

pipng solutions

WE ARE

a private company Peštan, leader in the Balkans in the production and distribution of products and solutions from the polymers.

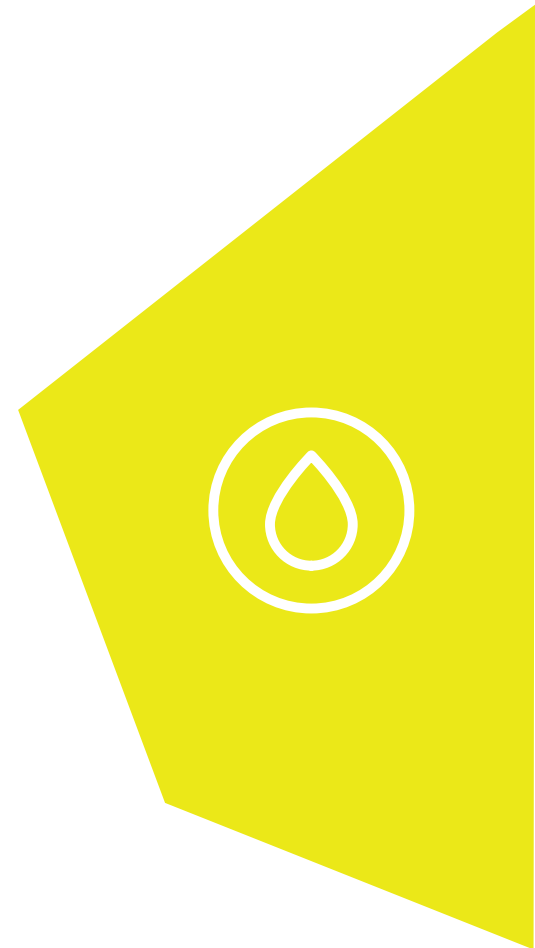
Company was founded in 1989 and has been producing water pipes made of polyethylene. Over time, we introduced new materials (polypropylene and PVC) and expanded product range. Today, in our offer you may find more than 8.500 products, divided into two categories:



**PIPING
SOLUTIONS**



**BATHROOM
SOLUTIONS**



July 2024

Production facilities of company Peštan are located in Arandjelovac, Serbia. Annual revenue exceeding 170 million €, which is realized with the help of 1.200 employees. Peštan has a direct presence, through its daughter companies, in Bosnia and Herzegovina, as well as in Romania and through its representative offices in Albania, Croatia, Russia and the United Arab Emirates. Peštan operates in more than 80 countries worldwide through a global network of agents and distributors. Primarily export-oriented, the company is present in the market of Europe, Russia, Middle East, North Africa, Latin America and USA. The entire production is adjusted to European standards which is proved by international certificates for quality products:

DVGW, MPA, KIWA, SKZ, INSTA CERT, ITC, SPSC, IGH, VUPS, EMI, ICC, IAPMO, MIRTEC, and certificates of quality process ISO 9001, ISO 14001, ISO 45001, ISO 27001 and ISO 50001. For maximum satisfaction of customer needs, the company is constantly innovating and improving personnel and equipment. Since 2009, the company introduced the SAP ERP modules MM, SD, PP, FI CO, and since 2012 have extended functionality and WMS was included. The introduction of WCM and WMS system has increased the efficiency, contributed to the allocation of costs and professional maintenance. Central warehouse is located in Serbia, Arandjelovac, which is sized and designed to meet the requirements of the most demanding customers who want

efficient and reliable delivery of products. To respond to these requirements, Peštan has 15.000 m² of closed storage space for finished and semi-finished products, 10.000 m² warehouse for raw materials and intermediate goods, and approximately 120.000 m² of open storage space. Indoor storage space is equipped with shelves with over 21.000 pallet positions. Our vision is to be recognized as a leader in the Balkans, which provides customers with diversified solutions and products in one place. Our mission is creating a competitive advantage in our customers' businesses with the help of first-class solutions, services and products. We provide our company's success by consistently meeting the needs of clients, stakeholders and employees.



KEY FACTS

80

AND MORE
COUNTRIES
WHERE WE EXPORT
OUR PRODUCTS

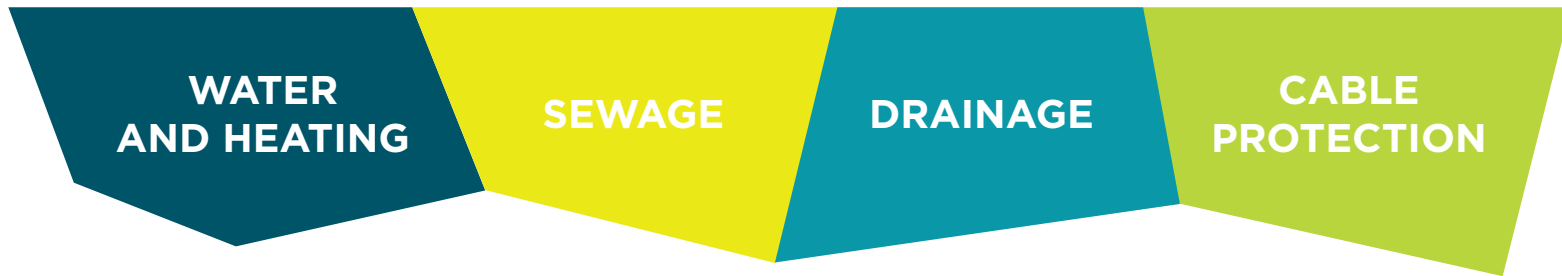
8.500

DIFFERENT PRODUCTS
IN OUR PRODUCTION
ASSORTMENT

65.000

TONS OF MATERIAL
PROCESSED
ANNUALLY

TYPES OF PIPING SOLUTIONS







WATER & HEATING



FLUIDTHERM



PP-R pipes & fittings for warm and cold water supply

PP-R and PP-RCT pipes are intended to be used for installation of hot and cold hygienic portable water, for heating and cooling systems, radiator connections, as well as for gray and reclaimed water transportation.

They are also intended to be used for the transportation of alimentary liquids, irrigation of the greenhouses and gardens, shipment of pressure air, vacuum installations, for the flow of various fluids in chemical industry, as well as for the transportation of the sea water and highly abrasive fluids. Their low weight and high tolerance to vibrations makes them suitable for various applications related to trains, ships, trucks and camping trailers, both in aggressive environment and on unstable ground.

SPECIFICATION OF MATERIAL

Polypropylene random copolymer [PP-R]

Polypropylene random copolymer with modified crystallinity [PP-RCT]

Polypropylene Random Copolymer has been used in the domestic plumbing and mechanical applications for more than 20 years. With its long history and proven performance PP-R material made an excellent fit to the demand for pressure resistance at high temperatures. Increase of the ecological awareness contributed to the final recognition of our product as the superior one in

the world of liquid engineering. New generation of material named as PP-RCT is Polypropylene-Random-Copolymer with improved temperature resistance and enhanced crystalline structure brought about by a special nucleation. Proof of excellent performance characteristics of PP-RCT is categorized required strength (CRS) of 5 MPa at 70 °C and 50 years in comparison to a value of

3,21 MPa for standard PP-R. Offering more than 50% improved long-term strength PP-RCT enables designers to achieve higher pipe hydraulic capacity and gives them possibility to apply higher pressure than with standard PP-R with MRS 10.0 MPa. Quality of raw material is being controlled by the Health and Care State Institute.

ADVANTAGES OF MATERIAL

Welding properties

During the welding material suffers neither changes nor burnings thus connections between pipes and fittings are both strong and safe.

Burning cautery

PP-R and PP-RCT is classified as normal flammable material which under ideal burning conditions turns into carbon monoxide and water.

* For more informations regarding the applications for transportation of special fluids, operation conditions please contact Pestan's technical support.

Polymer is protected during processing

Material can be processed several times without changes in molecular structure and without deterioration of physical and chemical characteristics and thermo-mechanical properties.

Impact strength

Impact strength of PP-R and PP-RCT pipes significantly decreases at temperatures below 5 °C which is common for polypropylene pipes

Resistance to chemical substances and metals

PP-R and PP-RCT is completely resistant to hydrolysis. Due to non- polar PP-R and PP-RCT behavior and specially designed additive package PP-R and PP-RCT are also suitable for transportation of the most of the chemicals.

Opacity

Light transmission through PP-R and PP-RCT is less than 0.2% which prevents growth of algae on the inside surface of pipes and fittings meant for drinking water.



PERMISSIBLE OPERATING PRESSURE DEPENDING ON TEMPERATURE AND THE EXPECTED LIFE OF THE TUBE IN ACCORDANCE WITH DIN 8077

PP-RCT

| TEMPERATURE °C | SERVICE LIFE, YEARS | PERMISSIBLE OPERATING PRESSURE, BAR (SF=1,5) | | | |
|----------------|---------------------|--|------|------|------|
| | | S | | | |
| | | 5 | 4 | 3,2 | 2,5 |
| | | SDR | | | |
| | | 11 | 9 | 7,4 | 6 |
| 10 | 1 | 19,0 | 24,0 | 30,2 | 38,0 |
| | 5 | 18,4 | 23,3 | 29,3 | 36,8 |
| | 10 | 18,3 | 22,9 | 28,9 | 36,4 |
| | 25 | 17,9 | 22,6 | 28,4 | 35,8 |
| | 50 | 17,7 | 22,3 | 28,0 | 35,3 |
| | 100 | 17,4 | 21,9 | 27,7 | 34,8 |
| 20 | 1 | 16,6 | 20,8 | 26,3 | 33,1 |
| | 5 | 16,1 | 20,2 | 25,4 | 32,1 |
| | 10 | 15,8 | 19,9 | 25,1 | 31,6 |
| | 25 | 15,5 | 19,6 | 24,7 | 31,0 |
| | 50 | 15,3 | 19,3 | 24,3 | 30,6 |
| | 100 | 15,1 | 19,0 | 24,0 | 30,2 |
| 30 | 1 | 14,3 | 18,1 | 22,8 | 28,7 |
| | 5 | 13,8 | 17,4 | 22,0 | 27,7 |
| | 10 | 13,7 | 17,2 | 21,7 | 27,3 |
| | 25 | 13,4 | 16,8 | 21,3 | 26,8 |
| | 50 | 13,2 | 16,6 | 20,9 | 26,3 |
| | 100 | 13,0 | 16,4 | 20,7 | 26,0 |
| 40 | 1 | 12,3 | 15,5 | 19,6 | 24,7 |
| | 5 | 11,9 | 15,0 | 18,8 | 23,8 |
| | 10 | 11,8 | 14,8 | 18,6 | 23,4 |
| | 25 | 11,5 | 14,4 | 18,2 | 22,9 |
| | 50 | 11,3 | 14,3 | 17,9 | 22,6 |
| | 100 | 11,1 | 14,0 | 17,7 | 22,3 |
| 50 | 1 | 10,5 | 13,3 | 16,8 | 21,1 |
| | 5 | 10,2 | 12,8 | 16,1 | 20,3 |
| | 10 | 10,0 | 12,6 | 15,8 | 19,9 |
| | 25 | 9,8 | 12,3 | 15,5 | 19,5 |
| | 50 | 9,6 | 12,1 | 15,3 | 19,2 |
| | 100 | 9,4 | 11,9 | 15,0 | 18,8 |
| 60 | 1 | 8,9 | 11,3 | 14,2 | 17,8 |
| | 5 | 8,6 | 10,8 | 13,6 | 17,2 |
| | 10 | 8,4 | 10,6 | 13,3 | 16,8 |
| | 25 | 8,3 | 10,3 | 13,1 | 16,5 |
| | 50 | 8,1 | 10,2 | 12,8 | 16,2 |
| | 100 | 7,9 | 10,0 | 12,6 | 15,9 |
| 70 | 1 | 7,5 | 9,4 | 11,9 | 15,0 |
| | 5 | 7,2 | 9,1 | 11,4 | 14,4 |
| | 10 | 7,1 | 8,9 | 11,3 | 14,1 |
| | 25 | 6,9 | 8,7 | 10,9 | 13,8 |
| | 50 | 6,8 | 8,5 | 10,8 | 13,5 |
| | 100 | 6,6 | 8,3 | 10,6 | 13,3 |
| 80 | 1 | 6,3 | 7,9 | 9,9 | 12,5 |
| | 5 | 6,0 | 7,5 | 9,5 | 12,0 |
| | 10 | 5,8 | 7,4 | 9,3 | 11,8 |
| | 25 | 5,8 | 7,2 | 9,1 | 11,4 |
| | 50 | 5,6 | 7,0 | 8,9 | 11,2 |
| | 100 | 5,4 | 6,8 | 8,7 | 11,0 |
| 95 | 1 | 4,7 | 5,9 | 7,4 | 9,3 |
| | 5 | 4,4 | 5,6 | 7,1 | 8,9 |
| | 10 | 4,3 | 5,5 | 6,9 | 8,8 |

PP-R

| TEMPERATURE °C | SERVICE LIFE, YEARS | PERMISSIBLE OPERATING PRESSURE, BAR (SF=1,5) | | |
|----------------|---------------------|--|------|------|
| | | S | | |
| | | 5 | 3,2 | 2,5 |
| | | SDR | | |
| | | 11 | 7,4 | 6 |
| 10 | 1 | 17,6 | 27,8 | 35,1 |
| | 5 | 16,5 | 26,3 | 33,1 |
| | 10 | 16,1 | 25,6 | 32,2 |
| | 25 | 15,6 | 24,8 | 31,2 |
| | 50 | 15,2 | 24,1 | 30,0 |
| | 100 | 14,8 | 23,5 | 29,6 |
| 20 | 1 | 15,0 | 23,8 | 29,9 |
| | 5 | 14,1 | 22,3 | 28,1 |
| | 10 | 13,7 | 21,8 | 27,3 |
| | 25 | 13,3 | 21,0 | 26,4 |
| | 50 | 12,8 | 20,4 | 25,8 |
| | 100 | 12,5 | 19,9 | 25,1 |
| 30 | 1 | 12,8 | 20,2 | 25,4 |
| | 5 | 11,9 | 18,9 | 23,8 |
| | 10 | 11,6 | 18,4 | 23,2 |
| | 25 | 11,2 | 17,8 | 22,3 |
| | 50 | 10,8 | 17,3 | 21,8 |
| | 100 | 10,6 | 16,8 | 21,2 |
| 40 | 1 | 10,8 | 17,2 | 21,6 |
| | 5 | 10,1 | 16,0 | 20,2 |
| | 10 | 9,8 | 15,6 | 19,6 |
| | 25 | 9,4 | 15,0 | 18,8 |
| | 50 | 9,2 | 14,5 | 18,3 |
| | 100 | 8,9 | 14,1 | 17,8 |
| 50 | 1 | 9,2 | 14,5 | 18,3 |
| | 5 | 8,5 | 13,5 | 17,0 |
| | 10 | 8,3 | 13,1 | 16,5 |
| | 25 | 7,9 | 12,6 | 15,8 |
| | 50 | 7,7 | 12,3 | 15,4 |
| | 100 | 7,5 | 11,8 | 14,9 |
| 60 | 1 | 7,7 | 12,3 | 15,4 |
| | 5 | 7,2 | 11,3 | 14,3 |
| | 10 | 6,9 | 11,0 | 13,8 |
| | 25 | 6,7 | 10,6 | 13,3 |
| | 50 | 6,4 | 10,3 | 12,9 |
| | 100 | 6,2 | 10,0 | 12,6 |
| 70 | 1 | 6,5 | 10,3 | 12,9 |
| | 5 | 6,0 | 9,5 | 12,0 |
| | 10 | 5,8 | 9,3 | 11,6 |
| | 25 | 5,0 | 8,0 | 10,1 |
| | 50 | 4,3 | 6,8 | 8,5 |
| | 100 | 4,0 | 6,4 | 8,1 |
| 80 | 1 | 5,4 | 8,6 | 10,8 |
| | 5 | 4,8 | 7,6 | 9,6 |
| | 10 | 4,0 | 6,4 | 8,1 |
| | 25 | 3,3 | 5,2 | 6,5 |
| | 50 | 3,0 | 4,8 | 6,0 |
| | 100 | 2,8 | 4,4 | 5,6 |
| 95 | 1 | 3,8 | 6,1 | 7,7 |
| | 5 | 2,6 | 4,1 | 5,2 |
| | 10 | 2,2 | 3,4 | 4,3 |

CHARACTERISTICS AND TECHNICAL DATA

- Long durability, thanks to its resistance to environment, IT DOESN'T CORRODE.
- Possibility of damage breaching caused by unpredictable currents
- Small pressure loss because of the smooth surface, which prevents sediments to get caught on the pipe wall, prevents turbulence and friction.
- They don't contain poisonous ingredients and are completely in accordance with standards of the flow for drinking water.
- Great thermal and sound insulator.
- Risk of condensation diminished to minimum, which is the characteristic of metal pipes.
- Energy savings.
- All insertions implemented in fitting are made of MS bar guaranteed chemical composition, which provides waterproofness of the joints.
- Excellent availability for welding. All parts can be connected with welding tool or electric muff.
- Very light, even 9 times lighter than steel which facilitates transportation and handling.

PP-R pipes are used with installations for hot and cold water and sanitary water. They can completely step in place of the zinc pipes for use of the potable water even in cases of high concentration of calcium. They are also used in outflow of the potable liquids, irrigation in gardens, delivery of pressured air, vacuum installations, chemical industry with flow of diverse liquids, also with conduct of sea water and highly abrasive liquids. It is frequently used with radiant heating also with floor heating and air conditioning. Their small weight and high tolerance to vibration are good for appliance in trains, ships, trucks, trailers, in aggressive environment and unstable grounds.

Pipes with glass fibers

Dilatation diminishing can be realized by using composite PP-R and PP-RCT pipes with glass

fibers. They are 3 layer pipes which middle layer has coextruded glass fibers. PESTAN recommends that glass fiber pipes be used for hot potable water and heating applications. Standard PP-R and PP-RCT fittings can be used for joining pipes with glass fibers by welding method.

Installation of PP-R and PP-RCT pipe systems

Process of head-to-head welding of pipes and fittings is very quick and simple. Joint of pipe and fitting is safe and strong, ready for use after couple of minutes.


Drinking water belongs to the best controlled foodstuffs

Home pipe system for supplying sanitary water should not affect the quality of drinking water. The choice of sanitary pipe system and the quality of materials, which is used for their production, it is

therefore of crucial importance. The system of pipes for drinking water of PP-R and PP-RCT is due to its physico-chemical feature environmental friendly and hygienic. The technical suitability of PP-R and PP-RCT is proven around the world for more than 20 years.

Pipe insulation

Pipe insulation is done to prevent dew and heat loss. PP-R pipes have a relatively low coefficient of thermal conductivity (0.24 W/mK), much lower than steel pipe, which allows significant energy savings. According to coefficient thermal conductivity, minimum insulation thickness is prescribed. When transporting cold liquids condensation may be possible ("sweating tube"), and is therefore desirable to insulate the pipe. Dew happens because of the differences between temperatures of transported fluid and ambient temperature.



Pipes made by Peštan are easy to handle. They weigh up to 80% less than other metal pipes making them easy to position, unpack, ship or assemble.

INSTALLER BENEFITS

Air testing convenient

With their remarkable characteristics, pipes made by Peštan successfully undergo the pressure test. Beside air pressure, the system can be tested using water air or water mix. Being very convenient, PEŠTAN pipes save time and prevent possible mess in case of a leak during the test.

Long-lasting material

PP-R and PP-RCT is both chemically and physically durable material which proves to be unbreakable in cases of incidental damage.

Compatible piping system

Due to the great compatibility of pipes made by Peštan which provides a wide range of edge connections and most advanced PP-R and PP-RCT, connecting systems and equipment are easily and quickly installed on safe way.

Time-saving fusion

Pipes and fittings made by Peštan are assembled with heat fusion and, as mentioned earlier, heat fusion is a process used to join pipes and fittings together by heating the materials and inserting them together which results in a perfect bond every time. It can save up to 50% of labor time compared to traditional welding and soldering.

Inflexible hanging pipe

Inflexible and rigid on their hangers, pipes made by Peštan appear to be clean and conventional with elbows and tees. That is why an installer can assemble more pipes while the final product is left to a craftsman.

Consistent outcomes

Using of PP-R and PP-RCT and heat fusion resulted in consistency and reliability of the piping system. The whole system can work without a single leak anywhere.

Expansion control

There is no need for additional expansion control since linear expansion is reduced by the fiber layer. The pipe itself absorbs its own stresses when fixed or buried so the expansion loops can be in use for longer period of time.

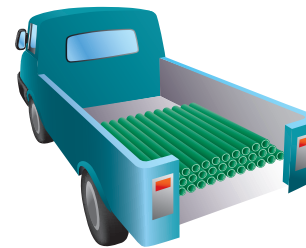
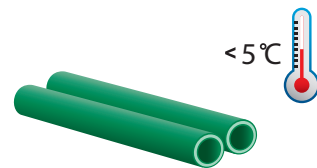
Flexible bonds and extent

Heat fusion bonds share the same properties with the pipes and fittings. This means that an assembled pipe is flexible enough to be prefabricated and moved without risking joints to crack or leak. Such an advantage also contributes to pipe protection from seismic activity but also gives the pipes even wider field of application.

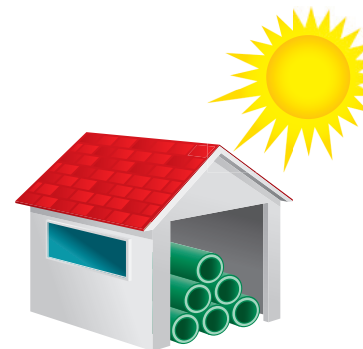
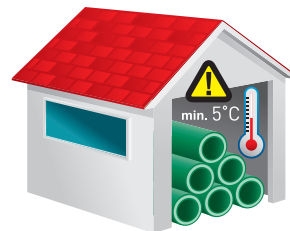
TRANSPORT AND STORAGE

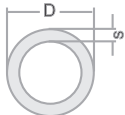

When storing PP-R pipes, make sure that they are separate from areas where solvents, adhesives, paint and similar products.



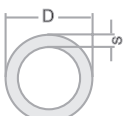

If the area where the tube occupied by moderate heating to 50 °C, it is necessary that the distance between the tube and the heating body, of at least 1 m. Storage should be chosen so that the pipe is always placed against it over the entire surface. One should avoid bending in storage and in transit. During transport pipes are not allowed to lay on the flat, truck or deck. Also, the pipes must be protected from mechanical damage and provided in a way that they are not exposed to dirt, solvents or direct heat.

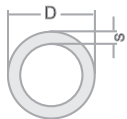



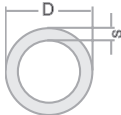

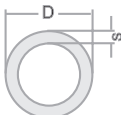

- Fluidtherm tubes can be stored at a temperature of at least 50 °C.
- PP-R pipes should be protected from direct UV radiation
- Storage PP-R pipe
- Pipes at low temperatures become fragile
- Right and wrong transporting PP-R pipe

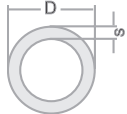



| ITEM DESCRIPTION | PICTURE | SDR | CODE | | | OD, MM | S, MM | DINN, MM |
|---|---------|-------------------|----------|-------|------|--------|-------|----------|
| FLUIDTHERM PPR PIPE (PP-R) | | | GREEN | WHITE | GRAY | | | |
|   | | EN 15874 | | | | | | |
| | | SDR 6 [PN25] | 10000220 | | | 16 | 2,7 | 10,6 |
| | | | 10000230 | | | 20 | 3,4 | 13,2 |
| | | | 10000240 | | | 25 | 4,2 | 16,6 |
| | | | 10000250 | | | 32 | 5,4 | 21,2 |
| | | | 10000260 | | | 40 | 6,7 | 26,6 |
| | | | 10000270 | | | 50 | 8,3 | 33,4 |
| | | | 10000280 | | | 63 | 10,5 | 42 |
| | | | 10000290 | | | 75 | 12,5 | 50 |
| | | | 10000300 | | | 90 | 15 | 60 |
| | | | 10000310 | | | 110 | 18,3 | 73,4 |
| | | | 10000315 | | | 125 | 20,8 | 83,4 |
| | | | | | | 160 | 26,6 | 106,8 |
| | | DIN 8077 | | | | | | |
| | | SDR 6 [PN25] | | | | 200 | 33,2 | 133,6 |
| | | EN 15874 | | | | | | |
| | | SDR 7,4 [PN20] | 10000120 | | | 16 | 2,2 | 11,6 |
| | | | 10000130 | | | 20 | 2,8 | 14,4 |
| | | | 10000140 | | | 25 | 3,5 | 18 |
| | | | 10000150 | | | 32 | 4,4 | 23,2 |
| | | | 10000160 | | | 40 | 5,5 | 29 |
| | | | 10000170 | | | 50 | 6,9 | 36,2 |
| | | | 10000180 | | | 63 | 8,6 | 45,8 |
| | | | 10000190 | | | 75 | 10,3 | 54,4 |
| | | | 10000200 | | | 90 | 12,3 | 65,4 |
| | | | 10000210 | | | 110 | 15,1 | 79,8 |
| | | | 10000215 | | | 125 | 17,1 | 90,8 |
| | | | | | | 160 | 21,9 | 106,8 |
| | | DIN 8077 | | | | | | |
| | | SDR 7,4 [PN20] | | | | 200 | 27,4 | 133,6 |
| | | | | | | 250 | 34,2 | 181,6 |
| | | DIN 8077 | | | | | | |
| | | SDR 9 [PN16] | | | | 200 | 22,4 | 155,2 |
| | | | | | | 250 | 27,9 | 194,2 |
| | | | | | | 315 | 35,2 | 244,6 |
| | | | | | | 355 | 39,7 | 275,6 |
| | | EN 15874 | | | | | | |

| ITEM DESCRIPTION | PICTURE | SDR | CODE | | | OD, MM | S, MM | DINN, MM |
|---|---------|--------------------|----------|-------|------|--------|-------|----------|
| FLUIDTHERM PPR PIPE (PP-R)   | | SDR 11 [PN10] | GREEN | WHITE | GRAY | | | |
| | | | 10000020 | | | 16 | 1,8 | 12,4 |
| | | | 10000030 | | | 20 | 1,9 | 16,2 |
| | | | 10000040 | | | 25 | 2,3 | 20,4 |
| | | | 10000050 | | | 32 | 2,9 | 26,2 |
| | | | 10000060 | | | 40 | 3,7 | 32,6 |
| | | | 10000070 | | | 50 | 4,6 | 40,8 |
| | | | 10000080 | | | 63 | 5,8 | 51,4 |
| | | | 10000090 | | | 75 | 6,8 | 61,4 |
| | | | 10000100 | | | 90 | 8,2 | 73,6 |
| | | | 10000110 | | | 110 | 10 | 90 |
| | | | 10000115 | | | 125 | 11,4 | 102,2 |
| | | | | | | 160 | 14,6 | 126,8 |
| | | DIN 8077 | | | | | | |
| | | | | | | 200 | 18,2 | 163,6 |
| | | | | | | 250 | 22,7 | 204,6 |
| | | SDR 11 [PN12,5] | | | | 315 | 28,6 | 257,8 |
| | | | | | | 355 | 32,2 | 290,6 |
| | | | | | | 400 | 36,3 | 327,4 |
| | | DIN 8077 | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | SDR 17,6 [PN6] | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| FLUIDTHERM PPR PIPE (PP-R / PP-R FG / PP-R)   | | EN 15874 | GREEN | WHITE | GRAY | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
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| | | | | | | | | |
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| | | | | | | | | |
| | | | | | | | | |
| | | SDR 6 [PN 25] | | | | | | |



| ITEM DESCRIPTION | PICTURE | SDR | CODE | | | OD, MM | S, MM | DINN, MM |
|---|---------|--------------------|-------|-------|------|--------|-------|----------|
| FLUIDTHERM PPR PIPE (PP-R / PP-R FG / PP-R) | | | GREEN | WHITE | GRAY | | | |
|   | | EN 15874 | | | | 125 | 20.8 | 83.4 |
| | | | | | | 160 | 26.6 | 106.8 |
| | | SDR 6 [PN25] | | | | | | |
| | | | | | | | | |
| | | DIN 8077 | | | | 200 | 33.2 | 133.6 |
| | | | | | | | | |
| | | SDR 6 [PN 25] | | | | | | |
| | | | | | | | | |
| | | EN 15874 | | | | 16 | 2.2 | 11.6 |
| | | | | | | 20 | 2.8 | 14.4 |
| | | SDR 7,4 [PN 20] | | | | 25 | 3.5 | 18 |
| | | | | | | 32 | 4.4 | 23.2 |
| | | | | | | 40 | 5.5 | 29 |
| | | | | | | 50 | 6.9 | 36.2 |
| | | | | | | 63 | 8.6 | 45.8 |
| | | | | | | 75 | 10.3 | 54.4 |
| | | | | | | 90 | 12.3 | 65.4 |
| | | | | | | 110 | 15.1 | 79.8 |
| | | | | | | 125 | 17.1 | 90.8 |
| | | | | | | 160 | 21.9 | 116.2 |
| | | DIN 8077 | | | | 200 | 27.4 | 133.6 |
| | | | | | | 250 | 34.2 | 181.6 |
| | | DIN 8077 | | | | 200 | 22.4 | 155.2 |
| | | | | | | 250 | 27.9 | 194.2 |
| | | | | | | 315 | 35.2 | 244.6 |
| | | | | | | 355 | 39.7 | 275.6 |
| | | | | | | | | |

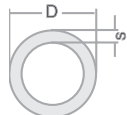

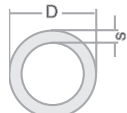

| ITEM DESCRIPTION | PICTURE | SDR | CODE | | | OD, MM | S, MM | DINN, MM | |
|---|---------|---------------------|-------|-------|------|--------|-------|----------|-------|
| FLUIDTHERM PPR PIPE (PP-R / PP-R FG / PP-R) | | | GREEN | WHITE | GRAY | | | | |
|   | | EN 15874 | | | | 16 | 1.8 | 12.4 | |
| | | | | | | 20 | 1.9 | 16.2 | |
| | | | | | | | 25 | 2.3 | 20.4 |
| | | | | | | | 32 | 2.9 | 26.2 |
| | | | | | | | 40 | 3.7 | 32.6 |
| | | SDR 11 [PN 10] | | | | | 50 | 4.6 | 40.8 |
| | | | | | | | 63 | 5.8 | 51.4 |
| | | | | | | | 75 | 6.8 | 61.4 |
| | | | | | | | 90 | 8.2 | 73.6 |
| | | | | | | | 110 | 10 | 90 |
| | | | | | | | 125 | 11.4 | 102.2 |
| | | | | | | | 160 | 14.6 | 126.8 |
| | | DIN 8077 | | | | | | | |
| | | SDR 11 [PN 12,5] | | | | | 200 | 18.2 | 163.6 |
| | | | | | | | 250 | 22.7 | 204.6 |
| | | | | | | | 315 | 28.6 | 257.8 |
| | | | | | | | 355 | 32.2 | 290.6 |
| | | | | | | | 400 | 36.3 | 327.4 |
| | | DIN 8077 | | | | | | | |
| | | SDR 17,6 [PN 6] | | | | | 200 | 11.4 | 177.2 |
| | | | | | | | 250 | 14.2 | 221.2 |
| | | | | | | | 315 | 17.9 | 279.2 |
| | | | | | | | 355 | 20.1 | 314.8 |
| | | | | | | | 400 | 22.7 | 354.6 |
| | | | | | | | 500 | 28.4 | 443.2 |
| | | | | | | | 630 | 35.7 | 558.6 |
| FLUIDTHERM PPR PIPE (PP-R / PP-R FG / PP-R) | | | GREEN | WHITE | GRAY | | | | |
|   | | EN 15874 | | | | | | | |
| | | | | | | | | | |
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| | | SDR 6 [PN 25] | | | | | | | |
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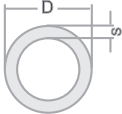

| ITEM DESCRIPTION | PICTURE | SDR | CODE | | | OD, MM | S, MM | DINN, MM |
|---|---------|-------------------|-------|-------|------|--------|-------|----------|
| FLUIDTHERM PPR PIPE (PP-R / PP-R FG / PP-R) | | | GREEN | WHITE | GRAY | | | |
|   | | EN 15874 | | | | 125 | 20.8 | 83.4 |
| | | SDR 6 [PN25] | | | | 160 | 26.6 | 106.8 |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | DIN 8077 | | | | | | |
| | | SDR 6 [PN 25] | | | | 200 | 33.2 | 133.6 |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | EN 15874 | | | | | | |
| | | SDR 7,4 [PN 20] | | | | 16 | 2.2 | 10.6 |
| | | | | | | 20 | 2.8 | 13.2 |
| | | | | | | 25 | 3.5 | 16.6 |
| | | | | | | 32 | 4.4 | 21.2 |
| | | | | | | 40 | 5.5 | 26.6 |
| | | | | | | 50 | 6.9 | 33.4 |
| | | | | | | 63 | 8.6 | 42 |
| | | | | | | 75 | 10.3 | 50 |
| | | | | | | 90 | 12.3 | 60 |
| | | | | | | 110 | 15.1 | 73.4 |
| | | | | | | 125 | 17.1 | 83.4 |
| | | | | | | 160 | 21.9 | 106.8 |
| | | DIN 8077 | | | | | | |
| | | SDR 7.4 [PN20] | | | | 200 | 27.4 | 133.6 |
| | | | | | | 250 | 34.2 | 181.6 |
| | | DIN 8077 | | | | | | |
| | | SDR 7.4 [PN20] | | | | 200 | 22.4 | 155.2 |
| | | | | | | 250 | 27.9 | 194.2 |
| | | | | | | 315 | 35.2 | 244.6 |
| | | | | | | 355 | 39.7 | 275.6 |

| ITEM DESCRIPTION | PICTURE | SDR | CODE | | | OD, MM | S, MM | DINN, MM |
|---|---------|---------------------|----------|-------|------|--------|-------|----------|
| FLUIDTHERM PPR PIPE (PP-R / PP-R FG / PP-R) | | | GREEN | WHITE | GRAY | | | |
|   | | EN 15874 | | | | | | |
| | | SDR 11 [PN 10] | | | | 16 | 1.8 | 12.4 |
| | | | | | | 20 | 1.9 | 16.2 |
| | | | | | | 25 | 2.3 | 20.4 |
| | | | | | | 32 | 2.9 | 26.2 |
| | | | | | | 40 | 3.7 | 32.6 |
| | | | | | | 50 | 4.6 | 40.8 |
| | | | | | | 63 | 5.8 | 51.4 |
| | | | | | | 75 | 6.8 | 61.4 |
| | | | | | | 90 | 8.2 | 73.6 |
| | | | | | | 110 | 10 | 90 |
| | | SDR 11 [PN 12,5] | | | | 125 | 11.4 | 102.2 |
| | | | | | | 160 | 14.6 | 126.8 |
| | | | DIN 8077 | | | | | |
| | | | | | | 200 | 18.2 | 163.6 |
| | | | | | | 250 | 22.7 | 204.6 |
| | | | | | | 315 | 28.6 | 257.8 |
| | | | | | | 355 | 32.2 | 290.6 |
| | | | | | | 400 | 36.3 | 327.4 |
| | | SDR 17,6 [PN 6] | DIN 8077 | | | | | |
| | | | | | | 200 | 11.4 | 177.2 |
| | | | | | | 250 | 14.2 | 221.2 |
| | | | | | | 315 | 17.9 | 279.2 |
| | | | | | | 355 | 20.1 | 314.8 |
| | | | | | | 400 | 22.7 | 354.6 |
| | | | | | | 500 | 28.4 | 443.2 |
| | | | | | | 630 | 35.7 | 558.6 |

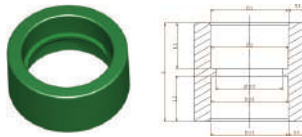

| ITEM DESCRIPTION | PICTURE | SDR | CODE | | | OD, MM | S, MM | DINN, MM |
|---|---------|-------------------|-------|-------|------|--------|-------|----------|
| FLUIDTHERM PPR PIPE (PP-R/AL/PP-R) | | | GREEN | WHITE | GRAY | | | |
|   | | EN 15874 | | | | | | |
| | | SDR 6 PN [20] | | | | 20 | 2.8 | 14.4 |
| | | | | | | 25 | 4.2 | 16.6 |
| | | | | | | 32 | 5.4 | 21.2 |
| | | | | | | 40 | 6.7 | 26.6 |
| | | | | | | 50 | 8.3 | 33.4 |
| | | | | | | 63 | 10.5 | 42 |
| | | EN 15874 | | | | | | |
| | | SDR 7,4 [PN16] | | | | 25 | 3.5 | 18 |
| | | | | | | 32 | 4.4 | 23.2 |
| | | | | | | 40 | 5.5 | 29 |
| | | | | | | 50 | 6.9 | 36.2 |
| | | | | | | 63 | 8.6 | 45.8 |
| | | EN 15874 | | | | | | |
| | | SDR 11 [PN10] | | | | 20 | 1.9 | 16.2 |
| | | | | | | 25 | 2.3 | 20.4 |
| | | | | | | 32 | 2.9 | 26.2 |
| | | | | | | 40 | 3.7 | 32.6 |
| | | | | | | 50 | 4.6 | 40.8 |
| | | | | | | 63 | 5.8 | 51.4 |


| ITEM DESCRIPTION | PICTURE | SDR | CODE | | | OD, MM | S, MM | DINN, MM |
|---|---------|-----------------|-------|-------|------|--------|-------|----------|
| FLUIDTHERM PPR PIPE (PP - RCT) | | | GREEN | WHITE | GRAY | | | |
|   | | EN 15874 | | | | 20 | 3.4 | 13.2 |
| | | | | | | 25 | 4.2 | 16.6 |
| | | | | | | 32 | 5.4 | 21.2 |
| | | | | | | 40 | 6.7 | 26.6 |
| | | | | | | 50 | 8.3 | 33.4 |
| | | | | | | 63 | 10.5 | 42 |
| | | | | | | 75 | 12.5 | 50 |
| | | | | | | 90 | 15 | 60 |
| | | | | | | 110 | 18.3 | 73.4 |
| | | | | | | 125 | 20.8 | 83.4 |
| | | | | | | 160 | 26.6 | 106.8 |
| | | DIN 8077 | | | | 200 | 33.2 | 133.6 |
| | | | | | | | | |
| | | EN 15874 | | | | 20 | 2.8 | 13.2 |
| | | | | | | 25 | 3.5 | 16.6 |
| | | | | | | 32 | 4.4 | 21.2 |
| | | | | | | 40 | 5.5 | 26.6 |
| | | | | | | 50 | 6.9 | 33.4 |
| | | | | | | 63 | 8.6 | 42 |
| | | | | | | 75 | 10.3 | 50 |
| | | | | | | 90 | 12.3 | 60 |
| | | | | | | 110 | 15.1 | 73.4 |
| | | | | | | 125 | 17.1 | 83.4 |
| | | | | | | 160 | 21.9 | 106.8 |
| | | DIN 8077 | | | | 200 | 27.4 | 133.6 |
| | | | | | | 250 | 34.2 | 181.6 |
| | | EN 15874 | | | | 20 | 2.3 | 15.4 |
| | | | | | | 25 | 2.8 | 19.4 |
| | | | | | | 32 | 3.6 | 24.8 |
| | | | | | | 40 | 4.4 | 31.2 |
| | | | | | | 50 | 5.6 | 38.8 |
| | | | | | | 63 | 7.1 | 48.8 |
| | | | | | | 75 | 8.4 | 58.2 |
| | | | | | | 90 | 10.1 | 69.8 |
| | | | | | | 110 | 12.3 | 85.4 |
| | | | | | | 125 | 14 | 97 |
| | | | | | | 160 | 17.9 | 124.2 |
| | | DIN 8077 | | | | 200 | 22.4 | 155.2 |
| | | | | | | 250 | 27.9 | 194.2 |
| | | | | | | 315 | 35.2 | 244.6 |
| | | | | | | 355 | 39.7 | 275.6 |

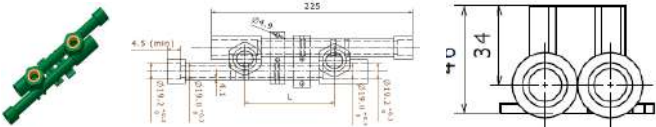
| ITEM DESCRIPTION | PICTURE | SDR | CODE | | | OD, MM | S, MM | DINN, MM | | |
|---|---------|---------------------|-------|-------|------|--------|-------|----------|-------|-------|
| FLUIDTHERM PPR PIPE (PP - RCT) | | | GREEN | WHITE | GRAY | | | | | |
|   | | EN 15874 | | | | 20 | 1.9 | 16.2 | | |
| | | | | | | 25 | 2.3 | 20.4 | | |
| | | | | | | | 32 | 2.9 | 26.2 | |
| | | | | | | | 40 | 3.7 | 32.6 | |
| | | | | | | | 50 | 4.6 | 40.8 | |
| | | SDR 11 [PN 10] | | | | | 63 | 5.8 | 51.4 | |
| | | | | | | | | 75 | 6.8 | 61.4 |
| | | | | | | | | 90 | 8.2 | 73.6 |
| | | | | | | | | 110 | 10 | 90 |
| | | | | | | | | 125 | 11.4 | 102.2 |
| | | | | | | | | 160 | 14.6 | 126.8 |
| | | DIN 8077 | | | | | | | | |
| | | SDR 11 [PN 12,5] | | | | | 200 | 18.2 | 163.6 | |
| | | | | | | | | 250 | 22.7 | 204.6 |
| | | | | | | | | 315 | 28.6 | 257.8 |
| | | | | | | | | 355 | 32.2 | 290.6 |
| | | | | | | | | 400 | 36.3 | 327.4 |
| | | DIN 8077 | | | | | | | | |
| | | SDR 17,6 [PN 8] | | | | | 200 | 11.4 | 163.6 | |
| | | | | | | | | 250 | 14.2 | 204.6 |
| | | | | | | | | 315 | 17.9 | 257.8 |
| | | | | | | | | 355 | 20.1 | 290.6 |
| | | | | | | | | 400 | 22.7 | 327.4 |
| | | | | | | | | 500 | 28.4 | 443.2 |
| | | | | | | | | 630 | 35.7 | 558.6 |
| FLUIDTHERM PPR PIPE (PP - RCT / PP - RCT - FG / PP - RCT) | | | GREEN | WHITE | GRAY | | | | | |
|   | | EN 15874 | | | | 20 | 3.4 | 13.2 | | |
| | | | | | | | 25 | 4.2 | 16.6 | |
| | | | | | | | 32 | 5.4 | 21.2 | |
| | | | | | | | 40 | 6.7 | 26.6 | |
| | | | | | | | 50 | 8.3 | 33.4 | |
| | | SDR 6 [PN 25] | | | | | 63 | 10.5 | 42 | |
| | | | | | | | | 75 | 12.5 | 50 |
| | | | | | | | | 90 | 15 | 60 |
| | | | | | | | | 110 | 18.3 | 73.4 |
| | | | | | | | | 125 | 20.8 | 83.4 |
| | | | | | | | | 160 | 26.6 | 106.8 |
| | | | | | | | | | | |
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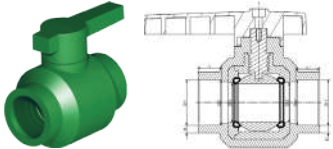
| ITEM DESCRIPTION | PICTURE | SDR | CODE | | | OD, MM | S, MM | DINN, MM |
|---|---------|--------------------|-------|-------|------|--------|-------|----------|
| FLUIDTHERM PPR PIPE (PP-RCT / PP-RCT-FG / PP-RCT) | | | GREEN | WHITE | GRAY | | | |
|   | | DIN 8077 | | | | 200 | 33.2 | 133.6 |
| | | SDR 6 [PN 25] | | | | | | |
| | | EN 15874 | | | | 20 | 2.8 | 13.2 |
| | | | | | | 25 | 3.5 | 16.6 |
| | | | | | | 32 | 4.4 | 21.2 |
| | | | | | | 40 | 5.5 | 26.6 |
| | | | | | | 50 | 6.9 | 33.4 |
| | | | | | | 63 | 8.6 | 42 |
| | | SDR 7,4 [PN 20] | | | | 75 | 10.3 | 50 |
| | | | | | | 90 | 12.3 | 60 |
| | | | | | | 110 | 15.1 | 73.4 |
| | | | | | | 125 | 17.1 | 83.4 |
| | | | | | | 160 | 21.9 | 106.8 |
| | | DIN 8077 | | | | 200 | 27.4 | 133.6 |
| | | SDR 7,4 [PN 20] | | | | 250 | 34.2 | 181.6 |
| | | EN 15874 | | | | 20 | 2.3 | 15.4 |
| | | | | | | 25 | 2.8 | 19.4 |
| | | | | | | 32 | 3.6 | 24.8 |
| | | | | | | 40 | 4.4 | 31.2 |
| | | | | | | 50 | 5.6 | 38.8 |
| | | SDR 9 [PN 16] | | | | 63 | 7.1 | 48.8 |
| | | | | | | 75 | 8.4 | 58.2 |
| | | | | | | 90 | 10.1 | 69.8 |
| | | | | | | 110 | 12.3 | 85.4 |
| | | | | | | 125 | 14 | 97 |
| | | | | | | 160 | 17.9 | 124.2 |
| | | DIN 8077 | | | | 200 | 22.4 | 155.2 |
| | | | | | | 250 | 27.9 | 194.2 |
| | | SDR 9 [PN 16] | | | | 315 | 35.2 | 244.6 |
| | | | | | | 355 | 39.7 | 275.6 |

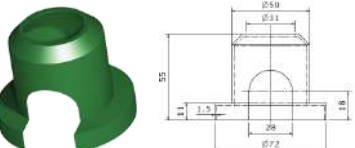
| ITEM DESCRIPTION | PICTURE | SDR | CODE | | | OD, MM | S, MM | DINN, MM |
|---|---------------------|----------|-------|-------|------|--------|-------|----------|
| FLUIDTHERM PPR PIPE (PP - RCT / PP - RCT - FG / PP - RCT) | | | GREEN | WHITE | GRAY | | | |
|   | | EN 15874 | | | | 20 | 1.9 | 16.2 |
| | | | | | | 25 | 2.3 | 20.4 |
| | | | | | | 32 | 2.9 | 26.2 |
| | | | | | | 40 | 3.7 | 32.6 |
| | | | | | | 50 | 4.6 | 40.8 |
| | SDR 11 [PN 10] | | | | | 63 | 5.8 | 51.4 |
| | | | | | | 75 | 6.8 | 61.4 |
| | | | | | | 90 | 8.2 | 73.6 |
| | | | | | | 110 | 10 | 90 |
| | | | | | | 125 | 11.4 | 102.2 |
| | | | | | | 160 | 14.6 | 126.8 |
| | | | | | | | | |
| | DIN 8077 | | | | | | | |
| | SDR 11 [PN 12.5] | | | | | 200 | 18.2 | 163.6 |
| | | | | | | 250 | 22.7 | 204.6 |
| | | | | | | 315 | 28.6 | 257.8 |
| | | | | | | 355 | 32.2 | 290.6 |
| | | | | | | 400 | 36.3 | 327.4 |
| | | | | | | | | |
| | DIN 8077 | | | | | | | |
| | SDR 17,6 [PN 8] | | | | | 200 | 11.4 | 163.6 |
| | | | | | | 250 | 14.2 | 204.6 |
| | | | | | | 315 | 17.9 | 257.8 |
| | | | | | | 355 | 20.1 | 290.6 |
| | | | | | | 400 | 22.7 | 327.4 |
| | | | | | | 500 | 28.4 | 443.2 |
| | | | | | | 630 | 35.7 | 558.6 |

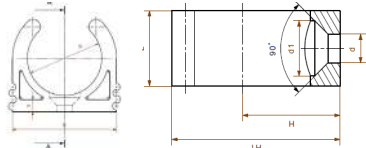
| ITEM DESCRIPTION | PICTURE | CODE | | | DN | | e | D ₁ | D ₂ | D ₃ - D ₃₃ | L ₁ | L ₂ | Weight | |
|---|---------|----------|----------|----------|-------|-----------------------|-----------------------|---------------------------------|----------------------------------|----------------------------------|----------------|---------------------------------|--------|--------|
| PPR SOCKET | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [kg] | |
|  | | 10001600 | 10011600 | 10021600 | ½" | 16 | 3.3 | 15.2 ^{+0.3} | 15.1 ^{+0.3} | 11.2 | 37 | 13.3 | | |
| | | 10001601 | 10011601 | 10021601 | ½" | 20 | 4.1 | 19.2 ^{+0.3} | 19.0 ^{+0.3} | 15.2 | 36 | 14.5 | 0.009 | |
| | | 10001602 | 10011602 | 10021602 | ¾" | 25 | 5.1 | 24.2 ^{+0.3} | 23.9 ^{+0.4} | 19.4 | 40 | 16 | 0.016 | |
| | | 10001603 | 10011603 | 10021603 | 1" | 32 | 6.5 | 31.1 ^{+0.4} | 30.9 ^{+0.4} | 25.0 | 41 | 18.1 | 0.029 | |
| | | 10001604 | 10011604 | 10021604 | 1½" | 40 | 8.1 | 39.0 ^{+0.4} | 38.8 ^{+0.4} | 31.4 | 48 | 20.5 | 0.057 | |
| | | 10001605 | 10011605 | 10021605 | 1½" | 50 | 10.1 | 48.9 ^{+0.5} | 48.7 ^{+0.5} | 39.4 | 56 | 23.5 | 0.087 | |
| | | 10001606 | 10011606 | 10021606 | 2" | 63 | 12.7 | 61.9 ^{+0.6} | 61.6 ^{+0.5} | 49.8 | 63 | 27.4 | 0.168 | |
| | | 10001607 | 10011607 | 10021607 | 2½" | 75 | 15.1 | 74.3 ^{+0.6} | 73.1 ^{+0.6} | 59.4 | 67 | 31 | 0.201 | |
| | | 10001608 | 10011608 | 10021608 | 3" | 90 | 18.1 | 89.3 ^{+0.6} | 87.9 ^{+0.6} | 71.6 | 75 | 35.5 | 0.325 | |
| | | 10001609 | 10011609 | 10021609 | 4" | 110 | 22.1 | 109.4 ^{+0.6} | 107.7 ^{+0.6} | 87.6 | 88 | 41.5 | 0.610 | |
| 10001210 | | | 4½" | 125 | 25.1 | 124.6 ^{+0.4} | 123.0 ^{+2.0} | 99.7 | 100 | 46.5 | 0.880 | | | |
| ELBOW 45° | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [kg] | |
|  | | 10001000 | 10011000 | 10021000 | ½" | 20 | 4.1 | 19.2 ^{+0.3} | 19.0 ^{+0.3} | 15.2 | 35.2 | 14.5 | 0.012 | |
| | | 10001001 | 10011001 | 10021001 | ¾" | 25 | 5.1 | 24.2 ^{+0.3} | 23.9 ^{+0.4} | 19.4 | 39.5 | 16 | 0.020 | |
| | | 10001002 | 10011002 | 10021002 | 1" | 32 | 6.5 | 31.1 ^{+0.4} | 30.9 ^{+0.4} | 25.0 | 46.5 | 18.1 | 0.037 | |
| | | 10001003 | 10011003 | 10021003 | 1¼" | 40 | 8.1 | 39.0 ^{+0.4} | 38.8 ^{+0.4} | 31.4 | 54 | 20.5 | 0.079 | |
| | | 10001004 | 10011004 | 10021004 | 1½" | 50 | 10.1 | 48.9 ^{+0.5} | 48.7 ^{+0.5} | 39.4 | 62.4 | 23.5 | 0.116 | |
| | | 10001005 | 10011005 | 10021005 | 2" | 63 | 12.7 | 61.9 ^{+0.6} | 61.6 ^{+0.5} | 49.8 | 71.4 | 27.4 | 0.206 | |
| | | 10001006 | 10011006 | 10021006 | 2½" | 75 | 15.1 | 74.3 ^{+0.6} | 73.1 ^{+0.6} | 59.4 | 81.4 | 30 | 0.336 | |
| | | 10001007 | 10011007 | 10021007 | 3" | 90 | 18.1 | 89.3 ^{+0.6} | 87.9 ^{+0.6} | 71.6 | 92.5 | 33 | 0.554 | |
| | | 10001009 | | | 4½" | 125 | 25.0 | 123.9 ^{+1.2} | 124.6 ^{+0.4} | 99.7 | 127 | 40 | 1.386 | |
| | | TEE | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] |
|  | | 10001900 | 10011900 | 10021900 | ½" | 20 | 4.1 | 19.2 ^{+0.3} | 19.0 ^{+0.3} | 15.2 | 54 | 14.5 | 0.019 | |
| | | 10001901 | 10011901 | 10021901 | ¾" | 25 | 5.1 | 24.2 ^{+0.3} | 23.9 ^{+0.4} | 19.4 | 62 | 16 | 0.031 | |
| | | 10001902 | 10011902 | 10021902 | 1" | 32 | 6.5 | 31.1 ^{+0.4} | 30.9 ^{+0.4} | 25.0 | 75 | 18.1 | 0.066 | |
| | | 10001903 | 10011903 | 10021903 | 1¼" | 40 | 8.1 | 39.0 ^{+0.4} | 38.8 ^{+0.4} | 31.4 | 86 | 20.5 | 0.111 | |
| | | 10001904 | 10011904 | 10021904 | 1½" | 50 | 10.1 | 48.9 ^{+0.5} | 48.7 ^{+0.5} | 39.4 | 100 | 23.5 | 0.188 | |
| | | 10001905 | 10011905 | 10021905 | 2" | 63 | 12.7 | 61.9 ^{+0.6} | 61.6 ^{+0.5} | 49.8 | 126 | 27.4 | 0.324 | |
| | | 10001906 | 10011906 | 10021906 | 2½" | 75 | 15.1 | 74.3 ^{+0.6} | 73.1 ^{+0.6} | 59.4 | 138 | 31 | 0.540 | |
| | | 10001907 | 10011907 | 10021907 | 3" | 90 | 18.1 | 89.3 ^{+0.6} | 87.9 ^{+0.6} | 71.6 | 162 | 35.5 | 0.905 | |
| | | 10001908 | 10011908 | 10021908 | 4" | 110 | 22.1 | 109.4 ^{+0.6} | 107.7 ^{+0.6} | 87.6 | 196 | 41.5 | 2.283 | |
| | | 10001810 | | | 4½" | 125 | 25.0 | 123.9 ^{+1.2} | 123.5 ^{+1.2} | 99.7 | 208 | 46.5 | | |
| ITEM DESCRIPTION | PICTURE | CODE | | | DN | | S | S ₁ - S ₂ | D ₁ - D ₁₁ | D ₂ - D ₂₂ | L | L ₁ - L ₂ | H | Weight |
| BRIDGE (MOULDING) | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [kg] |
|  | | 10003050 | 10013050 | 10023050 | ½" | 20 | 3.4 ^{+0.5} | 4.1 | 19.2 ^{+0.3} | 19.0 ^{+0.3} | 158 | 14.5 | 24 | 0.033 |
| | | 10003051 | 10013051 | 10023051 | ¾" | 25 | 4.2 ^{+0.6} | 5.1 | 24.2 ^{+0.3} | 23.9 ^{+0.4} | 199 | 16 | 33 | 0.055 |
| | | 10003052 | 10013052 | 10023052 | 1" | 32 | 5.4 ^{+0.7} | 6.5 | 31.1 ^{+0.4} | 30.9 ^{+0.4} | 250 | 18.1 | 40 | 0.112 |

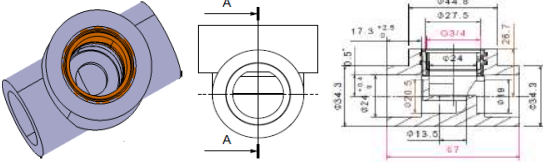
| ITEM DESCRIPTION | PICTURE | CODE | | | DN | | S ₁ | S ₂ | D ₁ | D ₂ | D ₃ | D ₁₁ | D ₂₂ | D ₃₃ | L | L ₁ | L ₂ | Weight |
|---|---------|----------|----------|----------|-----------------|----------------|----------------|----------------|-----------------------|-----------------------|----------------|----------------------|----------------------|-----------------|------|----------------|----------------|--------|
| TEE REDUCED | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [kg] |
|  | | 10002000 | 10012000 | 10022000 | ½" x ½" x ¾" | 20 x 20 x 25 | 4.1 | 5.1 | 19.2 ^{+0.3} | 19.0 ^{+0.3} | 15.2 | 24.2 ^{+0.3} | 23.9 ^{+0.4} | 19.4 | 63 | 14.5 | 16 | 0.027 |
| | | 10002005 | 10012005 | 10022005 | ¾" x ¾" x 1½" | 25 x 25 x 20 | 5.1 | 4.1 | 24.2 ^{+0.3} | 23.9 ^{+0.4} | 19.4 | 19.2 ^{+0.3} | 19.0 ^{+0.3} | 15.2 | 63 | 16 | 14.5 | 0.040 |
| | | 10002010 | 10012010 | 10022010 | 1" x 1" x 1½" | 32 x 32 x 20 | 6.5 | 4.1 | 31.1 ^{+0.4} | 30.9 ^{+0.4} | 25.0 | 19.2 ^{+0.3} | 19.0 ^{+0.3} | 15.2 | 74 | 18.1 | 14.5 | 0.048 |
| | | 10002011 | 10012011 | 10022011 | 1" x 1" x ¾" | 32 x 32 x 25 | 6.5 | 5.1 | 31.1 ^{+0.4} | 30.9 ^{+0.4} | 25.0 | 24.2 ^{+0.3} | 23.9 ^{+0.4} | 19.4 | 74 | 18.1 | 16 | 0.056 |
| | | 10002020 | 10012020 | 10022020 | 1¼" x 1¼" x ½" | 40 x 40 x 20 | 8.1 | 4.1 | 39.0 ^{+0.4} | 38.8 ^{+0.4} | 31.4 | 19.2 ^{+0.3} | 19.0 ^{+0.3} | 15.2 | 87 | 20.5 | 14.5 | 0.077 |
| | | 10002021 | 10012021 | 10022021 | 1¼" x 1¼" x ¾" | 40 x 40 x 25 | 8.1 | 5.1 | 39.0 ^{+0.4} | 38.8 ^{+0.4} | 31.4 | 24.2 ^{+0.3} | 23.9 ^{+0.4} | 19.4 | 87 | 20.5 | 16 | 0.086 |
| | | 10002022 | 10012022 | 10022022 | 1¼" x 1¼" x 1" | 40 x 40 x 32 | 8.1 | 6.5 | 39.0 ^{+0.4} | 38.8 ^{+0.4} | 31.4 | 31.1 ^{+0.4} | 30.9 ^{+0.4} | 25.0 | 76 | 20.5 | 18.1 | 0.097 |
| | | 10002030 | 10012030 | 10022030 | 1½" x 1½" x ½" | 50 x 50 x 20 | 10.1 | 4.1 | 48.9 ^{+0.5} | 48.7 ^{+0.5} | 39.4 | 19.2 ^{+0.3} | 19.0 ^{+0.3} | 15.2 | 70 | 23.5 | 14.5 | |
| | | 10002031 | 10012031 | 10022031 | 1½" x 1½" x ¾" | 50 x 50 x 25 | 10.1 | 5.1 | 48.9 ^{+0.5} | 48.7 ^{+0.5} | 39.4 | 24.2 ^{+0.3} | 23.9 ^{+0.4} | 19.4 | 74 | 23.5 | 16 | 0.119 |
| | | 10002032 | 10012032 | 10022032 | 1½" x 1½" x 1" | 50 x 50 x 32 | 10.1 | 6.5 | 48.9 ^{+0.5} | 48.7 ^{+0.5} | 39.4 | 31.1 ^{+0.4} | 30.9 ^{+0.4} | 25.0 | 82 | 23.5 | 18.1 | 0.134 |
| | | 10002033 | 10012033 | 10022033 | 1½" x 1½" x 1¼" | 50 x 50 x 40 | 10.1 | 8.1 | 48.9 ^{+0.5} | 48.7 ^{+0.5} | 39.4 | 39.0 ^{+0.4} | 38.8 ^{+0.4} | 31.4 | 90 | 23.5 | 20.5 | 0.153 |
| | | 10002040 | 10012040 | 10022040 | 2" x 2" x ½" | 63 x 63 x 20 | 12.7 | 4.1 | 61.9 ^{+0.6} | 61.6 ^{+0.5} | 49.8 | 19.2 ^{+0.3} | 19.0 ^{+0.3} | 15.2 | 78 | 27.4 | 14.5 | |
| | | 10002041 | 10012041 | 10022041 | 2" x 2" x ¾" | 63 x 63 x 25 | 12.7 | 5.1 | 61.9 ^{+0.6} | 61.6 ^{+0.5} | 49.8 | 24.2 ^{+0.3} | 23.9 ^{+0.4} | 19.4 | 84 | 27.4 | 16 | 0.208 |
| | | 10002042 | 10012042 | 10022042 | 2" x 2" x 1" | 63 x 63 x 32 | 12.7 | 6.5 | 61.9 ^{+0.6} | 61.6 ^{+0.5} | 49.8 | 31.1 ^{+0.4} | 30.9 ^{+0.4} | 25.0 | 90 | 27.4 | 18.1 | 0.225 |
| | | 10002043 | 10012043 | 10022043 | 2" x 2" x 1¼" | 63 x 63 x 40 | 12.7 | 8.1 | 61.9 ^{+0.6} | 61.6 ^{+0.5} | 49.8 | 39.0 ^{+0.4} | 38.8 ^{+0.4} | 31.4 | 98 | 27.4 | 20.5 | 0.249 |
| | | 10002044 | 10012044 | 10002044 | 2" x 2" x 1½" | 63 x 63 x 50 | 12.7 | 10.1 | 61.9 ^{+0.6} | 61.6 ^{+0.5} | 49.8 | 48.9 ^{+0.5} | 48.7 ^{+0.5} | 39.4 | 108 | 27.4 | 23.5 | 0.288 |
| | | | | | 2½" x 2½" x ½" | 75 x 75 x 20 | 15.1 | 4.1 | 74.3 ^{+0.6} | 73.1 ^{+0.6} | 59.4 | 19.2 ^{+0.3} | 19.0 ^{+0.3} | 15.2 | 86 | 31 | 14.5 | |
| | | 10002330 | | | 2½" x 2½" x ¾" | 75 x 75 x 25 | 15.1 | 5.1 | 74.3 ^{+0.6} | 73.1 ^{+0.6} | 59.4 | 24.2 ^{+0.3} | 23.9 ^{+0.4} | 19.4 | 90 | 31 | 16 | 0.320 |
| | | 10002050 | 10012050 | 10022050 | 2½" x 2½" x 1" | 75 x 75 x 32 | 15.1 | 6.5 | 74.3 ^{+0.6} | 73.1 ^{+0.6} | 59.4 | 31.1 ^{+0.4} | 30.9 ^{+0.4} | 25.0 | 96 | 31 | 18.1 | 0.342 |
| | | 10002051 | 10012051 | 10022051 | 2½" x 2½" x 1¼" | 75 x 75 x 40 | 15.1 | 8.1 | 74.3 ^{+0.6} | 73.1 ^{+0.6} | 59.4 | 39.0 ^{+0.4} | 38.8 ^{+0.4} | 31.4 | 104 | 31 | 20.5 | 0.374 |
| | | 10002052 | | | 2½" x 2½" x 1½" | 75 x 75 x 50 | 15.1 | 10.1 | 74.3 ^{+0.6} | 73.1 ^{+0.6} | 59.4 | 48.9 ^{+0.5} | 48.7 ^{+0.5} | 39.4 | 112 | 31 | 23.5 | 0.412 |
| | | 10002053 | | 10022053 | 2½" x 2½" x 2" | 75 x 75 x 63 | 15.1 | 12.7 | 74.3 ^{+0.6} | 73.1 ^{+0.6} | 59.4 | 61.9 ^{+0.6} | 61.6 ^{+0.5} | 49.8 | 125 | 31 | 27.4 | 0.478 |
| | | | | | 3" x 3" x 1" | 90 x 90 x 32 | 18.1 | 6.5 | 89.3 ^{+0.6} | 87.9 ^{+0.6} | 71.6 | 31.1 ^{+0.4} | 30.9 ^{+0.4} | 25.0 | 104 | 35.5 | 18.1 | 0.534 |
| | | 10002070 | 10012070 | 10022070 | 3" x 3" x 1¼" | 90 x 90 x 40 | 18.1 | 8.1 | 89.3 ^{+0.6} | 87.9 ^{+0.6} | 71.6 | 39.0 ^{+0.4} | 38.8 ^{+0.4} | 31.4 | 110 | 35.5 | 20.5 | 0.566 |
| | | | 10012071 | 10022071 | 3" x 3" x 1½" | 90 x 90 x 50 | 18.1 | 10.1 | 89.3 ^{+0.6} | 87.9 ^{+0.6} | 71.6 | 48.9 ^{+0.5} | 48.7 ^{+0.5} | 39.4 | 120 | 35.5 | 23.5 | 0.626 |
| | | 10002072 | | | 3" x 3" x 2" | 90 x 90 x 63 | 18.1 | 12.7 | 89.3 ^{+0.6} | 87.9 ^{+0.6} | 71.6 | 61.9 ^{+0.6} | 61.6 ^{+0.5} | 49.8 | 132 | 35.5 | 27.4 | 0.656 |
| | | | 10012073 | | 3" x 3" x 2½" | 90 x 90 x 75 | 18.1 | 15.1 | 89.3 ^{+0.6} | 87.9 ^{+0.6} | 71.6 | 74.3 ^{+0.6} | 73.1 ^{+0.6} | 59.4 | 144 | 35.5 | 31 | 0.792 |
| | | 10002080 | 10012080 | 10022080 | 4" x 4" x 1½" | 110 x 110 x 50 | 22.1 | 10.1 | 109.4 ^{+0.6} | 107.7 ^{+0.6} | 87.6 | 48.9 ^{+0.5} | 48.7 ^{+0.5} | 39.4 | 150 | 41.5 | 23.5 | |
| | | 10002081 | 10012081 | 10022081 | 4" x 4" x 2" | 110 x 110 x 63 | 22.1 | 12.7 | 109.4 ^{+0.6} | 107.7 ^{+0.6} | 87.6 | 61.9 ^{+0.6} | 61.6 ^{+0.5} | 49.8 | | 41.5 | 27.4 | |
| | | 10002082 | | | 4" x 4" x 2½" | 110 x 110 x 75 | 22.1 | 15.1 | 109.4 ^{+0.6} | 107.7 ^{+0.6} | 87.6 | 74.3 ^{+0.6} | 73.1 ^{+0.6} | 59.4 | 155 | 41.5 | 31 | 1.623 |
| | | 10002083 | | | 4" x 4" x 3" | 110 x 110 x 90 | 22.1 | 18.1 | 109.4 ^{+0.6} | 107.7 ^{+0.6} | 87.6 | 89.3 ^{+0.6} | 87.9 ^{+0.6} | 71.6 | 165 | 41.5 | 35.5 | 1.762 |
| | | | | | 4½" x 4½" x 2½" | 125 x 125 x 75 | 25.1 | 15.1 | 123.9 ^{+1.2} | 123.5 ^{+1.2} | 99.7 | 74.3 ^{+0.6} | 73.1 ^{+0.6} | 59.4 | 160 | 46.5 | 31 | |
| | | | | | 4½" x 4½" x 3" | 125 x 125 x 90 | 25.1 | 18.1 | 123.9 ^{+1.2} | 123.5 ^{+1.2} | 99.7 | 89.3 ^{+0.6} | 87.9 ^{+0.6} | 71.6 | 172 | 46.5 | 35.5 | |

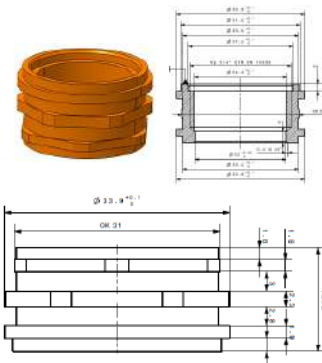
| ITEM DESCRIPTION | PICTURE | CODE | | | DN | | S | D ₁ | D ₂ | L | L ₁ | L ₂ | H ₁ | H ₂ | Weight |
|---|---------|----------|----------|----------|-------|------|------|----------------------|----------------------|------|----------------|----------------|----------------|----------------|--------|
| MOUNTING GROUP UN | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [kg] |
|  | | 10003500 | 10013500 | 10023500 | ½" | 20 | 4.1 | 19.0 ^{+0.3} | 19.2 ^{+0.3} | 100 | 225 | 14.5 | 46 | 34 | 0.227 |
| | | | | | | | | | | 135 | | | | | |
| | | | | | | | | | | 150 | | | | | |
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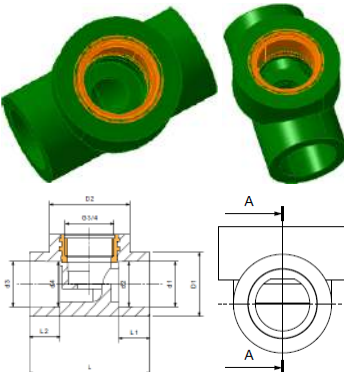
| ITEM DESCRIPTION | PICTURE | CODE | | | DN | | E | D ₁ | D ₂ | D ₃ | L | Weight |
|---|---------|----------|----------|----------|--------|------|------|----------------------|----------------------|----------------|------|--------|
| BALL VALVE | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [kg] |
|  | | 10003700 | 10013700 | 10023700 | 1/2" | 20 | 3.4 | 19.2 ^{+0.3} | 19.0 ^{+0.3} | 15.5 | 15.7 | 0.074 |
| | | 10003701 | 10013701 | 10023701 | 3/4" | 25 | 4.2 | 24.2 ^{+0.3} | 23.9 ^{+0.4} | 23 | 17 | 0.097 |
| | | 10003702 | 10013702 | 10023702 | 1" | 32 | 6.5 | 31.1 ^{+0.4} | 30.9 ^{+0.4} | 24.5 | 18.7 | 0.146 |
| | | 10003703 | 10013703 | 10023703 | 1 1/4" | 40 | 8.1 | 39.0 ^{+0.4} | 38.8 ^{+0.4} | 34 | 20.5 | |
| | | 10003704 | 10013704 | 10023704 | 1 1/2" | 50 | 10.1 | 48.9 ^{+0.5} | 48.7 ^{+0.5} | 41 | 23.5 | |
| | | 10003705 | 10013705 | 10023705 | 2" | 63 | 12.7 | 61.9 ^{+0.6} | 61.6 ^{+0.5} | 57 | 27.4 | |


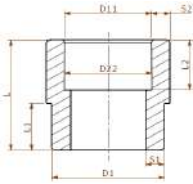
| ITEM DESCRIPTION | PICTURE | CODE | | | S | L | L ₁ | L ₂ | L ₃ | d ₁ | d ₂ | d ₃ | Weight |
|---|---------|----------|-------|------|------|------|----------------|----------------|----------------|----------------|----------------|----------------|--------|
| MASK FOR ELBOW WITH FIX.BRACK | | GREEN | WHITE | GRAY | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [kg] |
|  | | 10001350 | | | 1.5 | 55 | 18 | 11 | 28 | 31 | 50 | 72 | |
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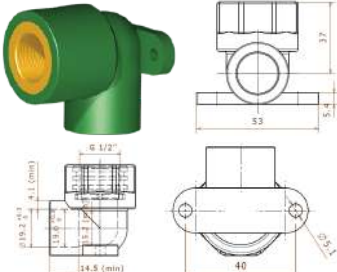
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|---|---------|----------|----------|----------|-------|------|------|------|----------------|----------------------|----------------|------|----------------|--------|
| LOW CLAMP | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [kg] |
|  | | 10002850 | 10012850 | 10022850 | 1/2" | 20 | 3.5 | 13.2 | 27.5 | 20.0 ^{+0.1} | 5 | 9 | 15 | 24 |
| | | 10002851 | 10012851 | 10022851 | 3/4" | 25 | 4.5 | 13.7 | 35 | 25.0 ^{+0.1} | 5 | 9 | 18 | 30.7 |
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| ITEM DESCRIPTION | PICTURE | CODE | | | DN | G | D ₁ | D ₂ | d | d ₁ | d ₂ | d ₃ | d ₄ | L | L ₁ | L ₂ | Weight |
|---|---------|----------|----------|----------|-------|------|----------------|----------------|------|----------------------|----------------|----------------|----------------|------|----------------|----------------|----------------------|
| VALVE BODY | | GREEN | WHITE | GRAY | [inc] | [mm] | [inc] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [kg] |
|  | | 10002350 | 10012350 | 10022350 | 1/2" | 20 | 1/2" | | | | | | | | | | |
| | | 10002351 | 10012351 | 10022351 | 3/4" | 25 | 3/4" | 34.3 | 44.8 | 24.0 ^{+0.4} | 20.5 | 19 | 13.5 | 27.5 | 67 | 26.7 | 17.3 ^{+2.5} |
| | | 10002352 | 10012352 | 10022352 | 1" | 32 | 1" | | | | | | | | | | |
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| ITEM DESCRIPTION | PICTURE | OK | D | D ₁ | D ₂ | d ₁ | d ₂ | L | L ₁ | L ₂ | L ₃ | L ₄ | L ₅ | L ₆ | L ₇ | Weight |
|---|---------|------|----------------------|----------------------|----------------------|----------------------|-----------------------|------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|--------|
| 3/4" INSERT | | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [kg] |
|  | | 31 | 33.9 ^{+0.1} | 30.5 ^{+0.1} | 27.5 ^{+0.1} | 24.4 ^{+0.1} | 24.0 ^{+0.05} | 15.6 | 1.8 | 1.8 | 3 | 2.3 | 2.8 | 1.9 | 2 | 0.046 |
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| ITEM DESCRIPTION | PICTURE | CODE | | | DN | G | D ₁ | D ₂ | d | d ₁ | d ₂ | d ₃ | d ₄ | L | L ₁ | L ₂ | Weight |
|--|---------|----------|----------|----------|-------|------|----------------|----------------|------|-----------------------|----------------------|----------------------|----------------------|----------------------|----------------|----------------------|----------------------|
| BALL VALVE | | GREEN | WHITE | GRAY | [inc] | [mm] | [inc] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [kg] |
|  | | 10002350 | 10012350 | 10022350 | 1/2" | 20 | 1/2" | 27 | 37.5 | 20.0 ^{+0.25} | 19.2 ^{+0.3} | 19.0 ^{+0.3} | 19.2 ^{+0.3} | 19.0 ^{+0.3} | 60 | 14.5 ^{+2.5} | 14.5 ^{+2.5} |
| | | 10002351 | 10012351 | 10022351 | 3/4" | 25 | 3/4" | 34.3 | 44.8 | 24.0 ^{+0.4} | 24.2 ^{+0.3} | 23.9 ^{+0.4} | 24.2 ^{+0.3} | 23.9 ^{+0.4} | 67 | 16.0 ^{+2.5} | 16.0 ^{+2.5} |
| | | 10002352 | 10012352 | 10022352 | 1" | 32 | 1" | 43.5 | 52.7 | 32.0 ^{+0.35} | 31.1 ^{+0.4} | 30.9 ^{+0.4} | 31.1 ^{+0.4} | 30.9 ^{+0.4} | 98 | 18.1 ^{+2.5} | 18.1 ^{+2.5} |
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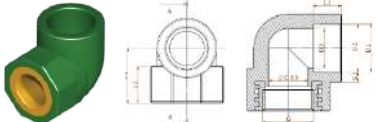
| ITEM DESCRIPTION | PICTURE | CODE | | | DN | | G | S ₁ | S ₂ | D ₁ | D ₁₁ | D ₂₂ | L | L ₁ | L ₂ | Weight |
|------------------|---|----------|----------|----------|------------|------------|----------------------|----------------|-----------------------|-----------------------|-----------------------|-----------------|----------------------|----------------|----------------|--------|
| REDUCER | | GREEN | WHITE | GRAY | [inc] | [mm] | [inc] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [kg] |
| |  | 10002200 | 10012200 | 10022200 | ¾" na ½" | 25 na 20 | 4.2 ^{+0.6} | 4.1 | 25.0 ^{+0.3} | 19.2 ^{+0.3} | 19.0 ^{+0.3} | 39 | 12.5 ^{+1.5} | 14.5 | 0.009 | |
| | | 10002205 | 10012205 | 10022205 | 1" na ½" | 32 na 20 | 5.4 ^{+0.7} | 4.1 | 32.0 ^{+0.3} | 19.2 ^{+0.3} | 19.0 ^{+0.3} | 39 | 14.6 ^{+1.5} | 14.5 | 0.018 | |
| | | 10002206 | 10012206 | 10022206 | 1" na ¾" | 32 na 25 | 5.4 ^{+0.7} | 5.1 | 31.1 ^{+0.4} | 24.2 ^{+0.3} | 23.9 ^{+0.4} | 45 | 14.6 ^{+1.5} | 16 | 0.015 | |
| | | 10002210 | 10012210 | 10022210 | 1¼" na ½" | 40 na 20 | 6.7 ^{+0.8} | 4.1 | 20.0 ^{+0.25} | 19.2 ^{+0.3} | 19.0 ^{+0.3} | 38.15 | 17.0 ^{+1.5} | 14.5 | 0.050 | |
| |  | 10002211 | 10012211 | 10022211 | 1¼" na ¾" | 40 na 25 | 6.7 ^{+0.8} | 5.1 | 25.0 ^{+0.3} | 24.2 ^{+0.3} | 23.9 ^{+0.4} | 38.5 | 17.0 ^{+1.5} | 16 | 0.049 | |
| | | 10002212 | 10012212 | 10022212 | 1¼" na 1" | 40 na 32 | 6.7 ^{+0.8} | 6.5 | 40.0 ^{+0.4} | 31.1 ^{+0.4} | 30.9 ^{+0.4} | 51 | 17.0 ^{+1.5} | 18.1 | 0.030 | |
| | | 10002220 | 10012220 | 10022220 | 1½" na ½" | 50 na 20 | 8.3 ⁺¹ | 4.1 | 20.0 ^{+0.25} | 19.2 ^{+0.3} | 19.0 ^{+0.3} | 35.15 | 20.0 ^{+1.5} | 14.5 | | |
| | | 10002221 | 10012221 | 10022221 | 1½" na ¾" | 50 na 25 | 8.3 ⁺¹ | 5.1 | 25.0 ^{+0.3} | 24.2 ^{+0.3} | 23.9 ^{+0.4} | 39.77 | 20.0 ^{+1.5} | 16 | 0.035 | |
| | | 10002222 | 10012222 | 10022222 | 1½" na 1" | 50 na 32 | 8.3 ⁺¹ | 6.5 | 32.0 ^{+0.35} | 31.1 ^{+0.4} | 30.9 ^{+0.4} | 40.14 | 20.0 ^{+1.5} | 18.1 | 0.036 | |
| | | 10002223 | 10012223 | 10022223 | 1½" na 1¼" | 50 na 40 | 8.3 ⁺¹ | 8.1 | 50.0 ^{+0.5} | 39.0 ^{+0.4} | 38.8 ^{+0.4} | 58 | 20.0 ^{+1.5} | 20.5 | 0.049 | |
| | | 10002240 | 10012240 | 10022240 | 2" na ½" | 63 na 20 | 10.5 ^{+1.2} | 4.1 | 20.0 ^{+0.25} | 19.2 ^{+0.3} | 19.0 ^{+0.3} | 59 | 23.9 ^{+1.5} | 14.5 | | |
| | | 10002241 | 10012241 | 10022241 | 2" na ¾" | 63 na 25 | 10.5 ^{+1.2} | 5.1 | 25.0 ^{+0.3} | 24.2 ^{+0.3} | 23.9 ^{+0.4} | 65 | 23.9 ^{+1.5} | 16 | 0.075 | |
| | | 10002242 | 10012242 | 10022242 | 2" na 1" | 63 na 32 | 10.5 ^{+1.2} | 6.5 | 32.0 ^{+0.35} | 31.1 ^{+0.4} | 30.9 ^{+0.4} | 62 | 23.9 ^{+1.5} | 18.1 | 0.075 | |
| | | 10002243 | 10012243 | 10022243 | 2" na 1¼" | 63 na 40 | 10.5 ^{+1.2} | 8.1 | 40.0 ^{+0.4} | 39.0 ^{+0.4} | 38.8 ^{+0.4} | 65 | 23.9 ^{+1.5} | 20.5 | 0.085 | |
| | | 10002244 | 10012244 | 10022244 | 2" na 1½" | 63 na 50 | 10.5 ^{+1.2} | 10.1 | 63.0 ^{+0.6} | 48.9 ^{+0.5} | 48.7 ^{+0.5} | 69 | 23.9 ^{+1.5} | 23.5 | 0.090 | |
| | | | | | 2½" na ½" | 75 na 20 | 12.5 ^{+1.4} | 4.1 | 20.0 ^{+0.25} | 19.2 ^{+0.3} | 19.0 ^{+0.3} | 45 | 27.5 ^{+1.5} | 14.5 | | |
| | | | | | 2½" na ¾" | 75 na 25 | 12.5 ^{+1.4} | 5.1 | 25.0 ^{+0.3} | 24.2 ^{+0.3} | 23.9 ^{+0.4} | 49.15 | 27.5 ^{+1.5} | 16 | | |
| | | | | | 2½" na 1" | 75 na 32 | 12.5 ^{+1.4} | 6.5 | 32.0 ^{+0.35} | 31.1 ^{+0.4} | 30.9 ^{+0.4} | 49 | 27.5 ^{+1.5} | 18.1 | | |
| | | 10002260 | 10012260 | 10022260 | 2½" na 1¼" | 75 na 40 | 12.5 ^{+1.4} | 8.1 | 40.0 ^{+0.4} | 39.0 ^{+0.4} | 38.8 ^{+0.4} | 49.5 | 27.5 ^{+1.5} | 20.5 | 0.099 | |
| | | 10002261 | 10012261 | 10022261 | 2½" na 1½" | 75 na 50 | 12.5 ^{+1.4} | 10.1 | 50.0 ^{+0.5} | 48.9 ^{+0.5} | 48.7 ^{+0.5} | 49.8 | 27.5 ^{+1.5} | 23.5 | 0.102 | |
| | | 10002262 | 10012262 | 10022262 | 2½" na 2" | 75 na 63 | 12.5 ^{+1.4} | 12.7 | 75.0 ^{+0.7} | 61.9 ^{+0.6} | 61.6 ^{+0.5} | 66 | 27.5 ^{+1.5} | 27.4 | 0.168 | |
| | | 10002280 | 10012280 | 10022280 | 3" na 1½" | 90 na 50 | 15.0 ^{+1.6} | 10.1 | 50.0 ^{+0.5} | 48.9 ^{+0.5} | 48.7 ^{+0.5} | 54.1 | 32.0 ^{+1.5} | 23.5 | 0.190 | |
| | | 10002281 | 10012281 | 10022281 | 3" na 2" | 90 na 63 | 15.0 ^{+1.6} | 12.7 | 63.0 ^{+1.2} | 61.9 ^{+0.6} | 61.6 ^{+0.5} | 55.1 | 32.0 ^{+1.5} | 27.4 | 0.174 | |
| | | 10002282 | 10012282 | 10022282 | 3" na 2½" | 90 na 75 | 15.0 ^{+1.6} | 15.1 | 90.0 ^{+0.9} | 74.3 ^{+0.6} | 73.1 ^{+0.6} | 76 | 32.0 ^{+1.5} | 31 | 0.283 | |
| | | 10002290 | 10012290 | 10022290 | 4" na 1½" | 110 na 50 | 18.3 ⁺² | 10.1 | 50.0 ^{+0.5} | 48.9 ^{+0.5} | 48.7 ^{+0.5} | 89 | 38.0 ^{+1.5} | 23.5 | | |
| | | 10002291 | 10012291 | 10022291 | 4" na 2" | 110 na 63 | 18.3 ⁺² | 12.7 | 63.0 ^{+1.2} | 61.9 ^{+0.6} | 61.6 ^{+0.5} | 85 | 38.0 ^{+1.5} | 27.4 | | |
| | | 10002292 | 10012292 | 10022292 | 4" na 2½" | 110 na 75 | 18.3 ⁺² | 15.1 | 75.0 ^{+0.7} | 74.3 ^{+0.6} | 73.1 ^{+0.6} | | 38.0 ^{+1.5} | 31 | 0.374 | |
| | | 10002293 | 10012293 | 10022293 | 4" na 3" | 110 na 90 | 18.3 ⁺² | 18.1 | 110.0 ⁺¹ | 89.3 ^{+0.6} | 87.9 ^{+0.6} | 88 | 38.0 ^{+1.5} | 35.5 | 0.404 | |
| | | 1002320 | | | 4½" na 2½" | 125 na 75 | 15.0 ^{+1.6} | 15.1 | 75.0 ^{+0.7} | 74.3 ^{+0.6} | 73.1 ^{+0.6} | 65 | 46.5 | 31 | | |
| | | 10002525 | | | 4½" na 3" | 125 na 90 | 18.3 ⁺² | 18.1 | 90.0 ^{+0.9} | 89.3 ^{+0.6} | 87.9 ^{+0.6} | 70 | 46.5 | 35.5 | | |
| | | | | | 4½" na 4" | 125 na 110 | 22.1 ^{+2.4} | 22.1 | 110.0 ⁺¹ | 109.4 ^{+0.6} | 107.7 ^{+0.6} | 89 | 46.5 ^{+1.5} | 41.5 | | |
| | | | | | 6" na 4" | 160 na 110 | | | | | | | | | | |
| | | | | | 6" na 4½" | 160 na 125 | | | | | | | | | | |
| | | | | | 7" na 4½" | 200 na 125 | | | | | | | | | | |
| | | | | | 7" na 6" | 200 na 160 | | | | | | | | | | |
| | | | | | 9" na 6" | 250 na 160 | | | | | | | | | | |
| | | | | | 9" na 7" | 250 na 200 | | | | | | | | | | |
| | | | | | 12" na 7" | 315 na 200 | | | | | | | | | | |
| | | | | | 12" na 9" | 315 na 250 | | | | | | | | | | |

