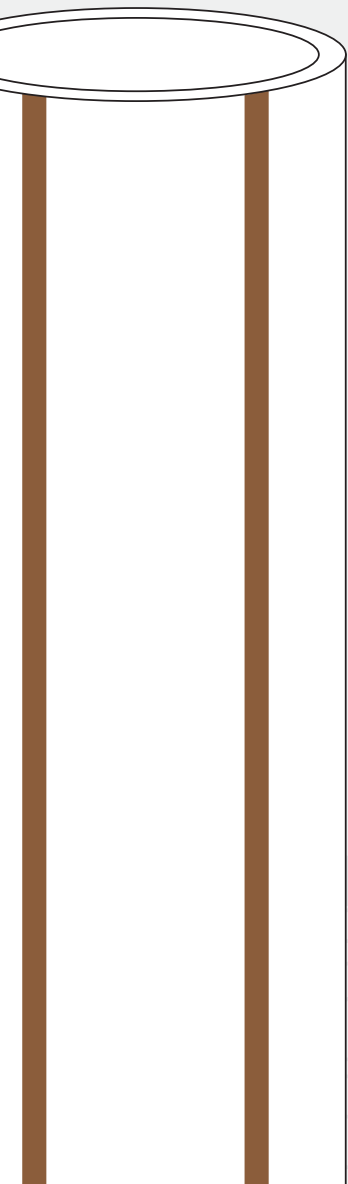


INSTALLATION SYSTEM
vargoplen

IRRIGATION AND SEWAGE
SMOOTH PE PIPES FOR IRRIGATION AND SEWAGE

Technology
and tradition.



CATALOGUE 08/2022

Complete solutions for
**sewage, water / gas supply,
drainage and cable protection**

 **VARGON**
INSTALLATION SYSTEMS



INSTALLATION SYSTEM
vargoplen

IRRIGATION AND SEWAGE

PIPES *KAN*

PIPES *KAN WHITE*

Installation system

Installation system **vargoplen** offers a comprehensive range of polyethylene pressure and non-pressure pipes made of PE 100 and PE 100-RC materials intended for the distribution of drinking water, gas, drainage of waste and rainwater, and for the construction of submarine outlets. **vargoplen** pipes are produced in a wide range of dimensions and pressure load tolerances.

Comparing PE 100 and PE 100-RC materials, all mechanical and physical characteristics of PE 100 material are satisfied by PE 100-RC material. The essential difference is the high resistance of the PE 100-RC material to external and internal loads once the pipe is installed in the ground and in operation.

Description and application of **vargoplen** pipes

Polyethylene (PE) is the most widespread and well-known plastic material, and pipe systems made of PE 100 and PE 100-RC materials, such as **vargoplen** installation system, are most suitable for pressure systems due to their elasticity and resistance to stress.

The report of the Croatian Institute of Public Health confirmed that PE-HD PE100 and PE 100-RC materials, from which **vargoplen** pipes are made, are completely neutral, and that the pipes are safe for the supply and distribution of drinking water.

Basic division of **vargoplen** pipes by application:

- pressurized water supply
- pressurized gas pipeline
- irrigation systems
- pressurized sewage
- non-pressurized sewage
- pipes for fish farms
- other (submarine drains, cable protection...)



Advantages of *vargoplen* pipes

- They are made of harmless, healthy, corrosion-resistant material that can be recycled,
- Long service life of the pipe, which is up to 100 years,
- Homogeneous production material with excellent hydraulic properties, without the need for protective coatings or internal linings,
- A wide range of connection fittings,
- Pipes are factory-produced in 100 m coils and 12 m straight length, and can be produced in other lengths (6 m, 13 m, 200 m, 250 m and 300 m) at the customer's request and needs,
- Lower weight of the pipe (kg/m) compared to pipes of other materials,
- They allow a bending radius of 12d, which reduces the need to use connecting parts,
- The possibility of connection by detachable (mechanical and flange connection) and non-detachable methods (butt welding and connection with electric fittings),
- Simple processing, cutting and joining of pipes, which facilitates installation

Quality control

In addition to the production process we have ensured a continuous monitoring of the production process quality control, starting from control of raw material to testing the quality of final products. Testings are performed in the company's laboratory, which is equipped with testing devices of renowned producers, sufficient to examine all the mechanical and physical characteristic of both, raw materials and finished products, in accordance with specified requirements of the HRN EN 12666-1 and HRN EN 12201-2 standards, which defines this type of product.

