



Bord Agrément na hÉireann  
Irish Agrément Board

CERTIFICATE NO. 01/0117

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

# Tectite 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 **Tectite Push-fit Fittings** manufactured by Yorkshire Fittings Ltd used with either Qual-PEX Cross-linked Polyethylene Pipe or Copper pipe to I.S. EN 1057:1996.

The **Tectite** range of **Push-fit Fittings** are manufactured from gunmetal or DZR brass outer casing with an integral support plastic collet and a stainless steel toothed ring. 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.

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

Qual-PEX pipes meet the requirements of Class 5 Service conditions specified in Table 1 of ISO EN 15875-1:2003 for a service life of 50 years.

The Tectite fittings and Qual-PEX pipe was tested to BS 7291-1:1990. This testing also satisfies the requirements of Class S service conditions as specified in Table 1 and Table 2 of BS7291-1:2001. *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 **Tectite range of fittings** are manufactured by :

Yorkshire Fittings Ltd.  
Stourton  
Leeds  
West Yorkshire  
England

and

Marketed by :  
Quality Plastics Ltd.  
P.O. Box. 29  
Whites Cross  
Cork

**Readers are advised to check that this Certificate has not been withdrawn or superseded by a later issue by contacting the Irish Agrément Board, NSAI, Glasnevin, Dublin 9 or online at [www.n Sai.ie/iab/01-0117](http://www.n Sai.ie/iab/01-0117)**

**1.1 ASSESSMENT**

In the opinion of the Irish Agrément Board (IAB), **Tectite Push-fit Fittings** with Qual-PEX pipe or Copper pipe to I.S. EN 1057: 1996 and 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:**

**D1 & D3 - MATERIALS AND WORKMANSHIP**

**D1** **Tectite Push-fit Fittings** with Qual-PEX pipe or Copper pipe to I.S. EN 1057: 1996 used in accordance with this Irish Agrément Board Certificate, can meet the requirements of the Building Regulations 1997 - 2002, for workmanship.

**D3** **Tectite Push-fit Fittings** and Qual-PEX Cross-linked Polyethylene Pipe as certified in this Irish Agrément Certificate are comprised of 'proper materials fit for the intended use'. (See Part 4 of this Certificate).

**L1 - Conservation of Fuel and Energy Heating** and hot water systems using **Tectite Push-fit Fittings** with Qual-PEX pipe or Copper pipe 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 bodies of the **Tectite** range of **Push-fit Fittings** are manufactured from gunmetal and DZR brass. **Tectite Push-fit Fittings** feature a stainless steel grab ring, Acetal demount ring and a brass cartridge sleeve plus a Nylon seal protection ring. The seal is provided by an integral greased EPDM (Ethylene Propylene Diene Monomer) 'O' ring between the wall of the fitting and the pipe. The range of **Tectite Push-fit Fittings** are shown in Table 1 (right). A disconnecting tool is supplied so that fittings may be disconnected and re-used.

### 2.2 MANUFACTURE

The main body and cartridge sleeve of the **Tectite Push-fit Fittings** are produced from gunmetal or DZR brass which is either cast or forged. The bodies and cartridge sleeves are then machined to specific dimensions. The fitting is then assembled with the stainless steel grab ring, EPDM 'O' ring, nylon seal protection ring, release collar and cartridge sleeve. The assembly is then crimped to lock in position.

#### 2.2.1 Quality Control

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

### 2.3 DELIVERY, STORAGE AND MARKING

**Tectite Push-fit Fittings** are supplied in polyethylene bags packed in cartons and bear (by impression) the manufacturer's symbol and connection sizes.

### 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 Tectite Joint

The **Tectite Push-fit Fittings** are easy to install, they achieve reliable and highly versatile joints, by using a positive mechanical system to join the fitting and pipe together.

When a length of pipe is inserted into the fitting, it passes through the release collar and then through the stainless steel grab ring. This grips the pipe, securing it so only the Tectite disconnecting clip or tool can release the fitting from the pipe.

Table 1: Range of Tectite Push-fit Fittings.

