# vargokor SEWAGE PIPES 

CORRUGATED PE PIPES AND FITTINGS FOR NON-PRESSURIZED SEWAGE


CATALOGUE 08/2022

INSTALLATION SYSTEMS

## vãagokor



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## SEWAGE

# PE CORRUGATED SEWAGE PIPES <br> PE AND PP COUPLINGS <br> PE FITTINGS <br> SEALS AND GASKETS 

ACCESSORIES

TOOLS
varg

## 8 kN/m²



## EXTREMELY LIGHT PIPE FOR EXTREME CONDITIONS

## System description

vargokor installation system consists of corrugated pipes and fittings for street sewage. Pipes and fittings are made of high-density polyethylene (PE-HD) with profiled walls and a smooth inner layer. They have high mechanical and chemical resistance. Due to the content of increasingly aggressive chemicals in waste water, increasing demands are being made for the durability of sewer pipes. Sewage pipelines must be permanently leakproof and resistant to corrosion in order to avoid dangerous contamination of groundwater and thus damage to the environment that could no longer be corrected.
If the images of damaged pipes in the channels are analyzed, it can be established that most of the damage, especially in the case of non-flexible pipes, is caused by changes in environmental conditions.

## Description and display of damages in order of frequency

1. Damaged connections
2. Formation of cracks and debris
3. Formation of permeable places
4. Root caused damage
5. Non-flow / flow problems
6. Deviations from position
7. Corrosion
8. Mechanical wear
9. Pipe burst
10. Other damages

2., 3., $4 ., 9$.

2., $3 ., 9$.

7., 8.

1., 3.

4., 5., 7.

Pipes placed in trenches or earth embankments are exposed to external loads, due to the weight of the backfill material and cover (static load), and loads caused by the passage of transport vehicles, etc. above them (dynamic load).
When a pipe placed in a trench becomes subject to an external load, an interaction relationship is created between the pipe, the backfill material and the walls of the trench. With flexible pipes, the deformation reaches very sensitive values: the buoyancy of the supporting filling material actually limits the deformation itself. Therefore, when laying the pipe, it is important to obtain sufficient contrast so that the soil used to fill the trench is adequately compacted and thus limit the deformation so that it is acceptable.


New, more elastic materials are increasingly being sought for laying infrastructural sewers, and one such material is high-density polyethylene (PE-HD), which is characterized by good chemical and high mechanical as well as temperature stability.
vargokor sewage pipe fully meets the set requirements and high standards of construction of infrastructure facilities.

System advantages


## Higher resistance to

 flexingDue to the rings which increase hardness, vargokor pipes are suitable for use in the most demanding projects of roads with heavy traffic.


High impact resistance
Due to the elasticity of the pipe, there are fewer breaks during transport, storage and assembly, especially at low temperatures.


Up to 50\% lighter than classic pipes
Light weight of vargokor pipes lowers the costs of manipulation as there is no need for heavy machines.


## Resistance to seismic influences

Due to the internal elasticity of the pipe that absorbs vibrations, ribbed pipes are resistant to seismic influences.


## Easy handling and quick assembly

Due to their excellent properties, vargokor pipes require less attention when making the bedding and laying them in the trench than classic pipes.


## System longevity

The high quality of the material from which vargokor pipes are made guarantees long-term functionality.


## Chemical resistance

Material used in production of vargokor pipes is resistant to wide range of aggressive chemicals which could be found in sewer systems.


## Bright interior

The smooth and bright interior of the pipe allows for easy inspection with a camera as part of mandatory inspections.

## Transport and assembly

## 1. Transport to the construction site

vargokor pipes and connecting elements must be transported using appropriate vehicles, loaded and unloaded under professional supervision. During transport, the pipes should be placed along a maximum surface area.

## 2. Unloading from a transport vehicle

a) With an excavator or a crane

It is recommended to use belts / lifting straps (e.g, textile or similar). Chains and cables can damage pipes, so it is not recommended to use them. Be sure to prevent throwing, falling and hitting hard against each other parts of pallets, pipes and parts of the configuration. The lifting straps should be placed under the pallet / transport stand, in the middle at a distance of 3.5 m .
b) By forklift

The pallets / pipes must be placed crosswise on the forks, while making sure there is as much distance as possible between the forks.