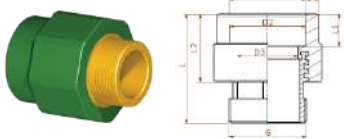
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|---|---|--|----------|----------|---------|---------|------|----------------------|----------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|--------|------|
| ELBOW 90°-FEMALE THREADED WITH DOUBLE FIX |  | | GREEN | WHITE | GRAY | [inc] | [mm] | [inc] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [kg] |
| 10001200 | | | 10011200 | 10021200 | ½» x ½" | 20 x 20 | ½" | 19.2 ^{+0.3} | 19.0 ^{+0.3} | 15.2 | 4.1 | 5.4 | 53 | 37 | 40 | 14.5 | 5.1 | 0.075 | |
| 10001201 | | | 10011201 | 10021201 | ½» x ¾" | 20 x 25 | ¾" | 24.2 ^{+0.3} | 23.9 ^{+0.4} | 19.4 | 5.1 | 5.4 | 53 | 37 | 40 | 16 | 5.1 | 0.088 | |
| | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |

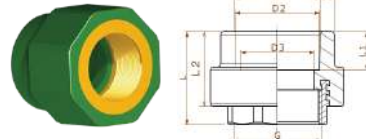
| ITEM DESCRIPTION | PICTURE | CODE | | | DN | | D ₁ | D ₂ | D ₃ | e ₁ | G | L ₁ | L ₂ | L ₃ | Weight |
|---|---|----------|----------|----------|-------|---------|----------------|----------------|----------------|----------------|------|----------------|----------------|----------------|--------|
| TEE | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | | [mm] | [mm] | [mm] | [mm] | [mm] | [kg] |
|  |  | 10001950 | 10001950 | 10001950 | ½" | 20 Male | 19.2 | 19 | 15.2 | 4.1 | ½" | 14.5 | 26 | 35 | |
| | | 10001951 | 10001951 | 10001951 | ¾" | 25 Male | 24.2 | 23.9 | 19.4 | 5.1 | ¾" | 16 | 26 | 36 | |
| | | 10001952 | 10001952 | 10001952 | 1" | 32 Male | 31.1 | 30.9 | 25 | 6.5 | 1" | 18.1 | 27 | 43 | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |

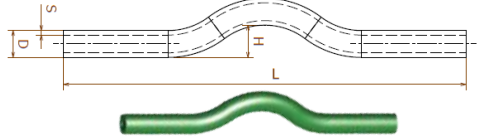
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|--|---------|----------|----------|----------|-------|----------------|----------------|----------------|------|----------------|----------------|----------------|--------|-------|
| TEE - FEMALE THREADED | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [kg] | |
|  | | 10001930 | 10001930 | 10001930 | ½" | 20 Female | 19 | 15.2 | 4.1 | ½" | 14.5 | 25 | 36 | 0.072 |
| | | 10001931 | 10001931 | 10001931 | ¾" | 25 Female | 23.9 | 19.4 | 5.1 | ¾" | 16 | 26 | 36 | 0.150 |
| | | 10001932 | 10001932 | 10001932 | 1" | 32 Female | 30.9 | 25 | 6.5 | 1" | 18.1 | 27 | 40 | |
| | | | | | | | | | | | | | | |
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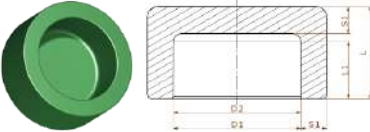
| ITEM DESCRIPTION | PICTURE | CODE | | | DN | | D ₁ | D ₂ | D ₃ | e ₁ | G | L ₁ | L ₂ | L ₃ | Weight |
|---|---------|----------|----------|----------|-------|---------|----------------|----------------|----------------|----------------|-------|----------------|----------------|----------------|--------|
| ELBOW 90° - MALE THREADED | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | | [mm] | [inc] | [mm] | [mm] | [mm] | [kg] |
|  | | 10001150 | 10001150 | 10001150 | ½" | 20 Male | 19.2 | 19 | 15.2 | 4.1 | ½" | 14.5 | 22 | 32 | 0.067 |
| | | 10001151 | 10001151 | 10001151 | ¾" | 25 Male | 24.2 | 23.9 | 19.4 | 5.1 | ¾" | 16 | 25 | 36 | 0.106 |
| | | 10001152 | 10001152 | 10001152 | 1" | 32 Male | 31.1 | 30.9 | 25 | 6.5 | 1" | 18.1 | 30 | 40 | 0.186 |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |

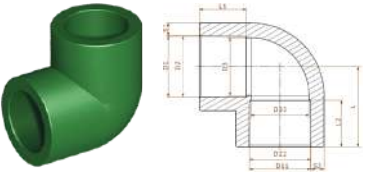
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|---|---------|----------|----------|----------|---------|-----------|----------------|----------------|----------------|-------|----------------|----------------|----------------|--------|
| ELBOW 90° - FEMALE THREADED | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [mm] | [inc] | [mm] | [mm] | [mm] | [kg] |
|  | | 10001100 | 10011100 | 10021100 | ½" | 20 Female | 19 | 15.2 | 4.1 | ½" | 14.5 | 22 | 32 | 0.056 |
| | | 10001101 | 10011101 | 10021101 | ¾" | 25 Female | 23.9 | 19.4 | 5.1 | ¾" | 16 | 25 | 36 | 0.077 |
| | | 10001102 | 10011102 | 10021102 | 1" | 32 Female | 30.9 | 25 | 6.5 | 1" | 18.1 | 30 | 40 | 0.198 |

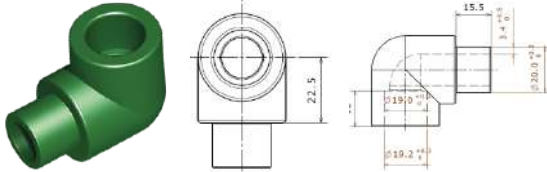
| ITEM DESCRIPTION | PICTURE | CODE | | | DN | | D ₂ | D ₃ | e ₁ | G | L | L ₁ | L ₂ | Weight |
|---|---------|----------|----------|----------|-------|---------|----------------|----------------|----------------|-------|------|----------------|----------------|--------|
| SOCKET - MALE THREADED | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [mm] | [inc] | [mm] | [mm] | [mm] | [kg] |
|  | | 10001651 | 10011651 | 10021651 | ½" | 20 Male | 19 | 15.6 | 5.1 | ½" | 57 | 14.5 | 34 | 0.062 |
| | | 10001652 | 10011652 | 10021652 | ¾" | 25 Male | 23.9 | 19.4 | 5.1 | ¾" | 61 | 16 | 36 | 0.100 |
| | | 10001653 | 10011653 | 10021653 | 1" | 32 Male | 30.9 | 25.0 | 5.4 | 1" | 73 | 18.1 | 43 | |
| | | 10001654 | 10011654 | 10021654 | 1¼" | 40 Male | 38.8 | 31.4 | 8.1 | 1¼" | 79 | 20.5 | 47 | |
| | | 10001655 | 10011655 | 10021655 | 1½" | 50 Male | 48.7 | 39.4 | 10.1 | 1½" | 87.5 | 23.5 | 52.5 | |
| | | 10001656 | 10011656 | 10021656 | 2" | 63 Male | 61.6 | 49.8 | 12.7 | 2" | 94 | 27.4 | 57 | |

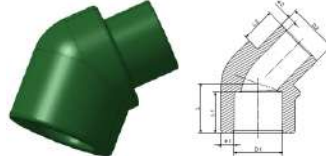
| ITEM DESCRIPTION | PICTURE | CODE | | | DN | | D ₂ | D ₃ | e ₁ | G | L | L ₁ | L ₂ | Weight |
|---|---------|----------|----------|----------|-------|-----------|----------------|----------------|----------------|-------|------|----------------|----------------|--------|
| SOCKET - FEMALE THREADED | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [mm] | [inc] | [mm] | [mm] | [mm] | [kg] |
|  | | 10001651 | 10011651 | 10021651 | ½" | 20 Female | 19 | 15.6 | 5.1 | ½" | 57 | 14.5 | 34 | 0.051 |
| | | 10001652 | 10011652 | 10021652 | ¾" | 25 Female | 23.9 | 19.4 | 5.1 | ¾" | 61 | 16 | 36 | 0.064 |
| | | 10001653 | 10011653 | 10021653 | 1" | 32 Female | 30.9 | 25.0 | 5.4 | 1" | 73 | 18.1 | 43 | |
| | | 10001654 | 10011654 | 10021654 | 1¼" | 40 Female | 38.8 | 31.4 | 8.1 | 1¼" | 79 | 20.5 | 47 | |
| | | 10001655 | 10011655 | 10021655 | 1½" | 50 Female | 48.7 | 39.4 | 10.1 | 1½" | 87.5 | 23.5 | 52.5 | |
| | | 10001656 | 10011656 | 10021656 | 2" | 63 Female | 61.6 | 49.8 | 12.7 | 2" | 94 | 27.4 | 57 | |

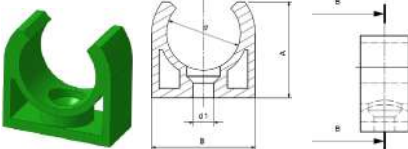
| ITEM DESCRIPTION | PICTURE | CODE | | | DN | | D | L | e | H | Weight |
|---|---------|----------|----------|----------|-------|------|------|------|------|------|--------|
| BRIDGE | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [mm] | [mm] | [kg] |
|  | | 10003000 | 10013000 | 10023000 | ½" | 20 | 20 | 285 | 3.4 | 24 | 0.049 |
| | | 10003001 | 10013001 | 10023001 | ¾" | 25 | 25 | 280 | 4.2 | 33 | 0.076 |
| | | 10003002 | 10013002 | 10023002 | 1" | 32 | 32 | 265 | 5.4 | 40 | 0.125 |

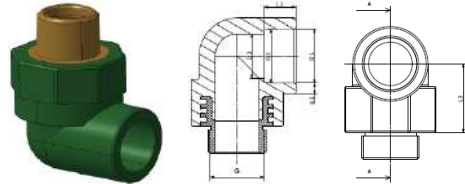
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|---|---------|----------|----------|----------|--------|------|----------------|-----------------------|----------------|------|----------------|--------|
| END CAP | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [kg] |
|  | | 10002400 | 10012400 | 10022400 | 1/2" | 20 | 19.2 | 19 | 4.1 | 19 | 14.5 | 0.006 |
| | | 10002401 | 10012401 | 10022401 | 3/4" | 25 | 24.2 | 23.9 | 5.1 | 23 | 16 | 0.011 |
| | | 10002402 | 10012402 | 10022402 | 1" | 32 | 31.1 | 30.9 | 6.5 | 26 | 18.1 | 0.020 |
| | | 10002403 | 10012403 | 10022403 | 1 1/4" | 40 | 39 | 38.8 | 8.1 | 35 | 20.5 | 0.048 |
| | | 10002404 | 10012404 | 10022404 | 1 1/2" | 50 | 48.9 | 48.7 | 10.1 | 38 | 23.5 | 0.084 |
| | | 10002405 | 10012405 | 10022405 | 2" | 63 | 61.9 | 61.6 | 12.7 | 41 | 27.4 | 0.151 |
| | | 10002406 | 10012406 | 10022406 | 2 1/2" | 75 | 74.3 | 73.1 | 15.1 | 51 | 30 | 0.221 |
| | | 10002407 | 10012407 | 10022407 | 3" | 90 | 89.3 | 87.9 | 18.1 | 58 | 33 | 0.364 |
| | | 10002810 | | | 4 1/2" | 125 | 124.4 | 123.2 | 25.1 | 76 | 37 | 0.924 |
| | | | | | 6" | 160 | 160 | 160.0 ^{+1.5} | 50 | 74 | 50 | |

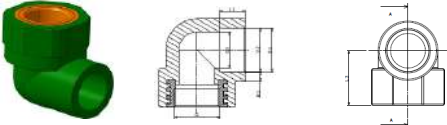
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|---|---------|----------|----------|----------|--------|------|----------------|----------------|----------------|----------------|------|--------|
| ELBOW 90° | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [kg] |
|  | | 10001020 | 10011020 | 10021020 | 1/2" | 20 | 19.2 | 15.2 | 4.1 | 14.5 | 26.5 | 0.014 |
| | | 10001021 | 10011021 | 10021021 | 3/4" | 25 | 24.2 | 19.4 | 5.1 | 16 | 31.5 | 0.022 |
| | | 10001022 | 10011022 | 10021022 | 1" | 32 | 31.1 | 25 | 6.5 | 18.1 | 38 | 0.055 |
| | | 10001023 | 10011023 | 10021023 | 1 1/4" | 40 | 39 | 31.4 | 8.1 | 20.5 | 46 | 0.106 |
| | | 10001024 | 10011024 | 10021024 | 1 1/2" | 50 | 48.9 | 39.4 | 10.1 | 23.5 | 52 | 0.158 |
| | | 10001025 | 10011025 | 10021025 | 2" | 63 | 61.6 | 49.8 | 12.7 | 27.4 | 62 | 0.321 |
| | | 10001026 | 10011026 | 10021026 | 2 1/2" | 75 | 74.3 | 59.4 | 15.1 | 30 | 69 | 0.436 |
| | | 10001027 | 10011027 | 10021027 | 3" | 90 | 89.3 | 71.6 | 18.1 | 33 | 81 | 0.730 |
| | | 10001028 | 10011028 | 10021028 | 4" | 110 | 109.4 | 87.6 | 22.1 | 37 | 98 | 1.926 |
| | | 10000209 | | | 4 1/2" | 125 | 122.6 | 99.7 | 25.1 | 40 | 103 | |

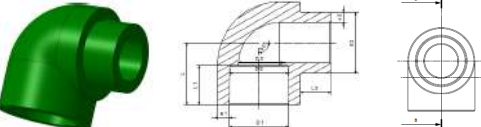
| ITEM DESCRIPTION | PICTURE | CODE | | | DN | | D ₁ | D ₂ | D ₃ | L ₁ | L ₂ | L ₃ | e ₁ | Weight |
|--|---------|----------|----------|----------|-------|------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|--------|
| STREET 90° - (FEMALE/MALE) | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [kg] |
|  | | 10001550 | 10011550 | 10021550 | 1/2" | 20 | 19 | 19.2 | 20 | 14.5 | 15.5 | 22.5 | 3.4 | 0.021 |
| | | 10001553 | | | 3/4" | 25 | 24.2 | 23.9 | 16.6 | 16 | 12.5 | 25.3 | 4.2 | |
| | | 10001554 | | | 1" | 32 | 31.1 | 30.9 | 21.2 | 18.1 | 14.5 | 30.7 | 5.4 | |
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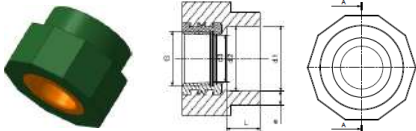
| ITEM DESCRIPTION | PICTURE | CODE | | | DN | | D ₁ | D ₂ | D ₃ | e ₁ | e ₂ | L | L ₁ | L ₂ | Weight |
|---|---------|----------|-------|------|-------|------|----------------------|----------------------|----------------|----------------|----------------|------|----------------|----------------|--------|
| ELBOW 45° - (FEMALE/MALE) | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [kg] |
|  | | 10001570 | | | 1/2" | 20 | 19.2 ^{+0.3} | 19.0 ^{+0.3} | 15.2 | 3.9 | 3.4 | 26.5 | 14.5 | 14.5 | |
| | | 10001572 | | | 3/4" | 25 | 24.2 ^{+0.3} | 23.9 ^{+0.4} | 19.4 | 4.8 | 4.2 | 31.5 | 16 | 16 | |
| | | 10001573 | | | 1" | 32 | 31.1 ^{+0.4} | 30.9 ^{+0.4} | 25 | 6.1 | 5.4 | 38 | 18.1 | 18 | |
| | | | | | | | | | | | | | | | |

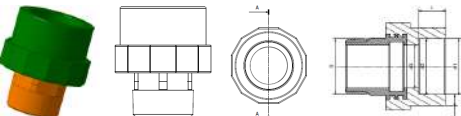
| ITEM DESCRIPTION | PICTURE | CODE | | | DN | | d | A | d ₁ | B | S | Weight |
|------------------|---|-------|-------|------|-------|------|------|------|----------------|------|------|--------|
| CLAMP - SHORT | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [kg] |
| |  | | | | 1/2" | 20 | 20 | 26 | 5.5 | 28 | 13.1 | |
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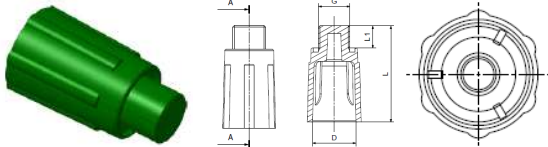
| ITEM DESCRIPTION | PICTURE | CODE | | | DN | | e | D ₁ | D ₂ | D ₃ | L ₁ | L ₃ | G | Weight |
|--|---|----------|----------|----------|-------------|---------|------|----------------------|----------------------|----------------|----------------|----------------|-------|--------|
| TRANSITION ELBOW (W/MALE THREAD) 90° - MALE THREAD | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [inc] | [kg] |
| |  | 10001500 | 10011500 | 10021500 | 1/2" x 3/4" | 20 x 25 | 4.8 | 19.2 ^{+0.3} | 19.0 ^{+0.3} | 15.2 | 14.5 | 32 | 3/4" | |
| | | 10001501 | 10011501 | 10021501 | 3/4" x 1/2" | 25 x 20 | 4.8 | 23.9 ^{+0.4} | 23.9 ^{+0.4} | 19.4 | 16 | 34 | 1/2" | |
| | | | | | | | | | | | | | | |
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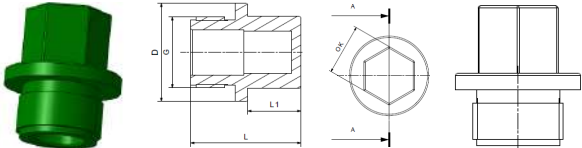
| ITEM DESCRIPTION | PICTURE | CODE | | | DN | | e | D ₁ | D ₂ | D ₃ | L ₁ | L ₃ | G | Weight |
|--|---|----------|----------|----------|-------------|---------|------|----------------------|----------------------|----------------|----------------|----------------|-------|--------|
| TRANSITION ELBOW (W/MALE THREAD) 90° - FEMALE THREAD | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [inc] | [kg] |
| |  | 10001450 | 10011450 | 10021450 | 1/2" x 3/4" | 20 x 25 | 4.1 | 19.2 ^{+0.3} | 19.0 ^{+0.3} | 15.2 | 14.5 | 32 | 3/4" | |
| | | 10001451 | 10011451 | 10021451 | 3/4" x 1/2" | 25 x 20 | 5.1 | 24.2 ^{+0.3} | 23.9 ^{+0.4} | 19.4 | 16 | 34 | 1/2" | |
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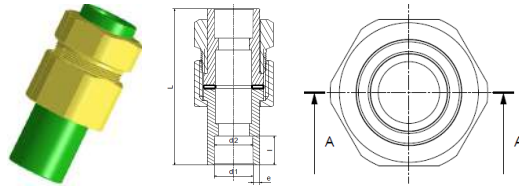
| ITEM DESCRIPTION | PICTURE | CODE | | | DN | | D ₁ | D ₂ | D ₃ | e ₁ | e ₂ | L | L ₁ | L ₂ | Weight |
|--------------------------|---|----------|----------|----------|-------------|---------|----------------------|----------------------|----------------|----------------|----------------|------|----------------|----------------|--------|
| STREET 90° (FEMALE/MALE) | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [kg] |
| |  | 10001400 | 10011400 | 10021400 | 1/2" x 3/4" | 20 x 25 | 24.2 ^{+0.3} | 23.9 ^{+0.4} | 19.4 | 4.8 | 3.4 | 25.5 | 16 | 11 | |
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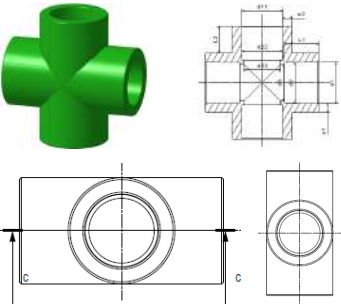
| ITEM DESCRIPTION | PICTURE | CODE | | | DN | | e | d ₁ | d ₂ | d ₃ | L | G | Weight |
|---|---------|-------|-------|------|-------|------|------|----------------------|----------------------|----------------|------|-------|--------|
| TRANSITION PIECE (ROUND FEMALE THREAD-HEX) | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [inc] | [kg] |
|  | | | | | ½" | 20 | 3.9 | 19.2 ^{+0.3} | 19.0 ^{+0.3} | 15.2 | 14.5 | ½" | |
| | | | | | ¾" | 25 | 4.8 | 24.2 ^{+0.3} | 23.9 ^{+0.4} | 19.4 | 16 | ¾" | |
| | | | | | 1" | 32 | 6.1 | 31.1 ^{+0.4} | 30.9 ^{+0.4} | 25 | 18.1 | 1" | |
| | | | | | 1½" | 40 | 7.5 | 39.0 ^{+0.4} | 38.8 ^{+0.4} | 31.4 | 20.5 | 1½" | |
| | | | | | 1½" | 50 | 9.3 | 48.9 ^{+0.5} | 48.7 ^{+0.5} | 39.4 | 23.5 | 1½" | |
| | | | | | 2" | 63 | 10.5 | 61.9 ^{+0.6} | 61.6 ^{+0.5} | 49.8 | 27.5 | 2" | |

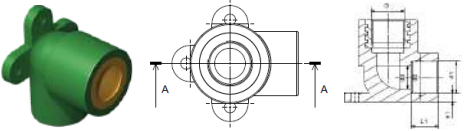
| ITEM DESCRIPTION | PICTURE | CODE | | | DN | | e | d ₁ | d ₂ | d ₃ | L | G | Weight |
|---|---------|-------|-------|------|----------|---------|------|----------------------|----------------------|----------------|------|-------|--------|
| TRANSITION PIECE (W/ROUND MALE THREAD-HEX) | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [inc] | [kg] |
|  | | | | | ½" x ¾" | 20 x 25 | 3.9 | 19.2 ^{+0.3} | 19.0 ^{+0.3} | 15.2 | 14.5 | ¾" | |
| | | | | | ¾" x ½" | 25 x 20 | 4.8 | 24.2 ^{+0.3} | 23.9 ^{+0.4} | 19.4 | 16 | ½" | |
| | | | | | 1" x ¾" | 32 x 25 | 6.1 | 31.1 ^{+0.4} | 30.9 ^{+0.4} | 25 | 18.1 | ¾" | |
| | | | | | 1½" x 1" | 40 x 32 | 7.5 | 39.0 ^{+0.4} | 38.8 ^{+0.4} | 31.4 | 20.5 | 1" | |


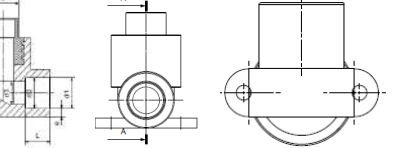
| ITEM DESCRIPTION | PICTURE | CODE | | | | | DN | | D | L | L ₁ | G | Weight |
|---|---------|----------|----------|------|----------|----------|-------|------|------|------|----------------|-------|--------|
| LONG PLUG FOR PRESSURE | | GREEN | WHITE | GRAY | RED | BLUE | [inc] | [mm] | [mm] | [mm] | [mm] | [inc] | [kg] |
|  | | | | | | | ½" | 20 | 29 | 65 | 15 | ½" | 0.020 |
| | | 10003601 | 10013601 | | 10043601 | 10033601 | ¾" | 25 | 33 | 65 | 15 | ¾" | 0.024 |

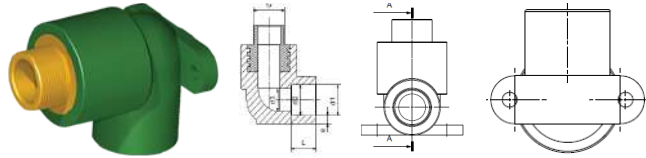
| ITEM DESCRIPTION | PICTURE | CODE | | | | | DN | | D | L | L ₁ | G | OK | Weight |
|---|---------|----------|----------|----------|----------|----------|-------|------|------|------|----------------|-------|------|--------|
| SHORT PLUG FOR PRESSURE | | GREEN | WHITE | GRAY | CRVENA | PLAVA | [inc] | [mm] | [mm] | [mm] | [mm] | [inc] | [mm] | [kg] |
|  | | 10002450 | 10012450 | 10022450 | 10042450 | 10032450 | 1/2" | 20 | 27.6 | 31 | 15 | 1/2" | 18 | |
| | | 10002451 | 10012451 | 10022451 | 10042451 | 10032451 | 3/4" | 25 | 33 | 25 | 8.5 | 3/4" | 22 | |

| ITEM DESCRIPTION | PICTURE | CODE UN | | | DN | | e | d ₁ | d ₂ | L | Weight | |
|---|---------|----------|-------|------|-------|------|------|----------------------|----------------------|------|--------|--|
| PLASTIC - PLASTIC NUT CONNECTOR | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [mm] | [mm] | [kg] | |
|  | | | | | ½" | 20 | 3.9 | 19.2 ^{+0.3} | 19.0 ^{+0.3} | 14.5 | | |
| | | 40005427 | | | ¾" | 25 | 4.8 | 24.2 ^{+0.3} | 23.9 ^{+0.4} | 16 | | |
| | | 40006087 | | | 1" | 32 | 6.1 | 31.1 ^{+0.4} | 30.9 ^{+0.4} | 18.1 | | |
| | | 40006220 | | | 1¼" | 40 | 7.5 | 39.0 ^{+0.4} | 38.8 ^{+0.4} | 20.5 | | |
| | | 40006256 | | | 1½" | 50 | 9.3 | 48.9 ^{+0.5} | 48.7 ^{+0.4} | 23.5 | | |
| | | 40006280 | | | 2" | 63 | 10.5 | 61.9 ^{+0.6} | 61.6 ^{+0.5} | 27.4 | | |
| | | CODE SN | | | | | | | | | | |
| | | | | | ½" | 20 | 3.9 | 19.2 ^{+0.3} | 19.0 ^{+0.3} | 14.5 | | |
| | | 40005425 | | | ¾" | 25 | 4.8 | 24.2 ^{+0.3} | 23.9 ^{+0.4} | 16 | | |
| | | 40006478 | | | 1" | 32 | 6.1 | 31.1 ^{+0.4} | 30.9 ^{+0.4} | 18.1 | | |
| | | 40006251 | | | 1¼" | 40 | 7.5 | 39.0 ^{+0.4} | 38.8 ^{+0.4} | 20.5 | | |
| | | 40006257 | | | 1½" | 50 | 9.3 | 48.9 ^{+0.5} | 48.7 ^{+0.4} | 23.5 | | |
| | | 40006255 | | | 2" | 63 | 10.5 | 61.9 ^{+0.6} | 61.6 ^{+0.5} | 27.4 | | |

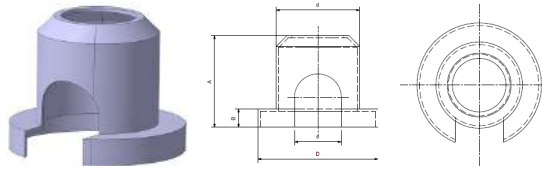
| ITEM DESCRIPTION | PICTURE | ŠIFRA | | | DN | | e ₁ - e ₂ | D ₁ | D ₂ | D ₃ - D ₃₃ | L ₁ | L ₂ | Weight |
|--|---------|----------|----------|----------|-------|------|---------------------------------|----------------------|----------------------|----------------------------------|----------------|----------------|--------|
| CROSS TEE | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [inc] | [kg] |
|  | | 10002150 | 10012150 | 10022150 | ½" | 20 | 4.1 | 19.2 ^{+0.3} | 19.0 ^{+0.3} | 15.2 | 14.5 | 25 | 0.023 |
| | | 10002151 | 10012151 | 10022151 | ¾" | 25 | 5.1 | 24.2 ^{+0.3} | 23.9 ^{+0.4} | 19.4 | 16 | 26 | 0.041 |
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| ITEM DESCRIPTION | PICTURE | CODE | | | DN | | d ₁ | d ₂ | d ₃ | e ₁ | G | L | Weight |
|---|---------|----------|----------|----------|-------------|------|----------------------|----------------------|----------------|----------------|-------|------|--------|
| BACK PLATE TRANSITION ELBOW (W/FEMALE THREAD) | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [mm] | [mm] | [inc] | [mm] | [kg] |
|  | | 10001202 | 10011202 | 10021202 | 1/2" x 1/2" | 20 | 19.2 ^{+0.3} | 19.0 ^{+0.3} | 15.2 | 3.9 | 1/2" | 14.5 | 0.069 |
| | | 10001206 | | | 3/4" x 3/4" | 25 | 24.2 ^{+0.3} | 23.9 ^{+0.3} | 19.4 | 4.8 | 3/4" | 16 | |
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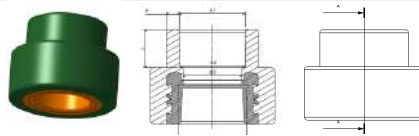
| ITEM DESCRIPTION | PICTURE | CODE | | | DN | D ₁ | D ₂ | D ₃ | e ₁ | G | L | Weight | |
|---|---------|----------|----------|----------|-------------|----------------|----------------------|----------------------|----------------|-------|------|--------|-------|
| BACK PLATE TRANSITION ELBOW (MALE THREAD) | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [mm] | [inc] | [mm] | [kg] | |
|   | | 10001250 | 10011250 | 10021250 | 1/2" x 1/2" | 20 | 19.2 ^{+0.3} | 19.0 ^{+0.4} | 15.2 | 3.9 | 1/2" | 14.5 | 0.086 |
| | | | | | | | | | | | | | |
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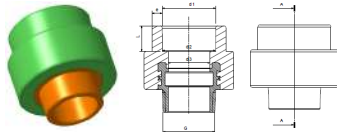
| ITEM DESCRIPTION | PICTURE | CODE | | | D | d | c | B | A | Weight |
|------------------|---------|----------|----------|----------|------|------|------|------|------|--------|
| ELBOW MASK | | GREEN | WHITE | GRAY | [mm] | [mm] | [mm] | [mm] | [mm] | [kg] |
| | | 10001350 | 10011350 | 10021350 | 72 | 50 | 18 | 11 | 55 | 0.015 |
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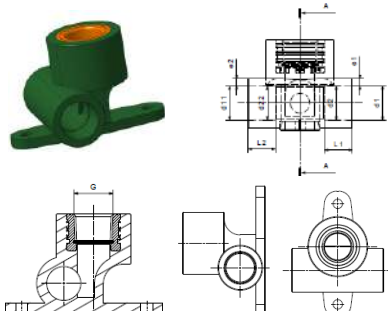


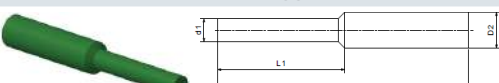
| ITEM DESCRIPTION | PICTURE | CODE | | | DN | e | D ₁ | D ₂ | D ₃ | L | G | Weight |
|----------------------------------|---------|----------|----------|----------|-------------|---------|----------------|----------------------|----------------------|------|-------|--------|
| TRANSITION PIECE - FEMALE THREAD | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [mm] | [mm] | [inc] | [kg] |
| | | 10001800 | 10011800 | 10021800 | 1/2" x 3/4" | 20 x 25 | 3.9 | 24.2 ^{+0.3} | 23.9 ^{+0.4} | 19.4 | 16 | 3/4" |
| | | 10001801 | 10011801 | 10021801 | 3/4" x 1/2" | 25 x 20 | 4.8 | 24.2 ^{+0.3} | 23.9 ^{+0.4} | 19.4 | 16 | 1/2" |
| | | 10001802 | | | 1" x 3/4" | 32 x 25 | 6.1 | 31.1 ^{+0.4} | 30.9 ^{+0.4} | 25 | 18.1 | 3/4" |
| | | | | | 1 1/4" x 1" | 40 x 32 | 7.5 | 39.0 ^{+0.4} | 38.8 ^{+0.4} | 31.4 | 20.5 | 1" |
| | | | | | | | | | | | | |
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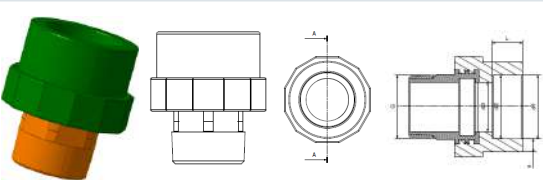


| ITEM DESCRIPTION | PICTURE | CODE | | | DN | e | d ₁ | d ₂ | d ₃ | L | G | Weight |
|--------------------------------|---------|----------|----------|----------|-------------|---------|----------------|----------------------|----------------------|------|-------|--------|
| TRANSITION PIECE - MALE THREAD | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [mm] | [mm] | [inc] | [kg] |
| | | 10001850 | 10011850 | 10021850 | 1/2" x 3/4" | 20 x 25 | 4.8 | 24.2 ^{+0.3} | 23.9 ^{+0.4} | 19.4 | 16 | 3/4" |
| | | 10001851 | 10011851 | 10021851 | 3/4" x 1/2" | 25 x 20 | 4.8 | 24.2 ^{+0.3} | 23.9 ^{+0.4} | 19.4 | 16 | 1/2" |
| | | 10001852 | | | 1" x 3/4" | 32 x 25 | 6.1 | 31.1 ^{+0.4} | 30.9 ^{+0.4} | 25 | 18.1 | 3/4" |
| | | | | | 1 1/4" x 1" | 40 x 32 | 7.5 | 39.0 ^{+0.4} | 38.8 ^{+0.4} | 31.4 | 20.5 | 1" |
| | | | | | | | | | | | | |
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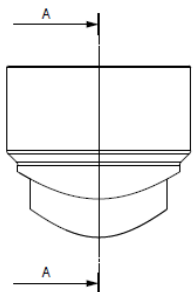
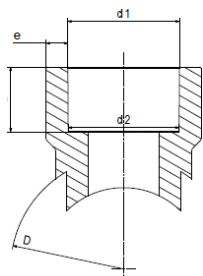


| ITEM DESCRIPTION | PICTURE | CODE | | | DN | | D ₁ | D ₂ | D ₃ -D ₃₃ | e ₁ -e ₂ | G | L ₁ | L ₂ | Weight |
|---|---------|-------|-------|------|-------------|---------|----------------------|----------------------|---------------------------------|--------------------------------|-------|----------------|----------------|--------|
| BACK PLATE TRANSITION TEE | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [mm] | [mm] | [inc] | [mm] | [inc] | [kg] |
|  | | | | | 1/2" x 1/2" | 20 x 20 | 19.2 ^{+0.3} | 19.0 ^{+0.3} | 15.2 | 4.1 | 1/2" | 14.5 | 25 | 0.083 |
| | | | | | 3/4" x 3/4" | 25 x 25 | 24.2 ^{+0.3} | 23.9 ^{+0.4} | 19.4 | 5.1 | 3/4" | 16 | 26 | 0.108 |
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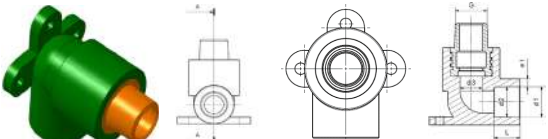
| ITEM DESCRIPTION | PICTURE | CODE | | | DN | | D ₁ | D ₂ | L | L ₁ | Weight |
|---|---------|----------|-------|------|-------|------|----------------|----------------|------|----------------|--------|
| REPAIR PLUG | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [mm] | [mm] | [kg] |
|  | | 10005002 | | | 1/2" | 20 | 7 | 11 | 70 | 40 | |
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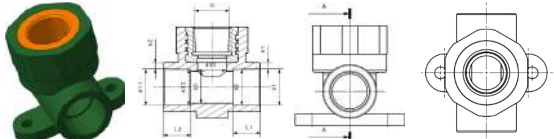
| ITEM DESCRIPTION | PICTURE | CODE | | | DN | | e | d ₁ | d ₂ | d ₃ | L | G | Weight |
|--|---------|-------|-------|------|--------|------|------|----------------------|----------------------|----------------|------|--------|--------|
| TRANSITION PIECE (W/ HEX MALE THREAD) | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [inc] | [kg] |
|  | | | | | 1/2" | 20 | 3.9 | 19.2 ^{+0.3} | 19.0 ^{+0.3} | 15.2 | 14.5 | 1/2" | |
| | | | | | 3/4" | 25 | 4.8 | 24.2 ^{+0.3} | 23.9 ^{+0.4} | 19.4 | 16 | 3/4" | |
| | | | | | 1" | 32 | 6.1 | 31.1 ^{+0.4} | 30.9 ^{+0.4} | 25 | 18.1 | 1" | |
| | | | | | 1 1/4" | 40 | 7.5 | 39.0 ^{+0.4} | 38.8 ^{+0.4} | 31.4 | 20.5 | 1 1/4" | |
| | | | | | 1 1/2" | 50 | 9.3 | 48.9 ^{+0.5} | 48.7 ^{+0.5} | 39.4 | 23.5 | 1 1/2" | |
| | | | | | 2" | 63 | 10.5 | 61.9 ^{+0.6} | 61.6 ^{+0.5} | 49.8 | 27.5 | 2" | |
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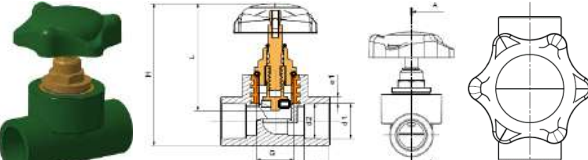
| ITEM DESCRIPTION | PICTURE | CODE | | | DN | | D | d ₁ | d ₂ | L | e | Weight |
|------------------|---------|----------|----------|----------|------------|------------|-----------------------|-----------------------|-----------------------|------|-------|--------|
| SADDLE | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [kg] |
| | | 10002500 | 10012500 | 10022500 | 1¼" na ½" | 40 na 20 | 40.0 ^{+0.4} | 19.2 ^{+0.3} | 19.0 ^{+0.3} | 14.5 | 3.9 | 0.012 |
| | | 10002501 | 10012501 | 10022501 | 1¼" na ¾" | 40 na 25 | 40.0 ^{+0.4} | 24.2 ^{+0.3} | 23.9 ^{+0.4} | 16 | 4.8 | 0.021 |
| | | 10002502 | 10012502 | 10022502 | 1½" na ½" | 50 na 20 | 50.0 ^{+0.5} | 19.2 ^{+0.3} | 19.0 ^{+0.3} | 14.5 | 3.9 | 0.013 |
| | | 10002503 | 10012503 | 10022503 | 1½" na ¾" | 50 na 25 | 50.0 ^{+0.5} | 24.2 ^{+0.3} | 23.9 ^{+0.4} | 16 | 4.8 | 0.020 |
| | | 10002504 | 10012504 | 10022504 | 2" na ½" | 63 na 20 | 63.0 ^{+0.6} | 19.2 ^{+0.3} | 19.0 ^{+0.3} | 14.5 | 3.9 | 0.014 |
| | | 10002505 | 10012505 | 10022505 | 2" na ¾" | 63 na 25 | 63.0 ^{+0.6} | 24.2 ^{+0.3} | 23.9 ^{+0.4} | 16 | 4.8 | 0.021 |
| | | 10002506 | 10012506 | 10022506 | 2" na 1" | 63 na 32 | 63.0 ^{+0.6} | 31.1 ^{+0.4} | 30.9 ^{+0.4} | 18.1 | 6.1 | 0.022 |
| | | | | | 2½" na ½" | 75 na 20 | 75.0 ^{+0.7} | 19.2 ^{+0.3} | 19.0 ^{+0.3} | 14.5 | 3.9 | 0.012 |
| | | | | | 2½" na ¾" | 75 na 25 | 75.0 ^{+0.7} | 24.2 ^{+0.3} | 23.9 ^{+0.4} | 16 | 4.8 | 0.014 |
| | | 10002509 | | | 2½" na 1" | 75 na 32 | 75.0 ^{+0.7} | 31.1 ^{+0.4} | 30.9 ^{+0.4} | 18.1 | 6.1 | 0.022 |
| | | 10002510 | | | 2½" na 1¼" | 75 na 40 | 75.0 ^{+0.7} | 39.0 ^{+0.4} | 38.8 ^{+0.4} | 20.5 | 7.5 | 0.041 |
| | | | | | 3" na ½" | 90 na 20 | 90.0 ^{+0.9} | 19.2 ^{+0.3} | 19.0 ^{+0.3} | 14.5 | 3.9 | 0.013 |
| | | | | | 3" na ¾" | 90 na 25 | 90.0 ^{+0.9} | 24.2 ^{+0.3} | 23.9 ^{+0.4} | 16 | 4.8 | 0.015 |
| | | 10002513 | | | 3" na 1" | 90 na 32 | 90.0 ^{+0.9} | 31.1 ^{+0.4} | 30.9 ^{+0.4} | 18.1 | 6.1 | 0.023 |
| | | 10002514 | | | 3" na 1¼" | 90 na 40 | 90.0 ^{+0.9} | 39.0 ^{+0.4} | 38.8 ^{+0.4} | 20.5 | 7.5 | 0.041 |
| | | 10002515 | | | 4½" na ½" | 125 na 20 | 125.0 ^{+1.2} | 19.2 ^{+0.3} | 19.0 ^{+0.3} | 14.5 | 3.9 | 0.014 |
| | | 10002516 | | | 4½" na ¾" | 125 na 25 | 125.0 ^{+1.2} | 24.2 ^{+0.3} | 23.9 ^{+0.4} | 16 | 4.8 | 0.015 |
| | | 10002517 | | | 4½" na 1" | 125 na 32 | 125.0 ^{+1.2} | 31.1 ^{+0.4} | 30.9 ^{+0.4} | 18.1 | 6.1 | 0.024 |
| | | 10002518 | | | 4½" na 1¼" | 125 na 40 | 125.0 ^{+1.2} | 39.0 ^{+0.4} | 38.8 ^{+0.4} | 20.5 | 7.5 | 0.043 |
| | | 10002519 | | | 4½" na 1½" | 125 na 50 | 125.0 ^{+1.2} | 48.9 ^{+0.5} | 48.7 ^{+0.5} | 23.5 | 9.3 | 0.081 |
| | | 10002520 | | | 4½" na 2" | 125 na 63 | 125.0 ^{+1.2} | 61.9 ^{+0.6} | 61.6 ^{+0.5} | 27.5 | 10.5 | 0.152 |
| | | | | | 6" na ½" | 160 na 20 | 160.0 ^{+1.5} | 19.2 ^{+0.3} | 19.0 ^{+0.3} | 14.5 | 3.9 | |
| | | | | | 6" na ¾" | 160 na 25 | 160.0 ^{+1.5} | 24.2 ^{+0.3} | 23.9 ^{+0.4} | 16 | 4.8 | |
| | | | | | 6" na 1" | 160 na 32 | 160.0 ^{+1.5} | 31.1 ^{+0.4} | 30.9 ^{+0.4} | 18.1 | 6.1 | |
| | | | | | 6" na 1¼" | 160 na 40 | 160.0 ^{+1.5} | 39.0 ^{+0.4} | 38.8 ^{+0.4} | 20.5 | 7.5 | |
| | | | | | 6" na 1½" | 160 na 50 | 160.0 ^{+1.5} | 48.9 ^{+0.5} | 48.7 ^{+0.5} | 23.5 | 9.3 | |
| | | | | | 6" na 2" | 160 na 63 | 160.0 ^{+1.5} | 61.9 ^{+0.6} | 61.6 ^{+0.5} | 27.5 | 10.5 | |
| | | | | | 6" na 2½" | 160 na 75 | 160.0 ^{+1.5} | 74.3 ^{+0.6} | 73.1 ^{+0.6} | 30 | 12.5 | |
| | | | | | 6" na 3" | 160 na 90 | 160.0 ^{+1.5} | 89.3 ^{+0.6} | 87.9 ^{+0.6} | 33 | 15 | |
| | | | | | 6" na 4" | 160 na 110 | 160.0 ^{+1.5} | 109.4 ^{+0.6} | 107.7 ^{+0.6} | 37.3 | 18.38 | |
| | | | | | 7" na ½" | 200 na 20 | 200.0 ^{+2.0} | 19.2 ^{+0.3} | 19.0 ^{+0.3} | 14.5 | 3.9 | |
| | | | | | 7" na ¾" | 200 na 25 | 200.0 ^{+2.0} | 24.2 ^{+0.3} | 23.9 ^{+0.4} | 16 | 4.8 | |
| | | | | | 7" na 1" | 200 na 32 | 200.0 ^{+2.0} | 31.1 ^{+0.4} | 30.9 ^{+0.4} | 18.1 | 6.1 | |
| | | | | | 7" na 1¼" | 200 na 40 | 200.0 ^{+2.0} | 39.0 ^{+0.4} | 38.8 ^{+0.4} | 20.5 | 7.5 | |
| | | | | | 7" na 1½" | 200 na 50 | 200.0 ^{+2.0} | 48.9 ^{+0.5} | 48.7 ^{+0.5} | 23.5 | 9.3 | |
| | | | | | 7" na 2" | 200 na 63 | 200.0 ^{+2.0} | 61.9 ^{+0.6} | 61.6 ^{+0.5} | 27.5 | 10.5 | |
| | | | | | 7" na 2½" | 200 na 75 | 200.0 ^{+2.0} | 74.3 ^{+0.6} | 73.1 ^{+0.6} | 30 | 12.5 | |
| | | | | | 7" na 3" | 200 na 90 | 200.0 ^{+2.0} | 89.3 ^{+0.6} | 87.9 ^{+0.6} | 33 | 15 | |
| | | | | | 7" to 4½" | 200 na 125 | 200.0 ^{+2.0} | 124.4 ^{+0.6} | 122.6 ^{+0.6} | 40 | 20.8 | |
| | | | | | 9" na 1¼" | 250 na 40 | 250.0 ^{+2.5} | 39.0 ^{+0.4} | 38.8 ^{+0.4} | 20.5 | 7.5 | |
| | | | | | 9" na 1½" | 250 na 50 | 250.0 ^{+2.5} | 48.9 ^{+0.5} | 48.7 ^{+0.5} | 23.5 | 9.3 | |
| | | | | | 9" na 2" | 250 na 63 | 250.0 ^{+2.5} | 61.9 ^{+0.6} | 61.6 ^{+0.5} | 27.5 | 10.5 | |
| | | | | | 9" na 2½" | 250 na 75 | 250.0 ^{+2.5} | 74.3 ^{+0.6} | 73.1 ^{+0.6} | 30 | 12.5 | |
| | | | | | 9" na 3" | 250 na 90 | 250.0 ^{+2.5} | 89.3 ^{+0.6} | 87.9 ^{+0.6} | 33 | 15 | |
| | | | | | 9" to 4" | 250 na 110 | 250.0 ^{+2.5} | 109.4 ^{+0.6} | 107.7 ^{+0.6} | 37.3 | 18.38 | |
| | | | | | 9" to 4½" | 250 na 125 | 250.0 ^{+2.5} | 124.4 ^{+0.6} | 122.6 ^{+0.6} | 40 | 20.8 | |
| | | | | | 12" na 2" | 315 na 63 | 315.0 ^{+2.5} | 61.9 ^{+0.6} | 61.6 ^{+0.5} | 27.5 | 10.5 | |
| | | | | | 12" na 2½" | 315 na 75 | 315.0 ^{+2.5} | 74.3 ^{+0.6} | 73.1 ^{+0.6} | 30 | 12.5 | |
| | | | | | 12" na 3" | 315 na 90 | 315.0 ^{+2.5} | 89.3 ^{+0.6} | 87.9 ^{+0.6} | 33 | 15 | |
| | | | | | 12" to 4" | 315 na 110 | 315.0 ^{+2.5} | 109.4 ^{+0.6} | 107.7 ^{+0.6} | 37.3 | 18.38 | |
| | | | | | 12" to 4½" | 315 na 125 | 315.0 ^{+2.5} | 124.4 ^{+0.6} | 122.6 ^{+0.6} | 40 | 20.8 | |
| | | | | | 12" to 6" | 315 na 160 | 315.0 ^{+2.5} | | | | | |

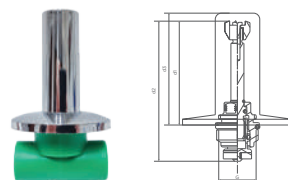


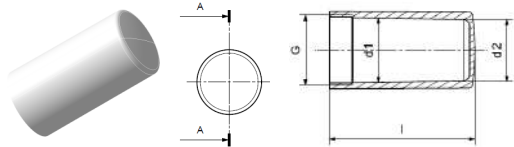
| ITEM DESCRIPTION | PICTURE | CODE | | | DN | d ₁ - d ₁₁ | d ₂ - d ₂₂ | d ₃ | d ₃₃ | e ₁ - e ₂ | G | L ₁ | L ₂ | Weight |
|---|---------|----------|----------|----------|--------------------|----------------------------------|----------------------------------|----------------|-----------------|---------------------------------|-------|----------------|----------------|--------|
| TRANSITION TEE - MALE THREAD | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [mm] | [mm] | [inc] | [mm] | [inc] | [kg] |
|  | | 10002100 | 10002100 | 10002100 | 1/2" x 1/2" x 3/4" | 20 x 20 x 25 Male | 19.2 | 19 | 15.2 | 19.4 | 4.1 | 3/4" | 14.5 | 26 |
| | | 10002101 | 10002101 | 10002101 | 3/4" x 3/4" x 1/2" | 25 x 25 x 20 Male | 24.2 | 23.9 | 19.4 | 15.2 | 5.1 | 1/2" | 16 | 26 |
| | | | | | | | | | | | | | | |

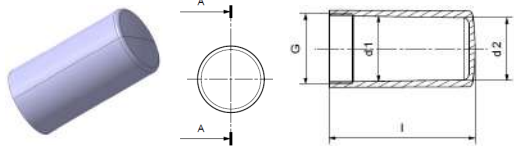
| ITEM DESCRIPTION | PICTURE | CODE | | | DN | d ₁ | d ₂ | d ₃ | e ₁ | G | L | Weight | |
|---|---------|-------|-------|------|-------------|----------------|----------------|----------------|----------------|-------|------|--------|-------|
| BACK PLATE TRANSITION ELBOW (MALE THREAD) | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [mm] | [inc] | [mm] | [kg] | |
|  | | | | | 3/4» x 1/2" | 25 x 20 Male | 24.2 | 23.9 | 19.4 | 4.8 | 1/2" | 16 | 0.069 |
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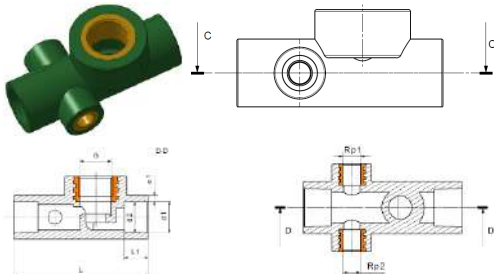
| ITEM DESCRIPTION | PICTURE | CODE | | | DN | d ₁ - d ₁₁ | d ₂ - d ₂₂ | d ₃ | d ₃₃ | e ₁ - e ₂ | G | L ₁ | L ₂ | Weight |
|---|---------|----------|----------|----------|-------------|----------------------------------|----------------------------------|----------------|-----------------|---------------------------------|-------|----------------|----------------|--------|
| BACK PLATE TRANSITION TEE - FEMALE THREAD | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [mm] | [mm] | [inc] | [mm] | [mm] | [kg] |
|  | | 10002190 | 10002190 | 10002190 | 3/4" x 1/2" | 25 x 20 Female | 24.2 | 23.9 | 19.4 | 15.2 | 5.1 | 1/2" | 16 | 26 |
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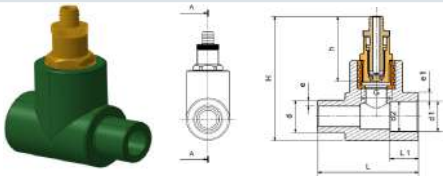
| ITEM DESCRIPTION | PICTURE | CODE | | | DN | | d ₁ | d ₂ | e ₁ | G | L ₁ | H | L | Weight |
|--|---------|----------|----------|----------|-------|------|----------------|----------------|----------------|------|----------------|------|------|--------|
| SCREW DOWN STOP GLOBE VALVE | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [kg] |
|  | | 10003300 | 10003300 | 10003300 | 1/2" | 20 | 19.2 | 19 | 3.9 | 1/2" | 14.5 | 78.5 | 57.5 | 0.029 |
| | | 10003301 | 10003301 | 10003301 | 3/4" | 25 | 24.2 | 23.9 | 4.8 | 3/4" | 16 | 78.5 | 57.5 | 0.045 |
| | | 10003302 | 10003302 | 10003302 | 1" | 32 | 31.1 | 30.9 | 6.1 | 1" | 18.1 | 78.5 | 57.5 | 0.092 |
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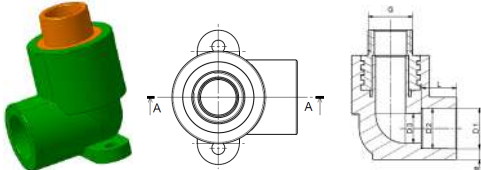
| ITEM DESCRIPTION | PICTURE | CODE | | | DN | | d ₁ | d ₂ | d ₃ | G |
|---|---------|----------|----------|----------|-------|------|----------------|----------------|----------------|------|
| VALVE SHUTTER - SWIRL | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [mm] | [mm] |
|  | | 10004230 | 10033230 | 10024230 | 1/2" | 20 | 71,3 | 93 | 76 | 1/2" |
| | | 10004231 | 10033231 | 10024231 | ¾" | 25 | 71,3 | 93 | 76 | ¾" |
| | | | | | 1" | 32 | 71,3 | 93 | 76 | 1" |
| | | | | | | | | | | |

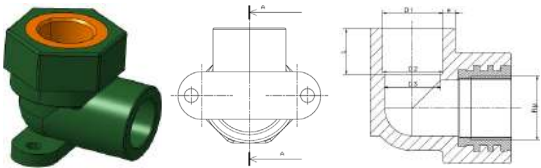
| ITEM DESCRIPTION | PICTURE | CODE | | | DN | | d ₂ | d ₁ | G | I | Weight |
|---|---------|----------|----------|----------|-------|------|----------------|----------------|-------|------|--------|
| VALVE CAP CHROME ABS | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [inc] | [mm] | [kg] |
|  | | 10003215 | 10003215 | 10003215 | 1/2" | 20 | 21.5 | 22.5 | 3/4" | 50 | |
| | | 10003216 | 10003216 | 10003216 | 3/4" | 25 | 21.5 | 22.5 | 3/4" | 50 | |
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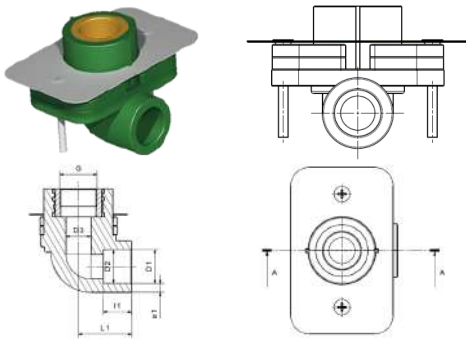
| ITEM DESCRIPTION | PICTURE | CODE | | | ND - OD | | d ₂ | d ₁ | G | I | Weight |
|---|---------|----------|----------|----------|---------|------|----------------|----------------|-------|------|--------|
| VALVE CAP CHROME ABS | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [inc] | [mm] | [kg] |
|  | | 10003210 | 10003210 | 10003210 | 1/2" | 20 | 21.5 | 22.5 | 3/4" | 50 | |
| | | 10003211 | 10003211 | 10003211 | 3/4" | 25 | 21.5 | 22.5 | 3/4" | 50 | |
| | | 10003212 | 10003212 | 10003212 | 1" | 32 | 21.5 | 22.5 | 3/4" | 50 | |
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| ITEM DESCRIPTION | PICTURE | CODE | | | DN | | d ₁ | d ₂ | G | e ₁ | L | L ₁ | RP ₁ - RP ₂ | Weight |
|--|---------|----------|----------|----------|-------|------|----------------|----------------|------|----------------|------|----------------|-----------------------------------|--------|
| VALVE WITH TWO OUTLETS | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [kg] |
|  | | 10003750 | 10003750 | 10003750 | 1/2" | 20 | 19.2 | 19 | 1/2" | 3.9 | 82 | 14.5 | 1/8" | |
| | | 10003751 | 10003751 | 10003751 | 3/4" | 25 | 24.2 | 23.9 | 3/4" | 4.8 | 87 | 16 | 1/8" | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |

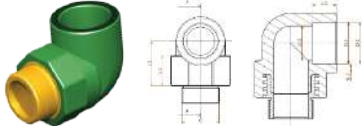
| ITEM DESCRIPTION | PICTURE | CODE | | | DN | | d ₁ | d ₂ | e | G | e ₁ | L | L ₁ | h | H | Weight |
|---|---------|----------|----------|----------|-------|------|----------------|----------------|------|-------|----------------|------|----------------|------|------|--------|
| DRAINING VRANCH | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [mm] | [inc] | [mm] | [mm] | [mm] | [mm] | [mm] | [kg] |
|  | | 10001930 | 10001930 | 10001930 | 1/2" | 20 | 19.2 | 19 | 3.4 | 1/2" | 3.9 | 58.5 | 14.5 | 40 | 78 | |
| | | 10001931 | 10001931 | 10001931 | 3/4" | 25 | 24.2 | 23.9 | 4.2 | 3/4" | 4.8 | 58.5 | 16 | 40 | 81 | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |

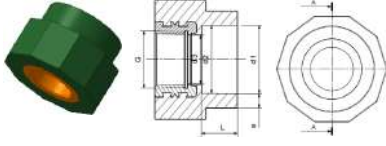
| ITEM DESCRIPTION | PICTURE | CODE | | | DN | | D ₁ | D ₂ | D ₃ | e | G | L | Weight |
|---|---------|----------|----------|----------|-------------|--------------|----------------|----------------|----------------|------|-------|------|--------|
| ELBOW 90°-MALE THREADED WITH DOUBLE FIXI | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [mm] | [mm] | [inc] | [mm] | [kg] |
|  | | 10001251 | 10001251 | 10001251 | 1/2" x 3/4" | 20 x 25 Male | 19.2 | 19 | 15.2 | 3.9 | 3/4" | 14.5 | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
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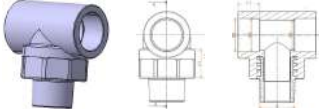
| ITEM DESCRIPTION | PICTURE | CODE | | | DN | | D ₁ | D ₂ | D ₃ | e | Rp | L | Weight |
|---|---------|----------|----------|----------|-------------|----------------|----------------|----------------|----------------|------|-------|------|--------|
| ELBOW 90°-FEMALE THREADED WITH DOUBLE FIXI | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [mm] | [mm] | [inc] | [mm] | [kg] |
|  | | 10001201 | 10001201 | 10001201 | 1/2" x 3/4" | 20 x 25 Female | 24.1 | 23.9 | 19.4 | 4.8 | 3/4" | 16 | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
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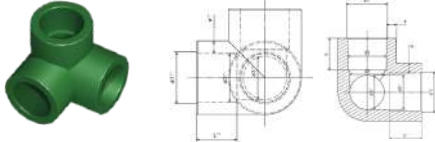
| ITEM DESCRIPTION | PICTURE | CODE | | | DN | | D ₁ | D ₂ | D ₃ | e ₁ | G | L ₁ | I ₁ | Weight |
|--|---------|----------|----------|----------|-------|------|----------------|----------------|----------------|----------------|-------|----------------|----------------|--------|
| RIGIPS ELBOW | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [mm] | [mm] | [inc] | [mm] | [mm] | [kg] |
|  | | 10001070 | 10001070 | 10001070 | 1/2" | 20 | 19.2 | 19 | 15.2 | 3.9 | 1/2" | 26.5 | 14.5 | 0.091 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |

| ITEM DESCRIPTION | PICTURE | CODE | | | DN | | d ₁ - d ₁₁ | d ₂ - d ₂₂ | d ₃ - d ₃₃ | S ₁ - S ₂ | L ₁ - L ₂ | L | Weight |
|---|---------|----------|----------|----------|--------|------|----------------------------------|----------------------------------|----------------------------------|---------------------------------|---------------------------------|------|--------|
| ELBOW 90° | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [kg] |
|  | | 10001020 | 10011020 | 10021020 | 1/2" | 20 | 19.2 | 19 | 15.2 | 4.1 | 14.5 | 26.5 | |
| | | 10001021 | 10011021 | 10021021 | 3/4" | 25 | 24.2 | 23.9 | 19.4 | 5.1 | 16 | 31.5 | |
| | | 10001022 | 10011022 | 10021022 | 1" | 32 | 31.1 | 30.9 | 25 | 6.5 | 18.1 | 38 | |
| | | 10001023 | 10011023 | 10021023 | 1 1/4" | 40 | 39 | 38.8 | 31.4 | 8.1 | 20.5 | 46 | |
| | | 10001024 | 10011024 | 10021024 | 1 1/2" | 50 | 48.9 | 48.7 | 39.4 | 10.1 | 23.5 | 52 | |
| | | 10001025 | 10011025 | 10021025 | 2" | 63 | 61.9 | 61.6 | 49.8 | 12.7 | 27.4 | 62 | |
| | | 10001026 | 10011026 | 10021026 | 2 1/2" | 75 | 74.3 | 73.1 | 59.4 | 15.1 | 31 | 69 | |
| | | 10001027 | 10011027 | 10021027 | 3" | 90 | 89.3 | 87.9 | 71.6 | 18.1 | 35.5 | 81 | |
| | | 10001028 | 10011028 | 10021028 | 4" | 110 | 109.4 | 10.7 | 87.6 | 22.1 | 41.5 | 98 | |
| | | 10000209 | | | 4 1/2" | 125 | | | | | | | |

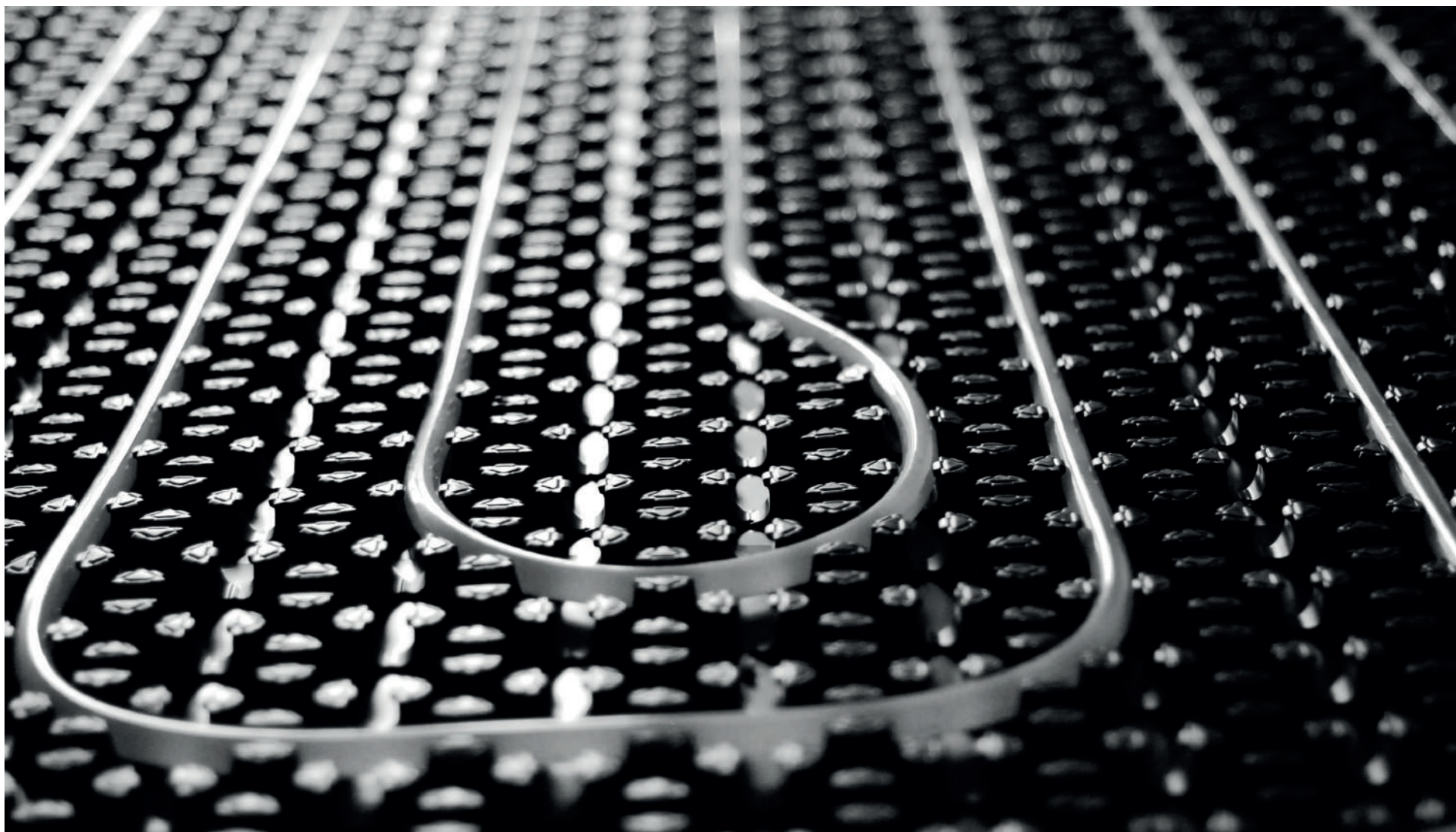
| ITEM DESCRIPTION | PICTURE | CODE | | | DN | | D ₁ | D ₂ | D ₃ | e ₁ | G | L ₁ | L ₂ | L ₃ | Weight |
|---|---------|----------|----------|----------|-------|---------|----------------|----------------|----------------|----------------|-------|----------------|----------------|----------------|--------|
| ELBOW 90° - MALE THREADED | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [mm] | [mm] | [inc] | [mm] | [mm] | [mm] | [kg] |
|  | | 10001150 | 10001150 | 10001150 | 1/2" | 20 Male | 19.2 | 19 | 15.2 | 4.1 | 1/2" | 14.5 | 22 | 32 | |
| | | 10001151 | 10001151 | 10001151 | 3/4" | 25 Male | 24.2 | 23.9 | 19.4 | 5.1 | 3/4" | 16 | 25 | 36 | |
| | | 10001152 | 10001152 | 10001152 | 1" | 32 Male | 31.1 | 30.9 | 25 | 6.5 | 1" | 18.1 | 30 | 40 | |

| ITEM DESCRIPTION | PICTURE | CODE | | | DN | | D ₁ | D ₂ | D ₃ | e | G | L | Weight |
|---|---------|-------|-------|------|---------------|---------|----------------|----------------|----------------|------|-------|------|--------|
| SOCKET - FEMALE THREADED | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [mm] | [mm] | [inc] | [mm] | [kg] |
|  | | | | | 1/2" x 3/4" | 20 x 25 | 19.2 | 19 | 15.2 | 3.9 | 3/4" | 14.5 | |
| | | | | | 3/4" x 1/2" | 25 x 20 | 24.2 | 23.9 | 19.4 | 4.8 | 1/2" | 16 | |
| | | | | | 1" x 3/4" | 32 x 25 | 31.1 | 30.9 | 25 | 6.1 | 3/4" | 18.1 | |
| | | | | | 1 1/4" x 3/4" | 40 x 32 | 39 | 38.8 | 31.4 | 7.5 | 1" | 20.5 | |

| ITEM DESCRIPTION | PICTURE | CODE | | | DN | | D ₁ | D ₂ | D ₃ | G | L ₁ | L ₂ | L ₃ | Weight |
|---|---------|----------|----------|----------|-------|---------|----------------|----------------|----------------|-------|----------------|----------------|----------------|--------|
| TEE - MALE THREADED | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [mm] | [inc] | [mm] | [mm] | [mm] | [kg] |
|  | | 10001950 | 10001950 | 10001950 | 1/2" | 20 Male | 19.2 | 19 | 15.2 | 1/2" | 14.5 | 26 | 35 | |
| | | 10001951 | 10001951 | 10001951 | 3/4" | 25 Male | 24.2 | 23.9 | 19.4 | 3/4" | 16 | 26 | 36 | |
| | | 10001952 | 10001952 | 10001952 | 1" | 32 Male | 31.1 | 30.9 | 25 | 1" | 18.1 | 27 | 43 | |

| ITEM DESCRIPTION | PICTURE | CODE | | | DN | | d ₁ - d _{1'} - d _{1''} | d ₂ - d _{2'} - d _{2''} | d ₃ - d _{3'} - d _{3''} | e - e' - e'' | L ₁ - L | Weight |
|---|---------|----------|----------|----------|-------|------|---|---|---|--------------|--------------------|--------|
| THREE-WAY ELBOW | | GREEN | WHITE | GRAY | [inc] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [kg] |
|  | | 10001050 | 10001050 | 10001050 | 1/2" | 20 | 19.2 | 19 | 15.2 | 3.9 | 14.5 | 0.022 |
| | | 10001051 | 10001051 | 10001051 | 3/4" | 25 | 24.1 | 23.9 | 19.4 | 4.8 | 16 | 0.035 |

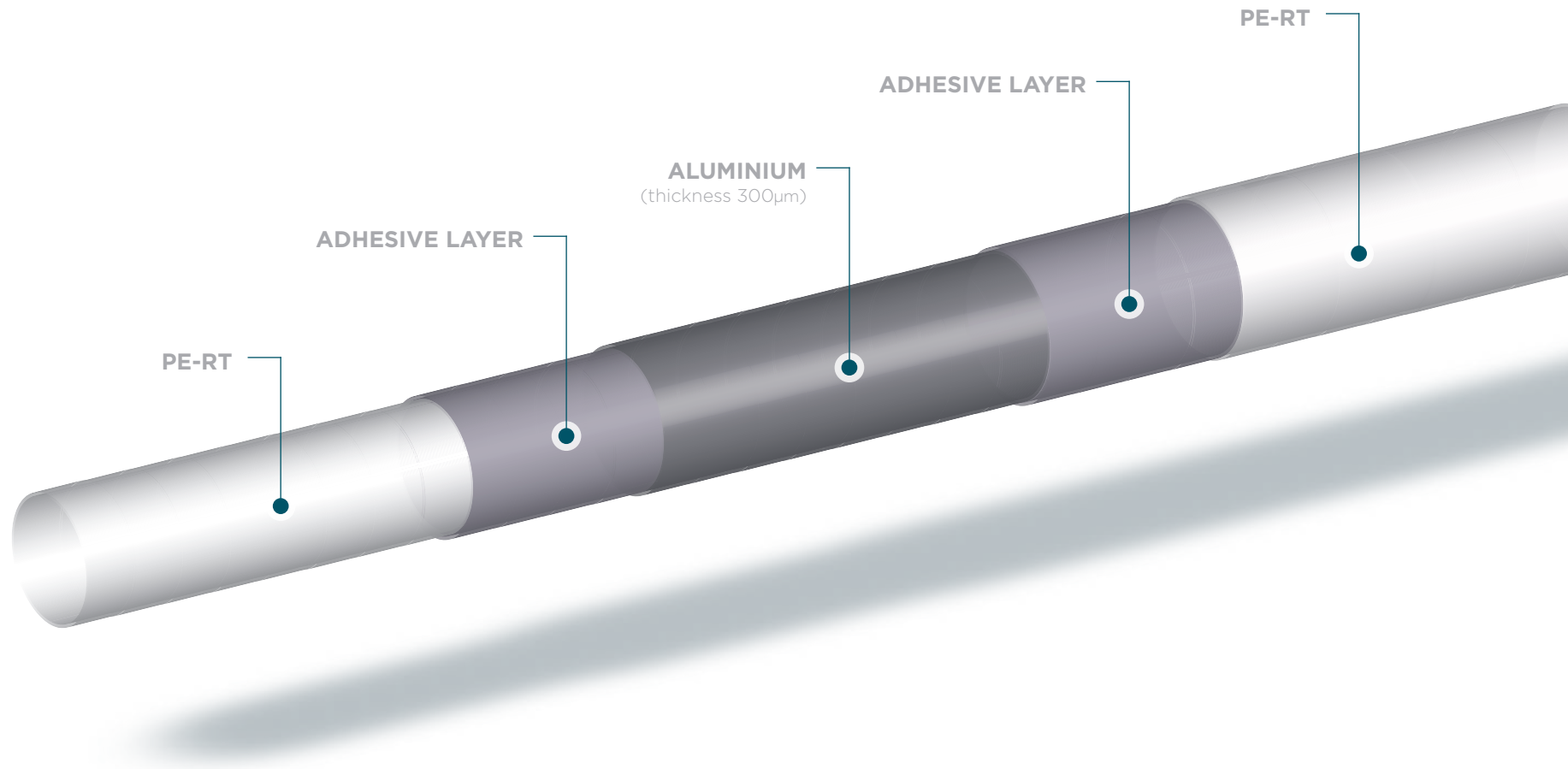




PERT-AL-PERT



Distribution of hot and cold water / Radiator connections / Underfloor heating



STRUCTURE OF PERT-AL PIPES

- Inner PE-RT layer
- Adhesive layer
- Aluminium
- Adhesive layer
- Outer layer made of PE-RT

PROPERTIES OF PERT-AL PIPES

The pipe possesses high resistance to temperature and pressure as well as dimensional stability, impermeability to oxygen, and low thermal expansion.

- The same system for all applications
- Lasting and tight connections
- 100 % oxygen barrier
- Low linear thermal expansion
- Time scale or oxidation will not occur
- Suitable for drinking water supply

CARACTERISTICS OF PERT-AL PIPES

- Good resistance at elevated temperatures
- Shape stability
- Butt - welding process
- Aluminium thickness is 300 µm
- Coefficient of thermal expansion is 0.024 mm/mK
- Pipes have been tested at 95 °C at 3.9 MPa hydrostatic stress for 22h

FIELD OF APPLICATION PERT-AL PIPES

- Hot and cold water distribution
- Radiator connections
- Underfloor heating

CROSS SECTION OF PERT-AL PIPES



BENDING RADIUS OF
ALUPEX PIPES IS 5*OD



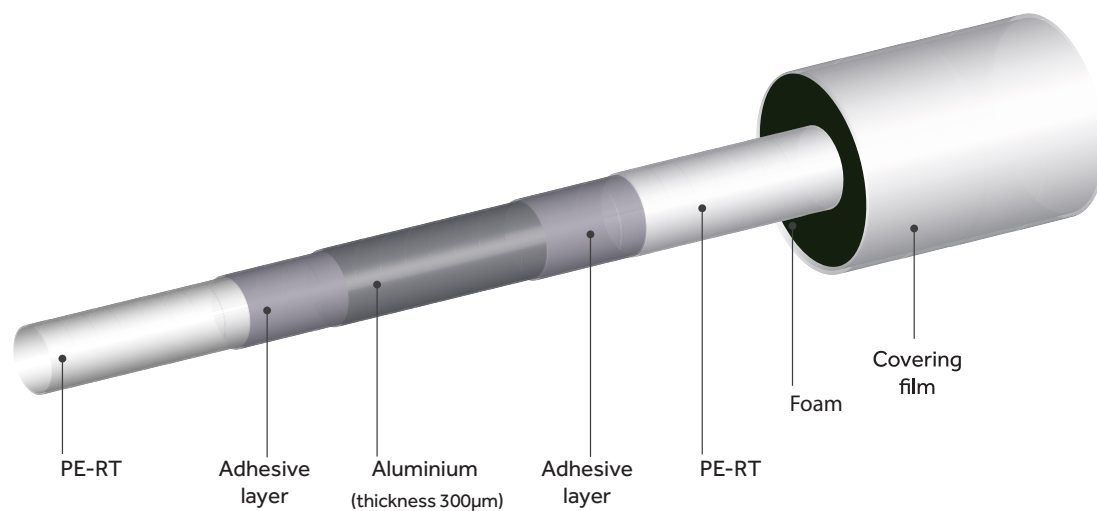
Available products PERT-AL pipes **Ø16, Ø20, Ø25, Ø32**

| APPLICATION CLASS | T _d (°C) | TIME ON T _d (YEAR) | T _{max} (°C) | TIME ON T _{max} (GODINA) | T _{mal} °C | TIME ON T _{mal} (SATI) | FIELD OF APPLICATION | PERMISSIBLE OPERATING PRESSURE |
|-------------------|---------------------|-------------------------------|-----------------------|-----------------------------------|---------------------|---------------------------------|--|--------------------------------|
| 1 | 60 | 49 | 80 | 19 | 51 | 00 | Hot water (60 °C) | 10 bar |
| 2 | 70 | 49 | 80 | 19 | 51 | 00 | Hot water (70 °C) | 8 bar |
| | 20 | 2,5 | | | | | | |
| | + | | | | | | | |
| 4 | 40 | 20 | 70 | 2,51 | 00 | 100 | Underfloor heating and low temperature radiators | 8 bar |
| | + | | | | | | | |
| | 60 | 2,5 | | | | | | |
| | 20 | 14 | | | | | | |
| | + | | | | | | | |
| 5 | 60 | 25 | 90 | 11 | 00 | 100 | High temperature radiators | 8 bar |
| | + | | | | | | | |
| | 80 | 10 | | | | | | |



PRE-INSULATED **PERT-AL-PERT**

- Hot and cold water transport
- Central heating (radiator connections)



Technical data:

Material: Neumreženi polietilen

Cell structure: Closed cells structure

Thermal conductivity of insulation: $<0,040\text{W/MK}$ at $0\text{ }^{\circ}\text{C}$
according to EN12667

Aerated water pass trough $>$ according to EN13469

Insulation thickness: $24 \pm 10\%$ kg/m^3 (ISO 845)

Insulation color: Grey

Insulation width: $6 \pm 1\text{ mm}$ according to
EN14313:2009+A1: 2013

Insulation work temperature up to: $+85\text{ }^{\circ}\text{C}$.

Markings: Peštan, EPE Pipe 16/6, datum.

Available diameters: $\varnothing 16$, $\varnothing 20$, $\varnothing 25$, $\varnothing 32$

Package: 50 m rolls

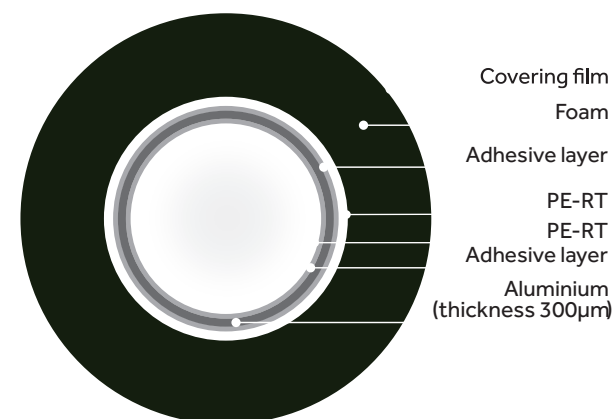
Pestan PERT – AL – PERT pipes are being used for radiating heating installations and potable water transportation. Depending on the client's wish they can be produced with or without protective isolation.

Isolation tube is made of expanded polyethylene foam of closed cells structure. It is meant for thermal insulation of pipe systems and complies with all the most important criteria for thermo-isolation of pipe systems by temperatures up to $85\text{ }^{\circ}\text{C}$.

Pestan pre-isolated PERT-AL-PERT consists of isolation tube and pipe.

Isolation tube is made of expanded polyethylene foam of grey color and doesn't contain CFC nor HCFC. Product must be stored in covered and dry area in it's original package.

Pestan PERT-AL-PERT pipes are made of high temperature resistant polyethylene and it has the rest of the high quality components al in accordance with standard and SKZ certificate to support it.



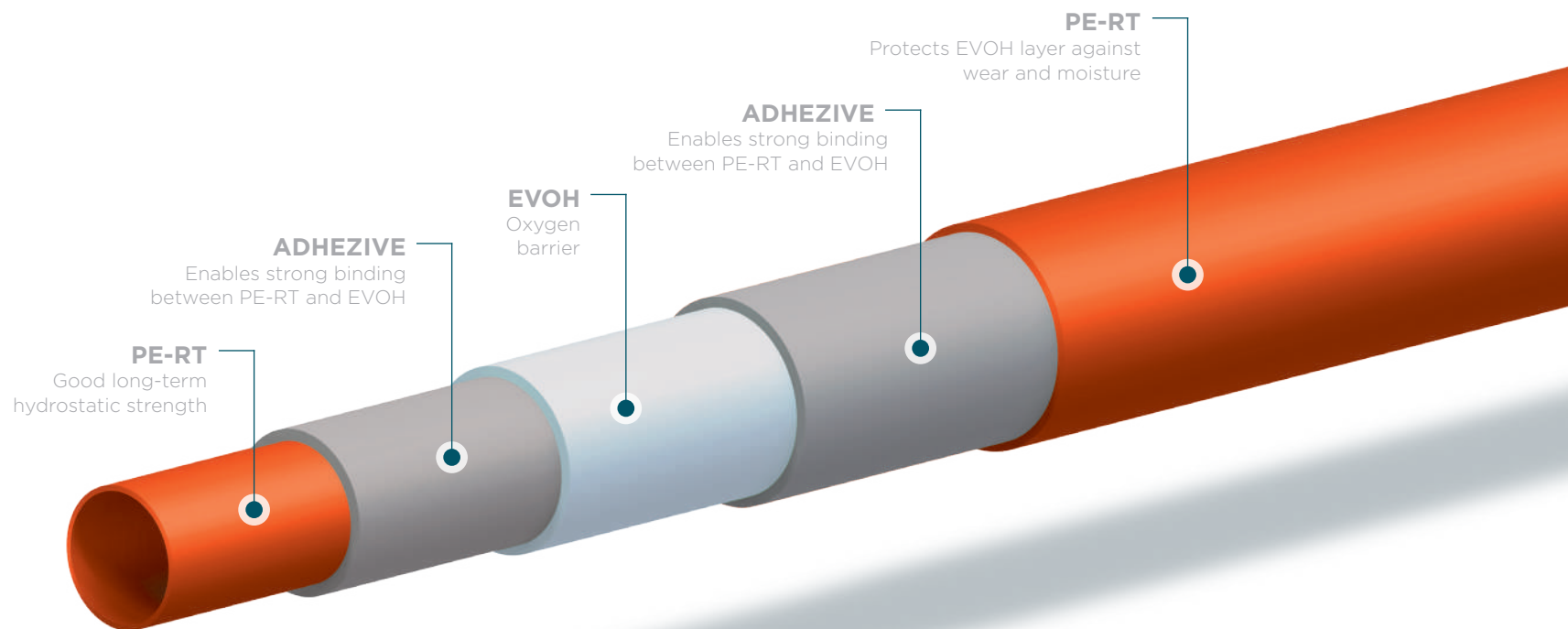


PE-RT OXY



Five layer pipe with evoh oxygen barrier

PE-RT Oxy five layer pipe is made of polyethylene with raised temperature resistance (PE-RT Type II), which possess good long term hydrostatic strength. PE-RT Type II protect damage of EVOH layer from wear and moisture during transport and construction which ensure the full efficiency of EVOH oxygen barrier during the long period e.g. proposed service life of pipe. EVOH layer doesn't allow diffusion of oxygen into the heating system therefore prevent corrosion of metal parts and devices.



