ICC-ES PMG Product Certificate

PMG-1244

Effective Date: April 2023
This listing is subject to re-examination in one year.

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A Subsidiary of the International Code Council®

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: Niron® Polypropylene (PP-RCT) Piping System

Listee: NUPI INDUSTRIE ITALIANE SpA
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www.nupiindustrieitaliane.com

NUPI AMERICAS
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Compliance with the following codes:

2021, 2018, 2015, 2012, 2009 and 2006 *International Plumbing Code*® (IPC)
2021, 2018, 2015, 2012, 2009 and 2006 *International Residential Code*® (IRC)
2021, 2018, 2015, 2012, 2009 and 2006 *International Mechanical Code*® (IMC)
2021, 2018, 2015, 2012, 2009 and 2006 *Uniform Plumbing Code** (UPC)*
2021, 2018, 2015, 2012, 2009 and 2006 *Uniform Mechanical Code** (UMC)*
2019, 2016, 2013 and 2010 *California Plumbing Code* (CPC)
2019, 2016, 2013 and 2010 *California Mechanical Code* (CMC)
2020 and 2017 *City of Los Angeles Plumbing Code*
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*
2020, 2015, 2010 and 2005 *National Plumbing Code of Canada***
2017 *Uniform Illustrated Plumbing Code – India*™ (UIPC-India) *

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Compliance with the following standards:

ASTM F 2389-2023, Pressure-rated Polypropylene (PP) Piping Systems
NSF/ANSI 14-2022, Plastic Piping Systems Components and Related Materials
NSF/ANSI 51-2023, Food Equipment Materials
NSF/ANSI/CAN 61-2022, Drinking Water System Components – Health Effects
CSA B137.11-2023 Polypropylene (PP-R & PP-RCT) pipe and fittings for pressure applications
ICC-ES LC1004, 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 (Approval Date: Nov 2009, Editorial Revision Date: June 2010)

Identification:

Niron® 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 (80 or 100)
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, 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.
10) The ICC-ES PMG listing mark. The ICC-ES PMG listing number (PMG-1244) is optional.

Niron® 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).
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, with which the fitting complies; and
6) The ICC-ES PMG listing mark.

Installation:

Niron® 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 (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 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 IAPMO 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: Niron® pipe and fittings are manufactured from random copolymer polypropylene pipe (PP-R) materials satisfying ASTM F 2389.

The pipe and fitting products have a pressure-rating of 150 psi (1034 kPa) at 180°F (82°C) and 405 psi (2792 kPa) at 73°F (23°C) for SDR 7.3, 120 psi (827 kPa) at 180°F (82°C) and 321 psi (2213 kPa) at 73°F (23°C) for SDR 9, 100 psi (689 kPa) at 180°F (82°C) and 258 psi (1778 kPa) at 73°F (23°C) for SDR 11, and 60 psi (414 kPa) at 180°F (82°C) and 162 psi (1117 kPa) at 73°F (23°C) for SDR 17. SDR is the ratio of outside diameter to wall thickness and is constant for all pipe sizes. Available in the following colors: Grey, Grey with blue stripes, Grey (Clima), Grey (Clima) with red stripes, and Clima CoolPro (white uv resistant outer layer) with the following pressure-rating: 225 psi (1551 kPa) at 140°F (60°C) and 425 psi (2930 kPa) at 68°F (20°C) for SDR 7.3, 175 psi (1206 kPa) at 140°F (60°C) and 330 psi (2275 kPa) at 68°F (20°C) for SDR 9, 140 psi (965 kPa) at 140°F (60°C) and 265 psi (1827 kPa) at 68°F (20°C) for SDR 11, and 88 psi (607 kPa) at 140°F (60°C) and 165 psi (1138 kPa) at 68°F (20°C) for SDR 17

SDR	Pipe Sizes OD (in)	Pipe Sizes OD (mm)
7.3	From 0.787 to 13.976	From 20 to 355 mm
9	From 1.260 to 13.976	From 32 to 355 mm
11	From 1.575 to 19.685	From 40 to 500 mm
17	From 2.480 to 24.803	From 63 to 630 mm

