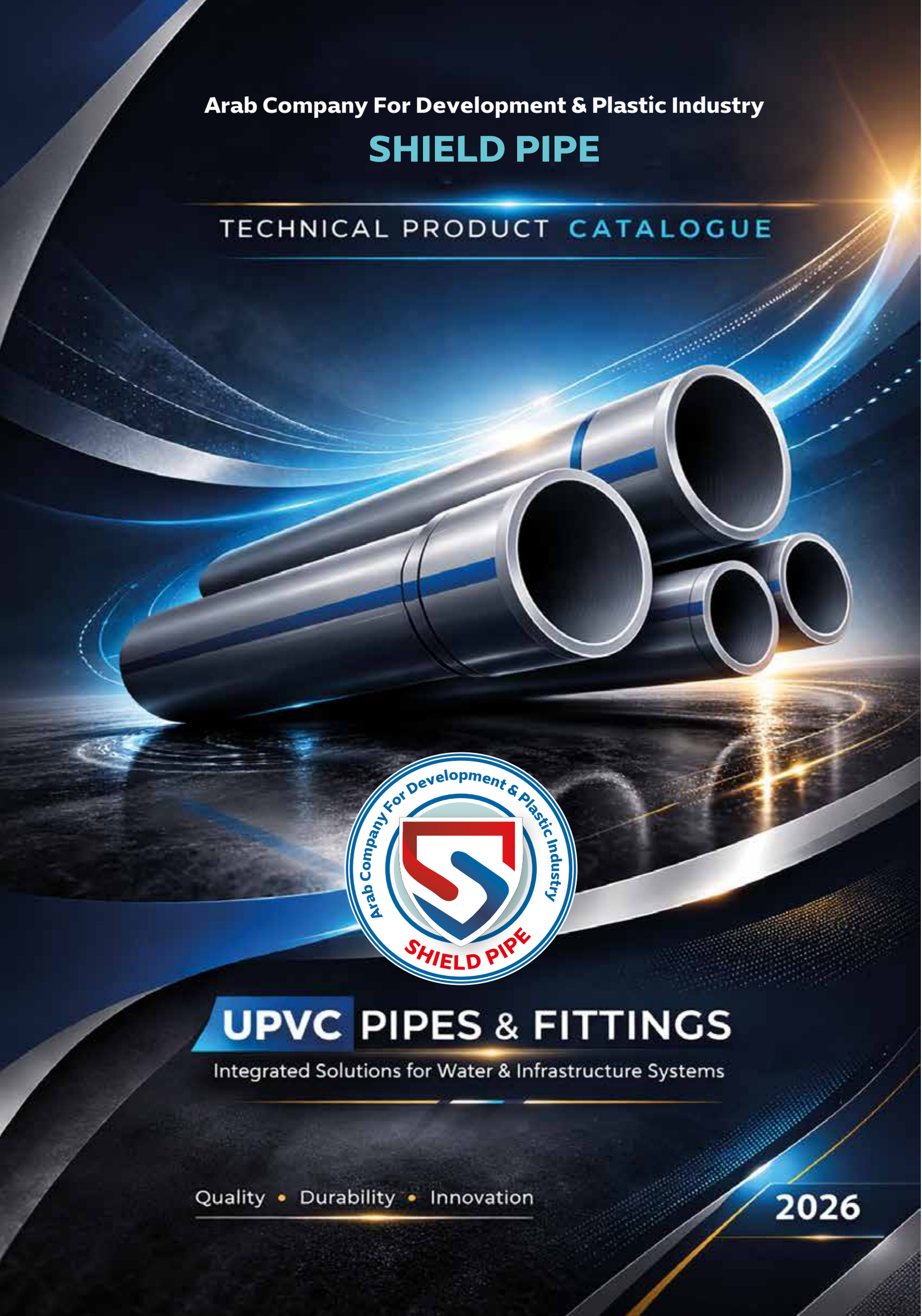
Arab Company For Development & Plastic Industry

SHIELD PIPE

TECHNICAL PRODUCT CATALOGUE



UPVC PIPES & FITTINGS

Integrated Solutions for Water & Infrastructure Systems

Quality • Durability • Innovation

2026

Arab Company for Development and Plastic Industry

الشركة العربية للتنمية وصناعة البلاستيك

VISION

The Arabic Company for Development and Plastic Industry aspires to become the leading provider among water drainage companies, driven by a clear vision and ambitious plans to meet market demands with innovation and excellence.

MISSION

1. Commitment to providing the highest level of quality products according to international standards.
2. Customer satisfaction is both our responsibility and our goal.
3. We believe that company development is directly linked to efficiency and the strength of human resources.
4. Encouraging creativity and innovation in the industrial field to remain ahead in the market.

GOALS

1. Ensure product quality matches international standards.
2. Achieve customer satisfaction in every project.
3. Maintain the safety of employees.
4. Preserve the work environment, prevent pollution, and conserve resources.
5. Achieve sustainable profitability to remain competitive in both price and quality.

UPVC Pipe Applications

1. Drinking water systems.
2. Internal and external drainage for residential units.
3. Advanced irrigation and watering systems.
4. Telephone and electricity cable protection.
5. Wells and boreholes

Advantages of Shield Pipe UPVC

1. **Mechanical strength**
   High resistance to static backfill loads and dynamic pressures.
2. **Chemical resistance**
   Excellent against acids and aggressive drainage water.
3. **Electrical insulation**
   Effective non-conductive properties.
4. **Hydraulic efficiency**
   Smooth inner surface ensures no loss in flow speed.
5. **Fire resistance**
   Safer performance in hazardous environments.
6. **Ease of installation & maintenance**
   Faster handling compared to alternative pipe systems.
7. **Lightweight**
   Easier transportation and assembly.
8. **Durability**
   Service life extending over several decades.
9. **Corrosion resistance**
   Does not rust or degrade over time.

Standards

- **DIN 8062/8061** – Pressure pipes (water supply)
- **DIN 19534** – PVC-U pipes for soil, waste & drainage
- **DIN 19531** – Fittings for drainage/sewer systems •
- **DIN 4925** – Filter pipes & well screens • Egyptian Standard Specification:
  - No. 2001 / 848 o No. 2008 / 848 o No. 2008 / 1717
- **British Standard:**
  - B.S. 3505 (Threadable pipes)
- **Telecom Egypt Specification:**
  - T.C. 161/A (Telephone cable protection)
- **International Standards:** o ISO 2003 / 4435 o ISO 1996 / 2-4422
- **ASTM D2241 SDR Series** – PVC pressure-rated pipes (USA)

Drinking water and irrigation

Egyptian Standard Specification No. 848 / 2001

German Standard Specification No. 8062 / 8061

Nominal Outside Diameter	Socket Depth mm		Class 1 4 Bar		Class 2 6 Bar		Class 3 10 Bar		Class 4 16 Bar	
			No. Thick of wall	Nom. Wt.	No. Thick of wall	Nom. Wt.	No. Thick of wall	Nom. Wt.	No. Thick of wall	Nom. Wt.
	TS	RR	mm	Kg/m	mm	Kg/m	mm	Kg/m	mm	Kg/m
20	32								1.5	0.137
25	32						1.5	0.174	1.9	0.212
32	32						1.8	0.264	2.4	0.342
40	40				1.8	0.334	1.9	0.35	3.0	0.525
50	50	80			1.8	0.422	2.4	0.552	3.7	0.809
63	63	105			1.9	0.562	3.0	0.854	4.7	1.29
75	70	115	1.8	0.642	2.2	0.782	3.6	1.22	5.6	1.82
90	79	120	1.8	0.774	2.7	1.13	4.3	1.75	6.7	2.61
110	91	125	2.2	1.16	3.2	1.64	5.3	2.61	8.2	3.90
125	105	130	2.5	1.48	3.7	2.13	6.0	3.34	9.3	5.01
140	111	134	2.8	1.84	4.1	2.65	6.7	4.18	10.4	6.27
160	121	140	3.2	2.41	4.7	3.44	7.7	5.47	11.9	8.17
180	125	150	3.6	3.02	5.3	4.37	8.7	6.88	13.4	10.4
200	130	160	4.0	3.70	5.9	5.37	9.6	8.51	14.9	12.8
225		160	4.5	4.70	6.6	6.76	10.8	10.8	16.7	16.1
250		185	4.9	5.65	7.3	8.31	11.9	13.2	18.6	19.9
280		195	5.5	7.11	8.2	10.4	13.4	16.6	20.8	24.9
315		210	6.2	9.02	9.2	13.2	15.0	20.9	23.4	31.5
355		220	7.0	11.4	10.4	16.7	16.9	26.5	26.3	39.9
400		240	7.9	14.5	11.7	21.1	19.1	33.7	29.7	50.8
450		255	8.9	18.3	13.2	26.8	21.5	42.7		
500		275	9.8	22.4	14.6	32.9	23.9	52.6		
560		300	11.0	28.1	16.4	41.4	26.7	65.8		
630		325	12.4	35.7	18.4	52.2	30.0	83.2		
710		350	14.0	45.3	20.7	66.1				
800		360	15.7	57.2	23.3	83.9				

