



اریبیان پولیمر پایپز (م م ح)
Arabian Polymer Pipes (FZE)





CERTIFICATION
Quality Management System

Certificate of Approval

This is to certify that the QMS of

ARABIAN POLYMER PIPES FZE

L4-01/L4-02, Saif Zone, Sharjah, P.O. Box 122727,
United Arab Emirates

Has been assessed and found to meet the requirements of

ISO 9001:2008

This certificate is valid for the following scope of operations:

Manufacturing and Selling of UPVC Pipes

Authorised by:

RN Cooke
Chief Executive

Date of Certificate Issue: 02 May 2016

Certificate Valid Until: 01 May 2017

Recertification audit before 02 April 2019. Certified since 02 May 2016.

This certificate is the property of QEC Certification and remains valid
subject to satisfactory annual Surveillance audits.

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Member of SN Registrars (Holdings) Ltd





أريبيان بوليمر بايبز (م م ح)
Arabian Polymer Pipes (FZE)

Welcome To Arabian Polymer Pipes FZE

Arabian Polymer Pipes FZE was established to produce quality plastic products. Our main product is Polyvinyl Chloride (uPVC) plastic pipes under I.S.O., B.S., A.S.T.M., S.A.S.O, and other International standards in order to become the best alternative to metal pipes.

The uPVC alternative is cheaper, more efficient, easy to transport to site, easy to install and resistant to corrosion and chemicals. Compared to polypropylene and polyethylene UPVC pipes are less costly, last longer and better hygienically. In our modern lifestyle UPVC pipes are a better technical solution.

uPVC pipes are used in all-important applications such as; high quality conduits for electric wiring systems, soil waste for residential and multi-story buildings (above/under ground).

Arabian Polymer uPVC pipes are produced in sizes and thickness suitable for all working situations. Our products are sold in local markets and neighboring gulf countries. Having a successful management style Arabian Polymer Pipes FZE is committed to high quality and environmentally friendly products and therefore should be your choice.



أريبيان بوليمر بايبز (م م ح)
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About Us:

Being environmentally conscious, Arabian Polymer Pipes looks to produce products that care for the future. In order to keep standards high, we obtained certification from ISO-90012008- and follow all procedures and process needed to fulfill the quality management system.

Our Mission:

Arabian Polymer Pipes aims to be the leading producer and supplier of top quality polyvinyl chloride (uPVC) in the Middle East. We focus on the development, manufacturing and distribution of our pipes to clients that are looking for suitable price.

Our Vision:

Our vision is to provide our clients with sustainable uPVC pipes at appropriate price in order for us to build a better tomorrow.

Benefits of PVC PIPES:

NON-CORROSIVE

Due to the uPVC material being chemically inert, uPVC pipes are not affected by acids, alkalis, pills, salts, moisture or the conditions inside or outside the pipe. UPVC pipes are able to withstand the extreme climates of the Middle East. In addition, uPVC pipes do not oxidise, which translates into longer durability of systems at hand.

INSULATOR

uPVC is itself an insulator material, which makes it an excellent insulator for electrical wires and cables. uPVC is not susceptible to damage caused by electrolyte corrosion.

MECHANICAL STRENGTH

uPVC pipes are able to withstand the pressure caused by high tensile and impact strength and do not bend or flatten under pressure due to their extreme flexibility.

FIRE RESISTANCE

uPVC pipes do not support combustion. In the event of fire, flames are not able to spread along the pipe and are self-extinguishing, making it the safest alternative.

LIGHT WEIGHT

uPVC pipes are exceptionally light, especially when compared to steel or cast iron pipes. This leads to lower transportation, installation and manpower costs.

SANITARY

uPVC pipes are completely non-toxic and do not affect the smell, taste or colour of any water or liquid.

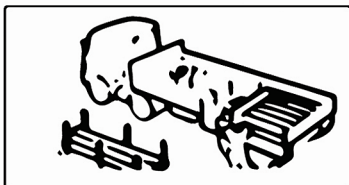
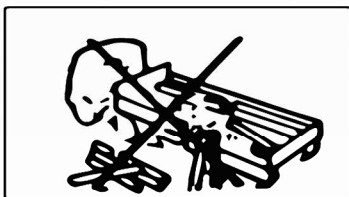
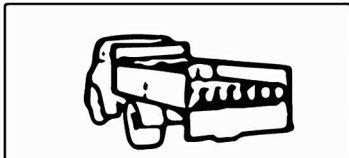
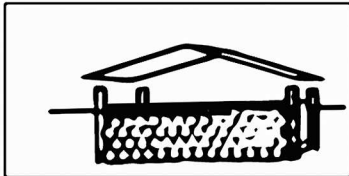
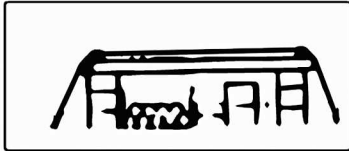
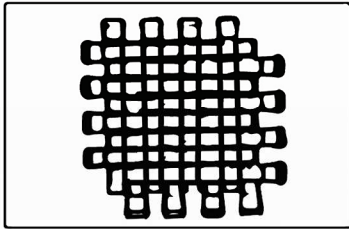
EASY INSTALLATION & MAINTENANCE

uPVC are amongst the easiest and quickest to install and maintain.

COST

uPVC pipes are amongst the least expensive solution.

Handling and Storage



unplasticised PVC pipes are strong but light, their specific gravity being approximately one-fifth of Cast Iron. As a result, these pipe are more easily handled than their metal counterparts. Reasonable care, however, should be used at all times, and when off loading. Pipes should be lowered, not dropped to the ground.

Pipes should be given adequate support at all times. Pipes should not be stacked in large piles, especially in warm temperature conditions, as the lower layers may distort, resulting in difficulties in jointing and pipe alignment. Any pipe with ends prepared for jointing 'socket and spigot joints, 'A' joints, etc) should be stacked in layers with sockets placed at alternate ends of the stack and with the sockets protruding to avoid unstable stacks and the possibility of imparting a permanent set to the pipes.

For long-term storage, pipe racks should provide continuous support, but if this is not possible, timber of at least Sin. (75mm) bearing width at spacing not greater than 3ft. (915mm) centers for pipe sizes 160mm and above, should be placed beneath the pipes and at 6ft. (1.8m) centers at the side, if the stacks are rectangular. These spacing apply to pipe size 160mm and above. Closer supports will be required for sizes below 160mm. In such pipe racks, pipes may be stored not more than seven layers, or 6ft. (1.8m) high, whichever is the lesser, but if id-Meier: classes of pipe are kept in the same racks, then the thickest classes largest diameter must always be placed at the bottom.

