

VIALLI®

PEXa PIPES & FITTINGS



VIALLI Cross- Linked Polyethylene (PEXa) Pipes & Fittings

VIALLI PEXa is one of the European Product Produced by **FV PLAST**, which has long experience for manufacturing different types of Pipes System.

VIALLI PEXa pipe produced according to German DIN 16892, DIN 16893 Standards defined required Cross-link Degree Depending on the Crosslink method. The higher cross-linked Degree increases the material's Strength. That helps it to be resistant to higher pressure and temperature

VIALLI PEXa pipes allow the Distribution of pressurized hot & cold water both sanitary and heating system. The techniques of water distribution using PEXa pipes present many advantages in comparison to the traditional distribution systems using iron or copper pipes.

The **VIALLI** PEXa pipe is made from carefully selected raw material supplied by the best resin manufacturers.

VIALLI PEXa pipes are produced and approved as per European Water Regulations Advisory Scheme (WRAS)

The Cross-Linking Process

VIALLI PEXa pipe is a High density polyethylene pipe. The polyethylene consists of long macromolecules, which are cross-linked together by transverse bond in the cross-linking process. This process guarantees high mechanical. Thermal and chemical resistance value for the polyethylene pipes. Therefore **VIALLI** PEXa pipe are able to transfer hot and cold water under pressure for long period of time.



FREQUENTLY ASKED QUESTIONS

Q: Which is the raw material used to produce VIALLI PEX Pipe system?

ANSWER

Vialli using Borealis raw material to produce PEXa pipes under DIN 16892 & DIN 16893.

Q: What are production standards of VIALLI PEX?

ANSWER

Following standards are used for the production of VIALLI pipes and fittings:

Standard	Concern Production
DIN 16892	Cross linked high-density polyethylene PEXa pipes - General quality requirements and testing
DIN 16893	Cross linked high-density polyethylene PEXa pipes – Dimensions

Q: What is the service life (life span) of VIALLI PE-X piping system for different pressure groups?

ANSWER

PEXa pipes have a service life of 50 years according to DIN Standards for in house applications. To have detailed information for Different temperatures and pressure rates, please refer to page No. 8

Q: Are VIALLI PEXa pipes used for drinking water? Are they Hygienic/ Healthy?

ANSWER

PEXa products can safely be used for Drinking water. VAILLI PEXa products have got all international Approvals as well as the approvals of the sales territories. (WRAS)

Q: How is the pipe cutting recommended?

ANSWER

It is advised to used sharp cutting tools to cut the pipe with no burrs, VIALLI Provide cutting tools.

Q: How is the size of pipes and fittings measured?

ANSWER

Pipes size is measured by mm (millimeter) of its outer Dia. PEXa fittings are measured by mm (millimeter) of inner dia. and metal threaded fittings threaded side size is measured in inches.

Q: Are VIALLI PEXa compression fittings reusable?

ANSWER

YES It is so Easy to disconnect the fittings and do the required maintenance and re-connect it again.

Q: Is there a possibility of over- or under-tightening the fitting?

ANSWER

If you follow the instructions above, the risks of over- or under-tightening are very small. Since all systems must be pressure tested prior to being put into use, it is possible to tighten the fitting more if there's a leak at the connection point. In order to avoid over-tightening the compression nut, do not use excessive force and wrenches larger than indicated when installing the fitting.

Q: I see that the brass O-ring is split - is it normal?

ANSWER

Yes. When the compression nut is tightened, the open ends of the O-ring come together, exerting pressure upon the Vialli PEXa pipe, allowing it to be compressed over the fitting's barbs.

Q: What purpose do the black rubber O-rings over the fitting's barbs serve?

ANSWER

The O-rings are intended to prevent water leakage. The main purpose of the barbs is to prevent the fitting from popping out under pressure from the pipe. The O-rings should not be removed from the fitting, nor is it necessary to lubricate them in any way.