The length of pipe 6 m. including socket or as request

RR rubber ring socket or TS solvent socket

Drinking water and irrigation

Egyptian Standard Specification No. 848 / 2008

International Standard Specification No. 4422-2/ 1996

Nominal Outside Diameter	6 Bar S 16.7 SDR34.4		8 Bar S 12.5 SDR26		10 Bar S 10 SDR21		12.5 Bar S 8 SDR17		16 Bar S 6.3 SDR13.6		25 Bar S 4 SDR9	
	Thick. Of Wall	Nom. Wt.	Thick. Of Wall	Nom. Wt.	Thick. Of Wall	Nom. Wt.	Thick. Of Wall	Nom. Wt.	Thick. Of Wall	Nom. Wt.	Thick. Of Wall	Nom. Wt.
DN	mm	Kg/m	mm	Kg/m	mm	Kg/m	mm	Kg/m	mm	Kg/m	mm	Kg/m
20	-	-	-	-	-	-			1.5	0.137	2.3	0.196
25	-	-	-	-	-	-	1.5	0.170	1.9	0.212	2.8	0.294
32	-	-	-	-	1.6	0.264	1.9	0.277	2.4	0.342	3.6	0.482
40	-	-	1.6	0.291	1.9	0.350	2.4	0.437	3.0	0.525	4.5	0.750
50	-	-	2.0	0.422	2.4	0.552	3	0.683	3.7	0.809	5.6	1.16
63	1.9	0.562	2.5	0.717	3.0	0.854	3.8	1.09	4.7	1.29	7.1	2.04
75	2.2	0.782	2.9	0.99	3.6	1.22	4.5	1.54	5.6	1.82	8.4	2.60
90	2.7	1.13	3.5	1.43	4.3	1.75	5.4	2.21	6.7	2.61	10.1	4.14

Nominal Outside Diameter	8 Bar S 16 SDR33 PN 8		12.5 Bar S 10 SDR21 PN 12.5		20 Bar S 6.3 SDR13.6 PN 20		25 Bar S 5 SDR11 PN 25	
	No. Thick of wall	Nom. Wt.	No. Thick of wall	Nom. Wt.	No. Thick of wall	Nom. Wt.	No. Thick of wall	Nom. Wt.
DN	mm	Kg/m	mm	Kg/m	mm	Kg/m	mm	Kg/m
110	3.4	1.7	5.3	2.61	8.1	3.9	10	5.00
125	3.9	2.21	6	3.34	9.2	5.01	11.4	6.48
140	4.3	2.74	6.7	4.18	10.3	6.27	12.7	8.09
160	4.9	3.57	7.7	5.47	11.8	8.17	14.6	10.63
180	5.5	4.51	8.6	6.88	13.3	10.4	16.4	13.4
200	6.2	5.64	9.6	8.51	14.7	12.8	18.2	16.57
225	6.9	7.06	10.8	10.8	16.6	16.1	-	-
250	7.7	8.76	11.9	13.2	18.4	19.9	-	-
280	8.6	10.96	13.4	16.6	20.6	24.9	-	-
315	9.7	13.91	15	20.9	23.2	31.5	-	-
355	10.9	17.62	16.9	26.5	26.1	39.9	-	-
400	12.3	22.4	19.1	33.7	29.4	50.8	-	-
450	13.8	28.27	21.5	42.7	33.1	67.82	-	-
500	15.3	34.83	23.9	52.6	36.8	83.77	-	-
560	17.2	43.85	26.7	65.8	-	-	-	-
630	19.3	55.36	30	83.2	-	-	-	-
710	21.8	70.47	-	-	-	-	-	-
800	24.5	89.24	-	-	-	-	-	-

The length of pipe 6 m. including socket or as request
RR rubber ring socket or TS solvent socket
S1 = DN - EN / 2EN سلسلة الماسورة
SDR 2 = DN / EN النسبة القياسية للمقاس
SDR -S-3 تربطهم المعادلة (SDR) = 2 (S) + 1

Sewerage and gravity flow applications

Egyptian Standard Specification No. 1717/ 2001

German Standard DIN 19534

Nominal Size mm	Outside diameter		Wall Thickness		Insertion Depth	Weight
	القطر الخارجى (مم)		سمك الجدار (مم)		Depth	Kg
القطر الأسمى	(D)	Tolerance	(S)	Tolerance	طول التداخل (مم)	وزن المتر كجم
110	110	0.3	3.0	0.5	125	1.630
125	125	0.3	3.0	0.5	130	1.870
150	160	0.4	3.6	0.6	140	2.650
200	200	0.4	4.5	0.7	160	4.120
250	250	0.5	6.1	0.9	185	7.000
300	315	0.6	7.7	1.0	210	11.110
400	400	0.7	9.8	1.2	240	17.800
500	500	0.9	12.2	1.5	275	27.649
630	630	1.1	15.4	1.8	325	43.944

The pipe length shall be 6 meters, or as specified by the customer.

Protection of telephone cables

T.C. 161A Wired and wireless communications

Nominal Size mm	Outside diameter		Wall Thickness		Weight	Insertion Depth
	القطر الخارجى (مم)		سمك الجدار (مم)		kg	طول التداخل (مم)
القطر الأسمى	(D)	Tolerance	(S)	Tolerance		
55	50	0.2	1.8	0.4	0.422	80
110	110	0.3	3.2	0.6	1.64	170

The pipe length is 6 meters including the socket and spigot, or as per the customer's request.

Threadable – for: irrigation and potable water, with a pressure rating of 9 bar

According to British Standard B33505

Nominal Size	Outside Diameter	Wall Thickness	Weight / meter
القطر الأسمى	القطر الخارجى مم	سمك الجدار مم	وزن المتر/ كجم
"1 / 2	21.2	2.6	0.226
"3 / 4	26.6	3.0	0.32
"1	33.4	3.5	0.47
"1 1 / 4	42.1	3.75	0.63
"1 1 / 2	48.0	4.3	0.815
"2	60.0	5.3	1.25

The pipe length shall be 6 meters, withouthead or as specified by the customer.

For sewerage applications

Egyptian Standard Specification No. 1717/ 2008

and identical modification to the International Standard Specification /4435 2003

المقاس الأسمى	القطر الخارجى الأسمى	SN2		SN4		SN8	
		SDR51		SDR41		SDR34	
		e	em	e	em	e	em
DN/OD	Dn	min	max	min	max	min	max
110	110			3.2	3.8	3.2	3.8
125	125			3.2	3.8	3.7	4.3
160	160	3.2	3.8	4	4.6	4.7	5.4
200	200	3.9	4.5	4.9	5.6	5.9	6.7
250	250	4.9	5.6	6.2	7.1	7.3	8.3
315	315	6.2	7.1	7.7	8.7	9.2	10.4
355	350	7	7.9	8.7	9.8	10.4	11.7
400	400	7.9	8.9	9.8	11	11.7	13.1
450	450	8.8	9.9	11	12.3	13.2	14.8
500	500	9.8	11	12.3	13.8	14.6	16.3
630	630	12.3	13.8	15.4	17.2	18.4	20.5
710	710	13.9	15.5	17.4	19.4		
800	800	15.7	17.5	19.6	21.8		

The pipe length is 6 meters including the socket and spigot, or as per the customer's request.

The pipes shall be installed using rubber sealing gaskets.

American Standard ASTM D2241

المقاس بالبوصة	Nominal size		SDR 64		SDR 41		SDR 32.5		SDR 26		SDR 21		SDR 17		SDR 13.5	
	القطر الخارجى		PSI 63		PSI 100		PSI 125		PSI 160		PSI 200		PSI 250		PSI 315	
	mm		BAR 4.3		BAR 6.9		BAR 8.6		BAR 11		BAR 13.8		BAR 17.8		BAR 21.7	
			Thick of wall/mm		Thick of wall/mm		Thick of wall/mm		Thick of wall/mm		Thick of wall/mm		Thick of wall/mm		Thick of wall/mm	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
1/2	21.24	21.43													1.85	2.08
3/4	26.57	26.77									1.53	2.03	1.58	2.08	1.99	2.48
1	33.28	33.52							1.53	2.03	1.6	2.1	1.96	2.46	2.47	2.97
1 1/4	42.04	42.29					1.53	2.03	1.63	2.13	2.01	2.51	2.49	2.99	3.13	3.63
1 1/2	48.11	48.41					1.53	2.03	1.86	2.36	2.29	2.79	2.85	3.35	3.59	4.08
2	60.18	60.47					1.86	2.36	2.32	2.81	2.88	3.37	3.56	4.06	4.48	4.97
2 1/2	72.85	73.2					2.24	2.74	2.8	3.3	3.48	3.98	4.3	4.8	5.42	6.07
3	88.7	89.1			2.16	2.66	2.75	3.25	3.43	3.93	4.25	4.74	5.24	5.86	6.58	7.36
4	114.08	114.52	1.78	2.28	2.8	3.3	3.51	4.01	4.4	4.9	5.44	6.09	6.74	7.54	8.46	9.47
6	168.0	168.55	2.65	3.14	4.12	4.62	5.19	5.79	6.48	7.26	8.03	8.99	9.91	11.9	12.48	13.97

The pipe length shall be 6 meters, or as specified by the customer.