For temporary storage in the field, where racks are not provided, the ground should be level and free from loose stones. Pipes stored thus should not exceed three layers high and should be stacked to prevent movement.

Stack heights should be reduced if pipes are nested, i.e. pipes stored inside pipes of larger diameters. Reductions in height should be proportional to the weight of the nested pipe compared to the weight of the pipes normally contained in such storages.

UPVC pipes should always be **stored in the shade** to avoid ultraviolet (U/V) degradation from the sun rays. Effect of UV light refer.

Since the soundness of any joint depends on the condition of the spigot and the socket, special care must be taken in transit, handling and storage to avoid damage to the ends.

When loading pipes on the vehicles, care must be taken to avoid their coming into contact with any sharp corners such as cope irons, loose nail-heads, etc., as pipes may be damaged by being rubbed against these during transit. Whilst in transit, pipes shall be well secured over their entire length and not allowed to project unsecured over the tailboard of the lorry. Pipes may be off-loaded from lorries by rolling them gently down timbers, care being taken to ensure that pipes do not fall one upon another, nor on to any hard or uneven surfaces.

PROPERTIES

MATERIAL : Unplasticised Polyvinyl Chloride (uPVC)

Table 1 ; All values at 23°C unless otherwise specified

PROPERTY	UNIT	VALUE
GENERAL PROPERTIES:		
Density	g / cm ³	1.42
Water absorption (boiling water X 24h)	mg / cm ²	<4
Poisson's Ratio	-	0.35 - 0.38
Friction Co-efficient, Hazzen William	Factor "C"	150
Mechanical properties:		
Tensile strength ultimate	MPa	>52
Modulus of Elasticity in tension	MPa	3180
Compressive strength	MPa	65.5
flexural strength	MPa	93
Izod impact strength	J/M of notch	55 - 60
Hardness (Rockwell)	R	119
(Durometer)	D	>70 +3
Thermal Properties:		
Deflection temperature	°C	>78
Vicat softening temperature	°C	>80
Co-efficient of lineat Th-Exansion	mm/m °C	0.08
Specific Heat	Kcal/kg °C	0.23
Thermal conductivity	W/m °C/m ²	0.15
Thermal Properties:		
Flammability (resistance) (UL-94/0.062")	Resistance Rating	Self extinguishing V-O
Electrical Properties:		
Dielectric Constant	60 cps @30°C	40.00
Dielectric Strength	Volts/mill	1100
Volume resistivity	ohm.cm	>10 ¹⁴

Note: 1.1: this data is based information obtained from samples tasted or provided by material manufacture it should be used as a general recommendation only and not as a gurantee performance or longevity.

Dimension of u PVC pressure pipes according to DIN & Saudi standards

(DIN 8061/62 & SASO 14)

Classes		Class 2		Class 3		Class 4		Class 5	
Pressure in Bars		4		6		10		16	
Nominal Outside Diameter	Nominal Tolerance Diameter	Nominal Wall Thick	Nominal Weight	Nominal Wall Thick	Nominal Weight	Nominal Wall Thick	Nominal Weight	Nominal Wall Thick	Nominal Weight
(mm)	(mm)	(mm)	Kg / Mtr	(mm)	Kg / Mtr	(mm)	Kg / Mtr	(mm)	Kg / Mtr
16	0.2	-	-	-	-	-	-	1.2	0.090
20	0.2	-	-	-	-	-	-	1.5	0.137
25	0.2	-	-	-	-	1.5	0.174	1.9	0.212
32	0.2	-	-	-	-	1.8	0.264	2.4	0.342
40	0.2	-	-	1.8	0.344	1.9	0.350	3.0	0.525
50	0.2	-	-	1.8	0.422	2.4	0.552	3.7	0.809
63	0.2	-	-	1.9	0.562	3.0	0.854	4.7	1.29
75	0.3	1.8	0.642	2.2	0.782	3.6	1.22	5.6	1.82
90	0.3	1.8	0.774	2.7	1.13	4.3	1.75	6.7	2.61
110	0.3	2.2	1.16	3.2	1.64	5.3	2.61	8.2	3.90
125	0.3	2.5	1.48	3.7	2.13	6.0	3.64	9.3	5.01
140	0.4	2.8	1.84	4.1	2.65	6.7	4.18	10.4	6.27
160	0.4	3.2	2.41	4.7	3.44	7.7	5.47	11.9	8.17
180	0.4	3.6	3.02	5.3	4.37	8.6	6.88	13.4	10.4
200	0.4	4.0	3.70	5.9	5.37	9.6	8.51	14.9	12.8
225	0.5	4.5	4.70	6.6	6.76	10.8	10.8	16.7	16.1
250	0.5	4.9	5.65	7.3	8.31	11.9	13.2	18.6	19.9
280	0.6	5.5	7.11	8.2	10.4	13.4	16.6	20.8	24.9
315	0.6	6.2	9.02	9.2	13.2	15.0	20.9	23.4	31.5
355	0.7	7.0	11.4	10.4	16.7	16.9	26.5	26.3	39.9
400	0.7	7.9	14.5	11.7	21.1	19.1	33.7	29.7	50.8

uPVC Pressure Pipes (BS 3505)

Nominal Size	Outside Diameter		Wall Thickness					
			Class C (9 Bar)		Class D (12 Bar)		Class E (15 Bar)	
Inch	Min. mm	Max. mm	Min. mm	Max. mm	Min. mm	Max. mm	Min. mm	Max. mm
1/2"	21.1	21.5					1.7	2.1
3/4"	26.6	26.9					1.9	2.5
1"	33.4	33.7					2.2	2.7
1-1/4"	42.1	42.4			2.2	2.7	2.7	3.2
1-1/2"	48.1	48.4			2.5	3.0	3.1	3.7
2"	60.2	60.5	2.5	3.0	3.1	3.7	3.9	4.5
3"	88.7	89.1	3.5	4.1	4.6	5.3	5.7	6.6
4"	114.1	114.5	4.5	5.2	6.0	6.9	7.3	8.4
5"	140.0	140.4	5.5	6.4	7.3	8.4	9.0	10.4
6"	168.0	168.5	6.6	7.6	8.8	10.2	10.8	12.5
8"	218.8	219.4	7.8	9.0	10.3	11.9	12.6	14.5

uPVC Pressure Pipes (BS 3506)

