EvoPEX™ technical manual

EvoPEX™

All the confidence you need.

The new EvoPEX™ system is a revolutionary step in providing an advanced potable water system for safe and efficient water delivery.

EvoPEX™ is engineered to improve efficiency and enable plumbers to optimise install time with clean, leak-free installations. Plumb an entire home without needing special tools.

No soldering, unions, clamps or glue is required, which means cleaner installations, less potential leak points and less time lost on the job. Just connect and move on with the new revolutionary EvoPEX™ system.


EvoPEX
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Technical Manual

Quality in every EvoPEX™ component

The Perfect Seal

EvoPEX™ push-to-connect is the rapid and reliable rough-in solution that plumbers have been waiting for.

Fittings Components

1. Protection cap

Made from LDPE a fully recyclable plastic which ensures all fittings are free from contamination prior to installation.

2. Body

Acudel high performance polymer ideal for plumbing application.

3. Radial seal

EPDM resistant to Chloramine and chemicals found in water systems. Ensures a water tight inner pipe seal.

4. Collet

20% glass filled reinforced Grilamid provides strength and flexibility to the fitting.

5. Grab ring

Stainless steel 316 grab ring. Flexible teeth that won't let go.

6. Spacer

Acetal Copolymer with low moisture absorption and dimensional stability. Provides additional support and guides the pipe into the fitting.

7. Collet retainer

Strong stainless steel 304 holds the spacer, grab ring, collet together on the body.

8. Protection ring

Glass Filled Polyamide with high mechanical strength and stiffness. Good sliding properties.

Benefits of EvoPEX™

Cost effective

EvoPEX™ is more cost effective than other systems. No expensive tools are required to make a joint and labour savings mean fast, efficient installation.

Confidence

Rather than sealing on the outside like other systems, the radial seal seals on the inside for the perfect join every time. You can have total confidence that every joint is perfect.

Flexibility

EvoPEX™ Cross linked Polyethylene pipe ensures flexibility for bending around corners, removing the need for 45° or 90° elbows most of the time.

Quality

We use the highest grade of materials and the most advanced manufacturing processes to deliver the highest quality push-to-connect fittings.

Efficient water delivery

The EvoPEX™system is immune to corrosion and mineral build-up for greater water pressure and improved water delivery.

Peace of mind

Each EvoPEX™ fitting has a clever green visual indicator that tells you when you've established a proper fitting connection.

Health

There are no torches, glues or solvents required for installation which keeps potentially dangerous chemicals out of the home and potable water supply.

Ease of installation

No tools mean easy installation in tight spaces. Fitting rotation offers the ability to perfectly align the direction of the pipe. And there are no minimum spacing requirements.

Reliability

With a huge 25-year system warranty, you can rest assured that every job will deliver decades of performance.

Do not use anaerobic thread sealants (e.g. Loxeal 58-11, Loctite 567 & 577) on this system. For threads it is recommended to use PTFE thread tape or pipe sealing cord. Avoid contact with other solvents e.g. Primer and Solvent Cement.

How to make an EvoPEX™ connection

Step 1.

When cutting EvoPEX™ pipe, ensure that the ends are cut square and the surface is smooth. It is recommended to use the EvoPEX™ cutter for best results. Ensure that both the EvoPEX™ fitting and pipe are clean and free of dirt and debris in preparation for making a connection.

Step 2.

Remove protection cap when you are ready to install. Push the pipe into the fitting firmly (a twisting action reduces insertion force). Take care to avoid inserting the pipe at an angle.

Step 3.

Ensure that the pipe is pushed into the fitting fully and engaged properly by checking that the green indicator ring is fully visible in all four slots. This ensures a permanent connection.

Protection Caps

It is important that no foreign matter be present within the fitting prior to pipe fitment. A multi-purpose protection cap ensures all fittings are free of contamination prior to installation. The protection cap can also be used on the PEX pipe end to ensure the pipe remains free of any onsite materials that may be caught when pushing pipes through frames, under floor or within ceilings. Added protection for your peace of mind.

EvoPEX™ PEX System

Comparison

	Push-to-connect EvoPEX™	Crimp	Compression
No tools required	○	X	X
No calibration/maintenance required for proper function of tool	○	X	X
No grooves in the tubing caused by the expansion tool that can create potential leak paths	○	○	X
Self gauging fluro green visual indicator for assurance of proper fitting engagement	○	X	X
No potential for leaks caused by nicks on the fitting exterior	○	X	X
Pipe owned by Australians, manufactured in Australia	○	X	X
Immediate pressure testing	○	○	○
25 Year System Warranty	○	○	○
No rings required for proper fitting connection	○	X	X

PEX Quality

No glues, solder, solvents necessary	○
No health and safety concerns	○
Freeze resistance	○
Flexibility for tight bend radius - less fittings	○
Efficient time-saving installation	○
No theft concerns	○
Immune to corrosion, pitting, and mineral build up	○
Rain and humid condition will NOT affect fitting seal	○
Cost effective, stable material costs	○
Retains more heat in hot water lines/resists condensation on cold water lines	○

Specifications

Engineering Specifications

The fitting utilises a high performance EPDM radial seal and 316 grade stainless steel grab ring. The EvoPEX™ push-to-connect fittings have been engineered to be installed only with EvoPEX™ cross-linked polyethylene pipe (PEX), which complies with AS2492. All brass EvoPEX™ fittings are made of dezincification resistant brass in compliance of AS2345 and AS/NZS2537. The EvoPEX™ plumbing system is designed only to be used in potable water systems.