## 3. Storage on the construction site

The pallet must not be unloaded with jolts onto a hard surface, it must be placed on a sufficiently solid surface to avoid sinking of the pallet or its wooden base.

Pipes and connecting elements can be stored outdoors, where the time of outdoor storage should not be longer than 1 year.
While storing the pipes, consider the following:
a) Pipes must be stored in the way to provide a flat surface for storage.
b) The height of the stacked pipes must not exceed 2 m . The stacked pipes must be secured from the side.

c) Stored vargokor pipes must be protected from overheating in summer, or during extreme heat. It is recommended to store it in the shade or cover the pipes with a light tarpaulin that does not allow light to pass through.

## 4. Transport to a trench

Due to the light weight, no special lifting devices are required for the transport of individual pipes and parts of the system to the trench.
If it is necessary to transport pallets, the same applies to what is stated under point 2, "Unloading from a transport vehicle".
The transport of individual pipes to the trench using a chain or cable is not allowed.


## 5. Assembly of vargokor pipes

Before assembling, inspect the pipe ends for possible damage during transport or storage.
Connecting vargokor pipes is carried out by using couplings and seals. Seals ensure the safety of the connection and guarantee a safe connection of pipes even in unfavorable installation conditions.
When connecting pipes, the following steps should be performed:
a) The part of the pipe that enters the coupling as well as the inner surface of the coupling must be cleaned of impurities
b) The seal should be mounted evenly in the recess between the first and second rib.
c) The couplings have a central limiter to prevent pulling during assembly, but it is recommended to mark the plug-in area of the pipe with a marker according to the tables on the next page.

Socket area table for outer (DN / OD) and inner (DN / ID) nominal diameter

| DN / OD | Pipe socket area <br> designation <br> $\mathbf{m m}$ |
| :---: | :---: |
| $\mathbf{1 6 0}$ | 112 |
| $\mathbf{2 0 0}$ | 148 |
| $\mathbf{2 5 0}$ | 153 |
| $\mathbf{3 1 5}$ | 160 |
| $\mathbf{4 0 0}$ | 200 |
| $\mathbf{5 0 0}$ | 250 |
| $\mathbf{6 3 0}$ | 275 |


| DN / ID | Pipe socket area <br> designation <br> $\mathbf{m m}$ |
| :---: | :---: |
| $\mathbf{2 5 0}$ | 143 |
| $\mathbf{3 0 0}$ | 163 |
| $\mathbf{4 0 0}$ | 200 |


d) Coat the seal located on the pipe and the inner surface of the coupling evenly with a lubricant for easier insertion of the pipe into the coupling. It is not allowed to use oils and fats for this purpose. Coated pipe ends must no longer be placed on the substrate due to the risk of dirt sticking to the pipe.

e) Immediately before installation, the couplings and ends of the pipes should be inspected again for foreign objects and removed.

f) vargokor pipe should then be pushed into the coupling up to the limiter or mark previously drawn on the pipe. Installation can be done by one or two people. Using a crowbar or wooden beam placed between, the pipe can be pushed into the coupling without any difficulties. Installation with an excavator is not allowed.


## 6. Shortening of vargokor pipes

Pipes should be cut using a fine teeth saw, in the middle of recessed part and transversely to the axis of the pipe. Unevenness and roughness in the area where the pipe was sawed must be removed by a scalpel, knife or sandpaper.
It is forbidden to press or strike the pipes with heavy machines in order to adjust pipe axis.


## 7. Installation of in-situ connection on the main pipe

Connection of the side pipe to the main pipe accordingly to the following instructions:

a) It is necessary to pierce the main pipe with the help of a drill and a crown with a drilling diameter equal to the diameter of the pipe that we want to connect. It is important that the hole is drilled in the upper half of the pipe perpendicular to its axis.
b) Clean the edge of the hole with a suitable tool.
c) Place the gasket on the pierced hole.
d) If you connect a smooth or corrugated pipe with a smaller diameter to the main pipe, it is necessary to use a different couplings that will be inserted into the main pipe (Art. 250 or Art. 251). The coupling for connecting the smooth pipe has a special slot for the seal. When a smaller corrugated pipe is connected to the main pipe, the seal is pulled between the two ribs of the smaller pipe, so the coupling for the corrugated pipes does not have a special slot.
e) Once you have fitted the seal to the coupling or to the corrugated pipe, you can complete the connection by pushing the pipe into the coupling.