Wall Thickness

Nominal Size Outside Diameter			Class-O			Class-B			Class-C			Class-D			Class-E		
			Non pressure			6.0 bar*			9.0 bar*			12.0 bar*			15 bar*		
			Averaged	Individual		Averaged	Individual		Averaged	Individual		Averaged	Individual		Averaged	Individual	
			Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value
			Max	Min.	Max.	Max	Min.	Max.	Max	Min.	Max.	Max	Min.	Max.	Max	Min.	Max.
Inch	Min.	Max.	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
1/2"	21.1	21.5													2.1	1.7	2.1
3/4"	26.6	26.9													2.5	1.9	2.5
1"	33.4	33.7													2.7	2.2	2.7
1-1/4"	42.1	42.4										2.7	2.2	2.7	3.2	2.7	3.2
1-1/2"	48.1	48.4	2.2	1.8	2.2							3	2.5	3	3.7	3.1	3.7
2"	60.2	60.5	2.2	1.8	2.2				3.2	2.5	3	3.7	3.1	3.7	4.5	3.9	4.5
2-1/2"	75.0	75.03	2.2	1.8	2.2				3.5	3.0	3.5	4.5	3.9	4.5	5.5	4.8	5.5
3"	88.7	89.1	2.2	1.8	2.2	3.4	2.9	3.4	4.1	3.5	4.1	5.3	4.6	5.3	6.5	5.7	6.6
4"	114.1	114.5	2.8	2.3	2.8	4.0	3.4	4.0	5.2	4.5	5.2	6.8	6	6.9	8.3	7.3	8.4
6"	168.0	168.5	3.7	3.1	3.7	5.2	4.5	5.2	7.5	6.6	7.6	9.9	8.8	10.2	12.1	10.8	12.5
8"	218.8	219.4	3.7	3.1	3.7	6.1	5.3	6.1	8.8	7.8	9.0	11.6	10	11.9	14.1	12.6	14.5

uPVC Soil Pipe (BS 4514)

Nominal Size	Outside Diameter		Wall Thickness	
	Min. (mm)	Max. (mm)	Min. (mm)	Max. (mm)
82	82.4	82.8	3.2	3.8
110	110	110.4	3.2	3.8
160	160	160.6	3.2	3.8

uPVC Soil & Waste Pipe (BS 5255)

Outside Diameter	W.T	Outside Diameter		Wall Thickness	
	(mm)	Min. (mm)	Max. (mm)	Min. (mm)	Max. (mm)
1-1/4" / 36mm	1.8	36.15	36.45	1.80	2.20
1-1/2" / 43mm	1.9	42.75	43.05	1.90	2.30
2" / 56mm	2	55.75	56.05	2.00	2.40

British Standard Telephone Duct (B.P.O)

Size	Minimum		Overall	Effective
mm	O.D (mm)	Thickness	Length (m)	Length (m)
Duct 56	53.9	1.55	6.07	6
Duct 54D	96.5	3.25	6.1	6

uPVC Drainage Pipe BSEN (1329)

W.T.		O.D. Mn		Wall Thickness (mm)	
O.D. (mm)	(mm)	Min.	Max.	Min.	Max.
36	3.00	36.2	36.45	3	3.5
43	3.00	42.75	43.05	3	3.5
50	3.00	50	50.2	3	3.5
56	3.00	55.8	56.05	3	3.5
75	3.00	75	75.3	3	3.5
82	3.00	82	82.3	3	3.5
110	3.20	110	110.3	3.2	3.8
160	3.20	160	160.4	3.2	3.8
200	4.90	200	200.5	4.9	5.6
250	6.20	250	250.5	6.2	7.1
315	7.70	315	315.6	7.7	8.7

Dimensions of Upvc Pipes

(Based on Astm D1785 Schedule 40 & 80)

Nominal Size in	O.D. Mn		Schedule 40			Schedule 80		
			Thickness mm		Weight	Thickness mm		Weight
Inch	Min.	Max.	Min.	Max.	Kg / Mt	Min.	Max.	Kg / Mt
1/2	21.2	21.54	2.8	3.3	0.24	3.7	4.2	0.31
3/4	26.6	26.9	2.9	3.4	0.33	3.9	4.4	0.41
1	33.4	33.7	3.4	3.9	0.48	4.6	5.1	0.6
1 1/4	42.1	42.4	3.6	4.1	0.65	4.9	5.4	0.84
1 1/2	48.1	48.4	3.7	4.2	0.77	5.1	5.7	1.03
2	60.2	60.5	3.9	4.4	1.04	5.5	6.2	1.41
2 1/2	73.2	73.2	5.16	5.77	1.57	7.01	7.85	2.2
3	88.7	89.1	5.5	6.2	2.14	7.9	8.5	2.88
4	114.1	114.5	6	6.7	3.05	8.6	9.6	4.22
6	168	168.5	7.1	8	5.37	11	12.3	8.05
8	218.8	219.4	8.2	9.2	8.11	12	14.2	10.1

RIGID uPVC Extra Strength Utilities Duct for Underground Installation

(Dimensions Based on NEMA TC-8 & ASTM F 512)0

Nominal Size	Average Outside Diameter	PVC - Type EB		PVC - Type DB	
		Wall Thickness Min.	Nominal Weight	Wall Thickness Min.	Nominal Weight
Inch	(mm)	(mm)	Kg / Mtr	(mm)	Kg / Mtr
1	33.4			1.52	0.251
1 1/2	48.26			1.52	0.369
2	60.32	1.52	0.465	1.96	0.576
3	88.9	1.93	0.847	3.0	1.25
4	114.3	2.54	1.39	3.91	2.05
6	168.28	3.85	3.02	5.77	4.42
Applications: Type EB for Encased Burial in Concrete					
Type DB for Direct Burial without Concrete					

u PVC Electrical Conduits & Tubing according to NEMA TC-2

Nominal Size	Average Outside Diameter	EPT-A-PVC			EPC-40-PVC			EPC-80-PVC		
		Wall Thickness Min.	Wall Thickness Max.	Weight Kg / Mtr	Wall Thickness Min.	Wall Thickness Max.	Weight Kg / Mtr	Wall Thickness Min.	Wall Thickness Max.	Weight Kg / Mtr
Inch	(mm)	(mm)	(mm)		(mm)	(mm)		(mm)	(mm)	
1/2	21.34	1.52	2.03	0.155	2.77	3.28	0.24	3.73	4.24	0.3
3/4	26.67	1.52	2.03	0.197	2.87	3.38	0.33	3.91	4.24	0.43
1	33.4	1.52	2.03	0.25	3.38	3.89	0.48	4.55	5.08	0.61
1 1/4	42.16	1.78	2.29	0.365	3.56	4.07	0.65	4.85	5.44	0.87
1 1/2	48.26	2.03	2.54	0.47	3.68	4.19	0.77	5.08	5.69	1.03
2	60.32	2.54	3.05	0.717	3.91	4.42	1.04	5.54	6.2	1.43
2 1/2	72.94	2.79	3.30	0.952	5.16	5.77	1.57	7.01	7.85	2.2
3	88.9	3.18	3.68	1.31	5.49	6.15	2.14	7.62	8.53	2.91
4	114.3	3.81	4.32	2.0	6.02	6.73	3.05	8.56	9.58	4.26
6	168.28				7.11	7.98	5.37	10.97	12.29	8.13
EPT - A:	Electrical Plastic Tubing - Designed to be encased in concrete.									
EPT - 40	Electrical Plastic Conduit - Designed for normal duty application									
EPT - 80	Electrical Plastic Conduit - Designed for heavy duty application.									
All EPC - A - PVC and EPC - 40 PV and EPC 80 - PVC shall be gray Colour										

