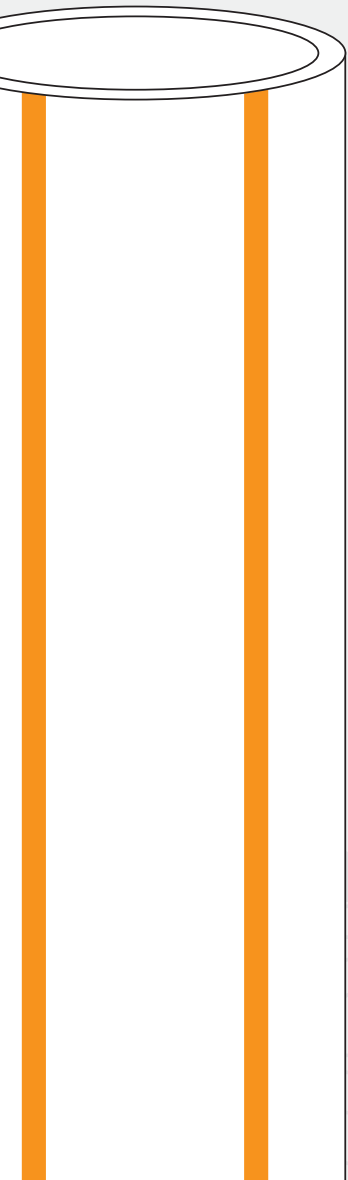


INSTALLATION SYSTEM
vargoplen

GAS

SMOOTH PE PIPES FOR GAS SUPPLY

Technology
and tradition.



CATALOGUE 08/2022

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

 
INSTALLATION SYSTEMS



INSTALLATION SYSTEM
vargoplen

GAS

PIPES *PE 100*

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 electrofusion 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 1555-1, -2 standard, which defines this type of product.

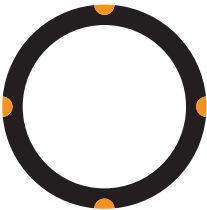
The following testing methods are performed:

- 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 and HRN EN 1555-2)
- Examination of the appearance and color of pipes (HRN EN 1555-1,-2)
- Induction oxidation time test (HRN EN ISO 11357-6)



Type of *vargoplen* GAS pipes

Gas pipes *vargoplen PLIN* are produced using single-layer technology

GAS PIPES	
<i>vargoplen PLIN</i>	
	
MATERIAL	
PE 100	
100%	

Gas pipes *vargoplen PLIN* are made of PE-HD PE 100 material in black color with four longitudinal lines in orange color and a printed length mark in meters. 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 1555-1, -2 standard, and are used for the supply of gaseous fuels with maximum working pressures (MOP) up to 10 bar, SDR 11 and SDR.



Joining technique

Connecting of **vargoplen PLIN** 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* GAS pipes

vargoplen PLIN 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 PLIN** 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

PRESSURE PIPES - HRN EN 1555-2					
SDR		17		11	
PE 100 C=1,25	MOP	6		10	
DN <i>(mm)</i>		s <i>(mm)</i>	weight <i>(kg/m)</i>	s <i>(mm)</i>	weight <i>(kg/m)</i>
20		2,3	0,133	3,0	0,164
25		2,3	0,171	3,0	0,202
32		2,3	0,225	3,0	0,277
40		2,4	0,300	3,7	0,430
50		3,0	0,445	4,6	0,666
63		3,8	0,716	5,8	1,050
75		4,5	1,030	6,8	1,470
90		5,4	1,480	8,2	2,120
110		6,6	2,180	10,0	3,140
125		7,4	2,760	11,4	4,080
140		8,3	3,460	12,7	5,080
160		9,5	4,520	14,6	6,670
180		10,7	5,710	16,4	8,420
200		11,9	7,050	18,2	10,400
225		13,4	8,930	20,5	13,100
250		14,8	11,000	22,7	16,200
280		16,6	13,700	25,4	20,300
315		18,7	17,400	28,6	25,600
355		21,1	22,100	32,2	32,500
400		23,7	28,000	36,3	41,300
450		26,7	35,4000	40,9	52,300
500		29,7	43,800	45,4	64,500

Packaging

Due to practical reasons and easier handling and transport, **vargoplen PLIN** 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). Straight pipes 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 17, SDR 11



