ASA Piping System Code Committee -
Summary Notes from ICC Code Hearings April 28 – 21, 2021

ASA TOOK A POSITION ON PROPOSALS HIGHLIGHTED THIS COLOR

PROPOSED CHANGES TO THE MECHNICAL CODE

Proposal	Chapter	Proponent(s)	Summary of Proposed Revision	Committee Position	Comments
M57	Section 602, Plenums	GBH Int.	602.2.1.7 Plastic plumbing piping and tubing. Plastic piping and tubing used in plumbing systems shall be *listed* and *labeled* as having a flame spread index not greater than 25 and a smoke-developed index not greater than 50 when tested in accordance with ASTM E84 or UL 723. Testing shall be conducted on a flat sheet of the material to be used for the piping or tubing at the thickness intended for use. Exception: Plastic water distribution piping and tubing *listed* and *labeled* in accordance with UL 2846 as having a peak optical density not greater than 0.50, an average optical density not greater than 0.15, and a flame spread distance not greater than 5 feet (1524 mm), and installed in accordance with its listing.	Failed	**ASA Position:** Oppose. Added language is improper. Test method requirements belong in the referenced test method standard, not in the code. Some piping materials cannot be made into a flat sheet. **ICC Hearing** Motion to reject passed based on a vote of 11 yes to 0 no.
M80	11. Refrigeration	Gastite	Revise as follows: PIPING. Where used in this code, "piping" refers to either pipe or tubing, or both. Pipe. A rigid conduit of iron, steel, copper, copper-alloy, or plastic, or multilayer composite aluminum and plastic. Tubing. Semirigid conduit of copper, copper-alloy, aluminum, plastic, or steel , or multilayer composite aluminum and plastic. Add PERT/AL/PERT Linesets to refrigerant pipe table	Approve	**Code Hearing Discussions:** Approved based on a vote of 7 yes to 4 no
M81	11. Refrigeration	CDA	Delete without substitution: ~~1108.5 Brass (copper alloy) pipe. Joints between brass pipe or fittings shall be brazed, mechanical, press-connect, threaded or welded joints conforming to Section 1108.3.~~	Approve	**Code Hearing Discussions:** Approved based on a vote of 11 yes, 0 no

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M82	11. Refrigeration	CDA	Revise as follows: 1109.4.1 Piping material. Piping material for Group A2, A3, B2 or B3 refrigerant located inside the building, except for *machinery rooms*, shall be copper pipe, ~~brass~~ copper alloy pipe or steel pipe. Pipe joints located in areas other than the *machinery room* shall be welded. Self-contained *listed* and *labeled equipment* or *appliances* shall have piping material based on the listing requirements.	Approve	**Code Hearing Discussions:** Approved based on a vote of 11 yes, 0 no
M83	11. Refrigeration	ASHRAE	Adding ASTM A333, which is a steel pipe used in refrigerant piping systems. The other change is to modification of Note b. ASHRAE 15 added restrictions to the use of Type F pipe. Add reference to UL 207. Adding allowance of steel, stainless steel, and copper tubing for A2, A3, B2, and B3.	Approve	**Code Hearing Discussions:** Approved based on a vote of 11 yes, 0 no
M85	12. Hydronic Piping	PPI	1201.1 Scope. The provisions of this chapter shall govern the construction, installation, *alteration* and repair of hydronic piping systems. This chapter shall apply to hydronic piping systems that are part of heating, ventilation and air-conditioning systems. Such piping systems shall include steam, hot water, radiant heating, radiant cooling, chilled water, steam condensate, ~~and~~ ground source heat pump loop systems and snow- and ice-melting. Potable cold and hot water distribution systems shall be installed in accordance with the *International Plumbing Code*.	Approve	**Code Hearing Discussions:** Approved based on a vote of 11 yes, 0 no
M87	12 Hydronic Piping	Viega	Add stainless steel pipe and tubing to Table 1202.4, Hydronic Pipe with reference to ASTM Standards – A269m A312, A554, A778, A269, A312, A554, A778	Approved as Modified	**ASA Position** Support **Code Hearing Discussion** Accepted based on modification to delete ASTM A554 since the standard is not related to ss pipe for hydonics. Motion passed with a vote of 11 yes to 0 no

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M 88	12 Hydronic Piping	Viega	Add stainless steel pipe fittings to Table 1202.4, Hydronic Pipe with reference to ASTM Standards – A269, A312, A554, A778, A269, A312, A554, A778 and F3226	Approved as Modified	**ASA Position** Support **Code Hearing Discussion** Accepted based on modification to delete ASTM A554 since the standard is not related to ss pipe for hydronics. Motion passed with a vote of 11 yes to 0 no
M89	12 Hydronic Piping	Lubrizol	Add exception to not require a primer for CPVC joints when the solvent cement is green.	Approve	**Code Hearing Discussion** Approved as submitted with a vote of 11 yes to 0 no.
M90	12 Hydronic Piping	PPI	Delete PB pipe and tubing and heat fusion joints.	Approve	**Code Hearing Discussion** Approved as submitted with a vote of 11 yes to 0 no.
M91	12 Hydronic Piping	Viega	1203.14 Stainless Steel Pipe. Joints between stainless steel pipe or fittings shall be mechanical joints that are made with an approved elastomeric seal, or shall be threaded or welded joints conforming to Section 1203.3. 1203.15 Stainless Steel Tubing. Joints between stainless steel tubing or fittings shall be mechanical or welded joints conforming to Section 1203.3.	Approve	**ASA Position** Support **Code Hearing Discussion** Approved as submitted with a vote of 11 yes to 0 no.
M92	12, Hydronic Piping	CAPMO	1205.1 Where required. Shutoff valves shall be installed in hydronic piping systems in the locations indicated in Sections 1205.1.1 through 1205.1.6. Access shall be provided to all full open valves and shutoff valves.	Approve	**Code Hearing Discussion** Approved as submitted with a vote of 11 yes to 0 no.
M93	12, Hydronic Piping	PPFA	Add ASTM F3253 to Table 1210.4, Ground-source Loop Pipe, PEX	Approve	**Code Hearing Discussion** Approved as submitted with a vote of 11 yes to 0 no.
M95	12, Hydronic Piping	PPI	1209.1 Materials. Piping for heating panels shall be standard-weight steel pipe, Type L copper tubing, ~~polybutylene~~ or ~~other~~ *approved* plastic pipe or tubing rated at 100 psi (689 kPa) at 180°F (82°C).	Approve	**Code Hearing Discussion** Approved as submitted with a vote of 11 yes to 0 no.
M 96	12 Hydronic Piping		Delete without substitution:	Approve	**Code Hearing Discussion**

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			~~1209.3.3 Polybutylene joints. Polybutylene pipe and tubing shall be installed in continuous lengths or shall be joined by heat fusion in accordance with Section 1203.9.1.~~		Approved as submitted with a vote of 11 yes to 0 no.
M 97	12 Hydronics Piping	PPI	Add new text as follows: 1209.6 Radiant tubing placement. Hydronic tubing to be embedded for the purpose of radiant heating or cooling shall be installed in accordance with the manufacturer's instructions and with the tube layout and spacing in accordance with the system design. Individual tubing circuit lengths shall be installed with a variance of not more than ±10 percent from the design. 1209.6.1 Radiant tubing circuit length. The maximum circuit length of radiant tubing from a supply-and-return manifold shall not exceed the lengths specified by the system design or, in the absence of manufacturer's specifications, the lengths specified in Table 1209.6.1. New table added providing max lengths of tubing based on nominal tube size.	Approve	**Code Hearing Discussion** Approved as submitted with a vote of 11 yes to 0 no.
M 98	12 Hydronics Piping	PPI	Add new text as follows: 1209.7 Snow & ice melt tubing placement. Hydronic tubing to be embedded for the purpose of snow & ice melt systems shall be installed in accordance with the manufacturer's installation instructions and with the tube layout and spacing in accordance with the system design. 1209.7.1 Snow-and ice-melt tubing circuit length. The maximum circuit length of snow- and ice- melt tubing from a supply-and-return manifold shall not exceed the lengths specified by the system design or, in the absence of manufacturer's specifications, the lengths specified in Table 1209.7.1. Individual tubing circuit lengths shall be installed with a variance of not more than ±10 percent from the design.	Approve	**Code Hearing Discussion** Approved as submitted with a vote of 11 yes to 0 no.

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M 99	12 Hydronics Piping	PPFA	Add ASTM F3347-20a: Standard Specification for Metal Press Insert Fittings with Factory Assembled Stainless Steel Press Sleeve for SDR9 Crosslinked Polyethylene (PEX) Tubing and SDR9 Polyethylene of Raised Temperature (PE-RT) Tubing to Table 1202.5 for Hydronic Pipe Fittings.	Approve	**Code Hearing Discussion** Approved as submitted with a vote of 11 yes to 0 no.
M 100	12 Hydronics Piping	PPFA	Add ASTM F3348-20b: Standard Specification for Plastic Press Insert Fittings with Factory Assembled Stainless Steel Press Sleeve for SDR9 Cross-linked Polyethylene (PEX) Tubing and SDR9 Polyethylene of Raised Temperature (PE-RT) Tubing to Table 1202.5 for Hydronic Pipe and Fittings.	Approve	**Code Hearing Discussion** Approved as submitted with a vote of 11 yes to 0 no.