RIGID uPVC Utilities Duct for Underground installation					
(Dimensions Based on NEMA TC-6 & ASTM F 512)					
Nominal Size	Average Outside Diameter	PVC - Type EB 20		PVC - Type DB 60	
		Wall Thickness Min.	Nominal Weight	Wall Thickness Min.	Nominal Weight
Inch	(mm)	(mm)	Kg / Mtr	(mm)	Kg / Mtr
2	60.32	1.52	0.465	1.52	0.462
3	88.9	1.55	0.703	2.34	1
4	114.3	2.08	1.17	3.07	1.65
6	168.28	3.18	2.53	4.62	3.57
Applications: Type EB for Encased Burial in Concrete					
Type DB for Direct Burial without Concrete					

Dimensions of uPVC Pipes						
(Based on Astm D 2241)						
Nominal Size in	Outside Diameter	Wall Thickness				
		100psi SDR	125psi SDR	160psi SDR	200psi SDR	315psi SDR
Inch	(mm)	41mm	32.5mm	26 mm	21mm	13.5mm
1/2	21.3					106
3/4	26.7				1.5	2
1	33.4			1.5	1.6	2.5
1 1/4	42.2			1.6	2	3.1
1 1/2	48.3			1.9	2.3	3.6
2	60.3			2.3	2.9	4.5
2 1/2	73			2.8	3.5	5.4
3	88.9		2.7	3.4	4.2	6.6
4	114.3	2.8	3.5	4.4	5.4	8.5
6	168.3	4.1	5.2	6.5	8	

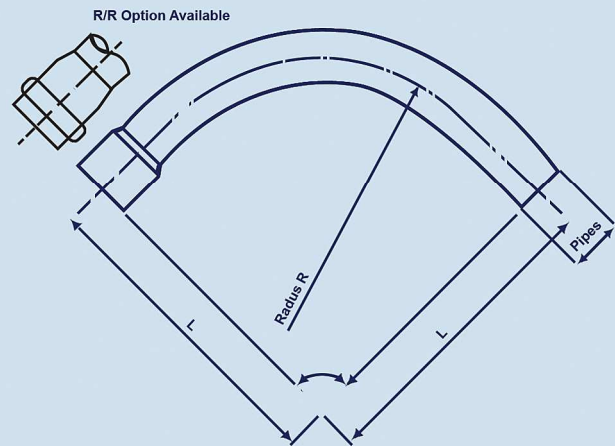
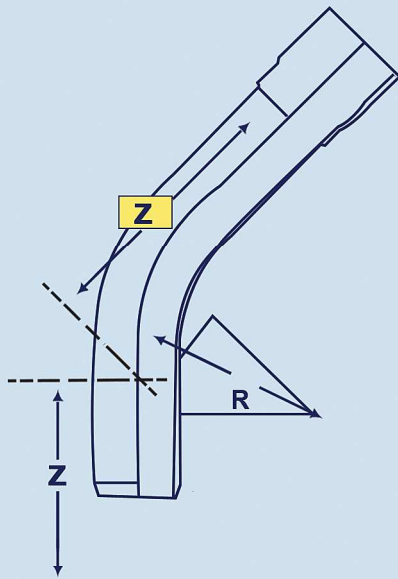
uPVC Drain, Waste & Vent Pipes (ASTM D - 2265)					
Nominal Size	Outside Diameter		Wall Thickness		Weight
	Min. (mm)	Max. (mm)	Min. (mm)	Max. (mm)	Kg / Mtr
1 1/4	42.03	42.29	3.56	9.06	0.65
1 1/2	48.11	48.41	3.68	4.19	0.77
2	60.17	60.47	3.91	4.42	1.04
3	88.7	89.1	5.49	6.15	2.14
4	114.1	114.5	6.02	6.73	3.05
6	168	168.56	7.11	7.98	5.37
8	218.7	219.46	8.18	9.17	8.11

Technical Properties for NEMA	
Material Properties	
Material	Poly Vinyl Chlorid (PVC)
Physical Properties	
Specific Gravity	1.42
Flammability	Self Extinguishing
Water Absorption	<4mg/ Cm2
Mechanical Properties	
ZOD Impact Strength	4.0ft ib/in Notch
Tensile Strength	7500 p.s.i.
Flexural Strength	13500 p.s.i.
Modulus of Elasticity	5.0 X 105 p.s.i.
Flattening	No Splitting
Thermal Properties	
Vicat Softening Point 5Kg	>80C
Thermal Conductivity	0.13k Cal / m.h.C
CO-Efficient of linear	5.0 X 10-5 / C
Expansion	
Specific Heat	0.25 Cal / c
Electrical Properties	
Dielectric Strength	>40 kv / mm
Surface Resistivity	> 10 chm
Volume Resistivity	>10 chm.cm

FABRICATION IN uPVC

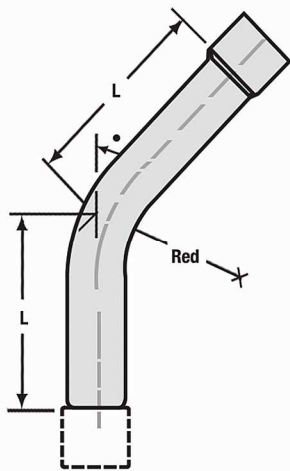
Even given extremely wide range of solution already offered by cosmoplast, there are still some highly needed specific applications that remain uncovered due to the diversity of the industries we serve. In order to fully satisfy these needs cosmoplast offers fabrication facilities in uPVC fitting that are tailor-made to address design and assembly requirements unfulfilled by even its own wide range of standard off the shelf product.

