

UPONOR Ltd
Specification
for
UPONOR PEX Plumbing Systems

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UPONOR PEX Pipe

UPONOR PEX pipe is a 5-layer pipe consisting of: opaque core pipe of chemically cross-linked polyethylene (PEX); adhesive tie layer; oxygen diffusion barrier; adhesive tie layer; outer coating of white PEX.

All UPONOR PEX 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).*' Manufacturing is in accordance with the international quality standard ISO 9001 and environmental standard ISO 14001. The system of UPONOR PEX pipe and Q&E fittings is approved by WRAS, approval No. 1209073.

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

UPONOR PEX pipe in sizes 16, 20 and 25mm is supplied in coils or 3m straight lengths.

Operating Conditions

- Heating systems where the water temperature does not continuously exceed 80°C at 6 bar. The maximum short-term malfunction temperature is 95°C for a cumulative 100 hours per year. The system 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 an equivalent national standard for Scotland or Republic of Ireland.
- Hot water services installations where the water temperature does not continuously exceed 70°C at 6 bar. The maximum short-term malfunction temperature is 95°C for a cumulative 100 hours over the working life of the system.
- Cold water services installations where the maximum operating pressure does not exceed 12 bar.

Classification of service conditions is given in BS EN ISO 15875-1:2003.

Uponor PEX pipe must not be used for continuously re-circulating hot water systems.

Pipe Properties

Coefficient of thermal expansion (20°C):	1.4 x 10 ⁻⁴ m/(m x K)
Coefficient of thermal expansion (100°C):	2.05 x 10 ⁻⁴ m/(m x K)
Thermal conductivity:	0.35W/(m x K)
Pipe internal roughness:	0.0005mm

UPONOR PEX pipework weight.

Dimension mm	Weight Kg/m	Volume l/m	Weight Kg/50m
16 x 1.8	0.088	0.11	4.4
20 x 1.9	0.117	0.197	5.85
25 x 2.5	0.182	0.306	9.05

UPONOR PEX pipes must not be stored or installed where they are exposed to direct sunlight. UV radiation affects the material, impairing long-term properties.

Fittings Range

Q&E – The unique Q&E jointing concept utilizes the ‘elastic memory’ characteristic of UPONOR PEX pipe. Q&E fittings, available in PPSU, seal on the bore.

Compression - UPONOR PEX pipe may be joined to compression fitting bodies conforming to BS EN 1254 using Uponor’s own range of ½” compression adaptors. For connection to ½” and ¾” Eurocone manifold outlets, UPONOR’s compression manifold adaptors must be used.

Radiator Heating Systems NV Manifold

UPONOR ‘NV’ Manifold includes chrome plated flow and return headers pre-mounted on nickel plated brackets with fill and drain points. Primary connections are 1” BSP and the nickel plated outlet connections are ¾” Eurocone. Supplied in 2–8 Port options.

Note: A 1 port extension set is available.

Radiator Heating Systems LS Manifold - with Actuator Control

UPONOR ‘LS’ Manifold includes lock shield valves on the flow manifold for balancing the system. The manifold includes chrome plated flow and return headers, pre-mounted on nickel plated brackets with fill and drain points. Primary connections are 1” BSP and the nickel plated outlet connections are ¾” Eurocone. Supplied in 2–12 port options.

Note: A 1 port extension set is available.

Hot and Cold Water Systems L Manifold – with Manual Control

UPONOR “L” type supplied as a single manifold made from plated brass, ¾” MT x ¾” FT with ½” MT outlets. Valves allow each circuit to be isolated. Complete with loop labeling discs to identify hot and cold water supply to appliances.

A larger version 1” x 1” with ¾” outlets is available. Both items have 2, 3 or 4 port options. L manifolds can be joined together to provide the required number of ports.

Hot and Cold Water Systems P Manifold

UPONOR “P” type supplied as a single manifold made from plated brass, 1” MT x 1” FT with ½” MT outlets. Supplied in 2, 3 or 4 port options. P manifolds can be joined together to provide the required number of ports.

PPSU Manifold

Single manifold made from hydrolysis resistant PPSU with either ¾” BSP or 20/25mm Q&E primary connections, with 16mm or 20mm Q&E outlets. Supplied in 3 and 4 port options.

PPSU Modular Manifold

Available in 2, 3 and 4 port options with 16mm Q&E outlets, or single port option with ½" or ¾" BSP outlet. Easily joined together by integral half-turn connections. Primary ¾" connections (straight or elbow) allow design flexibility.