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Proposal	Section(s)	Proponent(s)	Summary of Proposed Revision	Committee Position	Comments
P7	IPC Section 305, Protection of Pipes and Plumbing System Component	Huckabee Inc.	Add new text as follows: 305.8 Expansive Soil. Where expansive soil is identified but not removed under foundations, plumbing shall be protected in accordance with Section 305.8.1 or 305.8.2. 305.8.1 Non-Isolated Foundations. Under foundations with slabs that are structurally supported by a subgrade, it shall be permitted for plumbing to be buried. 305.8.2 Isolated Foundations. Under foundations with a slab or framing that structurally spans over an under-floor space which isolates the slab from the effects of expansive soil swelling and shrinking, the plumbing system shall be suspended so that piping, fittings, hangers and supports are isolated, by adequate void space, from the effects of expansive soil swelling and shrinking. To protect the void space, soil shall be sloped, benched or retained in accordance with an approved design methodology. It shall not be permitted for the piping, fittings, hangers and supports below the slab or below the framing to be in contact with soil or any assemblage of materials that is in contact with soil within the active zone. It shall not be permitted for a slab and plumbing to be lifted as an assembly to create the void space unless the under-floor space has a crawl space with access to allow inspection and repair of plumbing after lifting. Exception: It shall be permitted for the piping, fittings, hangers, and supports below the slab or below the framing to be in contact with structural elements of the foundation that are designed to resist the effects of expansive soil swelling and shrinking. Organic materials shall not be used for hangers, supports and soil retention systems. Materials subject to corrosion shall not be used		**ICC Hearing Results:** Proposal was withdrawn.

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			for hangers, supports and soil retention systems unless protected in an approved manner. Where piping transitions to a buried condition beyond the perimeter of the foundation, an adequately flexible fittings shall be provided in the piping system to accommodate the effects of expansive soil swelling and shrinking.		
P8	IPC Section 305, Protection of Pipes and Plumbing System Component	SEA of Texas	Add new text as follows: 305.8 Expansive Soil. Where expansive soil is identified but not removed under foundations, plumbing shall be protected in accordance with Section 305.8.1 or 305.8.2. 305.8.1 Non-Isolated Foundations. Under foundations with slabs that are structurally supported by a subgrade, it shall be permitted for plumbing to be buried. 305.8.2 2 Isolated Foundations. Under foundations with a slab or framing that structurally spans over an under-floor space which isolates the slab from the effects of expansive soil swelling and shrinking, the plumbing shall be suspended so that plumbing, hangers and supports are isolated, by adequate void space, from the effects of expansive soil swelling and shrinking. To protect the void space, soil shall be sloped, benched or retained in accordance with an approved design methodology. It shall not be permitted for the plumbing, hangers and supports below the slab or below the framing to be in contact with soil or any assemblage of materials that is in contact with soil within the active zone. It shall not be permitted for a slab and plumbing to be lifted as an assembly to create the void space unless the under-floor space is a crawlspace with access to allow inspection of plumbing after lifting. Materials subject to decay shall not be used for hangers, supports and soil retention systems. Materials subject to	Approve as Modified	**ICC Hearing Results:** Modification submitted: add reference to 1803.5 of IBC and 1808.6.3 of the IBC for 305.8. Add reference to 1806.6.1 in 305.8 and add an exception shall be permitted for plumbing to be buried if the plumbing provides drainage of an under –floor space. Motion: approved proposal as modified with a vote of 10 yes to 4 no.

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			corrosion shall not be used for hangers, supports and soil retention systems unless protected in an approved manner. Where plumbing transitions to a buried condition beyond the perimeter of the foundation, an adequately flexible expansion joint shall be provided in the plumbing.		
P9	Section 306 Trenching, Excavation and Backfill	AGA	Add new text as follows: 306.2.4 Tracer wire. For plastic sewer piping, an insulated copper tracer wire or other approved conductor shall be installed adjacent to and over the full length of the piping. Access shall be provided to the tracer wire or the tracer wire shall terminate at the cleanout between the building drain and building sewer. The tracer wire size shall be not less than 14 AWG and the insulation type shall be listed for direct burial.	Approve	**ICC Hearing Results** Motion: approve as submitted with a vote of 9 yes to 5 no
P10	Table 308.5 Hangar Spacing	CDA	Delete Brass pipe from the table. (reason – covered under copper alloy section)	Approve	**ICC Hearing Results** Motion: approve as submitted.
P11	Section 308, Piping Support	CISPI	Revise as follows: 308.6 Sway bracing. Where *horizontal drainage or waste pipes* 4 inches (102 mm) and larger are suspended in excess of 18 inches measured from the top of the horizontal piping being supported to the point of support,- these pipes and fittings shall be braced to prevent horizontal movement. ~~convey drainage or waste, and where a pipe fitting in that piping changes the flow direction greater than 45 degrees (0.79 rad), rigid bracing or other rigid support arrangements shall be installed to resist movement of the upstream pipe in the direction of pipe flow. A change of flow direction into a vertical pipe shall not require the upstream pipe to be braced.~~	Approve as Modified	**ICC Hearing Results** Modification submitted to add new text to the end of 308.6 "Sway bracing for horizontal pipes in seismically active zones shall be in accordance with chapter 1 of the IBC."
P-12	Section 308	Teekay Coupling	308.7.1 Location. For pipe sizes greater than 4 inches (102 mm), restraints shall be provided for drainpipes at all changes in direction and at all changes in diameter greater than two pipe	Reject	**ASA Position:** The ASTM standard has permissive language and does not provide dimensional

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			sizes. Braces, blocks, rodding or other suitable methods as specified by the coupling manufacturer for ASTM F1476 Type II Class 2 flexible & restrained shall be utilized.		requirements. In addition, the addition appears to be mfg. specific. **ICC Hearing Results:** Motion: disapproved by a vote of 11 yes to 0 no.
P14	Section 312, Tests and Inspections	PMGCAC	Add new text as follows: 312.4 Drainage and vent vacuum test. The portion of the drainage and vent system under test shall be evacuated of air by a vacuum type pump to achieve a uniform gauge pressure of negative 5 pounds per square inch or a negative 10 inches of mercury column (negative 34 kPa). This pressure shall be held without the removal of additional air for a period of 15 minutes. Any adjustments to the test pressure required because of changes in ambient temperatures or the seating of gaskets shall be made prior to the beginning of the test period.	Approve	**ICC Hearing Results:** Concern was raised that some pipe products might not be able to handle the 10 in. of mercury column. Motion: approved based on a vote of 11 yes to 3 no.
P59	Section 604, Design of Building Water Distribution System	Watts	Revise as follows: 604.8 Water pressure-reducing valve or regulator. Where static water pressure in the water supply piping ~~within a building~~ exceeds 80 psi (552 kPa) ~~static~~, an *approved-type* strainer and ~~water~~ pressure~~-reducing valve~~ regulator conforming to ASSE 1003 or CSA B356 and NSF 61.~~with strainer~~ shall be installed to reduce the pressure in the building water distribution piping to not greater than 80 psi (552 kPa) static. Pressure regulator sizes equal to or greater than 1 1/2 inches (40mm) shall not require a strainer. For line sizes greater than 3 inches {76 mm), an automatic control such as a pressure regulating valve shall be utilized. Such regulators shall control the pressure to water outlets in the building except where otherwise approved by the code official.	Reject	**ICC Hearing Results:** Motion to disapprove based on not requiring strainers, code official can simply bypass requirements. Might eliminate larger products (ASSE standard out for 4 in product. Vote was 14 yes to 0 no
P63	Part I IPC - Section 605, Material, Joints and Connections	Viega	Add stainless steel pipe and tubing to Table 605.5 with reference to ASTM Standards – A269m A312, A554, A778, A269, A312, A554, A778		**ICC Hearing Results:** Motion to disapprove based on ASTM standards not being relevant to plumbing. 11 yes to 2 no

