



Retraction left/right

Размер DN/α°	Code
110x50/45	ST10010545LRW



Elbow with direct exit

Diameter DN/α°	Code
110x50x87,5	ST10010587FW



Elbow with frontal exit

Diameter DN/α°	Code
110x50x87,5	ST10010587F



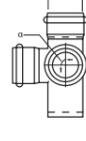
Corner cross with left exit

Diameter DN/α°	Code
110x110x50/87,5	ST711587W



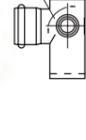
Corner cross with right exit

Diameter DN/α°	Code
110x110x50/87,5	ST711587W



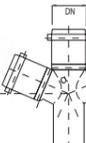
Corner cross

Diameter DN/α°	Code
110x110x110/87,5	ST711187W



Combined cross

Diameter DN/α°	Code
110x50x50x110	ST715587W



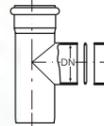
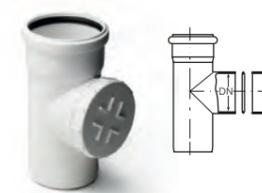
Cross

Diameter DN/α°	Code
50x50x50/45	ST855545W
50x50x50/87,5	ST855587W
110x50x50/45	ST805545W
110x50x50/87,5	ST805587W
110x110x50/87,5	ST801587W
110x110x110/45	ST801145W
110x110x110/87,5	ST801187W



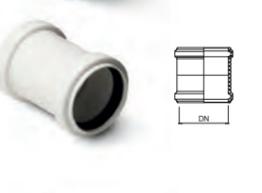
Eccentric reducer

Diameter DN	Code
40/32	ST504032W
50/32	ST505032W
50/40	ST515040W
110/50	ST511050W
160/110	ST516011W



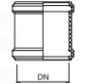
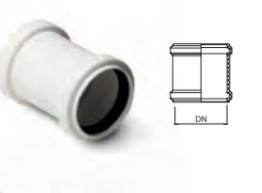
Inspection Tee

Diameter DN	Code
50	ST605000W
110	ST611000W
160	ST616000W



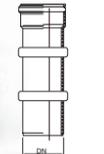
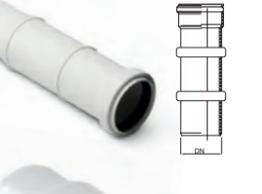
Double socket coupling

Diameter DN	Code
32	ST300320W
40	ST300421W
50	ST300520W
110	ST301120W
160	ST301620W



Double socket sliding coupling

Diameter DN	Code
32	ST300310W
40	ST300411W
50	ST300510W
110	ST301110W
160	ST301610W



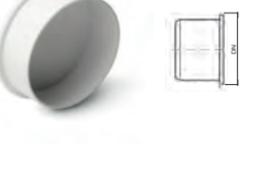
Compensation socket

Diameter DN	Code
110	ST911000W



Cast iron pipe adaptor

Diameter DN	Code
50/73	ST150075W
110/123	ST124110W



Plug

Diameter DN	Code
32	ST403000W
40	ST404000W
50	ST405000W
110	ST411000W
160	ST416000W



SILENT SEWAGE SYSTEM



Polytron Stilte Plus is the best silent drainage system made of polypropylene + reinforcing charges: the real plastic alternative to cast iron!

The product line consists of a multilayer pipes and its fittings ranging from 58 mm up to 200 mm. The pipes and fittings are characterized by an innovative design and include special and exclusive elements.

The outer diameter of the pipes and fittings of Polytron Stilte Plus corresponds to SML standard sewage sizes and can combine with these pipes through a standard connecting clamp of cast iron pipes.

Pipes and fittings have high ring stiffness, resistance to high temperatures (short-term up to 95 °C).

Polytron Stilte Plus pipes and fittings are significantly lighter than cast iron and unlike the SML system; it is push-fit socket connection which allows much faster installation. Plastic pipes are not subject to corrosion, which also improves system reliability.

Thanks to the smooth inner surface, the risk of clogging of the system is reduced. The pipes are resistant to abrasion, which ensures trouble-free operation for at least 50 years. Unlike metal sewage pipes, Polytron Stilte Plus system does not need to be painted.

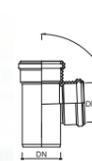
Due to its outstanding strength and soundproofing characteristics, Polytron Stilte Plus is particularly suitable for the following uses:

- Private residential buildings (apartment blocks, single and multi-family housing)
- Private commercial buildings (hotels, shopping centers, offices)
- Public buildings (schools)



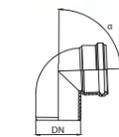
Silent sewage pipe with socket

Diameter DN	S,MM	Code
58x150	4	STPL550580150
58x250	4	STPL550580250
58x500	4	STPL550580500
58x1000	4	STPL550581000
58x1500	4	STPL550581500
58x2000	4	STPL550582000
58x3000	4	STPL550583000
110x150	5,3	STPL551100150
110x250	5,3	STPL551100250
110x500	5,3	STPL551100500
110x1000	5,3	STPL551101000
110x1500	5,3	STPL551101500
110x2000	5,3	STPL551102000
110x3000	5,3	STPL551103000
160x250	5,3	STPL551600250
160x500	5,3	STPL551600500
160x1000	5,3	STPL551601000
160x2000	5,3	STPL551602000
160x3000	5,3	STPL551603000
200x250	6,2	STPL552000250
200x500	6,2	STPL552000500
200x1000	6,2	STPL552001000
200x2000	6,2	STPL552002000
200x3000	6,2	STPL552003000



