

CERTIFICATE NO. 06/0239

Quality Plastics Ltd.,  
P.O. Box 29,  
Whites Cross,  
Cork,  
Ireland.  
Tel: 021 4884700 Fax: 021 4884701

## Qual-FIT Push-Fit Fittings

Tubes et raccords  
 Rohre und Anschlüsse

The **Irish Agrément Board** is designated by Government to issue European Technical Approvals.

Irish Agrément Board Certificates establish proof that the certified products are '**proper materials**' suitable for their intended use under Irish site conditions, and in accordance with the **Building Regulations 1997 to 2002**.

The **Irish Agrément Board** operates in association with the **National Standards Authority of Ireland (NSAI)** as the National Member of UEAtc.

### PRODUCT DESCRIPTION:

This Certificate relates to **Qual-FIT Push-fit Fittings** manufactured by PlumbFast Company Ltd used with either Qual-PEX Cross-linked Polyethylene Pipe or Copper pipe manufactured in accordance to I.S. EN 1057: 1996.

The **Qual-FIT Push-fit Fittings** are manufactured from Polybutylene, a stainless steel toothed 'Grab' ring and a Nylon spacer washer. The seal is achieved by the use of an integral greased EPDM (Ethylene Propylene Diene Monomer) 'O' ring between the wall of the fitting and the pipe.

**Qual-FIT Push-fit Fittings** when used with Qual-PEX pipe or Copper pipe in accordance to I.S. EN 1057: 1996 are suitable in hot and cold water services, central and underfloor heating systems.

The **Qual-FIT fittings** and **Qual-PEX pipe** were tested to and meet the requirements of Class S service conditions as specified in Table 1 and Table 2 of BS 7291-1:2001 *Thermoplastics pipes and associated fittings for hot and cold water for domestic purposes and heating installations in buildings - General requirements*. Which covers both vented and sealed central heating systems.

### MANUFACTURE AND MARKETING:

The **Qual-FIT** range of fittings are manufactured by:

PlumbFast Co. Ltd.  
Kangnam- Ka  
Seoul  
Korea

And marketed by

Quality Plastics Ltd.  
P.O. Box. 29  
Whites Cross  
Cork  
Ireland  
Tel. (021) 4884700 Fax. (021) 4884701

## 1.1 ASSESSMENT

In the opinion of the Irish Agrément Board (IAB), **Qual-FIT Push-fit Fittings** with Qual-PEX pipe or Copper pipe manufactured to I.S. EN 1057: 1996 when used in accordance with the provisions of this Certificate are satisfactory for the purpose defined above and can meet the requirements of the Building Regulations 1997 to 2002 as indicated in Section 1.2 of this Certificate.

## 1.2 BUILDING REGULATIONS 1997 to 2002

### REQUIREMENT:

#### ***Part D - MATERIALS AND WORKMANSHIP***

**D3 Qual-FIT Push-fit Fittings** as certified in this Irish Agrément Board certificate, are comprised of 'proper materials' fit for their intended use: (see Part 4 of this certificate).

**D1 Qual-FIT Push-fit Fittings** used in accordance with Irish Agrément Board Certificate, can meet the requirements of the Building Regulations 1997 - 2002, for workmanship.

#### ***Part L – Conservation of Fuel and Energy***

##### **L1 - Conservation of Fuel and Energy**

Heating and hot water systems using **Qual-FIT Push-fit Fittings** with Qual-PEX pipe or Copper pipe in accordance to I.S. EN 1057: 1996 can meet the current requirements for heating controls and the insulation of pipes and ducts. (See Section 4.2 of this Certificate).

### 2.1 PRODUCT DESCRIPTION

The body of the **Qual-FIT Push-fit Fitting** is manufactured from Polybutylene. **Qual-FIT Push-fit Fittings** feature a stainless steel grab ring, Nylon plastic spacer washer a EPDM 'O' ring and a cap nut. The seal is provided by an integral greased EDPM (Ethylene Propylene Diene Monomer) 'O' ring between the wall of the fitting and the pipe. The range of **Qual-FIT Push-fit Fittings** are shown in Table 1.

