



UNDERGROUND DRAINAGE & SEWER SYSTEM

a **LESSO** company

★ ★ ★
LEAD-FREE
PIPE SYSTEMS

SUITABLE FOR BUILDINGS,
HOUSES AND CIVIL
CONSTRUCTION PURPOSE.

LESSO





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PRODUCT RANGE

UNDERGROUND DRAINAGE & SEWER SYSTEM

FEATURES

- High quality of finish with smooth internal and external surface
- Provide low coefficient of flow friction
- Excellent resistance to chemicals and gases naturally found in sewage
- Extensive size range to suit all installation needs
- Certified ISO 9001 by SIRIM
- Complies with BS EN 1401 and MS 979. SPAN listed



ADVANTAGES

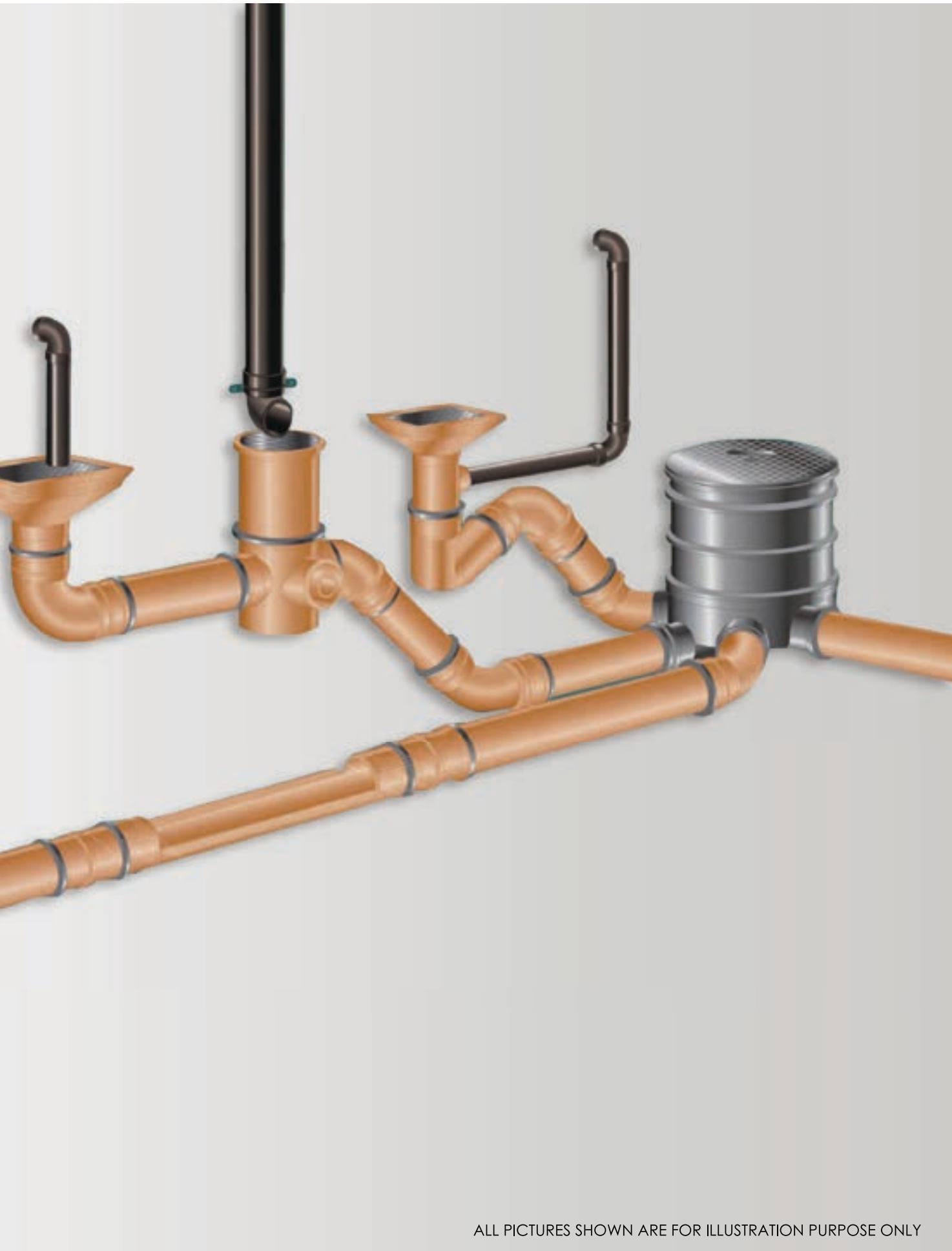
- High Internal Smoothness
- High Impact Resistance
- Abrasion and Shock Resistance
- Algae and Bacteria Resistance
- Ability to accommodate deformation without structural damage