Branch

Diameter DN/α°	Code
58x58/45	STPL2005805845
58x58/87,5	STPL2005805887
110x58/45	STPL2011005845
110x58/87,5	STPL2011005887
110x110/45	STPL2011011045
110x110/87,5	STPL2011011087
160x110/45	STPL2016011045
160x160/45	STPL2016016045
200x160/45	STPL2020016045
200x200/45	STPL2020020045



Elbow

Diameter DN/α°	Code
58x15	STPL1005815
58x30	STPL1005830
58x45	STPL1005845
58x67	STPL1005867
58x87,5	STPL1005887
110x15	STPL1011015
110x30	STPL1011030
110x45	STPL1011045
110x67,5	STPL1011067
110x87,5	STPL1011087
160x30	STPL1016030
160x45	STPL1016045
160x87,5	STPL1016087
200x45	STPL1020045
200x87,5	STPL1020087



Double socket coupling

Diameter DN	Code
58	STPL30058
110	STPL30110
160	STPL30160
200	STPL30200



Double socket sliding coupling

Diameter DN	Code
58	STPL31058
110	STPL31110
160	STPL31160
200	STPL31200

Eccentric reducer

Diameter DN	Code
40/58	STPL50058040
50/58	STPL50058050
110/58	STPL50110058
160/110	STPL50160110
200/160	STPL50200160

Compensation socket

Diameter DN	Code
110	STPL90110

Inspection Tee

Diameter DN	Code
58	STPL60058
110	STPL60110
160	STPL60160

Plug

Diameter DN	Code
58	STPL40058
110	STPL40110
160	STPL40160
200	STPL40200

Corner cross

Diameter DN/ α°	Code
110x110x110x87,5	STPL71187

Cross

Diameter DN/ α°	Code
110x110x110x87,5	STPL801187

Noise level

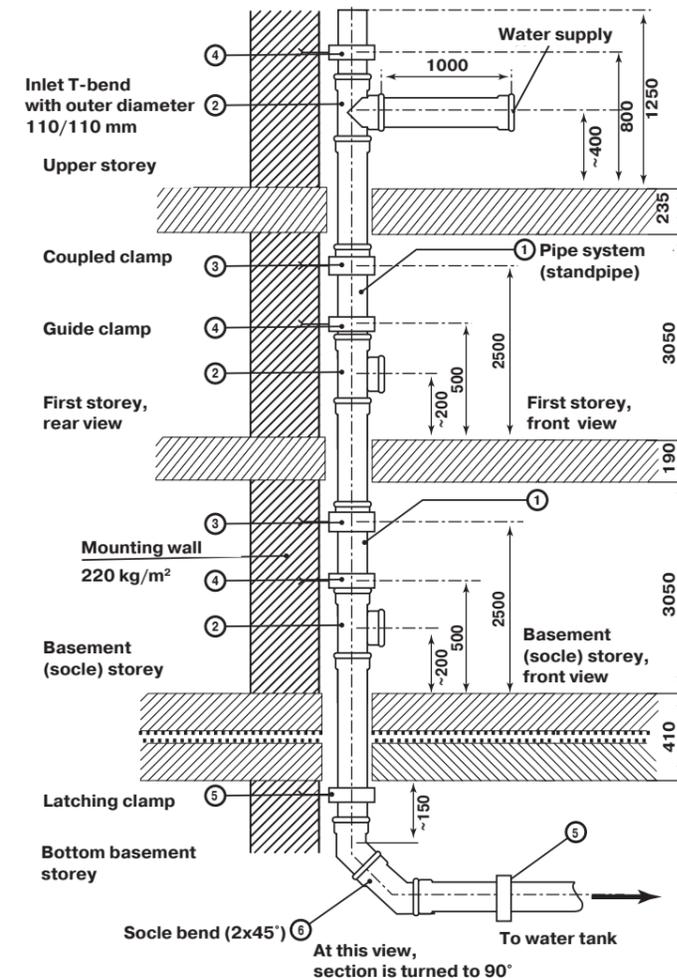
Thanks to our special compound and increased wall thickness, Polytron Stilte Plus pipes and fittings effectively suppress both structural and airborne noise, as evidenced by measurements taken at the Fraunhofer Institute of Building Physics in Stuttgart, Germany.

The soundproofing tests were performed at the Fraunhofer Institute for Building Physics in Stuttgart, according to the system diagram presented in DIN 4109 and EN 14366. The systems was examined from sound point of view in a standard system based on various flow rates. The test results prove excellent noise insulating characteristics of Polytron Stilte Plus.

For detailed information regarding the test results, please contact our technical team.