American Standard ASTM D1785 SCH40 SCH80

Nominal Size inch	Outside diameter mm		Sch 40 White pipes مواسير بيضاء			Sch 80 Grey pipes مواسير رمادى		
	Min	Max	Thickness mm	Pressure Rating Bar	Weight K.g/m	Thickness mm	Pressure Rating Bar	Weight K.g/m
1/2	21.2	21.2	2.8	41.4	0.24	3.7	58.6	0.31
3/4	26.6	26.9	2.9	33.1	0.33	3.9	47.6	0.41
1	33.4	33.7	3.4	31	0.48	4.6	43.4	0.6
1 1/4	42.1	42.4	3.6	25.5	0.65	4.9	35.9	0.84
1 1/2	48.1	48.4	3.7	22.8	0.77	5.1	32.4	1.03
2	60.2	60.5	3.9	19.3	1.04	5.5	27.6	1.41
3	88.7	89.1	5.5	17.9	2.14	7.6	25.5	2.88
4	114.1	114.5	6	15.2	3.05	8.6	22.1	4.22
6	168	168.5	7.1	12.4	5.37	11	19.3	8.05
8	218.8	219.4	8.2	11	8.11	12.7	17.2	12.23




UPVC Fittings Dimensions

Elbow 90° With Access Cap
كوع ٩٠ باب

Size (mm)
75
110
160

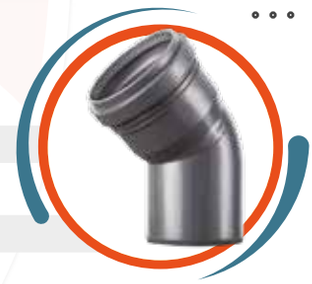
Elbow 90°
كـــوع ٩٠

Size (mm)
40
50
75
110
160

Tee 90°
مشترك ٩٠

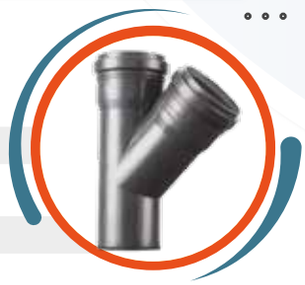
Size (mm)
40
50
75
110
160

Elbow 45° With Access Cap
كوع ٤٥ باب



Size (mm)
40
50
75
110
160

Tee 45°
مشترك ٤٥

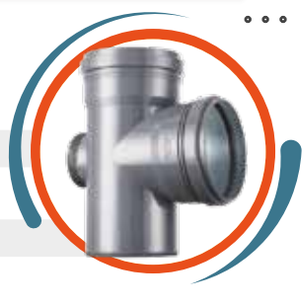


Size (mm)
50
75
110
160

Tee 90° With Access Cap
كوع ٩٠ باب

Size (mm)
75
110
160

Tee Reducer 90° with Access Cap
مشترك ٩٠ مسلوب باب



Size (mm)
110/50
110/75
160/110

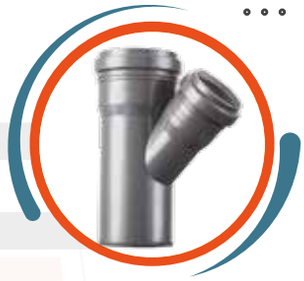
Tee Reducer 90°
مشترك ٩٠ مسلوب

Size (mm)
75/50
110/50
110/75
160/150

Coupling جلبـــة

Size (mm)
50
75
110
160
200

Tee Reducer 45° مشترك ٤٥ مسلوب



Size (mm)
75/50
110/50
110/75
160/110

Clean Out طبة تسليك

Size (mm)
75
110
160

Eccenric Socket Reducer مسلوب

Size (mm)
50/40
75/50
110/50
110/75
160/110

Double Branch 90° صليبة ٩٠

Size (mm)
110/110

Air Vent هـواية

Size (mm)
75
110

Floor Trap بيبـــة

Size (mm)
75/50

End Plug طبـــة

Size (mm)
50
75
110
160
200

UPVC properties

Physcial properties	
Specific gravity	1.38 - 1.43 gr/cm^3
Water absorption	< 4 mg/cm^2
Flammability	self extinguishing

الخصائص الطبيعية	
الوزن النوعي	١,٣٨ – ١,٤٣ سم٣
امتصاص الماء	< ٤ مليجرام / سم٢
القابلية للإشتعال	ذات اطفاء ذاتي

Thermal properties	
Softening Temp.	75°c
Specific heat	0.2 - 0.28 cal/g. °c
Thermal conductivity	0.12 - 0.14 K cal/m.h.°c
Ideal operating temp.	23°c
Max. operating temp.	60°c

الخصائص الحرارية	
درجة التلدن	٧٥°
الفحرارة النوعية	٠,٢ الى ٠,٢٨ كالوري/ درجة مئوية
التوصيل الحراري	٠,١٢الي٠,١٤كيلو/كالوري/م/ساعة/درجةمئوية
درجة الحرارة المثلي للتشغيل	٢٣°
درجة الجرارة القصوي للتشغيل	٦٠°

Mechanical properties at 23°c	
Tensile strength	475 - 525kg/cm^2
compressive strength	655 - 675 kg/cm^2
Flexural strength	880 - 950 kg/cm^2
Modulus of elasticity	3.2 - 10 kg/cm^2

الخصائص الميكانيكية في درجة ٢٣°	
مقاومة الشد	٤٧٥ – ٥٢٥ كجم/سم٢
مقاومة الضغط	٦٥٥ – ٦٧٥ كجم/سم٢
مقاومة الإنحناء	٨٨٠ – ٩٥٠ كجم/سم٢
مقاومة المرونة	٣,٢–١٠ كجم/سم٢

The maximum pressure capacity of the pipes is determined at a reference temperature of 23°C. As the operating temperature increases, the maximum allowable pressure decreases accordingly. Additionally, the service life of the pipes is determined based on the following reference chart, which should be used to select the appropriate pipe type

Temperature in °c	Design service life, in years	Permissible working pressure			
		series			
		2	3	4	5
		Pressure rating			
		PN 4	PN 6	PN 10	PN 16
10	1	5.3	7.9	13.2	21.1
	5	5	7.4	12.4	19.8
	10	4.8	7.2	12	19.2
	25	4.7	7.1	11.8	18.9
	50	4.6	7	11.6	18.6
20	1	4.8	7.2	12	19.2
	5	4.5	6.7	11.2	17.9
	10	4.3	6.5	10.8	17.3
	25	4.1	6.2	10.3	16.5
	50	4	6	10	16
30	1	3.9	5.8	9.7	15.5
	5	3.6	5.4	9	14.4
	10	3.5	5.3	8.8	14.1
	25	3.3	5	8.3	13.3
	50	3.2	4.8	8	12.8
40	1	3	4.6	7.6	12.2
	5	2.7	4.1	6.8	10.9
	10	2.6	4	6.6	10.6
	25	2.6	3.8	6.4	10.2
	50	2.5	3.8	6.3	10.1
50	1	2.8	4.2	7	11.2
	5	2.5	3.7	6.2	9.9
	10	2.4	3.6	6	9.6
	25	2.2	3.4	5.7	9.1
	50	2.2	3.4	5.6	9
60	1	2.3	3.5	5.8	9.3
	5	2.1	3.2	5.3	8.5
	10	2	3.1	5.1	8.2
	25	1.9	2.9	4.8	7.7
	50	1.9	2.9	4.8	7.7

Physical, Mechanical & Electrical Properties

Property	Value
Density	1.38 – 1.45 g/cm³
Tensile Strength at Yield	45–55 MPa
Stretching Resistance	500–550 kg/cm²
Hardness (Shore D)	80–85
Expansion Tolerance	Depth +10%, Diameter +2.5%, Length +0.1%
Burst Pressure	Up to 8× nominal pressure
Electrical Resistance	~ 10^9 Ω·cm (excellent insulator)
Service Life	50+ years under normal conditions

MATERIAL PROPERTIES
Unplasticized Polyvinyl Chloride (upvc)

