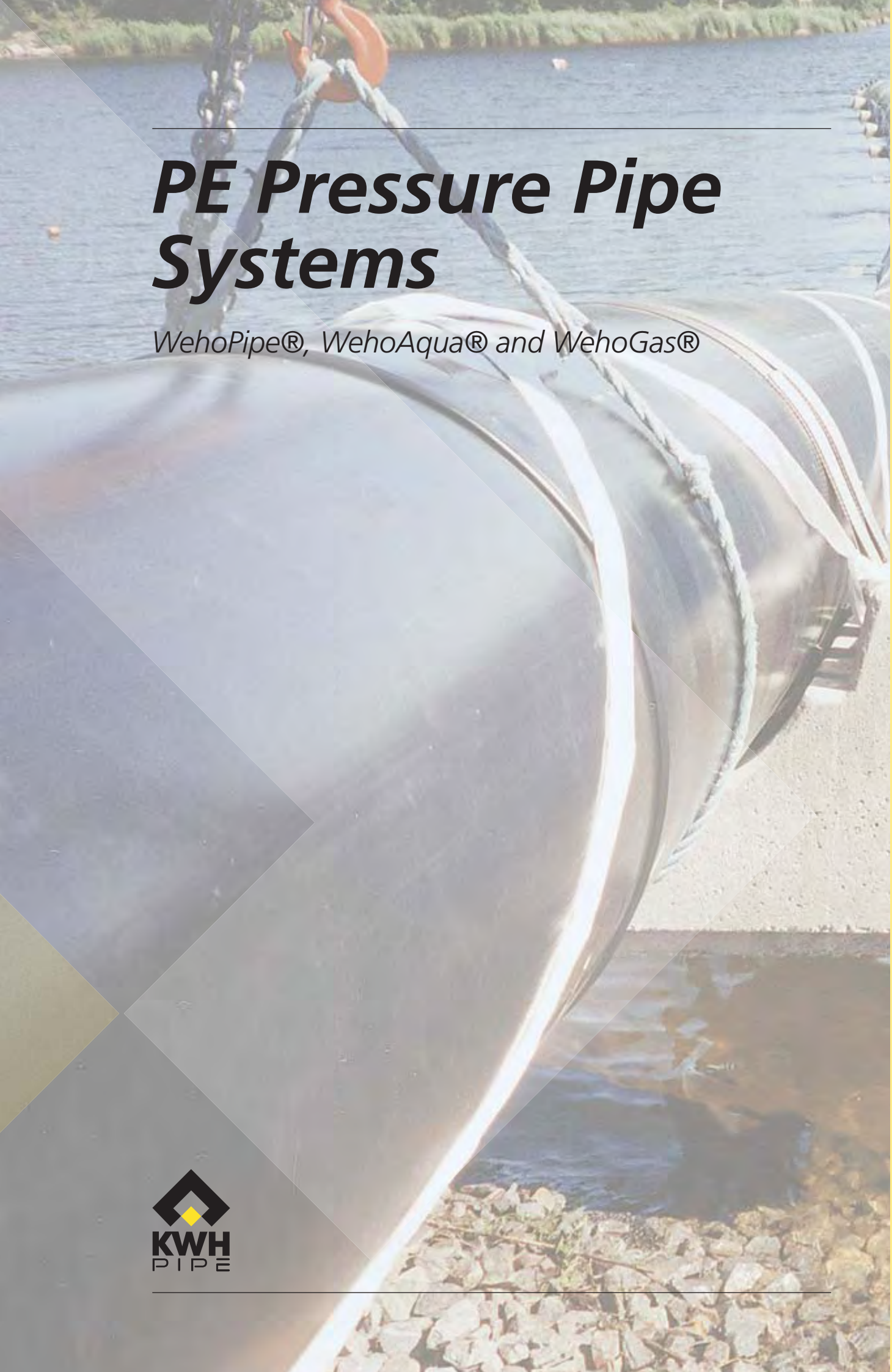
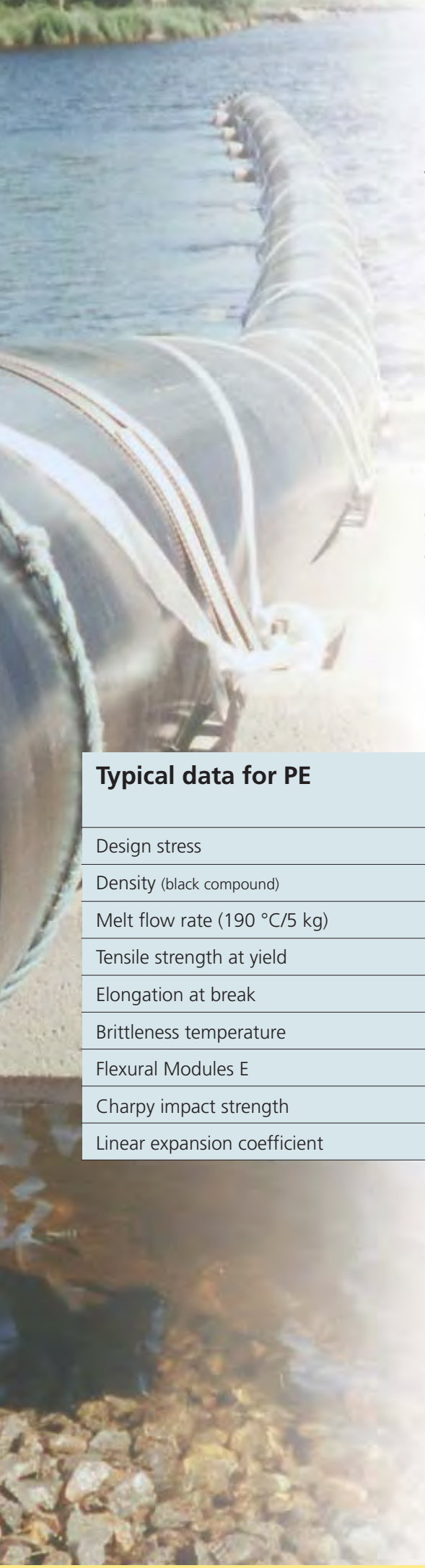