Characteristics

PE-RT Oxy

Good long term hydrostatic strength without crosslinking. Fusible with all know welding methods. Very high stress crack resistance. High flexibility. Good creep behavior. It melts on temperatures above 140 °C. It burns on the open flame and turn into CO₂ and water.

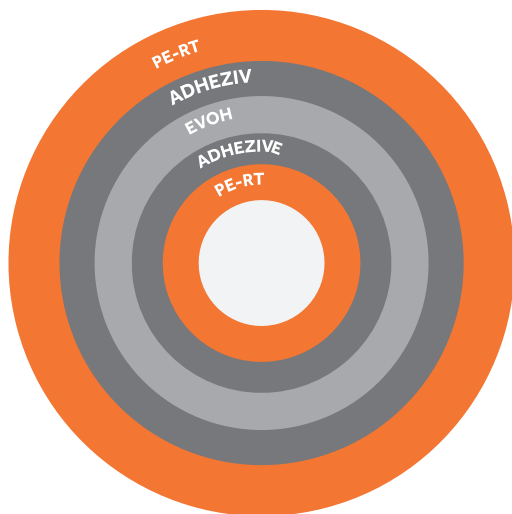
Application

PE-RT Oxy

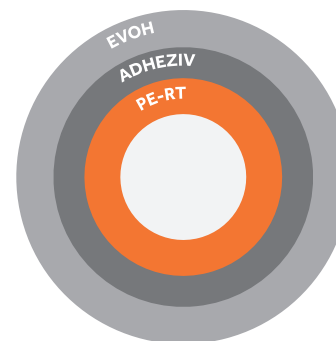
Underfloor heating. For hot and cold water distribution Radiator connection

Product range

- 16 x 2 mm
- 17 x 2 mm
- 18 x 2 mm
- 20 x 2 mm
- 22 x 3 mm
- 28 x 3 mm
- 28 x 4 mm



EVOH layer is in the middle of the pipe so it is fully protected from wear and moisture during transport and construction which ensure the full efficiency of EVOH oxygen barrier during the long period e.g. proposed service life of pipe.

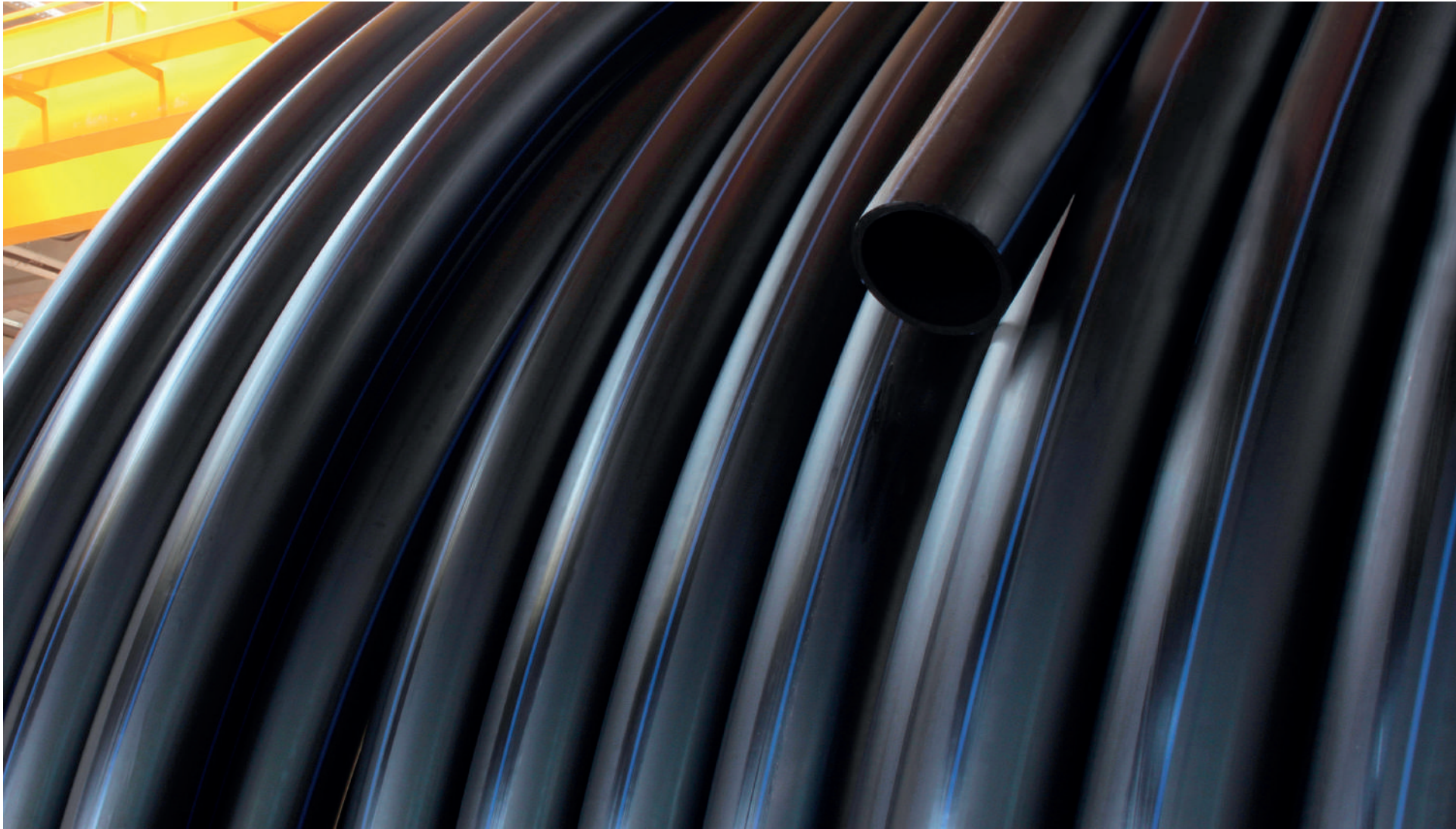


Outer layer of pipe is made of EVOH. Therefore, EVOH is directly exposed to wear and humidity. Oxygen impermeability will decrease with humidity increases.

APPLICATION CLASSES OF PESTAN PE-RT OXY PIPES (IN ACCORDANCE WITH ISO 22391)

| APPLICATION CLASSES | TD (°C) | TIME ON TD (YEARS) | T _{MAX} (°C) | TIME ON T _{MAX} (YEARS) | T _{MAL} (°C) | TIME ON T _{MAL} (SATI) | FIELD OF APPLICATION | ALLOWED OPERATING PRESSURE |
|---------------------|---------|--------------------|-----------------------|----------------------------------|-----------------------|---------------------------------|--|----------------------------|
| 1 | 60 | 49 | 80 | 1 | 95 | 100 | Hot water (60 °C) | 10 bar |
| 2 | 70 | 49 | 80 | 1 | 95 | 100 | Hot water (70 °C) | 8 bar |
| | 20 | 2,5 | | | | | | |
| | | + | | | | | | |
| 4 | 40 | 20 | 70 | 2,5 | 100 | 100 | Underfloor heating and low temperature radiators | 8 bar |
| | 60 | 2,5 | | | | | | |
| | 20 | 14 | | | | | | |
| | | + | | | | | | |
| 5 | 60 | 25 | 90 | 1 | 100 | 100 | High temperature radiators | 8 bar |
| | | + | | | | | | |
| | 80 | 10 | | | | | | |

TD - projected temperature
T_{max} - maximum temperature
T_{mal} - malfunction temperature



HDPE WATER PIPES



High Density Polyethylene water pipes PE-80 and PE-100

HDPE water pipes are being manufactured from original High Density Polyethylene PE 80 and PE 100. MRS- classification is MRS=8Mpa, respectively MRS=10Mpa, meaning that pipe will tolerate the same stress 50 years after.

PEŠTAN is using the best raw materials of well-known worldwide raw material suppliers. Quality of products is being monitoring in modern control quality department laboratory. Used materials have a proof of independent European laboratory for MRS classification. Safety coefficient of pipes is 1,25.

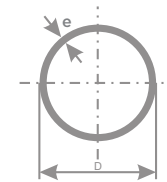
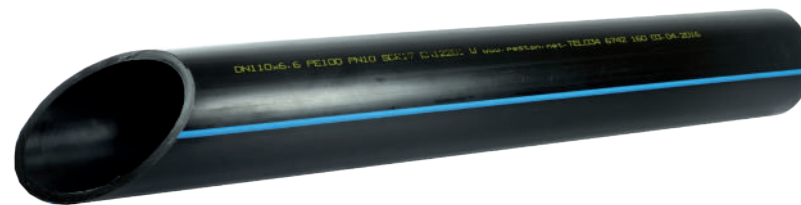
Pipes are completely in accordance with SRPS-EN 12201
Marking of pipes corresponds to European standards.

Advantages of PE-80 and PE-100 pipes

- Material is absolutely non-toxic and completely inert in contact with water;
- Easy for transport and handling;
- Easy connection by welding or with couplings;
- Life time above 50 years;
- No impact on water taste and smell;
- Tartar free that helps reduction water flow during the time;
- Very flexible and extremely resistant to vibration, seismic strikes and ground movements HDPE 80 pipes are more flexible.
- Pipeline can follow configuration of the ground because of its elasticity that reduces couplings needed
- Bending radius is 20d
- Pipes are UV resistant and resistant to temperatures from -30 °C up to +60 °C
- High abrasion resistance
- Very low pressure losses since coefficient friction are 10 times less than with steel pipes
- Transition from PE80 to PE100 is being done with electric coupling

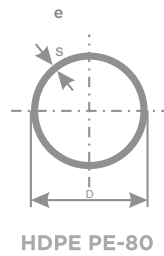
| SDR 6 (S-2,5) PN32 | | | SDR 7,4 (S-3,2) PN25 | | | SDR 9 (S-4) PN20 | | SDR 11 (S-5) PN16 | | SDR 13,6 (S-6,3) PN12,5 | | SDR 17 (S-8) PN10 | | SDR 21 (S-10) PN8 | | SDR 26 (S-12,5) PN6 | | SDR 33 (S-16) PN5 | | SDR 41 (S-20) PN4 | | |
|--------------------|------------------|-------|----------------------|-------|------------------|------------------|------------------|-------------------|------------------|-------------------------|------------------|-------------------|------------------|-------------------|------------------|---------------------|------------------|-------------------|------------------|-------------------|------------------|------|
| D (MM) | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M |
| 16 | 3,0 | 0,15 | 2,3 | 0,1 | 2 | 0,09 | | | | | | | | | | | | | | | | |
| 20 | 3,4 | 0,18 | 3,0 | 0,154 | 2,3 | 0,13 | 2 | 0,12 | | | | | | | | | | | | | | |
| 25 | 4,2 | 0,278 | 3,5 | 0,240 | 3 | 0,21 | 2,3 | 0,17 | 2,0 | 0,151 | 1,9 | 0,14 | | | | | | | | | | |
| 32 | 5,4 | 0,454 | 4,4 | 0,386 | 3,6 | 0,33 | 3 | 0,28 | 2,4 | 0,228 | 2 | 0,2 | | | | | | | | | | |
| 40 | 6,7 | 0,701 | 5,5 | 0,600 | 4,5 | 0,51 | 3,7 | 0,43 | 3,0 | 0,354 | 2,4 | 0,29 | 2,0 | 0,251 | | | | | | | | |
| 50 | 8,3 | 1,09 | 6,9 | 0,936 | 5,6 | 0,79 | 4,6 | 0,67 | 3,7 | 0,550 | 3 | 0,45 | 2,4 | 0,372 | 2,0 | 0,317 | | | | | | |
| 63 | 10,5 | 1,73 | 8,6 | 1,47 | 7,1 | 1,26 | 5,8 | 1,06 | 4,7 | 0,869 | 3,8 | 0,72 | 3,0 | 0,586 | 2,5 | 0,482 | | | | | | |
| 75 | 12,5 | 2,44 | 10,3 | 2,09 | 8,4 | 1,78 | 6,8 | 1,47 | 5,6 | 1,23 | 4,5 | 1,02 | 3,6 | 0,826 | 2,9 | 0,682 | | | | | | |
| 90 | 15,0 | 3,51 | 12,3 | 3,0 | 10,1 | 2,56 | 8,2 | 2,14 | 6,7 | 1,76 | 5,4 | 1,46 | 4,3 | 1,19 | 3,5 | 0,987 | | | | | | |
| 110 | 18,3 | 5,24 | 15,1 | 4,49 | 12,3 | 3,81 | 10 | 3,17 | 8,1 | 2,63 | 6,6 | 2,18 | 5,3 | 1,77 | 4,2 | 1,45 | | | | | | |
| 125 | 20,8 | 6,75 | 17,1 | 5,77 | 14 | 4,3 | 11,4 | 4,11 | 9,2 | 3,39 | 7,4 | 2,78 | 6,0 | 2,28 | 4,8 | 1,86 | | | | | | |
| 140 | 23,3 | 8,47 | 19,2 | 7,25 | 15,7 | 6,17 | 12,7 | 5,12 | 10,3 | 4,25 | 8,3 | 3,49 | 6,7 | 2,85 | 5,4 | 2,35 | | | | | | |
| 160 | 26,6 | 11,0 | 21,9 | 9,44 | 17,9 | 8,04 | 14,6 | 6,73 | 11,8 | 5,54 | 9,5 | 4,55 | 7,7 | 3,73 | 6,2 | 3,08 | | | | | | |
| 180 | 29,9 | 14,0 | 24,6 | 11,9 | 20,1 | 10,17 | 16,4 | 8,5 | 13,3 | 7,01 | 10,7 | 5,76 | 8,6 | 4,69 | 6,9 | 3,83 | | | | | | |
| 200 | 33,2 | 17,2 | 27,4 | 14,8 | 22,4 | 12,58 | 18,2 | 10,49 | 14,7 | 8,65 | 11,9 | 7,11 | 9,6 | 5,81 | 7,7 | 4,74 | | | | | | |
| 225 | 37,4 | 21,8 | 30,8 | 18,6 | 25,2 | 15,92 | 20,5 | 13,27 | 16,6 | 10,6 | 13,4 | 9,01 | 10,8 | 7,35 | 8,6 | 5,96 | | | | | | |
| 250 | 41,5 | 27,0 | 34,2 | 23,0 | 27,9 | 19,57 | 22,7 | 16,33 | 18,4 | 13,5 | 14,8 | 11,05 | 11,9 | 9,03 | 9,6 | 7,38 | | | | | | |
| 280 | 46,5 | 33,8 | 38,3 | 28,9 | 31,3 | 24,6 | 25,4 | 20,47 | 20,6 | 16,9 | 16,6 | 13,88 | 13,4 | 11,34 | 10,7 | 9,2 | | | | | | |
| 315 | 52,3 | 42,7 | 43,1 | 36,5 | 35,2 | 31,11 | 28,6 | 25,9 | 23,2 | 21,4 | 18,7 | 17,57 | 15,0 | 14,3 | 12,1 | 11,7 | 9,7 | 9,7 | 7,7 | 7,60 | | |
| 355 | 59,0 | 54,3 | 48,5 | 46,3 | 39,7 | 39,5 | 32,2 | 32,88 | 26,1 | 27,2 | 21,1 | 22,36 | 16,9 | 18,2 | 13,6 | 14,8 | 10,9 | 12,1 | 8,7 | 9,6 | | |
| 400 | | | 54,7 | 58,8 | 44,7 | 50,12 | 36,3 | 41,75 | 29,4 | 35,2 | 23,7 | 28,27 | 19,1 | 23,6 | 15,3 | 19,1 | 12,3 | 15,7 | 9,8 | 12,5 | | |
| 450 | | | 61,5 | 74,4 | 50,3 | 62,7 | 40,9 | 52,87 | 33,1 | 44,6 | 26,7 | 35,81 | 21,5 | 29,8 | 17,2 | 24,2 | 13,8 | 19,9 | 11,0 | 15,8 | | |
| 500 | | | 68,3 | 92,0 | 55,8 | 77,3 | 45,4 | 65,24 | 36,8 | 55,0 | 29,7 | 44,25 | 23,9 | 36,9 | 19,1 | 29,9 | 15,3 | 24,4 | 12,3 | 19,4 | | |
| 560 | | | | | 62,5 | 97 | 50,8 | 80,8 | 41,2 | 69,0 | 33,2 | 55,43 | 26,7 | 46,2 | 21,4 | 37,5 | 17,2 | 30,7 | 13,7 | 24,4 | | |
| 630 | | | | | 71 | 127,6 | 57,2 | 102 | 46,3 | 87,3 | 37,4 | 70,21 | 30,0 | 52,9 | 24,1 | 47,4 | 19,3 | 38,7 | 15,4 | 30,8 | | |
| 710 | | | | | 80* | 162* | 64,5 | 130 | 52,2 | 110,8 | 42,1 | 89 | 33,9 | 74,2 | 27,2 | 60,2 | 21,8 | 49,2 | 17,4 | 39,0 | | |
| 800 | | | | | 90,1* | 205,7* | 72,7 | 170,4 | 58,8 | 140,7 | 47,4 | 113 | 38,1 | 94,0 | 30,6 | 76,3 | 24,5 | 62,4 | 19,6 | 49,5 | | |
| 900 | | | | | | | 81,7 | 211,8 | 66,1 | 174,9 | 53,3 | 143,4 | 42,9 | 116,8 | 34,4 | 95,1 | 27,6 | 76,7 | 22 | 61,5 | | |
| 1000 | | | | | | | 90,8 | 261,6 | 73,4 | 215,9 | 59,3 | 177,2 | 47,7 | 144,4 | 38,2 | 116,9 | 30,6 | 94,0 | 24,5 | 76,2 | | |
| 1200 | | | | | | | | | 88,2 | 311,1 | 71,1 | 254,9 | 57,2 | 207,8 | 45,9 | 168,4 | 36,7 | 135,9 | 29,4 | 109,6 | | |

*other sizes are available upon request



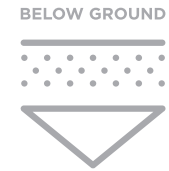
HDPE PE-100

| SDR 6 (S-2,5) PN 25 | | | SDR 7,4 (S-3,2) PN 20 | | | SDR 9 (S-4) PN 16 | | | SDR 11 (S-5) PN 12,5 | | | SDR 13,6 (S-6,3) PN 10 | | | SDR 17 (S-8) PN 8 | | | SDR 21 (S-10) PN 6 | | | SDR 26 (S-12,5) PN 5 | | | SDR 33 (S-16) PN 4 | | | SDR 41 (S-20) PN 3,2 | | |
|---------------------|------------------|-------|-----------------------|------|------------------|-------------------|------------------|-------|----------------------|------|------------------|------------------------|------------------|------|-------------------|-------|------------------|--------------------|------------------|------|----------------------|------|------------------|--------------------|------------------|------|----------------------|------|--|
| D (MM) | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M | |
| 16 | 3,0 | 0,15 | 2,3 | 0,1 | 2,0 | 0,09 | 1,9 | 0,9 | 1,8 | 0,08 | | | | | | | | | | | | | | | | | | | |
| 20 | 3,4 | 0,18 | 3,0 | 0,16 | 2,3 | 0,13 | 2,0 | 0,12 | 1,9 | 0,11 | | | | | | | | | | | | | | | | | | | |
| 25 | 4,2 | 0,278 | 3,5 | 0,24 | 3,0 | 0,21 | 2,3 | 0,17 | 2,0 | 0,15 | | | | | | | | | | | | | | | | | | | |
| 32 | 5,4 | 0,454 | 4,4 | 0,38 | 3,6 | 0,32 | 3,0 | 0,28 | 2,4 | 0,23 | 2,0 | 0,2 | | | | | | | | | | | | | | | | | |
| 40 | 6,7 | 0,701 | 5,5 | 0,6 | 4,5 | 0,56 | 3,7 | 0,43 | 3,0 | 0,36 | 2,4 | 0,29 | 2,0 | 0,24 | | | | | | | | | | | | | | | |
| 50 | 8,3 | 1,09 | 6,9 | 0,93 | 5,6 | 0,78 | 4,6 | 0,67 | 3,7 | 0,54 | 3,0 | 0,45 | 2,4 | 0,37 | 2,0 | 0,317 | | | | | | | | | | | | | |
| 63 | 10,5 | 1,73 | 8,6 | 1,47 | 7,1 | 1,25 | 5,8 | 1,06 | 4,7 | 0,87 | 3,8 | 0,72 | 3,0 | 0,58 | 2,5 | 0,482 | | | | | | | | | | | | | |
| 75 | 12,5 | 2,44 | 10,3 | 2,09 | 8,4 | 1,76 | 6,8 | 1,47 | 5,6 | 1,23 | 4,5 | 1,02 | 3,6 | 0,82 | 2,9 | 0,682 | | | | | | | | | | | | | |
| 90 | 15,0 | 3,51 | 12,3 | 2,99 | 10,1 | 2,54 | 8,2 | 2,14 | 6,7 | 1,76 | 5,4 | 1,46 | 4,3 | 1,18 | 3,5 | 0,987 | | | | | | | | | | | | | |
| 110 | 18,3 | 5,24 | 15,1 | 4,48 | 12,3 | 3,77 | 10,0 | 3,17 | 8,1 | 2,61 | 6,6 | 2,18 | 5,3 | 1,77 | 4,2 | 1,45 | | | | | | | | | | | | | |
| 125 | 20,8 | 6,75 | 17,1 | 5,77 | 14 | 4,86 | 11,4 | 4,11 | 9,2 | 3,36 | 7,4 | 2,78 | 6,0 | 2,27 | 4,8 | 1,86 | | | | | | | | | | | | | |
| 140 | 23,3 | 8,47 | 19,2 | 7,25 | 15,7 | 6,11 | 12,7 | 5,12 | 10,3 | 4,21 | 8,3 | 3,49 | 6,7 | 2,83 | 5,4 | 2,35 | | | | | | | | | | | | | |
| 160 | 26,6 | 11,0 | 21,9 | 9,44 | 17,9 | 7,95 | 14,6 | 6,73 | 11,8 | 5,29 | 9,5 | 4,55 | 7,7 | 3,72 | 6,2 | 3,08 | | | | | | | | | | | | | |
| 180 | 29,9 | 14,0 | 24,6 | 11,9 | 20,1 | 10,1 | 16,4 | 8,5 | 13,3 | 6,74 | 10,7 | 5,76 | 8,6 | 4,67 | 6,9 | 3,83 | | | | | | | | | | | | | |
| 200 | 33,2 | 17,2 | 27,4 | 14,8 | 22,4 | 12,4 | 18,2 | 10,49 | 14,7 | 8,3 | 11,9 | 7,11 | 9,6 | 5,78 | 7,7 | 4,74 | | | | | | | | | | | | | |
| 225 | 37,4 | 21,8 | 30,8 | 18,7 | 25,2 | 15,6 | 20,5 | 13,27 | 16,6 | 10,6 | 13,4 | 9,01 | 10,8 | 7,30 | 8,6 | 5,96 | | | | | | | | | | | | | |
| 250 | 41,5 | 27,0 | 34,2 | 2,3 | 27,9 | 19,4 | 22,7 | 16,33 | 18,4 | 13,4 | 14,8 | 11,05 | 11,9 | 8,93 | 9,6 | 7,38 | | | | | | | | | | | | | |
| 280 | 46,5 | 33,8 | 38,3 | 28,9 | 31,3 | 25 | 25,4 | 20,47 | 20,6 | 16,7 | 16,6 | 13,88 | 13,4 | 11,3 | 10,7 | 9,2 | | | | | | | | | | | | | |
| 315 | 52,3 | 42,7 | 43,1 | 36,6 | 35,2 | 30,8 | 28,6 | 25,9 | 23,2 | 21,2 | 18,7 | 17,57 | 15,0 | 14,2 | 12,1 | 11,7 | 9,7 | 9,7 | 7,7 | 7,60 | | | | | | | | | |
| 355 | 59,0 | 54,3 | 48,5 | 46,3 | 39,7 | 39,1 | 32,2 | 32,88 | 26,1 | 26,9 | 21,1 | 22,36 | 16,9 | 18,0 | 13,6 | 14,8 | 10,9 | 12,1 | 8,7 | 9,6 | | | | | | | | | |
| 400 | | | | | 44,7 | 49,6 | 36,3 | 41,75 | 29,4 | 34,1 | 23,7 | 28,27 | 19,1 | 22,9 | 15,3 | 19,1 | 12,3 | 15,7 | 9,8 | 12,5 | | | | | | | | | |
| 450 | | | | | | | 40,9 | 52,87 | 33,1 | 43,2 | 26,7 | 35,81 | 21,5 | 28,9 | 17,2 | 24,2 | 13,8 | 19,9 | 11,0 | 15,8 | | | | | | | | | |
| 500 | | | | | | | 45,4 | 65,24 | 36,8 | 53,4 | 29,7 | 44,25 | 23,9 | 35,7 | 19,1 | 29,9 | 15,3 | 24,4 | 12,3 | 19,4 | | | | | | | | | |
| 560 | | | | | | | 50,8 | 80,8 | 41,2 | 66,9 | 33,2 | 55,43 | 26,7 | 44,7 | 21,4 | 37,5 | 17,2 | 30,7 | 13,7 | 24,4 | | | | | | | | | |
| 630 | | | | | | | 57,2 | 102 | 46,3 | 84,6 | 37,4 | 70,21 | 30,0 | 56,4 | 24,1 | 47,4 | 19,3 | 38,7 | 15,4 | 30,8 | | | | | | | | | |
| 710 | | | | | | | 64,5 | 130 | 52,2 | 109 | 42,1 | 89 | 33,9 | 71,8 | 27,2 | 60,2 | 21,8 | 49,2 | 17,4 | 39,0 | | | | | | | | | |
| 800 | | | | | | | 72,7 | 170,4 | 58,8 | 138 | 47,4 | 113 | 38,1 | 91,8 | 30,6 | 76,3 | 24,5 | 62,4 | 19,6 | 49,5 | | | | | | | | | |





HDPE RC WATER PIPES



Water pipes made out of high density polyethylene PE 100-RC



POLYETHYLENE PIPES - BASIC DATA

Polyethylene is the most famous product made of plastic in mass production. It is classic member of polyolefin material family. Chemical formula of PE is $(CH_2 - CH_2)_n$ which makes it ecologically compatible hydro-carbonic product. Peštan uses for it's production of PE pipes PE-HD, polyethylene of high density that is.

PE-HD pipes are of very high quality for which the tests under the norms DIN EN ISO 12162 and ISO/TR 9080 have proven their life time to be more than 100 years. Practical use also confirms the same, in application in gas, water or sewage networks. PE-HD pipeline systems, some of which are in function for over the 40 years, are characterized by great security in it's usage, low costs of maintenance.

Pestan is offering a wide range of PE pressure pipe systems, designed for potable water, gas (EN 1555 and EN 12201). Pestan pressure pipes are made of polyethylene HD: PE-100.

Positive characteristics of polyethylene pipes are undoubtable. They are firm, resistant in touch with aggressive enviornment, resistant to corrosion and mechanical impacts. Advantage of PE pipes comparing them to others are: light weight, flexibility, very small pressure loss during friction, toughness in low temperatures, high chemical resistance, good connectivity and low price. PE has a great resistance to acids and greasy substances, insoluble in organic or non organic solvents in temperatures from 20 °C. They are very light and flexible so they offer economical application. Due to it's flexibility very long lines can be layed without using the fittings because pipes can follow the configuration of the grounds, like horizontal turnings of the pipeline routes. By applying PE pipes during the construction of the pipelines the share of fittings and armature in works is minimal. Also the length of pipes can be delivered by special requests for projects, that can diminish building expenses.



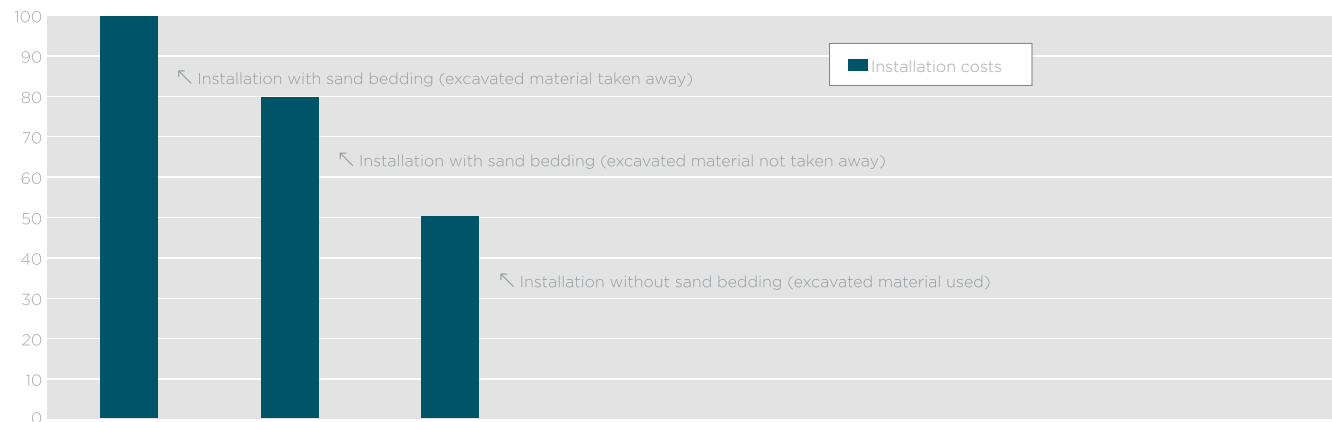
ADVANTAGES OF PE PIPES:

- High reliability and proven performance of functionality make PE a great choice, especially with buried systems;
- Resistance to low temperatures - because of its great expandability PE pipes do not make problems during application and works in low temperatures;
- High resistance to impact - huge resistance to hydraulic impact, fraying and weariness eliminate the need for greater nominal pressures and decreases the values of investment;
- Comparisons have shown that PE pipes have greater resistance to abrasion than the other material, so PE is most wanted for this characteristics when transport of solutes is in question;
- Great hydraulic characteristics - smooth surface and resistance to turbulent flow which allows the flow to be greater;
- High chemical resistance - resistance to vast number of chemicals;
- Ability to get weld - Because of the good flexibility PE pipelines of greater longitude can be connected out of the trench and laid afterwards (which decreases the width of the trench) and welded connections will be strong and reliable;
- Wide spectre of application methods - PE pipes offer to the workers numerous solutions of integration, that can save time and money, for example it is preferred the installation without the trench or with very narrow trench.

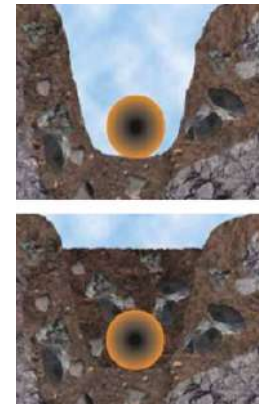
HOW DOES THE NEED FOR REINFORCED AND ENHANCED HDPE PE - 100 APPEAR

Sand coat around the pipe provides simple laying and protection from the rocks and stones. Conventional techniques of pipe placement are proven to be safe and reliable and they guarantee long term function of PE 80 and PE 100.

In last years the workers are more and more turning to new pipe laying techniques. Economic crisis and need for rationalization of spending made numerous producers question the price of making the sand coating for new pipelines and analyzing their necessity. If it is possible put in the dirt dug out from the trench hole it can be used for filling instead of the sand.



Peštan RC - resistant to crack



Rejecting the sand coat can result in scratches on the surface of newly placed pipeline. (Permitted damage is 10% of wall thickness) Besides that it is possible that rocks do the pointy or linear pressure the outer wall for a longer period - along with workload such as working pressure, weight of the dirt, or traffic so it could make damage.

If the protective sand coat is rejected it is necessary that chosen pipeline is protected from superficial damage derived from scratches, especially from pointy pressure so it wouldn't make cracks during the strain. So the condition for applying the pipe like this is that the pipe is made of material who can handle the load.



DAMAGE FROM
Point load

New unconventional techniques have been developed, however, damaging pipes during these techniques can always be avoided which led to the evaluation of pointy load/pressure during the works. New and unconventional techniques are:

- Open trench without sand coating for decreasing spending;
- Laying the pipeline by plowing;
- Directed drilling;
- Relining, breaking the pipeline.



Installation without digging an open trench, method
of pipe laying - ploughing



Installation without sand bedding

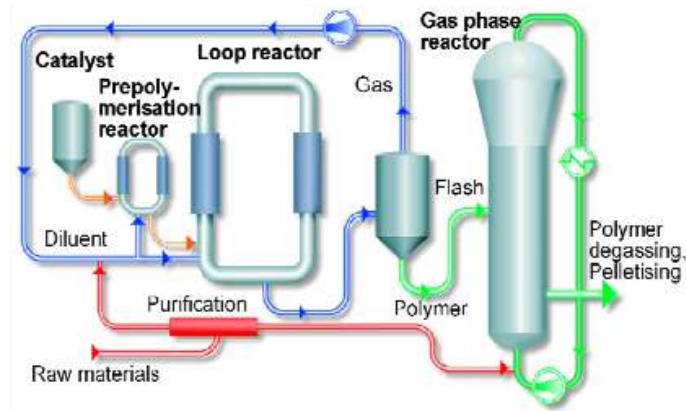
ADVANTAGES OF UNCONVENTIONAL METHODS ARE:

- Unconventional methods of installation bring significant decrease of spendings. Decrease of digging costs, bringing the sand and transport... It can all be decreased up to 50%;
- Problems of local inhabitants, decrease of incomes of local stores, redirection and slowed traffic represent indirect spendings of local community that don't occur with unconventional techniques;
- Programs of efficient CO₂ emission are necessary for solving the climate change problems in future. Emission of CO₂ made from bringing the sand and putting away extra dirt from digging the site can be avoided with unconventional methods.
- Time means money and comfort. Swiftness in executing the works makes the difference in the eyes of local inhabitants. Projects too long can be often seen as troublesome and hard bearing while swift projects with unconventional techniques can be done very fast and often unnoticed;
- In total unconventional techniques are good for the environment because of the decreased emission of CO₂, landscape preservation, trees, land structures...

PE 100 RC

In manner of responding to challenges of unconventional methods in laying pipes PE 100, to empower resistance to pointy load and pressure and fast spreading of a crack, Borealis has developed new and advanced grain BorSafe HE3490-LS-H. This is the compound that Pestan uses in producing the PE 100 RC pipes.

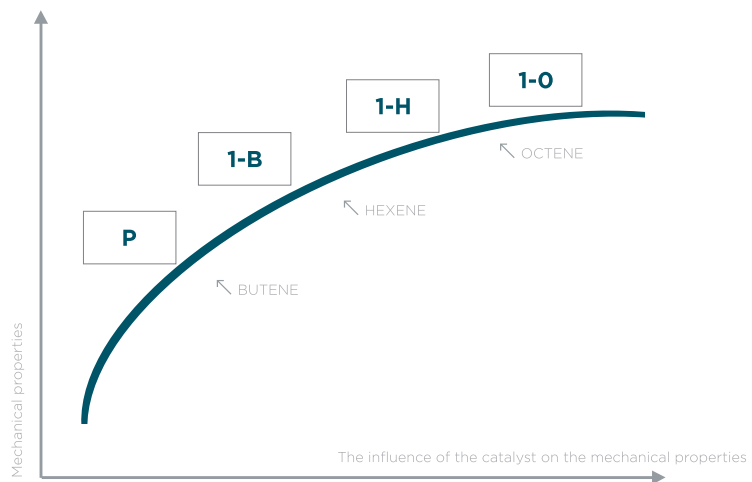
In business of pipes production the flexibility of two way or multi way process of producing PE material has provided a vast space for production of custom materials. The choice of catalysts, content and selective distribution in their content of polymer chains like the choice of parameters of process in every reactor affect the development of polymer structures and characteristics of final product. Two way process consists of two polymer reactors in row. In picture 1 it is shown the simplified view at basic principle of two way process. On illustration can be seen Borstar® drives with low pressure solution loop and gas phase reactor process. Catalyst enters the first reactor, where the polymer is formed as powder particles and through the polymerization of ethylene monomers and appropriate quantities of the comonomers, continuing in sequence mode in the second reactor.



Bimodal polymerisation process Borealis Borstar technology

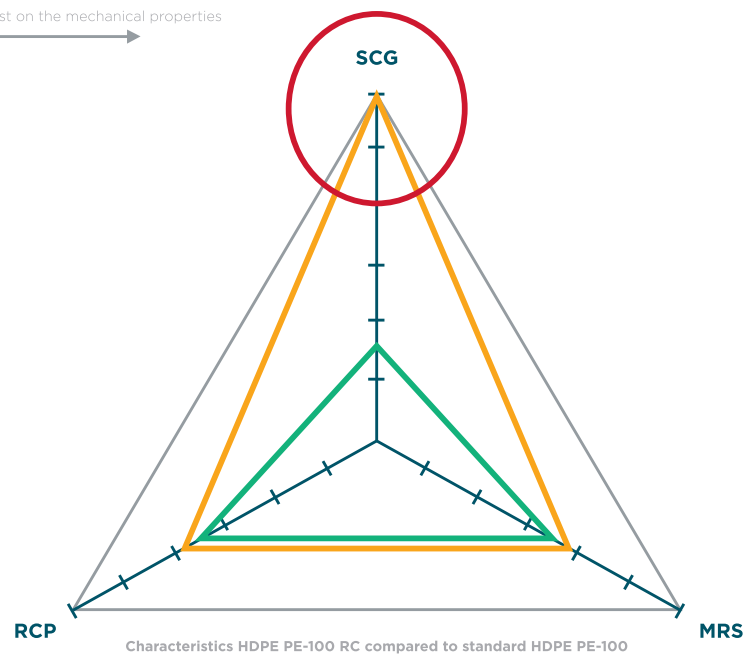
THE MAIN ADVANTAGES OF THE PROCESS ARE:

- Applies independent control of the reactor that operates distribution and comonomer adjust the molecular weight distribution (MWD);
- Blend between the reactors guarantee independent reaction mixtures. This may have produced a wide range of densities, from LLDPE to HDPE;
- Various comonomers can be incorporated in accordance with the needs, for example butene and hexene;
- MFR2 of different reactors can vary within a wide range, from 0.1 to << more than 1000 g/10 min;
- The process offers great flexibility as to the type of comonomer that can be incorporated in the correct regions of the polymer. For example, the use of the bimodal comonomer Hacken drives Borstar process results in polymers having an extremely high resistance slow crack growth.



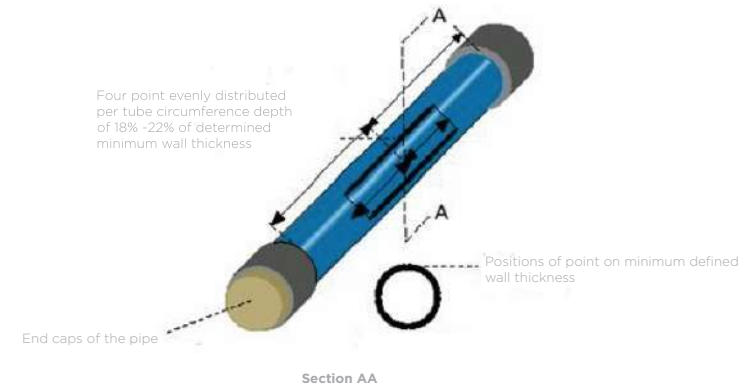
- HDPE PE-100 RC
- Standardni HDPE PE-100

SCG
slow crack growth
RCP
rapid crack propagation
MRS
minimum required strength



ESTABLISHIN THE CHARACTERISTICS OF PE 100 RC PIPES

Therefore, PE-HDPE RC 100 is an enhanced HDPE PE-100, which has improved mechanical properties. Improved mechanical properties are the result of a shift catalyst in the process production. Namely, the catalyst for the production of HDPE PE-100 is a butene, and the catalyst is for the production of PE-100 HDPE RC hexene. The assays are described below, indicate the excellent properties RC PE 100 tubing. NPT - notch pipe test, indicating the resistance tube to the recesses that may arise in the trench due exposure pipe stone or the rest of the old pipeline. PLT - point load test demonstrates thinkable tube to point loading, simulating the load that occurs when the tube. Functioning exposed stone walls or a longer period. FNCT - full notch Creep test is the test of raw materials that are produced by PE 100 RC pipe.



• Notch test

is the test method that is used in accordance with EN 12201, EN 1555, ISO4427 and ISO4437, formeasuring the resistance to slow crack growth. Notch test is performed according to ISO 13478 by what a piece of pipe defined cuts and then be tested by releasing water temperature 80 °C under a pressure of 9.2 bar (SDR 11, PE 100) to the moment of cracking.

The results of this test indicate excellent properties HDPE PE 100 RC pipes. The requirements of the standard is more than 500 h, time of cracking of the standard HDPE PE-100 pipe is 1000-2000 h, and at this time in HDPE PE-100 pipe RC increased to 8670 h (one day), which is 4,3 more!



- **Point-Load Test method (PLT)**

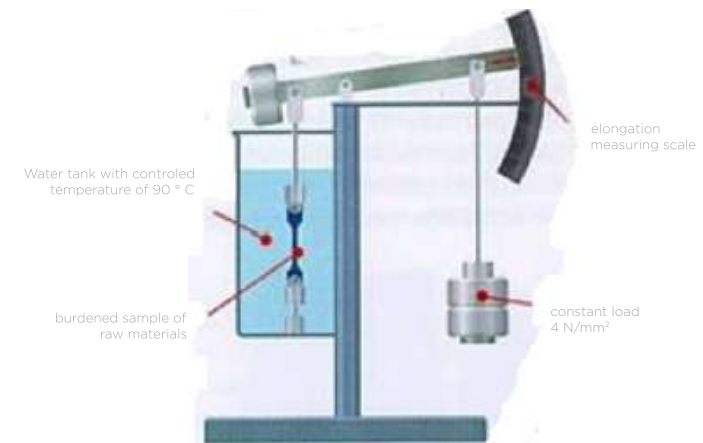
is a testing method that simulates stones in a trench without sand cots. Test is performed on a way that the tube, which is exposed to internal pressure, is loaded with the external force (Simulation of a stone). This test was developed by the institute Dr Hassel. In order to shorten the time of cancellation pipes, the medium that is used in this test is not the water, but it is detergent Akropol N 100. Detergent that is placed at a temperature of 80 °C is released under the pressure, and under these conditions the pipe is loaded with external force from 4 N/mm². Under these conditions the time of cancellation HDPE PE 100 RC pipe is >8760 h which means that in the case of loading the water at a temperature of 20 °C, life of the pipe HDPE PE-100 RC is more than 100 years. (Taken from the publication Dr Hassel).



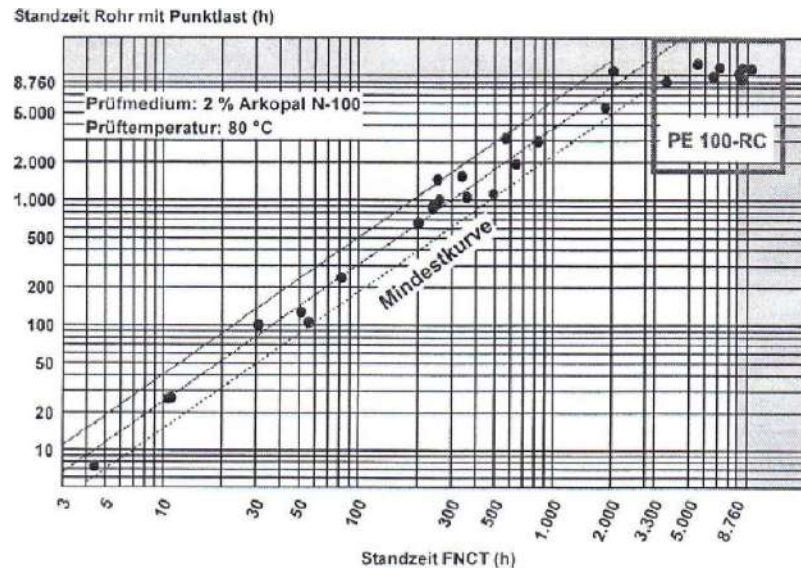
Point load test according to dr. Hassel

- **Full Notched Creep Test**

Test stretching of nicked raw material - is a test in which the test of rod material are cut sharply, and then when it is exposed to the water pool at a temperature of 90 °C with constant stretching, tightening strain of a force is 4 N/mm² until they burst. Test simulates local stress concentrations and implemented according to ISO 16770th. How we may have estimate the predicted lifetime of pipes that are under additional point load, Dr. Hessel's engineering and technical testing of pipes are under internal pressure, with additional point load compared with the results of the FNCT test (3RInternational 4/2001 and 6/2001).



FNCT test - Full Notch Creep-Test (stretching test) (ISO 16770)



Research Dr Hessel-a is covered with at least 30 test series in three decades with the target size of 8760 hours FNCT test. The correlation coefficient should be >0.9 (dispersion results) with minimum requirements for the lower confidence limit of 2.5% (97.5% points must be above the line). Correlation is accredited in accordance with EN 17025, ISO/IEC. Based on this correlation, the stability of the FNCT-in for at least 2000 hours is taken as proof of the 100-year life of the pipe under concentrated load (Dr. Hessel in the journal 3R International 6/2001).

PEŠTAN RC

Peštan RC is a compact (full wall) tube made of an innovative, extremely robust plastic BorSafe HE3490-LS-H. Tube prepared like this provides increased security and longer lifetime of pipes compared to traditional PE pipes, even when it comes to extreme loads, such as notching pipes, gutters and spotty loads.

Peštan RC can be easily installed, as well as traditional PE pipes with equal ability. Welding and PE - 100 Pipes and fittings can be connected by connecting areas or electrofusion as well as other standard techniques for joining PE pipes. Peštan RC pipes are compatible with the world's leading manufacturers of fittings. Peštan RC does not require special material for the installation of which is its biggest advantage.

Peštan RC hose thanks to its excellent resistance to stress cracking insensitive to-point loads and therefore did not need her sandy bed.

Peštan's RC tube is flexible and mobile. These properties allow laying in the proceedings of milling. Because of its high resistance to point loading Peštan RC tube is suitable for laying technique in which the soil is excavated and used as fill material.

Open trenches for pipelines threaten undisturbed running of road traffic and disturb nearby residents. Permanently damaging the asphalt on roads. For these reasons technique of laying without digging of a trench is facing the increasing acceptance, since in addition to provide the possibility of laying pipes under rivers, lakes and traffic routes.

APPLICATION TECHNIQUES FOR PE PIPES

As mentioned earlier a number of techniques have been developed by laying, in order to exploit the benefits of using polyethylene, these techniques are briefly described in text below.

- **Laying in narrow trenches**

This is a modification of the classic pipe laying in the trench. By using short or long ditches you have to dig the trenches that are 100 mm wider than the pipe which is to be installed into ground. Coiled or pre-welded pipes are laid in this passage. Significant savings can be achieved with less excavation volume, the less broth material (sand for bedding) and reduced labor.

- **Pipe bursting**

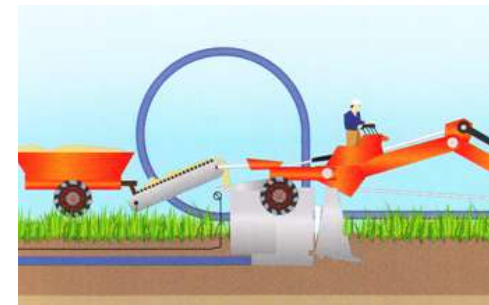
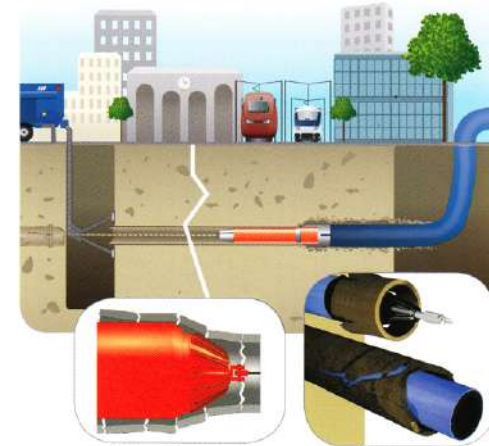
This is an increasingly popular method for rehabilitation of existing pipeline in places where excavation method is unacceptable. With pipe bursting metode the existing tube is destroyed and a new PE 100 RC pipe is drawn into the resulting hole that provides a replacement with the same diameter pipe or with the help of destroyers, pipe diameter can increase compared to the replased tube

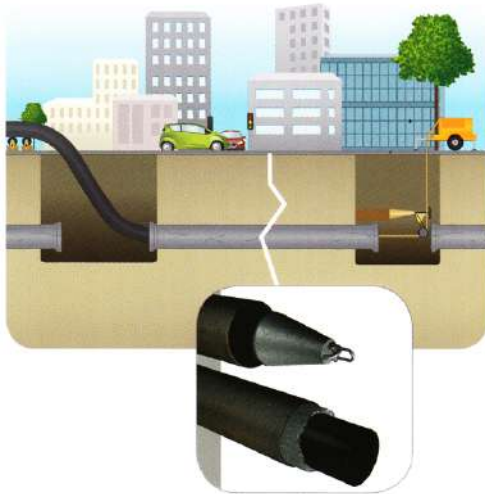
If the situation so requires, Today's hydraulic tools for bursting are capable for damaging the pipe and fittings, and with the further adaptation of tools it is possible to destroy even ductile and steel pipes.

NOTE. This method is technically challenging and requires expert trained staff and appropriate equipment. Depending on the material and the status of the old pipe, it may cause scratches and notches on the new pipe. Debris and stones are causing concentrated loads during the exploitation.

- **Laying plowing**

The technique were developed on the basis of Agricultural technology for laying and drain. This method is used for laying of the pipes for water and gas routes between settlements.





• Slip lining

Inserting of a small diameter of PE pipes, slip-lining in the existing Pipeline is one of many techniques for trenchless rehabilitation and repair of old pipeline.

With a slip lining it is inevitable to reduce the pipe diameter, although this can be minimized by thorough cleaning of old pipeline and selecting the largest possible diameter pipe for insertion.

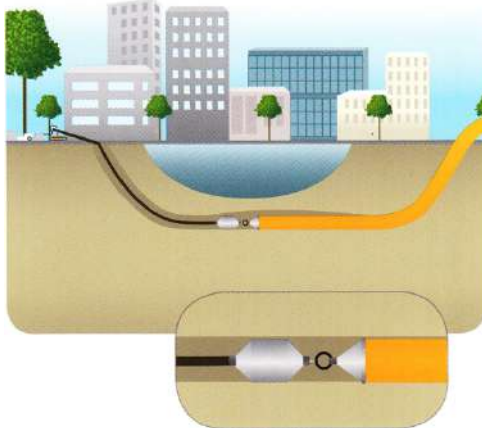
The smaller diameter is compensated by an improved hydraulic characteristics of polyethylene, in some instances we have even higher throughput of the new pipeline.

• Drilling

Drilling has become a frequently used method for trenchless setting of small diameters, and can deliver significant savings in relation to the installation of pipes from the excavation. Excavation is carried out for inbound and outbound caves, and it is ideal for passages, drilling pipeline under the road and out of sidewalk construction, gardens and places where there can be disrupted excavation of soils and plants.

Tool drilling is percussion tool with pneumatic motor, that drilled a hole (the tunnel) and in most cases drags a new PE pipe.

Experienced works contractors are required to perform these techniques installations, in order not to exceed a pre-allowed voltages welded pipe or the spool during threading.



• Directional drilling

This technique has also become an established method of installation for polyethylene pipes and it is used for passages under the road, rail railways and rivers and in places where excavation is difficult, expensive or impossible.

BENDING OF PIPES

One of the main advantages of PE is its flexibility and it can be used as an advantage for buried pipelines. Gradual changes of direction to point of 11.5° can be easily derived through bending of pipes without the need for additional valves and connecting costs.

Accepted rule for Pestan PE pipe systems (in hot conditions for SDR 11 pipes) is bending radius = $15 \times JV$ (Outer diameter) of pipe. In cold conditions safe bending radius for SDR 17 pipes is $25 \times S.P.$ For very cold winter, weather conditions of this value increases to $35 \times JV$ pipe. If you have a pipe with a thin wall, SDR 26 and SDR 33 you should increase this value up to 50%. Fittings and connections should not be installed on sections where the pipe is bent.

DETECTION OF TUBES

For detection of PE pipeline, the simplest and most economical method is to put in a trench and set with marker tapes that contains wire-track detection. Marker strips should be placed 300 mm above the top of the pipe.

CHARACTERISTICS AND ADVANTAGES OF THE HDPE PE-100 RC:

- Optimum protection against point source and surface pressure;
- Ideal for trenchless installation and without sand;
- Suitable for all modern welding technology, that can be applied with conventional joining methods used for PE 100;
- A simple and low cost-effective installation, similar to a traditional PE without a need for "Imported" backfill material;
- Very long service of lifetime, even with external damages; excavated earth could be used as backfill material and significantly reduces installation costs;
- Other benefits. All other advantages of standard PE pipe systems are also applicable to Peštan RC, such as for example, cold bending, resistance to hydraulic shock and fatigue of material.

All BorSafe LS-H are certified as PE 100-RC (resistant to crack):

- Approved by independent institutes,
- Recorded in KRV in Germany,
- Regular testing and quality control

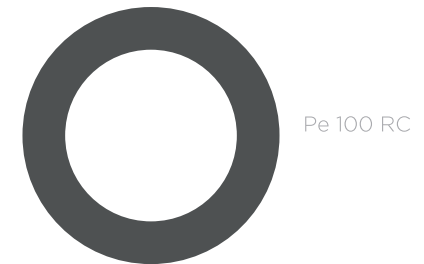
TYPES OF RC PIPES

Classification of pipe PE 100 RC CEV

There are several combinations of materials for the production of tubes, which allow the PE 100-RC material, and this combination is over minimum requirements applicable to PE 100th.

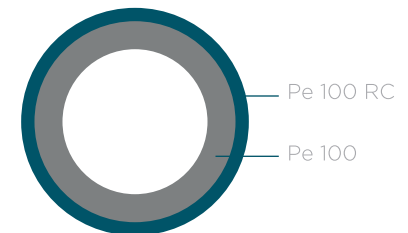
Type 1 Solid made of solid wall PE 100-RC

Pipes solid wall of one layer wall are made of PE 100-RC as defined by ISO 4065. These tubes can be made of full-color, blue or black water pipes with blue stripes to the applications which are made of such PE 100 RC materials.

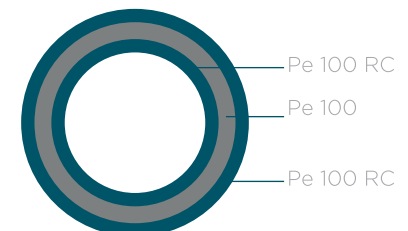


Type 2 Pipe with dimensionally integrated protective layer made of PE 100-RC

The dual-layered tube is dimensionally integrated with protective layers which are made of PE 100 or PE-100 RC and they have a coextruded layer made of PE 100-RC.

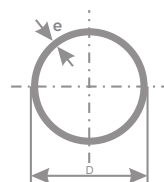


Three-layer pipes with dimensionally integrated protective layers are composed of PE 100 and PE 100 -R c and have inner and outer co-extruded layer made of PE 100-RC. This production is based on a two-layer and three-layer tube with a different outer layer in blue color for water.



CATALOG OF PRODUCTS

| | SDR 6 (S-2,5) PN 32 | | | SDR 7,4 (S-3,2) PN25 | | | SDR 9 (S-4) PN20 | | | SDR 11 (S-5) PN16 | | | SDR 13,6 (S-6,3) PN12,5 | | | SDR17 (S-8) PN10 | | | SDR21 (S-10) PN8 | | | SDR 26 (S-12,5) PN 6 | | | SDR33 (S-16) PN5 | | | SDR41 (S-20) PN4 | | |
|--------|---------------------|-------|------------------|----------------------|------------------|--------|------------------|-------|------------------|-------------------|------------------|-------|-------------------------|-------|------------------|------------------|------------------|------|------------------|------|------------------|----------------------|------------------|------|------------------|------|------------------|------------------|------------------|------|
| D (MM) | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M |
| 16 | 3,0 | 0,15 | 2,3 | 0,1 | 2 | 0,09 | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | 3,4 | 0,18 | 3,0 | 0,154 | 2,3 | 0,13 | 2 | 0,12 | | | | | | | | | | | | | | | | | | | | | | |
| 25 | 4,2 | 0,278 | 3,5 | 0,240 | 3 | 0,21 | 2,3 | 0,17 | 2,0 | 0,151 | 1,9 | 0,14 | | | | | | | | | | | | | | | | | | |
| 32 | 5,4 | 0,454 | 4,4 | 0,386 | 3,6 | 0,33 | 3 | 0,28 | 2,4 | 0,228 | 2 | 0,2 | | | | | | | | | | | | | | | | | | |
| 40 | 6,7 | 0,701 | 5,5 | 0,600 | 4,5 | 0,51 | 3,7 | 0,43 | 3,0 | 0,354 | 2,4 | 0,29 | 2,0 | 0,251 | | | | | | | | | | | | | | | | |
| 50 | 8,3 | 1,09 | 6,9 | 0,936 | 5,6 | 0,79 | 4,6 | 0,67 | 3,7 | 0,550 | 3 | 0,45 | 2,4 | 0,372 | 2,0 | 0,317 | | | | | | | | | | | | | | |
| 63 | 10,5 | 1,73 | 8,6 | 1,47 | 7,1 | 1,26 | 5,8 | 1,06 | 4,7 | 0,869 | 3,8 | 0,72 | 3,0 | 0,586 | 2,5 | 0,482 | | | | | | | | | | | | | | |
| 75 | 12,5 | 2,44 | 10,3 | 2,09 | 8,4 | 1,78 | 6,8 | 1,47 | 5,6 | 1,23 | 4,5 | 1,02 | 3,6 | 0,826 | 2,9 | 0,682 | | | | | | | | | | | | | | |
| 90 | 15,0 | 3,51 | 12,3 | 3,0 | 10,1 | 2,56 | 8,2 | 2,14 | 6,7 | 1,76 | 5,4 | 1,46 | 4,3 | 1,19 | 3,5 | 0,987 | | | | | | | | | | | | | | |
| 110 | 18,3 | 5,24 | 15,1 | 4,49 | 12,3 | 3,81 | 10 | 3,17 | 8,1 | 2,63 | 6,6 | 2,18 | 5,3 | 1,77 | 4,2 | 1,45 | | | | | | | | | | | | | | |
| 125 | 20,8 | 6,75 | 17,1 | 5,77 | 14 | 4,3 | 11,4 | 4,11 | 9,2 | 3,39 | 7,4 | 2,78 | 6,0 | 2,28 | 4,8 | 1,86 | | | | | | | | | | | | | | |
| 140 | 23,3 | 8,47 | 19,2 | 7,25 | 15,7 | 6,17 | 12,7 | 5,12 | 10,3 | 4,25 | 8,3 | 3,49 | 6,7 | 2,85 | 5,4 | 2,35 | | | | | | | | | | | | | | |
| 160 | 26,6 | 11,0 | 21,9 | 9,44 | 17,9 | 8,04 | 14,6 | 6,73 | 11,8 | 5,54 | 9,5 | 4,55 | 7,7 | 3,73 | 6,2 | 3,08 | | | | | | | | | | | | | | |
| 180 | 29,9 | 14,0 | 24,6 | 11,9 | 20,1 | 10,17 | 16,4 | 8,5 | 13,3 | 7,01 | 10,7 | 5,76 | 8,6 | 4,69 | 6,9 | 3,83 | | | | | | | | | | | | | | |
| 200 | 33,2 | 17,2 | 27,4 | 14,8 | 22,4 | 12,58 | 18,2 | 10,49 | 14,7 | 8,65 | 11,9 | 7,11 | 9,6 | 5,81 | 7,7 | 4,74 | | | | | | | | | | | | | | |
| 225 | 37,4 | 21,8 | 30,8 | 18,6 | 25,2 | 15,92 | 20,5 | 13,27 | 16,6 | 10,9 | 13,4 | 9,01 | 10,8 | 7,35 | 8,6 | 5,96 | | | | | | | | | | | | | | |
| 250 | 41,5 | 27,0 | 34,2 | 23,0 | 27,9 | 19,57 | 22,7 | 16,33 | 18,4 | 13,5 | 14,8 | 11,05 | 11,9 | 9,03 | 9,6 | 7,38 | | | | | | | | | | | | | | |
| 280 | 46,5 | 33,8 | 38,3 | 28,9 | 31,3 | 24,6 | 25,4 | 20,47 | 20,6 | 16,9 | 16,6 | 13,88 | 13,4 | 11,34 | 10,7 | 9,2 | | | | | | | | | | | | | | |
| 315 | 52,3 | 42,7 | 43,1 | 36,5 | 35,2 | 31,11 | 28,6 | 25,9 | 23,2 | 21,4 | 18,7 | 17,57 | 15,0 | 14,3 | 12,1 | 11,7 | 9,7 | 9,7 | 7,7 | 7,60 | | | | | | | | | | |
| 355 | 59,0 | 54,3 | 48,5 | 46,3 | 39,7 | 39,5 | 32,2 | 32,88 | 26,1 | 27,2 | 21,1 | 22,36 | 16,9 | 18,2 | 13,6 | 14,8 | 10,9 | 12,1 | 8,7 | 9,6 | | | | | | | | | | |
| 400 | | | 54,7 | 58,8 | 44,7 | 50,12 | 36,3 | 41,75 | 29,4 | 35,2 | 23,7 | 28,27 | 19,1 | 23,6 | 15,3 | 19,1 | 12,3 | 15,7 | 9,8 | 12,5 | | | | | | | | | | |
| 450 | | | 61,5 | 74,4 | 50,3 | 62,7 | 40,9 | 52,87 | 33,1 | 44,6 | 26,7 | 35,81 | 21,5 | 29,8 | 17,2 | 24,2 | 13,8 | 19,9 | 11,0 | 15,8 | | | | | | | | | | |
| 500 | | | | | 55,8 | 77,3 | 45,4 | 65,24 | 36,8 | 55,0 | 29,7 | 44,25 | 23,9 | 36,9 | 19,1 | 29,9 | 15,3 | 24,4 | 12,3 | 19,4 | | | | | | | | | | |
| 560 | | | | | 62,5 | 97 | 50,8 | 80,8 | 41,2 | 69,0 | 33,2 | 55,43 | 26,7 | 46,2 | 21,4 | 37,5 | 17,2 | 30,7 | 13,7 | 24,4 | | | | | | | | | | |
| 630 | | | | | 71 | 127,6 | 57,2 | 102 | 46,3 | 87,3 | 37,4 | 70,21 | 30,0 | 52,9 | 24,1 | 47,4 | 19,3 | 38,7 | 15,4 | 30,8 | | | | | | | | | | |
| 710 | | | | | 80* | 162* | 64,5 | 130 | 52,2 | 110,8 | 42,1 | 89 | 33,9 | 74,2 | 27,2 | 60,2 | 21,8 | 49,2 | 17,4 | 39,0 | | | | | | | | | | |
| 800 | | | | | 90,1* | 205,7* | 72,7 | 170,4 | 58,8 | 140,7 | 47,4 | 113 | 38,1 | 94,0 | 30,6 | 76,3 | 24,5 | 62,4 | 19,6 | 49,5 | | | | | | | | | | |





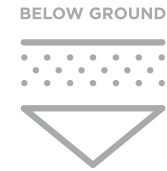
ARMO

Armored to provide pure quality

PAS 1075 type 3

The pipes for transporting water with pressure

ARMO WATER PIPES



HDPE RC type 3 pipes for transporting water under pressure

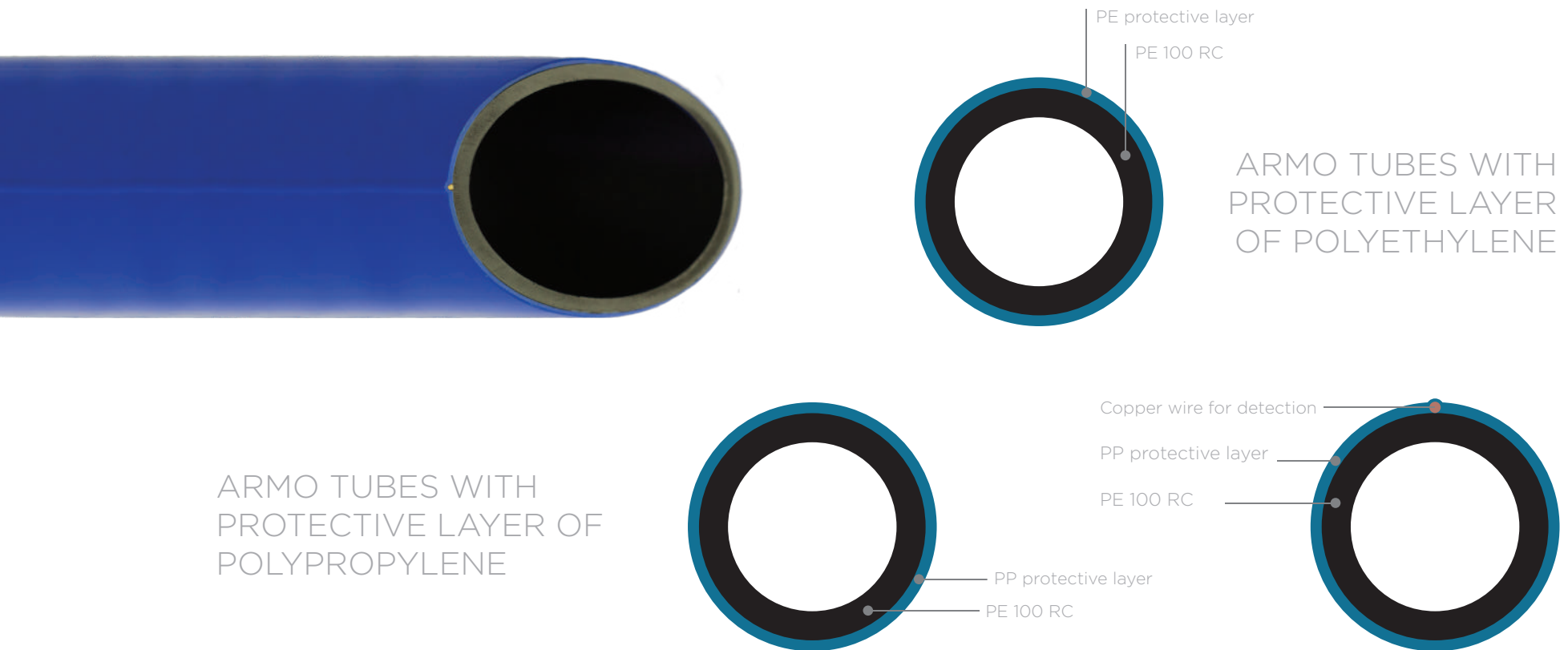
We have additionally reinforced the existing PE 100 RC pipes with a protective layer, thereby expanding the polyethylene pipe family with a new member called ARMO.

ARMO pipes represent the latest generation of development of polyethylene solutions. ARMO pipes are intended for alternative pipeline installation methods and are manufactured in accordance with PAS 1075, Type 3 standard.

TYPES OF PIPES

Armo is a double-walled tube made of innovative, highly robust PE 100 RC plastic with an extra protective layer made of polyethylene or polypropylene. This tube provides increased safety and longer life compared to traditional PE pipes, even when it comes to extreme loads such as pipe notches, grooves and point loads.

Pipes are with dimensionally added protective outer sheath of polyethylene or polypropylene. Armo tubes, as required by ISO 4065 for tubes with an outer protective layer, consist of a core tube of one-layer PE-100-RC standard dimension and a protective sheath of polypropylene or polyethylene. The minimum thickness of the sheath shall be 0.8 mm. The thickness of the sheath depends on the dimension of the pipe. Large pipes have a thicker liner due to the larger loads the pipes are designed for.



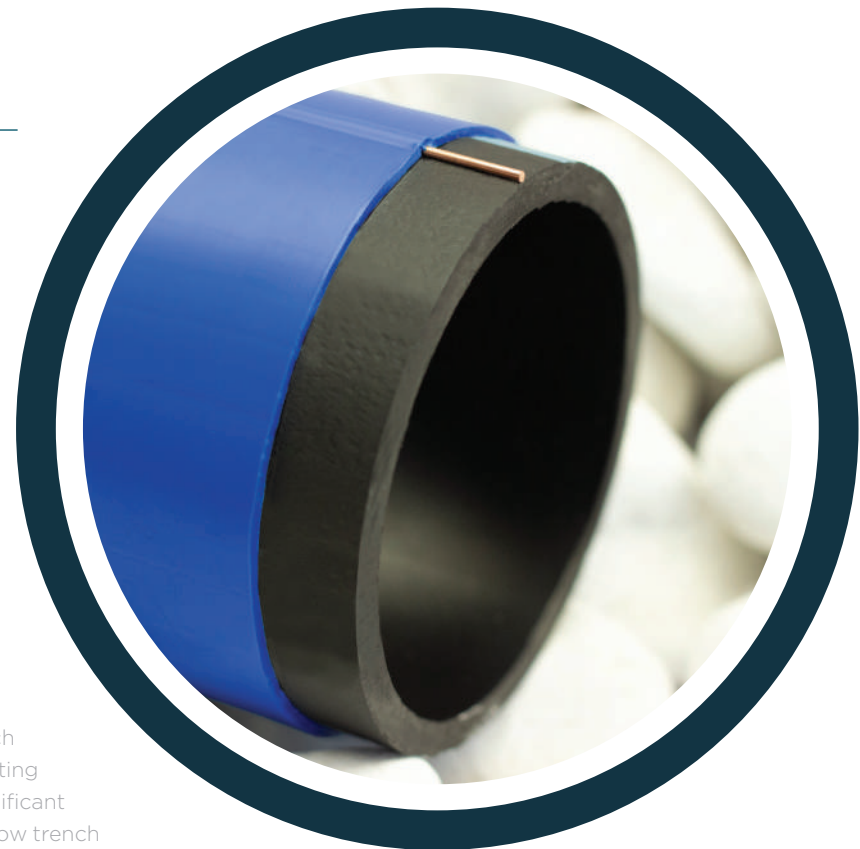
ADVANTAGES

ARMO pipes have high reliability and proven performance thanks to the materials they are made of, which makes them an excellent choice, especially for pipe systems intended for civil engineering projects. Due to their high stretchability, toughness and elasticity, PESTAN ARMO pipes do not cause problems during installation and operation at low temperatures.

High resistance to hydraulic shock, fatigue and wear eliminates the need for higher nominal pressures and reduces the value of the investment. Comparisons have shown that polyethylene pipes have a higher abrasion resistance than other materials, making PE the most desirable material for pipe transport of solutes.

Excellent hydraulic characteristics (low absolute roughness) - Smooth surface and resistance to turbulent fluid flow allow for greater flow and give excellent hydraulic characteristics to ARMO pipes. ARMO pipes are resistant to a large number of chemical agents.

Due to their good weldability and elasticity, long length PE pipelines can be connected outside the trench and then laid (which reduces the required trench width) and the welds will be strong and reliable. A wide range of PE pipe fitting methods offer installers numerous installation solutions that can provide significant time and cost savings, for example PE pipes are preferred for trenchless or narrow trench installations.



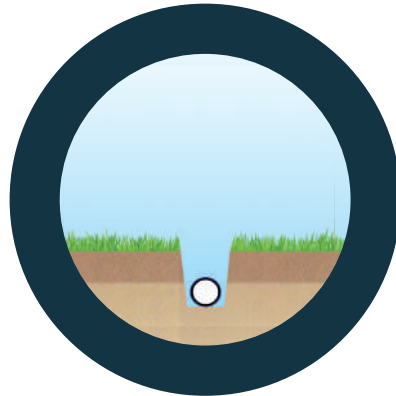
ARMO pipe look without protective layer

TECHNIQUES OF INSTALLATION

The methods used to incorporate ARMO tubes may be unconventional because of their reinforced structure over “ordinary” HDPE tubes.

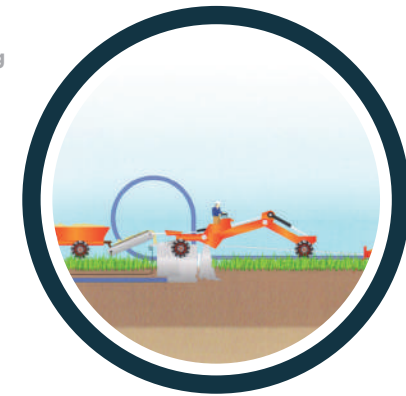
Laying in narrow trenches

This is a modification of the classic pipe laying in a trench. Using short or long trenches, trenches that are 100 mm wider than the laying pipe are dug. Piped or pre-welded pipelines are laid in this trench. Significant savings can be achieved with a much smaller volume of excavation, less imported material (sand for bedding) and reduced work.



Plowing

A technique developed on the basis of agro-cultural techniques for laying and drainage. This method is used for laying water and gas pipes on the tracks between settlements.



Pipe bursting

This is an increasingly popular method for the rehabilitation of existing pipelines, where excavation is unacceptable. With pipe bursting, the existing pipe is destroyed and the new ARMO pipe is retracted into the resulting hole, providing replacement with the same pipe diameter, or with the help of a destroyer, the pipe diameter can be increased relative to the replaced pipe. Today's bursting hydraulic tools are capable of destroying both pipes and fittings, if the situation so requires, and with further tool adaptation even ductile and steel pipes can be destroyed.

Pipes are with dimensionally added protective outer sheath of polyethylene or polypropylene. Armo tubes, as



required by ISO 4065 for tubes with an outer protective layer, consist of a core tube of one-layer PE-100-RC standard dimension and a protective sheath of polypropylene or polyethylene. The minimum thickness of the sheath shall be 0.8 mm. The thickness of the sheath depends on the dimension of the pipe. Large pipes have a thicker liner due to the larger loads the pipes are designed for.

This method is technically demanding and requires skilled personnel and appropriate equipment. Depending on the material and condition of the old pipe, scratches and cuts may occur on the new pipe. Debris and stones cause concentrated loads during exploitation.

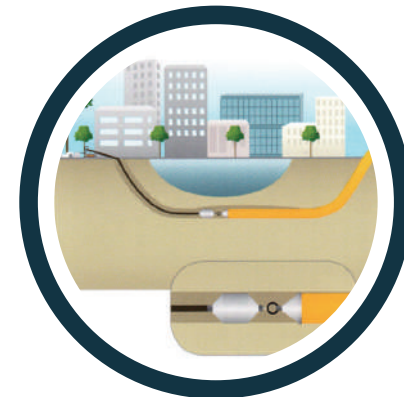


Moling

Moling has become a commonly used non-excavation method for smaller diameter pipe fitting, and can provide significant savings over excavation pipe fitting. Excavation is done only for entry and exit pits, so moling is ideal for underpasses and expensive sidewalks or sidewalks, gardens and gardens where excavation would disrupt land and plants. The moling tool is a percussion tool with a pneumatic motor, which drills a hole (tunnel) and in most cases pulls a new PE tube. Experienced contractors are required to perform this installation technique so as not to exceed the permissible stresses of a pre-welded pipeline or coil when drawn.

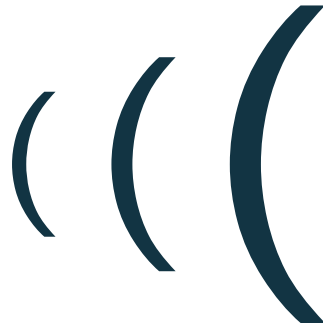
Directional drilling

This technique also became a conventional one and is used as an installation method for polyethylene pipes and is used for underpasses, railways and rivers, in places where excavation is difficult, expensive or impossible.



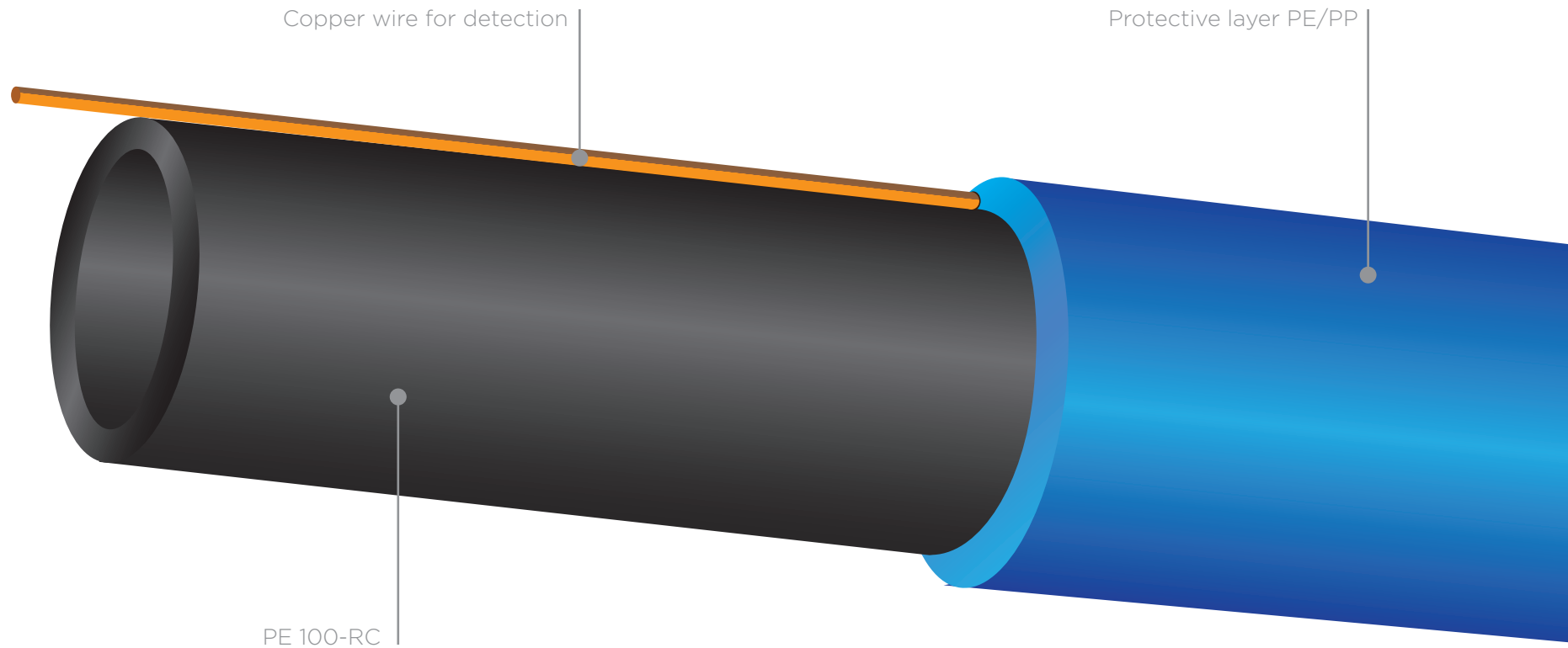
Slip-lining

Inserting smaller diameter ARMO pipes, slip-lining, into an existing pipeline is one of many techniques without excavation for rehabilitation - rehabilitation of old pipelines. With slip-lining a reduction in pipe diameter is inevitable, though this can be reduced to a minimum by thoroughly cleaning the old pipeline and choosing the largest possible pipe diameter for insertion. The smaller diameter is offset by the improved hydraulic performance of polyethylene, and in some cases we even have the higher throughput of the new pipeline.



PIPE DETECTION

For the detection of the ARMO pipeline, the simplest and most economical method is to place in the trench a tube containing in its structure a marker, a copper wire for monitoring - detection. A marker wire is placed between the center and outer layers of the pipe.



PIPE CONNECTION

These pipes can be connected with conventional welding (like other PE pipes), with the difference to pay attention if the pipes have copper wire in their structure. Pipes and fittings can be connected by welding the ends with standard techniques for joining PE pipes. Pestan Armo pipes are compatible with the fittings of leading manufacturers and do not require special material for installation which is their biggest advantage. Joining methods of Armo tubes are electrofusion welding, butt welding, and mechanical joining.

During electrofusion pipe welding, it is mandatory to remove the protective layer, whether made of PE or PP. The minimum length of removal of an additional protective layer from PP or PE, for a given pipe diameter, should be according to the dimensions shown in the table 1.

Armo pipes are compatible with fusion welding connectors of all worldwide leader manufacturers.

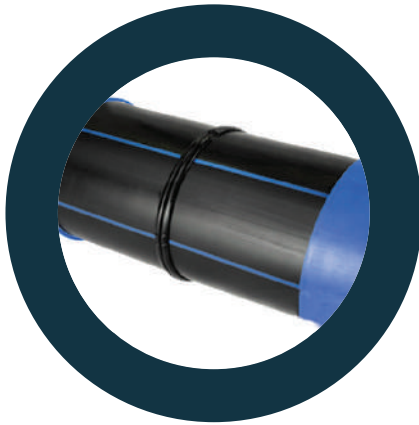
If ARMO pipes, which have an integrated copper wire for detection, are connected by electro-fusion, the copper wire must be moved to the side after removal of the protective layer, until the pipes are connected and then the ends of the copper wire are connected by an electric coupler. After that, it is imperative to protect the junction point of the ARMO pipe with a heat-shrink film and/or a butyl rubber-based self-bonding strip (to prevent corrosion and electrical insulation on pipes and metal parts).

*table No 1

| | | |
|----|-----|-----|
| DN | 110 | 90 |
| | 125 | 95 |
| | 140 | 105 |
| | 160 | 110 |
| | 180 | 115 |
| | 200 | 120 |
| | 225 | 125 |
| | 250 | 135 |
| | 280 | 150 |
| | 315 | 160 |
| | 355 | 160 |
| | 400 | 170 |
| | 450 | 180 |
| | 500 | 190 |
| | 560 | 200 |
| | 630 | 220 |

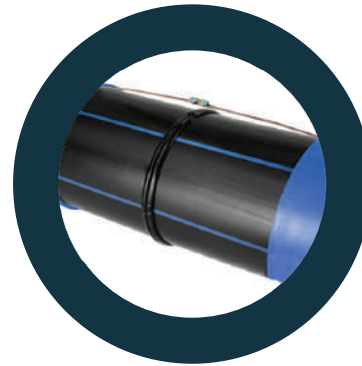
**Length of removal of
the protective layer**

The butt welding of the pipes **without copper wire** for detection is done in the following steps:



- If the **outer layer is made of polyethylene**, the welding is carried out without removing of the protective layer.
- If the **outer layer is polypropylene**, it is necessary to peel the outer layer according to Table 1 and connect the pipes. Finally, the junction point of the ARMO pipe is insulated with a heat shrink film and / or butyl rubber based self-adhesive tape.