APPLICATION

Paling Underground Pipes and Fittings are used for domestic drains, and public and private sewers





ALL PICTURES SHOWN ARE FOR ILLUSTRATION PURPOSE ONLY



QUALITY & CERTIFICATION



SYSTEM CERTIFICATION

PIPES

1. Unplasticized Polyvinyl Chloride (PVC-U) Pipes for Non-Pressure Underground Drainage and Sewerage application

FITTINGS

1. Unplasticized Polyvinyl Chloride (PVC-U) Fittings for Non-Pressure Underground Drainage and Sewerage system

PIPES

MODEL	NOM. SIZE (mm)	SPECIFICATION
Underground	110, 160, 200, 250 & 315	BS EN 1401
Underground	200, 250 & 315	MS 979-2

FITTINGS

MODEL	NOM. SIZE (mm)	SPECIFICATION
Swept Bend (F/F)	110, 160, 200	BS EN 1401
Unswep Bend (F/F)	110, 160, 200	BS EN 1401
Swept Branch	110, 160, 160x110	BS EN 1401
Swept Double Branch	110	BS EN 1401
45° Y-Branch	110,110x82,160x110	BS EN 1401
45° Y-Branch (F/F)	110,160,160x110, 200, 200x160,250, 250x160, 250x200, 315, 315x110, 315x160	BS EN 1401
Branch 87.5° (F/F)	160, 160x110, 200, 200x110, 200x160, 250, 250x110, 250x160, 250x200, 315, 315x110, 315x160, 315x200	BS EN 1401
Swept Reducing Double Branch	160x110	BS EN 1401
Unswep Reducing Double Branch	160x110	BS EN 1401
Double Branch 45°	110	BS EN 1401
Straight Coupler	110, 160, 200, 250 & 315	BS EN 1401
Access Plug	110, 160, 200, 250 & 315	BS EN 1401
Socket Plug	110, 160, 200, 250 & 315	BS EN 1401
Socket Plug with Screw on Cap	110	BS EN 1401
End Cap	110, 160, 200, 250 & 315	BS EN 1401
Concentric Reducer	160x110	BS EN 1401
Invert Reducer	110x160, 160x200, 160x250, 200x250, 200x315, 250x315	BS EN 1401
P' Trap	110	BS EN 1401
'S' Trap with Inspection Opening	110	BS EN 1401
WC Connecting Bend	110	BS EN 1401

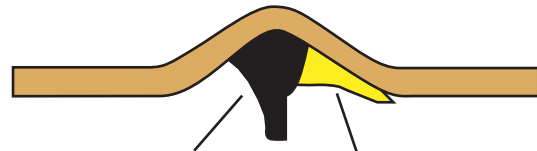
UNDERGROUND PIPES

RUBBER RING JOINT SYSTEM BENEFITS:

- Flexible joint can withstand ground settlement without damage
- Low insertion force to provide ease and speed in installation
- Fully watertight system to external pressure and depression
- Permits wide radius bends during installation
- High resistance to ageing and external agents
- Permits linear thermal expansion
- Angular and diametral deformation strength

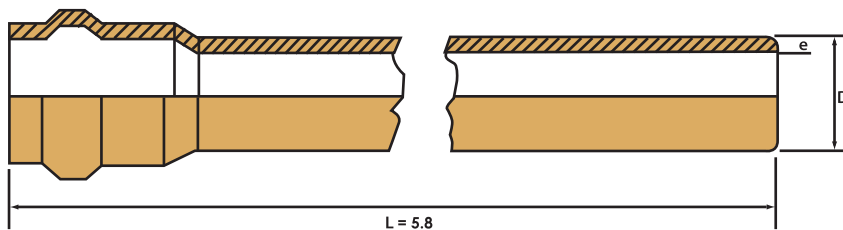
Paling PVC-U Underground pipe is fitted with Forsheda 605 Sewer Lock System, an integrated system where the seal and mandrel act together as a tool to shape the pipe socket during manufacture. The seal is firmly locked in the correct position by cooling-shrinking the pipe socket.

