

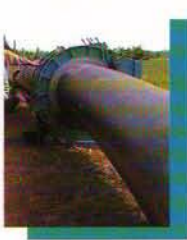
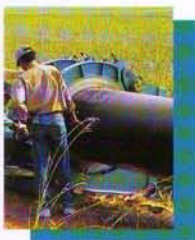
HDPE PIPE

UNILON[®]

SYMBOL OF HIGH QUALITY PIPE



SNI
Award
2006



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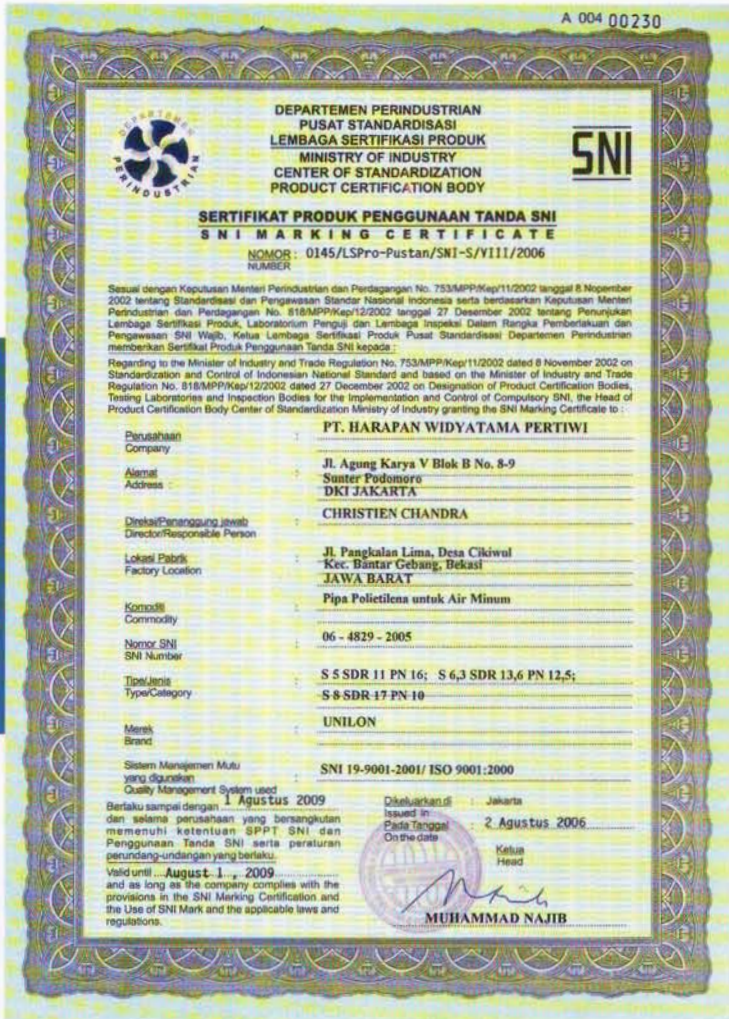
 SAI GLOBAL

QUALITY
ENDORSED
COMPANY
LIC.No. QEC21530
ISO 9001:2000

Quality System



HDPE Pipe



General Properties & Appearance

- Material Specification: PE 100 (HDPE) & PE 80 (MDPE)
- Characteristics: Elastic, Rigid Pipe Walls, smooth surface
- Color: Black, Yellow (Gas application), Blue, Orange
- Length: 6 mtr/Length, 200 - 400 mtr/Length (OD 20 - 63 mm pipes are able to be rolled)
- Connection method: Compression Fittings, Butt-Weld method, Electrofusion method.

Application

- Drinking Water Transport, Liquid Gas Transport, Hot Water distribution, Underground Cable Protection

Benefits

- High Flexibility, Heat Resist Capability,
- Homogenous Joining, improves joining strength.
- Reduces Fittings application

Standards

- Drinking Water Application :SNI - 06 - 4829 : 2005 - PE 100 & PE 80
- Gas Application :ISO 4437
- Underground Cable Protection :STEL - QA - L - 039 - 2001/Ver.2

