

## The totally flexible plumbing system

PlumbFast PB pipe & fitting is the grey, totally flexible plumbing system, the result of considerable investment in research and development, PlumbFast PB system is tailor made for the professional plumbing and heating installer who wants a high quality system that is simple to fit, durable in use, yet competitively priced.

### ✓ High level of specification

Manufactured in accordance with the highest European Quality Standards, including BS EN ISO 9001, PlumbFast PB system conforms to BS7291 Parts 1 and 2. Accordingly, the system holds the British Standard Institute Kitemark classification 'S'. PlumbFast PB system is one of few systems on the market to have achieved this.

### ✓ Comprehensive range

PlumbFast PB system offers a comprehensive choice of pipe and fittings in various sizes, suitable for all hot and cold plumbing and central heating systems. It can be used in both sealed and open vented systems and has been designed to withstand constant pressure at high temperatures. The combination of low thermal conductivity and high corrosion resistance makes it ideal for use in central heating systems.

### ✓ Easy to handle and fit

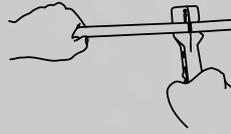
PlumbFastPB system offers the installer major advantages. The flexible nature of the pipe allows a cabling option, which speeds up pipework routing significantly. It will also cable through joists easily, thus dispensing with the time consuming task of pipe bending and joint compressing in confined areas.

PlumbFast PB piping is so flexible that it can be bent to 8 times its diameter without the need for a joint. Few tools are needed to complete even the most complex pipework systems. Joints are push-fit for simplicity and speed of installation. Nothing could be more simple, cleaner or safer. PB push-fit strongly recommends the use of lubricants which reduces installation time and ensures a perfect joint, first time, every time.

### ✓ Using PB system with other pipe and fittings

PlumbFastPB system is extremely versatile and can be used with various sized copper pipes manufactured to BS2874 and compression fittings manufactured to BS864.

## Joining Procedure



Cut the pipe at a right angle using a recommended cutter. Do not use a hacksaw. Cut the pipe at one of the cutting insertion mark ^ or mark pipe at correct insertion depth. Rotate pipe while cutting. Ensure pipe is clean and free from burrs and surface damage.



After removing any burrs insert a support sleeve (insert) fully into the end of the pipe.



Hole the fitting horizontally to the pipe and push the pipe firmly into the fitting. The connection is complete when the socket of the fitting has reached the next ^ mark on the pipe. Do not undo the retaining cap.



Test the connection by holding the fitting and pulling back on the pipe. The fitting is pre-lubricated and will be able to rotate freely around the pipe. This feature allows you to position fitting to best suit the pipe.

## Dismantling Procedure



Unscrew the retaining cap from the fitting and pull out the pipe.



The grab ring, spacer washer and O' ring will be in position on the pipe. Slide the O' ring and spacer washer down the pipe and away from the grab ring.



Use pliers to flatten the teeth on the grab ring and remove. The spacer washer, O' ring and retaining cap can then be removed from the pipe.



Reassemble the fitting by inserting a new grab ring together with the spacer washer and O' ring. See illustration overleaf for the correct order for reassembly. Hands tighten the retaining cap. Check the end of the pipe for damage and re-cut if necessary.

# Polybutylene Pipe & Fittings

## Polybutylene Pipe

### COIL

✓ Flexible Light



Other sizes (Inch & ISO dimension class) are available.

#### PB STANDARD PIPE

Code	Size	Pack Qty
PPSSRG15100A	15mm X 100m	1
PPSSRG15050A	15mm X 50m	1
PPSSRG22050A	22mm X 50m	1
PPSSRG22025A	22mm X 25m	1
PPSSRG28025A	28mm X 25m	1

#### PB BARRIER PIPE

Code	Size	Pack Qty
PPSBRG10100A	10mm X 100m	1
PPSBRG10050A	10mm X 50m	1
PPSBRG10025A	10mm X 25m	1
PPSBRG15100A	15mm X 100m	1
PPSBRG15050A	15mm X 50m	1
PPSBRG22050A	22mm X 50m	1
PPSBRG22025A	22mm X 25m	1
PPSBRG28025A	28mm X 25m	1

### LENGTH

#### PB STANDARD PIPE

Code	Size	Pack Qty
PPSSG15005A	15mm X 5.8m	20
PPSSG22005A	22mm X 5.8m	10
PPSSG28005A	28mm X 5.8m	5
PPSSG15003A	15mm X 3m	20
PPSSG22003A	22mm X 3m	10
PPSSG28003A	28mm X 3m	5



Other sizes (Inch & ISO dimension class) are available.