The butt welding of the tube **with the copper wire** for detection is done in the following steps:



- Peel the outer PP layer of the pipe in accordance with Table 1 with care not to damage the copper wire and the middle layer.
- Move copper wire to the side (usually “pulled” backwards) and the middle layer will be bonded with the butt welding machine. After that, the two ends of the copper wire are connected by an electrical connector.



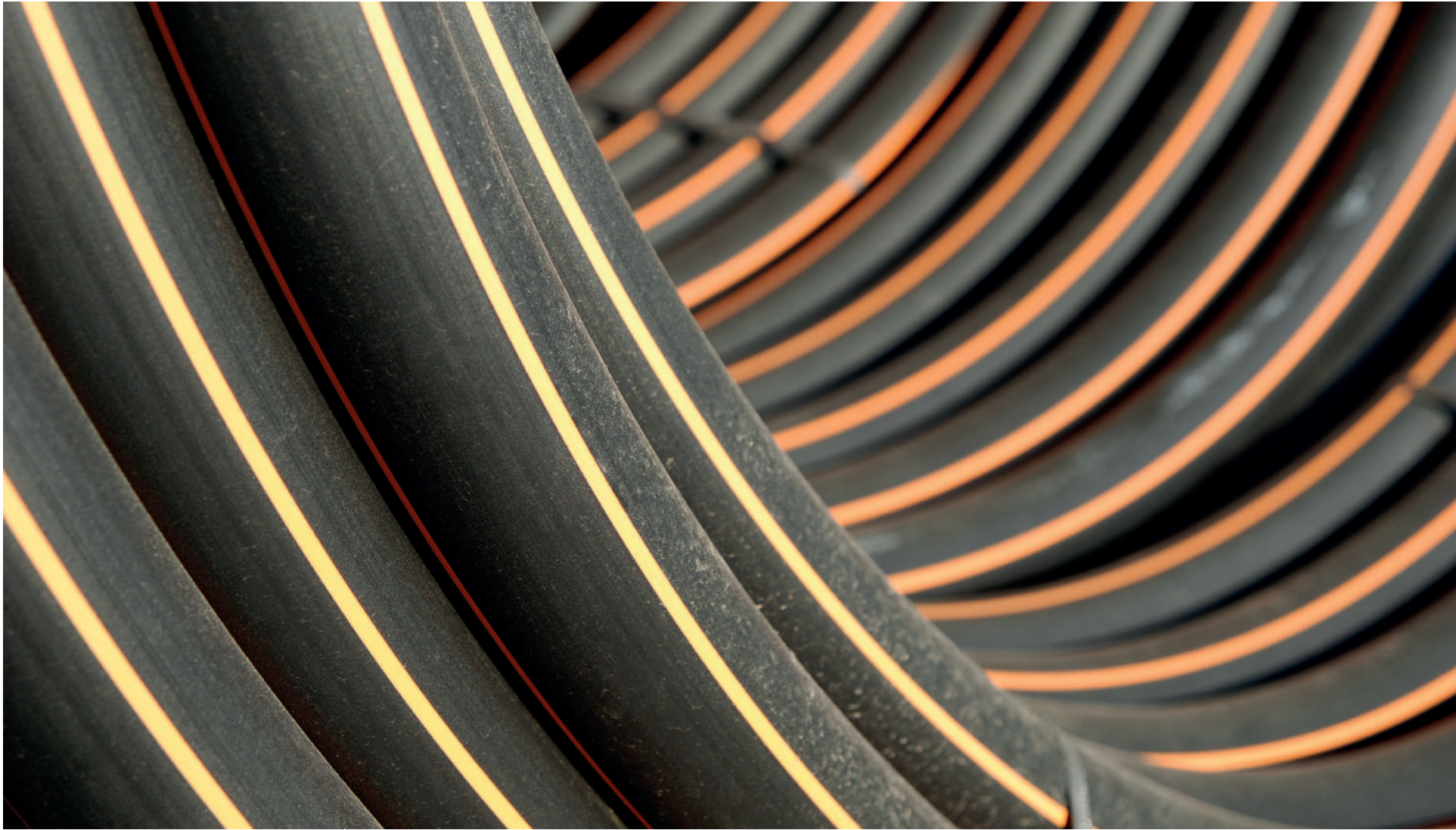
- Finally, the junction point of the ARMO middle layer and the copper wire junction is insulated with a heat shrink film and / or butyl rubber based self-adhesive tape (to prevent corrosion and electrical insulation on pipes and metal parts).

| DN [mm] | SDR 41 | SDR 33 | SDR 26 | SDR 21 | SDR 17 | SDR 13.6 | SDR 11 | SDR 9 | SDR 7.4 | SDR 6 |
|---------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | PN 4 | PN 5 | PN 6 | PN 8 | PN 10 | PN 12.5 | PN 16 | PN 20 | PN 25 | PN 32 |
| | e _{min} [mm] | e _{min} [mm] | e _{min} [mm] | e _{min} [mm] | e _{min} [mm] | e _{min} [mm] | e _{min} [mm] | e _{min} [mm] | e _{min} [mm] | e _{min} [mm] |
| 110 | | | 4.2 + APL* | 5.3 + APL* | 6.6 + APL* | 8.1 + APL* | 10.0 + APL* | 12.3 + APL* | 15.1 + APL* | 18.3 + APL* |
| 125 | | | 4.8 + APL* | 6.0 + APL* | 7.4 + APL* | 9.2 + APL* | 11.4 + APL* | 14.0 + APL* | 17.1 + APL* | 20.8 + APL* |
| 140 | | | 5.4 + APL* | 6.7 + APL* | 8.3 + APL* | 10.3 + APL* | 12.7 + APL* | 15.7 + APL* | 19.2 + APL* | 23.3 + APL* |
| 160 | | | 6.2 + APL* | 7.7 + APL* | 9.5 + APL* | 11.8 + APL* | 14.6 + APL* | 17.9 + APL* | 21.9 + APL* | 26.6 + APL* |
| 180 | | | 6.9 + APL* | 8.6 + APL* | 10.7 + APL* | 13.3 + APL* | 16.4 + APL* | 20.1 + APL* | 24.6 + APL* | 29.9 + APL* |
| 200 | | | 7.7 + APL* | 9.6 + APL* | 11.9 + APL* | 14.7 + APL* | 18.2 + APL* | 22.4 + APL* | 27.4 + APL* | 33.2 + APL* |
| 225 | | | 8.6 + APL* | 10.8 + APL* | 13.4 + APL* | 16.6 + APL* | 20.5 + APL* | 25.2 + APL* | 30.8 + APL* | 37.4 + APL* |
| 250 | | | 9.6 + APL* | 11.9 + APL* | 14.8 + APL* | 18.4 + APL* | 22.7 + APL* | 27.9 + APL* | 34.2 + APL* | 41.5 + APL* |
| 280 | | | 10.7 + APL* | 13.4 + APL* | 16.6 + APL* | 20.6 + APL* | 25.4 + APL* | 31.3 + APL* | 38.3 + APL* | 46.5 + APL* |
| 315 | 7.7 + APL* | 9.7 + APL* | 12.1 + APL* | 15.0 + APL* | 18.7 + APL* | 23.2 + APL* | 28.6 + APL* | 35.2 + APL* | 43.1 + APL* | 52.3 + APL* |
| 355 | 8.7 + APL* | 10.9 + APL* | 13.6 + APL* | 16.9 + APL* | 21.1 + APL* | 26.1 + APL* | 32.2 + APL* | 39.7 + APL* | 48.5 + APL* | 59.0 + APL* |
| 400 | 9.8 + APL* | 12.3 + APL* | 15.3 + APL* | 19.1 + APL* | 23.7 + APL* | 29.4 + APL* | 36.3 + APL* | 44.7 + APL* | 54.7 + APL* | 66.5 + APL* |
| 450 | 11.0 + APL* | 13.8 + APL* | 17.2 + APL* | 21.5 + APL* | 26.7 + APL* | 33.1 + APL* | 40.9 + APL* | | 61.5 + APL* | |
| 500 | 12.3 + APL* | 15.3 + APL* | 19.1 + APL* | 23.9 + APL* | 29.7 + APL* | 36.8 + APL* | 45.4 + APL* | | | |
| 560 | 13.7 + APL* | 17.2 + APL* | 21.4 + APL* | 26.7 + APL* | 33.2 + APL* | 41.2 + APL* | 50.8 + APL* | | | |
| 630 | 15.4 + APL* | 19.3 + APL* | 24.1 + APL* | 30.0 + APL* | 37.4 + APL* | 46.3 + APL* | 57.2 + APL* | | | |

*APL - additional protective layer (PP/PE), minimum 0.8 mm, depending on pipe dimensions, conditions of application and type of the project.







HDPE GAS PIPES



Polyethylene gas pipes

The need for PE pipes is increasing throughout the whole world. Their small weight allows easy handling, and simple, swift and reliable assembling. They are flexible and can be delivered in the rollers of 200m. They are extremely resistant to chemical, therefore they can be easily placed into the aggressive ground. They have a very high impact resistance even at very low temperatures, especially if made of network like polyethylene. These pipes do not corrode and have a lifespan of over 50 years.

Pipes are entirely in accordance with SRPS-EN1555, ISO 4437 (DIN8074).

PREFERENCES

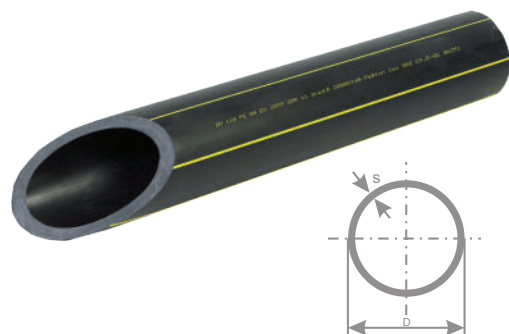
Pipes PE80 - products are available in black with yellow longitudinal lines.

The material used in the manufacture of the gas pipe is approved by the European Union for this application.

Wall thickness for both PE80 and PE100 gas pipes is the same, but with the difference in working pressure is 1, 4, 6, 6, 2 and 10 bar.

TECHNOLOGY

The pipes are entirely in accordance with EN 1555, ISO 4437 (DIN 8074) standards. PEŠTAN uses materials made by the world known companies, which have been checked and approved by its own laboratory. The production itself is monitored and controlled by the contemporary scanners. At the same time PEŠTAN controls the quality of its products in the independent international laboratories.



| SDR17 (S-8) PN1 | | | | SDR11 (S-5) PN4 | | |
|-----------------|----------|------|-------|-----------------|------|--------|
| D(MM) | CODE | S | KG/M | CODE | S | KG/M |
| 20 | 11600001 | 2.3 | 0.133 | 11600101 | 3 | 0.163 |
| 25 | 11600002 | 2.3 | 0.171 | 11600102 | 3 | 0.211 |
| 32 | 11600003 | 2.3 | 0.224 | 11600103 | 3 | 0.279 |
| 40 | 11600004 | 2.3 | 0.285 | 11600104 | 3.7 | 0.43 |
| 50 | 11600005 | 2.9 | 0.44 | 11205105 | 4.6 | 0.666 |
| 63 | 11600006 | 3.6 | 0.688 | 11600106 | 5.8 | 1.05 |
| 75 | 11600007 | 4.3 | 0.976 | 11600107 | 6.8 | 1.47 |
| 90 | 11600008 | 5.2 | 1.41 | 11600108 | 8.2 | 2.12 |
| 110 | 11600009 | 6.3 | 2.08 | 11600109 | 10 | 3.14 |
| 125 | 11600010 | 7.1 | 2.66 | 11600110 | 11.4 | 4.08 |
| 140 | 11600011 | 8 | 3.34 | 11600111 | 12.7 | 5.08 |
| 160 | 11600012 | 9.1 | 4.35 | 11600112 | 14.6 | 6.67 |
| 180 | 11600013 | 10.3 | 5.53 | 11600113 | 16.4 | 8.42 |
| 200 | 11600014 | 11.4 | 6.79 | 11600114 | 18.2 | 10.4 |
| 225 | 11600015 | 12.8 | 8.55 | 11600115 | 20.5 | 13.1 |
| 250 | 11600016 | 14.2 | 10.6 | 11600116 | 22.7 | 16.2 |
| 280 | 11600017 | 15.9 | 13.2 | 11600117 | 25.4 | 20.3 |
| 315 | 11600018 | 17.9 | 16.7 | 11600118 | 28.6 | 25.6 |
| 355 | 11600019 | 20.2 | 21.3 | 11600119 | 32.3 | 32.6 |
| 400 | 11600020 | 22.8 | 27 | 11600120 | 36.4 | 41.4 |
| 450 | 11600021 | 25.6 | 34.23 | 11600121 | 41 | 52.83 |
| 500 | 11600022 | 28.5 | 42.34 | 11600122 | 45.5 | 65.15 |
| 560 | 11600023 | 31.9 | 53.08 | 11600123 | 51 | 81.78 |
| 630 | 11600024 | 35.8 | 67.02 | 11600124 | 57.3 | 103.38 |

FITTING

Peštan is able to offer complete program of welded accessories made in all diameters and in all working pressures. Also other working pressures are available by the request.

HDPE PE-80

| SDR11 (S-5) PN10 | | | | SDR17,6 (S-8.3) PN6 | | | | SDR17 (S-8) PN6 | | | |
|------------------|----------|------|--------|---------------------|----------|------|-------|-----------------|----------|------|--------|
| D(MM) | CODE | S | KG/M | D(MM) | CODE | S | KG/M | D(MM) | CODE | S | KG/M |
| 16 | 11700500 | 3.0c | 0.126 | 16 | 11700000 | 2.3c | / | 16 | 11700260 | 2.3c | / |
| 20 | 11700501 | 3.0c | 0.165 | 20 | 11700001 | 2.3c | 0.133 | 20 | 11700261 | 2.3c | 0.133 |
| 25 | 11700502 | 3.0c | 0.213 | 25 | 11700002 | 2.3c | 0.171 | 25 | 11700262 | 2.3c | 0.171 |
| 32 | 11700503 | 3.0 | 0.281 | 32 | 11700003 | 2.3c | 0.224 | 32 | 11700263 | 2.3c | 0.224 |
| 40 | 11700504 | 3.7 | 0.434 | 40 | 11700004 | 2.3 | 0.285 | 40 | 11700264 | 2.4 | 0.295 |
| 50 | 11700505 | 4.6 | 0.672 | 50 | 11700005 | 2.9 | 0.440 | 50 | 11700265 | 3.0 | 0.454 |
| 63 | 11700506 | 5.8 | 1.062 | 63 | 11700006 | 3.6 | 0.688 | 63 | 11700266 | 3.8 | 0.722 |
| 75 | 11700507 | 6.8 | 1.483 | 75 | 11700007 | 4.3 | 0.976 | 75 | 11700267 | 4.5 | 1.02 |
| 90 | 11700508 | 8.2 | 2.149 | 90 | 11700008 | 5.2 | 1.41 | 90 | 11700268 | 5.4 | 1.466 |
| 110 | 11700509 | 10.0 | 3.187 | 110 | 11700009 | 6.3 | 2.08 | 110 | 11700269 | 6.6 | 2.182 |
| 125 | 11700613 | 11.4 | 4.134 | 125 | 11700112 | 7.1 | 2.66 | 125 | 10700342 | 7.4 | 2.783 |
| 140 | 11700623 | 12.7 | 5.153 | 140 | 11700123 | 8.0 | 3.34 | 140 | 11700352 | 8.3 | 3.494 |
| 160 | 11700633 | 14.6 | 6.762 | 160 | 11700133 | 9.1 | 4.35 | 160 | 11700362 | 9.5 | 4.56 |
| 180 | 11700643 | 16.4 | 8.541 | 180 | 11700142 | 10.3 | 5.53 | 180 | 11700372 | 10.7 | 5.768 |
| 200 | 11700653 | 18.2 | 10.539 | 200 | 11700153 | 11.4 | 6.79 | 200 | 11700382 | 11.9 | 7.118 |
| 225 | 11700663 | 20.5 | 13.342 | 225 | 11700163 | 12.8 | 8.55 | 225 | 11700392 | 13.4 | 9.028 |
| 250 | 11700673 | 22.7 | 16.406 | 250 | 11700173 | 14.2 | 10.60 | 250 | 11700402 | 14.8 | 11.063 |
| 280 | 11700683 | 25.4 | 20.036 | 280 | 11700183 | 15.9 | 13.20 | 280 | 11700412 | 16.6 | 13.899 |
| 315 | 11700693 | 28.6 | 26.036 | 315 | 11700193 | 17.9 | 16.70 | 315 | 11700422 | 18.7 | 17.601 |
| 355 | 11700703 | 32.2 | 33.141 | 355 | 11700203 | 20.2 | 21.30 | 355 | 11700432 | 21.1 | 22.403 |
| 400 | 11700713 | 36.3 | 42.057 | 400 | 11700213 | 22.8 | 27.00 | 400 | 11700442 | 23.7 | 28.312 |
| 450 | 11700723 | 40.9 | 53.132 | 450 | 11700223 | 25.6 | 34.23 | 450 | 11700452 | 26.7 | 35.869 |
| 500 | 11700733 | 45.4 | 65.684 | 500 | 11700233 | 28.4 | 42.34 | 500 | 11700462 | 29.7 | 44.32 |
| 560 | 11700743 | 50.8 | 82.273 | 560 | 11700243 | 31.9 | 53.08 | 560 | 11700472 | 33.2 | 55.523 |
| 630 | 11700753 | 57.2 | 104.22 | 630 | 11700253 | 35.8 | 67.02 | 630 | 11700482 | 37.4 | 70.322 |

HDPE PE-100

Registration control number: DVGW DG8106BR0083 DG8111BR0084

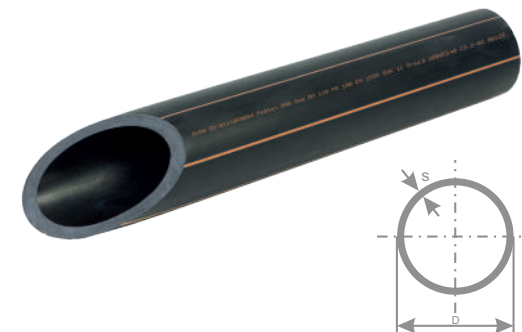
PREFERENCES

PE100 pipes are made in black color with orange longitudinal lines.

PACKAGING & TRANSPORT

When transporting and storing the pipes, they must not be dragged in the dirt or on sharp objects; also they must not come in contact with mineral oils, emollients or various coatings.

The pipes should be placed on the flat surface. The can be stored for the period of up to two years in the open.







SEWAGE

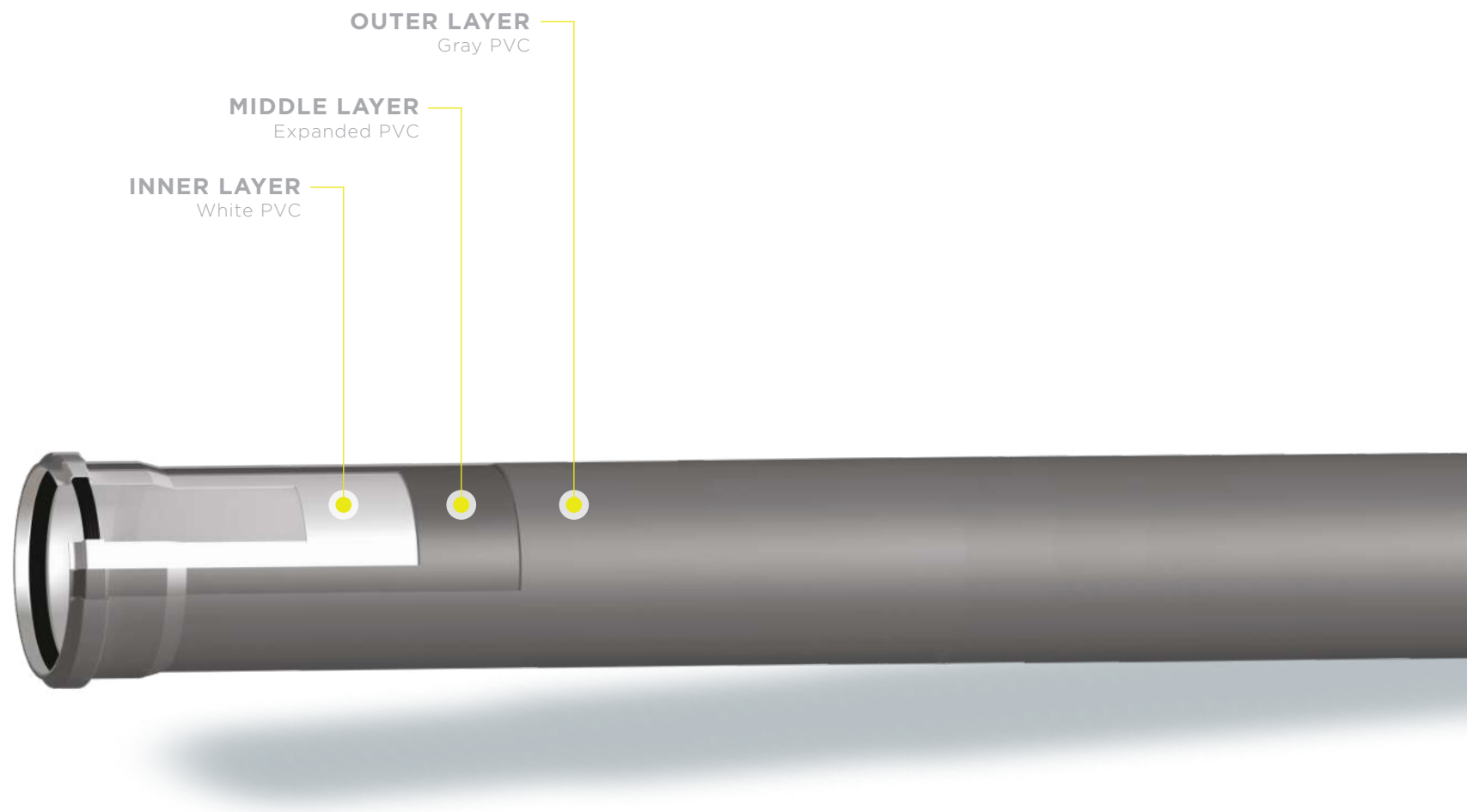


PVC PIPES - 3P



Production program Pestan PVC pipes for home system sewage-3p pipes- represents the pipes made of supreme quality polivynil chloride PVC-U in diameters Ø32 do Ø160.

Also these pipes are produced in lenghts of 250 mm, 500 mm, 1000 mm, 2000 mm, 3000 mm, 4000 mm.



It should be highlighted that using special technology these pipes manage to reduce noise level more than regular PVC pipes during the flow.

32 - 160

AVAILABLE PROFILES

EASY CAMERA INSPECTION

WHITE ANTIBACTERIAL LAYER

TEMPERATURE RESISTANCE





HT (PP) PIPES



& fittings for domestic & street sewage systems

The pipes for domestic sewerage systems together with the appropriate coupling sleeves are intended to be used for the removal of all kinds of waste water.

Assembly of the pipeline is extremely easy, pipes are connected to one another with fittings while complete seal is achieved with use of rubber bands. Maximum temperature of application is +90 °C. Pipes are resistant to salt water, alcohol, acids, alkalis, sulphates, aggressive gas and all kinds of detergents. On the other hand, they cannot be used for the transport of water which contains high percentage of benzene, benzine (petrol) or acetone.

Advantages & owner benefits

- Very light material
- Simple and easy way of both transport and manipulation
- Fast and cheap assembling
- Pipe connections are resistant to water and other type of fluids
- They are resistant to corrosion in alkaline, acid or aggressive environment
- They are fine electrical insulator, and also resistant to mechanical impact
- Guaranteed life time of more than 50 years
- Practically no costs of pipeline maintenance
- Connection with muffs and gaskets made of EPDM or rubber (EN 681)
- SRPS-EN 1451



Acoustic insulation

According to DIN 4109 noise generated from the pipeline, built-in sound-protected areas should not exceed 35dB (A). At the same time, the norm VDI 4100 guideline shows that the noise should not exceed 30dB (A). From the above mentioned reasons, Pešťan and its HT PP pipes were put on testing at the renowned Institute in Stuttgart, where is obtained confirmation of our quality. According to studies, Pešťan HT PP pipes and related fittings can be classified into LEVEL II sound insulation with results of 24dB (A), obtained in the tests (Test Report P-BA 95/2016). Test was performed on standard commercial collars.

| | EE | EF | ET | EO |
|--|----|----|----|----|
| Airborne sound pressure level L_{pA} [dB(A)] according to EN 14366 in the basement test-room UG front | 49 | 52 | 52 | 55 |
| Structure-borne sound characteristic level L_{wA} [dB(A)] according to EN 14366 in the basement test-room UG rear | 24 | 30 | 24 | 31 |

TEST WAS PERFORMED ON STANDARD COMMERCIAL COLLARS.



According to VDI 4100, there are three levels of sound insulation, depending on the purpose of the facility in which the pipes are installed:

- Level I sound insulation - requirements according to DIN 4109 corresponding to 30dB (A)
- Level II sound insulation - a higher level of sound insulation corresponds to 25dB (A)
- Level III sound insulation - the highest level of sound insulation corresponds to 20dB (A)

Test was performed on standard commercial collars.

VDI levels of sound insulation and classification:

- Level I sound insulation - family houses;
- Level II sound insulation - apartment buildings, residential and commercial buildings with few floors;
- Level III sound insulation - hotels, hospitals, libraries, reading rooms, residential complexes...



On family houses

Sound insulation level I or on agreement



Apartment buildings, residential and office buildings, comfort apartments

Sound insulation level II or higher



Hotels, hospitals, residential complexes

Sound insulation level III enhanced agreements



HT (PP) pipes & fittings

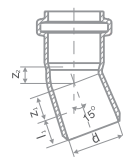

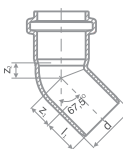


Product range from Ø32 up to Ø160



| ITEM DESCRIPTION | PICTURE | CODE | D | D1 | D2 | S |
|------------------|---------|----------|-----|-------|-------|-----|
| HTEM PIPE SDR41 | | | | | | |
| | | 10200004 | 32 | 32,3 | 38,6 | 1,8 |
| | | 10200024 | 40 | 40,3 | 49,6 | 1,8 |
| | | 10200044 | 50 | 50,3 | 59,6 | 1,8 |
| | | 10200104 | 75 | 75,3 | 84,5 | 1,9 |
| | | 10200154 | 90 | 90,4 | 99,5 | 2,2 |
| | | 10200204 | 110 | 110,3 | 120,5 | 2,7 |
| | | 10200224 | 125 | 125,3 | 137,5 | 3,1 |
| | | 10200244 | 160 | 160,3 | 174,3 | 3,9 |



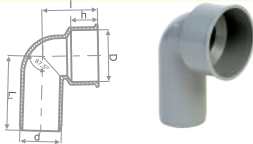

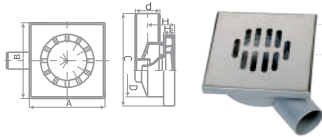

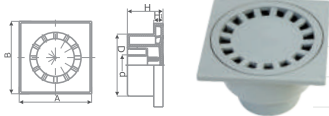

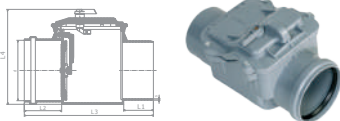

| ITEM DESCRIPTION | PICTURE | CODE | D | D1 | D2 | S |
|------------------|---------|----------|-----|-------|-------|-----|
| HTEM PIPE SDR41 | | | | | | |
| | | 19906500 | 32 | 32,3 | 38,6 | 1,8 |
| | | 19906511 | 40 | 40,3 | 49,6 | 1,8 |
| | | 19906521 | 50 | 50,3 | 59,6 | 1,8 |
| | | 19906531 | 75 | 75,3 | 84,5 | 1,9 |
| | | 19906642 | 90 | 90,4 | 99,5 | 2,2 |
| | | 19906541 | 110 | 110,3 | 120,5 | 2,7 |
| | | 19906551 | 125 | 125,3 | 137,5 | 3,1 |
| | | 19909561 | 160 | 160,3 | 174,3 | 3,9 |

| ITEM DESCRIPTION | PICTURE | CODE | D | Z1 | Z2 | L1MIN |
|---|---|----------|-----|-------|-------|-------|
| HTB BEND 15° | | | | | | |
|  |  | 10200300 | 30 | 3 | 5 | 39 |
| | | 10200301 | 40 | 4 | 7 | 44 |
| | | 10200302 | 50 | 5 | 9 | 46 |
| | | 10200304 | 75 | 7 | 11 | 51 |
| | | 10200329 | 90 | 5.62 | 10.33 | 55 |
| | | 10200308 | 110 | 9 | 14 | 58 |
| | | 10200309 | 125 | 10 | 14 | 82 |
| HTB BEND 30° | | | | | | |
|  |  | 10200500 | 32 | 8 | 13 | 39 |
| | | 10200501 | 40 | 14 | 14 | 44 |
| | | 10200502 | 50 | 9 | 12 | 46 |
| | | 10200529 | 90 | 11.44 | 16.44 | 55 |
| | | 10200508 | 110 | 17 | 21 | 58 |
| | | 10200509 | 125 | 10 | 15 | 15 |
| | | 10200510 | 160 | 29 | 23 | 23 |
| HTB BEND 45° | | | | | | |
|  |  | 10200600 | 32 | 9 | 12 | 42 |
| | | 10200601 | 40 | 10 | 14 | 44 |
| | | 10200602 | 50 | 12 | 16 | 46 |
| | | 10200604 | 75 | 18 | 21 | 51 |
| | | 10200637 | 90 | 47 | 23 | 37 |
| | | 10200608 | 110 | 25 | 29 | 58 |
| | | 10200635 | 125 | 28 | 33 | 64 |
| 10200610 | 160 | 42 | 36 | 94 | | |
| HTB BEND 67.5° | | | | | | |
|  |  | 10200700 | 32 | 13 | 16 | 42 |
| | | 10200701 | 40 | 16 | 19 | 44 |
| | | 10200702 | 50 | 19 | 23 | 46 |
| | | 10200704 | 75 | 28 | 32 | 51 |
| | | 10200723 | 90 | 28.53 | 34.45 | 55 |
| | | 10200708 | 110 | 40 | 46 | 58 |
| | | 10200709 | 125 | 45 | 50 | 82 |
| 10200710 | 160 | 64 | 58 | 94 | | |
| HTB BEND 87.5° | | | | | | |
|  |  | 10200800 | 32 | 19 | 23 | 42 |
| | | 10200801 | 40 | 23 | 26 | 44 |
| | | 10200802 | 50 | 28 | 31 | 46 |
| | | 10200804 | 75 | 40 | 43 | 51 |
| | | 10200837 | 90 | 49 | 46 | 49 |
| | | 10200808 | 110 | 57 | 57 | 58 |
| | | 10200809 | 125 | 65 | 65 | 64 |
| 10200810 | 160 | 89 | 83 | 94 | | |

| ITEM DESCRIPTION | PICTURE | CODE | D | Z1 | Z2 | Z3 | L1MIN |
|--|----------|---------|-------|-------|-------|----|-------|
| HTEA BRANCH 45° | | | | | | | |
|  | 10200900 | 32/32 | 9 | 40 | 40 | 42 | |
| | 10200901 | 40/32 | 5 | 46 | 44 | 44 | |
| | 10200902 | 40/40 | 10 | 49 | 49 | 44 | |
| | 10200903 | 50/32 | -1 | 53 | 49 | 46 | |
| | 10200904 | 50/40 | 5 | 56 | 54 | 46 | |
| | 10200905 | 50/50 | 12 | 61 | 61 | 46 | |
| | 10200912 | 75/50 | -1 | 79 | 74 | 51 | |
| | 10200914 | 75/75 | 18 | 91 | 91 | 51 | |
| | 10201073 | 90/50 | 9.64 | 98.01 | 90.34 | 55 | |
| | 10200986 | 90/90 | 17 | 110 | 161 | 56 | |
| | 10200938 | 110/50 | -17 | 104 | 91 | 58 | |
| | 10200940 | 110/75 | 1 | 116 | 109 | 58 | |
| | 10200944 | 110/110 | 25 | 134 | 134 | 58 | |
| | 10200953 | 125/110 | 18 | 144 | 141 | 64 | |
| | 10200954 | 125/125 | 28 | 152 | 152 | 64 | |
| | 10200963 | 160/110 | 1 | 168 | 159 | 81 | |
| | 10200965 | 160/160 | 36 | 194 | 194 | 81 | |
| HTEA BRANCH 67.5° | | | | | | | |
|  | 10201000 | 32/32 | 13 | 27 | 27 | 42 | |
| | 10201002 | 40/40 | 16 | 33 | 33 | 44 | |
| | 10201005 | 50/50 | 19 | 40 | 40 | 46 | |
| | 10201038 | 110/50 | 9 | 72 | 52 | 58 | |
| | 10201044 | 110/110 | 40 | 85 | 85 | 58 | |
| HTEA BRANCH 87.5° | | | | | | | |
|  | 10201100 | 32/32 | 19 | 21 | 21 | 42 | |
| | 10201101 | 40/32 | 19 | 25 | 21 | 44 | |
| | 10201102 | 40/40 | 23 | 25 | 25 | 44 | |
| | 10201103 | 50/32 | 19 | 30 | 21 | 46 | |
| | 10201104 | 50/40 | 23 | 30 | 25 | 46 | |
| | 10201105 | 50/50 | 28 | 30 | 30 | 46 | |
| | 10201112 | 75/50 | 27 | 43 | 31 | 51 | |
| | 10201114 | 75/75 | 40 | 43 | 43 | 51 | |
| | 10202186 | 90/40 | 16.91 | 93.05 | 83.37 | 55 | |
| | 10202187 | 90/50 | 23.06 | 55.1 | 36.57 | 55 | |
| | 10201196 | 90/90 | 43.13 | 56.64 | 56.64 | 56 | |
| | 10201198 | 110/40 | 20.40 | 56 | 30.5 | 58 | |
| | 10201138 | 110/50 | 28 | 60 | 32 | 58 | |
| | 10201140 | 110/75 | 40 | 60 | 45 | 58 | |
| | 10201144 | 110/110 | 57 | 62 | 62 | 58 | |
| | 10201153 | 125/110 | 58 | 69 | 63 | 64 | |
| | 10201154 | 125/125 | 65 | 70 | 70 | 64 | |
| | 10201164 | 160/125 | 66 | 87 | 71 | 81 | |
| | 10201165 | 160/160 | 83 | 89 | 89 | 81 | |

| ITEM DESCRIPTION | PICTURE | CODE | D | Z1 | Z2 | Z3 | L1MIN |
|--|----------|-------------|-----|-----|-----|----|-------|
| HTDA DOUBLE BRANCH 45° | | | | | | | |
|  | 10201505 | 50/50/50 | 12 | 61 | 61 | 46 | |
| | 10201538 | 50/110/50 | -17 | 104 | 91 | 58 | |
| | 10201544 | 110/110/110 | 25 | 134 | 134 | 58 | |
| HTDA DOUBLE BRANCH 67,5° | | | | | | | |
|  | 10201605 | 50/50/50 | 19 | 40 | 40 | 46 | |
| | 10201638 | 50/110/50 | 9 | 72 | 52 | 58 | |
| | 10201644 | 110/110/110 | 40 | 85 | 85 | 58 | |
| HTDA DOUBLE BRANCH 87,5° | | | | | | | |
|  | 10201738 | 50/110/50 | 28 | 30 | 30 | 46 | |
| | 10201744 | 110/110/110 | 28 | 60 | 32 | 58 | |
| | | | | | | | |
| HTRE INSPECTION PIPE | | | | | | | |
|  | 10201402 | 50 | 32 | | 30 | 46 | |
| | 10201404 | 75 | 48 | | 43 | 51 | |
| | 10201408 | 110 | 58 | | 62 | 58 | |
| | 10201409 | 125 | 58 | | 62 | 64 | |

| ITEM DESCRIPTION | PICTURE | CODE | D | Z1 | I |
|---|----------|---------|-----|-----|---|
| HTU DOUBLE SOCKET | | | | | |
|  | 10202300 | 32 | | 94 | |
| | 10202301 | 40 | | 103 | |
| | 10202302 | 50 | | 103 | |
| | 10202304 | 75 | | 109 | |
| | 10202339 | 90 | | 104 | |
| | 10202308 | 110 | | 122 | |
| | 10202309 | 125 | | 138 | |
| HTU SLIP COUPLER | | | | | |
|  | 10202400 | 32 | | 94 | |
| | 10202401 | 40 | | 103 | |
| | 10202402 | 50 | | 103 | |
| | 10202404 | 75 | | 109 | |
| | 10202408 | 110 | | 122 | |
| | 10202409 | 125 | | 138 | |
| HTR EXCENTRIC REDUCER | | | | | |
|  | 10201200 | 40/32 | 10 | 44 | |
| | 10201201 | 50/32 | 16 | 46 | |
| | 10201202 | 50/40 | 12 | 46 | |
| | 10201208 | 75/50 | 20 | 51 | |
| | 10201230 | 110/50 | 40 | 58 | |
| | 10201232 | 110/75 | 26 | 58 | |
| | 10201244 | 125/110 | 15 | 64 | |
| | 10201253 | 160/110 | 34 | 81 | |
| 10201254 | 160/125 | 27 | 81 | | |
| HTM END CAP | | | | | |
|  | 10202200 | 32 | | | |
| | 10202201 | 40 | | | |
| | 10202202 | 50 | | | |
| | 10202204 | 75 | | | |
| | 10202208 | 110 | | | |
| | 10202209 | 125 | | | |
| | 10202210 | 160 | | | |
| | 10202211 | 200 | | | |
| HT VENTILATION CAP | | | | | |
|  | 10202705 | 50 | 106 | 94 | |
| | 10202700 | 75 | 143 | 119 | |
| | 10202701 | 110 | 168 | 110 | |
| | 10202703 | 160 | 253 | 150 | |

| ITEM DESCRIPTION | PICTURE | CODE | D | D | H | L | L1 | | | |
|---|---|-------------------|---------------------|------|------|-----|-----|-------|------|------|
| HTSW FLOOR WASTE GULLE | | | | | | | | | | |
|  |  | 10202104 | 50 | 50,6 | 32,8 | 71 | 80 | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| HTSW FLOOR WASTE GULLE | | | | | | | | | | |
| | | 10202101 | 32 | 46 | 26 | 51 | 61 | | | |
| | | 10202103 | 40 | 46 | 26 | 51 | 75 | | | |
| HTSW FLOOR WASTE GULLEY TYPE 1 | | | | | | | | | | |
| | | 10202100 | 32 | 53,7 | 26 | 51 | 61 | | | |
| | | 10202102 | 40 | 53,7 | 26 | 51 | 75 | | | |
| | | | | | | | | | | |
| ITEM DESCRIPTION | PICTURE | CODE (METAL GRID) | CODE (PLASTIC GRID) | D | A | B | C | D | H | H1 |
| HTSW FLOOR WASTE GULLEY | | | | | | | | | | |
|  |  | 10299910 | 10299000 | 50 | 150 | 150 | 192 | 139,5 | 46,5 | 12,5 |
| | | 10299920 | 10299002 | 75 | 150 | 150 | 195 | 160 | 56,5 | 12,5 |
| | | | | | | | | | | |
| ITEM DESCRIPTION | PICTURE | CODE (METAL GRID) | CODE (PLASTIC GRID) | D | A | B | C | D | H | H1 |
| HTSW FLOOR WASTE GULLEY TYPE 2 | | | | | | | | | | |
|  |  | 10299911 | 10299001 | 50 | 150 | 150 | | 125 | 60 | 12,5 |
| | | 10299921 | 10299003 | 75 | 200 | 200 | | 160 | 130 | 9 |
| | | - | 10299005 | 110 | 200 | 200 | | 160 | 130 | 9 |
| | | - | 10299010 | 110 | 250 | 250 | | 200 | 85 | 12 |
| | | | | | | | | | | |
| ITEM DESCRIPTION | PICTURE | CODE | D | S | L1 | L2 | L3 | L4 | | |
| NON-RETURN VALVE | | | | | | | | | | |
|  |  | 10202500 | 50 | 2,2 | 50 | 40 | 197 | 98 | | |
| | | 10202501 | 75 | 2,5 | 70 | 54 | 265 | 139 | | |
| | | 10202502 | 110 | 4,0 | 64 | 64 | 320 | 189 | | |
| | | 10202503 | 125 | 4,0 | 68 | 65 | 318 | 226 | | |
| | | 10202504 | 160 | 4,0 | 68 | 103 | 350 | 248 | | |

| CODE | ITEM DESCRIPTION | PICTURE | Size D (mm) | L (mm) | L1 (mm) | W (mm) | Std Pck |
|----------|-----------------------------|--|-------------|--------|---------|--------|---------|
| 40006635 | HTPP P TRAP, GREY, DN110 MM |  | 110 | 167 | 269 | 176 | 10 |

| CODE | ITEM DESCRIPTION | PICTURE | Size D (mm) | d (mm) | d1 (mm) | h (mm) | H1 (mm) | W | Std Pck |
|----------|---|--|-------------|--------|---------|--------|---------|-----|---------|
| 40006637 | HTPP FLOOR TRAP, GREY, DN 110/DN75/DN50 |  | 110 | 75 | 50 | 141 | 50 | 213 | 10 |

| CODE | ITEM DESCRIPTION | PICTURE | Size D (mm) | d (mm) | d1 (mm) | h (mm) | H1 (mm) | W | Std Pck |
|----------|---|--|-------------|--------|---------|--------|---------|-----|---------|
| 40006638 | HTPP DEEP FLOOR TRAP, GREY, DN110/DN75/DN50 |  | 110 | 75 | 50 | 175 | 72 | 213 | 10 |



Let
the **silence**
be the only
thing you hear

S·LINE

S-LINE



Silent pipes and fittings Ø32 - Ø250

Provides reduction in noise and vibrations up to level of 12dB

S LINE SILENT SEWAGE SYSTEM

The pipes for domestic sewerage systems together with the appropriate coupling sleeves are intended to be used for the removal of all kinds of waste water.

Peštan silent piping system is a promoted version of Peštan HTPP home sewage system and it is specially designed for installation in places where sound insulation is taken into account.

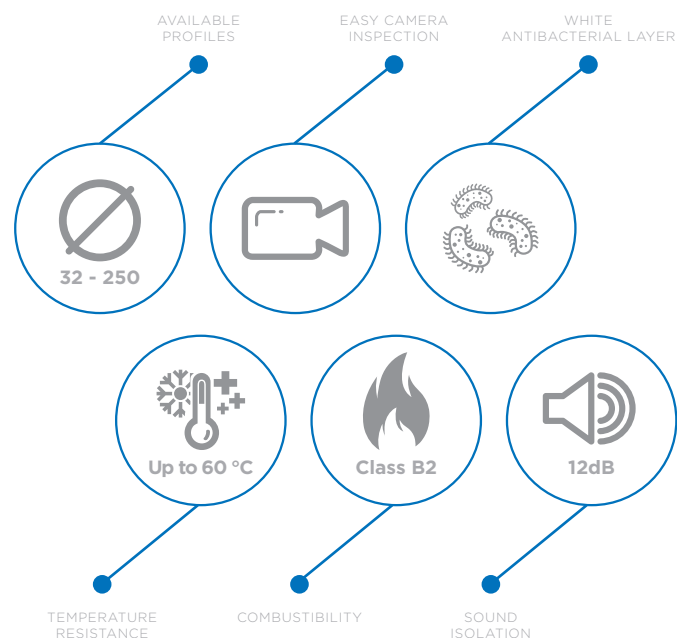
* In case of special request we offer diameters of 160 (200, 250, 315, 400 i 500)

Installed with special pipe clamps (with profiled rubber ring) provides reduction in noise and acoustic vibrations up to level of 12dB(A)*.

The latest technology of three-layer extrusion pipe and materials modified with mineral additives have raised disposal of waste water

systems within the building structure on a higher level.

* LSC,A [dB(A)] Fraunhofer test report P-BA 213/2016e



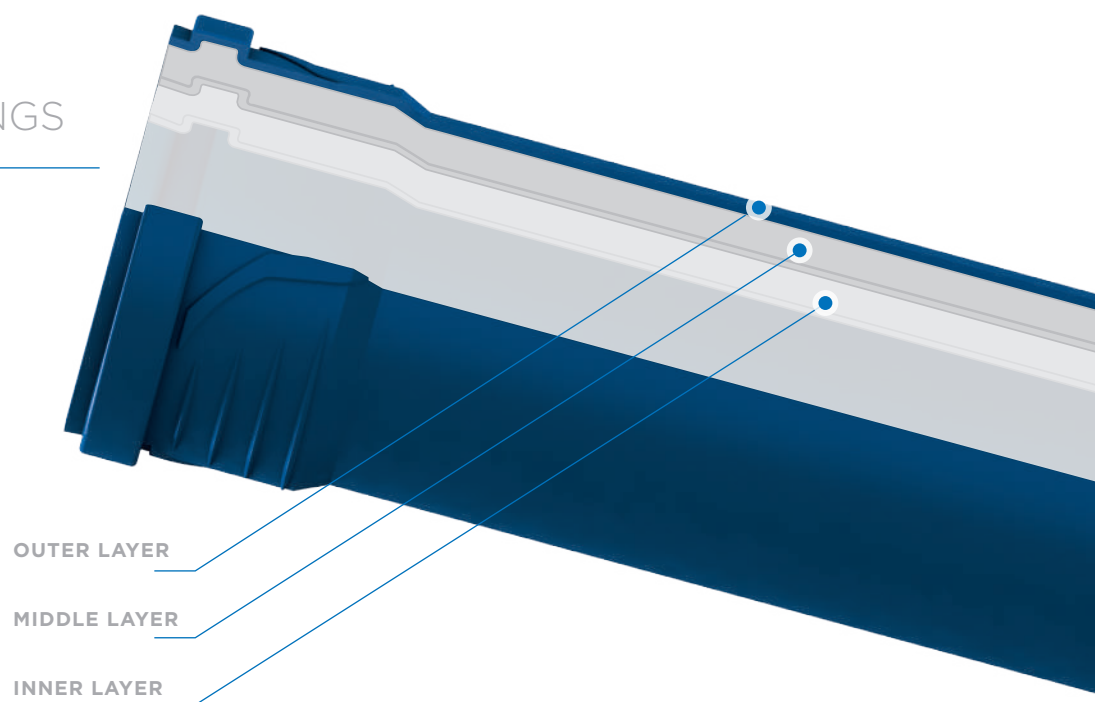
SPECIFICATION OF SILENT PIPES & FITTINGS

Peštan S LINE pipes are consisted of three layers, where each layer contributes to the desired characteristics of the product.

Inner layer: Made of polypropylene copolymer, smooth white inner surface prevents the buildup of sludge and reduces abrasion on the pipes. It allows easy inspection of the pipeline as it is white. It is resistant to high temperatures and chemicals.

Middle layer: Made of polypropylene copolymer and strengthened mineral filler, gives to pipes strength and flexibility.

External layer: Made of polypropylene copolymer, blue. Provides better impact resistance to the pipes, and greater safety when handling and installing products.



SUPPORTED STANDARDS:
EN 1451 • EN 1411 • EN 14366 • EN 681 • EN 12056

| | |
|------------------------------|--|
| Material | PP-H (polypropylene copolymer) |
| Pipe structure | Three-layer composite pipe PPC-PPM-PPC |
| Density | pipes (Ø32-Ø160) - 1.3 g/cm ³ fitting - 1.4 g/cm ³ |
| Hot water resistance | short term up to 95 °C long term up to 60 °C |
| Linear expansion coefficient | 0.05 mm/m °C |
| Chemical resistance | pH 2- pH 12 |
| E - modulus | 2400-3100 MPa |
| Joining method | Push-fit sockets with inserted rubber ring - resistant to leakage up to pressure of 0.5bar |
| Application category | BD (instalation in buildings and in building construction) |
| Fire classification | B2 - normal inflamability |
| Sound insulation level | 12 dB(A) sound insulation Level III |

NOISE FROM WASTE WATER INSTALLATIONS

There are two types of noise in waste water installation systems:

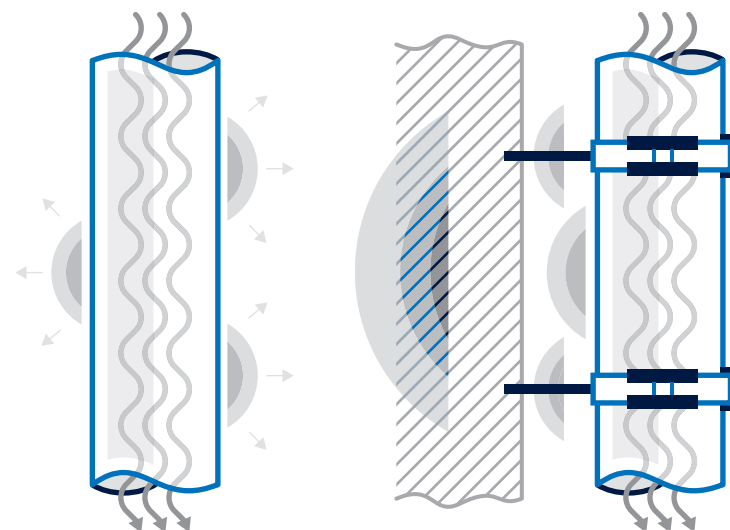
- Airborn noise
- Structure-borne noise

Airborn noise

Is consequence of waste water flowing within piping system. With special design of Peštan silent pipes airborne sound is limited and kept inside pipes preventing anoying noise to leave the system.

Structure-borne noise

Are vibrations created by flowing waste water inside pipes. From pipes it is transmitted to pipe clamps and finally to walls of the buildings creating irritating sounds. With special pipe clamps and with correct installation of the pipes this type of noise can be reduced to minimum.



ACOUSTIC INSULATION

According to DIN 4109 noise generated from the pipeline, built-in sound-protected areas should not exceed 35 dB (A). At the same time, the norm VDI 4100 guideline shows that the noise should not exceed 30dB (A). From the above mentioned reasons, Pešťan and its S LINE system were put on testing at the renowned Institute in Stuttgart, where is obtained confirmation of our quality.

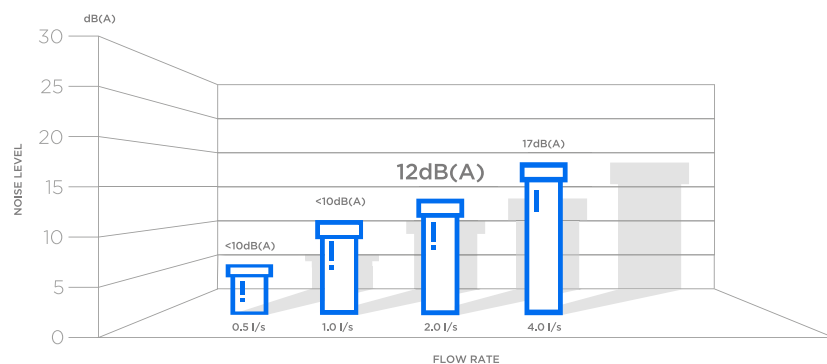
According to studies, Pešťan S LINE pipes and related fittings can be classified into LEVEL III of sound insulation with results of 12dB (A)*, obtained in the tests**.

Confirmation of the effective elimination of mentioned problems is done in special acoustic laboratory for measuring noise from wastewater installation systems of Fraunhofer institute Stuttgart. The obtained value from testing of 12dB(A)* makes Pešťan S LINE system suitable for installation on places where sound insulation is taken into account (hospitals, hotels, apartment buildings, universities, libraries, dormitories etc).

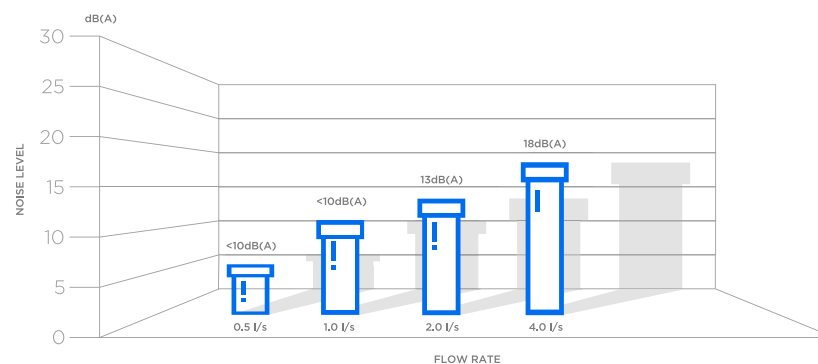
* LSC,A [dB (A)] Fraunhofer test report P-BA 213/2016e

** Test was performed on bismat 1000I collars.

Noise level of the PESTAN S LINE system in accordance with EN 14366



Noise level of the PESTAN S LINE system in accordance with VDI 4100



LEVEL OF SOUND ISOLATION AND CALSSIFICATION

According to VDI 4100, there are three levels of sound insulation, depending on the purpose of the facility in which the pipes are installed:

- Level I sound insulation - requirements according to DIN 4109 corresponding to 30dB (A)
- Level II sound insulation - a higher level of sound insulation corresponds to 25dB (A)
- Level III sound insulation - the highest level of sound insulation corresponds to 20dB (A)

VDI sound insulation clasification:

- Level I sound insulation - family houses
- Level II sound insulation - apartment buildings, residential and commercial buildings with few floors
- Level III sound insulation - hotels, hospitals, libraries, reading rooms, residential complexes...



On family houses

Sound insulation level I or on agreement



Apartment bulidings, residential and office buildings, comfort apartments

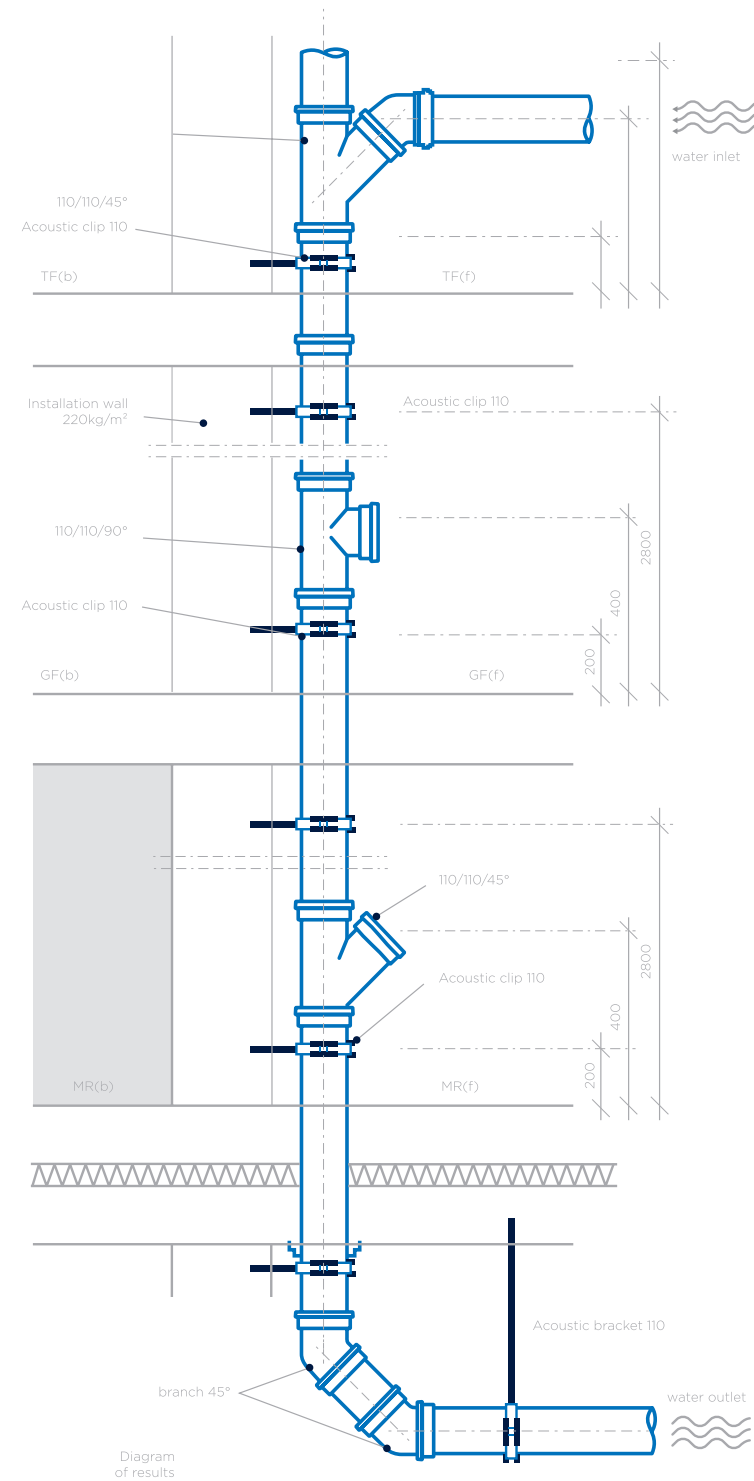
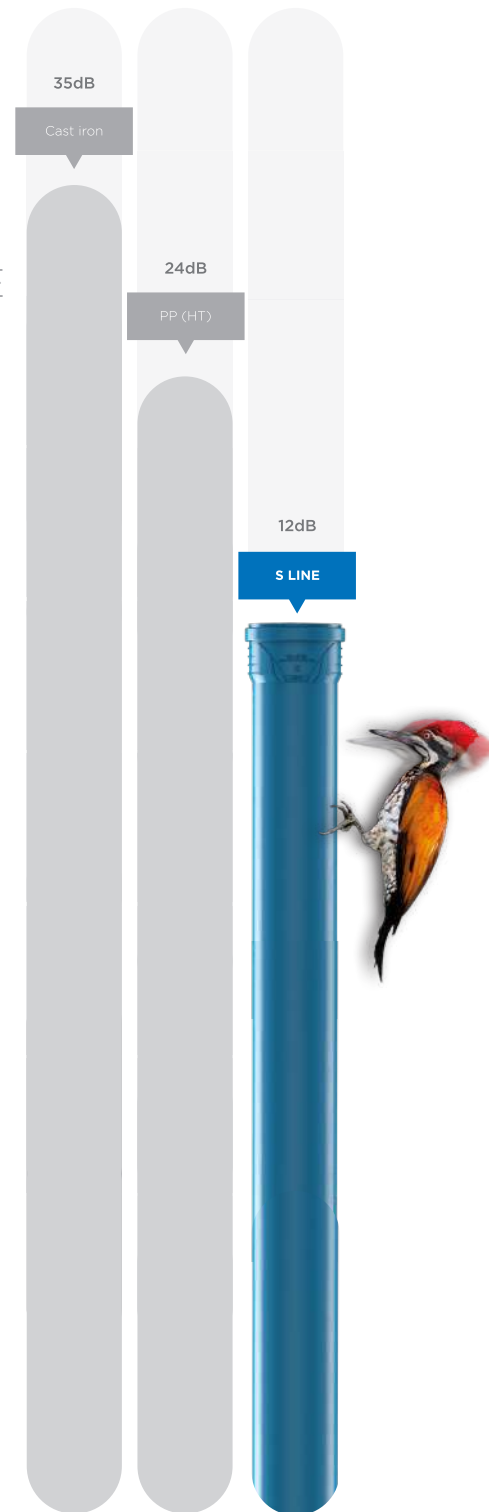
Sound insulation level II or higher



Hotels, hospitals, residential complexes

Sound insulation level III enhanced agreements

Testing of S LINE piping system



VENTOS

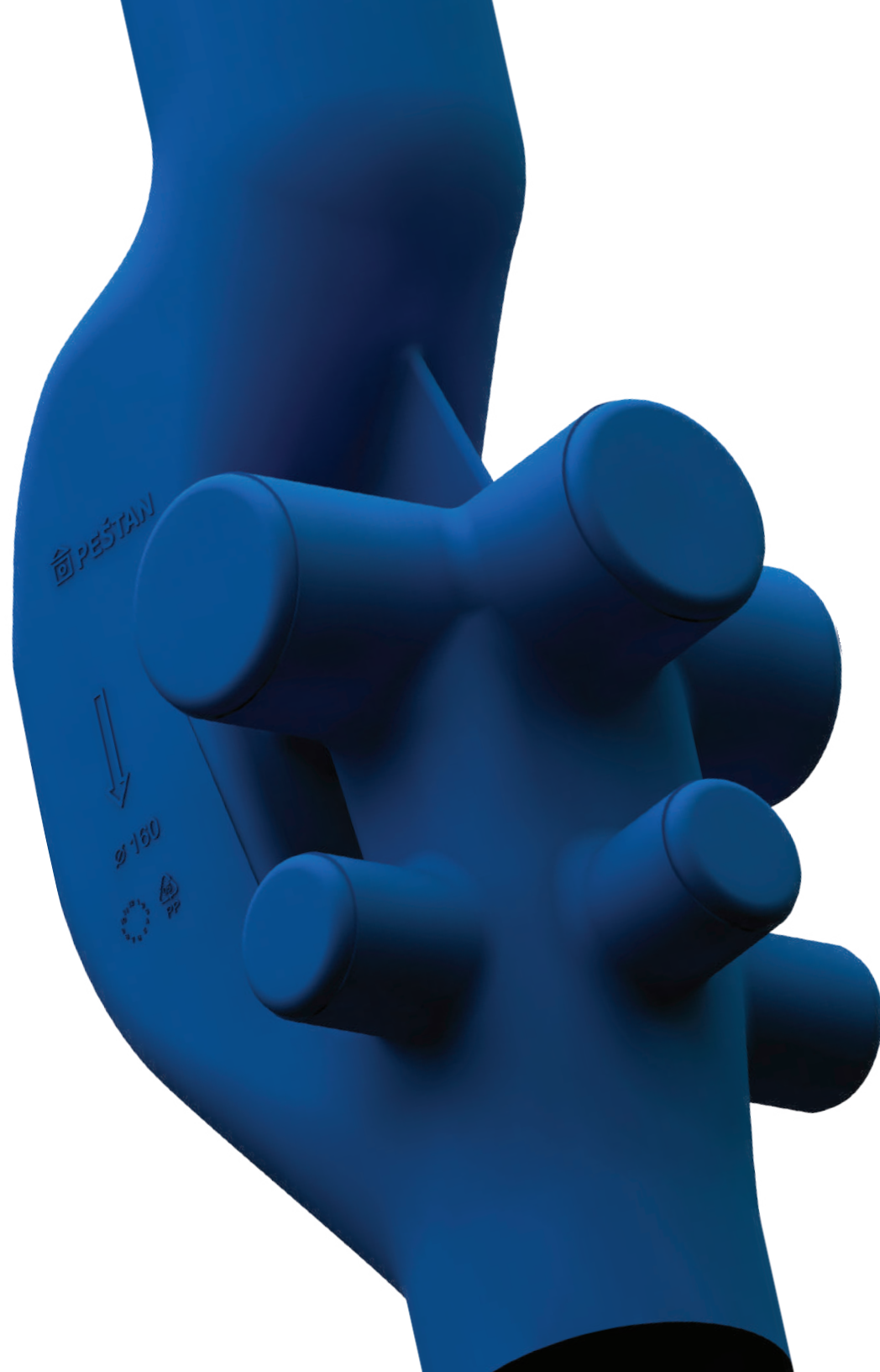
VENTILATION BRANCH

Apliance:

- Waste water drainage in buildings
- For buildings higher then 5 floors
- Six possible ways for connections

Tech. specification

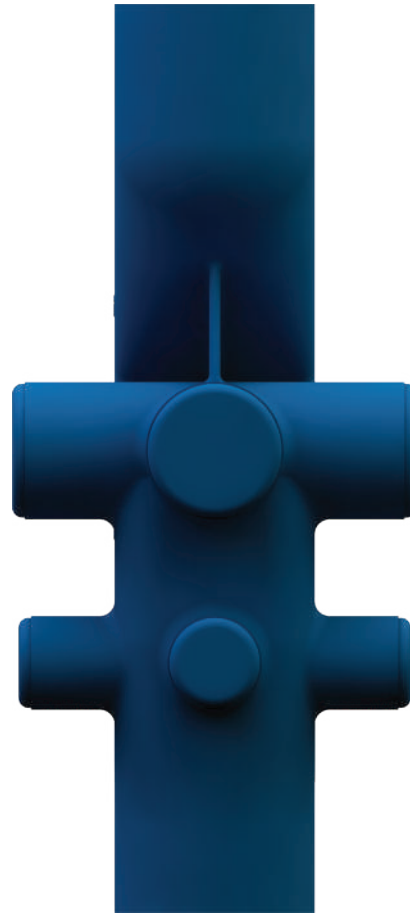
Maximum capacity outflow 17 l/s



VERTICAL CONNECTION PIECE FOR VALVES



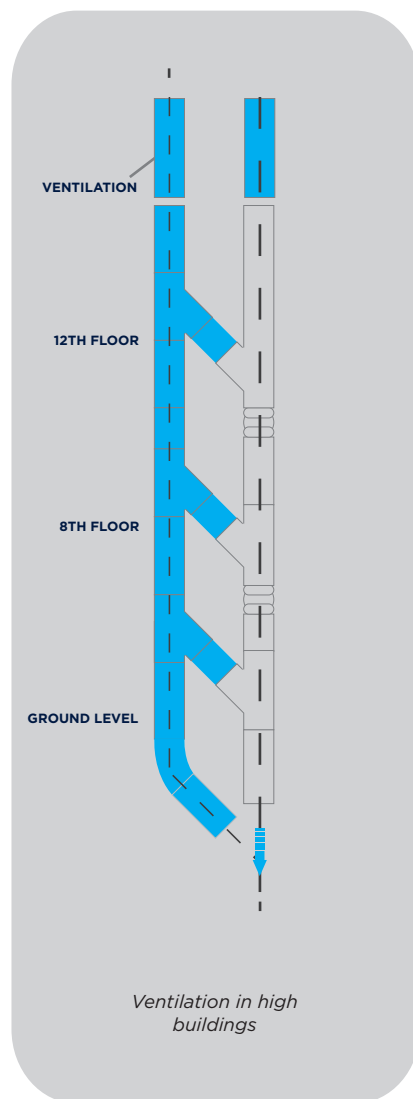
LEFT



FRONT



RIGHT

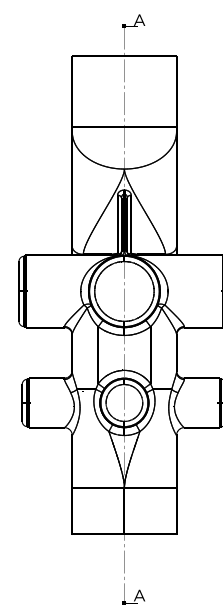


VENTILATION BRANCH

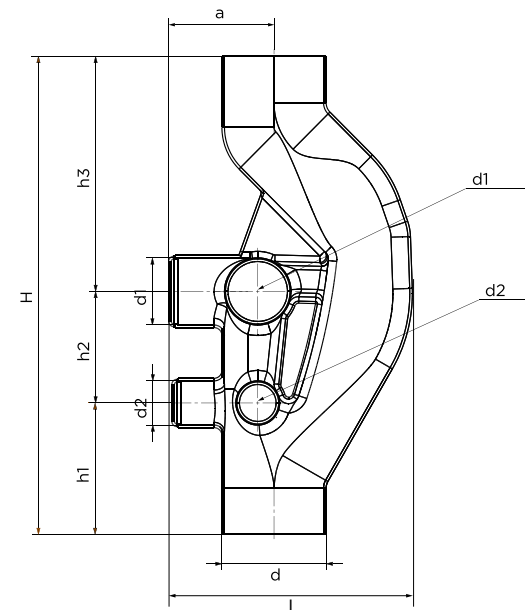
PARALLEL VENTILATION

During the construction of high buildings with traditional verticals the sudden change of pressure can happen in those verticals, that can lead to appearance of the subpressure that can pull the content out of the horizontal pipes attached to the vertical and that can lead to pipe cracking. Also great pressure can blow the content out of the pipes and because of those reasons during the construction the wider verticals are taken into account. Also parallel ventilation that is connected to vertical in regular spacings.

Maximum capacity for outflow is
DN 110 - 12 l/s
DN 160 - 17 l/s



BOTTOM VIEW
SCALE: 1:5



SECTION VIEW A-A
SCALE: 1:5

| DN | dØ | d1Ø | d2Ø | a | H | h1 | h2 | h3 | l |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| mm | mm | mm | mm | mm | mm | mm | mm | mm | mm |
| 110 | 110 | 110 | 75 | 135 | 730 | 245 | 170 | 315 | 320 |
| 160 | 160 | 110 | 75 | 147 | 730 | 359 | 170 | 200 | 365 |

CONNECTABLE VERTICAL PIECE - PIECE WITH GREATER CAPACITY

OPTIMIZATION OF FLOW IN HIGH BUILDINGS

Pestan vertical piece with greater flow enables increase of the capacity on verticals up to multiple times. Also removes the necessity for creating the parallel ventilation.

MODERN AND ECONOMICAL SOLUTION - REPLACEMENT FOR TRADITIONAL WAY OF DRAINAGE AND VENTILATION

Thanks to Pestan ventilation branch you can let go of traditional ways of projecting and placing of the drainage systems in buildings. Now there is economically and technically reliable solution. Besides that it provides undisturbed flow of the air between horizontal and vertical pipes. Pestan ventilation branch removes any possibility of creating of air pockets in the vertical. All this enables projecting and placing of the verticals without creating parallel ventilations which decreases the costs of the constructions.

COMPATIBILITY WITH PESTAN SYSTEMS

Pestan ventilation branch is made for verticals in diameters Ø110 and Ø160 with lateral insertions 110 and 75. It is compatible with S-line, HTPP and PVC systems.

TRADITIONAL WAY OF CONNECTING HORIZONTAL FLOOR PIPE AND VERTICAL

When water from vertical pipe reaches the horizontal subpressure can appear that can lead to unwanted consequences such as blow out of the pipe content.

PESTAN VENTILATION BRANCH

This hydraulically optimized piece for floor attachments enables that dimensions of verticals be smaller and it eliminates parallel vents which saves time, space and money.

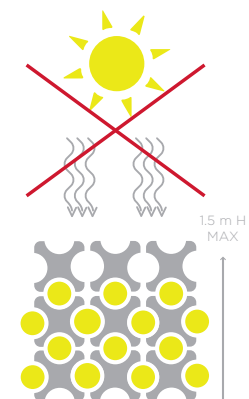
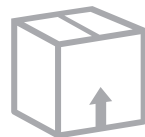
- Modern technical solution
- Economical construction solution
- Increase of vertical capacity
- Compatibility with all Pestan sewage systems



PACKING, STORAGE AND TRANSPORTATION:

All the fittings are packed in cardboard boxes. All pipes are packed in bundles. In order to prevent damage during transport, all Peštan pipes and fittings must not be transported unpacked and in horizontal position. During unloading they must

be protected against damage, particularly at temperatures below freezing. Never throw, drag or bend pipes and fittings. Pipes should be stored horizontally on even surfaces up to 1.5 m high, protected against sunlight.



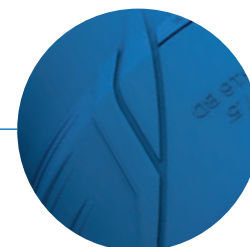
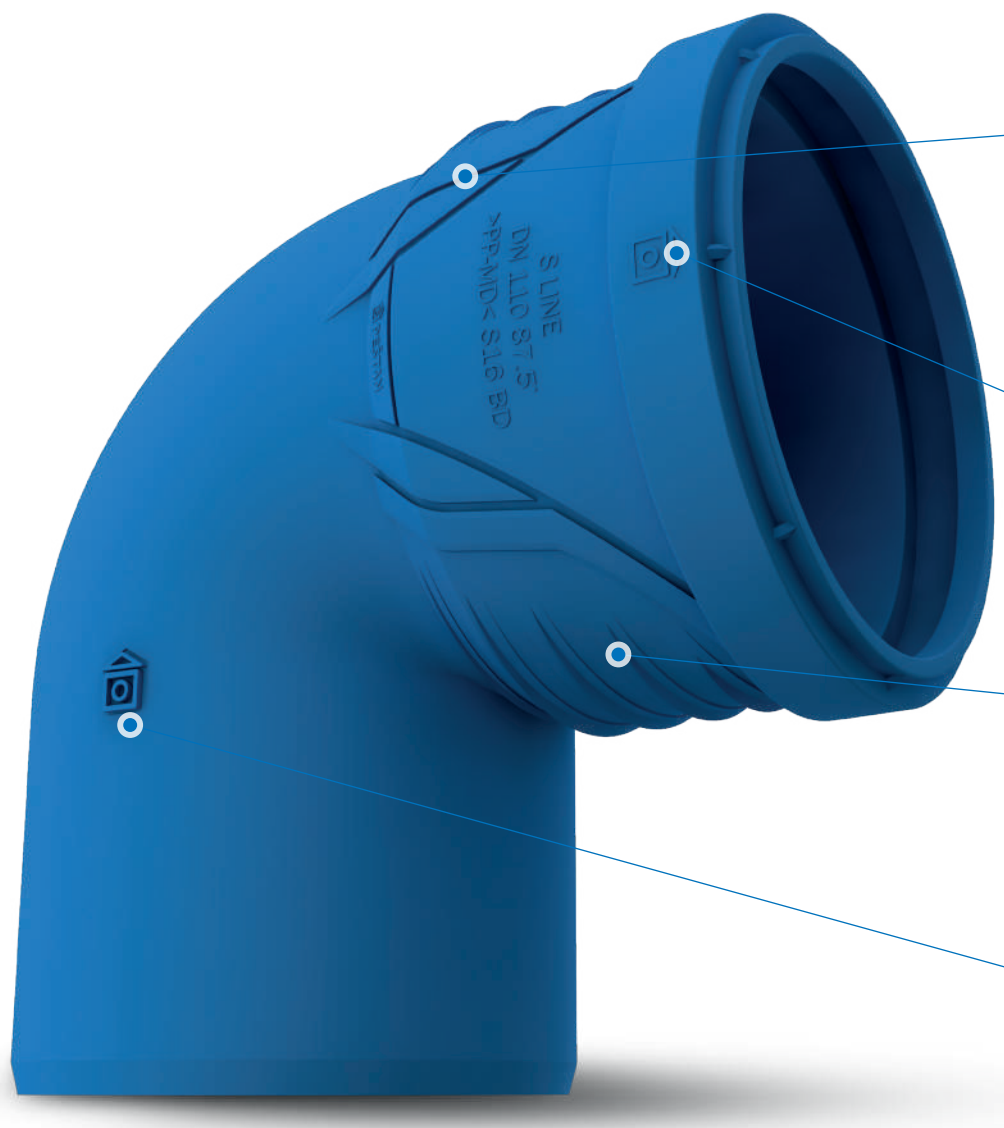
SILENCE IS CLOSER THAN EVER

Peštan silent system provides reduction in noise and acoustic vibrations up to level of 12dB. Silence and piece in your home is closer than ever

12dB (A)

Sound Insulation
Level III

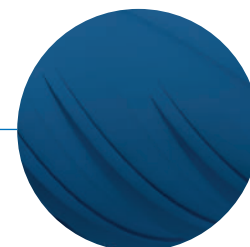




NEW - IMPROVED design of fitting socket



MARKER for determining angle of rotation of the fitting.



REINFORCEMENT ribs for strenghtening the fitting

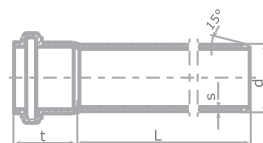


Peştan logo „**THE HOUSE**” on the bottom of the fitting is used as a marker for the depth of insertion of the fitting into the socket of a pipe or other fitting.

S LINE PIPES AND FITTINGS PRODUCT RANGE

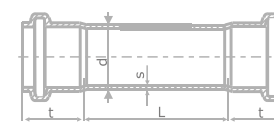
In case of special requests, we offer possibility of building pipes above DN 160 (DN 200, DN 250, DN 315, DN 400 and DN 500).

