

EURAPIPE

CONDENSER WATER

EURAPIPE[®] ABS PIPING SYSTEM

VOLUME 1 | ISSUE APRIL 2015

COMPANY PROFILE

Euratech Industries Sdn. Bhd., a wholly owned Malaysian company by has within itself a group of highly trained and dedicated staff in the design, manufacture, installation and operation of its products. The company is committed to a continuing program of quality and reliable products and services. A comprehensive technical advisory service is available from the company's technical service engineers including design of special customers' requirements, application advice and other information.

Our ABS products are manufactured and conformed to the highest international engineering quality standard such as Australian/ New Zealand Standard AS/NZS 3518.

Euratech Industries Sdn. Bhd. is also accredited to ISO9001:2008 Quality System.

Euratech Industries Sdn. Bhd. is principally engaged in the manufacturing and sales of Eurapipe ABS pressure pipes and fittings. Our products are widely used in a variety of industries such as:

- Water reticulation
- Domestic plumbing
- Water treatment plants
- Waste water treatment and recycling plants
- Power generation plants
- Industrial plants such as electronics, food processing, chemical, paper mills, palm oils and rubber mills.
- HVAC

It is Euratech's corporate objective to be the preferred supplier for high quality advanced thermoplastic piping systems by meeting our customers' needs in a timely and effective manner by giving full technical support and advice.

EURAPIPE ABS grey piping systems has complete size range from DN15 to DN750. Standard pressure ratings at 20°C starts at 450 KPa and goes up to 1500KPa (PN4.5 to PN15)

EURAPIPE ABS PRESSURE PIPE SYSTEM

INTRODUCTION

ABS thermoplastics piping system is recognised as one of the suitable materials to be used in many industries and domestic plumbing markets.

The material is very tough and resilient, has high impact strength, good chemical resistance, non-toxic and taint free.

The Eurapipe ABS piping systems comprises of a range of matched pressure pipes and fittings, joined together by cold solvent cement welding.

THE MATERIAL

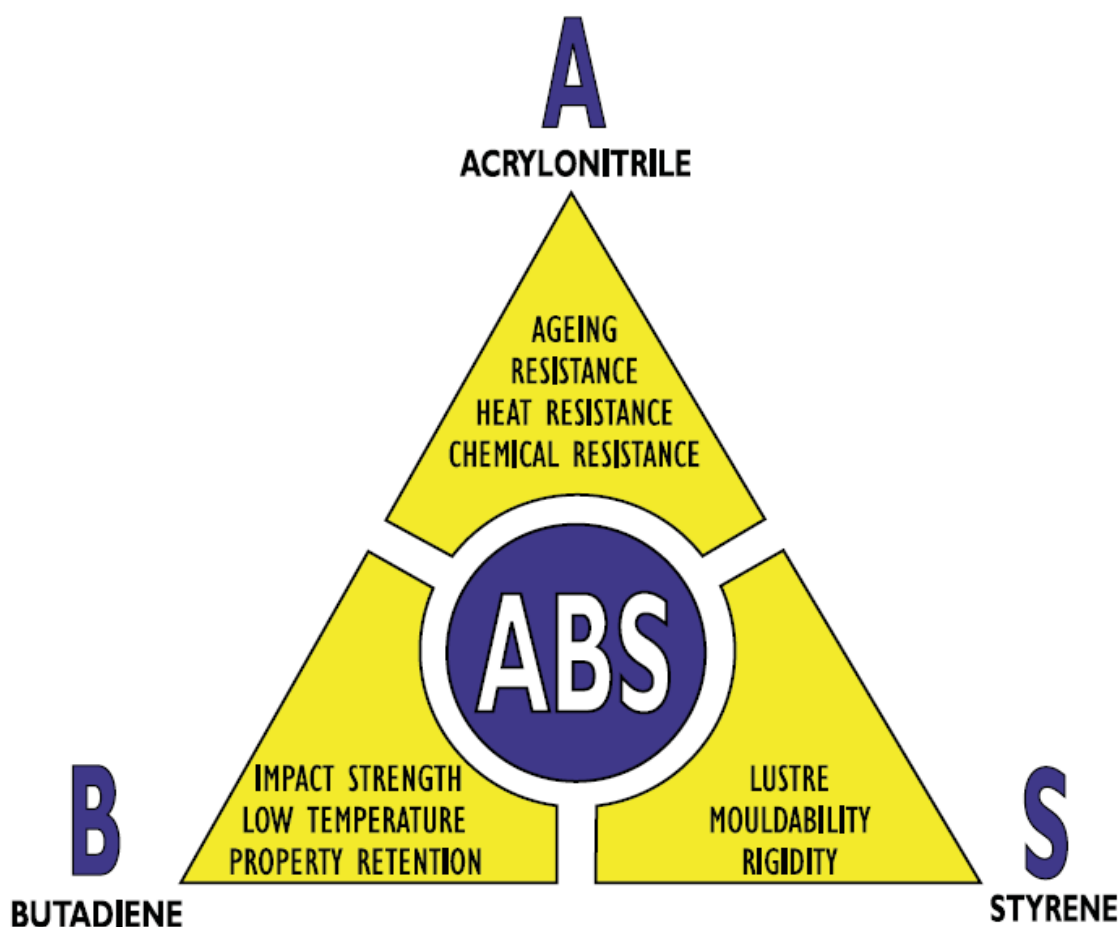
Acrylonitrile – Butadiene – Styrene (ABS) identifies as a family of engineering thermoplastics with a broad range of performance characteristics.