## 8. Making a trench

The construction of trenches is carried out in accordance with the HRN EN 1610 standard, "Laying and testing of sewage pipelines and trenches". It should be taken into account that a trench that is too narrow adversely affects proper installation (compression of the water area), and a trench that is too wide increases costs, so both result in an increase in the load on the system.
In the area where the two pipes join, a depression should be formed in the ground so that the coupling does not rest on solid ground and that no load occurs on that point of pipeline.

## 9. Foundation, assembly and filling

As with the construction of trenches, the foundation should be made according to the requirements of HRN EN 1610. The foundation should be made with at least 10 to 15 cm of fine-grained material. It is recommended to use materials that can be compacted (such as sand and gravel) and bind weakly or not at all.
The pipe should be covered with the same material up to 15 cm above its top. Compacting the material covering the top of the pipe, if necessary, is done by hand.
Mechanical compaction of the material directly above the pipe follows only when a layer of at least 30 cm has been applied over the top of the pipe. Pipes must not come into contact with compression devices. During installation, the pipes should be secured from the side and in a vertical position.
Backfilling (from 30 cm above the top of the pipe) follows in layers. Light to medium compaction devices can be used up to 1 m of coverage. Heavy machinery may only be used afterwards.
Due to the functionality and longevity of the system, the standard should therefore be followed.

Correct installation vargokor pipes

During the installation, it is very important to assure correct installation of vargokor corrugated pipes. Trench must be wide enough so the covering materijal can be compressed from above and sideway. The base must be made from the low granulation material ( $0-12 \mathrm{~mm}$ - finely ground rock, gravel and sand). The pipe must be covered with the same material. Special attention should be paid to ensure quality compression on the bottom sides of the laid pipe.


The picture shows a properly installed vargokor pipe

Bedding must be well compacted to prevent the part of the pipe or pipeline from sinking, as this results in counter-fall and retention of water at the lowest point. vargokor pipes are elastic, so even in this case they will not break, but the water will not drain normally.


In case of poor compaction, the entire pipeline section can sink

The tables show the dimensions of the trench and the thickness of the layers used to backfill the pipe and trench in accordance with the requirements of the HRN EN 1610 standard, full name: "Minimum width of the trench, depending on the nominal diameter DN", that is, "Minimum width of the trench, depending on the depth of the trench".

| DN / OD | minimum trench width ( $\mathrm{OD}+\mathrm{x}$ ) m |  |  |
| :---: | :---: | :---: | :---: |
|  | supported trench | unsupported trench |  |
|  |  | $B>60^{\circ}$ | $B=60^{\circ}$ |
| $\leq 225$ | OD $+0,40$ | OD + 0,40 |  |
| $>225$ do $\leq 350$ | OD + 0,50 | OD + 0,50 | OD + 0,40 |
| $>350$ do $\leq 700$ | OD + 0,70 | OD + 0,70 | OD + 0,40 |
| $>700$ do $\leq 200$ | OD $+0,85$ | OD + 0,85 | OD $+0,40$ |
| $>1200$ | OD + 1,00 | OD + 1,00 | OD + 0,40 |


| trench depth <br> $m$ | minimum trench <br> width <br> $m$ |
| :---: | :---: |
| $<1,00$ | -- |
| $1,00-1,75$ | 0,80 |
| $1,76-4,00$ | 0,90 |
| $>4,00$ | 1,00 |

by the data $O D+x, x / 2$ means a minimal workspace between the pipe and the wall of the trench.
Note:
OD - outer diameter in meters
$B$ - unsupported trench slope angle measured from the horizontal.

minimum trench width

unsupported trench

## Incorrect installation of vargokor pipes



The picture above shows incorrect installation of vargokor pipe in a too narrow trench. The small distance from the pipe to the edge of the trench does not allow quality compaction of the bedding.


It is not allowed to backfill vargokor pipes with excavated material, as damage and deformation of the pipe may occur due to the size of the stone material in the excavation.

