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POLYETHYLENE(PE) PIPES AND FITTINGS FOR WATER SUPPLY

[Product Technical Manual]

HongYue Plastic Group Co., Ltd.

PE PIPES AND FITTING FOR WATER SUPPLY
PRODUCT MANUAL

CONTENTS

STRATEGIC PARTNER

Hongyue Group's excellent product quality, continuous research and development of new products and perfect service system, by large real estate companies and end users at home and abroad. We currently has with more than hundreds of large domestic real estate companies established a strategic cooperation or long-term supply agreement, dealer sales network throughout the country, series products in the bird's nest, national games hall, and many of key engineering projects. In addition, our products have been exported to Europe, America, Oceania, Russia, and other overseas markets for long time, providing products and services for many overseas engineerings.

保利地产 · 中海地产 · Vanke 万科
招商地产 · LONGFOR 龙湖 · 恒大集团 EVERGRANDE GROUP
中国中铁 CREC · 中国五矿集团公司 CHINA MINMETALS CORPORATION · 中国建筑 CHINA STATE CONSTRUCTION
中国电建 POWERCHINA · 中国交通建设 CHINA COMMUNICATIONS CONSTRUCTION · CNBM 中国建筑材料集团公司

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ENTERPRISE PROFILE

Hongyue Plastic Group, founded in 1994, is a large environmental protection plastic pipe group company integrating scientific research, development, production and sales.Headquartered in Qinhuangdao Economic and Technological Development Zone, the group has four production bases, namely Longhai Road Industrial Park, Emeishan Road Industrial Park, Xiaogan Liuhe Industrial Park in Hubei province and YunFu Industrial Park in Guangdong Province, with a total area of 300,000 square meters and an annual production capacity of 300,000 tons.

Hongyue group provides all kinds of plastic pipeline systems, such as general public and civil construction pipelines, municipal pipelines and ground radiant heating pipelines, with nearly 3000 kinds of product specifications, which are widely used in construction, municipal water supply and drainage, floor heating engineering, thermal engineering, electric power communication, agriculture, factories and mines and other fields.

Hongyue technology to lead the market, with more than 100 patents.Testing center by CNAS national laboratory accreditation, earlier passed ISO9001 quality management certification, ISO14001 environmental management certification, OHSAS18001 health management certification, water-saving product certification and certification of Chinese environment mark, and successively passed the American NSF, ICC - ES, UPC, the European Union CE, Australia WATERMARK and Russian GOST, and other countries and regions, quality and health certification, products are exported to Europe, North America, South America, Oceania and other overseas markets, has been praised by the international market.

After 26 years of accumulation, Hongyue Group has officially entered the fast track of development, sales network throughout northeast, North, central, East, South, southwest, northwest and other regions, with large logistics warehousing centers in Changchun, Xi 'an, Zhengzhou and other places.With Evergrande, vanke, poly, China overseas and many other well-known real estate enterprises have formed strategic cooperative relations, has been awarded as the top 10 enterprises in the plastic pipe industry, top 500 real estate development enterprises preferred supplier, China's ground heating industry leading brand, China pipeline installation (hebei) training base.

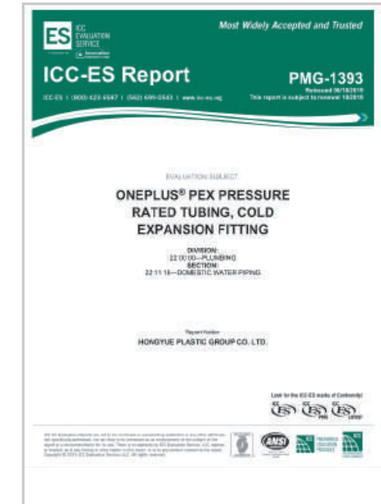
Hongyue Group has always been adhering to the core values of "honesty, credibility, and reality", to provide customers with truly valuable professional and fast service, and colleagues from all walks of life to work together for win-win, create great cause.

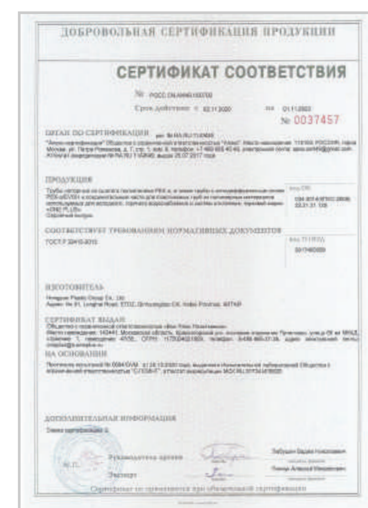

Qinhuangdao Longhai Industrial Park


Mount Emei Road Industrial Park, Qinhuangdao


Hubei Xiaogan Liuhe Industrial Park


YunFu Industrial Park in Guangdong Province





PREFACE

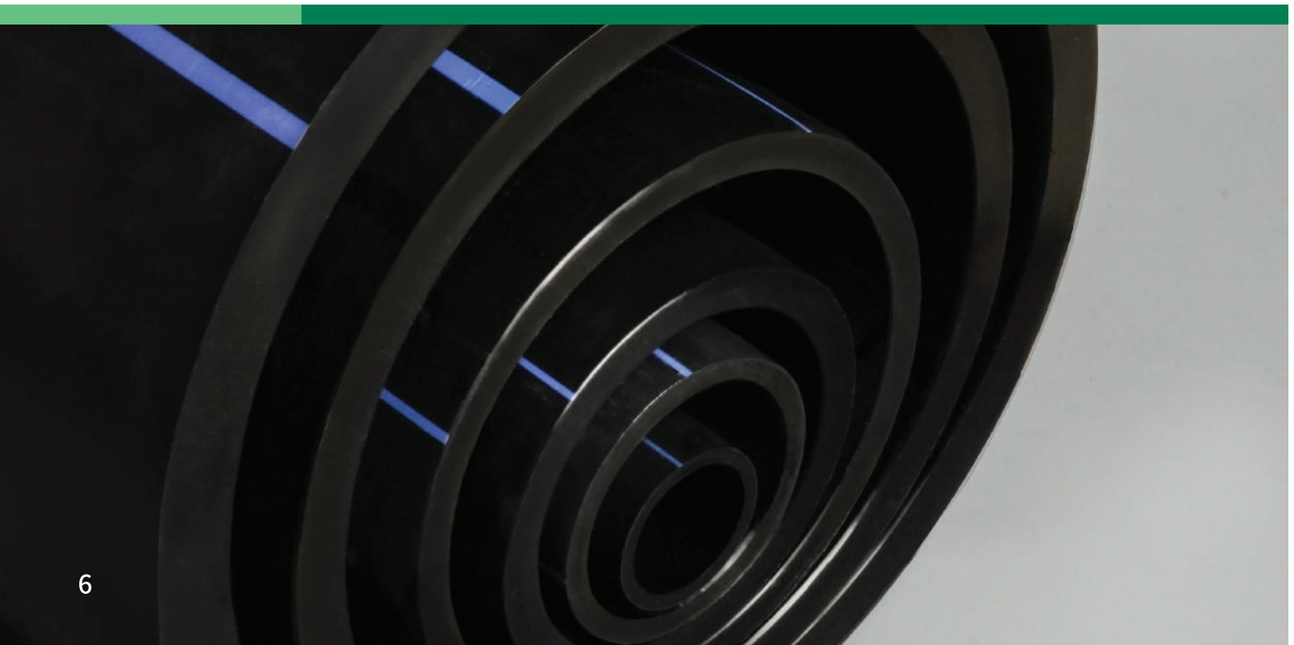
Polyethylene (PE) pipe is characterized by good flexibility, strong corrosion resistance, light weight and excellent impact resistance, etc. The pipe and fittings can be connected by hot-melt socket, hot-melt butt joint and electric melting, etc., so that the pipe and fittings can be fused into one, the system is safe and reliable, the construction cost is low, and it develops rapidly in the engineering application.Vigorously promote PE management, in line with the Ministry of Construction, the State Economic and Trade Commission guidelines for the development of chemical building materials, in line with people's living standards to improve the development needs.