The copolymeric system is alloyed to yield the optimum balance of properties suited to the selected end use.

ACRYLONITRILE - Impact chemical resistance and rigidity

BUTADIENE - Endows the product with impact strength, toughness and abrasion resistance.

STYRENE - Contributes to the lustre, ease of processing and rigidity



EURAPIPE ABS PRESSURE PIPE SYSTEM

MATERIAL PROPERTIES

The formulation used by Euratech has been developed in conjunction with polymer manufacturers to optimize performance with respect to tensile strength, chemical resistance, ductility, resistance to weathering, heat stability, taint free and ease of processing from raw material to finished product.

ABS is tough and strong over the recommended temperature range of -30°C to +60°C.

The outstanding properties of ABS are:

- . High Impact strength and ductility, which combine to give exceptional toughness.
- . Good chemical resistance
- . Abrasion resistance
- . High strength solvent weld jointing which allows efficient system assembly and modification
- . Withstands aggressive ground waters
- . High strain tolerance for buried applications
- . Suitable for exposed weather application
- . Better flow rate

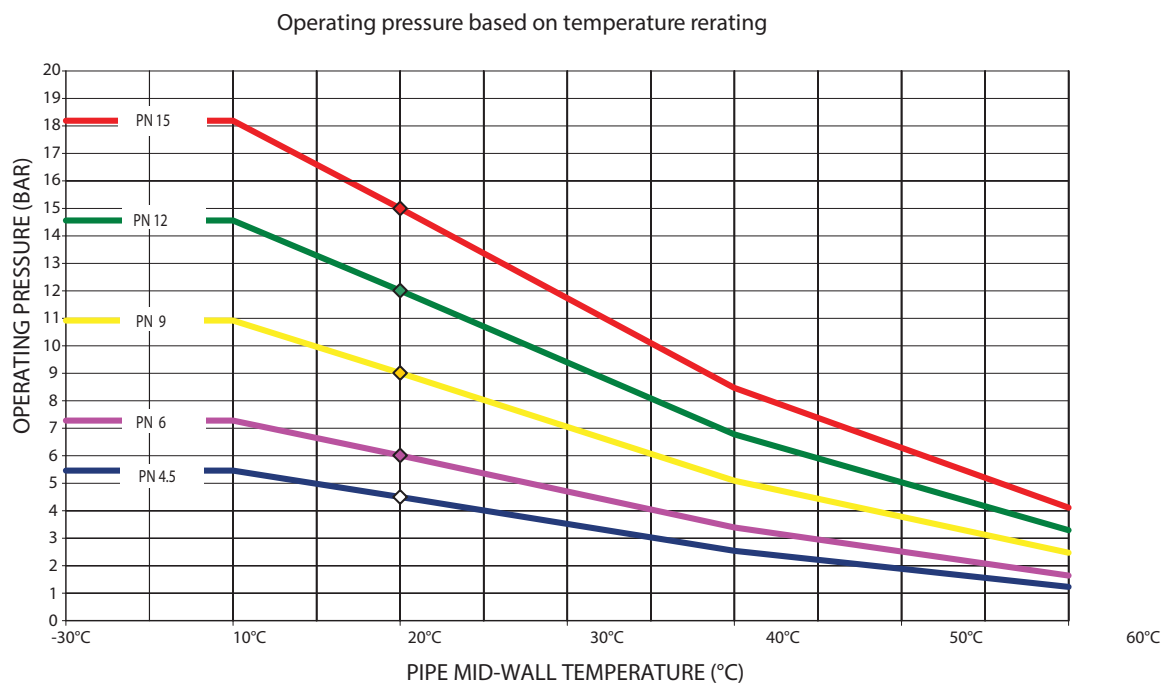


PROPERTY	REFERENCE TEMPERATURE (°C)	S.I. UNIT	OTHER UNITS
ULTIMATE TENSILE STRENGTH (STRAIN RATE 50MM/MIN) ASTM D638 TYPE I	20	40 MPa	5,800 lbf/in ²
ELONGATION AT BREAK	20	50%	50%
INSTANTANEOUS FLEXURAL MODULUS	20	2,200 MPa	319,072 lbf/in ²
COMPRESSIVE STRENGTH	20	42 MPa	6,100 lbf/in ²
IZOD IMPACT STRENGTH (NOTCHED) ASTM D256 (METHOD A)	23	340 J/m notch	6.4 ft lb/in notch
SPECIFIC GRAVITY @20°C		1.05x 10 ⁻³ kg/m ³	65.5 x 10 ⁻³ lb/ft ³
VICAT SOFTENING POINT ASTM D1525		95°C	203°F
COEFFICIENT OF THERMAL EXPANSION		10.1x 10 ⁻⁵ m/m°C	5.6x 10 ⁻⁵ ft/ft°F
MAXIMUM OPERATING TEMPERATURE		60°C	140°F
POISSON'S RATIO		0.35	
THERMAL CONDUCTIVITY		0.2W/m°C	1.3 BTU/ft ² /in/°F
SPECIFIC HEAT		1.47KJ/kg°C	0.35 BTU/lbm/°F
ABSOLUTE ROUGHNESS		0.003mm	0.0000098ft
DIELECTRIC CONSTANT			3.20@ 60 Hz
			3.12@ 10 ³ Hz