The following testing methods are performed:

- Melt mass flow test - MFR (HRN EN ISO 1133-1)
- Test methods for thermoplastics pipes longitudinal return (HRN EN ISO 2505)
- Testing of pipe resistance to internal pressure at constant temperature (HRN EN ISO 1167-1,-2)
- Density test (HRN EN ISO 1183-1)
- Pipe dimension testing (HRN EN ISO 3126, HRN EN 12201-2 and HRN EN 12666-1)
- Examination of the appearance and color of pipes (HRN EN 12201-1,-2 and HRN EN 12666-1)

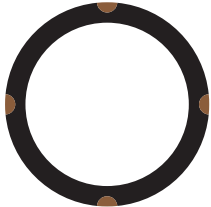
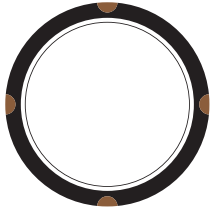


Types of *vargoplen* IRRIGATION AND SEWAGE pipes

Irrigation and sewage pipes are divided into single-layer and multilayer.

The group of single-layer pipes includes ***vargoplen KAN*** pipes ,while the group of multilayer pipes includes ***vargoplen KAN WHITE*** pipes.

IRRIGATION AND SEWERAGE PIPES

<i>vargoplen KAN</i>	<i>vargoplen KAN WHITE</i>
	
M A T E R I A L	
PE-HD	PE-HD
100%	90% / 10%

Irrigation and sewerage pipes ***vargoplen KAN*** are made of PE–HD material in black color with four longitudinal lines in brown color. Pipes ***vargoplen KAN WHITE*** are made of PE–HD material in black color with four longitudinal lines in brown color while their inner layer is white. The length in meters is printed on the pipes. Pipes are delivered in coils of 100 m and straight in standard length of 12 m, and if required by the customer in lengths of 6 m and 13 m. Pipes are produced in accordance with the HRN EN 12666-1 and HRN EN 12201-2 standards.



Joining technique

Connecting of **vargoplen KAN** and **vargoplen KAN WHITE** pipes is done in two ways, non-separable and separable process. Non-separable joining refers to butt welding and electrofusion welding, while separable joining refers to mechanical connecting.



Before starting the welding process, it is important to check and verify all the parameters:

- The welding environment should be over $+5\text{ }^{\circ}\text{C}$ and, if the weather is rainy or cold, it should be done in a sheltered area
- Pipe ends should be closed to prevent air circulation and fast cooling
- The welding zone should be clean and undamaged.

Butt welding is performed with a special device that prepares and heats the ends of two pipes and joins them under a certain pressure, thus creating a homogeneous joint that is as safe as the pipes themselves. Only pipes with the same wall thickness, i.e. the same SDR, can be joined with this welding method.

By electrofusion welding, the two ends of the pipe are joined by using an electrofusion fitting, which uses a heater through which electricity flows to achieve a leak-proof connection. The outer surface of pipe and the inner surface of the fitting are simultaneously heated with the help of current carried by the wires integrated in the connector itself to a certain temperature, and in this way they are connected.

Small-diameter pipes are most often joined with electrofusion fittings, while for larger diameters, butt welding is recommended due to lower costs.

In addition to common measures of clean pipes during the welding process, particular attention should be paid to remove condensed water on the pipes and fittings.



Mechanical fittings are limited to smaller pipe diameters, and are mainly used for water supply.