#### PB BARRIER PIPE

Code	Size	Pack Qty
PPBSG15005A	15mm X 5.8m	20
PPBSG22005A	22mm X 5.8m	10
PPBSG28005A	28mm X 5.8m	5
PPBSG15003A	15mm X 3m	20
PPBSG22003A	22mm X 3m	10
PPBSG28003A	28mm X 3m	5

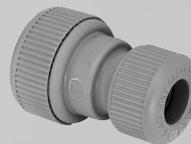
## Polybutylene Fittings

### STRAIGHT CONNECTOR



Code	Size	Pack Qty
PEASG10A	10mm	10
PEASG15A	15mm	10
PEASG22A	22mm	5
PEASG28	28mm	5

### REDUCER



Code	Size	Pack Qty
PEARG1510A	15 X 10mm	10
PEARG2215A	22 X 15mm	10

### ELBOW



Code	Size	Pack Qty
PEALG10A	10mm	10
PEALG15A	15mm	10
PEALG22A	22mm	10
PEALG28	28mm	5

### SPIGOT REDUCER



Code	Size	Pack Qty
PEASRG1510A	15 X 10mm	10
PEASRG2215A	22 X 15mm	10
PEASRG2822A	28 X 22mm	10

### TEE



Code	Size	Pack Qty
PEATG10A	10mm	10
PEATG15A	15mm	10
PEATG22A	22mm	10
PEATG28	28mm	5

### BRT (Unequal tee)



Code	Size	Pack Qty
PEABRTG1510A	15X15X10mm	5
PEABRTG2210A	22X22X10mm	5
PEABRTG2215A	22X22 X15mm	5
PEABRTG2815A	28X28X15mm	5
PEABRTG2822A	28X28X22mm	5

### ERT (Unequal tee)



Code	Size	Pack Qty
PEAERTG1510M	15X10 X15mm	5
PEAERTG2215A	22X15 X22mm	5

### BENT TAP CONNECTOR



Code	Size	Pack Qty
PEABTCG1512A	15mm X 1/2	10

### BORT (Unequal tee)



Code	Size	Pack Qty
PEABORG1510M	15X10X10mm	5
PEABORG2215A	22X15 X15mm	5

### MALE STRAIGHT ADAPTOR



Code	Size	Pack Qty
PBAMVSG1512A	15X1/2	10
PBAMVSG2212A	22X1/2	10
PBAMVSG2234A	22X3/4	10
PBAMVS2834	28X3/4	5
PBAMVS281	28X1	5

### STOP END



Code	Size	Pack Qty
PEAACG15A	15mm	10
PEAACG22A	22mm	10

### FEMALE STRAIGHT ADAPTOR



Code	Size	Pack Qty
PBAFVNG1512A	15 X 1/2	10
PBAFVNG2212A	22 X 1/2	10
PBAFVNG2234A	22 X 3/4	10
PBAFVN2834	28 X 3/4	5
PBAFVN281	28 X 1	5

### SPIGOT MANIFOLD



Code	Size	Pack Qty
PEAM4G2210A	22X10mm(4Ports)	5
PEAM2G2215A	22X15mm(2Ports)	5
PEAM4G2215A	22X15mm(4Ports)	5

### FEMALE ELBOW ADAPTOR



Code	Size	Pack Qty
PBASLAG1512A	15 X 1/2	5
PBASLFG2212A	22 X 1/2	5
PBASLFG2234A	22 X 3/4	5
PBASLF281	28 X 1	5

### TANK CONNECTOR



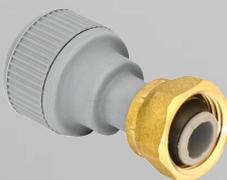
Code	Size	Pack Qty
PEATCG15A	15mm	10
PEATCG22A	22mm	10