			2.90@ 10 ⁶ Hz

EURAPIPE ABS PRESSURE PIPE SYSTEM

PRESSURE/ TEMPERATURE DERATING

All thermoplastic piping system pressure ratings apply at the standard mid-wall temperature of 20°C. Where systems are required to operate at higher continuous mid-wall temperatures, pressure rating must be adjusted in accordance with the following graph. The pressure values from 10°C up to 50°C are for 50 years design life, whereas for 60°C are for 20 years design life.



ADVANTAGES

1. ABRASION RESISTANCE

EURAPIPE ABS offers outstanding resistance to abrasion and erosion from aggressive slurries which can rapidly damage steel or other traditional pipe materials.

2. WEATHER RESISTANCE

EURAPIPE ABS is one of the most weather resistant polymers available today. Successful field tests have been completed on piping systems having been exposed to weathering for over 30 years.

3. LIGHT WEIGHT

ABS is one-sixth the weight of steel systems, making EURAPIPE easy to handle and install. This reduces the cost of installation, handling and transport.

4. CHEMICAL RESISTANCE

EURAPIPE ABS is unaffected by both internal and external attack by a wide range of acids, alkalis, ground water salts and other environmental factors. Please refer to Euratech for further information.

QUICK REFERENCE CHEMICAL RESISTANCE

Chemical	Resistance
Weak acids	Good resistance
Strong acids	Limited resistance
Weak alkalis	Good resistance
Strong alkalis	Good resistance
Aggressive soils	Excellent resistance
Metal salts	Good resistance
Sea water	Excellent resistance
Aromatic hydrocarbons	Poor resistance
Organic solvents	Poor resistance

5. NON-TOXIC/ TAINT FREE

The ABS formulation contains no harmful metallic stabilizers and it has been widely used for many years in piping systems for drinking water, medical preparations, food products and potable water. EURAPIPE ABS system is ideal for potable cold water. It conforms to World Health Organisation, E.E.C., AS4020 / BS6920 and MS1583 requirement for potable water reticulation and distribution.