Together the two seal materials form a forming tool to shape its own seal groove eliminating irregularities and tolerances in the socket. As the pipe is supplied with seal firmly integrated during manufacture, pipe laying work is made easier and faster. Risk of seal displacement during installation is eliminated.



A flexible "thermoplastic elastomer" element to effectively seal against spigot and socket.

A reinforcing "plastic" element bonded to the thermoplastic elastomer element, to hold the seal firmly in place.



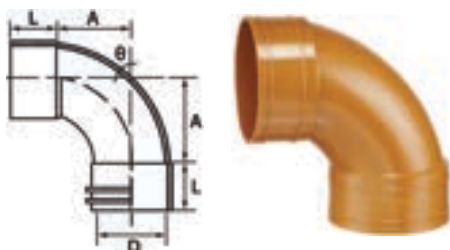
CODE NO.	NOM. SIZE (mm)	MEAN OUTSIDE DIAMETER (D) (mm)	WALL THICKNESS e (mm)	PIPE END	TYPE
1251 110 58 05	110	110.0 - 110.3	3.2 - 3.8	RRJ/SS/PE	SN8 SDR34
1251 160 58 05	160	160.0 - 160.4	4.0 - 4.6	RRJ/SS/PE	SN4 SDR41
1251 200 58 05	200	200.0 - 200.5	4.9 - 5.6	RRJ/SS/PE	SN4 SDR41
1252 250 58 05	250	250.0 - 250.5	6.2 - 7.1	RRJ/SS/PE	SN4 SDR41
1252 315 58 05	315	315.0 - 315.6	7.7 - 8.7	RRJ/SS/PE	SN4 SDR41

RRJ - Rubber Ring Joint

SS - Solvent Socket

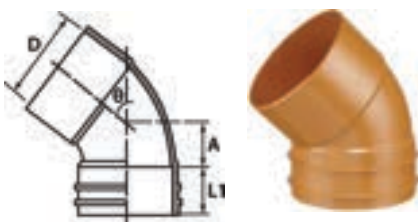
PE - Plain Ended

SWEEP BEND (F/F)



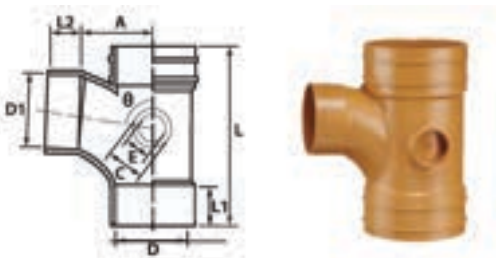
CODE NO.	NOM. SIZE (mm)	ANGLE θ	DIMENSIONS (mm)			TYPE
			L	A	D	
2501 110 05	110	87.5°	51	73	110	SN8 SDR34
2501 160 05	160	87.5°	76	120	160	SN4 SDR41
2501 200 05	200	89°	94	118	200	SN4 SDR41

45° BEND (F/F)



CODE NO.	NOM. SIZE (mm)	ANGLE θ	DIMENSIONS (mm)			TYPE
			L1	A	D	
2507 110 05	110	41°	50	20	110	SN8 SDR34
2510 110 05	110	45°	50	20	110	SN8 SDR34
2510 160 05	160	45°	76	30	160	SN4 SDR41
2510 200 05	200	45°	90	55	200	SN8 SDR34
2505 110 05	110	68°	52	56	110	SN4 SDR41
2505 160 05	160	68°	80	74	160	SN4 SDR41
2505 200 05	200	68°	100	96	200	SN4 SDR41

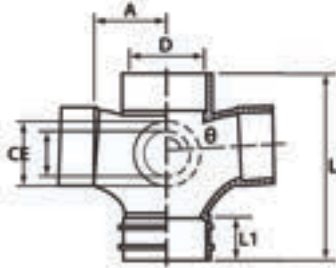
SWEEP BRANCH



CODE NO.	NOM. SIZE (mm)	ANGLE θ	DIMENSIONS (mm)								TYPE
			L	L1	L2	A	C	E	D	D1	
2511 110 05	110	87.5°	250	50	50	75	-	56	110	110	SN8 SDR34
2511 160 05	160	87.5°	360	77	77	145	82	56	160	160	SN4 SDR41
2511 160110 05	160x110	87.5°	312	76	48	120	-	56	160	110	SN4 SDR41

