PP-RCT Domestic Hot-Water (DHW) Systems

Design, Installation, and Operation Guidelines

This guidelines document is published for architects, building officials, engineers, and plumbers interested in using Uponor PP-RCT in domestic hot-water (DHW) applications. It describes general design, installation, and operation recommendations for the use of Uponor PP-RCT piping products. Refer to local codes for additional requirements. Uponor has made reasonable efforts to collect, prepare, and provide quality information and material in this guidelines document. However, system enhancements may result in modification without notice. Uponor is not liable for design, installation, and operation practices that deviate from this guidelines document or are not acceptable practices within the codes or standards of practice.

If there are differences between Uponor recommendations and local code, always follow the more-restrictive criteria. For example, where Uponor's recommendations are more restrictive than the local code, follow the Uponor recommendations to ensure the product performs as expected and remains covered under warranty. It is the installer's responsibility to ensure the product, design, and intended installation are acceptable to the local authority having jurisdiction (AHJ). Please direct any questions regarding the suitability of an application to Uponor Technical Services at 888.594.7726 or support.una@uponor.com.

Product Overview

Uponor PP-RCT pipe and fitting systems are intended for use in domestic hot-water (DHW) applications, including domestic hot-water recirculation (DHW-R), and are applicable for SDR 7.4 and SDR 9 pipe that feature red stripes on the side. The appendix at the end of this document includes all Uponor PP-RCT parts.

Suitable Applications

Uponor PP-RCT is a versatile piping product suitable for many types of DHW installations, including (but not limited to):

- Commercial hot-water distribution piping
- Vertical riser piping
- Re-pipes
- Domestic hot-water recirculation, including supply and return piping and any other components other than the end-of-line fixtures

Maximum Operating Temperature and Velocity Conditions for PP-RCT

Domestic Hot Water	Domestic Hot-Water Recirculation
140°F at 80 psi, 8 feet per second (fps) 60°C at 5.5 bar, 2.4 meters per second (m/s)	140°F at 80 psi, 2 fps 60°C at 5.5 bar, 0.6 m/s

System Velocity

Uponor recommends and promotes a complete polymer solution using PP-RCT and PEX-a products. When installing metallic materials in conjunction with Uponor PP-RCT, use proper velocity design limits for the respective material.

Domestic Hot-Water Recirculation

Uponor PP-RCT has been tested to and meets the requirements to achieve a chlorine rating of CL-TD, as per ASTM F2389. Uponor has also performed additional testing to evaluate chlorine resistance as per ASTM F2023. Test results show Uponor PP-RCT meets the "Class 3" rating. Based on this data, Uponor approves PP-RCT for use in DHW-R line applications for temperatures up to 140°F (60°C) for 50% of the time, or 12 hours per day.

Pipe Sizing

Ensure the correct pipe size for the DHW and/or DHW-R application. Refer to the Uponor Online Pipe Sizing Calculator at uponor.com/calculator for details.

- **DHW** – If the design requires booster pumps to increase system pressure, ensure the delivered pressure does not exceed 80 psi (5.5 bar). If higher pressures are necessary, implement pressure zones or contact Uponor Construction Services at design.services@uponor.com for recommendations.
- **DHW-R** – Ensure proper sizing of pumps for the 2 fps limit stated above for DHW-R lines. Uponor recommends installing balancing valves to ensure the velocity limit is not exceeded. Balancing valves also help reduce energy consumption and increase service life.

Water System Disinfection

To support system health, Uponor offers the following guidelines for treatment and disinfection of an Uponor PP-RCT DHW system.

Approved Chemicals

Uponor recommends the following chemicals for disinfecting PP-RCT piping systems at a temperature of **77°F (25°C)** that shall not exceed 200 ppm for three (3) hours **OR** 50 ppm for 24 hours:

- Sodium hypochlorite
- Chlorine (liquid or gas)
- Hydrogen peroxide
- Chloramines

To prevent reduced service of system components, do not allow disinfection solutions to remain in the system longer than 24 hours. Flush the system with potable water after disinfection.

- Limit disinfection to four (4) cycles over the life of the piping system.
- Avoid combining disinfectants.