PE Pressure Pipe Systems

WehoPipe®, WehoAqua® and WehoGas®

KWH PIPE



PE Pressure Pipes

Engineered pipe systems require superior material properties and long life time expectancy. PE pipework systems, developed over many decades, can provide economical solutions with highest quality.

Polyethylene pipe systems offer outstanding benefits

- cost saving with faster installation
- suitability for renovation
- long, maintenance free life time
- corrosion resistance
- flexibility, allows ground movement
- leaktight, fully fused joints

Materials

Materials used for pressure pipes are classified according to international standards for example, ISO and EN. Classification is based on the minimum required strength (MRS) given as the minimum tensile circumferential stress in the pipe wall, for which the pipe can be subjected during at least 50 years when transporting clean water at 20 °C.

Typical data for PE		**PE 80**	**PE 100**
Design stress	MPa	6.3	8.0
Density (black compound)	kg / m^3	945 - 956	957 - 961
Melt flow rate (190 °C/5 kg)	g / 10 min	0.4 - 0.7	0.2 - 0.4
Tensile strength at yield	MPa	18-23	23 - 25
Elongation at break	%	> 600	> 600
Brittleness temperature	°C	< -70	< -70
Flexural Modules E	MPa	650-1000	1000-1200
Charpy impact strength	kJ / m^2	no break	no break
Linear expansion coefficient	mm / m • °C	0.17	0.17

Jointing methods

Butt welding

Butt welding (or butt fusion) is the most common jointing method for PE-pipes. The butt-fusion joint is made by inserting a heater-plate between the ends of two pipes, which are then brought together under pressure - this softens the ends of the pipe. The heater-plate is then removed and the pipes brought together again and allowed to cool under pressure. This results in a high-tensile, leaktight homogeneous joint. Modern butt-fusion welding machines are normally fitted with an automatic recording unit, which not only can set the actual welding parameters, but also provide data-retrieval facilities for each butt-fusion operation.