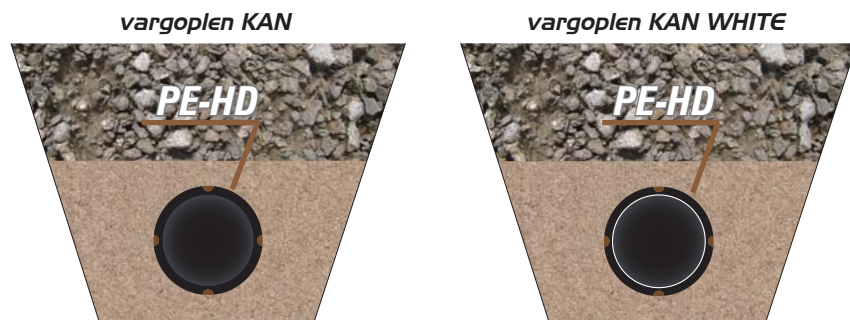
Installation of *vargoplen* IRRIGATION AND SEWAGE pipes

vargoplen KAN and ***vargoplen KAN WHITE*** pipes are installed using the classic method of laying (open laying), which requires the construction of a sand bed 10-15 cm high, and then backfilling with the same material up to a height of 15 cm above the pipe and only at the end with the material from the excavation of the trench. This method of installation is the safest for the pipe and ensures its durability, although it is more expensive and takes longer.

DN (mm)	trench width (m)		
	Supported trench	Unsupported trench	
		$\beta > 60$	$\beta \leq 60$
≤ 225	DN + 0,40	DN + 0,40	
$> 225 \leq 350$	DN + 0,50	DN + 0,50	DN + 0,40
$> 350 \leq 700$	DN + 0,70	DN + 0,70	DN + 0,40
$> 700 \leq 1200$	DN + 0,85	DN + 0,85	DN + 0,40
> 1200	DN + 1,00	DN + 1,00	DN + 0,40

Minimum width (bottom) of the trench depending on the outer pipe diameter (DN/OD) and the angle of the trench slope

Installation example of ***vargoplen KAN*** and ***vargoplen KAN WHITE*** pipes:



During installation, the rules on safety at work should be followed. The trench must be properly drained, and all joints should be left free until a leak test is performed.

One of the main advantages of polyethylene is, as mentioned earlier, its flexibility, which comes to the fore when laying and embedding pipelines. Pipes can be bent to a maximum radius of 12-20 times their outer diameter, which significantly reduces the use of connecting parts during design and execution. Tubes supplied in coils must always be unwind in the direction in which they are wound.

When laying pipeline, the external temperature should be taken into account due to the property of expansion. This material property is defined by the linear thermal expansion coefficient ($0.20 \text{ mm/m} \times ^\circ\text{C}$). For example, a 1 m long pipe will elongate when the outside temperature rises, and shorten when the outside temperature drops by 0.2 mm per degree of temperature change.

Range of pipes by purpose, load and dimension

NON-PRESSURE PIPES - HRN EN 12666-1					
SDR		33	26	21	17
S		16	12,5	10	8
PE-HD C=1,25	SN	2	4	8	16
DN (mm)		s (mm)	s (mm)	s (mm)	s (mm)
110		-	4,2	5,3	6,6
125		-	4,8	6,0	7,4
160		-	6,2	7,7	9,5
200		-	7,7	9,6	11,9
250		7,7	9,6	11,9	14,8
315		9,7	12,1	15,0	18,7
355		10,9	13,6	16,9	21,1
400		12,3	15,3	19,1	23,7
450		13,8	17,2	21,5	26,7
500		15,3	19,1	23,9	29,7

