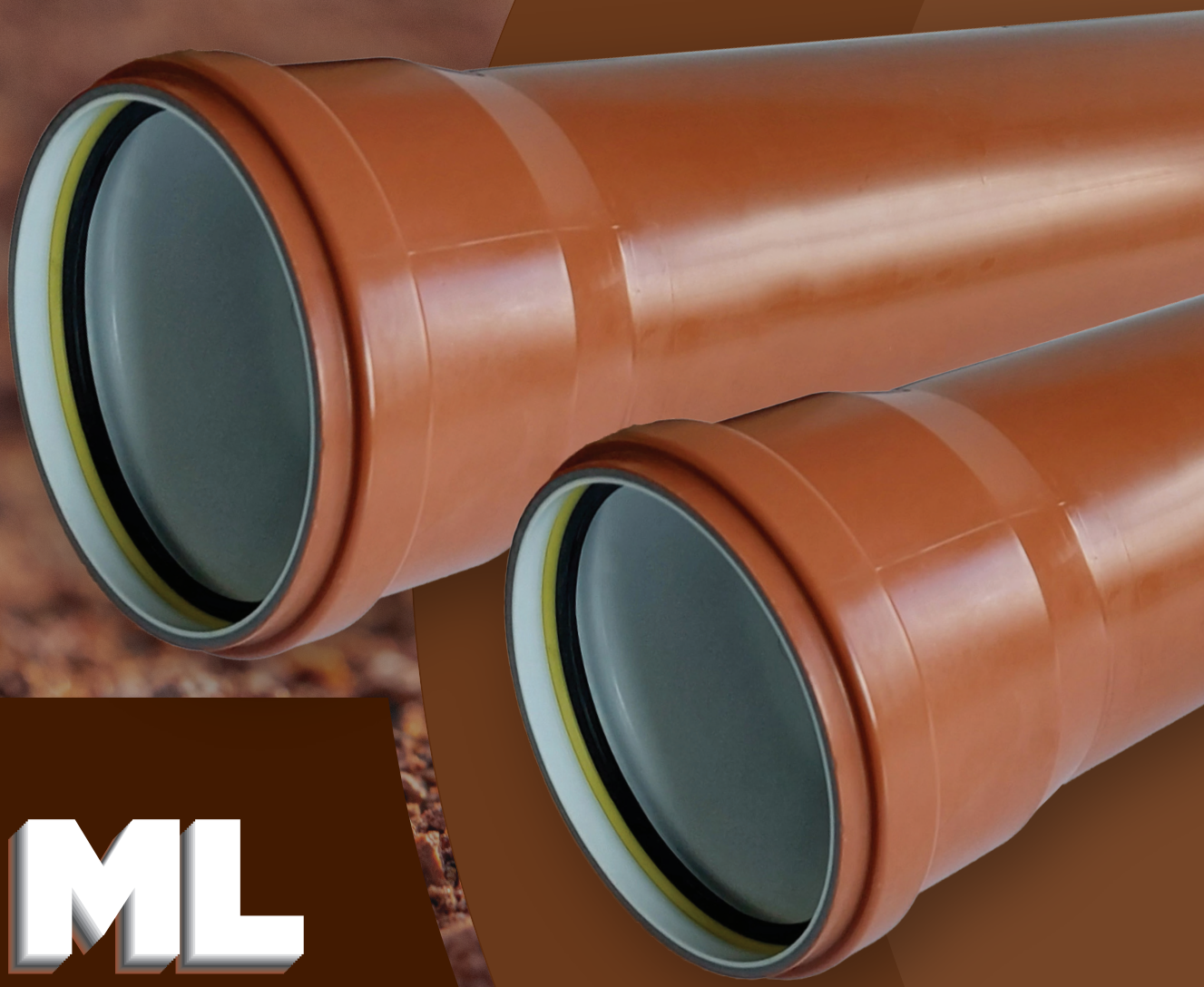
PEŠTAN
we build trust



PP STRONG ML
pipes

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

PP STRONG ML PIPES

After several years of development, Pestan developed a three layer PP sewage system for communal waste water removal. What we based ourselves upon, as in previous years, are quality, easy manipulation and reliability. This constant development and improvement led to the satisfaction of a large number of users.