Long Radius Bends

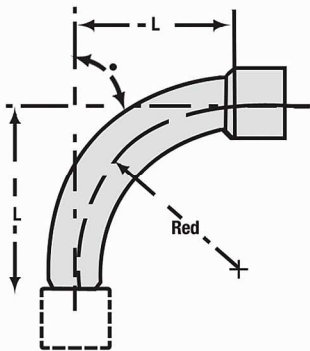


Fabricated Drawn Radius Bends (Solvent Weld Joint)

Drawn Radius bends are produced
normal wall thickness pipe



Single Socket
or Double Socket
to be specified



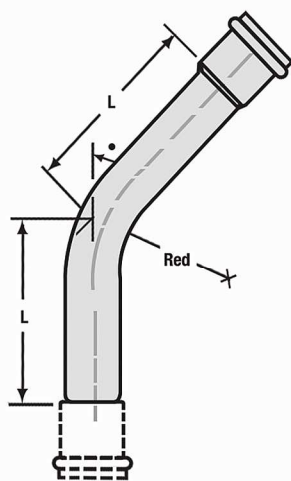
Single Socket
or Double Socket
to be specified

PIPE O.D. mm	Radius mm	11 1/4°	22 1/2°	45°	90°
		L. mm	L. mm	L. mm	L. mm
16	56	100	115	128	170
20	70	100	115	135	170
25	88	100	115	145	180
32	112	100	115	150	190
40	140	110	125	170	220
50	175	175	180	225	350
63	221	240	260	300	420
75	263	260	285	350	470
90	315	350	390	480	600
110	385	370	400	500	690
140	490	390	410	570	760
160	580	400	420	600	1000
200	712	480	540	760	1150
225	783	590	610	840	1240

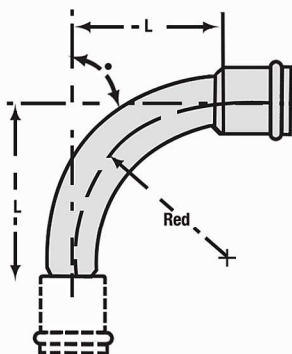
Dimension stated above are indicative. detailed specification for design purposes should be obtained from our technical sales department. Bends for sizes 250mm and above with solvent weld joint consult our sales department.

Fabricated Drawn Radius Bends (Rubber Seal Ring joint)

Drawn Radius bends are produced normal wall thickness pipe



Single Socket
or Double Socket
to be specified



Single Socket
or Double Socket
to be specified

PIPE O.D. mm	Radius mm	11 1/4° L. mm	22 1/2° L. mm	45° L. mm	90° L. mm
63	221	240			
-	-		260		
-	-			300	
-	-				420
75	263	260			
-	-		285		
-	-			350	
-	-				470
90	315	350			
-	-		390		
-	-			480	
-	-				600
110	385	370			
-	-		400		
-	-			500	
-	-				600
140	490	390			
-	-		410		
-	-			570	
-	-				760
160	560	400			
-	-		420		
-	-			600	
-	-				10000
200	712	480			
-	-		540		
-	-			760	
-	-				1150
225	788	590			
-	-		610		
-	-			840	
-	-				1240
250	852	680			
-	-		730		
-	-			850	
-	-				1350
280	980	700			
-	-		830		
-	-			1040	
-	-				1610
315	1103	810			
-	-		910		
-	-			1050	
-	-				1690

Noted : Bends of other Angles or Radius to special order.

Dimension state above are indicative detailed specification for design purpose should be obtained from our technical sales department.

Tables of Chemincal Resistance of UPVC

The resistance of plastic pipe materials to a wide range of chemicals is listed in the following tables. The chemical names used in the tables are, wherever possible, in accordance with the recommendations contained in BS 2474.

Abbreviations used in table as follows:

S - Satisfactory

U - Unsatisfactory:	So rated because of decomposition, solution, swelling, loss of ductility etc, of the sample tested.
D - Some attack OR Absorption	The material may be considered for use when alternative materials are Unsatisfactory, and where limited life is acceptable. When plastics are to be used with such chemicals, full-scale trials under realistic conditions are particularly necessary.
*_ Predicted results.	In order to cover as wide range of named chemicals as possible, the resistance of plastics to some chemicals has been predicted from its resistance to other chemicals which have similar composition.

T Reference should be made to section 21 (pipes for food and drink other than water) of BS CP 312 Part 1

Chemical	Concentration	Temperature	
		20o C	60o C
Acetaldehyde	40%(w/v) soln.	S	U*
	100%	U	U
Acetic acid	10%(v/v) soln.	S	S
	60%(v/v) soln.	S	D
	glacial	U	U
Acetic anhydride		U	U
Acetone		U	U
Acetonitrile			U*
Acetophenetidine		S*	S*
Acetophenone		U*	U*
Adipic acid		S	D
Alcohols, see specific			
Alcohols, see specific			
Aliphatic hydrocarbons		S	S
Allyl alcohol		D	U
Allyl chloride		U	U
Alum, see aluminium			
potassium sulphate			
Aluminium acetate		S*	S*
Aluminium chloride		S	S
Aluminium flouride		S*	S*
Aluminium hydroxide		S*	S*
Aluminium nitrate		S	S
Aluminium oxalate		S*	S*
Aluminium oxychloride		S	S
Aluminium potassium			
sulphate (alum)		S	S
Aluminium sulphate		S	S
Ammonia	dry gas	S	S
	liquid	U	U*
Ammonia solution	35%(m/v) soln.	S	S
(ammonium hydroxide)	(0-88 g/ml)		
Ammonium bicarbonate,			
see ammonium			
hydrogen carbonate			
Ammonium carbonate		S	S
Ammonium chloride		S	S
Ammonium ferrous citrate		S*	S*
Ammonium fluoride		S	S
Ammonium hydrogen			
carbonate		S*	S*
Ammonium hydroxide,			
see ammonia solution			
Ammonium metaphosphate		S	S
Ammonium nitrate		S	S
Ammonium ortho-			
phosphates		S*	S*
Ammonium oxalate		S*	S*
Ammonium persulphate		S	S
Ammonium sulphate		S	S
Ammonium sulphied		S	S
Ammonium thiocyanate		S	S
Ammonium zinc chloride			
(zinc ammonium			
chloride)		S*	S*
Amyl acetate		U	U
Amyl alcohol		S*	U
Amyl chloride		U	U
Aniline		U	U
Anilinehydrochloride		U	U
Aniline sulphate		U	U
Animal oils		S*	S*
Antraquinone		S	U
Antraquinone sulphonc			
acid		S	U
Antimony chloride		S	S*