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P71	Section 605, Material, Joints and Connections	Teekay Couplings	Revise as follows: 605.12.2 Mechanical joints. Mechanical joints shall be installed in accordance with the manufacturer's instructions. Mechanical joints for copper or copper alloy piping shall be made with a mechanical coupling with groove end piping, or ASTM F1476 Type II Class 2 flexible & restrained, or approved joint designed for the specific application.	Reject	**ASA Position** Oppose. Section 605.12.2 is specific to following manufacturer's instructions and reference a given ASTM standard or any other product standard is not appropriate for adding to this section. **ICC Hearing Results** Disapprove based on a vote of 14 yes to 0 no
P74	Part I. IPC Section 605, Material, Joints and Connections	PPFA	Revise as follows: 605.14.2 Solvent cementing. Joint surfaces shall be clean and free from moisture. Joints shall be made in accordance with the pipe manufacturer's installation instructions. Solvent-cemented joints shall be permitted above or below ground. Where such instructions require that a primer be used, the primer shall be applied to the joint surfaces and a solvent cement orange in color and conforming to ASTM F493 shall be applied to the joint surfaces. The joint shall be made while the cement is fluid and in accordance with ASTM D2855. Where such instructions allow for a one-step solvent cement, yellow in color and conforming to ASTM F493, to be used, the joint surfaces shall not require application of a primer before the solvent cement is applied. The joint shall be made while the cement is wet and in accordance with ~~ASTM D2846 or ASTM F493.~~ ASTM F3328. ~~Solvent-cemented joints shall be permitted above or below ground.~~	Approve	**ICC Code Hearing Results:** Motion to approve as submitted by a vote of 14 yes to 0 no
P75	Part I. IPC Section 605, Material, Joints and Connections	Lubrizol	605.14.2 Solvent cementing. Joint surfaces shall be clean and free from moisture. Joints shall be made in accordance with the pipe manufacturer's installation instructions. … Where such	Approve	**ICC Hearing Results:** Motion approve as submitted with a vote of 14 yes vs 0 no

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			instructions allow for a one-step solvent cement, yellow or green in color and conforming to ASTM F493, …		
P76	Part I. IPC Section 605	PPFA	Revise as follows: 605.15.2 Solvent cementing. Joint surfaces shall be clean and free from moisture, and an approved primer shall be applied. Solvent cement, orange in color and conforming to ASTM F493, shall be applied to joint surfaces. The joint shall be made while the cement is wet, and in accordance with ~~ASTM D2846 or ASTM F493~~ ASTM D2855. Solvent cement joints shall be permitted above or below ground. Exception: A primer is not required where all of the following conditions apply: 5. The joint is made in accordance with ASTM F3328.	Approve	**ICC Hearing Results:** Motion to accept at submitted based on 14 yes to 0 no
P82	Section 605, Material, Joints and Connection	Teekay Couplings	Revise as follows: **605.23 Joints between different materials**. Joints between different piping materials shall be made with a mechanical joint of the compression or mechanical-sealing type, or shall be made in accordance with Section 605.23.1, 605.23.2 or 605.23.3. Connectors or adapters shall have an elastomeric seal conforming to ASTM F477or NSF 61. Joints shall be installed in accordance with the manufacturer's instructions.	Reject	**ASA Position** Oppose. The "or NSF 61" is inappropriate since NSF 61 provides no performance criteria for the elastomeric seal so it should not be an "or" requirement. **ICC Hearing Results** Proposal rejected based on a vote of 14 yes, 0 no
P84	Section 605, Material, Joints and Connection	Teekay Couplings	Revise as follows: **605.23.3 Stainless steel.** Joints between stainless steel and different piping materials shall be made with a mechanical joint of the compression or mechanical sealing type that complies with Type II Class 3 of ASTM F1476, ~~or~~ a dielectric fitting or a dielectric union conforming to ASSE 1079.	Reject	**ASA Position** ASSE 1079 is the national industry standard that covers all these types of joints and ASTM F1476 provides no additional value. The ASTM standard does not include any dimensions or details related to the couplings. There may also be an issue with only referencing one Type of several types covered in the ASTM standard.

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					ICC Hearings Result Proposal rejected based on a vote of 14 yes to 0 no.
P85	Section 605, Material, Joints and Connection	CAPMO	Revise as follows: **606.1 Location of full-open valves.** *Full-open valves* shall be installed in the following locations: 1. On the building water service pipe from the public water supply near the curb. 2. On the water distribution supply pipe at the entrance into the structure. 2.1 In multiple-tenant buildings, three stories and fewer, where a common water supply piping system is installed to supply other than one- and two-family dwellings, a main shutoff valve shall be provided for each tenant.	Reject	**ICC Hearing Results:** Motion to disapprove by a vote of 11 yes to 3 no.
P89	Section 605, Material, Joints and Connection	PMGCAC	Add new text as follows: **607.2.1 Commercial energy provisions**. In occupancies that are required to comply with the Commercial provisions of the International Energy Conservation Code, the developed length of hot or tempered water piping shall limited in accordance with Sections C404.5.1 through C404.5.2.1 of that code.	Approve	**ICC Hearing Results:** Motion to approve based on a vote of 13 yes to 1 no
P110	Chapter 7. Sanitary Drainage	Teekay Couplings	Add ASTM F1476 to Table 702.4 for Copper and copper alloy, gray iron and ductile iron, PE, PVC, PVDF, stainless steel, steel and vitrified clay materials.	Reject	**ASA Position** The table contains the national industry standards that cover all of the types of pipe fittings listed and ASTM F1476 provides no additional value. In addition, F1476 is a coupling standard, not a fitting standard. **ICC Hearing Results**

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					Motion to reject passed based on a vote of 14 yes, 0 no
P111	Chapter 7. Sanitary Drainage	Charlotte Pipe and Foundry	Revise as follows: **702.6 Chemical waste drainage system**. A chemical waste drainage system , including its vent system, shall be completely ~~separated~~ independent from the sanitary drainage system. Separate drainage systems for chemical waste and vent pipes shall conform to one of the standards indicated in Table 702.6. The chemical waste shall be treated in accordance with Section 803.2 before discharging to the sanitary drainage system. ~~Separate drainage systems for chemical wastes and vent pipes shall be of an *approved* material that is~~ Chemical waste drainage system pipe and fitting materials shall be resistant to temperature, corrosion and degradation for the concentrations of chemicals involved per manufacturer recommendations. **901.3 Chemical waste drainage vent systems**. The vent system for a chemical waste drainage system shall be independent of ~~the sanitary vent system and shall terminate separately~~ any sanitary drainage vent system. The termination of a chemical waste drainage vent system shall be through the roof to the outdoors or to an air admittance valve that complies with ASSE 1049. Air admittance valves for chemical waste drainage systems shall be constructed of one of the materials ~~*approved* in accordance with Section~~ listed in table 702.6 and shall be tested for chemical resistance in accordance with ASTM F1412.	Accept as Modified	**ICC Hearing Results:** Motion to accept as modified was passed with a vote of 14 yes and 0 no. Modification changes polypropylene to Polyolefin and adds CSA B181.3
P114	Chapter 7. Sanitary Drainage	Teekay Coupling	Revise as follows: **705.5.2 Mechanical joints**. ~~Mechanical joints shall be installed in accordance with the manufacturer's instructions.~~ Mechanical joints for copper or copper alloy piping shall be made with a mechanical coupling for groove end piping, a coupling that complies with Type II Class 2 of ASTM F1476 or *approved* coupling designed for the specific application. Joints shall be installed in accordance with the manufacturer's instructions.	Reject	**ASA Position** Oppose. Section 705.5.2 is specific to following manufacturer's instructions and reference a given ASTM standard or any other product standard is not appropriate for adding to this section. Type II Class 2 joint are not typically used for copper or copper alloy joints.

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					ICC Hearing Results Motion to reject passed by a vote of 14 yes, 0 no
P115	Chapter 7. Sanitary Drainage	Teekay Coupling	Revise as follows: **705.8.2 Mechanical joints.** Joints shall be made with an *approved* elastomeric seal. Mechanical joints between stainless steel pipe and fittings shall be of the compression type, grooved coupling type, hydraulic press-connect fitting type, flanged type or, for plain end piping and fittings, a type that complies with either Type II Class 2 or Type II class 3 of ASTM F1476. Mechanical joints shall be installed in accordance with the manufacturer's instructions	Reject	**ASA Position** Oppose. A reference to ASTM F1476 implies that all mechanical joints need to comply with ASTM 1476 eliminates the use of already accepted national standards and ASTM 1476 is not specific to stainless steel pipe and fittings. **ICC Hearing Results** Motion to reject passed by a vote of 14 yes, 0 no
P117	Chapter 7. Sanitary Drainage	PPFA	Revise as follows: **705.10.2 Solvent cementing.** Joint surfaces shall be clean and free from moisture. A purple primer that conforms to ASTM F656 shall be applied. Solvent cement not purple in color and conforming to ASTM D2564, CSA B137.3, CSA B181.2 or CSA B182.1 shall be applied to all joint surfaces. The joint shall be made while the cement is wet and shall be in accordance with ASTM D2855. Solvent-cement joints shall be permitted above or below ground. Exception: A primer is not required where both of the following conditions apply: 1. The solvent cement used is third-party certified as conforming to ASTM D2564. 2. The solvent cement is used only for joining PVC drain, waste and vent pipe and fittings in nonpressure applications in sizes up to and including 4 inches (102 mm) in diameter. 3. The joint is made in accordance with ASTM F3328.	Approve	**ICC Hearing Results:** Motion to approve as submitted by a vote of 14 yes to 0 no.

