



# Specification

## Uponor Q&E Shrink-fit Flexible Pipe System

To be read with the preliminaries and general conditions

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Always refer to Uponor for the latest specification, technical information, installation instructions, training and method statements

### Uponor Q&E Shrink-fit System

Q&E Shrink-fit pipe systems are suitable for use in 'Open or Closed' water systems intended for domestic hot and cold potable water, heating or chilled water systems and hydronic radiant heating or cooling systems.

The unique Q&E Shrink-fit jointing concept utilizes the 'elastic-memory shrink-back' characteristic of both the PE-Xa pipe and the Q&E 'Evolution' rings to form a watertight seal on the inside bore of the pipe. Uponor Evolution rings are made from PE-Xa with stop-edges, conical inner shape, tactile ridges and can be used to identify different water services - red, blue and white (16, 20, 25, and 32mm only).

### Approvals & Standards

**Fittings** - WRAS 2009529 - Radel R 5100 fittings

**Pipe** - WRAS 2107570 - Pipes

Manufacturing is in accordance with the international quality standard ISO 9001 and environmental standard ISO 14001.

### Uponor Pe-X Pipe

Q&E PE-Xa barrier pipe (4 layer 16-25mm, 3 layer 12, 32-63mm) pipe fulfils the requirement for oxygen diffusion resistance as per DIN 4726. Consisting of: opaque core pipe of chemically cross-linked polyethylene (PE-Xa); adhesive tie layer; Oxygen diffusion layer of EVOH (ethylene vinyl alcohol) complying with BS EN ISO 15875; adhesive outer coating of white polyethylene (PE-Xa).

All Uponor PE-X pipes are manufactured to parts 1 and 2 of BS EN ISO 15875:2003 'Plastic piping systems for hot and cold water installations, cross-linked polyethylene (PEX)'. All Uponor pipe is clearly marked at 1m intervals with full production data, in accordance with the requirements of BS EN ISO 15875-2:2003.

Q&E PE-Xa pipe in sizes 12, 16, 20, 25, 32, 40, 50 and 63mm are supplied in coils (standard 50m, limited sizes in 100, 200 & 500m), or straight lengths of either 3m or 5m (depending on pipe size).

### Operating Conditions (BS EN ISO 15875-1:2003)

- **Heating systems (high temperature radiators)** - where the water temperature does not continuously exceed 80°C, 6 bar (conditions to class 5 - BS EN ISO 15875-1:2003). The maximum short-term malfunction temperature is 100°C for an accumulative 100 hours over the working life of the system.

(Heating systems must be installed with room and water temperature controls in accordance with the current Building Regulations Parts L1 (Energy – Dwellings) and L2 (Energy – Non Dwellings) for England and Wales, or equivalent national standard for Scotland or Republic of Ireland)

- **Hot water services** - where the water temperature does not continuously exceed 70°C, maximum design pressure of 6 bar (conditions to class 2 - BS EN ISO 15875-1:2003). The maximum short-term malfunction temperature is 95°C for an accumulative 100 hours over the working life of the system.

- **Cold water services <20 °C** - where the maximum system pressure does not exceed the maximum operating pressure of 10 bar (also see 'Pressure Testing' page 3)

Uponor Q&E Shrink-fit system can be used for DHW recirculating systems, provided the operating temperatures and pressures do not exceed the maximum conditions detailed under 'Hot water services'

### Pipe Properties

Coefficient of thermal expansion 0.18mm/(m - K)

$$\Delta L = a \times L \times \Delta T$$

**a** - Coefficient of linear expansion,

**L** - length of the pipe,

**ΔT** - change of temp

Thermal conductivity - 0.35W (m x K)

Pipe absolute roughness: 0.0005mm

## Uponor PE-X pipework dimensions and weight

Dimension mm	Weight Kg/m	Volume l/m	Weight Kg/m
16 x 1.8	0.084	0.11	0.194
20 x 1.9	0.113	0.197	0.31
25 x 2.5	0.171	0.306	0.477
32 x 2.9	0.271	0.529	0.80
40 x 3.7	0.43	0.814	1.244
50 x 4.6	0.665	1.274	1.939
63 x 5.8	1.048	2.034	3.082

### Q&E Shrink-fit Fittings Range

**PPSU** – Q&E Shrink-fit fittings are manufactured from Polyphenylsulfone Radel R 5100 (PPSU).

PPSU threaded adapters use BSP male/female threads. Male threaded items use 'G' type threads to BSP Parallel ISO-228. Female threads are 'Rp' to BS EN 10226-1. An appropriate PTFE tape thread sealant should be used on the thread to ensure pressure-tight joints. Tape thickness: 0.076 – 0.1 mm for 1/2" threads, 0.1 – 0.2 mm for 3/4" – 1" threads to EN751-3 FRp.