General Properties	UPVC VALLUE		UNITS
Density	1.38		g/cm^3
Water absorption	< 4		mg/cm^2
Flammability	Self extinguishing		
Mechanical properties			
Ulimate Tensile Strength	492		kg/cm^2
Compressive Strength	668		kg/cm^2
Flexural Strength	950		kg/cm^2
Modulus of Elasticity	$2.7x10^4$		kg/cm^2
Impact Strength (Charpy)	No Break > 10%		
Shore Hardness (Rockwell)	115		R
Thermal Properties			
Softening Point			
v.s.t. 5 kg	Pipes	Fittings	
	> 79°	> 76°	°C
Max. Operating temperature	60		°C
Coefficient of Thermal Expansion	$0.8x10^{-4}$		K^{-1}
Specific Heat	0.25		Cal/g . °C
Thermal Conductivity	0.13		Kcal/m.h. °C
Electrical Properties			
Volume Resistively	$> 10^{14}$		Ohm.cm
Surface Resistance	$> 10^{12}$		Ohm
Dielectric Strength	> 40		Kv/mm
Power Factor (at 10^6 cycle)	3.3		

All the above-mentioned values at 20oc.
UPVC are non-conductor of electricity and is not subject to galvanic or Electrolytic attack .
N.B. Electrical equipment must not be earthed to U.P.V.C Pipes

Chemical properties

- SHEILD PIPE U.P.V.C PIPES IS uneffected by salt,water demineralised, water chlorinated or florinated water.
- SHEILD PIPE U.P.V.C PIPES IS Suitable for most strong acids, alkalies and aqueous solutions (except those which strongly oxidising)
- SHEILD PIPE U.P.V.C PIPES : Should not normally be used for aldehydes, ketones, ethers, aromatic and chlorinated hydrocarbon

Reagents				Reagents			
Hydrochloric Acid (٪٣٥)	O	O	O	Sodium Hydroxide	O	O	O
Sulphuric Acid (٪٦٠)	O	O	O	Potassim Hydroxide	O	O	O
Sulphuric Acid (٪٩٨)	O		X	Ammonia Water	O	O	O
Furning Sulphuric Acid (٪١٠٠)	X			Calcium Hydroxide	O	O	O
Nitric Acid (٪٧٠)	O	O	X	Acetone	X		
Nitric Acid (٪٩٠)	X	X	X	Alcohol	O	O	O
Acetic Acid (Below ٪٩٠)	O	O	*	Carbon Tetrachloride	X	X	X
Acetic Acid (Over ٪٩٠)	*	X	X	Formalin	O	O	*
Oxalic Acid (٪٩٨)	O	O	O	Gasoline	O	O	*
Chlorine Gas (Dry ٪١٠٠)		X	X	Natural	O	O	
Chlorine Gas (Wet ٪٥)		X	X	Gaol Gas	O	O	
Cyclohexanol (٪١٠٠)	X			Freon ٪١٠٠) ١٢)	O	O	O
Toluene (٪١٠٠)	*			Xylene (٪١٠٠)	X	X	X
Stearic Acid (٪١٠٠)	O	O	O	Vinyl Acetate (٪١٠٠)	X	X	X
Sea Water	O	O	*	Phosphorus Trichloride (١٠٠)	X	X	X
Propane Liquid (٪١٠٠)	O			Thionyl Chloride (٪١٠٠)	X	X	X
Propane Gas (٪١٠٠)	O			Trichloroethylene (٪١٠٠)	O		
Sodium Chloride diluted	*	X	X	Triethanol Amine (٪١٠٠)	X	X	X
Cyclohexanone (٪١٠٠)	X			W. Gases.Nitrous traces			O
Potassium Chloride (٪١٠)		O	*	W. Gases.Nitrous highe			X
Potassium Chloride (Sat)			O	Wax Alcohol (٪١٠٠)			O
Potassium Chloride (٪٤٠)	O			Phemol (upto ٪٩٠)		*	
Potassium Nitrate (٪١٠)		O	O	Phenol (٪١)	O		
Potassium Nitrate (Sat.)			O	Methylalcohol (٪١٠٠)		O	*
Zinc Chloride (٪١٠)		O	*	Methylenchloride (٪١٠٠)	X		
Zinc Chloride (Sat.)			O	Gylcerine, Aqueous	O	O	O
Zinc Sulfate (٪١٠)		O	*	Glycol Aqueous (comm)			O
Zinc Sulfate (Sat.)			O	Hydrogen (٪١٠٠)			O
Whisky		O	O	Ozone (٪١٠٠)	O		
Wine (comm.)	O			Oleic Acid (comm)			O
Benzene (Benzol ٪١٠٠)	X			Oleum (٪١٠)	X		
Benzene (٪١٠٠)			O	W. Gases (so٢)(Lower)			O
Benzoicacid (all con.)	O	O	*	W. Gases (so٪٥٠)(٢)		O	
Urine (normal)		O	O	Gas water usual	*		
Butane gaseous (٪٥٠)	O			Chlorine Water (Sate.)	*		
Ethyl Acetate (٪١٠٠)	X	X	X	Butanol (upto ٪١٠)		O	*
Ethylalcohol (aqu. Any)	O		O	Nilk (comm)	O		
Ethylalcohol (٪٩٦)			*	Soda Aqueous (D - luted)		O	*
Ethylether (٪١٠٠)	X			Soda Aqueous (Satu.)			O
Fatty Acids			O	Bromine Liquid (٪١٠٠)	X		

O Completely unaffected may be used

* Slightly affected may be used

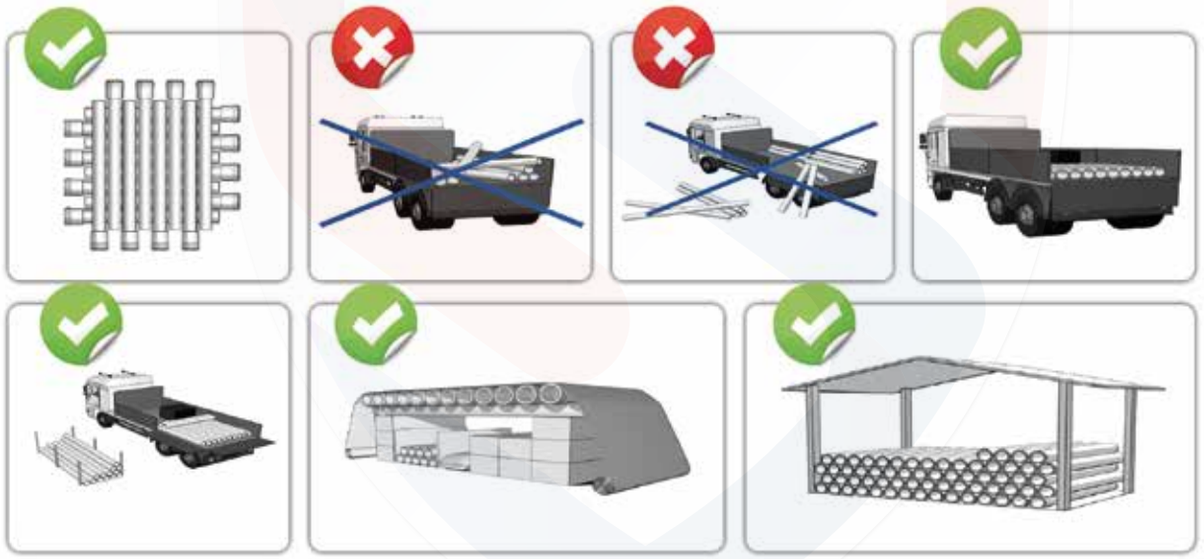
Affected may be used with care

X Do not use

Guidelines for Storing and Handling Pipes

Handling Pipes

- **Manual Handling:**
  - o Carry pipes carefully; never drag them on rough ground.
  - o For long pipes, lift at two or more points to prevent sagging.
- **Mechanical Handling:**
  - o Use wide, flat belts or slings — avoid chains, hooks, or steel cables that may scratch or crack the pipe.
  - o When unloading from trucks, do not throw or drop pipes.
- **Taking Pipes from Stacks:**
  - o Always remove pipes from the top of the stack, not from the sides or bottom.
  - o Roll pipes gently from the stack instead of pulling or forcing them out.
- **During Transport to Site:**
  - o Secure pipes properly to prevent rolling or shifting.
  - o Provide padding at contact points with the vehicle to avoid scratches.



Storage of Pipes :

- **Flat & Clean Surface:** Store pipes on a flat, smooth surface free of sharp objects or stones.
- **Support:** Place wooden battens or soft supports at regular intervals (at least every 2–1.5 meters) to prevent bending.
- **Stacking Height:**
  - o Do not stack pipes higher than 1.5 meters for large diameters and 2 meters for small diameters.
  - o Always place larger, heavier pipes at the bottom and lighter ones on top.
- **Protection from Sunlight:**
  - o uPVC pipes should not be exposed to direct sunlight for long periods.
  - o Cover with light-colored tarpaulin or UV-protective sheets, but allow air circulation to avoid heat build-up.
- **Temperature Consideration:** Store away from heat sources (boilers, welding areas) and chemicals that may damage the pipe surface.