Pipe with
single socket



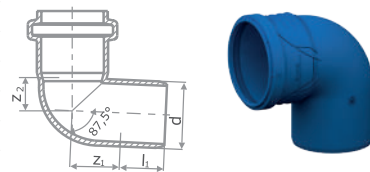
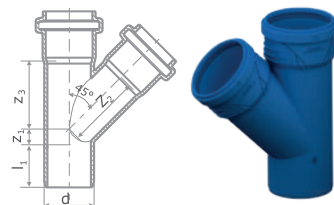
| | D | L | S | | D | L | S |
|----------|-----|------|-----|----------|-----|------|---------|
| 10304500 | 32 | 150 | 1,8 | 10304580 | 90 | 150 | 2,8 |
| 10304501 | | 250 | | 10304581 | | 250 | |
| 10304502 | | 500 | | 10304582 | | 500 | |
| 10304503 | | 750 | | 10304583 | | 750 | |
| 10304504 | | 1000 | | 10304584 | | 1000 | |
| 10304505 | | 1500 | | 10304585 | | 1500 | |
| 10304506 | | 2000 | | 10304586 | | 2000 | |
| 10304507 | | 2500 | | 10304587 | | 2500 | |
| 10304508 | | 3000 | | 10304588 | | 3000 | |
| 10304509 | | 4000 | | 10304589 | | 4000 | |
| 10304520 | 40 | 150 | 1,8 | 10304600 | 110 | 150 | 3,4+0,4 |
| 10304521 | | 250 | | 10304601 | | 250 | |
| 10304522 | | 500 | | 10304602 | | 500 | |
| 10304523 | | 750 | | 10304603 | | 750 | |
| 10304524 | | 1000 | | 10304604 | | 1000 | |
| 10304525 | | 1500 | | 10304605 | | 1500 | |
| 10304526 | | 2000 | | 10304606 | | 2000 | |
| 10304527 | | 2500 | | 10304607 | | 2500 | |
| 10304528 | | 3000 | | 10304608 | | 3000 | |
| 10304529 | | 4000 | | 10304609 | | 4000 | |
| 10304540 | 50 | 150 | 1,8 | 10304620 | 125 | 150 | 3,9 |
| 10304541 | | 250 | | 10304621 | | 250 | |
| 10304542 | | 500 | | 10304622 | | 500 | |
| 10304543 | | 750 | | 10304623 | | 750 | |
| 10304544 | | 1000 | | 10304624 | | 1000 | |
| 10304545 | | 1500 | | 10304625 | | 1500 | |
| 10304546 | | 2000 | | 10304626 | | 2000 | |
| 10304547 | | 2500 | | 10304627 | | 2500 | |
| 10304548 | | 3000 | | 10304628 | | 3000 | |
| 10304549 | | 4000 | | 10304629 | | 4000 | |
| 10304560 | 75 | 150 | 2,3 | 10304640 | 160 | 150 | 4,9 |
| 10304561 | | 250 | | 10304641 | | 250 | |
| 10304562 | | 500 | | 10304642 | | 500 | |
| 10304563 | | 750 | | 10304643 | | 750 | |
| 10304564 | | 1000 | | 10304644 | | 1000 | |
| 10304565 | | 1500 | | 10304645 | | 1500 | |
| 10304566 | | 2000 | | 10304646 | | 2000 | |
| 10304567 | | 2500 | | 10304647 | | 2500 | |
| 10304568 | | 3000 | | 10304648 | | 3000 | |
| 10304569 | | 4000 | | 10304649 | | 4000 | |
| 10304700 | 200 | 500 | 6,2 | 10304730 | 250 | 500 | 7,7 |
| 10304701 | | 750 | | 10304731 | | 750 | |
| 10304702 | | 100 | | 10304732 | | 1000 | |
| 10304703 | | 1500 | | 10304733 | | 1500 | |
| 10304704 | | 2000 | | 10304734 | | 2000 | |
| 10304705 | | 2500 | | 10304735 | | 2500 | |
| 10304706 | | 3000 | | 10304736 | | 3000 | |
| 10304707 | | 4000 | | 10304737 | | 4000 | |

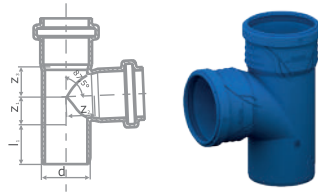

Pipe with
double socket



| | D | L | S | | D | L | S |
|----------|-----|------|-----|----------|-----|------|---------|
| 10305000 | 32 | 500 | 1,8 | 10305080 | 90 | 500 | 2,8 |
| 10305001 | | 750 | | 10305081 | | 750 | |
| 10305002 | | 1000 | | 10305082 | | 1000 | |
| 10305003 | | 1500 | | 10305083 | | 1500 | |
| 10305004 | | 2000 | | 10305084 | | 2000 | |
| 10305005 | | 2500 | | 10305085 | | 2500 | |
| 10305006 | | 3000 | | 10305086 | | 3000 | |
| 10305007 | | 4000 | | 10305087 | | 4000 | |
| 10305020 | 40 | 500 | 1,8 | 10305100 | 110 | 500 | 3,4+0,4 |
| 10305021 | | 750 | | 10305101 | | 750 | |
| 10305022 | | 1000 | | 10305102 | | 1000 | |
| 10305023 | | 1500 | | 10305103 | | 1500 | |
| 10305024 | | 2000 | | 10305104 | | 2000 | |
| 10305025 | | 2500 | | 10305105 | | 2500 | |
| 10305026 | | 3000 | | 10305106 | | 3000 | |
| 10305027 | | 4000 | | 10305107 | | 4000 | |
| 10305040 | 50 | 500 | 1,8 | 10305120 | 125 | 500 | 3,9 |
| 10305041 | | 750 | | 10305121 | | 750 | |
| 10305042 | | 1000 | | 10305122 | | 1000 | |
| 10305043 | | 1500 | | 10305123 | | 1500 | |
| 10305044 | | 2000 | | 10305124 | | 2000 | |
| 10305045 | | 2500 | | 10305125 | | 2500 | |
| 10305046 | | 3000 | | 10305126 | | 3000 | |
| 10305047 | | 4000 | | 10305127 | | 4000 | |
| 10305060 | 75 | 500 | 2,3 | 10305140 | 160 | 500 | 4,9 |
| 10305061 | | 750 | | 10305141 | | 750 | |
| 10305062 | | 1000 | | 10305142 | | 1000 | |
| 10305063 | | 1500 | | 10305143 | | 1500 | |
| 10305064 | | 2000 | | 10305144 | | 2000 | |
| 10305065 | | 2500 | | 10305145 | | 2500 | |
| 10305066 | | 3000 | | 10305146 | | 3000 | |
| 10305067 | | 4000 | | 10305147 | | 4000 | |
| 10305160 | 200 | 500 | 6,2 | 10305180 | 250 | 500 | 7,7 |
| 10305161 | | 750 | | 10305181 | | 750 | |
| 10305162 | | 100 | | 10305182 | | 1000 | |
| 10305163 | | 1500 | | 10305183 | | 1500 | |
| 10305164 | | 2000 | | 10305184 | | 2000 | |
| 10305165 | | 2500 | | 10305185 | | 2500 | |
| 10305166 | | 3000 | | 10305186 | | 3000 | |
| 10305167 | | 4000 | | 10305187 | | 4000 | |

| CODE | DESCRIPTION | PICTURE | Z ₁ | Z ₂ | L ₁ MIN | D |
|-------------------|---------------------------|---|----------------|----------------|--------------------|-----|
| S LINE BEND 15° | | | | | | |
| 10304000 | Silent bend HTB 32/15° |  | 25 | 8.45 | 25 | 32 |
| 10304001 | Silent bend HTB 40/15° | | 26.5 | 8.97 | 26.5 | 40 |
| 10304002 | Silent bend HTB 50/15° | | 29.005 | 8.26 | 29.005 | 50 |
| 10304003 | Silent bend HTB 75/15° | | 31.79 | 12.01 | 37.79 | 75 |
| 10304004 | Silent bend HTB 90/15° | | 33.5 | 13.83 | 33.5 | 90 |
| 10304005 | Silent bend HTB 110/15° | | 40.885 | 16.34 | 40.885 | 110 |
| 10304006 | Silent bend HTB 125/15° | | 43.84 | 19.52 | 43.84 | 125 |
| 10304007 | Silent bend HTB 160/15° | | 47.915 | 23.05 | 47.915 | 160 |
| 10304008 | Silent bend HTB 200/15° | | 12.18 | 27.11 | 100 | 200 |
| 10304009 | Silent bend HTB 250/15° | 15.23 | 34.95 | 120.5 | 250 | |
| S LINE BEND 30° | | | | | | |
| 10304020 | Silent bend HTB 32/30° |  | 25 | 10.4 | 25 | 32 |
| 10304021 | Silent bend HTB 40/30° | | 26.5 | 11.5 | 26.5 | 40 |
| 10304022 | Silent bend HTB 50/30° | | 30.57 | 11.24 | 30.57 | 50 |
| 10304023 | Silent bend HTB 75/30° | | 29.5 | 16.69 | 29.5 | 75 |
| 10304024 | Silent bend HTB 90/30° | | 33.5 | 19.58 | 33.5 | 90 |
| 10304025 | Silent bend HTB 110/30° | | 44.385 | 21.66 | 44.385 | 110 |
| 10304026 | Silent bend HTB 125/30° | | 47.81 | 27.06 | 47.81 | 125 |
| 10304027 | Silent bend HTB 160/30° | | 53.01 | 32.43 | 53.01 | 160 |
| 10304028 | Silent bend HTB 200/30° | | | | | |
| 10304029 | Silent bend HTB 250/30° | | | | | |
| S LINE BEND 45° | | | | | | |
| 10304040 | Silent bend HTB 32/45° |  | 27.88 | 11.97 | 27.88 | 32 |
| 10304041 | Silent bend HTB 40/45° | | 30.205 | 14.64 | 30.205 | 40 |
| 10304042 | Silent bend HTB 50/45° | | 32.245 | 14.89 | 32.245 | 50 |
| 10304043 | Silent bend HTB 75/45° | | 36.705 | 22.05 | 36.705 | 75 |
| 10304044 | Silent bend HTB 90/45° | | 42.18 | 25.7 | 42.18 | 90 |
| 10304045 | Silent bend HTB 110/45° | | 48.145 | 30.92 | 48.145 | 110 |
| 10304046 | Silent bend HTB 125/45° | | 52.075 | 35.6 | 52.075 | 125 |
| 10304047 | Silent bend HTB 160/45° | | 58.47 | 44.24 | 58.47 | 160 |
| 10304048 | Silent bend HTB 200/45° | | 38.31 | 55.25 | 102 | 200 |
| 10304049 | Silent bend HTB 250/45° | 47.92 | 69.09 | 123 | 250 | |
| S LINE BEND 67,5° | | | | | | |
| 10304060 | Silent bend HTB 32/67,5° |  | 29.645 | 16.03 | 29.645 | 32 |
| 10304061 | Silent bend HTB 40/67,5° | | 32.48 | 18.71 | 32.48 | 40 |
| 10304062 | Silent bend HTB 50/67,5° | | 35.15 | 21.03 | 35.15 | 50 |
| 10304063 | Silent bend HTB 75/67,5° | | 41.125 | 30.49 | 41.125 | 75 |
| 10304064 | Silent bend HTB 90/67,5° | | 47.5 | 36.39 | 47.5 | 90 |
| 10304065 | Silent bend HTB 110/67,5° | | 54.67 | 43.68 | 54.67 | 110 |
| 10304066 | Silent bend HTB 125/67,5° | | 59.475 | 51.07 | 59.475 | 125 |
| 10304067 | Silent bend HTB 160/67,5° | | 67.955 | 63.7 | 67.955 | 160 |
| 10304068 | Silent bend HTB 200/67,5° | | 61.81 | 80.74 | 104 | 200 |
| 10304069 | Silent bend HTB 250/67,5° | | 77.31 | 101.03 | 125.5 | 250 |

| CODE | DESCRIPTION | PICTURE | Z ₁ | Z ₂ | L ₁ MIN | D | |
|-------------------|--------------------------------|---|----------------|----------------|--------------------|--------------------|-----|
| S LINE BEND 87,5° | | | | | | | |
| 10304080 | Silent bend HTB 32/87,5° |  | 31.655 | 20.09 | 31.655 | 32 | |
| 10304081 | Silent bend HTB 40/87,5° | | 35.07 | 23.77 | 35.07 | 40 | |
| 10304082 | Silent bend HTB 50/87,5° | | 38.46 | 27.59 | 38.46 | 50 | |
| 10304083 | Silent bend HTB 75/87,5° | | 46.155 | 40.69 | 46.155 | 75 | |
| 10304084 | Silent bend HTB 90/87,5° | | 54.055 | 48.65 | 54.055 | 90 | |
| 10304085 | Silent bend HTB 110/87,5° | | 62.1 | 58.545 | 62.1 | 110 | |
| 10304086 | Silent bend HTB 125/87,5° | | 67.905 | 68.15 | 67.905 | 125 | |
| 10304087 | Silent bend HTB 160/87,5° | | 43 | 84.73 | 43 | 160 | |
| 10304088 | Silent bend HTB 200/87,5° | | 88.55 | 109.48 | 107 | 200 | |
| 10304089 | Silent bend HTB 250/87,5° | | 110.76 | 137.98 | 128.1 | 250 | |
| CODE | DESCRIPTION | PICTURE | Z ₁ | Z ₂ | Z ₃ | L ₁ MIN | D |
| S LINE BRANCH 45° | | | | | | | |
| 10304100 | Silent branch HTEA 32/32/45° |  | 6.78 | 47.68 | 47.6 | 47.22 | 32 |
| 10304101 | Silent branch HTEA 40/32/45° | | 2.64 | 54.48 | 53.64 | 52 | 40 |
| 10304102 | Silent branch HTEA 40/40/45° | | 8.28 | 59.24 | 59.41 | 49.72 | 40 |
| 10304103 | Silent branch HTEA 50/32/45° | | 2.14 | 61.09 | 57.72 | 48.1 | 50 |
| 10304104 | Silent branch HTEA 50/40/45° | | 3.59 | 64.95 | 64.5 | 55 | 50 |
| 10304105 | Silent branch HTEA 50/50/45° | | 10.36 | 70.52 | 70.49 | 63 | 50 |
| 10304106 | Silent branch HTEA 75/40/45° | | 9.22 | 84.015 | 78.12 | 46.5 | 75 |
| 10304107 | Silent branch HTEA 75/50/45° | | 2.14 | 88.4 | 85.84 | 54 | 75 |
| 10304108 | Silent branch HTEA 75/75/45° | | 15.53 | 103.97 | 103.79 | 70 | 75 |
| 10304109 | Silent branch HTEA 90/50/45° | | 9.64 | 98.49 | 90.32 | 54 | 90 |
| 10304110 | Silent branch HTEA 90/75/45° | | 8.03 | 113.31 | 110.37 | 72 | 90 |
| 10304111 | Silent branch HTEA 90/90/45° | | 18.64 | 120.98 | 120.94 | 81.5 | 90 |
| 10304112 | Silent branch HTEA 110/40/45° | | 26.72 | 107.36 | 96.65 | 42 | 110 |
| 10304113 | Silent branch HTEA 110/50/45° | | 19.64 | 112.46 | 120.74 | 49 | 110 |
| 10304114 | Silent branch HTEA 110/75/45° | | 1.97 | 127.72 | 121.75 | 67 | 110 |
| 10304115 | Silent branch HTEA 110/90/45° | | 8.64 | 136.75 | 132.65 | 76 | 110 |
| 10304116 | Silent branch HTEA 110/110/45° | | 22.78 | 146.67 | 145.67 | 92.5 | 110 |
| 10304117 | Silent branch HTEA 125/90/45° | | 1.14 | 146.65 | 140.05 | 75 | 125 |
| 10304118 | Silent branch HTEA 125/110/45° | | 15.28 | 159.68 | 156.64 | 89 | 125 |
| 10304119 | Silent branch HTEA 125/125/45° | | 25.89 | 169.58 | 170.03 | 100 | 125 |
| 10304120 | Silent branch HTEA 160/110/45° | | 2.22 | 185.82 | 174.3 | 78 | 160 |
| 10304121 | Silent branch HTEA 160/125/45° | | 8.39 | 193.75 | 188.78 | 89 | 160 |
| 10304122 | Silent branch HTEA 160/160/45° | | 33.14 | 213.57 | 213.49 | 114 | 160 |
| 10304123 | Silent branch HTEA 200/160/45° | | 13.14 | 221.15 | 215.35 | 99 | 200 |
| 10304124 | Silent branch HTEA 200/200/45° | | 41.42 | 240.35 | 240.35 | 99.58 | 200 |
| 10304125 | Silent branch HTEA 250/160/45° | | 11.86 | 253.15 | 241.53 | 118.86 | 200 |
| 10304126 | Silent branch HTEA 250/200/45° | | 16.42 | 277.35 | 269.53 | 119.58 | 200 |
| 10304127 | Silent branch HTEA 250/250/45° | | 49.84 | 301.53 | 301.53 | 121.16 | 200 |

| CODE | DESCRIPTION | PICTURE | Z ₁ | Z ₂ | Z ₃ | L ₁ MIN | D |
|--------------------------|---------------------------------------|--|----------------|----------------|----------------|--------------------|-----|
| S LINE BRANCH 87,5° | | | | | | | |
| 10304130 | Silent branch HTEA 32/32/87,5° |  | 15.3 | 22.51 | 22.53 | 47.86 | 32 |
| 10304132 | Silent branch HTEA 40/40/87,5° | | 19.08 | 27.3 | 27.62 | 49.92 | 40 |
| 10304134 | Silent branch HTEA 50/40/87,5° | | 19.96 | 30.47 | 27.35 | 50.06 | 50 |
| 10304135 | Silent branch HTEA 50/50/87,5° | | 23.93 | 31.37 | 31.57 | 52.07 | 50 |
| 10304136 | Silent branch HTEA 75/40/87,5° | | 16.84 | 42.925 | 29.66 | 55.58 | 75 |
| 10304137 | Silent branch HTEA 75/50/87,5° | | 23.39 | 43.57 | 35.96 | 55.47 | 75 |
| 10304138 | Silent branch HTEA 75/75/87,5° | | 35.9 | 46.23 | 46.72 | 56.1 | 75 |
| 10304139 | Silent branch HTEA 90/50/87,5° | | 23.06 | 51.07 | 68.31 | 64.44 | 90 |
| 10304140 | Silent branch HTEA 90/75/87,5° | | 35.57 | 53.17 | 47.06 | 63.63 | 90 |
| 10304141 | Silent branch HTEA 90/90/87,5° | | 43.08 | 55.3 | 55.41 | 63.42 | 90 |
| 10304142 | Silent branch HTEA 110/40/87,5° | | 17.62 | 61.475 | 30.465 | 68.53 | 110 |
| 10304143 | Silent branch HTEA 110/50/87,5° | | 22.62 | 62.2 | 35.82 | 69.4 | 110 |
| 10304144 | Silent branch HTEA 110/75/87,5° | | 35.13 | 63.11 | 47.49 | 69.75 | 110 |
| 10304145 | Silent branch HTEA 110/90/87,5° | | 42.6 | 63.32 | 56.25 | 70.75 | 110 |
| 10304146 | Silent branch HTEA 110/110/87,5° | | 52.65 | 65.19 | 65.96 | 70.84 | 110 |
| 10304147 | Silent branch HTEA 125/90/87,5° | | 42.31 | 72.485 | 70.79 | 73.79 | 125 |
| 10304148 | Silent branch HTEA 125/110/87,5° | | 52.48 | 75.05 | 66.48 | 73.19 | 125 |
| 10304149 | Silent branch HTEA 125/125/87,5° | | 59.83 | 73.99 | 74.55 | 73.17 | 125 |
| 10304150 | Silent branch HTEA 160/110/87,5° | 51.67 | 89.79 | 70.39 | 80.45 | 160 | |
| 10304151 | Silent branch HTEA 160/125/87,5° | 59.07 | 93.12 | 77.12 | 80.06 | 160 | |
| 10304152 | Silent branch HTEA 160/160/87,5° | 76.58 | 98.97 | 98.44 | 80.42 | 160 | |
| 10304153 | Silent branch HTEA 200/160/87,5° | 75.71 | 113.15 | 97.35 | 99.29 | 250 | |
| 10304154 | Silent branch HTEA 200/200/87,5° | 96.08 | 117.35 | 117.35 | 99.27 | 250 | |
| 10304155 | Silent branch HTEA 250/160/87,5° | 74.62 | 138.02 | 103.03 | 119.38 | 250 | |
| 10304156 | Silent branch HTEA 250/200/87,5° | 94.99 | 142.35 | 122.53 | 119.36 | 250 | |
| 10304157 | Silent branch HTEA 250/250/87,5° | 120.26 | 144.53 | 144.53 | 119.34 | 250 | |
| S LINE BEND BRANCH 87,5° | | | | | | | |
| 10304240 | Silent bend branch HTEA 90/90/87,5° |  | 52.13 | 65.85 | 53 | 63.07 | 90 |
| 10304241 | Silent bend branch HTEA 110/90/87,5° | | 49.89 | 77.35 | 53.42 | 74.9 | 110 |
| 10304242 | Silent bend branch HTEA 110/110/87,5° | | 60.53 | 80.51 | 61.35 | 74.54 | 110 |
| | | | | | | | |
| | | | | | | | |

| CODE | DESCRIPTION | PICTURE | Z ₁ | Z ₂ | Z ₃ | L ₁ MIN | D |
|---------------------------------|---|---------|----------------|----------------|----------------|--------------------|-----|
| S LINE DOUBLE BRANCH 45° | | | | | | | |
| 10304190 | Silent double branch HTDA 50/90/50-45° | | 25,25 | 45 | 25,25 | 54 | 90 |
| 10304191 | Silent double branch HTDA 50/110/50-45° | | 25,25 | 55,45 | 25,25 | 49 | 110 |

| | | | | | | | |
|---------------------------------|-----------------------------------|--|-------|--|-------|-------|-----|
| S LINE INSPECTION BRANCH | | | | | | | |
| 10304178 | Silent inspection branch HTRE 50 | | 25 | | 31,46 | 51 | 50 |
| 10304179 | Silent inspection branch HTRE 75 | | 37,5 | | 46,74 | 54,5 | |
| 10304180 | Silent inspection branch HTRE 90 | | 46,44 | | 55,83 | 62,06 | 90 |
| 10304181 | Silent inspection branch HTRE 110 | | 55 | | 66,15 | 68,5 | 110 |
| 10304182 | Silent inspection branch HTRE 125 | | 62,5 | | 75,53 | 70,5 | 125 |
| 10304183 | Silent inspection branch HTRE 160 | | 80 | | 98,78 | 77 | 160 |

| CODE | DESCRIPTION | PICTURE | L | D | DESCRIPTION | PICTURE | CODE | L | D |
|-----------------------------|------------------------------|---------|------|-------|-----------------------------|---------|----------|------|-------|
| S LINE DOUBLE SOCKET | | | | | S LINE SLIP COUPLER | | | | |
| 10304200 | Silent double socket HTM 32 | | 96.9 | 32.7 | Silent slip coupler HTU 32 | | 10304220 | 96.9 | 32.7 |
| 10304201 | Silent double socket HTM 40 | | 104 | 40.7 | Silent slip coupler HTU 40 | | 10304221 | 104 | 40.7 |
| 10304202 | Silent double socket HTM 50 | | 110 | 50.7 | Silent slip coupler HTU 50 | | 10304222 | 110 | 50.7 |
| 10304203 | Silent double socket HTM 75 | | 119 | 76 | Silent slip coupler HTU 75 | | 10304223 | 119 | 76 |
| 10304204 | Silent double socket HTM 90 | | 131 | 90 | Silent slip coupler HTU 90 | | 10304224 | 131 | 90 |
| 10304205 | Silent double socket HTM 110 | | 147 | 111 | Silent slip coupler HTU 110 | | 10304225 | 147 | 111 |
| 10304206 | Silent double socket HTM 125 | | 157 | 126 | Silent slip coupler HTU 125 | | 10304226 | 157 | 126 |
| 10304207 | Silent double socket HTM 160 | | 176 | 161 | Silent slip coupler HTU 160 | | 10304227 | 176 | 161 |
| 10304208 | Silent double socket HTM 200 | | 212 | 201 | Silent slip coupler HTU 200 | | 10304228 | 212 | 201 |
| 10304209 | Silent double socket HTM 250 | | 251 | 251.5 | Silent slip coupler HTU 250 | | 10304229 | 251 | 251.5 |

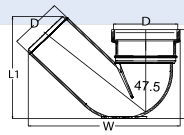
| CODE | DESCRIPTION | PICTURE | DN | d, ø | d1 ø | d2 ø | a | b | h | h1 | h2 | l | l1 | l2 |
|----------------------------------|--|---------|-----|------|------|------|-------|-----|------|----|------|------|-----|-----|
| VENTOS VENTILATION BRANCH | | | | | | | | | | | | | | |
| 40006502 | VENTOS VENTILATION BRANCH ø160/ø110/ø75 | | 160 | 160 | 110 | 75 | 13,39 | 9,5 | 19 | 17 | 35 | 13 | 8 | 11 |
| 40006918 | VENTOS VENTILATION BRANCH ø110/ø110/ø75 | | 110 | 110 | 110 | 75 | 13 | 8 | 21,5 | 17 | 35,5 | 10,5 | 5,5 | 9,5 |

| CODE | DESCRIPTION | PICTURE | Z1 | L1MIN | D | D ₁ |
|--------------------------|------------------------------------|---|---------|-------|-------|----------------|
| S LINE EXCENTRIC REDUCER | | | | | | |
| 10304160 | Silent reducer HTR 40/32 |  | 15.19 | 54.88 | 40 | 32.7 |
| 10304161 | Silent reducer HTR 32/40 | | 10.435 | 54.88 | 40 | 36.9 |
| 10304163 | Silent reducer HTR 40/50 | | 17.32 | 57.88 | 50 | 40.7 |
| 10304164 | Silent reducer HTR 50/40 | | 17.32 | 57.88 | 50 | 40.7 |
| 10304165 | Silent reducer HTR 75/50 | | 20.94 | 62.26 | 75 | 50.7 |
| 10304177 | Silent reducer HTR 90/40 | | 19.17 | 71.16 | 90 | 44.9 |
| 10304166 | Silent reducer HTR 90/50 | | 16.34 | 70.36 | 90 | 54.9 |
| 10304167 | Silent reducer HTR 90/75 | | 19.1 | 71.54 | 90 | 81 |
| 10304168 | Silent reducer HTR 90/110 | | 13.025 | 77.48 | 110 | 96.8 |
| 10304169 | Silent reducer HTR 90/125 | | 13.365 | 81.51 | 125 | 96.8 |
| 10304170 | Silent reducer HTR 110/40 | | 9.95 | 77.63 | 110 | 44.9 |
| 10304171 | Silent reducer HTR 110/50 | | 16.89 | 76.81 | 110 | 50.7 |
| 10304172 | Silent reducer HTR 110/75 | | 19.79 | 77.54 | 110 | 76 |
| 10304173 | Silent reducer HTR 125/110 | | 19.03 | 82.63 | 125 | 111 |
| 10304175 | Silent reducer HTR 160/125 | | 22.94 | 92.09 | 160 | 126 |
| 10304184 | Silent reducer HTR 200/160 | | 27.15 | 99 | 200 | 172 |
| 10304185 | Silent reducer HTR 250/200 | | 34.47 | 120 | 250 | 214.6 |
| CODE | DESCRIPTION | | PICTURE | Z1 | L1MIN | D |
| S LINE CAP FOR SOCKET | | | | | | |
| 10304260 | Sline pp Cap for socket ø32 (box) |  | 15.19 | 54.88 | 40 | 32.7 |
| 10304261 | Sline pp Cap for socket ø40 (box) | | 10.435 | 54.88 | 40 | 36.9 |
| 10304262 | Sline pp Cap for socket ø50 (box) | | 17.32 | 57.88 | 50 | 40.7 |
| 10304263 | Sline pp Cap for socket ø75 (box) | | 17.32 | 57.88 | 50 | 40.7 |
| 10304264 | Sline pp Cap for socket ø90 (box) | | 20.94 | 62.26 | 75 | 50.7 |
| 10304265 | Sline pp Cap for socket ø110 (box) | | 19.17 | 71.16 | 90 | 44.9 |
| 10304266 | Sline pp Cap for socket ø125 (box) | | 16.34 | 70.36 | 90 | 54.9 |
| 10304267 | Sline pp Cap for socket ø160 (box) | | 19.1 | 71.54 | 90 | 81 |

| CODE | DESCRIPTION | PICTURE | SIZE D (MM) | L (MM) | L1 (MM) | W (MM) | STD PCK |
|------|-------------|---------|-------------|--------|---------|--------|---------|
|------|-------------|---------|-------------|--------|---------|--------|---------|

40006639

S LINE P TRAP,BLUE DN 110 MM



110

167

269

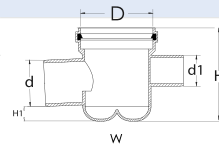
176

10

| CODE | DESCRIPTION | PICTURE | SIZE D (MM) | D (MM) | D1 (MM) | H (MM) | H1 (MM) | W | STD PCK |
|------|-------------|---------|-------------|--------|---------|--------|---------|---|---------|
|------|-------------|---------|-------------|--------|---------|--------|---------|---|---------|

40006640

S LINE FLOOR TRAP,BLUE DN 110/DN75/
DN50 MM



110

75

50

141

50

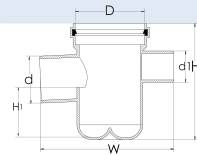
213

10

| CODE | DESCRIPTION | PICTURE | SIZE D (MM) | D (MM) | D1 (MM) | H (MM) | H1 (MM) | W | STD PCK |
|------|-------------|---------|-------------|--------|---------|--------|---------|---|---------|
|------|-------------|---------|-------------|--------|---------|--------|---------|---|---------|

40006641

S LINE DEEP FLOOR DN110/75/50 MM



110

75

50

175

72

213

10



PVC (KG) PIPES



For domestic & street sewage systems

The pipes for domestic and street sewerage systems together with the appropriate coupling sleeves are intended to be used for the removal of all kinds of waste water.

Assembly of the pipeline is extremely easy , pipes are connected to one another with fittings while complete seal is achieved with use of rubber bands. Maximum temperature of application is +600 °C. Pipes are resistant to salt water, alcohol, acids, alkalis, sulphates, aggressive gas and all kinds of detergents. On the other hand, they cannot be used for the transport of water which contains high percentage of benzene, benzine (petrol) or acetone.

Technical data & characteristics

- Very light material
- Simple and easy way of both transport and manipulation
- Fast and cheap assembling
- Pipe connections are resistant to water and other type of fluids
- They are resistant to corrosion in alkaline, acid or aggressive environment

- They are fine electrical insulator, and also resistant to mechanical impact
- Guaranteed life time of more than 50 years
- Practically no costs of pipeline maintenance
- Connection with muffs and gaskets made of EPDM or rubber (EN 681)
- SRPS EN 1401/SRPS EN 13476*

*SRPS EN 1401 - European norm for production of full wall compact PVC pipes. SRPS EN 13476 - European norm for production of three layer PVC pipes.



Material characteristics:

- Specific mass $1,38 \div 1,45 \text{ gr/cm}^3$
- Tensile strenght 50-60 MPa
- Thermal stability: according to Vicat min 79°C
- Thermal conductivity $0,54 \text{ KJ/mh/}^\circ\text{C}$
- Linear ratio of thermal extension $0,08 \text{ mm/m/}^\circ\text{C}$
- Water absorption 4 mg/cm^2

APPLICATION AND STATIC RECOMENDATION

What pipe series should be used depends on location, ground quality and type of foundation, other various conditions, etc.

Pipe series S-20 and S-16 are used in normal conditions, i.e. for normal type of ground, trenches, burial methods and ground compression.

Pipe series S-25 are laid in terrains with extremely incoherent material. Deformation of the cross section is checked after one to three months from laying of pipeline.

With pipe series S-20 and S-16 deformation cannot be higher than 5% of outer pipe diameter, while the maximum deformation after two years cannot be higher than 10% of diameter.

With pipe series S-25, after one to three months from laying of pipeline, maximum deformation will not be higher than 5%, while deformation after 2 years is allowed to be up to 8%.

Laying of sewerage pipes and fittings is allowed without any specific static evidence, and in accordance with the following conditions:

- Bellow traffic surfaces with traffic loading up to 30 tons, minimum covering layer should be 1,5 m.
- Bellow non-traffic surfaces or surfaces which are temporarily exposed to light vehicle traffic, minimum covering layer should be 0,8 m.
- While laying the pipeline bellow the buildings, covering layer above the pipe socket must be at least 150 mm.
- Protection pipes should be used if the loading from the mounted construction parts cannot be avoided.
- While laying the pipeline in the trenches with minimum width, covering layer must not be higher than 6 m; on the other hand, while laying the pipeline below the protective dam and in wide trenches, covering layer should not be higher than 4 m.
- Filling soil should have the following approximate characteristics: $8 \leq 20,5 \text{ KN/m}^2$
- $8 \leq 22,50$ (angle \varnothing)
- Laying the pipeline in the area with ground water is allowed only if the removal of the filling material is prevented. Removal is prevented by laying the pipeline in the filter layer made of gravel or concrete.
- If not acting completely in accordance with these norms it is necessary to calculate the pipe carrying ability, while standard conditions of filling and ground compression should be provided (DIN 4033, EN); this means that in the pipeline zone, from the bottom of the trench up to at least 30 cm above the vertex of the pipe the following ground compression values should be achieved:
 - 97% density of un shoveled soil for binding ground.
 - 95% density of unshoveled soil for binding ground.
 - All values of ground compression should be proven during handling.
 - Pipeline zone (from the bottom of the trench up to at least 30 cm above the vertex of the pipe) is filled with material which does not contain stones and at the same time can be compressed. Filling material, which will be in direct contact with the pipe, can be taken from the ground pile came from shoveled trench, which should be previously cleared from large pieces. Ground compression around the pipe can be done manually or by using hydraulic tools. Each time material is filled only up to vertex of the pipe while the ground compression is being done sidewise, never in the zone occupied by the pipe. Filling material is being compressed until well sidewise support of the sewerage trench is provided. Material is being filled above the vertex of the pipe in layers, in a way that the higher layers are compressing the lower ones.

PIPE SERIES SPECIFICATION

Pipe series S-25 (SDR 51) SN 2 KN/m

- Depth of pipe trench min 1,2 ÷ 4 m max
- Maximum loading max 12t/axel
- Ring stiffness SN 2 KN/m²
- Connection with EPDM or rubber (EN 681) seal in socket
- Length 1 ÷ 6 m

Pipe series S-20 (SDR 41) SN 4 KN/m²

- Depth of pipe trench min 1,2 ÷ 6 m max
- Maximum loading max 18t/axel
- Ring stiffness SN 4 KN/m²
- Connection with EPDM or rubber (EN 681) seal in socket
- Length 1 ÷ 6 m

Pipe series S-16 (SDR 34) SN 8 KN/m²

- Depth of pipe trench min 1,2 ÷ 6 m max
- Maximum loading max 18t/axel
- Ring stiffness SN 8 KN/m²
- Connection with EPDM or rubber (EN 681) seal in socket
- Length 1 ÷ 6 m

FITTING OF SN4 CLASS CAN BE USED WITH PIPES SN8, BECAUSE OF THEIR GEOMETRY THEY HAVE STRENGTH OF SN8.

SADDLE AFTER GRIP (SAG)

Saddle after grip is new, modern product, with great performance.

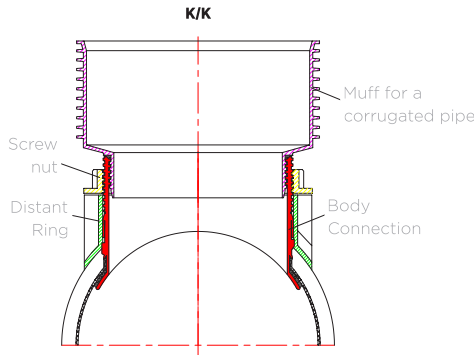
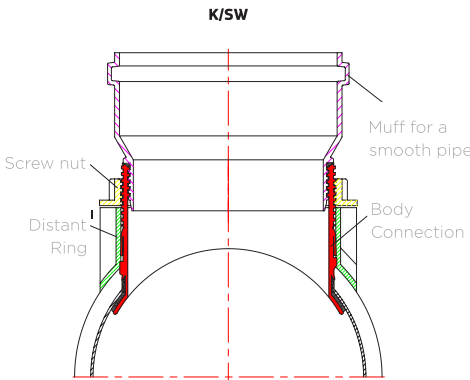
It is intended for subsequent connection to an existing pipeline for smooth as well as corrugated pipes. Using this system, combined with a great range of Peřtan fittings, production of new lines of home, street and drain sewer, as well as connecting to existing lines becomes satisfaction.

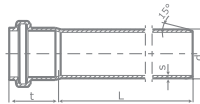

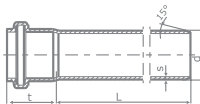

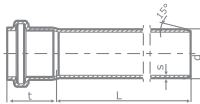

Peřtan latest product main purpose is to be subsequently attached to an existing pipeline with a connection to smooth and corrugated pipes. The connection is safe and waterproof. It is made of ABS by injection molding technology.

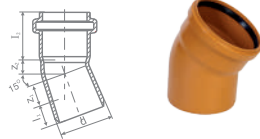

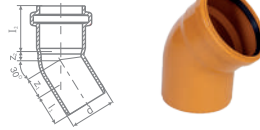

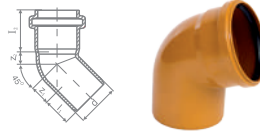

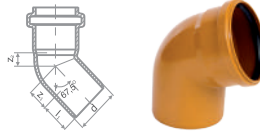

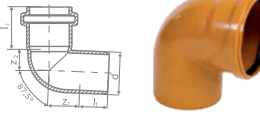

SIZES

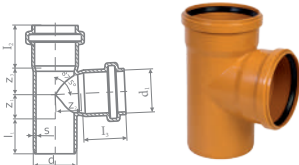
Sizes are given in the following table:

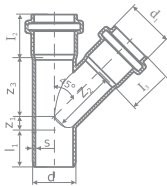

| K/K CODE | | K/SW CODE | |
|----------|--|-----------|---------|
| 10799210 | | 10799110 | 250/160 |
| 10799211 | | 10799111 | 300/160 |
| 10799212 | | 10799112 | 400/160 |
| 10799213 | | 10799113 | 500/160 |
| 10799214 | | 10799114 | 600/160 |
| K/K CODE | | K/SW CODE | |
| 10799200 | | 10799100 | 250/200 |
| 10799201 | | 10799101 | 300/200 |
| 10799202 | | 10799102 | 400/200 |
| 10799203 | | 10799103 | 500/200 |
| 10799204 | | 10799104 | 600/200 |

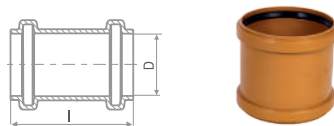
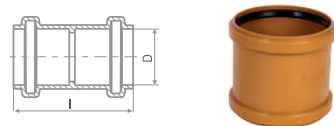
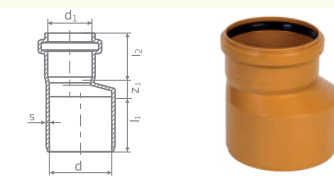
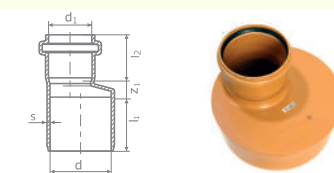


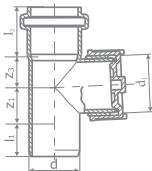

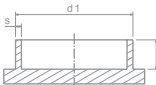

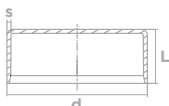

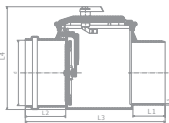

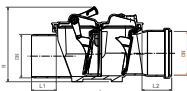

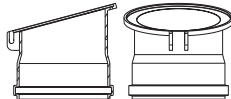

| DESCRIPTION | PICTURE | CODE | D | S | T |
|---|---|----------|-----|------|-----|
| KG PIPE SDR51 SN2 | | | | | |
|  |  | 10400044 | 160 | 3,2 | 86 |
| | | 10400054 | 200 | 3,9 | 106 |
| | | 10400074 | 250 | 4,9 | 128 |
| | | 10400104 | 315 | 6,2 | 155 |
| | | 10400144 | 400 | 7,9 | 183 |
| | | 10400184 | 500 | 9,8 | 210 |
| | | 10410560 | 630 | 12,3 | 188 |
| KG PIPE SDR41 SN4 | | | | | |
|  |  | 10400304 | 110 | 3,2 | 61 |
| | | 10400324 | 125 | 3,2 | 72 |
| | | 10400344 | 160 | 4,0 | 86 |
| | | 10400364 | 200 | 4,9 | 106 |
| | | 10400384 | 250 | 6,2 | 128 |
| | | 10400404 | 315 | 7,7 | 155 |
| | | 10400444 | 400 | 9,8 | 183 |
| | | 10400484 | 500 | 12,3 | 210 |
|  |  | 10410360 | 630 | 15,4 | 188 |
| | | 10400604 | 110 | 3,2 | 61 |
| | | 10400624 | 125 | 3,7 | 72 |
| | | 10400644 | 160 | 4,7 | 86 |
| | | 10400664 | 200 | 5,9 | 106 |
| | | 10400684 | 250 | 7,3 | 128 |
| | | 10400704 | 315 | 9,2 | 155 |
| | | 10400744 | 400 | 11,7 | 183 |
| | | 10400784 | 500 | 14,6 | 210 |
| | | 10410160 | 630 | 18,4 | 188 |



| DESCRIPTION | PICTURE | CODE | D | S | Z1 | Z2 | L1MIN | L2 |
|---|---|-----------|-----|-----|--------|--------|-------|------|
| KGB BEND 15° | | | | | | | | |
|  |  | 10401362 | 110 | 3,2 | 6,1 | 20 | 61 | 49,1 |
| | | 10401363 | 125 | 3,2 | 7,9 | 21 | 68 | 54,6 |
| | | 10401360 | 160 | 4 | 10,1 | 26,2 | 81 | 86 |
| | | 10401361 | 200 | 4,9 | 26 | 30 | 99 | 106 |
| | | *11500002 | 250 | 6,2 | 18 | 30 | 125 | 128 |
| | | *11500003 | 315 | | | | | |
| | | *11500005 | 400 | | | | | |
| | | *11500007 | 500 | | | | | |
| KGB BEND 30° | | | | | | | | |
|  |  | 10401020 | 110 | 3,2 | 14,7 | 27,1 | 61 | 49,6 |
| | | 10401021 | 125 | 3,2 | 16,7 | 29,1 | 68 | 54,6 |
| | | 10401022 | 160 | 4 | 24 | 30 | 81 | 86 |
| | | 10401023 | 200 | 4,9 | 30 | 39 | 99 | 106 |
| | | *11500102 | 250 | 6,2 | 37 | 49 | 125 | 128 |
| | | *11500103 | 315 | | | | | |
| | | *11500105 | 400 | | | | | |
| | | *11500107 | 500 | | | | | |
| KGB BEND 45° | | | | | | | | |
|  |  | 10401120 | 110 | 3,3 | 22,9 | 34,7 | 61 | 49,1 |
| | | 10401121 | 125 | 3,3 | 26 | 37,8 | 68 | 54,6 |
| | | 10401102 | 160 | 4 | 36 | 44 | 81 | 86 |
| | | 10401103 | 200 | 4,9 | 46 | 55 | 99 | 106 |
| | | 10401104 | 250 | 6,2 | 57 | 69 | 125 | 128 |
| | | 10401105 | 315 | 7,7 | 72 | 86 | 132 | 155 |
| | | 10401106 | 400 | 9,8 | 83,3 | 117,9 | 150 | 119 |
| | | *11500205 | 500 | | | | | |
| KGB BEND 67.5° | | | | | | | | |
|  |  | 10401320 | 110 | 3,3 | 54,67 | 43,68 | 61 | 49,1 |
| | | 10401321 | 125 | 3,3 | 59,475 | 51,07 | 68 | 54,6 |
| | | 10401302 | 160 | 4 | 67,955 | 63,7 | 81 | 86 |
| | | 10401303 | 200 | 4,9 | 61,81 | 80,74 | 99 | 106 |
| | | 10401304 | 250 | 6,2 | 77,31 | 101,03 | 125 | 128 |
| KGB BEND 87.5° | | | | | | | | |
|  |  | 10401320 | 110 | 3,3 | 53,2 | 62,8 | 61 | 49,1 |
| | | 10401321 | 125 | 3,3 | 60,4 | 70 | 68 | 54,6 |
| | | 10401302 | 160 | 4 | 83 | 89 | 81 | 86 |
| | | 10401303 | 200 | 4,9 | 105 | 114 | 99 | 106 |
| | | 10401304 | 250 | 6,2 | 131 | 143 | 125 | 128 |
| | | 10401305 | 315 | 7,7 | 165 | 180 | 132 | 155 |
| | | 10401326 | 400 | 9,8 | 193,3 | 121,2 | 150 | 119 |
| | | *11500405 | 500 | | | | | |

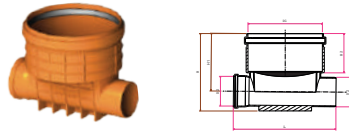
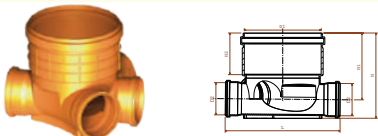
| DESCRIPTION | PICTURE | CODE | D/D1 | S | Z1 | Z2 | Z3 | L1MIN | L2 | L3 |
|---|---------|-----------|---------|-----|------|-------|-------|-------|-------|------|
| KGEA BRANCH 87,5° | | | | | | | | | | |
|  | | 10401630 | 110/110 | 3,3 | 52,7 | 67,3 | 67,3 | 61 | 49,1 | 49,1 |
| | | 10401631 | 125/110 | 3,3 | 52,4 | 67,6 | 67,6 | 68 | 54,6 | 49,1 |
| | | 10401632 | 125/125 | 3,3 | 59,9 | 75,1 | 75,1 | 68 | 54,6 | 54,6 |
| | | 10401603 | 160/110 | 4 | 58 | 86 | 64 | 81 | 86 | 61 |
| | | 10401604 | 160/125 | 4 | 66 | 87 | 71 | 81 | 86 | 72 |
| | | 10401605 | 160/160 | 4 | 83 | 89 | 89 | 81 | 86 | 86 |
| | | 10401606 | 200/110 | 4,9 | 62 | 105 | 64 | 99 | 106 | 61 |
| | | 10401607 | 200/125 | 4,9 | 69 | 75 | 101 | 75 | 106 | 72 |
| | | 10401608 | 200/160 | 4,9 | 86 | 108 | 90 | 99 | 106 | 86 |
| | | 10401609 | 200/200 | 4,9 | 106 | 111 | 111 | 99 | 106 | 106 |
| | | 10401619 | 250/110 | 6,2 | 90 | 132 | 100 | 120 | 128 | 61 |
| | | 10401620 | 250/125 | 6,2 | 90 | 132 | 100 | 120 | 128 | 72 |
| | | 10401610 | 250/160 | 6,2 | 89 | 132 | 91 | 125 | 128 | 86 |
| | | 10401611 | 250/200 | 6,2 | 108 | 134 | 111 | 125 | 128 | 106 |
| | | 10401612 | 250/250 | 6,2 | 131 | 138 | 138 | 125 | 128 | 128 |
| | | 10401618 | 315/110 | 7,7 | 93 | 162 | 104 | 134 | 155 | 61 |
| | | 10401617 | 315/125 | 7,7 | 93 | 162 | 104 | 134 | 155 | 72 |
| | | 10401613 | 315/160 | 7,7 | 93 | 164 | 104 | 134 | 155 | 86 |
| | | 10401614 | 315/200 | 7,7 | 111 | 165 | 113 | 132 | 155 | 106 |
| | | 10401615 | 315/250 | 7,7 | 134 | 169 | 139 | 132 | 155 | 128 |
| | | 10401616 | 315/315 | 7,7 | 165 | 173 | 173 | 132 | 155 | 155 |
| | | 10401621 | 400/110 | 9,8 | 106 | 206,5 | 131,8 | 150 | 124,2 | 51,3 |
| | | 10401622 | 400/160 | 9,8 | 106 | 209,7 | 131,8 | 150 | 124,2 | 65 |
| | | 10401623 | 400/200 | 9,8 | 106 | 214,5 | 131,8 | 150 | 124,2 | 77,5 |
| | | *11501232 | 400/110 | | | | | | | |
| | | *11501233 | 400/125 | | | | | | | |
| | | *11501234 | 400/160 | | | | | | | |
| | | *11501235 | 400/200 | | | | | | | |
| | | *11501236 | 400/250 | | | | | | | |
| | | *11501237 | 400/315 | | | | | | | |
| | | *11501239 | 400/400 | | | | | | | |
| | | *11501249 | 500/110 | | | | | | | |
| | | *11501250 | 500/125 | | | | | | | |
| | | *11501251 | 500/160 | | | | | | | |
| | | *11501252 | 500/200 | | | | | | | |
| | | *11501253 | 500/250 | | | | | | | |
| | | *11501254 | 500/315 | | | | | | | |
| | | *11501256 | 500/400 | | | | | | | |
| | | *11501258 | 500/500 | | | | | | | |
| | | *11501056 | 500/400 | | | | | | | |
| | | *11501058 | 500/500 | | | | | | | |

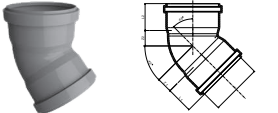
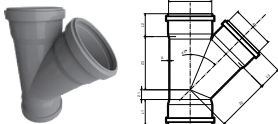
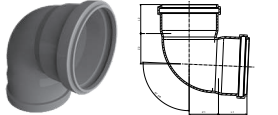
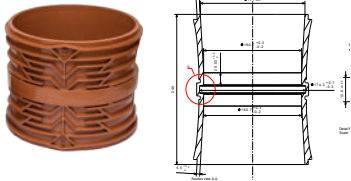
| DESCRIPTION | PICTURE | CODE | D/D1 | S | Z1 | Z2 | Z3 | L1 _{MIN} | L2 | L3 |
|---|-----------|---------|------|------|-------|-------|-----|-------------------|------|----|
| KGEA BRANCH 45° | | | | | | | | | | |
|   | 10401430 | 110/110 | 3,3 | 22,8 | 138,2 | 138,2 | 61 | 49,1 | 49,1 | |
| | 10401431 | 125/110 | 3,3 | 15,3 | 148,8 | 145,7 | 68 | 54,6 | 49,1 | |
| | 10401432 | 125/125 | 3,3 | 25,9 | 156,3 | 156,3 | 68 | 54,6 | 54,6 | |
| | 10401403 | 160/110 | 4 | 1 | 168 | 159 | 81 | 86 | 61 | |
| | 10401404 | 160/125 | 4 | 12 | 176 | 169 | 81 | 86 | 72 | |
| | 10401405 | 160/160 | 4 | 36 | 194 | 194 | 81 | 86 | 86 | |
| | 10401406 | 200/110 | 4,9 | -16 | 195 | 177 | 99 | 106 | 61 | |
| | 10401407 | 200/125 | 4,9 | 7 | 212 | 201 | 81 | 106 | 72 | |
| | 10401408 | 200/160 | 4,9 | 19 | 220 | 213 | 99 | 106 | 86 | |
| | 10401409 | 200/200 | 4,9 | 46 | 241 | 241 | 99 | 106 | 106 | |
| | 10401419 | 250/110 | 6,2 | 32 | 228 | 209 | 165 | 128 | 61 | |
| | 10401420 | 250/125 | 6,2 | 21 | 236 | 220 | 154 | 128 | 72 | |
| | 10401410 | 250/160 | 6,2 | -4 | 253 | 236 | 125 | 128 | 86 | |
| | 10401411 | 250/200 | 6,2 | 23 | 274 | 264 | 125 | 128 | 106 | |
| | 10401412 | 250/250 | 6,2 | 57 | 300 | 300 | 125 | 128 | 128 | |
| | 10401418 | 315/110 | 7,7 | 2 | 272 | 244 | 160 | 155 | 61 | |
| | 10401417 | 315/125 | 7,7 | -8 | 279 | 254 | 154 | 155 | 72 | |
| | 10401413 | 315/160 | 7,7 | -32 | 297 | 278 | 126 | 155 | 86 | |
| | 10401414 | 315/200 | 7,7 | -6 | 318 | 295 | 132 | 155 | 106 | |
| | 10401415 | 315/250 | 7,7 | 28 | 344 | 331 | 132 | 155 | 128 | |
| | 10401416 | 315/315 | 7,7 | 72 | 378 | 378 | 132 | 155 | 155 | |
| | 10203703 | 400/160 | 15,3 | 22 | 370 | 255 | 178 | 155 | 75 | |
| | 10203703 | 400/200 | 15,3 | 62 | 390 | 215 | 178 | 155 | 90 | |
| | *11501032 | 400/110 | | | | | | | | |
| | *11501033 | 400/125 | | | | | | | | |
| | *11501034 | 400/160 | | | | | | | | |
| | *11501035 | 400/200 | | | | | | | | |
| | *11501036 | 400/250 | | | | | | | | |
| | *11501037 | 400/315 | | | | | | | | |
| | *11501039 | 400/400 | | | | | | | | |
| | *11501049 | 500/110 | | | | | | | | |
| | *11501050 | 500/125 | | | | | | | | |
| | *11501051 | 500/160 | | | | | | | | |
| | *11501052 | 500/200 | | | | | | | | |
| | *11501053 | 500/250 | | | | | | | | |
| | *11501054 | 500/315 | | | | | | | | |
| | *11501056 | 500/400 | | | | | | | | |
| | *11501058 | 500/500 | | | | | | | | |
| | *11501258 | 500/500 | | | | | | | | |
| | *11501056 | 500/400 | | | | | | | | |
| | *11501058 | 500/500 | | | | | | | | |

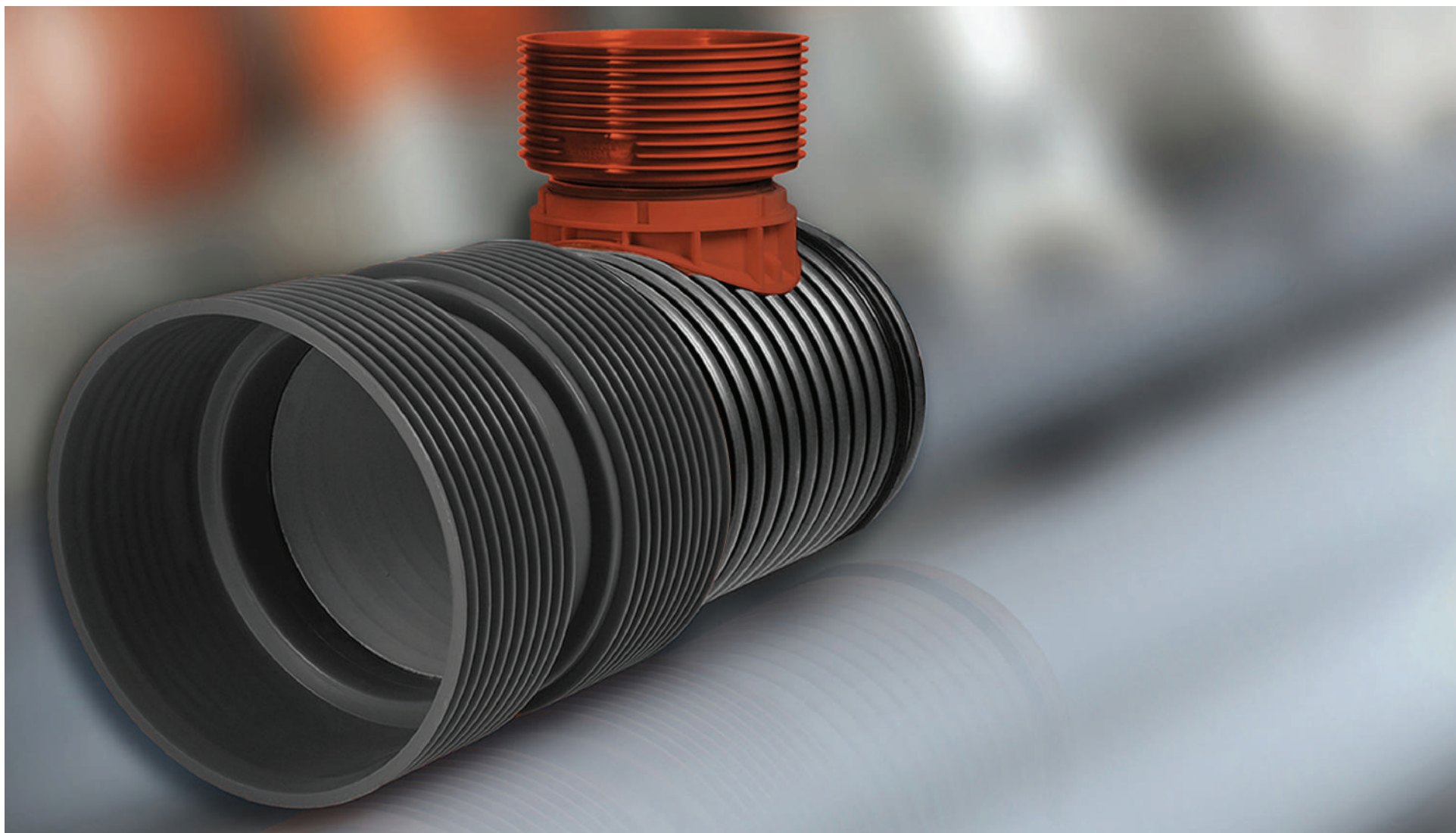
| DESCRIPTION | PICTURE | CODE | D (D/D1) | L1 _{MIN} | | | |
|---|-----------|---------|----------|-------------------|------|-------------------|----|
| KGU SLEEVE SOCKET | | | | | | | |
|  | 10402720 | 110 | 122,2 | | | | |
| | 10402721 | 125 | 131,2 | | | | |
| | 10402702 | 160 | 158 | | | | |
| | 10402703 | 200 | 158 | | | | |
| | 10402704 | 250 | 250 | | | | |
| | 10402705 | 315 | 293 | | | | |
| | 10402706 | 400 | 244 | | | | |
| | *11502310 | 500 | | | | | |
| KGU DOUBLE SOCKET | | | | | | | |
|  | 10402620 | 110 | 122,2 | | | | |
| | 10402621 | 125 | 131,2 | | | | |
| | 10402602 | 160 | 158 | | | | |
| | 10402604 | 250 | 250 | | | | |
| | 10402605 | 315 | 293 | | | | |
| | 10402626 | 400 | 244 | | | | |
| | *11502410 | 500 | | | | | |
| DESCRIPTION | PICTURE | CODE | (D/D1) | S | Z1 | L1 _{MIN} | L2 |
| KGR EXCENTRIC REDUCER | | | | | | | |
|  | 10401730 | 125/110 | 3,3 | 23,3 | 67 | 49,1 | |
| | 10401701 | 160/110 | 4 | 34 | 81 | 61 | |
| | 10401702 | 160/125 | 4 | 27 | 81 | 72 | |
| | 10401703 | 200/110 | 4,9 | 26 | 125 | 61 | |
| | 10401705 | 200/160 | 4,9 | 32 | 99 | 86 | |
| | 10401709 | 250/200 | 6,2 | 38 | 125 | 106 | |
| | 10401714 | 315/250 | 7,7 | 46 | 132 | 128 | |
| | 10401734 | 200/125 | 4,9 | 25 | 99,8 | 52 | |
| | 10401737 | 250/160 | 6,2 | 28 | 126 | 63 | |
| | 10401738 | 250/110 | 6,2 | 26 | 124 | 48 | |
| | 10401743 | 315/160 | 7,7 | 30 | 132 | 65 | |
| KGR REDUCER | | | | | | | |
|  | *10401750 | 110/200 | 4,9 | 5 | 61 | 59 | |
| | *10401800 | 110/250 | 6,1 | 7 | 61 | 90 | |
| | *10401810 | 110/315 | 7,7 | 40 | 61 | 93 | |
| | *10401820 | 110/400 | 6 | 40 | 61 | 95 | |
| | *10401751 | 125/200 | 4,9 | 5 | 72 | 59 | |
| | *10401801 | 125/250 | 6,1 | 7 | 72 | 90 | |
| | *10401811 | 125/315 | 7,7 | 40 | 72 | 93 | |
| | *10401821 | 125/400 | 9,8 | 40 | 72 | 95 | |
| | *10401802 | 160/250 | 6,1 | 8 | 86 | 90 | |
| | *10401812 | 160/315 | 7,7 | 7 | 86 | 93 | |
| | *10401822 | 160/400 | 9,8 | 50 | 86 | 95 | |
| | *10401813 | 200/315 | 7,7 | 7 | 106 | 93 | |
| | *10401823 | 200/400 | 9,8 | 50 | 106 | 95 | |
| | *10401824 | 250/400 | 9,8 | 50 | 128 | 95 | |
| | *11503027 | 315/400 | | | | | |
| | *11503044 | 400/500 | | | | | |

| DESCRIPTION | PICTURE | CODE | (D/D1) | S | Z1 | Z2 | L1MIN | L2 |
|---|-----------|---------|--------|------|-------|-----|-------|----|
| INSPECTION PIPE | | | | | | | | |
|   | 10401920 | 110/110 | 3,3 | 51,7 | 52,68 | 67 | 49,1 | |
| | 10401921 | 125/110 | 3,3 | 51,7 | 51 | 72 | 54,6 | |
| | 10401902 | 160/160 | 4 | 83 | 89 | 81 | 86 | |
| | 10401903 | 200/160 | 4,9 | 86 | 111 | 99 | 106 | |
| | 10401904 | 250/160 | 6,2 | 89 | 91 | 125 | 128 | |
| | 10401905 | 315/160 | 7,7 | 93 | 104 | 134 | 155 | |
| | *11502603 | 400/160 | | | | | | |
| DESCRIPTION | PICTURE | CODE | D | S | L | | | |
| KG END CAP | | | | | | | | |
|   | 10402904 | 200 | 4,9 | 51,5 | | | | |
| | 10402900 | 250 | 6,2 | 90 | | | | |
| | 10402901 | 315 | 7,7 | 92,5 | | | | |
| | 10402902 | 400 | 9,8 | 95 | | | | |
| | *11502504 | 500 | 12,3 | 120 | | | | |
| DESCRIPTION | PICTURE | CODE | D | S | L | | | |
| KGK END CAP | | | | | | | | |
|   | 10402030 | 110 | 3,4 | 45 | | | | |
| | 10402031 | 125 | 3,4 | 45 | | | | |
| | 10402032 | 160 | 4,2 | 53 | | | | |
| | 10402033 | 200 | 5,2 | 64 | | | | |
| DESCRIPTION | PICTURE | CODE | D | S | L1 | L2 | L3 | L4 |
| NON-RETURN VALVE | | | | | | | | |
|   | 10202502 | 110 | 4,0 | 64 | 64 | 320 | 189 | |
| | 10202503 | 125 | 4,0 | 68 | 65 | 318 | 226 | |
| | 10202504 | 160 | 4,0 | 68 | 103 | 350 | 248 | |
| | 10402000 | 200 | 4,5 | 100 | 86 | 455 | 300 | |
| | 10402001 | 250 | 6,2 | 144 | 104 | 566 | 365 | |
| | 10402002 | 315 | 7,7 | 160 | 116 | 728 | 454 | |
| NON-RETURN VALVE WITH TWO CLAPS | | | | | | | | |
|   | 10202505 | 110 | 4,0 | 62 | 62 | 355 | 190 | |
| | | 160 | | | | | | |
| | | 200 | | | | | | |
| DESCRIPTION | PICTURE | CODE | D | S | Z1 | L2 | | |
| CLAP VALVE | | | | | | | | |
|   | 10402041 | 125 | 3,3 | 20 | 52 | | | |
| | 10402042 | 160 | 4 | 25 | 62 | | | |
| | | | | | | | | |
| | | | | | | | | |

| DESCRIPTION | PICTURE | CODE | (D/D1) |
|-------------|---|----------|---------|
| SAG K/K |  | 10799210 | 250/160 |
| | | 10799211 | 300/160 |
| | | 10799212 | 400/160 |
| | | 10799213 | 500/160 |
| | | 10799214 | 600/160 |
| | | 10799200 | 250/200 |
| | | 10799201 | 300/200 |
| | | 10799202 | 400/200 |
| | | 10799203 | 500/200 |
| | | 10799204 | 600/200 |
| SAG K/SW |  | 10799110 | 250/160 |
| | | 10799111 | 300/160 |
| | | 10799112 | 400/160 |
| | | 10799113 | 500/160 |
| | | 10799114 | 600/160 |
| | | 10799100 | 250/200 |
| | | 10799101 | 300/200 |
| | | 10799102 | 400/200 |
| | | 10799103 | 500/200 |
| | | 10799104 | 600/200 |

| DESCRIPTION | PICTURE | CODE | (D/D1) | H | H1 | H2 | L |
|----------------|---|----------|---------|-----|-----|-----|-----|
| DRAIN MANHOLES |  | 10799224 | 315/160 | 384 | 281 | 190 | 479 |
| | | 10799220 | 400/160 | 420 | 315 | 207 | 554 |
| | | 10799221 | 400/200 | 470 | 340 | 207 | 586 |
| | | | | | | | |
| DRAIN MANHOLES |  | 10799225 | 315/160 | 395 | 309 | 185 | 490 |
| | | 10799222 | 400/160 | 420 | 319 | 207 | 559 |
| | | 10799223 | 400/200 | 470 | 344 | 207 | 584 |
| | | | | | | | |

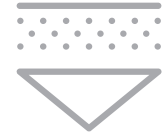
| DESCRIPTION | PICTURE | D | D1 | S | Z1 | Z2 | L1MIN | L2 | L3 |
|----------------------------|--|----------|-----|-----|--------|--------|-------|-------|-------|
| KGB BEND 110/45° |  | 110 | | 3.1 | 33.02 | 33.02 | 58.53 | 58.53 | |
| KGB BEND 125/45° | | 125 | | 3.6 | 36.92 | 36.92 | 64.46 | 64.46 | |
| KGB BEND 160/45° | | 160 | | 4.5 | 45.46 | 45.46 | 79.42 | 79.42 | |
| KGB BEND 110/87.5° | | 110 | | 3.1 | 61.15 | 61.15 | 58.53 | 58.53 | |
| KGB BEND 125/87.5° | | 125 | | 3.6 | 68.85 | 68.85 | 64.46 | 64.46 | |
| KGB BEND 160/87.5° | | 160 | | 4.5 | 86.35 | 86.35 | 79.42 | 79.42 | |
| KGEA BRANCH 110/110-45° |  | 110 | 110 | 3.1 | 24.94 | 133.47 | 58.53 | 58.53 | 58.53 |
| KGEA BRANCH 125/110-45° | | 125 | 110 | 3.7 | 16.07 | 146.47 | 64.46 | 64.46 | 58.53 |
| KGEA BRANCH 125/125-45° | | 125 | 125 | 3.7 | 26.07 | 152.53 | 64.46 | 64.46 | 64.46 |
| KGEA BRANCH 160/110-45° | | 160 | 110 | 4.7 | 1.15 | 173.97 | 90 | 79.42 | 58.53 |
| KGEA BRANCH 160/125-45° | | 160 | 125 | 4.7 | 11.15 | 178.53 | 88.85 | 79.42 | 64.46 |
| KGEA BRANCH 160/160-45° | | 160 | 160 | 4.7 | 36.15 | 195.57 | 88.85 | 79.42 | 79.42 |
| KGEA BRANCH 110/110-87.5° |  | 110 | 110 | 3.2 | 79.94 | 91.47 | 65.06 | 58.53 | 58.53 |
| KGEA BRANCH 125/110-87.5° | | 125 | 110 | 3.7 | 68.07 | 93.65 | 140 | 64.46 | 58.53 |
| KGEA BRANCH 125/125-87.5° | | 125 | 125 | 3.7 | 83.07 | 95.61 | 71.93 | 64.46 | 64.45 |
| KGEA BRANCH 160/110-87.5° | | 160 | 110 | 4.7 | 66.15 | 123.62 | 88.85 | 79.42 | 58.53 |
| KGEA BRANCH 160/125-87.5° | | 160 | 125 | 4.7 | 69.15 | 111.65 | 88.85 | 79.42 | 64.45 |
| KGEA BRANCH 160/160-87.5° | | 160 | 160 | 4.7 | 101.15 | 120.57 | 88.85 | 79.42 | 79.42 |
| DESCRIPTION | PICTURE | CODE | | | | | | | |
| KGF FLOOD GATE Ø110 |  | 10203680 | | | | | | | |
| KGF FLOOD GATE Ø125 | | 10203681 | | | | | | | |
| KGF FLOOD GATE Ø160 | | 10203682 | | | | | | | |
| KGF FLOOD GATE Ø200 | | 10203683 | | | | | | | |
| KGF FLOOD GATE Ø250 | | 10203684 | | | | | | | |
| KGF FLOOD GATE Ø315 | | 10203685 | | | | | | | |
| KGF FLOOD GATE Ø400 WELDED | | 11502908 | | | | | | | |
| KGF FLOOD GATE Ø500 WELDED | | 11502909 | | | | | | | |



PP CORRUGATED ID PIPES

Double layered corrugated PP ID pipes and fittings

BELOW GROUND



PRODUCTION AND PURPOSES

Peštan Company supplies for its corrugated pipes only certified materials from top manufacturers.

These raw materials are satisfying properties of high impact resistance that have polypropylene copolymer PP-B. It is very important to make the correct choice of pipe by the type of fluid and by conditions of exploitation, in accordance with the characteristics of the material from which they are made of.

| CHARACTERISTICS | VALUE | EN |
|--|----------------------------|-----------|
| Density | 900 kg/m ³ | EN 1183 |
| MFR | 0,3 gr/10 min (230/2,16) | EN1133 |
| Modulus of elasticity | 1500/2000MPa | EN527 |
| Tensile strength at yield point | 32 MPa | EN527 |
| Impact toughness by Sharp with a comma | +23 °C 70kJ/m ² | EN179/1eA |
| | -23 °C 7 kJ/m ² | EN179/1eA |



MATERIAL

Material properties and temperature application are given in the following table:

| MATERIAL | MIN. | MAX. | SHORT-TERM |
|----------|--------|-------|------------|
| PP | -20 °C | 60 °C | 95 °C |
| PE-HD | -40 °C | 40 °C | 70 °C |
| PVC-U | 0 °C | 40 °C | 60 °C |

PRODUCTION

Pipes are manufactured in accordance with SRPS-EN13476 and EN1440

- Classified according to the inner light diameter DN/ID
- Life expectancy is 100 years
- Excellent hydraulic properties
- Excellent chemical stability
- High temperature stability at 60 °C, short term up to 90 °C
- High resistance to abrasion
- Pipes are lightweight

- Easy handling and installation
- Good mechanical properties
- Good impact resistance at low temperatures
- Good pipe flexibility
- Pipes can be completely recycled
- Pipes do not contain heavy metals or other disputed matter
- Friction coefficient is - Kb = 0.25 mm

The pipes are manufactured as class SN4 and SN8, pipes according to customer's request can be produced in class SN12 and SN16

* In addition to classes SN4 and SN8, pipes can also be produced in classes SN12 and SN16 upon customer request

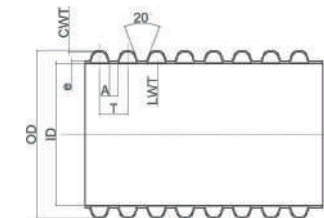
** The values in the table are mean values measured during continuous product quality control over a long period of time

| CODE | DN | | OD (mm) | ID (mm) | CWT | LWT | T | A | e |
|----------|------|-----|---------|---------|-----|-----|------|------|-----|
| 10702000 | Ø140 | SN4 | 160.5 | 140 | 0.7 | 0.7 | 17.4 | 3.5 | 11 |
| 10702020 | | SN8 | 160 | 139 | 0.7 | 0.8 | 17.4 | 3.5 | 11 |
| 10702001 | Ø200 | SN4 | 228 | 199 | 0.9 | 0.7 | 22 | 4.2 | 1.9 |
| 10702021 | | SN8 | 228.5 | 200 | 1 | 1.1 | 22 | 4.2 | 2 |
| 10702002 | Ø250 | SN4 | 284 | 249 | 1 | 0.6 | 26 | 4.5 | 2.2 |
| 10702022 | | SN8 | 283 | 248 | 1.2 | 1.4 | 26 | 4.5 | 2.3 |
| 10702003 | Ø300 | SN4 | 341 | 300 | 1.7 | 1.3 | 34.6 | 6.8 | 2.5 |
| 10702023 | | SN8 | 342 | 303 | 1.9 | 1.5 | 34.6 | 6.8 | 2.8 |
| 10702004 | Ø400 | SN4 | 455 | 400 | 1.8 | 1.2 | 50.8 | 11.9 | 3 |
| 10702024 | | SN8 | 454.5 | 401 | 2.1 | 2 | 50.8 | 11.9 | 3.2 |
| 10702005 | Ø500 | SN4 | 571 | 503 | 2 | 1.5 | 59 | 11 | 3.6 |
| 10702025 | | SN8 | 570 | 501 | 2.2 | 1.7 | 59 | 11 | 4.1 |
| 10702006 | Ø600 | SN4 | 686 | 607 | 2.4 | 2.5 | 70 | 14 | 3.7 |
| 10702026 | | SN8 | 685 | 607 | 2.7 | 2.7 | 70 | 14 | 4.5 |
| 10702007 | Ø800 | SN4 | 907 | 802 | 3.3 | 3 | 88.7 | 34.5 | 5.6 |
| 10702027 | | SN8 | 906 | 800 | 3.6 | 3.5 | 88.7 | 34.5 | 6.8 |

CONNECTING METHODS

The pipes are produced in accordance with SRPS-EN13476 and EN1440

Connecting with angle fitting, connecting many pipelines with T branches and connecting over the saddle after grip (SAG).

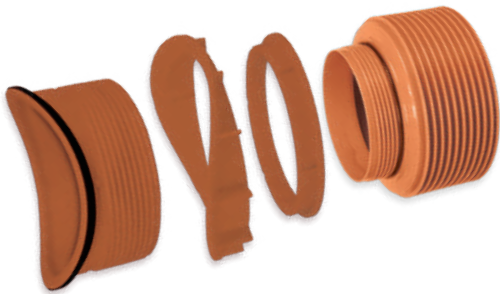


SADDLE AFTER GRIP (SAG)

Saddle after grip is new, modern product, with great performance.

It is intended for subsequent connection to an existing pipeline for smooth as well as corrugated pipes. Using this system, combined with a great range of Peřtan fittings, production of new lines of home, street and drain sewer, as well as connecting to existing lines becomes satisfaction.

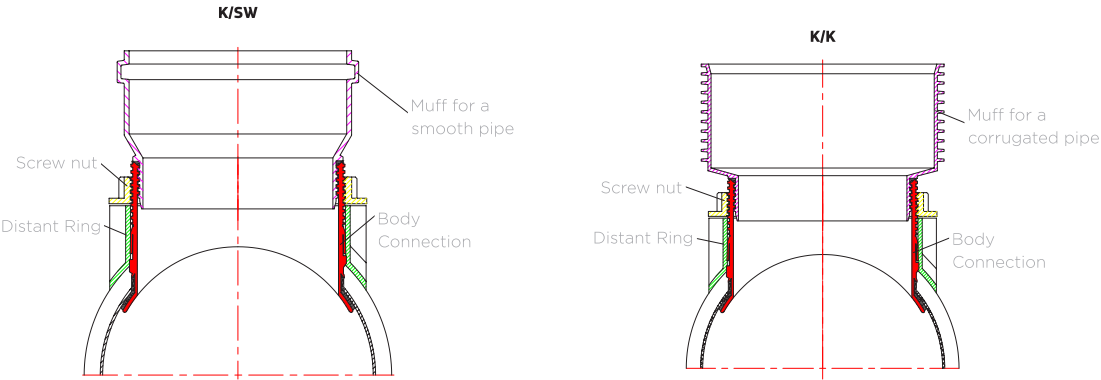
Peřtan latest product main purpose is to be subsequently attached to an existing pipeline with a connection to smooth and corrugated pipes. The connection is safe and waterproof. It is made of ABS by injection molding technology.



SIZES

Sizes are given in the following table:

| K/K CODE | K/SW CODE | |
|----------|-----------|---------|
| 10799210 | 10799110 | 250/160 |
| 10799211 | 10799111 | 300/160 |
| 10799212 | 10799112 | 400/160 |
| 10799213 | 10799113 | 500/160 |
| 10799214 | 10799114 | 600/160 |
| K/K CODE | K/SW CODE | |
| 10799200 | 10799100 | 250/200 |
| 10799201 | 10799101 | 300/200 |
| 10799202 | 10799102 | 400/200 |
| 10799203 | 10799103 | 500/200 |
| 10799204 | 10799104 | 600/200 |



MONTAGE OF SAG THROUGH PHASES



1. Tools required



2. Determining position for montage



3. Drilling holes for the guided crown saw



4. Drilling holes with crown saw



5. Cleaning chips and forming a clear hole



6. Lubricating rubber bands on the body of sag



7. Inserting body of sag through pre-prepared opening and setting int in the appropriate position



8. setting the spacer ring



9. Tightening the sag



10. Lubricating appropriate connection of sag



11. Setting the selected connection

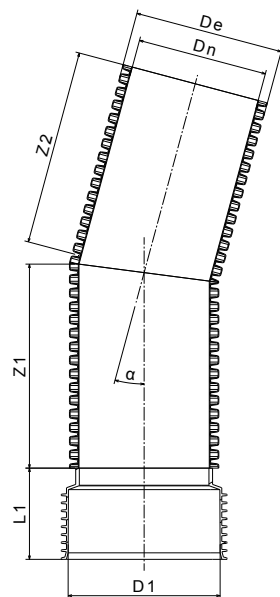


12. Final tightening of sag

BENDS 15°, 30°, 45°, 60°, 90°

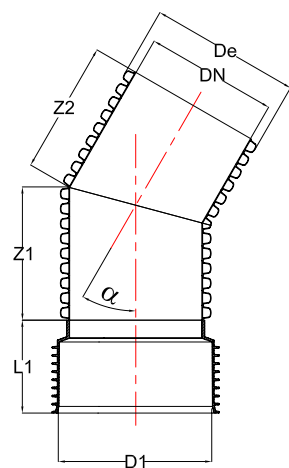
Bends are side fittings which main purpose is connecting pipes at certain angle in accordance with requirements (15°, 30°, 45°, 60°, 90°). It is made in the technology of welding pipe segments and semi joints which has the function of integrated socket.





BEND 15°

| CODE | DN | DE | D1 | A | L1 | Z1 | Z2 |
|----------|---------|-----|-----|-----|-----|-----|-----|
| 10799240 | 140 F/M | 160 | 162 | 30° | 95 | 180 | 165 |
| 10799521 | 140 F/F | 160 | 162 | 30° | 95 | 180 | 165 |
| 10799241 | 200 F/M | 227 | 230 | 30° | 140 | 200 | 180 |
| 10799523 | 200 F/F | 227 | 230 | 30° | 140 | 200 | 180 |
| 10799242 | 250 F/M | 283 | 286 | 30° | 170 | 235 | 210 |
| 10799525 | 250 F/F | 283 | 286 | 30° | 170 | 235 | 210 |
| 10799243 | 300 F/M | 340 | 346 | 30° | 180 | 280 | 250 |
| 10799527 | 300 F/F | 340 | 346 | 30° | 180 | 280 | 250 |
| 10799244 | 400 F/M | 453 | 458 | 30° | 230 | 355 | 315 |
| 10799529 | 400 F/F | 453 | 458 | 30° | 230 | 355 | 315 |
| 10799245 | 500 F/M | 567 | 575 | 30° | 255 | 475 | 425 |
| 10799531 | 500 F/F | 567 | 575 | 30° | 255 | 475 | 425 |
| 10799246 | 600 F/M | 680 | 686 | 30° | 300 | 595 | 525 |
| 10799533 | 600 F/F | 680 | 686 | 30° | 300 | 595 | 525 |

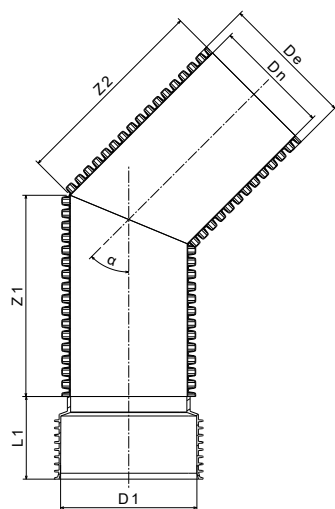


BEND 30°

| CODE | DN | DE | D1 | A | L1 | Z1 | Z2 |
|----------|---------|-----|-----|-----|-----|-----|-----|
| 10799250 | 140 F/M | 160 | 162 | 30° | 95 | 180 | 165 |
| 10799561 | 140 F/F | 160 | 162 | 30° | 95 | 180 | 165 |
| 10799251 | 200 F/M | 227 | 230 | 30° | 140 | 200 | 180 |
| 10799563 | 200 F/F | 227 | 230 | 30° | 140 | 200 | 180 |
| 10799252 | 250 F/M | 283 | 286 | 30° | 170 | 235 | 210 |
| 10799565 | 250 F/F | 283 | 286 | 30° | 170 | 235 | 210 |
| 10799253 | 300 F/M | 340 | 346 | 30° | 180 | 280 | 250 |
| 10799567 | 300 F/F | 340 | 346 | 30° | 180 | 280 | 250 |
| 10799254 | 400 F/M | 453 | 458 | 30° | 230 | 355 | 315 |
| 10799569 | 400 F/F | 453 | 458 | 30° | 230 | 355 | 315 |
| 10799255 | 500 F/M | 567 | 575 | 30° | 255 | 475 | 425 |
| 10799571 | 500 F/F | 567 | 575 | 30° | 255 | 475 | 425 |
| 10799256 | 600 F/M | 680 | 686 | 30° | 300 | 595 | 525 |
| 10799573 | 600 F/F | 680 | 686 | 30° | 300 | 595 | 525 |

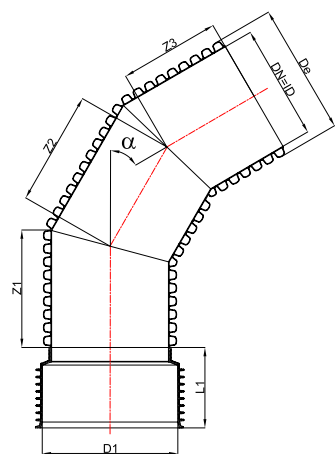
Measurements are given in millimeters (mm)

*F/M - female/male socket
F/F - female/female socket



BEND 45°

| CODE | DN | DE | D1 | A | L1 | Z1 | Z2 |
|----------|---------|-----|-----|-----|-----|-----|-----|
| 10799260 | 140 F/M | 160 | 162 | 45° | 95 | 210 | 210 |
| 10799586 | 140 F/F | 160 | 162 | 45° | 95 | 210 | 210 |
| 10799261 | 200 F/M | 227 | 230 | 45° | 140 | 225 | 225 |
| 10799588 | 200 F/F | 227 | 230 | 45° | 140 | 225 | 225 |
| 10799262 | 250 F/M | 283 | 286 | 45° | 170 | 260 | 260 |
| 10799590 | 250 F/F | 283 | 286 | 45° | 170 | 260 | 260 |
| 10799263 | 300 F/M | 340 | 346 | 45° | 180 | 315 | 315 |
| 10799592 | 300 F/F | 340 | 346 | 45° | 180 | 315 | 315 |
| 10799264 | 400 F/M | 453 | 458 | 45° | 230 | 395 | 395 |
| 10799594 | 400 F/F | 453 | 458 | 45° | 230 | 395 | 395 |
| 10799265 | 500 F/M | 567 | 575 | 45° | 255 | 530 | 530 |
| 10799596 | 500 F/F | 567 | 575 | 45° | 255 | 530 | 530 |
| 10799266 | 600 F/M | 680 | 686 | 45° | 300 | 660 | 660 |
| 10799598 | 600 F/F | 680 | 686 | 45° | 300 | 660 | 660 |

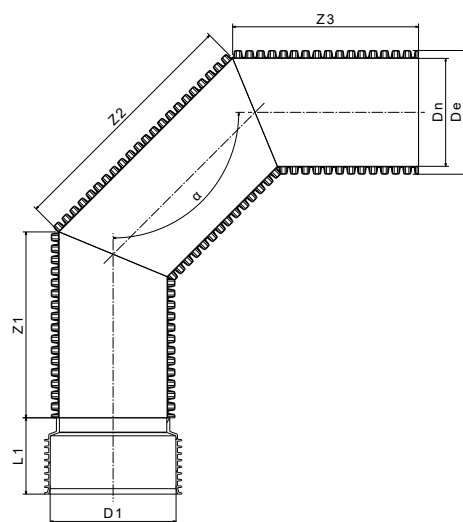


BEND 60°

| CODE | DN | DE | D1 | A | L1 | Z1 | Z2 | Z3 |
|----------|---------|-----|-----|-----|-----|-----|-----|-----|
| 10799270 | 140 F/M | 160 | 162 | 60° | 95 | 165 | 210 | 165 |
| 10799611 | 140 F/F | 160 | 162 | 60° | 95 | 165 | 210 | 165 |
| 10799271 | 200 F/M | 227 | 230 | 60° | 140 | 180 | 225 | 180 |
| 10799613 | 200 F/F | 227 | 230 | 60° | 140 | 180 | 225 | 180 |
| 10799272 | 250 F/M | 283 | 286 | 60° | 170 | 210 | 235 | 210 |
| 10799615 | 250 F/F | 283 | 286 | 60° | 170 | 210 | 235 | 210 |
| 10799273 | 300 F/M | 340 | 346 | 60° | 180 | 250 | 285 | 250 |
| 10799617 | 300 F/F | 340 | 346 | 60° | 180 | 250 | 285 | 250 |
| 10799274 | 400 F/M | 453 | 458 | 60° | 230 | 315 | 350 | 315 |
| 10799619 | 400 F/F | 453 | 458 | 60° | 230 | 315 | 350 | 315 |
| 10799275 | 500 F/M | 567 | 575 | 60° | 255 | 420 | 475 | 420 |
| 10799621 | 500 F/F | 567 | 575 | 60° | 255 | 420 | 475 | 420 |
| 10799276 | 600 F/M | 680 | 686 | 60° | 300 | 525 | 595 | 525 |
| 10799623 | 600 F/F | 680 | 686 | 60° | 300 | 525 | 595 | 525 |

Measurements are given in millimeters (mm)

*F/M - female/male socket
F/F - female/female socket



BEND 90°

| CODE | DN | DE | D1 | A | L1 | Z1 | Z2 | Z3 |
|----------|---------|-----|-----|-----|-----|-----|-----|-----|
| 10799280 | 140 F/M | 160 | 162 | 90° | 95 | 165 | 210 | 165 |
| 10799631 | 140 F/F | 160 | 162 | 90° | 95 | 165 | 210 | 165 |
| 10799281 | 200 F/M | 227 | 230 | 90° | 140 | 180 | 225 | 180 |
| 10799633 | 200 F/F | 227 | 230 | 90° | 140 | 180 | 225 | 180 |
| 10799282 | 250 F/M | 283 | 286 | 90° | 170 | 210 | 260 | 210 |
| 10799635 | 250 F/F | 283 | 286 | 90° | 170 | 210 | 260 | 210 |
| 10799283 | 300 F/M | 340 | 346 | 90° | 180 | 250 | 315 | 250 |
| 10799637 | 300 F/F | 340 | 346 | 90° | 180 | 250 | 315 | 250 |
| 10799284 | 400 F/M | 453 | 458 | 90° | 230 | 315 | 390 | 315 |
| 10799639 | 400 F/F | 453 | 458 | 90° | 230 | 315 | 390 | 315 |
| 10799285 | 500 F/M | 567 | 575 | 90° | 255 | 425 | 530 | 425 |
| 10799641 | 500 F/F | 567 | 575 | 90° | 255 | 425 | 530 | 425 |
| 10799286 | 600 F/M | 680 | 686 | 90° | 300 | 525 | 660 | 525 |
| 10799643 | 600 F/F | 680 | 686 | 90° | 300 | 525 | 660 | 525 |

Measurements are given in millimeters (mm)

*F/M - female/male socket

F/F - female/female socket

TEE

This fitting was obtained by welding pipe segments at an angle of 90° with the appropriate extension in the form of semi joint. Available for pipe diameters Ø140-Ø600.



K-BRANCH

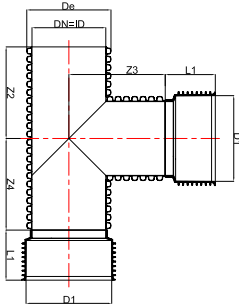
This fitting was obtained by welding pipe segments at an angle of 45° with the appropriate extension in the form of semi joint. Available for pipe diameters Ø140-Ø600.



EXCENTRIC REDUCER

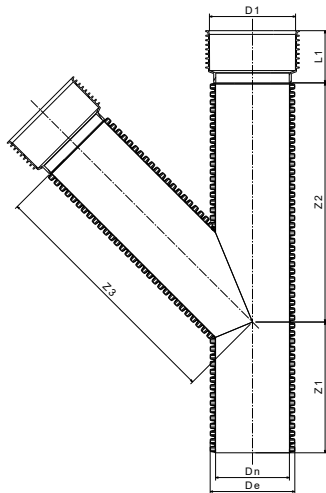
Fitting which main purpose is connecting pipes of different diameters. It is made of polypropylene injection molding technology. This fitting is available in sizes listed in the table.