Bending Radii

UPONOR PEX pipework can be bent freely without the aid of special tools. Pipe bend supports (fixtures) can be used to firmly hold the pipe in position. Care must be taken not to bend the pipe beyond the minimum radii given below, as this may cause it to kink.

Dimension (mm)	Bend Radius (mm)
16	80
20	100
25	125

Fixings

Uponor PEX pipework is not self supporting and should be fixed using pipe clips to provide adequate support whilst allowing for thermal expansion. A certain degree of sagging is to be expected in horizontal pipe runs – this will not affect the performance of the product. Uponor supply a variety of plastic pipe clips to fix Uponor pipe products into position.

Supports should always be installed at either side of a bend. It is recommended that pipes be supported at not more than 150 mm from connections, junctions, valves and other controls. Additional support must always be provided for pumps and other heavy items.

Diameter (mm)	Hot pipe, horizontal (m)	Cold pipe, horizontal (m)
16	0.4	0.75
20	0.5	0.8
25	0.6	0.85

For vertical pipe runs, multiply the above figures by 1.3

Pressure Testing

UPONOR PEX pipework system should be pressure tested in accordance with BS EN806-4:2010 or Water Regulation 1999, using potable cold water before the system is operational. The test should be 10 bar or 1.5 times the maximum pressure rating of the lowest rated component in the system for 30 minutes. The maximum test pressure applied to UPONOR PEX pipework must not exceed 18 bar at 20°C. The pressure should then be dropped to 0.5 times the operating pressure and tested over 90 minutes visually checking for leaks.

Note: Q&E joints take time to become leak-tight after installation, dependant on ambient temperature. 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
-5°C to 0°C	3 hours
-10°C to -5°C	4 hours

Solid Floors

UPONOR PEX 'Pipe-in-Conduit' should be used in solid floors to comply with the Water Regulations 1999. No ducting is necessary and pipes can subsequently be withdrawn and replaced if required. UPONOR PEX pipes are not affected by concrete or screeds.

Timber Floors

UPONOR PEX pipework should be laid in runs which are simple to locate in order to help prevent any puncturing with nails or screws. When notching or drilling the joists this must be in accordance with latest Building Regulations Part A and BS EN 806. For a uniform finish above surface, UPONOR recommend using Radiator Connection Guides for Joisted Floors.

Electrical Continuity

UPONOR PEX 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 and heaters and other exposed metallic components of the plumbing and heating system. UPONOR PEX pipework itself is not suitable for electrical earthing.

Connection to Boilers

UPONOR PEX should not be directly connected to boilers if the maximum temperature cannot be guaranteed. A minimum of 1000mm of copper pipe should always be used before changing to UPONOR PEX.

Corrosion Inhibitors

All central heating systems should be treated in the normal way to prevent corrosion of steel radiators and other components. UPONOR PEX pipework is not affected by proprietary anti-corrosion compounds such as Fernox or Sentinel at the normal recommended dosing levels.

Antifreeze

Ethylene glycol anti-freeze mixtures for central heating have no adverse effect on UPONOR PEX pipework. Where systems are left with residual water in unheated and unprotected buildings in freezing conditions, there is a risk of frost damage to the pipe. In all cases where there is a risk of freezing, add a glycol based antifreeze to the water to avoid ice damage to the pipe. After freezing conditions have lifted and before the system is started, the anti-freeze mixture should be fully flushed-out of the loops and disposed of properly in accordance with local regulations.

Disinfecting

The system should be disinfected after installation and pressure tested in accordance with the procedure in BS EN 806-4:2010. Care should be taken to ensure that the chlorine level does not exceed the permitted maximum for UPONOR PEX pipework of 5 ppm.

Potable water which contains chlorine at levels which is safe for human consumption will not adversely affect UPONOR PEX pipework, i.e. concentrations below 2 ppm for continuous use.

Chemical Resistance

UPONOR PEX pipework has very good resistance to most household chemicals. In the event of spillage, the pipework should be washed with clean water. Building materials such as concrete, mortar, plaster etc do not affect the pipes.

Solvent based tapes, paints or sealing compounds must not come into contact with UPONOR PEX pipework.

Other Applications

UPONOR PEX pipework must not be used for the following applications:

- Domestic gas
- Heating oil
- Compressed air
- Swimming pool water

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