PE-HD, like other plastic materials, is subject to dilatation, i.e. expansion and contraction due to temperature changes. If large temperature differences are expected from the moment of laying the pipe until the trench is buried, this phenomenon must be taken into account.
In order to avoid the occurrence of possible dilatation within the pipe-pipe connection, it is necessary to partially cover each individual pipe with adequate material during installation to prevent pipe displacement within the connection.
After the pipe has been fixated in this way, the assembly is started with a repetition of the backfilling procedure. This procedure will prevent dilatation of the pipe as well as the seal itself from pushing the pipe out of the coupling by its own force.


## Resistance of vargokor pipes to abrasion

vargokor pipes are made of high-density polyethylene (PE-HD), which has the property of extraordinary resistance to abrasion and is one of the most resistant materials used for making pipes.
At the University of Darmstadt, extensive fraying research was carried out on pipes made of different materials based on the recognized method of the Institut Süddeutsches Kunsthoff-Zentrum in Würzburg.
The diagram shows the impressive abrasion resistance properties of PE-HD pipes.


Cross-section of the pipe outer (DN / OD) and inner (DN / ID) nominal diameter

## DN / OD



| Nominal diameter DN / OD | Outer diameter mm | Inner diameter mm | Rib height <br> h <br> mm | Weight kg/m | Amount of pipes on |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  | Truck <br> 7,40 m <br> m / kom | Tow 13,6 m <br> m / kom |
| 160 | 160 | 138 | 11,0 | 1,5 | 1.248 / 208 | 2.496 / 416 |
| 200 | 200 | 171 | 14,5 | 2,0 | 900 / 150 | 1.800 / 300 |
| 250 | 250 | 214 | 18,0 | 3,0 | 600 / 100 | 1.200 / 200 |
| 315 | 315 | 271 | 22,0 | 4,6 | 378 / 63 | 756 / 126 |
| 400 | 400 | 343 | 28,5 | 7,5 | 246 / 41 | 492 / 82 |
| 500 | 500 | 431 | 34,5 | 10,7 | 144 / 24 | 288 / 48 |
| 630 | 630 | 542 | 44,0 | 17,6 | 90/ 15 | 180 / 30 |
| 800 | 800 | 688 | 56,0 | 26,5 | 54 / 9 | 108 / 18 |


| Nominal diameterDN / ID | Outer diameter mm | Inner diameter mm | Rib height h mm | Weight kg/m | Amount of pipes on |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  | Truck <br> 7,40 m <br> m / kom | Tow 13,6 m m / kom |
| 250 | 285 | 247 | 19,0 | 4,0 | 480 / 80 | 960 / 160 |
| 300 | 346 | 297 | 24,5 | 5,3 | 330 / 55 | 660 / 110 |
| 400 | 460 | 395 | 32,5 | 9,5 | 180 / 30 | 360 / 60 |

vargokor pipe set consists of vargokor corrugated pipe, coupling and two seals. The principle of connection with a coupling at one end of the pipe and a flat end with a seal at the other end of the pipe enables a very simple and quick connection into a long-term leak-proof sewage system.

When joining pipes, small joining forces are required. Pipes and couplings have the same peripheral stiffness, and with the use of the most modern sealing system, watertightness is guaranteed.

vargokor polyethylene corrugated pipes for non-pressure sewage and drainage of waste and rainwater are available in a range of diameters from DN / OD 160 to DN / OD 800 and DN / ID 250 to DN / ID 400, standard peripheral stiffness SN8.


| Art. 200 PE PIPE SN8 green / black | DN / OD | $\mathrm{mm}^{\mathrm{L}}$ | Code | OOO 000 000 |
| :---: | :---: | :---: | :---: | :---: |
|  | 160 | 6000 | - 21458 - | 1 |
|  | 200 | 6000 | 7854 | 1 |
|  | 250 | 6000 | 7855 | 1 |
|  | 315 | 6000 | 7856 | 1 |
|  | 400 | 6000 | 7857 | 1 |
|  | 500 | 6000 | 8008 | 1 |
|  | 630 | 6000 | 8009 | 1 |
|  | 800 | 6000 | 8849 | 1 |
|  |  |  |  |  |
|  | DN / ID | ${ }_{m m}^{\text {L }}$ | Code | 000 000 000 |
|  | 250 | 6000 | 13088 | 1 |
|  | 300 | 6000 | 13295 | 1 |
|  | 400 | 6000 | 13924 | 1 |