### FEMALE CENTER TEE



Code	Size	Pack Qty
PBASTCG1512A	15X15X1/2	5
PBASTCG2212A	22X22X1/2	5

### STRAIGHT TAP CONNECTOR



Code	Size	Pack Qty
PEASTG1512A	15mmX1/2	10
PEASTG2234A	22mmX3/4	10

## WALL PLATE ELBOW



Code	Size	Pack Qty
PBASLEG1512A	15mm	5

## MALE BALL VALVE



Code	Size	Pack Qty
PBABMM1512	15mmX1/2	5

## FEMALE BALL VALVE



Code	Size	Pack Qty
PBABFN1512	15mmX1/2	5

## LEVER VALVE



Code	Size	Pack Qty
PBABWG15A	15mm	5
PBABWG22A	22mm	5

## CAP NUT



Code	Size	Pack Qty
PEMBC10	10mm	50
PEPBC15	15mm	50
PEPBC22	22mm	50
PEPBC28	28mm	50

## INSERT



Code	Size	Pack Qty
PEMSS10O	10mm	50
PEMSS15O	15mm	50
PEMSS22	22mm	50
PEMSS28	28mm	50

## GRAB RING



Code	Size	Pack Qty
PEMG10O	10mm	50
PEMG15O	15mm	50
PEMG22O	22mm	50
PEMG28	28mm	50

## O'RING



Code	Size	Pack Qty
PEMO10O	10mm	50
PEMO15O	15mm	50
PEMO22	22mm	50
PEMO28	28mm	50

## SPACE WASHER



Code	Size	Pack Qty
PEZWG10	10mm	100
PEZWG15	15mm	100
PEZWG22	22mm	100
PEZWG28	28mm	100

## BLANK CAP



Code	Size	Pack Qty
PEZCG10O	10mm	50
PEZCG15A	15mm	50
PEZCG22A	22mm	50
PEZCG28	28mm	50

