

Utilajul, echipamentul tehnologic: Teava PPHM triplustrat D200 SN8

Nr.crt.	Specificatii tehnice impuse prin Caietul de sarcini	Corespondenta propunerii tehnice cu specificatiile tehnice impuse prin Caietul de sarcini	Producator
1	<p>Parametrii tehnici si functionali:</p> <ul style="list-style-type: none"> - Mediu de lucru: retea de canalizare fara presiune; - Material: PP-block co-polymer, caracteristici: <ul style="list-style-type: none"> - MFI – 0,3 Gr/10min (ISO 1133 / (230 C° / 2.16); - Densitatea – 900 kg/m3 (ISO 1183); - Rezistenta la incovoiere – 1500-2000 MPa (ISO 527-2); - Rezistenta tractiune 26*C – 35 MPa (ISO 527-2); - Rezistenta a impact – 50 kJ/m2 (+23 C°); 2,20 kJ/m2 (-20 C°). - Clasa de rezistenta: SN 8; - SDR: 29; - SN 8 KN/M2 SDR 9 S 14; - DN/OD 200 mm, diametrul interior 186.2 mm; grosime 6.9 mm; - Conductele PPHM ML COMPACT (PP multistrat cu structura neteda la exterior si interior) sunt fabricate din polipropilena co-polimer block cu material modificat de inalta performanta, in trei straturi care trebuie sa garanteze urmatoarele functionalitati: stratul intern rezistent la produse chimice si abraziune, stratul din mijloc rezistent la temperature scazute si stratul exterior trebuie sa fie rezistent la solicitari mecanice; - Se va folosi in procesul de fabricatie doar materie prima virgina, fara adaosuri de alte materiale. 	<p>Parametrii tehnici si functionali:</p> <ul style="list-style-type: none"> - Mediu de lucru: retea de canalizare fara presiune; - Material: PP-block co-polymer, caracteristici: <ul style="list-style-type: none"> - MFI – 0,3 Gr/10min (ISO 1133 / (230 C° / 2.16); - Densitatea – 900 kg/m3 (ISO 1183); - Rezistenta la incovoiere – 1500-2000 MPa (ISO 527-2); - Rezistenta tractiune 26*C – 35 MPa (ISO 527-2); - Rezistenta a impact – 50 kJ/m2 (+23 C°); 2,20 kJ/m2 (-20 C°). - Clasa de rezistenta: SN 8; - SDR: 29; - SN 8 KN/M2 SDR 9 S 14; - DN/OD 200 mm, diametrul interior 186.2 mm; grosime 6.9 mm; - Conductele PPHM ML COMPACT (PP multistrat cu structura neteda la exterior si interior) sunt fabricate din polipropilena co-polimer block cu material modificat de inalta performanta, in trei straturi care trebuie sa garanteze urmatoarele functionalitati: stratul intern rezistent la produse chimice si abraziune, stratul din mijloc rezistent la temperature scazute si stratul exterior trebuie sa fie rezistent la solicitari mecanice; - Se va folosi in procesul de fabricatie doar materie prima virgina, fara adaosuri de alte materiale. 	VALROM
2	<p>Specificatii de performanta si conditii privind siguranta in exploatare:</p> <ul style="list-style-type: none"> - Respectarea conditiilor de temperatura: -20 ÷ 60°C; - Amplasare: retea de canalizare fara presiune; - Montarea se va face conform instructiunilor de montare date de producator. 	<p>Specificatii de performanta si conditii privind siguranta in exploatare:</p> <ul style="list-style-type: none"> - Respectarea conditiilor de temperatura: -20 ÷ 60°C; - Amplasare: retea de canalizare fara presiune; <p>Montarea se va face conform instructiunilor de montare date de producator.</p>	VALROM
3	<p>Conditii privind conformitatea cu standardele relevante:</p> <ul style="list-style-type: none"> - Standard productie: EN 13476-2 (Type A1), ONORM B 5113; - Clasa de rezistenta: SN 8;10;12;16 acc. EN 9969; - Etanseitate de mimim 0.5 bari la imbinari in acord cu EN 1053; - Certificari: ISO 9001; ISO14001; ISO 45001; ISO 50001; - Certificare recunoscuta la nivel european; - Aviz si Evaluare tehnica emis de catre autoritatile din Republica Moldova 	<p>Conditii privind conformitatea cu standardele relevante:</p> <ul style="list-style-type: none"> - Standard productie: EN 13476-2 (Type A1), ONORM B 5113 - Clasa de rezistenta: SN 8;10;12;16 acc. EN 9969; - Etanseitate de mimim 0.5 bari la imbinari in acord cu EN 1053; - Certificari: ISO 9001; ISO14001; ISO 18001; ISO 50001; - Certificare recunoscuta la nivel european; Bulaqua standart <p>Certificat de conformitate pentru tevine PPHM emis de un organism acreditat in Rep. Moldova</p>	VALROM

4	<p>Conditii de garantie si post-garantie:</p> <ul style="list-style-type: none"> - Minim 24 luni de la livrare; - Furnizorul va asigura service in perioada de garantie; - Furnizorul va asigura piese de schimb pe baza de comanda in perioada post- garantie. 	<p>Conditii de garantie si post-garantie:</p> <ul style="list-style-type: none"> - Minim 24 luni de la livrare; - Furnizorul va asigura service in perioada de garantie; - Furnizorul va asigura piese de schimb pe baza de comanda in perioada post- garantie. 	VALROM
5	<p>Alte conditii cu caracter tehnic: Conductele PPHM ML trebuie sa fie produse cu tehnologii corespunzatoare si de ultima generatie pentru a garanta:</p> <ul style="list-style-type: none"> - grosimea stratului conductei conform normativelor in vigoare; - prezenta celor 3 straturi in acord cu cerintele impuse; - structura compacta fara despicari sau delaminari ale conductei. <p>Conductele vor fi prevazute cu mufa detasabila cu garnitura dubla din EPDM care trebuie sa garanteze o etanseitate de pana la 2.5 bari.</p> <p>Prin formula celor 3 straturi ale conductei producatorul ca garanta ca se asigura:</p> <ul style="list-style-type: none"> - stratul interior rezistent la substante chimice si abraziune, curgere excelenta si se vor preveni incrustarile (taieturile); - stratul din mijloc asigura rezistenta la impacT chiar si la temperaturi scazute; - stratul exterior trebuie sa fie rezistent la UV, agenti atmosferici si deriorari de suprafata. Culoarea conductelor PPHM ML COMPACT: <ul style="list-style-type: none"> - la exterior – portocaliu / maro; - la mijloc – negru; - la interior – culoare deschisa (pentru a usura inspectarea). 	<p>Alte conditii cu caracter tehnic: Conductele PPHM ML trebuie sa fie produse cu tehnologii corespunzatoare si de ultima generatie pentru a garanta:</p> <ul style="list-style-type: none"> - grosimea stratului conductei conform normativelor in vigoare; - prezenta celor 3 straturi in acord cu cerintele impuse; - structura compacta fara despicari sau delaminari ale conductei. <p>Conductele vor fi prevazute cu mufa detasabila cu garnitura dubla din EPDM care trebuie sa garanteze o etanseitate de pana la 2.5 bari.</p> <p>Prin formula celor 3 straturi ale conductei producatorul ca garanta ca se asigura:</p> <ul style="list-style-type: none"> - stratul interior rezistent la substante chimice si abraziune, curgere excelenta si se vor preveni incrustarile (taieturile); - stratul din mijloc asigura rezistenta la impacT chiar si la temperaturi scazute; - stratul exterior trebuie sa fie rezistent la UV, agenti atmosferici si deriorari de suprafata. <p>Culoarea conductelor PPHM ML COMPACT:</p> <ul style="list-style-type: none"> - la exterior – portocaliu deschis; - la mijloc – negru; - la interior – portocaliu deschis; 	VALROM

Toate fișele tehnice vor fi însoțite de Imputernicire producător



Utilajul, echipamentul tehnologic: Teava PPHM triplustrat D250 SN8

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Valrom Industrie SRL

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cod 062204, București
Tel: + 4 021 317 38 00;
Fax: + 4 037 289 94 45;
www.valrom.ro; office@valrom.ro

REG COM J40/4810/1996

CIF RO8529679

Capital social: 6.706.000 lei

ANEXA 2**IMPUTERNICIRE PRODUCATOR**

Data: 15.11.2024

Ref.Licitatie: *Rețele exterioare de apeduct și canalizare, inclusiv stația de epurare a comunei Băcioi (satele Băcioi, Brăila, Straisteni, Frumușica); (Etapa - 1; rezervoare supraterrane pentru apă potabilă)*

Catre: Primaria comunei Bacioi, MD-6812, MOLDOVA, mun.Chișinău, s.Băcioi, Independenței 125

Noi VALROM INDUSTRIE SRL, reprezentati legal prin DAN MINDRU, in calitate de DIRECTOR COMERCIAL avand facilitatile de productie in Bdul Preciziei 28, sector 6, Bucuresti, Romania ca producatori ai *Tevilor PPHM triplustrat*, imputernicim pe FOREMCONS SRL cu sediul in R.M. mun. Chișinău, sec. Botanica, str. Pădurii, 8, ap.(of.) 308 sa depuna o oferta completa al carei scop este furnizarea urmatoarelor produse, al caror producatori suntem: tevi Tevilor PPHM triplustrat. De asemenea suntem de acord ca FOREMCONS SRL sa prezinte la prezenta licitatie documentatia tehnica, certificarile si avizarile sanitare, agrementarile si avizarile tehnice specifice si sa puna in opera produsele mentionate mai sus.

Semnat de: IURIE ZAVEDIA

In calitate de: Manager Export





**MINISTERUL SĂNĂTĂȚII
AL REPUBLICII MOLDOVA**

**МИНИСТЕРСТВО ЗДРАВООХРАНЕНИЯ
РЕСПУБЛИКИ МОЛДОВА**

**AGENȚIA NAȚIONALĂ PENTRU SĂNĂTATE PUBLICĂ
НАЦИОНАЛЬНОЕ АГЕНТСТВО ОБЩЕСТВЕННОГО ЗДОРОВЬЯ**

MD-2028, muș. Chișinău, str. Gheorghe. Asachi, 67-a
Tel. + 373 22 574501, fax + 373 22 729725
IDNO 1018601000021

E-mail: office@ansp.gov.md

**DOCUMENTAȚIE MEDICALĂ / Медицинская документация
FORMULAR / Форма Nr. 303-2/e
APROBAT DE MS al RM / Утверждена МЗ РМ 31.10.11 Nr. 828**

Centrul de încercări de laborator acreditat de către
Centrul Național de Acreditare din Republica Moldova MOLDAC
Испытательный лабораторный центр аккредитованный
Национальным Аккредитационным Центром РМ MOLDAC
Certificat nr. LI-044 din 17.02.2018 valabil până la 16.02.2022

AVIZ SANITAR

PENTRU PRODUSELE ALIMENTARE ȘI NEALIMENTARE Nr. 449

Санитарное заключение для пищевых и непищевых продуктов

din/om " 18. " 03, a.2. 2022

Prin prezentul aviz sanitar se confirmă că producerea, importul, utilizarea și desfacerea produselor / echipamentelor
Настоящим санитарным заключением подтверждается, что производство, ввоз, использование и реализация продукции / оборудования

Articole (produse) din polietilena (HDPE; LDPE; LLDPE; PE-X; PE-RT) anexa verso!

sunt conforme Regulamentului (lor) sanitar (e) / соответствуют санитарному (ым) регламенту (ам) (se va indica denumirea completă a Regulamentului (lor) sanitar (e) / указать полное наименование санитарного (ых) регламента (ов)

Reglementărilor tehnice cu privire la cerințele minime pentru comercializarea produsele pentru construcții aprobate prin HG 913/2016, HG 308/2011, HG 278/2013

Organizația-producătoare/importatoare, țara de origine / организация произв./импортёр, страна происхождения

SC "VALROM INDUSTRIE" SRL, România

Destinatarul avizului sanitar / получатель санитарного заключения

SC "VALROM INDUSTRIE" SRL, România, București, bd. Preciziei 28, sector 6

Ca temel pentru recunoașterea conformității produselor Regulamentului (lor) sanitar (e) menționat (e) a servit / Основанием для признания продукции указанному (ым) санитарному (ым) регламенту (ам) послужило

Demers, certificat de înregistrare, aviz tehnic, agreement tehnic, certificate de calitate, analiză, avize sanitare, fișa cu date de siguranță, aviz sanitar nr.376 din 22.02.2019

(a enumera documentele de însoțire, buletinele de analiză / перечислить сопроводительные док., протоколы исслед.)