| Art. 200 PE pipe SN8 black / black | DN / OD | $\stackrel{\mathrm{L}}{\mathrm{L}}$ | Code | 000 000 000 |
| :---: | :---: | :---: | :---: | :---: |
| Cls, | 200 | 6000 | 24741 | 1 |
|  | 250 | 6000 | 24765 | 1 |
|  | 315 | 6000 | 24766 | 1 |
|  | 400 | 6000 | 24742 | 1 |
|  | 500 | 6000 | 24768 | 1 |
|  | 630 | 6000 | 24769 | 1 |
|  | 800 | 6000 | 24770 | 1 |
|  | DN / ID | $\frac{\mathrm{L}}{\mathrm{L}}$ | Code | OOO 000 000 |
|  | 250 | 6000 | 24771 | 1 |
|  | 300 | 6000 | 24772 | 1 |
|  | 400 | 6000 | 24743 | 1 |


| Art. 210 PE COUPLING | DN / OD | Code | 4 |
| :---: | :---: | :---: | :---: |
|  | 160 | 21459 | 1 |
|  | 200 | 17492 | 1 |
|  | 250 | 17493 | 1 |
|  | 315 | 17494 | 1 |
|  | 400 | 17495 | 1 |
|  | 500 | 17496 | 1 |
|  | 630 | 17497 | 1 |
|  | 800 | 11849 | 1 |
|  | 1000 | 11832 | 1 |
|  | 1200 | - 11834 - | 1 |
|  | DN / ID | Code | 4 |
|  | 250 | 17498 | 1 |
|  | 300 | 17499 | 1 |
|  | 400 | 17500 | 1 |


| Art. 210 / 1 PP COUPLING | DN / OD | Code | 4 |
| :---: | :---: | :---: | :---: |
|  | 200 | 7783 | 1 |
|  | 250 | 9119 | 1 |
|  | 315 | 10494 | 1 |
|  | 400 | 10495 | 1 |
|  | 500 | 11027 | 1 |
|  | 630 | 11431 | 1 |
|  | DN / ID | Code | 4 |
|  | 250 | 13186 | 1 |
|  | 300 | 13187 | 1 |
|  | 400 | 13925 | 1 |


| Art. 211 <br> PE SLIDING COUPLING | DN / OD | Code | 4 |
| :---: | :---: | :---: | :---: |
|  | 200 | 11804 | 1 |
|  | 250 | 11805 | 1 |
|  | 315 | 8691 | 1 |
|  | 400 | 8720 | 1 |
|  | 500 | 11806 | 1 |
|  | 630 | 11300 | 1 |
|  | DN / ID | Code | 4 |
|  | 250 | 13570 | 1 |
|  | 300 | 13723 | 1 |
|  | 400 | 14299 | 1 |


| $\begin{array}{c}\text { Art. 212 } \\ \text { PE SAND BLASTED COUPLING }\end{array}$ | Code |
| :---: | :---: | :---: | :---: |
| for conn. CORRUGATED PIPES with CONCRETE MANHOLE |  |$)$


| Art. 220 <br> PE BEND SEGMENTAL $10^{\circ}-45^{\circ}$ | DN / OD | Code | 4 |
| :---: | :---: | :---: | :---: |
|  | 160 | -8756- | 1 |
|  | 200 | 8758 |  |
|  | 250 | 8762 | 1 |
|  | 315 | 8764 | 1 |
|  | 400 | 8767 | 1 |
|  | 500 | 8769 | 1 |
|  | 630 | 8772 | 1 |
|  |  |  |  |
|  | DN / ID | Code | 4 |
|  | 250 | 13548 | 1 |
|  | 300 | 13670 | 1 |
|  | 400 | 15013 | 1 |


| Art. 221 <br> PE BEND SEGMENTAL 50․ $90^{\circ}$ | DN / OD | Code | 4 |
| :---: | :---: | :---: | :---: |
|  | 160 | -8757- | 1 |
|  | 200 | 8759 | 1 |
|  | 250 | 8763 | 1 |
|  | 315 | 8765 | 1 |
|  | 400 | 8768 | 1 |
|  | 500 | 8770 | 1 |
|  | 630 | 8773 | 1 |
|  | DN / ID | Code | 4 |
|  | 250 | 13730 | 1 |
|  | 300 | 14092 | 1 |
|  | 400 | 14093 | 1 |