SWEEP DOUBLE BRANCH

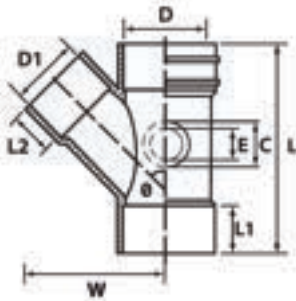
CODE NO.	NOM. SIZE (mm)	ANGLE		DIMENSIONS (mm)					TYPE
		θ	L	L1	A	C	E	D	
2516 110 05	110	87.5°	246	50	80	82	56	110	SN8 SDR34



45° Y-BRANCH

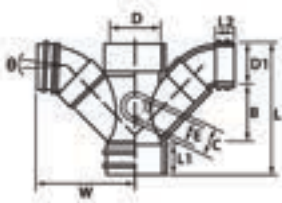
CODE NO.	NOM. SIZE (mm)	DIMENSIONS (mm)					TYPE			
		L	L1	L2	W	C		E	D	D1
2513 110 05*	110	266	51	51	175	75	56	110	110	SN8 SDR34
2513 160110 05	160x110	317	77	50	200	82	56	160	110	SN4 SDR41

* With Rubber Ring Joint



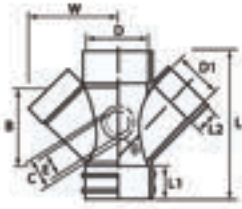
SWEEP REDUCING DOUBLE BRANCH

CODE NO.	NOM. SIZE (mm)	ANGLE			DIMENSIONS (mm)							TYPE
		θ	L	L1	L2	W	B	C	E	D	D1	
2511 16011005	160x110	87.5°	320	77	50	254	115	82	56	160	110	SN4 SDR41



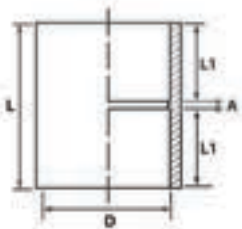
45° REDUCING DOUBLE BRANCH

CODE NO.	NOM. SIZE (mm)	ANGLE		DIMENSIONS (mm)							TYPE		
		\ominus	\oplus	L	L1	L2	W	B	C	E		D	D1
2518 1601 1005	160x110	45°		320	71	50	195	153	82	56	160	110	SN4 SDR41



STRAIGHT COUPLER

CODE NO.	NOM. SIZE (mm)	DIMENSIONS (mm)				TYPE
		L	L1	A	D	
2525 110 05	110	110	53	4	110	SN8 SDR34
2525 160 05	160	167	82	4	160	SN4 SDR41
2525 200 05	200	184	90	4	200	SN4 SDR41
2525 250 05	250	225	110	5	250	SN4 SDR41
2525 315 05 ^Δ	315	297	144	9	315	SN4 SDR41

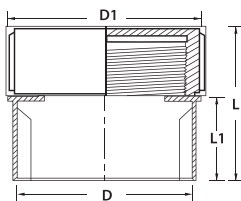


Δ Fabrication item

SOCKET PLUG

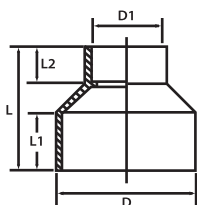
with Screw on Cap

CODE NO.	NOM. SIZE (mm)	DIMENSIONS (mm)				TYPE
		L	L1	D1	D	
2529 110082 05	110	77	50	110	76	SN8 SDR34



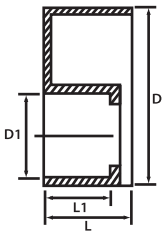
CONCENTRIC REDUCER

CODE NO.	NOM. SIZE (mm)	DIMENSIONS (mm)					TYPE
		L	L1	L2	D	D1	
2539 160110 05	160x100	145	75	49	160	110	SN4 SDR41



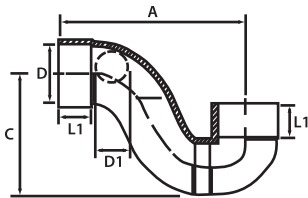
BUSH/SOCKET REDUCER

CODE NO.	NOM. SIZE (mm)	DIMENSIONS (mm)				TYPE
		L	L1	D	D1	
2536 160110 05	160x100	71	48	160	110	SN4 SDR41



P' TRAP

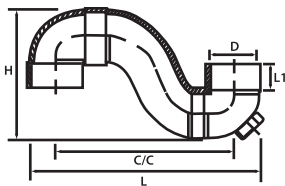
CODE NO.	NOM. SIZE (mm)	DIMENSIONS (mm)				
		L1	A	C	D	D1
2545 110 05	110	50	325	223	110	56



