



CSI: DIVISION 22 00 00—PLUMBING
Section: 22 11 00—Facility Water Distribution
Section: 22 11 16—Domestic Water Piping

DIVISION 23 00 00—HEATING, VENTILATING AND AIR CONDITIONING (HVAC)
Section: 23 21 13—Hydronic Piping

Product certification system:

The ICC-ES product certification system includes testing samples taken from the market or supplier's stock, or a combination of both, to verify compliance with applicable codes and standards. The system also involves factory inspections, and assessment and surveillance of the supplier's quality system.

Product: Wavin Polypropylene (PP-RCT) Piping Systems

Listee: Wavin Czechia s.r.o
Rudec 848
Kostelec and Labem, Czechia 277 13
www.wavin.com

Compliance with the following codes:

2024, 2021, 2018, 2015, 2012 and 2009 *International Plumbing Code*® (IPC)
2024, 2021, 2018, 2015, 2012 and 2009 *International Mechanical Code*® (IMC)
2021, 2018, 2015, 2012 and 2009 *International Residential Code*® (IRC)
2024, 2021, 2018, 2015, 2012 and 2009 *Uniform Plumbing Code*® (UPC)*
2024, 2021, 2018, 2015, 2012 and 2009 *Uniform Mechanical Code*® (UMC)*
2022, 2019, 2016, 2013 and 2010 *California Plumbing Code* (CPC)
2022, 2019, 2016, 2013 and 2010 *California Mechanical Code* (CMC)
2023, 2020 and 2017 *City of Los Angeles Plumbing Code*
2023, 2020 and 2017 *City of Los Angeles Mechanical Code*
2021, 2017 and 2007 *Code of Massachusetts Regulation 248 CMR 10.00: Uniform State Plumbing Code*
2021, 2017 *Massachusetts State Building Code 780 CMR Ninth Edition: Chapter 28*
2022 and 2017 *Uniform Illustrated Plumbing Code*® - India (UIPC-I)*
2020, 2015 and 2010 *National Plumbing Code of Canada*® (NPC**)

* Copyrighted publications of the International Association of Plumbing and Mechanical Officials

** National Plumbing Code of Canada is a copyrighted publication of National Research Council Canada

Compliance with the following standards:

ASTM F2389-2023, Standard Specification for Pressure-rated Polypropylene (PP) Piping Systems
NSF/ANSI 14-2022, Plastics Piping System Components and Related Materials

NSF/ANSI/CAN 61-2022, Drinking Water System Components – Health Effects
NSF/ANSI/CAN 372-2022, Drinking Water System Components – Lead Content
CSA B137.11-2023. Polypropylene (PP-RCT) Pipe and Fittings for Pressure Applications

Identification:

Piping:

The piping must be marked every 5 feet (1524 mm) with the following:

- 1) Manufacturer's name or trademark.
- 2) Nominal pipe size.
- 3) Metric series pipe shall be marked with the dimension ratio or both the outside diameter and wall thickness and shall include the term "metric;"
- 4) IPS series pipe shall include the marking "SCH 80" or "Schedule 80".
- 5) Type of material (PP-RCT) and classification number (112).
- 6) Pressure rating(s) and temperature for which the rating(s) is valid (for example, 355 psi at 73°F, 100 psi at 180°F);
- 7) This specification designation, ASTM F 2389 and CSA B137.11, with which the pipe complies.
- 8) Manufacturer's production code which allows the manufacturer to identify production date and location if producing at different sites.
- 9) Pipe intended for the transport of potable water or other water that could include residual free chlorine as a disinfectant shall also include the chlorine resistant destination for which it complies, CL-TD or CL-R and the word "potable" or "PW".
- 10) The ICC-ES PMG listing mark. The ICC-ES PMG listing number (PMG-1679) is optional.

Fittings:

Fittings must be marked with the following:

- 1) Nominal size.
- 2) Dimension ratio or schedule of the corresponding pipe, unless the fittings are made as part of a system sold by the manufacturer, and the same fitting design is used for all pipe series produced as part of the system.
- 3) Type of material (PP-RCT) as applicable.
- 4) For threaded fittings, the fitting, or the packaging in which the fitting is sold shall include either "Metric" or "NPT" as appropriate. For metric thread fittings, the packaging shall state that the fittings are not interchangeable with and shall not be used with NPT fittings. For NPT thread fittings, the packaging shall state that the fittings are not interchangeable with and shall not be used with metric fittings.
- 5) The fitting or the packaging in which the fitting is sold shall include this specification designation, ASTM F 2389 and CSA B137.11, with which the fitting complies; and
- 6) The ICC-ES PMG listing mark.

Installation:

Wavin piping and fittings must be installed in accordance with the manufacturer's published installation instructions, the applicable codes and this listing. Where differences exist, the instructions in this listing must govern. The minimum cold bending radius is six times the nominal diameter.

Water Distribution: Horizontally laid pipe must be secured in such a manner that temperature-induced expansion and contraction are accommodated. In areas using the Uniform Plumbing Code (UPC), PP piping must not be installed within the first 18 inches (457 mm) of piping connected to a water heater. The system may be installed in concrete in accordance with the manufacturer's instructions. The piping must be secured to the concrete reinforcement (i.e., "rebar") to hold it in place while pouring concrete. When embedment is in concrete, installation, including minimum concrete cover, must comply with IBC Section 1907, or IRC Section R506.1, as applicable.