DO NOT USE for System Disinfection

Do not use chlorine dioxide, ozone, bromine, copper-silver, or on-site copper ion generation for disinfection.

Uponor does not recommend use of PP-RCT as part of any potable-water distribution system in buildings where chlorine dioxide is used as a secondary disinfection or where injection systems using chlorine dioxide are utilized. Uponor issues this recommendation despite the limited industry data available for the long-term effects of chlorine dioxide on PP-RCT where the system is properly maintained and operated. This does not include the system disinfection, which is addressed above.

In certain isolated instances, particular characteristics of the potable water can impact the long-term performance of PP-RCT system components, even when water quality levels are within the permissive range set forth by the EPS National Drinking Water Standards and the Guidelines

for Canadian Drinking Water Quality by Health Canada. The installing contractor should have experience in the region of the intended use of the product. In addition, consultation with the local plumbing authority and local water authority regarding the performance of PP-RCT system components should occur before the selection and installation of the system.

Note: For questions about any other chemicals or cleaning agents, contact Uponor Technical Services at 888.594.7726 or support.una@uponor.com to ensure compatibility.

System Care

Building owners and management are encouraged to provide an annual maintenance program to provide safe, healthy water to the building occupants. For this reason, it is important to keep in check these following items:

- Valves (pressure-relief, balancing, reducing, etc.)
- Tanks (expansion, surge, bladder, etc.)
- Ensure acceptable levels of chlorine and copper
- Hydraulically balance system to ensure required flow rate for each area of the building
- Avoid water hammer and excessive surge pressures from valves and pumps
- Provide air release/elimination valves to reduce entrapped and dissolved air in the system
- Maintain recommended temperature and pressure limits

Pressure Testing

For pressure testing guidelines, refer to the Uponor PP-RCT Piping Systems Manual.

Combined-Use Systems

Uponor does not recommend using PP-RCT in combined-use systems unless the return lines are sized for DHW-R limits of 2 fps. A combined-use system is defined as when the plumbing system is designed entirely for potable use (lead free, etc.) and is piped in combination with the heating system, where all heating components meet the requirements of a plumbing system.

Mixed PP-RCT and Copper Systems

When possible, replace all copper piping in a system with Uponor PP-RCT. If limited copper piping remains as part of the system, strictly follow the rules and guidelines of the Copper Development Association (CDA Publication A4015-14/16: Copper Tube Handbook) regarding flow rates and water conditions. Also, ensure the operating conditions do not cause degradation, erosion, or corrosion of the copper. Test the level of copper in the water and ensure the copper levels do not exceed 0.1 ppm (mg/L). Higher levels indicate erosion/corrosion of the copper pipe due to system and/or water conditions.

Note that high levels of copper in a piping system with Uponor PP-RCT will void the warranty. However, small amounts of copper or brass in valves or other equipment will typically not cause an issue.

Velocity in Mixed PP-RCT and Copper Systems

In DHW systems with both Uponor PP-RCT and copper, strictly follow the rules and guidelines of the Copper Development Association (CDA Publication A4015-14/16: Copper Tube Handbook). Do not exceed 5 fps (1.5 m/s). In DHW-R systems with both PP-RCT and copper piping, do not exceed 1.5 fps (0.5 m/s).

Copper Concentrations with Unknown Velocity

For re-pipe applications where Uponor PP-RCT is replacing and connecting to copper lines and the design or actual system velocity is unknown, copper concentrations found in the water stream should not exceed 0.1 parts per million (ppm) during annual maintenance and water sampling.

Local Code Approvals

Before installing any piping, discuss the installation with local building and plumbing officials. While the Uponor PP-RCT hot-water systems discussed in this document meet the requirements of most building and plumbing codes found in the United States and Canada, local codes may be amended, and local ordinances may affect the specific code language. Be sure to refer to your local authority having jurisdiction (AHJ).