'S' TRAP

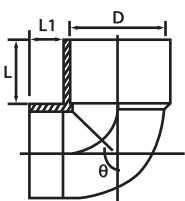
with Inspection Opening

CODE NO.	NOM. SIZE (mm)	DIMENSIONS (mm)				
		L	L1	H	C/C	D
2548 110 05	110	500	50	270	390	110



WC CONNECTING BEND

CODE NO.	NOM. SIZE (mm)	ANGLE θ	DIMENSIONS (mm)		
			L	L1	D
2508 110 05	110	90°	50	25	110
2509 110 05	110	90°	50	25	110



INSTALLATION TIPS – RUBBER RING JOINTS (PIPES)

The assembly of one pipe to another may be performed using various methods. One of the most successful methods employs a rubber ring joint. The rubber ring joint may be either of integral socket design (formed as a continuous, homogeneous entity with the pipe) or it may consist of a separate sleeve-type coupling. The joint provides the following advantages:

- Allowance for expansion and contraction
- Reliably assembled in poor weather conditions
- Consistent reliability
- Flexibility and resiliency
- Labor saving and overall economical
- Ease of installation

JOINTING METHOD

When the rings are color coded, be sure to consult the pipe manufacturer or their literature for the difference. In all cases, clean the ring, the socket or the coupling interior, especially the groove (except when the ring is permanently installed) and the spigot with a rag, brush or paper towel to remove any dirt or foreign material before assembling. Inspect the ring, pipe spigot chamber, ring groove and sealing surfaces for damages or deformation. Use only rings which are designed for and supplied with the pipe. Insert them as recommended by the manufacturer.

Lubricant should be applied as specified by the pipe manufacturer. Bacterial growth, damage to gaskets or the pipe, may result from the use of non-approved lubricants. Use only the lubricant supplied by the pipe manufacturer.

While keeping the lengths in paper alignment, brace the socket and push the spigot into the bell. The spigot should be inserted until the reference mark on the pipe barrel is even with the edge of the socket.

JOINTING METHOD FOR RUBBER RING JOINT



1. Clean dirt and grit from socket
2. Clean the exterior of the pipe before applying lubricant
3. Apply lubricant on spigot
4. Insert the pipe until the white line

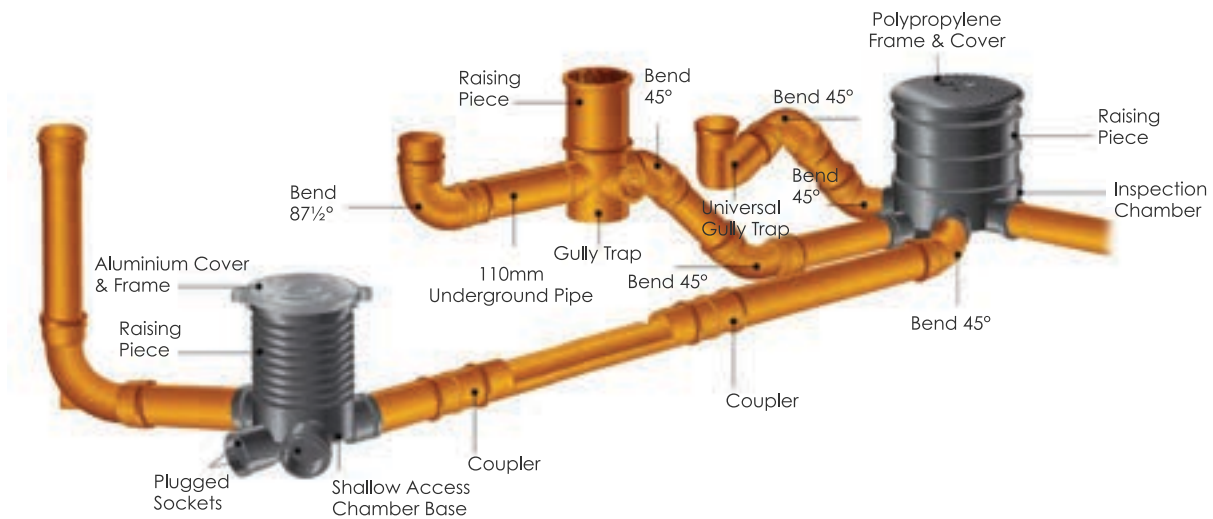
PALING CONNECTORS

Connecting to existing materials quickly and simply, saves installation time. Paling Underground Drainage and Sewer System are manufactured to British and Malaysian standards and are compatible with other standard uPVC drainage systems of the same nominal size.

