

THE SOLUTION



PEX-GARD™

*FLEXIBLE PIPING SYSTEMS
FROM PERMA-PIPE®*

**PREINSULATED FLEXIBLE PIPING
FOR DISTRIBUTION OF
HOT AND COLD FLUIDS**

The Flexible Pipe Solution



PEX-GARD™ APPLICATIONS

- Snow Melt**
- District Heating**
- District Cooling**
- Domestic Hot Water**
- Potable Water**
- Correctional Facilities**
- Universities**
- Hospitals**
- Housing Developments**

PEX-GARD™ by PERMA-PIPE® is designed for fast economical installation due to its extremely long laying lengths and ability to be routed around obstructions. PEX-GARD is available in maximum coiled lengths from 164 feet to 1,180 feet, depending on pipe diameter. These long lengths mean many applications can be installed without underground field joints. With fewer field joints, the trench width and cost can be kept to an absolute minimum.

Because of the very small bend radius possible with PEX-GARD, it is often possible to select the optimum routing between two points. Bending PEX-GARD eliminates the need for costly and time consuming welded elbows. With PEX-GARD you simply bend the pipe around corners.

With PEX-GARD, thermal expansion is absorbed within the pipe, therefore, expansion loops or joints are not required.

PEX SERVICE PIPE

PEX-GARD service pipe is a corrosion proof peroxide cross-linked polyethylene (PEX) that conforms to DIN standards 16892 and 16893.

PEX pipe has an oxygen diffusion barrier of EVAL (Ethylvenylalcohol) that prevents oxygen from diffusing through the wall of the pipe into the liquid. This barrier prevents corrosion of valves and other piping system components.

PEX-GARD service pipe is rated at 180 psig at 70°F and 90 psig at 200°F. Pressure ratings at other temperatures are available from PERMA-PIPE.

PEX-GARD is available as a single insulated pipe or as a special order, dual insulated pipe, where the supply and return pipe are contained in a single insulated jacket.

POLYURETHANE INSULATION

PEX-GARD insulation is fluorocarbon free, closed cell polyurethane foam. This highly efficient insulation has a thermal conductivity (K-factor) of 0.19 Btu-in/hr-ft²-°F and minimum 90% closed cell content.

POLYETHYLENE JACKET

PEX-GARD jacket is smooth wall polyethylene (PE). It is seamlessly extruded around the polyurethane foam. Polyethylene is ideally suited for this application due to its flexibility, impact resistance and chemical inertness.

PEX-GARD Engineering Information

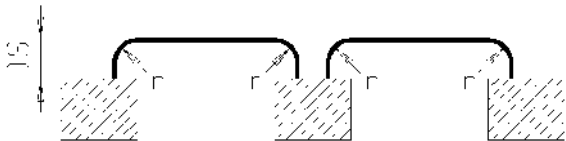
Nominal Pipe Size Inches	Service Pipe Diameter Inches (mm)	Service Pipe Wall Thickness Inches (mm)	Jacket Diameter Inches (mm)	Heat Loss/Gain (Btu/hr/ft)*			Maximum Coil Length Feet (m)	Minimum Bending Radius Feet (m)	Empty Weight Lb/ft (kg/m)
				30°F Δ T	100°F Δ T	150°F Δ T			
1	1.26 (32)	.114 (2.9)	2.95 (75)	3.6	11.9	17.8	1,180 (360)	2'-8" (0.8)	2.50 (1.05)
1.5	1.97 (50)	.145 (3.7)	4.33 (110)	3.8	12.6	18.9	492 (150)	3'-0" (0.9)	4.60 (2.10)
2	2.48 (63)	.228 (5.8)	4.92 (125)	4.3	14.4	21.6	328 (100)	3'-4" (1.0)	6.05 (2.75)
3	3.54 (90)	.323 (8.2)	6.30 (160)	5.1	17.0	25.4	164 (50)	4'-0" (1.2)	10.34 (4.70)
4	4.33 (110)	.393 (10.0)	7.09 (180)	5.9	19.7	29.5	164 (50)	4'-8" (1.4)	13.75 (6.25)

*Heat Loss/Gain values based on two foot burial depth and 12.0 Btu-in/hr-ft²-°F soil thermal conductivity.