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P119	Chapter 7. Sanitary Drainage	Teekay Couplings	Revise as follows: 705.12.2 Mechanical joints. ~~Mechanical joints in drainage piping shall be made with an elastomeric seal conforming to ASTM C1173, ASTM D3212 or CSA B602. Mechanical joints shall be installed in accordance with the manufacturer's instructions.~~ Mechanical joints on drainage pipe shall be made with an elastomeric seal conforming to ASTM C1173, ASTM D3212, CSA B602 or NSF 61. A mechanical joint shielded coupling for polyethylene pipe and fittings shall have a metallic shield that complies with either Type II Class 2 or Type II Class 3 of ASTM F1476. The coupling shall be designed and manufactured to suit the pipe outside diameter. The coupling shall be installed in accordance with manufacturer's instructions and tightened, using a calibrated torque wrench, to the torque indicated by the manufacturer.	Reject	**ASA Position** Oppose. A reference to ASTM F1476 implies that all mechanical joints need to comply with ASTM 1476 eliminates the use of already accepted national standards and ASTM 1476 is not specific to stainless steel pipe and fittings. **ICC Hearing Results** Motion to reject passed by a vote of 14 yes, 0 no
P124	Chapter 7. Sanitary Drainage	PMGCAC	Revise as follows: **705.16 Joints between different materials.** Joints between different piping materials shall be made with a mechanical joint ~~of the compression or mechanical sealing type~~ conforming to ASTM C1173, ASTM C1460 or ASTM C1461. Connectors and adapters shall be *approved* for the application and such joints shall have an elastomeric seal conforming to ASTM C425, ASTM C443, ASTM C564, ASTM C1440, ASTM F477, CSA A257.3M or CSA B602, or as required in Sections 705.16.1 through 705.16.7. Joints between glass pipe and other types of materials shall be made with adapters having a TFE seal. Joints shall be installed in accordance with the manufacturer's instructions. Add new text as follows: **705.2.4 Mechanical joints above ground.** Mechanical joint couplings used above ground to connect ABS pipe to ABS pipe shall be of the shielded type and shall be marked by the manufacturer as being recommended for the application.	Approve	**ICC Hearing Results:** Proposal accepted based on a vote of 14 yes, 0 no

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			705.10.5 Mechanical joints above ground. Mechanical joint couplings used above ground to connect PVC pipe to PVC pipe shall be of the shielded type and shall be marked by the manufacturer as being recommended for the application.		
P128	Chapter 7. Sanitary Drainage	Teekay Couplings	Revise as follows: **705.16.7 Stainless steel drainage systems to other materials**. Joints between stainless steel drainage systems and other piping materials shall be made with *approved* mechanical couplings and include or stepped mechanical coupling that complies with ASTM F1476 Type II Class 3 flexible and un-restrained.	Reject	**ASA Position** Oppose. A reference to ASTM F1476 implies that all mechanical joints need to comply with ASTM 1476 eliminates the use of already accepted national standards and ASTM 1476 is not specific to stainless steel pipe and fittings. **ICC Hearing Results** Motion to reject passed by a vote of 14 yes, 0 no
P129	Part I IPC – Section 718 Rehabilitation of Building Sewers and Building Drains	Hammerhead Technologies	Adds definition for cured-in-place piping and all new text for this section covering cured-in-place piping.	Reject	**ICC Hearing Results** Motion to reject passed by a vote of 14 yes, 0 no. Proposed standard has significant amount of permissive language.
P133	Part I IPC – Chapter 10, Traps, Interceptors and Separators	Gary Duren	Add new definition as follows: SANITARY WASTE VALVE. A device conforming to ASME A112.18.8 used as an alternate to a water-filled tubular waste trap that provides protections of the property from foul air in the sewer. Add new text as follows: 1003.1 General. Sanitary waste valve shall be permitted to be installed as an alternate to the liquid seal tubular traps required in Section 1002. Sanitary waste valves shall conform to ASME A112.18.8,	Reject	**ICC Hearing Results:** Motion to reject passed by a vote of 14 yes, 0 no. Technology might be useful in some applications. Definition does not describe what the device is. Term “foul air” is not defined. Section 1003 may be inappropriate location.

PROPOSED CHANGES TO THE PLUMBING CODE

			1003.2 Installation. Sanitary waste valves shall be installed in accordance with the requirements of this section and the manufacturer's instructions. 1003.3 Where permitted. Sanitary waste valves shall be permitted to be installed as an alternate to 1 1/4 inch (32 mm) and 1 1/2 inch (38mm) tubular traps. Where a sanitary waste valve is installed on the outlet of a food waste grinder, the device shall be installed in the vertical orientation. 1003.4 Location. Sanitary waste valves shall be permitted to be installed as an alternate where tubular traps are required for sinks, lavatories, laundry trays, tubs, showers or similar fixtures. Sanitary waste valves shall not be used on urinals. Sanitary waste valves shall be provided with access.		

PROPOSED CHANGES TO THE FUEL AND GAS CODE

Proposal	Section(s)	Proponent(s)	Summary of Proposed Revision	Committee Position	Comments
FG-2	404	AGA	Delete and substitute as follows: ~~404.6 Underground penetrations prohibited. Gas *piping* shall not penetrate building foundation walls at any point below grade. Gas *piping* shall enter and exit a building at a point above grade and the annular space between the pipe and the wall shall be sealed.~~ 404.6 Piping through foundation wall. Underground piping where installed below grade through the foundation or basement wall of a building shall be encased in a protective pipe sleeve. The annular space between the gas piping and the sleeve shall be sealed.	Approve	**ICC Code Hearing Results** Motion: Approved as submitted passed
FG-3	407	B. Chapin	407.2 Design and installation. *Piping* shall be supported with ~~metal~~ pipe hooks, ~~metal~~ pipe straps, ~~metal~~ bands, ~~metal~~ brackets, ~~metal~~ hangers or building structural components, suitable for the size of *piping*, of adequate strength and quality, and located at intervals so as to prevent or damp out excessive vibration. *Piping* shall be anchored to prevent undue strains on connected *appliances* and shall not be supported by other *piping*. Pipe hangers and supports shall conform to the requirements of MSS SP-58 and shall be spaced in accordance with Section 415. Supports, hangers and anchors shall be installed so as not to interfere with the free expansion and contraction of the *piping* between anchors. The components of the supporting *equipment* shall be designed and installed so that they will not be disengaged by movement of the supported *piping*.	Approve	**ICC Code Hearing Results** Motion: Approved as submitted passed 11-0

IMC

2021 GROUP A PROPOSED CHANGES TO THE I-CODES

April 11 – May 5, 2021
Virtual Committee Action Hearings

ICC
INTERNATIONAL CODE COUNCIL®

M57-21

IMC: 602.2.1.7

Proponents: Marcelo Hirschler, GBH International, representing self (mmh@gbhint.com)

2021 International Mechanical Code

Revise as follows:

602.2.1.7 Plastic plumbing piping and tubing. Plastic piping and tubing used in plumbing systems shall be *listed* and *labeled* as having a flame spread index not greater than 25 and a smoke-developed index not greater than 50 when tested in accordance with ASTM E84 or UL 723. Testing shall be conducted on a flat sheet of the material to be used for the piping or tubing at the thickness intended for use.

Exception: Plastic water distribution piping and tubing *listed* and *labeled* in accordance with UL 2846 as having a peak optical density not greater than 0.50, an average optical density not greater than 0.15, and a flame spread distance not greater than 5 feet (1524 mm), and installed in accordance with its listing.

Reason Statement: This proposal revisits an issue presented in earlier code cycles and disapproved.
However, this issue still presents an unnecessary concern for fire safety. ASTM E84 (Steiner tunnel test) does not contain any option that would allow testing of plastic pipes at other than as a sheet of the material tested at full width of the tunnel and at use thickness. By testing as specified in ASTM E84 the fire performance of the material used for the plastic piping or tubing material can be compared appropriately to the fire performance of any other material accepted for use in plenums.

Note that the charging paragraph for this section states:

602.2.1 Materials within plenums. Except as required by Sections 602.2.1.1 through 602.2.1.8, materials within plenums shall be noncombustible or shall be listed and labeled as having a flame spread index of not more than

25 and a smoke-developed index of not more than 50 when tested in accordance with ASTM E84 or UL 723.

The IMC provides multiple alternate options for plastic piping and tubing materials, as shown below:

1. The exception to section 602.2.1.7 allows materials to be tested to UL 2846, for plastic water distribution piping. UL 2846 was developed specifically to offer an option so that a pair of plastic pipes, intended for water distribution, can be tested as pipes, mounted on a special tray inside the Steiner tunnel. This option is, appropriately, widely used for plastic pipes used as pairs for water distribution.

2. Exception 5.1 to section 602.2.1 allows the use of "combustible materials fully enclosed within continuous noncombustible raceways or enclosures". This option is also widely used, appropriately, because the materials contained within the enclosure are "not exposed to the airflow".

3. Exception 5.2 to section 602.2.1 allows the use of "combustible materials fully enclosed within gypsum board assemblies". Again, just as the exception above, this option is widely used and addresses materials that are not exposed to the airflow.

4. Exception 5.3 to section 602.2.1 allows the use of "combustible materials fully enclosed within materials listed and labeled for installation within a plenum and listed for the application". Again, another fully appropriate and safe use.

