

polyethylene pipes

for drinking water distribution
and pressure sewerage

PE 80 and PE 100

In standard water supply networks, dimensions greater than Ø110 mm are mainly used for main water supply systems. Dimensions in domestic water supply systems are usually smaller and the working pressure is lower. Since the supply pipes of distribution systems usually consist of many branches, thus demanding many changes of direction, an appropriate flexibility of the material used is necessary. This makes the PE pipes a reasonable choice.

The main supply pipes that connect the water preparation source to the distribution network are usually built with PE 100 pipes. PE 100 is logical continuation of the development that enabled increased use of PE systems. The greater strength of the material enables the production of pressure pipes with greater dimensions.

The manufacturer reserves the right to make potential technical changes.

Table 4: PE 100 PE and 100 RC^{PLUS} pipes

d (mm)	10 bar (SDR 17)		12,5 bar (SDR 13.6)		16 bar (SDR 11)	
	e (mm)	Q (Kg/m)	e (mm)	Q (Kg/m)	e (mm)	Q (Kg/m)
20					2,0	0,117
25			2,0	0,149	2,3	0,171
32	2,0	0,192	2,4	0,232	3,0	0,279
40	2,4	0,295	3,0	0,362	3,7	0,432
50	3,0	0,454	3,7	0,551	4,6	0,669
63	3,8	0,722	4,7	0,878	5,8	1,058
75	4,5	1,020	5,6	1,244	6,8	1,478
90	5,4	1,466	6,7	1,782	8,2	2,141
110	6,6	2,182	8,1	2,639	10,0	3,175
125	7,4	2,783	9,2	3,401	11,4	4,119
140	8,3	3,494	10,3	4,259	12,7	5,135
160	9,5	4,560	11,8	5,559	14,6	6,739
180	10,7	5,768	13,3	7,055	16,4	8,518
200	11,9	7,118	14,7	8,653	18,2	10,504
225	13,4	9,028	16,6	10,989	20,5	13,296
250	14,8	11,063	18,4	13,536	22,7	16,352
280	16,6	13,899	20,6	16,960	25,4	20,500
315	18,8	17,643	23,2	21,495	28,6	25,949
355	21,1	22,403	26,1	27,253	32,2	32,942
400	23,7	28,425	29,4	34,700	36,4	42,043
450	26,7	35,869	33,1	43,776		



ISO 9001

BUREAU VERITAS
Certification



MINERVA ŽALEC, d.d.
 predelava plastike in kovin • Ložnica pri Žalcu 37 • 3310 Žalec
 tel.: +386 (0)3 71 36 200 • fax: +386 (0)3 71 36 202
 e-mail: uprava@minerva.si • web: http://www.minerva.si/

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Use

Polyethylene has been used for pipe production for nearly 40 years, most commonly in drinking water and gas distribution systems. In addition to corrosion resistance, wide chemical resistance, low mechanical fatigue and low weight, polyethylene pipelines are also characteristics for their flexibility and durability.

Advantages

Welded polyethylene pipes become one permanently watertight pole. Together with coupling elements they form permanently watertight systems that offer the highest possible safety of operation.

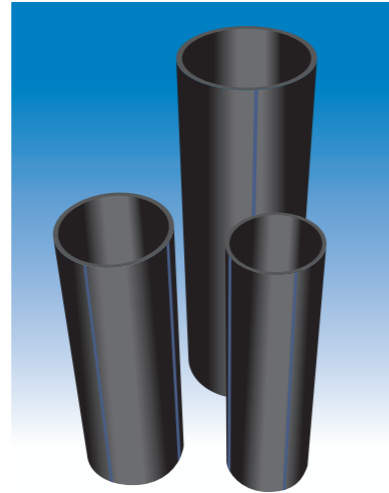
Flexibility of PE pipes enables rational installation techniques, thus decreasing the costs. Unlike rigid pipes made of classic materials, polyethylene pipes do not crack or fracture due to land subsidence and movement.

Standard

The international standards ISO 4427 and EN 12201 were proclaimed SIST ISO 4427 and SIST EN 12201 by method of proclamation.

The valid Slovenian regulations are in compliance with the international and European regulations as stated in STS - 05/016 (Slovenian technical approval).

Water and pressure sewerage pipes are produced according to the standard SIST EN 12201 (STS-05/016 Slovenian technical approval). Pipes are coloured black with longitudinal blue lines (water pipes, RAL 5005) or brown (sewerage pipes, RAL 8023) lines and marked with clearly visible and permanent mark that shows the material, standard, dimension, working pressure and date when pipe was produced.