System Design & Accessories

Building to Building

Typical PEX-GARD routing design

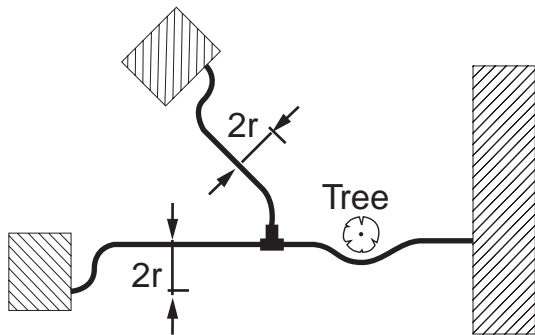


Tee Assembly Kit



Multiple Building

Typical PEX-GARD routing for systems which require a branch connection

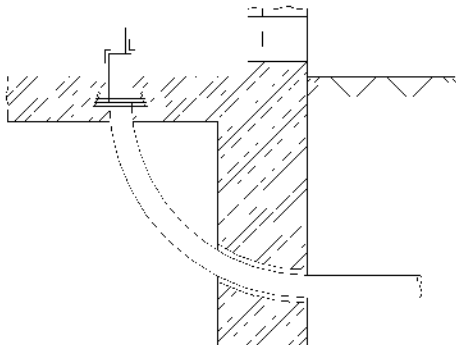


Field Joint Assembly Kit



Building Entry Detail

Typical PEX-GARD building entry with pipe sleeve in place



Termination Fitting Assembly Kits



PEX-GARD™

PEX-GARD Guide Specifications

SYSTEM REQUIREMENTS

The preinsulated (heating hot water, domestic hot water, chilled water or potable hot water) piping system shall be a flexible and bonded design. All components of the piping system, service pipe, insulation and jacket shall perform as a single unit. The piping system design shall not allow for the components to be separated. All materials of construction shall be noncorrosive. The system shall not require expansion compensation design. The system shall be designed to minimize the number of field joints.

The system supplied shall be complete with all couplings, field joint insulation kits, branch tees, termination fittings and end seals. All service pipe components shall be NSF rated.

The piping system shall be supplied in coiled lengths with maximum coil length based on the service pipe size as follows:

Service Pipe	Max. Coil Length
1"	1,180 feet
1.5"	492 feet
2"	328 feet
3"	164 feet
4"	164 feet

SERVICE PIPE

The service pipe shall be peroxide cross-linked polyethylene (PEX) in accordance with DIN 16892 and 16893. The service pipe shall have an organic oxygen-diffusion barrier of red

EVAL (Ethylvenylalcohol) in accordance with DIN 4726. The service pipe shall be rated at 180 psig at 70°F and 90 psig at 200°F.

INSULATION

The insulation shall be a bonded closed cell polyurethane foam with a maximum thermal conductivity (K-factor) of 0.19 Btu-in/hr-ft²-°F and minimum 90% closed cell content. The insulation shall completely fill the annular space and form a bond to both the service pipe and polyethylene outer jacket. Systems that are of a non-bonded construction shall not be allowed.

OUTER JACKET

The outer jacket material shall be extruded polyethylene designed for H2O loading at a minimum burial depth of two feet. The jacket shall be extruded over the insulation. Systems with the outer jacket not directly extruded over the insulation shall not be allowed.

END SEALS

All terminations of the piping system shall have a heat shrinkable polyethylene end seal. The end seal shall be field installed.

INSTALLATION

The piping system supplier shall provide on site technical assistance for critical periods of installation. All piping shall be installed in accordance with the PEX-GARD installation manual.



PERMA-PIPE[®]

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