The polyethylene (PE) water supply pipe series products of Hongyue company meet the requirements of GB/T13663-2018 "Polyethylene (PE) Piping System for Water Supply", GB/T17219 "Safety Evaluation Standard for Equipment and Protective Materials for Drinking Water Transmission and Distribution" and relevant hygienic safety evaluation regulations of the National Health Commission.

Hongyue polyethylene (PE) pipeline raw materials are imported polyethylene materials.The raw materials for water pipes are PE80 and PE100 polyethylene materials imported from abroad.

This manual is applicable to the design, construction and acceptance of municipal water supply system, building water supply system, residential area, plant buried water supply system, industrial and water treatment pipeline system, etc.Polyethylene piping systems and assemblies for general purpose pressure and potable water conveyance with a water temperature not greater than 40°C and a MOP maximum working pressure (MPa) not greater than 2.0MPa.Do not use in indoor fire fighting piping system.

This manual is compiled with reference to the current technical regulations for reference only. The design, construction and acceptance of the polyethylene water supply system shall comply with the relevant national and local standards, codes or codes of the project.



1.PE PIPE MATERIAL

1. PE water supply pipe series products have the inspection certificate issued by the quality inspection department and the certification documents issued by the sanitation and related departments.
2. Specifications, nominal pressure and the company's trademark and factory name are marked on the pipes and fittings, and the date of production is also marked on the pipes.
3. PE water supply pipe series products are mainly black.
4. The standard length of pipe is 6m, and other lengths can be customized; Pipes with an outside diameter less than 63mm can be supplied in coiled form or negotiated and determined according to user requirements.
5. PE water supply pipe series products have ten nominal pressure classes: 0.32mpa, 0.4mpa, 0.5mpa, 0.6mpa, 0.8mpa, 1.0mpa, 1.25mpa, 1.6mpa, 2.0mpa, 2.5mpa; There are 4 series of pipe fittings: (1) injection socket insert hot melt pipe fittings (2) electric melt pipe fittings (3) butt welding pipe fittings (4) and metal pipe and pipe fittings etc.
6. The PE pipe produced by our company USES PE80 and PE100 as raw materials. The products produced by our company have higher compressive strength and better resistance to rapid cracking.

The physical and mechanical properties are shown in the table below:

Items	Technical Index	
Melt mass flow rate (g/10min)	The change of MFR before and after processing is no more than 20%[a]	
Oxidation induction time (210°C)	⩾ 20min	
Longitudinal reversion rate (110°C)	⩽ 3%	
Carbon black content[b]	2.0%~2.5%	
Carbon black dispersion/pigment dispersion[c]	⩽ Class 3	
Ash content (850+50)°C	⩽ 0.1%	
elongation at break e_n ⩽ 5mm	⩾ 350%[d,e]	
elongation at break 5mm<e_n ⩽ 12mm	⩾ 350%[d,e]	
elongation at break e_n>12mm	⩾ 350%[d,e]	
8 Slow crack growth e_n ⩽ 5mm(cone test)	<10mm/24h	
Slow-resisting crack growth e_n>5mm(notch test) （80°C）	no damage,no leakage	
Hydrostatic strength	PE80	PE100
	10.0mpa no damage,no leakage	12.0mpa no damage,no leakage
	4.5mpa no damage,no leakage	5.4mpa no damage,no leakage
	4.0mpa no damage,no leakage	5.0mpa no damage,no leakage

2.PE PIPE CHARACTERISTICS

Polyethylene (PE) pipe solves two problems of traditional pipe successfully: corrosion and joint leakage. The main advantages of polyethylene tube are as follows:

- corrosion resistance
- Welding joint does not leak:
  The polyethylene pipe is mainly connected by hot melt, which ensures the identity of the interface material, structure and pipe body itself in essence, and realizes the joint and pipe material integration.
- Effective resistance to underground movement and end loads:
  PE pipe is a kind of pipe with high toughness. The elongation at break of PE pipe generally exceeds 500%, and it is very adaptable to the uneven settlement of pipe base.
- The great technical and economic value of flexibility of PE pipeline system:
  A. The flexibility of polyethylene enables PE pipes to be coiled and supplied in a longer length, which avoids the use of a large number of joints and fittings and reduces the number of connections workload. According to practical considerations, PE pipes with DN ≤ 63 can be supplied by winding.
  B. The PE pipe with a larger diameter can be connected on the ground (i.e. outside the pipe trench) before being laid into the pipe trench, which reduces the difficulty and workload of the connection.
  C. In some situations (such as crossing roads, railway subgrade, rivers, etc.), the flexible and light weight of polyethylene pipe can be used, and it has the advantages of excellent scratch resistance, no trench can be dug during construction, using directional drilling technology to lay polyethylene pipe.
  D. Polyethylene pipes can be laid at the bottom of rivers and lakes by sinking long pipes.During construction, connect a long pipe in advance at the position of laying pipeline after that, the weight is fixed directly to the bottom.
  E. Repair the old city water supply pipe by using PE pipe as liner.
- It has good resistance to rapid crack propagation.
- Long service life.The safety service life of polyethylene pressure piping system is more than 50 years.It has been established by international standards and some advanced standards abroad Confirmation.
- Easy to recycle:Polyethylene is an environment-friendly material, which can be recycled and reused. Even if it is incinerated, it will not produce substances that have an impact on the environment.

3.PIPELINE APPLICATIONS

Application: municipal water supply system, building water supply system, residential area, plant buried water supply system, industrial and water treatment pipeline system.



4.PIPE SPECIFICATION AND SIZE

According to GB/T13663.2-2018, the product tables of nominal outer diameter DN, nominal wall thickness EN and nominal pressure of PE80 and PE100 pipes for Hongyue water supply are listed.

