

BOR^{plus} SYSTEM

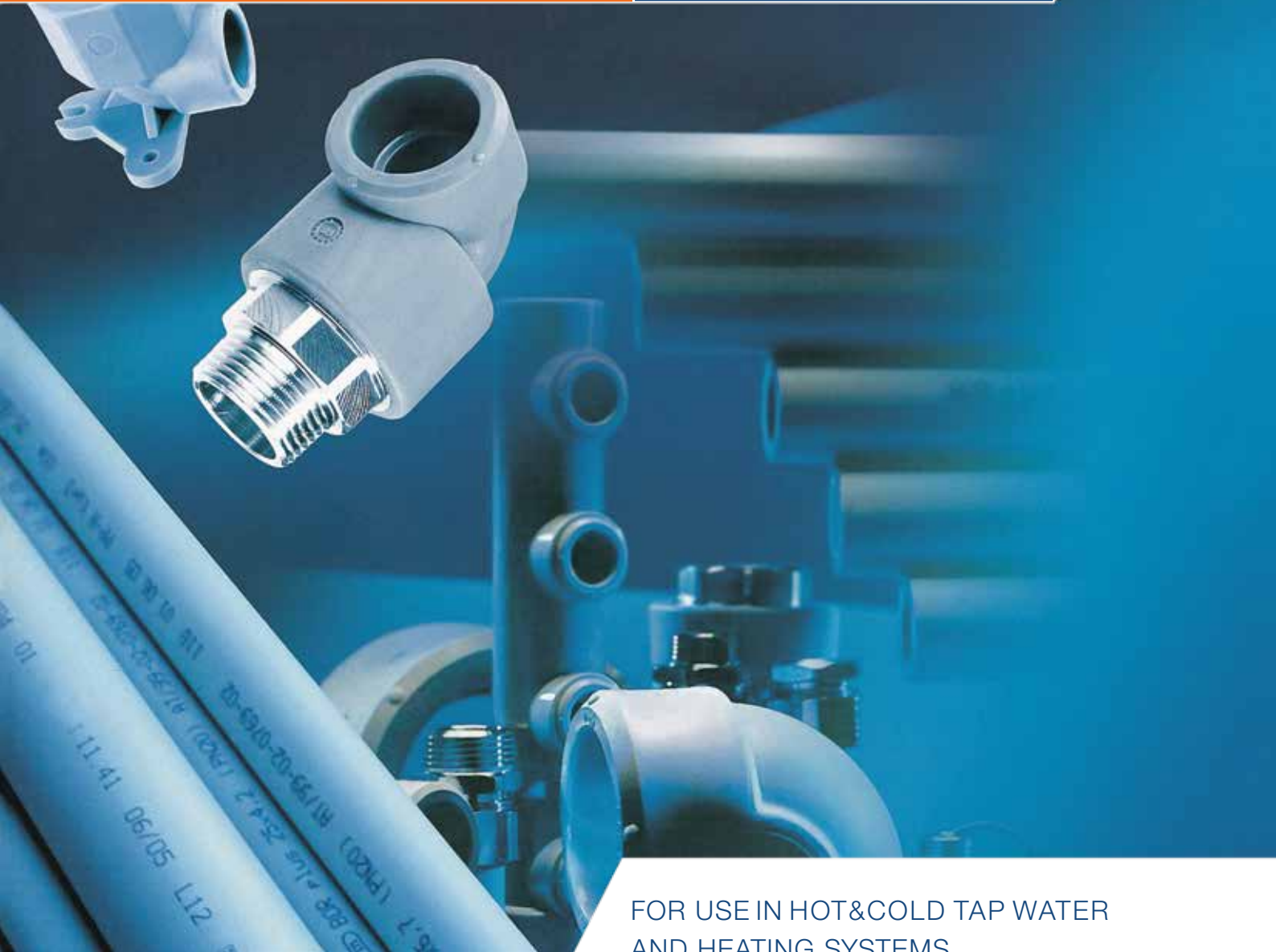
for home

2024



**Installation system
BOR^{plus}**

**Product
description**



FOR USE IN HOT&COLD TAP WATER
AND HEATING SYSTEMS

Top worldwide manufacturer of plastic pipe systems

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BOR^{plus} installation system

I. Background information

I. Background information

BOR^{plus} is an all-inclusive, high-quality, and well-tested polypropylene installation system.

Operational safety and useful life of over 50 years of BOR^{plus} is based on factors such as top-quality raw materials, strict control of

the manufacturing process, and fusion-welding connection techniques used during assembly.

1. Basic data



BOR^{plus} is made of type 3 polypropylene (PP-R). This material is resistant to simultaneous and long-term exposure to temperature and pressure of the medium, as well as 100% resistant to corrosion and exposure of over 300 different chemical substances at various temperatures.

BOR^{plus} PPR Pipes are manufactured with an acceptable tolerances in the ID and wall thickness as per the DIN standards 8077 & 8078 and EN ISO 15874.

Top-quality granulated plastic materials used to manufacture BOR^{plus} system include:

BOREALIS (RA 140E), Vestolen P 9421, and TOPILENE R200P.

* PP-RCT

Polypropylene random copolymer crystalline temperature (PP-RCT) is an enhanced crystalline structure is created through special nucleation process that makes ppr operate at higher pressures at elevated temperatures offering at least 50% improved strength.

2. System application

BOR^{plus} can be used both in assembly of new systems or for repairs of existing systems:

- water systems (hot and cold tap water)
- heating systems (radiator heating)
- cooling systems (chilled water)

in all types of residential buildings (single-family houses and apartment blocks) and public utility facilities.

Given its good chemical resistance, the system can also be used for the following applications:

- industry (compressed air systems, various types of process piping)
- agriculture and horticulture

3. Advantages

- fittings constructed with accordance to requirements of pressure class PN 25
- lifetime – over 50 years
- secure and quick assembly – fusion-welding guarantees absolute tightness of connections
- low noise level – vibrations are damped, sounds are absorbed
- low linear resistance factor ($k=0.007$) – no pipe encrustation
- reduced local resistance factors (even up to 60%) – unique design of fittings
- low thermal conductivity coefficient (0.21 W/mxK) – reduced thermal losses
- sanitary (hygienic) aspects (neutral to water)
- resistant to many chemicals

II. System characteristics

1. Scope and conditions of use

Table 1. Product range and properties of pipes. (PN20)

System type	cold tap water systems	hot tap water systems	central heating systems
Operating pressure P [b]	25.7	12.9	6.5
Operating temperature top [°C]	20	60	80
Maximum emergency temperature t _e [°C]	-	110	110
Maximum operating time at t _e			

Note: Emergency temperature (t_e) refers to periods of system breakdowns (e.g. control systems) when temperature might rise to levels presented in the table above during the total operating time of 100 hours during 50 years of use, with the maximum emergency operating time up to 3 hours.

2. Product range

- Homogenous PPR pipes class PN 16, PN 20, diameter range: 20 -160 mm.
- PPR pipes stabilized with a perforated aluminium insert, range diameter: 20 -110 mm.
- PPR fittings, range diameter: 20 -160 mm.
- PPR fittings with fused elements (female and male threads).
- PPR ball and straight valves. Accessories and fastening tools.
- Faser Composite Pipes SDR 6 diameter range 20-160mm.
- Faser Composite Pipes SDR 7.4 diameter range 20-250mm.
- PP-RCT Faser Composite Pipes SDR 6 20-160mm.
- PP-RCT Faser Composite Pipes SDR 7.4 and SDR 9 diameter range 20-250mm.
- PP-RCT Fittings diameter range 20-250mm
- UV Protected Pipe.