**Table 1: Range of Qual-FIT Push-fit Fittings**

SIZE	DESCRIPTION	CODE
1/2"	QUAL-FIT STRAIGHT CONNECTOR	104/QF10A
3/4"		104/QF10B
3/4" X 1/2"	QUAL-FIT STRAIGHT REDUCER	104/QF10C
1/2"	QUAL-FIT ELBOW	104/QF15A
3/4"		104/QF15B
1/2"	QUAL-FIT STOP END	104/QF51A
3/4"		104/QF51B
1/2"	QUAL-FIT STRAIGHT TAP CONNECTOR	104/QF62A
3/4"		104/QF62B
1/2"	QUAL-FIT BENT TAP CONNECTOR	104/QF27A
1/2"	QUAL-FIT EQUAL TEE	104/QF18A
3/4"		104/QF18B
3/4" 3/4" X 1/2"	QUAL-FIT REDUCING TEE	104/QF18C
3/4" X 1/2" X 3/4"		104/QF18D
3/4" X 1/2" X 1/2"		104/QF18E
3/4" X 1/2"	QUAL-FIT SPIGOT REDUCER	104/QF6
1/2"	QUAL-FIT TANK CONNECTOR	104/QF50A
3/4"		104/QF50B
1/2" X 1/2" bsp	QUAL-FIT MALE BSP ADAPTER	104/QF11A
3/4" X 3/4" bsp		104/QF11B
1/2" X 1/2" bsp	QUAL-FIT FEMALE BSP ADAPTER	104/QF12A
3/4" X 3/4" bsp		104/QF12B
1/2"	QUAL-FIT RELEASE CLIP	104/CLIPA
3/4"		104/CLIPB

The main body of the **Qual-FIT Push-fit Fittings** are produced from polybutylene by an injection moulding process and the cap body from polyamide. The fitting is then assembled with the stainless steel toothed grab ring, nylon spacer/washer and EPDM 'O' ring which are held in position with the threaded cap nut.

#### 2.2.1 Product Quality Control

Continuous quality control is carried out during manufacture, including checks on dimensional accuracy, heat reversion, pressure testing, thermostability, leak-tightness, and correct assembly of joints.

#### 2.3 DELIVERY, STORAGE AND MARKING

**Qual-FIT Push-fit Fittings** are supplied in re-sealable polyethylene bags packed in cartons and bear (by impression) the manufacturer's symbol. The actual size is marked on top of each cap nut of each fitting.

#### 2.4 INSTALLATION PROCEDURE

Installation must be carried out in accordance with the manufacturer's instructions and BS 5955-8:2001 Plastics pipework (thermoplastics materials). *Specification for the installation of thermoplastic pipes and associated fittings for use in domestic hot and cold services and heating systems in buildings and BS 6700:1997 Specification for design, installation, testing and maintenance of services supplying water for domestic use within buildings and their curtilages.*

As all plastic materials expand and contract with temperature change, due allowance in pipe runs should be made on installation to accommodate expansion and contraction of the pipe.

The principle of the Qual-FIT Joint. Although Qual-FIT Push-fit Fittings are easy to assemble on to the appropriate size pipe, it is important to take care while making the joint, to avoid leaks after assembly. Standard good practice according to the following procedure will ensure a trouble-free installation.

Because a push-fit fitting relies on an EPDM rubber 'O' ring to form a watertight seal it is extremely important that the fitting and pipe are kept free from dirt and debris, before and during installation. For this reason all **Qual-FIT Push-fit** fittings are supplied in bags and should remain in these until ready to use. Furthermore, the pipe should be checked around the

area of the joint prior to assembly to ensure it has not been damaged.

### Joining Procedure

1. Select the correct size of pipe and fitting for the job. Cut the pipe square (at one of the imprinted 'Q' marks if possible) using a rotary pipe cutters for both Qual-PEX and copper pipe. Ensure that the pipe is cut straight, and is fully clean and free from debris and swarf. (Deburr both the Qual-Pex and the copper pipe to remove any sharp edges). A pipe support insert must be used with the Qual-PEX pipe.



Figure 1.



Figure 2.

2. Push the correct size **Black Qual-PEX** pipe support insert into the end of the Qual-PEX pipe ensuring it is fully home. The insert will assist in re-rounding the pipe, and strengthening the joint. Measure and clearly mark the relevant socket depth on the pipe, with a pencil or felt marker. Approximate distances are as follows: 1/2" fitting – 25.5mm, 3/4" fitting – 26.6mm. The 'Q' markings on Qual-PEX pipe are at these intervals and should be used as a gauge.



