



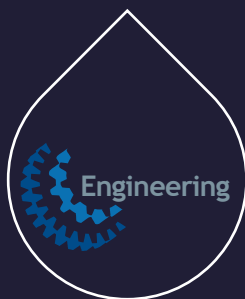
Knet Provides HDPE Water Piping Solutions

 **knet**
Provides Solutions for Next

 **BluEnergy**TM
Knet Water Piping Solutions

www.e-knet.com

Knet has produced HDPE pipe for civil engineering and communication since 1998 in Korea. Knet participated in many huge projects by the government for supplying water and has experienced of working for project internationally. Our extensive knowledge has enabled us to create a name for ourselves as a leading system provider for PE piping solutions



Provide Various Fitting & Joint Technology Support Engineering



Create customized Training Program for installation, Joint & Fitting



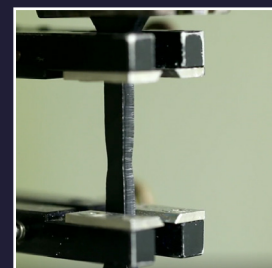
Customer service on Repair & Maintenance



Knet's Facility Production Line



Knet's Production Line Quality Control



Knet's laboratory Test-Compliance

Characteristics of PE 100 Pipe



Chemical Stability, Corrosion Resistance

Polyethylene doesn't erode to acid, alkali and salt. In addition micro-organism like bacteria or seaweed can't grow in Polyethylene material



Light Weight and Perfect connection

PE100 Pipe can be easily handled and installed because the weight of PE pipe is just 1/7 of steel pipe



Flexibility

PE100 Pipe is convenient to install because curved fitting don't have to be used at bent position and Flexibility is maintained at low temperature

Hygiene

Optimal condition as pipes for providing portable water are met not only in that purity of contents can be Maintained because PE pipes for supplying water doesn't have iron or easily extracted material but also in that the Taste of water doesn't change

Freezing Resistance

PE100 Pipes don't break up to -80 Celsius

HDPE Pipe's Benefits

Published by Plastic Pipe Institute



Saves Both Time And Money - Lower Life Cycle Costs, Reduced Installation Costs
Corrosion, Abrasion, And Chemical Resistant, Excellent Flow Characteristics
Leak Free, Lightweight And Flexible, Ductility And Toughness

PROPERTY of PE100 MATERIAL

Property of PE100 Material

Property	Unit	Typical Value	Test Method
Melt Index	g/10min	0.21	ASTM D1238
Density	g/cm ³	0.95	ASTM D1505
Water Absorption	%	<0.01	ASTM D570
Tensile Strength at Yield	kgf/cm ²	240	ASTM D638
Elongation at Break	%	>600	ASTM D638
Flexure Modulus	kgf/cm ²	9,000	ASTM D790
Rockwell Hardness	R Scale	40	ASTM D785
Impact Strength	kgf cm/cm	>50	ASTM D256
Environment Stress Cracking Resistance	hr.Cond.B.10%	>5000	ASTM D1693
Melting Point	°C	133	ASTM D3418
Vicat Softening Point	°C	124	ASTM D1525
Oxidation Induction Time at 200 °C	min	>60	ASTM D3895
Heat Deflection Temperature	°C	65	ASTM D648
Brittleness Temperature	°C	<-70	ASTM D746

※ The above value is representative value.

Application

Water Supply
Industrial & Power
Energy - Gas & Oil

Application field	Usage	Identification color
Waterworks	Water Pipe (D500-D1000)	<ul style="list-style-type: none"> ● Black ● Blue ● Purple, Etc
	Drain Pipe (D160-D450)	
	Feed Pipe (Less than D110)	
	Wastewater reclamation pipe (D110-D1000)	
	Plant Industrial Pipe	
	RO, UF Water Treatment System	
Industrial And Power	Chemical Sewers and Outfalls	<ul style="list-style-type: none"> ● Black
	Air Duct Pipe	
	Secondary Cooling Ash Lines	
	Storm Water Drainage	
Firewater System	Power plant, Oil stockpile base, Refinery plant	<ul style="list-style-type: none"> ● Red ● Black
	Petrochemical plant	
	Gas Extraction	
Landfill and Mining	Mineral conveying Pipe, Gas gathering Pipe	<ul style="list-style-type: none"> ● Black
	Leachate or Landfill Recirculation	
	Golf Sprinkler, Swimming Pool, Sauna Piping	
Leisure And Farming, Marine	Farming Irrigation Piping	<ul style="list-style-type: none"> ● Black ● Blue
	Fish cage, Marine structure	
Energy	Supply gas Pipe	<ul style="list-style-type: none"> ● Black ● Yellow (Gas)
	Ground heat exchange pipe	
	Trench Piping	

01 WATER SUPPLY

Potable water, sewer, drain, mining, irrigation, and reclaimed water.