Physical, Mechanical & Electrical Properties

Excavation work

Never lay pipes directly on hard soil, rocks, or uneven surfaces.
Store and stage pipes beside the trench in a way that prevents rolling or falling in water way to prevent damage.
Place a bedding layer minimum 15 cm or 3/1 of the pipe diameter fine sand at the trench bottom.

Excavation & Installation Dimensions

- Bedding Layer: Minimum 15 cm (or 3/1 of pipe diameter) fine sand at trench bottom.
- Side Clearance: 30–15 cm (normal soil), up to 30 cm in rocky soils.
- Cover Above Pipe:
  - Non-traffic: 80–60 cm.
  - Traffic zones: 120–90 cm.

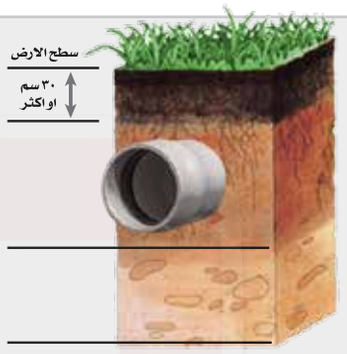
When installing pipes adjacent to existing buildings or structures, a minimum clearance of 30 cm must be maintained to ensure safety, protect the structural integrity of the building, and allow for proper backfilling and compaction.

Digging depth

The bedding layer beneath the pipe is designed to protect it. Therefore, the soil condition and the pressure exerted on the pipe at the installation site must be carefully evaluated when determining the appropriate digging depth.

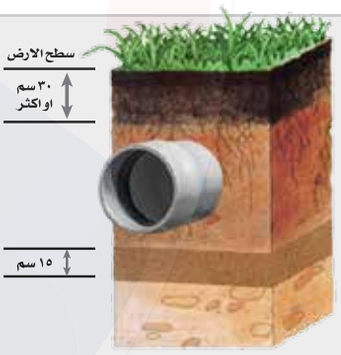
1. Normal Soil (Firm, Non-Rocky)

- Bedding thickness (below pipe): 15–10 cm fine sand.
- Side clearance (each side): 30–15 cm.
- Minimum cover above pipe (non-traffic): 60 cm.
- Minimum cover above pipe (traffic/roads): 120–90 cm.



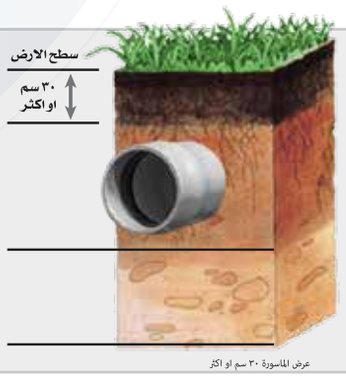
Sandy Soil

- Bedding thickness: 15 cm coarse sand or gravel.
- Side clearance: 30–20 cm.
- Minimum cover: 80 cm (to prevent exposure & movement).
- Special note: Compact side fill in layers of 20–15 cm



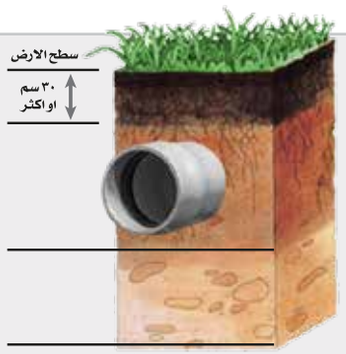
Clay Soil (Expansive/Sticky)

- Bedding thickness: 15 cm clean sand (to isolate from clay).
- Side clearance: 30–20 cm.
- Minimum cover: 80–60 cm.
- Precaution: Avoid waterlogging — ensure side drainage.



Rocky / Hard Soil

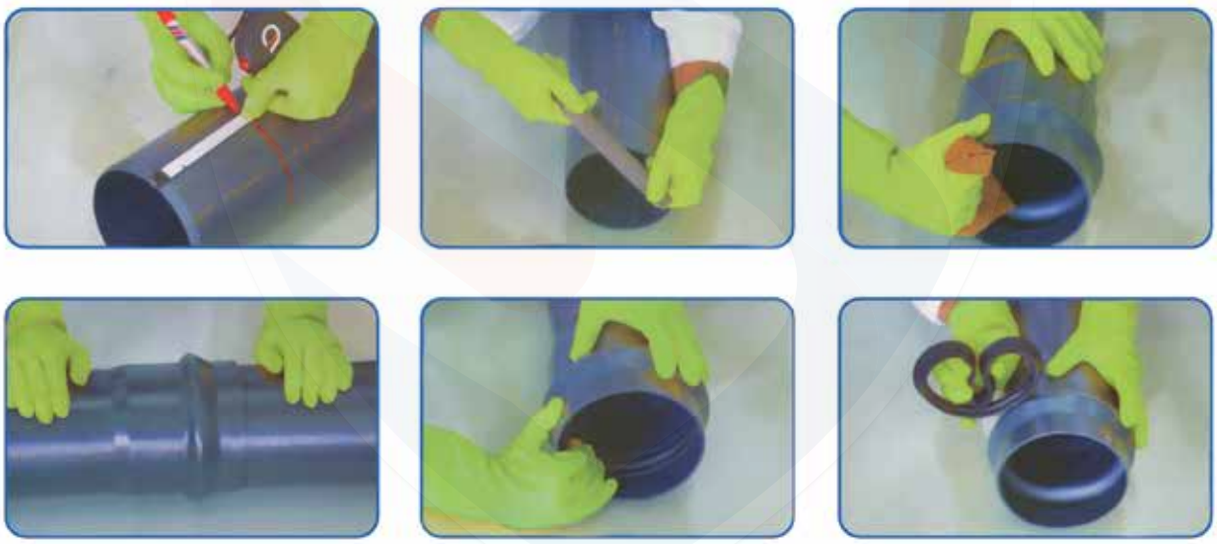
- Bedding thickness: 20–15 cm sand or fine gravel (extra protection).
- Side clearance: 30–25 cm.
- Over-excavation: Dig 20–15 cm deeper to remove sharp stones, refill with sand.
- Minimum cover: 100–80 cm (non-traffic), 120–100 cm (traffic).



Installation Methods

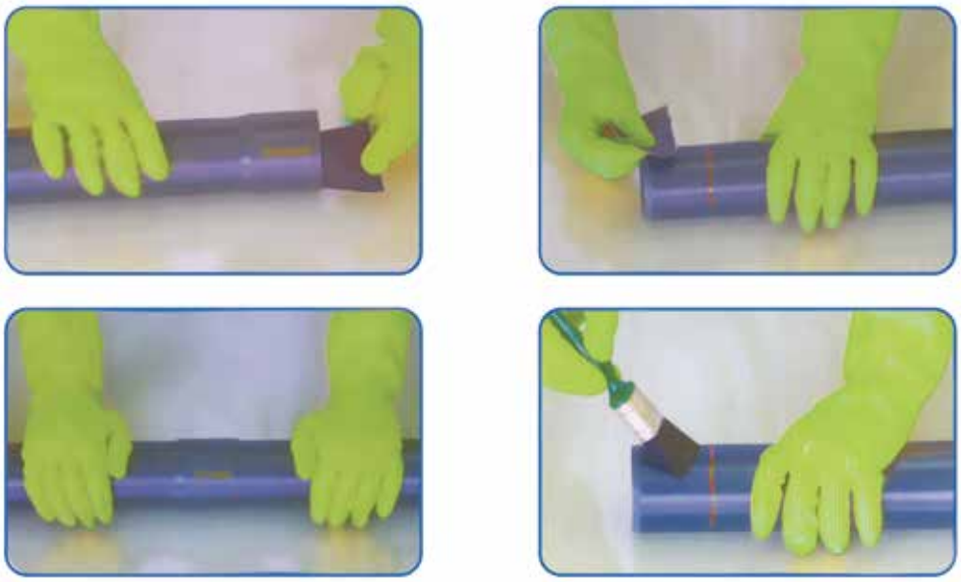
A. Rubber Ring (Push-Fit)

1. Clean joint area.
2. Verify correct ring position.
3. Apply lubricant on spigot.
4. Insert spigot fully to marked depth.



B. Solvent Cement (Adhesive Joint)

1. Cut pipe square, chamfer edge.
2. Clean spigot and socket.
3. Apply solvent cement uniformly.
4. Insert spigot, rotate slightly, hold.
5. Allow 24 hours curing before pressure testing.



Important Notes for Pipe Installation and Operation

1- **Handling After Jointing**

Once pipes are jointed, they should remain undisturbed for a period of 10 to 15 minutes to allow proper initial setting. After this period, the pipes may be moved carefully if required.

2- **Curing Time Before Backfilling**

Pipes should be left for at least four hours after jointing before they are installed into the soil or backfilled. This ensures joint integrity and reduces the risk of damage.

