



uponor

PRE-INSULATED
PIPE SYSTEMS
PRODUCTS AND
APPLICATIONS

BROCHURE

Featuring Ecoflex[®] pre-insulated pipe –
a flexible, sustainable, durable solution



Uponor Pre-insulated Pipe Systems

For Hydronic Heating and Cooling Applications

Uponor Pre-insulated Pipe Systems feature Ecoflex®, now available in ASTM sizes.

Designed for fluid transfer in a variety of hydronic heating, cooling and potable water applications, Ecoflex pipes are dependable, cost-effective and energy saving.

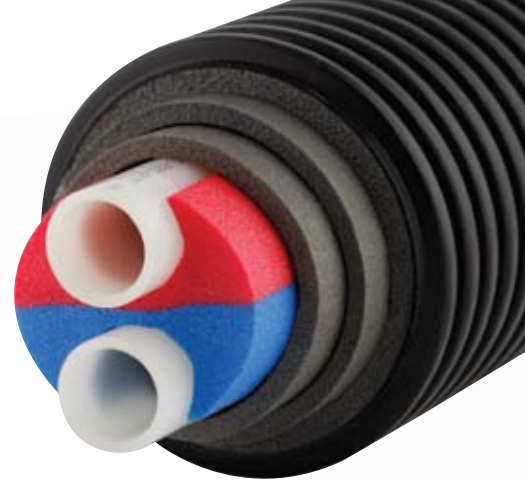
Service pipes are made from Engel-method crosslinked polyethylene (PEX) or high-density polyethylene (HDPE) — and protected by multi-layered insulation with a waterproof, corrugated HDPE jacket.

Lightweight and flexible, Ecoflex pipes by Uponor install easily and quickly in commercial and residential applications — even over obstacles and around corners. A special oxygen diffusion barrier on the PEX piping surface keeps oxygen from penetrating the piping walls and entering the circulating fluid.

A proven product with more than 90 million feet of pipe installed worldwide, this pre-insulated pipe provides consistent, uninterrupted performance.

Recognized for its ability to stand up to harsh environments, Ecoflex is virtually maintenance-free. This is especially important because Ecoflex usually involves an underground installation. With coil lengths available up to 600 feet, Ecoflex practically eliminates the need for underground joints — resulting in seamless runs of piping.

Uponor pre-insulated pipe has many commercial and residential applications — predominately in heating, cooling and potable water systems for large-scale complexes, such as schools and colleges, resorts, hotels, hospitals, correctional facilities and housing developments.



Radiant heating, plus snow and ice melting systems, also use Ecoflex as the pipe distribution system of choice. Outdoor furnace and boiler contractors, as well as homeowners, depend on our products for a trouble-free, energy-saving solution to piping underground when the heat source is located away from the structure.

Solutions for Any Product

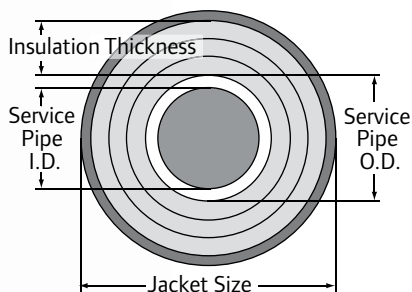
Uponor offers three different pre-insulated piping products for use in hydronic heating, cooling and potable water distribution systems: Ecoflex Thermal Single, Ecoflex Thermal Twin and Ecoflex Potable HDPE.





ASTM Ecoflex Thermal Single

Ecoflex Thermal Single is a service pipe constructed of durable Engel method crosslinked polyethylene (PEX-a) and available in 1", 1¼", 1½", 2", 2½" and 3" sizes. PEX-a is highly regarded for its exceptional durability and resistance to chemicals. Suitable for fluids from -58°F to 203°F (-50°C to 95°C), Ecoflex Thermal Single offers exceptional performance in a wide variety of applications. Closed-cell, PEX-foam insulation offers exceptional thermal resistance. Our corrugated, HDPE jacket provides superior resistance to ground water, and also offers exceptional compaction strength and flexibility.