Caracteristica sanitară a produselor / санитарная характеристика продукции:

Parametrii (factorii) / показатели (факторы) Normativul sanitar / санитарный норматив

Articolele în conformitate cu documentele normative, admise pentru utilizare în lucrări de construcție, montarea instalațiilor de apă rece și caldă, canalizare, încălzire, stații de epurare

Domeniu de utilizare / Область применения: montarea sistemelor de apeduct, canalizare

Condițiile necesare de utilizare, depozitare, transportare, măsurile de securitate / Необходимые условия использования, хранения, транспортировки, меры безопасности:

plasarea pe piață în condițiile respectării legislației în vigoare în Republica Moldova

AVIZUL SANITAR este valabil până la / Санитарное Заключение действительно до: 31 martie 2025

DIRECTORUL AGENȚIEI NAȚIONALE PENTRU SĂNĂTATE PUBLICĂ

Nicolae JELAMSCHI

(numele / пренумела / Ф.И.О.)



N. Jelamschi
(semnătura / подпись)

ANSP/HA03

000163

03

10-XVI-09

ex: St. Constantinovici
tel: 574 679



Anexa la avizul sanitar nr. 449 din 18.03 2022

Nr.	Denumirea produs
1	Tuburi, fittinguri, camine de apometru și cabine de puț pentru: rețele de transport apă potabilă, rețele de canalizare exterioară sub presiune și rețele transport apă brută (netratată)
2	Tuburi și fittinguri pentru: rețele de gaz
3	Tuburi și fittinguri pentru: canalizare interioară
4	Tuburi, fittinguri, cămine de vizitare, cămine de inspecție pentru: canalizare exterioară fără presiune și drenaj
5	Tuburi și fittinguri pentru: instalații de apă rece, apă caldă, încălzire cu radiatoare și încălzire prin pardoseală
6	Rezervoare supraterane și subterane, rezervoare și sisteme AquaPUR pentru: stocarea lichidelor alimentare, apă potabilă și apă brută (netratată)
7	Separatoare de grăsimi, separatoare de hidrocarburi, stații de epurare și fose septice pentru: epurarea biologică a apelor menajere și de producere pentru locații și obiective separate
8	Stații de pompare: pentru canalizări exterioare și interioare pentru pomparea apelor uzate menajere

Director



Nicolae JELAMSCHI

Valrom Industrie SRL

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DATA SHEET

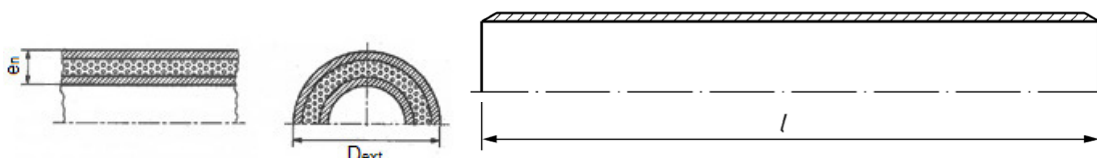
PP-HM MULTILAYER PIPE <KompactKIT> D.110÷400mm SN8

1. Field of use

- Polypropylene PP HM multilayer pipes are used for non-pressure underground sewerage networks without pressure (gravitational sewerage in which the flow is at a free level) for the transport of domestic and meteoric wastewater. The pipes are installed buried in the ground.

2. Technical features

- Reference Standard: SR EN 13476-2 "Plastics piping systems for non-pressure underground drainage and sewerage - structured-wall piping systems of unplasticized poly (vinyl chloride) (PVC-U), polypropylene (PP) and polyethylene (PE). Part 2: Specifications for pipes and fittings with smooth internal and external surface and the system, type A".
- The pipes are manufactured by co-extrusion.
- Materials:
 - the outer and the inner layer are made of polypropylene type PPHM (Polypropylene High Modulus),
 - The intermediate layer is made of polypropylene PP B (Polypropylene block copolymers) with modified minerals.
- Color: the outer and inner layers are orange-brown (RAL 8023) and the intermediate layer is white or black.
- The pipes are chamfered at both ends. PP SN8 S13.3 plugs are used for connection which are delivered together with the pipe.
- The pipes have stiffness class SN8, determined according to ISO 9969, $SN \geq 8 \text{ kN/m}^2$.
- Longitudinal reversion, determined according to EN ISO 2505: max. 2%
- Appearance: when examined with naked eye (no magnifying instruments) surfaces must be smooth, clean, without burrs, pores or other surface defects that can affect the performance of pipes. The ends to be connected must be cut clean and perpendicular to the axis of the pipe.
- Dimensions:



Nominal diameter DN [mm]	Outer diameter Dext. [mm]	e _n minimum [mm]	l [m]	Item
110	110 – 110,3	3,7	6	35058110600
125	125 – 125,3	4,2	6	35058125600
160	160 – 160,5	5,5	6	35058160600
200	200 – 200,5	6,9	6	35058200600
250	250 – 250,5	8,6	6	35058250600
315	315 – 315,6	10,4	6	35058315600
400	400 – 400,7	13,7	6	35058400600

e_n minimum = minimum pipe thickness

l = pipe length.

Marking:

- **Manufacturer's name:** Valrom
- **brand:** KompactKIT
- MADE IN ROMANIA
- **Nominal outer diameter:** Ø... (mm)
- **field of use code:** U
- **stiffness class:** SN8
- **standard:** EN 13476 - 2
- **material:** PP-HM
- **information for traceability:** LOT xxyy (xx - the last two digits of the year, yy - serial number of the lot); date day and month (xx, yy); hour and minute

3. Packing, handling, transport and storage

- For transport of pipes use vehicles with flat surface, without roughness, which will not damage the pipes. Pipes should be supported along their length to avoid damage to the extremities due to vibration.
- When loading and unloading pipes with forklifts care should be taken not to hit the pipes. When handling pipes, it is good to use non-abrasive straps (nylon, hemp or similar). If steel cables are used it is necessary to protect the pipes in the contact area. In cold periods, at freezing temperatures, pipes are prone to damage in case of impact. It is recommended to handle the pipes with maximum attention.
- It is recommended to load the heavier pipes first to avoid deformation of the lighter ones.
- Pipes will be stored on flat, stable surfaces, in areas covered and protected against fire, frost, UV radiation and major thermal variations.
- Temporary storage on the site must be made so that the pipes are not damaged, special attention will be paid to keeping the section of the pipe ends intact to not compromise the joint.
- It is recommended that during the cold season, all the pipes should be stored on the supports to avoid freezing.
- Pipes and gaskets shall be kept away from contact with fuels, solvents, oils, greases, paints or heat sources.

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- The height of the storage stack will not exceed 1 m regardless of the diameter of the pipe, to avoid deformation of the pipes from the base.
- If the pipes were delivered in the package then the package will be opened only a short time before the installation in the ditch.

4. Warranty and service life:

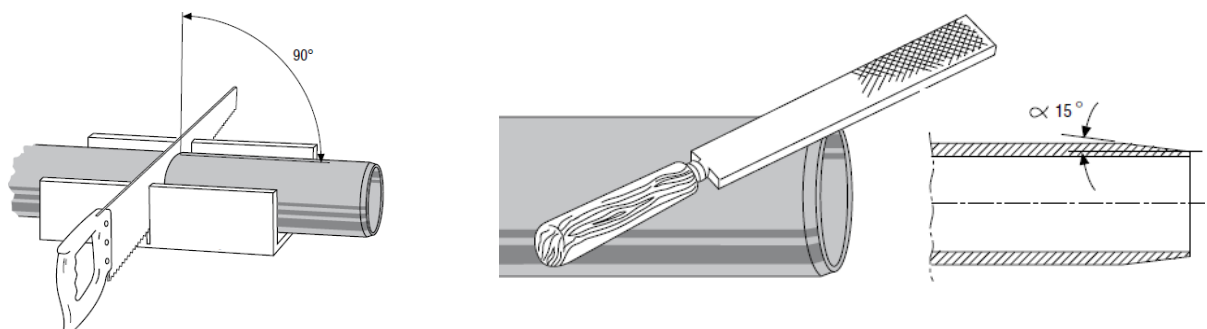
- Service life is 50 years.
- Warranty is 5 years from the date of delivery, provided that the instructions for transport storage, handling and installation are observed.

5. Installation instructions:

- Polypropylene material cannot be glued, so for side joining use mechanical saddle and mechanical couplers <KompactKIT>.
- Assembly stages:
 - Before joining, the elements should be cleaned carefully, they will be checked to be intact.
 - Temporarily remove the seal gasket.
 - Insert pipe spigot into the socket up to the stop and mark the position. The pipe will be withdrawn about 3 mm for each meter of pipe, but not more than 10 mm. The reference line will be marked.
 - Insert the sealing gasket correctly back into the socket.
 - Lubricate interior surface of gasket and exterior surface of pipe spigot with proper lubricant (silicone oil, soap with water etc.). Do not use oil or grease.
 - Push pipe spigot into the socket until the marked line. The success of this operation depends on the exact alignment of the pipes and lubrication.

Cut the pipe with a fine tooth saw .

The cut will be perpendicular on longitudinal pipe axis. Chamfer and bevel the pipe to an angle roughly 15° using a suitable chamfering tool or a fine file.



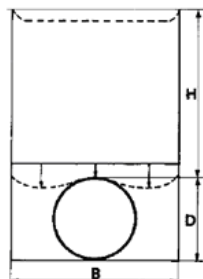
- PP multilayer pipes belong to the category of flexible pipes. The characteristic of flexible pipes is that under loads they deform significantly without being damaged. To limit the deformation of the pipe, it is very important that the lateral filling is compacted as correctly as possible. The required degree of compaction is established by the project.

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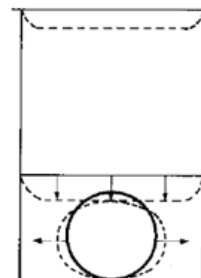
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- The correct choice of the filling material and the correct execution of the installation are factors that can limit the deformation of the pipe.