Referenced Standards and Publications

ASTM F2389	Standard Specification for Pressure-rated Polypropylene (PP) Piping Systems
ASTM F2023	Standard Test Method for Evaluating the Oxidative Resistance of Crosslinked Polyethylene (PEX) Pipe, Tubing and Systems to Hot Chlorinated Water
ASTM F3497	Standard Test Method for Evaluating the Oxidative Resistance of Polypropylene (PP) Piping Systems to Hot Chlorinated Water
ASTM F876	Standard Specification for Crosslinked Polyethylene (PEX) Tubing
PPI TN-53	Guide to Chorine Resistance Ratings of PEX Pipes and Tubing for Potable Water Applications
PPI TN-57	Proper Integration of Copper Tubing and Components with PP-R Piping Materials for Plumbing Applications
Copper Development Association, Inc.	Copper Tube Handbook – Industry Standard Guide for the Design and Installation of Copper Piping Systems
CDC	Centers for Disease Control and Prevention Water Disinfection with Chlorine and Chloramine – What are safe levels of chlorine in drinking water?
EPA	U.S. Environmental Protection Agency Drinking Water Regulations

Appendix

Part No.	Part Description
PR7231350	½" Uponor PP-RCT Mechanical Pipe, SDR 7.4 with Fiber, 13-ft. straight length
PR7231375	¾" Uponor PP-RCT Mechanical Pipe, SDR 7.4 with Fiber, 13-ft. straight length
PR9231310	1" Uponor PP-RCT Mechanical Pipe, SDR 9 with Fiber, 13-ft. straight length
PR9231313	1¼" Uponor PP-RCT Mechanical Pipe, SDR 9 with Fiber, 13-ft. straight length
PR9231315	1½" Uponor PP-RCT Mechanical Pipe, SDR 9 with Fiber, 13-ft. straight length
PR9231320	2" Uponor PP-RCT Mechanical Pipe, SDR 9 with Fiber, 13-ft. straight length
PR9231925	2½" Uponor PP-RCT Mechanical Pipe, SDR 9 with Fiber, 19-ft. straight length
PR9231930	3" Uponor PP-RCT Mechanical Pipe, SDR 9 with Fiber, 19-ft. straight length
PR9231940	4" Uponor PP-RCT Mechanical Pipe, SDR 9 with Fiber, 19-ft. straight length
PR9231960	6" Uponor PP-RCT Mechanical Pipe, SDR 9 with Fiber, 19-ft. straight length
PR7221375	¾" Uponor PP-RCT Hot Potable Pipe, SDR 7.4 with Fiber, 13-ft. straight length
PR7221350	½" Uponor PP-RCT Hot Potable Pipe, SDR 7.4 with Fiber, 13-ft. straight length
PR9221310	1" Uponor PP-RCT Hot Potable Pipe, SDR 9 with Fiber, 13-ft. straight length
PR9221313	1¼" Uponor PP-RCT Hot Potable Pipe, SDR 9 with Fiber, 13-ft. straight length
PR9221315	1½" Uponor PP-RCT Hot Potable Pipe, SDR 9 with Fiber, 13-ft. straight length
PR9221320	2" Uponor PP-RCT Hot Potable Pipe, SDR 9 with Fiber, 13-ft. straight length
PR9221925	2½" Uponor PP-RCT Hot Potable Pipe, SDR 9 with Fiber, 19-ft. straight length
PR9221930	3" Uponor PP-RCT Hot Potable Pipe, SDR 9 with Fiber, 19-ft. straight length
PR9221940	4" Uponor PP-RCT Hot Potable Pipe, SDR 9 with Fiber, 19-ft. straight length
PR9221960	6" Uponor PP-RCT Hot Potable Pipe, SDR 9 with Fiber, 19-ft. straight length
PR9221980	8" Uponor PP-RCT Hot Potable Pipe, SDR 9 with Fiber, 19-ft. straight length
PR4720500	Uponor PP-RCT Brass Union, ½"
PR4720750	Uponor PP-RCT Brass Union, ¾"
PR4721000	Uponor PP-RCT Brass Union, 1"
PR4721250	Uponor PP-RCT Brass Union, 1¼"
PR4721500	Uponor PP-RCT Brass Union, 1½"
PR4722000	Uponor PP-RCT Brass Union, 2"
PR4575050	Uponor LF Brass Female Threaded Adapter, ½" PP-RCT x ½" NPT
PR4575075	Uponor LF Brass Female Threaded Adapter, ½" PP-RCT x ¾" NPT
PR4577550	Uponor LF Brass Female Threaded Adapter, ¾" PP-RCT x ½" NPT
PR4577575	Uponor LF Brass Female Threaded Adapter, ¾" PP-RCT x ¾" NPT
PR4571010	Uponor LF Brass Female Threaded Adapter, 1" PP-RCT x 1" NPT
PR4571075	Uponor LF Brass Female Threaded Adapter, 1" PP-RCT x ¾" NPT
PR4571310	Uponor LF Brass Female Threaded Adapter, 1¼" PP-RCT x 1" NPT
PR4571313	Uponor LF Brass Female Threaded Adapter, 1¼" PP-RCT x 1¼" NPT
PR4571515	Uponor LF Brass Female Threaded Adapter, 1½" PP-RCT x 1½" NPT
PR4572020	Uponor LF Brass Female Threaded Adapter, 2" PP-RCT x 2" NPT
PR4525050	Uponor LF Brass Male Threaded Adapter, ½" PP-RCT x ½" NPT
PR4527550	Uponor LF Brass Male Threaded Adapter, ¾" PP-RCT x ½" NPT
PR4527575	Uponor LF Brass Male Threaded Adapter, ¾" PP-RCT x ¾" NPT
PR4521010	Uponor LF Brass Male Threaded Adapter, 1" PP-RCT x 1" NPT