02 Heat Fused Joints

HDPE pipe can be heat fused together to form a joint that is as strong or stronger than the pipe itself and is leak free.

03 Flexible and Fatigue Resistant

HDPE pipe can be bent to a radius 25 times the nominal pipe diameter. The flexibility of HDPE pressure pipe makes it well suited for dynamic soils including areas prone to earthquake.

04 Construction Advantages

The combination of flexibility and leak free joints allow for unique and cost effective types of installation methods that the rigid PVC and Ductile Iron pipes can't use with bell and spigot connections.

05 Cost Effective, Long Term and Permanent

Polyethylene pipe installations are cost effective and have long term cost advantages due to its physical properties, leak free joints and reduced maintenance costs. The polyethylene pipe industry estimates a service life for HDPE pipe to conservatively be 50-100 years. This relates to savings in replacement costs for generations to come.

06 Corrosion and Chemical Resistant

HDPE pipe will not corrode, tuberculate or support biological growth. HDPE pipe has superb chemical resistance and is the material of choice in harsh chemical environments

07 Handling

It is much easier to handle and install HDPE pipe vs. the heavier, rigid metallic or concrete pipe segments, allowing for huge cost advantages in the construction process.

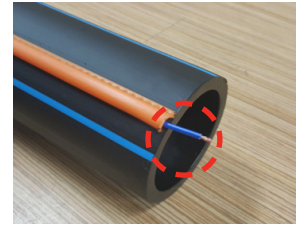


GIS Detection Integrated HDPE Pipe

GIS Detection Integrated HDPE Pipe

It has been challenging to detect the non metallic material pipes after they were installed. Knet's Detectable PE 100 Pipe provides location detection, deployment depth, directions, and GPS information.

Integrated high conductivity longitudinal copper wire sends electrical signals selected from transmitter and accurately locates directions and depths of buried pipes with portable detection equipment.



BluGISpipe™



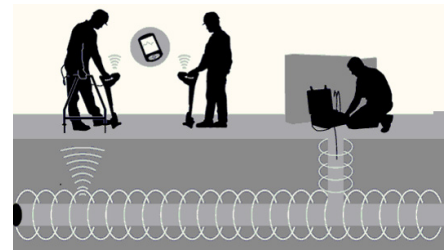
Identification of precise location of Underground Pipe.



Avoid unnecessary digging. Saves unnecessary street blockage and labor



Prevents Accident & unintentional cuts. Avoids unexpected cutting accidents



Accurate measurement Secures accurate depths during deployment
 - Depth : ± 30 Cm
 - Position : ± 30 Cm



The longitudinal direction of the outer pipe, even if the detection accuracy of the excavation is attached to the pipe line to the integrated pipe of the position on the ground (The copper line is protected by protection cover)

Excellent product Recognized by Korean Public Procurement Service



Specification

PE100 PIPE DIMENSIONS

KS M 3408-2(ISO 4427-2)