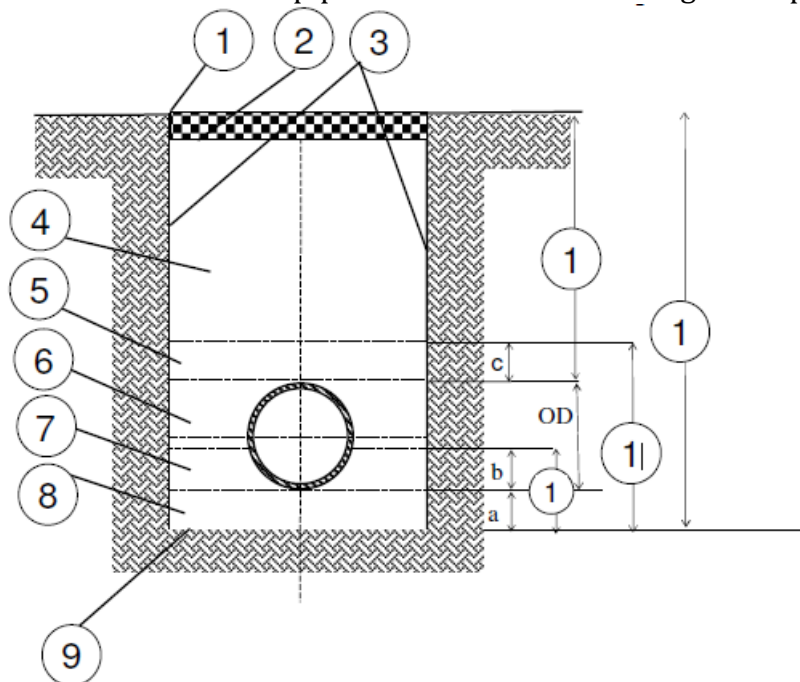
Deformation in the trench of rigid pipes



Deformation in the trench of flexible pipes



The installation of the pipes is carried out according to the provisions of the project.



- | | |
|--|--------------------------------------|
| 1 surface | 10 Cover height |
| 2 the basis of the road infrastructure | 11 The height of the support |
| 3 the walls of the trench | 12 The height of the special filling |
| 4 the actual filling | 13 Trench depth |
| 5 the first filling | a thickness of the lower bed |
| 6 lateral filling | b thickness of the upper bed |
| 7 upper bed, b | c thickness of the first filling |
| 8 bottom bed, a | OD the outside diameter of the pipe |
| 9 trench bottom | |

General laying conditions:

Multilayer PP pipes are generally installed at depths of at least 1.20 m. In the case where they are laid in areas without traffic, the minimum depth can be reduced to the minimum frost depth.

For SN8 PIPES the depth of laying in trench is between 1.2 m ÷ 6.0 m, measured from the upper generator of the pipe, installed in narrow or wide trench, heavy road traffic, maximum 18 tones/axis, in compliance with positioning instructions.

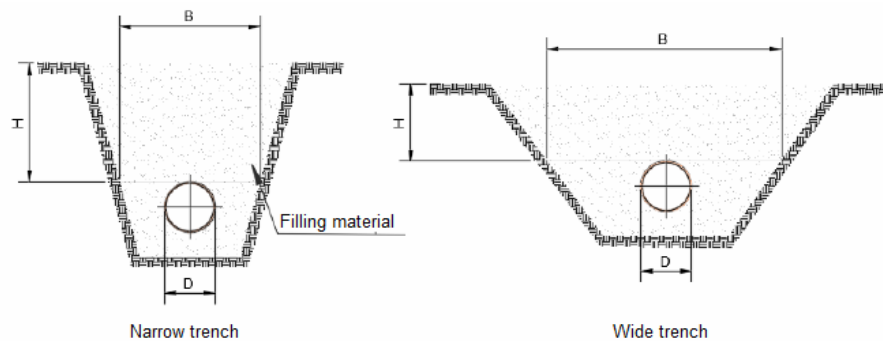
Width of the trench

Trench width is established by the project, it must ensure necessary space for joints inside it and compacting the filling in the pipe area.

Trench width must not exceed the maximum value established by the project.

Classification of the trench:

Type of trench	B	
Narrow trench	$\leq 3 D$	$< H/2$
Wide trench	$> 3 D$ $< 10 D$	$< H/2$
Infinite trench	$\geq 10 D$	$\geq H/2$



Bottom trench

Bottom trench must be dry (without groundwater or meteoric waters), continuous, flat and without stones.

Material and gradient of trench must be in accordance with project specifications. It is recommended not to change the bottom of the trench, if it has been modified, the initial bearing capacity must be restored.

If the trench bottom is unstable or the soil is compressible, appropriate measures should be provided.

In the case of lands with high content of organic substances, unstable (peat or flowing sand) etc., it is necessary to design a support layer on bottom trench. The nature and composition of the support layer are determined by the designer.

In case of frost it is necessary to protect the bottom of the trench so that the frozen layers are not left below or around the pipe.

Bedding

The bedding consists of upper and lower bedding. In the case of the pipe laid on natural trench bottom, the trench bottom is the lower bedding.

The role of the bed is to provide continuous support throughout the entire length of the pipe.

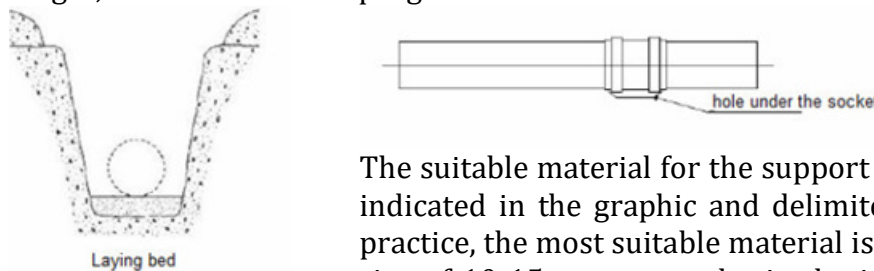
The materials used for embedment shall comply certain requirements in order to be capable of providing permanent stability and load bearing capacity for the pipeline buried in the ground.

Materials used for bedding should contain no particles with size above 20 mm for pipes with $D < 200$ mm and 40 mm for pipes with diameter between 200 and 630 mm.

Native soil can be re-used if shall meet all the following requirements: it is permitted by the project; it complies with any compactability requirements in the design; it is free from materials detrimental to the pipe (oversized particle, tree roots, waste, organic material, snow and ice) and any clay larger than 75 mm.

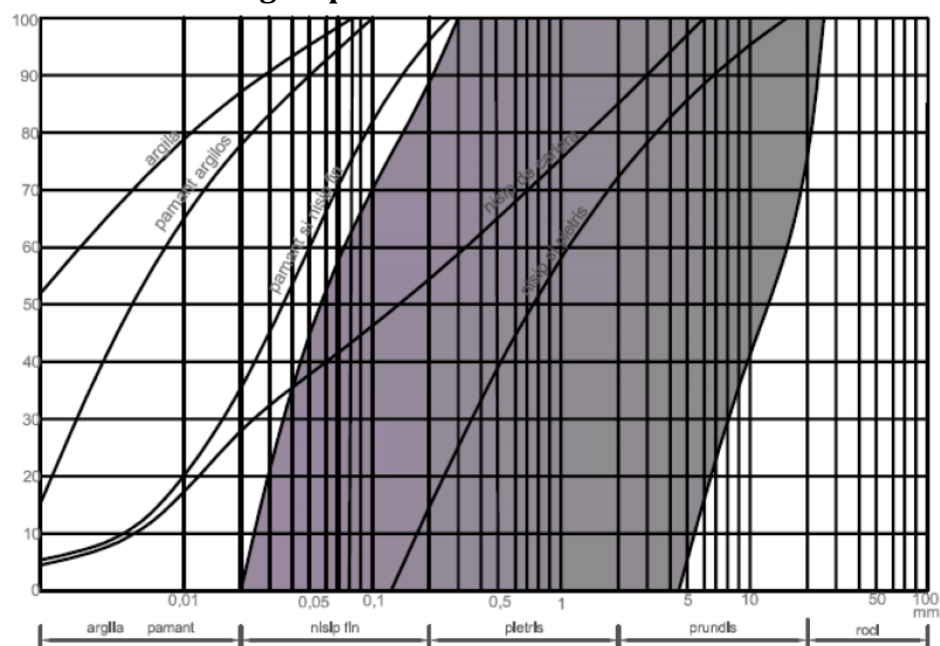
The lower bedding layer should generally have a thickness of 10 cm to 15 cm. The bedding material is spread over the entire width of the bottom of the pit and is leveled at the slope of the pipe.

Next to the coupling sockets small holes will be dug, in this way the pipe will rest its entire length, as the installation progresses the holes will be filled and compacted carefully.



The suitable material for the support and for the lateral filling is indicated in the graphic and delimited by the hatched area. In practice, the most suitable material is composed of gravel with a size of 10-15 mm or sand mixed with gravel with a maximum size of 20 mm.

Granulometric curves. Soil group



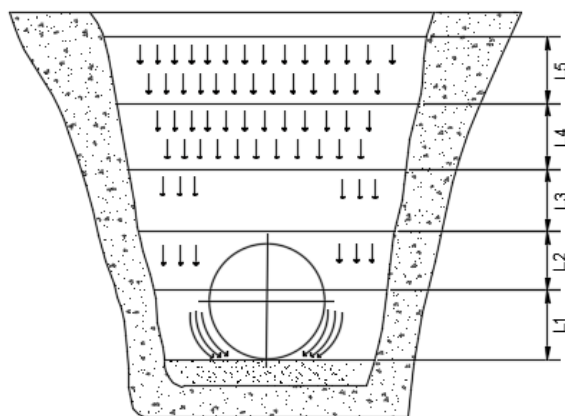
Horizontal: The diameters of the granules that correspond to the inner dimensions of the sieve meshes (mm); **Vertical:** Cumulative weights of the fractions that passed through the sieve, calculated as a percentage of the total weight (%)

Filling procedure

Manual filling in pipe area is the most important because of this depends the formation of the support bed for pipe and behavior in operation at external mechanical demands.

The filling around the pipe and the filling itself must be undertaken only when the state of the support and the connection of the pipes allow to withstand the loads.

The material already used for the construction of the bed will be placed around the pipe and compacted manually (well beaten with rammer and moistened to the limit for maximum tightening), in thin layers (10 cm) to the middle line of the pipe, taking great



care not to remain empty areas under the pipe and that the lateral parts between the pipe and the walls of the excavation are continuous and compact (layer L1).

The second layer of the side L2 will reach the upper generator of the pipe. Filling and compaction should be performed simultaneously on both sides of the pipe to prevent unwanted movement of the pipe.

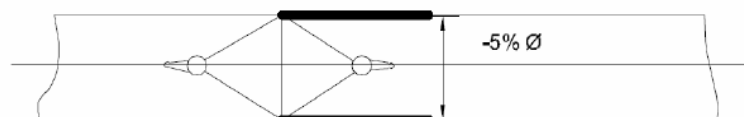
The third layer L3, will reach a higher dimension by 15 cm than the upper generator of pipe.

In layer L3 the compaction should be applied to the pipe only laterally and not above it. The subsequent filling (layers L4 and L5) will be carried out with the help of the earth that comes from the excavation cleaned of elements with a larger dimension > 100 mm, of roots, waste, organic materials, snow, ice or clay bulges larger than 75 mm. In areas where no compaction is required, elements with a maximum size of up to 300 mm are accepted if the ridge of the pipe has been covered.

The resulting Proctor index must be higher than the level provided by the designer. The compaction technology is performed in accordance with the calculations for checking the resistance of the pipe to earth loads and other demands. The last layer that sits is the vegetable layer.

Checking the diameter deformation

The vertical variation of the inner diameter of the pipes should be inspected, in order to verify the conformity with the mechanical resistance calculation. In general the maximum deformation of the pipe must not exceed 5 - 6%. This limit value is imposed due to network exploitation considerations. The verification can be carried out with the help of mechanical instruments (sphere or double cone) or with the help of optical instruments (cameras). From the reception procedure are excluded, due to the difficulties of implementation, the parts of the pipe that include special parts.



In cases where there are higher values of deformation than those established above, it is necessary to examine the cause.