PR4521075	Uponor LF Brass Male Threaded Adapter, 1" PP-RCT x ¾" NPT
PR4521313	Uponor LF Brass Male Threaded Adapter, 1¼" PP-RCT x 1¼" NPT
PR4521515	Uponor LF Brass Male Threaded Adapter, 1½" PP-RCT x 1½" NPT
PR4522020	Uponor LF Brass Male Threaded Adapter, 2" PP-RCT x 2" NPT
PR4515050	Uponor ProPEX LF Brass Adapter, ½" PP-RCT x ½" PEX
PR4517575	Uponor ProPEX LF Brass Adapter, ¾" PP-RCT x ¾" PEX
PR4511010	Uponor ProPEX LF Brass Adapter, 1" PP-RCT x 1" PEX
PR4511550	Uponor ProPEX LF Brass Saddle Adapter, 1½" / ¾" PP-RCT x ½" PEX, for Outlet Fusion
PR4512075	Uponor ProPEX LF Brass Saddle Adapter, 2" / ¾" PP-RCT x ¾" PEX, for Outlet Fusion
PR4775050	Uponor PP-RCT Coupling, ½" x ½"
PR4777575	Uponor PP-RCT Coupling, ¾" x ¾"
PR4771010	Uponor PP-RCT Coupling, 1" x 1"
PR4771313	Uponor PP-RCT Coupling, 1¼" x 1¼"
PR4771515	Uponor PP-RCT Coupling, 1½" x 1½"
PR4772020	Uponor PP-RCT Coupling, 2" x 2"
PR4772525	Uponor PP-RCT Coupling, 2½" x 2½"
PR4773030	Uponor PP-RCT Coupling, 3" x 3"
PR4774040	Uponor PP-RCT Coupling, 4" x 4"
PR4485050	Uponor PP-RCT Crossover, Molded, ½" x ½"
PR4487575	Uponor PP-RCT Crossover, Molded, ¾" x ¾"
PR4481010	Uponor PP-RCT Crossover, Molded, 1" x 1"
PR4764510	Uponor PP-RCT 45 Elbow, 1" x 1"
PR4764513	Uponor PP-RCT 45 Elbow, 1¼" x 1¼"
PR4764515	Uponor PP-RCT 45 Elbow, 1½" x 1½"
PR4764520	Uponor PP-RCT 45 Elbow, 2" x 2"
PR4764525	Uponor PP-RCT 45 Elbow, 2½" x 2½"
PR4764530	Uponor PP-RCT 45 Elbow, 3" x 3"
PR4764540	Uponor PP-RCT 45 Elbow, 4" x 4"
PR4764550	Uponor PP-RCT 45 Elbow, ½" x ½"
PR4764575	Uponor PP-RCT 45 Elbow, ¾" x ¾"
PR4434550	Uponor PP-RCT 45 Street Elbow, ½" x ½"
PR4434575	Uponor PP-RCT 45 Street Elbow, ¾" x ¾"
PR4434510	Uponor PP-RCT 45 Street Elbow, 1" x 1"
PR947645600	Uponor PP-RCT 45 Elbow, Mechanical, 6" x 6", SDR 9
PR94764561	Uponor PP-RCT 45 Elbow, Mechanical, 6" x 6", SDR 9, Short Radius
PR94764581	Uponor PP-RCT 45 Elbow, Mechanical, 8" x 8", SDR 9, Short Radius
PR947645100	Uponor PP-RCT 45 Elbow, Mechanical, 10" x 10", SDR 9, Short Radius
PR947645120	Uponor PP-RCT 45 Elbow, Mechanical, 12" x 12", SDR 9, Short Radius
PR94764560	Uponor PP-RCT 45 Elbow, Hot Potable, 6" x 6", SDR 9
PR94764580	Uponor PP-RCT 45 Elbow, Hot Potable, 8" x 8", SDR 9
PR4769050	Uponor PP-RCT 90 Elbow, ½" x ½"
PR4769075	Uponor PP-RCT 90 Elbow, ¾" x ¾"
PR4769010	Uponor PP-RCT 90 Elbow, 1" x 1"

