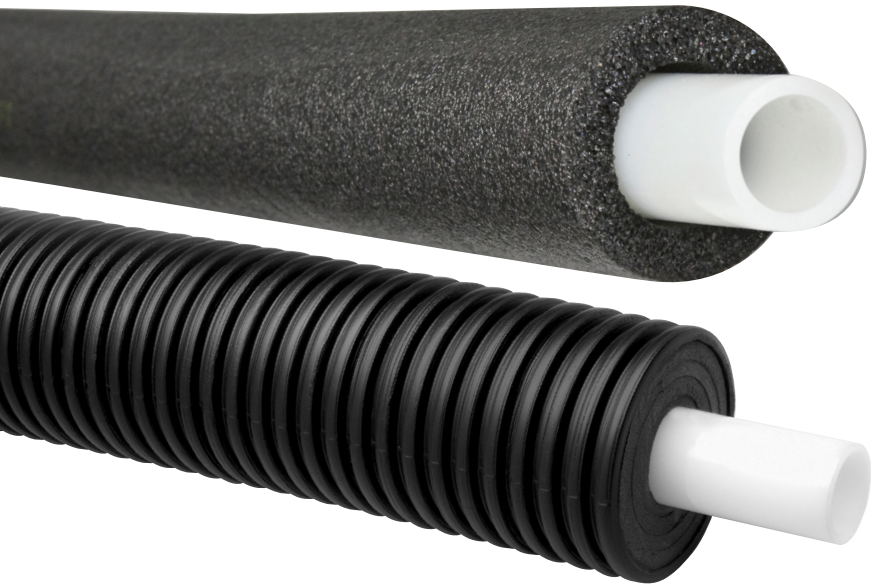


uponor

ECOFLEX®
PRE-INSULATED
PIPE SYSTEMS

**ECOFLEX VS.
PRE-INSULATED
PEX PIPE**

COMPARISON SHEET

Ecoflex® vs. Pre-insulated PEX Pipe

This document details the performance of Uponor's three different pipe offerings for direct-burial applications.

- Ecoflex® pre-insulated pipe
- Pre-insulated Wirsbo hePEX™ and Pre-insulated Uponor AquaPEX® pipe
- Wirsbo hePEX and Uponor AquaPEX bare-PEX pipe

All three options are appropriate for direct-burial applications, but each has different performance capabilities.

Direct-burial Application Considerations

When burying pipe in the ground, there are a few things to consider.

- What is the system temperature (fluid temperature)?
- What insulation thickness is required by code?
- Is there any risk for the pipe being exposed to high water table or flooding?

For areas with high water table or risk of flooding, the best option is Ecoflex pre-insulated pipe. The Ecoflex system is designed to be buried in the ground. The flexible, corrugated HDPE jacket surrounding the polyethylene (PE) foam insulation and PEX service piping, as well as the system accessories, are designed to create a watertight assembly.

Depending on energy code requirements, the piping choice may differ.

Example

The table below is based on Table C403.2.8 from the 2012 IECC (International Energy Conservation Code). Use this table to determine the required insulation thickness based on the operating temperature and pipe size for a project.

Uponor is using a PE foam with a conductivity of 0.25 Btu·in/(h·ft²·F).

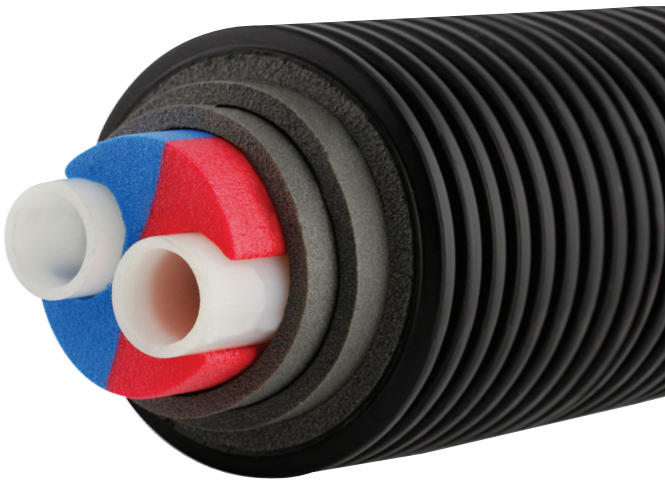
Fluid Operating Temperature Range and Usage (°F)	Insulation Conductivity		Nominal Pipe Size (inches)		
	Conductivity Btu·in./(h·ft²·°F)	**Mean Rating Temperature** (°F)	**< 1**	**1 to < 1½**	**1½ to < 4**
141-200	0.25-0.29	125	1.5	1.5	2.0
105-140	0.21-0.28	100	1.0	1.0	1.5
40-60	0.21-0.27	75	0.5	0.5	1.0
< 40	0.20-0.26	75	0.5	1.0	1.0