FITTING TYPE	SIZES
45° ELBOWS	½", ¾", 1", 1-¼", 1-½", 2", 2-½", 3", 3-½", 4", 6", 8", 10", 12", 14", 16", 18', 20", 24"
END CAPS	½", ¾", 1", 1-¼", 1-½", 2", 2-½", 3", 3-½", 4", 6", 8", 10", 12", 14", 16", 18', 20", 24"
ELECTROFUSION 45° ELBOWS	½", ¾", 1", 1-¼", 1-½", 2", 2-½", 3", 3-½", 4", 6", 8", 10"
BEND 90°	½", ¾"
STREET 45° ELBOWS	½", ¾", 1"
STUB FLANGE WITH O-RING SEALS	½", ¾", 1", 1-¼", 1-½", 2", 2-½", 3", 3-½", 4"
REDUCING CROSS	1-¼" - ¾" - ¾" - 1-¼"
SIDE OUTLET ELBOW	½"
90° ELBOWS	½", ¾", 1", 1-¼", 1-½", 2", 2-½", 3", 3-½", 4", 6", 8", 10", 12", 14", 16", 18", 20", 24"
ELECTROFUSION 90° ELBOWS	½", ¾", 1", 1-¼", 1-½", 2", 2-½", 3", 3-½", 4", 6", 8", 10"
STREET 90° ELBOWS	½", ¾", 1", 1-¼"
WELDING SADDLE (INSTRABRANCH)	1-¼" x ½", 1-¼" x ¾", 1-½" x ½", 1-½" x ¾", (2" - 2-½") x ½", (2" - 2-½") x ¾", (2" - 2 ½") x 1", (3" - 4") x ½", (3" - 4") x ¾", (3" - 4") x 1", 3" x 1-¼", 3" x 1-½", 3-½" x 1-½", 3-½" x 2", 4" x 1-¼", 4" x 1-½", 4" x 2", 4" x 2-½" (6" - 8") x ½", (6" - 8") x ¾", (6" - 8") x 1", (6" - 8") x 1-¼", 6" x 1-½", 6" x 2", 6" x 2-½", 6" x 3", 8" x 1-½", 8" x 2", 8" x 2-½", 8" x 3" (10" - 12") x ½", (10" - 12") x ¾", (10" - 12") x 1", (10" - 12") x 1-¼, 10" x 1-½", 10" x 2", 10" x 2-½", 10" x 3", 12" x 1-½", 12" x 2", 12" x 2-½", 12" x 3", (14" - 24") x ½", (14" -24") x ¾", (14" - 24") x 1", (14" - 24") x 1-¼, (14" - 18") x 1-½", (14" - 18") x 2", (14" - 18") x 3" (20" - 24") x 1-½", (20" - 24") x 2"

WELDING SADDLES (INSTRABRANCH) W/ FEMALE THR. NPT INS. (LEAD FREE BRASS)	(1-¼" - 1-½") x ½" FNPT x ½", (2" - 2-½") x ½" FNPT, (3" - 4") x ½" FNPT, (6" - 8") x ½" FNPT, (10" - 12") x ½" FNPT, (14" - 24") x ½" FNPT, (1-¼" – 1-½") x ¾" FNPT, (2" - 2-½") x ¾" FNPT, (3" - 4") x ¾" FNPT, (6" - 8") x ¾" FNPT, (10" - 12") x ¾" FNPT, (2" - 2-½") x 1" FNPT, (3" - 4") x 1" FNPT, (6" - 8") x 1" FNPT, (10" - 12") x 1" FNPT
WELDING SADDLES (INSTRABRANCH) W/ FEMALE THR. NPT INS. (STAINLESS STEEL)	(1-¼" - 1-½") x ½" FNPT, (2" - 2 ½") x ½" FNPT, (3" - 4") x ½" FNPT, (6" - 8") x ½" FNPT, (10" - 12") x ½" FNPT, (14" - 24") x ½" FNPT, (1-¼" - 1-½") x ¾" FNPT, (2" - 2-½") x ¾" FNPT, (3" - 4") x ¾" FNPT, (6" - 8") x ¾" FNPT, (10" – 12") x ¾" FNPT, (14" – 24") x ¾" FNPT, (2" - 2-½") x 1" FNPT, (3" - 4") x 1" FNPT, (6" - 8") x 1" FNPT, (10" - 12") x 1" FNPT, (14" - 24") x 1" FNPT
SOCKET FUSION COUPLINGS	½", ¾", 1", 1-¼", 1-½", 2", 2-½", 3", 3-½", 4"
ELECTROFUSION COUPLINGS	½", ¾", 1", 1-¼", 1-½", 2", 2-½", 3", 3-½", 4", 6", 8", 10", 12", 14", 16", 18", 20", 24"
REDUCING SOCKET FUSION COUPLINGS	¾" x ½", 1" x ½", 1" x ¾", 1-¼" x ½", 1-¼" x ¾", 1-¼" x 1", 1-½" x ½", 1-½" x ¾", 1-½" x 1", 1-½" x 1-¼", 2" x ¾", 2" x 1", 2" x 1-¼", 2" x 1-½", 2-½" x ½", 2-½" x ¾", 2-½" x 1", 2-½" x 1-¼", 2-½" x 1-½", 2-½" x 2", 3" x 2", 3" x 2-½", 4" x 2", 4" x 2-½", 4" x 3", 3-½" x 2", 3- ½" x 2-½", 3-½" x 3", 4" x 3", 4" x 3-½"
TEES	½", ¾", 1", 1-¼", 1-½", 2", 2-½", 3", 3-½", 4", 6", 8", 10", 12", 14", 16", 18", 20", 24"