3. Pipes - matching pipe types with system operation parameters

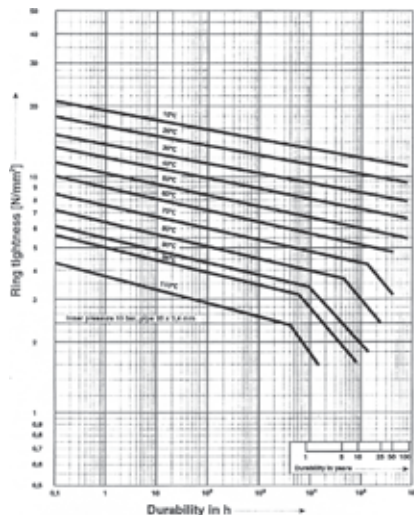
Depending on the required operating conditions for different temperature and pressure values, the following pipe pressure range is available.:

- PN 16 pipes - cold water systems with operating temperature up to 20° C and pressure up to 20.4 bar, as well as hot water

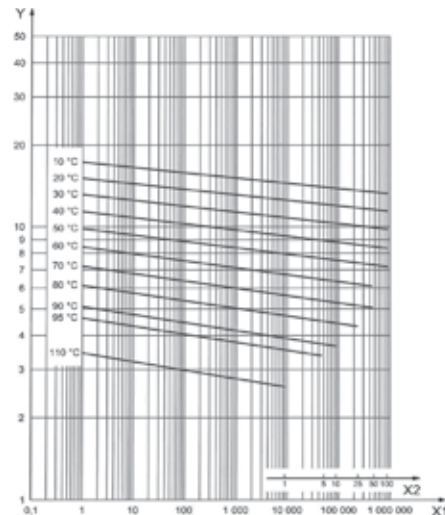
systems with operating temperature up to 60°C and pressure up to 10.2 bar.

- PN 20 pipes and stabilized pipes - cold and hot water systems with operating temperature up to 60°C and pressure up to 12.9 bar, as well as central heating systems with operating temperature up to 80°C and pressure up to 6.5 bar.

PP pipes stabilized with a aluminium insert strengthen the pipe and reduce its thermal elongation.



Durability of installation



Life Time of PP-RCT System

Allowable Operating Pressures for PP-R pipes, safety factor (SF) = 1.25

Temperature	Operating Time (years)	SDR 9	SDR 7.4	SDR 6
20 °C	10	20.7	26.1	32.8
	25	20.0	25.2	31.7
	50	19.5	24.5	30.9
30 °C	10	17.5	22.1	27.8
	25	16.9	21.3	26.8
	50	16.4	20.7	26.1
40 °C	10	14.8	18.7	23.5
	25	14.3	18.0	22.6
	50	13.9	17.4	22.0
60 °C	10	10.5	13.2	16.6
	25	10.1	12.7	16.0
	50	9.7	12.3	15.5
70 °C	10	8.8	11.1	13.9
	25	7.6	9.6	12.1
	50	6.4	8.1	10.2
80 °C	10	6.1	7.7	9.7
	25	4.9	6.2	7.8
95 °C	5	3.9	4.9	6.2

Allowable Operating Pressures for PP-R pipes, safety factor (SF) = 1.5

Temperature	Operating Time (years)	SDR 9	SDR 7.4	SDR 6
20 °C	10	17.2	21.7	27.4
	25	16.6	21	26.4
	50	16.2	20.4	25.7
30 °C	10	14.6	18.4	23.2
	25	14.1	17.7	22.3
	50	13.7	17.2	21.7
40 °C	10	12.3	15.5	19.6
	25	11.9	15.0	18.8
	50	11.5	14.5	18.3
60 °C	10	8.7	11.0	13.9
	25	8.4	10.5	13.3
	50	8.1	10.2	12.9
70 °C	10	7.3	9.2	11.6
	25	6.3	8.0	10.0
	50	5.3	6.7	8.5
80 °C	10	5.1	6.4	8.1
	25	4.1	5.1	6.5
95 °C	5	3.2	4.1	5.2

Allowable Operating Pressures for PP-R Fiber Stabil pipes, safety factor (SF) = 1.25

Temperature	Operating Time (years)	SDR 9	SDR 7.4	SDR 6
20 °C	10	26.1	32.8	41.4
	25	25.2	31.7	39.9
	50	24.5	30.9	38.9
30 °C	10	22.1	27.8	35.0
	25	21.3	26.8	33.8
	50	20.7	26.1	32.9
40 °C	10	18.7	23.5	29.6
	25	18.0	22.6	28.5
	50	17.4	22.0	27.7
60 °C	10	13.2	16.6	21.0
	25	12.7	16.0	20.1
	50	12.3	15.5	19.5
70 °C	10	11.1	13.9	17.5
	25	9.6	12.1	15.2
	50	8.1	10.2	12.8
80 °C	10	7.7	9.7	12.2
	25	6.2	7.8	9.8
95 °C	5	4.9	6.2	7.8

Allowable Operating Pressures for PP-R Fiber Stabil pipes, safety factor (SF) = 1.5

Temperature	Operating Time (years)	SDR 9	SDR 7.4	SDR 6
20 °C	10	21.7	27.4	34.5
	25	21	26.4	33.3
	50	20.4	25.7	32.4
30 °C	10	18.4	23.2	29.2
	25	17.7	22.3	28.1
	50	17.2	21.7	27.4
40 °C	10	15.5	19.6	24.7
	25	15.0	18.8	23.7
	50	14.5	18.3	23.1
60 °C	10	11.0	13.9	17.5
	25	10.5	13.3	16.7
	50	10.2	12.9	16.2
70 °C	10	9.2	11.6	14.6
	25	8.0	10.0	12.7
	50	6.7	8.5	10.7
80 °C	10	6.4	8.1	10.2
	25	5.1	6.5	8.1
95 °C	5	4.1	5.2	6.5

4. Fittings

Compared to other PPR systems, the distinguishing characteristics of BOR^{plus} fittings include:

- Smoother transition at the fitting-pipe point of contact, reducing flow irregularities
- Shift of the axis of symmetry in 90° elbows outside the fitting (diameter range: 20 - 40mm), directing the main stem of the flow to a more rounded arch

As a result, BOR^{plus} ensures a threefold reduction of hydraulic losses compared to other PPR systems.

5. Approvals and certificates

In line with current requirements for products and materials used in and sanitary certificates of the National Institute of Hygiene construction, BOR^{plus} has all technical approvals of COBRTIINSTAL.

BOR Plus system materials are under acceptance in several European countries among the others in Germany for DVGW. The final results of testing are anticipated in the beginning 1999. BOR Plus Installation System fulfills the requirements of the following DIN standards:

1. DIN 8077. Rohre aus Polypropylene (PP). Mafle. (Germany).
2. DIN 8078. Rohre aus Polypropylene (PP) Typ 1, 2, 3, Allgemeine Güteanforderungen, Prüfung. (Germany).
3. EN ISO 15874 (Europe).
4. BOR^{plus} PPR Piping System is certified by SKZ, DVGW, NSF 14, 61, TZW & WRAS.

6 . PP-RCT (Polypropylene Random Copolymer Crystalline Temperature)

Polypropylene Random Copolymer Crystalline Temperature (PP-RCT Type 4) is the latest invention in polymers piping industry, developed with a crystalline structure that exhibits an improved pressure rating at elevated temperatures.

A special nucleation process that enables the pipe to operate at higher pressures at elevated temperatures with the same wall thickness of normal PPR, this high pressure rating allow to down-gauge to a thinner wall pipe offering higher hydraulic capacities and cost savings.