6. EXCEPTIONALLY SMOOTH BORE

EURAPIPE ABS does not suffer from internal corrosion and provides a smooth bore for the life of the piping systems. The smooth bore does not support formation of scale and slime as do cement based lined products.

7. COLD SOLVENT WELD JOINING

The EURAPIPE size range also utilizes the proven traditional method of joining ABS pipes, cold solvent cement welding, which provides a homogenous bond between pipes and fittings (SWJ).

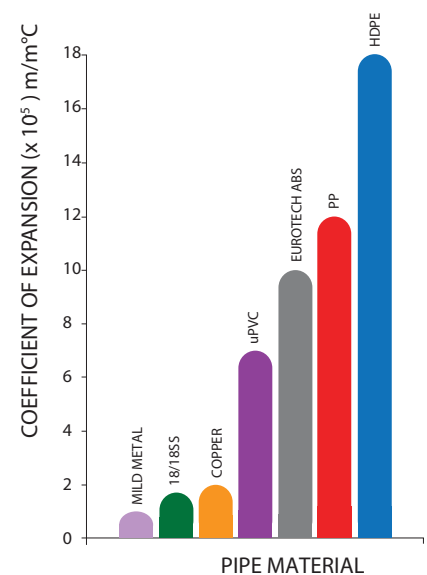
8. TEMPERATURE RANGE

A great advantage of EURAPIPE ABS over other plastic systems is its ability to perform over a wide temperature range from -30°C to +60°C. This makes EURAPIPE ABS very versatile and capable of handling a wide variety of fluids from refrigerants to moderately hot corrosive liquids

9. THERMAL EXPANSION

All thermoplastics expand at a greater rate than metal as shown in the diagram below.

Expansion need not cause undue concern in design or installation of an ABS piping system provided that due recognition is taken at the design stage. The reduced flexural modulus of ABS over that of steel results in reduced loads on supports and equipment arising from thermal strains. The linear coefficient of thermal expansion of ABS is $10.1 \times 10^{-5} \text{ m/m}^\circ\text{C}$.



10. ENVIRONMENTAL

The use of ABS contributes positively to the environment as it takes approximately one sixth of the energy to manufacture compared to metal products. This has direct savings in greenhouse gas emissions. Additionally ABS is lead and chlorine free and can be readily recycled.

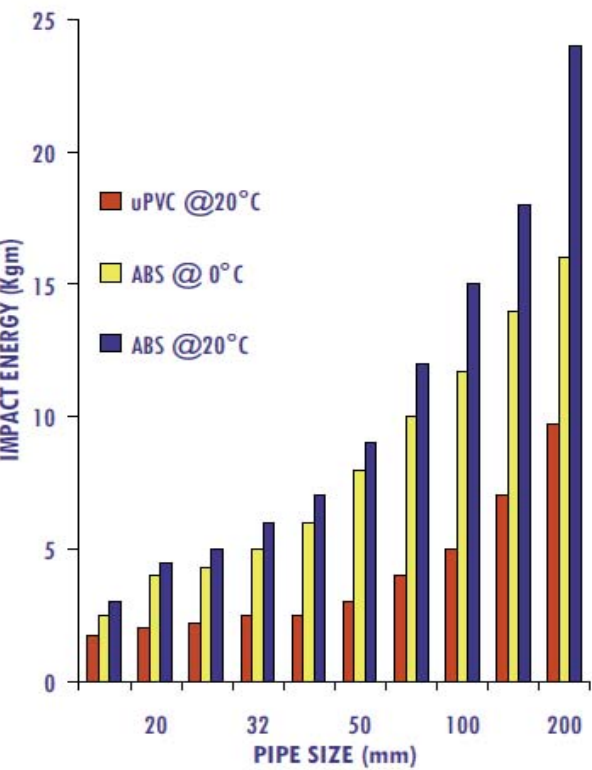
11. IMPACT STRENGTH

The butadiene constituent in ABS affords unrivalled resistance to impact. This means that EURAPIPE PIPING SYSTEMS may be used in more critical applications where other types of plastics could not be considered.