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Tightness test

It is carried out according to the prescriptions of the project and the national provisions in force:

NP 133 Normative regarding the design, execution and exploitation of the water supply and sewage systems of localities.

STAS 3051-91: Sewage systems. Channels of external sewerage networks. Fundamental design requirements

Testing of pipes in sewerage networks, according to NP 133:

The tightness test of the sewerage networks is carried out according to the provisions of STAS 3051. The tightness test is carried out on sections of maximum 500 m.

Before must be done:

- a) partial fillings leaving the joints free
- b) tight closures for all openings
- c) blocking of extremities and points susceptible to movement during the test.

OBSERVATIONS:

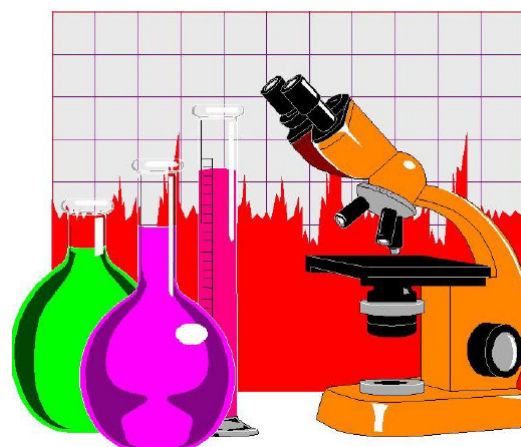
- According to EN 13476, PVC fittings with resistance class SDR 41 (according to EN 1401-1) and PP fittings with resistance class S16 (comp. EN 1852-1) can be used with pipes with ring stiffness SN4 or SN8.
- If it is desired to use PP multilayer pipes with chemically contaminated waste water (e.g. industrial water), the chemical resistance of the pipes must be evaluated in the design (see Appendix: Chemical resistance of polypropylene) and the use temperature must be taken into account.
- To evaluate the behavior of the sealing gasket, the document ISO/TR7620 *Chemical resistance for rubber materials should be consulted.*

ANNEX THE CHEMICAL RESISTANCE OF POLYPROPYLENE

Chemical resistance of polypropylene as it is specified in the document ISO/TR 10358:1993 Plastics pipes and fittings - Combined chemical-resistance classification table.

The information represents a summary of the data regarding the chemical resistance of polypropylene PP, presented in different public sources, derived both from practical experience and from laboratory tests.

The evaluation was done by immersing a material sample in the respective fluid at 20°, 60° and 100°C, at atmospheric pressure - in the absence of internal pressure and other external mechanical stresses - followed by the determination of the traction characteristics.

**Notes:**

1. In the tables, the concentrations of the solutions are expressed by mass.

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2. The information provided in this technical bulletin refers only to chemical resistance. Because generally other factors are involved, such as permeability, product geometry, etc. it is recommended to test the compatibility of the material for each individual use.

Definitions, symbols and classifications:

• **chemical resistance:** the ability of a material (plastic) to resist (modify the initial characteristics at a minimal level) after exposure to a fluid or direct contact with a certain substance (such as acids, bases, oils, fats, etc.) ; chemical resistance is assessed by determining some mechanical characteristics determining the conditions of use: loss of mass, degree of swelling, tensile stress-deformation characteristics, etc.

• **resistant: +**

the material is not affected or the effect is minor and difficult to quantify; stable in the long term.

• **limited resistance: o**

the environment may swell the PP or induce limited chemical changes. The use is restricted in terms of pressure and temperature and the shortening of the service life must be taken into account.

• **not recommended: -**

the effect produced is severe and the use of PP in contact with this fluid is **NOT** recommended

• **Sat.:** saturated aqueous solution, obtained at 20°C

• **Soil:** aqueous solution at a concentration of $\geq 10\%$ but unsaturated

• **Soil. dil:** diluted solution at a concentration $\leq 10\%$

• **Soil. ind.:** aqueous solution at the usual concentration for industrial use

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BULETIN TEHNIC TCO03 – Rezistența chimică a polipropilenei
4. Rezistența chimică

Denumire	Condiții	Temperatură, °C		
		20	60	100
A				
Acid azotic	60%	+	-	
Acetat de butil	100%	+	o	o
Acetat de etil	100%	o	o	
Acetat de metil	100%	+	+	
Acetat de pentil	100%	o		
Acetat de plumb	Sat.	+	+	
Acetofenona	100%	o	o	
Acetona	100%	+	+	
Acid acetic	max. 40%	+	+	
Acid acetic	50%	+	+	
Acid acetic	10%	+	+	
Acid acetic	97%	+	o	
Acid azotic	fumans	-	-	
Acid azotic	70%	-	-	
Acid benzoic		+	+	
Acid boric		+	+	
Acid carbonic		+	+	
Acid citric	10%	+	+	
Acid cloracetic	Sat.	+		
Acid clorsulfonic	100%	-	-	-
Acid formic	100%	+		
Acid fosforic	95%	+	+	
Acid hidroxi-acetic	30%	+	+	
Acid lactic	max. 90%	+	+	
Acid oleic	100%	+	o	
Acid oxalic				
Acid sulfuric	max. 10%	+	+	+
Acid sulfuric	50%	+	o	o
Acid sulfuric	96%	+	o	-
Acid tanic	10%	+	+	
Acid tartric		+	+	
Acid tricloraetic	10%	+	+	
Acizi grasi (C6)	100%	+	+	
Alcool benzoic	Sat.	+	+	
Alcool etilic	max. 95%	+	+	+
Alcool izopropilic	100%	+	+	+
Alcool metilic	5%	+	o	o
Amoniac (sol apoasa)	max. 30%	+		
Anilina	100%	+	+	
Apa de mare		+	+	+
Apa distilata	100%	+	+	+
Apa regala		o	o	
Azotat de calciu		+	+	
Azotat de cupru	Sat.	+	+	
Azotat de fier	Sat.	+	+	
Azotat de magneziu	Sat.	+	+	
B				
Benzen	100%	o	-	-
Benzina		-	-	-
Borax	Sol.	+	+	
Butanol	100%	+	o	o
Butil glicol	100%	+		
C				
Carbonat de bariu	Sat.	+	+	
Carbonat de calciu	Sat.	+	+	+
Carbonat de magneziu	Sat.	+	+	
Carbonat de sodiu	max. 50%	+	+	o
Cerneala		+	+	
Cetone		+		
Cianura de cupru	Sat.	+	+	
Ciclohexan	100%	+		
Ciclohexanol	100%	+	o	
Ciclohexanona	100%	o	-	-

Pagina 3 din 4

Denumire	Condiții	Temperatură, °C		
		20	60	100
Clor (lichid)	100%	-	-	-
Clor (sol apoasa)	Sat.	+	o	
Clorbenzen	100%	-	-	
Cloretanol	100%	+		
Cloroform	100%	o	-	-
Clorura de aluminiu		+	+	
Clorura de amoniu	Sat.	+		
Clorura de bariu	Sat.	+	+	
Clorura de calciu	Sat.	+	+	+
Clorura de cupru	Sat.	+	+	
Clorura de etil	100%	-	-	
Clorura de fier	Sat.	+	+	
Clorura de magneziu	Sat.	+	+	
Clorura de nichel	Sat.	+	+	
Clorura de sodiu	20%	+	o	-
Combustibil aviatie (115/145 octan)		o	-	
Crezol	peste 90%	+		
D				
Decalina (decahidronaftalena)	100%	-	-	-
Detergenti	2%	+	+	+
Dibutilftalat	100%	+	o	-
Dicloretilena	100%	+		
di-etanol amina	100%	+		
di-etilen glicol	100%	+	+	
Diizooctil-ftalat	100%	+	+	
di-metil amina	100%	+		
di-metil formamida	100%	+	+	
Dioxan	100%	o	o	
Dioxid de sulf (umed sau uscat)	100%	+	+	
Disulfura de carbon	100%	o	-	
E				
Emulsifianti		+	+	
Emulsii acrilice		+	+	
Etanolamina	100%	+	+	
Eter izopropilic	100%	+	+	+
Etilenglicol	100%	+	+	+
F				
Fenol	5%	+	+	
Fenol	90%	+		
Formaldehida	40%	+		
Fosfat de calciu	50%	+		
Furfurul	100%	-	-	
G				
Glicerina	100%	+	+	+
Glicol		+	+	
H				
Heptan	100%	o	-	-
Hexan	100%	+	o	
Hidrogen	100%	+		
Hidroxid de bariu		+	+	
Hidroxid de calciu		+	+	
I				
Izo-octan	100%	-	-	
L				
Lanolina	100%	+	+	
Lapte		+	+	+
M				
Mercur	100%	+	+	
Metil-amina	max. 32%	+		
Metil-etil cetona	100%	+		

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N				
Naftalina			+	-
Nitrobenzen	100%		+	o
O				
Oxid de etilena	100%		o	
P				
Parafina			+	o
Peroxid de hidrogen (apa oxigenata)	max. 10%		+	
Petrol (hidrocarburi alifatic)			-	-
Piridina	100%		o	
Propan	100%		+	
S				
Suc de fructe			+	+
Suc de mere			+	
Sulfat de aluminiu			+	+
Sulfat de bariu	Sat.		+	+
Sulfat de calciu			+	+
Sulfat de cupru	Sat.		+	+
Sulfat de fier	Sat.		+	+
Sulfat de magneziu	Sat.		+	+
T				
Tetraclorura de carbon	100%		-	-
Tetrahidrofuran	100%		o	-
Tinctura de iod			+	
Toluen	100%		-	-
Tricloretilena	100%		+	+
U				
Ulei de masline			+	+
Ulei de ricin	100%		+	
Ulei parafinic (FL 65)			+	o
Ulei siliconic			+	+
Uree			+	+
Urina			+	+
W				
White spirit	100%		o	-
X				
Xilen	100%		-	-

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DATA SHEET

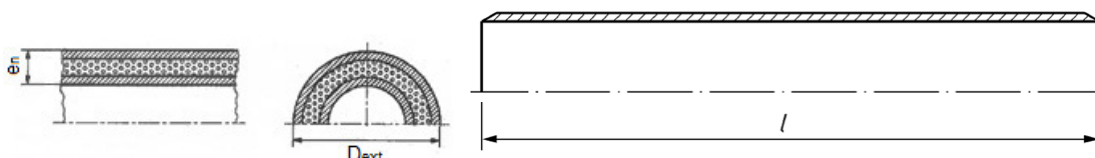
PP-HM MULTILAYER PIPE <KompactKIT> D.110÷400mm SN10

1. Field of use

- Polypropylene PP HM multilayer pipes are used for non-pressure underground sewerage networks without pressure (gravitational sewerage in which the flow is at a free level) for the transport of domestic and meteoric wastewater. The pipes are installed buried in the ground.

2. Technical features

- Reference Standard: SR EN 13476-2 "Plastics piping systems for non-pressure underground drainage and sewerage - structured-wall piping systems of unplasticized poly (vinyl chloride) (PVC-U), polypropylene (PP) and polyethylene (PE). Part 2: Specifications for pipes and fittings with smooth internal and external surface and the system, type A".
- The pipes are manufactured by co-extrusion.
- Materials:
 - the outer and the inner layer are made of polypropylene type PPHM (Polypropylene High Modulus),
 - The intermediate layer is made of polypropylene PP B (Polypropylene block copolymers) with modified minerals.
- Color: the outer and inner layers are orange-brown (RAL 8023) and the intermediate layer is white or black.
- The pipes are chamfered at both ends. PP SN8 S13.3 plugs are used for connection which are delivered together with the pipe.
- The pipes have stiffness class SN8, determined according to ISO 9969, $SN \geq 10 \text{ kN/m}^2$.
- Longitudinal reversion, determined according to EN ISO 2505: max. 2%
- Appearance: when examined with naked eye (no magnifying instruments) surfaces must be smooth, clean, without burrs, pores or other surface defects that can affect the performance of pipes. The ends to be connected must be cut clean and perpendicular to the axis of the pipe.
- Dimensions:



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Nominal diameter DN [mm]	Outer diameter Dext. [mm]	e _n minimum [mm]	l [m]	Item
110	110 – 110,3	4,2	6	35059110600
125	125 – 125,3	4,8	6	35059125600
160	160 – 160,5	6,2	6	35059160600
200	200 – 200,5	7,7	6	35059200600
250	250 – 250,5	9,6	6	35059250600
315	315 – 315,6	12,1	6	35059315600
400	400 – 400,7	15,3	6	35059400600

e_n minimum = minimum pipe thickness

l = pipe length.