Defenition: According to the definition found within industry standard ASTM F2389, PP-RCT means polypropylene random copolymer with modified crystallinity and temperature resistance. PP-RCT is a copolymer of propylene and at least one comonomer, where the propylene is more than 50% of the composition. PP-RCT piping products are rated for continuous operation at 82C° temperature, with pressure rating depending on their wall type (SDR). PP-RCT pipes also may include reinforcement layers for benefits such as reducing longitudinal thermal expansion/contraction.

Overview: PP-RCT is a high-temperature plastic pressure piping system first used for plumbing and hydronic heating in the 2000's in Europe and introduced to North America in the 2010's. PP-RCT pipes and fittings also provide resistance to highly acidic and basic solutions. Other uses include industrial and food-grade piping. Joints can be heat-fused. The high heat and/or pressure performance makes PP-RCT pipes and fittings suitable for demanding applications, such as pressure piping (plumbing, hydronics) in commercial high-rise buildings.

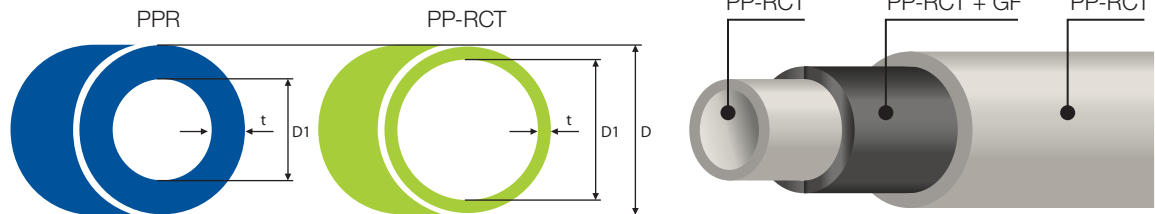
PP-R and PP-RCT Advantages

- Safety of potable water and long-term reliability
- Resistance to corrosion, tuberculation, deposits
- Chlorine and chloramine resistance
- Lightweight, easy to transport
- No scrap value, avoiding jobsite theft
- Durability and toughness to survive jobsite installations
- No flame, glue or solders are used for joining, heat-fused joints
- Available in wide range of sizes
- Natural Insulator, low thermal conductivity
- Professional installed appearance

PP-R and PP-RCT Applications

- Hot- and cold-water plumbing distribution, residential and commercial
- Hydronic piping and distribution (radiators, fan coils, etc.)
- Heating and chilled water piping
- Suitable for many industrial and process piping applications
- Food processing
- Compressed Air

Explanatory notes:
t = wall thickness
D = external diameter
D1 = internal diameter



Permissible working. Pressure and temperature for PP-RCT

Temperature	Operating Time [years]	SDR 11	SDR 9	SDR 7.4	SDR 6
		PP-RCT	PP-RCT	PP-RCT	PP-RCT
20°C	10	23.9	30.1	37.9	47.8
	25	23.5	29.6	37.2	46.9
	50	23.1	29.2	36.7	46.2
30°C	10	20.6	26.0	32.7	41.2
	25	20.2	25.5	32.1	40.4
	50	19.9	25.1	31.6	39.8
40°C	10	17.7	22.3	28.1	35.4
	25	17.3	21.8	27.5	34.6
	50	17.1	21.5	27.1	34.1
60°C	10	12.7	16.0	20.2	25.5
	25	12.4	15.7	19.8	24.9
	50	12.2	15.4	19.4	24.5
70°C	10	10.7	13.5	16.9	21.3
	25	10.4	13.1	16.5	20.8
	50	10.2	12.9	16.2	20.5
80°C	10	8.9	11.2	14.1	17.7
	25	8.6	10.9	13.7	17.3
95°C	5	6.7	8.5	10.7	13.5

Permissible operating pressures in bar (including allowable a safety factor of 1.25)

Permissible working. Pressure and temperature for PP-RCT

Temperature	Operating Time [years]	SDR 11	SDR 9	SDR 7.4	SDR 6
		PP-RCT	PP-RCT	PP-RCT	PP-RCT
20°C	10	19.9	25.1	31.6	39.8
	25	19.6	24.6	31.0	39.1
	50	19.3	24.3	30.6	38.5
30°C	10	17.2	21.7	27.3	34.4
	25	16.9	21.2	26.8	33.7
	50	16.6	20.9	26.4	33.2
40°C	10	14.7	18.6	23.4	29.5
	25	14.4	18.2	22.9	28.9
	50	14.2	17.9	22.6	28.4
60°C	10	10.6	13.4	16.8	21.2
	25	10.4	13.1	16.5	20.7
	50	10.2	12.8	16.2	20.4
70°C	10	8.9	11.2	14.1	17.8
	25	8.7	10.9	13.8	17.4
	50	8.5	10.7	13.5	17.08
80°C	10	7.4	9.3	11.7	14.8
	25	7.2	9.1	11.4	14.4
95°C	5	5.6	7.1	8.9	11.2

Permissible operating pressures in bar (including a safety factor of 1.5)

7. UV Protection

PPR & PP-RCT pipes and fittings are designed for indoor use. They are not stabilized for direct Ultraviolet (UV) exposure. Over Time, UV exposure causes degradation, resulting in decreases in the pipe's physical and chemical properties and long-term performance. If the pipes are to be used outdoors, they should be buried or encased in a protective wrap coating or treated described below. Ultraviolet radiation is an electromagnetic radiation presents in sunlight. So, when PPR pipes are exposed to sunlight for a long period it would affect the pipes by changing its color and chalk its surface.

A UV stabilizer added into the resin as a shield to UV radiation to protect the product from a long term UV radiation exposure; these multilayer pipes are developed with an external Polyethylene UV-stabilized layer to protect the pipes from damage.

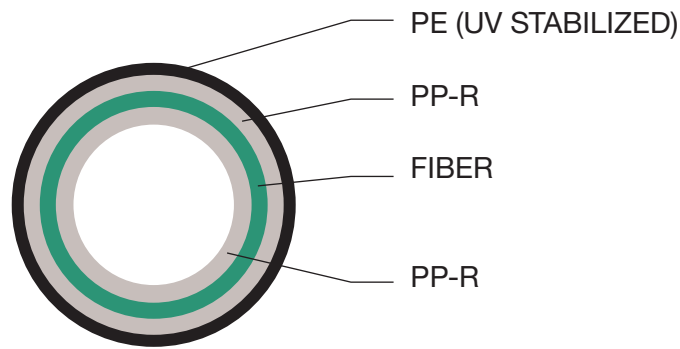
This method is applicable for full range of pipes sizes and nominal pressures so it can be used for outdoor application.

BOR^{plus} installation system

III. Assembly

The resistance of the BOR^{plus} UV system against UV-radiation was tested by an accredited test laboratory. In planned intervals during the complete prices, samples were taken in order to check possible mechanical changes based on a tensile test and it is approved for the contact with potable water and is the best choice for boiler connection on the top to the tapping points – outdoor and indoor.

It can be used as an ideal distribution system for Hot & Cold Water in residential and commercial buildings as well as for irrigation systems.



III. Assembly

1. Connection technique

In general, BOR^{plus} pipes and fittings are connected using the poly fusion welding technique at 260 - 280°C. This technique guarantees permanent fusion of the fitting and piping material, producing a uniform weld. As a result, the connection has even greater strength than the pipe itself.

Alternatively it is possible to use fittings with brass elements with male or female threads, or flanged sleeves.

With these techniques, polypropylene systems can be connected to any other material used in installation technologies.