Noise-absorbing properties of pipes are confirmed by tests at the Institute of building physics named after Fraunhofer, Stuttgart, Germany i.e. a recognized European center dedicated to the study of acoustic characteristics of construction systems.



To assess the noise, which the system will generate under the real operating conditions, tests under EN 14366 are conducted, in which a portion of multi-apartment building is simulated.

The test bench has two storeys, basement and garret premises, through which the sewage system standpipe runs being attached to one of the walls. The noise level is measured both inside the premise where this pipe is installed ('test' premise), and in the so-called 'protected' premise located on the other side of this wall. Actual similarity of the test premise in multi-apartment and residential buildings is the restroom, and the common residential rooms are similar to the protected premise.

According to German standard DIN 4109, noise level in these premises at night shall not exceed 30 dB(A). German standard VDI 4100 establishes more stringent requirements i.e. according to this standard, to reach the maximum acoustic comfort, the noise level shall be maximum 24 dB(A) for a multi-apartment building, and maximum 22 dB(A) for a single-family home.

Depending on wastewater flowrate, the following data on the noise level in dB(A) were obtained:

Conditions		Wastewater flowrate, L/s			
		0,5	1,0	2,0	4,0
Tests per EN14366	Test premise	43	45	47	49
	Protected premise	<10	10	12	17
Tests per VDI 4100	Test premise	41	43	44	47
	Protected premise	<10	<10	12	17

The maximum wastewater flowrate, which is used in the calculation of the real sewage system as per SP 30.13330.2016 is 1.6 L/s, and it occurs in it when flushing the toilet tank. During these tests, the maximum flowrate was 4.0 L/s, which 2.5 times more than the real values. But despite this, noise level in the protected premise even for the most stringent standard VDI 4100 was 5 dB(A) below the permissible values. Here, it shall be remembered that the decibel is a logarithmic unit of measurement, and a difference of 5 decibels corresponds to a change in the measured value of about 3.16 times.

Thus, Polytron Style Plus pipe has confirmed its high efficiency in management of noises in the sewage system. Application of these pipes and fittings allows for making internal sewage of a single-family house or apartment in a multi-storey building really noiseless.



Institution for testing, supervision and certification, officially recognized by the building supervisory authority. Approvals of new building materials, components and types of construction

Director
Prof. Dr. Philip Leistner
Prof. Dr. Klaus Peter Sedlbauer

Test Report P-BA 15/2019e

Determination of the Acoustic Performance of a Wastewater Installation System in the Laboratory according to EN 14366

Client: Limited Liability Company Scientific-production association «PRO AQUA», Russian Federation, 141370, Moscow oblast, Sergievo-Posadskii district, Khotkovo city, Khudozhestvennyi proezd, 2A, room 5

Test object: Wastewater system "POLYTRON STILTE PLUS LOW NOISE TPK DN110x5.3, 14.12.18" (manufacturer: Limited Liability Company Scientific-production association «PRO AQUA»). The wastewater system consisted of straight plastic pipes and fittings and acoustic pipe clamps with elastic inlay "DN 110 POLYTRON STILTE Plus" (manufacturer: Limited Liability Company Scientific-production association «PRO AQUA»)

Content:

Results sheet 1:	Summary of test results
Figures 1 to 3:	Detailed results
Figures 4 and 5:	Test set-up
Annex A:	Measurement set-up, noise excitation, acoustic parameters
Annex F:	Evaluation of measurements
Annex P:	Description of the test facility
Annex V:	Assessment according to VDI 4100

Test date: The measurement was carried out on January 24, 2019 in the test facilities of the Fraunhofer Institute for Building Physics in Stuttgart.

Stuttgart, April 9, 2019

Responsible Test Engineer: Head of Laboratory:

Dipl.-Ing.(FH) J. Mohr M.BP. Dipl.-Ing.(FH) S. Öhler

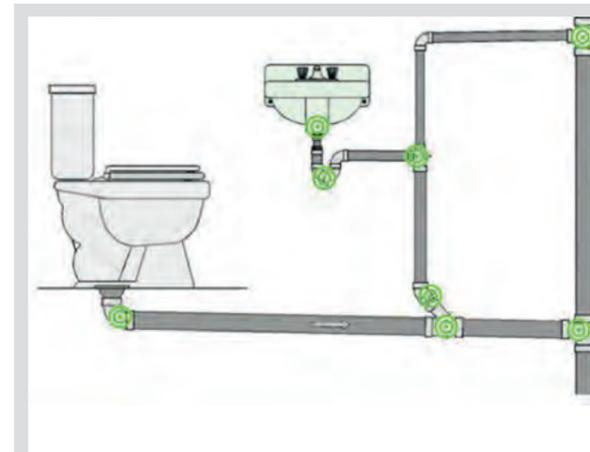
The test was carried out in a laboratory, accredited according to DIN EN ISO/IEC 17025:2005 by DAkkS. The accreditation certificate is D-PL-11140-11-01.