What makes this system better than the previous generation of tubes are:

- increased ring stiffness
- increased longitudinal stiffness
- improved sealing system

FIELDS OF APPLICATION

The PP three-layer pipe system is universal and can be used to remove all types of waste and rainwater in civil engineering systems.

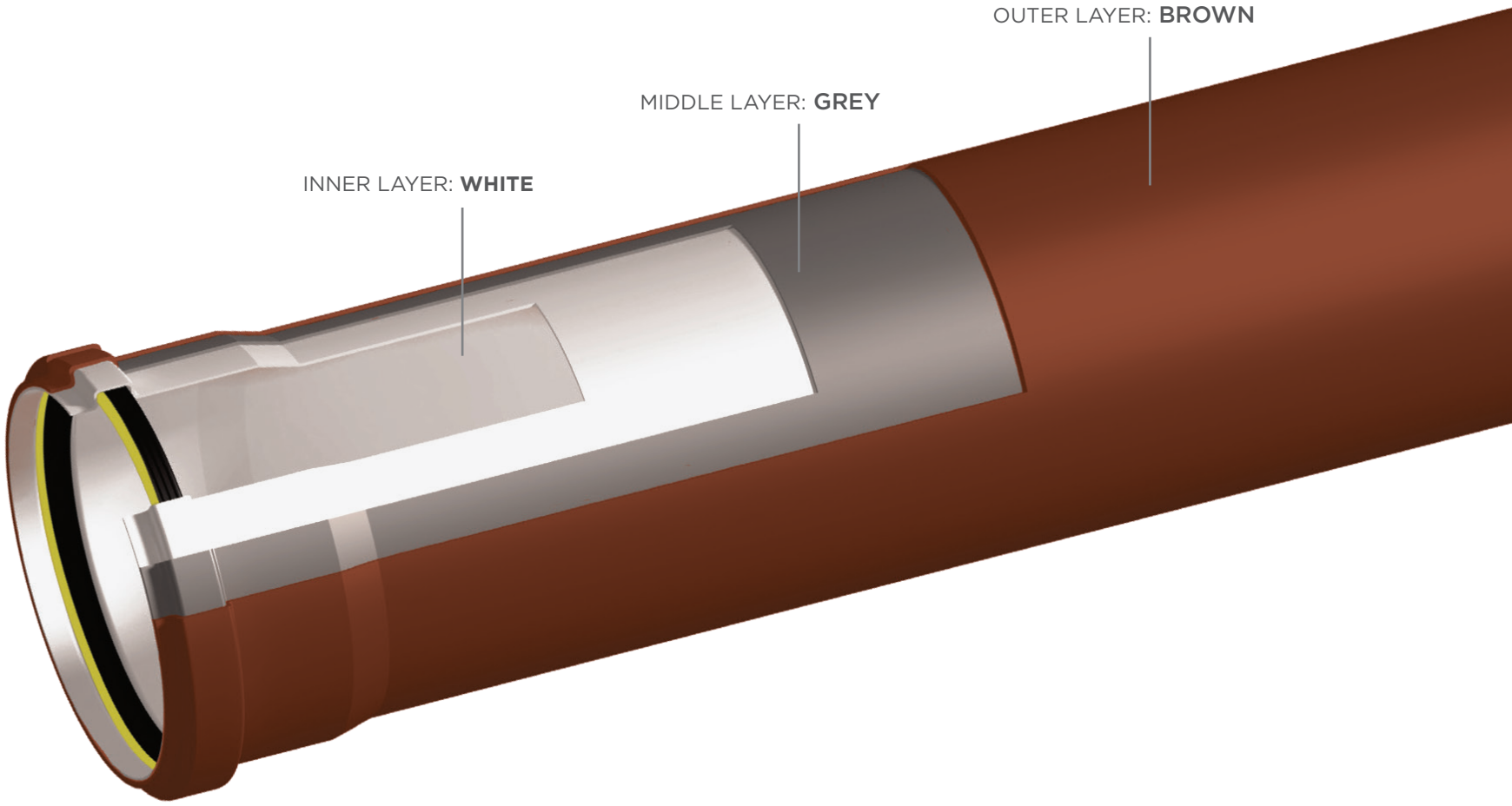
PEŠTAN PP three-layer pipes are designed and made for:

