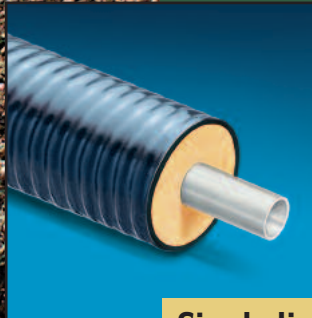


Rhinoflex[®] by Rovanco[®]

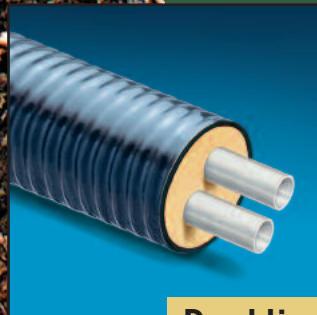
FLEXIBLE PRE-INSULATED PIPING

*The right product
for the distribution
of hot and cold fluids
from -20° to 204°F*



Single line Rhinoflex

*Available from 3/4" thru 5" with
PEX Carrier Pipe and 1 1/2" thru
5" with PE Pipe.*



Dual line Rhinoflex

*Available from 1" thru 2" with
PEX Carrier Pipe.*



Rovanco Piping Systems, Inc.

Rhinoflex[®] pre-insulated PEX and

Polyethylene comes in the longest lengths available from any supplier of flexible pre-insulated piping. The charts provide dimensional data to allow the user to select the right Rhinoflex piping system for their needs. You can rely on Rovanco's "Thousands of Miles" of experience on hundreds of thousands of piping systems worldwide to help you select the right product for your piping systems! Rhinoflex is available with a PEX or PE carrier pipe.

There are more than 700 miles of flexible pre-insulated pipe with PEX or PE carrier pipe installed in the U.S. and more than 13,000 miles installed worldwide over a 30 year period!

Flexible pre-insulated piping has taken over the market for 4" and smaller pre-insulated pipe because it is a high quality product and it has the lowest installed cost of any pre-insulated pipe. The long lengths of flexible pre-insulated Rhinoflex result in few or no underground joints and up to 60% less labor resulting in an installed cost savings of 25 to 40%!



Coils can be handled easily by 2 people.



Rhinoflex can be pulled through road sleeves up to 1,000 ft or directionally bored under roadways, walkways, driveways, streams and ponds! If installed with pipe weights, it can be laid directly in a pond, lake, river or stream!



Rhinoflex can easily be cut to length with just a hacksaw. No special tools or equipment are required to install. Rovanco provides complete installation kits, accessory materials, installation instructions. No special training or skills are required.

Carrier Pipe

For **hot service**, **PEX A** is the highest quality crosslinked polyethylene pipe available with an oxygen diffusion barrier. NSF approved for domestic use.

For **cold service**, high density **polyethylene** carrier pipe is suitable for temperatures down to -20°F. Can be butt fused or electrofusion welded.

Insulation

The high thermal efficiency of **flexible urethane** foam allows for a **smaller** outer jacket size than some competitors, and **lower heat losses**.

Outer Jacket

The polyethylene outer jacket is **the heaviest available** in the industry and **corrugated** to be **flexible**. It is "**Rhino tough**", providing the ultimate in long term protection.



Rhinoflex flexible pre-insulated pipe easily follows the route and contour of the trench.

Since Rhinoflex is available in lengths of up to 2,000 feet with no field joints, there is no need to over excavate or put workmen into the trench to join, insulate, and seal pipe joints.

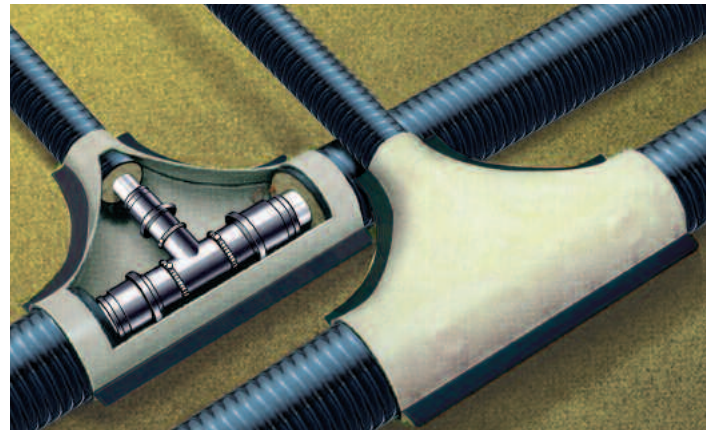
The smooth inner surface of the PEX and PE pipe, few if any coupling joints, and virtual elimination of fittings for changes in routing ensures even flow of the fluids and reduced pressure drops throughout the systems.