REDUCING TEES	¾" x ½" x ½", ¾" x ½" x ¾", ¾" x ¾" x ½", ¾" x ¾" x 1", 1" x ½" x ½", 1" x ¾ x ½", 1" x ¾" x ¾", 1" x ¾" x 1", 1" x 1" x ¾", 1-¼" x 1-¼" x ½", 1- ¼" x 1-¼" x ¾", 1-¼" x 1-¼" x 1", 1-½" x 1-½" x ½", 1-½" x 1-½" x ¾", 1-½" x 1-½" x 1", 2" x 2" x 1/2", 2" x 2" x ¾", 2" x 2" x 1", 2" x 2" x 1-¼", 2" x 2" x 1-½", 2-½" x 2-½" x 3/4", 2-½" x 2-½" x 1/2", 2-½" x 2-½" x 1", 2-½" x 2-½" x 1-¼", 2-½" x 2-½" x 1-½", 2- ½" x 2-½" x 2", 3" x 3" x 1- ¼", 3"x 3" x 1-½", 3" x 3" x 2", 3" x 3" x 2-½", "3-½" x 3-½" x 1-½", 3-½" x 3-½" x 2", 3-½" x 3-½" x 2-½", 3-½" x 3-½" x 3", 4" x 4" x 1-½", 4" x 4" x 2", 4" x 4" x 2-½", 4" x 4" x 3", 4" x 4" x 3-½", 6" x 6" x 2", 6" x 6" x 2-½", 6" x 6" x 3", 6" x 6" x 3-½", 6" x 6" x 4", 8" x 8" x 2", 8" x 8" x 2-½", 8" x 8" x 3", 8" x 8" x 3-½", 8" x 8" x 4", 10" x 10" x 3", 10" x 10" x 3-½", 10" x 10" x 4", 10" x 10" x 6", 10" x 10" x 8", 12" x 12" x 2", 12" x 12" x 2", 12" x 12" x 2 ½", 12" x 12" x 3", 12" x 12" x 3 ½", 12" x 12" x 4", 12" x 12" x 6", 12" x 12" x 8", 12" x 12" x 10", 14" x 14" x 2", 14" x 14" x 3", 14" x 14" x 3 ½", 14" x14" x 4", 14" x 14" x 6", 14" x 14" x 8", 14" x 14" x 10", 16" x 16" x 2", 16" x 16" x2 ½", 16" x 16" x 3", 16" x 16" x 4", 16" x 16" x 6", 16" x 16" x 8", 16" x 16" x 10", 16" x 16" x 12", 16" x 16" x 14", 18" x 18" x 2", 18" x 18" x 2 ½", 18" x 18" x 3", 18" x 18" x 3 ½", 18" x 18" x 4", 18" x 18" x 6", 18" x 18" x 8", 18" x 18" x 10", 18" x 18" x 12", 18" x 18" x 14", 18" x 18" x 16", 20" x 20" x 2", 20" x 20" x 2 ½", 20" x 20" x 3", 20" x 20" x 3 ½", 20" x 20" x 4", 20" x 20" x 6", 20" x 20" x 8", 20" x 20" x 10", 20" x