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Telefon +49(0) 711/970-3314; Fax -3406
akustik@ibp.fraunhofer.de
www.pruefstellen.ibp.fraunhofer.de/de/akkreditierte-prueflabore.html



Noise in sewage piping systems

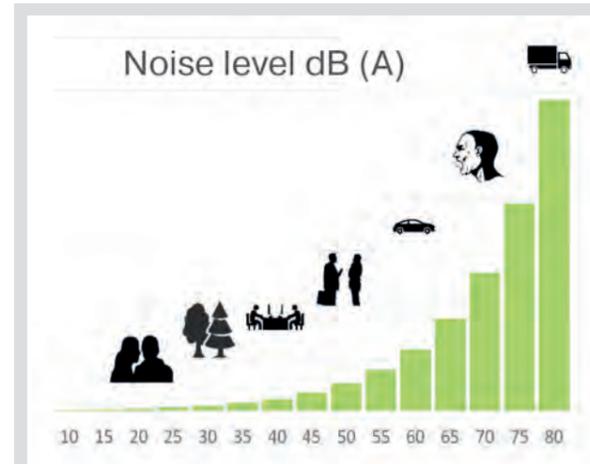


Sources of noise:

- Turns
- Plumbing connections
- Pipeline connections
- Fittings
- Change in diameter
- External noise

Types of noise:

- Structural
- Air



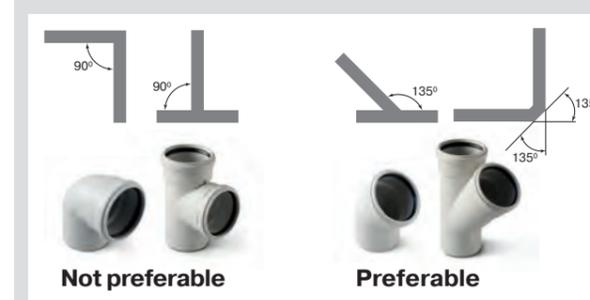
Permissible noise levels:

- According to the norms of SNiP 23-03-2003: at night no more than 30 dB
- DIN 4109: 30 dB
- VDI 4100, sound insulation degree II or III –25dB

Sound pressure difference

- 3 dB = 103/10 ~ 2 times
- 5 dB = 105/10 ~ 3.16 times
- 10 dB = 10 times

$m=10^{n/10}$, m – difference in times, n – difference in dB



Additional noise reduction tips:

Fix the system to walls with density over 220 kg / m²

Avoid elbows and branches with 87°, instead, combine two 45° or three 30° fittings.

Use soundproof fixing clamps.





COMFORT OF SILENCE



PIPELINE INSTALLATION: PIPES AND FITTINGS CONNECTIONS

Waste water piping system installation methods

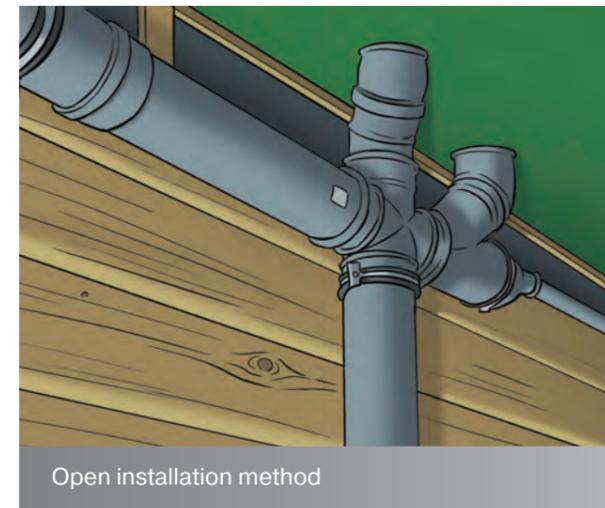
When installing internal sewage pipelines, the following methods are used:

Open installation

– In undergrounds, basements, workshops, utility and auxiliary rooms, corridors, technical floors with fastening to building structure with clamps.

Hidden installation

– With embedment in building structures of floors, under the floor, in panels, wall furrows, under column lining, in suspended ceilings, in sanitary cabins, in vertical shafts, under baseboard in the floor.



Open installation method



Closed installation method

Installing instructions

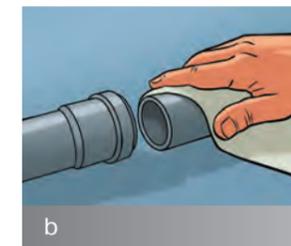
- a) Cut the pipe with a pipe cutter or handsaw. Always cut the pipe straight. Remove all swarf and burrs from the cut end and chamfer it
- b) Clean the ends of pipe and fitting.
- c) Check the integrity of the socket seal.
- d) Lubricate the part to be inserted with lubricant.

When inserting the pipe, there should be no dirt on the o-ring. Center the plug-in end of the pipe and push it all the way into the socket.

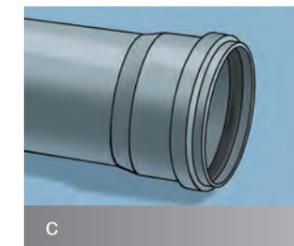
In the operation of pipelines, it occurs linear thermal extension of pipes and fittings. Therefore, after the pipe is pushed into the socket until it stops, it must be pulled back 10 mm. The maximum installation length of the pipe can be 2 m. The smooth ends of the fittings can be completely retracted into the socket. After installation, taking into account the possible linear elongation, the pipes must be secured with clamps to prevent their displacement during further installation.