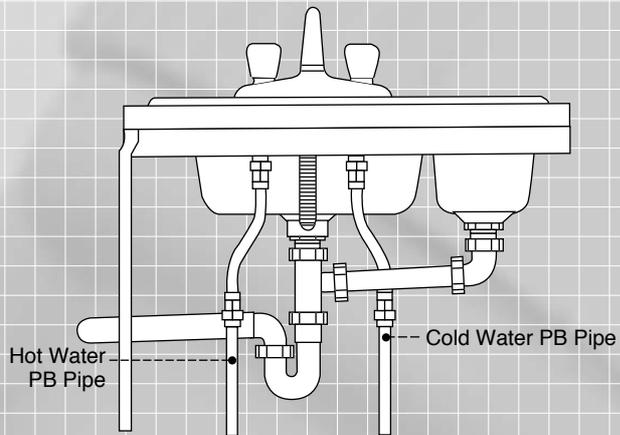
## PIPE CUTTER



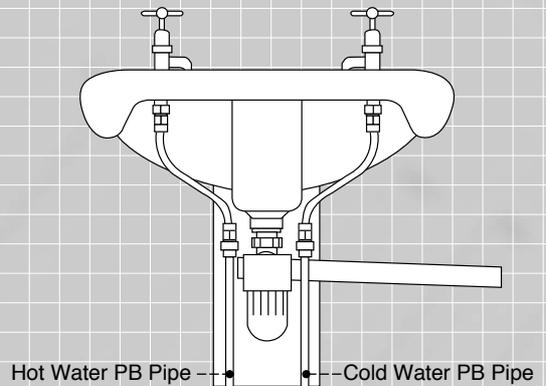
Code	Size	Pack Qty
PEPCUT	10mm ~ 28mm	1

# HOT & COLD WATER SUPPLY

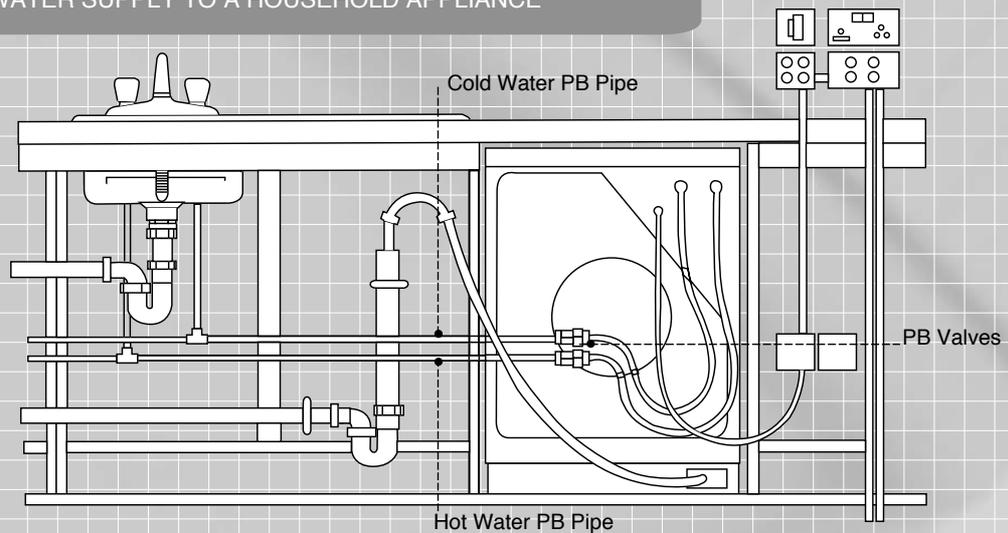
HOT & COLD WATER SUPPLY TO AND FROM THE KITCHEN BASIN



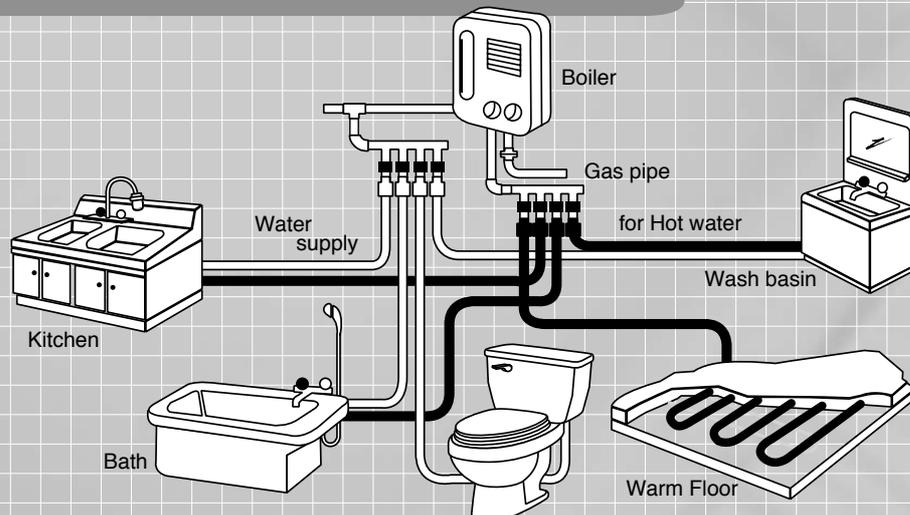
HOT & COLD WATER SUPPLY FROM HOUSEHOLD SINK



HOT & COLD WATER SUPPLY TO A HOUSEHOLD APPLIANCE



HOT & COLD WATER SERVICES AND UNDER-FLOOR HEATING



## Technical Information

### Advantages and Product physical properties and guidelines

#### Physical Properties & Guidelines

- ✓ Applications
- ✓ Painting
- ✓ Handling
- ✓ Cabling
- ✓ Storage

#### Installation Instructions

- ✓ Connecting to Copper
- ✓ Clipping
- ✓ Connecting to Compression Fittings
- ✓ Laying in Concrete and Masonry
- ✓ Connecting to Heating Appliances
- ✓ System Testing
- ✓ Bending the Pipe
- ✓ Corrosion Inhibitors

#### General Precautions

- ✓ Electric Installations
- ✓ Chlorine
- ✓ Rodents
- ✓ Gases, Fuels and Fuel Oils

## INTRODUCTION

PlumbFast PB system offers you a complete and flexible plumbing and heating system manufactured in a BS EN ISO 9001 approved facility. PlumbFast PB pipes and fittings are both manufactured from the same raw material, therefore offering uniform expansion and contraction, with an extensive range of both pipe and fittings available in various sizes.

