

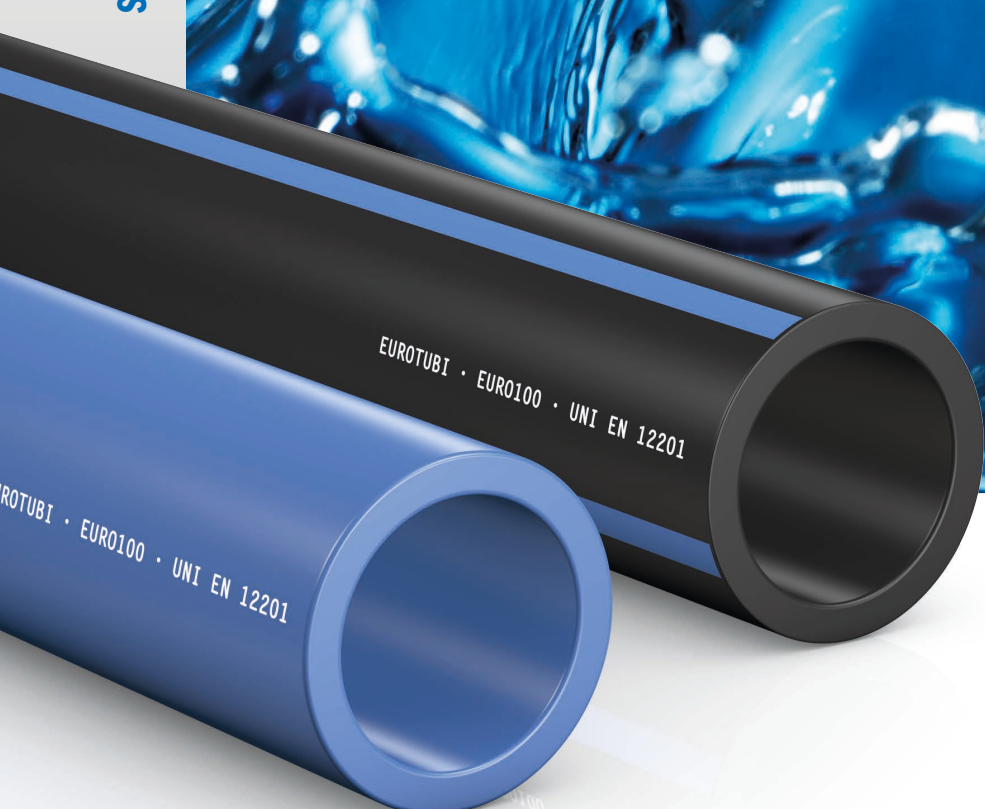
# EURO100



EN

Polyethylene pipes made of PE100 (MRS 10), black in colour with coextruded blue stripes, intended for the supply of water for human consumption, including raw water prior to treatment, fulfilling the requirements of standards EN 12201-2 and ISO 4427, organoleptic characteristics verified and certified according to standard EN 1622 and compliant with national European regulations for drinking water.

SUPPLY OF DRINKING WATER



## DESIGN CONSIDERATIONS

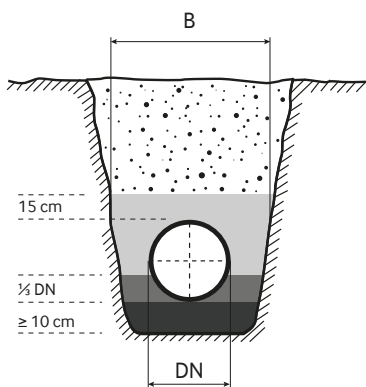
The design of a piping network based on EURO100 is focused on the determination of the pipe diameter for a specific lay-out once parameters as flow, total length, piezometric height and roughness are completely defined.

The criteria for dimensioning a pipeline, as described in standards, must be able to fulfil the maximum required flow, balancing the water supply according to the demand and evaluating the velocity of the fluid in the pipe, the roughness coefficient of the internal surface and the pressure difference between the ends of the piping system.

The distributed pressure drop may be estimated through an abacus which links the flow (Q) and the velocity (V) of the fluid to the internal diameter (d) of the pipeline. It is generally advisable to operate with a fluid velocity in the range 0.5-2.5 m/s in order to avoid overpressure and stagnation. On the other hand, the pressure drops due to the flow through fittings and valves have to be estimated according to their specific type as described in standards.

