CUSTOMER SERVICE

CERTIFICATE
OF REGISTRATION

This is to certify that:

PT. Harapan Widyatama Pertiwi

Head Office : Jl. 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

operates a

QUALITY MANAGEMENT SYSTEM

which complies with the requirements of

ISO 9001:2008

for the following scope

Production and sales of UNILON uPVC and HDPE of pipes and fittings.

Certificate No: QEC21530

Issued: 14 December 2015
Expires: 16 June 2017

Originally Certified: 17 June 2002
Current Certification: 14 December 2015

Heather Mahon
Acting Head of Policy, Risk and Certification

Registered by:
SAI Global Certification Services Pty Ltd (ACN 108 716 669) 286 Sussex Street Sydney NSW 2000 Australia with SAI Global Limited 286 Sussex Street Sydney NSW 2000 Australia ("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 proven negligence. This certificate remains the property of SAI Global and must be returned to SAI Global upon its request. To verify that this certificate is current please refer to SAI Global On-Line Certification register at http://www.saiglobal.com

SAI GLOBAL

UNILON is internationally certified for Quality Management System for production and Sales of uPVC, HDPE Pipes and Fittings.

UNILON constantly strives to provide our customers with excellent and diverse range of services. Our sales and marketing teams consist of qualified, fully trained and experienced professionals.

To minimize our customers' inventory cost, we maintain an accurate and punctual product delivery service.

In some cases, we also offer specific pipe installation training or on-site installation services. Unlike the conventional uPVC pipe joining method, HDPE pipe requires special equipments for the installation. These equipments are available upon customer's request. For customers who wish to improve their capacity in this installation method, UNILON will provide a brief introduction and an on-hand practice with the tangible products and equipments.

UNILON also provides after sales services such as pre-sales testing and on-site inspection to monitor the quality of the pipe installation. We are committed to continue finding new ways to meet our customer needs.

CERTIFICATIONS

Kementerian Perindustrian REPUBLIK INDONESIA
KA 01258
BALAI SERTIFIKASI INDUSTRI
INSTITUTE for INDUSTRIAL CERTIFICATION

SERTIFIKAT PRODUK PENGGUNAAN TANDA SNI (SPPT SNI)

Nomor : 141/S/RV/B/IV/2017

diberikan kepada:

PT. HARAPAN WIDYATAMA PERTIWI

Jl. Agung Karya V Blok B No. 8-9 Sunter Podomoro, Jakarta 14340, DKI Jakarta

Berdasarkan sistem sertifikasi 5, dinyatakan bahwa perusahaan telah menerapkan Sistem Manajemen Mutu SNI ISO 9001:2008 dan mutu produknya telah memenuhi persyaratan :

- SNI 4829.2:2015 — *Sistem Perpipaan Plastik-Pipa Polietilena (PE) dan Fitting untuk Sistem Penyediaan Air Minum Bagian 2: Pipa*

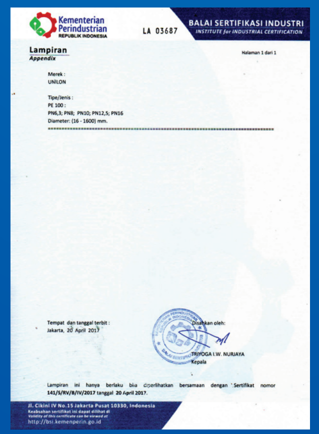
untuk alamat pabrik:
Jl. Pangkalan V, Ds.Cikiwul, Kec. Bantar Gebang, Kab. Bekasi, Jawa Barat

Tempat dan tanggal terbit :
Jakarta, 20 April 2017

Disahkan oleh:
TRIYOGA I.W. NURJAYA
Kepala

Sertifikat ini berlaku sampai dengan tanggal **08 Mei 2018** selama perusahaan masih memenuhi ketentuan dan peraturan yang ditetapkan Balai Sertifikasi Industri dan hanya berlaku jika diperlihatkan bersamaan dengan lampirannya.
Sertifikat ini menggantikan sertifikat No. 237/S/RV/B/III.1/2015 tanggal 30 Maret 2015 dengan nomor seri NA 00662.

Jl. Cikini IV No.15 Jakarta Pusat 10330, Indonesia
Keabsahan sertifikat ini dapat dilihat di
Validity of this certificate can be viewed at
http://bsi.kemenperin.go.id



Kementerian Perindustrian REPUBLIK INDONESIA
LA 03687
BALAI SERTIFIKASI INDUSTRI
INSTITUTE for INDUSTRIAL CERTIFICATION

Lampiran
Appendix

Halaman 1 dari 1

Merek :
UNILON

Tipe/Jenis :
PE 100 :
PN6,3; PN8; PN10; PN12,5; PN16
Diameter: (16 - 1600) mm.

Tempat dan tanggal terbit :
Jakarta, 20 April 2017

Disahkan oleh:
TRIYOGA I.W. NURJAYA
Kepala

Lampiran ini hanya berlaku bila diperlihatkan bersamaan dengan Sertifikat nomor 141/S/RV/B/IV/2017 tanggal 20 April 2017.