PR4769013	Uponor PP-RCT 90 Elbow, 1¼" x 1¼"
PR4769015	Uponor PP-RCT 90 Elbow, 1½" x 1½"
PR4769020	Uponor PP-RCT 90 Elbow, 2" x 2"
PR4769025	Uponor PP-RCT 90 Elbow, 2½" x 2½"
PR4769030	Uponor PP-RCT 90 Elbow, 3" x 3"
PR4769040	Uponor PP-RCT 90 Elbow, 4" x 4"
PR4439050	Uponor PP-RCT 90 Street Elbow, ½" x ½"
PR4439075	Uponor PP-RCT 90 Street Elbow, ¾" x ¾"
PR4439010	Uponor PP-RCT 90 Street Elbow, 1" x 1"
PR947690600	Uponor PP-RCT 90 Elbow, Mechanical, 6" x 6", SDR 9
PR94769061	Uponor PP-RCT 90 Elbow, Mechanical, 6" x 6", SDR 9, Short Radius
PR947690800	Uponor PP-RCT 90 Elbow, Mechanical, 8" x 8", SDR 9
PR94769081	Uponor PP-RCT 90 Elbow, Mechanical, 8" x 8", SDR 9, Short Radius
PR94769060	Uponor PP-RCT 90 Elbow, Hot Potable, 6" x 6", SDR 9
PR94769080	Uponor PP-RCT 90 Elbow, Hot Potable, 8" x 8", SDR 9
PR4350500	Uponor PP-RCT End Cap, ½"
PR4350750	Uponor PP-RCT End Cap, ¾"
PR4351000	Uponor PP-RCT End Cap, 1"
PR4351250	Uponor PP-RCT End Cap, 1¼"
PR4351500	Uponor PP-RCT End Cap, 1½"
PR4352000	Uponor PP-RCT End Cap, 2"
PR4352500	Uponor PP-RCT End Cap, 2½"
PR4353000	Uponor PP-RCT End Cap, 3"
PR4354000	Uponor PP-RCT End Cap, 4"
PR9435600	Uponor PP-RCT End Cap, 6", SDR 9
PR943580	Uponor PP-RCT End Cap, 8", SDR 9
PR4777550	Uponor PP-RCT Fitting Reducer, ¾" x ½"
PR4771075	Uponor PP-RCT Fitting Reducer, 1" x ¾"
PR4771050	Uponor PP-RCT Fitting Reducer, 1" x ½"
PR4771310	Uponor PP-RCT Fitting Reducer, 1¼" x 1"
PR4771375	Uponor PP-RCT Fitting Reducer, 1¼" x ¾"
PR4771350	Uponor PP-RCT Fitting Reducer, 1¼" x ½"
PR4771513	Uponor PP-RCT Fitting Reducer, 1½" x 1¼"
PR4771510	Uponor PP-RCT Fitting Reducer, 1½" x 1"
PR4771550	Uponor PP-RCT Fitting Reducer, 1½" x ½"
PR4771575	Uponor PP-RCT Fitting Reducer, 1½" x ¾"
PR4772010	Uponor PP-RCT Fitting Reducer, 2" x 1"
PR4772013	Uponor PP-RCT Fitting Reducer, 2" x 1¼"
PR4772015	Uponor PP-RCT Fitting Reducer, 2" x 1½"
PR4772075	Uponor PP-RCT Fitting Reducer, 2" x ¾"
PR4772510	Uponor PP-RCT Fitting Reducer, 2½" x 1"
PR4772513	Uponor PP-RCT Fitting Reducer, 2½" x 1¼"
PR4772515	Uponor PP-RCT Fitting Reducer, 2½" x 1½"