HDPE PIPE UNILON SNI - 06 - 4829 : 2005 - PE 80 & PE 100

Series	S - 4	S - 5	S - 6,3	S - 8	S - 10	S - 12,5	S - 16	S - 20
SDR	SDR - 9	SDR - 11	SDR - 13,6	SDR - 17	SDR - 21	SDR - 26	SDR - 33	SDR - 41
PE 80	PN - 16	PN - 12,5	PN - 10	PN - 8	PN - 6,3	PN - 5	PN - 4	PN - 3,2
PE 100	PN - 20	PN - 16	PN - 12,5	PN - 10	PN - 8	PN - 6,3	PN - 5	PN - 4
OD	Wall Thickness							
(mm)	(mm)							
16	1,8	1,6	-	-	-	-	-	-
20	2,3	1,9	1,6	-	-	-	-	-
25	2,8	2,3	1,9	1,6	-	-	-	-
32	3,6	2,9	2,4	1,9	1,6	-	-	-
40	4,5	3,7	3,0	2,4	1,9	1,6	-	-
50	5,6	4,6	3,7	3,0	2,4	2,0	1,6	-
63	7,1	5,8	4,7	3,8	3,0	2,4	2,0	1,6
75	8,4	6,8	5,5	4,5	3,6	2,9	2,3	1,9
90	10,1	8,2	6,6	5,4	4,3	3,5	2,8	2,2
110	12,3	10,0	8,1	6,6	5,3	4,3	3,4	2,7
125	14,0	11,4	9,2	7,4	6,0	4,8	3,9	3,1
140	15,7	12,7	10,3	8,3	6,7	5,4	4,3	3,5
160	17,9	14,6	11,8	9,5	7,7	6,2	4,9	4,0
180	20,1	16,4	13,3	10,7	8,6	6,9	5,5	4,4
200	22,4	18,2	14,7	11,9	9,6	7,7	6,2	4,9
225	25,1	20,5	16,6	13,4	10,8	8,6	6,9	5,5
250	27,5	22,7	18,4	14,8	11,9	9,6	7,7	6,2
280	31,3	25,4	20,6	16,6	13,4	10,7	8,5	6,9
315	35,2	28,6	23,2	18,7	15,0	12,1	9,7	7,7
355	39,6	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	50,2	40,9	33,1	26,7	21,5	17,2	13,8	11,0
500	55,8	45,4	36,8	29,6	23,9	19,1	15,3	12,3
560	-	50,8	41,2	33,2	26,7	21,4	17,2	13,7
630	-	57,2	46,3	37,2	30,0	24,1	19,3	15,4
710	-	-	52,2	42,1	33,9	27,2	21,8	17,4
800	-	-	-	47,4	38,1	30,6	24,5	19,6
900	-	-	-	53,5	42,9	34,4	27,6	22,0
1000	-	-	-	59,3	47,7	38,2	30,6	24,5
1200	-	-	-	-	57,2	45,9	36,7	29,4
1400	-	-	-	-	66,7	53,2	42,9	34,4
1600	-	-	-	-	76,2	61,3	49,0	39,3

MDPE PIPE UNILON FOR GAS - ISO 4437

OD (mm)	Wall Thickness (mm)		
	SDR11-S5	SDR17-S8	SDR17.6-S8.3
20	2,0		
25	2,3		
32	2,9	2,0	2,0
40	3,7	2,4	2,3
50	4,6	3,0	2,9
63	5,8	3,8	3,6
75	6,8	4,5	4,3
90	8,2	5,4	5,2
110	10,0	6,6	6,3
125	11,4	7,4	7,1

OD (mm)	Wall Thickness (mm)		
	SDR11-S5	SDR17-S8	SDR17.6-S8.3
140	12,7	8,3	8,0
160	14,6	9,5	9,1
180	16,4	10,7	10,3
200	18,2	11,9	11,4
225	20,5	13,4	12,8
250	22,7	14,8	14,2
280	25,4	16,6	16,0
315	28,6	18,7	17,9
355	31,4	21,1	19,6

HDPE FITTINGS

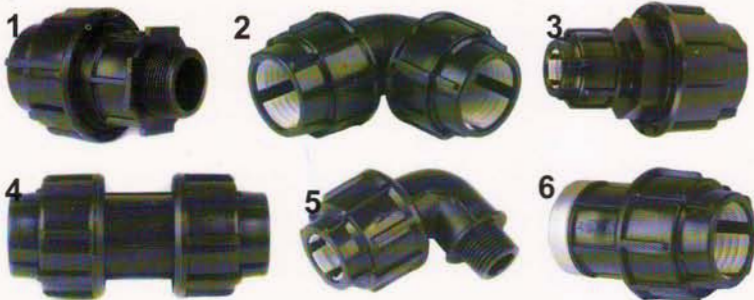


Fabricated Fittings



Compression Fittings Available Stocks

1. Male Threaded-Compression
2. Elbow 90° All Compression
3. Reducing Compression
4. Straight Coupler Compression
5. Elbow 90° Male Threaded-Compression
6. Female Threaded-Compression