Technical Data

Performance

EvoPEX™ pipe and fittings comply with AS/NZS2492 and AS/NZS2537 respectively. EvoPEX™ pipe is designed to operate for hot and cold water applications and can operate continuously at 70`C with a maximum working pressure of 1000kPa.

The performance of other products such as heaters and valves can cause temperature fluctuations that exceed 70°C, therefore systems should be run at 60°C to allow for this. Temperatures above 70°c for any period will affect the life of the pipe. Should temperature requirements need to exceed this, the manufacturer should be contacted.

General

Summary

A. Push-to-connect connection system for potable water distribution.

References

A. AS/NZS 4020 - Testing of products for use in contact with drinking water.

B. AS/NZS2492 - Cross-linked polyethylene (PEX) pipes for pressure applications.

C. AS/NZS 2537 - Mechanical jointing fittings for use with cross-linked polyethylene (PEX) pipe for hot and cold water applications.

D. AS/NZS 2537.2 - Water supply - metallic fittings and connectors.

E. AS1432 - Copper tubes for plumbing, gas fittings and drainage applications.

F. AS/NZS 3500 - National plumbing and drainage.

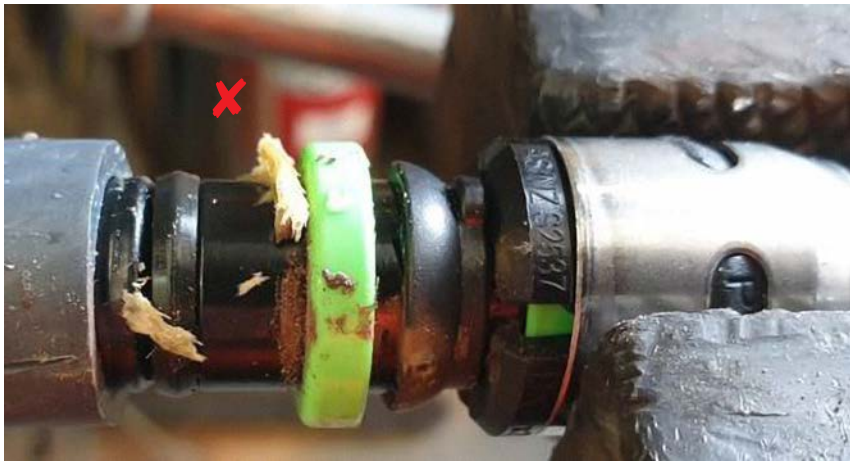
Quality assurance

A. Installer shall be well informed on installation instructions prior to installing and fully licensed.

B. The installation of tubing and fittings for hot and cold water distribution systems shall conform to the requirements of the AS/NZS 3500.

C. The piping shall be cut square, even and have no rough edges and free of damage or debris.

Good vs Bad Connection

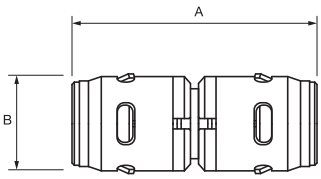


Contaminated fitting

Poor cut

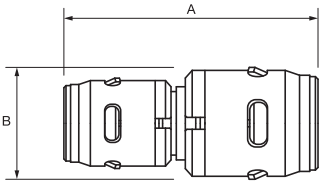
Complete join

EvoPEX™ Fittings



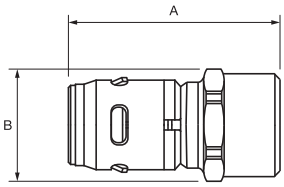
Straight coupling

Code	Size	A (mm)	B (mm)
1544880	16mm	56.50	22.50
1544881	20mm	60.40	27.60



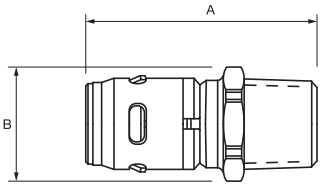
Reducing coupling

Code	Size	A (mm)	B (mm)
1544882	20 X 16mm	62.45	27.60



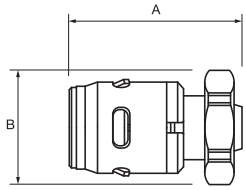
Female connector

Code	Size	A (mm)	B (mm)
1544885	16mm X 1/2" FI	50.90	27.50
1544886	20mm X 3/4" FI	54.35	34.00