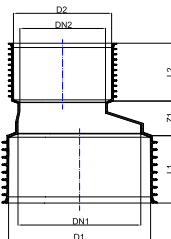
TEE

| CODE | DN | DE | D1 | L1 | Z2 | Z3 | Z4 |
|----------|---------|-----|-----|-----|-----|-----|-----|
| 10799350 | 140 F/M | 160 | 162 | 91 | 220 | 215 | 220 |
| 10799671 | 140 F/F | 160 | 162 | 91 | 220 | 215 | 220 |
| 10799351 | 200 F/M | 227 | 230 | 140 | 245 | 245 | 245 |
| 10799673 | 200 F/F | 227 | 230 | 140 | 245 | 245 | 245 |
| 10799352 | 250 F/M | 283 | 286 | 168 | 285 | 300 | 285 |
| 10799675 | 250 F/F | 283 | 286 | 168 | 285 | 300 | 285 |
| 10799353 | 300 F/M | 340 | 344 | 182 | 345 | 360 | 345 |
| 10799677 | 300 F/F | 340 | 344 | 182 | 345 | 360 | 345 |
| 10799354 | 400 F/M | 453 | 458 | 235 | 430 | 460 | 430 |
| 10799679 | 400 F/F | 453 | 458 | 235 | 430 | 460 | 430 |
| 10799355 | 500 F/M | 567 | 574 | 299 | 580 | 600 | 580 |
| 10799681 | 500 F/F | 567 | 574 | 299 | 580 | 600 | 580 |
| 10799356 | 600 F/M | 680 | 686 | 310 | 725 | 735 | 725 |
| 10799683 | 600 F/F | 680 | 686 | 310 | 725 | 735 | 725 |



K-BRANCH

| CODE | DN | DE | D1 | L1 | Z2 | Z3 | Z4 |
|----------|---------|-----|-----|-----|-----|-----|-----|
| 10799330 | 140 F/M | 160 | 162 | 91 | 220 | 215 | 220 |
| 10799651 | 140 F/F | 160 | 162 | 91 | 220 | 215 | 220 |
| 10799333 | 200 F/M | 227 | 230 | 140 | 245 | 245 | 245 |
| 10799653 | 200 F/F | 227 | 230 | 140 | 245 | 245 | 245 |
| 10799654 | 250 F/M | 283 | 286 | 168 | 285 | 300 | 285 |
| 10799655 | 250 F/F | 283 | 286 | 168 | 285 | 300 | 285 |
| 10799656 | 300 F/M | 340 | 344 | 182 | 345 | 360 | 345 |
| 10799657 | 300 F/F | 340 | 344 | 182 | 345 | 360 | 345 |
| 10799658 | 400 F/M | 453 | 458 | 235 | 430 | 460 | 430 |
| 10799659 | 400 F/F | 453 | 458 | 235 | 430 | 460 | 430 |
| 10799660 | 500 F/M | 567 | 574 | 299 | 580 | 600 | 580 |
| 10799661 | 500 F/F | 567 | 574 | 299 | 580 | 600 | 580 |
| 10799662 | 600 F/M | 680 | 686 | 310 | 725 | 735 | 725 |
| 10799663 | 600 F/F | 680 | 686 | 310 | 725 | 735 | 725 |



EXCENTRIC REDUCER

| CODE | DN1 | DN2 | D1 | D2 | Z1 | L1 | L2 |
|----------|-----|-----|-----|-----|-----|-----|-----|
| 10799300 | 200 | 140 | 230 | 160 | 58 | 115 | 91 |
| 40000760 | 250 | 200 | 286 | 230 | 129 | 145 | 110 |
| 40000763 | 300 | 250 | 344 | 286 | 136 | 153 | 137 |
| 40000812 | 400 | 300 | 458 | 344 | 146 | 200 | 150 |
| 40000764 | 500 | 400 | 574 | 458 | 159 | 262 | 200 |
| 40000814 | 600 | 500 | 686 | 574 | 171 | 270 | 262 |

Measurements are given in millimeters (mm)

*F/M - female/male socket

F/F - female/female socket

TRANSITION FROM CORRUGATED TO SMOOTH PIPE

The purpose of this product is transition from smooth to corrugated pipe. It is made of polypropylene injection molding technology or welding. It is available in sizes that are given in the table.



END CAP

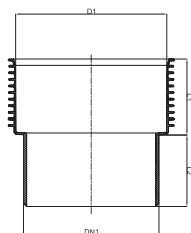
This product has a function of closing the pipes and fittings while installing pipes and different types of testing as well as for any other purpose. It is made in the technology of injection molding and welding polypropylene.



DOUBLE MUFF

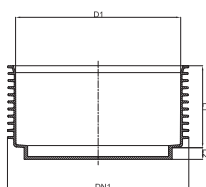
Fitting designed for linear connection of pipe with same diameter. The product is obtained by polypropylene injection molding.





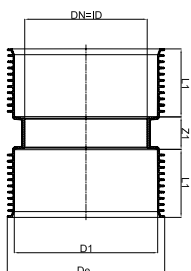
TRANSITION FROM CORRUGATED TO SMOOTH PIPE

| CODE | DN | DN1 | D1 | L1 | L2 |
|----------|-----|-----|-----|-----|-----|
| 10799500 | 140 | 160 | 162 | 90 | 90 |
| 40000771 | 200 | 200 | 230 | 115 | 120 |
| 40000772 | 250 | 250 | 286 | 145 | 143 |
| 40000773 | 300 | 315 | 346 | 153 | 155 |
| 40000774 | 400 | 400 | 459 | 235 | 200 |



END CAP

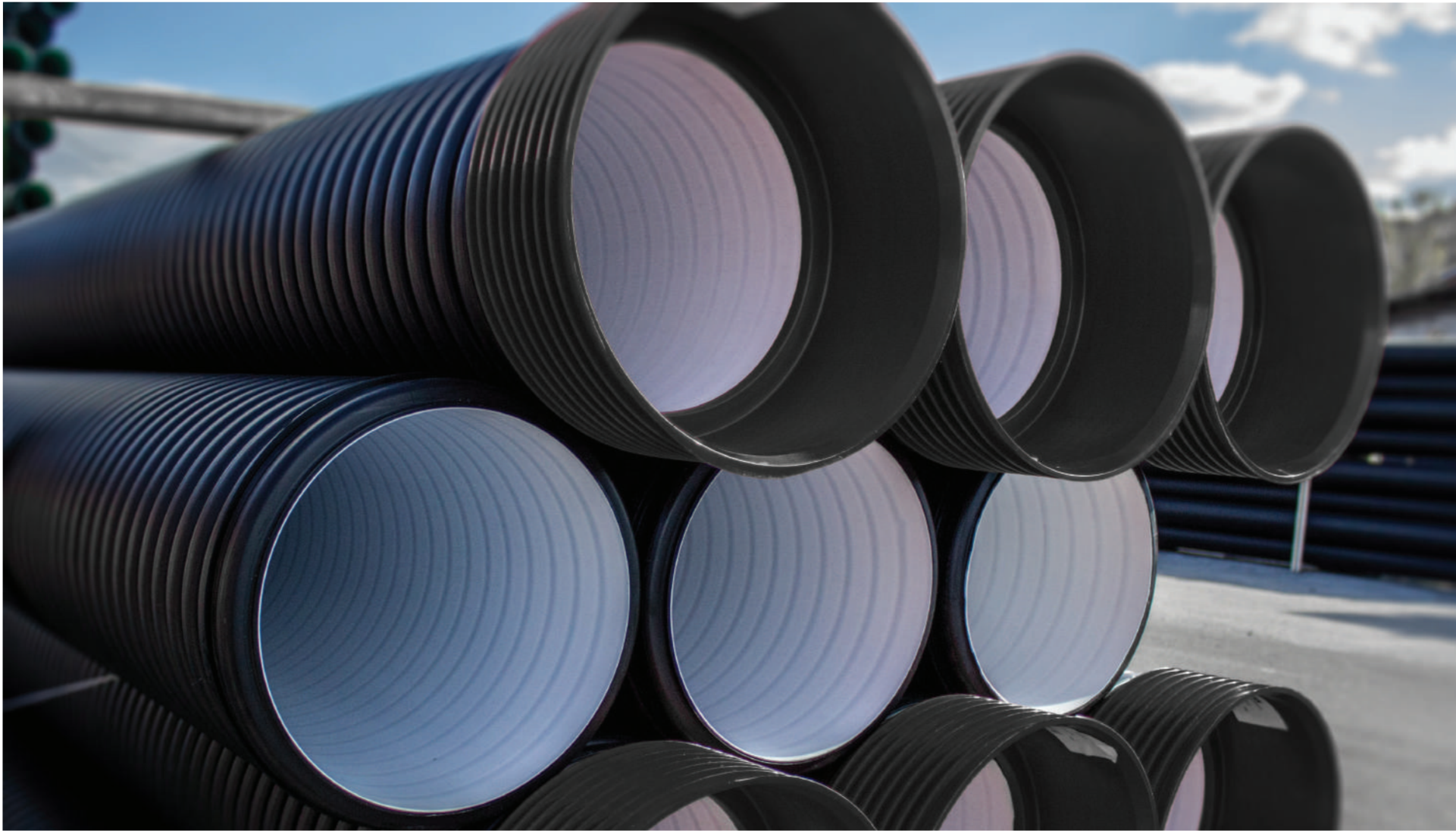
| CODE | DN | DN1 | D1 | L1 | L2 |
|----------|-----|-----|-----|-----|------|
| 10799400 | 140 | 176 | 162 | 90 | 25,5 |
| 10799401 | 200 | 230 | 200 | 115 | 30 |
| 10799402 | 250 | 286 | 250 | 145 | 31 |
| 10799403 | 300 | 346 | 300 | 153 | 32 |
| 10799404 | 400 | 459 | 400 | 235 | 35 |
| 10799405 | 500 | 624 | 574 | 262 | 37 |
| 10799406 | 600 | 748 | 686 | 270 | 40 |



DOUBLE MUFF

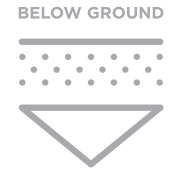
| CODE | DN | DE | D1 | L1 | Z1 |
|----------|-----|-----|-----|-----|----|
| 10799000 | 140 | 176 | 162 | 90 | 51 |
| 10799001 | 200 | 252 | 230 | 115 | 60 |
| 10799002 | 250 | 312 | 286 | 145 | 62 |
| 10799003 | 300 | 375 | 346 | 153 | 64 |
| 10799004 | 400 | 498 | 459 | 200 | 70 |
| 10799005 | 500 | 624 | 575 | 262 | 74 |
| 10799006 | 600 | 748 | 690 | 270 | 80 |
| 40000792 | 800 | 960 | 919 | 325 | 90 |

Measurements are given in millimeters (mm)



PP CORUGATED OD PIPES

Double layered corrugated PP OD pipes and fittings

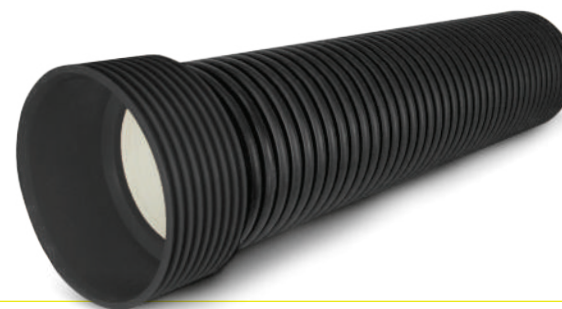


PRODUCTION AND PURPOSES

Peštan Company supplies for its corrugated pipes only certified materials from top manufacturers.

These raw materials are satisfying properties of high impact resistance that have polypropylene copolymer PP-B. It is very important to make the correct choice of pipe by the type of fluid and by conditions of exploitation, in accordance with the characteristics of the material from which they are made of.

| CHARACTERISTICS | VALUE | EN |
|--|----------------------------|-----------|
| Density | 900kg/m ³ | EN 1183 |
| MFR | 0,3gr/10 min(230/2,16) | EN1133 |
| Modulus of elasticity | 1500/2000MPa | EN527 |
| Tensile strength at yield point | 32 MPa | EN527 |
| Impact toughness by Sharp with a comma | +23 °C 70kJ/m ² | EN179/1eA |
| | -23 °C 7 kJ/m ² | EN179/1eA |



MATERIAL

Material properties and temperature application are given in the following table:

| MATERIAL | MIN. | MAX. | SHORT-TERM |
|----------|--------|-------|------------|
| PP | -20 °C | 60 °C | 95 °C |
| PE-HD | -40 °C | 40 °C | 70 °C |
| PVC-U | 0 °C | 40 °C | 60 °C |

PRODUCTION

Pipes are manufactured in accordance with SRPS-EN13476 and EN1440

- Classified according to outside diameter DN/OD
- Life expectancy is 100 years
- Excellent hydraulic properties
- Excellent chemical stability
- High temperature stability at 60 °C, short term up to 90 °C
- High resistance to abrasion
- Pipes are lightweight
- Easy handling and installation
- Good mechanical properties
- Good impact resistance at low temperatures
- Good pipe flexibility

- Pipes can be completely recycled
- Pipes do not contain heavy metals or other disputed matter
- Friction coefficient is - Kb = 0.25 mm
- Standard length is 6 or 12 m

The pipes are manufactured as class SN4 and SN8, pipes according to customer's request can be produced in class SN12 and SN16.

Pipe diameters from DN 200 up to DN 500 are produced with welded socket. Smaller diameters are produced with double socket already mounted on the pipe.

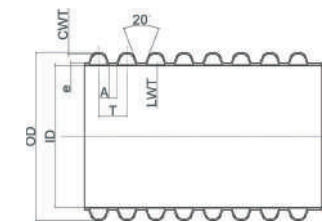
| DN (OD) mm | | ID (mm) | CWT | LWT | T | A | e |
|------------|-----|---------|-----|-----|------|------|-----|
| Ø110 | SN4 | 96 | 0.4 | 0.5 | 13.6 | 4.1 | 1 |
| | SN8 | 95 | 0.5 | 0.6 | 13.6 | 4.1 | 1.1 |
| Ø125 | SN4 | 109 | 0.6 | 0.6 | 15.2 | 4.4 | 1.2 |
| | SN8 | 108 | 0.6 | 0.7 | 15.2 | 4.4 | 1.3 |
| Ø160 | SN4 | 138 | 0.6 | 0.7 | 20 | 5.4 | 1.3 |
| | SN8 | 137 | 0.7 | 0.8 | 20 | 5.4 | 1.4 |
| Ø200 | SN4 | 177 | 1 | 0.7 | 19.3 | 6 | 1.5 |
| | SN8 | 175 | 1.1 | 0.8 | 19.3 | 6 | 1.8 |
| Ø250 | SN4 | 221 | 1.2 | 0.8 | 30.1 | 6.5 | 1.6 |
| | SN8 | 220 | 1.5 | 1 | 30.1 | 6.5 | 2.2 |
| Ø315 | SN4 | 272 | 1.6 | 0.7 | 35 | 8.8 | 2 |
| | SN8 | 270 | 2 | 1.2 | 35 | 8.8 | 3.1 |
| Ø400 | SN4 | 345 | 1.8 | 1.3 | 49 | 11.7 | 2 |
| | SN8 | 343 | 2 | 1.5 | 49 | 11.7 | 3.5 |
| Ø500 | SN4 | 430 | 1.8 | 1.7 | 58 | 19.4 | 3.8 |
| | SN8 | 428 | 2 | 1.8 | 58 | 19.4 | 5.2 |
| Ø630 | SN4 | 547 | 2 | 2.1 | 71.2 | 25 | 5.4 |
| | SN8 | 545 | 2.3 | 2.3 | 71.2 | 25 | 6.3 |

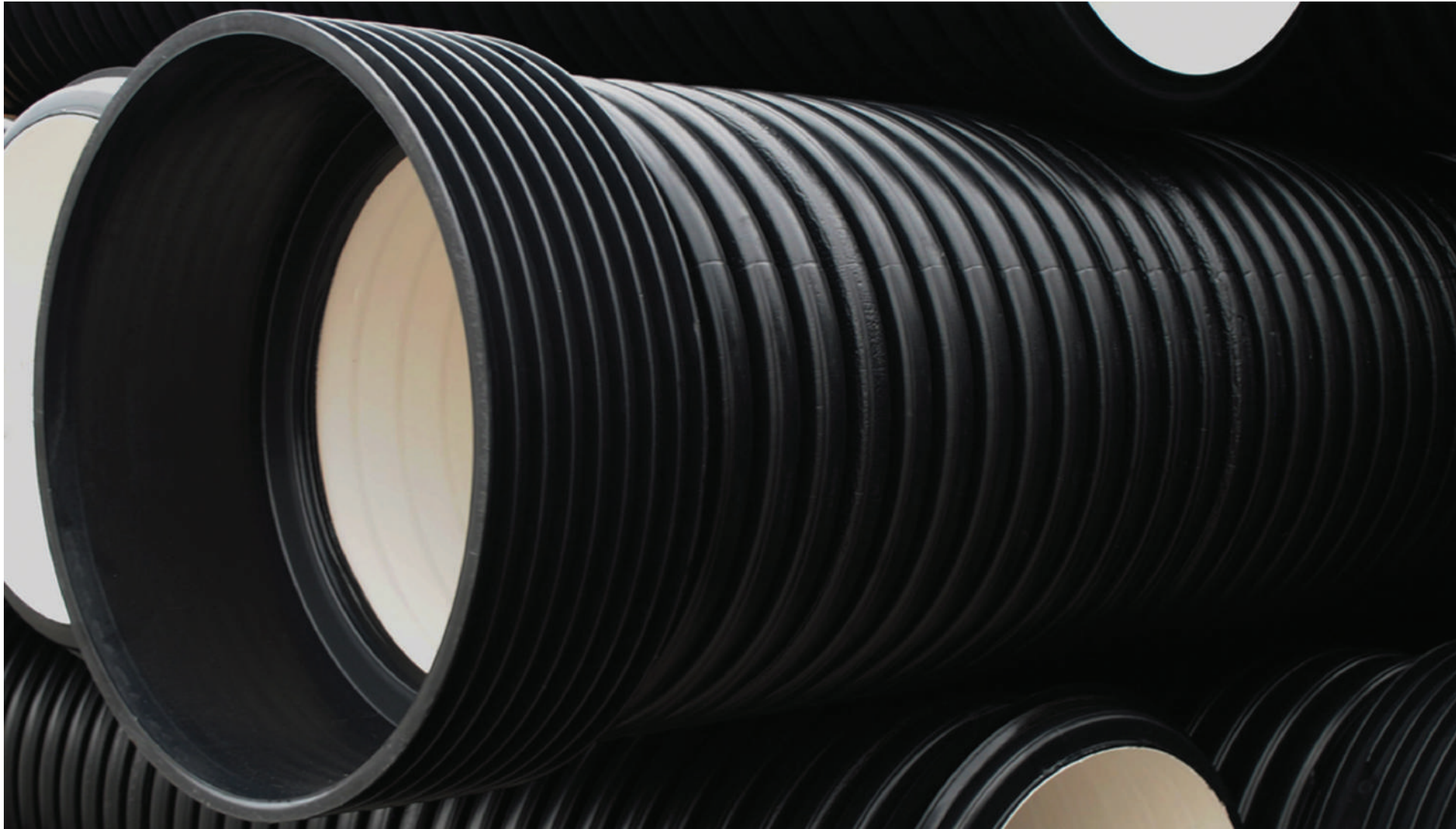
* The values in the table are mean values measured during continuous product quality control over a long period of time

CONNECTING METHODS

The pipes are produced in accordance with SRPS-EN13476 and EN1440

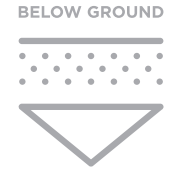
Connecting with angle fitting, connecting many pipelines with T branches and connecting over the saddle after grip (SAG).





HDPE CORRUGATED ID PIPES

For domestic & street sewage systems

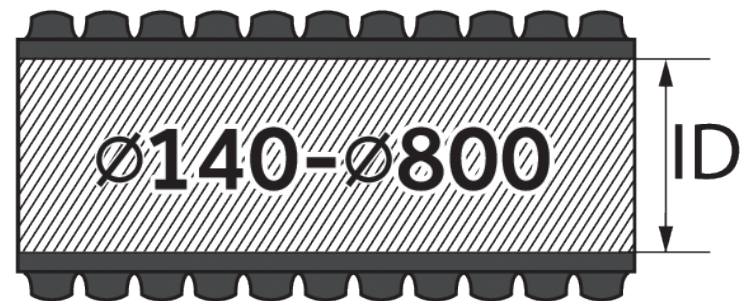


HDPE CORRUGATED PIPES FOR SEWERAGE SYSTEM

Connection method is via the socket with rubber which is inserted into the third channel of corrugated pipe between the ribs and the lubricated socket is pulled over the rubber on tube. Pipes can be shortened by ordinary knife or saw, and all the pieces of pipe can be used as extensions.

HDPE pipes are lighter than PVC pipes for the same purpose, allowing easier handling and installation, and they have excellent chemical resistance to aggressive environment and the surrounding soil. Laying and using of HDPE pipelines is between -40 °C to +60 °C. The smooth inner surface has a low coefficient of friction so the pipes have very good hydraulic characteristics. They have excellent resistance to abrasion and excellent mechanical and physical properties.

Pipes are resistant to UV rays, and can stand in the open for an year. Beyond that period they should be protected. During transportation and installation, protection must be ensured by keeping the pipes away from sharp edges because they can damage the pipe while they are very resistant to the impacts with a blunt object. The pipes are certified by the Institute for Materials of Republic of Serbia.



FEATURES AND SPECIFICATIONS

- Material: PE-HD (polyethylene high-density)
- Pipes can be embed at a depth of at least 0.8 m to 8m max. Concrete protection is required above 0.8 m
- Quick and cheap installation
- Ring stiffness SN=4 KN/m² and SN=8 KN/m²
- Standard lenght is 6 or 12 m, or coil 50 + 100 m
- Standard color is black and can be different by demand
- Standard packing:
Ø110-Ø200 Bar 6 and 12 m, or coil 50 i 100 m Ø250-Ø315 bar 6 and 12 m

INSTALLATION

INSTALLATION OF PIPES

The pipes must be professionally installed respecting the appropriate guidelines specified by standard 1610 and DIN4033, which means that in an area of the pipeline from the bottom of the trench to at least 30 cm above the vertex, following compression values should be achieved.

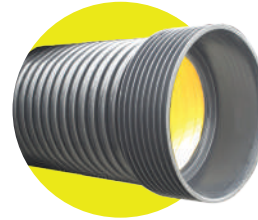
ACCORDING TO PROCTOR:

- All values should be proven during operation
- 97% density of shoveled land for non-bonding soil
- 95% density of unshoveled land for bonding soil

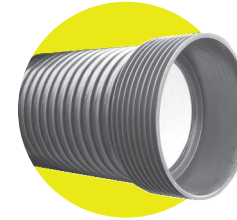
DN /ID (nominal diameter is inside diameter) double layer corrugated HDPE pipes are classified by the inner diameter of the pipe.

They are made without integrated socket, and connection is achieved through the sockets made of the same material.

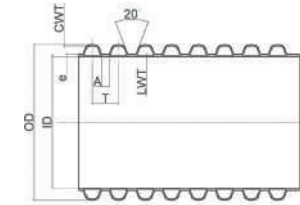
Range of production is from Ø140-Ø800 with ring stiffness of sn4 and sn8, and even stronger by special order.



ID SN4



ID SN8

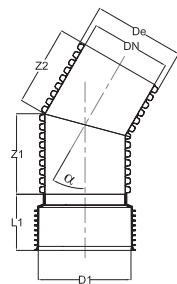


| DN | | OD (mm) | ID (mm) | CWT | LWT | T | A | e |
|------|-----|---------|---------|-----|-----|------|------|-----|
| Ø140 | SN4 | 160.5 | 140 | 0.7 | 0.7 | 17.4 | 3.5 | 1.1 |
| | SN8 | 160 | 139 | 0.7 | 0.8 | 17.4 | 3.5 | 1.1 |
| Ø200 | SN4 | 228 | 199 | 0.9 | 0.7 | 22 | 4.2 | 1.9 |
| | SN8 | 228.5 | 200 | 1 | 1.1 | 22 | 4.2 | 2 |
| Ø250 | SN4 | 284 | 249 | 1 | 0.6 | 26 | 4.5 | 2.2 |
| | SN8 | 283 | 248 | 1.2 | 1.4 | 26 | 4.5 | 2.3 |
| Ø300 | SN4 | 341 | 300 | 1.7 | 1.3 | 34.6 | 6.8 | 2.5 |
| | SN8 | 342 | 303 | 1.9 | 1.5 | 34.6 | 6.8 | 2.8 |
| Ø400 | SN4 | 455 | 400 | 1.8 | 1.2 | 50.8 | 11.9 | 3 |
| | SN8 | 454.5 | 401 | 2.1 | 2 | 50.8 | 11.9 | 3.2 |
| Ø500 | SN4 | 571 | 503 | 2 | 1.5 | 59 | 11 | 3.6 |
| | SN8 | 570 | 501 | 2.2 | 1.7 | 59 | 11 | 4.1 |
| Ø600 | SN4 | 686 | 607 | 2.4 | 2.5 | 70 | 14 | 3.7 |
| | SN8 | 685 | 607 | 2.7 | 2.7 | 70 | 14 | 4.5 |
| Ø800 | SN4 | 907 | 802 | 3.3 | 3 | 88.7 | 34.5 | 5.6 |
| | SN8 | 906 | 800 | 3.6 | 3.5 | 88.7 | 34.5 | 6.8 |

* The values in the table are mean values measured during continuous product quality control over a long period of time

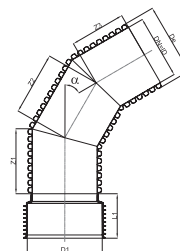
COUPLING ELEMENTS AND FITTINGS

An integral part of any piping system are the various joints, branches and manholes. Peštan products and the entire program of coupling elements and fittings. These include: Branches, Bends, Reducers, Drain manholes, End caps, Couplings.



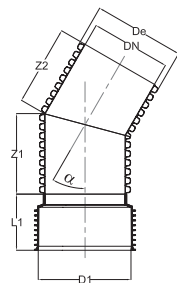
BEND 30°

| DN | DE | D1 | α | L1 | Z1 | Z2 |
|-----|-----|-----|----------|-----|-----|-----|
| 140 | 160 | 162 | 30° | 95 | 180 | 165 |
| 200 | 227 | 230 | 30° | 140 | 200 | 180 |
| 250 | 283 | 286 | 30° | 170 | 235 | 210 |
| 300 | 340 | 346 | 30° | 180 | 280 | 250 |
| 400 | 453 | 458 | 30° | 230 | 355 | 315 |
| 500 | 567 | 575 | 30° | 255 | 475 | 425 |
| 600 | 680 | 686 | 30° | 300 | 595 | 525 |



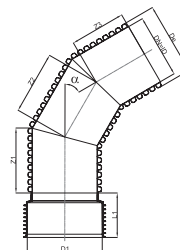
BEND 60°

| DN | DE | D1 | α | L1 | Z1 | Z2 | Z3 |
|-----|-----|-----|----------|-----|-----|-----|-----|
| 140 | 160 | 162 | 60° | 95 | 165 | 210 | 165 |
| 200 | 227 | 230 | 60° | 140 | 180 | 225 | 180 |
| 250 | 283 | 286 | 60° | 170 | 210 | 235 | 210 |
| 300 | 340 | 346 | 60° | 180 | 250 | 285 | 250 |
| 400 | 453 | 458 | 60° | 230 | 315 | 350 | 315 |
| 500 | 567 | 575 | 60° | 255 | 420 | 475 | 420 |
| 600 | 680 | 686 | 60° | 300 | 525 | 595 | 525 |



BEND 45°

| DN | DE | D1 | α | L1 | Z1 | Z2 |
|-----|-----|-----|----------|-----|-----|-----|
| 140 | 160 | 162 | 45° | 95 | 210 | 210 |
| 200 | 227 | 230 | 45° | 140 | 225 | 225 |
| 250 | 283 | 286 | 45° | 170 | 260 | 260 |
| 300 | 340 | 346 | 45° | 180 | 315 | 315 |
| 400 | 453 | 458 | 45° | 230 | 395 | 395 |
| 500 | 567 | 575 | 45° | 255 | 530 | 530 |
| 600 | 680 | 686 | 45° | 300 | 660 | 660 |

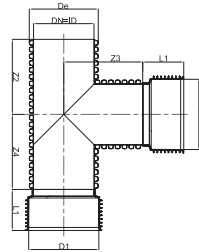


BEND 90°

| DN | DE | D1 | α | L1 | Z1 | Z2 | Z3 |
|-----|-----|-----|----------|-----|-----|-----|-----|
| 140 | 160 | 162 | 90° | 95 | 165 | 210 | 165 |
| 200 | 227 | 230 | 90° | 140 | 180 | 225 | 180 |
| 250 | 283 | 286 | 90° | 170 | 210 | 260 | 210 |
| 300 | 340 | 346 | 90° | 180 | 250 | 315 | 250 |
| 400 | 453 | 458 | 90° | 230 | 315 | 390 | 315 |
| 500 | 567 | 575 | 90° | 255 | 425 | 530 | 425 |
| 600 | 680 | 686 | 90° | 300 | 525 | 660 | 525 |

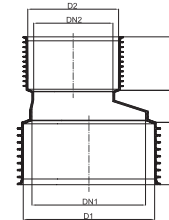
TEE

| DN | DE | D1 | L1 | Z2 | Z3 | Z4 |
|-----|-----|-----|-----|-----|-----|-----|
| 140 | 160 | 162 | 91 | 220 | 215 | 220 |
| 200 | 227 | 230 | 140 | 245 | 245 | 245 |
| 250 | 283 | 286 | 168 | 285 | 300 | 285 |
| 300 | 340 | 344 | 182 | 345 | 360 | 345 |
| 400 | 453 | 458 | 235 | 430 | 460 | 430 |
| 500 | 567 | 574 | 299 | 580 | 600 | 580 |
| 600 | 680 | 686 | 310 | 725 | 735 | 725 |



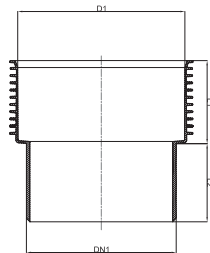
EXCENTRIC REDUCER

| DN1 | DN2 | D1 | D2 | Z1 | L1 | L2 |
|-----|-----|-----|-----|-----|-----|-----|
| 200 | 140 | 230 | 160 | 58 | 115 | 91 |
| 250 | 200 | 286 | 230 | 129 | 145 | 110 |
| 300 | 250 | 344 | 286 | 136 | 153 | 137 |
| 400 | 300 | 458 | 344 | 146 | 200 | 150 |
| 500 | 400 | 574 | 458 | 159 | 262 | 200 |
| 600 | 500 | 686 | 574 | 171 | 270 | 262 |



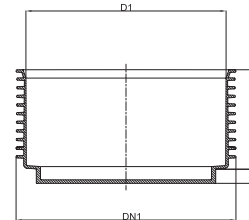
TRANSITION FROM CORRUGATED TO SMOOTH PIPE

| DN | DN1 | D1 | L1 | L2 |
|-----|-----|-----|-----|-----|
| 140 | 160 | 162 | 90 | 90 |
| 200 | 200 | 230 | 115 | 120 |
| 250 | 250 | 286 | 145 | 143 |
| 300 | 315 | 346 | 153 | 155 |
| 400 | 400 | 459 | 235 | 200 |



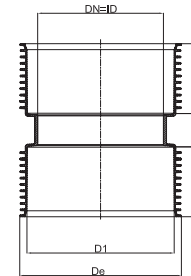
END CAP

| DN | DN1 | D1 | L1 | L2 |
|-----|-----|-----|-----|------|
| 140 | 176 | 162 | 90 | 25,5 |
| 200 | 230 | 200 | 115 | 30 |
| 250 | 286 | 250 | 145 | 31 |
| 300 | 346 | 300 | 153 | 32 |
| 400 | 459 | 400 | 235 | 35 |
| 500 | 624 | 574 | 262 | 37 |
| 600 | 748 | 686 | 270 | 40 |



DOUBLE MUFF

| DN | DE | D1 | L1 | Z1 |
|-----|-----|-----|-----|----|
| 140 | 176 | 162 | 90 | 51 |
| 200 | 252 | 230 | 115 | 60 |
| 250 | 312 | 286 | 145 | 62 |
| 300 | 375 | 346 | 153 | 64 |
| 400 | 498 | 459 | 200 | 70 |
| 500 | 624 | 575 | 262 | 74 |
| 600 | 748 | 690 | 270 | 80 |
| 800 | 960 | 919 | 325 | 90 |

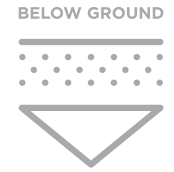






HDPE CORRUGATED OD PIPES

For street sewage systems



HDPE CORRUGATED PIPES FOR SEWERAGE SYSTEM

Connection method is via the socket with rubber which is inserted into the third channel of corrugated pipe between the ribs and the lubricated socket is pulled over the rubber on tube. Pipes can be shortened by ordinary knife or saw, and all the pieces of pipe can be used as extensions.

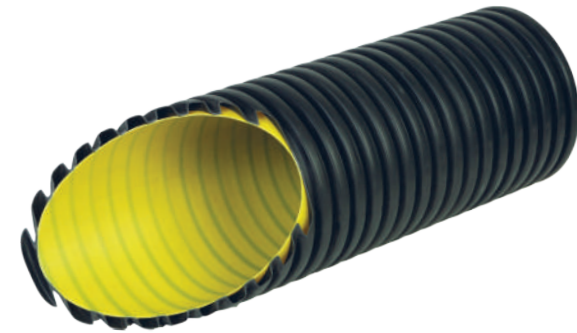
HDPE pipes are lighter than PVC pipes for the same purpose, allowing easier handling and installation, and they have excellent chemical resistance to aggressive environment and the surrounding soil. Laying and using of HDPE pipelines is between -40°C to $+60^{\circ}\text{C}$. The smooth inner surface has a low coefficient of friction so the pipes have very good hydraulic characteristics. They have excellent resistance to abrasion and excellent mechanical and physical properties.

Pipes are resistant to UV rays, and can stand in the open for an year. Beyond that period they should be protected. During transportation and installation, protection must be ensured by keeping the pipes away from sharp edges because they can damage the pipe while they are very resistant to the impacts with a blunt object. The pipes are certified by the Institute for Materials of Republic of Serbia.



FEATURES AND SPECIFICATIONS

- Material: PE-HD (polyethylene high-density)
- Pipes can be embed at a depth of at least 0.8 m to 8 m max. Concrete protection is required above 0.8 m
- Quick and cheap installation
- Ring stiffness SN = 4 KN/m² and SN = 8 KN/m²
- Standard lenght is 6 or 12 m, or coil 50 + 100 m
- Standard color is black and can be different by demand
- Standard packing:
Ø110-Ø200 Bar 6 and 12 m, or coil 50 i 100 m Ø250-Ø315 bar 6 and 12 m



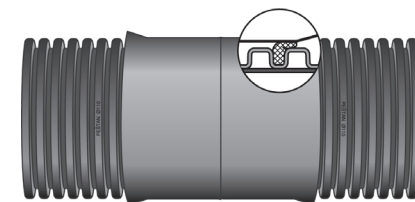
PACKAGING AND INSTALLATION

INSTALLATION OF PIPES

The pipes must be professionally installed respecting the appropriate guidelines specified by standard 1610 and DIN4033, which means that in an area of the pipeline from the bottom of the trench to at least 30 cm above the vertex, following compression values should be achieved.

ACCORDING TO PROCTOR:

- All values should be proven during operation
- 97% density of shoveled land for non-bonding soil
- 95% density of unshoveled land for bonding soil

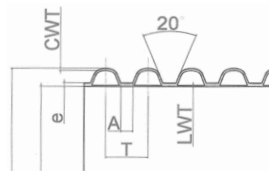


CONNECTING THE PIPE
WITH THE SOCKET

HDPE corrugated pipes defined by the outer diameter (DN/OD) DN/OD (nominal diameter is outside diameter) double layer corrugated HDPE pipes are classified by the outer diameter of the pipe.

They are made without integrated socket, and connection is achieved through the sockets made of the same material.

Range of production is from Ø140-Ø500 with ring stiffness of SN4 and SN8, and even stronger by special order.



OD SN4



OD SN8

| DN | | OD (mm) | ID (mm) | CWT | LWT | T | A | e |
|------|-----|---------|---------|-----|-----|------|------|-----|
| Ø140 | SN4 | 160.5 | 140 | 0.7 | 0.7 | 17.4 | 3.5 | 11 |
| | SN8 | 160 | 139 | 0.7 | 0.8 | 17.4 | 3.5 | 11 |
| Ø200 | SN4 | 228 | 199 | 0.9 | 0.7 | 22 | 4.2 | 19 |
| | SN8 | 228.5 | 200 | 1 | 1.1 | 22 | 4.2 | 2 |
| Ø250 | SN4 | 284 | 249 | 1 | 0.6 | 26 | 4.5 | 2.2 |
| | SN8 | 283 | 248 | 1.2 | 1.4 | 26 | 4.5 | 2.3 |
| Ø300 | SN4 | 341 | 300 | 1.7 | 1.3 | 34.6 | 6.8 | 2.5 |
| | SN8 | 342 | 303 | 1.9 | 1.5 | 34.6 | 6.8 | 2.8 |
| Ø400 | SN4 | 455 | 400 | 1.8 | 1.2 | 50.8 | 11.9 | 3 |
| | SN8 | 454.5 | 401 | 2.1 | 2 | 50.8 | 11.9 | 3.2 |
| Ø500 | SN4 | 571 | 503 | 2 | 1.5 | 59 | 11 | 3.6 |
| | SN8 | 570 | 501 | 2.2 | 1.7 | 59 | 11 | 4.1 |
| Ø600 | SN4 | 686 | 607 | 2.4 | 2.5 | 70 | 14 | 3.7 |
| | SN8 | 685 | 607 | 2.7 | 2.7 | 70 | 14 | 4.5 |
| Ø800 | SN4 | 907 | 802 | 3.3 | 3 | 88.7 | 34.5 | 5.6 |
| | SN8 | 906 | 800 | 3.6 | 3.5 | 88.7 | 34.5 | 6.8 |

* The values in the table are mean values measured during continuous product quality control over a long period of time





PP STRONG

Compact high strenght Polypropylene pipes



PP STRONG pipes and fittings

Peštan PP Strong pipes and fittings are produced of PP material by the newest technology of pipe extrusion and fitting injection. PP STRONG pipe system for all kinds of waste water is made as homogeneous fully-walled pipe without mineral additives with extremely smooth inner surface according to EN 1852.

Both pipe and fitting in the PP STRONG range are intended for areas with great static pressure, such as airports, highways and railroads. PP STRONG system is universal and can be used for removing all types of waste waters in low construction.

Installation and manipulation of the pipeline elements is very simple and is described in the following chapters of this technical manual. Pipes are connected with fittings, while the waterproofing in connections is provided by rubber rings (safety lock) made of EPDM rubber with plastic reinforcement. Inner layer of PP STRONG pipe is very smooth, which results with excellent hydraulic characteristics, high resistance to abrasion, and preventing subsidence on inner layer of the pipe.

PP STRONG pipes are resistant to corrosion and their life span is 50 years if used properly.

PP STRONG pipes are resistant to corrosion and their life span is 50 years if used properly.

Pipes and fitting have excellent thermal stability and are resistant to:

- Short term exposure up to 90 °C
- Continuous thermal exposure up to 60 °C

Chemical resistance of PP STRONG:

Salt water, alcohol, acids, alkali, sulphates, aggressive gases and all kinds of detergents. They are well suited for drainage of aggressive chemical wastes, Ph values between 2 and 12.

PP STRONG is sensitive to waste waters that contain high percentage of gasoline, benzene and acetone. For detailed chemical resistance of pipeline please consult the table on our web page.

Fittings are 100% resistant to leaking up to the pressure of 0.5bar with usage of classic rubber ring of EPDM rubber. While using the special safety lock rubber with plastic reinforcement, leaking resistance goes up to 2bar short term.

Pipes aren't intended for outside appliance because of the instability to UV radiation. PP STRONG is intended for underground appliance and under great loads.

Do not install the pipeline in temperature below -10 °C.

PP STRONG goes under the B2 class of fire stability by standard DIN 4102, they belong to the group of normal burning materials.

CHARACTERISTICS:

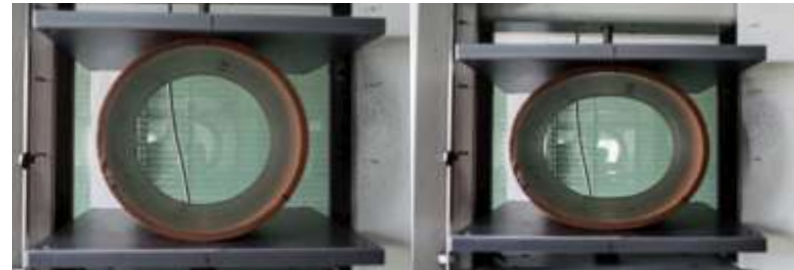
- Absolute impermeability
- Minimal wasting
- Stable functioning during the whole life span of the pipe
- Higher ring stiffness
- Higher longitudinal rigidity
- Available pipe with coupling or with integrated socket
- High ring flexibility

ADVANTAGES:

- Wide range of fittings
- Great resistance to static and dynamic pressures
- Great resistance to work damage
- High impact resistance
- Without mineral additives
- Stability to chemical and thermal pressure
- Very tight lock in connections
- Very long term life

FIELDS OF APPLIANCE:

- Communal drainage
 - New buildings or replacements of old sewage
- Chemical and machine industry
 - Excellent chemical stability (ph 2-12)
- Food industry
 - Great stability to temperatures and cycle work resistance
 - Stability to cleaning products
- Roads
 - Great resistance to static and dynamic loads and pressures



Pipes withstand deformations up to 30% to inner diameter. According to EN ISO 13968



BENOR

· INSTA-CERT ·

PP STRONG pipes

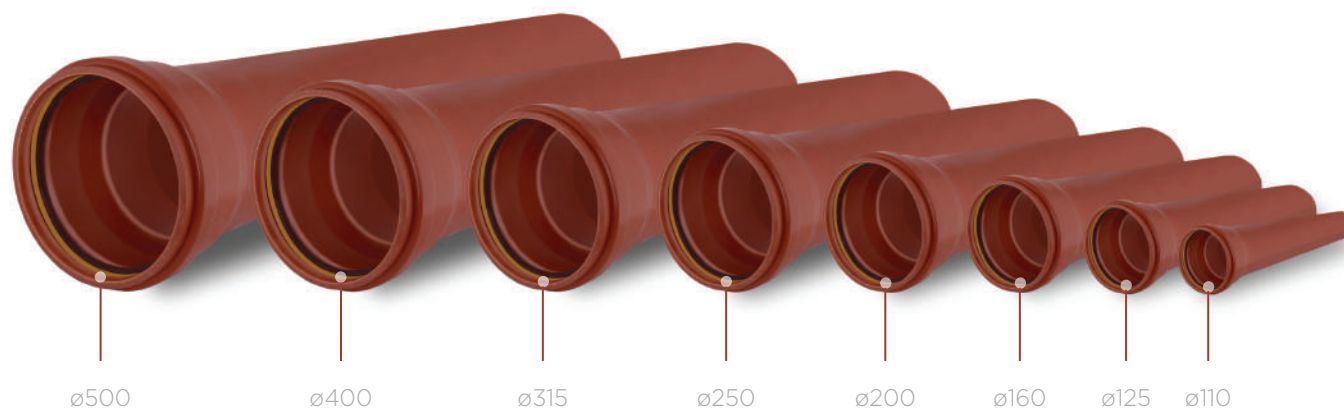
Peštan PP STRONG pipes and fittings are produced in:

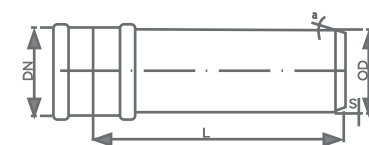
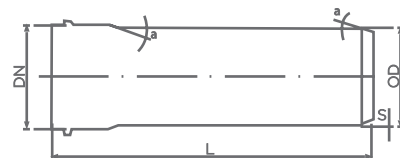
- Diameters Ø110 to Ø500
- Ring stiffnesses SN4, SN8, SN10, SN12, SN16 in accordance EN1852

PP STRONG pipes are produced in standard lengths 1 - 6m.

PP STRONG in classes SN4, SN8 SN10 and SN12 are produced with socket, while class SN16 are produced with integrated coupling.

PP STRONG coupling stiffness class is SN16 and as such resistant to big static pressures.

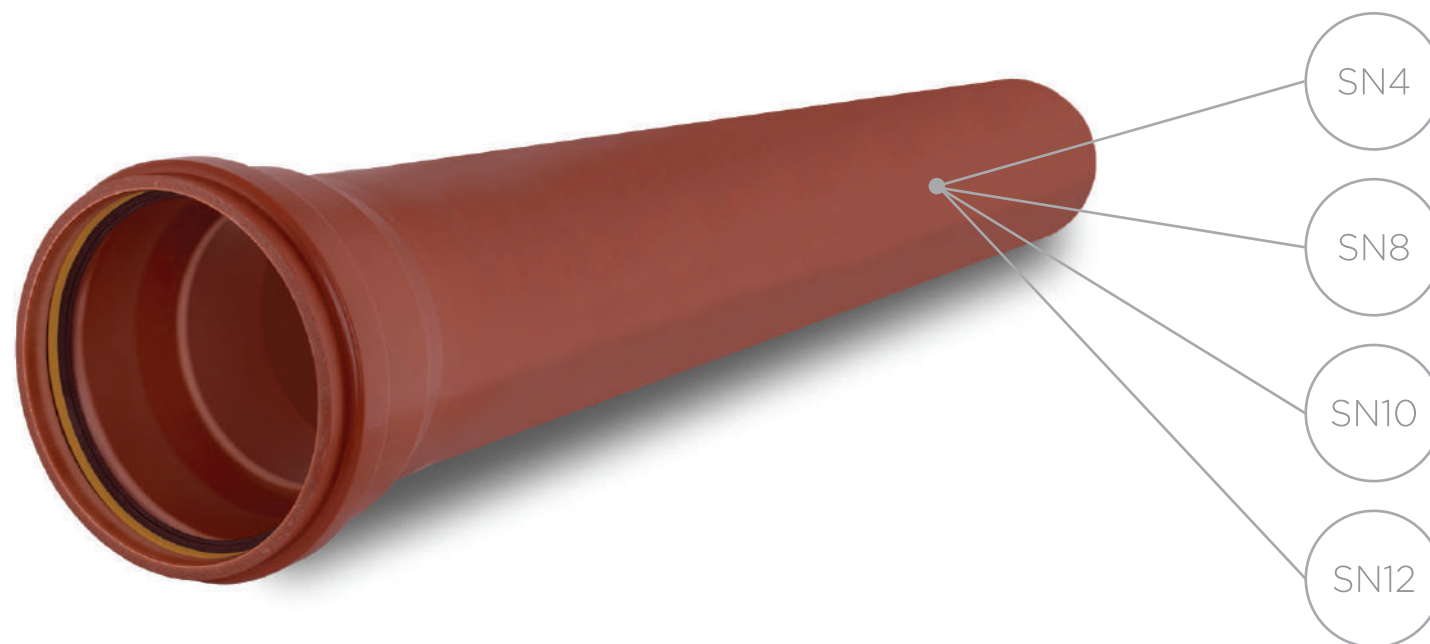




| SN 4 | | | SN 8 | | | SN 10 | | | SN 12 | | | SN 16 | | |
|---------|--------|--------|---------|--------|--------|---------|--------|--------|---------|--------|--------|---------|--------|--------|
| DN [mm] | S [mm] | L [mm] | DN [mm] | S [mm] | L [mm] | DN [mm] | S [mm] | L [mm] | DN [mm] | S [mm] | L [mm] | DN [mm] | S [mm] | L [mm] |
| 110 | 3,4 | 1000 | 110 | 3,8 | 1000 | 110 | 4,2 | 1000 | 110 | 4,5 | 1000 | 110 | 5 | 1000 |
| | | 3000 | | | 3000 | | | 3000 | | | 3000 | | | 3000 |
| | | 6000 | | | 6000 | | | 6000 | | | 6000 | | | 6000 |
| 125 | 3,9 | 1000 | 125 | 4,3 | 1000 | 125 | 4,8 | 1000 | 125 | 5,1 | 1000 | 125 | 5,7 | 1000 |
| | | 3000 | | | 3000 | | | 3000 | | | 3000 | | | 3000 |
| | | 6000 | | | 6000 | | | 6000 | | | 6000 | | | 6000 |
| 160 | 4,9 | 1000 | 160 | 5,5 | 1000 | 160 | 6,2 | 1000 | 160 | 6,5 | 1000 | 160 | 7,3 | 1000 |
| | | 3000 | | | 3000 | | | 3000 | | | 3000 | | | 3000 |
| | | 6000 | | | 6000 | | | 6000 | | | 6000 | | | 6000 |
| 200 | 6,2 | 1000 | 200 | 6,9 | 1000 | 200 | 7,7 | 1000 | 200 | 8,1 | 1000 | 200 | 9,1 | 1000 |
| | | 3000 | | | 3000 | | | 3000 | | | 3000 | | | 3000 |
| | | 6000 | | | 6000 | | | 6000 | | | 6000 | | | 6000 |
| 250 | 7,7 | 1000 | 250 | 8,6 | 1000 | 250 | 9,6 | 1000 | 250 | 10,2 | 1000 | 250 | 11,4 | 1000 |
| | | 3000 | | | 3000 | | | 3000 | | | 3000 | | | 3000 |
| | | 6000 | | | 6000 | | | 6000 | | | 6000 | | | 6000 |
| 315 | 9,7 | 1000 | 315 | 10,8 | 1000 | 315 | 12,1 | 1000 | 315 | 12,8 | 1000 | 315 | 14,4 | 1000 |
| | | 3000 | | | 3000 | | | 3000 | | | 3000 | | | 3000 |
| | | 6000 | | | 6000 | | | 6000 | | | 6000 | | | 6000 |
| 400 | 12,3 | 1000 | 400 | 13,7 | 1000 | 400 | 15,4 | 1000 | 400 | 16,3 | 1000 | 400 | 18,2 | 1000 |
| | | 3000 | | | 3000 | | | 3000 | | | 3000 | | | 3000 |
| | | 6000 | | | 6000 | | | 6000 | | | 6000 | | | 6000 |
| 500 | 15,3 | 1000 | 500 | 17,1 | 1000 | 500 | 19,2 | 1000 | 500 | 20,3 | 1000 | 500 | 22,8 | 1000 |
| | | 3000 | | | 3000 | | | 3000 | | | 3000 | | | 3000 |
| | | 6000 | | | 6000 | | | 6000 | | | 6000 | | | 6000 |

PP STRONG pipes with integrated socket

The tubes are produced in ring stiffness of: SN4, SN8, SN10, SN12.

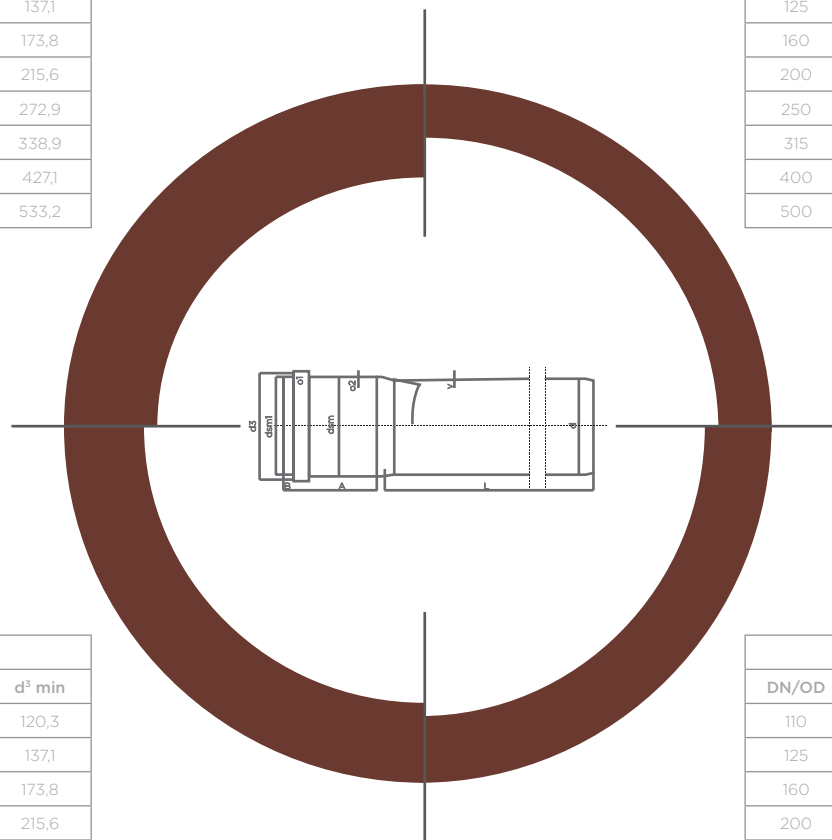


PIPE MARKING

EAN, Peštan logo, PP DN_OD SDR EN1852 SN PP Strong CT UD www.pestan.net SRB date time *

| SDR 20,6 SN12 | | | | |
|---------------|-------|-------|-------|--------------------|
| DN/OD | e min | A min | B min | d ³ min |
| 110 | 4,5 | 40 | 6 | 120,3 |
| 125 | 5,1 | 43 | 7 | 137,1 |
| 160 | 6,5 | 50 | 9 | 173,8 |
| 200 | 8,1 | 58 | 12 | 215,6 |
| 250 | 10,2 | 68 | 18 | 272,9 |
| 315 | 12,8 | 81 | 20 | 338,9 |
| 400 | 16,3 | 98 | 24 | 427,1 |
| 500 | 20,3 | 118 | 28 | 533,2 |

| SDR 33 SN 4 | | | | |
|-------------|-------|-------|-------|--------------------|
| DN/OD | e min | A min | B min | d ³ min |
| 110 | 3,4 | 40 | 6 | 120,3 |
| 125 | 3,9 | 43 | 7 | 137,1 |
| 160 | 4,9 | 50 | 9 | 173,8 |
| 200 | 6,2 | 58 | 12 | 215,6 |
| 250 | 7,7 | 68 | 18 | 272,9 |
| 315 | 9,7 | 81 | 20 | 338,9 |
| 400 | 12,3 | 98 | 24 | 427,1 |
| 500 | 15,3 | 118 | 28 | 533,2 |

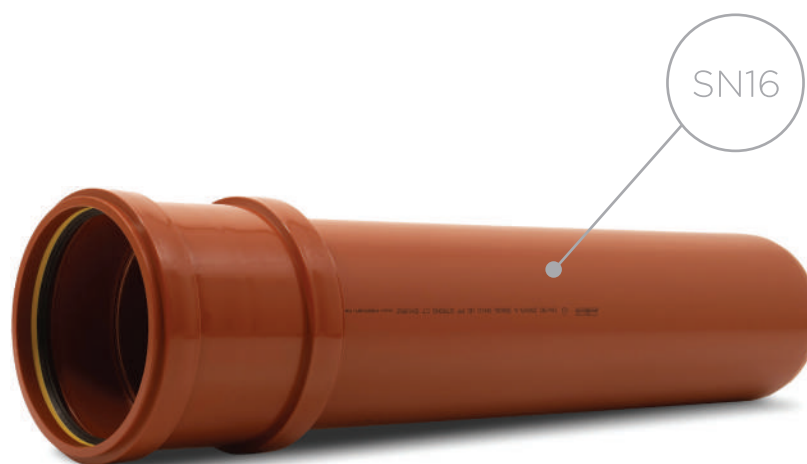


| SDR 33 SN 4 | | | | |
|-------------|-------|-------|-------|--------------------|
| DN/OD | e min | A min | B min | d ³ min |
| 110 | 4,2 | 40 | 6 | 120,3 |
| 125 | 4,8 | 43 | 7 | 137,1 |
| 160 | 6,2 | 50 | 9 | 173,8 |
| 200 | 7,7 | 58 | 12 | 215,6 |
| 250 | 9,6 | 68 | 18 | 272,9 |
| 315 | 12,1 | 81 | 20 | 338,9 |
| 400 | 15,4 | 98 | 24 | 427,1 |
| 500 | 19,2 | 118 | 28 | 533,2 |

| SDR 33 SN 4 | | | | |
|-------------|-------|-------|-------|--------------------|
| DN/OD | e min | A min | B min | d ³ min |
| 110 | 3,8 | 40 | 6 | 120,3 |
| 125 | 4,3 | 43 | 7 | 137,1 |
| 160 | 5,5 | 50 | 9 | 173,8 |
| 200 | 6,9 | 58 | 12 | 215,6 |
| 250 | 8,6 | 68 | 18 | 272,9 |
| 315 | 10,8 | 81 | 20 | 338,9 |
| 400 | 13,7 | 98 | 24 | 427,1 |
| 500 | 17,1 | 118 | 28 | 533,2 |

PP STRONG pipes with coupling

The tube is produced in ring stiffness of: SN16



| SDR 22 SN 16 | | | | |
|--------------|-------|-------|-------|--------------------|
| DN/OD | e min | A min | B min | d ³ min |
| 110 | 5 | 40 | 6 | 120,3 |
| 125 | 5,7 | 43 | 7 | 137,1 |
| 160 | 7,3 | 50 | 9 | 173,8 |
| 200 | 9,1 | 58 | 12 | 215,6 |
| 250 | 11,4 | 68 | 18 | 272,9 |
| 315 | 14,4 | 81 | 20 | 338,9 |
| 400 | 18,3 | 98 | 24 | 427,1 |
| 500 | 22,8 | 118 | 28 | 533,2 |

Class and pipe stiffness

| | | |
|--------|--------|----------|
| SN 4 | S 16 | SDR 33 |
| SN 8 S | 14 | SDR 29 |
| SN 10 | S 12,5 | SDR 26 |
| SN 12 | S 11,8 | SDR 24,6 |
| SN 16 | S 10,5 | SDR 22 |

| Material characteristics | Value | Standard |
|--|--|------------------------|
| Density | 900 kg/m ³ | ISO 1183 |
| MFR (230 °C/2,16 kg) | ≤1,5 g/10 min | ISO 1183 |
| Internal pressure test (80 °C, 4,2 MPa) | » 140 h | ISO 1167-1 |
| Internal pressure test (95 °C, 2,5 MPa) | » 1000 h | ISO 1167-2 |
| Rensile Strain at Yield (50 mm/min) | 6,5 %/33 MPa | ISO 527-1 ISO 527±2 |
| Charpy Impact Strength (23 °C/-20 °C) | 29/2 kJ/m ² | ISO 179/1 eA |
| Ring stiffness, SN | 4, 8, 10, 12, 16 | ISO 9969 |
| Chemical resistance | 2... 12 pH | ISO/TR 10 358 |
| Temperature resistance (short term/longterm) | 90/60 °C | |
| Temperature conductivity | 0,2 W/mK | DIN 52612 |
| Linear coefficient of stretching | 0,14 mm/Km | DIN 52328 |
| Module of elasticity | 2000 MPa | ISO 178 |
| Connection technique | Socket and rubber | |
| Rubber ring | Rubber ring with plastic strengthened in different color and with closing surfaces | |



PP STRONG fittings

Within the Peštan production program there is a complete fitting program made in diameters from Ø110 to Ø315 produced in ring stiffness of SN8 (S13.3) while fittings Ø110, Ø160, Ø200, Ø400 are produced in ring stiffness of SN4 (S16).

The couplings are produced in the class SN16 (S10.5) in all dimensions.



• INSTA-CERT •

BENOR

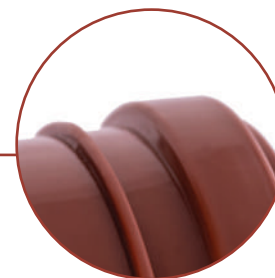




Rubber rings are made of EPDM rubber with plastic reinforcement



PP Strong fitting marking



Reinforced ribs for higher fitting strength

Fittings class according to EN 1852 standard

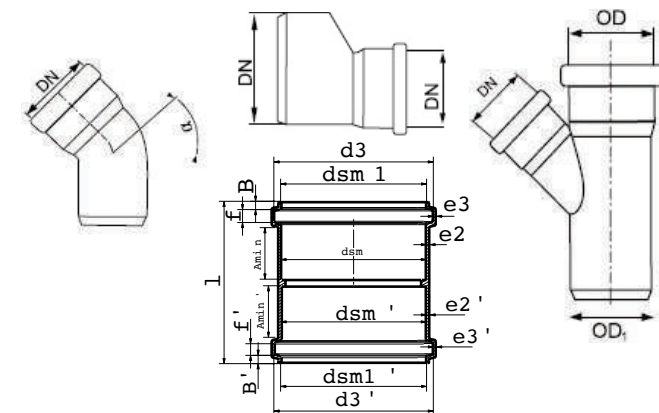
| DN/OD | Minimum wall thickness | | |
|---------------------------------------|------------------------|------------------------|----------------------------|
| | SN 2 S 20 SDR 41 | SN 4 S 16 SDR 33 | SN 8 S 13,3 SDR 27,6 |
| 110 | - | 3,4 | 4,0 |
| 125 | - | - | 4,6 |
| 160 | - | 4,9 | 5,8 |
| 200 | - | 5,2 | 7,3 |
| 250 | 6,2 | 7,7 | 9,1 |
| 315 | 7,7 | 9,7 | 11,4 |
| 400 | 9,8 | 12,3 | |
| Value e_{min} according to ISO 4065 | | | |




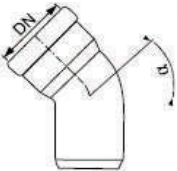
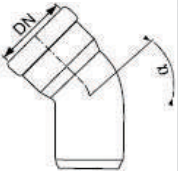
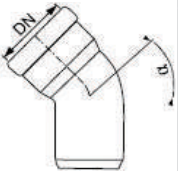
| EN 1852 (SDR 27,6) - SN8 | | | | | | | |
|--------------------------|--------|--------|--------|--------|--------|--------|--------|
| mm | DN 110 | DN 125 | DN 160 | DN 200 | DN 250 | DN 315 | DN 400 |
| Dem (mm) | 110,0 | 125,0 | 160,0 | 200,0 | 250 | 315,0 | 400,0 |
| e min (mm) | 4,0 | 4,6 | 5,8 | 7,3 | 9,1 | 11,4 | 14,5 |
| D3 min (mm) | 120,3 | 137,1 | 173,8 | 215,6 | 272,9 | 338,9 | 427,1 |
| B min (mm) | 6 | 7 | 9 | 12 | 18 | 20 | 24 |
| A min (mm) | 40 | 43 | 50 | 58 | 68 | 81 | 98 |
| L1 min (mm) | 62 | 68 | 82 | 98 | 118 | 144 | 178 |


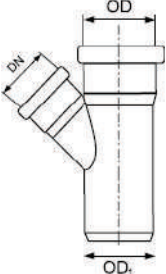
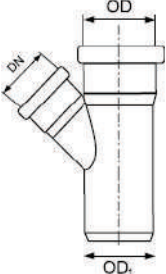
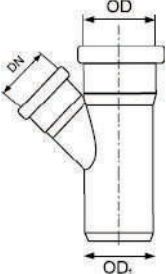
| EN 1852 (SDR 22) - SN 16 | | | | | | | | |
|--------------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| mm | DN 110 | DN 125 | DN 160 | DN 200 | DN 250 | DN 315 | DN 400 | DN 500 |
| Dem (mm) | 110,4 | 125,4 | 160,5 | 200,6 | 250,9 | 316,0 | 401,2 | 501,5 |
| e min (mm) | 4,5 | 5,2 | 6,6 | 8,2 | 10,3 | 11,3 | 16,4 | 16,4 |
| D3 min (mm) | 120,3 | 137,1 | 173,8 | 215,6 | 272,9 | 338,9 | 427,1 | 533,2 |
| B min (mm) | 6 | 7 | 9 | 12 | 18 | 20 | 24 | 28 |
| A min (mm) | 40 | 43 | 50 | 58 | 68 | 81 | 98 | 118 |


| SDR 33 S16 SN4 | | | | | | |
|----------------|-----------------------|--------------------|------------------|------------------|------------------|-------------------|
| DN/OD | dem | dsm _{min} | e _{min} | A _{min} | C _{max} | L1 _{min} |
| 110 | 110.0 ^{+0.4} | 110.4 | 3.4 | 40 | 22 | 62 |
| 160 | 160.0 ^{+0.5} | 160.5 | 4.9 | 50 | 32 | 82 |
| 200 | 200.0 ^{+0.5} | 200.6 | 6.2 | 58 | 40 | 98 |




| SDR 33 S16 SN4 | | | | | | |
|----------------|-----------------------|--------------------|------------------|------------------|------------------|-------------------|
| DN/OD | dem | dsm _{min} | e _{min} | A _{min} | C _{max} | L1 _{min} |
| 110 | 110.0 ^{+0.4} | 110.4 | 4.0 | 40 | 22 | 62 |
| 125 | 125.0 ^{+0.4} | 125.4 | 4.6 | 43 | 26 | 68 |
| 160 | 160.0 ^{+0.5} | 160.5 | 5.8 | 50 | 32 | 82 |
| 200 | 200.0 ^{+0.5} | 200.6 | 7.3 | 58 | 40 | 98 |
| 250 | 250.0 ^{+0.5} | 250.8 | 9.1 | 68 | 70 | 118 |
| 315 | 315.0 ^{+0.6} | 316.1 | 11.4 | 81 | 70 | 144 |
| 400 | 400.0 ^{+0.7} | 403.7 | 14.5 | 98 | 80 | 178 |
| 500 | 500.0 ^{+0.9} | 504.6 | 18.1 | 118 | 80 | 218 |

| PP STRONG BEND | | | | |
|--|---------|-----------|--------|------|
| | DN [mm] | ANGLE [°] | S 13,3 | S 16 |
|  | 110 | 15 | ✓ | ✓ |
| | | 30 | ✓ | ✓ |
| | | 45 | ✓ | ✓ |
| | | 67,5 | ✓ | — |
| | | 87,5 | ✓ | ✓ |
| | 125 | 15 | ✓ | — |
| | | 30 | ✓ | — |
| | | 45 | ✓ | — |
| | | 67,5 | ✓ | — |
| | | 87,5 | ✓ | — |
|  | 160 | 15 | ✓ | ✓ |
| | | 30 | ✓ | ✓ |
| | | 45 | ✓ | ✓ |
| | | 67,5 | ✓ | — |
| | | 87,5 | ✓ | ✓ |
| | 200 | 15 | ✓ | ✓ |
| | | 30 | ✓ | ✓ |
| | | 45 | ✓ | ✓ |
| | | 67,5 | ✓ | — |
| | | 87,5 | ✓ | ✓ |
|  | 250 | 15 | ✓ | — |
| | | 30 | ✓ | — |
| | | 45 | ✓ | — |
| | | 67,5 | ✓ | — |
| | | 87,5 | ✓ | — |
| | 315 | 15 | ✓ | — |
| | | 30 | ✓ | — |
| | | 45 | ✓ | — |
| | | 67,5 | ✓ | — |
| | | 87,5 | ✓ | — |
|  | 400 | 45 | ✓ | — |
| | | 87,5 | ✓ | — |

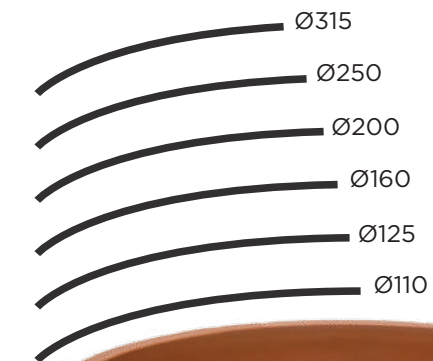
| PP STRONG BRANCH | | | | |
|---|----------|-----------|--------|------|
| | DN [mm] | ANGLE [°] | S 13,3 | S 16 |
|  | 110/ 110 | 45 | ✓ | ✓ |
| | | 87,5 | ✓ | ✓ |
| | 125/125 | 45 | ✓ | — |
| | | 87,5 | ✓ | — |
| | 160/110 | 45 | — | ✓ |
| | | 87,5 | — | ✓ |
| | 160/160 | 45 | ✓ | ✓ |
| | | 87,5 | ✓ | ✓ |
| | 200/160 | 45 | ✓ | ✓ |
| | | 87,5 | ✓ | ✓ |
|  | 200/200 | 45 | ✓ | ✓ |
| | | 87,5 | ✓ | ✓ |
| | 250/160 | 45 | ✓ | — |
| | | 87,5 | ✓ | — |
| | 250/200 | 45 | ✓ | — |
| | | 87,5 | ✓ | — |
| | 250/250 | 45 | ✓ | — |
| | | 87,5 | ✓ | — |
| | 315/160 | 45 | ✓ | — |
| | | 87,5 | ✓ | — |
|  | 315/200 | 45 | ✓ | — |
| | | 87,5 | ✓ | — |
| | 315/250 | 45 | ✓ | — |
| | | 87,5 | ✓ | — |
| | 315/315 | 45 | ✓ | — |
| | | 87,5 | ✓ | — |
|  | 400/160 | 45 | ✓ | — |
| | 400/200 | 45 | ✓ | — |

| PP STRONG DOUBLE SOCKET | | | |
|---|---------|--------|------|
| | DN [mm] | S 13,3 | S 16 |
|  | 110 | ✓ | ✓ |
| | 125 | ✓ | — |
| | 160 | ✓ | ✓ |
| | 200 | ✓ | — |
| | 250 | ✓ | — |
| | 315 | ✓ | — |
| | 400 | ✓ | — |
| | 500 | ✓ | — |

| PP STRONG SLEEVE SOCKET | | | |
|---|---------|--------|------|
| | DN [mm] | S 13,3 | S 16 |
|  | 110 | ✓ | ✓ |
| | 125 | ✓ | — |
| | 160 | ✓ | ✓ |
| | 200 | ✓ | — |
| | 250 | ✓ | — |
| | 315 | ✓ | — |
| | 400 | ✓ | — |
| | 500 | ✓ | — |

| PP STRONG REDUCTION | | | |
|---|---------|--------|------|
| | DN [mm] | S 13,3 | S 16 |
|  | 160/110 | — | ✓ |
| | 200/160 | ✓ | ✓ |
| | 250/200 | ✓ | — |
| | 315/250 | ✓ | — |
| | | | |

■ **KGF Flood gate
for manhole.
For smooth PP,
PVC and PE pipes.**
Class S13.3 SN8

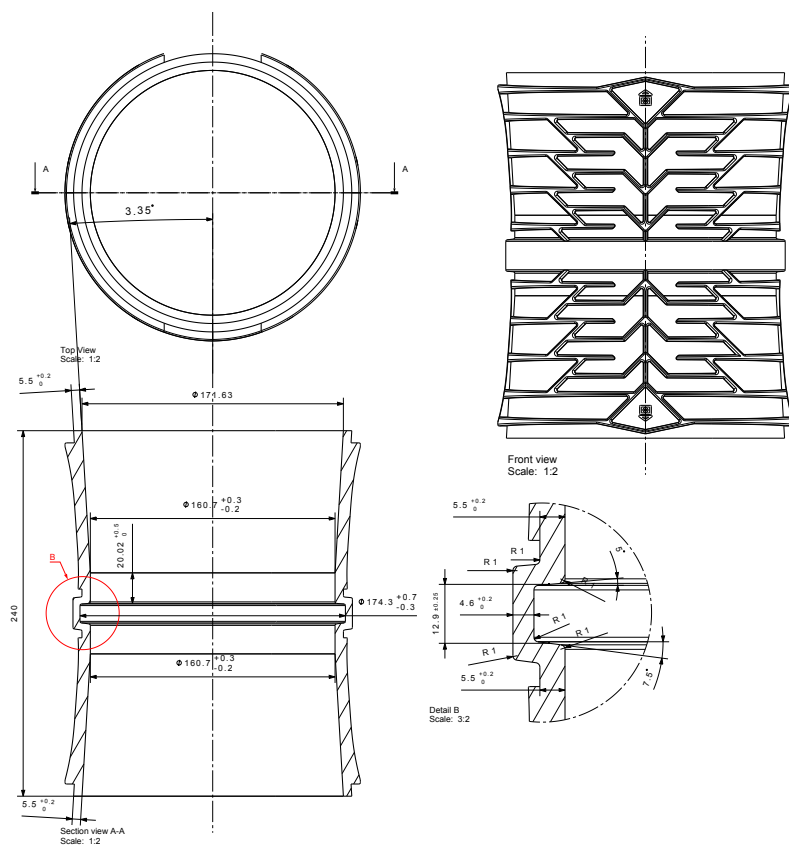


The ribs on the fitting
provide a connection
between the concrete
manhole and the KGF
element. →





| | |
|----------|----------------------------|
| 10203680 | PVC KGF FLOOD GATE ø110 |
| 10203681 | PVC KGF FLOOD GATE ø125 |
| 10203682 | PVC KGF FLOOD GATE ø160 |
| 10203683 | PVC KGF FLOOD GATE ø200 |
| 10203684 | PVC KGF FLOOD GATE ø250 |
| 10203685 | PVC KGF FLOOD GATE ø315 |
| 11502908 | KGF FLOOD GATE Ø400 WELDED |
| 11502909 | KGF FLOOD GATE Ø500 WELDED |



Internal slope 3%
(interior fitting) ➔



Packaging of pipes and fittings

Peštan PP Strong pipes and fittings are packaged in transport packages (unit and pallet) in a way favorable to customers. The packaging ensures the customer safety during storage and easy handling with the same. Pipes in lengths of 1m all up to 6m are packed in packages which, depending on the diameter and length, contain a certain number of pieces both in unit packaging and whole packages.



The look of packed package with 3 frames

Note:

For exact information on the dimensions of the package and the number of pieces on unit and transport package, contact Peštan on email: office@pestan.net



Standard packages of coupling elements (fittings) are in cardboard packaging in specified dimensions, which represent unit packages.

Transport and manipulation:

Peštan PP Strong pipes and all connecting elements should be transported with appropriate transport vehicles. The loading area of the transport vehicle must be solid, flat, without sharp protrusions and without any waste parts (both on the floor and on all sides of the inner part of the transport vehicle). The dimensions of the pallets and packages are such that the loading space of the vehicle is maximally filled.

When it comes to loading pipes outside the transport package, the pipes must rest on a flat surface with their entire length in order not to cause deformation of the pipes. The couplers must therefore be alternately rotated and pulled out for their entire length. This should primarily be taken into account with the pipe of large lengths, because for them improper handling it can come to bending at their ends.

When loading and unloading both pipes and fittings should be handled with care, they should not be thrown, pulled, pushed, especially on concrete and other rough surfaces.

Note:

When manipulating and transporting at the temperatures of less than 0 °C, be especially careful to avoid striking stresses in order to avoid mechanical damage to pipes and fittings.

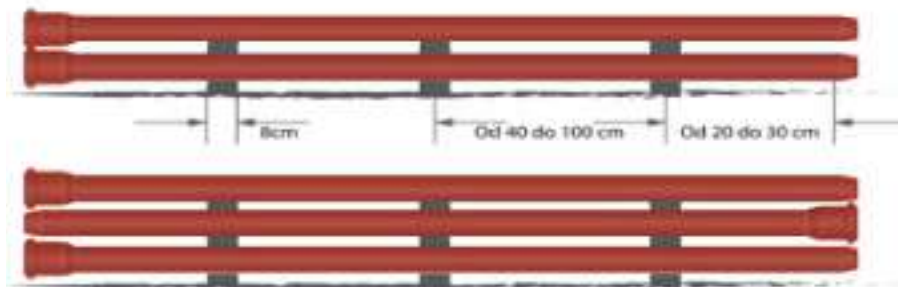
Storage:

Peštan Strong PP fittings, which are packed in a cardboard packaging, are stored exclusively indoors (preferably, one pallet - one pallet place). If there is no regal warehouse, it is recommended that this type of transport packaging is stored in a closed space on a flat surface and in one level (do not place a pallet on the pallet).

The transport packaging should be stored in a dry, clean and closed environment with temperatures between 10 and 30°C and a relative humidity between 50 and 60%. Packages should be protected from the direct influence of sunlight, moisture and heat. When the pipe warehouse outdoors they should be protected from direct influence of sunlight with UV protective foil or eaves.

Also, when storing, the pipes must not be stored near the heated surfaces and should be kept in mind not to come in contact with fuels, solvents.

Also, when storing pipes under the pipe, lay wooden billets so that the joints at the ends of the pipe do not rely on the surface and therefore deform.



Installation and connection

Peštan Strong PP pipes and fittings are installed in accordance with EN 1601 Gravity drainage system of street sewers.

If there is a specific regulation within certain countries which deviates from the above mentioned norms, be sure to consult Peštan technical support before installing the system.

introduction

The first step in the design of sewage systems is geotechnical investigations along the entire route of the pipeline, while the most important condition for achieving a satisfactory pipe installation systems interactions of the pipe and the surrounding soil. The greatest support for embedded pipes gives the soil around the lower half of the pipe in both directions. Therefore, it is very important what kind of soil is done by laying as well as a procedure that is done in the field of soil compaction around the pipe.

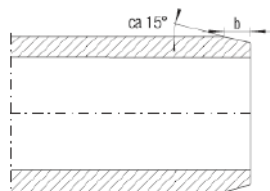
Cutting

Connection of the PP Strong sewage elements are interconnected with rubber sockets for the SN4, SN8, SN10 and SN12 pipes that provide a watertight base of elements, while in the pipe class SN16 pipes connect with other elements via the SN16 class coupling.

All pipes and fittings have a socket coupling in at least one end. Pipes can be cut either with a special pipe section or with a handsaw.

When cutting pipe, cutting must be carried out perpendicular to the axis of the tube, the cut end must be clean and skew.

The table can find the necessary fixings in relation to the diameter of the pipe.



View the required punctation

| DN/OD | b [mm] |
|-------|--------|
| 110 | 7 |
| 125 | 7 |
| 160 | 9 |
| 200 | 10 |
| 250 | 14 |
| 315 | 17 |
| 400 | 20 |
| 500 | 23 |

Connecting pipes and fittings

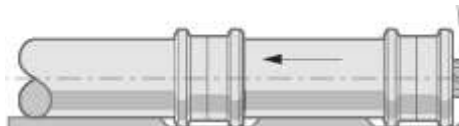
When connecting pipes and fittings, all steps must be taken to ensure a secure connection to avoid leaking due to further installation and subsequent use.

In order to connect pipes and fittings, it takes a few steps to execute before that:

1. Clean the pipe fitting and straight end of the pipe.
2. After cleaning the pipes and fittings, check the condition of the sealing elements.
3. After cleaning the check of the condition of the sealing elements, it is necessary to lubricate the flat end of the pipe and the rubber fitting. Peštan lubricants are recommended for this purpose. Lubricants based on oil must not be used. Socket and the sealing rubber bands must be dry and clean. They must also be lubricated.

Laying pipe in a trench

Peštan Strong PP pipes can be placed in a relatively loose ground. When laying the pipes must be taken into account that in places where the socket coupling or the section is deeper so that coupling aligns along its length, and when it does not disturb the drop tube. Illustrated explanation is below.



When laying pipes and fittings on steep sections, measures should be taken due to the operation of the longitudinal force. In practice, this is most often achieved by the production of concrete resistor blocks.

Filling and compacting

The filling (30 cm above the tube's head) is followed in layers. Lightweight and medium compacting devices can be used up to 1 m covering. Heavy machines can only be used afterwards.

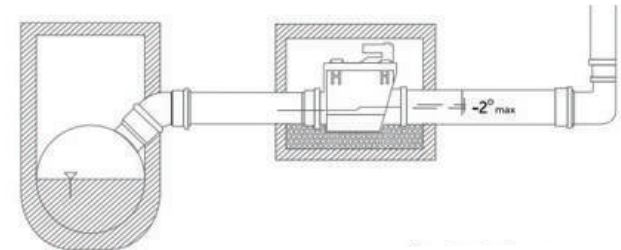
The filling material must be compacted in layers of thickness from 10 to 30cm, and the required thickness of the overtemperature is:

- Minimum 15cm for diameter DN > 400
- Minimum 30cm for diameter DN < 400

For these surfaces, a minimum compression of the main overfill of 90% is required according to the modified Procter's Density.

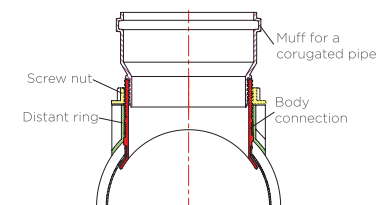
Installation of flood prevention device - non-return valve

When installing a PP strong pipeline, the designer can foresee the installation of a non-return valve on certain sections. In places where there is the possibility of returning water from the street sewer to the facilities, as well as preventing the entry of rodents and other animals through the pipeline. Non-return valves are equipped with automatic valves for closing the flow of water and are opposite to the intended flow of water.

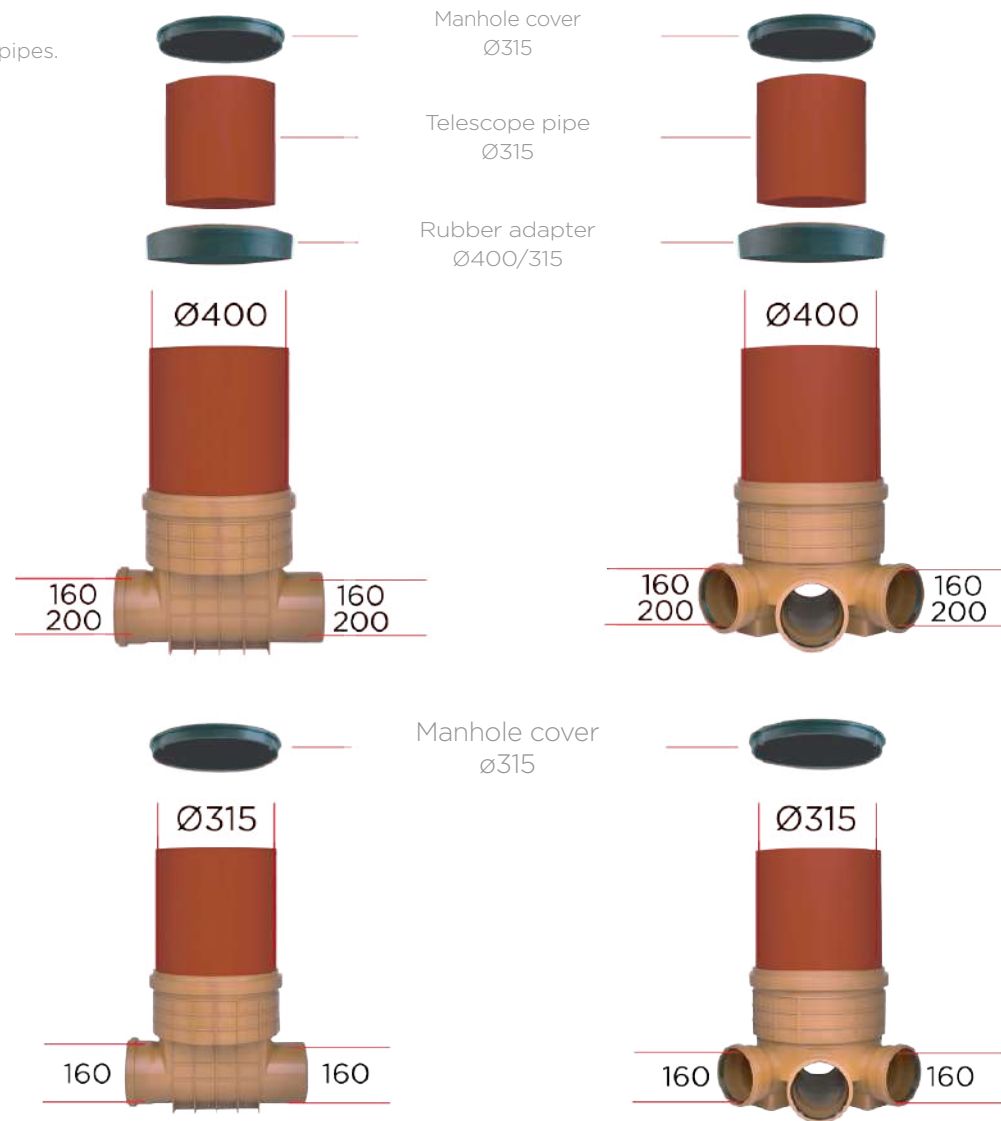


SAG - Saddle After Grip

SAG - Saddle After Grip is used for subsequent connection to the existing pipeline and in combination with PP Strong pipes gives quick and easy solution. The joint is safe and waterproof, which is provided by the EPDM rubber on the inside of SAG.



Possibility of making drain manholes of diameter Ø315 and Ø400 of PP Strong pipes.





PVC ULTRA



Pipes for a modern sewerage system - PVC ULTRA SN 10, SN 12 i SN 16

PEŠTAN PVC ULTRA SEWERAGE SYSTEM

PEŠTAN PVC ULTRA is a modern sewerage system, which exceeds most of the products of company Peštan.