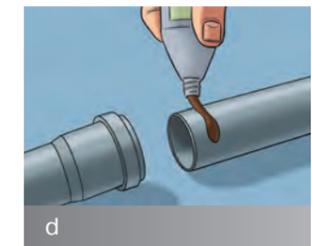
a



b



c



d



SEE OUR
NEW
VIDEO



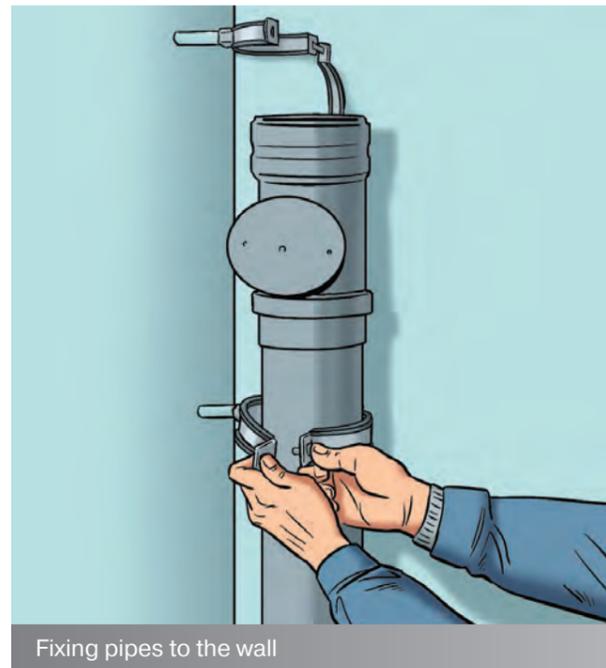
Fastening the system

The design and sizing of sewage and rainwater systems must take into account standard EN 12056-1-2-3-4-5. For the installation and use of Polytron in-house piping systems, please take into account of any national provisions or laws. The socket system ensures the hydraulic seal. Any mechanical stress must be taken into account during design and assembly in order not to affect the integrity of the system's hydraulic seal. Pipes must be fastened using bracelets, placed under the socket, in order to prevent it from slipping

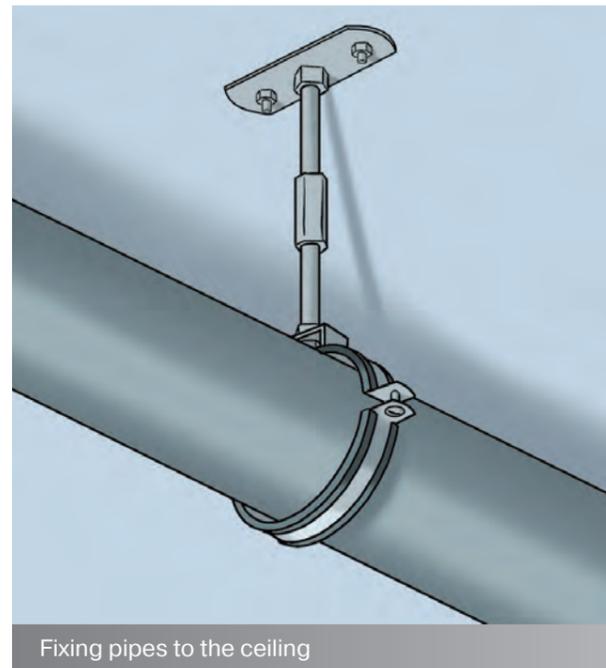
The maximum distance between the bracelets must not exceed:

- 10 times the diameter of the pipe for horizontal pipes;
- 15 times the diameter of the pipe for vertical pipes.

Moreover, all fittings which involve a change in direction of the system must be properly clamped to prevent the socket from slipping in the event of accidental excess pressure. The water column should not exceed a maximum height of 5 meters.



Fixing pipes to the wall



Fixing pipes to the ceiling

Repairing and additional installation of fittings

To insert a new branch into an existing pipe use a double socket sliding coupling and follow the step below:

- 1- cut a pipe section from the existing system. The length of the section must be equal to the new branch length plus the insert depth of the triple depth sleeve.
- 2- insert coupling on the lower end of the existing pipe
- 3- insert sliding socket on the upper end of the existing pipe until abutment
- 4- insert the branch into sliding socket
- 5- slide down together the branch and sliding coupling until insertion into the coupling below.