Nominal outer diameter DN	Standard Size ratio							
	SDR9	SDR11	SDR13.6	SDR17	SDR21	SDR26	SDR33	SDR41
	Pipe series							
	S4	S5	S6.3	S8	S10	S12.5	S16	S20
	PE80 Nominal pressure MPa							
	1.6	1.25	1.0	0.8	0.6	0.5	0.4	0.32
	PE100 Nominal pressure MPa							
	2.0	1.6	1.25	1.0	0.8	0.6	0.5	0.4
	Nominal wall thickness en/mm							
20	2.3	2.3	—	—	—	—	—	—
25	3.0	2.3	2.3	—	—	—	—	—
32	3.6	3.0	2.4	2.3	—	—	—	—
40	4.5	3.7	3.0	2.4	2.3	—	—	—
50	5.6	4.6	3.7	3.0	2.4	2.3	—	—
63	7.1	5.8	4.7	3.8	3.0	2.5	—	—
75	8.4	6.8	5.6	4.5	3.6	2.9	—	—
90	10.1	8.2	6.7	5.4	4.3	3.5	—	—
110	12.3	10.0	8.1	6.6	5.3	4.2	—	—
125	14.0	11.4	9.2	7.4	6.0	4.8	—	—
140	15.7	12.7	10.3	8.3	6.7	5.4	—	—
160	17.9	14.6	11.8	9.5	7.7	6.2	—	—
180	20.1	16.4	13.3	10.7	8.6	6.9	—	—
200	22.4	18.2	14.7	11.9	9.6	7.7	—	—
225	25.2	20.5	16.6	13.4	10.8	8.6	—	—
250	27.9	22.7	18.4	14.8	11.9	9.6	—	—
280	31.3	25.4	20.6	16.6	13.4	10.7	—	—
315	35.2	28.6	23.2	18.7	15.0	12.1	9.7	7.7
355	39.7	32.2	26.1	21.1	16.9	13.6	10.9	8.7
400	44.7	36.3	29.4	23.7	19.1	15.3	12.3	9.8
450	50.3	40.9	33.1	26.7	21.5	17.2	13.8	11.0
500	55.8	45.4	36.8	29.7	23.9	19.1	15.3	12.3
260	62.5	50.8	41.2	33.2	26.7	21.4	17.2	13.7
630	70.3	57.2	46.3	37.4	30.0	24.1	19.1	15.4
710	79.3*	64.5*	52.2	42.1	33.9	27.2	21.8*	17.4*
800	89.3*	72.6*	58.8	47.4	38.1	30.6	24.5*	19.6*
900	—	81.7*	66.2	53.3	42.9	34.4	27.6*	22.0*
1000	—	90.2*	72.5	59.3	47.7	38.2	30.6*	24.5*
1200	—	—	88.2	67.9	57.2	45.9	36.7*	29.4*

Note: The size plus * is not the preferred size. Please consult the manufacturer before purchasing

Executive standard according to ISO4427

Nominal outer diameter DN	Standard Size ratio									
	-	-	SDR9	SDR11	SDR13.6	SDR17	SDR21	SDR26	SDR33	SDR41
	Pipe series									
	-	-	S4	S5	S6.3	S8	S10	S12.5	S16	S20
	PE80 Nominal pressure MPa									
	2.5	2.0	1.6	1.25	1.0	0.8	0.6	0.5	0.4	0.32
	PE100 Nominal pressure MPa									
	-	2.5	2.0	1.6	1.25	1.0	0.8	0.6	0.5	0.4
	Nominal wall thickness en/mm									
20	3.4	3.0	2.3	2.3	—	—	—	—	—	—
25	4.2	3.5	3.0	2.3	2.3	—	—	—	—	—
32	5.4	4.4	3.6	3.0	2.4	2.3	—	—	—	—
40	6.7	5.5	4.5	3.7	3.0	2.4	2.3	—	—	—
50	8.3	6.9	5.6	4.6	3.7	3.0	2.4	2.3	—	—
63	10.5	8.6	7.1	5.8	4.7	3.8	3.0	2.5	—	—
75	12.5	10.3	8.4	6.8	5.6	4.5	3.6	2.9	—	—
90	15.0	12.3	10.1	8.2	6.7	5.4	4.3	3.5	—	—
110	18.3	15.1	12.3	10.0	8.1	6.6	5.3	4.2	—	—
125	20.8	17.1	14.0	11.4	9.2	7.4	6.0	4.8	—	—
140	23.3	19.2	15.7	12.7	10.3	8.3	6.7	5.4	—	—
160	26.6	21.9	17.9	14.6	11.8	9.5	7.7	6.2	—	—
180	29.9	24.6	20.1	16.4	13.3	10.7	8.6	6.9	—	—
200	33.2	27.4	22.4	18.2	14.7	11.9	9.6	7.7	—	—
225	37.4	30.8	25.2	20.5	16.6	13.4	10.8	8.6	—	—
250	41.5	34.2	27.9	22.7	18.4	14.8	11.9	9.6	—	—
280	46.5	38.3	31.3	25.4	20.6	16.6	13.4	10.7	—	—
315	52.3	43.1	35.2	28.6	23.2	18.7	15.0	12.1	9.7	7.7
355	59.0	48.5	39.7	32.2	26.1	21.1	16.9	13.6	10.9	8.7
400	—	54.7	44.7	36.3	29.4	23.7	19.1	15.3	12.3	9.8
450	—	61.5	50.3	40.9	33.1	26.7	21.5	17.2	13.8	11.0
500	—	—	55.8	45.4	36.8	29.7	23.9	19.1	15.3	12.3
260	—	—	62.5	50.8	41.2	33.2	26.7	21.4	17.2	13.7
630	—	—	70.3	57.2	46.3	37.4	30.0	24.1	19.1	15.4
710	—	—	79.3*	64.5*	52.2	42.1	33.9	27.2	21.8*	17.4*
800	—	—	89.3*	72.6*	58.8	47.4	38.1	30.6	24.5*	19.6*
900	—	—	—	81.7*	66.2	53.3	42.9	34.4	27.6*	22.0*
1000	—	—	—	90.2*	72.5	59.3	47.7	38.2	30.6*	24.5*
1200	—	—	—	—	88.2	67.9	57.2	45.9	36.7*	29.4*

5.FITTINGS

Intubation series

Socket Male thread tee
Size (mm)

20×1/2" 40×11/4"
25×1/2" 50×11/2"
25×3/4" 63×2"
32×1/2"
32×3/4"
32×1"

Socket Female thread tee
Size (mm)

20×1/2" 40×11/4"
25×1/2" 50×11/2"
25×3/4" 63×2"
32×1/2"
32×3/4"
32×1"

Socket Male Thread coupler
Size (mm)

20×1/2" 40×11/4"
25×1/2" 50×11/2"
25×3/4" 63×2"
32×1/2" 75×21/2"
32×3/4" 90×3"
32×1" 110×4"

Socket Female Thread coupler
Size (mm)

20×1/2" 40×11/4"
25×1/2" 50×11/2"
25×3/4" 63×2"
32×1/2" 75×21/2"
32×3/4" 90×3"
32×1" 110×4"

Socket male thread elbow
Size (mm)

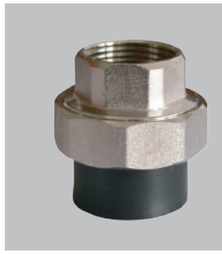
20×1/2" 40×11/4"
25×1/2" 50×11/2"
25×3/4" 63×2"
32×1/2"
32×3/4"
32×1"

Socket female elbow
Size (mm)

20×1/2" 40×11/4"
25×1/2" 50×11/2"
25×3/4" 63×2"
32×1/2"
32×3/4"
32×1"

Socket female thread union
Size (mm)

20×1/2" 40×11/4"
25×1/2" 50×11/2"
25×3/4" 63×2"
32×1/2" 75×2½"
32×3/4" 90×3"
32×1" 110×4"