Paling Underground Drainage System have been designed to meet the needs of today's drain laying market. It incorporates wide range of fittings that makes the system easy to use even in bad weather conditions and enables all types of drainage to be catered for. The system's overall flexibility offers considerable savings in both labour and installation time.

A comprehensive range of components is available in (110mm, 160mm, 200mm, 250mm and 315mm sizes, thus ensuring that Paling can supply all domestic, commercial and industrial requirements for both foul water and surface water drainage up to main sewer).

DRAINAGE SYSTEM LAYOUT



Paling offers a variety of bends, junctions, adaptors, gullies and access fittings to overcome the most difficult drainage installation.



FREQUENTLY

ASKED QUESTIONS



WHAT ARE THE ADVANTAGES OF PVC-U?

PVC-U pipes do not react with chemicals and do not conduct electricity. They are safe for use outdoors or in soil that contains a high level of acidity, alkalis or other chemicals. They are also suitable for use indoors or as a means to convey chemicals or waste products, without the risk of the contents corroding and weakening the integrity of the pipes. They are frequently used in industrial and laboratory applications due to their capacity to withstand high temperatures.

WHAT ARE THE BENEFITS OF UNDERGROUND PIPE RUBBER RING JOINT?

Paling Rubber Ring Joint is flexible and offers a 3 degree true deflection in any direction. This helps the pipe to accommodate soil settlement without damaging the pipeline. In addition, the Rubber Ring Joint permits wide bending radius during curvature installation.

WHY ARE PVC PIPING SYSTEMS COST EFFECTIVE?

The cost of PVC piping is only a fraction of the cost for products made of other materials. Installation costs are also lower, because of increased productivity and cheaper transportation expenses due to the product's lower weight. Savings are also realised when work is done to join the piping sections together, because PVC piping makes use of simple PVC connectors and solvent cements, whereas metal piping requires welding and expensive metal connectors to bring into operational use.

DO PVC-U FITTINGS LAST LONG?

PVC is strong and durable, in spite of its relatively light weight. As a result, this material is suitable for all types of long-term applications, including indoor, outdoor and buried piping system. It remains strong across a range of temperatures, resulting in fewer burst pipes and reduced maintenance issues. In general, the impact strength of PVC piping is actually better than that of comparable alternative materials.

ARE THERE ANY MARKINGS ON PALING PIPES?

Paling marks all of its pipes with the following: Paling logo, SIRIM certification, SIRIM license number, standards conformance and year of the standard, nominal size, manufacture date, manufacture shift code, lead-free and quality mark.



ABOUT LESSO MALAYSIA INDUSTRIES SDN. BHD.

These systems are suitable for various applications and building types, including domestic, commercial, industrial and civil construction projects. Paling products are accurately designed to consistently exceed the performance aspects specified under widely recognized standards.

Along with ISO 9001 certification and various approvals by SIRIM and IKRAM, Paling products are accredited by NSF, an authority in water industry standards.

Paling products are manufactured under an effective system of inspection, testing, supervision and control.



ABOUT CHINA LESSO GROUP HOLDINGS LIMITED

(Stock Name: China Lesso, Stock Code: 02128.HK)

China Lesso Group Holdings Limited is a large industrial group of home furnishings and building materials in China. China Lesso offers products, services and channels involving piping, building materials and home furnishings, environmental protection, and modern agriculture. With the rapid development of internationalization and globalization, China Lesso boasts more than 80 holding subsidiaries and more than 23 production bases distributed in 17 provinces across China, and in Canada and Indonesia. China Lesso remains committed to improving its strategic layout, broadening its sales network and expanding the market. This is how it provides products and services for customers in a timely and efficient way.

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TRUSTED PIPEWORK FOR LIFE

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