2. Installation guide



1. Pipes should be cut down to required length, at 90° to the axis, using appropriate tools (pipe shears or cutters).



2. Before welding, pipes and fittings must be cleaned (to remove dust, grease, etc.) and dried.



3. Mark the required depth of pipe insertion into the fitting (for a given outer pipe diameter - see the table).



4. Before welding any stabilised PP pipes, a layer of aluminium with the outer plastic coating must be removed along the entire depth of the weld. To remove the aluminium coat, use a special coarse file with the diameter that fits pipe dimensions.



5. Simultaneously insert the pipe end and slide the fitting over corresponding heating tips of the welder (heated up to 260 - 280° C earlier) Keep the required heating time - see heating time values for different system dimensions.



6. After heating, remove both elements from heating tips and push the pipe into the fitting flange up to the depth marked earlier. The welding time depends on the outer diameter of the pipe. Good welds should have a double, uniform fin of material pushed out to the surface, along the circumference connected elements.



7. It is recommended to keep the connection fixed for the next 10 - 20 seconds, allowing the weld to cool down partially and achieve the initial strength. It is now possible to make other connections of the system. Full load of the weld is allowed only when the connection has cooled down completely.

3. Welding process parameters

Pipe diameter [mm]	Welding depth [mm]	Heating time* [s]	Welding time [s]	Cooling time [mm]
20	14	5	4	2
25	15	7	4	2
32	16	8	6	4
40	18	12	6	4
50	20	18	6	4
63	24	24	8	6
75	26	30	10	8
90	29	40	10	8
110	32.5	50	10	8
125	35	60	12	9
160	40	70	14	10
200	Butt Fusion welding (follow procedure as per machine manufacturer)			
250	Butt Fusion welding (follow procedure as per machine manufacturer)			

Note:

Values presented in the table refer to PN 16, PN 20 pipes and stabilized pipes.

* With the outside temperature below +5°C, the heating time should be increased by 50%.

4. Pipe connection

Distances between (sliding) supports are given in cm for horizontal pipes made of:

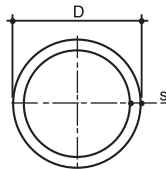
■ polypropylene pipes (homogenous | Monolayer)

Pipe outside diameter [mm]	Temperature of flowing water [°C]					
	20	30	40	50	60	70
20	80	75	70	70	65	60
25	85	85	85	80	75	70
32	100	95	95	90	85	75
40	110	110	105	100	95	85
50	125	120	115	110	105	90
63	140	135	130	125	120	105
75	155	150	145	135	130	115
90	170	165	160	155	150	145
110	190	185	180	175	160	155
125	205	200	195	195	175	170
160	240	235	230	225	210	205
200	280	275	270	265	250	245
250	320	315	310	305	290	285

■ polypropylene pipes (stabilized | Multilayer)

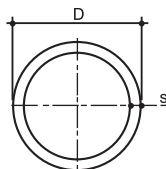
Pipe outside diameter [mm]	Temperature of flowing water [°C]					
	20	30	40	50	60	70
20	135	125	120	120	110	100
25	145	145	145	135	125	120
32	170	160	160	150	145	125
40	185	185	180	170	160	145
50	210	205	200	185	180	150
63	235	230	220	210	200	180
75	250	245	235	225	210	190
90	265	260	250	240	230	210
110	270	265	255	245	235	215
125	275	270	260	250	240	220
160	285	280	270	260	250	230
200	295	290	280	270	260	240
250	305	300	290	280	270	250

Pipes



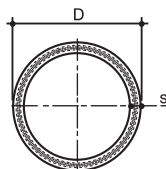
PN 16 pipe, 4 m long

product code	D [mm]	s [mm]	unit of measure
9502510	20	2,8	m
9502513	25	3,5	m
9502516	32	4,4	m
9502519	40	5,5	m
9502522	50	6,9	m
9502525	63	8,6	m
9502528	75	10,3	m
9502531	90	12,3	m
9502534	110	15,1	m
9502530	125	17,1	m
9502540	160	21,9	m



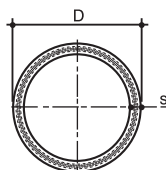
PN 20 pipe, 4 m long

product code	D [mm]	s [mm]	unit of measure
95 020 10	20	3.4	m
95 020 13	25	4.2	m
95 020 16	32	5.4	m
95 020 19	40	6.7	m
95 020 22	50	8.3	m
95 020 25	63	10.5	m
95 020 28	75	12.5	m
95 020 31	90	15	m
95 020 34	110	18.4	m
95 020 36	125	20.8	m
95 020 40	160	26.6	m



PN 20 Faser pipe, 4 m long

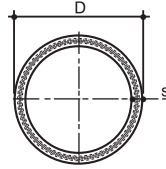
product code	D [mm]	s [mm]	unit of measure
95 040 10	20	2.8	m
95 040 13	25	3.5	m
95 040 16	32	4.4	m
95 040 19	40	5.5	m
95 040 22	50	6.9	m
95 040 25	63	8.6	m
95 040 28	75	10.3	m
95 040 31	90	12.3	m
95 040 34	110	15.1	m
95 040 36	125	17.1	m
95 040 40	160	21.9	m
95 040 43	200	27.4	m
95 040 46	250	34.2	m



PN 25 Faser pipe, 4 m long

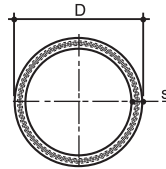
product code	D [mm]	s [mm]	unit of measure
95 060 10	20	3.4	m
95 060 13	25	4.2	m
95 060 16	32	5.4	m
95 060 19	40	6.7	m
95 060 22	50	8.3	m
95 060 25	63	10.5	m
95 060 28	75	12.5	m
95 060 31	90	15	m
95 060 34	110	18.3	m
95 060 36	125	20.8	m
95 060 40	160	26.6	m

Pipes



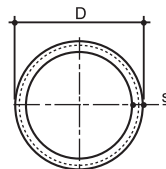
PN 20 Faser pipe, 4 m long with UV Protection

product code	D [mm]	s [mm]	unit of measure
UV 95 040 10	20	2.8	m
UV 95 040 13	25	3.5	m
UV 95 040 16	32	4.4	m
UV 95 040 19	40	5.5	m
UV 95 040 22	50	6.9	m
UV 95 040 25	63	8.6	m
UV 95 040 28	75	10.3	m
UV 95 040 31	90	12.3	m
UV 95 040 34	110	15.1	m
UV 95 040 36	125	17.1	m
UV 95 040 40	160	21.9	m
UV 95 040 43	200	27.4	m
UV 95 040 46	250	34.2	m



PN 25 Faser pipe, 4 m long with UV Protection

product code	D [mm]	s [mm]	unit of measure
UV 95 060 10	20	3.4	m
UV 95 060 13	25	4.2	m
UV 95 060 16	32	5.4	m
UV 95 060 19	40	6.7	m
UV 95 060 22	50	8.3	m
UV 95 060 25	63	10.5	m
UV 95 060 28	75	12.5	m
UV 95 060 31	90	15	m
UV 95 060 34	110	18.3	m
UV 95 060 36	125	20.8	m
UV 95 060 40	160	26.6	m



PN 25 stabilized pipe, 4 m long

product code	D [mm]	s [mm]	unit of measure
95 050 10	20	3.4	m
95 050 13	25	4.2	m
95 050 16	32	5.4	m
95 050 19	40	6.7	m
95 050 22	50	8.3	m
95 050 25	63	10.5	m
95 050 28	75	12.5	m
95 050 31	90	15	m
95 050 34	110	18.3	m

Electro Fusion Socket



Electro Fusion Socket

product code	D [mm]	L [mm]	H [mm]	unit of measure
77 018 00	20	70	50	szt.
77 018 02	25	80	55	szt.
77 018 04	32	80	65	szt.
77 018 06	40	95	70	szt.
77 018 08	50	105	80	szt.
77 018 10	63	120	100	szt.
77 018 12	75	130	110	szt.
77 018 14	90	145	120	szt.
77 018 16	110	165	125	szt.
77 018 18	125	175	170	szt.

