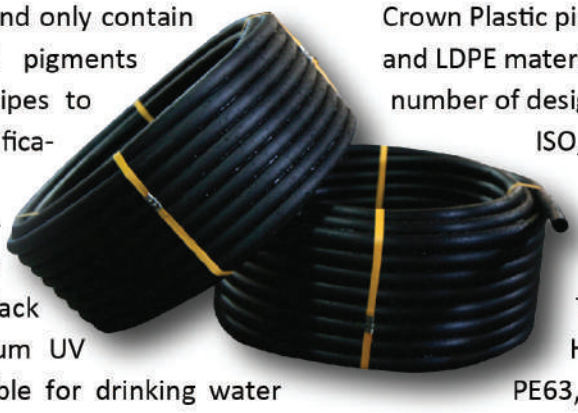
POLYETHYLENE PIPE SYSTEM

Irrigation and Water Distribution

THE POLYETHYLENE DIFFERENCE

Crown Plastic PE pipes are made from 100% virgin polyethylene and only contain UV stabilizers and pigments necessary for the pipes to conform to the specifications.

Pipes contain minimum of 2.5% carbon black. All pipes are black in color for maximum UV resistance and suitable for drinking water and potable water supplies.



Crown Plastic pipes are produced in HDPE, LLDPE and LDPE material. HDPE pipes are produced in a number of design stresses against the standards ISO, DIN, EN and have a design coefficient "C" of not less than 1.25 to the MRS of the material as set out in Table 1 and Table 2.

HDPE pipes can be produced in PE63, PE80 or PE100 material.

Table 1 : Designation of Material

Designation of material	MRS at 50 years and 20°C Maximum	Maximum Allowable Hydrostatic Design Stress, σ_s
	MPa	MPa
PE 100	10	8
PE 80	8	6.3
PE 63	6.3	5
PE 40	4	3.2
PE 32	3.2	2.5

The relationship between MRS and σ_S for various design coefficients is given in Table 2.

Table 2 : Relationship between MRS, σ_S and design coefficient C at 20°C

Hydrostatic design stress of pipe, σ_s MPa	Minimum required strength of material MPa				
	10	8	6.3 Design coefficient, C	4	3.2
8	1.25	-			-
6.3	1.6	1.25	-	-	-
5	2	1.6	1.25	-	-
4	2.5	2	1.6	-	-
3.2	3.2	2.5	2	1.25	-
2.5	-	3.2	2.5	1.6	1.25

ISO 4427 : 1996, DIN 8074, EN 12201

Pipes of High Density Polyethylene (HDPE)

Polyethylene pipes with a design stress σ_s of 5 MPa (PE63)

	Pipe series 1)							
	S 16	S 12,5	S 8,3	S 8	S 6,3	S 5	S 4	S 3.2
Nominal Outside Diameter	Standard dimension ratio							
	SDR 33	SDR 26	SDR 17,6	SDR 17	SDR 13,6	SDR 11	SDR 9	SDR 7,4
	Nominal pressure PN 2) for σ_s = 5 MPa							
d_n	PN 3,2	PN 4	PN 6	PN 6,3	PN 8	PN 10	PN 12,5	PN 16
	Nominal wall thickness, e_n							
16	-	-	-	-	-	2.3	2.3	2.3
20	-	-	-	-	2.3	2.3	2.3	2.8
25	-	-	2.3	2.3	2.3	2.3	2.8	3.5
32	-	-	2.3	2.3	2.4	2.9	3.6	4.4
40	-	2.3	2.3	2.4	3.0	3.7	4.5	5.5
50	-	2.3	2.9	3.0	3.7	4.6	5.6	6.9
63	2.3	2.5	3.6	3.8	4.7	5.8	7.1	8.6
75	2.3	2.9	4.3	4.5	5.6	6.8	8.4	10.3
90	2.8	3.5	5.1	5.4	6.7	8.2	10.1	12.3
110	3.4	4.2	6.3	6.6	8.1	10.0	12.3	15.1
125	3.9	4.8	7.1	7.4	9.2	11.4	14.0	17.1
140	4.3	5.4	8.0	8.3	10.3	12.7	15.7	19.2
160	4.9	6.2	9.1	9.5	11.8	14.6	17.9	21.9
180	5.5	6.9	10.2	10.7	13.3	16.4	20.1	24.6
200	6.2	7.7	11.4	11.9	14.7	18.2	22.4	27.4
225	6.9	8.6	12.8	13.4	16.6	20.5	25.2	30.8
250	7.7	9.6	14.2	14.8	18.4	22.7	27.9	34.2
280	8.6	10.7	15.9	16.6	20.6	25.4	31.3	38.3
315	9.7	12.1	17.9	18.7	23.2	28.6	35.2	43.1
355	10.9	13.6	20.1	21.1	26.1	32.2	39.7	48.5
400	12.3	15.3	22.7	23.7	29.4	36.3	44.7	54.7