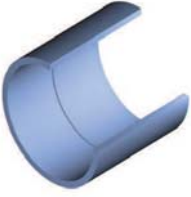
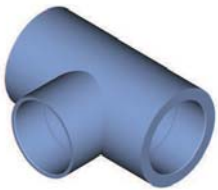
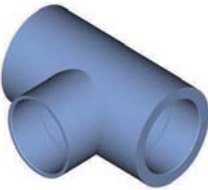
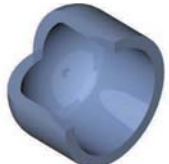
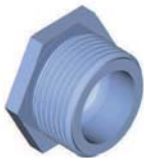
ABS is ductile material and the mode of failure resembles that of soft copper.

Failure is by ductile distortion and tearing, the localized nature minimizing the loss of pipe contents.

In contrast, crack propagation and hazardous material fragmentation accompany the failure of brittle material.



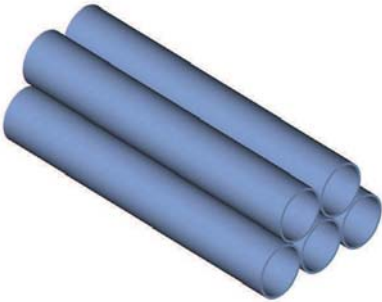
EURAPIPE ABS GREY PRESSURE PIPING SYSTEM PRODUCT RANGE

				
PLAIN SOCKET CODE 100	STUB FLANGE CODE 135	FULL FACE FLANGE CODE 129,130,317,322	BLANK FLANGE STUB STYLE CODE 136	BLANK FULL FACE FLANGE CODE 131, 313, 315, 316
				
BACKING RING CODE 415, 416, 425, 413	GASKET (FULL FACE STYLE) CODE 409,410,426	GASKET (STUB FLANGE STYLE) CODE 431	ELBOW 90° CODE 115	ELBOW 45° CODE 119
				
FAUCET ELBOW 90° CODE 116	BEND 90° R=1.2D (SP-SP) CODE 301	BEND 45° R=1.2D (SP-SP) CODE 302	BEND 90° R=2.5D (SP-SP) CODE 308	BEND 45° R=2.5D (SP-SP) CODE 312
				
BEND 90° R=5D (SP-SP) CODE 309	BEND 45° R=5D (SP-SP) CODE 310	EQUAL TEE (SO-SOXSO) CODE 122	REDUCING TEE SOCKET CODE 122	REDUCING TEE SPIGOT CODE 120
				