Figure 3.

3. To demount, unscrew the cap nut and retract the pipe from the fitting. Cut back the pipe behind the grab ring. To re-use the fitting, insert a new grab ring into the fitting and re-use the spacer and 'O' ring. Some lubrication may be necessary on the 'O' ring (see figure 3).

### Bending Qual-PEX

For sharp bends (< 80 mm in radius) standard elbow fittings should be used. Where bends of 80 mm are required it is often quicker and neater to use a standard 15 mm x 90° angle bracket. Gentle bends (radii ≥ 175 mm) may be made by the use of pipe clips on either side of the bend, positioned to maintain the bend radius.

The use of pipe bending springs and skilled manipulation is not required. The pipe should not be heated with a blow lamp, hot-air gun or similar.

Table 2: Minimum Bend Radii

1/2" Qual-PEX	80 mm using angle brackets 175 mm using pipe clips
3/4" Qual-PEX	225 mm using pipe clips
1" Qual-PEX	300 mm using pipe clips

### Clipping Qual-PEX Pipe

Clips should be positioned adjacent to fittings wherever possible, making due allowance for expansion and contraction of the pipework. Where Qual-PEX pipe is to be surface mounted and visible the following clipping distances are recommended:

**Table 3: Clipping Distances**

	Average Service Temperature		
	20° C	60° C	80° C
<b>1/2" Qual-PEX</b>	500 mm	400 mm	300 mm
- horizontal	800 mm	600 mm	500 mm
- vertical			500 mm
<b>3/4" Qual-PEX</b>	800 mm	600mm	500 mm
- horizontal	1200 mm	1000 mm	800 mm
- vertical			800 mm
<b>1" Qual-PEX</b>	800 mm	600mm	500 mm
- horizontal	1200 mm	1000 mm	800 mm
- vertical			800 mm

Where Qual-PEX pipe is to be boxed-in or installed under floors or in loft spaces, clipping distances can be increased or the clips omitted altogether if the pipe is adequately supported by other means.

#### Protection of Qual-PEX Pipe

Qual-PEX pipe is a tough material that needs no greater protection from accidental damage when installed than conventional copper. As with copper, Qual-PEX pipe should be sleeved when passing through walls and protected from nails, etc., when placed under floorboards or buried under plaster.

Qual-PEX pipe is stabilised to withstand limited exposure to ultraviolet radiation or sunlight, but is not designed for permanent direct exposure. Under such conditions painting or lagging is required.

#### System Testing

The purpose of system testing is to identify any points where leakages occur at a time when they can be repaired as easily as possible, regardless of their cause.

System testing should take place immediately after first fix installation, and before the pipework is completely covered over. For Qual-FIT push-fit systems high and low pressure testing is mandatory.

Low pressure test = 3 bar (air or water) for 15 minutes.

High pressure test = 6 Bar (air or water), or a pressure equal to 1.5 times the pressure relief valve setting whichever is the greater for 1 hour.

Note: When the testing is complete, the test water is discharged from the system, where there is a risk of freezing conditions.

#### Commissioning the system

When commissioning the system it must be flushed. Filled with water, the pump started and residual air removed by opening the bleed valves in each circuit. The system must be checked for leaks after all the air has been removed and before the pipes are covered.

As with all plumbing systems care should be taken in the layout of pipe runs to avoid damage from nailing.

To minimise this risk the pipe runs should be kept clear of room perimeters and where possible doorways.

#### Connection limitations

**Qual-FIT push-fit fittings** cannot be connected directly to chrome plated copper or stainless steel, because of the relative surface hardness of these materials.

#### Boiler connections

Qual-PEX pipe should not be connected directly to a boiler or similar heat source. It is important to ensure that such a connection is made with a minimum of one metre length of copper pipe. Qual-PEX pipe can be joined to this.

#### Gas pipe

**Qual-FIT Push-fit Fittings** and **Qual-PEX** pipe should never be used in gas piping systems.

#### Electrical connections

Since it is extruded from plastics material, **Qual-PEX Pipe** is an insulator and is **NOT** suitable for earthing electrical appliances.

