

Radiant Heating Specifications

Part 1 – GENERAL

1.1 SUMMARY

- 1.1.1 Viega's ProRadiant heating systems utilize crosslinked high density polyethylene (PEX) tubing in conjunction with manifolds and controls to deliver hydronic radiant heating and cooling.

1.2 REFERENCES

- 1.2.1 ASTM F876/F2023 Standard Specification for Crosslinked Polyethylene (PEX) Tubing
- 1.2.2 ASTM F877 Standard Specification for Crosslinked Polyethylene (PEX) Plastic Hot- and Cold- Water Distribution Systems
- 1.2.3 ANSI/NSF 61 Drinking Water System Components - Health Effects
- 1.2.4 ANSI/NSF 14 Plastics Piping System Components and Related Materials
- 1.2.5 NSF-pw Potable Water Certification Mark
- 1.2.6 ICC

1.3 QUALITY ASSURANCE

- 1.3.1 Installation is recommended to be done by a certified Viega installer. Piping of boiler lines to stations and manifolds are recommended to be done by a heating contractor.
Controls recommended to be done by a licensed electrician.
- 1.3.2 The installation of Viega's ProRadiant products are to be installed per manufacturer's installation instructions or by local code. It is recommended that Viega fittings be the only fittings used with Viega PEX tubing along with manifolds and controls.

1.4 DELIVERY, STORAGE, AND HANDLING

- 1.4.1 Radiant Product shall be delivered to job site in such a manner to protect the products. Products shall not be roughly handled, especially controls, manifolds, stations and PEX pipe. All products should be unloaded with reasonable care.
- 1.4.2 Products shall be stored in a dry clean area. Pipe shall be stored in an area that direct and indirect sunlight will not come in contact with it for more than 90 days.

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1.5 WARRANTY

- 1.5.1 All Viega ProRadiant products will be warranted by manufacturer as free from defects and conforming to the designated standard. The warranty shall only be applicable to ProRadiant products installed in accordance with the manufacturer's installation instructions.
- 1.5.2 The manufacturer of the ProRadiant products shall not be held responsible for the improper use, handling, or installation of the product.

Part 2 – PRODUCTS

2.1 PRODUCT INFORMATION

- 2.1.1 ViegaPEX Barrier: Tubing shall be silane crosslinked high density polyethylene as per ASTM F876/F877. Tubing shall include an oxygen diffusion barrier in accordance with DIN 4726. Tubing shall also meet the requirements of ANSI/NSF 14 and 61.
- 2.1.2 FostaPEX: Tubing shall be electronically crosslinked high density polyethylene as per ASTM F876/F877. An aluminum layer shall cover the inner PEX core for form stability and serve as an oxygen diffusion barrier. An outer layer of polyethylene shall cover the aluminum for protection against corrosion. Tubing shall also meet the requirements of ANSI/NSF 14 and 61.
- 2.1.3 Pextron Tubing: Tubing shall be electronically crosslinked high density polyethylene as per ASTM F876/F877/F2023. Tubing shall include an oxygen diffusion barrier in accordance to DIN 4726.
- 2.1.4 Mixing Station: Made from brass and copper, this station is included with one of three Grundfos pumps factory attached and tested. Station also includes a 1" diverting valve made to accept an actuator. Stations are also equipped with two 1" ball valves. And threaded end connections to attach directly to a Viega Manifold. Station is delivered with two 6-5/8" wall mounting brackets.
- 2.1.5 Injection Stations: Made from brass, this station is included with one of three Grundfos pumps factory attached and tested. Station also includes a injection valve made to accept an actuator. Injection station is also equipped with two purge valves, temperature gauge and 1" M NPT to connect directly to manifolds. Station is delivered with wall mounting bracket.
- 2.1.6 Stainless Manifolds: Manifolds shall be made of 304 Stainless Steel with nickel valve necks of select models. Flow meters, balancing valves and shut off valves are on select models. Each stainless manifold comes with two air bleeders while

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select models come with two purge valves. Manifolds have 1" NPT removable end caps and 1-1/4" Union connections. Manifolds are suitable to receive all SVC connections.