PlumbFast PB fittings house an 'O' ring, spacer washer and grab ring and employ a simple push-fit technique for joining the fitting to the pipe. It is suitable for both sealed and open vented heating systems. With its low thermal conductivity and high resistance to corrosion, PlumbFast PB system offers you the ideal product for all domestic water supplies and central heating applications. Manufactured to BS 7291 Part 1 and 2 Class S and awarded BSI Kitemark License No. KM52006 for Thermoplastic hot and cold pipe and fittings produced in Polybutylene.

## CERTIFICATION

- ✓ U.K BS Kite Mark BS7291
- ✓ U.K BS EN ISO9001
- ✓ Korea KFQ ISO9001
- ✓ Spain AENOR ISO15876
- ✓ Australia Standard Mark & Water Mark AS/NZS 2642
- ✓ Korea KS Mark KS M 3363
- ✓ U.K British Board of Agreement BBA Mark

## ADVANTAGES

PlumbFast PB system offers you a quick and simple push-fit installation, with our "straight" coiled pipes of 50m and 100m eliminating the need for several joints on continuous runs. The flexible properties of Polybutylene require fewer fittings to complete the job; installation time can be reduced by as much as 40%.

The pipe is much easier to install than copper due to its flexibility, allowing the installer to cable through joists and around obstructions with ease, even the fittings can be rotated under pressure. Blowtorches, solders and tools are no longer required to make a watertight joint.

The high impact resistance of Polybutylene, due to its flexible properties, means that it is not easily damaged by impact or accidental crushing, resulting in less wastage.

PlumbFast PB system has higher heat retention than copper, (insulation is still recommended) resulting in pipes being cooler to the touch.

PlumbFast pipes and fittings have low thermal conductivity which means that condensation on cold water pipes is greatly reduced having the added benefit of a higher resistance to the pipes freezing.

Using PlumbFast PB pipe and fittings as opposed to copper results in less mechanical noise through the pipework, eliminating the hammer effect, thus, giving a much quieter operating system.

PlumbFast PB pipe and fittings have little monetary scrap value keeping theft from the site of installation to a minimum.

PlumbFast PB pipe and fittings are completely non-toxic offering the safest possible system to guard against water contamination.

PlumbFast PB pipe and fittings are also completely de-mountable aiding the plumber during installation.

## Product physical properties and guidelines

Temperature	Pressure	PSI
20 °C	12 Bar	174
65 °C	6 Bar	87
82 °C	3.5 Bar	51

## PB Technical Properties

Properties	Unit	Test Method	PF PB pipe
Melt Flow Rate	g/10min	ASTM D 1238	0.5
Density	G/cm	ASTM D 1505	0.920
Tensile Strength at Yield	Kg/cm <sup>3</sup>	ASTM D 638	175
Tensile Strength at Break	Kg/cm <sup>3</sup>	ASTM D 638	400
Elongation at Break	%	ASTM D 638	330
Tensile Modulus	Kg/cm <sup>3</sup>	JIS K 7113	4000
Izod Impact Strength	Kg/cm/cm	ASTM D 256	No Break
Shore Hardness	D Scale	ASTM D 2240	60
Melting Point	°C	DSC	127
Vicat Softening Point	°C	JIS K 7206	119
Brittleness Temp	°C	JIS K 7216	-18 Lower than
Coefficient Of Expansion	Cm/cm/°C	ASTM D 696	1.3 x10 <sup>4</sup>
Thermal Conductivity	Kcal/mhr°C	ASTM C 177	0.33

## APPLICATIONS

PlumbFast PB pipe and fittings offer excellent performance for long term pressure at high temperatures, coupled with its low thermal conductivity and high resistance to corrosion, making it the ideal product for central heating systems. PlumbFast PB pipe and fittings are also suitable for the installation of indirect and direct mains fed cold water services, vented and unvented hot water systems. PlumbFast PB barrier pipe is highly recommended for use in Under-floor Heating Systems making the complete range of PlumbFast PB pipe and fittings one of the most versatile products available to the plumbing installer to date. PlumbFast PB pipe and fittings can even be installed into caravans and boats where flexibility, low weight and resistance to freezing make them the most versatile products to use.