PIPES OF HIGH DENSITY POLYETHYLENE (HDPE)

ISO 4427 : 1996, DIN 8074, EN 12201

Polyethylene Pipes with a Design Stress σ_s of 6.3 MPa (PE80)

Nominal Outside Diameter d_n	Pipe series 1)				
	S 10	S 8	S 6,3	S 5	S 4
	Standard dimension ratio				
	SDR 21	SDR 17	SDR 13,6	SDR 11	SDR 9
	Nominal pressure PN 2) fro σ_s =6,3MPa				
	PN 6	PN 8	PN 10	PN 12,5	PN 16
	Nominal wall thickness, 3) e_n (mm)				
16	-	-	-	-	2.3
20	-	-	-	-	2.3
25	-	-	-	2.3	2.8
32	-	-	-	3.0	3.6
40	-	-	-	3.7	4.5
50	-	-	-	4.6	5.6
63	-	-	4.7	5.8	7.1
75	-	4.5	5.6	6.8	8.4
90	4.3	5.4	6.7	8.2	10.1
110	5.3	6.6	8.1	10.0	12.3
125	6.0	7.4	9.2	11.4	14.0
140	6.7	8.3	10.3	12.7	15.7
160	7.7	9.5	11.8	14.6	17.9
180	8.6	10.7	13.3	16.4	20.1
200	9.6	11.9	14.7	18.2	22.4
225	10.8	13.4	16.6	20.5	25.2
250	11.9	14.8	18.4	22.7	27.9
280	13.4	16.6	20.6	25.4	31.3
315	15.0	18.7	23.2	28.6	35.2
355	16.9	21.1	26.1	32.2	39.7
400	19.1	23.7	29.4	36.3	44.7

POLYETHYLENE PIPE SYSTEM
For Water Distribution

Polyethylene Pipes with a Design Stress σ_s of 8 MPa (PE100)

Nominal Outside Diameter d_n	Pipe series 1)		
	S 8	S 6,3	S 5
	Standard dimension ratio		
	SDR 17	SDR 13,6	SDR 11
	Nominal pressure PN 2) fro σ_s =8 MPa		
	PN 10	PN 12,5	PN 16
	Nominal wall thickness, 3) e_n (mm)		
32	-	-	3.0
40	-	-	3.7
50	-	-	4.6
63	-	4.7	5.8
75	4.5	5.6	6.8
90	5.4	6.7	8.2
110	6.6	8.1	10.0
125	7.4	9.2	11.4
140	8.3	10.3	12.7
160	9.5	11.8	14.6
180	10.7	13.3	16.4
200	11.9	14.7	18.2
225	13.4	16.6	20.5
250	14.8	18.4	22.7
280	16.6	20.6	25.4
315	18.7	23.2	28.6
355	21.1	26.1	32.2
400	23.7	29.4	36.3

DIN 8072
Pipes of Low Density Polyethylene (LLDPE)

Outside Diameter (mm)	Wall Thickness		
	2.5 Bar Rating (mm)	6 Bar Rating (mm)	10 Bar Rating (mm)
10	-	-	2.0
12	-	-	2.0
16	-	2.0	2.7
20	-	2.2	3.4
25	2.0	2.7	4.2
32	2.0	3.5	5.4
40	2.0	4.3	6.7
50	2.4	5.4	8.4
63	3.0	6.8	10.5
75	3.6	8.1	12.5
90	4.3	9.7	15.0
110	5.3	11.8	18.4

