ICC-ES PMG Product Certificate

PMG-1014

Effective Date: April 2025

This listing is subject to re-examination in one year.

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CSI: Division: 22 00 00—PLUMBING
Section: 22 11 16—Domestic Water Piping

Division: 23 00 00— 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.

Products: PP-RCT and PP-R Pipe and Fittings

Listee: Aquatherm GmbH
Biggen I-5
Attendorn D-57439
Germany
www.aquatherm.de

Compliance with the following codes:

2024, 2021, 2018, 2015, 2012, 2009, 2006, and 2003 *International Plumbing Code®* (IPC)
2024, 2021, 2018, 2015, 2012, 2009, 2006, and 2003 *International Residential Code®* (IRC)
2024, 2021, 2018, 2015, 2012, 2009, 2006, and 2003 *International Mechanical Code®* (IMC)
2024, 2021, 2018, 2015, 2012, 2009, 2006, and 2003 *Uniform Plumbing Code®* (UPC)*
2024, 2021, 2018, 2015, 2012, 2009, 2006, and 2003 *Uniform Mechanical Code®* (UMC)*
2023, 2020, and 2017 *City of Los Angeles Plumbing Code*
2023, 2020, and 2017 *City of Los Angeles Mechanical Code*
2023, 2021, 2017 and 2007 *Code of Massachusetts Regulation 248 CMR 10.00: Uniform State Plumbing Code*
2023, 2021 and 2017 *Massachusetts State Building Code 780 CMR Ninth Edition: Chapter 28*
2020, 2015 and 2010 *National Plumbing Code of Canada®* (NPC)**

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Compliance with the following standards:

ASTM F2389-2024a, Pressure-rated Polypropylene (PP) Piping Systems
NSF/ANSI 14-2023, Plastics Piping System Components and Related Materials
NSF/ANSI/CAN 61-2024, Drinking Water System Components - Health Effects
ICC-ES LC1004-2009 (editorially revised June 2010), PMG Listing Criteria for PP, PEX, PEX-AL-PEX, and PP-AL-PP Piping, Tube and Fittings Used in Radiant Heating and Water Supply Systems
CSA B137.11-2020, Polypropylene (PP-R) Pipe and Fittings for Pressure Applications

Identification:

Piping:

The piping must be marked every 5 feet (1524 mm) with the following: the name Aquatherm , blue pipe, blue pipe MF, blue pipe MF RP, blue pipe MF RP UV; nominal pipe diameter; material designation (PP-RCT or PP-R); ; standard dimensional ratio (SDR 6, 7.3, 9, 11, 17, or 17.6); temperature and pressure ratings; standard designation; production code; and the ICC-ES PMG listing mark. 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, Class 0, 1, 3 or 5. The ICC-ES PMG listing number (PMG-1014) is optional.

Fittings:

Aquatherm blue system fittings must be marked with the nominal diameter, the Aquatherm logo (see Figure 1) and the type of material (PP-RCT, PP-R).

Packages containing Aquatherm blue system fittings must be marked with the following: standard designation; nominal size and either the ICC-ES PMG listing number (PMG-1014) or the ICC-ES PMG listing mark.

Installation:

Aquatherm blue pipe, blue pipe MF, blue pipe MF RP, blue pipe MF RP UV, piping and fittings are socket, butt, fusion outlet, or electrofusion heat-welded and 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 of tubing 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 (ie "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 $3^1/_2$ 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 1907, 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 R316, 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 IAPMO UMC, or Section M2103.4 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: Aquatherm blue pipe and blue pipe MF pipe and fittings are manufactured from random copolymer polypropylene pipe (PP-RCT, PP-R) materials satisfying NSF/ANSI 14 and NSF/ANSI/CAN 61 as well as ASTM F2389 and CSA B137.11.

Aquatherm Advanced system consisting of Aquatherm blue pipe, blue pipe MF, blue pipe MF RP pipe, fittings and fiberglass or mineral wool insulation, with bare fittings no more than every 6 ft. of pipe were evaluated to ASTM E84 and ULC S102.2 and were found to have a flame-spread index of less than 5 and smoke-development index of less than 25.

The pipe and fittings are available in nominally 20-, 25-, 32-, 40-, 50-, 63-, 75-, 90-, 110-, 125-, 140-160-, 200-, 250-, 315-, 355-, 400-, 450-, 500-, 560-, and 630- millimeter (0.787, 0.984, 1.26, 1.575, 1.96, 2.48, 2.95, 3.54, 4.33, 4.92, 5.51, 6.3, 7.87, 9.84, 12.40, 13.98, 16, 18, 20, 22, and 24 inches) outside-diameter sizes in 4-meter (13.1 feet) or 6-meter (19.7 feet) straight lengths. The 20- and 25-millimeter (0.787 and 0.973 inch) sizes are also available in coils of 100-meter (328 feet) length. The pipe and fitting products are pressure-rated for a minimum of 100 psi (690 kPa) at 180°F (82°C) for standard dimension ratios (SDRs) of 6, 7.3, and 9 and for a minimum 160 psi (1100 kPa) at 73°F (23°C) for all SDRs. SDR is the ratio of outside diameter to wall thickness and is constant for all pipe sizes. Fittings and pipe must be joined by heat fusion with a proprietary device. Flanged, threaded, PEX, and grooved adapter fittings are available for joining to other materials.

Conditions of Listing:

1. Where used in heating and/or cooling 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.
2. When installation is in fire-resistance-rated assemblies, evidence of compliance with IBC Section 714 (penetrations) must be provided to the code official for approval.
3. 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).
4. Each installation must be pressure-tested for leaks in the presence of the code official or the code official's designated representative.
5. Clearances from heat-producing equipment must be in accordance with the applicable code.
6. 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.
7. For jurisdictions enforcing the IPC, for water supply and distribution, heat-fusion joints must be installed in accordance with IPC Section 605.20.1.
8. The piping is under a quality control program with surveillance inspections by ICC-ES.

FIGURE 1—AQUATHERM LOGO