Pipelines based on EURO100 are also suitable for fire-fighting networks provided national rules are taken into account for this specific use.

## INSTALLATION IN TRENCHES



According to the standard ENV 1046 the width of the trench at the springline of the pipe must not be greater than necessary to provide adequate room for jointing the pipe in the trench and compacting the pipe zone backfill at the haunches (typical values are  $b_s = 200$  mm for  $DN \leq 300$ ,  $b_s = 300$  mm

for  $300 \leq DN \leq 900$  and  $b_s = 400$  mm for  $900 \leq DN \leq 1200$ ).

When determining the trench depth, allowance for a suitable bedding should be incorporated. In general, care should be taken that the depth of cover above the crown of the pipe for pipes passing under traffic areas should usually be a minimum of 600 mm and to prevent the conveyed fluids from being affected by frost. The surface at the trench grade shall be continuous, uniform and free of particles greater than 15 mm for  $DN < 100$ , 20 mm for  $100 \leq DN < 300$ , 30 mm

for  $300 \leq DN < 600$  and 40 mm for  $DN \geq 600$ . To provide a uniform support for the pipe the bedding layer should generally have a thickness of 100 - 150 mm and be not less than 50 mm and the material shall be granular such as gravel, sand or crushed rock.

The backfill above the pipe zone should be placed by spreading in approximately uniform layers and compacted according to the various types of equipment and backfill materials.

## BENDING

EURO100 pipes have a high degree of flexibility and can follow the undulations of the ground without bends, provided the radius of curvature is higher than a limit value which depends on the SDR. The minimum bending radius at 20 °C is defined as in the following table.

SDR	Radius of curvature	Radius of curvature*
$\leq 11$	$\geq 25$ DN	$\geq 25$ DN
13,6 ÷ 17	$\geq 25$ DN	$\geq 45$ DN
21 ÷ 26	$\geq 35$ DN	$\geq 45$ DN

\* With linear joint, e.g. head-to-head joint, electrosadable sleeve, compression sleeve, etc.

## CHEMICAL RESISTANCE

In the event it is necessary to evaluate the chemical resistance of EURO100 for specific installations, the pipes shall be classified in accordance with international guidelines (i.e. standard ISO/TR 10358). For a few chemical substances used at 20 °C the resistance is classified as in the following table.

Chemical	Resistance
Ethyl alcohol (40%)	Satisfactory resistance
Chlorine (sol.)	Limited resistance
Sodium chloride (2%)	Satisfactory resistance
Chlorine dioxide	Not satisfactory resistance

## OPERATION

When a piping system based on EURO100 is to be operated at a constant temperature higher than 20 °C, up to 40 °C, a pressure reduction coefficient as given in the following table applies (extract from EN 12201-1).

Temp. [°C]	PN 6	PN 8	PN 10	PN 12,5	PN 16	PN 20	PN 25
$\leq 20$	6	8	10	12,5	16	20	25
30	5,2	6,8	8,7	10,8	13,9	17,4	21,7
40	4,4	5,8	7,4	9,2	11,8	14,8	18,5

## JOINTING

A piping system based on EURO100 can be jointed through butt-fusion welding, electrofusion or mechanical compression joints. The choice of the most adequate jointing technique can affect the reliability and the long term behaviour of the pipe network. The range of pipe diameters intended to be assembled with different methods is summarised in the following table..

Jointing method	Range of DN
Butt-fusion	DN ≥ 63
Electrofusion	DN ≥ 20

## TESTING

A piping network for water supply has to be subjected to a hydrostatic pressure test to ensure the integrity of pipes, couplings, fittings and other components, such as anchor blocks, following the instructions given in standards such as EN 805.

Testing should be done after the backfilling of the trench leaving the joints uncovered. Filling of the piping network with water must be done slowly to avoid water hammers, air must be expelled and finally the venting devices must be closed.