However, in spite of all the fire safe options available for installation of highly combustible plastic piping and tubing, it has become evident that listings have been issued for plastic pipe or tubing for use in plenums based on testing that has been conducted using one or two pipes in the middle of the ASTM E84 tunnel, while the pipe is full of water during the test (circulating water, typically). This is not an option that the code allows (since it is not an option that either ASTM E84 or UL 723 allow) and such testing is not conducted in accordance with ASTM E84 or UL 723.

The following arguments have been presented in opposition to requiring testing of sheets for piping materials:

1. Plastic pipes will always be full of water during use. That is only true for some pipes but is not true for pipes transporting other fluids, such as various oils or other combustibles, and the IMC code section applies to any plastic pipe used for plumbing any fluid. Moreover, plastic pipes will likely be empty during construction and/or repair.

2. Manufacturers cannot generate test specimens that are sheets 24 feet long and 2 feet wide, for testing. The same argument would apply (and has been rejected in ICC codes) for manufacturers of any type of product required to be tested using a standard test specimen. Note that ASTM E84 testing is required for products as diverse as plastic signs, light transmitting plastics, water-resistive barriers, insulating materials, interior wall and ceiling materials, interior trim materials, laminated panels, site-fabricated stretch systems, MCM systems, and so on. All must be tested as indicated in the ASTM E84 standard. Why should plastic pipes be the exception?

A number of special standard mounting methods exist (and are referenced in ICC codes and in ASTM E84) for some products. The IMC contains one example, in a reference to ASTM E2231 for specimen preparation and mounting of pipe and duct insulation materials. However, plastic pipes

(other than those that can be tested to UL 2846) need to be tested strictly to ASTM E84 or UL 723. In summary, this proposal simply requires testing in accordance with the ASTM E84 or UL 723 standard.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This just clarifies a testing protocol that is being misapplied.

M57-21

M80-21

IMC: SECTION 202, TABLE 1107.4, 1108.10 (New), 1109.4.1, ASTM Chapter 15 (New)

Proponents: Brad Campbell, Titeflex Corp., representing Gastite (brad.campbell@gastite.com)

2021 International Mechanical Code

Revise as follows:

PIPING. Where used in this code, "piping" refers to either pipe or tubing, or both.

Pipe.

A rigid conduit of iron, steel, copper, copper-alloy, or plastic , or multilayer composite aluminum and plastic.

Tubing.

Semirigid conduit of copper, copper-alloy, aluminum, plastic, or steel , or multilayer composite aluminum and plastic.

TABLE 1107.4
REFRIGERANT PIPE

PIPING MATERIAL	STANDARD
Aluminum tube	ASTM B210/ASTM B210M, ASTM B491/B491M
Brass (copper alloy) pipe	ASTM B43
Copper linesets	ASTM B280, ASTM B1003
Copper pipe	ASTM B42, ASTM B302
Copper tube[a]	ASTM B68, ASTM B75, ASTM B88, ASTM B280, ASTM B819
Steel pipe[b]	ASTM A53, ASTM A106
Steel tube	ASTM A254, ASTM A334
Polyethylene of raised temperature / aluminum / polyethylene of raised temperature (PERT/AL/PERT) linesets	ASTM FXXXX

a. Soft annealed copper tubing larger than $1^{3}/_{8}$ inch (35 mm) O.D. shall not be used for field-assembled refrigerant piping unless it is protected from mechanical damage.

b. ASTM A53, Type F steel pipe shall not be used for refrigerant lines having an operating temperature less than -20°F (-29°C).

Add new text as follows:

1108.10 PERT/AL/PERT pipe. Joints between PERT/AL/PERT pipe or fittings shall be mechanical or press-connect joints conforming to Section 1108.3.

Revise as follows:

1109.4.1 Piping material. Piping material for Group A2, A3, B2 or B3 refrigerant located inside the building, except for *machinery rooms*, shall be copper pipe, brass pipe or steel pipe. Multilayer composite PERT/AL/PERT pipe may be used for Group A2 refrigerant. Pipe joints located in areas other than the *machinery room* shall be welded. Self-contained *listed* and *labeled equipment* or *appliances* shall have piping material based on the listing requirements.

Exception: PERT/AL/PERT pipe joints located in areas other than the machinery room shall be mechanical or press-connect joints.

Add new text as follows:

ASTM

ASTM International
100 Barr Harbor Drive, P.O. Box C700
West Conshohocken PA 19428

ASTM FXXXX: Polyethylene of Raised Temperature/Aluminum/Polyethylene of Raised Temperature (PERT/AL/PERT) Composite Pressure Pipe based on Inner Diameter (ID) for use in Air Conditioning and Refrigeration Line Set Systems

Staff Analysis: A review of the standards proposed for inclusion in the code, ASTM FXXXX: Polyethylene of Raised Temperature/Aluminum/Polyethylene of Raised Temperature (PERT/AL/PERT) Composite Pressure Pipe based on Inner Diameter (ID) for use in Air Conditioning and Refrigeration Line Set Systems, with regard to some of the key ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before March 20, 2021.

Reason Statement: PERT/AL/PERT pipe material is not listed in the IMC 1107 Refrigeration Piping Materials section. This type of composite pipe has primarily been used for water conveyance applications but if the pipe is designed and tested to the new ASTM FXXXX Standard for "Polyethylene of Raised Temperature / Aluminum / Polyethylene of Raised Temperature (PERT/AL/PERT) Composite Pressure Pipe based on Inner Diameter (ID) for use in Air Conditioning and Refrigeration Line Set Systems" it will be a comparable Line Set option. This new ASTM FXXXX standard will be finalized and published in the next 30 days.

Bibliography: ASTM FXXX approved PERT/AL/PERT lineset pipes have been tested and proven to be an excellent refrigeration piping material option. This standard was designed with dimensional tables that are ID controlled to match that of ACR Copper lineset tube so that the flowrate and volume of the pipe remains the same. This specification also has high pressure performance tables so that the pipe satisfies the wide range of refrigerant pressures. The new ASTM standard covers the following test evaluations:

- Dimensional evaluation to allowed standard (ASTM D2122)
- Adhesion testing (visual and peel) to verify the bonding between the various layers
- Ring pull testing to ensure a strong and effective weld seam
- Elongation and tensile testing of the aluminum alloy used in the pipe construction to ensure that only top performing alloys are used for this

application (ASTM E8/E8M)

- Burst pressure testing to verify the listed design pressure (ASTM D1599)
- Sustained pressure testing to ensure the pipe will handle continuous high pressure values at elevated temperatures (ASTM1598)
- Vibration testing after specified refrigerant exposure to pipe and fitting assembly (UL1963 Sec. 58.10)
- Pull testing after specified refrigerant exposure to pipe and fitting assembly (UL1963 Sec.58.11)
- Burst or Fatigue testing after specified refrigerant exposure to pipe and fitting assembly (Fatigue Method UL207 Sec. 14)
- Hydrostatic burst testing to evaluate the fitting connection to the pipe (ASTM 1599)
- Hydrostatic sustained pressure testing to evaluate the fitting connection to the pipe (ASTM1598)
- Thermocycling testing to evaluate the fitting connection to the pipe

This product has also been tested and evaluated for refrigerant and oil exposure to ASHRAE G38 "Guideline for Using Metal Pressure Vessels to Test Materials Used in Refrigeration Systems" where the physical properties of the inner PERT wall were evaluated both before and after exposure testing.

Cost Impact: The code change proposal will decrease the cost of construction
The use of an ASTM FXXXX approved PERT/AL/PERT lineset pipe will provide a decrease in the cost of construction due to cost effective raw materials that are used to make up the multilayer pipe. Most importantly the PERT, adhesive, and aluminum layer construction maintains better price stability than that of the commonly used refrigeration piping materials today which are very volatile and can not be held for any period of time. The product is light weight and can be sold in larger easily handled coils that can be straightened and formed for quicker installation in the field saving time and money. The overall structure of the pipe provides a lower risk of kinking than that of traditional lineset pipes which helps prevent unnecessary installation scrap and rework. Also this type of pipe is less likely to be stolen at job sights due to nature of the material.

M80-21

M81-21

IMC: 1108.5

Proponents: Pennie L Feehan, representing Copper Development Association (penniefeehan@me.com)

2021 International Mechanical Code

Delete without substitution:

~~**1108.5 Brass (copper alloy) pipe.** Joints between brass pipe or fittings shall be brazed, mechanical, press-connect, threaded or welded joints conforming to Section 1108.3.~~

Reason Statement: Because brass is a copper alloy, this section is not needed and is covered in Section 1108.6.

Bibliography: 1108.6 Copper pipe. Joints between copper or copper-alloy pipe or fittings shall be brazed, mechanical, press-connect, soldered, threaded or welded joints conforming to Section 1108.3.

Cost Impact: The code change proposal will increase the cost of construction
This is simply an elimination of duplication of requirements in code. It is a clarification of the code that does not affect materials or labor.

M82-21

IMC: 1109.4.1

Proponents: Pennie L Feehan, representing Copper Development Association (penniefeehan@me.com)

2021 International Mechanical Code

Revise as follows:

1109.4.1 Piping material. Piping material for Group A2, A3, B2 or B3 refrigerant located inside the building, except for *machinery rooms*, shall be copper pipe, ~~brass~~ copper alloy pipe or steel pipe. Pipe joints located in areas other than the *machinery room* shall be welded. Self-contained *listed* and *labeled equipment* or *appliances* shall have piping material based on the listing requirements.