## HANDLING

Care should be taken when handling all Polybutylene products especially pipe, avoid dragging along the ground, rubbing against rough surfaces like walls and concrete floors which could reduce the wall thickness of the pipe. When feeding pipe through holes in brickwork and walls always cover the end of the pipe with tape to avoid debris entering the pipe, this will also help in avoiding damage to the joining surface. Care should also be taken to avoid crushing the pipe walls during bending and the wall of the pipe being punctured by sharp objects.

## STORAGE

PlumbFast PB pipe and fittings should always be stored in their protective wrapper, away from sources of ultra violet light, for example direct sunlight. Where installation is unavoidable in areas of direct sunlight and sources of artificial ultra violet light always install the pipework into ducting. When storage of pipe is required for any length of time do not exceed 1.5 metre stack heights for coils and 1 meter stack heights for straight lengths.

## PAINTING

PlumbFast PB pipe and fittings can be painted using normal household paints; however solvent based products and cellulose paints should not be used. Surfaces to be painted should be free from all deposits of silicone and grease compounds. When required, re-painting may be achieved by gently rubbing down with wet and dry using a grade no coarser than 400, hot air guns and chemical based paint strippers should never be used on any Polybutylene products.

## CABLING

PlumbFast PB pipes flexibility enables the installer to thread the pipe through concealed and inaccessible spaces with minimal or no disruption to the surrounding building resulting in major savings to installation time. The flexibility of PlumbFast PB pipe means that pipework can be threaded through dry wall systems, studded partitions and cabled through holes drilled into joists. There are restrictions as to where joists can be drilled and notched, these restrictions can be found in the Building Regulations Approved Document A and BS 6700: 1997.

### As a general guide:

- ✓ Holes in roof and floor joists should be no greater than 0.25 times the overall depth.
- ✓ Holes drilled into the joist should be drilled at the neutral axis and should not be less than 3 diameters (centre to centre) apart.
- ✓ Holes should be spaced between 0.25 and 0.4 times the span from the support.
- ✓ Notches in roof and floor joists should be no deeper than 0.125 times the depth of the joist.
- ✓ Notches in roof and floor joists should under no circumstance be cut any closer to the support than 0.07 of the span and no further away than 0.25 times the span.

## Installation Instructions

### CONNECTING TO METRIC SIZE COPPER

PlumbFast PB fittings are suitable for use with all metric sized copper tube manufactured to BS2871. The copper tube should be cut using a plumber's pipe cutter, remove all sharp edges to avoid damaging the O-ring when inserting into the PlumbFast PB fitting.

### CONNECTING TO COMPRESSION FITTINGS

PlumbFast PB pipe can be used with compression fittings manufactured to BS864. A stainless steel insert must always be inserted into the PB pipe before compressing the joint. The olive must be within the length of the support sleeve and PTFE tape over the olive will ensure a watertight seal is achieved.

### CONNECTING TO A HEATING APPLIANCE

When connecting to any heating appliance you must ensure that at least 2 meters of copper pipe is firstly connected to the heating appliance on both the flow out and the return before connecting to PB pipe. Care should be taken to ensure that the heating appliance has the appropriate thermostatic cut out controls to ensure that operating temperatures do not exceed the pressure and temperature limits for Class S thermoplastic pipe.

### BENDING THE PIPE

PB pipe's immense flexibility enables the installer, by clipping the pipe into place, to cold form bends up to 8 times the pipes diameter, in many cases dispensing with the need to make elbow connections, again reducing installation time.

### CLIPPING

PB pipe as with all Polybutylene pipe is not self-supporting like copper, it is therefore recommended that Polybutylene pipe be supported as set out in BS5955: Part 8:1990.

### RECOMMENDED CLIPPING DISTANCES

Nominal Diameter	Horizontal Runs	Vertical Runs
10mm	0.3m	0.5m
15mm	0.3m	0.5m
16mm	0.4m	0.6m
20mm	0.5m	0.8m
22mm	0.5m	0.8m
25mm	0.5m	0.8m
28mm	0.8m	1.0m

### LAYING INTO CONCRETE AND MASONRY

PlumbFast PB pipe and fittings can be laid into concrete and masonry provided that they are installed into conduit pipe and junction boxes. This is to ensure that access to the pipe and fittings can take place should the need arise to carry out any maintenance.