Fields of Applications

Vailli PEXa pipes are used for:

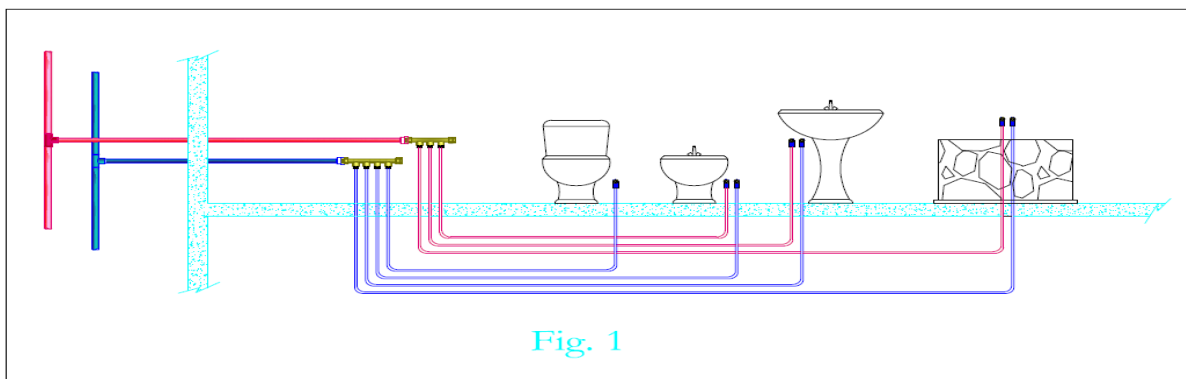
- ❖ Hot and Cold water Supply using the “Pipe in Pipe” Technique with Manifolds.
- ❖ Hot and Cold water Supply using the “Pipe in Pipe” Technique with PPR mains
- ❖ Traditional water supply Systems.

Vailli PEXa Advantages

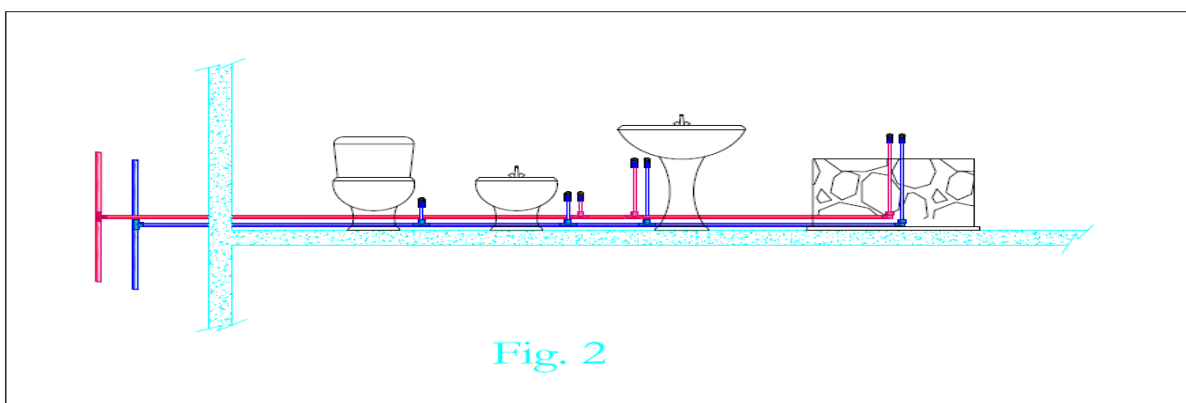
- ❖ Easy and fast Installation
- ❖ Easy inter exchangeable the inner pipe in case of failure.
- ❖ High Temperature & pressure resistant.
- ❖ Hygienically safe
- ❖ High Aging stability
- ❖ No Corrosion
- ❖ Does Not affect from acids
- ❖ Low friction coefficient
- ❖ Flexible