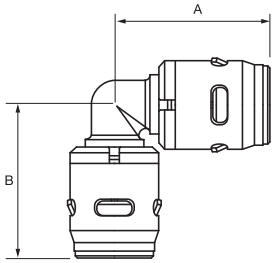
Male connector

Code	Size	A (mm)	B (mm)
1544883	16mm X 1/2" MI	48.45	24.00
1544884	20mm X 3/4" MI	52.70	32.20
1545191	20mmX 1/2" MI	52.70	24.00



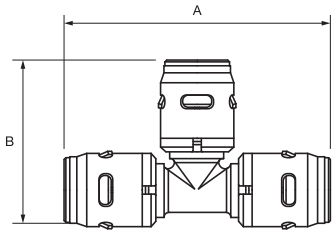
Loose nut connector

Code	Size	A (mm)	B (mm)
1544906	16 X 1/2" FI	53.80	26.90
1544907	20 X 3/4" FI	54.90	31.20



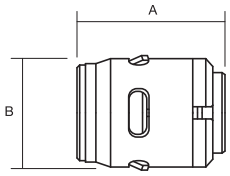
Elbow

Code	Size	A (mm)	B (mm)
1544887	16mm	38.10	38.10
1544888	20mm	42.55	42.55



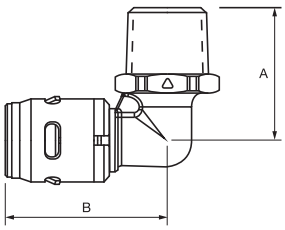
Tee

Code	Size	A (mm)	B (mm)
1544899	16 X 16 X 16mm	76.20	49.40
1544900	20 X 20 X 20mm	85.10	56.35
1544901	20 X 20 X 16mm	84.70	54.25
1544902	20 X 16 X 20mm	81.70	54.80
1544903	20 X 16 X 16mm	82.85	51.35



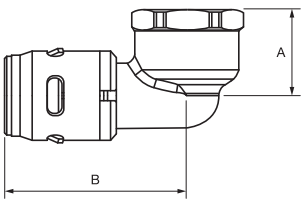
Stop end

Code	Size	A (mm)	B (mm)
1544904	16mm	30.25	22.60
1544905	20mm	32.20	27.60



Male elbow

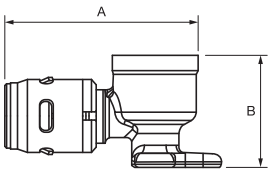
Code	Size	A (mm)	B (mm)
1545192	16mm X 1/2" MI	36.70	38.15



Female elbow

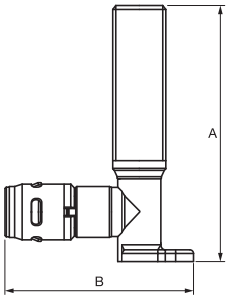
Code	Size	A (mm)	B (mm)
1544890	16mm X 1/2" FI	21.00	44.15

EvoPEX™ Fittings



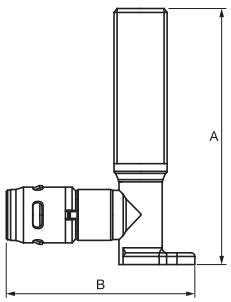
Female lugged elbow

Code	Size	A (mm)	B (mm)
1544891	16mm X 1/2" FI	34.00	67.20
1544892	20mm X 3/4" FI	34.00	67.20



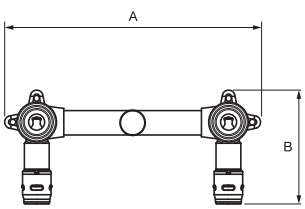
Male lugged elbow

Code	Size	A (mm)	B (mm)
1544893	16mm X 1/2" MI (185)	185	76.50
1544894	16mm X 1/2" MI (100)	100	74.00
1544895	20mm X 3/4" MI (185)	185	84.25
1544896	20mm X 1/2" MI (100)	100	76.50
1545170	20mm X 1/2" MI (185)	185	76.50
1545193	16mm X 1/2" MI (73)	73	74.00



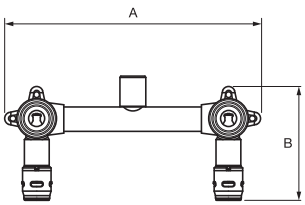
Recycled elbow

Code	Size	A (mm)	B (mm)
1544897	20mm X 5/8" MI (100)	100	81.5
1544898	20mm X 5/8" MI (185)	185	81.5



Recessed assembly

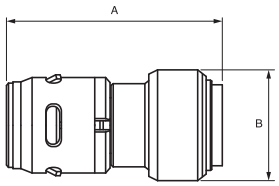
Code	Size	A (mm)	B (mm)
1544908	300mm	350	88.25
1544909	200mm	250	88.25