Jl. Cikini IV No.15 Jakarta Pusat 10330, Indonesia
Keabsahan sertifikat ini dapat dilihat di
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***UNILON**'s HDPE products are Nationally-Certified (SNI) for drinking water utilities*

HDPE PIPE & FITTINGS

UNILON®

SYMBOL OF HIGH QUALITY PIPE

www.unilon.co.id

FORTHEN
indonesia

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Indonesia
Ph. (021) 624 6211; (021) 624 6226
www.forthen-indonesia.com

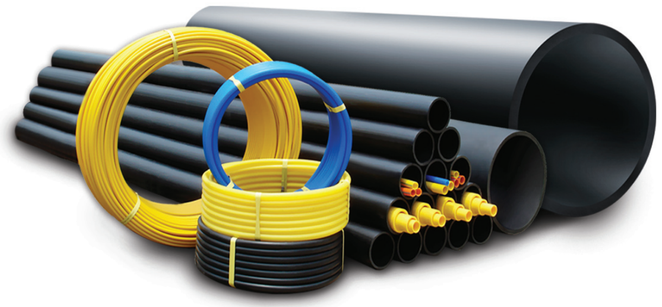
Certified System ISO 9001 Quality — SAI GLOBAL
nqa. OHSAS 18001 Registered Health & Safety Management

MECHANICAL PROPERTIES

HDPE PIPE & FITTINGS UNILON SYMBOL OF HIGH QUALITY PIPE

UNILON HDPE PIPE RAW MATERIAL PROPERTIES

Materials	Properties	Testing Method	Unit	PE 80	PE 100
MECHANICAL	Density	ISO 1183	g/cm³	0.955	0.95
	Melt Index MFi 190º	ISO 1133	g/10min	0.52	0.35
	Tensile Strength at Yield Point	ISO 527	Mpa	24	28
	Elongation at Yield Point	ISO 527	%	9	9
	Direct Tensile Strength Strain Rate	ISO 527	Mpa	34	35
	Elongation at Break	ISO 527	%	> 700	> 700
	Flexural stress at 3.5% deflection (2mm/min)	ISO 178	Mpa	17	23
	Shore Hardness D	ISO 868		65	65
THERMAL	Crystalline Melting Range	(DSC)	ºC	128 - 131	130 - 132
	Thermal Conductivity at 20ºC	DIN 52612	W/mºC	0.4	0.4
	Coefficient of linear thermal expansion up to 80ºC		1/ºC	1.6 x 10 - 4	1.6 x 10 - 4
ELECTRICAL	Dielectric Strength	IEC 243	KV/cm	180	180
	Dielectric (2 x 10^ cycles)	IEC 250		2.4	2.4
	Surface Resistance	IEC 93	OHMS	> 10 - 16	> 10 - 16



HDPE PIPES DIMENSIONS

HDPE PIPE & FITTINGS UNILON SYMBOL OF HIGH QUALITY PIPE

SNI 4829.2 : 2015 – PE 80 & PE 100

Series SDR	S - 4 SDR - 9	S - 5 SDR - 11	S - 6.3 SDR-13.6	S - 8 SDR - 17	S - 10 SDR - 21	S - 12.5 SDR - 26	S - 16 SDR - 33	S - 20 SDR - 41
PE 80	PN - 16	PN - 12.5	PN - 10	PN - 8	PN - 6	PN - 5	PN - 4	PN - 2.5
PE 100	PN - 20	PN - 16	PN - 12.5	PN - 10	PN - 8	PN - 6	PN - 5	PN - 4
OD (mm)	Wall Thickness (mm)							
16	2.0							
20	2.3	2.0						
25	3.0	2.3	2.0					
32	3.6	3.0	2.4	2.0				
40	4.5	3.7	3.0	2.4	2.0			
50	5.6	4.6	3.7	3.0	2.4	2.0		
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
560	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	19.3	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	47.7	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
1400			102.9	82.4	66.7	53.5	42.9	34.3
1600			117.6	94.1	76.2	61.2	49.0	39.2

MDPE PIPE FOR GAS - ISO 4437

OD	S - 5 SDR 11	S - 8 SDR 17	S - 8.3 SDR 17.6	OD	S - 5 SDR 11	S - 8 SDR 17	S - 8.3 SDR 17.6
(mm)	Wall Thickness (mm)			(mm)	Wall Thickness (mm)		
20	2.3			140	12.7	8.3	8.0
25	3.0			160	14.6	9.5	9.1
32	3.0	2.0	2.0	180	16.4	10.7	10.3
40	3.7	2.4	2.3	200	18.2	11.9	11.4
50	4.6	3.0	2.9	225	20.5	13.4	12.8
63	5.8	3.8	3.6	250	22.7	14.8	14.2
75	6.8	4.5	4.3	280	25.4	16.6	16.0
90	8.2	5.4	5.2	315	28.6	18.7	17.9
110	10.0	6.6	6.3	355	31.4	21.1	19.6
125	11.4	7.4	7.1				

FITTINGS

HDPE PIPE & FITTINGS UNILON SYMBOL OF HIGH QUALITY PIPE

HDPE BUTT-WELD FITTINGS

MOULDED
1. Elbow 90º
2. Stub End Flange
3. Reducer
4. Tee
5. Reducing Tee

SEGMENTED
6. Tee Segmented
7. Elbow Segmented

HDPE ELECTROFUSSION FITTINGS

1. Connection Socket
2. Reducer
3. Elbow 90º
4. Tee Connection

HDPE COMPRESSION FITTINGS

1. Male Threaded Adaptor
2. Reducing Compression
3. Elbow 90º Compression
4. Straight Coupler Compression
5. Male Threaded Elbow 90º
6. Female Threaded Adaptor

HDPE THREADED FITTINGS

1. Threaded Reducing Coupling
2. Female Threaded Adaptor
3. Male Threaded Adaptor
4. Tee Adaptor
5. Water Moer
6. Gate Valve