The system test pressure (STP) must be calculated according to the maximum design pressure (MDP) as follows:

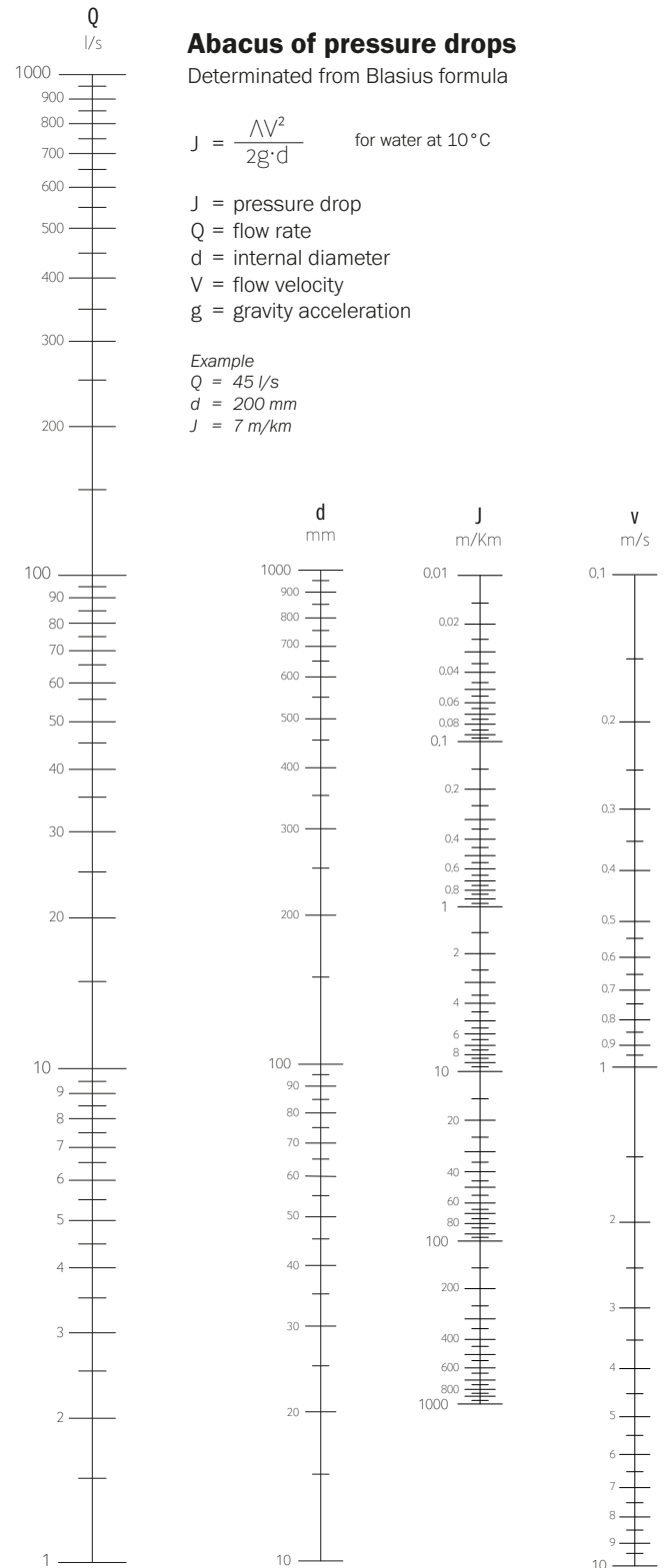
- for calculated water hammer:

$$STP = MDP_c + 100 \text{ kPa}$$

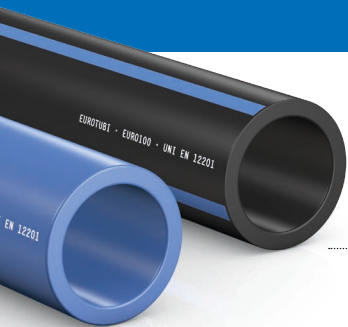
- without calculated water hammer:

$$STP = MDP_a \times 1,5 \text{ or } MDP_a + 500 \text{ kPa}$$

(the lower of the two values)



The designer of a piping system shall consider and carefully evaluate the implications of the parameters of each specific project with technical or law regulations.