TAPPING SADDLES CODE 127	Y PIECE 45° CODE 128	REDUCING BUSH CODE 109	REDUCING SOCKET CODE 114	END CAP CODE 140
				
SOCKET UNION CODE 205	FAUCET SOCKET CODE 101	VALVE SOCKET CODE 151	FAUCET ADAPTOR CODE 153	THREADED PLUG CODE 155

EURAPIPE ABS GREY PIPING SYSTEM

PIPE DIMENSION

Code	Size	Description	PN Rating	OD Mean (mm)	WT Mean (mm)	ID Mean (mm)	Weight kg/m
R11.5200.015	DN15	ABS Pipe	PN20	21.35	2.10	17.15	0.13
R11.5180.020	DN20	ABS Pipe	PN18	26.75	2.40	21.95	0.19
R11.5180.025	DN25	ABS Pipe	PN18	33.55	3.05	27.45	0.31
R11.5180.032	DN32	ABS Pipe	PN18	42.25	3.80	34.65	0.48
R11.5180.040	DN40	ABS Pipe	PN18	48.25	4.30	39.65	0.62
R11.5120.050	DN50	ABS Pipe	PN12	60.35	3.65	53.05	0.68
R11.5150.050	DN50	ABS Pipe	PN15	60.35	4.50	51.35	0.83
R11.5120.065	DN65	ABS Pipe	PN12	75.35	4.50	66.35	1.05
R11.5150.065	DN65	ABS Pipe	PN15	75.35	5.65	64.05	1.30
R11.5090.080	DN80	ABS Pipe	PN 9	88.90	4.10	80.70	1.47
R11.5120.080	DN80	ABS Pipe	PN12	88.90	5.35	78.20	1.48
R11.5150.080	DN80	ABS Pipe	PN15	88.90	6.60	75.70	1.79
R11.5090.100	DN100	ABS Pipe	PN 9	114.30	5.25	103.80	1.89
R11.5120.100	DN100	ABS Pipe	PN12	114.30	6.80	100.70	2.41
R11.5150.100	DN100	ABS Pipe	PN15	114.30	8.50	97.30	2.97
R11.5090.125	DN125	ABS Pipe	PN 9	140.20	6.40	127.40	2.83
R11.5120.125	DN125	ABS Pipe	PN12	140.20	8.40	123.40	3.65
R11.5150.125	DN125	ABS Pipe	PN15	140.20	10.40	119.40	4.54
R11.5090.150	DN150	ABS Pipe	PN 9	168.30	7.65	152.95	4.05
R11.5120.150	DN150	ABS Pipe	PN12	168.30	10.10	148.05	5.27
R11.5150.150	DN150	ABS Pipe	PN15	168.30	12.40	143.45	6.38
R11.5060.225	DN200	ABS Pipe	PN 6	225.30	7.05	211.20	5.08
R11.5090.225	DN200	ABS Pipe	PN 9	225.30	10.30	204.70	7.31
R11.5120.225	DN200	ABS Pipe	PN12	225.30	13.45	198.40	9.40
R11.5060.250	DN225	ABS Pipe	PN 6	250.35	7.75	234.85	6.20
R11.5090.250	DN225	ABS Pipe	PN 9	250.35	11.45	227.45	9.02
R11.5120.250	DN225	ABS Pipe	PN12	250.35	14.90	220.55	11.58
R11.5060.315	DN300	ABS Pipe	PN 6	315.45	9.75	295.95	9.84
R11.5090.315	DN300	ABS Pipe	PN 9	315.45	14.40	286.65	14.31
R11.5120.315	DN300	ABS Pipe	PN12	315.45	18.80	277.85	18.40
R11.5060.355	DN350	ABS Pipe	PN 6	355.50	10.90	333.70	12.40
R11.5090.355	DN350	ABS Pipe	PN 9	355.50	16.15	323.20	18.09
R11.5120.355	DN350	ABS Pipe	PN12	355.50	21.20	313.10	23.39
R11.5060.400	DN375	ABS Pipe	PN 6	400.50	12.40	375.70	15.88
R11.5090.400	DN375	ABS Pipe	PN 9	400.50	18.15	364.20	22.90
R11.5120.400	DN375	ABS Pipe	PN12	400.50	23.80	352.80	29.64



NOTES

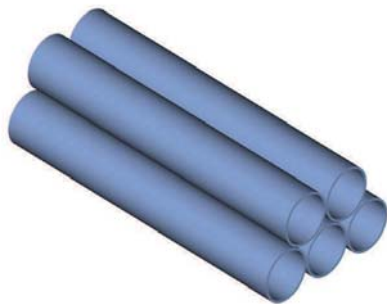
- Complies with AS/NZS 3518
- Standard pipe length supplied 5.8m
- Other lengths and pressure ratings are available upon request
- Pipe is supplied plain ended
- All values quoted are subject to manufacturing tolerances
- Dimensions are mean values

TECHNICAL DATA

- Temperature Range :-30 °C to +60 °C
- Joining Methods: Solvent welding, flanged joints, mechanical couplings
- Approvals: SIRIM, SPAN, SAI GLOBAL, GL, ABS
- Standard: AS/NZS 3518