Material Properties of PEX-a Service Pipe

Property	Temp.	Value
Density	NA	59 lb./ft. ³ (0.945 kg/dm ³)
Smoothness Value	NA	0.02 mil
Coefficient of Thermal Expansion	68°F (20°C)	78 · 10 ⁻⁶ in./in. · °F (1.4 m/m · °C)
	212°F (100°C)	114 · 10 ⁻⁶ in./in. · °F (2.05 m/m · °C)
Tensile Strength	68°F (20°C)	2,800 to 3,800 psi (193 to 262 bar)
	212°F (100°C)	1,300 to 1,900 psi (90 to 131 bar)
Modulus of Elasticity	68°F (20°C)	87,000 to 130,000 psi (5,998 to 8,963 bar)
	180°F (82°C)	44,000 to 58,000 psi (3,033 to 3,999 bar)
Thermal Conductivity	NA	2.64 BTU · in./ft. ² · h · °F [0.38 W/(m·K)]

Material Properties of PEX-foam Insulation

Property	Value
Density	2.0 lb./ft. ³ (0.032 kg/dm ³)
Thermal Conductivity	0.28 BTU · in./ft. ² · h · °F [0.037 W/(m·K)]
Tensile Strength	43 psi (3 bar)
Hardness, 40% Compression	0.25 lb. · in. ² (7.3 N/cm ²)
Absorption of Water by Insulation at 68°F (20°C) 24 Hours Immersed in Water	2.0%
Vapor Permeability	0.1 g/100 in. ² d (1.5 g/m ² d)

Material Properties of HDPE Service Pipe

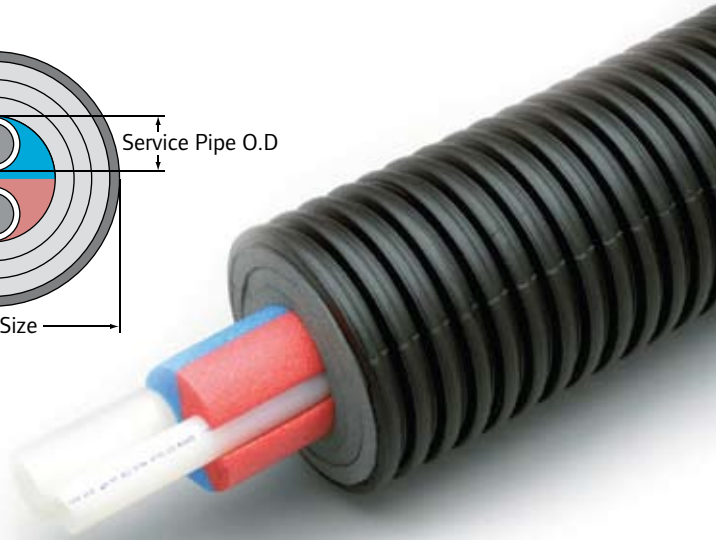
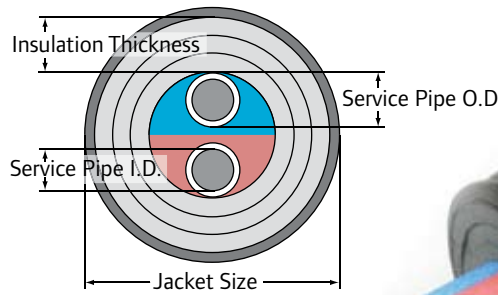
Property	Temp.	Value
Density	NA	59 lb./ft. ³ (0.945 kg/dm ³)
Smoothness Value	NA	0.027 mil
Coefficient of Thermal Expansion	68-176°F (20-80°C)	1.1 · 10 ⁻⁶ in./in. · °F (2.05 m/m · °C)
	73°F (23°C)	2,901 to 4,351 psi (200 to 300 bar)
Strength	176°F (80°C)	580 to 870 psi (40 to 60 bar)
	68°F (20°C)	87,000 psi (5,998 bar)
Thermal Conductivity	NA	2.64 BTU · in./ft. ² · h · °F [0.38 W/(m·K)]