Socket female thread union
Size (mm)

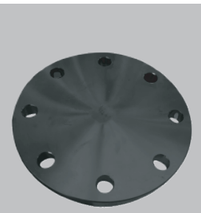
20×1/2"
25×3/4"
32×1"
40×11/4"
50×11/2"
63×2"

Socket double union valve with brass ball
Size (mm)

20
25
32
40
50
63

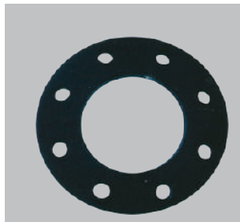
Hot melt socket with double internal thread single contact ball valve
Size (mm)

20
25
32



Anticorrosive spray blind plate
(Carbon steel)
Size (mm)

50	160	400
63	200	450
75	225	500
90	250	630
110	315	
125	355	



Anticorrosive spray flange (carbon steel)
Size (mm) （1.0-1.6mpa)

20	75
25	90
32	110
40	
50	
63	

Socket PE add coupler
Size (mm)

110×63	315×110
160×63	
160×110	
200×63	
200×110	
250×110	

Socket PE repair joint
Size (mm)

50	160
63	200
75	225
90	250
110	315
125	

Socket stop valve
Size (mm)

20	75
25	90
32	110
40	
50	
63	

Socket flange gasket
Size (mm)

50	160	400
63	200	450
75	225	500
90	250	560
110	315	630
125	355	

BUTT-JOINT FITTINGS SERIES

Butt-joint reducing coupler ①
Size (mm)

SDR17 (1.0MPa)

355×110	355×315	400×355	450×355	500×315	560×400	630×450
355×160	400×200	450×200	450×400	500×355	560×450	630×500
355×200	400×225	450×225	500×200	500×400	560×500	710×250
355×225	400×250	450×250	500×225	500×450	630×315	710×315
355×250	400×280	450×280	500×250	560×315	630×355	710×355
355×280	400×315	450×315	500×280	560×355	630×400	

Butt-joint reducing coupler ②
Size (mm)

SDR17 (1.0MPa)

710×400	800×315	800×630
710×450	800×355	800×710
710×500	800×400	
710×560	800×450	
710×630	800×500	
800×250	800×560	

SDR13.6 (1.25MPa)

90×50	110×90	140×75	160×90	180×160
90×63	125×63	140×90	160×110	200×50
90×75	125×75	140×110	160×125	200×63
110×50	125×90	140×125	180×110	200×75
110×63	125×110	160×63	180×125	200×90
110×75	140×63	160×75	180×140	200×110

Butt-joint reducing coupler ③
Size (mm)

SDR13.6 (1.25MPa)

125×63	225×110	250×200	280×180	315×200
125×75	225×160	250×225	280×200	315×225
125×90	225×180	280×110	280×225	315×250
125×110	225×200	280×125	280×250	315×280
200×160	250×110	280×140	315×110	
200×180	250×160	280×160	315×160	

Butt-joint reducing coupler ④
Size (mm)

SDR11 (1.6MPa)

140×63	160×75	180×125	200×90	225×125	250×200	280×180	315×200
140×75	160×90	180×140	200×110	225×160	250×225	280×200	315×225
140×90	160×110	180×160	200×125	225×180	280×110	280×225	315×250
140×110	160×125	200×50	200×140	225×200	280×125	280×250	315×280
140×125	160×140	200×63	200×160	250×110	280×140	315×110	355×110
160×63	180×110	200×75	225×110	250×160	280×160	315×160	355×125

Butt-joint reducing coupler ⑤
Size (mm)

SDR11 (1.6MPa)

355×160	355×315	400×225	450×225	500×250	560×315	630×355
355×180	400×110	400×250	450×250	500×280	560×355	630×400
355×200	400×125	400×280	450×280	500×315	560×400	630×450
355×225	400×160	400×315	450×315	500×355	560×450	630×500
355×250	400×180	400×355	450×355	500×400	560×500	630×560
355×280	400×200	450×200	450×400	500×450	630×315	

Butt-joint equal tee
Size (mm)

SDR17 (1.0MPa)		SDR13.6 (1.25MPa)		SDR11 (1.6MPa)			
355	710	90	200	63	160	315	630
400	800	110	225	75	180	355	
450		125	250	90	200	400	
500		140	280	110	225	450	
560		160	315	125	250	500	
630		180		140	280	560	

Butt-joint reducing tee ①
Size (mm)

SDR17 (1.0MPa)

180×125	280×140	315×225	355×225	400×140	400×280	450×225	500×110
180×140	280×180	355×125	355×250	400×160	400×315	450×250	500×125
250×125	280×225	355×140	355×280	400×180	400×355	450×280	500×160
250×140	315×125	355×160	355×315	400×200	450×110	450×315	500×200
250×180	315×140	355×180	400×110	400×225	450×160	450×355	500×225
280×125	315×180	355×200	400×125	400×250	450×200	450×400	500×250

Butt-joint reducing tee ②
Size (mm)

SDR17 (1.0MPa)

500×280	560×160	560×355	630×200	630×400	710×250	800×160	800×500
500×315	560×200	560×400	630×225	630×450	710×315	800×200	800×630
500×355	560×225	560×450	630×250	630×500	710×400	800×250	800×710
500×400	560×250	560×500	630×280	710×110	710×500	800×315	
500×450	560×280	630×110	630×315	710×160	710×630	800×355	
560×110	560×315	630×160	630×355	710×200	800×110	800×400	

Butt-joint reducing tee ③
Size (mm)

SDR13.6 (1.25MPa)

90×50	110×90	140×75	160×75	180×75	200×90	225×110	250×110
90×63	125×63	140×90	160×90	180×90	200×110	225×160	250×160
90×75	125×75	140×110	160×110	180×110	200×160	225×200	250×200
110×50	125×90	140×125	160×125	180×160	225×63	250×63	280×63
110×63	125×110	160×50	160×140	200×63	225×75	250×75	280×75
110×75	140×63	160×63	180×63	200×75	225×90	250×90	280×90

Butt-joint reducing tee ④
Size (mm)

SDR13.6 (1.25MPa)

280×110	315×90
280×160	315×110
280×200	315×160
280×250	315×200
315×63	315×250
315×75	

Butt-joint reducing tee ⑤
Size (mm)

SDR11 (1.6MPa)

125×63	140×90	160×90	180×90	200×75	200×180	225×200	250×140
125×75	140×110	160×110	180×110	200×90	225×63	250×63	250×160
125×90	140×125	160×125	180×125	200×110	225×75	250×75	250×180
125×110	160×50	160×140	180×140	200×125	225×90	250×90	250×200
140×63	160×63	180×63	180×160	200×140	225×110	250×110	280×63
140×75	160×75	180×75	200×63	200×160	225×160	250×125	280×75

Butt-joint reducing tee ⑥
Size (mm)

SDR11 (1.6MPa)

280×90	280×200	315×110	315×225	355×160	355×315	400×200	450×110
280×110	280×225	315×125	315×250	355×180	400×110	400×225	450×160
280×125	280×250	315×140	315×280	355×200	400×125	400×250	450×200
280×140	315×63	315×160	355×110	355×225	400×140	400×280	450×225
280×160	315×75	315×180	355×125	355×250	400×160	400×315	450×250
280×180	315×90	315×200	355×140	355×280	400×180	400×355	450×280

