

# POLYPIPE

## Mining



## About Poly Pipe Pty Ltd

Located in the Hunter Valley, NSW, Australia, Poly Pipe Pty Ltd (Poly Pipe) has an ultra modern extrusion, high tech manufacturing facility.

It supplies Polyethylene (PE) pipe and related products that comply with all relevant Australian statutory and regulatory requirements.

In addition Poly Pipe adheres and advances safe work practices, effective environmental policies and quality practices in everything that it does.

As a member of a worldwide technology group with Australia-wide manufacturing facilities, Poly Pipe was established on the knowledge, experience, and reputation of its associated companies, some of which include Pipemakers and Metroll.

Its national and international customers are found in the mining, rural and irrigation, water and civil, telecommunication, sewerage and drainage industries.



## Benefits of Poly Pipe

- Long lengths
- Cost effectiveness
- Easy installation
- Flexibility & resilience
- Chemical resistance
- Corrosion resistance
- Abrasion resistance
- High flow capacity
- Weathering resistance
- Durability
- High impact resistance

## Industry Applications

- Telecommunications
- Electrical
- Mining
- Water
- Gas
- Air
- Irrigation
- Sewerage & Drainage
- Civil Applications

## Features

- Material Grade: PE 100
- Standard length 12m
- Colour Jacket: Black
- Colour Stripe: As specified
- Rural  $\frac{3}{4}$  - 2 inches in bore
- Metric straights 16 - 800 $\varnothing$  & various PNs
- Flood pipe (metric PN4) 160 - 800 $\varnothing$

## Product Information

Poly Pipe Pty Ltd manufactures and supplies premium quality Polyethylene (PE) pipe for the mining industry. All metric pipe are manufactured to AS/NZS 4130:2009.

PE pipe is manufactured in sizes from 16mm to 800mm O.D. in a pressure range from PN3.2 (320kPa) to PN25 (2500kPa).

Poly Pipe has its own transport fleet so customers benefit from personalised and efficient delivery services.

For the mining industry, the pipe is mainly black in colour however new technological innovations allow Poly Pipe to offer a fully coloured outer skin for specific applications.

Pipe colour is determined by relevant provisions of the Australian/New Zealand standards or the nature of industry specific applications.

### Typical “Co-Extruded” Jacket Colours

Yellow - Indicating a gas application  
White - Used for surface applications to reduce heat absorption

## Expansion & Contraction

PE pipe expands and contracts by approximately 250mm for every 100m of pipe over a 10°C change in pipe temperature. For below ground installations, no allowance for expansion is required provided the connection system has stabilised to service temperature before backfilling. For above ground installations, thermal contraction should be allowed for by 'snaking' the pipe.

## Applications

PE pipe can be used for a diverse range of applications including:

- Open cut mining
- Underground mining
- Slurry lines
- Water supply
- Sewerage & wastewater
- Gas distribution

## Product Data

Poly Pipe manufactures PE pipe ranging in size from 16mm to 800mm O.D. Coils can be manufactured up to 160mm O.D. and straight lengths up to 20m long. If you require special lengths, for coils or straight lengths, Poly Pipe can discuss and work with you to achieve your desired outcome.

The dimensions of pipe have been referred to in terms of the Standard Dimension Ratio (SDR) where:

$$\text{SDR} = \frac{\text{Outside Diameter}}{\text{Wall Thickness}}$$

## Design Life

All metric PE pipe is manufactured under the Australian Standard AS/NZS 4130:2009 - Polyethylene (PE) pipe for pressure applications.

By convention, plastics pipe systems are often designed on the basis of 50 year extrapolated test data. This is established international practice but is not intended to imply the service life of pressure pipe is limited to 50 years.

For correctly manufactured and installed systems, the actual life cannot be predicted, but can be expected to be well in excess of 100 years before major rehabilitation is required.

## Co-Extrusions

Poly Pipe comes in a range of colours including yellow, blue and lilac. These colours are either co-extruded as stripes or jackets as a way of categorising the pipe end use. Poly Pipe also manufactures pipe with a white jacket to minimise temperature rise when exposed to sunlight.

## Installation

PE pipe offers many cost saving advantages in both above ground and below ground installations. Whilst they are robust and resistant to site damage, normal care and sensible handling practices are necessary to ensure trouble free operations.

PE pipe should be handled, stored and installed in accordance with Australian Standard AS/NZS 2033:2008 - Installation of polyethylene pipe systems. Local authority regulations and specifications should also be adhered to.



## Pressure Capacity Above Ground with White Co-Ex Jacket

Maximum mean wall temperature = 35°C

PN	Kilopascals		
	PE80B	PE80C	PE100
3.2	260	230	260
4	320	290	320
6.3	500	460	500
8	640	580	640
10	800	730	800
12.5	1000	910	1000
16	1280	1160	1280
20	1600	1450	1600
25	2000	1810	2000

The maximum measured mean wall temperature recorded in 35°C on the top of the pipe during summer. This results in increased pressure capacity, reduced thermal movement, increased reliability and significant cost reduction.