Reason Statement: Brass and Bronze are Copper Alloys. Copper Alloy is the correct term.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This is editorial to update the use of terms in the code. Editorial changes do not affect material or labor costs.

M83-21

IMC: TABLE 1107.4, TABLE 1107.5, 1107.7, 1109.2.2, 1109.2.3, 1109.2.6, 1109.2.7, 1109.3, 1109.3.1, 1109.3.2, 1109.4, 1109.4.1, 1109.4.2, 1109.7, 1110.3, 1110.3.1 (New), 1110.5, 1110.5.2, 1110.5.1, 1110.6, 1110.7, ASTM Chapter 15 (New)

Proponents: Emily Toto, representing ASHRAE (etoto@ashrae.org)

2021 International Mechanical Code

Revise as follows:

TABLE 1107.4
REFRIGERANT PIPE

PIPING MATERIAL	STANDARD
Aluminum tube	ASTM B210/ASTM B210M, ASTM B491/B491M
Brass (copper alloy) pipe	ASTM B43
Copper linesets	ASTM B280, ASTM B1003
Copper pipe	ASTM B42, ASTM B302
Copper tube[a]	ASTM B68, ASTM B75, ASTM B88, ASTM B280, ASTM B819
Steel pipe[b]	ASTM A53, ASTM A106, ASTM A333
Steel tube	ASTM A254, ASTM A334

a. Soft annealed copper tubing larger than $1^{3}/_{8}$ inch (35 mm) O.D. shall not be used for field-assembled refrigerant piping unless it is protected from mechanical damage.

b. ASTM A53, Type F steel pipe shall ~~not be used for refrigerant lines having an operating temperature less than -20°F (-29°C).~~ only be permitted for discharge lines in pressure relief systems.

TABLE 1107.5
REFRIGERANT PIPE FITTINGS

FITTING MATERIAL	STANDARD
Aluminum	ASTM B361
~~Brass (copper alloy)~~	~~ASME B16.15, ASME B16.24~~
Copper and Copper Alloy (Brass)	ASME B16.15, ASME B16.18, ASME B16.22, ASME B16.24, ASME B16.26, ASME B16.50
Steel	ASTM A105, ASTM A181, ASTM A193, ASTM A234, ASTM A420, ASTM A707

1107.7 Flexible connectors, expansion and vibration compensators. Flexible connectors and expansion and vibration control devices shall be *listed* and *labeled* for use in refrigerant systems , and pressures for which the components are installed.

1109.2.2 Refrigerant pipe enclosure. Refrigerant piping shall be protected by locating it within the building elements or within protective enclosures.
Exception: Piping protection within the building elements or protective enclosure shall not be required in any of the following locations:

1. Where installed without ready access or located more than 7 feet 3 inches (2210 mm) above the finished floor.
2. Where located within 6 feet (1829 mm) of the refrigerant unit or *appliance*.
3. Where located in a *machinery room* complying with Section 1105.
4. Outside the building:
   4.1. Protected from damage from the weather, including, but not limited to, hail, ice, and snow loads, and
   4.2. Protected from damage within the expected foot or traffic path
   4.3. Outside underground installed not less than 8 inches (200 mm) below finished grade and protected against corrosion.

1109.2.3 Prohibited locations. Refrigerant piping shall not be installed in any of the following locations:
1. Exposed within a fire-resistance-rated exit access corridor.
2. Exposed w~~W~~ithin an interior exit stairway.
3. Within an interior exit ramp.
4. Within an exit passageway.
5. Within an elevator, dumbwaiter or other shaft containing a moving object.

1109.2.6 Exposed piping surface temperature. Exposed piping with ready access to nonauthorized personnel having surface temperatures greater than 120°F (49°C) or less than 5°F (-15°C) shall be protected from contact or shall have thermal insulation that limits the exposed insulation surface temperature to a range of 5°F (-15°C) to 120°F (49°C).

1109.2.7 Pipe identification. Refrigerant pipe located in areas other than the room or space where the refrigerating *equipment* is located shall be identified. The pipe identification shall be located at intervals not exceeding 20 feet (6096 mm) on the refrigerant piping or pipe insulation. The minimum height of lettering of the identification label shall be $^1/_2$ inch (12.7 mm). The identification shall indicate the refrigerant designation and safety group classification of refrigerant used in the piping system. For Group A2L and B2L refrigerants the identification shall also include the following statement: “WARNING – Risk of Fire. Flammable Refrigerant.” For Group A2, A3, B2 and B3 refrigerants, the identification shall also include the following statement: "DANGER—Risk of Fire or Explosion. Flammable Refrigerant." For any Group B refrigerant, the identification shall also include the following statement: "DANGER—Toxic Refrigerant."

1109.3 Installation requirements for Group A2L, A2, A3, ~~or~~ B2L , B2, or B3 refrigerant. Piping systems using Group A2L , A2, A3, ~~or~~ B2L , B2, or B3 refrigerant shall comply with the requirements of Sections 1109.3.1 and 1109.3.2.

1109.3.1 Pipe protection. In addition to the requirements of Section 305.5, aluminum, copper and steel tube used for Group ~~A2L~~ A2, A3, ~~and~~ B2L , B2, and B3 refrigerants and located in concealed locations where tubing is installed in studs, joists, rafters or similar member spaces, and located less than $1^1/_2$ inches (38 mm) from the nearest edge of the member, shall be continuously protected by shield plates. Protective steel shield plates having a minimum thickness of 0.0575 inch (1.46 mm) (No. 16 gage) shall cover the area of the tube plus the area extending not less than 2 inches (51 mm) beyond both sides of the tube.

1109.3.2 Shaft ventilation. Refrigerant pipe shafts with systems using Group A2L or B2L refrigerant shall be naturally or mechanically ventilated. Refrigerant pipe shafts with one or more systems using any Group A2, A3, B2, or B3 refrigerant shall be continuously mechanically ventilated and shall include a refrigerant detector. The shaft ventilation exhaust outlet shall comply with Section 501.3.1. Naturally ventilated shafts shall have a pipe, duct or conduit not less than 4 inches (102 mm) in diameter that connects to the lowest point of the shaft and extends to the outdoors. The

pipe, duct or conduit shall be level or pitched downward to the outdoors. Mechanically ventilated shafts shall have a minimum airflow velocity in accordance with Table 1109.3.2. The mechanical ventilation shall be continuously operated or activated by a refrigerant detector. Systems utilizing a refrigerant detector shall activate the mechanical ventilation at a maximum refrigerant concentration of 25 percent of the lower flammable limit of the refrigerant. The detector, or a sampling tube that draws air to the detector, shall be located in an area where refrigerant from a leak will concentrate. The shaft shall not be required to be ventilated for double-wall refrigerant pipe where the interstitial space of the double-wall pipe is vented to the outdoors.

Delete without substitution:

~~**1109.4 Installation requirements for Group A2, A3, B2 or B3 refrigerant.** Piping systems using Group A2, A3, B2 or B3 refrigerant shall comply with the requirements of Sections 1109.4.1 and 1109.4.2.~~

~~**1109.4.1 Piping material.** Piping material for Group A2, A3, B2 or B3 refrigerant located inside the building, except for *machinery rooms*, shall be copper pipe, brass pipe or steel pipe. Pipe joints located in areas other than the *machinery room* shall be welded. Self-contained *listed* and *labeled equipment* or *appliances* shall have piping material based on the listing requirements.~~

~~**1109.4.2 Shaft ventilation.** Refrigerant pipe shafts with systems using Group A2, A3, B2 or B3 refrigerant shall be continuously mechanically ventilated. The shaft ventilation exhaust outlet shall comply with Section 501.3.1. Mechanically ventilated shafts shall have a minimum airflow velocity as specified in Table 1109.3.2. The shaft shall not be required to be ventilated for double-wall refrigerant pipe where the interstitial space of the double-wall pipe is vented to the outdoors.~~

~~**1109.7 Condensate control.** Refrigerating piping and fittings that, during normal operation, will reach a surface temperature below the dew point of the surrounding air, and are located in spaces or areas where condensation has the potential to cause a safety hazard to the building occupants, structure, electrical *equipment* or any other *equipment* or *appliances*, shall be insulated or protected in an *approved* manner to prevent damage from condensation.~~

Revise as follows:

1110.3 Test gases. The medium used for pressure testing the refrigerant system shall be one of the following inert gases: oxygen-free nitrogen, helium, ~~or~~ argon or premixed nonflammable oxygen-free nitrogen with a tracer gas of hydrogen or helium. For R-744 refrigerant systems, carbon dioxide shall be allowed as the test medium. For R-718 refrigerant systems, water shall be allowed as the test medium. ~~Oxygen, air, combustible gases and mixtures containing such gases shall not be used as a test medium. Systems erected on the premises with tubing not exceeding $^{5}/_{8}$ inch (15.9 mm) outside diameter shall be allowed to use the refrigerant identified on the nameplate label or marking as the test medium.~~

Add new text as follows:

1110.3.1 Test Gases Not Permitted. Oxygen, air, refrigerants other than those identified in Section 1110.3, combustible gases and mixtures containing such gases shall not be used as the pressure test medium.