Types of installation

Double pipe Installation



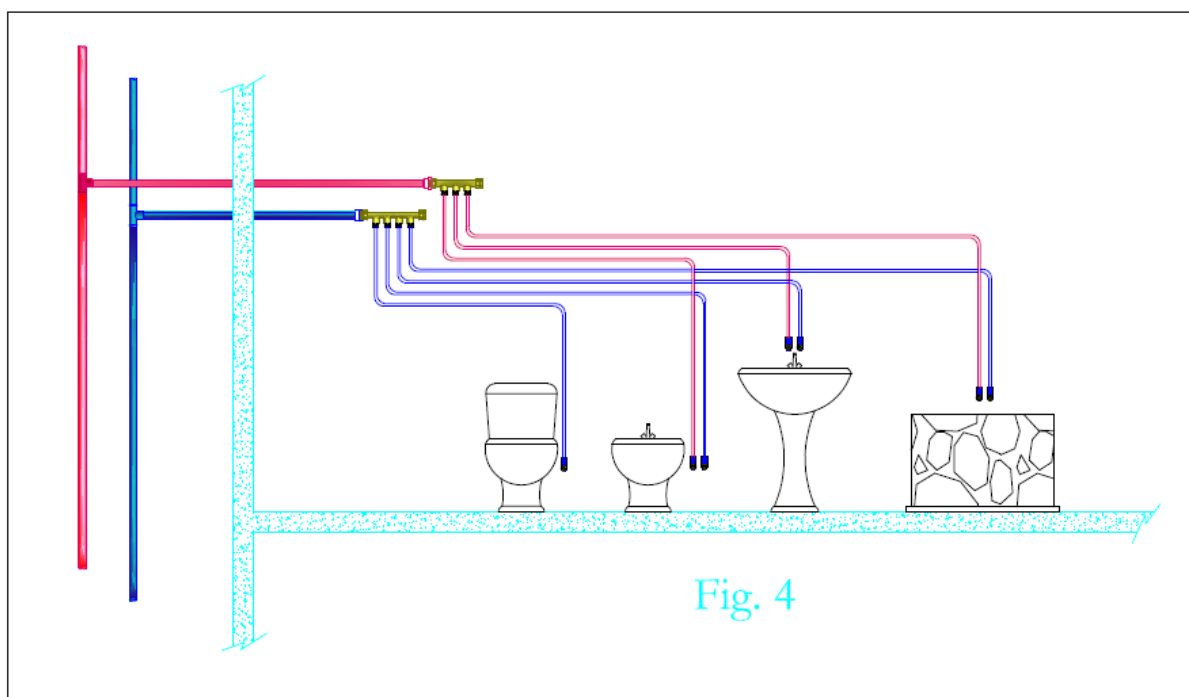
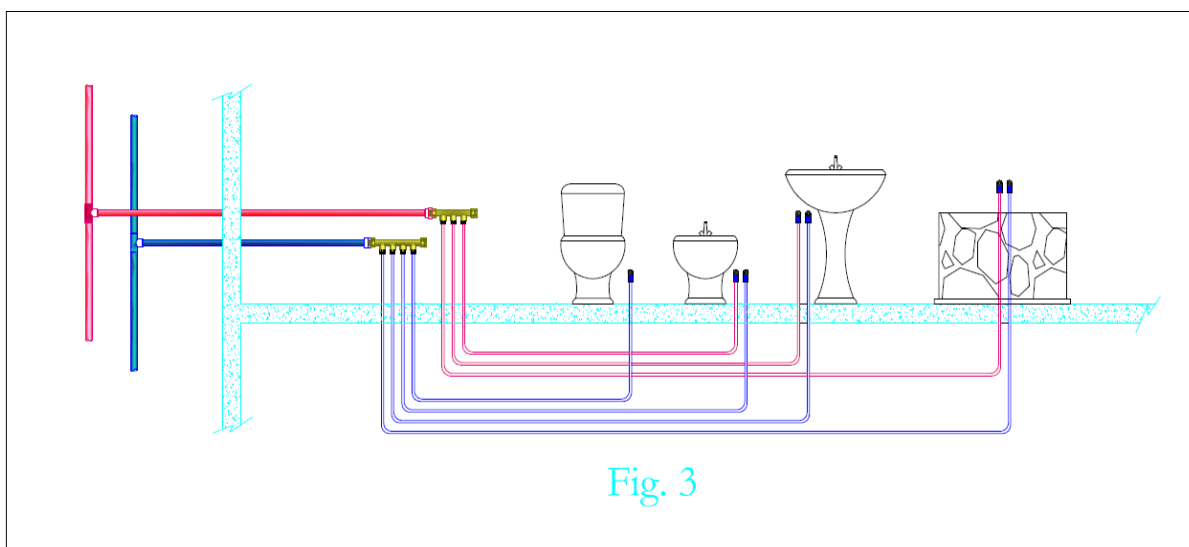
Single Pipe Installation