Electrofusion jointing

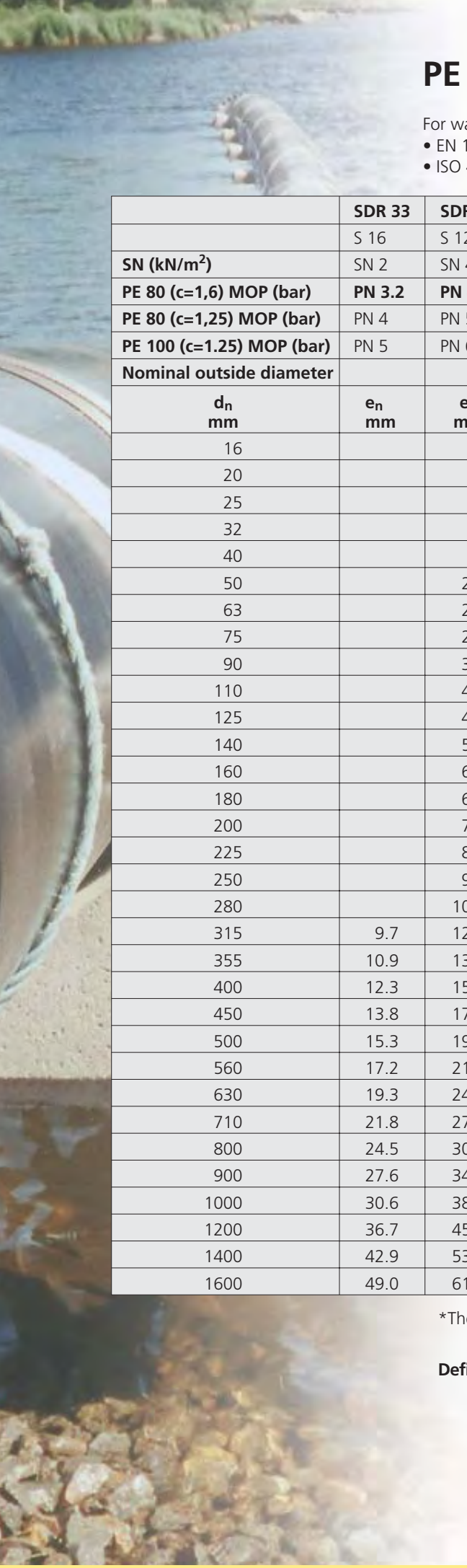
Electrofusion jointing is used for both the jointing of pipes and pipes to fittings. The electrofusion fitting is supplied with a "heating-coil" pre-installed during the manufacturing process. By applying an electrical charge to the fitting, the wires of the coil heat up to a pre-determined temperature, which causes the PE to melt and form a high-tensile, leaktight joint. Modern electrofusion control boxes are designed to set time and power requirements automatically for each different fitting.

Flange joints

Flange joints are made by welding a "stub-end" to a piece of pipe and by using "loose-flanges", nuts and bolts. They are connected to similar fittings on another pipe or fitting. "loose-flanges" can be supplied in different materials (ie. steel, aluminium etc), with different surface coatings. The finished joint offers a high tensile strength and ease of assembly.

Compression fitting

Compression fittings are normally only available in relatively small diameters. They are fairly simple and easy to use and can be supplied either in plastic or metal. The finished joint however, has a low tensile strength compared to the butt-fusion and electrofusion joints.



PE Pressure Pipes

For water supply
- EN 12201
- ISO 4427

	SDR 33	**SDR 26**	**SDR 21**	**SDR 17**	**SDR 13.6**	**SDR 11**	**SDR 9**	**SDR 7,4**
	S 16	S 12,5	S 10	S 8	S 6,3	S 5	S 4	S 3,2
SN (kN/m^2)	SN 2	SN 4	SN 6	SN 16	SN 32	SN 64	SN 80	SN 128
PE 80 (c=1,6) MOP (bar)	**PN 3.2**	**PN 4**	PN 5	**PN 6***	PN 8	PN 10	PN 12.5	PN 16
PE 80 (c=1,25) MOP (bar)	PN 4	PN 5	PN 6*	PN 8	**PN 10**	PN 12.5	PN 16	PN 20
PE 100 (c=1.25) MOP (bar)	PN 5	PN 6*	PN 8	**PN 10**	PN 12.5	**PN 16**	**PN 20**	PN 25
Nominal outside diameter								
d_n mm	**e_n mm**	**e_n mm**	**e_n mm**	**e_n mm**	**e_n mm**	**e_n mm**	**e_n mm**	**e_n mm**
16							2.0	2.3
20						2.0	2.3	3.0
25					2.0	2.3	3.0	3.5
32				2.0	2.4	3.0	3.6	4.4
40			2.0	2.4	3.0	3.7	4.5	5.5
50		2.0	2.4	3.0	3.7	4.6	5.6	6.9
63		2.5	3.0	3.8	4.7	5.8	7.1	8.6
75		2.9	3.6	4.5	5.6	6.8	8.4	10.3
90		3.5	4.3	5.4	6.7	8.2	10.1	12.3
110		4.2	5.3	6.6	8.1	10.0	12.3	15.1
125		4.8	6.0	7.4	9.2	11.4	14.0	17.1
140		5.4	6.7	8.3	10.3	12.7	15.7	19.2
160		6.2	7.7	9.5	11.8	14.6	17.9	21.9
180		6.9	8.6	10.7	13.3	16.4	20.1	24.6
200		7.7	9.6	11.9	14.7	18.2	22.4	27.4
225		8.6	10.8	13.4	16.6	20.5	25.2	30.8
250		9.6	11.9	14.8	18.4	22.7	27.9	34.2
280		10.7	13.4	16.6	20.6	25.4	31.3	38.3
315	9.7	12.1	15.0	18.7	23.2	28.6	35.2	43.1
355	10.9	13.6	16.9	21.1	26.1	32.2	39.7	48.5
400	12.3	15.3	19.1	23.7	29.4	36.3	44.7	54.7
450	13.8	17.2	21.5	26.7	33.1	40.9	50.3	61.5
500	15.3	19.1	23.9	29.7	36.8	45.4	55.8	
560	17.2	21.4	26.7	33.2	41.2	50.8		
630	19.3	24.1	30.0	37.4	46.3	57.2		
710	21.8	27.2	33.9	42.1	52.2			
800	24.5	30.6	38.1	47.4	58.8			
900	27.6	34.4	42.9	53.3				
1000	30.6	38.2	47.7	59.3				
1200	36.7	45.9	57.2	70.6				
1400	42.9	53.5						
1600	49.0	61.2						

