For Residential or Commercial Radiant Heating and Snow Melt Applications

Job Name	Contractor
Job Location	Approval
Engineer	Contractor's P.O. No.
Approval	Representative

R-flex[™]

Flexible Insulated PEX Pipe for hot or chilled water

Sizes: 1" (25.4 mm)

32 mm (1.3") 40 mm (1.6") 50 mm (2.0") 63 mm (2.5") 75mm (3.0") 90mm (3.5") 110mm (4.3")

R-flex is a multi-layered insulated piping system consisting of cross-linked SDR-9 (1" only) or SDR-11 PEX barrier pipe, multiple PE foam insulation layers, and an outer dual wall corrugated casing. R-flex is engineered for exterior hydronic heating and cooling applications and is <u>not intended for</u> <u>interior or potable applications</u>. R-flex tubing features an integral DIN 4726 standard oxygen barrier that limits oxygen diffusion through the pipe wall to less than 0.10 g/m3/day at 104°F water temperature and is available in single or dual pipe configuration.

Specifications

Insulation thermal conductivity 0.0211 Btu/hr sq ft °F (0.0365 W/m °K). Insulation water absorption after 28 days less than 1.04% volume. System shall be installed using Watts

Radiant Single or Dual R-flex. All

Operating Temperature & Pressure								
Max. Temperature	Max. Pressure							
200°F (93.3°C)	80 psi (5.5 bar)							
180°F (82.2°C)	100 psi (6.9 bar)							
73.4°F (22.7°C)	160 psi (11.0 bar)							

connections shall be made using Watts Radiant's R-flex Compression fittings in accordance with all corresponding installation guidelines.

Installation Parameters

R-flex must be installed in accordance with all Watts Radiant installation procedures, including information provided in the R-flex installation manual and guidelines.

Features

R-flex is available with either Single or Dual PEX pipes. The inner insulation layer is constructed of flexible, water resistant, extruded PE foam encased in a unique dual layer corrugated outer casing. This dual layer provides enhanced flexibility while preventing water penetration. In the event the outer layer is damaged, the inner layer still protects the insulation from water penetration - preventing a potential increase in heat loss.

Applications

R-flex can be used for hydronic heating, hydronic snow melting, district heating, commercial and process piping, cooling towers and chilled water systems, geothermal, agricultural piping, biomass heat sources, wood-fired boilers, solar, and more.

▲ CAUTION

This Engineering Sheet is not intended to provide full installation instructions and safety information. In order to avoid property damage or injury, please refer to the complete installation manual and product safety information provided with the product.

Dual	Wall	Outer	Jacket



R-flex consists of a barrier PEX pipe, PE foam insulation, and a dual wall external protective casing.



Pex Tubing Standards and Listings



1 inch pex tubing is certified to ASTM F876, SDR-9 dimensions.



All other pex tubing manufactured in accordance to DIN standards for Testing and Materials (DIN 16892 and 16893).



Watts Radiant product specifications in U.S. customary units and metric are approximate and are provided for reference only. For precise measurements, please contact Watts Radiant Technical Service. Watts Radiant reserves the right to change or modify product design, construction, specifications, or materials without prior notice and without incurring any obligation to make such changes and modifications on Watts Radiant products previously or subsequently sold.

Sp	Specifications (conforms to DIN 16892, SDR 11)												
	Order #	Description	PEX ID	PEX OD	Jacket OD	Bend Radius	Coil Length	Coil Diameter	Coil Height	Coil Weight	Fluid Cap./ 100m (328ft)	Insulation Thickness	Casing R-Value
	81012929	160/40 R-flex	32.6 mm <i>(1.28")</i>	40.0 mm (1.57")	160 mm <i>(6.30")</i>	350 mm <i>(13.8")</i>	100 m** (328 ft)	2300 mm	850 mm <i>(33.50")</i>	232 kg (512 lbs)	83.00 L (21.93 gal)	47.5 mm (1.88")	6.79
	81012886	160/50 R-flex	40.8 mm (1.61")	50.0 mm (1.97")		450 mm <i>(17.8")</i>				248 kg (547 lbs)	131.31 L (34.69 gal)	42.5 mm (1.68")	6.07
gle	81012887	160/63 R-flex	51.6 mm <i>(2.03")</i>	63.0 mm <i>(2.48")</i>		550 mm <i>(21.7")</i>				278 kg (613 lbs)	208.76 L (55.15 gal)	37.0 mm (1.46")	5.27
Sin	81012889	200/75 R-flex	61.4 mm (2.42")	75.0 mm <i>(2.95")</i>		800 mm <i>(31.5")</i>		(90.6")	1400 mm (55.20")	416 kg <i>(917 lbs)</i>	296.67 L (78.37 gal)	52.0 mm <i>(2.05")</i>	7.4
	81012890	200/90 R-flex	73.6 mm <i>(2.90")</i>	90.0 mm (3.54")	200 mm <i>(7.90")</i>	1100 mm <i>(43.4")</i>				473 kg (1,043 lbs)	426.02 L (112.55 gal)	44.0 mm (1.74")	6.28
	81012891	200/110 R-flex	90.0 mm <i>(3.55")</i>	110.0 mm (4.33")		1200 mm (27.3")				564 kg (1,244 lbs)	638.41 L (168.365 gal)	34.0 mm <i>(1.33")</i>	4.84