** Containing 3 parts by volume of concentrated hydrochloric acid to one part by volume of concentrated nitric acid.

Chemical	Concentration	Temperature	
		20o C	60o C
Aqua regia**	conc.	U	U
Aromatic hydrocarbons		U	U
Arsenic acid (syrupy)	75%(m/m)	S	D
	or 2 g/ml		
Aryl sylphonic acids		S	U
Barium carbonate		S*	S*
Barium chloride		S*	S*
Barium hydroxide		S	S
Barium sulphate		S*	S*
Barium sulphide		S	S
Beert		S	
Benzaldehyde	trace	U	U
	100%	U	U
Benzene		U	U
Benzoic acid		D	U
Benzoyl chloride		U*	U*
Benzyl acetate		U	U*
Benzyl alcohol			
(phenylcarbinol)		U*	U*
Bismuth carbonate		S	S
Borax, see disodium			
tetraborate			
Boric acid		S	S
Boron trifluoride		S	
Brine		S	S
Bromine	trace	S	U
	100% dry gas	U*	U
	liquid	U	U
Bromomethane			
(methyl bromide)		U*	U*
Butadiene		S	S
Butane		S	S
Butanediols		U	U
Butanols (butyl alcohols)		S	D
Butyl acetate		U	U
Butyl chloride		U*	U*
iso Butyl methyl ketone			
(4-methylpentan-2-one)		U*	U*
Butylphenols		U	U
Butyraldehyde		U*	U*
Butyric acid	20% aq. Soln.	S	U*
	conc.	U	U
Calcium carbonate		S	S
Calcium chlorate		S	S
Calcium chloride	aq. Soln.	S	S
Calcium hydrogen sulphite			
(calcium bisulphite)		S*	S*
Calcium hydroxide		S	S
Calcium hypochlorite		S	S
Calcium nitrate		S	S
Calcium orthophosphates		S*	S*
Calcium sulphate		S	S
Calcium sulphide		S	S
Carbon dioxide (gas)	U	S	S
Carbon disulphide			
Carbon monoxide		S	S
Carbon tetrachloride		D	U
Casein		S*	S*
Castor oil		S	S
Cetyl alcohol, see			
hexadecanol			
Chloral hydrate		S	S
Chloric acid		S	S**

** At 20% concentration

Chemicalw	Concentration	Temperature	
		20o C	60o C
Chlorine, gas	10% dry	D	
	100% dry	D	U
	10% moist	U	U
Chlorine	sat.aq.soln.	D	U*
Chlorine trifluoride		U*	U*
Chloroacetic acid		S	D
		U	U
Chloroethane (ethyl Chloride)		U	U
2-Chloroethanol (ethylene chlorohydrin)		U	U
Chloroform		U	U
Chloromethane (methyl chloride)		U	U
Chlorosulphonic acid		D	U
Chromic acid	plating soln.	S	S
Chromic potassium sulphate (chrome alum)		S	S
Cidert		S*	
Citric acid		S	S
Copper** chloride		S*	S*
Copper** cyanide		S*	S*
Copper** fluoride		S	S
Copper** nitrate		S*	S*
Copper** sulphate		S	S
Creosote		U	U
Cresols		U	U
Cresylic acid		U	U*
Crotonaldehyde		U	U
Cyclohexanol		U	U
Cyclohexanone		U	U
Detergents (synthetic)	diluted for use		
Developers (photographic)		S	S
Dextrin		S	S
Dextroset	sat.soln.	S	S
Daimyl ether		U*	U*
Diazo salts		S	S
Dibromoethane (ethylene dibromide)		U*	U*
Dibutyl phthalate		U*	U*
Dichlorobenzene		U*	U*
Dichlorodifluoromethane		S	
Dichloroethane (ethylene dichloride)		U	U
Dichloroethylene		U*	U*
1,2-Dichloropropane (propylene dichloride)		U	U
Diethyl ether		U	U
Diethyl ketone		U*	U*
Diethyl sulphate (ethyl sulphate)		U	U
Digol (diethylene glycol)		S*	S*
Dimethyl sulphate (methyl sulphate)		S	U
Dimethylamine		S	S
Dimethylcarbinol, see isopropyl alcohol			
Diethyl phthalate		U*	U*
Dioxan		U*	U*
Diphenyl ether		U	U
Disodium phosphate, see disodium hydrogen orthophosphate			
Dodecanoic acid (lauric)		S	S

**Cuprous or cupric.

Chemical	Concentration	Temperature	
		20o C	60o C
Dodecanol (lauryl alcohol)		S*	S*
Emulsifiers	all	S*	S*
Emulsions (photographic)		S	S
Ethane		S*	
Ethanediol (ethylene glycol)		S	S
Ethanol (ethyl alcohol)	95-100%	S	D
	40% (v/v) aq. soln.	S	D
Ethers (see also diethyl ether)		U	U
Ethyl acetate		U	U
Ethyl acrylate		U	U
Ethyl alcohol, see ethanol			
Ethyl butyrate		U*	U*
Ethyl chloride, see Chloroethane			
Ethyl formate		U*	U*
Ethyl lactate		U*	U*
Ethyl methyl ketone (methyl ethyl ketone)		U	U
Ethyl sulphate, see diethyl sulphate			
Ethylene chlorohydrin, see 2-chloroethanol			
Ethylene dibromide, see dichloroethane			
Ethylene dichloride, see dichloroethane			
Ethylene glycol, see ethanediol			
Ethylene oxide (oxiran)		U	U
Fatty acids, higher		S	S
Ferric chloride		S	S
Ferric nitrate		S	S
Ferric sulphate		S	S
Ferrous ammonium citrate, see ammonium ferrous citrate			
Ferrous chloride		S*	S*
Ferrous sulphate		S*	S*
Fixing soln.(photographic)		S	S
Fluorine		U	U
Fluorosilic acid	40% aq. Soln.	S	S
	conc.	S	S
Formaldehyde	40% (w/w) aq. soln.	S	S
Formic acid	3% aq. Soln.	S	S
	10% aq. Soln.	S	S
	25% aq. Soln.	S	D
	50% aq. Soln.	S	U
	98%-100%	U	U
Fructoset		S	S
Fruit juicest		S	S
Fuel oil		S	S
Furfuraldehyde(furfural)	100%	U	U
furfuryl alcohol		U*	U
Gallic acid, see 3, 4, 5-trihydroxybenzoic acid			
Gasolin, see petrol			
Glucose		S	S
Glycerol		S	S
Glycerol monobenzyl ether		U*	U*