Description	Size	Code
Straight Coupler	1/2"	092/Q10A
Straight Coupler	3/4"	092/Q10B
Elbow	1/2"	092/Q15A
Elbow	3/4"	092/Q15B
Equal Tee	1/2"	092/Q18A
Equal Tee	3/4"	092/Q18B
Reduced Branch Tee	3/4" x 3/4" x 1/2"	092/Q18C
End Branch Tee	1/2" x 3/4" x 3/4"	092/Q18D
Branch and End Reduced Tee	3/4" x 1/2" x 1/2"	092/Q18E
Spigot Reducer	3/4" x 1/2"	092/Q6
Male Coupling	1/2" x 1/2" BSP	092/Q11A
Male Coupling	3/4" x 3/4" BSP	092/Q11B
Male Coupling	3/4" x 1" BSP	092/Q11C
Female Coupling	3/4" x 1" BSP	092/Q12C
Tank Connector	1/2" x 1/2" BSP	092/Q50A
Tank Connector	3/4" x 3/4" BSP	092/Q50B
Stop End	1/2"	092/Q51A
Stop End	3/4"	092/Q51B
Backplate Elbow	1/2" BSP	092/Q17W
Bent Tap Connector	1/2" BSP	092/Q27A
Straight Tap Connector	1/2" BSP	092/Q62A
Straight Tap Connector	3/4" BSP	092/Q62B
Disconnecting Tool	1/2"	092/DTA
Disconnecting Tool	3/4"	092/DTB
Disconnecting Clip	1/2"	092/DCA
Disconnecting Clip	3/4"	092/DCB

To complete the joint the pipe must be pushed through the support, which guides the pipe and compresses the 'O' ring between the wall of the fitting and the pipe. Only when the pipe has passed through the 'O' ring and reached the pipe stop is a secure joint created.

**Joining Procedure**

Select the correct size of pipe and fitting for the job. Cut the pipe square using a rotary pipe cutters for both the 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 copper pipe to remove any sharp edges). A pipe support sleeve must be used with the Qual-PEX pipe. (see Figure 1.)



Fig 1

Insert the correct size pipe support sleeve into the Qual-PEX pipe ensuring it is fully home. 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 – 23mm, 3/4" fitting – 27mm. The 'T' markings on Qual-PEX pipe are at these intervals and should be used as a gauge. (see Figure 2.)



Fig 2



Fig 3

Insert the pipe through the release collar to rest against the grab ring. Push the pipe firmly home until it reaches the pipe stop with a positive 'click'. Check the fitting has reached the mark. Pull the pipe to check that the fitting is secure. **Tectite Push-fit Fittings** should be installed a minimum of 10mm apart to enable easy access with the disconnecting tool/clip, should disconnecting be required. (see Figure 3.)

To demount, insert the disconnecting tool forks around the fitting assembly. Squeeze the disconnecting tool with one hand, compressing the release collar in the fitting. Alternatively the plastic disconnecting clip can be used. With the other hand twist out the pipe. Check the fitting for damage before remaking the joint. When the fitting has been de-mounted from Qual-PEX pipe, the pipe should be cut back behind the location of the fitting, in case the pipe has been scored during the demounting process. (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>			
-horizontal	500mm	400mm	300mm
-vertical	800mm	600mm	500mm
<b>3/4" Qual-PEX</b>			
-horizontal	800mm	600mm	500mm
-vertical	1200mm	1000mm	800mm
<b>1" Qual-PEX</b>			
-horizontal	800mm	600mm	500mm
-vertical	1200mm	1000mm	800mm

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 Tectite 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 pressure is discharged from the system, where there is a risk of freezing conditions.

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### 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.

### 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

Tectite 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 is an insulator and is not suitable for earthing electrical appliances. Alternative arrangements must be made to earth metal items such as sinks, baths etc. as required by the 'National Rules for Electrical Installations' (ETCI) 3<sup>rd</sup> edition ET101/2000.

## Part Three / Design Data

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### 3.1 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 **Tectite-Push-fit Fittings** and **Qual-Pex** pipe 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.*

### 3.2 Safe working temperatures and pressures

The **Tectite 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 **Tectite Push-fit Fittings** and **Qual-PEX** pipe will not be adversely affected by accidental contact with linseed oil based sealing compounds or soldering flux, although these materials should not normally be used in making joints. Only water based paints and wood preservatives should be used.

### 3.4 Effect on water quality

Tectite 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 Ltd 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 avoid 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 **Tectite Push-fit Fittings and Qual-PEX** pipe are used in combination and passes 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 **Tectite Push-fit Fittings and Qual-PEX** combination has been widely used in other European countries for over three years. Experience with the system has been favourable.

The **Tectite Push-fit Fittings** and the **Qual-PEX** pipe when used in combination 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 Tectite fittings and Qual-PEX pipe was tested to BS 7291-1:1990. This testing also satisfies the requirements of Class S service conditions as specified in Table 1 and Table 2 of BS7291-1:2001. *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.

#### 4.5 OTHER INVESTIGATIONS

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 fitting
9. Effect of materials on quality of potable water to BS 6920-1:2000  
*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.*
  - (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.
  - (ii) 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. **01/0117** is accordingly granted by the NSAI to **Quality Plastics Ltd.** on behalf of The Irish Agrément Board.

Date of Issue: **March 2001**

Signed



Chief Executive, NSAI

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.n sai.ie](http://www.n sai.ie)

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