Shower assembly

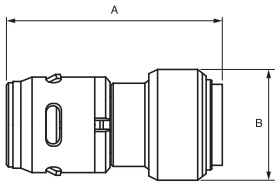
Code	Size	A (mm)	B (mm)
1544910	200mm	250	88.25
1544911	150mm	200	88.25

EvoPEX™ Fittings



Conversion coupling

Code	Size	A (mm)	B (mm)
1544912	16mm X DN15cu	53.50	30.90
1544913	20mm X DN20cu	60.15	30.90



>B< Press adaptors

Code	Size
1544001	16mm X 15mm
1544002	20mm X 20mm

EvoPEX™ Cutters

EvoPEX™ tube cutters

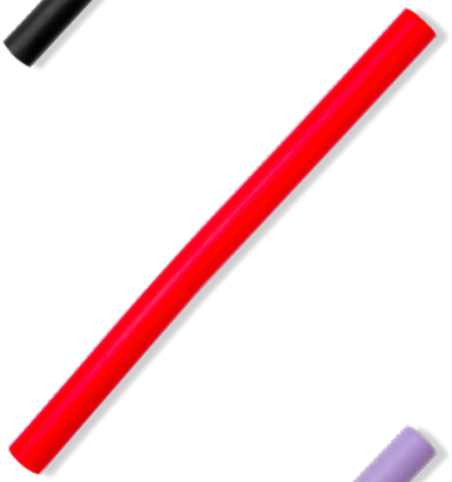
Code	Size
8022050	12mm - 25mm

The EvoPEX™ range is updated regularly,
for the latest range check out www.evopex.com.au

EvoPEX™ Pipes

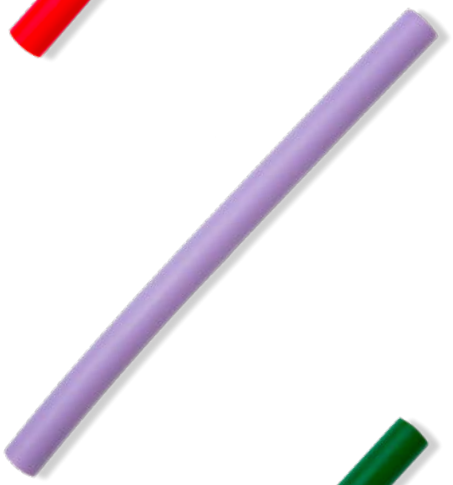
Potable water

Code	Size	Length
1537786	16mm	5m Straight
1537792	16mm	100m Coil
1537796	20mm	5m Straight
1537802	20mm	100m Coil



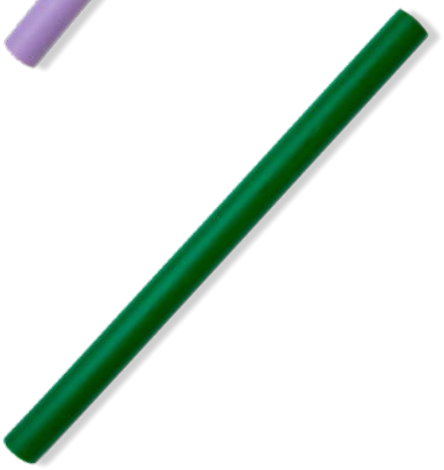
Hot water (red)

Code	Size	Length
1537789	16mm	5m Straight
1537793	16mm	100m Coil
1537799	20mm	5m Straight
1537803	20mm	100m Coil



Recycled water (lilac)

Code	Size	Length
1537788	16mm	5m Straight
1537795	16mm	50m Coil
1537798	20mm	5m Straight
1537805	20mm	50m Coil



Rain water (green)

Code	Size	Length
1537787	16mm	5m Straight
1537794	16mm	50m Coil
1537797	20mm	5m Straight
1537804	20mm	50m Coil

EvoPEX™ with its strong, irreversible cross linking properties, is the ideal pipe for use on both hot and cold domestic water plumbing systems.

EvoPEX™ PEX Pipes

Pressure loss and flow rates

The full range of EvoPEX™ PEX pipe is manufactured in Australia from high quality virgin materials and are approved to AS/NZS2492.

Cross Linked Polyethylene

The process of cross linking polyethylene ties the molecular chains of the material together into a three dimensional structure, improving the properties of the material and making it ideal for use with both hot and cold water plumbing systems.

Cross linking improves:

- Performance at high temperature.
- Chemical resistance.
- Resistance to cracking, creep and abrasion.

Moisture Cure

EvoPEX™ pipe is manufactured using the silane or “moisture cure” method and is produced in a simple two stage process.

1. Silane grafted polyethylene is combined with a catalyst and extruded into pipe.
2. The cross linking process is then performed by exposing the pipe to steam.

The moisture cure process results in a cross linked PEX pipe with enhanced properties of strength, flexibility, pressure rating, expansion, contraction which makes it ideally suited for hot and cold water applications.