Marking:

- **Manufacturer's name:** Valrom
- **brand:** KompactKIT
- MADE IN ROMANIA
- **Nominal outer diameter:** Ø... (mm)
- **field of use code:** U
- **stiffness class:** SN10
- **standard:** EN 13476 - 2
- **material:** PP-HM
- **information for traceability:** LOT xxyy (xx - the last two digits of the year, yy - serial number of the lot); date day and month (xx, yy); hour and minute

3. Packing, handling, transport and storage

- For transport of pipes use vehicles with flat surface, without roughness, which will not damage the pipes. Pipes should be supported along their length to avoid damage to the extremities due to vibration.
- When loading and unloading pipes with forklifts care should be taken not to hit the pipes. When handling pipes, it is good to use non-abrasive straps (nylon, hemp or similar). If steel cables are used it is necessary to protect the pipes in the contact area. In cold periods, at freezing temperatures, pipes are prone to damage in case of impact. It is recommended to handle the pipes with maximum attention.
- It is recommended to load the heavier pipes first to avoid deformation of the lighter ones.
- In the long-term (>90days), the storage is done in covered spaces, so that the products are protected from direct solar radiation. In the short term <90 days, storage can be done outdoors.
- Pipes will be stored on flat, stable surfaces, in areas covered and protected against fire, frost, UV radiation and major thermal variations.
- Temporary storage on the site must be made so that the pipes are not damaged, special attention will be paid to keeping the section of the pipe ends intact to not compromise the joint.

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- It is recommended that during the cold season, all the pipes should be stored on the supports to avoid freezing.
- Pipes and gaskets shall be kept away from contact with fuels, solvents, oils, greases, paints or heat sources.
- The height of the storage stack will not exceed 1 m regardless of the diameter of the pipe, to avoid deformation of the pipes from the base.
- If the pipes were delivered in the package then the package will be opened only a short time before the installation in the ditch.

4. Warranty and service life:

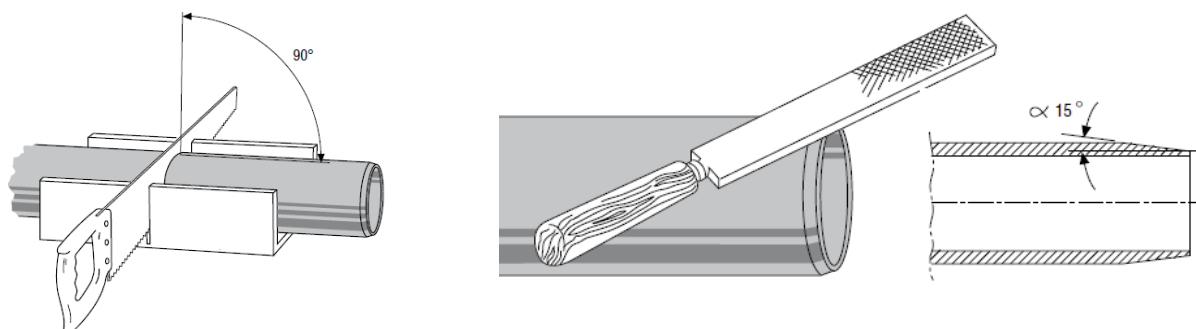
- Service life is 50 years.
- Warranty is 5 years from the date of delivery, provided that the instructions for transport storage, handling and installation are observed.

5. Installation instructions:

- Polypropylene material cannot be glued, so for side joining use mechanical saddle and mechanical couplers <KompactKIT>.
- Assembly stages:
 - Before joining, the elements should be cleaned carefully, they will be checked to be intact.
 - Temporarily remove the seal gasket.
 - Insert pipe spigot into the socket up to the stop and mark the position. The pipe will be withdrawn about 3 mm for each meter of pipe, but not more than 10 mm. The reference line will be marked.
 - Insert the sealing gasket correctly back into the socket.
 - Lubricate interior surface of gasket and exterior surface of pipe spigot with proper lubricant (silicone oil, soap with water etc.). Do not use oil or grease.
 - Push pipe spigot into the socket until the marked line. The success of this operation depends on the exact alignment of the pipes and lubrication.

Cut the pipe with a fine tooth saw .

The cut will be perpendicular on longitudinal pipe axis. Chamfer and bevel the pipe to an angle roughly 15° using a suitable chamfering tool or a fine file.

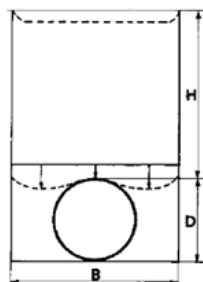


- PP multilayer pipes belong to the category of flexible pipes. The characteristic of flexible pipes is that under loads they deform significantly without being damaged. To limit the deformation of the pipe, it is very important that the lateral filling is

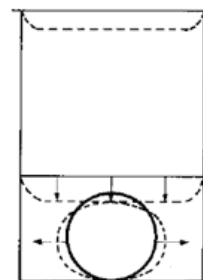
compacted as correctly as possible. The required degree of compaction is established by the project.

- The correct choice of the filling material and the correct execution of the installation are factors that can limit the deformation of the pipe.

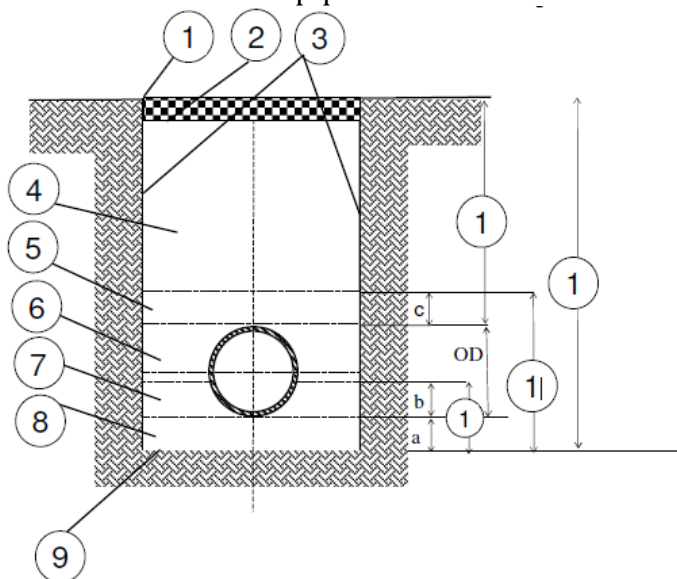
Deformation in the trench of rigid pipes



Deformation in the trench of flexible pipes



The installation of the pipes is carried out according to the provisions of the project.



- | | |
|--|--------------------------------------|
| 1 surface | 10 Cover height |
| 2 the basis of the road infrastructure | 11 The height of the support |
| 3 the walls of the trench | 12 The height of the special filling |
| 4 the actual filling | 13 Trench depth |
| 5 the first filling | a thickness of the lower bed |
| 6 lateral filling | b thickness of the upper bed |
| 7 upper bed, b | c thickness of the first filling |
| 8 bottom bed, a | OD the outside diameter of the pipe |
| 9 trench bottom | |

General laying conditions: Multilayer PP-HM pipes are generally installed at depths of at least 1.20 m. In the case where they are laid in areas without traffic, the minimum depth can be reduced to the minimum frost depth.

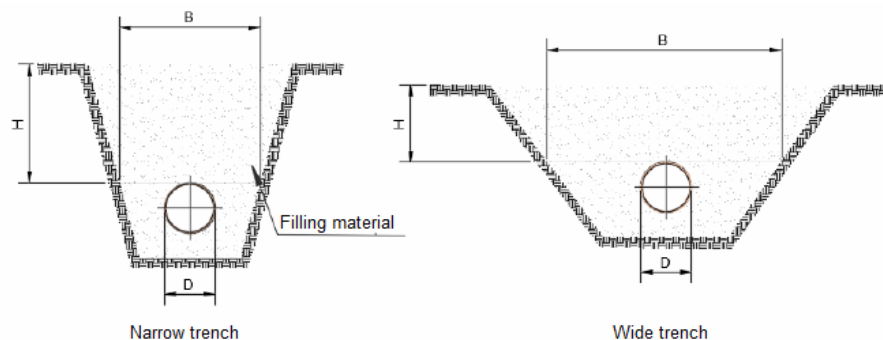
Width of the trench

Trench width is established by the project, it must ensure necessary space for joints inside it and compacting the filling in the pipe area.

Trench width must not exceed the maximum value established by the project.

Classification of the trench:

Type of trench	B	
Narrow trench	$\leq 3 D$	$< H/2$
Wide trench	$> 3 D$ $< 10 D$	$< H/2$
Infinite trench	$\geq 10 D$	$\geq H/2$



Bottom trench

Bottom trench must be dry (without groundwater or meteoric waters), continuous, flat and without stones.

Material and gradient of trench must be in accordance with project specifications. It is recommended not to change the bottom of the trench, if it has been modified, the initial bearing capacity must be restored.

If the trench bottom is unstable or the soil is compressible, appropriate measures should be provided.

In the case of lands with high content of organic substances, unstable (peat or flowing sand) etc., it is necessary to design a support layer on bottom trench. The nature and composition of the support layer are determined by the designer.

In case of frost it is necessary to protect the bottom of the trench so that the frozen layers are not left below or around the pipe.

Bedding

The bedding consists of upper and lower bedding. In the case of the pipe laid on natural trench bottom, the trench bottom is the lower bedding.

The role of the bed is to provide continuous support throughout the entire length of the pipe.

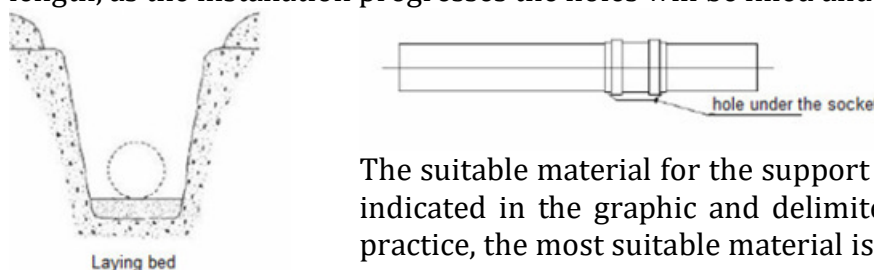
The materials used for embedment shall comply certain requirements in order to be capable of providing permanent stability and load bearing capacity for the pipeline buried in the ground.

Materials used for bedding should contain no particles with size above 20 mm for pipes with $D < 200$ mm and 40 mm for pipes with diameter between 200 and 400 mm.

Native soil can be re-used if shall meet all the following requirements: it is permitted by the project; it complies with any compactability requirements in the design; it is free from materials detrimental to the pipe (oversized particle, tree roots, waste, organic material, snow and ice) and any clay larger than 75mm.