Plastic Union



Plastic Union

product code	D [mm]	L [mm]	L1 [mm]	L2 [mm]	L3 [mm]	D1 [mm]	unit of measure
9584010	20	39	19	23	25	28	szt.
9584113	25	52	22	27	29	34	szt.
9584316	32	61	24	30	36	41	szt.
9584419	40	76	26	37	43	53	szt.
9584521	50	86	35	43	49	66	szt.
9584624	63	97	40	50	55	81	szt.

Elbows



Elbow 90°

product code	D [mm]	Z [mm]	L [mm]	unit of measure
95 140 10	20	19	26	szt.
95 140 13	25	21	30	szt.
95 140 16	32	24	35	szt.
95 140 19	40	29	42	szt.
95 140 22	50	34	50	szt.
95 140 25	63	40	60	szt.
95 140 28	75	46	70	szt.
95 140 31	90	50	86	szt.
95 140 34	110	56	105	szt.
95 140 37	125	61	103	szt.
95 140 40	160	61	111	szt.



Elbow 45°

product code	D [mm]	Z [mm]	L [mm]	unit of measure
95 146 10	20	15	16	szt.
95 146 13	25	16	18	szt.
95 146 16	32	18	20	szt.
95 146 19	40	21	23	szt.
95 146 22	50	24	26	szt.
95 146 25	63	28	31	szt.
95 146 28	75	31	35	szt.
95 146 29	90	36	35	szt.
95 146 30	110	39	38	szt.
95 146 37	125	41	40	szt.
95 146 40	160	52	50	szt.

Tees



Tee

product code	D [mm]	Z [mm]	L [mm]	L1 [mm]	unit of measure
95 155 10	20	15	54	27	szt.
95 155 13	25	19	63	32	szt.
95 155 16	32	25	76	38	szt.
95 155 19	40	31	91	45	szt.
95 155 22	50	39	109	55	szt.
95 155 25	63	50	134	67	szt.
95 155 28	75	59	156	78	szt.
95 155 31	90	72	179	89	szt.
95 155 34	110	98	210	105	szt.
95 155 37	125	43	209	103	szt.
95 155 40	160	109	218	113	szt.

Reducer tee at branching

product code	D1 [mm]	D2 [mm]	D1 [mm]	Z [mm]	L [mm]	L1 [mm]	unit of measure
95 159 13	25	20	25	16	63	30	szt.
95 159 16	32	20	32	18	68	34	szt.
95 160 16	32	25	32	18	76	36	szt.
95 159 19	40	20	40	21	81	29	szt.
95 160 19	40	25	40	21	81	41	szt.
95 161 19	40	32	40	21	91	43	szt.
95 159 22	50	20	50	25	89	43	szt.
95 160 22	50	25	50	24	97	47	szt.
95 161 22	50	32	50	24	97	49	szt.
95 162 22	50	40	50	28	28	109	szt.
95 161 25	63	32	63	28	119	58	szt.
95 162 25	63	40	63	28	119	60	szt.
95 163 25	63	50	63	28	134	63	szt.
95 162 28	75	40	75	31	139	68	szt.
95 163 28	75	50	75	31	139	71	szt.
95 164 28	75	63	75	31	156	75	szt.
95 163 31	90	50	90	36	140	72	szt.
95 164 31	90	63	90	36	148	74	szt.
95 165 31	90	75	90	36	160	78	szt.
95 165 33	110	63	110	41	152	93	szt.
95 165 34	110	75	110	38	156	87	szt.
95 165 35	110	90	110	43	178	93	szt.
95 165 38	160	90	160	52	193	120	szt.
95 165 40	160	110	160	47	207	104	szt.

Coupler



Coupler

product code	D [mm]	Z [mm]	L [mm]	unit of measure
95 105 10	20	15	32	szt.
95 105 13	25	16	35	szt.
95 105 16	32	18	39	szt.
95 105 19	40	21	44	szt.
95 105 22	50	24	50	szt.
95 105 25	63	28	58	szt.
95 105 28	75	31	66	szt.
95 105 31	90	36	89	szt.
95 105 34	110	42	101	szt.
95 105 37	125	47	90	szt.
95 105 40	160	51	109	szt.

Pipe cap



Pipe Cap

product code	D [mm]	Z [mm]	L [mm]	unit of measure
95 223 10	20	15	28	szt.
95 223 13	25	16	32	szt.
95 223 16	32	18	36	szt.
95 223 19	40	21	42	szt.
95 223 22	50	24	50	szt.
95 223 25	63	28	58	szt.
95 223 28	75	31	65	szt.
95 223 31	90	37	72	szt.
95 223 34	110	41	79	szt.
95 223 70	125	43	82	szt.
95 223 40	160	45	85	szt.

Bypass



Bypass

product code	D [mm]	Z [mm]	L [mm]	unit of measure
95 230 10	20	22	86	szt.
95 230 13	25	27	93	szt.
95 230 16	32	34	101	szt.

Reducers



Reducers

product code	D1 [mm]	D2 [mm]	Z [mm]	L [mm]	L1 [mm]	unit of measure
95 111 13	25	20	16	42	29	szt.
95 111 16	32	20	18	45	33	szt.
95 112 16	32	25	18	46	33	szt.
95 111 19	40	20	21	48	39	szt.
95 112 19	40	25	21	50	39	szt.
95 113 19	40	32	21	52	39	szt.
95 112 22	50	25	24	55	46	szt.
95 113 22	50	32	24	57	46	szt.
95 114 22	50	40	24	59	46	szt.
95 113 25	63	32	28	61	52	szt.
95 114 25	63	40	28	63	52	szt.
95 115 25	63	50	28	66	52	szt.
95 114 28	75	40	31	68	58	szt.
95 115 28	75	50	31	71	58	szt.
95 116 28	75	63	31	75	58	szt.
95 115 31	90	50	24	65	30	szt.
95 116 31	90	63	28	70	34	szt.
95 117 31	90	75	31	74	38	szt.
95 118 18	110	50	41	93	54	szt.
95 118 21	110	63	38	93	40	szt.
95 118 28	110	75	35	90	40	szt.
95 118 31	110	90	33	93	42	szt.
95 118 35	125	110	47	94	61	szt.
95 118 41	160	125	54	102	68	szt.
95 118 40	160	110	54	103	73	szt.

Flanged fleeve



Flanged Fleeve

product code	D [mm]	Z [mm]	L [mm]	unit of measure
9523825	63	95	35	szt.
9523828	75	119	36	szt.
9523831	90	140	41	szt.
9523834	110	169	49	szt.
9523842	125	191	52	szt.
9523838	160	188	119	szt.
9523844	200	300	150	szt.
9523846	250	375	188	szt.

Threaded elements PP-R



90° elbow with female thread

product code	D [mm]	Z [mm]	L [mm]	unit of measure
9539010	20x½"	26	38	szt.
9539013	25x½"	30	41	szt.
9539110	20x¾"	26	40	szt.
9539113	25x¾"	30	42	szt.
9539116	32x¾"	32	46	szt.

Threaded elements PP-R



90° elbow with female thread and wrench unit

product code	D [mm]	Z [mm]	L [mm]	unit of measure
9539516	32x1"	34	59	szt.