Working Pressure

The performance of other products such as heaters and valves can cause temperature fluctuations that exceed 70°C, therefore systems should be run at 60°C to allow for this. Should temperature requirements need to exceed this, the manufacturer should be contacted.

Dimensions (in millimeters)

Nominal outside diameter	16.0	20.0
Avg. Wall thickness	2.15	2.45
Avg. Internal diameter	11.7	15.2

Testing of materials in contact with drinking water

EvoPEX™ PEX pipe and fittings are approved to AS/NZS4020.

Fire and Excessive Heat

» Keep PEX at a minimum of 500mm from sources of high heat such as heating appliances, flues from heating appliances etc.

» Keep PEX 1500mm from slow combustion type stoves (wet back type).

» Leave 300mm minimum space between PEX Pipe and recessed electric light fittings.

PEX should not be positioned within 150mm of gas or central heating vents or flues.

Where fire collars or the like are required, installers should contact the manufacturer of those products to ensure they have certification for PEX pipes.

EvoPEX™ PEX Pipes

Water Quality and Chlorine

Potable water is sourced in a variety of methods. The Australian Drinking Water Guidelines provides a framework to govern potable water. To achieve this chlorine and other agents are sometimes used as constituents of the water or for commissioning purposes.

In these situations the manufacturer must be consulted to ensure that the water composition will not affect the pipe or fittings. Due to the variance of water quality and treating the installer must ensure that the pipe and fittings suit the application.

Non Potable Water Pipes (not for human consumption)

The pipe is manufactured in accordance with AS/NZS2492 however it is coloured in a special lilac colour specified and branded in accordance with the authorities requirements for the distribution of water not suitable for human consumption.

The water is generally used for watering gardens and supply to cisterns.

Rain Water

Green pipe is available for rainwater applications.

Recirculating Hot Water Systems

Recirculating Hot Water Systems or Ring Mains are a good way to minimise the time it to takes to get hot water to an outlet on larger installations and can reduce water consumption. It is also known that the continual flow of water and exposure to high temperatures make this a very demanding application, whether copper, PEX, other piping materials. If not configured correctly, the entire plumbing system may have a significantly reduced service life.

The ensure the expected system service life and to cater for performance tolerances of boilers and other heat sources the following installing and water quality parameters must be followed on any recirculating hot water systems using the EvoPEX™ plumbing system in order to maintain the product warranty.

This allows the plumbing system designer to adequately size pipe diameters and fitting size/type for optimal performance in any given application.

» The maximum water temperature in the system is to be limited to 60°C.

» The water pressure within the ring main must be limited to 500kPa, as per AS/NZS3500.

» The pipe work and recirculating pumps must be sized to limit the maximum water velocity to the requirement of AS3500 for non-metallic piping. Where copper tube is part of the installation, the velocity restrictions for this material must be adhered to.

» A timer operated recirculation pump must be used with a maximum circulation time of 12 hours per 24 hour period. It is recommended that the pipe work be insulated and that the recirculating pump also have a thermostat control to further reduce stress on the system and minimise energy consumption.

» The pipe layout should be designed to use wide sweeping bends in the pipe with minimal fittings.

» Water quality conditions are typical of major Australian city potable water reticulation systems as defined in the Australian Drinking Water Guidelines.

Uncontrolled Heat Sources

In the case of uncontrolled heat sources, such as slow combustion stoves, room heaters, water heating coils, wet back boilers, solar or the like, PEX pipe should not be used. The primary flow and returns on these types of heaters should not be installed in PEX Pipe.

Secondary flow and returns must be controlled so that the temperature and pressure requirements are not exceeded.

In the interest of safe temperature and to protect the user, tempering valves should be installed in accordance with AS/NZS3500 4.2.

EvoPEX™ PEX Pipes

Pressure loss and flow rates

Fittings Equivalent Pipe Length

The Equivalent Length is a common method used in the plumbing industry to define and calculate pressure losses in a piping network. The Equivalent Length of a plumbing fitting describes length of straight pipe (same size as fitting) that is equivalent to the losses due to the fitting.

This allows the plumbing system designer to adequately size pipe diameters and fitting size/type for optimal performance in any given application.

Fitting size	Coupling	Elbow	Tee (Run)	Tee (Branch)
16mm	1.3	5.6	1.4	5.4
20mm	1.0	5.5	1.0	4.9

Example: Using two 16mm Elbow and one 16mm Coupling is Equivalent to adding (2 x 5.6) + 1.3 = 12.5m of 16mm pipe

Thermal Properties

PEX pipe will not melt. This is due to the irreversible cross linking process which has changed the chemical structure of the base polyethylene.

Property	Value
Ignition Temperature °C	380
Specific Heat (J/kg/K)	2300
Density (g/cm³)	0.94
Thermal Expansion Coefficient (x10-6/K)	14.22

Timber Frames

Drill holes through studs, plates etc. large enough so that the pipe can move freely through the holes to allow for expansion and contraction and pressure surges.