	20" x 10", 20" x 20" x 12", 20" x 20" x 14", 20" x 20" x 16", 20" x 20" 18", 22" x 22" x 2", 22" x 22" x 2 ½", 22" x 22" x 3", 22" x 22" x 3 ½", 22" x 22" x 4", 22" x 22" x 6", 22" x 22" x 8", 22" x 22" x 10", 22" x 22" x 12", 22" x 22" 14", 22" x 22" x 16", 24" x 24" x 2", 24" x 24" x 2 ½", 24" x 24" x 3", 24" x 24" x 3 ½", 24" x 24" x 4", 24" x 24" 6", 24" x 24" x 8", 24" x 24" 10", 24" x 24" x 12", 24" x 24" x 14", 24" x 24" x 16", 24" x 24" x 18", 24" x 24" x 20", 24" x 24" x 22"
ELECTROFUSION TEES	½", ¾", 1", 1-¼", 1-½", 2", 2-½", 3", 3-½", 4", 6", 8", 10"
FEMALE THR. TEE (LEAD FREE BRASS)	½" x ½", ¾" x ½", ¾" x ¾", 1" x ½", 1" x ¾", 1" x 1"
FEMALE THR. TEE (STAINLESS STEEL)	½" x ½", ¾" x ½", ¾" x ¾", 1" x ½", 1" x ¾", 1" x 1"
FEMALE THR ADAPTERS NPT (LEAD FREE BRASS)	½" x ½", ½" x ¾", ¾" x ½", ¾" x ¾", 1" x ¾", 1" x 1", 1-¼" x 1", 1-¼" x 1-¼", 1-½" x 1-¼", 1-½" x 1-½", 2" x 1-½", 2" x 2", 2-½" x 2", 2-½" x 2-½", 3" x 3", 3-½" x 3-½", 3-1/2" x 4", 4" x 4"
MALE THR. ADAPTERS NPT (LEAD FREE BRASS)	½" x ½", ½" x ¾", ¾" x ½", ¾" x ¾", 1" x ¾", 1" x 1", 1-¼" x 1", 1-¼" x 1-¼", 1-½" x 1-¼", 1-½" x 1-½", 2" x 1-½", 2" x 2", 2-½" x 2", 2-½" x 2-½", 3" x 3", 3-½" x 3-½", 3-1/2" x 4", 4" x 4"
FEMALE THR ADAPTERS NPT (STAINLESS STEEL)	½" x ½", ½" x ¾", ¾" x ½", ¾" x ¾", 1" x ¾", 1" x 1", 1-¼" x 1", 1-¼" x 1-¼", 1-½" x 1-¼", 1-½" x 1-½", 2" x 1-½", 2" x 2", 2-½" x 2", 2-½" x 2-½", 3" x 3", 3-½" x 3-½", 3-1/2" x 4", 4" x 4"
MALE THR. ADAPTERS NPT (STAINLESS STEEL)	½" x ½", ½" x ¾", ¾" x ½", ¾" x ¾", 1" x ¾", 1" x 1", 1-¼" x 1", 1-¼" x 1-¼", 1-½" x 1-¼", 1-½" x 1-½", 2" x 1-½", 2" x 2", 2-½" x 2", 2-½" x 2-½", 3" x 3", 3-½" x 3-½", 3-1/2" x 4", 4" x 4"
CONCENTRIC REDUCER	2-½" x 1-¼", 2-½" x 1-½", 2-½" x 2", 3" x 1-½", 3" x 2", 3" x 2-½", 3-½" x 2", 3-½" x 2-½", 3-½" x 3", 4" x 2-½", 4" x 3", 4" x 3-½", 6" x 3", 6" x 3-½", 6" x 4", 8" x 4", 8" x 6", 10" x 6",