SIZE	Out Dia (mm)		Material		SDR11		SDR13.6		SDR17		SDR21		SDR26		
					PN(Nominal Pressure, bar)										
			PE100		PN16		PN12.5		PN10		PN8		PN6		
			PE80		PN12.5		PN10		PN8		PN6		PN5		
Length(m)		Pipe Wall Thickness(mm)													
		Min.	Max.	Straight	Roll	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
20	20.0	20.3	6.0	120.0	2.0	2.3	-	-	-	-	-	-	-	-	-
25	25.0	25.3	6.0	120.0	2.3	2.7	-	-	-	-	-	-	-	-	-
32	32.0	32.3	6.0	90.0	3.0	3.4	-	-	-	-	-	-	-	-	-
40	40.0	40.4	6.0	90.0	3.7	4.2	-	-	-	-	-	-	-	-	-
50	50.0	50.4	6.0	60.0	4.6	5.2	-	-	-	-	-	-	-	-	-
63	63.0	63.4	6.0	40.0	5.8	6.5	-	-	-	-	-	-	-	-	-
90	90.0	90.6	6.0	40.0	8.2	9.2	-	-	-	-	-	-	-	-	-
110	110.0	110.7	6.0	-	10.0	11.1	8.1	9.1	6.6	7.4	5.3	6.0	4.2	4.8	
160	160.0	161.0	6.0	-	14.6	16.2	11.8	13.1	9.5	10.6	7.7	8.6	6.2	7.0	
225	225.0	226.4	6.0	-	20.5	22.7	16.6	18.4	13.4	14.9	10.8	12.0	8.6	9.6	
250	250.0	251.5	6.0	-	22.7	25.1	18.4	20.4	14.8	16.4	11.9	13.2	9.6	10.7	
280	280.0	281.7	6.0	-	25.4	28.1	20.6	22.8	16.6	18.4	13.4	14.9	10.7	11.9	
315	315.0	316.9	6.0	-	28.6	31.6	23.2	25.7	18.7	20.7	15.0	16.6	12.1	13.5	
355	355.0	357.2	6.0	-	32.2	35.6	26.1	28.9	21.1	23.4	16.9	18.7	13.6	15.1	
400	400.0	402.4	6.0	-	36.3	40.1	29.4	32.5	23.7	26.2	19.1	21.2	15.3	17.0	
450	450.0	452.7	6.0	-	40.9	45.1	33.1	36.6	26.7	29.5	21.5	23.8	17.2	19.1	
500	500.0	503.0	6.0	-	45.4	50.1	36.8	40.6	29.7	32.8	23.9	26.4	19.1	21.2	
560	560.0	563.4	6.0	-	50.8	56.0	41.2	45.5	33.2	36.7	26.7	29.5	21.4	23.7	
630	630.0	633.8	6.0	-	57.2	63.1	46.3	51.1	37.4	41.3	30.0	33.1	24.1	26.7	
710	710.0	716.4	6.0	-	-	-	52.2	57.6	42.1	46.5	33.9	37.4	27.2	30.1	
800	800.0	807.2	6.0	-	-	-	58.8	64.8	47.4	52.3	38.1	42.1	30.6	33.8	
1000	1000.0	1009.0	6.0	-	-	-	-	-	53.3	58.8	47.7	52.6	38.2	42.2	
1200	1200.0	1210.8	6.0	-	-	-	-	-	59.3	65.4	57.2	63.1	45.9	50.6	



Fittings Butt Fusion Specification

PE100 FITTINGS (B/F)

Item	Type	Size			Appearance
B/F 900 ELBOW	Injection	D20	D25	D32	
		D40	D50	D63	
		D90	D110	D160	
		D225	D280	D315	
	Fabricate	D355	D400	D450	
		D500	D560	D630	
		D710	D800		

Item	Type	Size			Appearance
B/F CON. REDUCER	Injection	D20	D25	D32	
		D40	D50	D63	
		D90	D110	D160	
		D225	D280	D315	
	Fabricate	D355	D400	D450	
		D500	D560	D630	
		D710	D800		

Item	Type	Size			Appearance
B/F 450 ELBOW	Injection	D20	D25	D32	
		D40	D50	D63	
		D90	D110	D160	
		D225	D280	D315	
	Fabricate	D355	D400	D450	
		D500	D560	D630	
		D710	D800		

Item	Type	Size			Appearance
B/F PE STUB- END & BACK UP RING	Injection	D20	D25	D32	
		D40	D50	D63	
		D90	D110	D160	
		D225	D280	D315	
	Fabricate	D355	D400	D450	
		D500	D560	D630	
		D710	D800		

Item	Type	Size			Appearance
B/F EQUAL TEE	Injection	D20	D25	D32	
		D40	D50	D63	
		D90	D110	D160	
		D225	D280	D315	
	Fabricate	D355	D400	D450	
		D500	D560	D630	
		D710	D800		

Item	Type	Size			Appearance
Transition Fittings (T/F, Male)	Injection	D20	D25	D32	
		D40	D50	D63	
		D90	D110	D160	
		D225	D280	D315	
	Fabricate	D355	D400	D450	
		D500	D560	D630	
		D710	D800		


Item	Type	Size			Appearance
B/F REDUCING TEE	Injection	D20	D25	D32	
		D40	D50	D63	
		D90	D110	D160	
		D225	D280	D315	
	Fabricate	D355	D400	D450	
		D500	D560	D630	
		D710	D800		