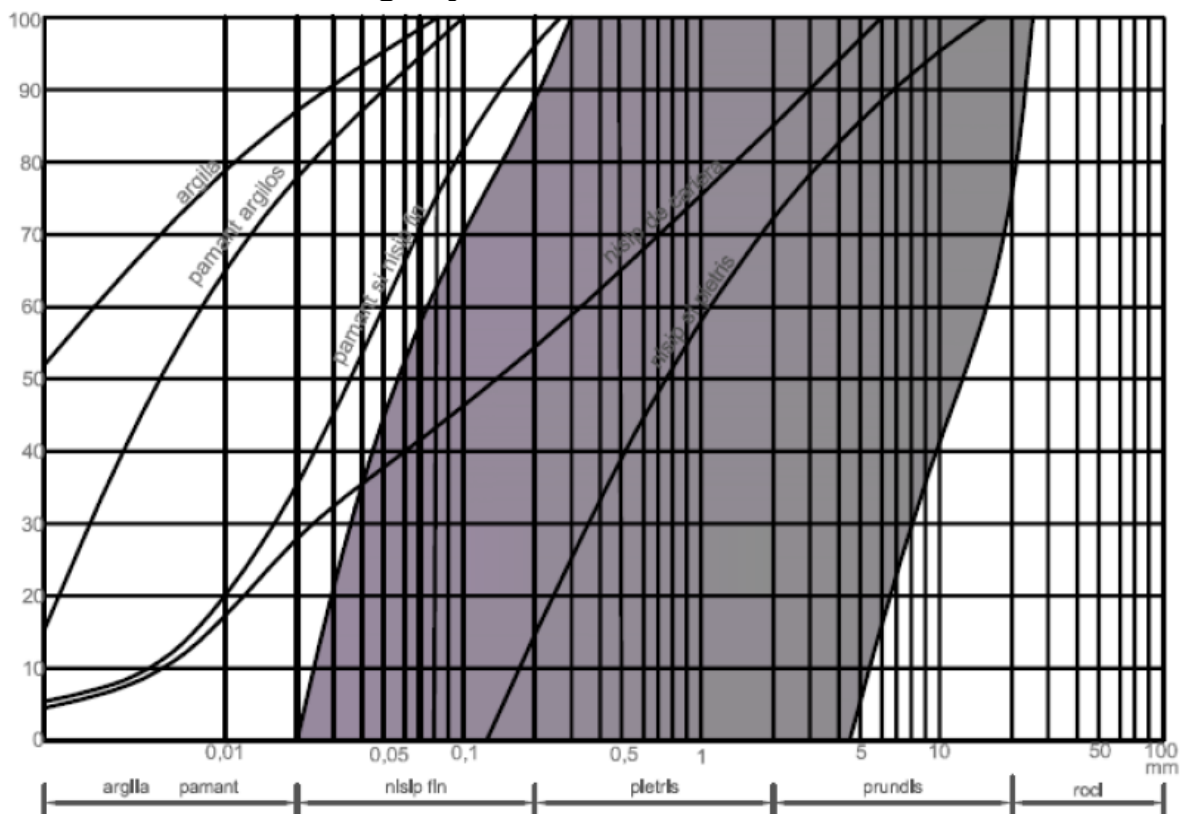
The lower bedding layer should generally have a thickness of 10 cm to 15 cm. The bedding material is spread over the entire width of the bottom of the pit and is leveled at the slope of the pipe.

Next to the coupling sockets small holes will be dug, in this way the pipe will rest its entire length, as the installation progresses the holes will be filled and compacted carefully.



The suitable material for the support and for the lateral filling is indicated in the graphic and delimited by the hatched area. In practice, the most suitable material is composed of gravel with a size of 10-15 mm or sand mixed with gravel with a maximum size of 20 mm.

Granulometric curves. Soil groups



Horizontal: The diameters of the granules that correspond to the inner dimensions of the sieve meshes (mm); **Vertical:** Cumulative weights of the fractions that passed through the sieve, calculated as a percentage of the total weight (%)

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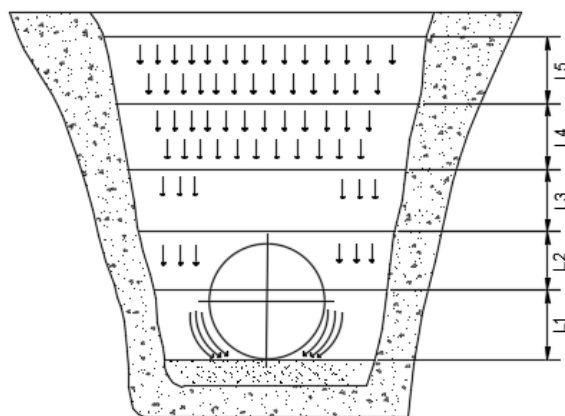
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Filling procedure

Manual filling in pipe area is the most important because of this depends the formation of the support bed for pipe and behavior in operation at external mechanical demands.

The filling around the pipe and the filling itself must be undertaken only when the state of the support and the connection of the pipes allow to withstand the loads.

The material already used for the construction of the bed will be placed around the pipe and compacted manually (well beaten with rammer and moistened to the limit for maximum tightening), in thin layers (10 cm) to the middle line of the pipe, taking great



care not to remain empty areas under the pipe and that the lateral parts between the pipe and the walls of the excavation are continuous and compact (layer L1).

The second layer of the side L2 will reach the upper generator of the pipe. Filling and compaction should be performed simultaneously on both sides of the pipe to prevent unwanted movement of the pipe.

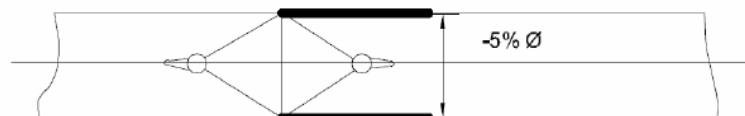
The third layer L3, will reach a higher dimension by 15 cm than the upper generator of pipe.

In layer L3 the compaction should be applied to the pipe only laterally and not above it. The subsequent filling (layers L4 and L5) will be carried out with the help of the earth that comes from the excavation cleaned of elements with a larger dimension > 100 mm, of roots, waste, organic materials, snow, ice or clay bulges larger than 75 mm. In areas where no compaction is required, elements with a maximum size of up to 300 mm are accepted if the ridge of the pipe has been covered.

The resulting Proctor index must be higher than the level provided by the designer. The compaction technology is performed in accordance with the calculations for checking the resistance of the pipe to earth loads and other demands. The last layer that sits is the vegetable layer.

Checking the diameter deformation

The vertical variation of the inner diameter of the pipes should be inspected, in order to verify the conformity with the mechanical resistance calculation. In general the maximum deformation of the pipe must not exceed 5 - 6%. This limit value is imposed due to network exploitation considerations. The verification can be carried out with the help of mechanical instruments (sphere or double cone) or with the help of optical instruments (cameras). From the reception procedure are excluded, due to the difficulties of implementation, the parts of the pipe that include special parts.



In cases where there are higher values of deformation than those established above, it is necessary to examine the cause.

Tightness test

It is carried out according to the prescriptions of the project and the national provisions in force:

NP 133 Normative regarding the design, execution and exploitation of the water supply and sewage systems of localities.

STAS 3051-91: Sewage systems. Channels of external sewerage networks. Fundamental design requirements

Testing of pipes in sewerage networks, according to NP 133:

The tightness test of the sewerage networks is carried out according to the provisions of STAS 3051. The tightness test is carried out on sections of maximum 500 m.

Before must be done:

- a) partial fillings leaving the joints free
- b) tight closures for all openings
- c) blocking of extremities and points susceptible to movement during the test.

OBSERVATIONS:

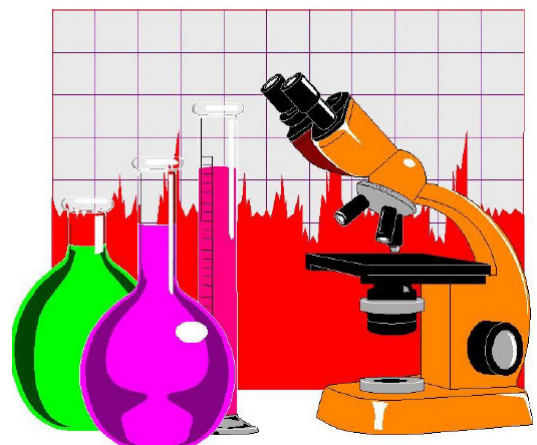
- According to EN 13476, PVC fittings with resistance class SDR 41 (according to EN 1401-1) and PP fittings with resistance class S16 (comp. EN 1852-1) can be used with pipes with ring stiffness SN4 or SN8.
- If it is desired to use PP multilayer pipes with chemically contaminated waste water (e.g. industrial water), the chemical resistance of the pipes must be evaluated in the design (see Appendix: Chemical resistance of polypropylene) and the use temperature must be taken into account.
- To evaluate the behavior of the sealing gasket, the document ISO/TR7620 *Chemical resistance for rubber materials should be consulted.*

ANNEX THE CHEMICAL RESISTANCE OF POLYPROPYLENE

Chemical resistance of polypropylene as it is specified in the document ISO/TR 10358:1993 Plastics pipes and fittings - Combined chemical-resistance classification table.

The information represents a summary of the data regarding the chemical resistance of polypropylene PP, presented in different public sources, derived both from practical experience and from laboratory tests.

The evaluation was done by immersing a material sample in the respective fluid at 20°, 60° and 100°C, at atmospheric pressure - in the absence of internal pressure and other external mechanical stresses - followed by the determination of the traction characteristics.



Notes:

1. In the tables, the concentrations of the solutions are expressed by mass.

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2. The information provided in this technical bulletin refers only to chemical resistance. Because generally other factors are involved, such as permeability, product geometry, etc. it is recommended to test the compatibility of the material for each individual use.

Definitions, symbols and classifications:

• **chemical resistance:** the ability of a material (plastic) to resist (modify the initial characteristics at a minimal level) after exposure to a fluid or direct contact with a certain substance (such as acids, bases, oils, fats, etc.) ; chemical resistance is assessed by determining some mechanical characteristics determining the conditions of use: loss of mass, degree of swelling, tensile stress-deformation characteristics, etc.

• **resistant: +**

the material is not affected or the effect is minor and difficult to quantify; stable in the long term.

• **limited resistance: o**

the environment may swell the PP or induce limited chemical changes. The use is restricted in terms of pressure and temperature and the shortening of the service life must be taken into account.