PR4772520	Uponor PP-RCT Fitting Reducer, 2½" x 2"
PR4772550	Uponor PP-RCT Fitting Reducer, 2½" x ½"
PR4772575	Uponor PP-RCT Fitting Reducer, 2½" x ¾"
PR4773015	Uponor PP-RCT Fitting Reducer, 3" x 1½"
PR4773020	Uponor PP-RCT Fitting Reducer, 3" x 2"
PR4773025	Uponor PP-RCT Fitting Reducer, 3" x 2½"
PR94774025	Uponor PP-RCT Fitting Reducer, 4" x 2½", SDR 9
PR94774030	Uponor PP-RCT Fitting Reducer, 4" x 3", SDR 9
PR2981500	Uponor PP-RCT Flange Adapter, 1½"
PR2982000	Uponor PP-RCT Flange Adapter, 2"
PR2982525	Uponor PP-RCT Flange Adapter, 2½", for Butterfly Valves
PR2983030	Uponor PP-RCT Flange Adapter, 3", for Butterfly Valves
PR929840	Uponor PP-RCT Flange Adapter, 4", SDR 9, Butt or Socket Fused with Coupling
PR929860	Uponor PP-RCT Flange Adapter, 6", SDR 9
PR929880	Uponor PP-RCT Flange Adapter, 8", SDR 9
PR94776040	Uponor PP-RCT Reducer, 6" x 4", SDR 9, Butt to Socket Fusion
PR94778040	Uponor PP-RCT Reducer, 8" x 4", SDR 9
PR94778060	Uponor PP-RCT Reducer, 8" x 6", SDR 9
PR4755075	Uponor PP-RCT Reducing Tee, ½" x ½" x ¾"
PR4757550	Uponor PP-RCT Reducing Tee, ¾" x ¾" x ½"
PR4751175	Uponor PP-RCT Reducing Tee, 1" x 1" x ¾"
PR4751775	Uponor PP-RCT Reducing Tee, 1" x ¾" x ¾"
PR4751150	Uponor PP-RCT Reducing Tee, 1" x 1" x ½"
PR4751550	Uponor PP-RCT Reducing Tee, 1" x ½" x ½"
PR4751331	Uponor PP-RCT Reducing Tee, 1¼" x 1¼" x 1"
PR4751375	Uponor PP-RCT Reducing Tee, 1¼" x 1¼" x ¾"
PR4751350	Uponor PP-RCT Reducing Tee, 1¼" x 1¼" x ½"
PR4751553	Uponor PP-RCT Reducing Tee, 1½" x 1½" x 1¼"
PR4751551	Uponor PP-RCT Reducing Tee, 1½" x 1½" x 1"
PR4751575	Uponor PP-RCT Reducing Tee, 1½" x 1½" x ¾"
PR4752215	Uponor PP-RCT Reducing Tee, 2" x 2" x 1½"
PR4752213	Uponor PP-RCT Reducing Tee, 2" x 2" x 1¼"
PR4752210	Uponor PP-RCT Reducing Tee, 2" x 2" x 1"
PR4752520	Uponor PP-RCT Reducing Tee, 2½" x 2½" x 2"
PR4752515	Uponor PP-RCT Reducing Tee, 2½" x 2½" x 1½"
PR4752513	Uponor PP-RCT Reducing Tee, 2½" x 2½" x 1¼"
PR4752510	Uponor PP-RCT Reducing Tee, 2½" x 2½" x 1"
PR4752575	Uponor PP-RCT Reducing Tee, 2½" x 2½" x ¾"
PR4753325	Uponor PP-RCT Reducing Tee, 3" x 3" x 2½"
PR4753320	Uponor PP-RCT Reducing Tee, 3" x 3" x 2"
PR4753315	Uponor PP-RCT Reducing Tee, 3" x 3" x 1½"
PR4753313	Uponor PP-RCT Reducing Tee, 3" x 3" x 1¼"
PR4753310	Uponor PP-RCT Reducing Tee, 3" x 3" x 1"