Butt-joint reducing tee ⑦
Size (mm)

SDR11 (1.6MPa)

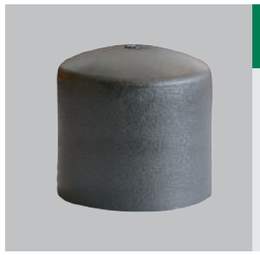
450×315	500×200	500×400	560×250	560×500	630×280
450×355	500×225	500×450	560×280	630×110	630×315
450×400	500×250	560×110	560×315	630×160	630×355
500×110	500×280	560×160	560×355	630×200	630×400
500×125	500×315	560×200	560×400	630×225	630×450
500×160	500×355	560×225	560×450	630×250	630×500

Butt-joint 90° Elbow
Size (mm)

SDR17 (1.0MPa)		SDR13.6 (1.25MPa)		SDR11 (1.6MPa)		
355	710	90	200	125	250	500
400	800	110	225	140	280	560
450		125	250	160	315	630
500		140	280	180	355	
560		160	315	200	400	
630		180		225	450	

Butt-joint 45° Elbow
Size (mm)

SDR17 (1.0MPa)	SDR13.6 (1.25MPa)		SDR11 (1.6MPa)		
355	90	200	125	250	500
400	110	225	140	280	560
450	125	250	160	315	630
500	140	280	180	355	
560	160	315	200	400	
630	180		225	450	



Butt-joint Cap
Size (mm)

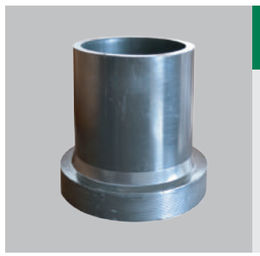
SDR17 (1.0MPa)		SDR13.6 (1.25MPa)	SDR11 (1.6MPa)		
315	630	125	140	315	630
355	710	160	160	355	
400	800	180	200	400	
450	900	200	225	450	
500	1000	250	250	500	
560	1200	280	280	560	

Butt-joint equal cross
Size (mm)

SDR17 (1.0MPa)		SDR13.6 (1.25MPa)	SDR11 (1.6MPa)	
355	710	160	63	200
400	800	200	75	225
450		225	90	250
500		250	110	315
560		315	125	355
630			160	400

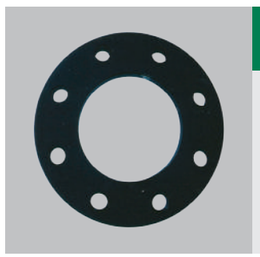
Butt-joint reducing cross
Size (mm)

SDR17 (1.0MPa)			SDR13.6 (1.25MPa)	SDR11 (1.6MPa)		
355×200	500×200	630×315	180×110	90×63	200×160	315×200
400×200	500×250	710×200	225×160	110×63	225×160	355×200
450×200	500×315	710×315	280×110	125×75	250×110	400×200
450×315	560×200	800×200	315×200	160×110	250×160	
500×110	560×315	800×400		180×110	250×200	
500×160	630×200	800×630		200×110	280×110	



Butt injection molding flange head
Size (mm)

SDR17 (1.0MPa)		SDR13.6 (1.25MPa)			SDR11 (1.6MPa)			
400	800	90	200	450	50	140	280	560
450	900	110	225	710	63	160	315	630
500	1000	125	250	800	75	180	355	
560	1200	140	280		90	200	400	
630		160	315		110	225	450	
710		180	355		125	250	500	



Anti-corrosive spray flange (iron)
Size (mm)

SDR11 (1.0MPa)					SDR11 (1.6MPa)			
50	140	280	560	1200	50	140	280	560
63	160	315	630		63	160	315	630
75	180	355	710		75	180	355	
90	200	400	800		90	200	400	
110	225	450	900		110	225	450	
125	250	500	1000		125	250	500	

ELECTRIC MELTING FITTINGS SERIES

Electric fusion reducing coupler
Size (mm)

32×25	75×63	110×90	160×90	200×90	250×110
40×32	90×50	125×75	160×110	200×110	250×160
50×32	90×63	125×90	160×125	200×125	250×200
50×40	90×75	125×110	160×75	200×160	315×160
63×32	110×50	140×110	200×50	225×110	315×200
63×50	110×63	160×50	200×63	225×160	315×250
75×50	110×75	160×63	200×75	225×200	

Electrofusion reducing tee ①
Size (mm)

32×25	63×50	110×50	140×110	200×50	225×90	250×160
40×25	75×40	110×63	160×50	200×63	225×110	250×200
40×32	75×50	110×75	160×63	200×75	225×160	315×110
50×32	75×63	110×90	160×75	200×90	225×200	315×125
50×40	90×50	125×75	160×90	200×110	250×90	315×160
63×32	90×63	125×90	160×110	200×125	250×110	315×200
63×40	90×75	125×110	160×125	200×160	250×125	315×250

Electrofusion reducing tee ②
Size (mm)

355×110	400×160	500×250
355×160	400×200	500×315
355×200	400×250	500×400
355×250	400×315	500×450
355×315	500×110	
400×110	500×160	
400×125	500×200	

Electrofusion coupler
Size (mm)

25	90	225	450
32	110	250	500
40	125	280	560
50	140	315	630
63	160	355	
75	200	400	

Electrofusion tee
Size (mm)

32	110	250
40	125	315
50	140	355
63	160	400
75	200	500
90	225	

electrofusion 90° Elbow
Size (mm)

32	110	250
40	125	315
50	140	355
63	160	400
75	200	500
90	225	

electrofusion 45° Elbow
Size (mm)

50	140
63	160
75	200
90	225
110	250
125	315

Electrofusion cap
Size (mm)

50
75
110
160

Electrofusion flange
Size (mm)

50	140	315	630
63	160	355	
75	200	400	
90	225	450	
110	250	500	
125	280	560	

Flange plate (Carbon steel)
Size (mm)

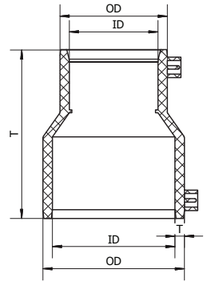
50	140	250
63	160	315
75	200(8 孔)	355
90	200(12 孔)	400
110	225(8 孔)	500
125	225(12 孔)	630

Note: the > 160 caliber welding joint is on both sides of the product. Electric fusion joints ≤ 160 caliber are arranged vertically.