### 3. GENERAL

The heating demands for particular rooms are designed in accordance with the CIBSE Guide 1980: Part A. To calculate the pressure drop in the pipes connected to each radiator or underfloor heating coil, the total length of pipe is defined as the sum of the lengths of flow and return pipes from the boiler. When Qual-PEX pipe and Qual-FIT fittings are used together the bore of the pipe is less than copper or stainless steel pipe of the equivalent outside diameter. The consequent reduction in flow rate for a given pressure head should be considered when designing hot and cold water distribution or central heating systems. The flow rates for Qual-PEX pipe are calculated in accordance with BS 6700:1997.

#### 3.1 Structural design

*Floor constructions must be designed to comply with the relevant technical specifications selected from:*

- I.S. 326 1995 *Code of Practice for the Structural Use of Concrete.*
- BS 5268-2:2002 *Structural use of timber. Code of practice for permissible stress design, materials and workmanship.*
- *The Technical Guidance Document to Part B of the Building Regulations 1997 to 2002.*

#### 3.2 Safe working temperatures and pressures

The **Qual-FIT Push-fit fittings and Qual-PEX** pipe when installed as an assembly meet the requirements for Class 5 service conditions specified in Table 1 of ISO EN 15875-1: 2003 for a service life of 50 years. These conditions include operating temperatures of 60° C for 25 years operation, 80° C for 10 years and 100° C for 100 hours at a working pressure of 4 bar. The pipe is also suitable for cold water services for a period of 50 years at a temperature of 20° C and an operating pressure of 10 bar. There is an adequate safety factor to ensure that damage to the pipe will not occur in the event of boiler thermostat or other control failure.

#### 3.3 Chemical resistance

The materials used in **Qual-FIT Push-fit Fittings** and Qual-PEX pipe should not come in contact with cellulose based paints, paint thinners or strippers, soldering flux, acid based descalents or aggressive cleaning products. Only water based paints or wood preservatives should be used.

#### 3.4 Effect on water quality

Qual-FIT Push-fit Fittings and Qual-PEX Cross-linked Polyethylene Pipe are approved and listed by the UK Water Regulations Advisory Scheme (WRAS) as items which have passed full tests on the effect of water quality in accordance with BS 6920: Part 1: 2000 *Specification for the suitability of non-metallic products for use in contact with water intended for human consumption with regard to their effect on the quality of the water.*

#### 3.5 Flow characteristics

The bore of the Qual-PEX pipe is less than copper or steel pipe of the equivalent outside diameter. The consequent reduction in flow rate for a given pressure head should be considered when designing the central heating system.

#### 3.6 Note on System Design

In systems where low water content gas boilers with cast iron heat exchangers are used, Quality Plastics recommend that the balancing valve for the hot water circuit be a brass lockshield gate valve (conforming to BS 5154: 1991 Specification for copper alloy globe, globe stop and check, check and gate valve). This lockshield valve is important so as to prevent the valve being inadvertently turned off while the boiler is on and so avoiding the pipework being exposed to excessive temperatures by providing an open circuit for water to circulate between the boiler flow and return.

#### 4.1 BEHAVIOUR IN FIRE

##### Properties in relation to fire

Where the **Qual-FIT Push-fit** fittings and **Qual-PEX** pipe are used in combination and pass through an element of structure or cavity barrier the opening should be fire-stopped in a way that will permit thermal movement.

#### 4.2 THERMAL INSULATION

Heating controls and pipe insulation must meet the minimum requirements of Part L Conservation of Fuel and Energy of the Building Regulations 1997 to 2002. Guidance is given in Section 2 -3 of the Technical Guidance Document to Part L.

#### 4.3 DURABILITY

The **Qual-FIT push-fit** fitting and **Qual-PEX** pipe assembly has been widely used in other European countries for over three years. Experience with the assembly has been favourable.

The **Qual-FIT push-fit** fitting and **Qual-PEX** pipe when used as an assembly will have a life at least equivalent to that expected from a traditional installation with metal pipes and fittings.

#### 4.4 TESTS AND ASSESSMENTS WERE CARRIED OUT TO DETERMINE THE FOLLOWING:

The **Qual-FIT fittings** and **Qual-PEX pipe** were tested to and meets the requirements of Class S service conditions as specified in Table 1 and Table 2 of BS 7291-1:2001 *Thermoplastics pipes and associated fittings for hot and cold water for domestic purposes and heating installations in buildings - General requirements*. Which covers both vented and sealed central heating systems.