Chemical	Concentration	Temperature	
		20o C	60o C
Glycol, see ethanediol			
Glycollic acid	30% alc. Soln.	S	S
Grape sugar		S	S
Heptane		S	U
Hexadecanol (cetyl alcohol)		S*	S*
Hexanol (hexyl alcohol)		S	S
Hydrobromic acid	50% (w/v) aq. soln.	S	S
	100% (w/v) aq. soln.	S*	S*
Hydrochloric acid	10% (w/v) aq. soln.	S	S
	22% (w/v) aq. soln.	S	S
	concentrated (36%)	S	S
Hydrocyanic acid	10% (w/v) aq. soln.	S	S
hydrofluoric acid	4% (w/v) aq. soln.	S	S
	40% (w/v) aq. soln.	S	U
	60% (w/v) aq. soln.	D	U*
	concentrated	U*	U*
Hydrogen		S	S
Hydrogen bromide	anhydrous	S*	S*
Hydrogen chloride	anhydrous	S*	S*
Hydrogen fluoride	anhydrous	S*	S*
Hydrogen peroxide	3% (w/v) aq. soln.	S	S
	12% (w/v) aq. soln.	S	S
	30% (w/v) aq. soln.	S	S
	90% (w/v) or greater	U	U
Hydrogen sulphide		S	S
Hydroquinone, see quinol			
Hydroxylammonium sulphate		S	S
Hypochlorous acid		D	U*
Iodine	soln. potassium iodide	U	U
iso-octane (2, 2, 4-trimethylpentane)		S	U
Isophorone		U	U
Isopropanol, see isopropyl alcohol			
Lactic acid	10% (w/v) aq. soln.	S	S
	100% (w/v) aq.	U	U
Lanolin		S*	S*
Latex		S	S
Lauric acid, see dodecanoic acid			
Lauryl alcohol, see dodecanol			
Lead acetate		S	S
Lead arsenate		S*	S*
Lead nitrate		S*	S*

Chemical	Concentration	Temperature	
		20o C	60o C
Lead tetraethyl, see tetraethyl lead			
Linoleic acid		S	S
Linseed oil		S	S
Lubricating oil		S	S
Magnesium carbonate		S	S
Magnesium chloride		S	S
Magnesium hydroxide		S	S
Magnesium nitrate		S	S
Maleic acid	25% (w/v) aq. soln.	S	S
	50% (w/v) aq. soln.	S	S
	concentrated	S	S
Malic acid		S	S
Manganese sulphate		S*	S*
Margarine		S	S
Mercuric chloride		S	S
Mercuric cyanide		S	S
Mercurous nitrate		S	S
Mercury		S	S
Mesityl oxide		U	U
Metalic soaps (water soluble)		S*	S*
Methanol (methyl alcohol)	100%	S	D
	6% (w/v) aq. soln.	S	S*
		U*	U*
Methyl acetate			
Methyl bromide, see bromomethane			
Methyl isobutyl ketone, see isobutyl methyl ketone			
Methyl chloride, see chloromethane			
methyl ethyl ketone, see ethyl methyl ketone			
Methyl glycol		S	S
Methyl hydrogen sulphate (methyl sulphuric acid)	50% (w/v) aq. soln.	S	S
	60% (w/v) aq. soln.	S	S
	75% (w/v) aq. soln.	S	S
	90% (w/v) aq. soln.	S	S
Methyl methacrylate		U	U
Methyl sulphate, see dimethyl sulphate			
Methylated spirits		S	D
Methylcyclohexanone		U	U
Methylsulphonic acid		S	D
Milk		S*	S*
Mineral oils		S	S
Mixed acids**			U
Molasses		S	S
Monochlorobenzene		U*	U*
Naphtha		S	S
Naphthalene		U	U
Nickel chloride		S	S
Nickel nitrate		S	S
Nickel sulphate		S	S
Nicotine		S	S

** Various proportions of concentrated nitric acid and concentrated hydrochloric acid (see also acqua regia).

Chemical	Concentration	Temperature	
		20o C	60o C
Nicotinic acid		S	S
Nitric acid	5% (w/v) aq.		
	soln.	S	
	10% (w/v) aq.		
	soln.	S	D
	25% (w/v) aq.		
	soln.	S	D
	50% (w/v) aq.		
	soln.	S	U
	70% (w/v) aq.		
	soln.	D	U
	98% (w/v) aq.		
	soln.	U	U
Nitrobenzene		U	U
Nitropropane		U	U
Nitrous fumes	moist	D	U
Nonanol (nonyl alcohol)		S*	S*
Octane		S*	U*
Octanol (octyl alcohol)		S*	
Oils and fast		S	S
Oleic acid		S	S
Orthophosphoric acid	20% aq. Soln.	S	S
	30% aq. Soln.	S	S
	50% aq. Soln.	S	S
	95% aq. Soln.	S	S
Oxalic acid		S	S
Oxygen		S	S
Ozone		S	S
Palmitic acid	10%	S	S
	70%	S	S
Paraffin		S	S
Paraffin wax		S	S
Pentane		S*	
Perchloric acid	10%	S	D
Petrol		S	U
Petrol/benzene mixture	80:20 ratio	U	U
Petroleum spirit			
(petroleum ether)		U	U
Phenol		S	U
Phenylcarbinol, see benzyl alcohol			
Phenylhydrazine		U	U
Phenylhydrazine hydro- chloride		U	U
Phosgene	gas	S	U
	liquid	U	U
Phosphates (see also under ammonium, potassium, sodium, etc)		S*	S*
Phosphine		S	S
Phosphoric acid, see orthophosphoric acid			
Phosphorus		S	U
Phosphorus pentoxide		S	S*
Phosphorus trichloride		U	U
Phosphoryl chloride (phosphorus oxychloride)		U	U
Phthalic anhydride		S*	S*
Picric acid	1% (w/v) aq. soln.	S	S*
	10% (w/v) alc. soln.	U	U