⩽ 160 vertical

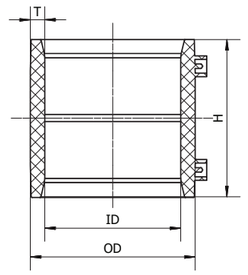
＞ 160 both side

■ ELECTRIC MELTING FITTINGS SERIES



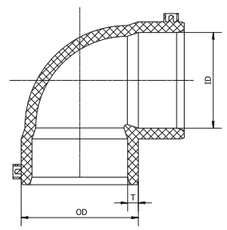
Electric fusion reducing coupler
Size (mm)

Size	ID	OD	Thickness	Height	Weight
90*63	63*90	79*110	8*10	135	0.41
110*90	90*110	110*134	10*12	153	0.67
160*90	90*160	110*194	10*17	183	1.3
160*110	110*160	134*192	12*16	186	1.4
200*125	125*200	149*236	12*18	215	2.1
225*110	110*225	134*265	12*20	223	3
225*160	160*225	190*265	15*20	232	3
225*200	200*225	236*265	18*20	232	3.1
250*225	225*250	265*294	20*22	252	4.2
315*160	160*315	192*363	16*24	268	5.8
315*250	250*315	292*363	21*24	290	6.4



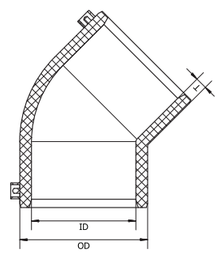
Electrofusion coupler
Size (mm)

Size	ID	OD	Thickness	Height	Weight
63	63.4	80	8.4	116	0.22
90	90.4	111	10.3	150	0.49
110	110.4	137	13	159	0.8
160	160.8	196	17.5	190	1.86
225	225.8	267	21	215	3.2
315	315.8	382	33	264	9.29
400	400	480	36.5	285	14.8



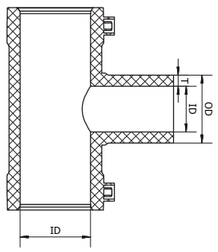
electrofusion 90° Elbow
Size (mm)

Size	ID	OD	Thickness	Height	Weight
63*90°	63	79	8	128	0.27
90*90°	90	110	10	169	0.7
110*90°	110	132	11	200	1
160*90°	160	190	15	270	2.5
225*90°	225	267	21	358	6
315*90°	315	375	30	480	16
400*90°	400	472	36	580	29.6



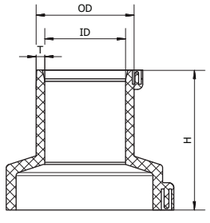
electrofusion 45° Elbow
Size (mm)

Size	ID	OD	Thickness	Height	Weight
63*45°	63	79	8	150	0.28
90*45°	90	110	10	190	0.6
110*45	110	132	11	215	1
160*45	160	190	15	295	2.1
225*45	225	267	21	375	4.9
315*45	315	375	30	480	12
400*45	400	472	36	585	22.8



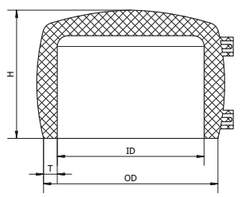
Electrofusion reducing tee
Size (mm)

Size	ID	OD	Thickness	Height	Weight
90*50	90	110	10	213	0.74
90*63	90	110	10	213	0.83
160*50	160	192	16	263	2.3
160*63	160	192	16	263	2.3
160*90	160	192	16	315	2.4
160*110	160	192	16	315	2.7
225*90	225	265	20	395	6.2
225*110	225	265	20	395	6.4
225*160	225	265	20	395	6.4
400*315	400	472	36	623	32



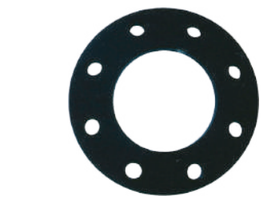
Electrofusion flange
Size (mm)

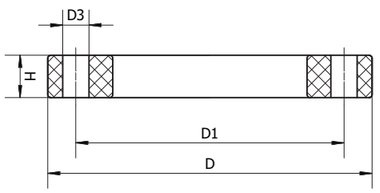
Size	ID	OD	Thickness	Height	Weight
63	63	79	8	77	0.26
90	90	110	10	85	0.45
110	110	132	11	104	0.64
160	160	190	15	125	1.3
225	225	265	20	122	2
315	315	355	20	155	4.1
400	400	456	28	155	7



Electrofusion cap
Size (mm)

Size	ID	OD	Thickness	Height	Weight
63	63	79	8	82	0.2
90	90	110	10	95	0.4
110	110	134	12	103	0.6
160	160	190	15	145	1.4





Flange plate (Carbon steel)
Size (mm)

Size	Nominal diameter	D	D1	D3	Bolt size
63	50	165	125	18	M16
90	80	200	160	18	M16
110	100	220	180	18	M16
160	150	285	240	22	M20
225	200	340	295	22	M20
315	300	460	410	26	M24

6. PIPE CONNECTION

PIPE CONNECTION MODE

① When DN ≤ 63, hot-melt socket connection or electro-melt connection shall be adopted;
② When DN ≥ 75, hot-melt butt joint or electro-melt connection shall be adopted;
③ The connection with metal pipe and pipeline accessories can be made by flange connection or transition pipe fitting connection, etc.

(1).HOT MELT SOCKET CONNECTION

When using this method, hot-melt welding machine is adopted. The specific steps are as follows:

① Check the surface quality of the pipe, the joint part is clean and nondestructive, the fracture surface is smooth and burr free.

② Measure the depth of the socket and mark the surface of the pipe.

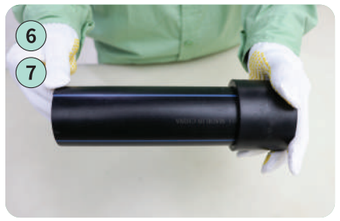
③ The pipe orifice shall use a special scraper to treat the surface of the pipe connecting part. It is appropriate to chamfer the edge of the new surface layer. The groove shall be 30° and the length of the surface groove shall not be greater than 2.0mm.

④ Wipe the socket surface of the pipe fitting with a dry cloth and clean the surface.

⑤ Insert the pipe and fittings into the heater at the same time, and heat the connecting part.

⑥ The heating time, support and cooling time of pipes and fittings shall comply with the provisions of the equipment manual of the hot melt machine.

⑦ Hot welding end, should be in the pipe socket flange ring.



Note: The pipe and fittings can be operated after the specified cooling time.

Recommended process parameters for hot melt socket of polyethylene pipe (SDR11) (weld temperature: 260℃ ±10℃)

nominal outside diameter(mm)	heat-up time(s)	Maximum conversion time(s)	Minimum cooling time(min)
20	5	4	2
25	7	4	2
32	8	6	4
40	12	6	4
50	18	6	4
63	24	8	6
75	26	8	8
90	29	8	8
110	32.5	10	8

(3).ELECTRICAL FUSION CONNECTION

The characteristics of electric melting socket plug connection are convenient, fast, small external factors interference, in the small diameter of the pipeline and construction of difficult occasions application is more economical, the steps are as follows:

① Clean the dirt on the surface of the pipe to be connected, mark the insertion depth, and scrape its skin.

② The pipe fixed on the rack, and cover the electric melting fitting on the pipe.

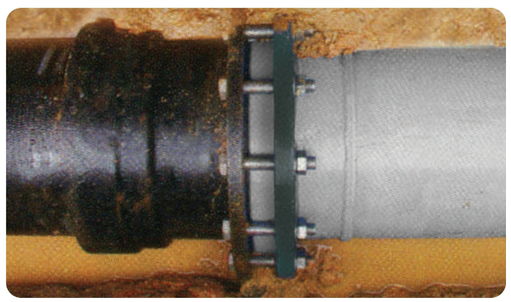
③ Align the connecting parts to ensure that they are on the same axis.