- Sewage systems
  - Municipal drainage
  - New construction
  - Replacement of the existing sewage network
- Chemical and mechanical industry
  - Excellent chemical stability (ph-value 2-12)
  - Suitable for use with heavy traffic loads
- Food industry
  - High stability to temperatures and resistance to cyclic work
  - Resistance to cleaning agents
- Roads
  - Resistance to high static and dynamic loads
  - High longitudinal stiffness
- Water protection zones II and III
- Special applications

PRODUCT DESCRIPTION

PP three-layer sewer pipes are made of polypropylene. They are made as a multi-layer pipe with an extremely smooth inner surface according to EN 13476. The pipe is connected via a muff and a coupling, while the waterproofness of the connection is ensured by rubber rings made of EPDM rubber with an additional support ring. The sealing ring has support in the form of a ring, which holds it in place and prevents it from being ejected. Even so, it can be taken out, cleaned and re-placed in its intended place without any problems

PP three layer pipe consists of three polypropylene layers:



The inner polypropylene layer, made of highly advanced and high-quality polypropylene using the highest technology, enables high thermal and chemical resistance, as well as perfect abrasive resistance. The smooth surface of the inner layer ensures a high flow rate, while the white color ensures easier inspection.

The middle layer is reinforced with mineral fibers, which ensures high longitudinal and annular stiffness, while flexibility is fully preserved.

The outer layer, with admixtures of reinforcing material, has a high modulus of elasticity and high strength. It is resistant to mechanical damage, UV radiation and temperature expansion.

In many projects, the longitudinal drop of the pipeline is very small, then pipes with high longitudinal stiffness are of particular importance. The new PP Three-layer pipe has appropriate longitudinal stiffness. The required high longitudinal stiffness was achieved by two factors:

- Superior three-layer technology
- Proven PP material in symbiosis with high-quality reinforcement materials

PRODUCT MARKING

BAR-KOD logo PESTAN EN 13476-2 MULTILAYER DN/OD SN PP UD CT *www.pestan.net SRB date time

MECHANICAL PHYSICAL CHARACTERISTICS

High resistance to static and dynamic loads, high resistance to impact, long service life

Material characteristics	Value	Standard
Material	Polypropylene copolymer	
Pipe structure	Multilayer type A1	SRPS EN 13476-2:2018
Density	0,900 g/cm3	
MFR (230 C / 2,16 kg)	0,25 g/10 min ili ≤1,5 g/10 min	ISO 1133
Inner pressure testing (80 C, 4,2 MPa)	> 140 h	ISO 1167-1
Inner pressure testing (95 C 2,5 MPa)	> 1000 h	ISO 1167-1
Tensile strength (50mm/min)	36 MPa	ISO 527-2
Resistance to temperature		
Coefficient of linear elongation	≤ 2 %	EN ISO 2505
Chemical resistance	Prema tablici hemijske otpornosti materijala	ISO/TR 10358
Modulus of elasticity	2000 MPa	ISO 178
Impact strength according to Sharpie (23 C / -20 C)	30 kJ/m2	ISO 179-1
Resistance to temperature (short and longterm)	80 °C / 60 °C	
Thermal conductivity	0,2 W/mK	DIN 52612
Field of appliance	UD	EN 13476-2:2018
Flammability classification	B2	DIN 4102-1

HEMICAL RESISTANCE

High chemical resistance to a large number of compounds (pH 1 - pH 13).