- 2.1.7 Brass Manifolds: Shall be made from brass. Supply header is fitted with balancing valves and the return header is fitted with shutoff valves made to receive optional powerheads for individual zone control. Manifolds are suitable to receive all SVC connections. Used with manifold accessory kit.
- 2.1.8 Compression Fittings: Shall be made of brass and used to connect PEX to manifolds or to repair a damaged tubing line.
- 2.1.9 Press Fittings: Shall be made of brass and shall be used with manufacturer's stainless steel press sleeves and press tools.
- 2.1.10 Press Sleeves: Shall be made of 304 Stainless Steel and shall only be pressed using the Viega Press Tools.
- 2.1.11 Snap Panel: Shall be made of high density polystyrene. Snap Panels shall have a compressive strength of 1250 psf. Each panel will be made to the dimensions of 3' x 5' x 1". Snap Panels are made to overlap and interlock, creating a reinforced base while acting as an oxygen barrier.
- 2.1.12 Climate Panels: Panels shall be constructed from CCX fir plywood to a nominal thickness of 1/2". A .012" thick piece of aluminum shall be attached to the bottom of the plywood for even heat distribution. Climate Panels are made to be used with ViegaPEX Barrier and Pextron 5/16" tubing.
- 2.1.13 Climate Trak: Shall be made from extruded aluminum made to be used on conjunction with either ViegaPEX Barrier or Pextron 3/8" and 1/2" tubing. Not to be used with any silicone or other heat transfer material.
- 2.1.14 Diverting Valves: Valve body shall be made of bronze with brass and corrosion resistant steel internal components. Valve shall also include EPDM (ethylene-propylene-dienemonomer) rubber seals. Valve has max working temp of 242°F and max working pressure of 145 psi.
- 2.1.15 Mixing Valves (3/4-1-1/2 inch): Mixing valve shall be grey cast iron with sweat connections with gaskets with a chromium-plated plug. Valve has maximum operating temperature of 230°F with max operating pressure of 125 psi. Angular adjustment shall be 90°. All moving parts shall be treated with special heat resistant grease if they are to come in contact with hot water.
- 2.1.16 Mixing Valves (2-3 inch): Mixing valve shall be grey cast iron with flange connections as per DIN 2531. Valve has max operating temperature of 260°F with max operating pressure of 125 psi. Angular adjustment shall be 90°. All moving parts shall be treated with special heat resistant grease if they are to come in contact with hot water.

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2.2 SOURCE QUALITY CONTROL

2.2.1 The ViegaPEX cross-linked polyethylene tubing and fitting manufacturer shall maintain a third party listing of the tubing and fittings. The tubing and fittings shall be marked with ASTM F876/F877 to ensure tubing and fittings are continuously being made to the same required standard. Tubing shall also be marked with the NSF-pw marking to verify this tubing's suitability to transport potable water.

PART 3 – EXECUTION

3.1 EXAMINATION

3.1.1 The installing contractor shall examine the tubing, manifolds, stations, fittings, and controls for any visible defects. There shall be no visible defects on products used in installation. Any products with defects shall be rejected and returned.

3.2 PREPARATION

3.2.1 Tubing shall be cut with Viega tubing cutters or other cutters that ensure the tubing will be cut square. Tubing shall be cut square to permit proper joining with the fittings and manifolds.

3.3 INSTALLATION GENERAL LOCATIONS

3.3.1 Tubing and manifolds shall be installed as per engineering's CAD drawings. If drawings are unavailable layout shall be done according to installation manuals provided by manufacturer. Viega provides an heat loss and design when requested.

3.4 INSTALLATION

3.4.1 Tubing: Tubing used shall be provided by manufacturer and handled with general care. Tubing shall not be exposed to excessive UV light, harmful substances, excessive heat, sharp objects and any other potentially harmful situations. Tubing shall be laid out taking into account the minimum bending

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radius. Tubing shall be sleeved at all floor and slab penetrations. Tubing shall be secured by plastic zip ties, or plastic clips approved by manufacturer. At no time should a metallic clip or tie be used to hold tubing.

- 3.4.2 Manifolds/Stations: Manifolds used shall be provided by manufacturer and installed per installation manual. Tubing shall be connected to manifolds using the recommended SVC press fittings or compression fittings with split compression ring. Connections of manifolds to stations shall be done with the recommended fittings or adapters.
- 3.4.3 Controls: Controls should be installed by a licensed electrician. Refer to manufacturer's installation manuals for correct programming and hook-up of controls.
- 3.4.4 Freeze Protection: System should be protected from freezing at all times. If system is installed and pressure tested with water in an unfinished house during heating season, air or the proper glycol mixtures should be used. Insulation may be used in exposed areas. Glycol mixtures may also be needed in systems that are not used year-round and may be exposed to freezing temperatures.

3.5 FIELD QUALITY CONTROL

- 3.5.1 Pressure testing: Air or water may be used for testing the system for leaks. Pressurize system to 60 psi and cap off. Be sure to keep system pressurized while finish flooring is installed over it to ensure tubing is not damaged during this step. If a leak is detected cut damaged tubing out and repair with recommended couplings.