④ Electric welding, to signal the eye melt out, electric melting completed.

⑤ Cooling, electric melting completed

(4).TRANSITIONAL CONNECTION

Schematic diagram of transition connection



The connection of metal pipe and piping accessories (such as valve, water meter, etc.) shall be connected with transition pipe fittings such as wire clasp or flange.

7. TRANSPORTATION AND STORAGE OF PIPES AND FITTINGS

Pipe materials and fittings should be handled with care, no violent collision, avoid contact with sharp objects.

Pipe materials and fittings should be stored in a well-ventilated place inside the room or shed. They should not be piled up in the open to avoid sunlight exposure.

The pipe stacking site should be flat, dry and clean, not stained with dirt and oil, neatly stacked, and the height should not exceed 1.5m.

Pipes are inflammable and should not be stored in the same warehouse with other inflammable goods.

8. PIPING DESIGN

■ CHOICE OF NOMINAL PRESSURE CLASS FOR PIPING

① The service life of the pipeline shall be guaranteed for 50 years within the prescribed service conditions and long-term operating temperature range. The nominal pressure shall meet the requirement of the maximum working pressure of the system.
② The pressure level of pipe fitting should be greater than that of pipe material.
③ Suitable temperature performance of pipe. The suitable temperature range of pipeline conveying medium is 0 ~ 40°C , and the best temperature is room temperature. Nominal pressure (PN) of PE pipe refers to the internal water pressure index at 20°C . If the temperature of the medium is between 20 °C and 40°C , the working pressure (Pw) should be corrected according to the drop coefficient (FT) of different temperatures in the following table.

Drop coefficients of different temperatures:

Water temperature t(°C)	20	30	40
Pressure reduction (f_t)	1.0	0.85	0.74

The pressure grade of the pipe can be determined according to the actual temperature of the medium water, computational formula

$$\text{work stress } Pw = ft \cdot PN_{\circ}$$

■ PIPELINE HYDRAULIC CALCULATION

① The water head loss along the pipeline should be calculated according to the following formula:

$$I=4.2747\cdot10\text{-}9\cdot dnj\text{-}4.774\cdot Q1.774$$

in the formula:
I—Loss of long head per unit of pipe 10KPa/m;
dnj—Calculate the inside diameter of pipe（mm）;
Q—Calculated pipeline flow（L/S）。

② The pipeline design flow rate is suitable for 0.8 ~ 2.0m/s, generally 0.8 ~ 1.2m/s.

③ Local head loss of pipeline should be calculated according to the pipe network along the loss of 20 ~ 30%, the percentage value is determined by the number of pipe fittings in the system,Take the lower limit for small quantity, take the upper limit for big quantity.

■ CONSIDERATION OF PIPE TEMPERATURE DIFFERENCE DEFORMATION

① Buried PE pipe; in summer, pipelines with DN ≤ 110 can be laid in a slightly serpentine shape; pipelines above DN110 have sufficient soil resistance to resist thermal stress, so there is no need to reserve pipe length; In winter, there is no need to reserve pipe length.

② The temperature of indoor open installation pipe is changed from the actual use temperature, and the expansion or contraction length generated is calculated according to the following formula:

$$L=\alpha\cdot\Delta t\cdot L$$

in the formula:
ΔL—Calculate the stretch of the pipe segment(mm);
Δt—Change in temperature(℃);
L—Calculate the length of the straight pipe segment(m);
α—The linear expansion coefficient of the pipeline is between 0.16 and 0.20mm/m°C

③ Interior with the pipeline compensation should be preferred compensation, turning angle of the free arm ring, Π compensation measures may be adopted. The top ring, Π type compensator should set a fixed support.

⑤ The riser shall be fixed by crossing the floor position.

9. PIPELINE CONSTRUCTION

■ CONSTRUCTION REGULATIONS FOR INDOOR PLUMBING

① The pipeline should be installed in the dark, but not buried in the load-bearing structure.
② Protective measures should be taken for pipeline laying in places where there is a possibility of collision, freezing or direct sunlight.
③ The pipe through the basement exterior wall, roof floor, pool, water tank should be strict waterproof measures.
④ And metal pipe accessories, valves, water meters and other connections should be reliable support.
⑤ The pipe diameter of the pipe laid with the embedded wall shall not be greater than 25mm, and the thickness of the cement mortar protective layer on the surface of the embedded or buried pipe shall not be less than 10mm.
⑥ The distance between movable supports of risers and transverse tubes shall conform to the provisions in the following table.

Nominal outside diameter dn(mm)	20	25	32	40	50	63	75	90	110
Horizontal pipe(mm)	650	750	850	950	1050	1200	1300	1450	1600
Stand pipe(mm)	850	1000	1100	1250	1400	1550	1700	1850	2000

Note: Support shall be provided for each layer of risers from 1.60 ~ 1.80 above the ground.

■ CONSTRUCTION OF OUTDOOR BURIED PIPELINE

① The depth of outdoor burial shall be determined comprehensively according to the depth of the cryosphere, requirements for use, geographical conditions and other factors, usually at least below the deepest freezing line 300mm, and shall meet the following conditions:
1、 When pipe diameter DN ≤ 50mm, the minimum buried depth of pipe tip is 500mm;
2、 When the pipe diameter DN ≥ 50mm, the minimum buried depth of pipe tip is 700mm ~ 1000mm.
② Outdoor buried depth, when can not meet the vehicle requirements, the pipeline should be designed according to the requirements of the installation of casing, or fine stone concrete cladding and other reinforcement processing.
③ In the pipeline system, valves, fire hydrants or other ancillary facilities and other joints must be set up a separate foundation, and fixed, and take anti-settlement measures.
④ trench excavation, the bottom of the trench to be paved with sand or meet the requirements of the original earth leveling rammed.
⑤ The pipe can be connected into a long pipe on the ground in advance, and after each welding joint is sufficiently cooled, it can be directly dragged to the edge of the groove and placed in it. Generally, the maximum safe distance for the smaller pipeline is 100m, while the maximum safe distance for the larger pipeline is 50m.
⑥ After the installation and laying of the pipeline should be backfilled as soon as possible, backfill time should be in a day and night in the lowest temperature moment.
⑦ Pipeline backfilling shall be carried out in the following two steps:
1. Backfill the two ribs of the pipe with sand or original soil conforming to the requirements, with a backfill height of 100 ~ 150mm at one time, and then backfill the second layer after tamping until backfill reaches at least 100mm above the pipe top. During the backfilling process, the gap between the lower part of the pipeline and the bottom of the pipeline must be filled. No backfilling is allowed within 200mm before and after the pipeline interface, so that the quality of each joint can be directly observed during the pressure test.
2. The large area of pipe shall be backfilled after passing pressure test, and the part above 300mm of pipe tip shall be backfilled and filled. When mechanical backfilling is used, it shall be backfilled from both sides of the pipe at the same time, and the machine shall not drive on the pipe.
⑧ Before pressure test, the thickness of backfill above the pipe cap should not be less than 300mm to prevent the piping system from moving during pressure test.