ASTM Ecoflex Thermal Single Product Offering

Product Number	Description	Jacket Size	Insulation Thickness	Insulation Value	Service Pipe I.D.	Service Pipe O.D.	Max. Coil Length	Weight per Foot
5015510	1" Thermal Single	5.5"	1.77"	R-7.12	0.862"	1.125"	600'	0.90 lbs.
5015513	1¼" Thermal Single	5.5"	1.65"	R-6.66	1.054"	1.375"	500'	1.08 lbs.
5016915	1½" Thermal Single	6.9"	2.13"	R-8.18	1.244"	1.625"	300'	1.46 lbs.
5016920	2" Thermal Single	6.9"	1.93"	R-7.42	1.629"	2.125"	300'	1.55 lbs.
5016925	2½" Thermal Single	6.9"	1.65"	R-6.36	2.011"	2.65"	300'	1.97 lbs.
5016930	3" Thermal Single	7.9"	1.89"	R-4.54	2.398"	3.125"	300'	2.80 lbs.

ASTM Ecoflex Thermal Twin

Ecoflex Thermal Twin offers the performance and durability of Thermal Single, with two (2) service pipes in a single jacket. Thermal Twin is available in 1", 1¼", 1½", 2" and 2½" service pipe sizes with lengths up to 600 feet.



ASTM Ecoflex Thermal Twin Product Offering

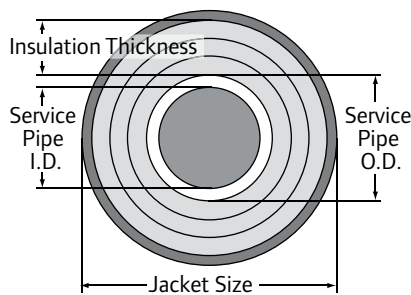
Product Number	Description	Jacket Size	Insulation Thickness	Insulation Value	Service Pipe I.D.	Service Pipe O.D.	Max. Coil Length	Weight per Foot
5026910	1" Thermal Twin	6.9"	1.54"	R-5.91	0.862"	1.125"	600'	1.55 lbs.
5026913	1¼" Thermal Twin	6.9"	1.34"	R-5.15	1.054"	1.375"	500'	1.71 lbs.
5026915	1½" Thermal Twin	6.9"	1.06"	R-4.09	1.244"	1.625"	300'	1.85 lbs.
5027920	2" Thermal Twin	7.9"	0.95"	R-4.09	1.629"	2.125"	300'	2.68 lbs.
5027925	2½" Thermal Twin	7.9"	0.60"	R-2.27	2.011"	2.65"	300'	3.40 lbs.

Note: When computing glycol mixture based on volume, double the volume per foot of Thermal Twin to account for the two pipes.

ASTM Ecoflex Potable HDPE

Ecoflex Potable HDPE features high-density polyethylene (HDPE) service pipe, available in 1¼", 1½", 2, 3" and 4" service pipe sizes. Potable HDPE is ideal for hydronic cooling, snow

melting and potable water applications and is suitable for temperatures from -30°F to 140°F (-34°C to 60°C). Closed-cell, PEX-foam insulation offers exceptional thermal resistance while maintaining lightweight, flexible performance. Our corrugated, HDPE jacket provides superior resistance to ground water, and also offers exceptional compaction strength and flexibility.