Note: For direct-burial heating and hot-water system piping, it is acceptable to reduce thicknesses by 1½" (38mm), but thicknesses should not be less than 1" (25mm).

Based on the insulation thickness required by code, choose the appropriate Uponor product from the tables below. If using supply/return piping for a heating or cooling application, consider Ecoflex Twin. Ecoflex Twin offers better heat-loss performance compared with two Ecoflex Single pipes.

Pipe Dimension	Ecoflex Single			Pre-insulated Pipe				Bare PEX
	Jacket Dimension	Insulation Thickness (inch)	Heat Loss Per Foot (Btu/h•ft)	Heat Loss Per Foot (Btu/h•ft)				Heat Loss Per Foot (Btu/h•ft)
				Insulation Thickness				
				½"	1"	1½"	2"	
¾"	2.7"	0.71	12.18	13.70	10.65	9.20	8.33	27.82
1"	2.7"	0.59	14.76	15.51	11.99	10.30	9.27	29.86
1"	5.5"	1.85	9.58	15.51	11.99	10.30	9.27	29.86
1¼"	5.5"	1.73	10.77	17.18	13.25	11.32	10.14	31.71
1½"	5.5"	2.13	10.78	18.73	14.43	12.29	10.98	33.41
2"	6.9"	1.93	12.81	21.60	16.66	14.12	12.54	36.52
2½"	6.9"	1.54	15.84	24.21	18.73	15.84	14.02	39.35
3"	7.9"	1.93	15.76	26.65	20.69	17.47	15.42	41.99
3½"	7.9"	1.65	18.39	28.94	22.57	19.04	16.78	44.49
4"	7.9"	1.42	21.25	31.13	24.37	20.56	18.09	46.87

Pipe Dimension	Ecoflex Single		
	Jacket Dimension	Insulation Thickness (inch)	Heat Loss Per Foot (Btu/h•ft)
2" x 1"	6.9"	1.95	10.82
2" x 1¼"	5.5"	1.05	15.55
2" x 1¼"	6.9"	1.72	12.68
2" x 1½"	6.9"	1.50	14.77
2" x 2"	7.9"	1.49	17.63
2" x 2½"	7.9"	1.05	23.18



1. Insulation conductivity of 0.25 (Btu•in)/(hr•ft²•°F)
2. 180°F (82.2°C) supply water temperature
3. 140°F (60°C) return water temperature (for Twin pipes only)
4. 50°F (10°C) ground temperature
5. 24 inch burial depth
6. Soil conductivity of 1.44 (Btu•in)/(hr•ft²•°F)

When burying Pre-insulated Wirsbo hePEX or Pre-insulated Uponor AquaPEX pipe (without a jacket) there will be some compression of the PE foam which will reduce the foam thickness. If the product is buried two feet underground, the compression will be around 8 to 10 percent, depending on soil conditions. Additional insulation can be used to compensate for this compression.

Important Tips

- Use Uponor Ecoflex for underground piping installations where there is high water table or a risk of flooding. Additionally, use Ecoflex Twin products to improve heat-loss performance.
- If installing pipe in dry soil conditions that are above the water table, it is acceptable to use Pre-insulated Wirsbo hePEX or Pre-insulated Uponor AquaPEX. Be sure to take into consideration compression of the foam insulation, which in most cases means additional insulation or additional installation steps.
- According to the 2012 IECC, there is no need for insulation where fluid temperatures are between 60°F (15.6°C) and 105°F (40.6°C); therefore, it is acceptable to use bare-PEX pipe.

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