Butt-Welded Fittings Available Stocks

- Elbow 90° .7
- Stub End .8
- Reducer .9
- Reducing Tee .10
- Tee .11



ElectroFusion Fittings Available Stocks

- Elbow 90° .12
- Tee with Butt-Welded Connection .13
- Reducer .14
- Connection Socket .15



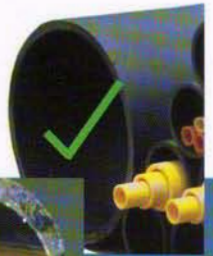
POLYETHYLENE PIPE WELDING PROCEDURES

1. BUTT WELD METHOD

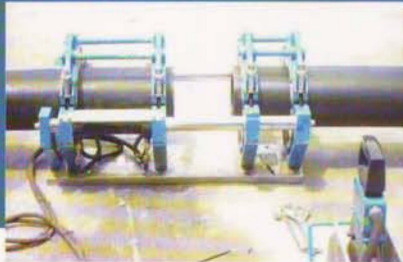
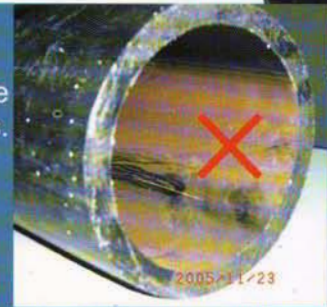


Set Heater Plate's temperature at:

- $230^{\circ}\text{C} \pm 5^{\circ}\text{C}$ for pipes thicker than 20mm
- $215^{\circ}\text{C} \pm 5^{\circ}\text{C}$ for pipes with wall-thickness less than 20mm



Clean Pipe ends from Dust, Soil, and other substance for they could reduce the strength of the welded joints.



Place both pipe ends on the clamping unit.

Use the Plenary Cutter to flattening both pipe ends. Apply some pressure from the pipes toward the cutter during cutting process.



Press both pipe ends toward the Heater Plate when the plate's temperature is appropriate. Apply pressure as calculated to produce beads with the right size.

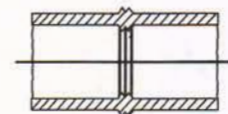
Lift the Heater Plate as soon as possible. Press both molten pipe ends toward each other.

Leave the pipes to cool down for a period as calculated. Maintain pipe ends' pressure level during cooling period.



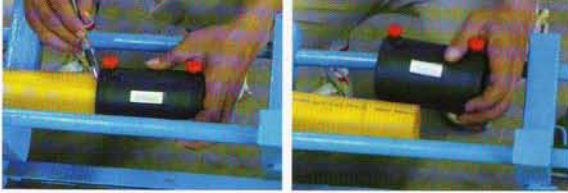
Precautions:

- Pipe ends cleanliness,
- Heater Plate's Temperature,
- Maintain both pipes on a single axis,
- Wall Thickness must be consistent,
- All parameters must be calculated prior the welding process,
- Only trained personnel are allowed to perform the welding process.
- *As part of our Service, we will provide trainings and continuous follow-ups for customers who installs UNILON PE Pipes.*



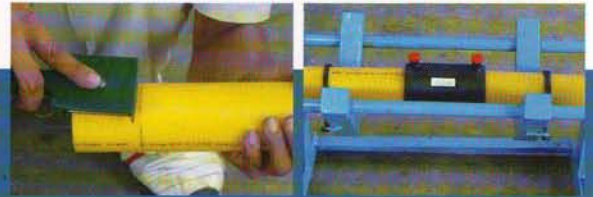
POLYETHYLENE PIPE WELDING PROCEDURES

2. ELECTROFUSION WELDING METHOD



Clean the pipe's ends and Fittings.
Push the pipe into the fitting.
Mark the length of the pipe to be welded.

Peel the Pipe's ends surface using the scrapper.
Do not peel too deep or exceed the marked line.
Clamp both pipe with the fittings on the supporting frame.
Maintain both pipes and fitting are inline.