EURAPIPE ABS GREY PIPING SYSTEM

PIPE DIMENSION - CONTINUE



Code	Size	Description	PN rating	OD Mean (mm)	WT Mean (mm)	ID Mean (mm)	Weight kg/m
R11.5060.450	DN400	ABS Pipe	PN 6	450.50	13.85	422.80	19.96
R11.5090.450	DN400	ABS Pipe	PN 9	450.50	20.45	409.60	29.02
R11.5120.450	DN400	ABS Pipe	PN12	450.50	26.75	397.00	37.41
R11.5060.500	DN450	ABS Pipe	PN 6	500.50	15.45	469.60	24.73
R11.5090.500	DN450	ABS Pipe	PN 9	500.50	22.80	454.90	35.94
R11.5120.500	DN450	ABS Pipe	PN12	500.50	29.70	441.10	46.14
R11.5060.560	DN500	ABS Pipe	PN 6	560.50	17.20	526.10	30.84
R11.5090.560	DN500	ABS Pipe	PN 9	560.50	25.40	509.70	44.85
R11.5120.560	DN500	ABS Pipe	PN 12	560.50	33.30	493.90	57.93
R11.5060.630	DN575	ABS Pipe	PN 6	630.60	19.40	591.80	39.13
R11.5090.630	DN575	ABS Pipe	PN 9	630.60	28.65	573.30	56.91
R11.5120.630	DN575	ABS Pipe	PN12	630.60	37.50	555.60	73.40
R11.5060.710	DN650	ABS Pipe	PN 6	710.70	21.85	667.00	49.67
R11.5090.710	DN650	ABS Pipe	PN 9	710.70	32.25	646.20	72.20
R11.5060.826	DN750	ABS Pipe	PN 6	825.60	25.30	775.00	66.82
R11.5090.826	DN750	ABS Pipe	PN 9	825.60	37.40	750.80	97.28

- Notes
1. All values quoted are average and are subjected to manufacturing tolerances
 2. Standard pipe length supplied is 5.8m. Lengths up to 11.6m available upon request
 3. Other sizes such as 125mm are available upon customer order.
 4. Other pressure ratings are available upon request i.e. 4.5, 6 and 9.
 5. Rated working pressure is based on 20° C
 6. Class D is equivalent to PN12 and class E is equivalent to PN15.

NOTES

- Complies with AS/NZS 3518
- Standard pipe length supplied 5.8m
- Other lengths and pressure ratings are available upon request
- Pipe is supplied plain ended
- All values quoted are subject to manufacturing tolerances
- Dimensions are mean values

TECHNICAL DATA

- Temperature Range : -30 °C to +60 °C
- Joining Methods: Solvent welding, flanged joints, mechanical couplings
- Approvals: SIRIM, SPAN, SAI GLOBAL, GL, ABS
- Standard: AS/NZS 3518

INSTALLATION PROCEDURE

PREPARATION

1

Prepare and inspect the pipe. Pipe with scratches, gauges or dents more than 10% of the pipe wall thickness shall not be used.

Joining surface must be clean and free from water, dirt, oils or any foreign matter to ensure a good weld.



2

The ends of the pipes shall be cut square and chamfered.

All burrs shall be removed.



3

Dry fit the joint without forcing the pipe into the fitting.

If the pipe cannot enter into the fitting or does not bind up before reaching the end of the fitting, DO NOT continue with the joint.



4

Measure the distance from the mouth of fitting to stopper (Insertion depth)



5

Mark the insertion depth + 10mm from the end of the pipe and this served as the witness mark in order to identify when the joint is fully "home".



INSTALLATION PROCEDURE

6

Abrade and clean outer surface of the pipe and inner surface of fitting by using the sand paper.



7

Wipe over the surfaces with a clean dry rag/ brush to ensure the surface is clean.
Immediately before joining, thoroughly wipe the abraded surfaces with a clean rag/brush moistened with MEK Cleaner.

Apply only one coat of the MEK cleaner.



JOINING

1

Stir solvent cement before use.

Using the brush to apply the solvent cement to the pipe and the fittings.
A thin layer of solvent should be sufficient to have a good join.

DO NOT apply solvent cement onto the pipe over the witness mark

DO NOT pour the solvent cement onto the pipe or allow puddles to form



2

Immediately after applying the solvent cement, push fully "home" using the mark on the pipe as the guide.
DO NOT twist fitting on the pipe.

After this process done, wipe off the excessive solvent cement by using the clean rags.

Hold on the joint until it reaches the holding time.

Different pipe size requires different holding time.



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For further information regarding these products, reference should be made to the instructions and the guidelines for care and use issued by Euratech Industries Sdn. Bhd. representative listed on this publication.



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