# EURO100

SUPPLY OF DRINKING WATER

DN	PN 6 SDR 26		PN 8 SDR 21		PN 10 SDR 17		PN 12,5 SDR 13,6		PN 16 SDR 11		PN 20 SDR 9		PN 25 SDR 7,4	
	e <sub>n</sub>	DI [mm]	e <sub>n</sub>	DI [mm]	e <sub>n</sub>	DI [mm]	e <sub>n</sub>	DI [mm]	e <sub>n</sub>	DI [mm]	e <sub>n</sub>	DI [mm]	e <sub>n</sub>	DI [mm]
20	-	-	-	-	2,0•	16,0	2,0•	16,0	2,0	16,0	2,3	15,4	3,0	14,0
25	-	-	-	-	2,0•	21,0	2,0	21,0	2,3	20,4	3,0	19,0	3,5	18,0
32	-	-	-	-	2,0	28,0	2,4	27,2	3,0	26,0	3,6	24,8	4,4	23,2
40	-	-	2,0	36,0	2,4	35,2	3,0	34,0	3,7	32,6	4,5	31,0	5,5	29,0
50	2,0	46,0	2,4	45,2	3,0	44,0	3,7	42,6	4,6	40,8	5,6	38,8	6,9	36,2
63	2,5	58,0	3,0	57,0	3,8	55,4	4,7	53,6	5,8	51,4	7,1	48,8	8,6	45,8
75	2,9	69,2	3,6	67,8	4,5	66,0	5,6	63,8	6,8	61,4	8,4	58,2	10,3	54,4
90	3,5	83,0	4,3	81,4	5,4	79,2	6,7	76,6	8,2	73,6	10,1	69,8	12,3	65,4
110	4,2	101,6	5,3	99,4	6,6	96,8	8,1	93,8	10,0	90,0	12,3	85,4	15,1	79,8
125	4,8	115,4	6,0	113,0	7,4	110,2	9,2	106,6	11,4	102,2	14,0	97,0	17,1	90,8
140	5,4	129,2	6,7	126,6	8,3	123,4	10,3	119,4	12,7	114,6	15,7	108,6	19,2	101,6
160	6,2	147,6	7,7	144,6	9,5	141,0	11,8	136,4	14,6	130,8	17,9	124,2	21,9	116,2
180	6,9	166,2	8,6	162,8	10,7	158,6	13,3	153,4	16,4	147,2	20,1	139,8	24,6	130,8
200	7,7	184,6	9,6	180,8	11,9	176,2	14,7	170,6	18,2	163,6	22,4	155,2	27,4	145,2
225	8,6	207,8	10,8	203,4	13,4	198,2	16,6	191,8	20,5	184,0	25,2	174,6	30,8	163,4
250	9,6	230,8	11,9	226,2	14,8	220,4	18,4	213,2	22,7	204,6	27,9	194,2	34,2	181,6
280	10,7	258,6	13,4	253,2	16,6	246,8	20,6	238,8	25,4	229,2	31,3	217,4	38,3	203,4
315	12,1	290,8	15,0	285,0	18,7	277,6	23,2	268,6	28,6	257,8	35,2	244,6	43,1	228,8
355	13,6	327,8	16,9	321,2	21,1	312,8	26,1	302,8	32,2	290,6	39,7	275,6	48,5	258,0
400	15,3	369,4	19,1	361,8	23,7	352,6	29,4	341,2	36,3	327,4	44,7	310,6	54,7	290,6
450	17,2	415,6	21,5	407,0	26,7	396,6	33,1	383,8	40,9	368,2	50,3	349,4	61,5	327,0
500	19,1	461,8	23,9	452,2	29,7	440,6	36,8	426,4	45,4	409,2	55,8	388,4	-	-
560	21,4	517,2	26,7	506,6	33,2	493,6	41,2	477,6	50,8	458,4	62,5	435,0	-	-
630	24,1	581,8	30,0	570,0	37,4	555,2	46,3	537,4	57,2	515,6	70,3	489,4	-	-
710	27,2	655,6	33,9	642,2	42,1	625,8	52,2	605,6	64,5	581,0	79,3	551,4	-	-
800	30,6	738,8	38,1	723,8	47,4	705,2	58,8	682,4	72,6	654,8	89,3	621,4	-	-
900	34,4	831,2	42,9	814,2	53,3	793,4	66,1	767,8	81,7	736,6	-	-	-	-
1000	38,2	923,6	47,7	904,6	59,3	881,4	73,5	853,0	90,8	818,4	-	-	-	-
1200	45,9	1108,2	57,2	1085,6	71,1	1057,8	-	-	-	-	-	-	-	-

• Thickness rounded to lower SDR

DN = nominal outside diameter

DI = inner diameter

e<sub>n</sub> = nominal thickness



For the range of certified pipes, check the website [www.eurotubi.com](http://www.eurotubi.com) and the websites of the certification bodies.



EUROTUBI is a commercial division of Idrotherm 2000 S.p.A.

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