

polyethylene pipes

for gas distribution



PE pipes are inspected in production and in laboratories. An advanced laboratory performs inspections and tests according to the SIST EN 1555-2 technical regulation. In addition to inspection of pipes, source materials are also inspected.

Dimensions of the pipe are in accordance with SIST EN 1555-2 for respective gas working pressure values. For gas working pressure under 1 bar (0.1 MPa), series 8 pipes are used; for gas working pressure under 4 bars (0.4 MPa) series 5 pipes are used. Pipes with the diameter under 110 mm are delivered wound on drums or in straight bars in lengths of 6 m and 12 m.

The pipes are coloured black with yellow longitudinal lines. Each meter of length is marked with clearly visible and permanent mark.

PE pipes for gas distribution are manufactured according to technical specifications of SIST EN 1555 and Slovenian technical approval STS-06/003, issued by Slovenian National building and civil engineering institute. Application of SIST EN technical regulation is recommended in designing and installation of PE pipelines. We were producing our pipes according to DVGW up to year 2001, after that we obtained STS-06/003 and SIST EN 1555.

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Slovensko tehnično soglasje STS-06/003 Slovenian Technical Approval		
Podeljeno na podlagi določil Zakona o gradbenih proizvodih - ZGPro (Ur. list RS, št. 52/00 in št. 110/02 – ZGO-1) naslednjemu gradbenemu proizvodu:		
On the basis of provisions of the Construction Products Act – ZGPro (OG RS, nos. 52/00 and 110/02 – ZGO-1) granted to the following construction product:		
Komercialno ime proizvoda: Trade name	PE cevi MINERVA za razvod plina PPZ cevi MINERVA za razvod plina	
Imetnik soglasja: Holder of approval	MINERVA ŽALEC d.d. predelava plastike in kovin Ložnica pri Žalcu 37 3310 Žalec	
Vrsta in predvidena uporaba proizvoda:	Cevi iz polietilena za razvod plina DN 20 – 450 mm SDR 11, 17 PN do 10 bar Cevi iz polietilena 100 z dodatno zaščitno plastjo izdelano iz polipropilena za razvod plina DN 32 – 125 mm SDR 11, 17 PN do 10 bar	
Generic type and use of the product		
Veljavost: Validity	od (from) do (to)	5. 02.2009 1. 03.2011
Proizvodni obrat: Manufacturing plant	Proizvodni obrat Minerva Ložnica pri Žalcu 37	
Izdaja št.: Edition Nr.:	2	
To soglasje zamenjuje: This Approval replaces:	STS-06/003 veljavno od 1.03.2006 do 1.03.2011 STS-06/003 with validity from 1.03.2006 to 1.03.2011	
To slovensko tehnično soglasje obsega: This Slovenian Technical Approval contains:	20 strani z vključno 4 prilogami 20 pages including 4 annexes	

The manufacturer reserves the right to make potential technical changes.

ISO 9001

BUREAU VERITAS
Certification



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 **MINERVA ŽALEC d.d.**



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Polyethylene pipes and natural gas - problem free transport

Polyethylene is a material with number of distinctive advantages compared to traditional materials used in production of pipes for gas pipelines. Pipeline designers and energy gas distributors are increasingly using PE pipes and joint elements in low-pressure and medium-pressure distribution networks with working pressure under 4 bars (0,4 MPa).

Due to the remarkable technical characteristics of polyethylene, this system of pipes and joint elements represents a synthesis of reliability and cost-effectiveness.

In production of polyethylene pipes we use polyethylene compounds type PE 80 (8,0 MPa) and type PE 100 (10,0 MPa) according to the MRS classification. All materials have the necessary international certificates.

Use of polyethylene is growing worldwide due to the following characteristics:

- high flexibility and possibility of delivery in drums,
- low density enables easy handling,
- easy, quick and reliable joining
- remarkable chemical resistance enables laying into aggressive ground.