POLYETHYLENE CROSS LINKED WATER SUPPLY SYSTEM

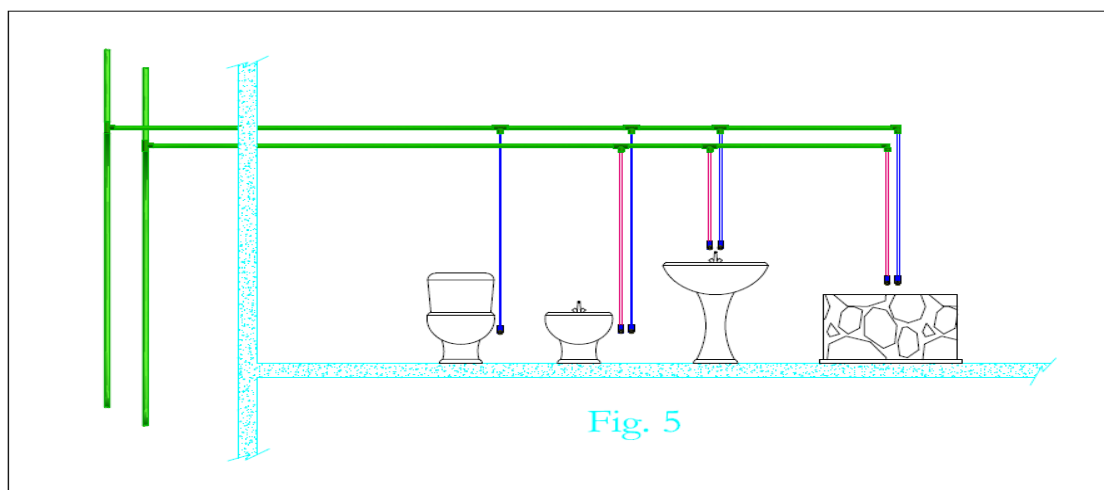
Pipe in Pipe system using manifolds:

This system has been inspired from the parallel electricity distribution systems, as each tap is supplied with two pipes, one for hot and the other for cold water directly from manifolds. The hot and cold water manifolds are installed in a cabinet embedded into the wall (Fig. 3) or directly fixed on the wall above the false ceiling (Fig.4). The hot and cold water taps involved in each circuit respectively.



Pipe in Pipe system using PPR Main Headers:

In this system, the taps are supplied with hot and cold water using PEXa pipes running inside corrugated conduits, directly from the PPR main installed above the false Ceiling (Fig. 5) This system combines the advantage of pliability and possibility of easy replacement of the damage pipes.



Types of PEX pipes

Standard	PEX Typ.	Definition	Cross linked Degree
DIN 16892	PEXa	Pipes cross-linked with peroxide	80-85%
DIN 16892	PEXb	Pipes cross-linked with Hydro silicon	75-80%
DIN 16892	PEXc	Pipes cross-linked w/ addition E-bombing	60%
DIN 16892	PEXd	Pipes cross-linked with Peroxide	60%

PEXa

Formed with the peroxide that is made into the raw material during the extrusion. Peroxide is the chemical that is activated by heat forms free from radicals from the cross-link. These kind of pipes are called PE-Xa cross-link pipes.