	10" x 8", 12" x 6", 12" x 8", 12" x 10", 14" x 8", 14" x 10", 14" x 12", 16" x 10", 16" x 12", 16" x 14", 18" x 12", 18" x 14", 18" x 16", 20" x 14", 20" x 16", 20" x 18", 24" x 16", 24" x 18", 24" x 20", 24" x 22"
COPPER STUB OUT TRANITION FITTING WITH SOCKET ENDS	½" x ½" CTS, ¾" x ¾" CTS, 1" x 1" CTS
COPPER STUB OUT ELBOW TRANSITION FITTING WITH SOCKET ENDS	½" x ½" CTS, ¾" x ¾" CTS, 1" x 1" CTS
22 Degree Elbows	3", 3-½", 4", 6", 8", 10", 12", 14", 16", 18", 20", 24"
Stub Flanges (Requiring Gaskets)	1, 1-¼", 1-½", 2", 2-½", 3", 3-½", 4", 6", 8", 10", 12", 14", 16", 18", 20", 24"
Gasket - Low Stress EPDM	2", 2-½", 3", 3-½", 4", 6", 8", 10", 12", 14, 16", 18, 20", 24"
Male Side Reducing Tee	6" x 6" x 2", 6" x 6" x 2-½", 6" x 6" x 3", 6" x 6" x 3-½", 6" x 6" x 4", 8" x 8" x 2", 8" x 8" x 2-½", 8" x 8" x 3", 8" x 8" x 3-½", 8" x 8" x 4", 10" x 10" x 2", 10" x 10" x 2-½", 10" x 10" x 3", 10" x 10" x 3-½", 10" x 10" x 4", 10" x 10" x 6", 10" x 10" x 8", 12" x 12" x 3", 12" x 12" x 3-½", 12" x 12" x 4", 12" x 12" x 6", 12" x 12" x 8", 12" x 12" x 10", 14" x 14" x 2", 14" x 14" x 2-½", 14" x 14" x 3", 14" x 14" x 3-½", "14" x 14" x 4", 14" x 14" x 6", 14" x 14" x 8", 14" x 14" x 10", 16" x 16" x 2", 16" x 16" x 2-½", 16" x 16" x 3", 16" x 16" x 3-½", 16" x 16" x 4", 16" x 16" x 6", 16" x 16" x 8", 16" x 16" x 10", 16" x 16" x 12", 16" x 16" x 14", 18" x 18" x 2", 18" x 18" x 2-½", 18" x 18" x 3", 18" x 18" x 3-½", 18" x 18" x 4", 18" x 18" x 6", 18" x 18" x 8", 18" x 18" x 10", 18" x 18" x 12", 18" x 18" x 14", 18" x 18" x 16", 20" x 20" x 2", 20" x 20" x 2-½", 20" x 20" x 3", 20" x 20" x 3-½", 20" x 20" x 4", 20" x 20" x 6", 20" x 20" x 8", 20" x 20" x 10", 20" x 20" x 12", 20" x 20" x 14", 20" x 20" x 16", 20" x 20" x 18", 22" x 22" x 2", 22" x 22" x 2-½", 22" x 22" x 3", 22" x 22" x 3-½`", 22" x 22" x 4", 22" x 22" x 6", 22" x 22" x 8", 22" x 22" x 10", 22" x 22" x 12", 22" x 22" x 14", 22" x 22" x 16", 24" x 24" x 2", 24" x 24" x 2-½", 24" x

