Davant GPF is the grey, totally flexible plumbing system from Davant Products, the result of considerable investment in research and development. GPF 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 9002, the GPFpolybutylene pipe and fittings system conforms to BS7291 Parts 1 and 2. Accordingly, the system holds the British Standard Institute Kitemark classification 'S'. The GPF polybutylene system is one of few systems on the market to have achieved this.

Comprehensive range

The GPF PB system offers a comprehensive choice of pipe and fittings in 10mm, 15mm, 22mm and 28mm 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

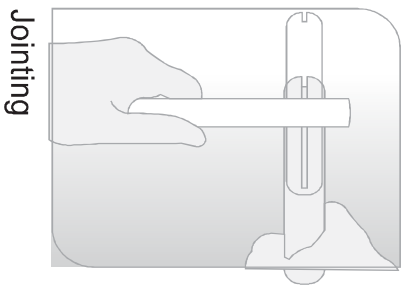
The GPF polybutylene system offers the installer major advantages. The flexible nature of the pipe allows a cabling option, which speeds up pipework routing significantly.
It will also cable through joists easily, thus dispensing with the time consuming task of pipe bending and joint compressing in confined areas. GPF 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. Davant strongly recommends the use of lubricants which reduces installation time and ensures a perfect joint, first time, every time.

Using GPF with other pipe and fittings

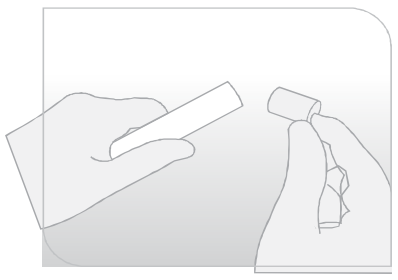
The GPF polybutylene system is extremely versatile and can be used with all metric sized copper pipe manufactured to BS2874 and compression fittings manufactured to BS864.

Jointing

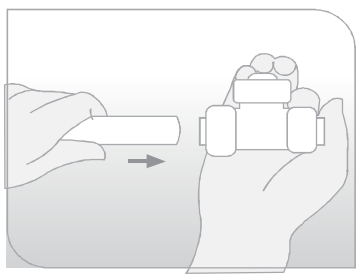


Use only purpose designed pipe cutters and cut the pipe squarely. Ensure the pipe is free from burrs and scratches.

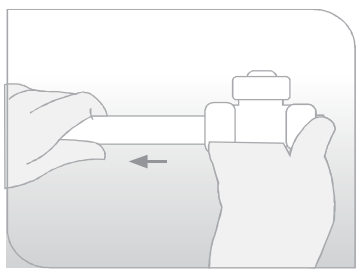
Do not use a hacksaw.



Always use the correct pipe insert.



Ensure all cap nuts are hand tightened. Visually check the internal components. Make the correct insertion depth by observing the chevron markings on the pipe. Push the pipe firmly and horizontally into the fitting. A secure joint has been made when the correct insertion marking is reached.



After checking the correct insertion depth has been achieved, pull back on the pipe firmly to ensure the grab ring engages correctly.

bsi.

Kitemark™ Certificate

This is to certify that:

Plumb Fast Co., Ltd.
Floor 11, Sanhomulsan B/D
87 Nonhyeon-ro
Seocho-gu
Seoul
06775
Republic of Korea

Holds Certificate Number: KM 52006

In respect of:

**BS 7291 Parts 1 & 2**
**Thermoplastic pipes and associated fittings for hot and cold water for domestic purposes and heating installations in buildings**

This issues the right and licence to use the Kitemark in accordance with the Kitemark Terms and Conditions governing the use of the Kitemark, as may be updated from time to time by BSI Assurance UK Ltd (the "Conditions"). All defined terms in this Certificate shall have the same meaning as in the Conditions.

The use of the Kitemark is authorized in respect of the Product(s) detailed on this Certificate provided at or from the above address.

For and on behalf of BSI: Shahm Barhom, Group Product Certification Director

First Issued: 2000-02-21 Effective Date: 2025-01-14
Latest Issue: 2025-01-14 Expiry Date: 2026-09-22

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# GREY PUSHFIT
## Technical Data

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**INTRODUCTION**
Installation Codes and Product Guidelines
Product Guarantees
Technical Helpline
GPF PB offers you a complete and flexible plumbing and heating system manufactured in a BS EN ISO 9002 approved facility.
GPF PB pipe 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 10, 15, 16, 20, 22, 25 & 28mm.
GPF 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, GPF PB 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.

**MANUFACTURED TO:**
BS 7291 Part 1 and 2 Class S

**ADVANTAGES**
GPF PB 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.
GPF PB has higher heat retention than copper, (insulation is still recommended) resulting in pipes being cooler to the touch.
GPF PB 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 GPF 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.
GPF PB pipe and fittings have little monetary scrap value keeping theft from the site of installation to a minimum.
GPF PB pipe and fittings are completely non-toxic offering the safest possible system to guard against water contamination.
GPF PB pipe and fittings are also completely de-mountable aiding the plumber during installation.

| TEMPERATURE | PRESSURE | PSI |
|---|---|---|
| 20°C | 12 Bar | 174 |
| 65°C | 6 Bar | 87 |
| 82°C | 3.5 Bar | 51 |

| 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/cm3 | ASTM D 638 | 175 |
| Tensile Stength at Break | Kg/cm3 | ASTM D 638 | 400 |
| Elogation at Break | % | ASTM D 638 | 330 |
| Tensile Modulus | Kg/cm3 | JIS K 7113 | 4000 |
| Izod Impact Stength | 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 7216 | 119 |
| Brittleness Temp | °C | Test Method | -18 Lower than |
| Coefficient Of Expansion | Cm/cm/°C | ASTM D 696 | 1.3 x104 |
| Thermal Conductivity | Kcal/mhr°C °C | ASTM C 177 | 0.33 |

**APPLICATIONS**
GPF 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.
GPF 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. GPF PB barrier pipe is highly recommended for use in Underfloor Heating Systems making the complete range of GPF PB pipe and fittings one of the most versatile products available to the plumbing installer to date.
GPF 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**
GPF 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 1.5metre stack heights for coils and 1 metre stack heights for straight lengths.
**PAINTING**
GPF 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**
GPF 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 GPF 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 joistsshould be no greater than 0.25 times the overall depth.
Holes drilled into the joistshould 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**
GPF PB fittings are suitable for use with all metric sized copper tube. 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 GPF PB fitting.
**CONNECTING TO METRIC SIZE COMPRESSION FITTINGS**
GPF PB pipe can be used with compression fittings manufactured to BS864. A GPF stainless steel insert must always be inserted into the GPF 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 metres of copper pipe is firstly connected to the heating appliance on both the flow out and the return before connecting to GPF 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 limitsfor Class S thermoplastic pipe.
**BENDING THE PIPE**
GPF PB pipe's immense flexibilityenables 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**
GPF PB pipe as with all polybutylene pipe is not self supporting like copper, it is therefore recommended that polybutylene pipe be supported

| NORMAL 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 |

**Installation** Instructions
**LAYING INTO CONCRETE AND MASONRY**
GPF 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.
GPF 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.
GPF 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.
GPF 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**
GPF PB pipe as with all plastic products is non-conductive and should not be used to provide an earth return.
Where GPF 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 GPF PB, could occur.

**CHLORINE**
The GPF 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**
GPF 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 GPF 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.
GPF 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.