Range of pipes by purpose, load and dimension

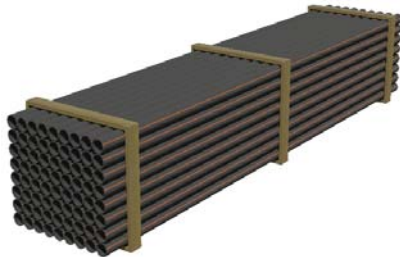
PRESSURE PIPES - HRN EN 12201-2								
SDR		26	21	17	13,6	11	9	7,4
S		12,5	10	8	6,3	5	4	3,2
PE 100 C=1,25	PN	6	8	10	12,5	16	20	25
DN (mm)		S (mm)	S (mm)	S (mm)	S (mm)	S (mm)	S (mm)	S (mm)
20		-	-	-	-	2,0	2,3	3,0
25		-	-	-	2,0	2,3	3,0	3,5
32		-	-	2,0	2,4	3,0	3,6	4,4
40		-	2,0	2,4	3,0	3,7	4,5	5,5
50		2,0	2,4	3,0	3,7	4,6	5,6	6,9
63		2,5	3,0	3,8	4,7	5,8	7,1	8,6
75		2,9	3,6	4,5	5,6	6,8	8,4	10,3
90		3,5	4,3	5,4	6,7	8,2	10,1	12,3
110		4,2	5,3	6,6	8,1	10,0	12,3	15,1
125		4,8	6,0	7,4	9,2	11,4	14,0	17,1
140		5,4	6,7	8,3	10,3	12,7	15,7	19,2
160		6,2	7,7	9,5	11,8	14,6	17,9	21,9
180		6,9	8,6	10,7	13,3	16,4	20,1	24,6
200		7,7	9,6	11,9	14,7	18,2	22,4	27,4
225		8,6	10,8	13,4	16,6	20,5	25,2	30,8
250		9,6	11,9	14,8	18,4	22,7	27,9	34,2
280		10,7	13,4	16,6	20,6	25,4	31,3	38,3
315		12,1	15,0	18,7	23,2	28,6	35,2	43,1
355		13,6	16,9	21,1	26,1	32,2	39,7	48,5
400		15,3	19,1	23,7	29,4	36,3	44,7	54,7
450		17,2	21,5	26,7	33,1	40,9	50,3	61,5
500		19,1	23,9	29,7	36,8	45,4	55,8	-

Packaging

Due to practical reasons and easier handling and transport, **vargoplen KAN** and **vargoplen KAN WHITE** pipes are available in coils, straight lengths or both, depending on the diameter. Pipes with a diameter of DN 20 - DN 50 are delivered in coil, pipes with a diameter of DN 63 - DN 110 are delivered in coil and in straight lengths stacked in a bundle (pallet), and pipes with a diameter of DN 125 - DN 500 are delivered in straight lengths stacked in a bundle (palette). Pipes in a stick are delivered in a length of 12 m, and at the customer's request in lengths of 6 m and 13 m. The ends of the pipes are secured with plugs to protect the interior from the impurities.



Valid for: SDR 11,
SDR 13,6, SDR 17
(S5, S6,3, S8)



COIL DIMENSION / PIPE LENGTH IN COIL

D mm	100 m		
	Dv mm	B mm	Du mm
32	1100	280	810
40	1220	370	920
50	1600	350	1240
75	2150	470	1650
90	2500	540	1900
110	2800	550	1900

Dv: coil outer diameter, B: coil width, Du: coil inner diameter

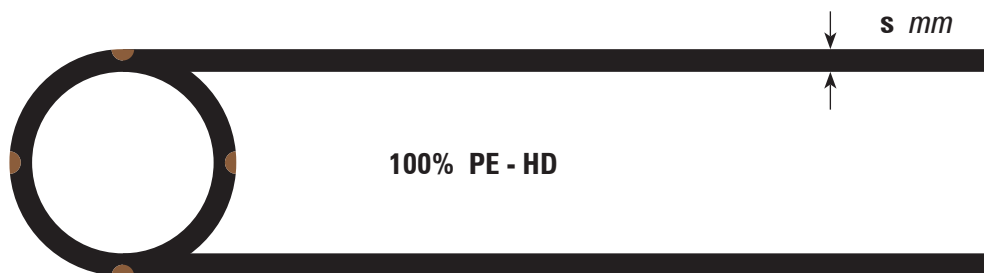
PALLET DIMENSION / AMOUNT OF PIPES IN PALLET L = 12m