■ REPAIR OF OLD PIPELINES

To PE pipe with update old pipeline, it is a kind of comprehensive pipeline management method, insert the metal pipe after the formation of the new pipeline structure, makes the anti-corrosion performance of PE pipe and metal pipe excellent mechanical property together, make the overall efficiency is greatly increased, so as to prolong the service life of old pipe, and reduce the cost of repair. The construction steps and precautions are as follows:

① Excavate and cut off the junction of the branch pipe.
② Clean up any excess sediment, sharp edges and protrusions or corrosive substances that may damage the PE pipe during or after installation.
③ Connect the tube long enough in advance to be inserted and pressure test, when there is no leakage before penetration.
④ Dig a long enough guide groove before insertion so that the PE pipe will not bend beyond its minimum bending radius when inserted.
⑤ During penetration, the end of the PE pipe inserted should be closed, and the opening of the shell pipe should be shielded by a smooth funnel made of a material slightly less hard than or equal to that of the PE pipe, which is not easy to wear out, so as not to damage the PE pipe.Nipple front end should be chamfered in order to surmount minor obstacles.When the PE pipe is pulled, its tensile load should not exceed 1/2 of the yield strength of the pipe.
⑥ Connect the PE pipe and branch pipe inserted into the pipeline.
⑦ The PE pipe exposed outside the steel pipe line should be able to bear enough load, prevent fracturing and shear failure, or use arch protection and other protection measures.

HYDROSTATIC TEST AND FLUSHING DISINFECTION

The system shall be inspected as follows before piping pressure test:
① The pipeline system shall be filled with water and discharged, and check whether there is leakage in the pipeline;
② Determine the pressure test range of the system or pipe section, check the safety fixation and blocking measures within the section scope.

The test pressure of pipeline system shall be 1.5 times of the working pressure, but shall not be less than 0.60mpa. The hydrostatic test shall be conducted in two stages:
First stage, initial pressure test process:
① Water injection in the pipeline system to remove the air in the pipeline;
② Use manual pump to slowly pressurize to the test pressure, and make up the pressure twice within 30min;
③ If the pressure drop does not exceed 0.06mpa within 30min, the first pressure test is qualified.
The second stage, the second pressure test process:
After the initial pressure test is qualified, the secondary pressure test shall be conducted to stabilize the pressure for 2h and the pressure drop shall not exceed 0.02mpa. When the secondary pressure test exceeds 0.02mpa, the system shall repeat the above two stages of pressure test until the pressure drop of the second stage meets the requirements.

Washing and disinfection:
① After the pipeline pressure test is qualified, empty the system memory water, carry out the pipeline system flushing and disinfection.
② Flush the pipe for the first time, use the clean water with a flow rate of not less than 1.0m/s to continuously flush to the outlet, and finish the flushing when the turbidity of the water sample is less than 3NTU.
③ After the first flush of the pipeline, the pipeline should be injected with a clean aqueous solution containing no less than 20mg/L of effective Chlorine, and the pipeline should be left to soak for not less than 24h in the system.
④ Disinfection ends, empty disinfectant, and then use drinking water for the second time to flush the pipeline, so that its water quality by the health department test in line with the "health standards for drinking water", can be delivered for use.

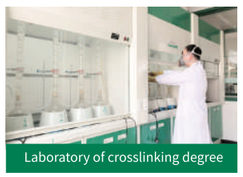
TEST CENTER

Hongyue Testing Center all adopt the domestic and foreign advanced experimental equipment, the inspection project and the detection ability is comprehensive, at the same time has the high-quality quality inspector team, strictly implements the three-level inspection system to the product, has provided the strong guarantee for the production of high quality products, and in 2013 passed the national laboratory accreditation CNAS certification.

QUALITY CONTROL CONCEPT

1. The advanced and strict "three-level inspection system" ensures good product quality.
2. 24-hour testing laboratory, non-stop testing of products and new products.
3. Complete raw material testing system to ensure product source control.
4. Complete on-site testing system, and move some laboratories into the production line.


Laboratory of hydrostatic pressure test


Laboratory of crosslinking degree


Laboratory of thermal deformation and vacat softening point


Mechanical properties Laboratory


Melt mass-flow rate test


Droping impact test

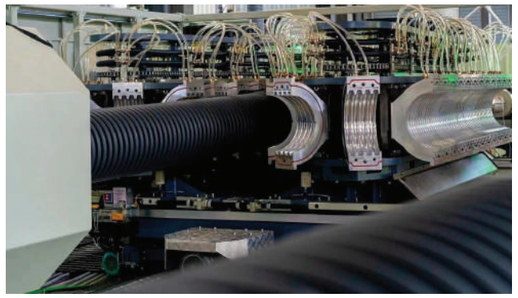

Determination of impact by the charpy method


20 lines of hydrostatic pressure test

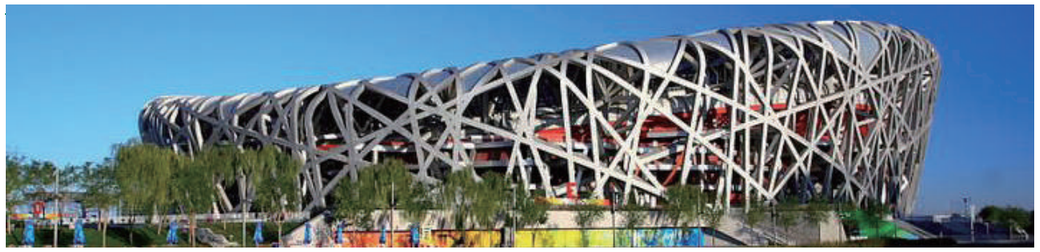

Temperature analysis test


Resistance to internal pressure test

PLANT LANDSCAPE



ENGINEERING CASE (PART)



◎ National Stadium(Bird's Nest)

◎ The Pines Melaka,Malaysia Malacca

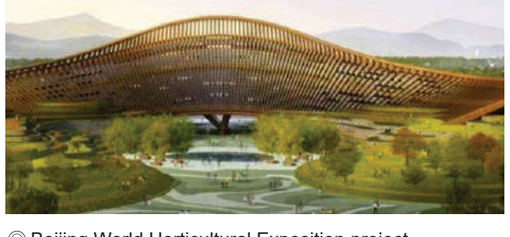
◎ Rain Tree Hotel,Papua New Guinea

◎ City Hall, Papua New Guinea

◎ Villa El Dorado, Cambodia

◎ North Korea Pyongyang Municipal Highway drainage project

◎ ICRC North Korea hospital renovation and expansion



◎ Beijing World Horticultural Exposition project

◎ Calvary Adelaide Hospital

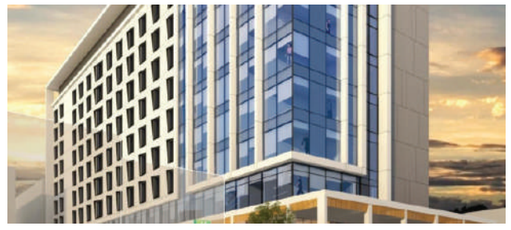
◎ Sydney Infinity Cove Lane

◎ Calvary Adelaide Hospital

◎ U-City Retirement Living

◎ Unilodge Student Accommodation

◎ West Franklin Apartments



◎ Holiday inn Hindley

◎ Bohem Apartments

◎ East Park Apartments

◎ Central Adelaide

◎ Quest Port Adelaide

ONEADD

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