Revise as follows:

1110.5 Piping system strength test ~~pressure test and leak test~~. Refrigerating system components and refrigerant piping shall be tested in accordance with ASME B31.5 or this section. Separate tests for isolated portions of the system are permitted provided that all required portions are tested at least once. Pressurize with test gas for a minimum of 10 minutes to not less than the lower of (a) the lowest design pressure for any system component, or (b) the lowest value of set pressure for any pressure relief devices in the system. The design pressures for determination of test pressure shall be the pressure identified on the label nameplate of the condensing unit, compressor, compressor unit, pressure vessel, or other system component with a nameplate. A passing test result shall have no rupture or structural failure of any system component or refrigerant piping.

Refrigerant piping and tubing greater than 3/4 inches in diameter shall be tested in accordance with ASHRAE 15.

~~The refrigerant piping system shall be tested as a whole or separate tests shall be conducted for the low-pressure side and high-pressure side of the piping system. The refrigerant piping system shall be tested in accordance with both of the following methods:~~

1. ~~The system shall be pressurized for a period of not less than 60 minutes to not less than the lower of the design pressures or the setting of the pressure relief device(s). The design pressures for testing shall be the pressure listed on the label nameplate of the condensing unit, compressor, compressor unit, pressure vessel or other system component with a nameplate. Additional test gas shall not be added to the system after the start of the pressure test. The system shall not show loss of pressure on the test pressure measuring device during the pressure test. Where using refrigerant as a test medium in accordance with Section 1110.3, the test pressure shall be not less than the saturation dew point pressure at 77°F (25°C).~~
2. ~~A vacuum of 500 microns shall be achieved. After achieving a vacuum, the system shall be isolated from the vacuum pump. The system pressure shall not rise above 1,500 microns for a period of not less than 10 minutes.~~

Delete without substitution:

~~**1110.5.2 Limited charge systems.** Limited charge systems with a pressure relief device, erected on the premises, shall be tested at a pressure not less than one and one-half times the pressure setting of the relief device. *Listed* and *labeled* limited charge systems shall be tested at the~~

~~*equipment* or *appliance* design pressure.~~

~~**1110.5.1 Joints and refrigerant-containing parts in air ducts.** Joints and all refrigerant-containing parts of a refrigerating system located in an air duct of an air-conditioning system that conveys conditioned air to and from human-occupied spaces shall be tested at a pressure of 150 percent of the higher of the design pressure or pressure relief device setting.~~

~~**1110.6 Booster compressor.** Where a compressor protected by a pressure relief device is used as a booster to obtain an intermediate pressure, and such compressor discharges into the suction side of another compressor, the booster compressor shall be considered to be a part of the low-pressure side of the system.~~

~~**1110.7 Centrifugal/nonpositive displacement compressors.** Where testing systems using centrifugal or other nonpositive displacement compressors, the entire system shall be considered to be the low-pressure side for test purposes.~~

Add new standard(s) as follows:

ASTM

ASTM International
100 Barr Harbor Drive, P.O. Box C700
West Conshohocken PA 19428

A333-18: Standard Specification for Seamless and Welded Steel Pipe for Low-Temperature Service and other Applications with required Notch Toughness

Staff Analysis: A review of the standards proposed for inclusion in the code, ASTM A333-18: Standard Specification for Seamless and Welded Steel Pipe for Low-Temperature Service and Other Applications with Required Notch Toughness, with regard to some of the key ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before March 20, 2021.

Reason Statement: For Table 1107.4, ASHRAE 15 modified the piping requirements by adding ASTM A333, which is a steel pipe used in refrigerant piping systems. The other change is to modification of Note b. ASHRAE 15 added restrictions to the use of Type F pipe. For many years, Type F pipe ceased to be manufactured in the United States. Hence, the requirements were basically ignored. With the influx of foreign made steel pipe, Type F pipe has reemerged in the United States. That is why it is important to add the limitation since Type F pipe does not have strength and longevity of ERW pipe. Note: ASTM will provide the documentation required to add ASTM A333 to the Chapter 15 references.
For Table 1107.5 , the change is editorial. ASHRAE SSPC 15 Refrigerant Piping Working Group combined brass and copper fittings since the fittings can be used for either piping material. The fitting standard shown being removed are already located under the current heading of copper.

For Section 1107.7, we propose to add a reference to UL 207, which has been modified to add requirements for flexible connectors and expansion and vibration compensators. The other change is a mandate that the components be rated for the pressure of the refrigerant piping system. While this is already implied, it is better to include the wording to avoid improper interpretation of the requirement.

For Sections 1109.2-1109.4, There are two changes made by the ASHRAE 15 Committee regarding piping installation requirements. New requirements were added for piping protection when installed on the outside of the building. This includes buried pipe. The other change relates to interior exit stairways. These spaces are often heated and cooled by individual heat pumps. Thus, there is refrigerant piping within the exit stairs, however, the piping is not exposed creating a hazard. Furthermore, the quantity of refrigerant in the piping must be below the RCL (refrigerant concentration limit). The installation requirements for flammable refrigerants were also simplified by combining the sections of A2L and B2L with A2, A3, B2, and B3. The changes that resulted from the combining of the sections was the allowance of steel, stainless steel, and copper tubing for A2, A3, B2, and B3. ASHRAE 15 Committee found no reason for the continued requirement of limiting A2, A3, B2, and B3 refrigerants to pipe while not allowing tube. Both materials can handle the refrigerants and pressures. Furthermore, there are protection requirements for the tubing. In the tubing protection section, Group A2L was removed. This is based on testing showing that continuous protection is unnecessary for Group A2L refrigerants. The protection of stud and joist penetrations remain. The other changes include a statement on nonauthorized personnel for protection of the piping. This would allow exposed piping in machinery rooms. The last change is a marking requirement for A2L and B2L piping. This added marking of the piping is consistent with the labeling required by UL/CSA 60335-2-40.

For Section 1109.7, The ASHRAE 15 Committee was of the opinion that this section would be very difficult for a code official to enforce. To eliminate unintended consequences of the uncertainty associated with dew point will in a given space, this section was deleted during the updating of the piping requirements.

For Section 1110, The proposed Test Gas requirements adds an allowance for the use of premixed nitrogen with a tracer gas or either hydrogen or helium. The tracer gas makes it easier to detect a leak in larger refrigeration piping systems. The use of tracer gases for testing piping systems is common practice in larger refrigeration systems. The changes to the testing section reflect modifications made in ASHRAE 15 to expand the requirements for large piping systems in which a greater duration is appropriate. Note that the latest standard can be viewed free of charge at https://www.ashrae.org/technical-resources/standards-and-guidelines/read-only-versions-of-ashrae-standards.

Bibliography: 1. ASTM A333-18, Standard Specification for Seamless and Welded Steel Pipe for Low-Temperature Service and Other Applications with Required Notch Toughness.
2. ANSI/ASHRAE Standard 15-2019, Safety Standard for Refrigeration Systems.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
While some times for testing are increased, technicians can normally be completing other tasks associated with the refrigeration system during these times.

M83-21

M85-21

IMC: 1201.1

Proponents: Lance MacNevin, Plastics Pipe Institute, representing Plastics Pipe Institute (lmacnevin@plasticpipe.org)

2021 International Mechanical Code

Revise as follows:

1201.1 Scope. The provisions of this chapter shall govern the construction, installation,*alteration* and repair of hydronic piping systems. This chapter shall apply to hydronic piping systems that are part of heating, ventilation and air-conditioning systems. Such piping systems shall include steam, hot water, radiant heating, radiant cooling, chilled water, steam condensate , ~~and~~ ground source heat pump loop systems and snow- and ice-melting. Potable cold and hot water distribution systems shall be installed in accordance with the *International Plumbing Code* .

Reason Statement: The hydronic applications known as radiant heating & cooling and snow & ice melting are currently listed within Ch. 12 in Section 1209 Embedded Piping, but are missing from the Scope. Therefore, these types of hydronic systems should be listed within the Scope. Subsequent proposals, if accepted, will add new requirements for radiant heating & cooling and snow & ice melting tubing systems.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
The hydronic applications known as radiant heating & cooling and snow & ice melting are currently listed within Ch. 12 in Section 1209 Embedded Piping, but are missing from the Scope.