Polyethylene pipes for water distribution are marked with a blue line.

Characteristics and classification of the PE material

According to the new ISO classification (ISO TR 9080, ISO12162), PE material is classified according to minimal long-term strength, acquired with the standard extrapolation method.

Table 1 presents MRS values and (σ_s) for respective PE material types.

Welding

PE pipes are welded with the following procedures: butt-welding, poly-fusion welding and resistance butt-welding. With poly-fusion welding and resistance butt-welding, PE 80 and PE 100 fittings are used. In pipeline transitions from PE 80 to PE 100, resistance butt-welding is recommended.

Table 1: classification of PE material

Material Type	MRS (MPa) minimal required strength	$\sigma_s = MRS/C$ (MPa) safe working stress
PE 80	8,0	6,3
PE 100	10,0	8,0
PE 100 RC ^{PLUS}	10,0	8,0

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Safe working stress (σ_s) is calculated using the MRS value and the minimal project-safety factor. According to SIST ISO 4427 and SIST EN 12201-1/2, $C=1,25$.

The equal safety factor value was accepted in DIN 8074, 8075 and in the DVGW 608. According to SIST ISO 4427 and SIST EN 12201 the compliant pressure levels are as shown in table 2.

Table 2: relation between SDR, S and p

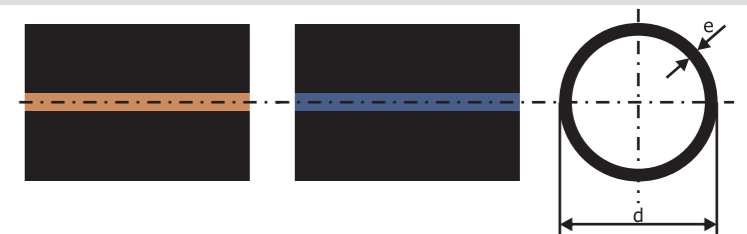
SDR	S	Working pressure "p" (bar)		
		PE 80	PE 100	PE 100 RC ^{PLUS}
17	8	8	10	10
13,6	6,3	10	12,5	12,5
11	5	12,5	16	16

$$SDR = d/e$$

$$S = (SDR - 1)/2$$

$$e = d/(2S + 1)$$

SDR = standard dimension ratio
 e = thickness of the wall of the pipe
 d = outer diameter of the pipe (mm)
 S = pipe series



All fitting and coupling elements that are butt-welded together are made from PE 80 (for PE 80 pipes) and from PE 100 (for PE 100 pipes).

Table 3: PE 80 pipes

d (mm)	8 bar (SDR 17)		10 bar (SDR 13.6)		12,5 bar (SDR 11)		16 bar (SDR 9)	
	e (mm)	Q (Kg/m)	e (mm)	Q (Kg/m)	e (mm)	Q (Kg/m)	e (mm)	Q (Kg/m)
20					2,0	0,116	2,3	0,132
25			2,0	0,148	2,3	0,169	3,0	0,210
32	2,0	0,193	2,4	0,229	3,0	0,276	3,6	0,325
40	2,4	0,292	3,0	0,358	3,7	0,427	4,5	0,507
50	3,0	0,449	3,7	0,545	4,6	0,662	5,6	0,786
63	3,8	0,715	4,7	0,868	5,8	1,047	7,1	1,254
75	4,5	1,009	5,6	1,231	6,8	1,462	8,4	1,762
90	5,4	1,451	6,7	1,763	8,2	2,119	10,1	2,542
110	6,6	2,159	8,1	2,612	10,0	3,142	12,3	3,777
125	7,4	2,754	9,2	3,365	11,4	4,076	14,0	4,885
140	8,3	3,458	10,3	4,214	12,7	5,081	15,7	6,120
160	9,5	4,513	11,8	5,501	14,6	6,669	17,9	7,969
180	10,7	5,708	13,3	6,982	16,4	8,429	20,1	10,082
200	11,9	7,044	14,7	8,563	18,2	10,395		
225	13,4	8,934	16,6	10,874	20,5	13,157		
250	14,8	10,948	18,4	13,395	22,7	16,181		
280	16,6	13,755	20,6	16,784	25,4	20,286		
315	18,8	17,459	23,2	21,271	28,6	25,679		
355	21,1	22,169	26,1	26,970	32,2	32,599		
400	23,7	28,129	29,4	34,339	36,4	41,605		
450	26,7	35,496	33,1	43,320				
500	29,7	43,858						