PR4754430	Uponor PP-RCT Reducing Tee, 4" x 4" x 3"
PR4754425	Uponor PP-RCT Reducing Tee, 4" x 4" x 2½"
PR947566400	Uponor PP-RCT Reducing Tee, Mechanical, 6" x 6" x 4", SDR 9
PR94756640	Uponor PP-RCT Reducing Tee, Hot Potable, 6" x 6" x 4", SDR 9
PR94758840	Uponor PP-RCT Reducing Tee, Hot Potable, 8" x 8" x 4", SDR 9
PR94758860	Uponor PP-RCT Reducing Tee, Hot Potable, 8" x 8" x 6", SDR 9
PR4781350	Uponor PP-RCT Saddle, 1¼" x ½", for Outlet Fusion
PR4781375	Uponor PP-RCT Saddle, 1¼" x ¾", for Outlet Fusion
PR4781550	Uponor PP-RCT Saddle, 1½" x ½", for Outlet Fusion
PR4781575	Uponor PP-RCT Saddle, 1½" x ¾", for Outlet Fusion
PR4782010	Uponor PP-RCT Saddle, 2" x 1", for Outlet Fusion
PR4782050	Uponor PP-RCT Saddle, 2" x ½", for Outlet Fusion
PR4782075	Uponor PP-RCT Saddle, 2" x ¾'', for Outlet Fusion
PR4782510	Uponor PP-RCT Saddle, 2½" x 1", for Outlet Fusion
PR4782513	Uponor PP-RCT Saddle, 2½" x 1¼", for Outlet Fusion
PR4782550	Uponor PP-RCT Saddle, 2½" x ½", for Outlet Fusion
PR4782575	Uponor PP-RCT Saddle, 2½" x ¾", for Outlet Fusion
PR4783010	Uponor PP-RCT Saddle, 3" x 1", for Outlet Fusion
PR4783013	Uponor PP-RCT Saddle, 3" x 1¼", for Outlet Fusion
PR4783050	Uponor PP-RCT Saddle, 3" x ½", for Outlet Fusion
PR4783075	Uponor PP-RCT Saddle, 3" x ¾", for Outlet Fusion
PR4784010	Uponor PP-RCT Saddle, 4" x 1", for Outlet Fusion
PR4784013	Uponor PP-RCT Saddle, 4" x 1¼", for Outlet Fusion
PR4784015	Uponor PP-RCT Saddle, 4" x 1½", for Outlet Fusion
PR4784020	Uponor PP-RCT Saddle, 4" x 2", for Outlet Fusion
PR4784050	Uponor PP-RCT Saddle, 4" x ½", for Outlet Fusion
PR4784075	Uponor PP-RCT Saddle, 4" x ¾", for Outlet Fusion
PR4786010	Uponor PP-RCT Saddle, 6" x 1", for Outlet Fusion
PR4786013	Uponor PP-RCT Saddle, 6" x 1¼", for Outlet Fusion
PR4786015	Uponor PP-RCT Saddle, 6" x 1½", for Outlet Fusion
PR4786020	Uponor PP-RCT Saddle, 6" x 2", for Outlet Fusion
PR4786025	Uponor PP-RCT Saddle, 6" x 2½", for Outlet Fusion
PR4786030	Uponor PP-RCT Saddle, 6" x 3", for Outlet Fusion
PR4786050	Uponor PP-RCT Saddle, 6" x ½", for Outlet Fusion
PR4786075	Uponor PP-RCT Saddle, 6" x ¾", for Outlet Fusion
PR4788010	Uponor PP-RCT Saddle, 8" x 1", for Outlet Fusion
PR4788013	Uponor PP-RCT Saddle, 8" x 1¼", for Outlet Fusion
PR4788015	Uponor PP-RCT Saddle, 8" x 1½", for Outlet Fusion
PR4788020	Uponor PP-RCT Saddle, 8" x 2", for Outlet Fusion
PR4788025	Uponor PP-RCT Saddle, 8" x 2½", for Outlet Fusion
PR4788030	Uponor PP-RCT Saddle, 8" x 3", for Outlet Fusion
PR4788040	Uponor PP-RCT Saddle, 8" x 4", for Outlet Fusion
PR4788050	Uponor PP-RCT Saddle, 8" x ½", for Outlet Fusion