PEXb

Connected crossly to the polyethylene Xi an with hydro silicon during and after the process. These kinds of pipes are called PE-Xb cross-link pipes.

PE-Xc

Radiation (electron bombarding) is applied to the polyethylene to maintain cross-linked chains. These kinds of pipes are called PE-Xc cross-link pipes.

PE-Xd

The pipes that are maintained by cross linking the chains at the Azo (nitroamine) environment are called PE-Xd cross-linked pipes

Basic points to be considered in order to have safe and problem free mounting

Take in consideration of replacement in case of failure and mount horizontally and avoid the sharp twist while mounting.

- ❖ To avoid the damage from the metals like screw thread, remember to make the pipe's coordinates that go through a closed area.
- ❖ Install the pipes at temperature that is over the freezing point.
- ❖ In order to avoid rust or powder get into the pipes, keep the ends closed until the installation is finished.
- ❖ Keep the conjunctions points open in order to make adjustments.
- ❖ Do not cover the system until the tests are preceded.
- ❖ Do not exposed pipes to direct sunlight.
- ❖ Pass a productive sheath under the alum. This protective sheath will also act like an airbag and help heat isolation.
- ❖ Be careful of protection sheath being in spiral form in order not to cause cross section narrowing in order to determine the incoming and outgoing water directions, used red protective sheath for hot water and blue cold water.

Technical Data

Vialli PEX Technical Properties

Property	Temp.	Standard	Value	Unit
Density		DIN 1872	0.94	g/cm ³
Breaking off Resistance	20°C	DIN 53455	290-300	Kg/cm ³
Impact Strength		DIN 53453	No Break	Mn.j.mm ³
Breaking off Elongation	20°C	DIN 52456	300-350	%
	100°C	DIN 53455	500-600	%
Elasticity Module		DIN 53457	600	N/mm ²
Surface Resistance		DIN 53453	Ω	>10 ¹²
Operating Temperature			-100° C+100°C	C
Liner Expansion coefficient	20°C	DIN 53752	1.4x 10 ⁻⁴	°C
	100°C	DIN 53752	2.05x 10 ⁻⁴	°C
Softening Temperature			135	°C
Heat Conductivity		DIN 52612 Pr1	0.41	W.K ⁻¹ .m ⁻¹
Specific Heat			0.50	Cal/gr

OPERATING PRESSURE TABLE

O.D	Thickness (PN20)	Density Kg/m
16	2.2	0.095
20	2.8	0.153
25	3.5	0.238
32	4.4	0.382
40	5.5	0.594
50	6.9	0.926
63	8.7	1.47
75	10.3	2.07
90	12.4	2.98
110	15.1	4.44

Vialli PEXa Behavior According to DIN 16892 under Long-Term Stressing.

The Service life of Vialli PEXa depends on the Internal hoops Stress over Time Subject to Temperature.

$$\int = \frac{p \times [ds]}{20xs}$$

20xs

s= hoop Stress [N/mm² or MPa]

P= Internal Pressure (Bar)

D= Outer Diameter of Pipe mm

S= Wall Thickness of Pipe

Permissible Working Pressure of Vialli PEX Pipes (DIN 16893) With safety factor 1.2

Service Life Year	Temperature (°C)	Pressure Rate / Bar PN 20
1	20	21.7
10	20	21.0
50	20	20.0
1	40	17.5
10	40	16.9
50	40	16.5
1	60	13.8
10	60	13.1
50	60	12.9
1	95	9.0
10	95	8.6
50	95	8.2

VIALLI DZR BRASS FITTINGS

GENERAL INFORMATION

Dezincification resistant brass (DZR Brass) is essentially a leaded arsenical brass with a duplex structure. As its name suggests it was originally developed to provide good resistance to dezincification type corrosion which is experienced by normal hot working brasses.

As well as the improved dezincification also offers good strength levels, is readily machined and easily hot forged. Its primary usage over the years has been for water fittings that are produced by hot stamping and machining

Designed for use with compression fittings (offered separately), that are manufactured in compliance.