To avoid noises where pipes pass through studs, plates etc. that have large holes, consideration should be given to the use of a non aggressive compound, gromment or sleeve in the annular space in the stud or plate. Ensure that pipe is protected when bending against frames etc.

Steel Frames

Ensure that where a pipe passes through a steel frame a suitable sleeve or gromment is used to protect the pipe against raw edges so it can still move through.

PEX pipe specifications and dimensions

Thermal Linear Expansion

The table below represents expansion and contraction of PEX pipe in millimeters, resulting from a given change in temperature.

The table is calculated using the following equation: Change in pipe length = 0.1422 x Pipe length x Change in temperature.

Change in temperature °C

Length of pipe in metres	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
1	1.4	1.7	2.0	2.3	2.6	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.8	5.1	5.4	5.7
2	2.8	3.4	4.0	4.6	5.1	5.7	6.3	6.8	7.4	8.0	8.5	9.1	9.7	10.2	10.8	11.4
4	5.7	6.8	8.0	9.1	10.2	11.4	12.5	13.7	14.8	15.9	17.1	18.2	19.3	20.5	21.6	22.8
6	8.5	10.2	11.9	13.7	15.4	17.1	18.8	20.5	22.2	23.9	25.6	27.3	29.0	30.7	32.4	34.1
8	11.4	13.7	15.9	18.2	20.5	22.8	25.0	27.3	29.6	31.9	34.1	36.4	38.7	41.0	43.2	45.5
10	14.2	17.1	19.9	22.8	25.6	28.4	31.3	34.1	37.0	39.8	42.7	45.5	48.3	51.2	54.0	56.9
12	17.1	20.5	23.9	27.3	30.7	34.1	37.5	41.0	44.4	47.8	51.2	54.6	58.0	61.4	64.8	68.3
14	19.9	23.9	27.9	31.9	35.8	39.8	43.8	47.8	51.8	55.7	59.7	63.7	67.7	71.7	75.7	79.6
16	22.8	27.3	31.9	36.4	41.0	45.5	50.1	54.6	59.2	63.7	68.3	72.8	77.4	81.9	86.5	91.0
18	25.6	30.7	35.8	41.0	46.1	51.2	56.3	61.4	66.5	71.7	76.8	81.9	87.0	92.1	97.3	102.4
20	28.4	34.1	39.8	45.5	51.2	56.9	62.6	68.3	73.9	79.6	85.3	91.0	96.7	102.4	108.1	113.8
22	31.3	37.5	43.8	50.1	56.3	62.6	68.8	75.1	81.3	87.6	93.9	100.1	106.4	112.6	118.9	125.1
24	34.1	41.0	47.8	54.6	61.4	68.3	75.1	81.9	88.7	95.6	102.4	109.2	116.0	122.9	129.7	136.5
26	37.0	44.4	51.8	59.2	66.5	73.9	81.3	88.7	96.1	103.5	110.9	118.3	12 5.7	133.1	140.5	147.9
28	39.8	47.8	55.7	63.7	71.7	79.6	87.6	95.6	103.5	111 .5	119.4	127.4	135.4	143.3	151.3	159.3
30	42.7	51.2	59.7	68.3	76.8	85.3	93.9	10 2.4	110 .9	119.4	12 8.0	136.5	145 .0	153.6	162.1	170 .6
32	45.5	54.6	63.7	72.8	81.9	91.0	100.1	109.2	118.3	127.4	136.5	145.6	154.7	163.8	172.9	182.0
34	48.3	58.0	67.7	77.4	87.0	96.7	106.4	116.0	125.7	135.4	145.0	154.7	164.4	174.1	183.7	193.4
36	51.2	61.4	71.7	81.9	92.1	102.4	112.6	122.9	133.1	143.3	153.6	163.8	174.1	184.3	194.5	204.8
38	54.0	64.8	75.7	86.5	97.3	108.1	118.9	129 .7	140 .5	151.3	162.1	172.9	183.7	194.5	205.3	216.1
40	56.9	68.3	79.6	91.0	102.4	113.8	125.1	136.5	147.9	159.3	170.6	182.0	193.4	204.8	216.1	227.5

Precautions

Electrical

It is of the utmost importance that if a metallic pipe is being replaced or installed in part of its entirety by a plastic pipe or other non-metallic fittings or couplings, the requirements of AS/NZS 3500 must be followed.

No work should be carried out until the earth requirements have been checked by an electrical contractor and modified if necessary.

Chemicals

Drinking water provides life therefore any chemical exposure to pipes and fittings not only could contaminate the quality of our drinking water but also damage the pipes and fittings servicing the water supply.

During installation, throughout construction and thereafter any chemical based products such as primers, solvent cement, expansion foams, marking paints must not be used within a 1m proximity of drinking water pipes and fittings. Always check with the manufacturer before using PEX pipe other than for potable water.