Water Service: Buried piping must be installed in such a manner that external loads do not decrease the vertical dimension of the cross section by more than 5 percent. Piping must be installed to provide an allowance for contraction of the line due to temperature change prior to backfilling. In areas with poor soil conditions (plastic clays), the trench bottom must be prepared using granular material to

provide a stable base. Potable water service piping must not be located in, under or above cesspools, septic tanks, septic tank drainage fields or pits.

Water Distribution and Water Service Piping: Installed piping must be pressure-tested and inspected as required by IPC Section 606.6, IRC Section P2503.6 or UPC Section 103.5.

Hydronic Piping Systems: The installation must comply with Chapter 12 of the applicable mechanical code(s) and the manufacturer's published installation instructions. Details of the design and installation of the hydronic piping system must be submitted to the code official for approval. All circuits must be formed from continuous lengths of piping, from manifold supply to return. No splices are allowed. The system may be installed in either concrete or wood floors. When the system is embedded in concrete floors, a moisture barrier must be laid over a concrete base slab a minimum of 3¹/₂ inches (38 mm) thick. Under-floor insulation and reinforcing mesh must then be placed on the slab. The piping must be uncoiled and attached to the mesh using soft steel wire. A concrete topping is then laid over the piping. When embedment is in concrete, installation, including minimum concrete cover, must comply with IBC Section 1906.3, or IRC Section R506.1, as applicable. When the piping is installed over polystyrene boards, the boards must comply with IBC Section 2603, or IRC Section R314, as applicable.

Antifreeze protection may be achieved by the addition of chemicals detailed in Item 1 of the Conditions of Listing, below. The quantity of these allowed chemicals required to achieve a specific freeze protection level is beyond the scope of this listing. Addition of antifreeze to the radiant heating loop must be in accordance with the manufacturer's installation instructions and the material safety data sheet (MSDS).

Mounting brackets and installation hardware are provided by the manufacturer. Horizontally laid pipe must be secured in such a way that temperature-induced expansion and contraction are accommodated.

Hydronic Piping: The piping must be pressure-tested for leaks before installation of covering, as noted in Section 1208 of the IMC, Section 1207 of the UMC, or Section M2103.3 of the IRC, as applicable. The leak test must be witnessed by the code official or the code official's designated representative.

Models:

Pipe and Fittings: Wavin pipe and fittings for mechanical and plumbing are manufactured from monolayer or multilayer polypropylene random copolymer with modified crystallinity and temperature resistance (PP-RCT) materials satisfying ASTM F 2389, CSA B137.11, NSF/ANSI 14, NSF/ANSI/CAN 372, and NSF/ANSI/CAN 61.

Pipes for plumbing and mechanical applications are available in either gray or green in color. The pipes are also available with a middle layer containing basalt fiber (multilayer pipes) to reduce the linear expansions. The fittings for plumbing and mechanical applications are in gray or green in color.

The pipes are available in nominally 20-, 25-, 32-, 40-, 50-, 63-, 75-, 90-, 110-, 125-, 160-, 200-, and 250-millimeters (1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 3-1/2, 4, 6, 8, and 10 inches) outside-diameter sizes in 4-meter (13 feet) or 5.8-meter (19 feet) straight lengths. The fittings are available in nominally 20-, 25-, 32-, 40-, 50-, 63-, 75-, 90-, 110-, 125-, 160-, 200-, 250-millimeters (1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 3-1/2, 4, 6, 8, 10 inches).

The pipe and fitting products have a minimum pressure rating as specified in Table X.1.1 of ASTM F2389 for all standard dimension ratios (SDRs) of 7.4, 9, 11, and 17. Pipe and fittings must be joined by socket fusion or butt fusion for large dimensions. Electrofusion is optional and shall be carried out with a proprietary device. Flanged, and threaded adapter fittings are available for joining to other materials.

Conditions of Listing:

1. The products recognized in this listing must be installed in accordance with the manufacturer's published installation instructions and the applicable codes.
2. Where used in radiant heating systems, the pipe and fittings are recognized for use with water, as well as aqueous solutions of ethylene glycol or propylene glycol for antifreeze, up to 100 percent concentrations of either glycol.
3. When installation is in fire-resistance-rated assemblies, evidence of compliance with IBC Section 712 (penetrations) must be provided to the code official for approval.
4. During placement of cover over the piping, the pipe must be maintained at the greater of 1^{1/2} times the working pressure or 100 psi (689.4 kPa).
5. Each installation must be pressure-tested for leaks in the presence of the code official or the code official's designated representative.
6. Clearances from heat-producing equipment must be in accordance with the applicable code.
7. Hydronic piping systems that utilize a non-potable heat transfer fluid must not be connected to the potable water system except through the use of approved devices such as backflow preventers or double-walled heat exchangers.
8. For jurisdictions enforcing the IPC, for water supply and distribution, heat-fusion joints must be installed in accordance with IPC Section 605.20.1.
9. The products recognized in this listing are under a quality control program with two surveillance inspections per year by ICC-ES.