3- **Maintenance Requirements**

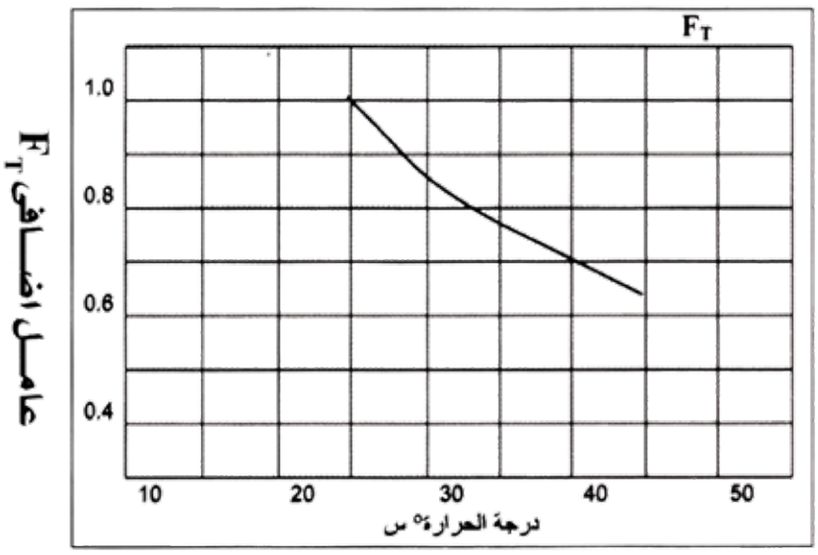
When the system is correctly designed, properly installed, and high-quality products are used, the pipe network will require minimal maintenance over its service life.

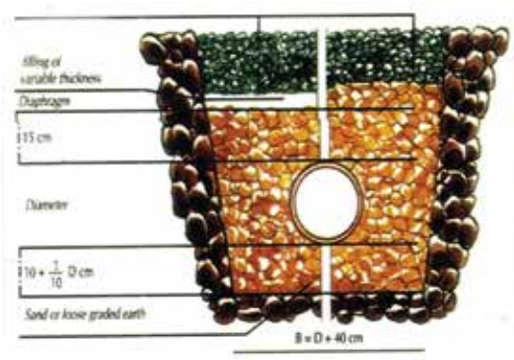
4- **Temperature Considerations**

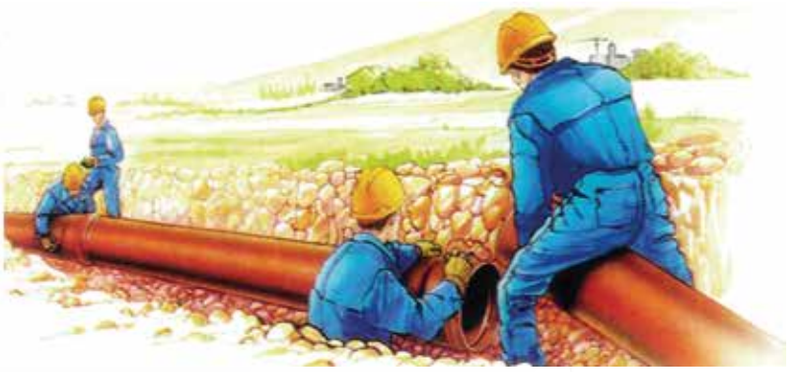
The effect of temperature on pipe performance must be taken into account. The rate of change factor (ft) between °25C and °45C should be applied when calculating the maximum operating pressure. The following grid provides the values of ft for different temperatures, and the maximum pressure can be determined by multiplying the nominal pressure rating (PN) by the corresponding ft value.

5- **Material Properties**

It is essential to understand the physical properties of uPVC pipes to select the most suitable system for the intended application. Correct material selection, combined with proper installation practices, helps avoid failures caused by incorrect usage or poor installation methods.







Technical Issues During Installation & Prevention :

Technical issues may arise due to improper placement methods. Failure to follow the recommended installation guidelines can result in pipe damage, particularly during testing or after installation.

1-

Jointing & Connections

- **Issue:** Leakage due to poor cleaning, uneven cement, or improper insertion.
- **Prevention:**
  - Clean spigot and socket thoroughly.
  - Apply solvent cement evenly.
  - Insert to full depth with allowance for expansion.
  - Allow full curing time before testing.

2-

Rubber Ring (Push-Fit Joints)

- **Issue:** Leakage due to missing, displaced, or damaged rubber ring.
- **Prevention:**
  - Always confirm rubber ring placement.
  - Use approved lubricant on spigot (not directly on ring).
  - Inspect after jointing.

3-

Spigot-Socket Stability

- **Issue:** Loose fit, angular stress, or instability during backfilling.
- **Prevention:**
  - Verify dimensions and tolerances.
  - Mark and check insertion depth.
  - Provide proper bedding and side support.

4-

Difficulty in Spigot Insertion

- **Issue:** Spigot cannot enter socket or requires excessive force.
- **Prevention:**
  - Check alignment and cleanliness.
  - Confirm rubber ring is seated correctly.
  - Apply sufficient lubricant.
  - Avoid use of excessive force.

5-

Pressure Testing

- **Issue:** False readings due to trapped air or excessive pressure
- **Prevention:**
  - Fill slowly, release air pockets.
  - Test only after curing.
  - Do not exceed recommended pressure.

6-

Handling & Storage

- **Issue:** Pipes crack or deform due to mishandling or poor storage.
- **Prevention:**
  - Handle carefully; avoid dropping.
  - Store on flat surfaces with proper supports.
  - Protect from prolonged sunlight exposure.

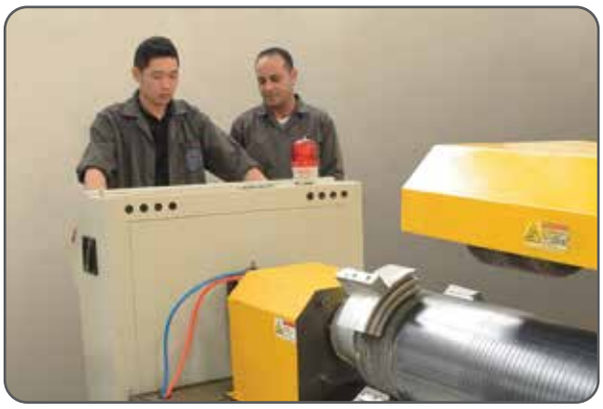
wells











Upvc general advantages

1. **Non-corrosion**
Upvc pipes&fittings resist corrosion caused byacid,alkalis,oils,salts,moisture and the media inside and outside the pipe.

2. **Non toxic**
It neither affects the tast, smell or color of water or liquid nor reacy with any liquid to cause a pre- cipitant

3. **Low flow loss**
It has a mirror-smooth surface that minimizes resistance and impedes the bulid-up of deposits and corrosive scales.

4. **Light weight**
Upvc pipe&fittings are llighter in weight than tradeitional cast iron this gives savings in manpower Handling and installation costs.

5. **Ease of installation and maintenance**
It is quick and easy to install by using solvent cement by threading or by rubber joints.
Upvc pipe can be cut easily for installation.
Also can be quickly repaired with a minimum of complication or cost

6. **Fire proof**
Upvc pipes& fittings will not support combustion. In the event of , flames are unable to travel along the pipe and fitting, It is self-extinguishing.

7. **Insulator**
Upvc pipes& fittings are ideal for electric conduits, as upvc is integral insulator, it eliminates the possibility of electrolytic corrosion that so often destroys underground piping systems.

8. **High chemical rsistance**
Shield pipe upvc (dwv) systems are resistant to a great number of chemical agenys.

UPVC casing and screen standard

Produces a high quality range of UPVC well casing and screen strictly in accordance with the standard din 4925, in tow basic ranges a standard range for shallow and medium well depths and a heavy duty, thick walled range for greater well depths. Casing and screens are made from 100% virgin unplasticized poly vinyl chloride comp with differ-ent colors, with required accessories. According to the standard

1 **Material**
UPVC according to din 4925

2 **Pipe lengths**
Normal supplied in 3 m and 6 m overall lengths to fit inside standard containers and sea transport, others supplies with required lengths available.

3 **Pip screen slots**
Normally in size and widths ranging with dia 1.0 mm-1.5 mm -2.0mm.

4 **Pipe thread methods**
According to din 4925 standard threaded connection are mechanically jointed for greater range supplied above 125mm, which is produced the pipes casing and screen with sockets, other small products supplies with flushed threaded joints.

5 **Pipe joints**
Greater sizes supplied with male/female sockets joint as standard,small sizes supplied with flushed joint on thick walled pipe.

6 **Pipe marking**
Standard marking for pipes casing and screen includes OD , s , is applied an all products.

Use and installation

CASING

According to UPVC pipe standard casing wall thickness is collapse rate of approximately
6-10 bars for mechanical properties of casing permit installation in water well approximately up 100m (328 feet).
Respectively 153 m (500 ft)* depending on local site of water well installation conditions, under special installation with some methods even greater depths are possible.
The thick- walled casing has collapse resistance rate of approximately 14-16 bars which is mechanically permit installation up to a depth 300 m (1000ft), and under special installation condition can be possible for more depth*see the table no.(2)
The threads on both types of casing are conducted as in the drawing attached no (1), depending on the normal diameter and the tensile strength of these joints permit freely suspended installation load and soil movements resistance.