| Art. 230 <br> PE BRANCH SEGMENTAL $45^{\circ}$ | DN / OD | Code | 4 |
| :---: | :---: | :---: | :---: |
|  | 160 / 160 | - 9948 - | 1 |
|  | 200 / 200 | 9735 | 1 |
|  | 250 / 250 | 10146 | 1 |
|  | 315 / 315 | 10975 | 1 |
|  | DN / ID | Code | 4 |
|  | 250 / 250 | 14094 | 1 |
|  | 300 / 300 | 14095 | 1 |



| Art. 232 <br> PE REDUCED BRANCH SEGMENTAL $45^{\circ}$ | DN / OD | Code | 4 |
| :---: | :---: | :---: | :---: |
|  | 200/160 | - 9800 - | 1 |
|  | 250/160 | - 9253 - | 1 |
|  | 250/200 | 9801 | 1 |
|  | 315/160 | -9803 - | 1 |
|  | 315/200 | 8649 | 1 |
|  | 315/250 | 9799 | 1 |
|  | 400/160 | - 8563 - | 1 |
|  | 400/200 | 11082 | 1 |
|  | 400/250 | 10987 | 1 |
|  | $400 / 315$ | 8647 | 1 |
|  | 500/160 | - 11083 - | 1 |
|  | 500/200 | 11084 | 1 |
|  | 500/250 | 11010 | 1 |
|  | 500/315 | 11011 | 1 |
|  | 500/400 | 11012 | 1 |
|  | $630 / 160$ | - 11013 - | 1 |
|  | 630/200 | 11014 | 1 |
|  | 630/250 | 11015 | 1 |
|  | $630 / 315$ | 11016 | 1 |
|  | 630 / 400 | 11017 | 1 |
|  | $630 / 500$ | 11018 | 1 |
|  |  |  |  |
|  | DN / ID | Code | 4 |
|  | 250/160 | 14771 | 1 |
|  | 300/250 | 14394 | 1 |
|  | $400 / 250$ | 14395 | 1 |
|  | 400/300 | 14396 | 1 |

Art. 233
PE REDUGED BRANCH SEGMENTAL $45^{\circ}$ CORRUGATED BODY / CONNECTION SMOOTH


| DN / OD | Code | 4 |
| :---: | :---: | :---: |
| 200 / 160 | - 14182 - | 1 |
| 250 / 160 | - 14183 - | 1 |
| 250 / 200 | - 14180 - | 1 |
| 315 / 160 | - 14184 - | 1 |
| 315 / 200 | - 14181 - | 1 |
| 315 / 250 | - 14185 - | 1 |
| 400 / 160 | - 14186 - | 1 |
| 400 / 200 | - 14187 - | 1 |
| 400 / 250 | - 14188 - | 1 |
| 400 / 315 | - 14189 - | 1 |
| 500 / 160 | - 14190 - | 1 |
| 500 / 200 | - 14191 - | 1 |
| 500 / 250 | - 14192 - | 1 |
| 500 / 315 | - 14193 - | 1 |
| 500 / 400 | - 14194 - | 1 |
| 630 / 160 | - 14195 - | 1 |
| 630 / 200 | - 14196 - | 1 |
| 630 / 250 | - 14197 - | 1 |
| 630 / 315 | - 14198 - | 1 |
| 630 / 400 | - 14199 - | 1 |
| 630 / 500 | - 14200 - | 1 |


| DN / ID | Code | 1 |
| :---: | :---: | :---: |
| ID 250 / OD 160 | $-14276-$ | $\mathbf{1}$ |
| ID 250 / OD 200 | $-14277-$ | $\mathbf{1}$ |
| ID 300 / OD 160 | $-14278-$ | $\mathbf{1}$ |
| ID 300 / OD 200 | $-14279-$ | $\mathbf{1}$ |
| ID 300 / OD 250 | $-14280-$ | $\mathbf{1}$ |