*The calculated value for PE 80 pipes is 6.3. bar and for PE 100 pipes 6.4 bar

Definitions

d_n	mm	nominal outside diameter
e_n	mm	nominal wall thickness
SN	kN/m^2	ring stiffness
MOP	bar	max. operating pressure
PN	bar	nominal pressure
c		overall service coefficient
SDR		standard dimension ratio d_n/e_n
S		pipe series

Water supply

When using high quality WehoPipe and WehoAqua pipes a long-term, maintenance-free water distribution is guaranteed. Our quality control procedures ensure that only the best raw materials are used in the production of WehoPipe and WehoAqua pipework.

PE Pressure Pipes

For the supply of gaseous fuels
- EN 1555
- ISO 4437

	SDR 11
	S 5
SN (kN/m²)	SN 64
PE 80 (c=4) MOP (bar)	**PN 4**
PE 100 (c=2.5) MOP (bar)	**PN 8**
nominal outside diameter	
d_n mm	**e_n mm**
16	3.0
20	3.0
25	3.0
32	3.0
40	3.7
50	4.6
63	5.8
75	6.8
90	8.2
110	10.0
125	11.4
140	12.7
160	14.6
180	16.4
200	18.2
225	20.5
250	22.7
280	25.4
315	28.6
355	32.2
400	36.3
450	40.9
500	45.5
560	50.9
630	57.3

Definitions

d_n	mm	nominal outside diameter
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Gas Distribution

WehoGas pipework offers flexibility in installation for both service pipework and major gas distribution networks.

Relining

PE pipes are ideal for various types of relining operations, including:

- horizontal directional drilling
- short module relining
- renovation of inspection chambers
- long length "close-fit" relining
- non pressure relining
- industrial renovation

Intakes and outfalls

PE pipes have a special application in the design of outfalls and intakes thanks to their excellent properties such as:

- 100% corrosion-resistance
- extremely safe construction
- faster and more economical installation compared with laying of conventional pipe

Process and slurry pipework

The excellent corrosion-resistance, chemical resistance and long-term durability of PE pipe has resulted in the mining and process industries choosing polyethylene as their preferred pipework material.

PE Fittings

For electrofusion

Couplers	Ø 20 mm - 355 mm
Elbows 90°/45°	Ø 20 mm - 180 mm
Branch saddles Tapping tees	40/32 - 355/63
Reducers	Ø 20 mm - 180 mm
End plugs	Ø 20 mm - 250 mm
Tees	Ø 32 mm - 180 mm

For electrofusion

Elbows 90°/45°	Ø 110 mm - 225 mm
Tees	Ø 110 mm - 225 mm
Reducers	Ø 110 mm - 225 mm
Stubend	Ø 20 mm - 355 mm

Segment welded

Bends 90°/45°	Ø 200 mm - 1600 mm
Tees	Ø 200 mm - 1600 mm
Reducers	Ø 200 mm - 1600 mm

Stubends

Stubends	Ø 20 mm - 1600 mm

Safe choice

Choose a safe, durable, service free and cost efficient pipe - WehoPipe, WehoAqua, WehoGas.






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KWH PIPE

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