90° elbow with male thread

product code	D [mm]	Z [mm]	L [mm]	unit of measure
9540010	20x1/2"	26	52	szt.
9540013	25x1/2"	30	55	szt.
9540110	20x3/4"	26	55	szt.
9540113	25x3/4"	30	57	szt.
9540116	32x3/4"	32	61	szt.

90° elbow with male thread and wrench unit

product code	D [mm]	Z [mm]	L [mm]	unit of measure
9540516	32x1"	34	78	szt.

Tee with female thread at branching

product code	D [mm]	Z [mm]	L [mm]	L1 [mm]	unit of measure
9541010	20x1/2"x20	15	51	52	szt.
9541110	20x3/4"x20	15	51	55	szt.
9541013	25x1/2"x25	16	59	55	szt.
9541113	25x3/4"x25	16	59	57	szt.
9541115	32x1/2"x32	18	63	43	szt.
9541116	32x3/4"x32	18	63	59	szt.

Tee with female thread at branching, with wrench unit

product code	D [mm]	Z [mm]	L [mm]	L1 [mm]	unit of measure
9541516	32x1"x32	18	68	78	szt.

Tee with male thread at branching

product code	D [mm]	Z [mm]	L [mm]	L1 [mm]	unit of measure
9542010	20x1/2"x20	15	51	52	szt.
9542110	20x3/4"x20	15	51	55	szt.
9542013	25x1/2"x25	16	59	55	szt.
9542113	25x3/4"x25	16	59	57	szt.
9542116	32x3/4"x32	18	63	59	szt.

Tee with male thread at branching, with wrench unit

product code	D [mm]	Z [mm]	L [mm]	L1 [mm]	unit of measure
9542516	32x1"x32	18	68	78	szt.

Threaded elements PP-R



Coupler with female thread

product code	D [mm]	Z [mm]	L [mm]	L1 [mm]	unit of measure
9535010	20x1/2"	15	43	28	szt.
9535013	25x1/2"	16	46	28	szt.
9535110	20x3/4"	15	46	31	szt.
9535113	25x3/4"	16	47	31	szt.



Coupler with female thread and wrench unit

product code	D [mm]	Z [mm]	L [mm]	L1 [mm]	unit of measure
9536216	32x1"	18	64	51	szt.
9536319	40x1 1/4"	21	72	57	szt.
9536422	50x1 1/2"	24	80	62	szt.
9536525	63x2"	28	90	68	szt.
9536628	75x2 1/2"	31	98	73	szt.



Coupler with male thread

product code	D [mm]	Z [mm]	L [mm]	L1 [mm]	unit of measure
9537010	20x1/2"	15	57	43	szt.
9537013	25x1/2"	16	58	46	szt.
9537110	20x3/4"	15	61	46	szt.
9537113	25x3/4"	16	62	47	szt.



Coupler with male thread and wrench unit

product code	D [mm]	Z [mm]	L [mm]	L1 [mm]	unit of measure
9538216	32x1"	18	83	51	szt.
9538319	40x1 1/4"	21	91	57	szt.
9538422	50x1 1/2"	24	102	62	szt.
9538525	63x2"	28	114	68	szt.
9538628	75x2 1/2"	31	123	73	szt.
9538631	90x3"	36	127	84	szt.



Half-union with female thread

product code	D [mm]	Z [mm]	unit of measure
9543010	20x1/2"	24	szt.
9543113	25x3/4"	30	szt.
9543319	32x1"	34	szt.
9543421	40x1 1/4"	38	szt.
9543524	50x1 1/2"	44	szt.
9543627	63x2"	52	szt.



Half-union with male thread

product code	D [mm]	Z [mm]	unit of measure
9544010	20x1/2"	32	szt.
9544113	25x3/4"	39	szt.
9544316	32x1"	48	szt.
9544419	40x1 1/4"	57	szt.
9544521	50x1 1/2"	69	szt.
9544624	63x2"	81	szt.

Valves



Straight valve

product code	D	Z	L	unit of
	[mm]	[mm]	[mm]	measure
9550010	20	28	69	szt.
9550013	25	30	80	szt.
9550016	32	39	89	szt.
9550019	40	41	112	szt.
9550022	50	48	136	szt.
9550025	63	60	162	szt.

Ball valve

product code	D	L	unit of
	[mm]	[mm]	measure
9551510	20	60	szt.
9551513	25	65	szt.
9551516	32	71	szt.
9551519	40	85	szt.
9551522	50	100	szt.
9551525	63	115	szt.

Concealed valve with chromium

product code	D	Z	L	unit of
	[mm]	[mm]	[mm]	measure
9560010	20	28	69	szt.
9560013	25	30	78	szt.
9560016	32	34	78	szt.

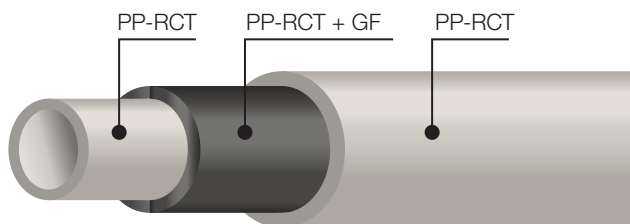
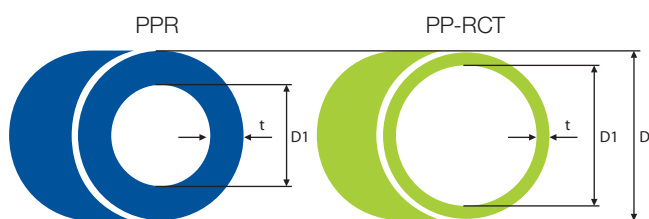
Steel Clamp with rubber insert



product code	D	unit of
	[mm]	measure
9580310	20	szt.
9580313	25	szt.
9580316	32	szt.
9580319	40	szt.
9580322	50	szt.
9580325	63	szt.
9580328	75	szt.
9580331	90	szt.
9580334	110	szt.
9580336	160	szt.
9580343	200	szt.
9580346	250	szt.

PP-RCT Pipes

Explanatory notes:
t = wall thickness
D = external diameter
D1 = internal diameter



SDR 7.4 PP-RCT Faser Composite Pipes

product code	Size [mm]	Thickness [mm]	unit of measure
PPRCT9507010	20	2.8	m
PPRCT9507013	25	3.5	m
PPRCT9507016	32	4.4	m
PPRCT9507019	40	5.5	m
PPRCT9507022	50	6.9	m
PPRCT9507025	63	8.6	m
PPRCT9507028	75	10.3	m
PPRCT9507031	90	12.3	m
PPRCT9507034	110	15.1	m
PPRCT9507036	125	17.1	m
PPRCT9507037	160	21.9	m
PPRCT9507043	200	27.4	m
PPRCT9507046	250	34.2	m

SDR 6 PP-RCT Faser Composite Pipes

product code	Size [mm]	Thickness [mm]	unit of measure
PPRCT9508010	20	3.4	m
PPRCT9508013	25	4.2	m
PPRCT9508016	32	5.4	m
PPRCT9508019	40	6.7	m
PPRCT9508022	50	8.3	m
PPRCT9508025	63	10.5	m
PPRCT9508028	75	12.5	m
PPRCT9508031	90	15	m
PPRCT9508034	110	18.3	m
PPRCT9508036	125	20.8	m
PPRCT9508037	160	26.6	m

SDR 9 PP-RCT Faser Composite Pipes

product code	Size [mm]	Thickness [mm]	unit of measure
PPRCT9508510	20	2.3	m
PPRCT9508513	25	2.8	m
PPRCT9508516	32	3.6	m
PPRCT9508519	40	4.5	m
PPRCT9508522	50	5.6	m
PPRCT9508525	63	7.1	m
PPRCT9508528	75	8.4	m
PPRCT9508531	90	10.1	m
PPRCT9508534	110	12.3	m
PPRCT9508537	125	14	m
PPRCT9508540	160	17.9	m
PPRCT9508543	200	22.4	m
PPRCT9508546	250	27.9	m

PP-RCT Electro Fusion Socket



Electro Fusion Socket

product code	D [mm]	L [mm]	H [mm]	unit of measure
PPRCT7701800	20	70	50	szt.
PPRCT7701802	25	80	55	szt.
PPRCT7701804	32	80	65	szt.
PPRCT7701806	40	95	70	szt.
PPRCT7701808	50	105	80	szt.
PPRCT7701810	63	120	100	szt.
PPRCT7701812	75	130	110	szt.
PPRCT7701814	90	145	120	szt.
PPRCT7701816	110	165	125	szt.
PPRCT7701818	125	175	170	szt.
PPRCT7701822	200	210	260	szt.
PPRCT7701824	250	240	320	szt.