| Art. 234 <br> PE REDUCED BRANCH SEGMENTAL $90^{\circ}$ CORRUGATED BODY / CONNECTION COUPLING | DN / OD | Code | 4 |
| :---: | :---: | :---: | :---: |
|  | 200/160 | - 9547 - | 1 |
|  | 250/160 | - 9983 - | 1 |
|  | 250/200 | 9933 | 1 |
|  | 315/160 | - 10988 - | 1 |
|  | 315/200 | 9113 | 1 |
|  | 315/250 | 9844 | 1 |
|  | $400 / 160$ | -8655- | 1 |
|  | $400 / 200$ | 9934 | 1 |
|  | $400 / 250$ | 10989 | 1 |
|  | $400 / 315$ | 9646 | 1 |
|  | $500 / 160$ | - 10990 - | 1 |
|  | $500 / 200$ | 9242 | 1 |
|  | $500 / 250$ | 11085 | 1 |
|  | 500/315 | 10991 | 1 |
|  | $500 / 400$ | 10992 | 1 |
|  | $630 / 160$ | - 10993 - | 1 |
|  | $630 / 200$ | 10994 | 1 |
|  | $630 / 250$ | 10995 | 1 |
|  | $630 / 315$ | 10996 | 1 |
|  | $630 / 400$ | 10997 | 1 |
|  | $630 / 500$ | 10998 | 1 |
|  |  |  |  |
|  | DN / ID | Code | 4 |
|  | 250/160 | 13973 | 1 |
|  | 400/250 | 15011 | 1 |
|  | 400 / 300 | 15012 | 1 |

Art. 235
PE REDUCED BRANCH SEGMENTAL $90^{\circ}$ CORRUGATED BODY / CONNECTION SMOOTH


| DN / OD | Code | 4 |
| :---: | :---: | :---: |
| 200 / 160 | - 14201 - | 1 |
| 250 / 160 | - 14202 - | 1 |
| 250 / 200 | - 14203 - | 1 |
| 315 / 160 | - 14204 - | 1 |
| 315 / 200 | - 14205 - | 1 |
| 315 / 250 | - 14206 - | 1 |
| 400 / 160 | - 14207 - | 1 |
| 400 / 200 | - 14208 - | 1 |
| 400 / 250 | - 14209 - | 1 |
| 400 / 315 | - 14210 - | 1 |
| 500 / 160 | - 14211 - | 1 |
| 500 / 200 | - 14212 - | 1 |
| 500 / 250 | - 14213 - | 1 |
| 500 / 315 | - 14214 - | 1 |
| 500 / 400 | - 14215 - | 1 |
| 630 / 160 | - 14216 - | 1 |
| 630 / 200 | - 14217 - | 1 |
| 630 / 250 | - 14218 - | 1 |
| 630 / 315 | - 14219 - | 1 |
| 630 / 400 | - 14220 - | 1 |
| 630 / 500 | - 14221 - | 1 |


| DN / ID | Code | $\mathbf{1}$ |
| :---: | :---: | :---: |
| ID 250 / OD 160 | $-14281-$ | $\mathbf{1}$ |
| ID 250 / OD 200 | $-14282-$ | $\mathbf{1}$ |
| ID 300 / OD 160 | $-14283-$ | $\mathbf{1}$ |
| ID 300 / OD 200 | $-14284-$ | $\mathbf{1}$ |


| Art. 240 <br> PE REDUCER SEGMENTAL <br> CORRUGATED / CORRUGATED PIPE |
| :---: |

$\left.\begin{array}{c}\text { Art. 241 } \\ \text { PE REDUCER SEGMENTAL } \\ \text { CORRUGATED / SMOOTH PIPE }\end{array}\right)$

| Art. 250 |
| :---: | :---: | :---: | :---: |
| PE COUPLING FOR VERTICAL CONNECTION |
| SMOOTH on CORRUGATED PIPE without seal |$\quad$ DN / OD

Art. 251
PE COUPLING FOR VERTICAL CONNECTION CORRUGATED on CORRUGATED PIPE


| DN / OD | Code | $\uparrow$ |
| :---: | :---: | :---: |
| $\mathbf{1 6 0}$ | $-7977-$ | $\mathbf{1}$ |
| 200 | 7998 | $\mathbf{1}$ |
| $\mathbf{2 5 0}$ | $-8556-$ | $\mathbf{1}$ |


| Art. 252 PE CAP | DN / OD | Code | 4 |
| :---: | :---: | :---: | :---: |
|  | 160 | -8732- | 1 |
|  | 200 | 8733 | 1 |
|  | 250 | 8734 | 1 |
|  | 315 | 8438 | 1 |
|  | 400 | 8735 | 1 |
|  | 500 | 8736 | 1 |
|  | 630 | 8737 | 1 |
|  | DN / ID | Code | 4 |
|  | 250 | 13671 | 1 |
|  | 300 | 13722 | 1 |
|  | 400 | 14389 | 1 |