## Support Distances PE100

Size (mm)	SDR26	SDR21	SDR17	SDR13.6	SDR11	SDR9
200	2.2	2.5	2.7	2.9	3.0	3.2
225	2.4	2.7	2.9	3.1	3.3	3.4
250	2.6	3.0	3.1	3.3	3.5	3.7
280	2.8	3.2	3.4	3.6	3.8	4.0
315	3.0	3.4	3.7	3.9	4.1	4.3
355	3.3	3.7	4.0	4.2	4.4	4.7
400	3.5	4.0	4.3	4.5	4.8	5.0
450	3.8	4.4	4.7	4.9	5.2	5.5
500	4.1	4.7	5.0	5.3	5.6	5.9
560	4.4	5.1	5.4	5.7	6.0	6.0
630	4.8	5.5	5.8	6.2	6.5	6.8
710	5.2	6.0	6.3	6.7	7.0	7.4
800	5.7	6.4	6.9	7.2	7.6	8.0

NB: Data is based on co-ex white jacket pipe.

## Pressure Unit Conversion

PN	kPa	m	bar	psi
4.0	400	40	4.0	58
6.3	630	63	6.3	90
8.0	800	80	8.0	116
10.0	1000	100	10.0	145
12.5	1250	125	12.5	181
16.0	1600	160	16.0	229
20.0	2000	200	20.0	290

## Dimensions to AS/NZS 4130:2009

SDR	41				26				21			
	4				6.3				8			
PN for PE100	Min Wall (mm)	Mean ID (mm)	STD Length (m)	Weight per Metre (Kg)	Min Wall (mm)	Mean ID (mm)	STD Length (m)	Weight per Metre (Kg)	Min Wall (mm)	Mean ID (mm)	STD Length (m)	Weight per Metre (Kg)
160	4.0	152.3	12	2.0	6.2	147.6	12	3.1	7.7	144.5	12	3.7
180	4.4	171.5	12	2.5	6.9	166.3	12	3.8	8.6	162.7	12	4.7
200	4.9	190.5	12	3.1	7.7	184.6	12	4.7	9.6	180.6	12	5.8
225	5.5	214.4	12	3.9	8.6	207.9	12	5.9	10.8	203.3	12	7.4
250	6.2	238.0	12	4.9	9.6	230.9	12	7.4	11.9	226.1	12	9.0
280	6.9	266.7	12	6.0	10.7	258.7	12	9.2	13.4	253.0	12	11.4
315	7.7	300.2	12	7.6	12.1	290.9	12	11.7	15.0	284.9	12	14.3
355	8.7	338.2	12	9.6	13.6	327.9	12	14.8	16.9	321.0	12	18.2
400	9.8	381.1	12	12.2	15.3	381.1	12	18.8	19.1	361.5	12	23.2
450	11.0	428.9	12	15.4	17.2	415.8	12	23.7	21.5	406.8	12	29.3
500	12.3	476.3	12	19.1	19.1	462.0	12	29.2	23.9	452.0	12	36.1
560	13.7	533.6	12	23.8	21.4	517.4	12	36.7	26.7	506.3	12	45.2
630	15.4	600.4	12	30.2	24.1	582.1	12	46.5	30.0	569.8	12	57.1
710	17.4	676.5	12	38.5	27.2	655.9	12	59.2	33.9	641.9	12	72.9
800	19.6	762.3	12	48.8	33.8	739.2	12	75.0	38.1	723.4	12	92.4

**Please Note:** All dimensions and weights are approximate and are subject to change without notice. PN 20 and PN 25 are available in various sizes subject to minimum run quantities. Please contact the Poly Pipe sales office for further information.

## Pipe Bending Radius (m) 20mm - 800mm

DN	33 PE100	20 PE80
20	0.6	0.4
25	0.8	0.5
32	1.0	0.6
40	1.3	0.8
50	1.6	1.0
63	2.1	1.3
75	2.4	1.5
90	2.9	1.8
110	3.6	2.2
125	4.1	2.5
140	4.6	2.8
160	5.2	3.2
200	6.6	4.0
225	7.4	4.5
250	8.2	5.0
280	9.2	5.6
315	10.4	6.3
355	11.7	7.1
400	13.2	8.0
450	14.8	9.0
500	16.5	10.0
560	18.5	11.2
630	20.8	12.6
710	23.4	14.2
800	26.4	16.0

## Pipe Capacity of Poly Pipe Trucks-PE100

Pipe Outside Diameter (mm)	No. of Pipes
63 (100m)	35
75 (100m)	25
90 (100m)	24
110 (100m)	20
110	300
125	224
140	195
160	132
180	120
200	100
225	81
250	64
280	56
315	42
355	42
400	30
450	25
500	20
560	15
630	12
710	9
800	6

**Guide Only:** Weight restrictions may apply. Maximum weight for all trailers is 19T. Special trailers may carry more. Contact the Poly Pipe sales office for clarification.