SCREEN

A

B

C

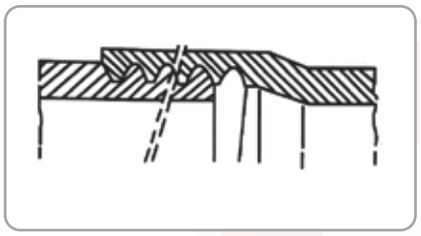
Accirdubg ti a standerd din 4295 UPVC screen pipes can be supplied either plain or with ribs up to 200 mm (8) above ND 200 are supplied plain or can be requested according to client design.
The threaded joints of Shield pipe UPVC screen pipe areidentical with our easing, guarantee coupling joints with differents of the same diameter.z
See drawing no (2)
Screen are available in range of slots sizes and when selecting the type and dimensions of the screen to be used, we should consider the conditions bellows:
- The permeability of the send or gravel back the screen should be higher than tow slots or two screen
- The slot width should be selected as to resist the water well back washing and development of two boreholes.
- The screen does not corrode and that it can be regenerated by mechanical or chemical means without damage.

Recommended selection for casing and screen installatin table

No.	Borehole conditions Soil formation water well depth and aquifer ,	Recommended selection for casing and screen installatin				
		Casing pipe selection	screen pipe recomm.			Backwash . air –develop.r
			Slot wid (mm)	Strength (bars)	Length(m)	
1	(A) shallow water wells (SHW) Soil formation: basement and stable formation borehole depth: small "Dia up"6 Ø (160mm) Depth up to Ø (60m) water well aquifer: poor-semi poor	flush joint UPVC casing up 4 Ø (110mm) 6-10 bars	1.0 slots flush screen pipe	6 to 10 bars	3m	not exceed 12 bars
2	soil formation: lose soil& unstable formations borehole depth: small Dia up 6 Ø (160mm) depth up to Ø (60) water well aquifer: poor-semi poor	flush joint UPVC casing up 4 Ø (110mm) 6-10 bars	1.0- 1,5 flush screen pipe	10 to 16 bars	3m	not exceed 16 bars
3	soil formation: basement and stable formation borehole depth: med-large Dia 7 Ø (180mm) up to 12.25 Ø (315mm)depth up to (152m) water well aquifer: poor-semi poor	socket joint UPVC casing up 8 Ø (200mm) 10 bars	1.00 socket screen pipe	16 bars	6m	not exceed 20 bars
4	soil formation : lose soil & unstable formations. borehole depth: med-large dia 7 Ø (180mm) up to 12.25 Ø (315mm) depth up to(152m) water well aquifer: semi rich –rich	socket joint UPVC casing up 8 Ø (200mm) 10 bars	1.00- 1.5 mm socket screen pipe	16 bars	6m	not exceed 20 bars
5	(B) deep water well (D.W)soil formation : basement and stable formation borehole depth: small Dia up 6 Ø (160mm) depth up to Ø (182m) water well aquifer: poor-semi poor	socket joint UPVC casing up 4 Ø (110mm) 10 bars	1.00mm socket UPVC screen pipe	10 bars	3m or 6m	not exceed 12 bars
6	soil formation: lose soil &unstable formations borehole depth : small up 6 Ø (160) depth up to (182m) water well aquifer : semi poor to rich aquifer	socket joint UPVC casing up 4 Ø (110mm) 10 bars	1.5mm socket UPVC screen pipe	16 bars	3m or 6m	not exceed 20 bars
7	soil formation : all soil formations borehole depth : deep water well up to Ø (300m) med-large dia 7 Ø (180mm)up to 12.25 (315mm) water well aquifer: semi poor to rich aquifer	socket joint UPVC casing up 10 Ø (250mm) 16 bars	1.00- 1.5mm socket UPVC screen pipe	16 bars	6m	not exceed 20 bars
8	soil formation : all soil formations borehole depth : deep water well depth up to Ø (500m) med-large dia 12.25 Ø (315mm)up to 17/25 (450mm)up to 17.25 Ø (450mm) water well aquifer : rich – very rich aquifer	socket joint UPVC casing up 12 Ø (315mm) 16 bars	1.5 mm socket UPVC screen pipe	16-25 bars	6m	not exceed 22 bars

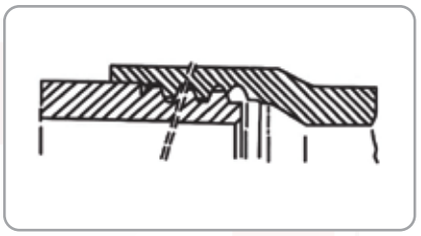
Use and installation

DRAWING NO (1)
All well casing and screen are provided with a male thread at the spigot end and female thread at the socket end.
Arrange of thread types are available :



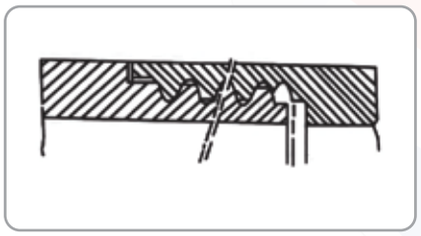
White worth pipe thread

according to din 2999 from sizes
35/1.25" to 100/4"
and rising main 1.25, 1.50, 2"
For 4 deep wells (R)



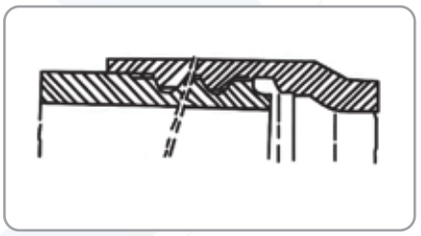
Trapezoidal thread din 4925

6mm pitch on 100/4"to200/8"
12mm pitch on 250/10" to 400/16 "
For medium and deep wells
(TR)



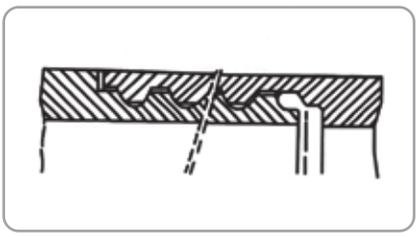
Flush joint trapezoidal thread

Only to be used on extra thick walled
Pipe as thread is machined into pipe wall



Trapezoidal round shoulder thread

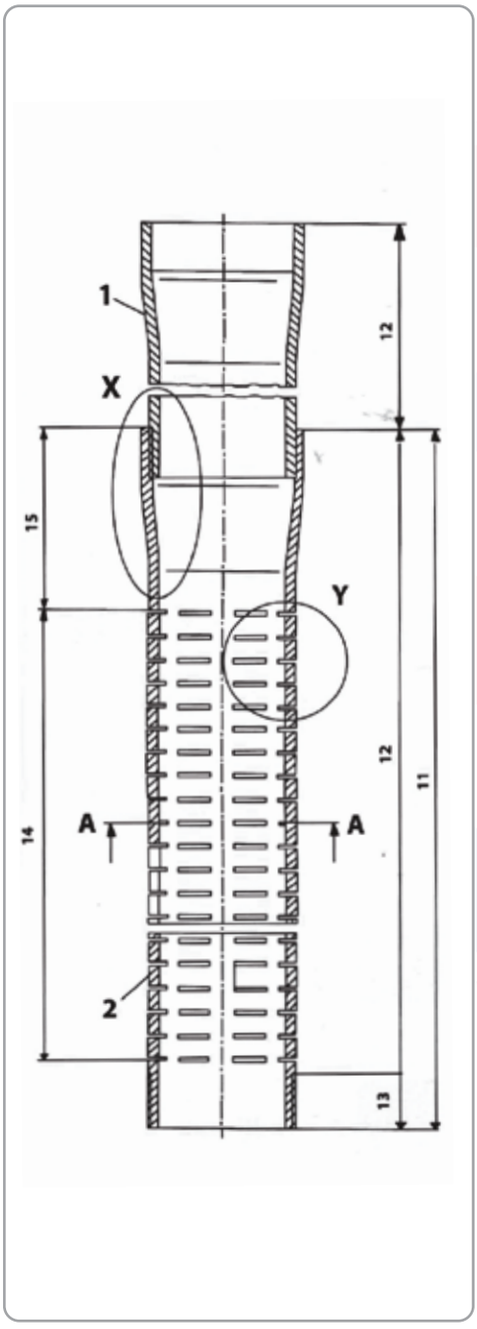
For use on heavy duty large diameter
Screen sizes 250/10" and above