Always check with the manufacturer if the pipework is to be installed in a known contaminated area, in contaminated soils or may be subject to chemical spills.

EvoPEX™ PEX Pipes

PEX pipe specifications and dimensions

Maximum flow rates allowable under the requirements of AS/NZS3500

Pipe Size	Max Flow (L/min) *
16mm	20
20mm	33

* Based on AS/NZS3500 maximum allowable velocity in pipe of 3m/s

Pressure or head loss through PEX pipe

This table below shows pressure loss through EvoPEX™ PEX Pipe at various flow rates per metre of pipe.

In order to determine the pressure loss through the pipe, the given flow rate for a particular portion of tube must be established (this may be done using the table provided in AS3500.1), along with the required pipe length used.

The pressure loss can then be read off from the table directly.

It is important to understand the information provided here is theoretical and based on new clean pipe. No allowance has been made for age or any abnormal conditions of the interior surface of the pipe.

Flowrate (L/min) vs Head Loss (kPa) - Per Metre of Pipe

Pipe Size	4L/min	8L/min	12L/min	16L/min	20L/min	24L/min	28L/min	32L/min
16mm	0.59	1.75	3.71	6.33	9.57			
20mm	0.14	0.52	1.09	1.86	2.82	3.95	5.25	6.72

Example 1: At 8L/min flowrate, the head loss is 1.75kPa for every metre of 16mm pipe run.

Example 2: At 8L/min flowrate, the total head loss of a pipeline using two 16mm elbow, one 16mm coupling together with 20M of 16mm pipe is equivalent to (12.5 + 20) x 1.75 = 56.9kPa.

Minimum Cold Bending Radii

DIAMETER	RADII
16mm	160mm
20mm	200mm
25mm	250mm
32mm	350mm

*Ten times the outside diameter of the pipe used

Bending of the pipe for change of direction is preferable to elbows however fittings will be required where sharp bends are necessary. Tighter bends can be achieved using a bend support.

Do not use pipes that have; kinks, cuts, deep scratches, squashed ends, imperfections or have been in contact with grease or tar substances. Any of the above should be cut out and replaced as these conditions may affect the integrity of the system.

PEX pipe specifications and dimensions

Thermal Insulation

R-Values of Common Plumbing Piping and Insulation.

"R-value = Thickness / Conductivity. See AS/NZS3500"

In certain areas, AS/NZS3500 requires a minimum insulation of R=0.3, no current piping material will meet this requirement without suitable thermal insulation.

	CONDUCTIVITY (K) W/M/K	OD MM	ID MM	WALL THICKNESS MM	R-VALUE K.M²/W
Air	0.02			6	0.300
Copper DN15	401	12.7	10.88	.91	0.0000023
Lagged Copper (Approx..)	Cu + Air + Plastic			~2	0.034
EvoPEX™ PEX 16MM	0.35	16	11.6	2.2	0.006
EvoPEX™ PEX 20MM	0.35	20	15.1	2.45	0.007
E-THERM™	0.034			8	0.235
Requirement of AS/NZS3500 DN15	0.03			9	0.300
Requirement of AS/NZS3500	0.0433			13	0.300

Environment

The EvoPEX™ PEX system has obtained a rating of 5 in the Ecoselector database maintained by Vicurban. For further information contact Vicurban or visit www.vicurban.com.au.

UV Resistance

EvoPEX™ pipe and fittings should not be installed in direct or reflected sunlight as the material may degrade with extended UV exposure. Where external installation is required, install the EvoPEX™ pre-conduited product or provide other similar UV protection.

Acoustic Properties

Comparative tests between DN16 PEX pipe and 15mm copper tube indicate an average noise reduction of up to 17dB (A) can be obtained when using PEX pipe.

EvoPEX™ Application suitability

EvoPEX™ pipe and fittings are suitable for burial in most applications; however care is required when using fittings in applications that require burial to ensure the correct installation practices are used and due care is given to any environmental factors that may have a detrimental effect on the life expectancy of the fittings and pipe.

The installation of EvoPEX™ pipe and fittings in applications that will require the burial or chased into concrete or brickwork must comply with all local plumbing code requirements. EvoPEX™ fittings are not suitable for use in areas where the soil is or may become contaminated* including the soil used for back filling. All EvoPEX™ fittings with brass bodies must have an impervious barrier between the fitting and the surrounding soil. Self-fusing, formaldehyde and chloride-free, fully cured silicone tape with a minimum thickness of 0.020" should be used for this purpose.

The soil used for back filling must be free of rocks, debris or any sharp objects that may cause damage to the fitting or pipe through impact or abrasion.