• **not recommended: -**

the effect produced is severe and the use of PP in contact with this fluid is **NOT** recommended

• **Sat.:** saturated aqueous solution, obtained at 20°C

• **Soil:** aqueous solution at a concentration of $\geq 10\%$ but unsaturated

• **Soil. dil:** diluted solution at a concentration $\leq 10\%$

• **Soil. ind.:** aqueous solution at the usual concentration for industrial use

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BULETIN TEHNIC TCO03 – Rezistența chimică a polipropilenei
4. Rezistența chimică

Denumire	Condiții	Temperatură, °C		
		20	60	100
A				
Acid azotic	60%	+	-	
Acetat de butil	100%	+	0	0
Acetat de etil	100%	0	0	
Acetat de metil	100%	+	+	
Acetat de pentil	100%	0		
Acetat de plumb	Sat.	+	+	
Acetofenona	100%	0	0	
Acetona	100%	+	+	
Acid acetic	max. 40%	+	+	
Acid acetic	50%	+	+	
Acid acetic	10%	+	+	
Acid acetic	97%	+	0	
Acid azotic	fumans	-	-	
Acid azotic	70%	-	-	
Acid benzoic		+	+	
Acid boric		+	+	
Acid carbonic		+	+	
Acid citric	10%	+	+	
Acid cloracetic	Sat.	+		
Acid clorsulfonic	100%	-	-	-
Acid formic	100%	+		
Acid fosforic	95%	+	+	
Acid hidroxi-acetic	30%	+	+	
Acid lactic	max. 90%	+	+	
Acid oleic	100%	+	0	
Acid oxalic				
Acid sulfuric	max. 10%	+	+	+
Acid sulfuric	50%	+	0	0
Acid sulfuric	96%	+	0	-
Acid tanic	10%	+	+	
Acid tartric		+	+	
Acid tricloraetic	10%	+	+	
Acizi grasi (C6)	100%	+	+	
Alcool benzoic	Sat.	+	+	
Alcool etilic	max. 95%	+	+	+
Alcool izopropilic	100%	+	+	+
Alcool metilic	5%	+	0	0
Amoniac (sol apoasa)	max. 30%	+		
Anilina	100%	+	+	
Apa de mare		+	+	+
Apa distilata	100%	+	+	+
Apa regala		0	0	
Azotat de calciu		+	+	
Azotat de cupru	Sat.	+	+	
Azotat de fier	Sat.	+	+	
Azotat de magneziu	Sat.	+	+	
B				
Benzen	100%	0	-	-
Benzina		-	-	-
Borax	Sol.	+	+	
Butanol	100%	+	0	0
Butil glicol	100%	+		
C				
Carbonat de bariu	Sat.	+	+	
Carbonat de calciu	Sat.	+	+	+
Carbonat de magneziu	Sat.	+	+	
Carbonat de sodiu	max. 50%	+	+	0
Cerneala		+	+	
Cetone		+		
Cianura de cupru	Sat.	+	+	
Ciclohexan	100%	+		
Ciclohexanol	100%	+	0	
Ciclohexanona	100%	0	-	-

Pagina 3 din 4

Denumire	Condiții	Temperatură, °C		
		20	60	100
Clor (lichid)	100%	-	-	-
Clor (sol apoasa)	Sat.	+	0	
Clorbenzen	100%	-	-	
Cloretanol	100%	+		
Cloroform	100%	0	-	-
Clorura de aluminiu		+	+	
Clorura de amoniu	Sat.	+		
Clorura de bariu	Sat.	+	+	
Clorura de calciu	Sat.	+	+	+
Clorura de cupru	Sat.	+	+	
Clorura de etil	100%	-	-	
Clorura de fier	Sat.	+	+	
Clorura de magneziu	Sat.	+	+	
Clorura de nichel	Sat.	+	+	
Clorura de sodiu	20%	+	0	-
Combustibil aviatie (115/145 octan)		0	-	
Crezol	peste 90%	+		
D				
Decalina (decahidronaftalena)	100%	-	-	-
Detergenti	2%	+	+	+
Dibutilftalat	100%	+	0	-
Dicloretilena	100%	+		
di-etanol amina	100%	+		
di-etilen glicol	100%	+	+	
Diizooctil-ftalat	100%	+	+	
di-metil amina	100%	+		
di-metil formamida	100%	+	+	
Dioxan	100%	0	0	
Dioxid de sulf (umed sau uscat)	100%	+	+	
Disulfura de carbon	100%	0	-	
E				
Emulsifianti		+	+	
Emulsii acrilice		+	+	
Etanolamina	100%	+	+	
Eter izopropilic	100%	+	+	+
Etilenglicol	100%	+	+	+
F				
Fenol	5%	+	+	
Fenol	90%	+		
Formaldehida	40%	+		
Fosfat de calciu	50%	+		
Furfurul	100%	-	-	
G				
Glicerina	100%	+	+	+
Glicol		+	+	
H				
Heptan	100%	0	-	-
Hexan	100%	+	0	
Hidrogen	100%	+		
Hidroxid de bariu		+	+	
Hidroxid de calciu		+	+	
I				
Izo-octan	100%	-	-	
L				
Lanolina	100%	+	+	
Lapte		+	+	+
M				
Mercur	100%	+	+	
Metil-amina	max. 32%	+		
Metil-etil cetona	100%	+		

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N				
Naftalina			+	-
Nitrobenzen	100%		+	o
O				
Oxid de etilena	100%		o	
P				
Parafina			+	o
Peroxid de hidrogen (apa oxigenata)	max. 10%		+	
Petrol (hidrocarburi alifactice)			-	-
Piridina	100%		o	
Propan	100%		+	
S				
Suc de fructe			+	+
Suc de mere			+	
Sulfat de aluminiu			+	+
Sulfat de bariu	Sat.		+	+
Sulfat de calciu			+	+
Sulfat de cupru	Sat.		+	+
Sulfat de fier	Sat.		+	+
Sulfat de magneziu	Sat.		+	+
T				
Tetraclorura de carbon	100%		-	-
Tetrahidrofuran	100%		o	-
Tinctura de iod			+	
Toluen	100%		-	-
Tricloretilena	100%		+	+
U				
Ulei de masline			+	+
Ulei de ricin	100%		+	
Ulei parafinic (FL 65)			+	o
Ulei siliconic			+	+
Uree			+	+
Urina			+	+
W				
White spirit	100%		o	-
X				
Xilen	100%		-	-

CERTIFICATE OF CONFORMITY**23 – НУРВСПСРБ – VR – 036 – 49**

Issued pursuant to Art. 14, par.1 and/or par.2 of Ordinance № RD-02-20-1 from 05.02.2015 on the terms and the conditions for the use of construction products in the construction works of the Republic of Bulgaria of the Ministry of Regional Development and Public Works for the construction product

Pipes from polypropylene (PP)
trademark „KompactKIT”

STRUCTURED-WALL PIPES WITH SMOOTH INTERNAL AND EXTERNAL SURFACE
System type “A1”

Designed for non-pressure underground drainage and sewerage used outside building structure. Produced from PP, with range, dimensions, ring stiffness and evaluated characteristics in accordance with Annex № 1 to this Certificate

Released on the market by:
Valrom Industrie S.R.L.
28 Preciziei str, sector 6, Bucharest, Romania

Produced in:
Valrom Industrie S.R.L.
28 Preciziei str, sector 6, Bucharest, Romania

This Certificate certifies that the product has been evaluated and conforms to the national requirements, defined in

BDS EN 13476-2:2018+A1:2020
BDS EN 13476-2:2018+A1:2020/ NA:2021

and point 11 from Annex № 2 to item 2 of Order № ПД-02-14-1329 from 03.12.2015 of the Minister of the Regional Development and Public Works

The Certificate was issued for the first time on **23.06.2023** and remains valid until **22.06.2026**, provided that the producer ensures consistency of product characteristics and the conditions of production or production control have not been changed significantly.

Place of issuance: Sofia
Date: 23.06.2023

BULAQUA } STANDART
CEO:
(Dipl. Ing. Alexander Marinchev)

This certificate includes 1 Annex of 1 page, which is an integral part of the same.

Annex №1
to Certificate of conformity № 23 – НУРВСПСПРБ –VR – 036 – 49
issued on 23.06.2023 and valid until 22.06.2026
1. Dimensions and working pressure

Nominal sizes DN/OD	Ring stiffness SN, kN/m ²	Type of pipes and material
160	8 10	Multilayer pipes from high-modulus polypropylene (PP-HM)
200		
250		
315		
400		

2. Evaluated characteristics in accordance with the national requirements

Characteristic	Declaration requirement
Appearance and colour	According to BDS EN 13476-1:2018, item 6
Geometrical characteristics, mm: - average external diameter, DN/OD - average internal diameter, DN/ID	Tables 5, 6 and 7 According to BDS EN 13476-2:2018+A1:2020
Impact resistance at 0 °C (round the clock method)	TIR ≤10 % % of damaged samples According to BDS EN 13476-2:2018+A1:2020
Ring stiffness SN, kN/m ²	≥ from the declared value of SN According to BDS EN 13476-2:2018+A1:2020
Ring flexibility, kN	item 9.1.2. According to BDS EN 13476-2:2018+A1:2020
Longitudinal reversion, %	≤ 2% no damage, declamations, cracks or bubbles on the pipe According to BDS EN 13476-2:2018+A1:2020

Place of issuance: Sofia
Date: 23.06.2023
CEO:
(Dipl. Ing. Alexander Marinchev)

BULAQUA STANDART

CERTIFICAT DE CONFORMITATE



Nr. de înregistrare **OC ICC 11 A0007462-22**



Data emiterii 10 august 2022

Valabil pînă 10 august 2025

ORGANISMUL DE CERTIFICARE OCpr. - 003

ORGANISMUL DE CERTIFICARE produse din cadrul SC "Inspecție-Certificare-Calitate" S.R.L.
MD 2032, mun. Chișinău, str. Sarmizegetusa, 92, tel./fax 022 50-70-75, www.certificare.md
Certificat de acreditare nr. OCpr - 003 valabil pînă la 28.11.2022.

PRIN PREZENTUL DOCUMENT SE CONFIRMĂ FAPTUL, CĂ PRODUSELE IDENTIFICATE ASTFEL:
DENUMIREA / DESCRIEREA

Țevi din polipropilenă din PP multistrat, DN 110 mm ÷ 500 mm, SN 2 ÷ SN 16
cu și fără mufă, pentru instalații de canalizare fără presiune subterane. Marca KompactKIT.
Fabricare în serie conform EN 13476-2.

Codul NCM
3917

SÎNT CONFORME CU CERINȚELE OBLIGATORII STABILITE ÎN :

SM EN 13476-2+A1:2020 p. 4.3.2 (tab.2), 6, 7.2.1, 7.2.3 (tab.5), 7.2.5.2 (tab.6), 8.2.1 (tab.10), 11.1,
11.2.1 (tab.18)

PRODUCĂTOR

S. C. „VALROM INDUSTRIE” SRL, bd. Preciziei, nr. 28, sector 6, București, România

Codul țării
RO

SOLICITANT

S. C. „VALROM INDUSTRIE” SRL, bd. Preciziei, nr. 28, sector 6, București,
România

Codul IDNO
RO8529679

CERTIFICATUL ESTE ELIBERAT ÎN BAZA

Raportului de încercări nr. 233-T din 02.08.2022, eliberat de către LÎ din cadrul ÎM „Palplast” SRL, str. Alexandru cel Bun 114, or. Călărași, RM certificat de acreditare nr. LÎ-031 valabil pînă la 20.06.2023, Raportului de identificare a produselor nr. 9174-22 din 17.05.2022, Raportului de control tehnic al produselor supuse certificării nr. 9174-22 din 17.05.2022; Raportului de evaluare a procesului de producție Nr. 9174-22 din 18.05.2022, Raportului sumar Nr. 9174-22 din 10.08.2022, eliberate de OC "ICC".

INFORMAȚIE SUPLIMENTARĂ:

Schema de certificare nr. 3. Evaluarea periodică se va efectua o dată pe an de OC "ICC" conform contractului de evaluare periodică a produselor certificate Nr. 22.22.9174-EPPC din 10.08.2022. Certificatul este valabil doar în cazul asigurării fiecărei unități de produs certificat cu informația amplă în limba de stat în conformitate cu legislația în vigoare. La întreprindere este implementat sistemul de management al calității ISO 9001:2015, certificatul nr.8172 valabil pînă la 19.11.2022, sistemul de management al sănătății și securității ocupaționale SR ISO 45001:2018, certificatul nr.3298, valabil pînă la 26.11.2022, sistemul de management de mediu SR EN ISO 14001:2015, certificatul nr.3505, valabil pînă la 26.11.2022 eliberate de SRAC CERT SRL atestat de acreditare SM 004, București, România.