*Plastic pipes and fittings - Combined classification table of chemical resistance ISO/TR 10358.

PRODUCT AVAILABILITY

Available in standard lengths: **1m, 2m, 3m, 4m, 5m and 6m**

Pipe diameters from **ø110** to **ø500mm**

Annular tube stiffness: **SN4, SN8, SN10, SN12, SN16**

SDR33 SN4

DN/OD	emin	emax
110	3.4	4.0
125	3.9	4.5
160	4.9	5.6
200	6.2	7.1
250	7.7	8.7
315	9.7	10.9
400	12.3	13.8
500	15.3	17.1

SDR29 SN8

DN/OD	emin	emax
110	3.8	4.4
125	4.3	5.0
160	5.5	6.3
200	6.9	7.8
250	8.6	9.7
315	10.8	12.1
400	13.7	15.2
500	17.1	19.1

SDR26 SN10

DN/OD	emin	emax
110	4.2	4.9
125	4.8	5.5
160	6.2	7.1
200	7.7	8.7
250	9.6	10.8
315	12.1	13.6
400	15.3	17.1
500	17.1	19.1

SDR26 SN12

DN/OD	emin	emax
110	4.5	5.2
125	5.1	5.8
160	6.5	7.4
200	8.1	9.1
250	10.2	11.4
315	12.8	14.3
400	16.3	18.0
500	20.3	22.4

SDR22 SN16

DN/OD	emin	emax
110	5.0	5.7
125	5.7	6.5
160	7.3	8.3
200	9.1	10.3
250	11.4	12.8
315	14.4	16.1
400	18.2	20.3
500	22.8	25.3

LIFE SERVICE SPAN

The expected lifetime of Pestan PP Three-layer pipes is 50 years and more, which is confirmed by many tests:

- Strength requirements under weathered internal pressure
- Layer adhesion
- Determination of flow index
- Resistance to impact load
- Annular stiffness
- Ring flexibility
- Impact strength at low temperatures
- Sealability
- Physical properties after temperature cycles

PP three-layer pipes are the right choice for environmental protection.

Considering the choice of material, polypropylene is a material that takes part in environmental protection. The entire production process is ecologically friendly. PP three-layer is fully recyclable. It is free of halogens and heavy metals.

Recycling and disposal are environmentally safe. For the plastic industry, material reuse is ensured.

Using appropriate types of polypropylene and advanced technology, this product remains compact while:

- under shock load
- deformations
- when cutting and bending
- exposure to UV radiation
- outdoor disposal
- under the influence of aggressive wastewater

PIPE PACKAGING

Peštan PP three-layer pipes are packed in transport packages (single and pallet) in a way that is favorable for customers.

The packaging itself provides the customer with security during storage, as well as easy handling.

Pipes in lengths of 1m up to and including 6 meters are packed in packages which, depending on the diameter and length, contain a certain number of pieces both in unit packaging and in whole packages.

Appearance of the three frames packing

Note: For accurate information on package dimensions, number of pieces in unit and transport packages, contact Peštan at mail office@pestan.net

TRANSPORT AND HANDLING

Transport and manipulation of Peštan PP three-layer pipes should be transported by suitable transport vehicles. The loading area of the transport vehicle must be clean, flat, without sharp protrusions and without any debris (both on the floor of the vehicle and on all sides of the interior of the transport vehicle). The dimensions of pallets and packages are such that the loading space of the means of transport is maximally filled. When it comes to loading pipes outside the transport package (bulk), the pipes must rest on a flat surface along their entire length so that they do not become deformed. Therefore, the couplings must be alternately turned and pulled out for their entire length. This must be taken into account primarily with pipes of longer lengths, because improper handling can lead to bending at their ends. When loading and unloading pipes, they should be handled carefully, they should not be thrown, pulled, pushed, especially on concrete and other rough surfaces.

INSTALLATION AND CONNECTION

Peštan's PP three-layer pipes are installed in accordance with EN 1601 Gravity drainage system of street sewage. If there is a special regulation within certain countries, which deviates from the mentioned norm, it is mandatory to consult Pestan technical support before installing the system itself.