MANUFACTURING TECHNOLOGIES

Brass parts and components can be casting, forging, hot extrusion and cold drawing.

MECHANICAL PROPERTIES

Forging Brass

Alloy	Physical Properties	Snerv N/mm ²	Car. Rott. N/mm ²	Allung %	Durezza HB
CW617N	H080	>(120)	>(360)	>(20)	>(80)

Brass Bar

Alloy	Physical Properties	Snerv N/mm ²	Car. Rott. N/mm ²	Allung %	Durezza HB
CW614N	R500	(390)	>500	>8	(150)
CW614N	R430	(250)	>430	>10	(120)

MACHINABILITY

The workability and adaptability of brass to the automatic machines makes it one of the most used material in the Fittings business. The high cutting speed reduces the manufacturing timeline reducing evidently, the production cost. The components surface is smooth allowing finishing process as polishing and coating at a very reasonable price.

CORROSION RESISTANCE

The brass has excellent resistance to corrosion when it is used in hydro thermo sanitary systems. Water with high concentration of chlorine can put under stress the brass and cause corrosion. This phenomenon is called dezincification: selective leaching of zinc from brass alloys. Containing more than 15% zinc in presence of oxygen and moisture. In this particular case is better to use a Dezincification resistant brass (**DZR**). The DZR, (CuZn36Pb2asCW602N), material has been developed for using pipe fittings with potable water.

METAL RESIDUES IN DRINKING WATER

The percentage of lead in **DZR Brass** is considerably low, so all **DZR Brass** components are designed to respect the highest health and safety standards.

VIALLI BRONZE-GUN METAL- FITTINGS

GENERAL INFORMATION

Bronze is one of the oldest metal alloys, consisting primarily of copper, usually with tin as additive. Compositions vary, but most modern bronze is 88% copper and 12% tin. Bronze may also contain manganese, aluminum, nickel, phosphorus, silicon, arsenic, or zinc

Vialli Bronze fittings provide a tight seal when installed correctly. Vialli Bronze fittings are used in many applications including plumbing, heating systems, hot water plumbing, pneumatic and marine type construction. The Vialli Bronze fittings are resistant from harmful effects of corrosion when in contact with fresh or salt water, that is polluted with mineral acids.

Vialli Bronze-Gun Metal – PEXa pipe fittings are the best durable Choice

MANUFACTURING TECHNOLOGIES

Parts and components can be obtained only by casting or by a mechanical process of semi-finished metal removal coming from casting. Therefore the result is a rough and uneven surface.

MECHANICAL PROPERTIES

Forging Bronze

Alloy	Physical Properties	Snerv N/mm ²	Car. Rott. N/mm ²	Allung %	Durezza HB
CW617N	Fuso	>(90)	>(220)	>(16)	(70)

MACHINABILITY

The bronze, despite the presence of lead has a capacity of adapting to automatic machine. The components surface, particularly the one manufactured by casting, presents some imperfections and roughness, which cause pressure drop. The galvanic treatment leaves the surface less bright and polished.

CORROSION RESISTANCE

The bronze has, general a very good resistance to the corrosion. The bronze has a tolerance to the corrosion cracking, but it is totally exempt from this phenomenon

METAL RESIDUES IN DRINKING WATER

All Bronze components are designed to respect the highest health and safety standards.

CERTIFICATES



RECOMMENDATIONS

Heating the pipe with naked flame or with any heating element of high temperature should not be used, as this will damage the pipe and can cause Deformation.

It is a must to protect a visible pipe from ultra violet rays and Direct sunlight, as this may change the chemical- physical features of the PEXa material and cause it to lose its characteristics.

Do Not Use with PEX

Liquid-based leak detectors, adhesive tape, pipe dope, linseed oil, threading compound, putty, mineral oil, petroleum products, metal pipe hangers.