Item	Type	Size			Appearance
Transition Fittings (T/F, Female)	Injection	D20	D25	D32	
		D40	D50	D63	
		D90	D110	D160	
		D225	D280	D315	
	Fabricate	D355	D400	D450	
		D500	D560	D630	
		D710	D800		





Fitting Electro Fusion Specification


PE100 FITTINGS (E/F)


Item	Type	Size			Appearance
E/F SOCKET	Injection	D20	D25	D32	
		D40	D50	D63	
		D90	D110	D160	
		D225	D280	D315	
		D355	D400	D450	
		D500	D560	D630	


Item	Type	Size			Appearance
E/F SERVICE TEE	Injection	D40 x D20 ~ D32			
		D50 x D20 ~ D32			
		D63 x D20 ~ D50			
		D90 x D20 ~ D63			
		D110 x D20 ~ D63			
		D160 x D20 ~ D63			
		D225 x D20 ~ D63			
		D280 x D32 ~ D63			


Item	Type	Size			Appearance
E/F 90° ELBOW	Injection	D20	D25	D32	
		D40	D50	D63	
		D90	D110	D160	
		D225			

Item	Type	Size			Appearance
E/F 45° ELBOW	Injection	D20	D25	D32	
		D40	D50	D63	
		D90	D110	D160	
		D225			

Item	Type	Size			Appearance
E/F EQUAL TEE	Injection	D20	D25	D32	
		D40	D50	D63	
		D90	D110	D160	
		D225			

Item	Type	Size			Appearance
E/F END CAP	Injection	D20	D25	D32	
		D40	D50	D63	
		D90	D110	D160	
		D225			

Item	Type	Size			Appearance
E/F REDUCING TEE	Injection	D25 x D20			
		D32 x D20 ~ D25			
		D40 x D20 ~ D32			
		D50 x D32 ~ D40			
		D63 x D20 ~ D50			
		D90 x D32 ~ D63			
		D110 x D40 ~ D90			
		D160 x D63 ~ D110			
		D225 x D90 ~ D160			

Item	Type	Size			Appearance
E/F REDUCER	Injection	D25 x D20			
		D32 x D20 ~ D25			
		D40 x D20 ~ D32			
		D50 x D32 ~ D40			
		D63 x D32 ~ D50			
		D90 x D63			
		D110 x D63 ~ D90			
		D160 x D90 ~ D110			
		D225 x D160			



Landfill Application – PE 100 Perforated Pipe

With HDPE's outstanding characteristic, we provide perforated pipe for Landfill application/ gas gathering, leachate collection. Perforated pipe is for collection of leachate and methane gas. With rigorous standards for performance, durability and easy installation, HDPE pipe comply with these.

Application

Leachate collection

An important part of maintaining a landfill is managing the leachate through proper treatment methods designed to prevent pollution into surrounding ground and surface waters. To leachate Collection Pipe System , perforated pipes, surrounded by a bed of gravel, transport collected leachate to specially designed low points called sumps. Pumps, located within the sumps, automatically remove the leachate from the landfill and transport it to the leachate management facilities for treatment or another proper method of disposal



Gas Gathering

Landfill gas is a complex mix of different gases created by the action of microorganisms within a landfill. The gases produced within a landfill can be collected and used in various ways. This approach requires the gas to be processed into pipeline quality, e.g., by removing various contaminants and components. The efficiency of gas collection at landfills directly impacts the amount of energy that can be recovered - closed landfills (those no longer accepting waste) collect gas more efficiently than open landfills (those that are still accepting waste)

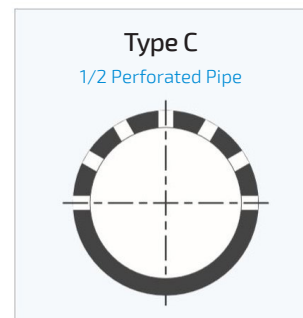
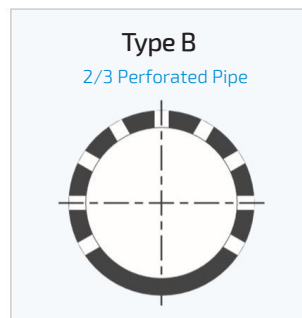
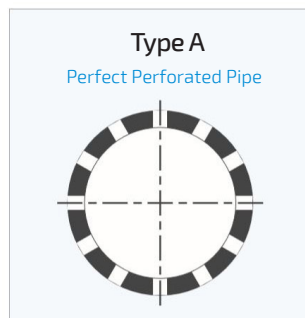