	81012879	125/2x1 R-flex*	0.863" (21.92 mm)	1.125" <i>(28.58 mm)</i>	4.90" (125 mm)	11.80" <i>(300 mm)</i>	100 m** (328 ft)	82.70" (2100 m)	27.60" (700 mm)	368 kg (162 lbs)	19.97 gal (75.46 L)	1.11" (28.0 mm)	4.01
	81012880	125/2x32 R-flex	26.2 mm (1.03")	32.0 mm <i>(1.26")</i>	125 mm (4.90")	300 mm <i>(11.80")</i>		2100 m <i>(82.70")</i>	700 mm <i>(27.60")</i>	182 kg <i>(402 lbs)</i>	107.48 L (28.40 gal)	22.3 mm <i>(0.88")</i>	3.18
Dual	81012882	160/2x40 R-flex	32.6 mm <i>(1.28")</i>	40.0 mm <i>(1.57")</i>	160 mm <i>(6.30")</i>	600 mm <i>(23.70")</i>		2300 mm (55.20")	850 mm <i>(33.50")</i>	263 kg <i>(580 lbs)</i>	166.00 L (43.86 gal)	34.0 mm <i>(1.34")</i>	4.84
	81012884	200/2x50 R-flex	40.8 mm (1.61")	50.0 mm <i>(1.97")</i>	200 mm	800 mm <i>(31.50")</i>			") 1400 mm <i>(55.20")</i>	403 kg <i>(889 lbs)</i>	262.62 L (69.38 gal)	46.0 mm <i>(1.81")</i>	5.67
	81012885	200/2x63 R-flex	51.6 mm (2.03")	63.0 mm <i>(2.48")</i>	(7.90")	1200 mm (47.30")				464 kg (1,023 lbs)	417.52 L (110.30 gal)	33.0 mm <i>(1.30")</i>	4.69

* Pex pipe is ASTM F876, SDR-9 dimensions. ** Custom lengths are available upon request. Contact distributor for details.







Radiant Floor Heating & Snow Melting

Watts Radiant is an ISO 9001-2008 approved facility.



The art of simplicity.

Traditional carrier pipes, such as copper or black iron, require installers to cut and install transition fittings to work around an obstacle. With R-flex, installers no longer have to cut pipe and add connecting points. R-flex bends around the obstacle.

Fewer connections translate into reduced cost of parts and labor, less risk of leakages, and shorter installation times. Each buried transition, or connection, is sealed in a durable casing, protecting the connections from stress, water, and time. Moreover, R-flex system accessories can be installed without any special tools.

R-flex connections are an additional time-saver. Each connection is made with a standard torque wrench. No special tools required.

R-flex in action.

If there is a need to transfer heated water, or water/glycol, from one location to another, then there is a need for R-flex.



R-flex coils ready to be shipped.



Fittings, Components, Accessories



DUAL R-FLEX 1" Carrier Pipe with 125 mm jacket 32 mm Carrier Pipe with 125 mm or 160 mm jacket 40 mm Carrier Pipe with 160 mm jacket 50 mm Carrier Pipe with 160 mm or 200 mm jacket 63 mm Carrier Pipe with 200 mm jacket

SINGLE R-FLEX

40 mm Carrier Pipe with 160 mm jacket 50 mm Carrier Pipe with 160 mm jacket 63 mm Carrier Pipe with 160 mm jacket 75 mm Carrier Pipe with 200 mm jacket 90 mm Carrier Pipe with 200 mm jacket 110 mm Carrier Pipe with 200 mm jacket

CASINGS

Casings are designed to protect the R-flex connection when buried and can be used with all R-flex, from 125 mm to 200 mm jacket sizes.