Based on the "flake" on the pipe itself, it can be concluded that the system is suitable for installation at temperatures below -10°C.

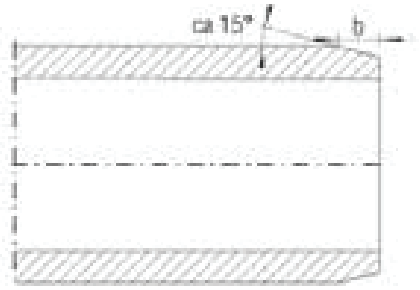
INTRODUCTION

The first step in the design of sewage systems is geotechnical investigation along the entire route of the pipeline. While the most important condition for achieving a satisfactory installation of pipe systems is the interaction between the pipe and the surrounding soil. The greatest support for the installed pipe is provided by the soil around the lower half of the pipe in both directions. That is why it is extremely important what type of soil is laid on, as well as the procedure used to compact the soil in the area around the pipe.

CUTTING

The connection of elements of PP three-layer sewerage is done with each other through muffs with rubber gaskets for pipe classes SN4, SN8, SN10 and SN12, which ensure a watertight connection of the elements, while with pipe class SN16 the pipes are connected to other elements via a class SN16 connector. All pipes and fittings have a muff/coupling on at least one end. Pipes can be cut either with a special cutter or a hand saw with fine teeth. When cutting the pipe, the cut must be made perpendicular to the axis of the pipe, the cut end should be cleaned and inclined. In the table you can find the required inclinations in relation to the pipe diameter.

Illustration od required inclination



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

PIPE CONNECTION

When connecting pipes, all steps should be taken into account to ensure a safe connection, so that the pipeline does not leak due to further installation and subsequent use.
In order to connect the pipes, it is necessary to perform several steps beforehand:

1. Clean the muff and the flat end of the pipe. Clean with a dry cloth or a cloth moistened with water.

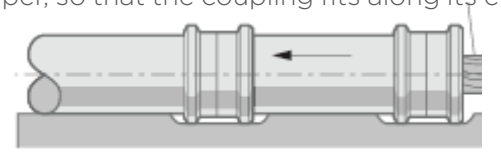
2. After cleaning the pipe and muff, check the condition of the sealing elements.

3. After cleaning and checking the condition of the sealing elements, it is necessary to lubricate the flat end of the pipe and the rubber of the fitting itself. It is recommended to use the Peštan lubricant intended for this purpose. Petroleum-based lubricants must not be used. The muff and sealing rubber must be dry and clean. They must also be lubricated.

LAYING PIPES IN THE TRENCH

Pestan PP multilayer pipes can be laid in consistent, relatively loose soil. When laying the pipe, care must be taken that in the places where the muff or coupling is located, that part is deeper, so that the coupling fits along its entire length, without disturbing the fall of the pipe.

An illustrated explanation is provided below:



When laying pipes on steep sections, due to the action of longitudinal forces, measures should be taken against loosening of the substrate, shearing of the pipe and gapping of the joint, which in practice is most often achieved by making concrete support blocks. In doing so, the muff must be turned upstream (i.e. in counterfall) so that the pipes are naturally rammed.

FILLING AND COMPACTION

Backfilling (from 30 cm above the top of the pipe) follows in layers. Light and medium compaction devices can be used up to 1 m of coverage. Heavy machinery may only be used after that.

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

- Minimum 15 cm for pipes with diameter Dn > 400;
- Minimum 30 cm for pipes with diameter Dn < 400.

In the case of traffic areas, a minimum compaction of the main backfill of 90% is required according to the modified Proctor's density test.

TECHNICAL ASSISTANCE

Our technical and engineering team is advised and supported by European institutes.
For more information, you can contact PEŠTAN technical support or a regional sales representative in the field.

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BREND MANIFESTO

We do not only sell pipes, 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.


PEŠTAN
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