Joining Rhinoflex is quick and sure. Only the highest quality brass couplings are used to ensure leak proof joints for the life of the system.

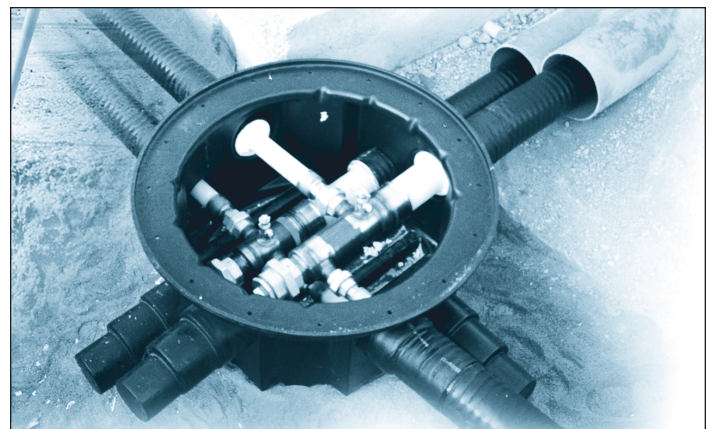
Rhinoflex is built to take the rough handling experienced at the job site. The components are all flexible, non-corrosive and tough!



Couplings are rated at 200 PSI – a higher pressure than the pipe! No welding, brazing or soldering.



The field insulation of tees and fittings is quick and easy. The plastic fitting covers are designed to be water tight at a 10 ft head of water.



Valving and branches can be accomplished in Rhinoflex manholes, custom designed to meet your system's requirements!

Rhinoflex® Guide Spec.

The pre-insulated piping system shall be of a flexible design and all components of carrier pipe, insulation and jacket must be able to expand and contract as a unit without overstressing or adversely affecting any of the materials. The pipe, insulation and jacket will all be made of materials that will not corrode. The system will be designed to be installed in a manner that will not require expansion loops or compensators of any type. The system will be installed with the fewest number of underground joints possible. The piping system supplier will be responsible for the overall design of the expansion and contraction compensation. The system will be supplied complete with coupling fittings, insulation kits and termination fittings all supplied by the piping system supplier. All products shall be manufactured to ISO 9002 standards. NSF approved.

Carrier Pipe Crosslinked PEX pipe for temperatures up to 204°F or polyethylene pipe for temperatures up to 110°F. NSF and ASTM certified for PEX pipes.

Insulation All insulation materials will be supplied by the system manufacturer and will be polyurethane closed cell insulation. The insulation will be furnished in the thicknesses as shown in Charts 1 & 2 for the respective carrier pipe sizes.

Jacket Material The outer protective jacket shall be corrugated seamless polyethylene completely encompassing and protecting the insulation from moisture and damage, designed for H-20 loading at a burial depth of 2 ft minimum. The jacket will be provided in a diameter and thickness as shown in Charts 1 & 2.

Fittings All fittings and connections will be either brass, copper or nickel-plated. They will be installed in accordance with the detailed installation instructions. All buried fittings and couplings will be insulated and sealed per the system suppliers instruction. All fittings for domestic use to be NSF and ASTM approved.

End Seals All direct buried ends of insulated pipe with exposed insulation will be sealed with polyethylene end seal.

Manholes The contractor has the option to supply field built manholes or factory supplied polyethylene or coated steel manholes. If the system supplier is providing factory engineered manholes, they will be installed per the supplier instructions.

Field Tests All carrier pipe systems should be tested at 1 1/2 times the operating pressure prior to burial.

Backfill The pipe should be backfilled with clean fill a minimum of 4 inches on the trench bottom, 3 inches on either side, 2 inches between adjacent pipes and 6 inches over the top of the jacket. The balance of the trench can be filled in with native materials containing rocks no larger than 2 inches.

Supplier Assistance At customer's request, system supplier will provide a qualified field service technician on-site to properly train the installing personnel in all phases of installation.