Leave Excess Tubing

Leave extra tubing at the beginning and end of runs to simplify connection to manifolds and end points and to make connections without straining the tubing or connection. Immediate connection to a manifold or transition fittings and then making the run reduces the chance of cutting tubing too short.

Identify Tubing Runs

Clearly and permanently mark each run at each end to identify the fixture it supplies (hot or cold water, bathroom sink, kitchen sink, basement toilet, etc). Do not apply adhesive labels to PEXa pipe.

PEXa and Concrete

Tubing installed within or under concrete slabs should be continuous lengths of PEXa tube. Do not install fittings beneath concrete.

Minimum Bend Radius

Do not bend tube too tightly. The minimum recommended bend radius is six times the tube size (i.e. ½" tube = 3" bend radius). When making a 90° turn, use bend supports.

Manifold Installation Warnings:

- ❖ Before and after installation, ensure manifold is kept in a location with limited exposure to chemicals, paint, hazardous materials, debris, excessive heat, direct flame, or moving objects that could cause damage.
- ❖ The manifold should be located in an area that will not be covered permanently with sheetrock, plywood, or paneling.
- ❖ Manifolds should not be installed or kept in a location exposed to freezing temperatures.
- ❖ Do not use pipe dope or tape to seal any fittings on the manifold.
- ❖ Care should be taken not to over or under tighten fittings.
- ❖ Distribution lines must connect to the connecting valves in a straight line perpendicular to the manifold as to avoid bending stress on the valves.
- ❖ The installer must also meet all qualifications required by the state and/or local administrative authority administering the provisions of the code where PEXa piping is installed.

INSTALLATION RECOMMENDATION



Cut the pipe size

Make sure the blade of the pipe is angled perfectly straight across the pipe. A clean straight cut makes sure it will connect properly to the fitting.



Choose the fittings

Chose the correct fittings according to PEXa pipe Dimension



Sleeve the nut and olive

Slide the nut over the pipe followed by the olive as indicated.



Insert fitting body

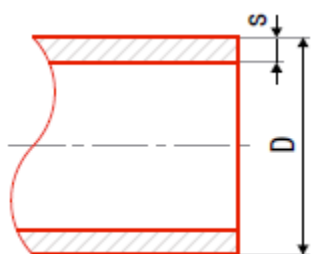
Check O-rings on the main body are intact and free of dirt. Insert the main body of the fitting into the pipe. It should go in easily, if it is stiff then pipe. Is not fully beveled.



Tighten with spanners

Slide the nut, olive and fitting together and Tighten off with spanners. This completes the fitting.

PEX PRODUCTS



1.) PEXa Cross linked pipe

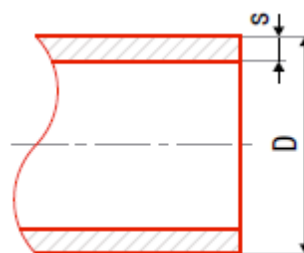
Formed with the peroxide that is made into the raw material during the extrusion. Peroxide is the chemical that is activated by heat forms free from radicals from the cross-link. These kind of pipes are called PE-Xa cross-link pipes.

Size (D,s)	Description	Art. No.
16mm (1.8mm wall thickness)	PEXa	10101
16mm (2.0mm wall thickness)	PEXa	10102
16mm (2.2mm wall thickness)	PEXa	10103
16mm (2.3mm wall thickness)	PEXa	10104
20mm (1.9mm wall thickness)	PEXa	10201
20mm (2.0mm wall thickness)	PEXa	10202
20mm (2.5mm wall thickness)	PEXa	10203
20mm (2.8mm wall thickness)	PEXa	10204

2.) PEXb Cross linked pipe

Connected crossly to the polyethylene Xi an with hydro silicon during and after the process. These kinds of pipes are called PE-Xb cross-link pipes.