D mm	S5, S6,3, S8				
	Bv x Hv mm	B x H mm	Length of pipes in pallet m	Amount of pipes in pallet pc	Amount of pipes in tow truck pcs / m
63	1185 x 600	1075 x 500	1788	149	894 / 10728
75	1150 x 565	1050 x 465	1140	95	570 / 6840
90	1180 x 660	1080 x 560	972	81	486 / 5832
110	1200 x 595	1100 x 495	576	48	288 / 3456
125	1165 x 660	1065 x 560	480	40	240 / 2880
140	1150 x 730	1050 x 630	420	35	210 / 2520
160	1140 x 680	1040 x 580	288	24	144 / 1728
180	1180 x 750	1080 x 650	264	22	132 / 1584
200	1200 x 650	1100 x 550	180	15	90 / 1080
225	1120 x 715	1020 x 615	144	12	72 / 864
250	1100 x 785	1000 x 685	132	11	66 / 792
280	1220 x 865	1120 x 765	132	11	66 / 792
315	1205 x 965	1105 x 865	108	9	36 / 432
355	1165 x 1070	1065 x 970	96	8	36 / 432
400	900 x 900	800 x 800	48	4	16 / 192
450	1000 x 550	900 x 450	24	2	20 / 240
500	1100 x 600	1000 x 500	24	2	20 / 240

Bv: pallet width, Hv: pallet height, B: width of pipes in pallet, H: height of pipes in pallet

FOR SEWAGE

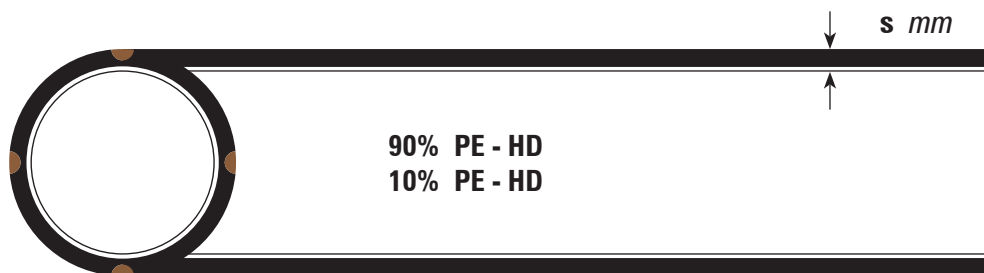
vargoplen KAN



DN mm	SN 2				SN 4				SN 8				SN 16			
	SDR 33 S16				SDR 26 S12,5				SDR 21 S10				SDR 17 S8			
	s mm	Weight kg/m	K m	P m	s mm	Weight kg/m	K m	P m	s mm	Weight kg/m	K m	P m	s mm	Weight kg/m	K m	P m
110	–	–	–	–	4,2	1,43	–	12	5,3	1,77	–	12	6,6	2,18	–	12
125	–	–	–	–	4,8	1,84	–	12	6,0	2,27	–	12	7,4	2,76	–	12
160	–	–	–	–	6,2	3,04	–	12	7,7	3,72	–	12	9,5	4,52	–	12
200	–	–	–	–	7,7	4,69	–	12	9,6	5,78	–	12	11,9	7,05	–	12
250	7,7	5,92	–	12	9,6	7,30	–	12	11,9	8,93	–	12	14,8	11,00	–	12
315	9,7	9,37	–	12	12,1	11,60	–	12	15,0	14,20	–	12	18,7	17,40	–	12
355	10,9	11,80	–	12	13,6	14,60	–	12	16,9	18,00	–	12	21,1	22,10	–	12
400	12,3	15,10	–	12	15,3	18,60	–	12	19,1	22,90	–	12	23,7	28,00	–	12
450	13,8	19,00	–	12	17,2	23,50	–	12	21,5	28,90	–	12	26,7	35,40	–	12
500	15,3	23,40	–	12	19,1	28,90	–	12	23,9	35,70	–	12	29,7	43,80	–	12