17				13.6				11			
10				12.5				16			
Min Wall (mm)	Mean ID (mm)	STD Length (m)	Weight per Metre (Kg)	Min Wall (mm)	Mean ID (mm)	STD Length (m)	Weight per Metre (Kg)	Min Wall (mm)	Mean ID (mm)	STD Length (m)	Weight per Metre (Kg)
9.5	140.7	12	4.6	11.8	135.9	12	5.6	14.6	130.0	12	6.7
10.7	158.3	12	5.8	13.3	152.8	12	7.1	16.4	146.3	12	8.5
11.9	175.8	12	7.1	14.7	169.9	12	8.7	18.2	162.5	12	10.5
13.4	197.8	12	9.0	16.6	191.1	12	11.0	20.5	182.9	12	13.3
14.8	220.0	12	11.1	18.4	212.4	12	13.5	22.7	203.4	12	16.4
16.6	246.3	12	13.9	20.6	237.9	12	17.0	25.4	227.8	12	20.5
18.7	277.1	12	17.6	23.2	267.6	12	21.5	28.6	256.3	12	26.0
21.1	312.1	12	22.4	26.1	301.6	12	27.3	32.2	288.8	12	32.9
23.7	351.9	12	28.3	29.4	339.9	12	34.6	36.3	325.4	12	41.8
26.7	395.9	12	35.9	33.1	382.4	12	43.8	40.9	366.1	12	53.0
29.6	440.0	12	44.2	36.8	424.9	12	54.0	45.4	406.8	12	65.3
33.2	492.6	12	55.5	41.2	475.8	12	67.8	50.8	455.7	12	81.9
37.3	554.4	12	70.1	46.3	535.5	12	85.7	57.2	512.6	12	103.7
42.1	624.6	12	89.5	52.2	603.4	12	109.1	64.5	577.6	12	132.1
47.4	703.9	12	113.5	58.8	680.0	12	138.4				

## Maximum Allowable Operating Pressure - PE100 (Black)

Temp (°C)	Design Life (yrs)	Design Factor	PN 4	PN 6.3	PN 8	PN 10	PN 12.5	PN 16	PN 20	PN 25
			SDR 41	SDR 26	SDR 21	SDR 17	SDR 13.6	SDR 11	SDR 9	SDR 7.4
20	100	1.0	40	64	80	100	127	160	200	250
25	100	1.1	36	58	73	91	115	145	182	227
30	100	1.1	36	58	73	91	115	145	182	227
35	50	1.2	33	53	67	83	106	133	167	208
40	50	1.2	33	53	67	83	106	133	167	208
45	35	1.3	31	49	62	77	99	123	154	192
50	22	1.4	29	46	57	71	91	114	143	179
55	15	1.4	29	46	57	71	91	114	143	179
60	7	1.5	27	43	53	67	85	107	133	167
80	1	2.0	20	32	40	50	63	80	100	125

The design life periods may be considered to be the minimum potential service lives and represent the maximum extrapolated periods permitted by the ISO 9080:2003 extrapolation rules given the available test data.

## Comparison of SDR & Pressure Ratings (PN)

SDR	41	33	26	21	17	13.6	11	9	7.4
PE80	PN 3.2	PN 4	-	PN 6.3	PN 8	PN 10	PN 12.5	PN 16	PN 20
PE100	PN 4	-	PN 6.3	PN 8	PN 10	PN 12.5	PN 16	PN 20	PN 25

**SDR:** Nominal ratio of outside diameter to wall thickness.

**PN:** Pressure rating at 20DC (MPa multiplied by 10).

**PE Classification:** Long term rupture stress at 20DC (MPa multiplied by 10) to which the minimum safety factor of 1.25 is applied in order to obtain the 20DC design hoop stress.

## Standard Pipe Colour Chart

Colour	Common Use
Blue	Water
Orange	Electrical Conduit
Yellow	Gas - PE100
Light Yellow	Gas - PE80
Red	Fire Service Water
Green	Imperial Rural/Raw Water
Purple	Recycled/Reclaimed Water
Grey	SewerFlex
Cream	Pressure Sewer
White	Communications Conduit

Poly Pipe aims to meet its commitment to quality through continuous improvement programs, use of latest technology, close co-operation with key suppliers, commitment to staff development and regular customer feedback.

The Poly Pipe manufacturing plant has Quality Assurance Certification to ISO 9001:2008. All Pressure Pipes, including Gas, have the WaterMark and Standards Certification.

External Agencies carry out regular audits to provide third party accreditation to the Poly Pipe Quality Management System and verify its ongoing compliance with this Standard.

# POLYPIPE

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