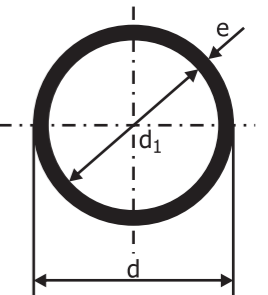
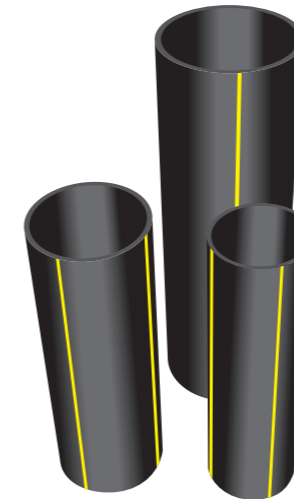
Table 1: Material quality

Material characteristics	used at MINERVA	Corresponding standards			Unit	Value
	ISO	ASTM	DIN	NF	SI	
Density -23°C (base material)	1183	D 1505-68 (75)	53479-D	T 51063	g/cm³	> 0,930
Flow speed 190/5 (MFR)	EN 1133	D 1238-82F	53735	T 51016	g/10min	0,4 ÷ 1,3
Tensile strenght	527	D 638-M81	53455	T 51034	MPa	≥ 20
Shear strenght	527	D 638-M81	53455	T 51034	MPa	25 ÷ 34
Shear elongation (50 mm/mm)	527	D 638-M81	53455	T 51034	%	≥ 600
Modulus of elasticity	178	D 790	53452	T 51034	MPa	≥ 700
IZOD impact toughness	180	D 256-73			J/m	ni loma
Shore D hardness	868	D 2240-81	53505	T 51109		58 ÷ 65
Resistance to fracture in the medium B, F50		D 1693-70			h	≥ 1000
Thermal extension coefficient		D 696	52328		K1	2 x 10 ⁻⁴
Thermal conductivity (23°C)		C 177	52612		w/m°K	0,32 ÷ 0,40
Surface electrical resistance	IEC 60093		53482		Ω	> 10 ¹³

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SDR = d/e (ISO 4437)
Weight is calculated with density 0,950 g/cm³

d = outer diameter of the pipe
e = wall thickness
d1 = inner diameter of the pipe

Table 2: Pipes for gas pipelines /SIST EN 1555-2/ PE 100

Outer diameter d (mm)	PE 80 S 8 series SDR 17 / 1 bar		PE 80 S 5 series SDR 11 / 4 bar		PE 100/PE 100 RC ^{PLUS} S 8 series SDR 17 / 4 bar		PE 100/PE 100 RC ^{PLUS} S 5 series SDR 11 / 10 bar		Bar lenght m	Drum lenght m
	e (mm)	d1 (mm)	e (mm)	d1 (mm)	e (mm)	d1 (mm)	e (mm)	d1 (mm)		
20			3,0	14,0			3,0	14,0		200
25			3,0	19,0			3,0	19,0		200
32			3,0	26,0			3,0	26,0	6	200
40			3,7	32,6			3,7	32,6	6	200
50			4,6	40,8			4,6	40,8	6	200
63	3,8	55,4	5,8	51,4	3,8	55,4	5,8	51,4	12	200
75	4,5	66,0	6,8	61,4	4,5	66,0	6,8	61,4	12	100
90	5,4	79,2	8,2	73,6	5,4	79,2	8,2	73,6	12	100
110	6,6	96,8	10,0	90,0	6,6	96,8	10,0	90,0	12	100
125	7,4	110,2	11,4	102,2	7,4	110,2	11,4	102,2	12	
140	8,3	123,4	12,7	114,6	8,3	123,4	12,7	114,6	12	
160	9,5	141,0	14,6	130,8	9,5	141,0	14,6	130,8	12	
180	10,7	158,6	16,4	147,2	10,7	158,6	16,4	147,2	12	
200	11,9	176,2	18,2	163,6	11,9	176,2	18,2	163,6	12	
225	13,4	198,2	20,5	184,0	13,4	198,2	20,5	184,0	12	
250	14,8	220,4	22,7	204,6	14,8	220,4	22,7	204,6	12	
280	16,6	246,8	25,4	229,2	16,6	246,8	25,4	229,2	12	
315	18,7	278,3	28,6	257,8	18,7	278,3	28,6	257,8	12	
355	21,1	312,8	32,3	290,4	21,1	312,8	32,3	290,4	12	
400	23,7	352,6	36,4	327,2	23,7	352,6	36,4	327,2	12	
450	26,7	396,6			26,7	396,6			12	