PP-RCT Plastic Union



Plastic Union

product code	D [mm]	L [mm]	L1 [mm]	L2 [mm]	L3 [mm]	D1 [mm]	unit of measure
PPRCT9584010	20	39	19	23	25	28	szt.
PPRCT9584113	25	52	22	27	29	34	szt.
PPRCT9584316	32	61	24	30	36	41	szt.
PPRCT9584419	40	76	26	37	43	53	szt.
PPRCT9584521	50	86	35	43	49	66	szt.
PPRCT9584624	63	97	40	50	55	81	szt.

PP-RCT Elbow 90°



Elbow 90°

product code	D [mm]	Z [mm]	L [mm]	unit of measure
PPRCT9514010	20	19	26	szt.
PPRCT9514013	25	21	30	szt.
PPRCT9514016	32	24	35	szt.
PPRCT9514019	40	29	42	szt.
PPRCT9514022	50	34	50	szt.
PPRCT9514025	63	40	60	szt.
PPRCT9514028	75	46	70	szt.
PPRCT9514031	90	50	86	szt.
PPRCT9514034	110	56	105	szt.
PPRCT9514037	125	61	103	szt.
PPRCT9514040	160	61	111	szt.
PPRCT9514043	200	70	125	szt.
PPRCT9514047	250	81	140	szt.

PP-RCT Elbow 45°



Elbow 45°

product code	D [mm]	Z [mm]	L [mm]	unit of measure
PPRCT9514610	20	15	16	szt.
PPRCT9514613	25	16	18	szt.
PPRCT9514616	32	18	20	szt.
PPRCT9514619	40	21	23	szt.
PPRCT9514622	50	24	26	szt.
PPRCT9514625	63	28	31	szt.
PPRCT9514628	75	31	35	szt.
PPRCT9514629	90	36	35	szt.
PPRCT9514630	110	39	38	szt.
PPRCT9514637	125	41	40	szt.
PPRCT9514636	160	52	50	szt.
PPRCT9514643	200	70	80	szt.
PPRCT9514647	250	81	100	szt.

PP-RCT Tee



Tee

product code	D [mm]	Z [mm]	L [mm]	L1 [mm]	unit of measure
PPRCT9515510	20	15	54	27	szt.
PPRCT9515513	25	19	63	32	szt.
PPRCT9515516	32	25	76	38	szt.
PPRCT9515519	40	31	91	45	szt.
PPRCT9515522	50	39	109	55	szt.
PPRCT9515525	63	50	134	67	szt.
PPRCT9515528	75	59	156	78	szt.
PPRCT9515531	90	72	179	89	szt.
PPRCT9515534	110	98	210	105	szt.
PPRCT9515537	125	43	209	103	szt.
PPRCT9515540	160	109	218	113	szt.
PPRCT9515543	200	70	300	170	szt.
PPRCT9515547	250	87	350	210	szt.

PP-RCT Reducer tee at branching



Reducer tee at branching

product code	D1 [mm]	D2 [mm]	D1 [mm]	Z [mm]	L [mm]	L1 [mm]	unit of measure
PPRCT9515913	25	20	25	16	63	30	szt.
PPRCT9515916	32	20	32	18	68	34	szt.
PPRCT9516016	32	25	32	18	76	36	szt.
PPRCT9515919	40	20	40	21	81	29	szt.
PPRCT9516019	40	25	40	21	81	41	szt.
PPRCT9516119	40	32	40	21	91	43	szt.
PPRCT9515922	50	20	50	25	89	43	szt.
PPRCT9516022	50	25	50	24	97	47	szt.
PPRCT9516122	50	32	50	24	97	49	szt.
PPRCT9516222	50	40	50	28	28	109	szt.
PPRCT9516125	63	32	63	28	119	58	szt.
PPRCT9516140	63	40	63	28	119	60	szt.
PPRCT9516325	63	50	63	28	134	63	szt.
PPRCT9516228	75	40	75	31	139	68	szt.
PPRCT9516140	75	50	75	31	139	71	szt.
PPRCT9516428	75	63	75	31	156	75	szt.
PPRCT9516431	90	63	90	36	148	74	szt.
PPRCT9516531	90	75	90	36	160	78	szt.
PPRCT9516533	110	63	110	41	152	93	szt.
PPRCT9516532	110	75	110	38	156	87	szt.
PPRCT9516535	110	90	110	43	178	93	szt.
PPRCT9516537	160	90	160	52	193	120	szt.
PPRCT9516540	160	110	160	47	207	104	szt.

PP-RCT Coupler



Coupler

product code	D [mm]	Z [mm]	L [mm]	unit of measure
PPRCT9510510	20	15	32	szt.
PPRCT9510513	25	16	35	szt.
PPRCT9510516	32	18	39	szt.
PPRCT9510519	40	21	44	szt.
PPRCT9510522	50	24	50	szt.
PPRCT9510525	63	28	58	szt.
PPRCT9510528	75	31	66	szt.
PPRCT9510531	90	36	89	szt.
PPRCT9510534	110	42	101	szt.
PPRCT9510537	125	47	90	szt.
PPRCT9510540	160	51	109	szt.

PP-RCT Pipe Cap



Pipe Cap

product code	D [mm]	Z [mm]	L [mm]	unit of measure
PPRCT9522310	20	15	28	szt.
PPRCT9522313	25	16	32	szt.
PPRCT9522316	32	18	36	szt.
PPRCT9522319	40	21	42	szt.
PPRCT9522322	50	24	50	szt.
PPRCT9522325	63	28	58	szt.
PPRCT9522328	75	31	65	szt.
PPRCT9522331	90	37	72	szt.
PPRCT9522333	110	41	79	szt.
PPRCT9522337	125	43	82	szt.
PPRCT9522340	160	45	85	szt.
PPRCT9522343	200	120	180	szt.
PPRCT9522347	250	145	240	szt.