Peštan development team, after years of research, has developed a new system of sewerage pipes, higher quality and more innovative than previously offered.

ULTRA system (which is a synonym for ultra-modern, innovation and quality) is complementing the existing PP STRONG system, but is based on the PVC as basic raw material.

Peštan PVC ultra are 3-layer sewerage pipes with ring stiffness SN 12. Pipes are produced and tested in accordance with EN 1401. These pipes have a diameter from DN160 to DN400 and have extruded socket which, unlike double sockets or sleeve sockets, reduces possibility of leaks of pipeline for 100%.

PURPOSE

The purpose of these pipes is in field of high static load such as airports, highways and railways. Pipes can be used in areas where there are underground water.

| | DN | D1 | S | LENGTH (M) | | | | | | D2 | D3 | E | F1 | U | LB |
|------|-----|-------|------|------------|---|---|---|---|---|-------|-------|------|------|-------|-------|
| | | | | 1 | 2 | 3 | 4 | 5 | 6 | | | | | | |
| SN10 | 160 | 160.4 | 4,7 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 160.3 | 174.4 | 12.5 | 12.5 | 50.8 | 75.9 |
| | 200 | 200 | 5,9 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 200.4 | 216.3 | 15.7 | 13.6 | 60.3 | 89.5 |
| | 250 | 250 | 7,3 | ✓ | ✓ | ✓ | ✓ | | ✓ | 250.4 | 272.8 | 19.8 | 20.9 | 72.4 | 112.9 |
| | 300 | 315 | 9,2 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 315.5 | 339 | 24.9 | 22.8 | 87.8 | 135.5 |
| | 400 | 400 | 11,7 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 400.7 | 427.1 | 31.6 | 25.7 | 108.4 | 165.5 |
| | 500 | 500 | 14,6 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 500.7 | | | | | |
| | 630 | 630 | 18,4 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 630.8 | | | | | |

| | DN | D1 | S | LENGTH (M) | | | | | | D2 | D3 | E | F1 | U | LB |
|------|-----|-----|------|------------|---|---|---|---|---|-------|-------|------|------|-------|-------|
| | | | | 1 | 2 | 3 | 4 | 5 | 6 | | | | | | |
| SN12 | 160 | 160 | 5,5 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 160.4 | 174.4 | 12.5 | 12.5 | 50.8 | 75.9 |
| | 200 | 200 | 6,7 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 200.5 | 216.3 | 15.7 | 13.6 | 60.3 | 89.5 |
| | 250 | 250 | 8,1 | ✓ | ✓ | ✓ | ✓ | | ✓ | 250.5 | 272.8 | 19.8 | 20.9 | 72.4 | 112.9 |
| | 300 | 315 | 10,5 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 315.6 | 339 | 24.9 | 22.8 | 87.8 | 135.5 |
| | 400 | 400 | 12,7 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 400.8 | 427.1 | 31.6 | 25.7 | 108.4 | 165.5 |
| | 500 | 500 | 16,7 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 500.8 | | | | | |
| | 630 | 630 | 20,7 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 630.9 | | | | | |

| | DN | D1 | S | LENGTH (M) | | | | | | D2 | D3 | E | F1 | U | LB |
|------|-----|-----|------|------------|---|---|---|---|---|-------|-------|------|------|-------|-------|
| | | | | 1 | 2 | 3 | 4 | 5 | 6 | | | | | | |
| SN16 | 160 | 160 | 6,1 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 160.5 | 174.4 | 12.5 | 12.5 | 50.8 | 75.9 |
| | 200 | 200 | 7,7 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 200.6 | 216.3 | 15.7 | 13.6 | 60.3 | 89.5 |
| | 250 | 250 | 9,6 | ✓ | ✓ | ✓ | ✓ | | ✓ | 250.6 | 272.8 | 19.8 | 20.9 | 72.4 | 112.9 |
| | 300 | 315 | 12,1 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 315.7 | 339 | 24.9 | 22.8 | 87.8 | 135.5 |
| | 400 | 400 | 15,4 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 400.8 | 427.1 | 31.6 | 25.7 | 108.4 | 165.5 |
| | 500 | 500 | 19,2 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 500.8 | | | | | |
| | 630 | 630 | 24,2 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 630.9 | | | | | |



PVC ULTRA

Compared to other plastics suitable for the manufacture of pipes, PVC is characterized by a high modulus of elasticity and good crack resistance. Excellent impact resistance of Pestan PVC Ultra system allows installation at temperatures as low as -10 °C. Pipes can be used to distribute hot water to a maximum of 60 °C.

Pipes carry a label with snowflake in accordance with EN 1401. The pipes are tested in accordance with EN 744 and EN 1411, which unlike of EN 1401 go a step further. This standard stipulates the release of metal weight of 8 kg with a height of at least one meter to the pipe, at a temperature of -10 °C (for diameter DN160).

Since there were no cracks or deformation as result of testing of Pestan PVC Ultra, the mark of snowflake is allowed to be used on pipes. This test simulates the real situation on the construction site where large pieces of stone can fall onto the pipe until it is in a trench.

| CHARACTERISTIC | REQUESTS | TESTING PARAMETERS | | TEST METHOD |
|--------------------------------------|--|-------------------------------------|--|--------------|
| impact resistance (method stairs) | H50 ≥ 1 m Max. A layout below 0,5 m | Test/temperature/ type of stroke | -10 °C ø90 in accordance with EN 1411:1996 | EN 1411:1996 |
| | | Stroke mass for: | | |
| | | dn = 110 mm | 4 kg | |
| | | dn = 125 mm | 5 kg | |
| | | dn = 160 mm | 8 kg | |
| | | dn = 200 mm | 10 kg | |
| | | dn = 250 mm | 12,5 kg | |

1. Bar code, 2. Peštan logo, 3. Material, 4. Diameter, 5. Wall thickness, 6. Dimensions according to standard EN 1401, 7. Date and time of manufacture, 8. Snowflake (Installation at low temperatures)

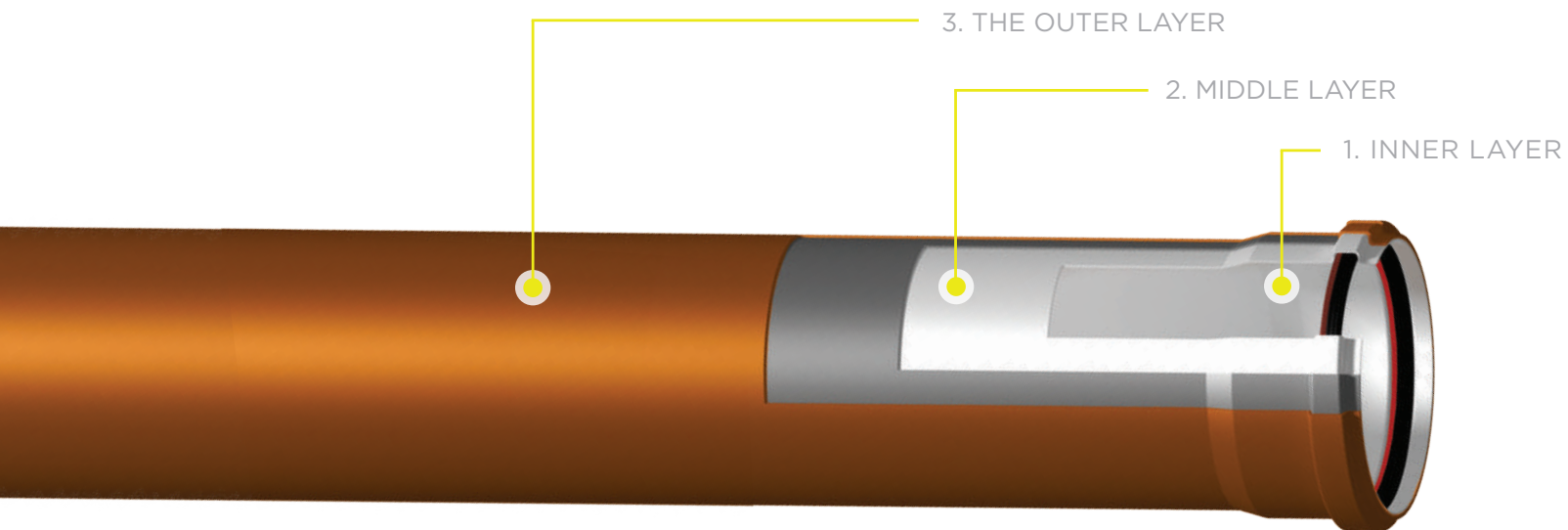


In socket, the rubber ring is placed, with two sealing surfaces and additional short plastic ring that is made in a different color. Rubber ring has a unique design that rubber parts and plastic manufactures together in order to obtain a sealing element. Soft plastic armature allows easy installation of ring, by bending inside to the place where the four notches. After that very easily corrected to the previous position thanks to the notches on the plastic part

Rubber ring is firmly mounted in the socket of the pipe making seal through whole pipe and eliminating many disadvantages of other types of rubber. The sealing rubber is mounted in socket of pipe and so reaches the customer. When the two pipes are connected, the rubber ring is designed to be deformed to a real pressure on the sleeve and the pipe and thus achieves an ideal combination. The pressure in the tubes can vary. The pressure in the pipes may vary, and in these conditions rubber ring must follow these deformations.

Design of rubber ring facilitates the worker installation in a trench, and it is impossible to drop the eraser or turned upside down, so that the risk of incorrect assembly practically does not exist. All that is needed is to lubricate the pipe ring. Opening modes have been designed so that it requires very little force to setup, alignment and connection of the pipes, reducing the risk of shifting of ring, even larger diameters even larger diameters can be connected without special tools and equipment to connect. Pipes fittings can be connected together easily and quickly.

THE INTERSECTION OF PVC ULTRA PIPES



1. INNER LAYER:

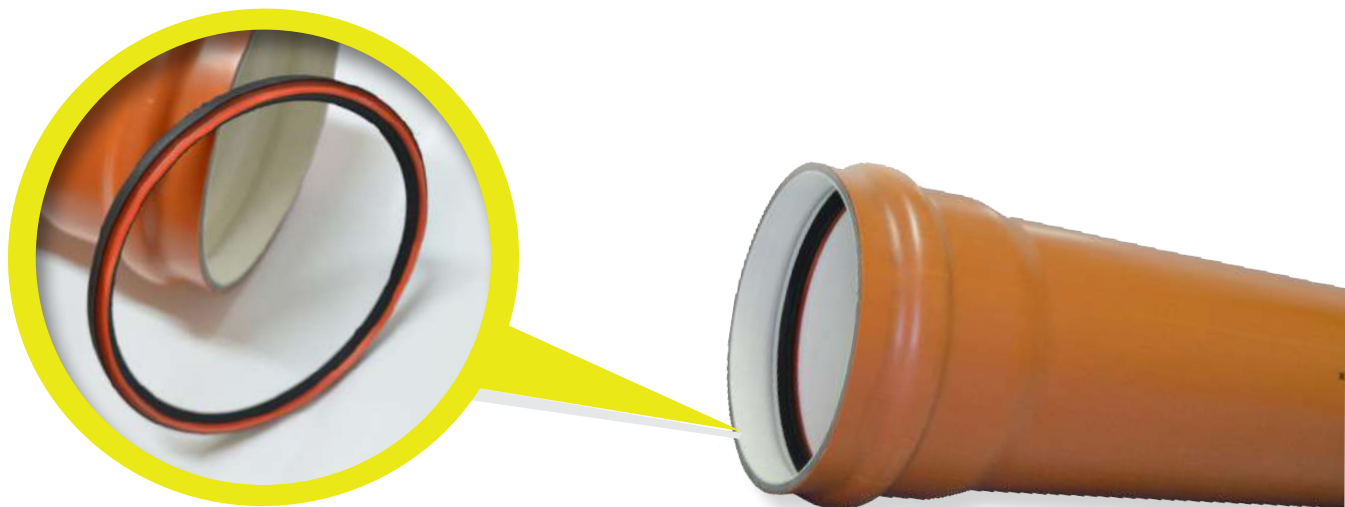
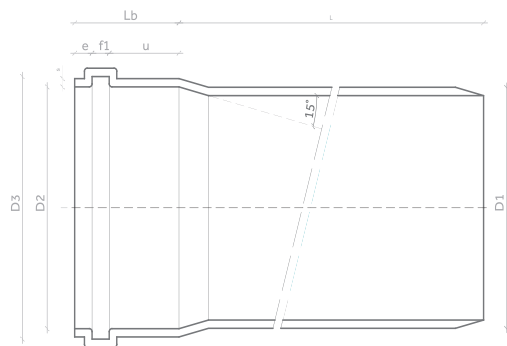
White color provides a better reflection when shooting camera

2. MIDDLE LAYER:

Gray filled with additional mineral reinforced
It absorbs blows Increases static of pipes

3. THE OUTER LAYER:

Dark orange colour
Shockproof to stone

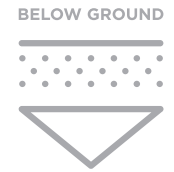


| PARAMETER | CHARACTERISTICS |
|---------------------------------|---|
| Material | polyvinyl chloride (PVC) |
| The structure of the pipe | Three-layer compact PVC pipes |
| The ring stiffness of the pipe | SN 10, SN 12, SN 16 |
| Dostupne dužine cevi | 1, 2, 3, 4, 5, 6 metara |
| Seal | Rubber and plastic reinforcement in a different color and with two sealing surfaces |
| The temperature when installing | minimum -10 °C, maximum 50 °C |
| Compacting soil during assembly | 90 % - 98 % PS |
| The depth of the liner | min. 0,5 m, max. 10 m (on the basis of a detailed statistical calculation) |



PE AND PP SPIRAL PIPES - SPIROPIPE

For street sewage systems



Spiral pipes are two-layer corrugated pipes made of high-density polyethylene and consist of an inner smooth wall and external corrugated spiral wall.

PE SPIRAL PIPES - SPIROPIPE

Spiral pipes are two-layer corrugated pipes made of high-density polyethylene and consist of an inner smooth wall and external corrugated spiral wall. The tube is produced by winding profiled outer layer reinforcement of high density polyethylene with corrugated profile on a smooth inner layer that is extruded and welded in continuity.

The outer layer consists of smaller ribs high-intensity hose coated with polyethylene, and the inner layer consists of high-density polyethylene. Presence of profiled hose in the outer layer significantly improves the strength of the pipe itself. Production technology makes possible different steps (profiles) during the winding of the profiled outer layer, which provides different pipe stiffness.

For this reason, PEŠTAN spiral corrugated pipes can be produced in different classes of stiffness.



CONSTITUTIVE PROPERTY OF MATERIALS

- Resistance of crack

High stress crack resistance, even at low temperatures, which is a feature of this material, guarantees compactness and the stiffness of products that are fully made out of the best quality materials. Reference procedure for the determination of impact resistance is a EN 744.

- Better hydraulic characteristics

Inner diameter and hydraulic characteristics of Peštan PE and PP SPIRAL SPIROPIPE remain the same over the time, regardless of the type of profile, thanks to the strong reduced roughness and low adhesion of the inner pipe walls. The nominal diameter corresponds to the effective inner diameter of the pipe, with tolerances allowed according to reference standards.

- UV resistance

Black polyethylene pipes are resistant to atmospheric effects and UV radiation, thanks to the addition of soot which is equally scattered on a polymeric basis. So such tubes can be used and stored outdoors, for an appropriate period of time, without damaging the material.

Blue pipes are partially resistant to UV radiation and they can be stored outdoors, but in limited period of time (up to 6 months).

- Physical properties of materials PE

- The density 959 gr/cm³, according to ISO 1183
- Modulus of stretching 1050 MPa, according to ISO 527
- MRS Classification 10 MPa, according to ISO12162
- Impact strength to Sharpie 23 MPa, according to ISO 179
- Vicat softening temperature 71 °C, according to ISO 306
- Coefficient of linear thermal elongation of 0.13 mm/m °C

- Physical properties of materials PP

- The density 900 gr/cm³, according to ISO 1183
- Modulus of stretching 1300 MPa, according to ISO 527
- Tensile load 28 MPa, according to ISO 527
- Impact strength to Sharpie 70 kJ/m², according to ISO 179

- Chemical resistance of materials

Peštan PE SPIRAL SPIROPIPE pipes are resistant to salty water, alcohol, acids, alkalines, sulfates, aggressive gases and all kinds of detergents. On the other hand, can not be used for the transport of water which contains high percentage of benzene, benzine (petrol) or acetone.

- Temperature resistance of materials

PE SPIRAL SPIROPIPE pipes are resistant to temperatures up to 60 degrees short-term and 40° long-term.

Polypropylene has high temperature resistance, therefore the pipes made of this material also have heightened temperature load resistance. PP SPIRAL SPIROPIPE pipes are resistant to temperatures up to 95° short-term and 60° long-term.

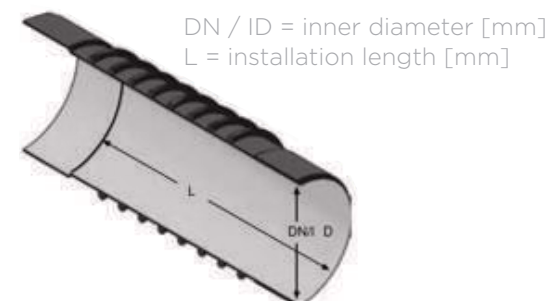
PROGRAM

- Production program Peštan PE SPIRAL pipes SPIROPIPE for large sewer systems or non-critical transport of water includes pipes made of the highest quality polyethylene PE 100 with profiled ones with reinforcement in the ribs, in diameters of Ø300 up to Ø3000.

Nominal and inner pipe diameter

| DN (mm) | DN/ID (mm) |
|---------|------------|
| 300 | 300 |
| 400 | 400 |
| 500 | 500 |
| 600 | 600 |
| 700 | 700 |

| DN (mm) | DN/ID (mm) |
|---------|------------|
| 800 | 800 |
| 900 | 900 |
| 1000 | 1000 |
| 1100 | 1100 |
| 1200 | 1200 |



Also, these pipes are produced in standard length of 6 m. They can also be produced in other lengths according to project specification.

- Peštan SPIRAL pipes SPIROPIPE are produced in more variants of strength (resistance) to the external load (depending on the step of the profiled outer layer of reinforcement, as well as on diameter):

SN 2 KN/m²

SN 8 KN/m²

SN 16 KN/m²

SN 4 KN/m²

SN 12.5 KN/m²

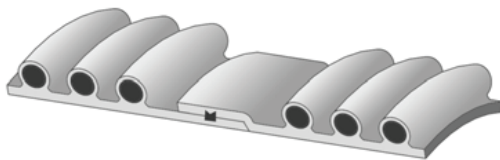
TECHICAL

- Application and installation

Inner diameter and hydraulic characteristics of Peštan SPIRAL SPIROPIPE pipes remain the same over the time, regardless of the type of profile, thanks to the strong reduced roughness and low adhesion of the inner pipe walls. The nominal diameter corresponds to the effective inner diameter of the pipe, with tolerances allowed according to reference standards.

- Connection of the PE SPIRAL pipes

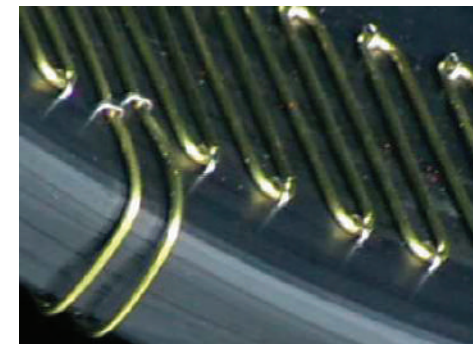
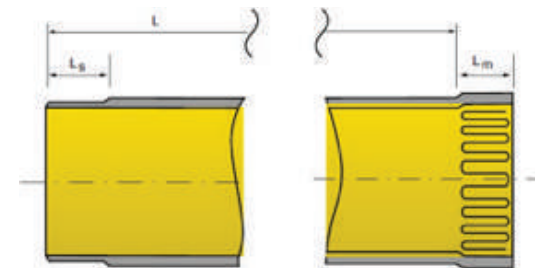
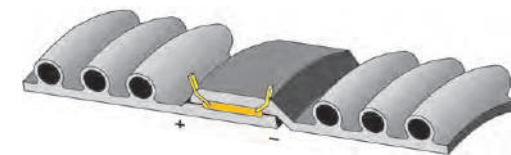
- Peštan PE SPIRAL pipes SPIROPIPE connected in two ways. The smaller diameters are connected over the header into which the EPDM rubber is mounted.



This type of compound is most widespread due to its own simplicity and speed of performance. At the female's end of pipe, the rubber was inserted during the production and it is homogeneously coupled with a muff. The male and female parts of the compound are performed in accordance with the parameters by the EN standard 13476.

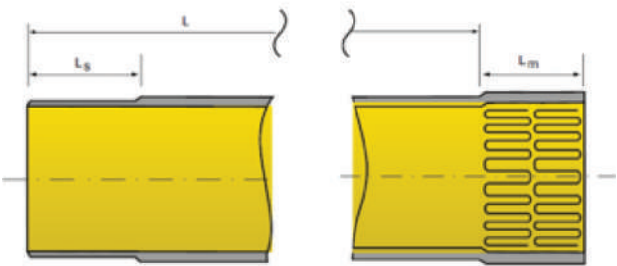
The rubber is made in accordance with EN 681-1.

The larger diameters are connected either with the rubber band or electrofusion welding.



TECHICAL

Peřtan PE SPIRAL SPIROPIPE pipes are produced with extended socket into which it is possible to insert two electrodes for electrofusion welding that provides additional security and an increase of system resistance to internal pressure (up to 3 bar).

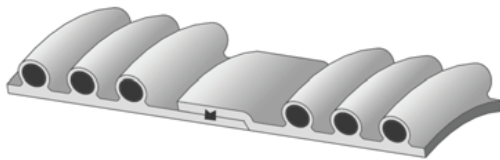


| CONNECTION OF THE PE SPIROPIPE (DN) | |
|-------------------------------------|---------------|
| MUF AND RUBBER | ELECTROFUSION |
| 300 | 300 |
| 400 | 400 |
| 500 | 500 |
| 600 | 600 |
| 700 | 700 |
| 800 | 800 |
| 900 | 900 |
| 1000 | 1000 |
| 1100 | 1100 |
| 1200 | 1200 |

| CONNECTION OF THE PE SPIROPIPE (DN) | |
|-------------------------------------|---------------|
| MUF AND RUBBER | ELECTROFUSION |
| | 1400 |
| | 1600 |
| | 1800 |
| | 2000 |
| | 2500 |
| | 3000 |

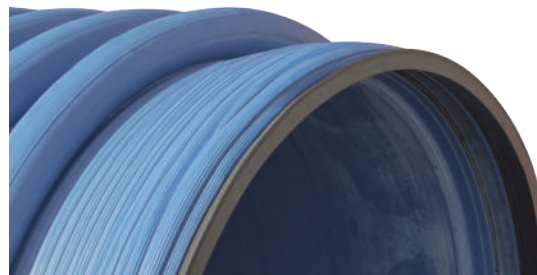
TECHICAL

- Peštan PP SPIRAL pipes SPIROPIPE are connected over the header into which the EPDM rubber is mouthed.



This type of connection is most widespread due to its own simplicity and speed of performance. At the female's end of pipe, the rubber was inserted during the production and it is homogeneously coupled with a muff. The male and female parts of the connection are performed in accordance with the parameters by the EN standard 13476.

The rubber is made in accordance with EN 681-1.



| CONNECTION OF THE PP SPIROPIPE (DN) | |
|--|---------------|
| MUF AND RUBBER | ELECTROFUSION |
| 300 | |
| 400 | |
| 500 | |
| 600 | |
| 700 | |
| 800 | |
| 900 | |
| 1000 | |
| 1100 | |
| 1200 | |

Standards that correspond with PE and PP SPIRAL SPIROPIPE pipe system

PE and PP SPIRAL SPIROPIPE pipe system is produced and corresponds the requirements of the standard SRPS EN 13476-3: 2008 "Plastics piping systems mass for underground drainage and sewage without pressure - Piping systems with stainless steel polyvinyl chloride (U-PVC), polypropylene (PP) and polyethylene (PE) - Part 3: Specifications of pipes and fittings with smooth inner and molded outer surface and system, type B" and DIN 16961.

It is applicable with existing standards and regulations for the design of sewerage systems: "SRPS EN 752:2008 - Drain and sewer systems outside buildings", and also with the standard for the installation of pipelines SRPS EN 1610: 2006 Design and testing of lines and channels for wastewater.

TECHICAL

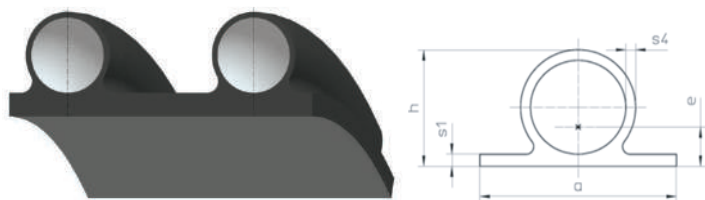
- Types of profiles

Peštan currently offers three basic pipe profile products to its customers:

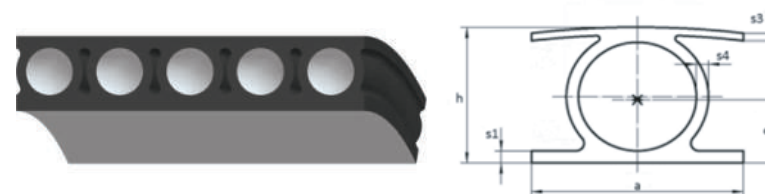
1. Peštan Spiro PR
2. Peštan Spiro CPR
3. Peštan Spiro OP

Depending on the needs of the project and the desired stiffness, these three profiles can be further modified by adding more levels of reinforcement and modification of diameter of the tube. The goal is to complete the optimization of the pipes for the project needs, with full quality guarantee.

- PR profile



- CPR profile



- OP profile



ADVANTAGES OF PESTAN PE SPIRAL SPIROPIPE PIPES

- Durability

Reduced investment costs and work life expectancy for at least 50 years reduce costs of use.

- Saving time

Significant time saving can be achieved in pipeline placement due to the length and the low mass of the pipe, as well as due to easy and quick way of mounting and joining.

- Maintenance

Inner smooth sides of the walls, compactness and increased electrical, chemical and biological resistance, significantly reduce the costs of cleaning and maintenance.

- Hydraulics

Due to the improved hydraulic properties, they can be used in smaller diameters than in traditional pipes.

- Waterproof

100% leakproofness of joints: removal of penetration or leakage of fluid, and the penetration of roots due to welded joints.

- Lengths

Standard pipe length of 6m, as well as possibility of production of pipes in lengths according to the specification, significantly reduce the amount of connections.

- Usage

Possibilities of using Peštan SPIRAL SPIROPIPE tubes are numerous. Main application is found in the construction of underground sewers network, but excellent characteristics of this tube materials make it possible to create various systems where fast and easy assembly is required, chemical resistance, as well as the safety of the compounds.



HDPE PIPES FOR SEWAGE



Pipes for pressure sewerage systems made from high-density polyethylene

Pipes for pressure sewerage systems are produced in "PEŠTAN" exclusively from the original high-density PE, PE80 and PE100. MRS classification = 8Mpa or MRS = 10MPa means that the pipes after 50 years can handle the the same strain.

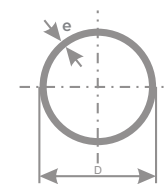
"PEŠTAN" uses the best raw materials from renowned manufacturers. The quality of our products "PEŠTAN" maintains with the quality department, in its modern laboratories. The materials have proof of independent European laboratory for MRS classification.

Benefits of pipes PE80 and PE100

- The material is absolutely non-toxic and completely inert in contact with wastewater.
- Easy for transport and handling.
- Easy to connect by welding or joints.
- The transition from PE-80 to PE-100 should be performed by electro-socket
- The lifespan is more than 50 years.
- On the inner walls of the pipes, layers of stones nor deposits of dirt can be stuck, and consequently there is no reduction in flow during long-term use.
- Very flexible and extremely resistant to vibrations, seismic shocks and the movement of soil.
- Greater flexibility with pipes of PE-80.
- Due to the elasticity of the pipeline route can follow the configuration of the terrain, so there is no need for many fittings.
- The bending radius is 20d.
- Pipes are resistant to UV rays and to temperatures of -30 °C to + 60 °C.
- They have a high resistance to abrasion.
- Very low pressure losses because the friction coefficient 10 times less than that of steel pipes.

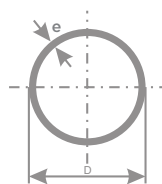
| SDR 6 (S-2,5) PN32 | | | SDR 7,4 (S-3,2) PN25 | | | SDR 9 (S-4) PN20 | | SDR 11 (S-5) PN16 | | SDR 13,6 (S-6,3) PN12,5 | | SDR 17 (S-8) PN10 | | SDR 21 (S-10) PN8 | | SDR 26 (S-12,5) PN6 | | SDR 33 (S-16) PN5 | | SDR 41 (S-20) PN4 | |
|--------------------|------------------|-------|----------------------|-------|------------------|------------------|------------------|-------------------|------------------|-------------------------|------------------|-------------------|------------------|-------------------|------------------|---------------------|------------------|-------------------|------------------|-------------------|--|
| D (MM) | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M | |
| 16 | 3,0 | 0,15 | 2,3 | 0,1 | 2 | 0,09 | | | | | | | | | | | | | | | |
| 20 | 3,4 | 0,18 | 3,0 | 0,154 | 2,3 | 0,13 | 2, | 0,12 | | | | | | | | | | | | | |
| 25 | 4,2 | 0,278 | 3,5 | 0,240 | 3 | 0,21 | 2,3 | 0,17 | 2,0 | 0,151 | 1,9 | 0,14 | | | | | | | | | |
| 32 | 5,4 | 0,454 | 4,4 | 0,386 | 3,6 | 0,33 | 3 | 0,28 | 2,4 | 0,228 | 2 | 0,2 | | | | | | | | | |
| 40 | 6,7 | 0,701 | 5,5 | 0,600 | 4,5 | 0,51 | 3,7 | 0,43 | 3,0 | 0,354 | 2,4 | 0,29 | 2,0 | 0,251 | | | | | | | |
| 50 | 8,3 | 1,09 | 6,9 | 0,936 | 5,6 | 0,79 | 4,6 | 0,67 | 3,7 | 0,550 | 3 | 0,45 | 2,4 | 0,372 | 2,0 | 0,317 | | | | | |
| 63 | 10,5 | 1,73 | 8,6 | 1,47 | 7,1 | 1,26 | 5,8 | 1,06 | 4,7 | 0,869 | 3,8 | 0,72 | 3,0 | 0,586 | 2,5 | 0,482 | | | | | |
| 75 | 12,5 | 2,44 | 10,3 | 2,09 | 8,4 | 1,78 | 6,8 | 1,47 | 5,6 | 1,23 | 4,5 | 1,02 | 3,6 | 0,826 | 2,9 | 0,682 | | | | | |
| 90 | 15,0 | 3,51 | 12,3 | 3,0 | 10,1 | 2,56 | 8,2 | 2,14 | 6,7 | 1,76 | 5,4 | 1,46 | 4,3 | 1,19 | 3,5 | 0,987 | | | | | |
| 110 | 18,3 | 5,24 | 15,1 | 4,49 | 12,3 | 3,81 | 10 | 3,17 | 8,1 | 2,63 | 6,6 | 2,18 | 5,3 | 1,77 | 4,2 | 1,45 | | | | | |
| 125 | 20,8 | 6,75 | 17,1 | 5,77 | 14 | 4,3 | 11,4 | 4,11 | 9,2 | 3,39 | 7,4 | 2,78 | 6,0 | 2,28 | 4,8 | 1,86 | | | | | |
| 140 | 23,3 | 8,47 | 19,2 | 7,25 | 15,7 | 6,17 | 12,7 | 5,12 | 10,3 | 4,25 | 8,3 | 3,49 | 6,7 | 2,85 | 5,4 | 2,35 | | | | | |
| 160 | 26,6 | 11,0 | 21,9 | 9,44 | 17,9 | 8,04 | 14,6 | 6,73 | 11,8 | 5,54 | 9,5 | 4,55 | 7,7 | 3,73 | 6,2 | 3,08 | | | | | |
| 180 | 29,9 | 14,0 | 24,6 | 11,9 | 20,1 | 10,17 | 16,4 | 8,5 | 13,3 | 7,01 | 10,7 | 5,76 | 8,6 | 4,69 | 6,9 | 3,83 | | | | | |
| 200 | 33,2 | 17,2 | 27,4 | 14,8 | 22,4 | 12,58 | 18,2 | 10,49 | 14,7 | 8,65 | 11,9 | 7,11 | 9,6 | 5,81 | 7,7 | 4,74 | | | | | |
| 225 | 37,4 | 21,8 | 30,8 | 18,6 | 25,2 | 15,92 | 20,5 | 13,27 | 16,6 | 10,6 | 13,4 | 9,01 | 10,8 | 7,35 | 8,6 | 5,96 | | | | | |
| 250 | 41,5 | 27,0 | 34,2 | 23,0 | 27,9 | 19,57 | 22,7 | 16,33 | 18,4 | 13,5 | 14,8 | 11,05 | 11,9 | 9,03 | 9,6 | 7,38 | | | | | |
| 280 | 46,5 | 33,8 | 38,3 | 28,9 | 31,3 | 24,6 | 25,4 | 20,47 | 20,6 | 16,9 | 16,6 | 13,88 | 13,4 | 11,34 | 10,7 | 9,2 | | | | | |
| 315 | 52,3 | 42,7 | 43,1 | 36,5 | 35,2 | 31,11 | 28,6 | 25,9 | 23,2 | 21,4 | 18,7 | 17,57 | 15,0 | 14,3 | 12,1 | 11,7 | 9,7 | 9,7 | 7,7 | 7,60 | |
| 355 | 59,0 | 54,3 | 48,5 | 46,3 | 39,7 | 39,5 | 32,2 | 32,88 | 26,1 | 27,2 | 21,1 | 22,36 | 16,9 | 18,2 | 13,6 | 14,8 | 10,9 | 12,1 | 8,7 | 9,6 | |
| 400 | | | 54,7 | 58,8 | 44,7 | 50,12 | 36,3 | 41,75 | 29,4 | 35,2 | 23,7 | 28,27 | 19,1 | 23,6 | 15,3 | 19,1 | 12,3 | 15,7 | 9,8 | 12,5 | |
| 450 | | | 61,5 | 74,4 | 50,3 | 62,7 | 40,9 | 52,87 | 33,1 | 44,6 | 26,7 | 35,81 | 21,5 | 29,8 | 17,2 | 24,2 | 13,8 | 19,9 | 11,0 | 15,8 | |
| 500 | | | 68,3 | 92,0 | 55,8 | 77,3 | 45,4 | 65,24 | 36,8 | 55,0 | 29,7 | 44,25 | 23,9 | 36,9 | 19,1 | 29,9 | 15,3 | 24,4 | 12,3 | 19,4 | |
| 560 | | | | | 62,5 | 97 | 50,8 | 80,8 | 41,2 | 69,0 | 33,2 | 55,43 | 26,7 | 46,2 | 21,4 | 37,5 | 17,2 | 30,7 | 13,7 | 24,4 | |
| 630 | | | | | 71 | 127,6 | 57,2 | 102 | 46,3 | 87,3 | 37,4 | 70,21 | 30,0 | 52,9 | 24,1 | 47,4 | 19,3 | 38,7 | 15,4 | 30,8 | |
| 710 | | | | | 80* | 162* | 64,5 | 130 | 52,2 | 110,8 | 42,1 | 89 | 33,9 | 74,2 | 27,2 | 60,2 | 21,8 | 49,2 | 17,4 | 39,0 | |
| 800 | | | | | 90,1* | 205,7* | 72,7 | 170,4 | 58,8 | 140,7 | 47,4 | 113 | 38,1 | 94,0 | 30,6 | 76,3 | 24,5 | 62,4 | 19,6 | 49,5 | |
| 900 | | | | | | | 81,7 | 211,8 | 66,1 | 174,9 | 53,3 | 143,4 | 42,9 | 116,8 | 34,4 | 95,1 | 27,6 | 76,7 | 22 | 61,5 | |
| 1000 | | | | | | | 90,8 | 261,6 | 73,4 | 215,9 | 59,3 | 177,2 | 47,7 | 144,4 | 38,2 | 116,9 | 30,6 | 94,0 | 24,5 | 76,2 | |
| 1200 | | | | | | | | | 88,2 | 311,1 | 71,1 | 254,9 | 57,2 | 207,8 | 45,9 | 168,4 | 36,7 | 135,9 | 29,4 | 109,6 | |

*other sizes are available upon request

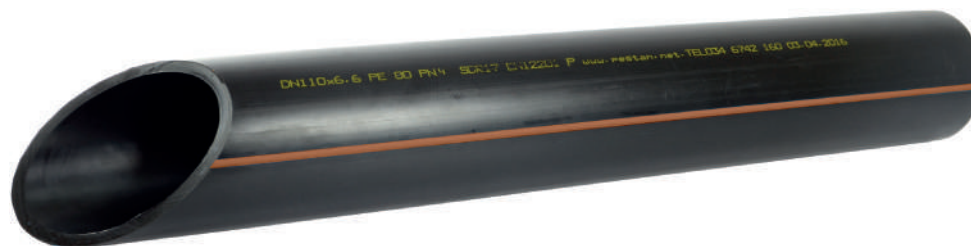


HDPE PE-100

| | SDR 6 (S-2,5) PN 25 | | SDR 7,4 (S-3,2) PN 20 | | SDR 9 (S-4) PN 16 | | SDR 11 (S-5) PN 12,5 | | SDR 13,6 (S-6,3) PN 10 | | SDR 17 (S-8) PN 8 | | SDR 21 (S-10) PN 6 | | SDR 26 (S-12,5) PN 5 | | SDR 33 (S-16) PN 4 | | SDR 41 (S-20) PN 3,2 | |
|--------|---------------------|-------|-----------------------|------|-------------------|------|----------------------|-------|------------------------|------|-------------------|-------|--------------------|------|----------------------|-------|--------------------|------|----------------------|------|
| D (MM) | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M | e _{min} | KG/M |
| 16 | 3,0 | 0,15 | 2,3 | 0,1 | 2,0 | 0,09 | 1,9 | 0,9 | 1,8 | 0,08 | | | | | | | | | | |
| 20 | 3,4 | 0,18 | 3,0 | 0,16 | 2,3 | 0,13 | 2,0 | 0,12 | 1,9 | 0,11 | | | | | | | | | | |
| 25 | 4,2 | 0,278 | 3,5 | 0,24 | 3,0 | 0,21 | 2,3 | 0,17 | 2,0 | 0,15 | | | | | | | | | | |
| 32 | 5,4 | 0,454 | 4,4 | 0,38 | 3,6 | 0,32 | 3,0 | 0,28 | 2,4 | 0,23 | 2,0 | 0,2 | | | | | | | | |
| 40 | 6,7 | 0,701 | 5,5 | 0,6 | 4,5 | 0,56 | 3,7 | 0,43 | 3,0 | 0,36 | 2,4 | 0,29 | 2,0 | 0,24 | | | | | | |
| 50 | 8,3 | 1,09 | 6,9 | 0,93 | 5,6 | 0,78 | 4,6 | 0,67 | 3,7 | 0,54 | 3,0 | 0,45 | 2,4 | 0,37 | 2,0 | 0,317 | | | | |
| 63 | 10,5 | 1,73 | 8,6 | 1,47 | 7,1 | 1,25 | 5,8 | 1,06 | 4,7 | 0,87 | 3,8 | 0,72 | 3,0 | 0,58 | 2,5 | 0,482 | | | | |
| 75 | 12,5 | 2,44 | 10,3 | 2,09 | 8,4 | 1,76 | 6,8 | 1,47 | 5,6 | 1,23 | 4,5 | 1,02 | 3,6 | 0,82 | 2,9 | 0,682 | | | | |
| 90 | 15,0 | 3,51 | 12,3 | 2,99 | 10,1 | 2,54 | 8,2 | 2,14 | 6,7 | 1,76 | 5,4 | 1,46 | 4,3 | 1,18 | 3,5 | 0,987 | | | | |
| 110 | 18,3 | 5,24 | 15,1 | 4,48 | 12,3 | 3,77 | 10,0 | 3,17 | 8,1 | 2,61 | 6,6 | 2,18 | 5,3 | 1,77 | 4,2 | 1,45 | | | | |
| 125 | 20,8 | 6,75 | 17,1 | 5,77 | 14 | 4,86 | 11,4 | 4,11 | 9,2 | 3,36 | 7,4 | 2,78 | 6,0 | 2,27 | 4,8 | 1,86 | | | | |
| 140 | 23,3 | 8,47 | 19,2 | 7,25 | 15,7 | 6,11 | 12,7 | 5,12 | 10,3 | 4,21 | 8,3 | 3,49 | 6,7 | 2,83 | 5,4 | 2,35 | | | | |
| 160 | 26,6 | 11,0 | 21,9 | 9,44 | 17,9 | 7,95 | 14,6 | 6,73 | 11,8 | 5,29 | 9,5 | 4,55 | 7,7 | 3,72 | 6,2 | 3,08 | | | | |
| 180 | 29,9 | 14,0 | 24,6 | 11,9 | 20,1 | 10,1 | 16,4 | 8,5 | 13,3 | 6,74 | 10,7 | 5,76 | 8,6 | 4,67 | 6,9 | 3,83 | | | | |
| 200 | 33,2 | 17,2 | 27,4 | 14,8 | 22,4 | 12,4 | 18,2 | 10,49 | 14,7 | 8,3 | 11,9 | 7,11 | 9,6 | 5,78 | 7,7 | 4,74 | | | | |
| 225 | 37,4 | 21,8 | 30,8 | 18,7 | 25,2 | 15,6 | 20,5 | 13,27 | 16,6 | 10,6 | 13,4 | 9,01 | 10,8 | 7,30 | 8,6 | 5,96 | | | | |
| 250 | 41,5 | 27,0 | 34,2 | 2,3 | 27,9 | 19,4 | 22,7 | 16,33 | 18,4 | 13,4 | 14,8 | 11,05 | 11,9 | 8,93 | 9,6 | 7,38 | | | | |
| 280 | 46,5 | 33,8 | 38,3 | 28,9 | 31,3 | 25 | 25,4 | 20,47 | 20,6 | 16,7 | 16,6 | 13,88 | 13,4 | 11,3 | 10,7 | 9,2 | | | | |
| 315 | 52,3 | 42,7 | 43,1 | 36,6 | 35,2 | 30,8 | 28,6 | 25,9 | 23,2 | 21,2 | 18,7 | 17,57 | 15,0 | 14,2 | 12,1 | 11,7 | 9,7 | 9,7 | 7,7 | 7,60 |
| 355 | 59,0 | 54,3 | 48,5 | 46,3 | 39,7 | 39,1 | 32,2 | 32,88 | 26,1 | 26,9 | 21,1 | 22,36 | 16,9 | 18,0 | 13,6 | 14,8 | 10,9 | 12,1 | 8,7 | 9,6 |
| 400 | | | | | 44,7 | 49,6 | 36,3 | 41,75 | 29,4 | 34,1 | 23,7 | 28,27 | 19,1 | 22,9 | 15,3 | 19,1 | 12,3 | 15,7 | 9,8 | 12,5 |
| 450 | | | | | | | 40,9 | 52,87 | 33,1 | 43,2 | 26,7 | 35,81 | 21,5 | 28,9 | 17,2 | 24,2 | 13,8 | 19,9 | 11,0 | 15,8 |
| 500 | | | | | | | 45,4 | 65,24 | 36,8 | 53,4 | 29,7 | 44,25 | 23,9 | 35,7 | 19,1 | 29,9 | 15,3 | 24,4 | 12,3 | 19,4 |
| 560 | | | | | | | 50,8 | 80,8 | 41,2 | 66,9 | 33,2 | 55,43 | 26,7 | 44,7 | 21,4 | 37,5 | 17,2 | 30,7 | 13,7 | 24,4 |
| 630 | | | | | | | 57,2 | 102 | 46,3 | 84,6 | 37,4 | 70,21 | 30,0 | 56,4 | 24,1 | 47,4 | 19,3 | 38,7 | 15,4 | 30,8 |
| 710 | | | | | | | 64,5 | 130 | 52,2 | 109 | 42,1 | 89 | 33,9 | 71,8 | 27,2 | 60,2 | 21,8 | 49,2 | 17,4 | 39,0 |
| 800 | | | | | | | 72,7 | 170,4 | 58,8 | 138 | 47,4 | 113 | 38,1 | 91,8 | 30,6 | 76,3 | 24,5 | 62,4 | 19,6 | 49,5 |

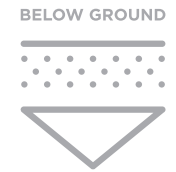


HDPE PE-80



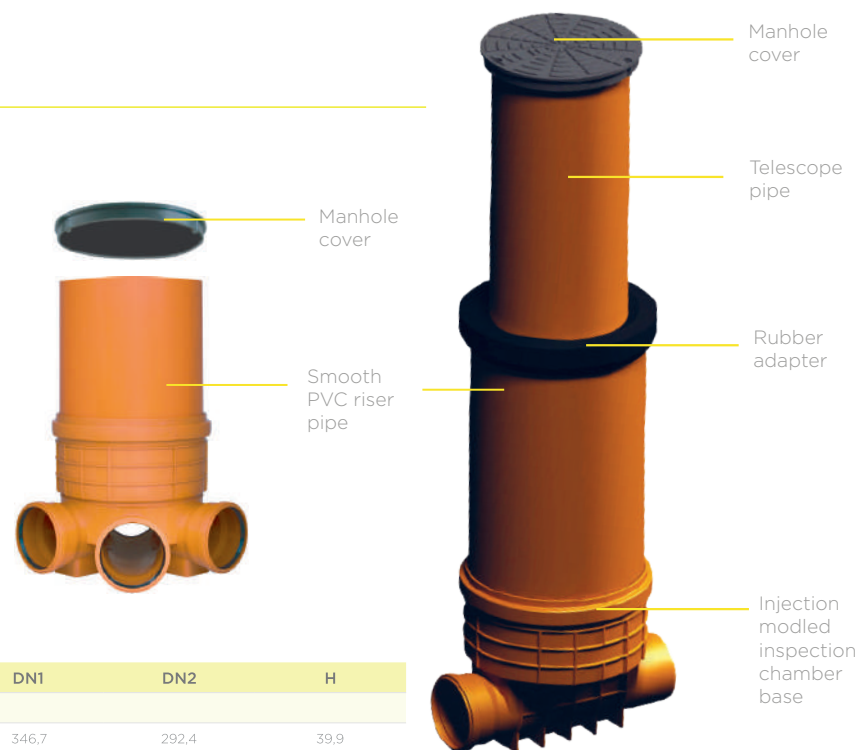


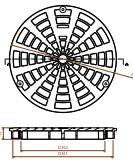

MANHOLES

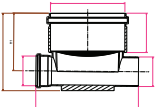


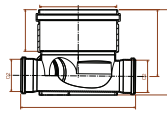
DRAIN MANHOLES Ø315 AND Ø400

Manholes with gutter on bottom are being manufactured from polypropylene (manhole bottom). Manhole body as well as telescopic extension are made from PVC or PP strong pipe, being connected with rubber seal for telescopic connection which enables absolute waterproofing.

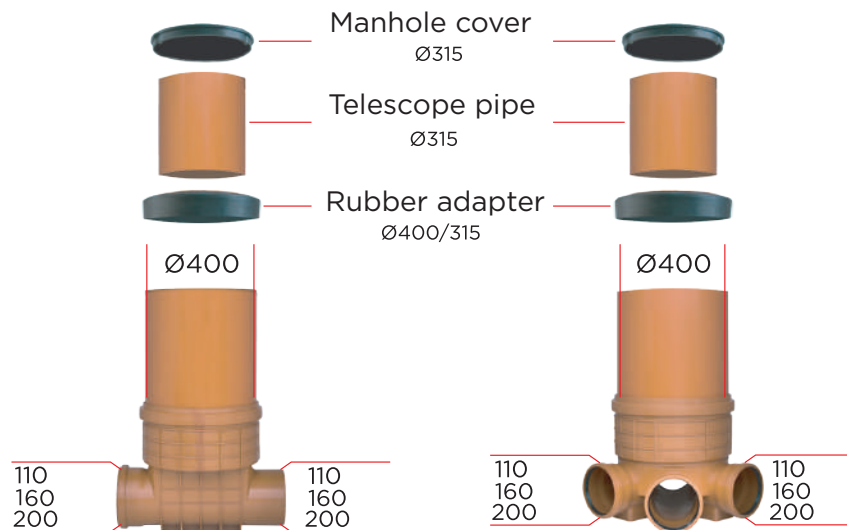
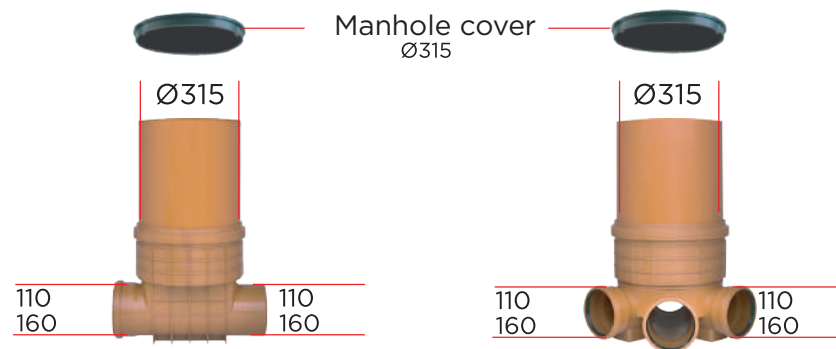


| NAME | PICTURE | CODE | DN | DN1 | DN2 | H |
|--|---|----------|-----|-------|-------|------|
| DRAIN MANHOLES LINEAR TRAY | | | | | | |
|  |  | 10204560 | 315 | 346,7 | 292,4 | 39,9 |
| | | 10204561 | 400 | 413 | 370 | 49 |

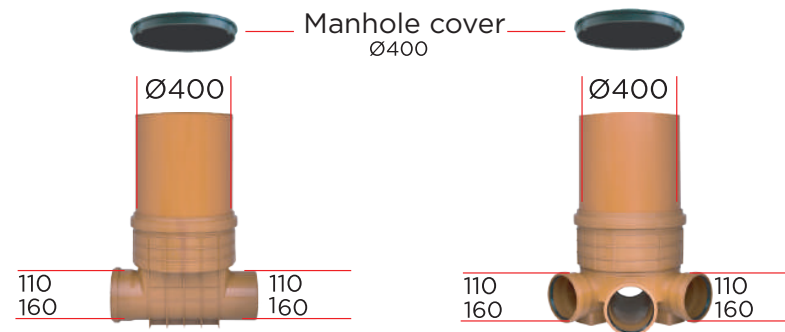
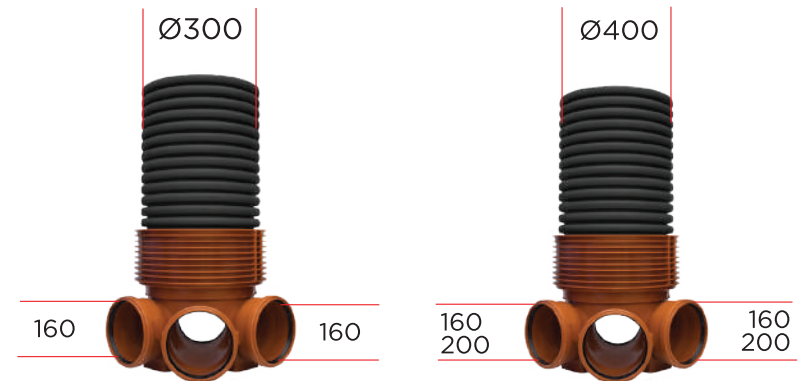
| NAME | PICTURE | CODE | (D/D1) | H | H1 | H2 | L |
|---|---------|----------|---------|-----|-----|-----|-----|
| DRAIN MANHOLES | | | | | | | |
|   | | 10799298 | 315/110 | 330 | 295 | 140 | 435 |
| | | 10799224 | 315/160 | 384 | 281 | 190 | 479 |
| | | 10799230 | 400/110 | 360 | 289 | 226 | 562 |
| | | 10799220 | 400/160 | 420 | 315 | 207 | 554 |
| | | 10799221 | 400/200 | 470 | 340 | 207 | 586 |

| | | | | | | | |
|---|--|----------|---------|-----|-----|-----|-----|
| DRAIN MANHOLES | | | | | | | |
|   | | 10799229 | 315/110 | 356 | 278 | 201 | 444 |
| | | 10799225 | 315/160 | 395 | 309 | 185 | 490 |
| | | 10799231 | 400/110 | 401 | 306 | 226 | 534 |
| | | 10799222 | 400/160 | 420 | 319 | 207 | 559 |
| | | 10799223 | 400/200 | 470 | 344 | 207 | 584 |

EXTENSION WITH PVC OR PP SMOOTH PIPE



EXTENSION WITH PP CORRUGATED PIPE

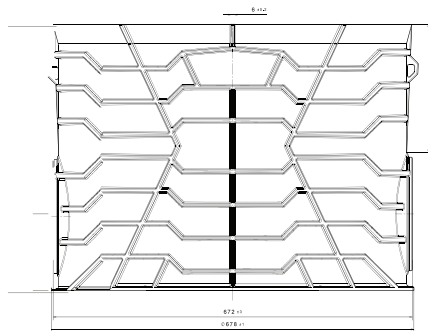


DRAIN MANHOLE Ø630

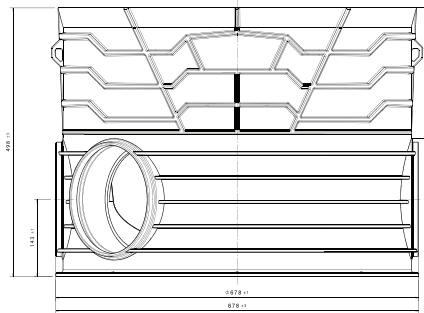
PRODUCT AVAILABILITY / OPTIONS

Available two types :
Straight through manhole
Collective manhole

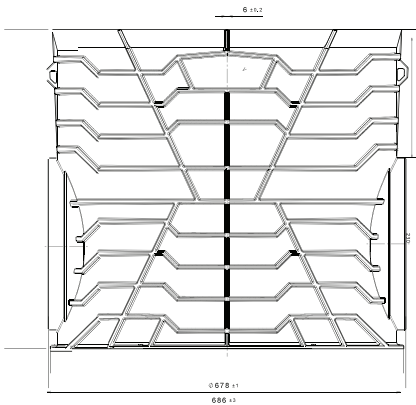
Drain manhole bottom available for connection on pipelines with DN 315 and DN 200. In cases where connections to other diameters are required, reduction fittings from Pestan standard portfolio may be used. If required, there is possibility of connecting drain manhole with pipeline that is projected for corrugated pipes. For this purpose any of transition items from Pestan portfolio may be used.



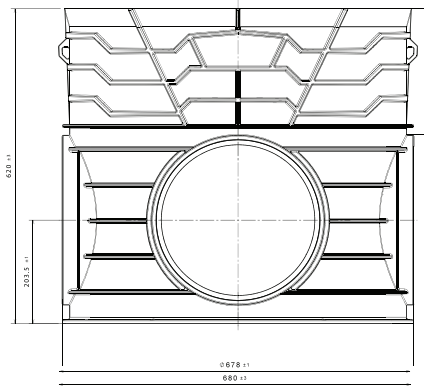
Technical drawing of straight through drain manhole 630/200



Technical drawing of straight through drain manhole 630/200



Technical drawing of straight through drain manhole 630/315

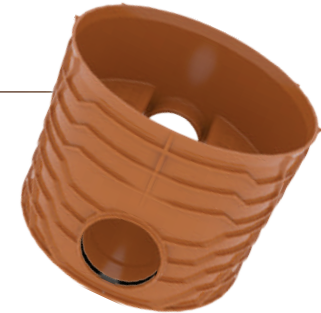


Technical drawing of straight through drain manhole 630/315

**Straight through
drain manhole**
 Ø630/Ø315



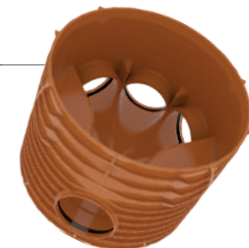
**Straight through
drain manhole**
 Ø630/Ø200



**Collective drain
manhole**
 Ø630/Ø315



**Collective drain
manhole**
 Ø630/Ø200



DRAIN MANHOLE Ø630

Beside visual effect, reinforcement ribs are designed to provide better strength. Hooks for hanging / descending manhole to the hole / channel are designed to provide reliability as being reinforced from upper side where cord or rope should hang, so these hooks without problems can resist manhole weight while descending.

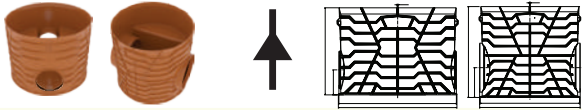


Top point of the manhole bottom is adjusted for corrugated pipe DN 630 OD to which is being connected by rubber seals. Grip, on certain models where technically was possible to be designed, serves for better support, in case maintenance repairman is going down to the manhole, Grip prevents from shoes slipping.

On the bottom of each manhole there is possibility of placing stopple, exclusively on client's demand. Ribs on lower side of drain manhole serve as structural reinforcement from soil from all directions, as well as reinforcement for repairmen in charge for pipeline maintenance who will descend to the manhole.

PURPOSE

Pestan darain manhole is intended to be used for collecting all kind of waste water in storm water systems as well as junction for house connections. It is possible to use drain manhole as revision manhole also, which is very important when constructing house connections and connecting multiple objects before connecting to main pipeline.



| NAME | PICTURE | CODE | (D1/D2) | H | H1 | L |
|--------------------------------|---|----------|---------|-----|-----|-----|
| STRAIGHT THROUGH DRAIN MANHOLE |  | 10799233 | 630/200 | 498 | 355 | 678 |
| | | 10799234 | 630/315 | 620 | 416 | 686 |
| | | | | | | |
| COLLECTIVE DRAIN MANHOLE |  | 10799235 | 630/200 | 498 | 355 | 678 |
| | | 10799236 | 630/315 | 620 | 416 | 680 |
| | | | | | | |
| COLLECTIVE DRAIN MANHOLE |  | 10799235 | 630/200 | 498 | 355 | 678 |
| | | | | | | |
| | | | | | | |

DRAIN MANHOLE CONNECTION TO DIFFERENT TYPES OF PIPELINES



Connection directly with smooth pipe.



Connection by reducer.



Connection with corrugated pipe.

Relief ring for manholes DN 630 enables their assembly in areas with bigger static load.



(relief ring for manholes DN 630)

Extension
Ø600 ID



**EXTRUSION
CONNECTION**

**Relief
ring**



Extension
Ø630 OD



**RUBBER BAND
CONNECTION**

Manhole is available in diameters Ø630/315 and Ø630/200. If it needs to be connected to other diameters of the pipeline, reduction pieces can be used Pešťan's standard production assortment.

REDUCED PIECES FOR SMOOTH PIPES

| | | | |
|-----------|-----------|-----------|-----------|
| Ø315/Ø250 | Ø200/Ø160 | Ø200/Ø125 | Ø200/Ø110 |
|-----------|-----------|-----------|-----------|

If necessary it is possible connecting the drain manhole with the pipeline that is designed of corrugated pipes. For this need it is possible to use some of the transient pieces from the Pešťan production assortment.

TRANSITIONAL PIECES FROM SMOOTH TO CORRUGATED PIPE

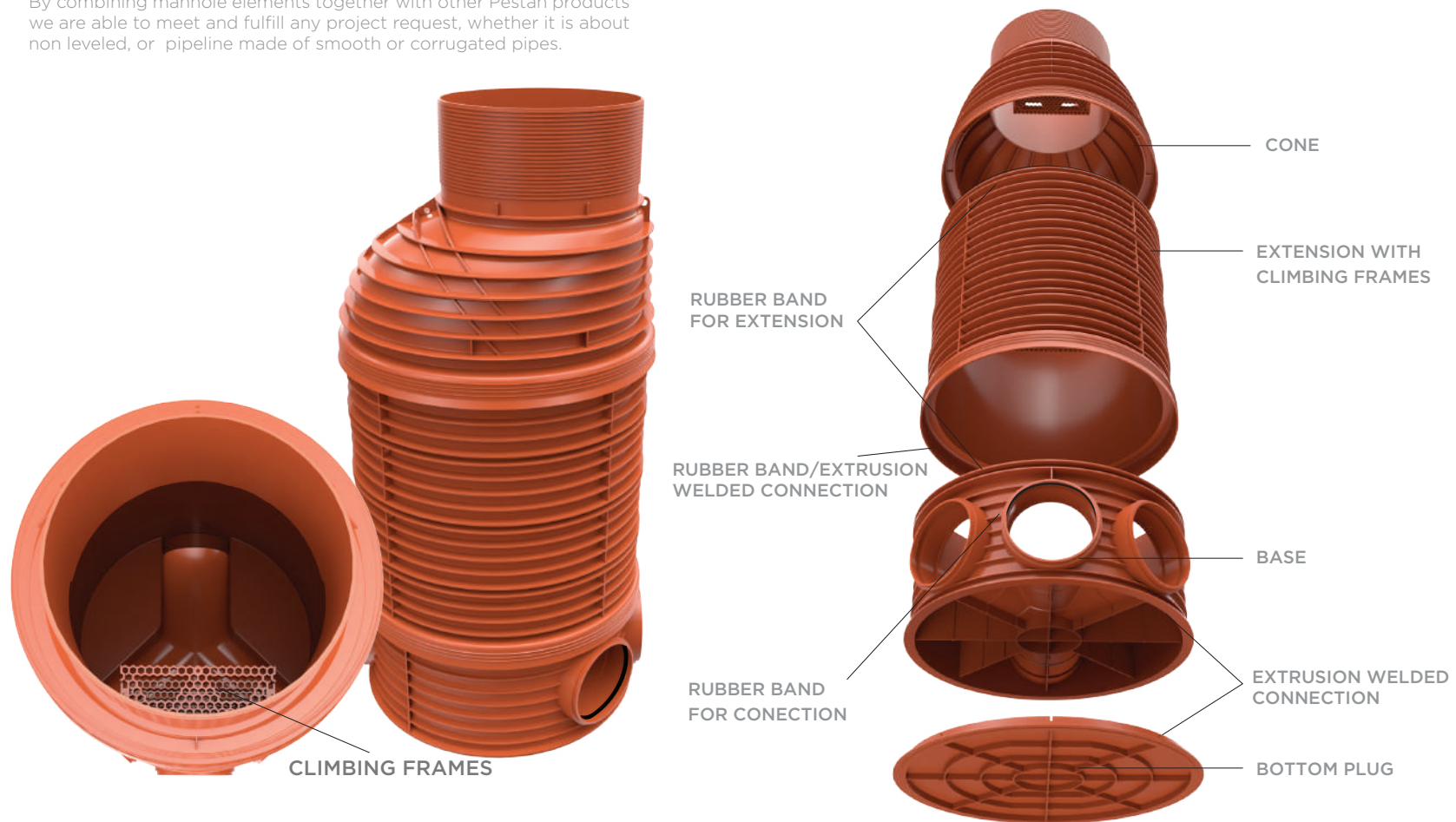
| | | | |
|-----------|-----------|-----------|-----------|
| Ø300/Ø315 | Ø250/Ø250 | Ø200/Ø200 | Ø140/Ø160 |
|-----------|-----------|-----------|-----------|

IMPRUVA INJECTION MOLDED DRAIN MANHOLE Ø1000

In order to meet all trends of modern construction Pestan company, beside existing one, has expanded it's product portfolio with new product - polypropylene injected drain manhole with DN 1000. Application of these manholes is in all kinds of systems for collection of waste and storm water. Pestan manholes are manufactured by injection molding process from polypropylene of the highest quality as per European Norm for manhole manufacturing - EN 13598. By combining manhole elements together with other Pestan products we are able to meet and fulfill any project request, whether it is about non leveled, or pipeline made of smooth or corrugated pipes.

ELEMENTS

Drain manhole consists of few elements, which assembled together makes an integral product. Items that manhole consists of are: base, bottom plug, extension with climbing frames, cone.

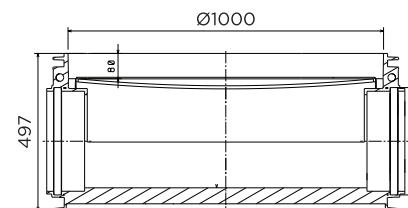
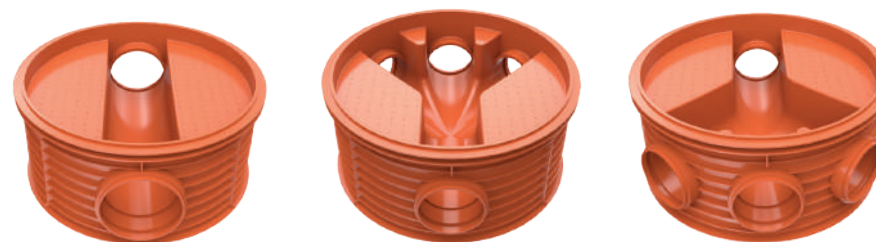


MANHOLE BASES

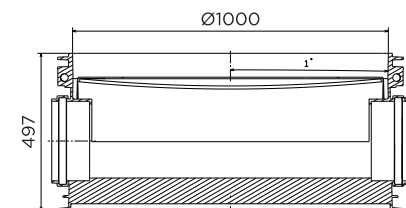
Manhole bases as monolithic forms are injected with already formed gutter and preinstalled rubber seal with highest quality of EPDM which guarantees waterproofing of the connection of manhole base and extension or cone. In each connection on manhole is installed EPDM rubber as well.

In standard offer are bases with inlets DN 250 and 300 and outlets DN 250 and 300 under different angles for Pestan PVC smooth or corrugated pipes. Transition to Pestan corrugated ID pipes is possible with Pestan transition item from smooth to corrugated pipes. As per project demand, connections of bigger diameters intended for pipelines made of smooth or corrugated pipes DN 400, 500 600 and 630 is also possible.

Bottom plug is injected element from polypropylene intended to be positioned below the base when necessary to have closed or doubled bottom. Assembly is optional.



Inlet/outlet DN315



Inlet/outlet DN250

| BASE | DN250 | DN315 | Number of inlets | Inlet angle |
|------|-------|-------|------------------|----------------------|
| | ✓ | ✓ | 1 | 180° |
| | ✓ | ✓ | 3 | 135° 180° 225° |
| | ✓ | ✓ | 2 | 225° |
| | ✓ | ✓ | 2 | 135° |

EXTENSIONS

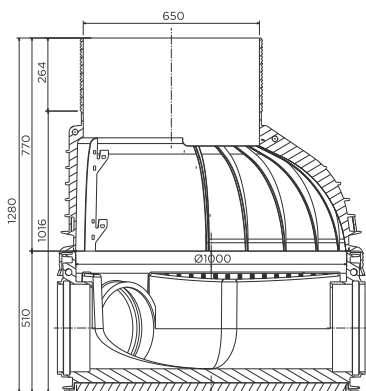
Extension with climbing steps is injected molding part of the manhole with different optional height; by adding these parts to the base appropriate manhole height is achieved.

Pestan produces extensions in heights 250, 500, 750, 1000mm and enables adjusting manhole height to each project. In extensions themselves are preinstalled climbing steps on 250mm height from each other, by this easier entering and manhole leaving is achieved while intervention. Climbing steps are made of polypropylene by injection molding method as per EN 14396 and EN 13101.

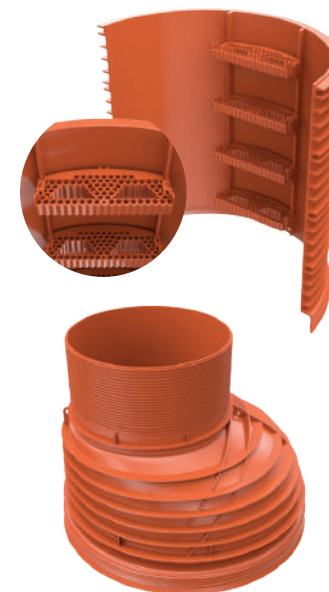
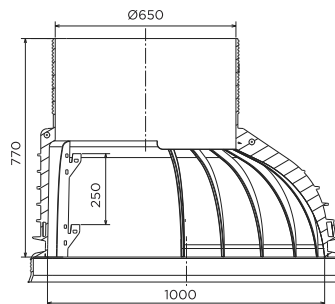
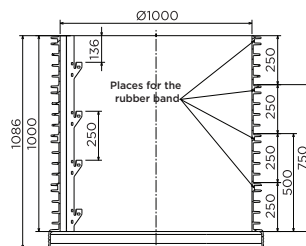
Cone

Cone ending is injecting molded element which, by its adding on the manhole base and connection - makes manhole itself as complete product. Ending cone element are parts for closing which decrease upper manhole diameter enabling assembly of different types of covers.

Beside advantage of manhole height adjustment Pestan manhole are known for their lightness which makes manipulation on the spot easier, as well as simple way of connection to pipeline. Material used for manufacturing guarantees consistency and extraordinary chemical resistance.



minimum height manhole



MANHOLE HEIGHT

Pestan injected manholes are with adjustable height and in this way can meet any project demand. Minimal manhole height in combination of manhole base and cone that is cut to the minimum is 1016 mm for manholes with connectors DN 250 and 315. Maximal manhole height is limited to 6 m and is achieved by adding extensions.

CONNECTING

Element connecting is performed by pre-installed seals made of highest quality EPDM rubber for waterproofing guarantee. Except this, connection by extrusion welding of elements to each other is also possible and in this way unbeatable connection is made.

ADDITIONAL CONNECTORS

If required and predicted by project there is possibility for connection of non leveled pipelines by combination of cutting manhole body together with injecting welding of connector itself for manhole body.

DRAIN MANHOLES

Peštan company has included
DRAIN MANHOLES in its product range.

- Drain manholes Ø400 ID
- Drain (revision) manholes Ø500 ID
- Drain (revision) manholes Ø600 ID

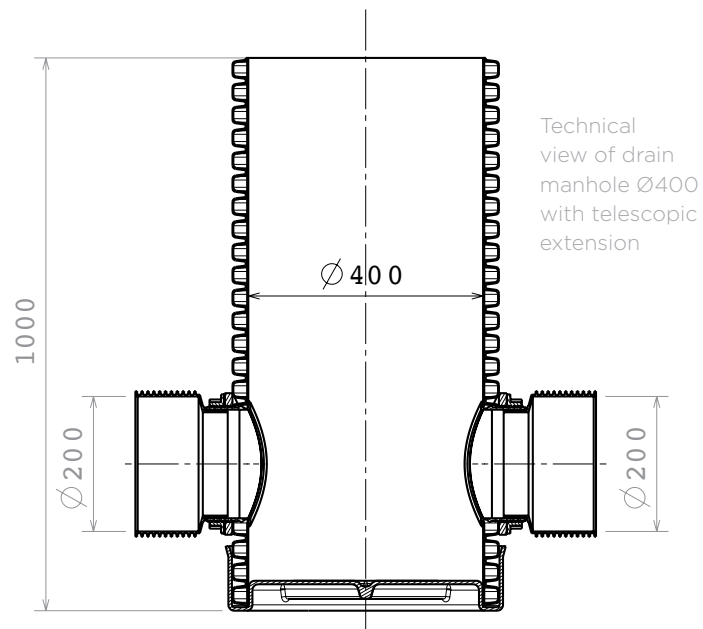
*ID - Inner diameter

PURPOSE

These products are mainly designed to collect rainwater in the rainwater sewage systems for individual home installations and also in systems of civil engineering (collecting rain water from and near the roads, etc) In addition it is possible to use drain manholes Ø600 (sometimes Ø500

too) as revision as well which is particularly important during installation of home sewer and connection of multiple objects before joining the main line etc.
With this, relevant joining standards are met, with additional reductions in joining costs

and installation time, while corrections of the mistakes on terrain (such as axel and angle issues as well as height of connecting lines) are facilitated by its flexibility.



MANHOLES WITH SLUDGE TRAP

Peštan produces manholes with sludge trap as a integral part of the collector in gravity sewer systems, waste water systems, storm water or combined. These manholes are made of polypropylene.

Manholes are made of monolithic structures composed of a flat bottom, manhole body (PP corrugated pipe) and connections as specified by projects. The elements of each manhole are welded to each other by extrusion welded.

Manholes are made by order or project specification.

Dimensions

DN 800 mm

Material

Polypropylene

Standards

SRPS EN 13589

Fields of application

Gravity sewer systems
Waste water systems, storm
water and combined
Various industrial application.



DESCRIPTION

Peštan produces manholes with sludge trap as a integral part of the collector in gravity sewer systems, waste water systems, storm water or combined.

They are used as revision manholes, cascading manholes, manholes with sludge trap or manholes for sewer flushing.

Manholes are made of monolithic structures composed of a flat bottom, manhole body (PP corrugated pipe) and connections as specified by projects.

The elements of each manhole are welded to each other by extrusion welded.

Advantages

- Long durability
- Water tightness
- Resistance to aggressive chemicals
- Easy handling
- Quick installation
- Easy height adjustment

CONSTRUCTION

Construction of drain manholes is usually performed with the Sedimentation, and in this system the height of sedimentation can be modified and adapted to specific customer requirements. Manhole height can be easily adjusted on the ground and by reducing the vertical which is always PP double layer corrugated pipe SN 8 it can be fully adapted to the situation before setting of cover grids.

Construction consists of:

- Drain bottom
- PP corrugated pipe SN 8 vertical
- Appropriate number of SAG's used to form one output and one or more inputs.

Using SAG's enables the various versions of connecting smooth or corrugated pipe diameters in the 140 ID corr. 160 OD corr. 160 SW, and also

ID 200 corr. and 200 SW. It is possible to form the manhole on the spot, which is a huge advantage because the drilling and installation of SAG's can be performed at the site of installation with simultaneous correction of alignment errors and regular deviations from the projected documents. Due to the extremely high ring stiffness of used PP corr. pipes, recommended height of manhole can range up to 5 m.

The table below contains the basic data related to drain manholes:

| | DRAIN MANHOLE 400 MM | DRAIN REVISION MANHOLE 500MM | DRAIN REVISION MANHOLE 600 MM |
|--------------------------------------|----------------------|------------------------------|-------------------------------|
| Minimal angle between the terminal | 60 | 45 | 45 |
| Maximal height of the manhole - h | 5000 | 5000 | 5000 |
| Minimal height to the port axis - h1 | 260 | 300 | 310 |
| Maximal number of input ports | 2 | 3 | 4 |

The seal between the vertical and manhole bottom is achieved by using common rubber ring which is used for PP corrugated pipes which allows sealing up to 0.5 bar and 5 m height of the water column which defined maximum height of the manhole.

Drain manhole is supplied as a telescopic too. In this version base is upgraded with coupling ring and PVC Ø315 OD.

This is a very popular and sought option for designers and contractors because this structure results in greater depth of installation with a

flexible coupling ring connection and in case of heavy loads due to increased surface pressure or increased construction depth, transmission of loads based on the manhole is prevented. Building the concrete ring around the PVC pipe is required.

DELIVERY

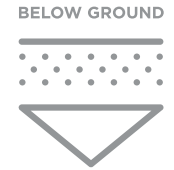
At the request of the customer, manhole can be supplied in kit-form which is particularly popular with final customers because of lower prices and a relatively simple and rapid preparation of manholes users, which leaves them with possibility of corrections and changes.

These products can be delivered and fully assembled on the basis of data obtained from our customers. This can significantly speed up the delivery of the alignment setting but reduces the possibility of correcting possible deviations on terrain.





CONCRETE MANHOLES



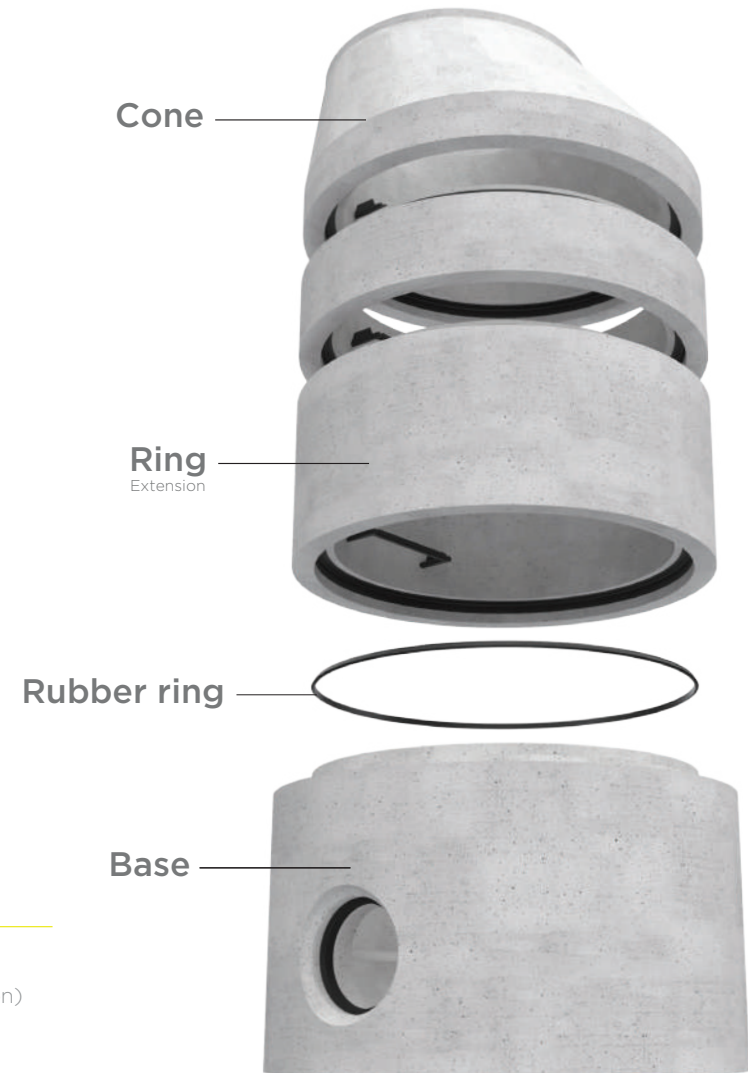
CONCRETE MANHOLES

Prestressed concrete manhole is produced from the best quality concrete by high strength method vibro pressing and SCC method (Self Compacting Concrete). The concrete manhole is used for implementation of fecal and storm sewerage. They are used in infrastructural construction of industrial areas, but also in communal construction in settlements. All manholes are produced by project plans. Concrete manholes are according to requirements of project composed of different assembly elements, and different shape of the entrance and exit openings.



ELEMENTS

The elements used to complete the manhole are the manhole base, the extension (extension) and the conical end.

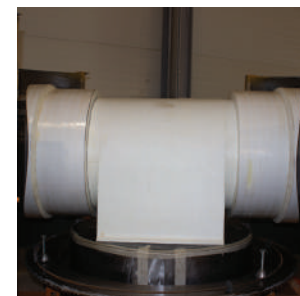


PRODUCTION PROCESS

By improving the technology and using a special smart solution for the individual shaping of the kinete and pipe connection during the production of concrete bases, it is possible to respond to the requirements of the most complex projects. Due to the individual approach in the production process of concrete bases, we can produce a configuration of connectors and kinets at the request of the investor or customer



Production of kinete models and connections to base are being done on CNC machines by production of negative body by cutting custom extruded polystyrene which enables the modeling of concrete bases. Slow and undesirable retention of waste water in the channel kinetes are avoided by constant drop in the entire course of the channel, including the connection of the pipe and the manhole kinet



Production process of concrete manholes is completely aligned with EN 1917 - European standard for concrete manholes. They are produced by vibro-pressing of high quality concrete C30/37. Brand of concrete from which elements of manholes are produced is MB40.

- In production we use CEM1 52.5R without additives with latent hydraulic properties.
- We use economic separated aggregates without admixtures, stone filler.
- We use additives to improve the compactness of concrete.
- Aerant to increase resistance to the effects of atmospheric influences.
- Chemical additive to reduce water absorption.

After the steel formwork is filled and the concrete hardens, the concrete base the shaft is removed from the formwork and prepared for transport to the construction site. The most modern concrete technology contributes to a long life elements. Signs of aging and wear of elements are reduced to a minimum.



TYPES OF BASES

We produce 3 main types of bases:

1. FLAT BOTTOM BASE WITH RUBBER RING **BETO**

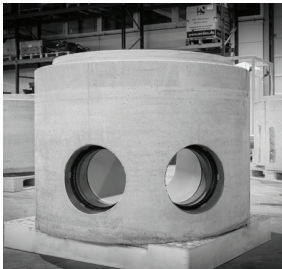


Wall thickness of the base is 150mm-230mm depending on the dimensions of input and output connector.

Hight of the base 500mm-1000mm

We produce concrete manholes in dimension of 1000mm

2. KINET BOTTOM BASE AND RUBBER RING **BETO PLUS**



3. LINER BASE **BETO PRO**



For easier handling and manipulation on the construction site, we install in bases special handles for hanging and carrying the base



There are several types of kinete:

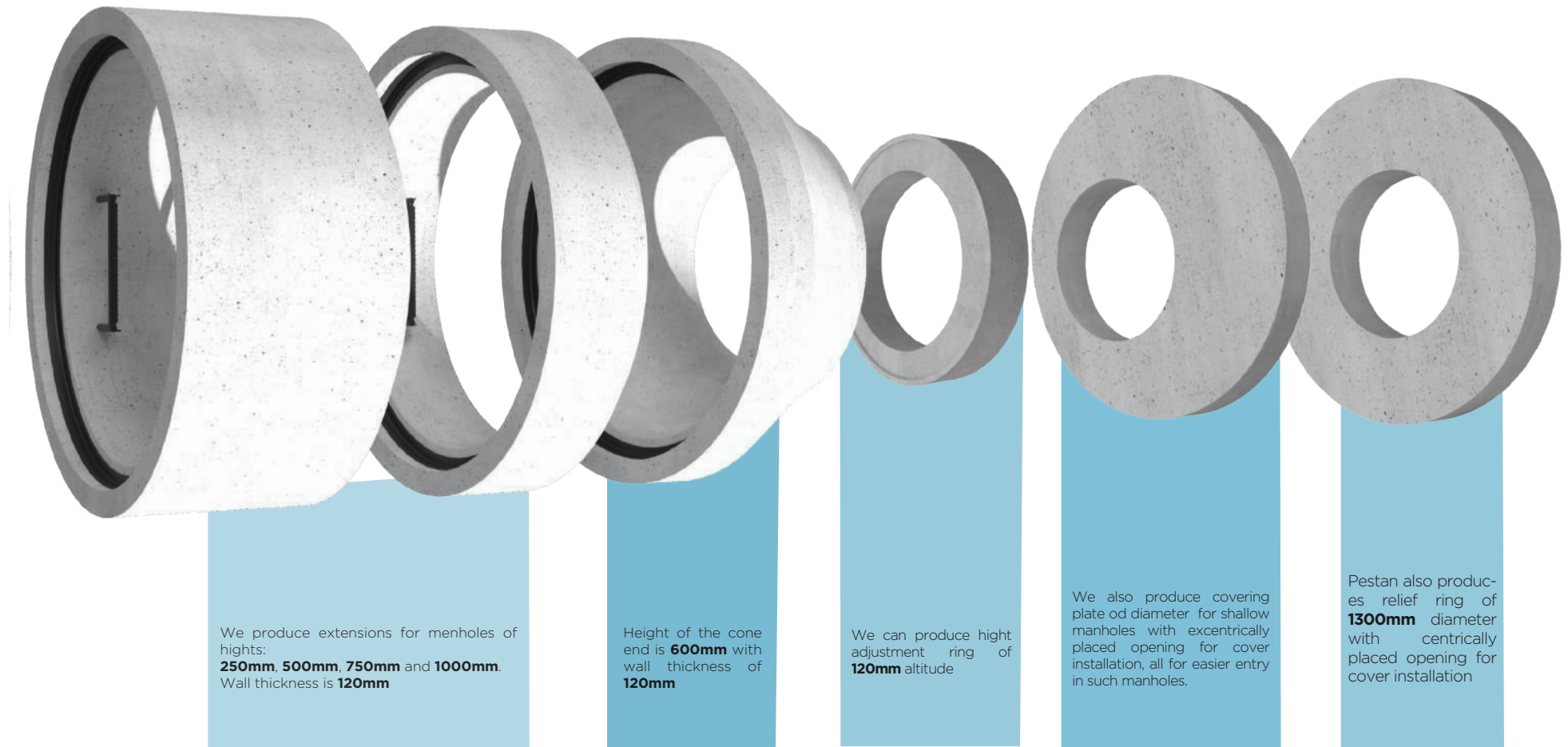
- **TRANSITORY**
- **COLLECTIVE**
- **KINETA ON REQUEST IN ACCORDANCE WITH TECHNICAL POSSIBILITIES**

Pass-through bases are made in vibro-pressed concrete technology for connections up to Ø250. Collector bases and Pass-through bases with connections from Ø315 to Ø630 are made using the SCC method (casting method).