	24" x 3", 24" x 24" x 3-½", 24" x 24" x 4", 24" x 24" x 6", 24" x 24" x 8", 24" x 24" x 10", 24" x 24" x 12", 24" x 24" x 14", 24" x 24" x 16", 24" x 24" x 18", 24" x 24" x 20", 24" x 24" x 22"
Female Side Fusion Reducing Tee	3" x 3" x 1-¼", 3" x 3" x 1-½", 3" x 3" x 2", 3-½" x 3-½" x 1-¼", 3-½" x 3-½" x 1-½", 3-½" x 3-½" x 2", 4" x 4" x 1-¼", 4" x 4" x 1-½", 4" x 4" x 2", 4" x 4" x 2-½", 4" x 4" x 3", 6" x 6" x 1-½", 6" x 6" x 2", 6" x 6" x 2-½", 6" x 6" x 3", 8" x 8" x 1-¼", 8" x 8" x 1-½", 8" x 8" x 2", 8" x 8" x 2-½", 8" x 8" x 3", 10" x 10" x 1-¼", 10" x 10" x 1-½", 10" x 10" x 2", 10" x10" x 2-½", 10" x 10" x 3", 12" x 12" x 1-¼", 12" x 12" x 1-½", 12" x 12" x 2", 12" x 12" x 2-½", 12" x 12" x 3", 14" x 14" x 1-¼", 14" x 14" x 1-½", 14" x 14" x 2", 14" x 14" x 2-½"
PEX Adapter, with Lead Free Brass - Type A	½" x ½", ¾" x 5/8", ¾" x ½", ¾" x ¾", 1" x 1", 1 x 1-¼"
Ball Valve	½", ¾", 1", 1-¼", 1-½", 2", 3", 3-½"
Electrofusion Reducer	3 ½" x 3 ½" x 2", 3-½" x 3-½" x 3", 4" x 4" x 2", 4" x 4" x 3", 4" x 4" x 3½", 6" x 6" x 2", 6" x 6" x 3", 6" x 6" x 3-½", 6" x 6" x 4", 8" x 8" x 3", 8" x 8" x 3-½", 8" x 8" x 4", 8" x 8" x 6", 10" x 10" x 3", 10" x 10" x 3-½", 10" x 10" x 4", 10" x 10" x 6", 10" x 10" x 8"
Electrolet with Rigid Under Clamp	1-¼" x ¾", 1½" x ¾", 2" x ¾", 2-½" x ¾", 3" x ¾", 1-¼" x 1", 1-½" x 1", 2" x 1", 2-½" x 1", 3" x 1", 4" x 1", 2" x 1-¼", 2-½" x 1", 3" x 1", 4" x 1", 2" x 1-¼", 2-½" x 1-¼", 2" x 1-½", 2" x 2", 3" x 2", 3-½" x 2", 4" x 2"
Electrolet with Belt	3-½" x ¾", 4" x ¾", 6" x 3/4", 4" x 1", 6" x 1", 8" x 1", 10" x 1", 12" x 1", 3" x 1-¼", 3-½" x 1-¼", 4" x 1-¼", 6" x 1-¼", 8" x 1-¼", 10" x 1-¼", 12" x 1-¼", 3" x 1-½", 3-½" x 1-½", 4" x 1-½", 6" x 1-½", 8" x 1-½", 10" x 1-½", 12" x 1-½", 6" x 2", 8" x 2", 10" x 2", 12" x 2", 3-½" x 2 1/2", 4" x 2-½", 6" x 2-½", 8" x 2-½", 10" x 2-½", 12" x 2-½", 3" x 3", 3-½" x 3", 4" x 3", 6" x 3", 8" x 3", 10" x 3", 12" x 3", 3 ½" x 3-1/2", 6" x 3-½", 8" x 3-½", 10" x 3-½",