ASTM Ecoflex Potable HDPE Product Offering

Product Number	Description	Jacket Size	Insulation Thickness	Insulation Value	Service Pipe I.D.	Service Pipe O.D.	Max. Coil Length	Weight per Foot
5115513	1¼" Potable HDPE	5.5"	1.54"	R-5.91	1.358"	1.66"	300'	1.00 lbs.
5115515	1½" Potable HDPE	5.5"	1.45"	R-5.45	1.554"	1.90"	300'	1.00 lbs.
5115520	2" Potable HDPE	5.5"	1.18"	R-4.54	1.943"	2.375"	300'	1.40 lbs.
5116930	3" Potable HDPE	6.9"	1.30"	R-4.54	2.86"	3.5"	300'	2.40 lbs.
5117940	4" Potable HDPE	7.9"	1.18"	R-4.09	3.68"	4.5"	300'	3.60 lbs.

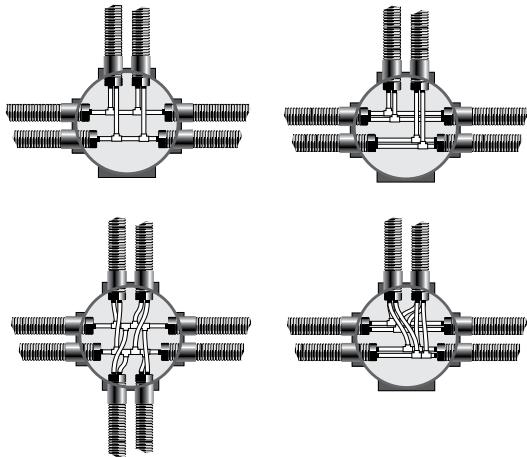
Accessories



Ecoflex Connection Vault

Connection Vault

The Ecoflex Connection Vault is a fully insulated, watertight chamber that provides a single point-of-use for multiple connections. Constructed of durable polyethylene and lined with polyethylene insulation, Connection Vaults are available in 6-outlet and 8-outlet configurations for design flexibility.



Fittings for strong and reliable connections with no leaky pipes or wasted water.

Various connections (ProPEX EP Tee, ProPEX EP Elbow, etc.), couplings and rings are available.

WIPEX™ Fittings

Adapter fittings are required for all PEX service pipe connections and are an option to fusion joints for HDPE service pipe.

Manufactured from a dezincification resistant alloy, DZR brass, the WIPEX™ Fitting is specifically designed for connecting Uponor Ecoflex, Uponor AquaPEX and Uponor hePEX plus pre-insulated pipe of larger diameter size (1" to 4"), with a pressure class of 87 psi to 145 psi (6 bar to 10 bar). The gripping strength is higher than the tensile strength of the pipe, and the sealing performance is unaffected by temperature fluctuations.



WIPEX Fittings

Insulation Kits

Ecoflex Insulation Kits are available in straight, tee, H-connection and 90-degree patterns suitable for 5.5", 6.9" and 7.9" jacket sizes. Reducers are available when jacket size transitions are required. Insulation kits are made of high-density, crosslinked polyethylene foam. These kits also include stainless-steel clamps and



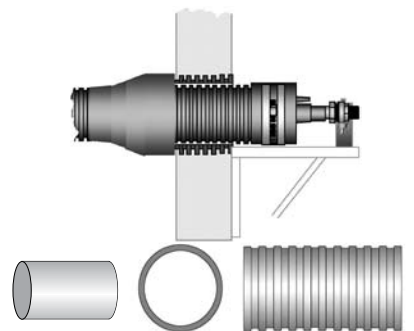
Insulation Kits

polyurethane caulking to ensure a watertight, durable connection.

Sleeves, Seal and Compression Kits

To make your custom installations easier, Uponor offers the following products that facilitate specific piping configurations you may require for your project:

- Ecoflex Wall Sleeves
- Ecoflex Compression Wall Seals
- Wall Sleeve and Heat Shrink Seal Kits



Sleeves, Seal and Compression Kits

Ecoflex Wall Sleeves, made of HDPE with a corrugated outer jacket and smooth wall interior, are compatible with all Ecoflex jacket sizes. Ecoflex Compression Wall Seals are mechanical compression devices suitable for use with field core drills.