Landfill accessory items

We provide landfill accessory items, fittings etc. Please inquiry to our specialist for technical support

Material	Size	Hole Spec
SDR11	D110 ~ D630	Hole Diameter : 12mmPerforation Pattern & Diameter can be determined by request
SDR13.6	D110 ~ D800	
SDR17	D110 ~ D1000	

PERFORATION PATTERNS

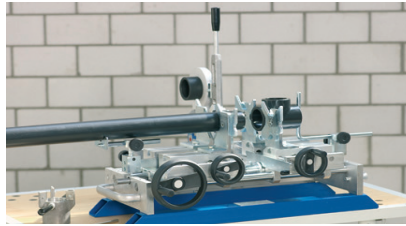


Perforation pipe has same dimension as our PE 100 on page 6

Jointing Technology



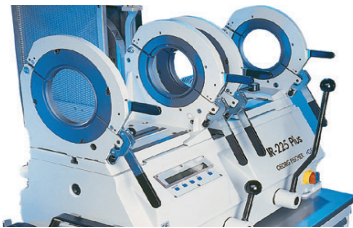
Electro Fusion -Easy Connection
Special fittings that have built-in electric heating elements which are used to weld the joint together. Semi-Automatic Welding with the lowest expenditure of human labor



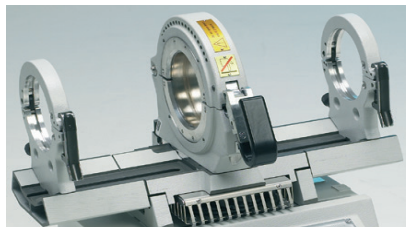
Socket Fusion – Fast and easy way
Socket fusion is a fast and easy way to assemble piping systems. Socket fittings fuse over the pipe wall, making the joints the strongest part of the entire system



Butt Fusion - For larger dimensions
Butt Fusion is a welding process used to join two different pieces of a thermoplastic. This process involves heating both pieces simultaneously and pressing them together



IR Plus® (In infrared) Fusion-Clean connection
In infrared (IR) fusion joining the fusion areas of the components (pipes, fittings, valves) are heated to fusion temperature without contact to the heating element and joined by means of mechanical pressure without using additional materials. Short Welding time combined with high traceability of each weld and minimal welding seams



BCF® Plus Fusion- The Smooth connection
The fusion joining process consists in transmitting precisely defined thermal energy to the pipe and fitting ends being joined by means of half-shell heating elements. At the same time an elastic, pressurised bladder supports the inside surface of the fusion zone in order to prevent the formation of an internal fusion bead. The best welding quality with the highest welding factor and no welding seams



Mechanical Joints –The fast connection
Fast exchangeability, detachable, customizing, transitions and washing are just a few of the benefits

Reference

South Korea Project



**Saemangeum, Korea
Water Supply Pipe Project**

- Pipe Size : D560
- Length : 17KM, • W.P. : 10 Bar



ULSAN City, Korea

- Pipe Size : D 800



**Sokcho, Korea
Deep Ocean Water Intake Pipe Project**

- Pipe Size : D710
- Length : 10KM, • W.P. : 10 Bar

International Projects



Dubai Atlantis Project

- PIPE SIZE : D630
- LENGTH : 3.7Km • W.P. : 10 Bar



**Dubai Palm Island Project
Electro Fusion**

- PIPE SIZE : D630 • W.P. : 10 Bar

Dubai Palm Island Project

- PIPE SIZE : D630
- LENGTH : 5.5Km, • W.P. : 10 Bar



**Kenya, Olkaria Iv Geothermal
Plant Project**

- PIPE SIZE : D280
- LENGTH : 7Km • W.P. : 16 Bar



**Myanmar, Monywa Water
Supply Project**

- PIPE SIZE : D315
- LENGTH : 16Km • W.P. : 10 Bar



Philippines, Jg Summit Ncc Project

- PIPE SIZE : D355
- LENGTH : 6Km • W.P. : 16 Bar



Global Network

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KNET Global Malaysia
 Kuala Lumpur, Malaysia

KNET Myanmar Sales & Office
 Yangon, Myanmar

KNET US Office
 New York, NY, USA

KNET Latin America Office
 Miami, FL, USA

Internationally certified with KNET

KNET has met and maintains the rigorous standards required to become a certified by ISO9001, ISO14001 and TL9000.

KNET Microduct has been rigorously tested by Telcordia Technologies and found to be compliant with Telcordia GR-3155-COR