Casings are available in Tee, Elbow, and Coupling configurations.

ADAPTERS All adapters are R-flex by NPT and are designed for use solely with the R-flex product line.

FITTINGS Tees, elbows, and

couplings are available in two configurations blank or assembled.



Elbows and couplings are

Tees are available in

are available if a 2-step reduction is required.

equal or one-step reducing. Bushings



WattsRadiant Floor Heating & Snow Melting

4500 E. Progress Place Springfield, MO 65803-8816 www.wattsradiant.com/rflex 800-276-2419 (toll-free USA/Canada) 417-864-6108 (phone) 417-864-8161 (Fax)

insulated piping systems

Insulated supply and return piping for:

- Hydronic heating
- Hydronic snow melting
- **District heating**
- **Commercial and process pipin**
- Geothermal
- Agricultural piping
- Biomass heat sources
- Wood-fired boilers
- Solar
- Cooling towers & chilled water systems

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A solid proven system.

R-flex is a pre-insulated, flexible, energy-saving PEX piping system with a durable, waterproof outer cover. R-flex is used as cost-effective distribution for heating and cooling applications in schools, universities, resorts, housing developments, and much more. It consists of a long-lasting PEX carrier pipe or pipes surrounded by thick insulation layers, all contained in a unique double-wall outer casing for maximum protection. The flexibility and light weight of R-flex make it far easier to install than rigid piping systems.

Superior protection.

Surrounding the inner PEX carrier pipe are several layers of micro-cellular, cross-linked polyethylene foam with a closed cellular structure. This unique design provides R-flex a low water vapor absorption, an enhanced R-value insulation, and an excellent resistance to extreme temperatures.

Most importantly, R-flex is able to maintain these insulation properties over time. Other insulation types, such as polyurethane (PUR) foam, can crush when the pipe is bent, causing them to lose their insulative properties.

A double-wall, corrugated, high density polyethylene PE-HD twin outer wall casing protects both the carrier pipe and the insulation from jobsite damage and water absorption. The unique double-wall casing offers far superior protection and greater flexibility compared to single-wall products or installer fabricated methods.



Carrier pipes in Dual R-flex are marked with a single dash line and a double dashed line to provide easy identification at transition points.

R-flex is manufactured to ASTM F876/F877 for 1" and DIN 16892 and 16893 for 32 mm — 110 mm sizes (nominal 1"- 4")

At the core.

At the core of R-flex is either one or two barrier PEX carrier pipes. R-flex PEX is manufactured in an ISO 9001 facility for Watts Europe using the Engel extrusion method. Watts Europe has manufactured millions of feet of insulated PEX since 1994.

Barrier PEX offers several advantages.

- high resistance to corrosion and pressure at high temperatures
- exceptionally high abrasion resistance
 superb chemical resistance
- proven product with excellent longevity at high temperatures

Max pressure
80 psi (5.52 bar)
100 psi (6.89 ba
160 psi (11.03 ba

The barrier

Each of the carrier PEX pipes is coated with an EVOH oxygen barrier which prevents oxygen from permeating into the piping system. Reducing oxygen in a closed-loop hydronic system increases the life expectancy of the system components.

Rust-free is worry-free.
WWW.WATTSradiant.com/rflex

Flexible, fast, and easy.

R-flex derives a unique benefit from the use of the polyethylene foam insulation and the double-wall outer shell; increased flexibility. This feature provides an



advantage when running R-flex between buildings, around trench corners, or through wall penetrations. The ability to maintain tighter bends makes handling easier and installations guicker.

Simply dig a trench, lay down a sand foundation, and lay the R-flex in a gentle serpentine pattern. R-flex is self-compensating, eliminating the need for expensive expansion loops.

Single and Dual R-flex carrier pipe options provide greater system design flexibility and reduced installation time.

Long coil lengths minimize the need for mid-run connections translating into reduced installation costs and a reduced potential of leaks.

Design it with RadiantWorks Professional®

RadiantWorks Professional allows designers to properly determine the amount of R-flex required for a project and an estimated amount of transitional heat loss. Design it once. Design it right. Design with RadiantWorks Professional!