PP-RCT Reducer



Reducers

product code	D1 [mm]	D2 [mm]	Z [mm]	L [mm]	L1 [mm]	unit of measure
PPRCT9511113	25	20	16	42	29	szt.
PPRCT9511116	32	20	18	45	33	szt.
PPRCT9511216	32	25	18	46	33	szt.
PPRCT9511119	40	20	21	48	39	szt.
PPRCT9511219	40	25	21	50	39	szt.
PPRCT9511319	40	32	21	52	39	szt.
PPRCT9511222	50	25	24	55	46	szt.
PPRCT9511322	50	32	24	57	46	szt.
PPRCT9511422	50	40	24	59	46	szt.
PPRCT9511325	63	32	28	61	52	szt.
PPRCT9511425	63	40	28	63	52	szt.
PPRCT9511525	63	50	28	66	52	szt.
PPRCT9511428	75	40	31	68	58	szt.
PPRCT9511528	75	50	31	71	58	szt.
PPRCT9511628	75	63	31	75	58	szt.
PPRCT9511631	90	63	28	70	34	szt.
PPRCT9511731	90	75	31	74	38	szt.
PPRCT9511818	110	50	41	93	54	szt.
PPRCT9511825	110	63	38	93	40	szt.
PPRCT9511828	110	75	35	90	40	szt.
PPRCT9511831	110	90	33	93	42	szt.
PPRCT9511835	125	110	47	94	61	szt.
PPRCT9511838	160	125	54	102	68	szt.
PPRCT9511840	160	110	54	103	73	szt.
PPRCT9511843	200	160	70	140	80	szt.
PPRCT9511847	250	200	81	160	95	szt.

Threaded elements CW617N



90° elbow with female thread

product code	D [mm]	Z [mm]	L [mm]	unit of measure
PPRCT9539010	20x½"	26	38	szt.
PPRCT9539013	25x½"	30	41	szt.
PPRCT9539113	25x¾"	30	42	szt.

90° elbow with female thread and wrench unit

product code	D [mm]	Z [mm]	L [mm]	unit of measure
PPRCT9539019	32x1"	34	59	szt.

Threaded elements CW617N



90° elbow with male thread

product code	D [mm]	Z [mm]	L [mm]	unit of measure
PPRCT9540010	20x1/2"	26	52	szt.
PPRCT9540013	25x1/2"	30	55	szt.
PPRCT9540113	25x3/4"	30	57	szt.



90° elbow with male thread and wrench unit

product code	D [mm]	Z [mm]	L [mm]	unit of measure
PPRCT9540516	32x1"	34	78	szt.



Tee with female thread at branching

product code	D [mm]	Z [mm]	L [mm]	L1 [mm]	unit of measure
PPRCT9541010	20x1/2"x20	15	51	52	szt.
PPRCT9541110	20x3/4"x20	15	51	55	szt.
PPRCT9541013	25x1/2"x25	16	59	55	szt.
PPRCT9541113	25x3/4"x25	16	59	57	szt.
PPRCT9541016	32x1/2"x32	18	63	43	szt.
PPRCT9541116	32x3/4"x32	18	63	59	szt.



Tee with female thread at branching, with wrench unit

product code	D [mm]	Z [mm]	L [mm]	L1 [mm]	unit of measure
PPRCT9541516	32x1"x32	18	68	78	szt.



Tee with male thread at branching

product code	D [mm]	Z [mm]	L [mm]	L1 [mm]	unit of measure
PPRCT9542010	20x1/2"x20	15	51	52	szt.
PPRCT9542013	25x1/2"x25	16	59	55	szt.
PPRCT9542113	25x3/4"x25	16	59	57	szt.
PPRCT9542115	32x1/2"x32	18	63	61	szt.
PPRCT9542116	32x3/4"x32	18	63	59	szt.



Tee with male thread at branching, with wrench unit

product code	D [mm]	Z [mm]	L [mm]	L1 [mm]	unit of measure
PPRCT9542516	32x1"x32	18	68	78	szt.

Threaded elements CW617N



Coupler with female thread

product code	D [mm]	Z [mm]	L [mm]	L1 [mm]	unit of measure
PPRCT9535010	20x1/2"	15	43	28	szt.
PPRCT9535013	25x1/2"	16	46	28	szt.
PPRCT9535113	25x3/4"	16	47	31	szt.



Coupler with female thread and wrench unit

product code	D [mm]	Z [mm]	L [mm]	L1 [mm]	unit of measure
PPRCT9536216	32x1"	18	64	51	szt.
PPRCT9536319	40x1 1/4"	21	72	57	szt.
PPRCT9536520	50x1 1/2"	24	80	62	szt.
PPRCT9536525	63x2"	28	90	68	szt.
PPRCT9536628	75x2 1/2"	31	98	73	szt.
PPRCT9536631	90x3"	35	84	48	szt.



Coupler with male thread

product code	D [mm]	Z [mm]	L [mm]	L1 [mm]	unit of measure
PPRCT9537010	20x1/2"	15	57	43	szt.
PPRCT9537013	25x1/2"	16	58	46	szt.
PPRCT9537110	20x3/4"	15	61	46	szt.
PPRCT9537113	25x3/4"	16	62	47	szt.



Coupler with male thread and wrench unit

product code	D [mm]	Z [mm]	L [mm]	L1 [mm]	unit of measure
PPRCT9538216	32x1"	18	83	51	szt.
PPRCT9538319	40x1 1/4"	21	91	57	szt.
PPRCT9538422	50x1 1/2"	24	102	62	szt.
PPRCT9538525	63x2"	28	114	68	szt.
PPRCT9538628	75x2 1/2"	31	123	73	szt.
PPRCT9538631	90x3"	36	127	84	szt.



Half-union with female thread

product code	D [mm]	Z [mm]	unit of measure
PPRCT9543010	20x1/2"	24	szt.
PPRCT9543113	25x3/4"	30	szt.
PPRCT9543319	32x1"	34	szt.
PPRCT9543421	40x1 1/4"	38	szt.
PPRCT9543524	50x1 1/2"	44	szt.
PPRCT9543627	63x2"	52	szt.



Half-union with male thread

product code	D [mm]	Z [mm]	unit of measure
PPRCT9544010	20x1/2"	32	szt.
PPRCT9544113	25x3/4"	39	szt.
PPRCT9544316	32x1"	48	szt.
PPRCT9544319	40x1 1/4"	57	szt.
PPRCT9544422	50x1 1/2"	69	szt.
PPRCT9544525	63x2"	81	szt.

PP-RCT Flanged Fleeve



product code	D [mm]	L [mm]	L1 [mm]	unit of measure
PPRCT9523825	63	95	35	szt.
PPRCT9523828	75	119	36	szt.
PPRCT9523831	90	140	41	szt.
PPRCT9523834	110	169	49	szt.
PPRCT9523836	125	191	52	szt.
PPRCT9523837	160	188	119	szt.
PPRCT9523843	200	300	150	szt.
PPRCT9523846	250	375	188	szt.

Pipe cutter



product code	D [mm]	unit of measure
9581540	20-40	szt.
9581575	40-63	szt.
C 0010	75-110	szt.

Welding Machine / Dies

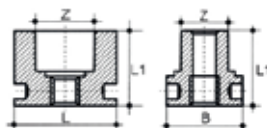


product code	D [mm]	unit of measure
9582575	20-63	szt.
9582576	75-110	szt.
9582579	125-160	szt.

Electro Fusion Welding Machine

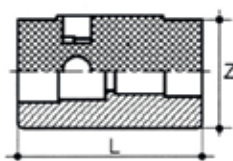
product code	D [mm]	unit of measure
9582585	20-110	szt.

Heating tip



product code	D [mm]	unit of measure
9593510	20	szt.
9593513	25	szt.
9593516	32	szt.
9593519	40	szt.
9593522	50	szt.
9593525	63	szt.
9593528	75	szt.
9593531	90	szt.
9593534	110	szt.
9593537	125	szt.
9593540	160	szt.

Coarse file for stabilised pipes



product code	D [mm]	unit of measure
9549520	20-25	szt.
9549532	32-40	szt.
9549550	50-63	szt.
9549591	75-90	szt.
9549595	110	szt.

NOTES:

A series of horizontal dashed lines for taking notes.

BOR^{plus} SYSTEM

for home



**Installation system
BOR^{plus}**

**Product
description**



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