COIL DIMENSION / PIPE LENGTH IN COIL

D mm	100 m		
	Dv mm	B mm	Du mm
20	860	250	690
25	990	250	760
32	1100	280	810
40	1220	370	920
50	1600	350	1240
63	1900	400	1460
75	2150	470	1650
90	2500	540	1900
110	2800	550	1900

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

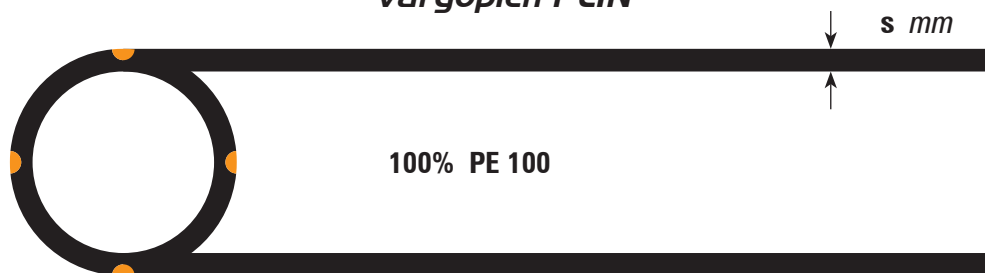
PALLET DIMENSION / AMOUNT OF PIPES IN PALLET L=12m

D mm	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 GAS SUPPLY

vargoplen PLIN



DN mm	6 bar				10 bar			
	SDR 17				SDR 11			
	s mm	Weight kg/m	K m	P m	s mm	Weight kg/m	K m	P m
20	2,3	0,133	100	–	3,0	0,164	100	–
25	2,3	0,171	100	–	3,0	0,202	100	–
32	2,3	0,225	100	–	3,0	0,277	100	–
40	2,4	0,300	100	–	3,7	0,430	100	–
50	3,0	0,445	100	–	4,6	0,666	100	–
63	3,8	0,716	100	–	5,8	1,050	100	–
75	4,5	1,030	100	12	6,8	1,470	100	12
90	5,4	1,480	100	12	8,2	2,120	100	12
110	6,6	2,180	100	12	10,0	3,140	100	12
125	7,4	2,760	–	12	11,4	4,080	–	12
140	8,3	3,460	–	12	12,7	5,080	–	12
160	9,5	4,520	–	12	14,6	6,670	–	12
180	10,7	5,710	–	12	16,4	8,420	–	12
200	11,9	7,050	–	12	18,2	10,400	–	12
225	13,4	8,930	–	12	20,5	13,100	–	12
250	14,8	11,000	–	12	22,7	16,200	–	12
280	16,6	13,700	–	12	25,4	20,300	–	12
315	18,7	17,400	–	12	28,6	25,600	–	12
355	21,1	22,100	–	12	32,2	32,500	–	12
400	23,7	28,000	–	12	36,3	41,300	–	12
450	26,7	35,400	–	12	40,9	52,300	–	12
500	29,7	43,800	–	12	45,4	64,500	–	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

vargoterm

HOUSE WATER SUPPLY

vargoplen

WATER

vargoplen

IRRIGATION AND SEWAGE

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GAS

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SEWAGE PIPES

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SEWAGE CHAMBERS AND CATCHPITS

vargodren

DRAINAGE PIPES

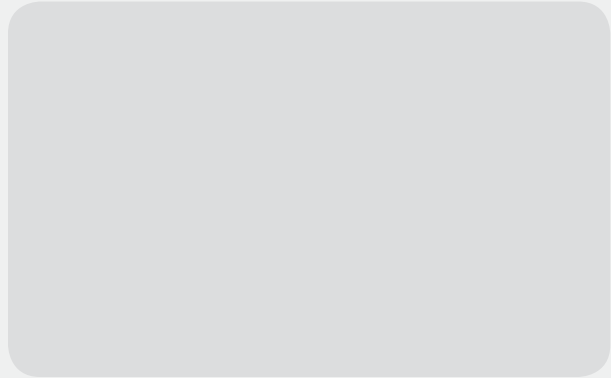
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CABLE PROTECTION PIPES

vargoheat

FLOOR HEATING PIPES

Local distributor:



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