s: wall thickness, K: coil, P: straight length

FOR SEWAGE
vargoplen KAN WHITE

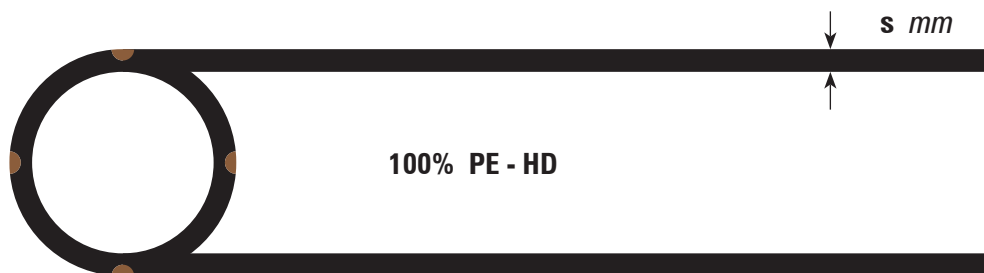


DN mm	SN 2				SN 4				SN 8				SN 16			
	SDR 33 S16				SDR 26 S12,5				SDR 21 S10				SDR 17 S8			
	s mm	Weight kg/m	K m	P m	s mm	Weight kg/m	K m	P m	s mm	Weight kg/m	K m	P m	s mm	Weight kg/m	K m	P m
110	–	–	–	–	4,2	1,43	–	12	5,3	1,77	–	12	6,6	2,18	–	12
125	–	–	–	–	4,8	1,84	–	12	6,0	2,27	–	12	7,4	2,76	–	12
160	–	–	–	–	6,2	3,04	–	12	7,7	3,72	–	12	9,5	4,52	–	12
200	–	–	–	–	7,7	4,69	–	12	9,6	5,78	–	12	11,9	7,05	–	12
250	7,7	5,92	–	12	9,6	7,30	–	12	11,9	8,93	–	12	14,8	11,00	–	12
315	9,7	9,37	–	12	12,1	11,60	–	12	15,0	14,20	–	12	18,7	17,40	–	12
355	10,9	11,80	–	12	13,6	14,60	–	12	16,9	18,00	–	12	21,1	22,10	–	12
400	12,3	15,10	–	12	15,3	18,60	–	12	19,1	22,90	–	12	23,7	28,00	–	12
450	13,8	19,00	–	12	17,2	23,50	–	12	21,5	28,90	–	12	26,7	35,40	–	12
500	15,3	23,40	–	12	19,1	28,90	–	12	23,9	35,70	–	12	29,7	43,80	–	12

