



PE 80 Pipes and Fittings for Natural Gas Systems

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PE 80 PIPES AND FITTINGS FOR NATURAL GAS SYSTEMS

PRODUCT IDENTITY

Product Name	DIZAYN PE NATURAL GAS PIPES AND FITTINGS
Raw Material	HDPE / MDPE = PE 80
Product Color	Yellow
Production Standard	TS EN 1555-2
Other Standards	ISO 4437, DIN 16963
Production Standard fo Fittings	EN 1555-3

PRODUCT SPECIFICATIONS

Production Range	Ø25 - Ø710 mm
Pressure Range	SDR11 - PN 12,5 (for 4 bar lines in accordance with European Norms)
Production Unit Lengths	Ø25 - Ø90 - (Coil - 100 - 200 meters) Ø110 - Ø710 - (11,8 - 12 - 13,5 meters)

QUALITY CERTIFICATES OF DİZAYN GROUP



TECHNICAL SPECIFICATIONS

Polymer Data	PE 80	Unit	Test Method
Density at (23°C)	0.940	g / cm ³	ISO 1183
Viscosity Number	280	cm ³ / gr	ISO 1628-3
MFR (190° / 5 kg)	0.85	g / 10 dak.	ISO 1133
MFR (190° / 25 kg)	18	g / 10	ISO 1133
Mechanical Properties			
Yield Stress	18	Mpa	ISO 527
Elongation at yield	10-12	%	ISO 527
Tensile Modulus	> 600	%	ISO 527
Notched Impact strenght	600	Mpa	ISO 527
Notched Impact strenght			
+ 23 °C	17	kJ / m ²	ISO 179/1eA
- 20 °C	5	kJ / m ²	ISO 179/1eA
Other Properties			
Oxidation - Induction time at (210°C)	≥ 20	min	ISO TR 10837
Carbon Black Content	2,3±0,2	%	ISO 6964
Carbon Black Dispersion	≤ 3		ISO CD 11420
MRS minimum Required Strenght	> 8	MPa	ISO TR 9080
Resistance to S.C.P (Slow Crack Propagation) x=4,6 Mpa, 80°C Notched	> 2000	h	EN 33479
Resistance to R.C.P (Rapid Crack) Propagation S4-test 110/10 mm 0°C	-	bar	ISO DIS 13477
Linear Thermal Expansion	1.5x10 ⁻⁴	0°C ⁻¹	ASTM D 696 (20-60°C)
Specific Heat Capacity	1.9	J / g °C	BPCL
Electrical Properties			
Electric Strenght	> 20	kV / mm	BS 27 82: 201 B
Volume resistivity	> 10 ¹³	Ωm	BS 27 82: 230A
Surface resistivity	> 10 ¹⁵	Ωm	BS 27 82: 231A
Relative resistivity	2,6	-	BS 2067 (1 to 20 MHZ)
Loss tangent	3x10 ⁻⁴	-	BS 2067

PE 80 PIPES AND FITTINGS FOR NATURAL GAS SYSTEMS

2.1 Dizayn Natural Gas Pipes and Fittings

Dizayn Group uses polyethylene raw material for the manufacture of gas pipes and fittings because the first priority in manufacture of natural gas pipes and fittings is ultimate safety. Because the pipe made of polyethylene raw material can easily be bent and not corroded. Polyethylene pipe is light in weight and it has a wide variety of fittings to be used in connection. The polyethylene raw material is very resistant to impacts. The characteristics make the polyethylene pipes very easy to install, no need for frequent service and maintenance as well as very long service life. These features all mean very cheap and very safe installation for gas pipe lines. Dizayn Group uses world quality raw material in production of the gas pipes.

The raw material used in production of Dizayn natural gas pipes is PE 80 (MRS=8 MPa HDPE) and PE100 (MRS=10 MPa). Our company produces gas pipes in the diameter range between 20 mm – 400 mm. The fittings which are welded using electrofusion welding method ensure absolute leak proof for very long service time. The quality of a chain is dependent on the quality of the elements one by one. In the pipe lines, the weakest points are the connection places.



Picture 2.1 - The safety is on the top priority for the gas pipes and fittings.

This becomes more vital if a long period leak proof is required. The quality of a pipe line we can say is first dependant on the quality of connection points.

The electrofusion welding method used by Dizayn Group guaranties a maximum safety in connection points of natural gas pipe lines where absolute safety is vital. Dizayn Group is aware of this fact.



Picture 2.2 - Connection by using electrofusion welding



For the gas pipes, thanks to the nature of the plastic raw material, the passage of the gas can be stopped by squeezing the pipe. After release, the pipe will remember its round shape and will return to its normal shape.



Picture 1.1.11 - The squeezing of PE gas pipe.