1. Dimensional accuracy
2. Effect of thermal cycling on pipes and fittings
3. Long-term hydrostatic pressure resistance of pipes and fittings
4. Hydrostatic pressure resistance of fittings
5. Resistance to pull-out of assembled joints
6. Short-term hydrostatic pressure resistance of pipes and fittings at 20°C
7. Short-term hydrostatic pressure resistance of pipes and fittings at 100°C
8. Long-term hydrostatic strength of pipes and fittings.

9. Effect of materials on quality of potable water to BS 6920-1:2000 *Suitability of non-metallic products for use in contact with water intended for human consumption with regard to their effect on the quality of the water. Specification.*

#### 4.5 OTHER INVESTIGATIONS

- (i) Existing data on product properties in relation to toxicity with respect to suitability for use with potable water supplies mechanical strength/stability and durability were assessed.
- (iii) The manufacturing process was examined including the methods adopted for quality control, and details were obtained of the quality and composition of the materials used.

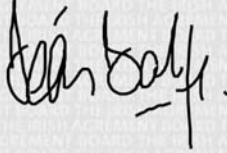
- 5.1** National Standards Authority of Ireland ("NSAI") following consultation with the Irish Agrément Board ("IAB") has assessed the performance and method of installation of the product/process and the quality of the materials used in its manufacture and certifies the product/process to be fit for the use for which it is certified provided that it is manufactured, installed, used and maintained in accordance with the descriptions and specifications set out in this Certificate and in accordance with the manufacturer's instructions and usual trade practice. This Certificate shall remain valid for five years from date of issue so long as:
- (a) the specification of the product is unchanged.
  - (b) the Building Regulations 1997 to 2002 and any other regulation or standard applicable to the product/process, its use or installation remains unchanged.
  - (c) the product continues to be assessed for the quality of its manufacture and marking by NSAI.
  - (d) no new information becomes available which in the opinion of the NSAI, would preclude the granting of the Certificate.
  - (e) the product or process continues to be manufactured, installed, used and maintained in accordance with the description, specifications and safety recommendations set out in this certificate.
  - (f) the registration and/or surveillance fees due to IAB are paid.
- 5.2** The IAB mark and certification number may only be used on or in relation to product/processes in respect of which a valid Certificate exists. If the Certificate becomes invalid the Certificate holder must not use the IAB mark and certification number and must remove them from the products already marked.
- 5.3** In granting Certification, the NSAI makes no representation as to;
- (a) the absence or presence of patent rights subsisting in the product/process; or
  - (b) the legal right of the Certificate holder to market, install or maintain the product/process; or
  - (c) whether individual products have been manufactured or installed by the Certificate holder in accordance with the descriptions and specifications set out in this Certificate.
- 5.4** This Certificate does not comprise installation instructions and does not replace the manufacturer's directions or any professional or trade advice relating to use and installation which may be appropriate.
- 5.5** Any recommendations contained in this Certificate relating to the safe use of the certified product/process are preconditions to the validity of the Certificate. However the NSAI does not certify that the manufacture or installation of the certified product or process in accordance with the descriptions and specifications set out in this Certificate will satisfy the requirements of the Safety, Health and Welfare at Work Act, 1989, or of any other current or future common law duty of care owed by the manufacturer or by the Certificate holder.
- 5.6** The NSAI is not responsible to any person or body for loss or damage including personal injury arising as a direct or indirect result of the use of this product or process.
- 5.7** Where reference is made in this Certificate to any Act of the Oireachtas, Regulation made thereunder, Statutory Instrument, Code of Practice, National Standards, Manufacturer's instructions, or similar publication, it shall be construed as reference to such publication in the form in which it is in force at the date of this Certification.

## The Irish Agrément Board

This Certificate No. **06/0239** is accordingly granted by the **NSAI** to **Quality Plastics Ltd** on behalf of **The Irish Agrément Board**.

Date of Issue: **January 2006**

Signed



**Seán Balfe**  
**Manager Irish Agrément Board**

Readers may check that the status of this Certificate has not changed by contacting the Irish Agrément Board, NSAI, Glasnevin, Dublin 9, Ireland. Telephone: (01) 807 3800. Fax: (01) 807 3842. [www.nsai.ie](http://www.nsai.ie)