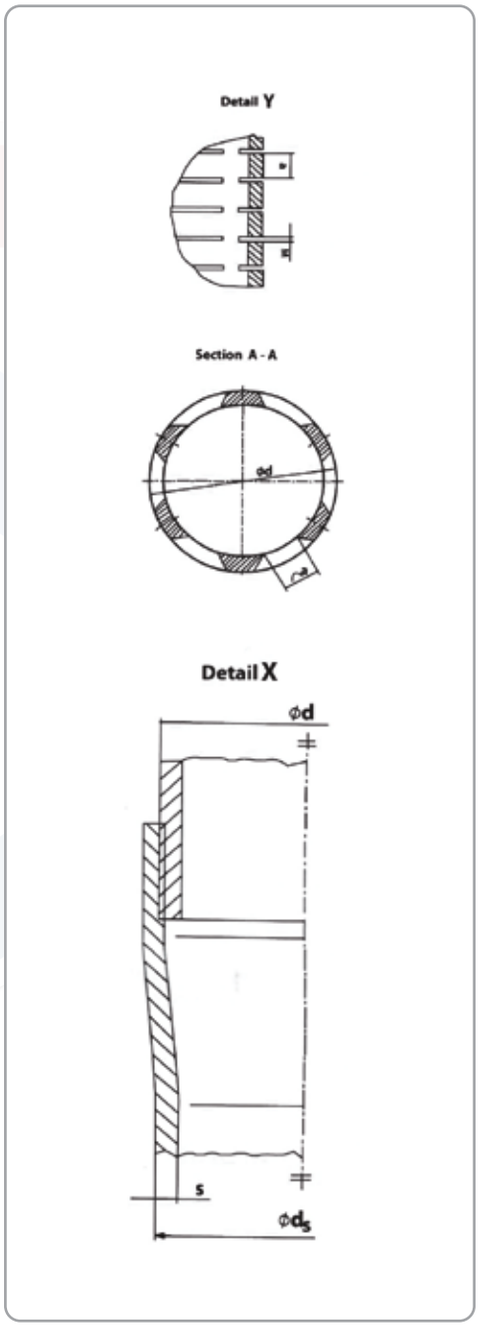


Flush joint with trapezoidal round shoulder thread

Only for shallow and medium
4 U.P.V.C casing and screen pipes

DRAWING NO (2)



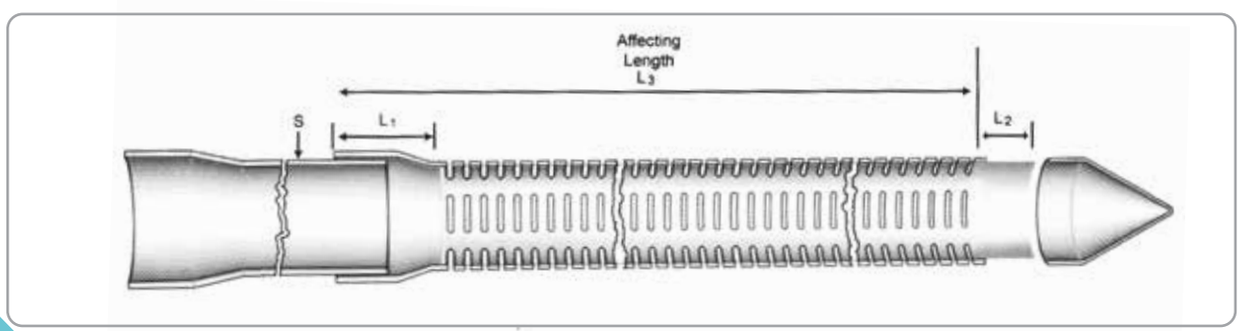


Casing and Filter Pipe Assembly

Fundamentals of adjusting for expansion and contraction of vertcal pipe

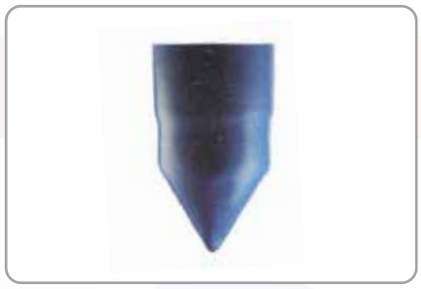
0.20 mm 3%	0.20 mm
0.30 mm 4%	0.30 mm
0.40 mm 5%	0.40 mm
0.50 mm 6%	0.50 mm
0.75 mm 9%	0.75 mm
1.00 mm 11%	1.00 mm
1.25 mm 13%	1.25 mm
1.50 mm 16%	1.50 mm
2.00 mm 20%	2.00 mm
3.00 mm 25%	3.00 mm

No dia (mm)	Wall Thickness (mm) S		Threading (L_1)	Head Length (L_2)	Tail Length (L_2)	L_3		No of screen slots N	Length of screen slots a	Percrentof screen slots wedth (%)		
Standard wall	bars 10	bar 16				3 m	6 m			w(1 mm)	w(1.5 mm)	w(2 mm)
50	2.4	3.7	R	120	40	2840	5840	2	45	4	6	7
63	3.0	4.7	R	140	40	2830	5830	2	50	3.5	5.3	8
75	3.6	5.6	R	160	50	2810	5810	2	60	3.5	5.3	8
90	4.3	6.7	R	180	50	2790	5790	3	60	4.5	6.7	9
110	5.3	8.2	R	200	60	2760	4760	3	75	4.5	6.7	9
125	6.0	9.3	R	220	60	1240	5740	3	80	4.5	6.7	9
140	6.7	10.4	TR	220	70	2740	5740	3	85	4.5	6.7	9
160	7.7	11.9	TR	240	70	2720	5720	4	85	4.7	7	9
200	9.6	14.9	TR	250	80	2710	5710	4	100	4.7	7	9
225	10.8	16.7	TR	270	90	2690	5690	5	100	5	7.5	10
150	11.9	18.6	TR	300	100	2650	5650	5	105	5	7.5	10
280	13.4	20.8	TR	310	120	2640	5640	5	110	5	7.5	10
315	15.0	23.4	TR	320	120	2630	5630	6	110	5	7.5	10



Accessories

Produces a range of high quality accessories and tools for successful installation of casing screen.
The accessories are available for the full range of sizes produced.



Sand traps

v-shaped made of UPVC to trap sand at bottom of screen. Length to be specified at time of order

ABBREVIATIONS

Mpt: male pipe thread.
Fpt: female pipe thread.
Fps: female pipe sement.
Mr ks: reduction with one socket.
Mmb-ks: double socket with socket branch.
Mma-ks: double socket with flanged connection.
mmi-ks: double socket with female connection

وزارة الإسكان والمرافق والمجتمعات العمرانية
Ministry of Housing, Utilities & Urban Communities

الهيئة القومية لمياه الشرب والصرف الصحى
إدارة الاختبارات والرقابة على الصناعة

شهادة اعتماد منشأة إنتاجية

(مواسير PPR –UPVC)

ساري حتى ٣٠/ ٦/ ٢٠٢٦

اسم المنشأة : الشركة العربية للتنمية وصناعة البلاستيك (شيلد بايب) .

عنوان الادارة : ٥٦ صقر قريش مساكن شيراتون القاهرة .

عنوان المصنع : قطعة رقم (٢٨) المنطقة الصناعية (قلب الصناعية) مدينة بدر. محافظة القاهرة .

السجل التجارى: ١٢٥٦٢١ **مكتب سجل تجارى :** الاستثمار **محافظة :** القاهرة .

ب-ض رقم تسجيل ضريبي : ٧٢٩-١٠-٥٨٦٥ **مأمورية:** الاستثمار **محافظة:** القاهرة .

سجل صناعي رقم : ١٢١٩٠٤١٤٠١٠٠٤٧٥٢ **سنة الإصدار :** ٢٠١٩ **نوعية الصناعة :** منتجات لدائنية .

رخصة : ٢٣٢٠١٩٠١٠٦٠٠٠٠١ **تاريخ الاصدار** ٢٠١٩ **(مدينة):** بدر .

المنتجات المعتمدة لدى الهيئة :-

١. مواسير بلاستيك UPVC حتى قطر ٤٥٠مم بضغوط مختلفة للاستخدام فى مشروعات مياه الشرب والصرف الصحى .
٢. مواسير وقطع بولى بروبلين حتي قطر ٦٣مم بضغوط مختلفة للاستخدام في مشروعات مياة الشرب .

- **طبقا للمواصفات القياسية المصرية و العالمية المتبعة فى هذا الشأن .**
- **يتم الالتزام بتعليمات الادارة و الموضحة خلفة وفي حاله مخالفتها يعتبر لاغي .**
- **شهادة الاعتماد لا تستخدم كبديل لشهادات اختبار الهيئة التى تصدر لكل امر توريد على حده .**

المدير العام

مهندسة/

سمية محمد محمد نحلة

صادر في ١/ ١٠/ ٢٠٢٥م
ساري حتى ٢٠٢٦/٦/٣٠م

(شهرين من تاريخ انتهاء المتابعة السنوية)

ALaa

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Notes :

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