Seria A Nr. 0007462



ADJ. CONDUCĂTORUL
ORGANISMULUI DE CERTIFICARE

Neaga O.

În atenția antreprenorilor și organelor de control !

Copiile certificatelor se legalizează prin specimenul de ștampilă și semnătura deținătorului certificatului

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SR EN ISO/CEI 17021-1:2015
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SM 004



C E R T I F I C A T

SRAC certifică organizația/ certifies the organisation

VALROM INDUSTRIE S.R.L.

Sediul social: B-dul. Preciziei, nr. 28, sector 6, București

**pentru următoarele activități/
for the following fields of activities**

Proiectare, fabricare și comercializare, service produse extrudate, injectate, sudate, strunjite din materiale termoplastice. Fabricare, achiziție, comercializare de sisteme și echipamente conexe pentru rețele de apă, gaz, canalizare, telecomunicații, instalații termice și sanitare

Design, manufacturing and sale, servicing of extruded, molded, welded, turned products made of thermoplastic materials. Manufacturing, acquisition, sale of related systems and equipment for water, gas, sewerage, telecommunications networks, heating and sanitary installations

Sediul de lucru: B-dul. Biruinței, nr. 151, Pantelimon, jud. Ilfov

**pentru următoarele activități/
for the following fields of activities**

Fabricare, comercializare produse rotoformate din materiale termoplastice. Fabricare și comercializare de echipamente conexe pentru rețeaua de apă, canalizare, telecomunicații și sanitare
Manufacturing, sale of rotoformed products made of thermoplastic materials. Manufacture and trade of related equipment for water networks, sanitation, telecommunications and sanitary

că are implementat și menține un
sistem de managementul calității
conform condițiilor din standardul

which has implemented and maintains a
quality management system
which fulfils the requirements of the standard

SR EN ISO 9001:2015 (ISO 9001:2015)



Valabilitatea certificatului este condiționată de
efectuarea supravegheților anuale până la data de:



nr. certificat/ certificate registration no. **8172**
data inițială a certificării/ initial certification date **29 noiembrie 2010**
data recertificării/ reissuing date * **25 noiembrie 2022**
data ultimei actualizări/ last update -
valabil până la/ valid until **24 noiembrie 2025** (cu condiția vizării anuale)
SRAC CERT SRL, Str. Vasile Pârvan Nr. 14, Sector 1, București www.srac.ro

Director General
Ing. Mihaela Cristea

acreditat pentru
CERTIFICARE



SR EN ISO/CEI 17021-1:2015
CERTIFICAT DE ACREDITARE
SM 004



C E R T I F I C A T

SRAC certifică organizația/ certifies the organisation

VALROM INDUSTRIE S.R.L.

Sediul social: B-dul. Preciziei, nr. 28, sector 6, București

**pentru următoarele activități/
for the following fields of activities**

Proiectare, fabricare și comercializare, service produse extrudate, injectate, sudate, strunjite din materiale termoplastice. Fabricare, achiziție, comercializare de sisteme și echipamente conexe pentru rețele de apă, gaz, canalizare, telecomunicații, instalații termice și sanitare

Design, manufacturing and sale, servicing of extruded, molded, welded, turned products made of thermoplastic materials. Manufacturing, acquisition, sale of related systems and equipment for water, gas, sewerage, telecommunications networks, heating and sanitary installations

Sediul de lucru: B-dul. Biruinței, nr. 151, Pantelimon, jud. Ilfov

**pentru următoarele activități/
for the following fields of activities**

Fabricare, comercializare produse rotoformate din materiale termoplastice. Fabricare și comercializare de echipamente conexe pentru rețeaua de apă, canalizare, telecomunicații și sanitare
Manufacturing, sale of rotoformed products made of thermoplastic materials. Manufacture and trade of related equipment for water networks, sanitation, telecommunications and sanitary

că are implementat și menține un
sistem de management de mediu
conform condițiilor din standardul

which has implemented and maintains an
environmental management system
which fulfils the requirements of the standard

SR EN ISO 14001:2015 (ISO 14001:2015)



Valabilitatea certificatului este condiționată de
efectuarea supravegherilor anuale până la data de:



nr. certificat/ certificate registration no. **3305**
data inițială a certificării/ initial certification date **29 noiembrie 2010**
data recertificării/ reissuing date * **25 noiembrie 2022**
data ultimei actualizări/ last update -
valabil până la/ valid until **24 noiembrie 2025** (cu condiția vizării anuale)
SRAC CERT SRL, Str. Vasile Pârvan Nr. 14, Sector 1, București www.srac.ro

Director General
Ing. Mihaela Cristea

acreditat pentru
CERTIFICARE



SR EN ISO/CEI 17021-1:2015
CERTIFICAT DE ACREDITARE
SM 004



C E R T I F I C A T

SRAC certifică organizația/ certifies the organisation

VALROM INDUSTRIE S.R.L.

Sediul social: B-dul. Preciziei, nr. 28, sector 6, București

**pentru următoarele activități/
for the following fields of activities**

Proiectare, fabricare și comercializare, service produse extrudate, injectate, sudate, strunjite din materiale termoplastice. Fabricare, achiziție, comercializare de sisteme și echipamente conexe pentru rețele de apă, gaz, canalizare, telecomunicații, instalații termice și sanitare

Design, manufacturing and sale, servicing of extruded, molded, welded, turned products made of thermoplastic materials. Manufacturing, acquisition, sale of related systems and equipment for water, gas, sewerage, telecommunications networks, heating and sanitary installations

Sediul de lucru: B-dul. Biruinței, nr. 151, Pantelimon, jud. Ilfov

**pentru următoarele activități/
for the following fields of activities**

Fabricare, comercializare produse rotoformate din materiale termoplastice. Fabricare și comercializare de echipamente conexe pentru rețeaua de apă, canalizare, telecomunicații și sanitare
Manufacturing, sale of rotoformed products made of thermoplastic materials. Manufacture and trade of related equipment for water networks, sanitation, telecommunications and sanitary

că are implementat și menține un
**sistem de management al sănătății
și securității ocupaționale**
conform condițiilor din referențialul

which has implemented and maintains an
**occupational health and safety
management system**
which fulfils the requirements of the reference standard

SR ISO 45001:2018 (ISO 45001:2018)



Valabilitatea certificatului este condiționată de
efectuarea supravegheților anuale până la data de:

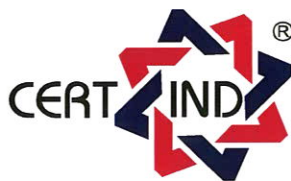
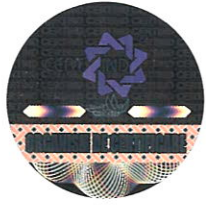


nr. certificat/ certificate registration no. **3298**
data inițială a certificării/ initial certification date **12 decembrie 2014**
data recertificării/ reissuing date * **25 noiembrie 2022**
data ultimei actualizări/ last update -
valabil până la/ valid until **24 noiembrie 2025** (cu condiția vizării anuale)
SRAC CERT SRL, Str. Vasile Pârvan Nr. 14, Sector 1, București www.srac.ro

Director General
Ing. Mihaela Cristea



CERTIFICAT
VALABIL DOAR
CU CONDIȚIA
VIZĂRII ANUALE



acreditat pentru
CERTIFICARE



SR EN ISO/CEI 17021-1:2015
CERTIFICAT DE ACREDITARE
SM 041

CERTIFICAT

CERTIND

Confirmă faptul că sistemul de management al

VALROM INDUSTRIE SRL

cu sediu social în: București, bulevardul Preciziei, nr. 28, sector 6
locație secundară: Pantelimon, bulevardul Biruinței, nr. 151, județul Ilfov

este conform cu cerințele:

SR EN ISO 50001:2019/ ISO 50001:2018

având domeniul de certificare:

Proiectare, fabricare și comercializare, service produse extrudate, injectate, sudate, strunjite din materiale termoplastice. Fabricare, achiziție, comercializare de sisteme și echipamente conexe pentru rețele de apă, gaz, canalizare, telecomunicații, instalații termice și sanitare. Fabricare și comercializare produse rotoformate din materiale termoplastice. Fabricare și comercializare de echipamente conexe pentru rețeaua de apă, canalizare telecomunicații și sanitare.

- domeniul de certificare conform anexei -

Certificat nr.: 48047/123-40-En

Certificare inițială: 14.05.2020

Certificare curentă (recertificare): 03.05.2023

Data expirării ciclului de certificare: 13.05.2026 cu condiția vizării anuale a certificatului

Recertificarea trebuie finalizată până la data expirării ciclului de certificare

Organismul de certificare își rezervă dreptul de a suspenda, retrage sau anula prezentul certificat dacă, la auditurile de supraveghere se constată că nu au fost menținute condițiile de la data certificării inițiale.

CERTIND SA - ORGANISM DE CERTIFICARE
Palatul UGIR-1903, Str. George Enescu 27-29, Sector 1, București

DIRECTOR GENERAL
Violeta Sergentu

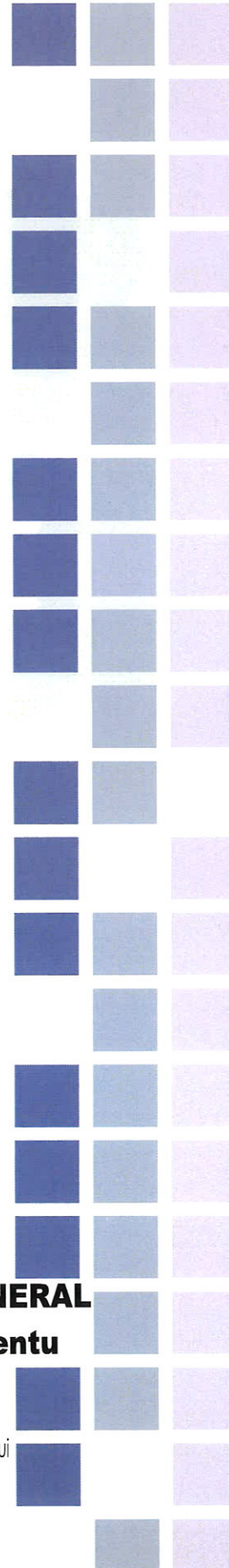


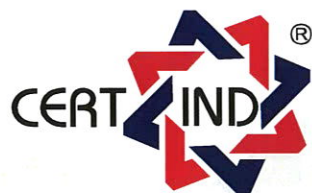
organism de certificare

Detalii privind veridicitatea acestui certificat pot fi obținute la CERTIND SA: telefon: 021.313.36.51; e-mail: office@certind.ro
Falsificarea acestui document se pedepsește conform legii.

VALABIL PANA IN
MAI
2024

VALABIL PANA IN
MAI
2025





Anexa la certificatul nr. 48047/123-40-En din 03.05.2023

Locatia	Tipul locatiei	Activitati desfasurate
Bucuresti, strada Preciziei nr. 28, sector 6	SEDIUL SOCIAL	Proiectare, fabricare si comercializare, service produse extrudate, injectate, sudate, strunjite din materiale termoplastice. Fabricare, achizitie, comercializare de sisteme si echipamente conexe pentru retele de apa, gaz, canalizare, telecomunicatii, instalatii termice si sanitare.
Pantelimon, strada Biruintei, nr. 151, judetul Ilfov	LOCATIE SECUNDARA	Fabricare si comercializare produse rotoformate din materiale termoplastice. Fabricare si comercializare de echipamente conexe pentru rețeaua de apa, canalizare, telecomunicatii si sanitare.

Aceasta anexa este valabila numai insotita de Certificatul de Conformitate CERTIND Nr. 48047/123-40-En

DIRECTOR GENERAL
Violeta Sergentu