Chemical	Concentration	Temperature	
		20o C	60o C
Plating solutions:			
brass		S	S
cadmium		S	S
chromium		S	S
copper		S	S
gold		S	S
indium		S	S
lead		S	S
nickel		S	S
rhodium		S	S
silver		S	S
tin		S	S
zinc		S	S
Polyglycol ethers		U*	U*
Potassium acid sulphate, see potassium hydrogen sulphate			
Potassium antimonate		S*	S*
Potassium bicarbonate, see potassium hydrogen carbonate			
Potassium bichromate, see potassium dichromate			
Potassium bisulphate, see potassium hydrogen sulphate			
Potassium borate		S	S
Potassium bromate		S	S
Potassium bromide		S	S
Potassium carbonate		S	S
Potassium chlorate		S	S
Potassium chloride		S	S
Potassium chromate		S	S
Potassium cuprocyanide		S*	S*
Potassium cyanide		S	S
Potassium dichromate (potassium bichromate)		S	S
Potassium ferricyanide		S	S
Potassium ferrocyanide		S	S
Potassium fluoride		S	S
Potassium hydrogen carbonate (potassium bicarbonate)		S	S
Potassium hydrogen sulphate (potassium acid sulphate)		S*	S*
Potassium hydrogen sulphite (potassium bisulphite)		S*	S*
Potassium hydroxide	1% (w/v) aq. soln.		
	10% (w/v) aq. soln.	S	S
	conc. Soln.	S	S
Potassium hypochlorite		S*	S*
Potassium nitrate		S	S
Potassium orthophosphates		S*	S*
Potassium perborate		S	S
Potassium perchlorate	10% soln.	S	S
Potassium permanganate	20% soln.	S	S
Potassium persulphate	5% soln.	S	S
Potassium sulphate		S*	S*
Potassium thiosulphate		S*	S*
Propane		S	S

Chemical	Concentration	Temperature	
		20o C	60o C
Propane-1, 2-diol (propylene glycol)		S*	S*
Propargyl alcohol (prop-2-ynl-ol)		S	S
Propionic acid	50% aq. Soln.	S*	S*
	100% aq. Soln.	S*	U*
iso Propopyl alcohol (isopropanol)		S	S
Prophlene dichloride, see 1,2-dichloropropane			
Propylene oxide		U*	U*
Pyridine		U	U
Quinol (hydroquinone)		S*	S*
Rayon coagulating bath		S*	S*
Sulphur trioxide		S*	S*
Salicylic acid		S	S
Sea water		S	S
Selenic acid		U	U
Shortening		S*	S*
Silicic acid		S	S
Silver acetate		S*	S*
Silver cyanide		S	S
Silver nitrate		S	S
Soap solutions (aqueous)		S	S
Sodium acetate		S	S
Sodium acid sulphate, see sodium hydrogen sulphate			
Sodium aluminate		S*	S*
Sodium antimonate		S*	S*
Sodium benzoate		S	D
Sodium bicarbonate, see sodium hydrogen carbonate			
Sodium bisulphate, see sodium hydrogen sulphate			
Sodium bisulphate, see sodium hydrogen sulphate			
Sodium borate, see disodium tetraborate			
Sodium bromide		S	S
Sodium carbonate		S	S
Sodium chlorate		S	S
Sodium chloride		S	S
Sodium cyanide		S*	S*
Sodium ferricyanide		S	S
Sodium ferrocyanide		S	S
Sodium fluoride		S	S
Sodium hydrogen carbonate (sodium bicarbonate)		S	S
disodium hydrogen orthophosphate		S*	S*
Sodium hydrogen sulphate (sodium bisulphate)		S	S
Sodium hydrogen sulphite (sodium bisulphate)		S	S
Sodium hydroxide	1% (w/v) aq. soln.	S	S
	10% (w/v) aq. soln.	S	S

Chemical	Concentration	Temperature	
		20o C	60o C
	40% (w/v) aq. soln.	S	S
	conc.	S	S
Sodium hypochlorite	15% available chlorine	S	S
Sodium hyposulphite see Sodium thiosulphate			
Sodium metaphosphate		S*	S*
Soidum nitrate		S	S
Sodium nitrite		S	S
trisodium orthophosphate		S*	S*
Sodium perborate		S*	S*
Sodium peroxide		S*	S*
Sodium silicate		S*	S*
Sodium suphate		S	S
Sodium suphide	aq. Soln.	S	S
disodium tetraborate (borax)		S	S
Sodium thiosulphate (sodium hyposulphite)		S*	S*
Soft soap		S*	S*
Stannic chloride		S	S
Stannous chloride		S	S
Starch		S	S
Stearic acid		S	S
Sucrose		S*	S*
Sulphur	colloidal	S	S
Sulphur dioxide	dry	S	S
	moist	S	U
	liquid	D	U
Sulphur trioxide		S	S
Sulphuric acid	10% (w/v) aq. soln.	S	S
	20% (w/v) aq. soln.	S	S
	30% (w/v) aq. soln.	S	S
	40% (w/v) aq. soln.	S	S
	50% (w/v) aq. soln.	S	S
	55% (w/v) aq. soln.	S	S
	60% (w/v) aq. soln.	S	S
	70% (w/v) aq. soln.	S	S
	80% (w/v) aq. soln.	S	S
	90% (w/v) aq. soln.	S	S
	95% (w/v) aq. soln.	D	U
	98% (w/v) aq. soln.	U	U
	fluming	U*	U*
Sulphurous acid	10% (w/v) aq. soln.	S	S
	30% (w/v) aq. soln.	S	S
Surface active agents	all	S*	S*
Tallow		S*	S*
Tannic acid		S	S
Tanning extracts		S	S*
Tartaric acid		S	S
Tetraethyl lead (lead tetraethyl)		S	S

Chemical	Concentration	Temperature	
		20o C	60o C
Tetrahydrofuran		U	U
Tetrahydronaphthalene			
(tetralin)		U	U
Thionyl chloride		U	U
Titanium tetrachloride		U	U
Toluene		U	U
Transformer oil		S*	S*
Tributyl phosphate		U	U
Trichloroacetic acid		S*	S*
Trichlorobenzene		U*	U*
Trichloroethane		U*	U*
Trichloroethylene		U	U
Tricresyl phosphate, see tritolyl phosphate			
Triethanolamine		S	U
Trigol (triethylene glycol)		S*	S*
3, 4, 5- Trihydroxybenzoic acid (gallic acid)		S*	S*
Trimethylamine		S	U*
Trimethylol propane (2-ethyl-2hydroxymethyl- propanediol)		S	U
Trisodium phosphate, see sodium orthophosphate			
Tritolyl phosphate (tricresylphosphate)		U*	U*
Turpentine		S	S
Urea		S	S
Urine		S	S
Vanilla extract		S*	S*
Vegitable oils		S	S
Vinegar		S	S
Vinyl acetate		U	U
Water		S	S
Wetting agents		S*	S*
Whey		S*	S*
Wines and spirits		S	S
Xylene		U*	U*
Xylenol		U*	U*
Yeast		S	S
Zinc ammonium chloride, see ammonium zinc chloride			
Zinc carbonate		S*	S*
Zinc chloride		S	S
Zinc oxide		S	S
Zinc sulphate		S	S



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