| Art. 260 PE FLAP VALVE | DN / OD | Code | 4 |
| :---: | :---: | :---: | :---: |
|  | 250 | 18672 | 1 |
|  | 315 | 12849 | 1 |
|  | 400 | 18603 | 1 |
|  | 500 | 13718 | 1 |
|  | 630 | 18699 | 1 |
|  | 800 | - 13137 - | 1 |
|  | DN / ID | Code | 4 |
|  | 250 | 18700 | 1 |
|  | 300 | 18673 | 1 |
|  | 400 | 18701 | 1 |


| Art. 270 <br> SEAL VARGOKOR | DN / OD | Code | (1) |
| :---: | :---: | :---: | :---: |
|  | 160 | - 21565 - | 1 |
|  | 200 | - 7943 - | 1 |
|  | 250 | - 7944 - | 1 |
|  | 315 | - 7865 - | 1 |
|  | 400 | - 7866 - | 1 |
|  | 500 | -8012- | 1 |
|  | 630 | -8013 - | 1 |
|  | 800 | -8037- | 1 |
|  | 1000 | - 11836 - | 1 |
|  | 1200 | - 11838 - | 1 |
|  | DN / ID | Code | 4 |
|  | 250 | - 13123 - | 1 |
|  | 300 | - 13299 - | 1 |
|  | 400 | - 13926 - | 1 |


| Art. 180 |
| :---: | :---: | :---: | :---: |
| SEAL (for Art. 250) |$\quad$ Code | DN OD |
| :---: |

Art. 274
RUBBER GASKET FOR VERTICAL CONNECTION
PIPE on PIPE (TALL)


| DN / OD | Code | 4 |
| :---: | :---: | :---: |
| 160 / 315 | - 7985 - | 1 |
| 160 / 400 | -8346- | 1 |
| 160 / 500 | - 8061 - | 1 |
| 160 / 630 | - 8062 - | 1 |
| 160 / 800 | - 11007 - | 1 |
| 200/315 | - 7995 - | 1 |
| 200 / 400 | - 8465 - | 1 |
| 200/500 | - 8466 - | 1 |
| 200 / 630 | - 8071 - | 1 |
| 200 / 800 | - 11008 - | 1 |
| 250 / 500 | - 7996 - | 1 |
| 250 / 630 | - 8710 - | 1 |
| 250 / 800 | - 11009 - | 1 |


| Art. 275 <br> RUBBER GASKET FOR VERTICAL CONNECTION PIPE on MANHOLE (SHORT) | DN / OD | Code | 4 |
| :---: | :---: | :---: | :---: |
|  | 160 | - 8739 - | 1 |
|  | 200 | -8638- | 1 |
|  | 250 | - 8740 - | 1 |
|  | 315 | - 9061 - | 1 |
|  | 400 |  | 1 |


| $\begin{gathered} \text { Art. } 190 / 1 \\ \text { POTASSIUM SOAP } \end{gathered}$ | Packaging | Code | 4 |
| :---: | :---: | :---: | :---: |
|  | 1 kg | - $2180-$ | 1 |



| Art. 280 CROWN SAW | DN / OD | Code | 4 |
| :---: | :---: | :---: | :---: |
|  | 160 | - 8388 - | 1 |
|  | 200 | -8072- | 1 |
|  | 250 | -8389 - | 1 |



INSTALLATION SYSTEMS

## vargokal <br> HOUSE SEWAGE SYSTEM

## vargokal PLUS <br> HOUSE SEWAGE SYSTEM - LOW NOISE

## vargokal ULTRA <br> HOUSE SEWAGESYSTEM - SILENT

Vargoknal Sir
HOUSE SEWAGE SYSTEM - SYPHONS

## vargoterm

HOUSE WATER SUPPLY

## vargoplen

water

## vargoplen

IRRIGATION AND SEWAGE

## vargoplen

## vargokor <br> SEWAGEPIPES

## vargokor

SEWAGE CHAMBERS AND CATCHPITS

## vargodren

DRAINAGE PIPES

CABLE PROTECTION PIPES

## vargoheat

FLOOR HEATING PIPES

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