s: wall thickness, K: coil, P: straight length

FOR IRRIGATION / SEWAGE

vargoplen KAN

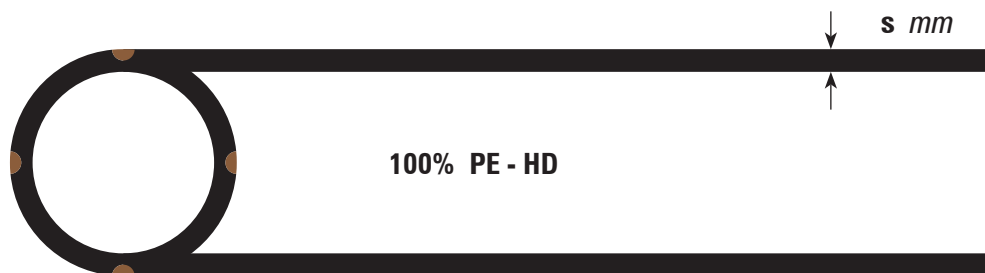


DN mm	PN 6				PN 8				PN 10				PN 12,5			
	SDR 26 S12,5 (C=1.25)				SDR 21 S10 (C=1.25)				SDR 17 S8 (C=1.25)				SDR 13,6 S6,3 (C=1.25)			
	s mm	Weight kg/m	K m	P m	s mm	Weight kg/m	K m	P m	s mm	Weight kg/m	K m	P m	s mm	Weight kg/m	K m	P m
32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
75	-	-	-	-	-	-	-	-	4,5	1,030	100	12	-	-	-	-
90	-	-	-	-	-	-	-	-	5,4	1,480	100	12	6,7	1,770	100	12
110	4,2	1,430	-	12	5,3	1,770	-	12	6,6	2,180	100	12	8,1	2,620	-	12
125	4,8	1,840	-	12	6,0	2,270	-	12	7,4	2,760	-	12	9,2	3,370	-	12
140	5,4	2,320	-	12	6,7	2,830	-	12	8,3	3,460	-	12	10,3	4,220	-	12
160	6,2	3,040	-	12	7,7	3,720	-	12	9,5	4,520	-	12	11,8	5,500	-	12
180	6,9	3,790	-	12	8,6	4,670	-	12	10,7	5,710	-	12	13,3	6,980	-	12
200	7,7	4,690	-	12	9,6	5,780	-	12	11,9	7,050	-	12	14,7	8,560	-	12
225	8,6	5,890	-	12	10,8	7,300	-	12	13,4	8,930	-	12	16,6	10,900	-	12
250	9,6	7,300	-	12	11,9	8,930	-	12	14,8	11,000	-	12	18,4	13,400	-	12
280	10,7	9,100	-	12	13,4	11,300	-	12	16,6	13,700	-	12	20,6	16,800	-	12
315	12,1	11,600	-	12	15,0	14,200	-	12	18,7	17,400	-	12	23,2	21,200	-	12
355	13,6	14,600	-	12	16,9	18,000	-	12	21,1	22,100	-	12	26,1	26,900	-	12
400	15,3	18,600	-	12	19,1	22,900	-	12	23,7	28,000	-	12	29,4	34,100	-	12
450	17,2	23,500	-	12	21,5	28,900	-	12	26,7	35,400	-	12	33,1	43,200	-	12
500	19,1	28,900	-	12	23,9	35,700	-	12	29,7	43,800	-	12	36,8	53,300	-	12

s: wall thickness, K: coil, P: straight length

FOR IRRIGATION / SEWAGE

vargoplen KAN



DN mm	PN 16				PN 20				PN 25			
	SDR 11 S5 (C=1.25)				SDR 9 S4 (C=1.25)				SDR 7,4 S3,2 (C=1.25)			
	s mm	Weight kg/m	K m	P m	s mm	Weight kg/m	K m	P m	s mm	Weight kg/m	K m	P m
32	3,0	0,277	100	-	-	-	-	-	-	-	-	-
40	-	-	-	-	4,5	0,509	100	-	-	-	-	-
50	4,6	0,666	100	-	-	-	-	-	-	-	-	-
63	-	-	-	-	-	-	-	-	-	-	-	-
75	-	-	-	-	-	-	-	-	-	-	-	-
90	8,2	2,120	100	12	-	-	-	-	-	-	-	-
110	10,0	3,140	100	12	12,3	3,780	-	12	15,1	4,490	-	12
125	11,4	4,080	-	12	14,0	4,870	-	12	17,1	5,770	-	12
140	12,7	5,080	-	12	15,7	6,110	-	12	19,2	7,250	-	12
160	14,6	6,670	-	12	17,9	7,960	-	12	21,9	9,440	-	12
180	16,4	8,420	-	12	20,1	10,100	-	12	24,6	11,900	-	12
200	18,2	10,400	-	12	22,4	12,400	-	12	27,4	14,800	-	12
225	20,5	13,100	-	12	25,2	15,800	-	12	30,8	18,600	-	12
250	22,7	16,200	-	12	27,9	19,400	-	12	34,2	23,000	-	12
280	25,4	20,300	-	12	31,3	24,300	-	12	38,3	28,900	-	12
315	28,6	25,600	-	12	35,2	30,800	-	12	43,1	36,500	-	12
355	32,2	32,500	-	12	39,7	39,100	-	12	48,5	46,300	-	12
400	36,3	41,300	-	12	44,7	49,600	-	12	54,7	58,800	-	12
450	40,9	52,300	-	12	50,3	62,700	-	12	61,5	74,400	-	12
500	45,4	64,500	-	12	55,8	77,300	-	12	68,3	91,800	-	12

s: wall thickness, K: coil, P: straight length



vargokal

HOUSE SEWAGE SYSTEM

vargokal PLUS

HOUSE SEWAGE SYSTEM - LOW NOISE

vargokal ULTRA

HOUSE SEWAGE SYSTEM - SILENT

vargokal SIF

HOUSE SEWAGE SYSTEM - SYPHONS

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DRAINAGE PIPES

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CABLE PROTECTION PIPES

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FLOOR HEATING PIPES

Local distributor:



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