*Examples of contamination include, but are not limited to, petrochemicals (reclaimed service station sites), high levels of nitrogen compounds (this could be caused by animal waste or fertiliser that may be found in some agricultural applications), low pH levels (below pH 6), high pH levels(above pH 8), run off from land fill, formaldehyde compounds, and solvents. It should be noted that such contaminants have been known to migrate through plastic piping systems and contaminate the potable water supplied through these pipes.

Silicone Underground Wrap

Make an EvoPEX™ connection ensuring pipe is inserted to proper depth. While leaving the protective film in place, measure the amount of tape needed to completely wrap the fitting. To ensure a proper seal, overlap tape by 25mm past the end of the fitting on every end and 6mm– 12mm between/across the fitting.

Wrap the fitting by pulling the tape tight and removing the protective film. Completely cover the fitting. The tape will bond to itself within minutes and will cement to itself within a few hours forming an air and water tight seal.

Installation Requirements

Threaded connectors

Do not use anaerobic thread sealants (e.g. Loxeal 58-11, Loctite 567 & 577) on this system.

For threads it is recommended to use PTFE thread tape or pipe sealing cord. Avoid contact with other solvents e.g. Primer and Solvent Cement.

EvoPEX™ soldering

When soldering is required near an EvoPEX™ connection, make all solder joints first and then make the EvoPEX™ connections. The heat generated by soldering or brazing can be detrimental to EvoPEX™ pipe and fittings.

EvoPEX™ pipe cutters

EvoPEX™ pipe cutters are recommended to provide the best possible clean straight cut

Working pressure and temperature

EvoPEX™ pipe and fittings comply with AS/NZS2492 and AS/NZS2537 respectively. EvoPEX™ pipe is designed to operate with a working pressure of 1600 kPa at 20°C, and can operate continuously at 70°C with a maximum working pressure of 1000 kPa.

The performance of other products such as heaters and valves can cause temperature fluctuations that exceed 70°C, therefore systems should be run at 60°C to allow for this. Should temperature requirements need to exceed this, the manufacturer should be contacted.

Pressure testing EvoPEX™ systems

Always refer to AS/NZS3500 for pressure testing EvoPEX™ systems after installation. Testing must be completed prior to concealing fittings with concrete or by other means. Australian Standard AS/NZS3500 requires installers to commission installations by pressure testing to 1500kPa for 30 mins at 20°C.

Troubleshooting

The basic installation steps required for a water tight EvoPEX™ connection are detailed on p.9 under, 'How to make an EvoPEX™ connection.'

If a water leak is identified during or after pressure testing the fitting should be cut out and replaced. Even if the leak appears to have stopped after fitting rotation or further pipe insertion, don't risk it, remove it!

The most probable cause of a leaking fitting is either an angled or poor cut pipe, short pipe engagement or fitting contamination.

Clipping

AS/NZS 3500 recommend the following spacings;

Diameter	Horizontal	Vertical
16mm	600mm	1200mm
20mm	700mm	1400mm

The above is a guide only. Good plumbing practice requires that clipping be installed so that stress is not imposed on the joint. When bending close to a joint, clips should be placed near the fitting in a manner not to stress the joint.

Frequently Asked Questions

Q. Can an EvoPEX™ fitting be rotated on the pipe?

A. Yes, EvoPEX™ fittings can be rotated after assembly and will not affect the integrity of the joint.

Q. Are EvoPEX™ fittings approved for underground use?

A. EvoPEX™ fittings are suitable for burial in most applications; however care is required when using fittings in applications that require burial to ensure the correct installation practices are used and due care is given to any environmental factors that may have a detrimental effect on the life expectancy of the fittings and pipe.

Q. How long after installation can an EvoPEX™ system be pressure tested?

A. An EvoPEX™ system can be tested immediately once all connections are made. Pressure testing guidelines and requirements as per AS/NZS 3500.

Q. Are tools needed for the EvoPEX™ system ?

A. No tools are required to make a fitting connection. PEX cutters are required for cutting EvoPEX™ pipe. Proper pipe cutters and deburring tools are needed for other pipe types used with copper transition fittings.

Q. What are additional precautions to take during the installation process with EvoPEX™ fittings?

A. Do not use anaerobic thread sealants (e.g. Loxeal 58-11, Loctite 567 & 577) on this system. For threads it is recommended to use PTFE thread tape or pipe sealing cord. Avoid contact with other solvents e.g. Primer and Solvent Cement.

When using firestops or other expanding fillers, protect the EvoPEX™ fittings from contact by wrapping (polyethylene wrap - min. 2 layers) the fittings in areas where contact is possible.

Warranty

Terms and conditions for the EvoPEX™ product warranty can be found at evopex.com.au/warranty

Quick Tips

- Always test with water on completion and before covering the pipe as per the Australian Universal Standard AS/NZS 3500.
- If the pipe is difficult to insert or will not engage into the fitting, do not force the pipe. Remove and check for obstructions.
- All EvoPEX™ Radial Seals are per-lubricated during manufacture, no additional lubrication shall be used.

Find out more at
evopex.com.au

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