Insulation is also recommended to protect against frost and heat loss. Please check recommendations as outlined in Byelaw 58.

### SYSTEM TESTING

A full scale systems check should be carried out in accordance with BS6700: 1997 and Water Supply Regulations 1999. When the installation is complete the system should be filled and flushed out, refill the system slowly to avoid any air locks. PB blanking caps and stop ends are particularly useful to plug all outlets prior to system testing taking place. We recommend that the system be subjected to a hydraulic pressure test for 30 minutes at 10-bar minimum then reducing to 5-bar for a further 30 minutes. When testing be sure that pressures used do not exceed manufacturer's levels for boilers, cylinders and pumps. Any drop off in pressure over this period should be investigated and any leakages within the system must be repaired or replaced.

### CORROSION INHIBITORS

It is recommended that a corrosion inhibitor be used at all times. PlumbFast PB pipe and fittings are in no way affected by the anti-corrosion properties found in compounds such as Sentinel and Fernox. All heating circuits should be protected by an appropriate inhibitor as oxygen may enter the system through a variety of points such as pumps, header tanks and valves. PlumbFast PB barrier pipe has the added advantage of an oxygen barrier incorporated into the pipe to greatly reduce the ingress of oxygen through the pipe wall. It is therefore highly recommended that barrier pipe be used along with an inhibitor on all sealed heating systems.

## General Precautions

### ELECTRICAL INSTALLATIONS

PlumbFast PB pipe as with all plastic products is non-conductive and should not be used to provide an earth return. Where PlumbFast PB pipe is used to replace a section of existing copper pipe that was previously earthed, electrical continuity should be reinstated by affixing a section of earth cable between the ends of the copper pipe secured to the metal using clamps or clips. No requirements are however needed to bond the pipe work to earth on new installations where no metal pipe is installed. However all electrical requirements for heaters, cylinders and pumps etc. should be taken into account. If in any doubt consult a qualified electrician.

### RODENTS

In this day and age it is highly unlikely for properties to be infested with rodents. However, if rodents are present in large numbers and no steps towards extermination have been carried out, it is possible that damage to electrical and plumbing materials, including PlumbFast PB, could occur.

### CHLORINE

The PlumbFast PB range of pipe and fittings are suitable for carrying normal levels of chlorine found in domestic water supply systems. It is however not suitable for carrying large quantities, for example, water circulation of swimming pools that use large concentrations of chlorine. Short-term exposure of chlorine used for disinfecting will have no adverse effect on the system provided the maximum permitted level of 5ppm is not exceeded.

### GASES, FUEL AND FUEL OILS

PlumbFast PB pipe and fittings are not suitable for the transportation of gases, steam and compressed air; it is also not suitable for the transportation of fuel oils including petroleum.

### INSTALLATION CODES AND PRODUCT GUIDELINES

The guides and standards below should be followed during design and installation when using PlumbFast PB pipe and fittings. BS 6700:1997.

Specification for design, installation, testing and maintenance of services supplying water for domestic use within buildings and their curtilages. WSR:1999.

Water Supply Regulations 1999. WIA:1991. Water Industry Act 1991. BS 5955 Part 8:1990. Specification for the installation of thermoplastic pipe and fittings for use in domestic hot and cold water services, and heating systems. BS8000. Workmanship on building sites Part 15: 1990 code of practice for hot and cold water services. BS 5499: 1990. Specification for forced circulation hot water central heating systems for domestic premises. The Institute of Plumbing's. - Plumbing Engineering Services Design Guide. Guide to the use of plastic pipework. TR11, HVCA, 1992. Mechanical and electrical standard specification for heating, hot and cold water installations for dwellings. Published by the former PSA.

### PRODUCT GUARANTEE

25 Year Product Guarantee. PlumbFast PB pipe and fittings are guaranteed for 25 years against defects in materials or manufacture from date of purchase. This guarantee only applies if the system is installed to the recommendations within this Technical and Installation guide, and is used in a normal domestic operation.