TECHNICAL DATA

| DESCRIPTION (DN 1000) | MM |
|---|------------|
| Internal diameter of base | 1000 |
| Base height | 500 - 1000 |
| Wall thickness for connections up to DN 315 | 150 |
| Wall thickness for connections up to DN 400 | 170 |
| Wall thickness for connections up to DN 500 | 190 |
| Wall thickness for connections up to DN 630 | 230 |
| Dimension of pipe connections for smooth pipes | 110 - 630 |
| Dimensions of pipe connections for ribbed pipes | 160 - 400 |
| Wall thickness of extensions and tapered end | 120 |
| The height of the tapered end | 600 |

CONCRETE MANHOLE ELEMENTS



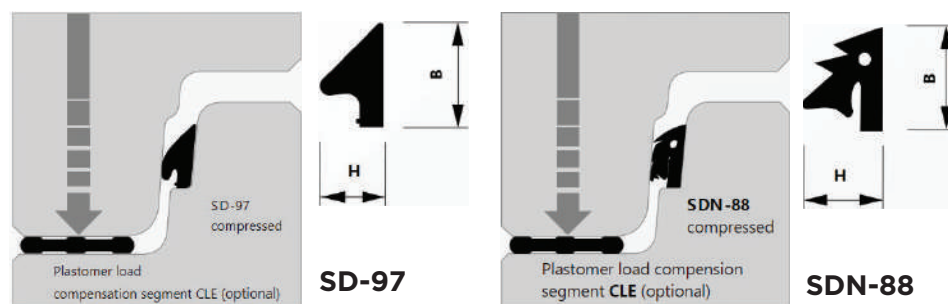
RUBBER SEALS



All concrete manholes are equipped with rubber seals and are watertight.

Sealing between concrete elements it is achieved by subsequent mounting rubber bands on the upper part of the base or extensions.

Connection pieces can be used (transition pieces) for pipes with integrated rubber bands (corrugated-ribbed pipes).



subsequent mounting of rubber bands on the upper part of the base or extensions.

All fittings are used with integrated rubber rings. These integrated seals are poured together with the kinet and thus form a solid connection. Such joints are used for joints with smooth pipes (PVC, PP STRONG, PEHD, ...)

Connection pieces (transition pieces) can be used for pipes with integrated rubber bands (corrugated-ribbed pipes).



Integrated rubber rings



Direct smooth pipe connection



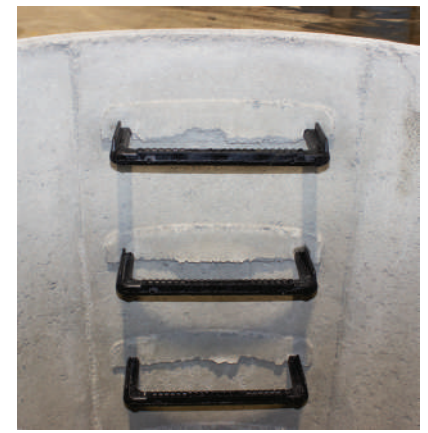
Reducer connection



Corrugated pipe connection

CLIMBING FRAMES

Climbing frames in manholes are made of solid steel, covered with non-slip material with a layer of polyethylene, completely and permanently protected from corrosion, as per EN 13101. Climbers are cast in the production process ensuring greater safety and less assembly time on the construction site.



ELEMENTS OF REVISION WINDOW

Base of revision window with connectors for pipes with integrated rubber bends

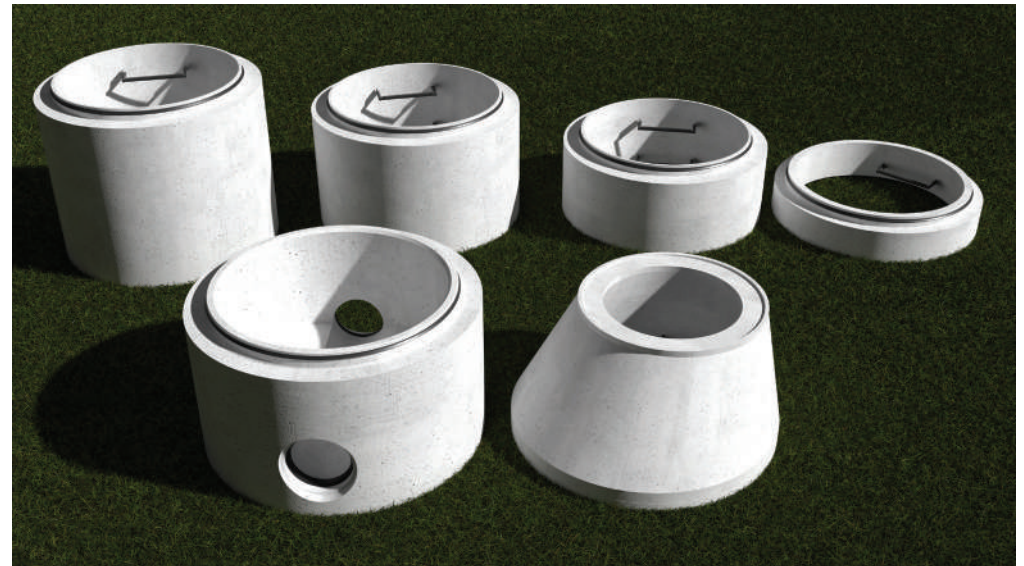
Extension of revision window

Height adjustment ring

Cone - final element of the inspection window with an integrated seal for waterproofing

Climbing frames covered with non-slip material

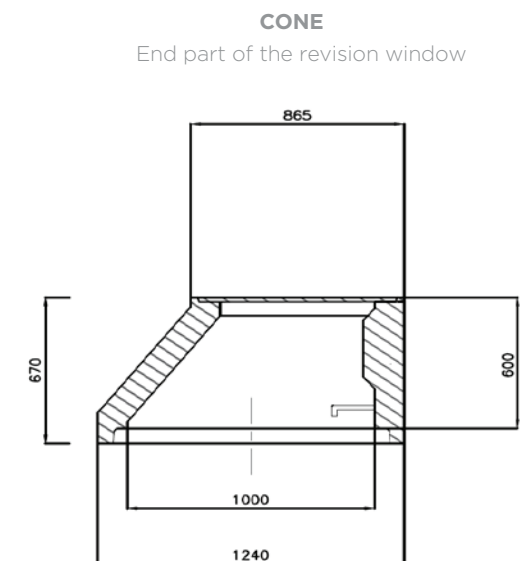
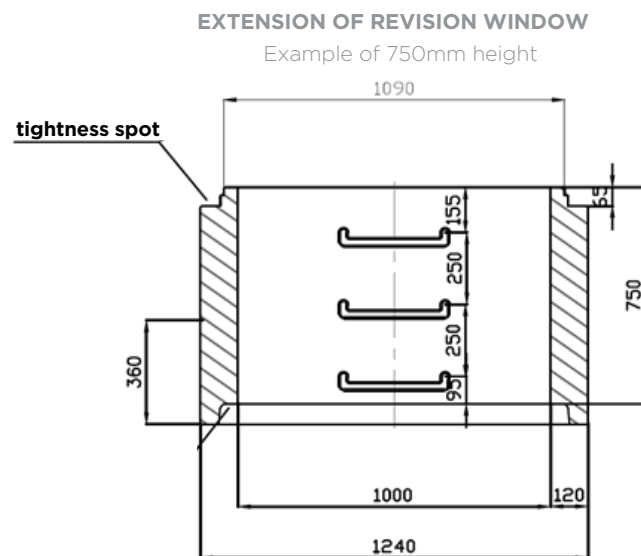
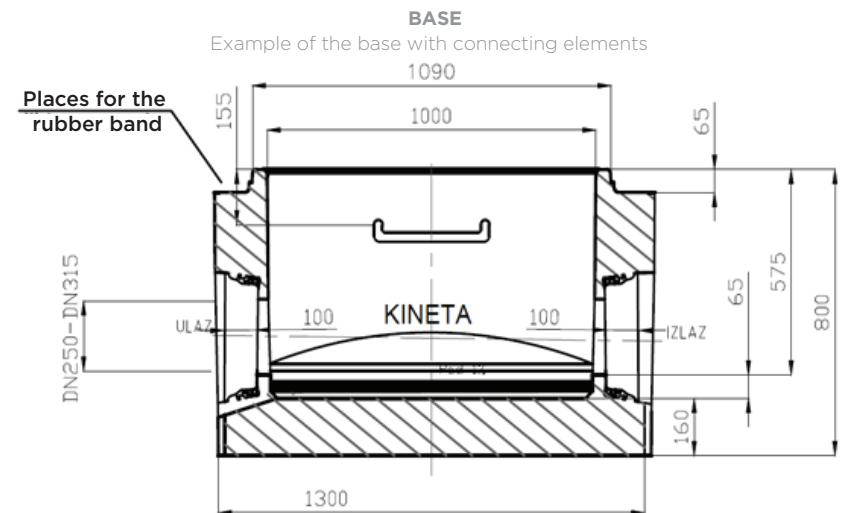
Rubber seals for waterproofing



Particular attention must be paid to the mutual joining of elements if you want to make the joints waterproof.

All elements are connected exclusively and strictly vertically one on top of the other, during which it is necessary to keep a strict account so that it does not come to mutual bending of the elements.

In this way, it is achieved that the rubber which is subsequently mounted on the upper surface of the lower element, and before lowering the upper element, fill its own role completely and achieve a 100% of watertight joint.



Assembly of elements of the inspection window:

The base of the inspection opening is placed on a concrete base or a base made of stone aggregate. Construction of the base, assembly and backfilling of pipes and shafts is prescribed according to standards EN 1610 and EN1917.

The quality of the substrate is the responsibility of the contractor and must be in accordance with the conditions prescribed in the project. The project defines: the width of the construction pit, the slope excavation slopes, stabilization of the substrate and the type of material used for it, backfilling of the construction pit, layer materials and degree of backfilling compaction.

Extensions and/or a conical element are placed on the base of the inspection window.

During the assembly of the elements of the shaft, the contractor is obliged to use the appropriate equipment in order to avoid possible damage to the elements and enable the appropriate the quality of the fit in the elements, taking into account the integrated rubber seals.

All elements must be cleaned of dirt with special attention in the part where the sealing rubber is located, both between the elements of the shaft and in the place where connect the pipes.

TRANSPORT

The following recommendations should be followed during transport and manipulation:

- Transport the elements according to their dimensions and weight.
- It is recommended to lay the elements on wooden pallets to reduce the risk of damage.
- When laying the elements in the construction pit, use adequate tools and machines for transferring and positioning the elements.
- Use the highest precautions at all times to avoid injury to workers.







DRAINAGE



HDPE OD DRAINAGE PIPES

HDPE drainage corrugated pipes



HDPE DRAINAGE CORRUGATED PIPES

The need for water is a basic life requirement. But the uncontrolled flow of water can often cause problems, because effective drainage plays an important role in agriculture and construction of sports facilities, roads and buildings. If appropriate pipes are not placed in proper accordance with the present water and land management, for example while building brick buildings, irreparable damage can be done in a short time. As a result, drainage systems are necessary aspect of any

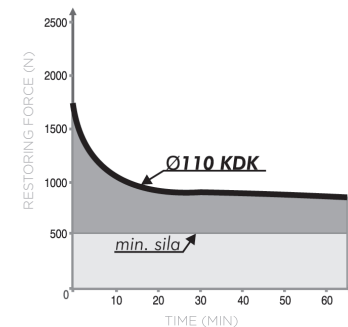
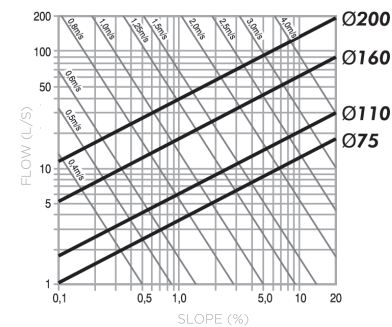
construction work especially in agriculture and construction of roads and buildings, where we have the optimum protection and treatment of ground water resources. Corrugated pipes are characterized by their "sandwich" structure. Outer wall of the corrugated pipes provides high rigidity and stability of these pipes, while the smooth inner wall provides optimum water flow speed. Inner and outer wall are connected homogeneous. Water

HDPE DRAINAGE CORRUGATED PIPES FEATURES

- Material: HDPE
- Standard: DIN 4262/1
- Density: $>0,945 \text{ kg/m}^3$
- MFI $190^\circ\text{C}/5\text{Kg}$ 0,35-1,3gr/10'
- Elastic modulus $>800 \text{ MPa}$
- Thermal expansion coefficients: $0,17 \text{ mm/m}^\circ\text{K}$
- Coefficients of thermal conductivity: na 23°C - 0,36-0,5 W/mk
- Surface Resistivity: $>10^{13} \Omega$
- Type of connection through socket without rubber
- Laying of pipelines and the use of HDPE pipelines is between -40°C to $+60^\circ\text{C}$.
- Ring stiffness $\text{SN}=4 \text{ KN/m}^2$ (EN ISO 9969)
- Standard color is black

HYDRAULIC CHARACTERISTICS

The diagram shows the hydraulic characteristics based on the coefficient of rigidity $k_b = 0.5$



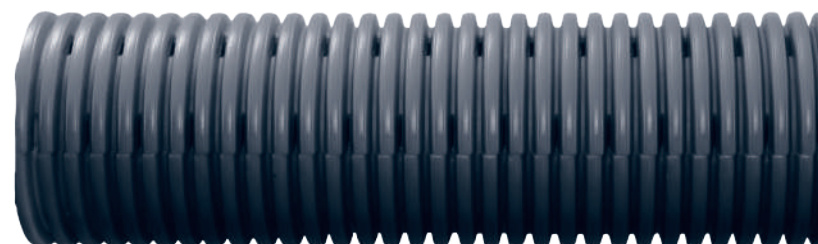
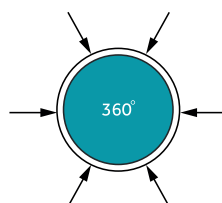
TYPES OF PIPES

There are three types of drainage pipes made of polyethylene, defined through outside diameter - pipe OD:

- KD - rigid drainage pipes (fully perforated)
- KDK - rigid drainage - sewerage pipes (partially perforated)
- FDK - flexible drainage pipes (fully perforated)

KD - RIGID DRAINAGE PIPES (FULLY PERFORATED)

KD pipes function is to provide optimum drainage podstepena and anti-freeze layer. This applies both during construction and completion of the works site by entering the existing water and transporting it to the exit spot. The joints are impermeable to sand. It is not necessary to place a rubber. Standard implies 6 slots along the scope with angle of 60°.



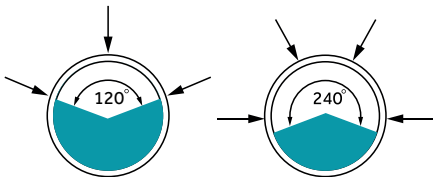
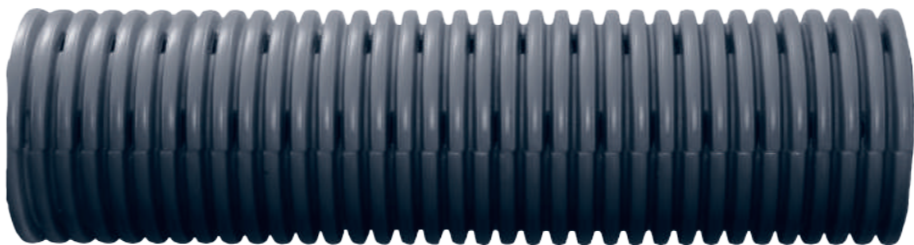
| CODE | OUTTER DIAMETER (MM) | INNER DIAMETER (MM) | STANDARD GAP (MM) | SPACE FOR WATER INLET (CM ² /M) | STANDARD LENGTH (M) |
|----------|----------------------|---------------------|-------------------|--|---------------------|
| 10800000 | Ø75 | Ø62 | 1 - 1,4 | >50 | 6 |
| 10800001 | Ø90 | Ø75 | 1 - 1,4 | >50 | 6 |
| 10800002 | Ø110 | Ø92 | 1 - 1,4 | >50 | 6 |
| 10800003 | Ø125 | Ø108 | 1 - 1,4 | >50 | 6 |
| 10800004 | Ø160 | Ø138 | 1 - 1,4 | >50 | 6 |
| 10800005 | Ø200 | Ø176 | 1 - 1,4 | >50 | 6 |
| 00000000 | Ø250 | Ø222 | 1 - 1,4 | >50 | 6 |
| 00000000 | Ø315 | Ø278 | 1 - 1,4 | >50 | 6 |
| 00000000 | Ø400 | Ø348 | 1 - 1,4 | >50 | 6 |
| 00000000 | Ø500 | Ø432 | 1 - 1,4 | >50 | 6 |

KDK – RIGID DRAINAGE – SEWERAGE PIPES (PARTIALLY PERFORATED)

Partially perforated KDK rigid drainage-sewerage pipes are perfect combination of perforated and collecting pipe. If requested, they must be able to collect and transport any surface water

that occurs, the short and long distances. Joints are impervious to water and sand because of the transport. Rubber is inserted into the third channel of the corrugated pipe and the socket

is slipped over the lubricated rubber. The pipes must be professionally installed by respecting the guidelines for laying of pipelines specified 1610 DIN4033.



| CODE 220° | CODE 150° | OUTTER DIAMETER (MM) | INNER DIAMETER (MM) | STANDARD GAP (MM) | SPACE FOR WATER INLET (CM²/M) | STANDARD LENGTH (M) |
|-----------|-----------|----------------------|---------------------|-------------------|-------------------------------|---------------------|
| 10800100 | 10800200 | Ø75 | Ø62 | 1 - 1,4 | >50 | 6 |
| 10800101 | 10800201 | Ø90 | Ø75 | 1 - 1,4 | >50 | 6 |
| 10800102 | 10800202 | Ø110 | Ø92 | 1 - 1,4 | >50 | 6 |
| 10800103 | 10800203 | Ø125 | Ø108 | 1 - 1,4 | >50 | 6 |
| 10800104 | 10800204 | Ø160 | Ø138 | 1 - 1,4 | >50 | 6 |
| 10800105 | 10800205 | Ø200 | Ø176 | 1 - 1,4 | >50 | 6 |
| 00000000 | 00000000 | Ø250 | Ø222 | 1 - 1,4 | >50 | 6 |
| 00000000 | 00000000 | Ø315 | Ø278 | 1 - 1,4 | >50 | 6 |
| 00000000 | 00000000 | Ø400 | Ø348 | 1 - 1,4 | >50 | 6 |
| 00000000 | 00000000 | Ø500 | Ø432 | 1 - 1,4 | >50 | 6 |

FDK – FLEXIBLE DRAINAGE PIPES (FULLY PERFORATED)

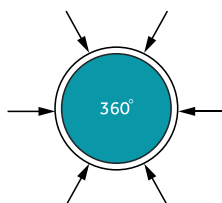
These pipes are light, highly flexible, resistant to UV light, solid and economical, easy to assemble. Due to special production process, the inner side of the pipe is smooth while the outer side is corrugated. The pipes are continued with coupling, which is impervious to sand. Application

temperature is from -40 °C to +60 °C. They are made of a material HDPE/LDPE. Gaps make > 50cm²/m of the water entrance surface. The slots are placed symmetrically in each channel of corrugated pipe. They are laid faster and better automatically. While settling, the pipes can be

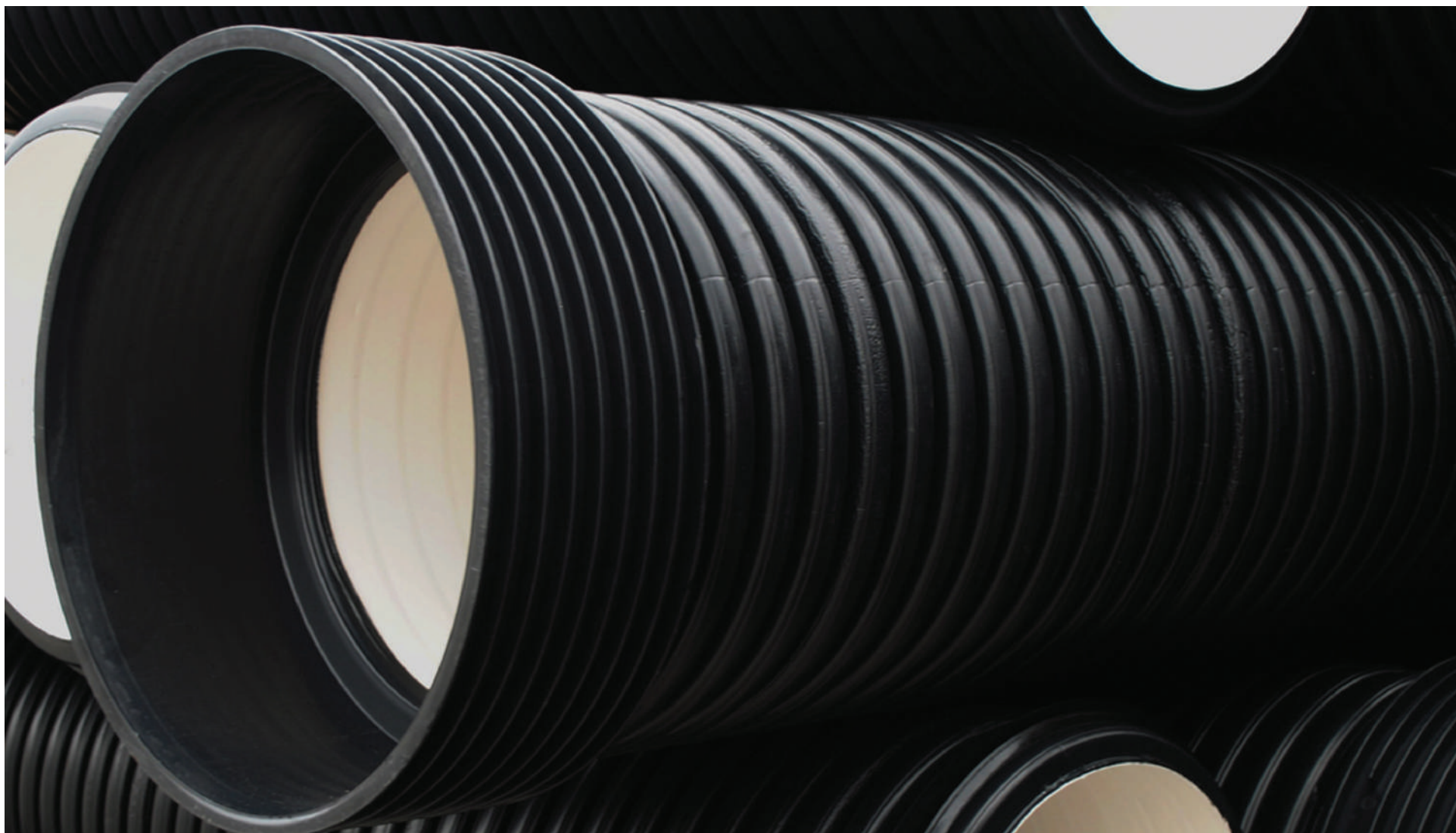
encased with filter material. The role of filters is to increase throughput and prevent rapid clogging pipes. It is possible to choose the number of slots for entry of water. Standard color is black and yellow-black. Other colors are possible by demand. They are packed and shipped in 50 m long coils.

IT IS POSSIBLE
TO CHOOSE THE
NUMBER OF SLOTS
FOR ENTRY OF
WATER.

On request peštan is
able to produce rigid
drainage – sewerage
pipes (partially
perforated) with
bigger perforation
50-200cm²/m for
diametres from
ø75-ø315



| CODE | OUTTER DIAMETER (MM) | INNER DIAMETER (MM) | STANDARD GAP (MM) | SPACE FOR WATER INLET (CM ² /M) | STANDARD LENGTH (M) |
|----------|----------------------|---------------------|-------------------|--|---------------------|
| 10800500 | Ø75 | Ø62 | 1 - 1,4 | >50 | 100 |
| 10800501 | Ø90 | Ø75 | 1 - 1,4 | >50 | 100 |
| 10800502 | Ø110 | Ø92 | 1 - 1,4 | >50 | 50 |
| 10800503 | Ø125 | Ø108 | 1 - 1,4 | >50 | 50 |
| 10800504 | Ø160 | Ø138 | 1 - 1,4 | >50 | 50 |
| 10800505 | Ø200 | Ø176 | 1 - 1,4 | >50 | 50 |
| 00000000 | Ø250 | Ø222 | 1 - 1,4 | >50 | 6 |
| 00000000 | Ø315 | Ø278 | 1 - 1,4 | >50 | 6 |
| 00000000 | Ø400 | Ø348 | 1 - 1,4 | >50 | 6 |
| 00000000 | Ø500 | Ø432 | 1 - 1,4 | >50 | 6 |



HDPE ID DRAINAGE PIPES



Poliethylene corrugated ID drainage pipes

Excess water in the soil can cause serious problems on land and objects in landslides and in very short period of time until their complete destruction. Therefore, the proper drainage of the terrain is extremely important before we have to design and prepare the ground for construction. Having in mind the need for drainage of excess water from the soil Peštan in its production program it is included a large range of diameters in accordance with DIN 4262/1 corrugated drainage and polyethylene (PE) pipe to drain excess water from the soil. Thanks to its large hydraulic capacity and a wide range of diameters these pipes are fully able to respond to any request and to provide a reliable and long-term drainage field.

HDPE pipes are lighter than PVC pipes and they are used for the same purpose, which allows easier handling and installation, they have excellent chemical resistance to aggressive environments and the surrounding land. Placing and use of HDPE pipeline is from -40°C up to $+60^{\circ}\text{C}$. The smooth inner surface has a low coefficient of friction so the pipes have very good hydraulic characteristics. They have excellent resistance to abrasion and they have excellent mechanical and physical properties.

Pipes are resistant to UV rays, they can stand a year outdoors and they should be protected. It is necessary to take into account that during transport and installation the pipes must not be dragged over sharp edges because sharp edges can damage the pipe while they are impact-resistant on blunt instrument.

CHARACTERISTICS AND SPECIFICATIONS

- Material: PE-HD (high-density polyethylene)
- Fast and inexpensive assembling
- Standard: DIN 4262/1
- Density: > 0,945 Kg / m³
- Index dispensing MFI 190 ° C / 5kg 0,35-1,3 gr / 10 '
- Modulus of elasticity: > 800 MPa
- The coefficient of linear thermal expansion: 0,17mm / mK
- The coefficient of thermal conductivity at 23 ° C - 0,36-0,5W / mK
- Surface electrical resistance: > 10¹³Ω
- Connection through via a socket
- Ring hardness SN = 4kN / m² I = SN 8 kN / m²
- Color: Black standard (at the request of the customer as well as some other color)
- Standard length 6 and 12m



PEŠTAN has all the necessary fittings for installation of pipes

TYPES OF HDPE ID DRAINAGE PIPES

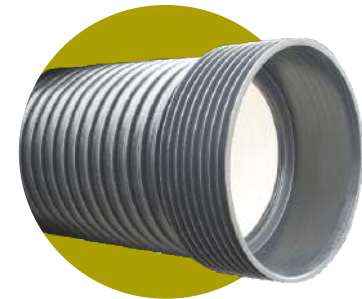
DN / ID (nominal diameter is inner diameter of the inside-diameter)
double wall corrugated HDPE pipes are classified according to internal diameter.

They are manufactured with integrated socket.

They can work in a range from Ø140 to Ø800, stiffness SN 4 and SN 8th



ID SN4



ID SN8

| DN | | OD (mm) | ID (mm) | e (mm) | CWT (mm) | LWT (mm) | T (mm) | A (mm) | Kg/m |
|------|-----|---------|---------|--------|----------|----------|--------|--------|-----------|
| Ø140 | SN4 | Ø160 | 139.8 | 1.2 | 0.5-0.9 | 0.9 | 17.44 | 3.5 | 0.8-1.1 |
| | SN8 | Ø160 | 139 | 1.6 | 0.9-1.2 | 1.1 | 17.44 | 3.5 | 1.1-1.4 |
| Ø200 | SN4 | Ø227 | 199 | 1.7 | 0.9-1.2 | 1.2 | 22.43 | 4.5 | 1.8-2.0 |
| | SN8 | Ø227 | 198 | 2.2 | 1.2-1.6 | 1.4 | 22.43 | 4.5 | 2.1-2.5 |
| Ø250 | SN4 | Ø283 | 249 | 2.2 | 1.2-1.4 | 1.5 | 26.17 | 5.1 | 2.8-3.1 |
| | SN8 | Ø283 | 248 | 2.7 | 1.6-2.0 | 1.6 | 26.17 | 5.1 | 3.6-3.85 |
| Ø300 | SN4 | Ø340 | 298.2 | 2.6 | 1.3-1.5 | 1.7 | 31.4 | 5.5 | 3.8-4.2 |
| | SN8 | Ø340 | 297 | 3.2 | 1.7-2.2 | 1.8 | 31.4 | 5.5 | 4.5-5.2 |
| Ø400 | SN4 | Ø453 | 397.8 | 3.2 | 1.4-1.7 | 2.2 | 39.25 | 7.9 | 5.8-6.6 |
| | SN8 | Ø453 | 396 | 4.1 | 2.2-2.6 | 2.5 | 39.25 | 7.9 | 8.1-8.9 |
| Ø500 | SN4 | Ø567 | 497.6 | 4.2 | 1.8-2.2 | 3.0 | 52.78 | 9.4 | 9.8-10.7 |
| | SN8 | Ø567 | 495 | 5.5 | 2.4-3.1 | 3.3 | 52.78 | 9.4 | 12.6-13.5 |
| Ø600 | SN4 | Ø680 | 597 | 5.2 | 2.6-3.0 | 3.5 | 65.97 | 13.2 | 15.0-16.5 |
| | SN8 | Ø680 | 594 | 6.7 | 3.4-3.8 | 3.8 | 65.97 | 13.2 | 18.7-19.3 |
| Ø800 | SN4 | Ø906 | 796 | 6.5 | 2.8-3.2 | 4.5 | 89.97 | 19.3 | 24.0-25.8 |
| | SN8 | Ø906 | 792 | 8.5 | 4.3-5.1 | 4.7 | 89.87 | 19.3 | 31.6-33.4 |

There are two types of drainage pipes made of polyethylene, defined through inside diameter - pipe ID:

- **KD** - RIGID DRAINAGE PIPES (FULLY PERFORATED)
- **KDK** - RIGID DRAINAGE-SEWERAGE PIPES (PARTLY PERFORATED)

KD - RIGID DRAINAGE PIPES (FULLY PERFORATED)

KD pipes has to assure the function of optimum drainage degree and anti-freeze layer.

This is applied for both during the construction and completion of work construction site by entering of the existing water and transporting it to the main dumping. The joints are impermeable on sand. Installation of rubber for compounds for these pipes are not necessary.

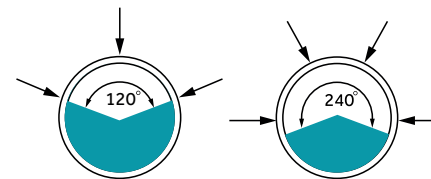
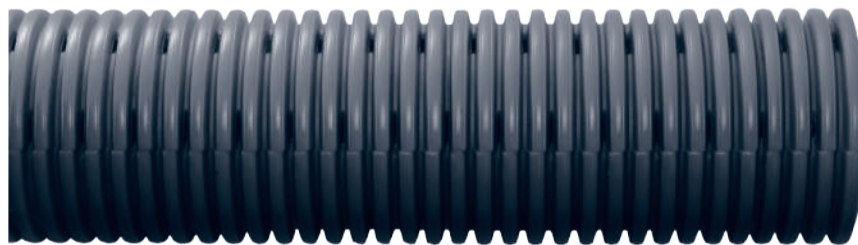
Standard are 6 slots per Celma diameter volume distributed up to 60°.



KDK - RIGID DRAINAGE PIPES (PARTIALLY PERFORATED)

Partially perforated KDK stiff drainage-sewerage pipes represent the ideal combination of perforated and collected pipes. If its necessary, they must be able to collect and transport any surface water which at short and long distances. Joint is impermeable to water and sand because of water transport. Eraser is inserted into the third channel of corrugated pipes. The greased socket is inserted over the greased rubber.

The pipes must be professionally installed respecting the directions for laying of the pipeline given in 1610 and DIN 4033.



The slots on both types of pipes are located between the ribs. Pipe has to be symmetrically in volume over the length of the tube which does not allows impeded access of water to the slit. During the construction of drainage systems it is recommended to put the pipe in the stone filter layer except if is placed in an additional protective layer of geotextile filter to prevent leaching of the soil and the possible blocking of the hole on the tube impurities and therefore I reduced efficiency of the pipeline.

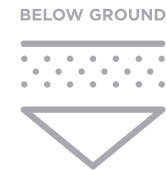
IT IS POSSIBLE
TO SELECT THE
NUMBER OF SLOTS
FOR ENTRY OF
WATER

That can be
manufactured by request
stiff sewage drainage
pipes with bigger slot
50-200 cm²/m



PP ID DRAINAGE PIPES

Polypropilene corrugated drainage pipes ID



Excess of water in the soil can cause serious problems on land and objects until their complete destruction in landslides in a very short period of time. Therefore, the proper drainage of the terrain is extremely important to consider when designing and preparing the ground for construction.

Bearing in mind the need for drainage of excess water from the soil, Peštan included corrugated drainage and polypropylene (PP) pipes in its production portfolio. Peštan provides a large range of diameters in accordance with DIN 4262/1. These pipes, thanks to their large hydraulic capacity and a wide range of diameters, are fully able to respond to any request and provide a reliable and long-term drainage of ground. In addition, thanks to the chemical resistance of polypropylene, these pipes are used even in the presence of chemically aggressive liquids.

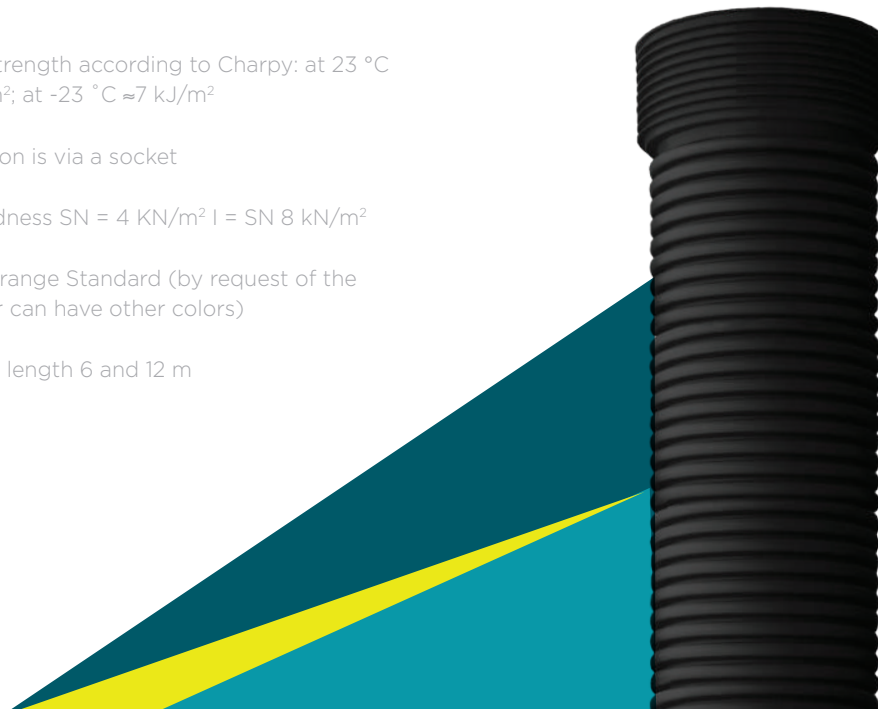
Peštan polypropylene corrugated drainage pipes are made from standard PP corrugated pipes. The pipes are passing through perforation process in accordance with DIN 4262/1.

PP pipes are lighter than PVC pipes for the same purpose, which provides easier handling and installation. They have excellent chemical resistance to aggressive environment and the surrounding land. The smooth inner surface has a low coefficient of friction so that the pipes have very good hydraulic characteristics. They have excellent resistance to abrasion, mechanical and physical properties.

Pipes are resistant to UV rays- they can stand outdoors for one year. They should be protected. It is necessary to take into account that during transport and installation pipes shouldn't be dragged over sharp edges, sharp edges can damage the pipe while they are impact-resistant to blunt instrument.

FEATURES AND TECHNICAL DATA

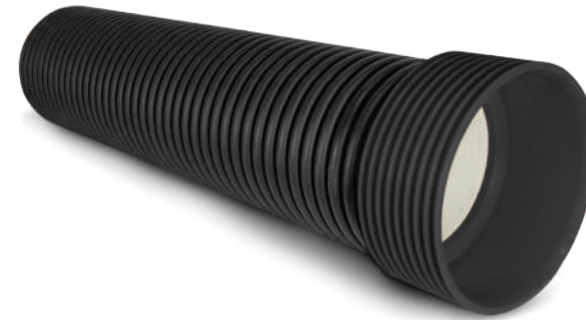
- Material: PP-B copolymer
- Fast and inexpensive mounting
- Standard: DIN 4262/1
- Density: $>0,900 \text{ Kg/m}^3$
- Pour Index: MFR 230 C/2.16 0,30 gr/10'
- Modulus of elasticity: MPa 1500/2000
- Tensile strength: 32 MPa
- Impact strength according to Charpy: at 23°C $\approx 70 \text{ kJ/m}^2$; at -23°C $\approx 7 \text{ kJ/m}^2$
- Connection is via a socket
- Ring hardness $\text{SN} = 4 \text{ kN/m}^2$ I = $\text{SN} 8 \text{ kN/m}^2$
- Colour: orange Standard (by request of the customer can have other colors)
- Standard length 6 and 12 m



TYPES OF PP ID DRAINAGE PIPES

Double-layer corrugated PP pipe have been classified by the internal diameter of DN/ID (nominal diameter is the inner diameter/ inside-diameter).

They are manufactured with integrated socket.They can be produced in a range from Ø140 to Ø800, of ring stiffness SN 4 and SN 8.



| DN | | OD (MM) | ID (MM) | E (MM) | CWT (MM) | LWT (MM) | T (MM) | A (MM) | KG/M |
|------|-----|---------|---------|--------|----------|----------|--------|--------|-----------|
| Ø140 | SN4 | Ø160 | 139.8 | 1.2 | 0.5-0.9 | 0.9 | 17.44 | 3.5 | 0.8-1.1 |
| | SN8 | Ø160 | 139 | 1.6 | 0.9-1.2 | 1.1 | 17.44 | 3.5 | 1.1-1.4 |
| Ø200 | SN4 | Ø227 | 199 | 1.7 | 0.9-1.2 | 1.2 | 22.43 | 4.5 | 1.8-2.0 |
| | SN8 | Ø227 | 198 | 2.2 | 1.2-1.6 | 1.4 | 22.43 | 4.5 | 2.1-2.5 |
| Ø250 | SN4 | Ø283 | 249 | 2.2 | 1.2-1.4 | 1.5 | 26.17 | 5.1 | 2.8-3.1 |
| | SN8 | Ø283 | 248 | 2.7 | 1.6-2.0 | 1.6 | 26.17 | 5.1 | 3.6-3.85 |
| Ø300 | SN4 | Ø340 | 298.2 | 2.6 | 1.3-1.5 | 1.7 | 31.4 | 5.5 | 3.8-4.2 |
| | SN8 | Ø340 | 297 | 3.2 | 1.7-2.2 | 1.8 | 31.4 | 5.5 | 4.5-5.2 |
| Ø400 | SN4 | Ø453 | 397.8 | 3.2 | 1.4-1.7 | 2.2 | 39.25 | 7.9 | 5.8-6.6 |
| | SN8 | Ø453 | 396 | 4.1 | 2.2-2.6 | 2.5 | 39.25 | 7.9 | 8.1-8.9 |
| Ø500 | SN4 | Ø567 | 497.6 | 4.2 | 1.8-2.2 | 3.0 | 52.78 | 9.4 | 9.8-10.7 |
| | SN8 | Ø567 | 495 | 5.5 | 2.4-3.1 | 3.3 | 52.78 | 9.4 | 12.6-13.5 |
| Ø600 | SN4 | Ø680 | 597 | 5.2 | 2.6-3.0 | 3.5 | 65.97 | 13.2 | 15.0-16.5 |
| | SN8 | Ø680 | 594 | 6.7 | 3.4-3.8 | 3.8 | 65.97 | 13.2 | 18.7-19.3 |
| Ø800 | SN4 | Ø906 | 796 | 6.5 | 2.8-3.2 | 4.5 | 89.97 | 19.3 | 24.0-25.8 |
| | SN8 | Ø906 | 792 | 8.5 | 4.3-5.1 | 4.7 | 89.87 | 19.3 | 31.6-33.4 |

There are two types of drainage pipes made of polypropylene, defined through the inner diameter – ID pipes:

- **KD** – RIGID DRAINAGE PIPES (FULLY PERFORATED)
- **KDK** – RIGID DRAINAGE-SEWERAGE PIPES (PARTLY PERFORATED)

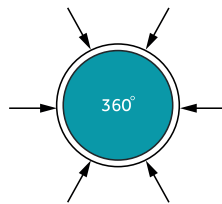
KD - RIGID DRAINAGE PIPES (FULLY PERFORATED)

KD pipes function is to assure the optimum drainage sub-degree and anti-freeze layer.

This applies both during the construction and completion of the work site by entering the existing water and transporting it to the main dumping.

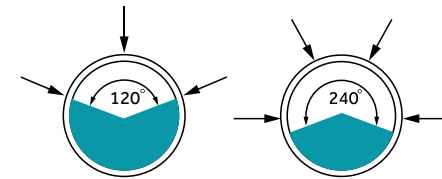
The joints are impermeable to sand.

Installation of rubber rings to such pipes is not necessary. 6 slots are standard per whole volume and they are distributed to 60°.



KDK - RIGID SOLID DRAINAGE PIPES (PARTIALLY PERFORATED)

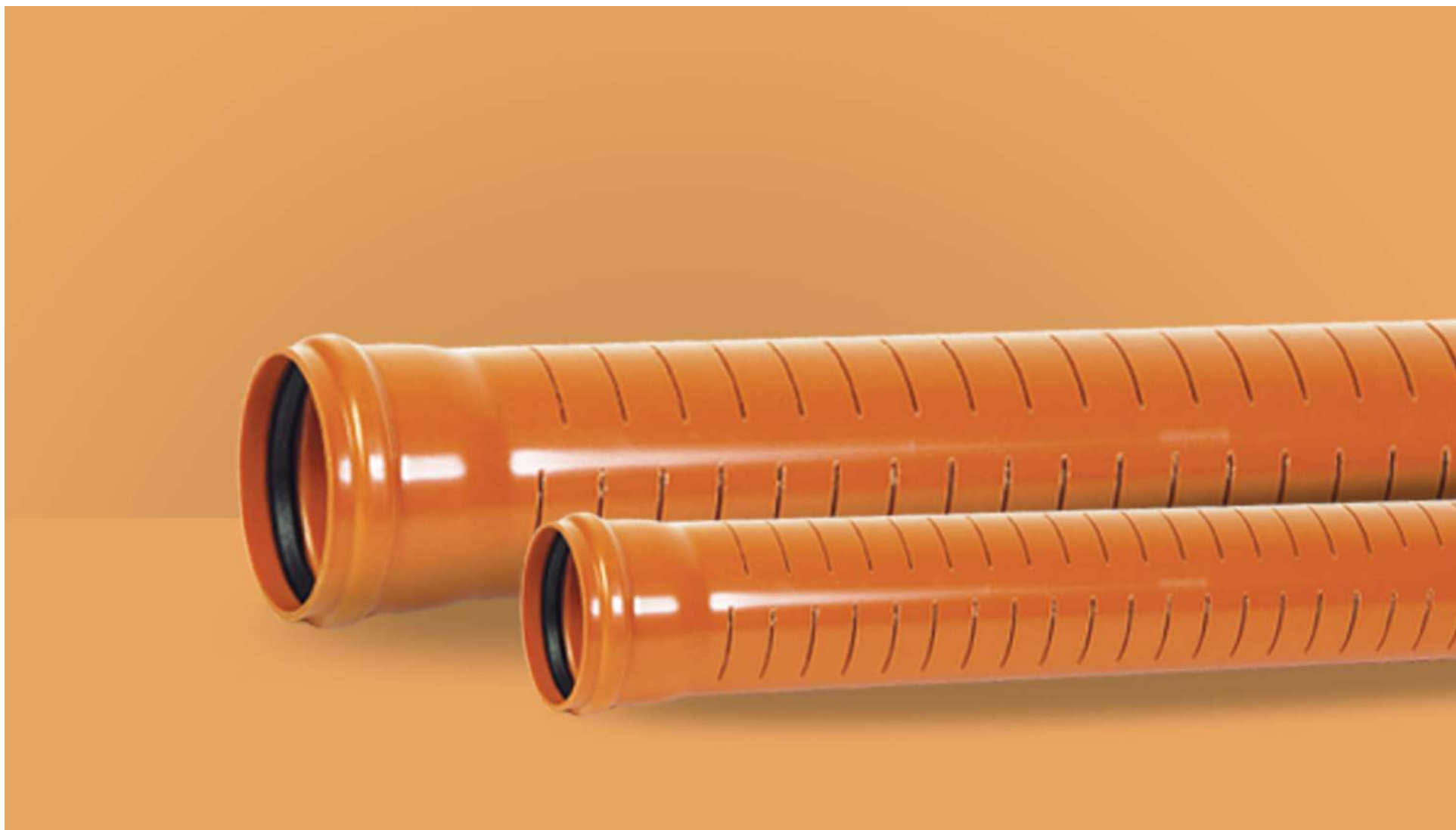
Partially perforated KDK solid drainage-sewerage pipes represent the ideal combination of perforated and collecting pipes. If requested, they must be able to collect and transport any surface water at short and long distances. Because of water transport, sockets are impermeable to water and sand. Rubber ring is inserted into the third channel of the corrugated pipe and socket, which is first lubricated, is wrapped around lubricated rubber. The pipes must be professionally installed respecting the guidelines for laying the pipeline given in EN1610 and DIN4033.



The slots on both types of pipes are located between the ribs of pipe, symmetrically over whole volume of the pipe which allows a smooth access of water to the slot. During the construction of drainage systems it is recommended to place a pipe, in addition to the stone filter layer, in an additional protective layer of geotextile filter to prevent leaching of the soil and the possible blocking of the hole on the pipe impurities and therefore reduction of efficiency of the pipeline.

POSSIBLE TO SELECT
THE NUMBER OF
SLOTS

*on request, rigid
sewage drainage pipes
with bigger slots
can be produced
50 - 200 cm²/m



PVC DRAINAGE PIPES



PVC perforated drainage pipes

KG (PVC) PERFORATED PIPES

Perforated PVC pipes for drainage have been manufactured according to DIN 4262 standard.

Assembly of the pipeline is extremely easy , pipes are connected to one another with fittings while complete seal is achieved with use of rubber bands. Maximum temperature of application is +60 °C. Pipes are resistant to salt water, alcohol, acids, alkalis, sulphates, aggressive gas and all kinds of detergents. On the other hand, they cannot be used for the transport of water which contains high percentage of benzene, benzine (petrol) or acetone.

ADVANTAGES & OWNER BENEFITS

- Very light material
- Simple and easy way of both transport and manipulation
- Fast and cheap assembling
- Pipe connections are resistant to water and other type of fluids
- They are resistant to corrosion in alkaline, acid or aggressive environment
- They are fine electrical insulator, and also resistant to mechanical impact
- Guaranteed life time of more than 50 years
- Connection with muffs and gaskets made of EPDM or rubber (EN 681)
- SRPS EN 1401 - compact; SRPS EN 13476 - Three-Layered

The method of producing perforations in the PVC pipes



SPECIFICATION OF MATERIAL



PVC-pipes and fittings are made from compound of non-softened PVC material with = 10MPa mixed with necessary additives.
Specific mass $1,38 \div 1,45 \text{ gr/cm}^3$

- Typical weight $1.38 \div 1.45 \text{ g/cm}^3$
- Tensile strenght 50-60 MPa
- Thermal stability:
according to Vicat min $79 \text{ }^\circ\text{C}$
- Thermal conductivity $0,54 \text{ KJ/mh/}^\circ\text{C}$
- Linear ratio of thermal extension $0,08 \text{ mm/m/}^\circ\text{C}$
- Water absorption 4 mg/cm^2

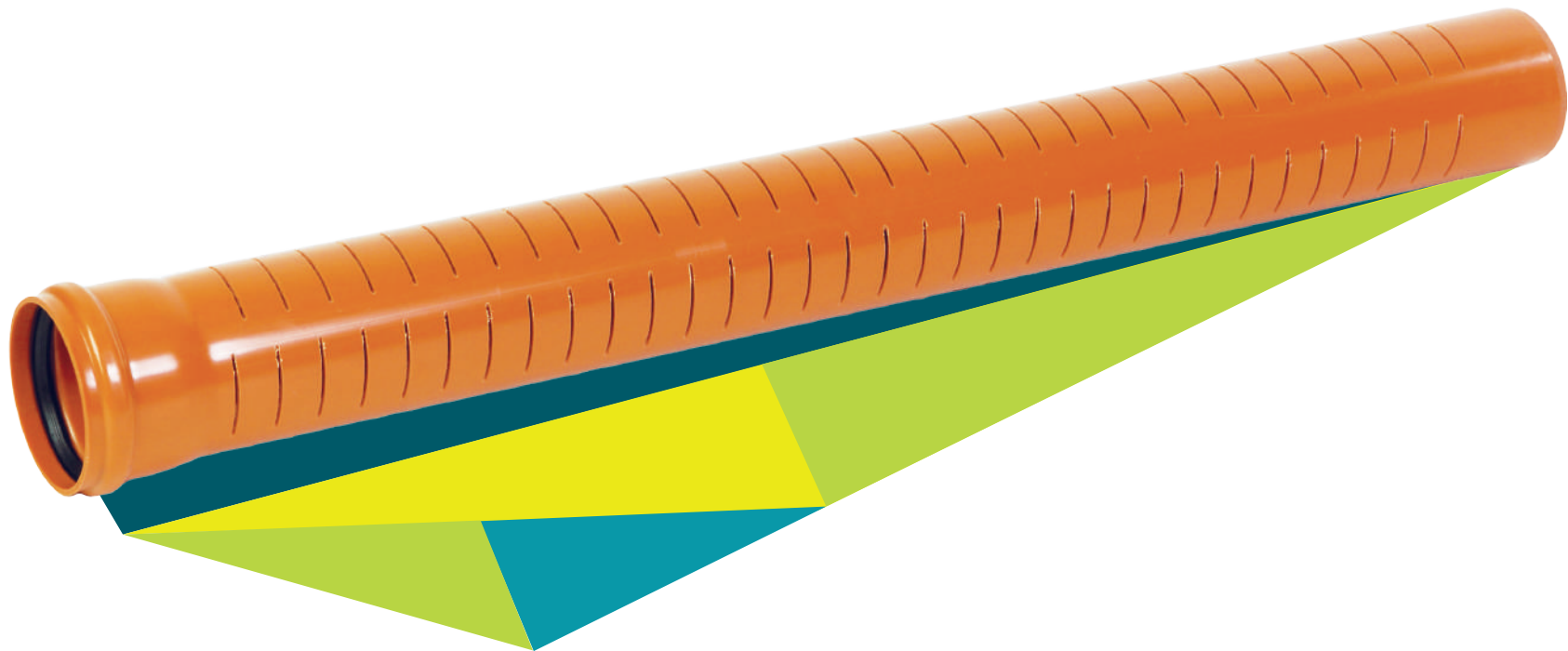
PIPE SERIES SPECIFICATION

Pipe series S-20 (SDR 41) SN 4 KN/m²

- Depth of pipe trench min 1,2 ÷ 6 m max
- Maximum loading max 18 t/axel
- Ring stiffness SN 4 KN/m²
- Connection with EPDM or rubber (EN 681) seal in socket
- Length 1 ÷ 6m

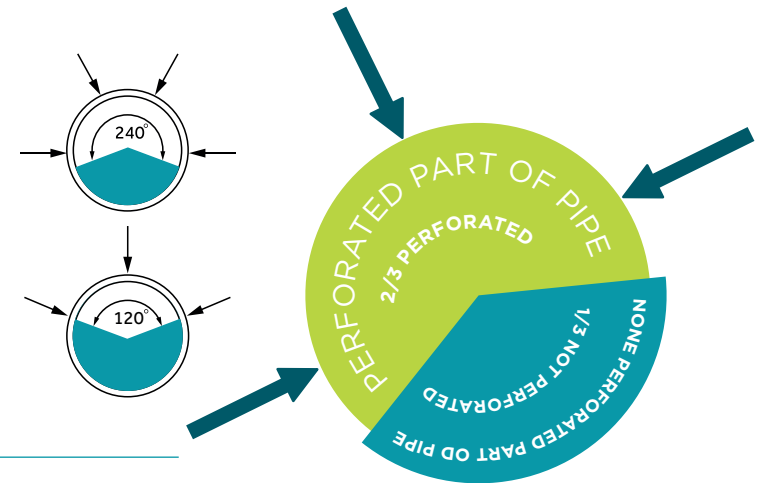
Pipe series S-16 (SDR 34) SN 8 KN/m²

- Depth of pipe trench min 1,2 ÷ 6 m max
- Maximum loading max 18 t/axel
- Ring stiffness SN 8 KN/m²
- Connection with EPDM or rubber (EN 681) seal in socket
- Length 1 ÷ 6 m

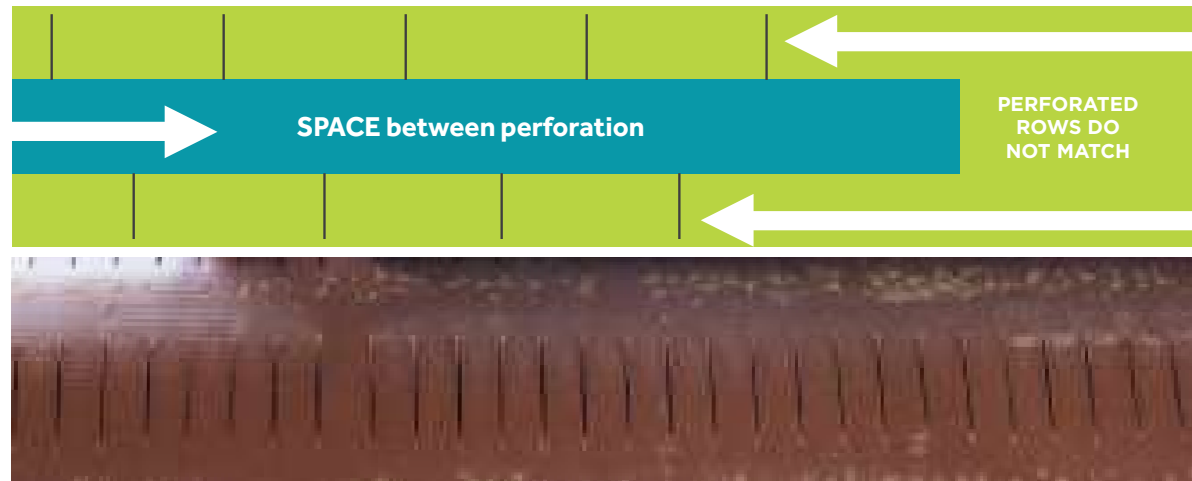


Ø110 pipe - perforated in 3 rows
 Ø125 pipe - perforated in 3 rows
 Ø160 pipe - perforated in 3 rows
 Ø200 pipe - perforated in 4 rows

Ø250 pipe - perforated in 5 rows
 Ø315 pipe - perforated in 6 rows
 Ø400 pipe - perforated in 7 rows



ILLUSTRATED EXAMPLE OF PERFORATED PIPE



The slots are such as to allow unrestricted entry of water into the pipe. Their position is normal to the axis of the tube. Slot width in the perforated pipe is from 2.5 to 3 mm. Area slit the water intake is greater than 50 cm/m².

DISTANCE BETWEEN CUTS

From 15 mm to 20 mm on pipes Ø110 and Ø125
 From 20 mm to 25 mm on pipes Ø160

From 25 mm to 30 mm on pipes Ø200 and Ø250
 From 35 mm to 40 mm on pipes Ø315
 From 45 mm to 50 mm on pipes Ø400

PIPES ACCORDING TO DIN 4262 STANDARD SHALL BE CATEGORIZED IN THE FOLLOWING WAYS ACCORDING TO THEIR ARRANGEMENT OF THE SLOTS AS SHOWN IN PICTURE:

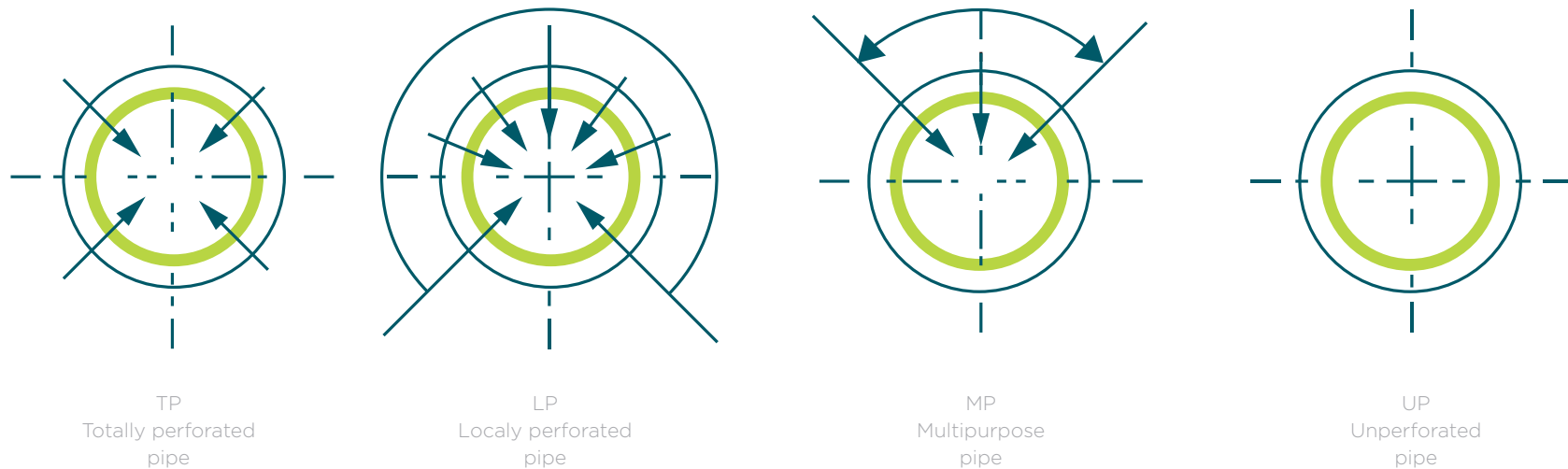
a) Totally perforated pipes (TP) are arranged uniformly over the entire circumference of the water inlet opening and having at least four rows of slots. They may be used in all sizes. Tubes of the type C1 and C2 are not produced as pipes.

b) Locally perforated pipes (LP) in which the water inlet opening is arranged over a range of about 220 degrees ± 10 at the pipe apex symmetrically to the vertical axis of the pipe, and the sole is unslotted. It must have at least three rows of slots. They are usually available in nominal sizes DN100 eingestetzt to DN200.

c) Multi purpose pipes (MP) in which the water inlet opening is arranged on top of the pipe symmetrically to the vertical pipe axis evenly over a range of maximum 120 degrees, have at least two rows of slots and have a watertight connection. The lower part of the MP-pipe can be used as transport pipe for all of the water. They are used in nominal diameters from DN200.

d) Unperforated transport pipe (UP)

THE INSTALLATION POSITION OF THE TP AND MP-PIPES MUST BE RECOGNIZABLE EITHER BY THE SHAPE OF THE PIPE OR BY A CROWN MARK.





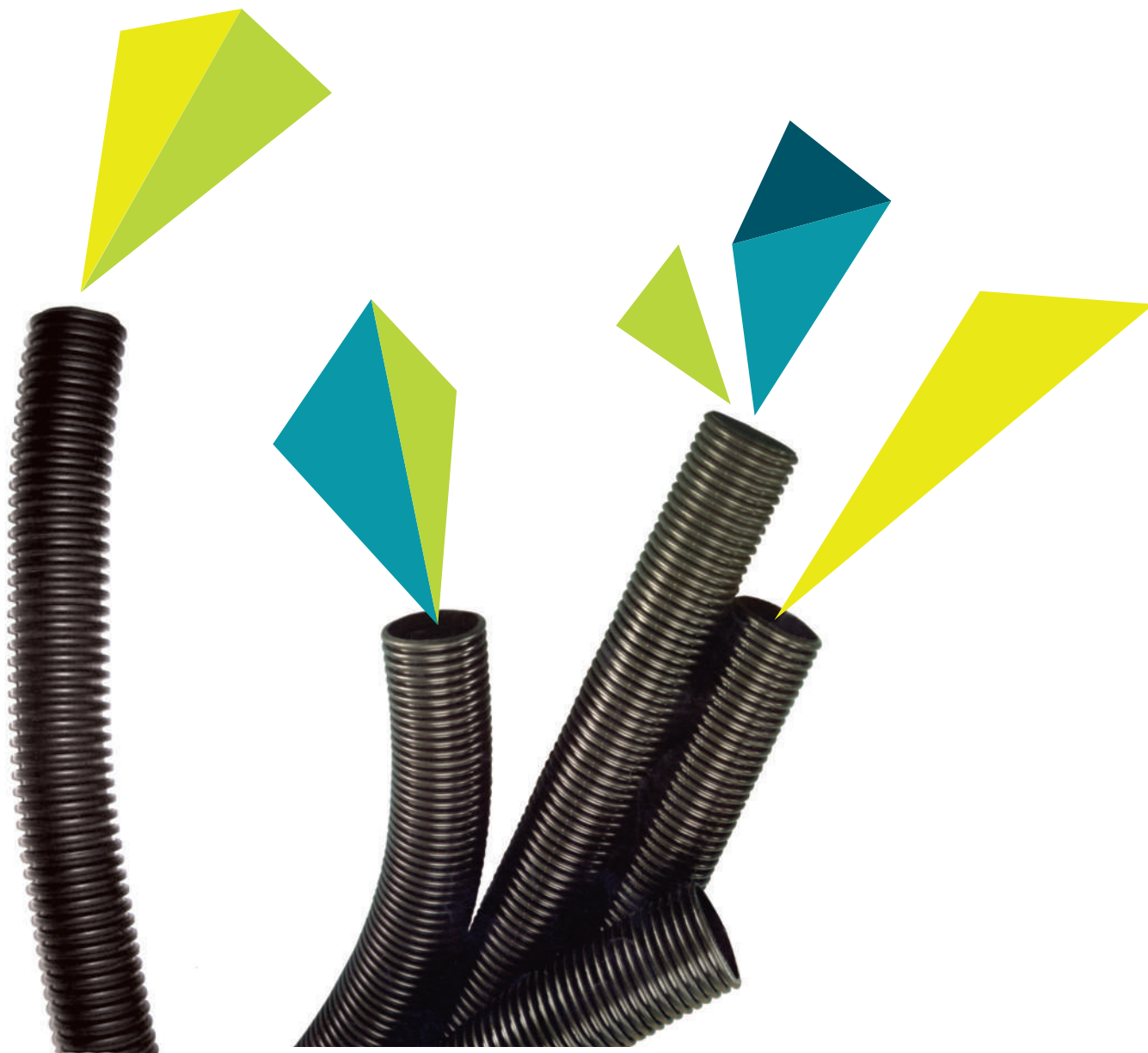


CABLE PROTECTION



SINGLE LAYER CORRUGATED PIPES





SINGLE LAYER ELECTRO INSULATING CORRUGATED “THROAT” PIPES

They are used for power and PTT installations in industrial and construction building. They are placed in the mortar and in concrete layer. Cables can be inserted quickly and easily inside the pipes, even on curved surface. These pipes are produced in accordance with DIN49018

| CODE | OUTSIDE DIAMETER MM | INSIDE DIAMETER MM | MIN INSIDE DIAMETER WHEN BENDED MM |
|----------|---------------------|--------------------|------------------------------------|
| 10900101 | Ø20 | Ø14 | 100 |
| 10900102 | Ø25 | Ø19 | 50 |
| 10900103 | Ø32 | Ø25 | 50 |



PVC PTT AND EL-EN PIPES

PVC Pipes for cable protection

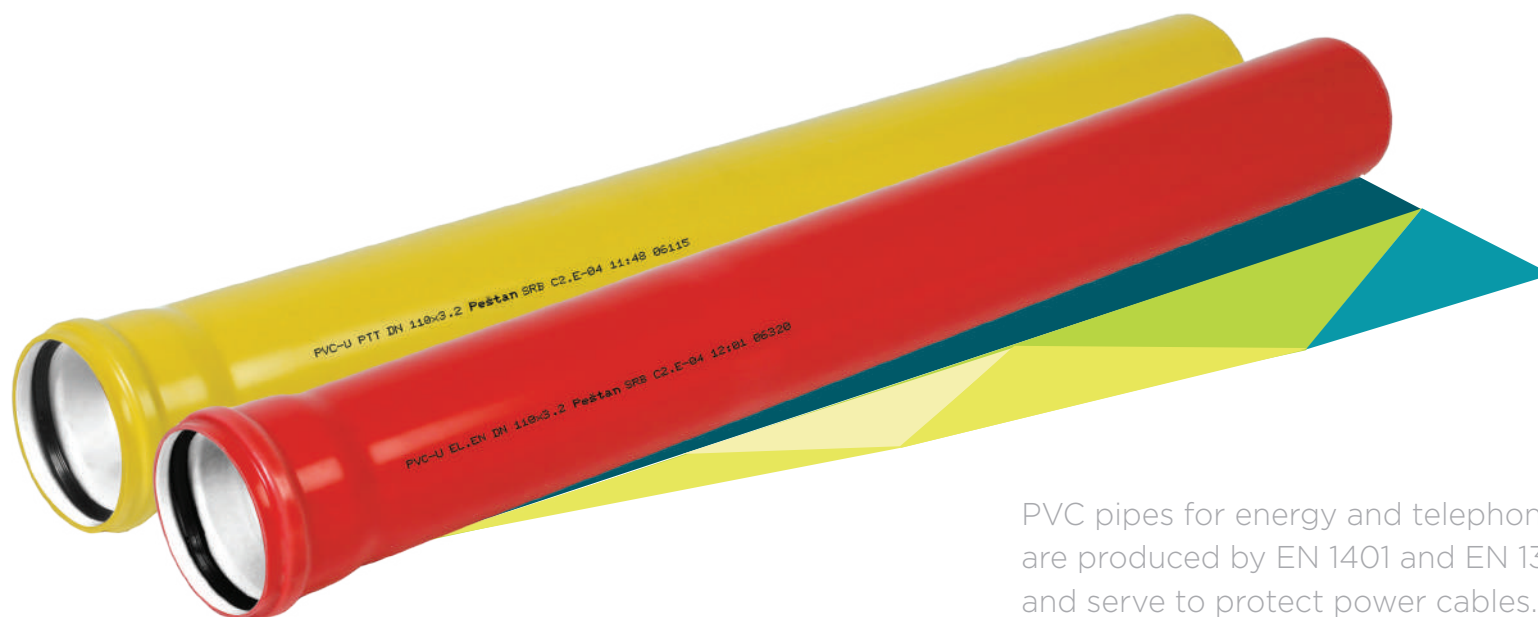
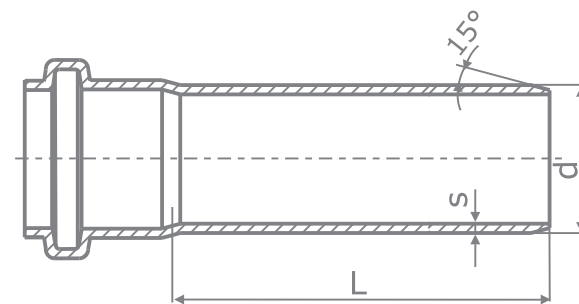
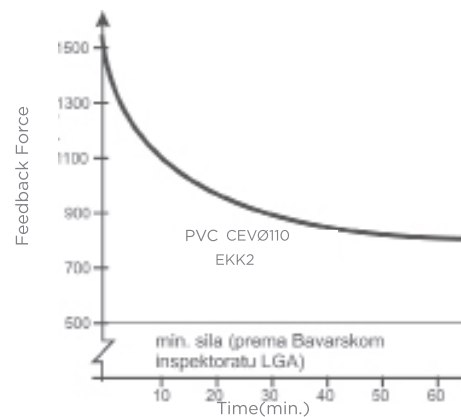
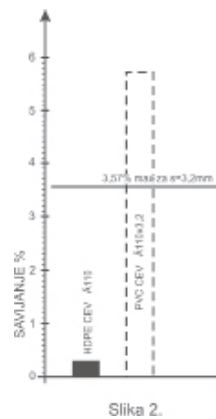
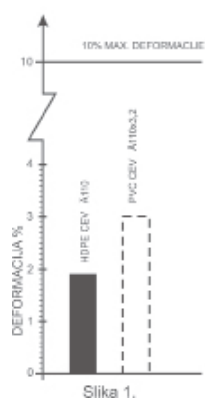


PVC PIPES FOR CABLE SYSTEMS

- Light material, easy and quickly to storage and manipulate;
- Easy to transport, simple and cheap assembling process;
- The process of connecting two PVC pipes doesn't last for more than 1 minute, there for the interruptions of the traffic do not last very long;
- They have thin walls, so that the laying of the cables inside the pipes is very swift and simple;
- In the same trench a large number of pipes can be laid next and on top of each other;
- Connections are impermeable to water and any other fluids;
- They are resistant to corrosion in alkaline, acid or any other aggressive environment;
- They are fine electrical insulators and also resistant to stray currents;
- They're resistant to impact;
- They are resistant to ageing (with the life time of more than 50 years);
- Pipe dimensions are 110 mm, 125 mm, 160 mm 200 mm with the length of 6 m;
- They're produced in yellow and red color.

These pipes are produced out of PVC, according to EN 1401 and EN 13476. Standard production length is 6 m. They can be continued with the socket and rubber bend which is water, sand and dust impermeable. Pipes are produced in standard colors: yellow for PTT cables and red for electro energetic installations.

| PVC PIPES | | | | |
|-----------|--------|-----------------------|-----------------|--------------------|
| CODE | COLOR | OUTSIDE DIAMETER (DC) | INSIDE DIAMETER | WALL THICKNESS (S) |
| 11400011 | Red | 110+0,3 | 110,6-0,2 | 3,2+0,5 |
| | | 125 | 118,6 | 3,7 |
| | | 160 | 152 | 4,7 |
| | | 200 | 190,2 | 5,9 |
| | Yellow | 110+0,3 | 110,6-0,2 | 3,2+0,5 |
| | | 125 | 118,6 | 3,7 |
| | | 160 | 152 | 4,7 |
| | | 200 | 190,2 | 5,9 |



PVC pipes for energy and telephone cables are produced by EN 1401 and EN 13476, and serve to protect power cables.



HDPE CORRUGATED CABLE PROTECTION PIPES



Polyethylene double-layered corrugated pipes for cable protection

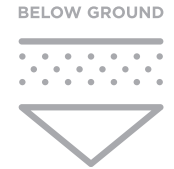
Pipes are prepared by SRPS-EN12201, DIN8074-8075, ISO 4427 and ISO 4065

| HDPE PE-80 | |
|------------|--------|
| CODE | D (MM) |
| 11199202 | Ø50 |
| 0000000 | Ø75 |
| 11199205 | Ø90 |
| 11199206 | Ø110 |
| 0000000 | Ø125 |
| 0000000 | Ø160 |
| 0000000 | Ø200 |



SMOOTH PIPES FOR CABLE PROTECTION

Polyethylene smooth pipes for cable protection



Are prepared by SRPS-EN12201, DIN8074-8075, ISO 4427 and ISO 4065

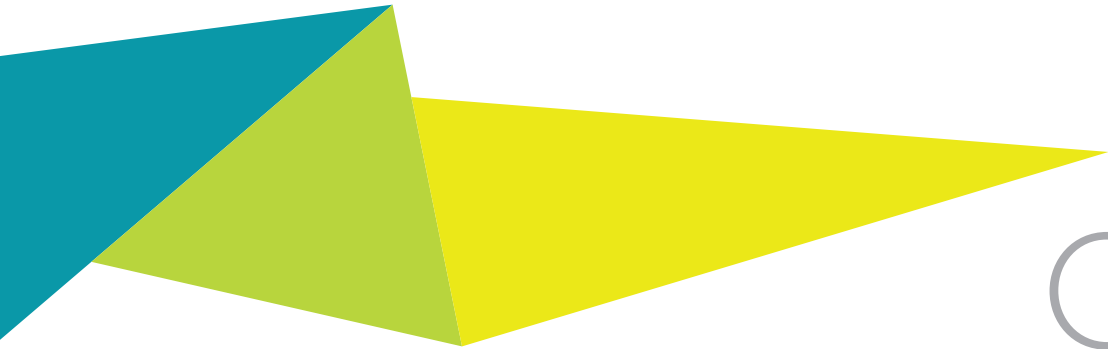
| HDPE PE-80 | | |
|------------|--|--------|
| CODE | | D (MM) |
| 11199198 | | Ø20 |
| 11199200 | | Ø32 |
| 11199201 | | Ø40 |
| 11199202 | | Ø50 |
| 00000000 | | Ø63 |
| 00000000 | | Ø75 |
| 11199205 | | Ø90 |
| 11199206 | | Ø110 |



HDPE cable protection pipes are made of high quality polyethylene PE 80.
They are produced in black color and have 4 coextruded light purple lines, which are arranged around the perimeter of the tube.
HDPE cable protection pipes have a smooth outer surface and the inner surface of the pipe is with grooves.
HDPE cable protection pipes are UV stable.



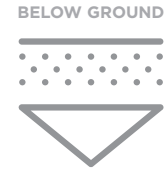




OUTDOOR DRAINAGE



VEDRO OUTDOOR DRAIN



Horizontal atmospheric drain for drainage of the surface water and rainwater.



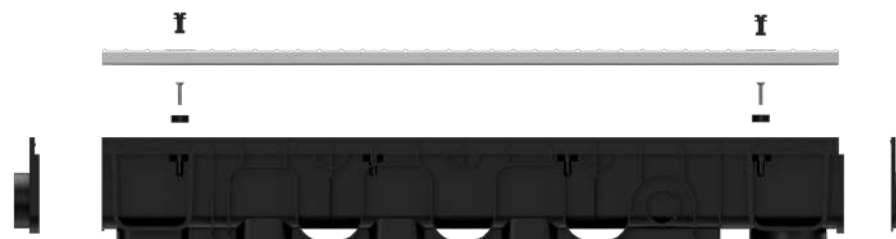
Vedro outdoor drain A15 with metal grid

The Vedro drain is intended for draining surface water in external sewage systems. Thanks to the adequate performance and design of the drain, as well as high durability, drainage is carried out in the most efficient way

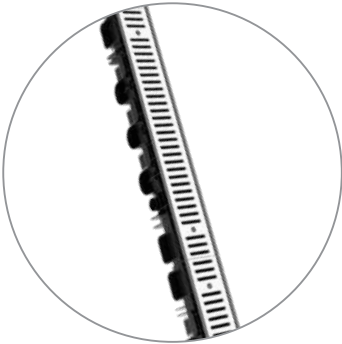


MAIN ADVANTAGES:

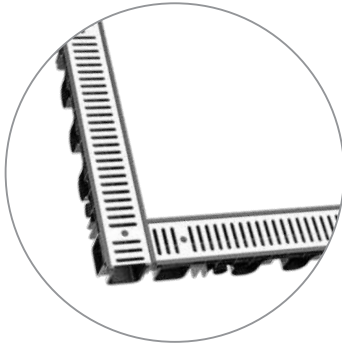
- High quality and reliability - standard EN 1433
- Two openings on the side for pipes DN 50 mm and on the bottom side DN 75 and 110 mm
- Effective removal of rainwater from external surfaces
- Massive ribs for structural strength
- System with four fixing points for the base
- Modularity in the continuation of drains in L, X, T, I shapes for additional practicality



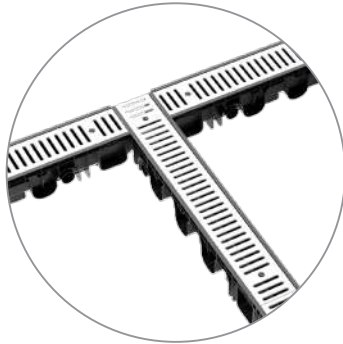
Connection options:



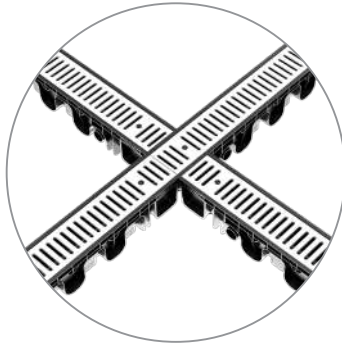
I CONNECTION



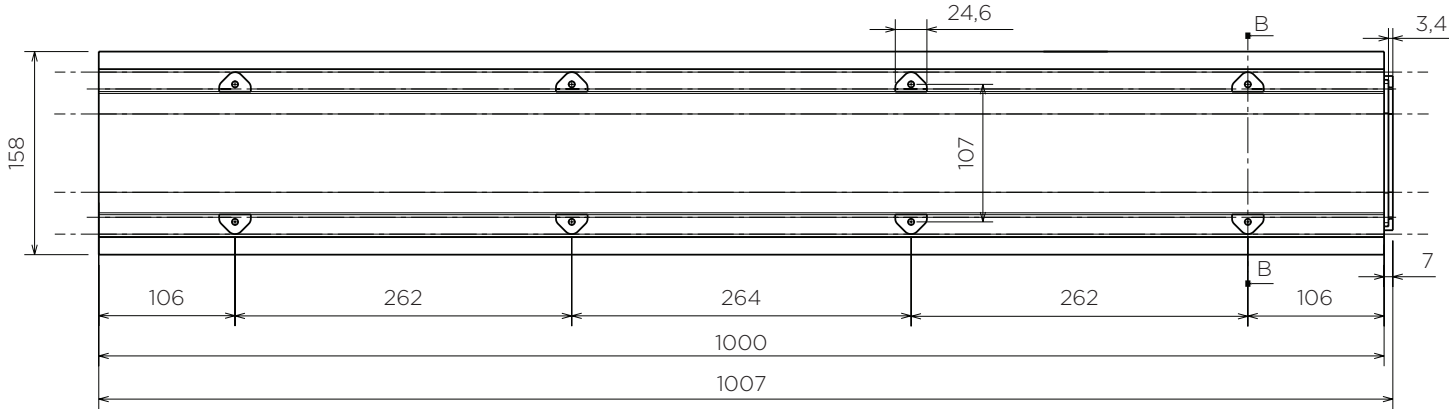
L CONNECTION



T CONNECTION



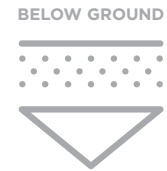
X CONNECTION



| FULL NAME OF PRODUCT | CODE |
|------------------------------------|----------|
| VEDRO OUTDOOR DRAIN A15 METAL GRID | 13705000 |



VEDRO GUTTER DRAIN



Vertical atmospheric drain for drainage of the surface water and rainwater.

GENERAL CHARACTERISTICS

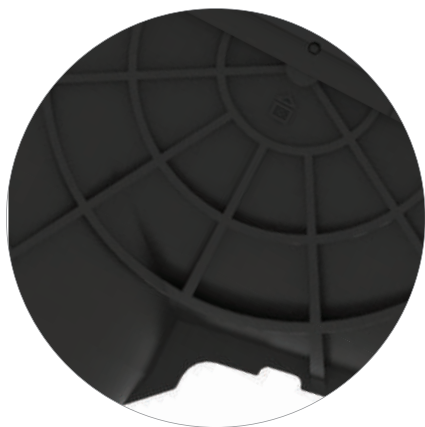
Made of polypropylene, the product is intended and designed for adequate drainage of surface water (rainwater) in external sewage systems. The drain allows the connection of gutter pipes of different diameters. The drain pipe connection includes 2 options (110 and 125 mm), which are used depending on the pipeline to which the drain is connected.

The gutter drain contains a dry valve that blocks the entry of pests from the pipeline, as well as a basket (leaf catcher) which maximally simplifies and facilitates cleaning. The design also enables the connection of different diameters of gutter pipes in a simple way, by cutting the appropriate diameters to DN50, DN75, DN90 DN110, and DN125.

FULL PRODUCT NAME: GUTTER DRAIN VERTICAL

PRODUCT CODE: 10299090

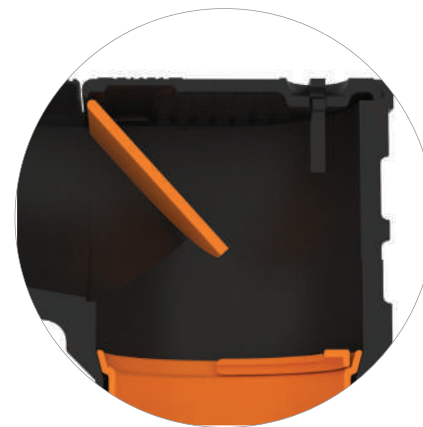




Strengthened ribs for the better adhesion to the base (concrete)



Biggs for cutting appropriate gutter diameter



Valve for protection against pest entrances



LEAF CATCHER

The leaf catcher has improved water flow thanks to the central ribbed pillar which in the case of clogging the bottom, provides undisturbed water flow.

The folding handle provides easy removal of catchers and easier disposal of collected leaves. The cup with a conic shape provides easy removal without getting stuck.



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| 296 | OUTDOOR DRAINAGE |
| 298 | VEDRO OUTDOOR DRAIN |
| 302 | VEDRO GUTTER DRAIN |

BRAND MANIFESTO

We are not oriented just to production, we combine reliability with quality for the ultimate benefit of our clients.

We do not build short-term client relationships, but long-term and genuine partnerships.

Everything we do, we do with one thing in mind - to create ideas to perfectly match all our client needs and the best way for us to achieve this goal is to constantly educate our clients provide solutions that meet their specific needs and support them throughout the entire process.

Because our success is as big as your trust in us.



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