PR4788075	Uponor PP-RCT Saddle, 8" x ¾", for Outlet Fusion
PR4791575	Uponor PP-RCT Transition Saddle, 1½" x ¾", Female NPT, for Outlet Fusion
PR4791550	Uponor PP-RCT Transition Saddle, 1½" x ½", Female NPT, for Outlet Fusion
PR4792075	Uponor PP-RCT Transition Saddle, 2" x ¾", Female NPT, for Outlet Fusion
PR4792050	Uponor PP-RCT Transition Saddle, 2" x ½", Female NPT, for Outlet Fusion
PR4792510	Uponor PP-RCT Transition Saddle, 2½" x 1", Female NPT, for Outlet Fusion
PR4792575	Uponor PP-RCT Transition Saddle, 2½" x ¾", Female NPT, for Outlet Fusion
PR4792550	Uponor PP-RCT Transition Saddle, 2½" x ½", Female NPT, for Outlet Fusion
PR4793010	Uponor PP-RCT Transition Saddle, 3" x 1", Female NPT, for Outlet Fusion
PR4793075	Uponor PP-RCT Transition Saddle, 3" x ¾", Female NPT, for Outlet Fusion
PR4793050	Uponor PP-RCT Transition Saddle, 3" x ½", Female NPT, for Outlet Fusion
PR4794010	Uponor PP-RCT Transition Saddle, 4" x 1", Female NPT, for Outlet Fusion
PR4794075	Uponor PP-RCT Transition Saddle, 4" x ¾", Female NPT, for Outlet Fusion
PR4794050	Uponor PP-RCT Transition Saddle, 4" x ½", Female NPT, for Outlet Fusion
PR4796010	Uponor PP-RCT Transition Saddle, 6" x 1", Female NPT, for Outlet Fusion
PR4796075	Uponor PP-RCT Transition Saddle, 6" x ¾", Female NPT, for Outlet Fusion
PR4796050	Uponor PP-RCT Transition Saddle, 6" x ½", Female NPT, for Outlet Fusion
PR4798010	Uponor PP-RCT Transition Saddle, 8" x 1", Female NPT, for Outlet Fusion
PR4798075	Uponor PP-RCT Transition Saddle, 8" x ¾", Female NPT, for Outlet Fusion
PR4798050	Uponor PP-RCT Transition Saddle, 8" x ½", Female NPT, for Outlet Fusion
PR4755050	Uponor PP-RCT Tee, ½" x ½" x ½"
PR4757575	Uponor PP-RCT Tee, ¾" x ¾" x ¾"
PR4751000	Uponor PP-RCT Tee, 1" x 1" x 1"
PR4751250	Uponor PP-RCT Tee, 1¼" x 1¼" x 1¼"
PR4751500	Uponor PP-RCT Tee, 1½" x 1½" x 1½"
PR4752000	Uponor PP-RCT Tee, 2" x 2" x 2"
PR4752500	Uponor PP-RCT Tee, 2½" x 2½" x 2½"
PR4753000	Uponor PP-RCT Tee, 3" x 3" x 3"
PR4754000	Uponor PP-RCT Tee, 4" x 4" x 4"
PR9475600	Uponor PP-RCT Tee, Mechanical, 6" x 6" x 6", SDR 9
PR9475800	Uponor PP-RCT Tee, Mechanical, 8" x 8" x 8", SDR 9
PR947560	Uponor PP-RCT Tee, Hot Potable, 6" x 6" x 6", SDR 9
PR947580	Uponor PP-RCT Tee, Hot Potable, 8" x 8" x 8", SDR 9