DRIP TUBING

ASAE S435
ASTM Standard Linear Low Density Drip Irrigation Tubing (LLDPE)

Ordering Code	Nominal Inside Diameter		Minimum Inside Diameter		Minimum Wall Thickness		Nominal Working Pressure	
	mm		in	mm	in	m.m	Psi	Bar
CPDP 15670D (112)	½	13	0.617	15.67	4.8	1.12	69	4.8
CPDP 15670D (124)	½	15	0.707	17.96	4.6	1.24	67	4.6
CPDP 18110D (107)	½	16	0.713	18.11	3.9	1.07	57	3.9
CPDP 20900D (119)	¾	18	0.823	20.90	3.8	1.19	55	3.8
CPDP 23440D (132)	¾	21	0.923	23.44	3.7	1.32	60	3.7
CPDP 30020D (157)	1	27	1.180	30.02	3.4	1.57	50	3.4

AUST STD 2698-1 : 1984
Asutralian Standard Linear Low Density Drip Irrigation Tubing (LLDPE)

Ordering Code	Nominal Inside Diameter		Minimum Inside Diameter		Minimum Wall Thickness		Nominal Working Pressure		Coil Size Meters
	mm		in	mm	in	m.m	Psi	Bar	
CPDP 15670D(112)	½	13	0.50	12.7	0.047	1.2	44	3.0	250 mtrs.
CPDP 15670D (124)	½	13	0.50	12.7	0.059	1.5	60	4.0	250 mtrs.
CPDP 18110D (107)	½	16	0.62	15.8	0.047	1.2	44	3.0	250 mtrs.
CPDP 20900D (119)	¾	19	0.74	18.90	0.051	1.3	44	3.0	250 mtrs.
CPDP 23440D (132)	1	25	1.00	25.20	0.059	1.5	44	3.0	250 mtrs.
CPDP 30020D (157)	1 ¼	32	1.24	31.50	0.078	2.0	44	3.0	250 mtrs.

BS 1972 / 67
British Standard Low Density Polyethylene (LDPE)

Nominal Pipe Size Inch	Outside Diameter				Wall Thickness Class B 6.1 kgf/cm (Bar Approx)^2				Class C 9.1 kgf/cm (Bar Approx)^2				Class D 12.2 kgf/cm (Bar Approx)^2			
	Minimum		Maximum		Minimum		Maximum		Minimum		Maximum		Minimum		Maximum	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
⅛	0.669	17.0	0.681	17.3	-	-	-	-	0.087	2.2	0.098	2.5	0.110	2.8	0.122	3.1
½	0.835	21.2	0.847	21.5	-	-	-	-	0.106	2.7	0.118	3.0	0.134	3.4	0.146	3.7
¾	1.047	26.6	1.059	26.9	0.091	2.3	0.102	2.6	0.134	3.4	0.146	3.7	0.169	4.3	0.185	4.7
1	1.315	33.4	1.327	33.7	0.118	3.0	0.130	3.3	0.165	4.2	0.181	4.6	0.213	5.8	0.232	5.9
1¼	1.657	42.1	1.673	42.5	0.146	3.7	0.161	4.1	0.209	5.3	0.228	5.8	0.268	6.7	0.295	7.5
1½	1.894	48.1	1.910	48.5	0.169	4.3	0.185	4.7	0.240	6.1	0.264	6.7	0.307	7.8	0.338	8.6
2	2.366	60.1	2.386	60.6	0.209	5.3	0.228	5.8	0.299	7.6	0.331	8.4	-	-	-	-
3	3.488	88.6	3.516	89.3	0.307	7.8	0.339	8.6	0.441	11.2	0.484	12.3	-	-	-	-
4	4.484	113.9	4.516	114.7	0.394	10.0	0.433	11.0	-	-	-	-	-	-	-	-

CROWN PLASTIC

مصنع كراون للأنابيب البلاستيكية ذ.م.م

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