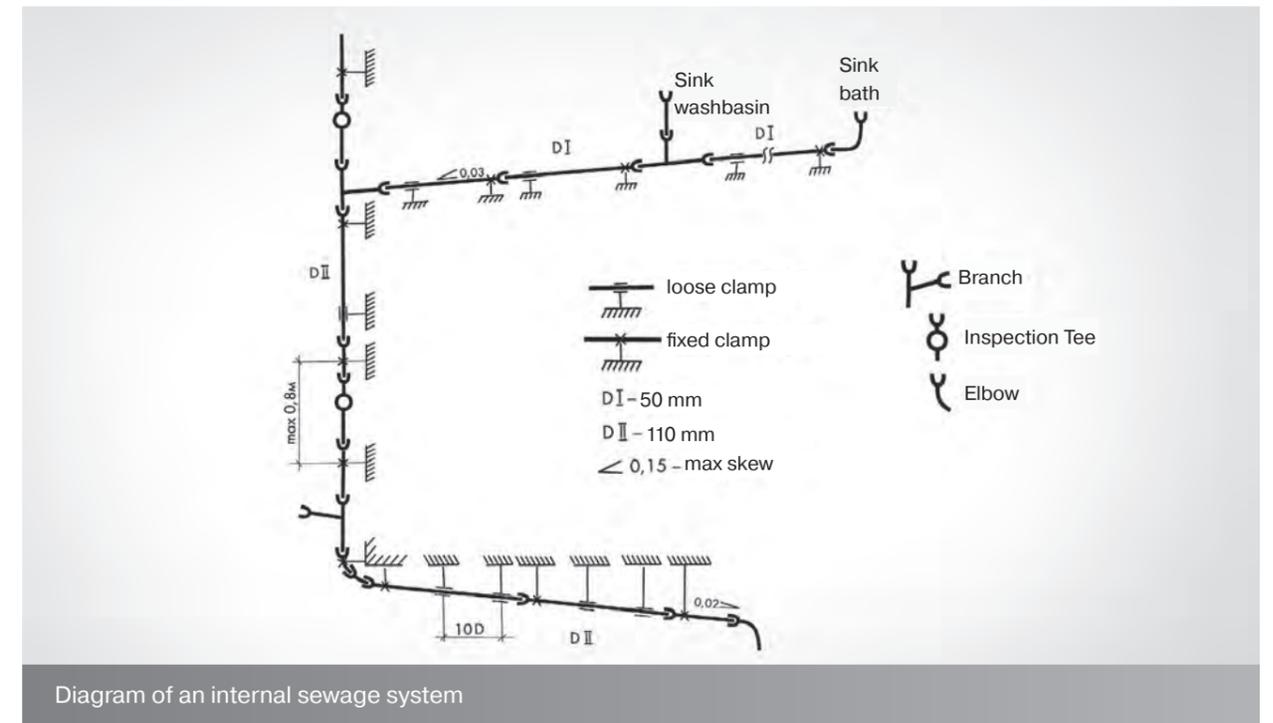
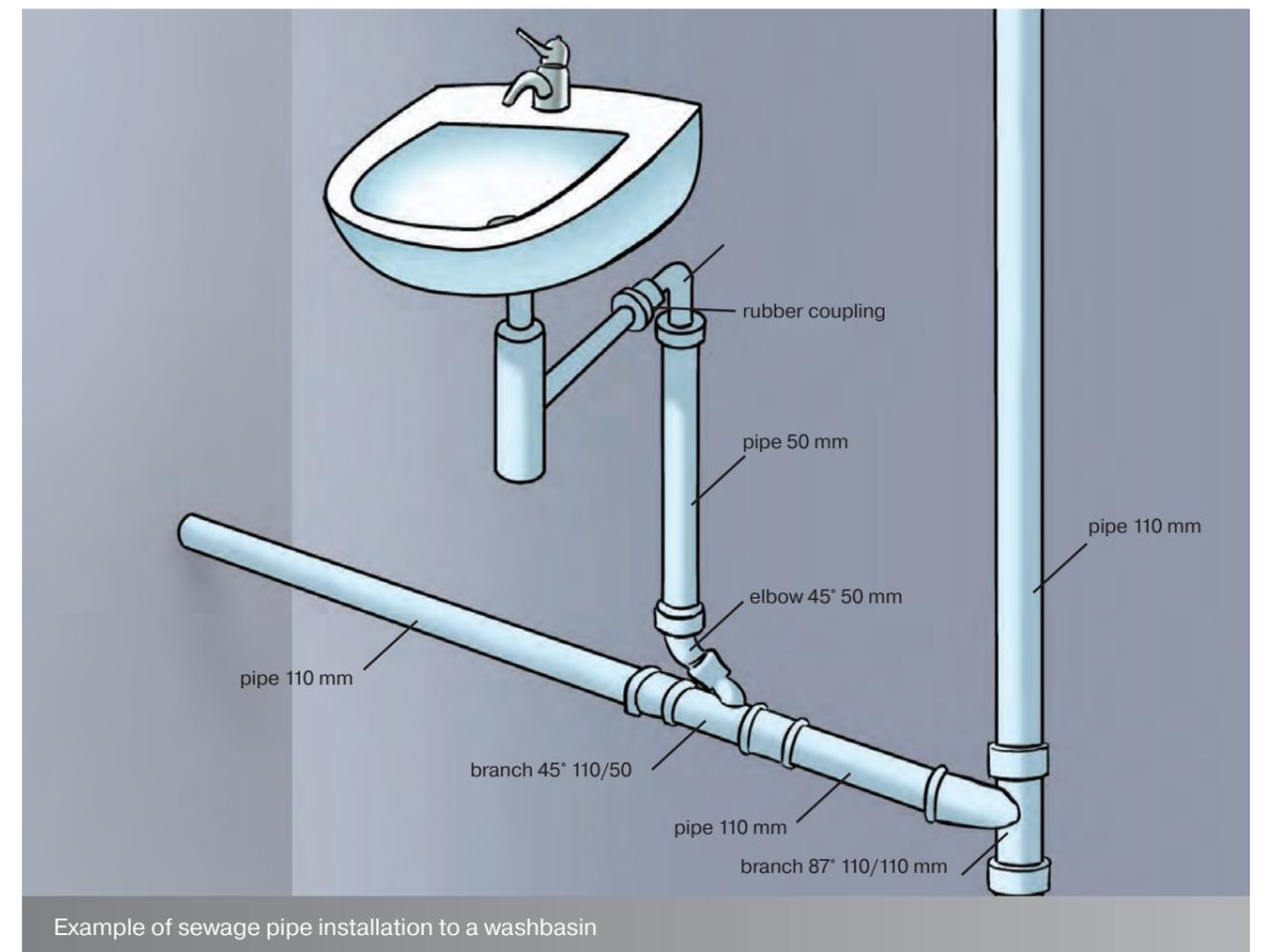