	12" x 3-½", 8"x 4", 10" x 4", 12" x 4"
High Volume Electrolet with Belt	8" x 3", 10" x 3", 12" x 3", 14" x 3", 16" x 3", 18" x 3", 20" x 3", 22" x 3", 24" x 3", 12" x 6", 14" x 6", 16" x 6", 18" x 6", 20" x 6", 22" x 6", 24" x 6", 14" x 8", 16" x 8", 18" x 8", 20" x 8", 22" x 8", 24" x 8"
Electrolet with Ridgid Under Clamp and Lead Free PEX Adapter	1-¼" x ½", 1-¼" x 5/8", 1-¼" x ¾", 1-¼" x 1", 1-¼" x 1-¼", 1-½" x ½", 1-½" x 5/8", 1-½" x ¾", 1-½" x 1", 1-½" x 1-¼", 2" x ½", 2" x 5/8", 2" x ¾", 2" x 1", 2" x 1-¼", 2" x 1-½", 2" x2", 2 ½" x ½", 2 ½" x 5/8", 2 ½" x ¾", 2 ½" x 1", 2 ½" x 1 ¼", 3" x ½", 3" x 5/8", 3" x ¾", 3" x 1", 3" x 1-¼"
Electrolet with Belt and Lead Free PEX Adapter	3" x 1-½", 3" x 2", 3-½" x ½", 3-½" x 5/8", 3-½" x ¾", 3-½" x 1-½", 3-½" x 2", 4" x ½", 4" x 5/8", 4" x ¾", 4" x 1 ½", 4" x 2", 6" x ½", 6" x 5/8", 6" x ¾", 6" x 1", 6" x 1-¼", 6" x 1-½", 6" x 2", 8" x 1", 8" x 1-¼", 8" x 1-½", 8" x 2", 10" x 1", 10" x 1-¼", 10" x 1-½", 10" x 2", 12" x 1", 12" x 1-¼", 12" x 1-½", 12" x 2"
Electrolet with Rigid Underclamp and Female Threaded NPT Lead Free Adapter	1 ¼" x ½", 1 ¼" x ¾", 1-¼" x 1", 1- ½" x ½", 1-½" x ¾", 1-½" x 1", 2" x ½", 2" x ¾", 2" x 1", 2" x 1-¼", 2" x 1-½", 2" x 2", 2-½" x ½", 2-½" x ¾", 2-½" x 1", 2-½" x 1-¼", 3" x ½", 3" x ¾", 3" x 1", 3" x 2", 3-½" x 1", 3-½" x 2", 4" x 2"
Electrolet with Belt and Female Threaded NPT Lead Free Adapter	3" x 1-¼", 3" x 1-½", 3" x 3", 3-½" x ½", 3-½" x ¾", 3 ½" x 3 ½" x 1 ¼", 3-½" x 1-½", 3-½" x 2-½", 3-½" x 3", 3-½" x 4", 4" x ½", 4" x ¾", 4" x 1-¼", 4" x 1-½", 4" x 2", 4" x 2-½", 4" x 3", 6" x ½", 6" x ¾", 6" x 1", 6" x 1-¼", 6" x 1-½", 6" x 2", 6" x 2-½", 6" x 3", 8" x ¾", 8" x 1", 8" x 1-¼", 8" x 1-½", 8" x 2", 8" x 2-½", 8" x 3", 8" x 4", 10" x ¾", 10" x 1", 10" x 1-¼", 10" x 1-½", 10" x 2", 10" x 2-½", 10" x 3", 10" x 4", 12" x ¾", 12" x 1", 12" x 1-¼", 12" x 1-½", 12" x 2", 12" x 2-½", 12" x 3", 12" x 4"
Electrolet with Rigid Underclamp and Male Threaded NPT Lead Free Adapter	1¼" x ½", 1¼" x 3/4", 1¼" x 1", 1 ½" x ½", 1 ½" x 3/4", 1 ½" x 1", 2" x ½", 2" x 3/4", 2" x 1", 2" x 1¼", 2" x 1½", 2" x 2",

	2½" x ½", 2½" x 3/4", 2½" x 1", 2½" x 1¼", 3" x ½", 3" x 3/4", 3" x 1", 3" x 2", 3½" x 1", 3½" x 2", 4" x 2"
Electrolet with Belt and Male Threaded NPT Lead Free Adapter	3" x 1-¼", 3" x 1-½", 3" x 3", 3-½" x ½", 3-½" x ¾", 3-½" x 1¼",3-½" x 1-½", 3-½" x 2-½", 3-½" x 3, 3-½" x 4", 4" x ½", 4" x ¾", 4" x 1", 4" x 1-¼", 4" x 1-½", 4" x 2-½", 4" x 3", 6" x ½", 6" x ¾", 6" x 1", 6" x 1-¼", 6" x 1-½", 6" x 2", 6" x 2-½", 6" x 3", 8" x ¾", 8" x 1", 8" x 1-¼", 8" x 1-½", 8" x 2", 8" x 2-½", 8" x 3", 8" x 4", 10" x ¾", 10" x 1", 10" x 1-¼", 10" x 1-½", 10" x 2", 10" x 2-½", 10" x 3", 10" x 4", 12" x ¾", 12" x 1", 12" x 1-¼", 12" x 1-½", 12" x 2", 12" x 2-½", 12" x 3", 12" x 4"
All Plastic Unions	½", ¾", 1", 1-¼", 1-½", 2"

Conditions of Listing:

1. 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.
2. 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.
3. During placement of cover over the piping, the pipe must be maintained at the greater of $1\frac{1}{2}$ 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 manufactured in Varese and Bologna, Italy, as well as Early Branch, South Carolina under a quality control program with annual inspections by ICC-ES.