Approved Vendors Rhinoflex, as supplied by Rovanco, Joliet, Illinois or approved equal. Any alternate supplier must submit their technical data to the engineer 20 days prior to bid date to be approved in writing as an equal.

Rhinoflex Single Crosslinked Polyethylene • Chart 1

Standard Products • Pre-Insulated PEX-A Pipes

Nominal Carrier Pipe Size		Carrier Pipe Type	Nominal Insulation Thickness	PE Jacket OD	Jacket Thickness	Bending Radius	dt 30	Heat Loss (Btu/hr/ft)			Wt lb/ft
Inches	mm							dt 100	dt 150		
0.75"	ASTM	PEX	1.00"	3.07	0.08	2'6"	2.87	8.31	12.21	0.80	
1.00"	ASTM	PEX	0.91"	3.07	0.08	2'7"	3.38	11.56	16.90	0.85	
1.25"	ASTM	PEX	0.80"	3.07	0.08	2'8"	3.53	11.76	17.64	0.90	
1.50"	ASTM	PEX	1.00"	3.66	0.09	2'10"	3.63	12.10	18.14	1.30	
2.00"	ASTM	PEX	1.13"	4.45	0.09	3'0"	4.14	13.81	20.17	1.80	
2.50"	(75 mm)	PEX	1.34"	5.63	0.12	3'2"	4.50	15.00	22.50	2.30	
3.00"	(90 mm)	PEX	1.44"	6.42	0.13	3'7"	4.88	16.27	24.40	3.20	
4.00"	(110 mm)	PEX	1.05"	6.42	0.13	4'0"	7.27	24.22	36.33	3.80	

Rhinoflex Dual Crosslinked Polyethylene • Chart 2

Standard Products • Pre-Insulated Twin PEX-A Pipes

Nominal Carrier Pipe Size		Carrier Pipe Type	Nominal Insulation Thickness	PE Jacket OD	Jacket Thickness	Bending Radius	dt 30	Heat Loss (Btu/hr/ft)			Wt lb/ft
Inches	mm							dt 100	dt 150		
1.00"	ASTM	PEX	1.70"	4.45	0.09	2'10"	3.97	16.59	22.42	1.50	
1.25"	ASTM	PEX	1.20"	5.03	0.10	3'2"	4.48	17.84	23.50	1.70	
1.50"	ASTM	PEX	1.25"	6.42	0.13	3'10"	5.46	18.08	26.80	2.60	

Rhinoflex Single Polyethylene • Chart 3

Standard Products • Pre-Insulated HDPE Pipes

Nominal Carrier Pipe Size		Carrier Pipe Type	Nominal Insulation Thickness	PE Jacket OD	Jacket Thickness	Bending Radius	dt 30	Heat Loss (Btu/hr/ft)			Wt lb/ft
Inches	mm							dt 100	dt 150		
1.50"	(50 mm)	PE	1.25"	4.45	0.09	2'10"	3.63	12.10	18.14	1.30	
2.00"	(63 mm)	PE	1.28"	5.03	0.10	3'0"	4.14	13.81	20.17	1.80	
2.50"	(75 mm)	PE	1.34"	5.63	0.12	3'2"	4.50	15.00	22.50	2.30	
3.00"	(90 mm)	PE	1.44"	6.42	0.13	3'7"	4.88	16.27	24.40	3.20	
4.00"	(110 mm)	PE	1.05"	6.42	0.13	4'0"	7.27	24.22	36.33	3.80	

Heat loss has been calculated with 3 different delta T's, 24" depth of bury, soil temperature of 50°F and soil conductivity of .12.

Rovanco's products are covered by various U.S. patents. Rovanco®, Insul-8®, Rhinoflex®, Rhinocoat® are federally registered trademarks.

All Rhinoflex piping is ASTM and metric sized and will fit up to all other types of ASTM and metric sized flexible pre-insulated piping systems. For more specific data regarding other pipe sizes, insulation thicknesses, pressure drop, heat loss, systems design, heat tracing or pricing, please contact your local Rovanco representative.

Rhinoflex is available exclusively from Rovanco Piping Systems, Inc.

Rovanco Piping Systems, Inc.

20535 S.E. Frontage Road
Joliet, Illinois 60431
(815) 741-6700
Fax (815) 741-4229
Website: www.rovanco.com
Email: marketing@rovanco.com

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