PE 80 PIPES AND FITTINGS FOR NATURAL GAS SYSTEMS

Table 2.1 - MDPE Dizayn PE 80 Pipes

S ₁₅₀ =3,9;S ₁₅₀ =15 SDR 41; PN 3.2		S ₁₂₄ =7,7;S ₁₅₀ =3 SDR 33; PN 4		S ₁₂₄ =16,2; S ₁₅₀ =6,4 SDR 26; PN 5		S ₁₂₄ =27,4; S ₁₅₀ =10,8 SDR 22; PN 6		S ₁₂₄ =61,6; S ₁₅₀ =24,4 SDR 17; PN 8		S ₁₂₄ =127; S ₁₅₀ =50 SDR 13,6; PN 10		S ₁₂₄ =253; S ₁₅₀ =100 SDR 11; PN 12,5		S ₁₂₄ =495; S ₁₅₀ =195 SDR 9; PN 16		S ₁₂₄ =966; S ₁₅₀ =381 SDR 7,4; PN 20		S ₁₂₄ =2027; S ₁₅₀ =800 SDR 6; PN 25					
mm	kg/m	DN	S	Unit (Weight)	DN	S	Unit (Weight)	DN	S	Unit (Weight)	DN	S	Unit (Weight)	DN	S	Unit (Weight)	DN	S	Unit (Weight)				
90	2.3	0.67	75	2.3	0.58	63	2.5	0.52	50	2.3	0.39	40	3.0	0.38			20	3.0	0.17	16	3.0	0.13	
110	2.7	0.98	90	2.8	0.82	75	2.9	0.70	63	2.9	0.56	50	3.7	0.57			25	3.5	0.25	20	3.4	0.19	
125	3.1	1.29	110	3.4	1.22	90	3.5	1.02	75	3.4	0.79	63	4.7	0.90			32	4.4	0.40	25	4.2	0.29	
140	3.5	1.61	125	3.9	1.57	110	4.2	1.49	90	4.1	1.14	75	5.6	1.28			40	5.5	0.62	32	5.4	0.47	
160	4.0	2.07	140	4.3	1.96	140	5.4	2.41	125	4.2	1.49	110	6.6	2.24			50	6.9	0.97	40	6.7	0.72	
180	4.4	2.59	160	4.9	2.51	160	6.2	3.17	140	6.4	2.77	125	7.4	2.86			63	8.6	1.52	50	8.3	1.13	
200	4.9	3.16	180	5.5	3.19	180	6.9	3.92	160	7.3	3.61	140	8.3	3.59			75	10.3	2.17	63	10.5	1.79	
225	5.5	4.01	200	6.2	3.99	200	7.7	4.87	180	8.2	4.57	160	9.5	4.68			90	12.3	3.11	75	12.5	2.54	
250	6.2	5.03	225	6.9	4.95	225	8.6	6.11	200	9.1	5.64	180	10.7	5.91			110	15.1	4.66	90	15.0	3.66	
280	6.9	6.20	250	7.7	6.14	250	9.6	7.57	225	10.2	7.14	200	12.5	7.4			125	17.1	6.00	110	18.3	5.46	
315	7.7	7.79	280	8.6	7.67	280	10.7	9.43	250	11.4	8.82	225	14.0	8.3			140	19.2	7.54	125	20.8	7.06	
355	8.7	9.90	315	9.7	9.71	315	12.1	12.03	280	12.7	11.06	250	16.6	14.23			160	21.9	9.83	140	23.3	8.85	
400	9.8	12.54	355	10.9	12.27	355	13.6	15.17	315	14.3	14.00	280	18.7	18.02			180	29.9	14.59	160	26.6	11.54	
450	11.0	15.79	400	12.3	15.65	400	15.3	19.25	355	16.1	17.78	315	21.9	21.98			200	39.7	20.45	180	29.9	14.59	
500	12.3	19.70	450	13.8	19.66	450	17.2	24.33	400	18.2	22.57	355	26.1	27.92			225	48.5	24.38	200	33.2	18.01	
560	13.7	24.48	500	15.3	24.27	500	19.1	30.01	450	20.5	28.57	400	29.4	35.44			250	59.0	28.00	225	37.4	22.82	
630	15.4	30.98	560	17.2	30.54	560	21.4	37.57	500	22.7	35.27	450	36.8	55.38			280	75.4	34.20	250	41.5	28.14	
710	17.4	39.41	630	19.3	38.50	630	24.1	47.62	560	25.5	44.25	500	41.2	69.47			315	98.3	43.11	280	46.5	35.31	
800	19.6	49.93	710	21.8	48.87	710	27.2	60.50	630	28.6	56.00	560	46.3	87.92			355	124.3	48.34	315	52.3	44.68	
900	22.0	62.91	800	24.5	61.92	800	30.6	76.56	710	32.3	71.13	630	37.4	72.07			400	161.5	54.79	355	59.0	56.79	
1000	24.5	77.394	900	27.6	78.40	900	34.4	97.57	800	36.4	90.30	710	42.1	91.44			450	206.7	61.42	400	66.7	72.26	
1200	29.4	112.17	1000	30.6	96.54	1000	38.2	119.49	900	40.9	114.29	800	47.4	116.00			500	277.0	77.70				
1400	34.3	152.61	1200	36.7	138.83	1200	45.9	172.26	1000	45.5	141.09	900	53.3	146.75			560	353.8					
1600	39.2	199.27	1400	42.9	189.32	1400	53.5	234.26	1200	54.5	203.17	1000	66.2	179.44			630	442.2					
			1600	49.0	247.14	1600	61.2	306.24	1400	63.6	276.54	1200	70.6	259.25			710	558.8					
									1600	72.7	361.20	1600	94.1	460.89									