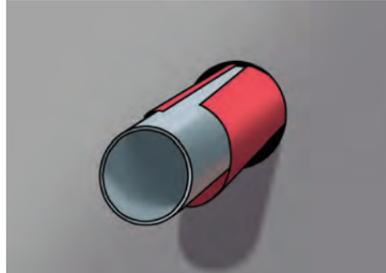
Diagram of an internal sewage system



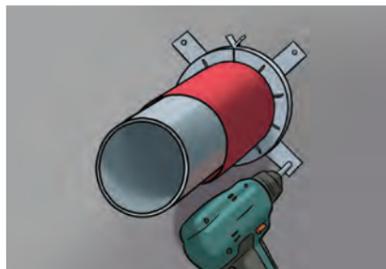
Example of sewage pipe installation to a washbasin

INSTALLATION OF FIRE COLLARS:

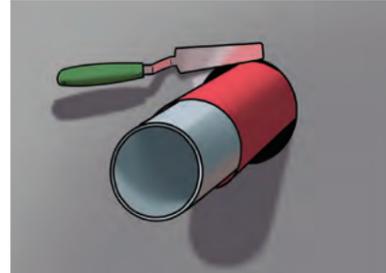
■ Install the piping (if necessary, along with soundproof insulation material)



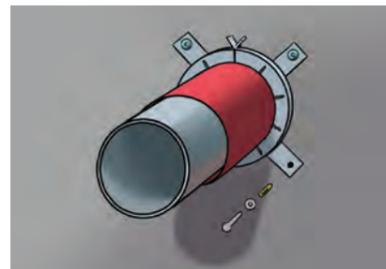
■ Mark the attachment points and drill holes



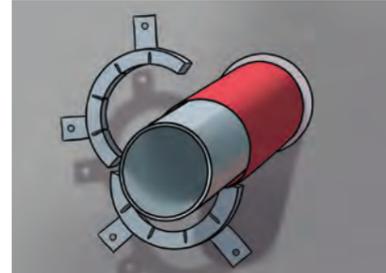
■ Gaps around the pipes within the thickness of the wall or floor are sealed with a suitable fire rated intumescent mastic



