



## 45° Elbows

- BSP Threaded
- Available in ABS & PVC

G	L	Z	E	Kg. ABS	Kg. PVC
3/8"	11.4	8.1	23.5	0.009	0.010
1/2"	15.0	6.5	28	0.014	0.018
3/4"	16.3	8.7	34	0.022	0.030
1"	19.1	10.9	42	0.039	0.050
1 1/4"	21.4	14.6	51	0.058	0.080
1 1/2"	21.4	21.6	61	0.110	0.145
2"	25.7	27.3	75	0.191	0.254
2 1/2"	30.2	31.8	89	0.254	0.360
3"	33.3	38.7	106	0.446	0.620
4"	39.3	46.7	128	0.665	0.830

## uPVC PIPE SYSTEMS

uPVC (unplasticised poly vinyl chloride) is one of the most popular thermoplastic materials used for pipework installations. Light weight, uPVC has excellent resistance to chemicals and abrasion, is tasteless and odourless making it ideal for use with potable water systems and most food products as its extremely smooth bore gives excellent flow characteristics.

uPVC is resistant to most solutions of acids, alkalis, salts and solvents which can be mixed with water. Connections can be made either solvent cement or BSP threaded fittings. uPVC products are clearly identified by their dark grey colour.

## ABS PIPE SYSTEMS

ABS (acrylonitrile butadiene styrene) is an extremely robust thermoplastic pipework system used by many industries in systems for food and beverage production, sewerage and water treatment etc. ABS is extremely resistant to impact with good resistance to chemicals, is non-toxic, conforming to the toxicological requirements of the British Plastic Federation, British Industrial Biological Research Association Code of Practice for Food Usage 45/5, and EEC requirements for plastic materials in contact with foodstuffs. These systems are light, strong and simple to fit using a solvent cement. ABS products are clearly identified by their light grey colour.

## CHEMICAL RESISTANCE

### uPVC

Has chemical resistance properties which are excellent, being resistant to most solutions of salts, acids, alkalis and water soluble solvents. These products are NOT resistant to aromatic or chlorinated hydrocarbons.

### ABS

Has good resistance to a wide range of diluted inorganic acids, organic acids, salts, animal fats and oils but ABS is NOT resistant to organic solvents, alcohol, petrol, acetic acid or vegetable oils.

For information on specific chemical resistance for both uPVC and ABS please contact our sales department.

## STANDARDS

Albion products are generally in accordance with the following standards.

uPVC Fittings BS4346 part 1

ABS Fittings BS5392 part 1

Threaded Fittings BS21, DIN2999, IS07

uPVC Solvent Cement BS4346 part 3

Albion fittings and valves have WRAS approval for use on potable water certificate numbers 1111121 (PVC), 1111122 (ABS) refer.

## QUALITY AND ENVIRONMENT

Albion's commitment to quality is reflected by our operation of an independently assessed quality management system registered under ISO 9001:2008 We also operate an environmental management system that has been successfully assessed against the ISO 14001:2004 environmental management standard.

## IMPERIAL AND METRIC SIZES

We have prepared the following information to assist those who are not familiar with the method of describing metric and imperial sizes when specifying pipes and fittings.

Imperial pipe fittings and other components are specified by the nominal size of the pipe bore in inches and fractions of an inch.

Metric pipe fittings and other components are specified by reference to the outside diameter expressed in millimetres.

The following table gives a general guide for comparison between metric and imperial sizes up to 8 inches. It is essential to understand that metric and imperial are not usually interchangeable as the actual equivalents are slightly different.

However the following sizes coincide exactly:

2 1/2" with 75mm\*

5" with 140mm\*

Nominal bore (inches)	Imperial Sizes		Metric Sizes
	Nominal bore (inches)	Outside Diameter (mm)	Pipe Outside Diameter (mm)
3/8"		17.1	16
1/2"		21.3	20
3/4"		26.7	25
1"		33.4	32
1 1/4"		42.2	40
1 1/2"		48.3	50
2"		60.3	63
2 1/2"		75*	75*
3"		88.9	90
4"		114.3	110
5"		140*	140*
6"		168.3	160
8"		219.1	225

## PRESSURE RATINGS FOR uPVC FITTINGS & VALVES

Unless otherwise indicated the pressure ratings are as follows:

Product	Size Inches	Pressure Rating
Fittings Solvent Cement	1/2 - 6	15 bar
	8	9 bar
Fittings Threaded	3/8 - 4	10 bar
Ball Valves	3/8 - 2	16 bar
	2 1/2 - 4	10 bar
3 Way & Diaphragm Valves	3/8 - 2	10 bar
Wafer Check Valves	1 1/4 - 12	10 bar
Butterfly Valves	2 - 5	10 bar
	6 - 10	6 bar

## PRESSURE RATINGS FOR ABS FITTINGS & VALVES

Product	Size Inches	Pressure Rating
Fittings Solvent Cement	1/2 - 4	15 bar
	6	12 bar
	2 1/2 & 8	9 bar
Ball Valves	3/8 - 2	15 bar
	2 1/2 - 4	9 bar

All pressure ratings are at 20°C

## TEMPERATURE AND PRESSURE

The recommended working temperature range for uPVC pipework systems is from 0°C to 60°C. The recommended working temperature range for ABS pipework systems is from minus 40°C to 80°C. Pressure ratings of pipe and fittings are always quoted with, and subject to, a given temperature, normally 20°C. They can be used at higher temperatures but it is a fundamental principle of plastic pipework systems that if the temperature is increased then the pressure must be reduced. For temperatures above 20°C the recommended maximum pressure ratings are progressively reduced.

Although ABS pipe systems are suitable for use at temperatures as low as minus 40°C, it is necessary as with any other pipeline materials, to take precautions to prevent the line fluid freezing and causing consequent damage to the pipework system.

## THERMAL EXPANSION

The thermal coefficient of linear expansion for uPVC is  $7.0 \times 10^{-5}/^{\circ}\text{C}$

The thermal coefficient of linear expansion for ABS is  $10.1 \times 10^{-5}/^{\circ}\text{C}$

It is necessary in certain situations to make special provision for this expansion and contraction.

Valves, heavy flanges and any ancillary equipment should be independently supported. They can also be used as anchor points to control expansion.

## SOLVENT CEMENTS

Albion solvent cements are specially formulated for use with Albion Plastic Products. The correct solvent cement, which creates a bond between pipe and fitting, must be used for solvent welding. uPVC and ABS systems use different cements so no attempt should be made to solvent weld ABS fittings with uPVC cement or uPVC fittings with ABS cement.

An indication of the number of joints likely to be made per litre of Albion solvent cement is:

Size	uPVC	ABS
1/2 - 1	300	400
1 1/4 - 2	120	175
3	50	70
4	30	45
6	15	25
8	8	15
10	3	4
12	3	4

Albion solvent cements are available in 1/2 litre tins, instructions for recommended solvent welding procedures are printed on each tin. These instructions should be carefully followed.