The Wall Sleeve and Heat Shrink Seal Kit provides a simple installation for new block construction or an existing wall with an irregular hole. The Wall Sleeve and Heat Shrink Seal Kits make the installer's job easier, offering installation convenience and compatibility.



Rubber End Caps

Rubber End Caps

The Ecoflex End Caps, made from EPDM rubber, are required on all exposed ends of Ecoflex pipes to avoid ground water contamination. It is crucial to create a water-resistant seal on the ends of the piping. Without this seal, water could enter the pre-insulated pipe and dramatically reduce the effectiveness of the pipe insulation.

ProPEX® Fittings

Available in both brass and engineered plastic (EP), ProPEX® Fittings include a full line of products designed to ensure a strong, reliable connection with AquaPEX® and hePEX™ plus tubing.

Uponor ProPEX Fittings hold tight in strength tests at 1,000 pounds of pull tension. They do not require calibration, go/no-go gauges, torches, solvents or primer. And ProPEX Fittings easily withstand high temperatures and pressures well above ASTM standards. Use ProPEX



ProPEX Fittings

Applications

Uponor pre-insulated pipe is ideal for applications that require underground piping to distribute water and other fluids from heating, cooling or potable water sources.

Typically, furnaces and air conditioners are located within the home or building, but many applications exist in which this design is not feasible or desirable — large campuses with multiple buildings, remote guest cottages, cabins, hospitals, correctional facilities, or snow and ice melting applications. This is where Uponor Pre-insulated Pipe Systems can really make a difference.

No matter how secluded or complex the project, Uponor has pre-insulated pipe systems for all your heating, cooling, and potable water needs — dependable, cost-effective and energy saving.

District Energy

In the Uponor Pre-insulated Pipe System, Ecoflex Thermal Single, Ecoflex Thermal Twin and Ecoflex Potable HDPE, are ideal piping products for district energy applications. Thermal and Potable HDPE pipes are available in sizes up to 4 inches diameter.

Ecoflex Thermal Single and Thermal Twin offer a low-flow resistance due to the PEX service pipe. PEX pipes feature a lower resistance of friction at the pipe wall than metal pipes of the same diameter. These pre-insulated pipes feature PEX service pipe suitable for temperatures from -58°F to 203°F (50°C to 95°C).

For cooling and low-temperature distribution systems, Ecoflex Potable HDPE, featuring HDPE service pipe, is the piping of choice.

These durable, high-performance products, combined with our Connection Vault, offer advantages no other system can provide — a fully insulated, water-resistant, underground piping system with virtually all connections in one location.

Remote Buildings and Outdoor Furnaces

Uponor Ecoflex Thermal Twin is ideal for distributing heated fluids from a remote boiler or furnace location to a house or building. Thermal Twin includes two PEX pipes in one jacket for highest efficiency — resulting in fast, easy installations.

Outdoor furnace and boiler contractors, as well as homeowners, depend on our products for a trouble-free, energy-saving solution to piping underground when the heat source is not located in the home.

Snow and Ice Melting Systems

Uponor Ecoflex Thermal Single, Thermal Twin and Potable HDPE offer an ideal solution to underground piping between boiler and remote manifolds. Featuring service pipe sizes up to 4 inches — large or small — Ecoflex can perform and meet the durability requirements of your most demanding environments.

To minimize costly handling and jobsite waste, Uponor can deliver Ecoflex pipe cut to measure for your specific project requirements.

Industrial Applications

Thermal Single and Thermal Twin are excellent choices for industrial applications due to the PEX service pipe. PEX is a very durable and resistant piping product that can handle many of the chemicals and harsh solutions used in the industrial workplace.



District Energy



Snow and Ice Melting Systems



Remote Buildings and Outdoor Furnaces



Industrial Applications

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