Prepare Power source for the Welding Machine.
Activate the machine.
Connect the cathode wires from the machine to the fittings.

Enter the welding parameters into the machines.
Maintain close supervision during welding process.
Only trained personnel are allowed to perform the welding process.



3. COMPRESSION JOINING METHOD



1. Clean the pipe end from dirt or chips.



2. Insert the Locking Nut and the compression ring.



3. Insert the Rubber Ring at the pipe end.



4. Connect the pipe and the rings into the Fitting's Body.



5. Use chain wrench to fastened the Locking Nut.



6. The Locking Nut must fully cover threads on the Fitting's body

CUSTOMER SERVICES



UNILON constantly strives to provide our customers with an excellent and diverse range of services.

Our sales and marketing team consist of qualified, fully trained and experienced professionals.

We are committed to provide timely deliveries to enable our customers to minimize their inventory costs. However our service by no means ends with accurate and on-time delivery of products.

In other cases, we have to provide Specific Pipe Installation Technique Training or On-Site Installation Services. For PE Pipes, the jointing methods are different from the conventional PVC pipes. PE Pipes requires welding equipment that must be operated by trained personnel only. These equipments are available upon customers' request. For customers who wish to improve their knowledge and skills regarding this welding technique, UNILON will provide brief theory introduction and on-hand practice with the actual equipment and PE pipe.

UNILON provides other After Sales Services such as Lab Testing and On-site Inspections to monitor the quality of the pipe's installation. UNILON will always continue to look for new ways to meet its commitments to customers' needs.

www.pipalaku.com

Quality System Management Cert.

ISO 9001:2000



CERTIFICATE OF REGISTRATION

PT. Harapan Widyatama Pertiwi

Head Office: Agung Karya V, Blok B No. 8-9 Sunter Podomoro Jakarta 14340, INDONESIA
 Factory: Jl. Pangkalan V, Desa Cikiwul Kecamatan Bantar Gebang Bekasi, Jawa Barat, INDONESIA

complies with the requirements of
AS/NZS ISO 9001:2000
 Quality management systems - Requirements
 for the following capability

The registration covers the Quality Management System for the manufacture and sale of UNILON uPVC, HDPE pipes and fittings.

Registered by:
 SAI Global Certification Services Pty Ltd (ACN 108 716 809) 216 Sussex Street Sydney NSW 2000 Australia with PT SAI Global Indonesia (SAI Global) and subject to the SAI Global Terms and Conditions for Certification. While all due care and skill was exercised in carrying out this assessment, SAI Global accepts responsibility only for written representations. This certificate remains the property of SAI Global and must be returned to SAI Global upon its request.

Certificate No.: QEC21530
 Issue Date: 24 June 2005
 Certified Date: 17 June 2002
 Expiry Date: 16 June 2008

Alex Eszrahovich
 General Manager Certification
 for and on behalf of
 SAI Global

Alvin
 Authorized Local Signatory, SAI Global









CERTIFICATE

IQNet and SAI Global hereby certify that
 the organization

PT. Harapan Widyatama Pertiwi

Head Office: Agung Karya V, Blok B No. 8-9 Sunter Podomoro Jakarta 14340, INDONESIA
 Factory: Jl. Pangkalan V, Desa Cikiwul Kecamatan Bantar Gebang Bekasi, Jawa Barat, INDONESIA

for the following field of activities

The registration covers the Quality Management System for the manufacture and sale of UNILON uPVC, HDPE pipes and fittings

has implemented and maintains a
Quality Management System
 which fulfills the requirements of the following standard
ISO 9001:2000

Certificate No.: AU QEC21530
 Issue Date: 24 June 2005
 Certified Date: 17 June 2002
 Expiry Date: 16 June 2008

Dr. Fabio Ruvers
 President of IQNet

Alex Eszrahovich
 General Manager Certification
 SAI Global Limited



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*The list of IQNet partners is valid as the date of issue of this certificate. Updated information is available under www.iqnet-certification.com

PT. PIPA LAKU INDONESIA

PLI PIPALAKU
 Distributor Pipa & Accessories

Ruko Neo Arcade Blok B No. 3 - Gading Serpong - kelapa D
 Tangerang - Banten - Indonesia - 021 22223993

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uPVC & HDPE PIPE
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 SYMBOL OF HIGH QUALITY PIPE