**Brass fittings (limited range)** – All brass fittings are manufactured from 4MS approved material CW617N

**Compression** – Uponor Q&E PE-Xa pipes may be joined to compression fitting bodies conforming to BS EN 1254 using Uponor's own range of 1/2" or 3/4" compression adaptors. For connection to 1/2" and 3/4" manifold outlets, Uponor's Eurocone compression manifold adaptors must be used.

O-rings used within some Uponor Shrink-fit Q&E threaded fittings are manufactured from Ethylene Propylene Diene Monomer (EPDM), in accordance with BS EN 681-1.

### Pipe Fixings and Supports

Uponor PE-Xa pipework is not self supporting and should be fixed using pipe clips to provide adequate support, whilst allowing for thermal expansion. Details to BS EN 806-4:2010-06. A degree of 'flexing' is to be expected in horizontal pipe runs used for hot water – this will not affect the performance of the product.

### Installation and tooling

For manufacturer's warranties to apply, all products must be installed to the manufacturer's latest installation instructions (refer to Uponor for the latest version)

All installers should hold a current manufacturer's training certificate of not more than two years old.

Correct tooling, as approved by the manufacturer, should be used at all times. All tools should be regularly maintained and be of good serviceable quality (safety training MUST be sought).

### Pressure Testing

All pressure testing must be carried out by a competent person. Any pressure testing should first be preceded by an initial visual inspection of the complete pipe system and equipment.

Uponor Q&E pipework should be pressure tested in accordance with BS EN806-4:2010-06 to part 6.1.3.2 procedure B or C, or Water Regulation (Water Fittings) 1999, using potable cold water in accordance with to BS EN 13443-1 before the system is operational.

The maximum test pressure should be 1.1 times MOP at a temperature of ≤ 25°C and does not exceed the maximum design pressure of 11 bar of <20°C

Note: Dependent on ambient temperature, Uponor Q&E shrink-fit joints take time to become leak-tight after installation. The following minimum waiting times must be observed before pressure testing.

5°C and above	0.5 hour
0°C to +5°C	1.5 hours
-10°C to 0°C	3 - 4 hours

### Solid Floors

For domestic services, Uponor Q&E 'Pipe-in-Conduit' should be used in solid floors to comply with the Water Regulations (water fittings) 1999. No ducting is necessary and pipes can subsequently be withdrawn and replaced if required. Uponor Q&E pipes are not affected by standard concrete or screeds.

### Electrical Continuity

Uponor Q&E pipework is non-conductive and does not need to be bonded to earth. In new installations which do not use any sections of metal pipes, there is no requirement to bond the pipework to earth. However, it is still necessary to bond all electrical components such as pumps, boilers, heaters and other exposed metallic components of the plumbing and heating system. Uponor Q&E pipework itself is not suitable for electrical equipotential bonding of a system.

## Connection to Boilers, Heaters & Cylinders

Uponor Q&E Shrink-fit should not be directly connected to boilers or heaters, which have a higher constant temperature of 70°C (malfunction temperature 95°C for 100h) in tap water and constant higher temperature of 80°C (malfunction temperature of 100°C for 100h) for heating (please also seek advice from the boiler or heater manufacturer).

## Corrosion Inhibitors

Heating systems should be treated in the normal way to prevent corrosion of metallic components within the system. Please refer to Uponor for advice on suitable water treatments for use with Q&E shrink-fit systems.

## Fire rating

Uponor Q&E Shrink-fit flexible pipe system has been certificated to BS EN 13501-1 Category 'C-s1-d2'

## Disinfection

Systems intended for use for potable water should be disinfected following installation. Uponor Q&E Shrink-fit system can be treated for short-term chemical disinfection in accordance with the standards BS EN 806-4:2010 and the DVGW work sheet W 290 / W 291 and W 557 (A).

Please refer to Uponor for a list of acceptable chemicals

## Chemical Resistance

Uponor Q&E Shrink-fit flexible pipe system has very good resistance to many household chemicals. However, in the event of spillage, the pipework should be washed with clean water. Building materials such as standard concrete, mortar and plaster do not affect the pipes. Solvent based cleaning products, tapes, paints, adhesives or sealing compounds must not come into contact with Uponor Q&E Shrink-fit flexible pipe system, unless approved by Uponor.

## Limitation of use

Uponor Q&E Shrink-fit flexible pipe system **MUST NOT** be used for the following applications:

- Domestic gas
- Heating Oil
- Compressed Air systems
- Swimming Pool Water
- Fire control systems
- Water from a private water supply must provide a water report for approval
- Uponor Q&E pipes must not be stored or installed where they are exposed to direct sunlight.

(Please refer to Uponor for approval in applications other than heating, cooling or domestic water supply).

## Manufacturer details

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