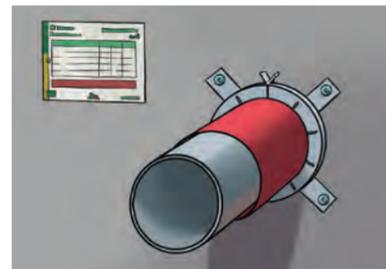
■ Fasten the trims with screws



■ Choose correct collar size



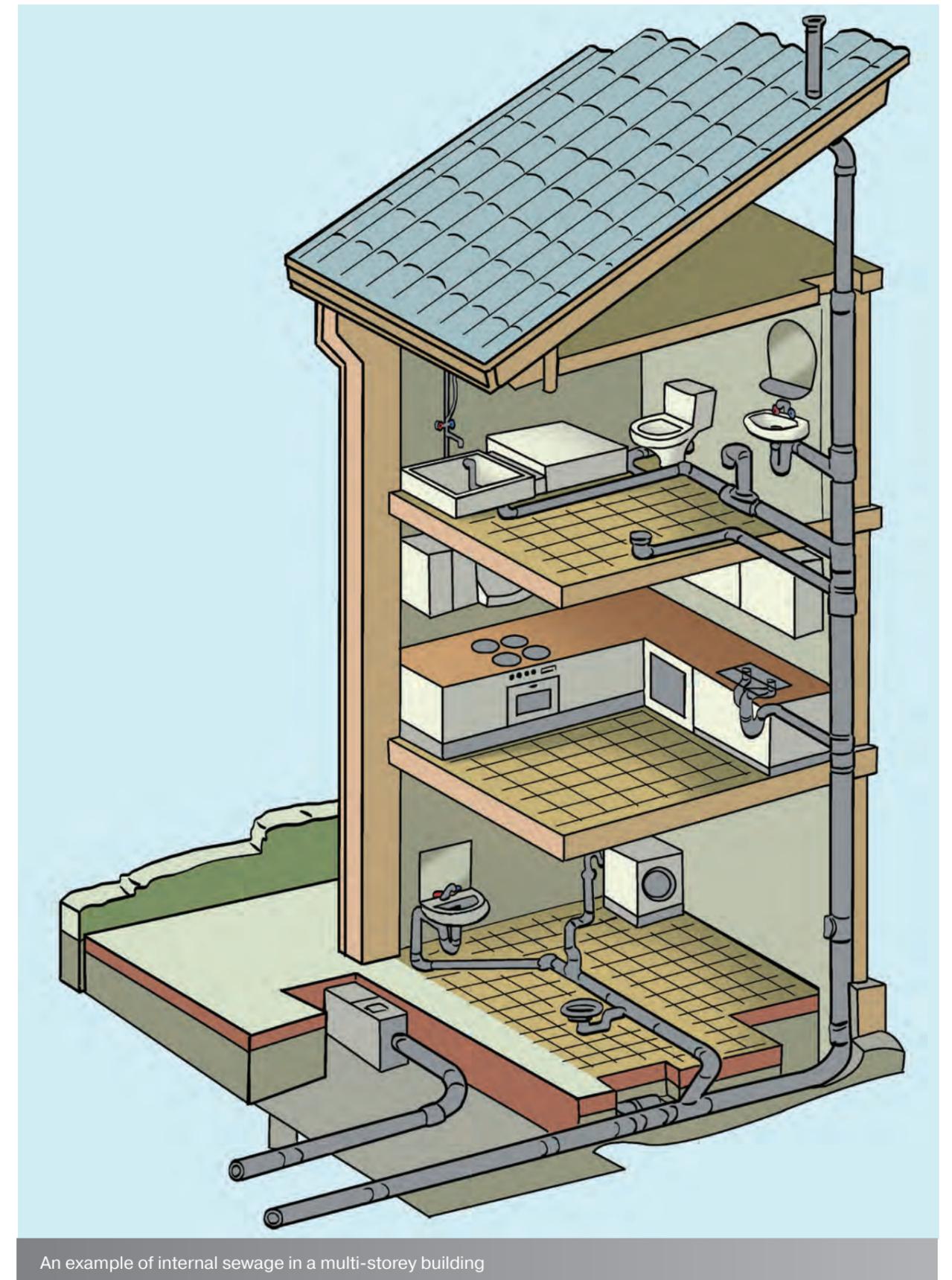
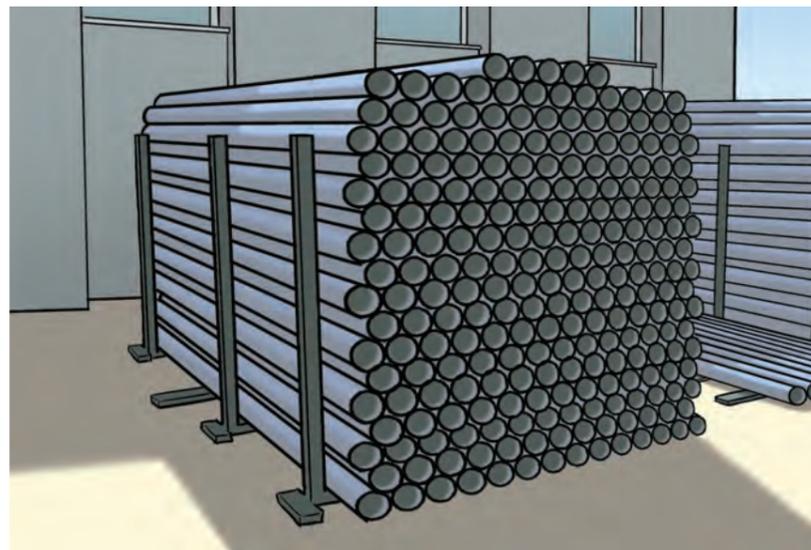
■ Fill in the attached label and attach it with a seal

**TRANSPORTATION AND STORAGE OF POLYPROPYLENE PIPES AND FITTINGS**

Pipes not laid on pallets, must be supported along the entire length during transportation. Protect pipes from shocks, especially at minus temperatures. When loading and unloading using lifting devices, use wide textile belts or similar. Pipes and fittings with installed rubber O-rings, can be stored outdoors for a maximum of 3 years.

When storing pipes you need to consider:

- For storage, it is necessary to use reliable supports that do not cause deformation or bending of pipes.
- When storing pipe sockets should not be exposed to horizontal or vertical loads.
- Loading height should not exceed 1.5 m



An example of internal sewage in a multi-storey building

POLYTRON

The best equipment
allows us to produce
the best products