Size	Description	Art. No.
16mm (1.8mm wall thickness)	PEXb	20101
16mm (2.0mm wall thickness)	PEXb	20102
16mm (2.2mm wall thickness)	PEXb	20103
16mm (2.3mm wall thickness)	PEXb	20104
20mm (1.9mm wall thickness)	PEXb	20201
20mm (2.0mm wall thickness)	PEXb	20202
20mm (2.5mm wall thickness)	PEXb	20203
20mm (2.8mm wall thickness)	PEXb	20204



3.) Corrugated Conduit

Corrugated Conduit is a flexible conduit which can be used in a host of different applications and add extra protection also indicates the PEX pipe if it's hot (red) & cold (blue)

Size	Description	Art. No.
25mm	Corrugated Conduit (red)	30101
25mm	Corrugated Conduit (blue)	30102
32mm	Corrugated Conduit (red)	30103
32mm	Corrugated Conduit (blue)	30104



4.) Female Elbow & Comp. Fitt. (DZR or Bronze)

Elbow is made of a lead-free DZR brass and is an easy to install, low-cost solution to connect to PEX tubing



Size	Description	Art. No.
16mm x 2.2 mm x ½"	Female Elbow	21101
20mm x 2.8mm x ½"	Female Elbow	21102
20mm x 2.8mm x ¾"	Female Elbow	21103

5.) Elbow Casing

Plastic box for holding Elbows for easy PEX tubing Connection

Size	Description	Art. No.
25mm	Elbow Casing	211011
32mm	Elbow Casing	211012



6.) PEX MALE Adaptor (DZR or Bronze)

A special adaptor to connect PEX pipe & Water Source

Size	Description	Art. No.
16mm x 2.2mm x ½"	PEX Adaptor	21201
20mm x 2.8mm x ½"	PEX Adaptor	21202
20mm x 2.8mm x ¾"	PEX Adaptor	21203



7.) PEX Female Adaptor (DZR or Bronze)

A special adaptor to connect PEX pipe & Water Source

Size	Description	Art. No.
16mm x 2.2mm x ½"	PEX Female Adaptor	21301
20mm x 2.8mm x ½"	PEX Female Adaptor	21302
20mm x 2.8mm x ¾"	PEX Female Adaptor	21303



8.) Manifold with Valves (DZR or Bronze)

PEX manifolds are a new method for residential water distribution, gaining acceptance in the home building industry. Manifold plumbing systems are control centers for hot and cold water that feed flexible PEX supply lines to individual fixtures.

Size	Outlet	Art No.
16mm x 2.2mm x ¾"	2,3 & 4 outlet	21401
20mm x 2.8mm x 1"	2,3 & 4 outlet	21402
16mm x 2.2mm x 1 ¼"	2,3 & 4 outlet	21403
20mm x 2.8mm x 1 ½"	2,3 & 4 outlet	21404





9.) Manifold (DZR or Bronze)

PEX manifolds are a new method for residential water distribution, gaining acceptance in the home building industry. Manifold plumbing systems are control centers for hot and cold water that feed flexible PEX supply lines to individual fixtures.

Size	Outlet	Art No.
16mm x 2.2mm x $\frac{3}{4}$ "	2,3 & 4 outlet	21501
20mm x 2.8mm x 1"	2,3 & 4 outlet	21502
16mm x 2.2mm x 1 $\frac{1}{4}$ "	2,3 & 4 outlet	21503
20mm x 2.8mm x 1 $\frac{1}{2}$ "	2,3 & 4 outlet	21504

10.) Female End Cap-Manifold (DZR or Bronze)

They are used to seal the female end of a manifold.

Size	Description	Art No.
$\frac{3}{4}$ "	Female End Cap	21601
1"	Female End Cap	21602
1 $\frac{1}{4}$ "	Female End Cap	21603
1 $\frac{1}{2}$ "	Female End Cap	21604



11.) Male End Cap-Manifold (DZR or Bronze)

They are used to seal the female end of a manifold.

Size	Description	Art No.
$\frac{3}{4}$ "	Male End Cap	21701
1"	Male End Cap	21702
1 $\frac{1}{4}$ "	Male End Cap	21703
1 $\frac{1}{2}$ "	Male End Cap	21704

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