SDR: STANDARD DIMENSION RATIO (= OUTER DIA / WALL THICKNESS)

DN : NOMINAL DIAMETER (OUTER DIAMETER)

S : WALL THICKNESS

Sr24= Ring stiffness daily (24 hours)

Sr50= Ring stiffness for 50 years

■ Standard Production
■ Special Production on Demand

PE 80 PIPES AND FITTINGS FOR NATURAL GAS SYSTEMS

Table 2.2 - HDPE Dizayn PE 80 Pipes dimensions

S _{r24} =3.9/S _{r50} =1.5 SDR 41; PN 3.2		S _{r24} =7.7/S _{r50} =3 SDR 33; PN 4		S _{r24} =16.2/S _{r50} =6.4 SDR 26; PN 5		S _{r24} =27.4/S _{r50} =10.8 SDR 22; PN 6		S _{r24} =61.8/S _{r50} =24.4 SDR 17; PN 8		S _{r24} =127/S _{r50} =50 SDR 13; PN 10		S _{r24} =253/S _{r50} =50 SDR11PN 12.5		S _{r24} =495/S _{r50} =195 SDR 9; PN 16		S _{r24} =966/S _{r50} =381 SDR 7.4; PN 20		S _{r24} =2027/S _{r50} =800 SDR 6; PN 25		
DN	S	DN	S	DN	S	DN	S	DN	S	DN	S	DN	S	DN	S	DN	S	DN	S	
mm	kg/m	mm	kg/m	mm	kg/m	mm	kg/m	mm	kg/m	mm	kg/m	mm	kg/m	mm	kg/m	mm	kg/m	mm	kg/m	
90	2.3	0.67	75	2.3	0.58	63	2.5	0.52	50	2.3	0.39	50	3.0	0.47						
110	2.7	0.98	90	2.8	0.82	75	2.9	0.70	63	3.8	0.75	63	4.7	0.90						
125	3.1	1.29	125	3.9	1.57	125	4.8	1.91	125	5.7	2.20	125	7.4	2.86						
140	3.5	1.61	140	4.3	1.96	140	5.4	2.41	140	6.4	2.77	140	8.3	3.59						
160	4.0	2.07	160	4.9	2.51	160	6.2	3.17	160	7.3	3.61	160	9.5	4.68						
180	4.4	2.59	180	5.5	3.19	180	6.9	3.92	180	8.2	4.57	180	10.7	5.91						
200	4.9	3.16	200	6.2	3.99	200	7.7	4.87	200	9.1	5.64	200	11.9	7.29						
225	5.5	4.01	225	6.9	4.95	225	8.6	6.11	225	10.2	7.14	225	13.4	9.25						
250	6.2	5.03	250	7.7	6.14	250	9.6	7.57	250	11.4	8.82	250	14.8	11.33						
280	6.9	6.20	280	8.6	7.67	280	10.7	9.43	280	12.7	11.06	280	16.6	14.23						
315	7.7	7.79	315	9.7	9.71	315	12.1	12.03	315	14.3	14.00	315	18.7	18.02						
355	8.7	9.90	355	10.9	12.27	355	13.6	15.17	355	16.1	17.78	355	20.1	22.94						
400	9.8	12.54	400	12.3	15.65	400	15.3	19.25	400	18.2	22.57	400	23.7	29.00						
450	11.0	15.79	450	13.8	19.66	450	17.2	24.33	450	20.5	28.57	450	26.7	36.75						
500	12.3	19.70	500	15.3	24.27	500	19.1	30.01	500	22.7	35.27	500	29.7	45.42						
560	13.7	24.48	560	17.2	30.54	560	21.4	37.57	560	25.5	44.25	560	33.2	56.87						
630	15.4	30.98	630	19.3	38.50	630	24.1	47.62	630	28.6	56.00	630	37.4	72.07						
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900	22.0	62.91	900	27.6	78.40	900	34.4	97.57	900	40.9	114.29	900	53.3	146.75						
1000	24.5	77.94	1000	30.6	96.54	1000	38.2	119.49	1000	45.5	141.09	1000	59.3	181.40						
1200	29.4	112.17	1200	36.7	138.83	1200	45.9	172.26	1200	54.5	203.17	1200	70.6	259.25						
1400	34.3	152.61	1400	42.9	189.32	1400	53.5	234.26	1400	63.6	276.54	1400	82.4	352.87						
1600	39.2	199.27	1600	49.0	247.14	1600	61.2	306.24	1600	72.7	361.20	1600	94.1	460.89						

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