M87-21

IMC: TABLE 1202.4, ASTM Chapter 15 (New)

Proponents: Lisa Reiheld, representing Viega LLC (lisa.reiheld@viega.us)

2021 International Mechanical Code

Revise as follows:

TABLE 1202.4
HYDRONIC PIPE

MATERIAL	STANDARD (see Chapter 15)
Acrylonitrile butadiene styrene (ABS) plastic pipe	ASTM D1527; ASTM F2806
Chlorinated polyvinyl chloride (CPVC) plastic pipe	ASTM D2846; ASTM F441; ASTM F442
Chlorinated polyvinyl chloride/aluminum/chlorinated polyvinyl chloride (CPVC/AL/CPVC)	ASTM F2855
Copper or copper-alloy pipe	ASTM B42; ASTM B43; ASTM B302
Copper or copper-alloy tube (Type K, L or M)	ASTM B75; ASTM B88; ASTM B135; ASTM B251
Cross-linked polyethylene/aluminum/cross-linked polyethylene (PEX-AL-PEX) pressure pipe	ASTM F1281; CSA CAN/CSA-B-137.10
Cross-linked polyethylene (PEX) tubing	ASTM F876; ASTM F3253; CSA B137.5
Ductile iron pipe	AWWA C115/A21.15; AWWA C151/A21.51
Lead pipe	FS WW-P-325B
Polyethylene/aluminum/polyethylene (PE-AL-PE) pressure pipe	ASTM F1282; CSA B137.9
Polypropylene (PP) plastic pipe	ASTM F2389
Polyvinyl chloride (PVC) plastic pipe	ASTM D1785; ASTM D2241
Raised temperature polyethylene (PE-RT)	ASTM F2623; ASTM F2769; CSA B137.18
Steel pipe	ASTM A53; ASTM A106;
Steel tubing	ASTM A254
Stainless Steel pipe	ASTM A269; ASTM A312; ASTM A554; ASTM A778
Stainless Steel tubing	ASTM A269; ASTM A312; ASTM A554; ASTM A778

Add new standard(s) as follows:

ASTM

ASTM International
100 Barr Harbor Drive, P.O. Box C700
West Conshohocken PA 19428

ASTM A554-16: Standard Specification for Welded Stainless Steel Mechanical Tubing

Add new text as follows:

ASTM

ASTM International
100 Barr Harbor Drive, P.O. Box C700
West Conshohocken PA 19428

ASTM A778/A778M-16: Standard Specification for Welded, Unannealed Austenitic Stainless Steel Tubular Products

Staff Analysis: A review of the standards proposed for inclusion in the code, ASTM A554-16 and A778-16: Standard Specification for Welded Stainless Steel Mechanical Tubing and ASTM A778/A778M-16: Standard Specification for Welded, Unannealed Austenitic Stainless Steel Tubular Products, with regard to some of the key ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before March 20, 2021.

Reason Statement: Stainless steel material is proposed to be added for hydronic applications where stainless steel pipe, tubing and fittings are necessary for corrosion resistance. The proposed stainless steel standards are also referenced in other nationally recognized codes and are commonly used for potable water distribution and hydronic applications.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
The proposal of including stainless steel as another recognized material for the use in hydronic systems will not increase the cost of construction due to the fact that stainless steel piping and tubing would be only one of multiple material options the user of the code could specify.

M87-21

M88-21

IMC: TABLE 1202.5, ASTM Chapter 15 (New)

Proponents: Lisa Reiheld, Viega LLC, representing Viega LLC (lisa.reiheld@viega.us)

2021 International Mechanical Code

Revise as follows:

TABLE 1202.5
HYDRONIC PIPE FITTINGS

MATERIAL	STANDARD (see Chapter 15)
Copper and copper alloys	ASME B16.15; ASME B16.18; ASME B16.22; ASME B16.24; ASME B16.26; ASME B16.51; ASSE 1061; ASTM F1974; ASTM F3226
CPVC	ASSE 1061; ASTM D2846; ASTM F438; ASTM F439
Ductile iron and gray iron	ANSI/AWWA C110/A21.10; ASTM A395; ASTM A536; ASTM F1476; ASTM F1548; AWWA C153/A21.53
Ductile iron	ANSI/AWWA C153/A21.53
Gray iron	ASTM A126
Malleable iron	ASME B16.3
PE-RT fittings	ASSE 1061; ASTM D3261; ASTM F1807; ASTM F2098; ASTM F2159; ASTM F2735; ASTM F2769; CSA B137.1; CSA B137.18
PEX fittings	ASSE 1061; ASTM F877; ASTM F1807; ASTM F1960; ASTM F2080; ASTM F2159; ASTM F3253
Plastic	ASTM D2466; ASTM D2467; ASTM D2846; ASTM F877; ASTM F2389; ASTM F2735
Steel	ASME B16.5; ASME B16.9; ASME B16.11; ASME B16.28; ASTM A53; ASTM A106; ASTM A234; ASTM A395; ASTM A420; ASTM A536; ASTM F1476; ASTM F1548; ASTM F3226
Stainless Steel	ASTM A269; ASTM A312; ASTM A554; ASTM A778; ASTM F3226

Add new standard(s) as follows:

ASTM

ASTM International
100 Barr Harbor Drive, P.O. Box C700
West Conshohocken PA 19428

A554-16: Standard Specification for Welded Stainless Steel Mechanical Tubing

A778/A778M-16: Standard Specification for Welded, Unannealed Austenitic Stainless Steel Tubular Products

Staff Analysis: A review of the standards proposed for inclusion in the code, ASTM A554: Standard Specification for Welded Stainless Steel Mechanical Tubing; and ASTM A778: Standard Specification for Welded, Unannealed Austenitic Stainless Steel Tubular Products, with regard to some of the key ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before March 20, 2021.

Reason Statement: ASTM F3226 Standard Specification for Metallic Press-Connect Fittings for Piping and Tubing Systems is now published and includes Carbon Steel, Stainless Steel, Copper and Copper-Alloy materials. By including this standard will provide a reference standard for press-connect technology for each of the alloys.
Stainless steel material is proposed to be added for applications where stainless steel pipe, tubing and fittings are necessary for corrosion resistance. The proposed stainless steel standards are also referenced in other nationally recognized codes and are commonly used for potable water distribution and hydronic applications.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This standard is not the only standard that the pipe fittings can meet in accordance with the Pipe Fittings Table, this is just an alternative standard that some manufacturer's have tested their products to and would like to see recognized as an acceptable standard for pipe fittings. Testing to this standard is optional and no existing standards have been removed or replaced by the proposed addition of this standard.

M88-21

M89-21

IMC: 1203.3.4

Proponents: Forest Hampton, representing Lubrizol, Inc. (forest.hampton@lubrizol.com)

2021 International Mechanical Code

Revise as follows:

1203.3.4 Solvent-cemented joints. Joint surfaces shall be clean and free from moisture. An *approved* primer shall be applied to CPVC and PVC pipe-joint surfaces. Joints shall be made while the cement is wet. Solvent cement conforming to the following standards shall be applied to all joint surfaces:

1. ASTM D2235 for ABS joints.
2. ASTM F493 for CPVC joints.
3. ASTM D2564 for PVC joints.

CPVC joints shall be made in accordance with ASTM D2846.

Exception: For CPVC pipe joint connections, a primer is not required where all of the following conditions apply:

1. The solvent cement used is third-party certified as conforming to ASTM F493.
2. The solvent cement is yellow or green in color.
3. The solvent cement is used only for joining $^{1}/_{2}$-inch (12.7 mm) through 2-inch (51 mm) diameter CPVC pipe and fittings.
4. The CPVC pipe or fittings are manufactured in accordance with ASTM D2846.

Reason Statement: Currently, it can be difficult to see the yellow solvent cement ring on a tan CTS CPVC joint during inspection. A high contrast cement has been asked for from the field to aid in the inspection of CPVC joints. The color green was chosen because of its high contrast against the tan pipe and fittings and green is not currently used to identify any other type of cement.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
The addition of another one-step solvent cement color will not change the cost of construction.

M90-21

IMC: 1203.9, 1203.9.1

Proponents: Lance MacNevin, Plastics Pipe Institute, representing Plastics Pipe Institute (lmacnevin@plasticpipe.org)

2021 International Mechanical Code

Delete without substitution:

~~**1203.9 Polybutylene plastic pipe and tubing.** Joints between polybutylene plastic pipe and tubing or fittings shall be mechanical joints conforming to Section 1203.3 or heat-fusion joints conforming to Section 1203.9.1.~~

~~**1203.9.1 Heat-fusion joints.** Joints shall be of the socket-fusion or butt-fusion type. Joint surfaces shall be clean and free from moisture. Joint surfaces shall be heated to melt temperatures and joined. The joint shall be undisturbed until cool. Joints shall be made in accordance with ASTM D3309.~~

Reason Statement: Polybutylene (PB) tubing has not been manufactured for sale in the US since the late 1990s. PB was previously removed from Table 1202.4 “Hydronic Pipe” at some time before 2015. The referenced product standard, ASTM D3309 “Polybutylene (PB) Plastic Hot- and Cold-Water Distribution Systems” was withdrawn in 2010.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
Polybutylene (PB) tubing has not been manufactured for sale in the US since the late 1990s, and PB was previously removed from Table 1202.4 “Hydronic Pipe” at some time before 2015.

M91-21

IMC: 1203.14 (New), 1203.15 (New)

Proponents: Lisa Reiheld, Viega LLC, representing Viega LLC (lisa.reiheld@viega.us)

International Mechanical Code

2021 International Mechanical Code

Add new text as follows:

1203.14 Stainless Steel Pipe. Joints between stainless steel pipe or fittings shall be mechanical joints that are made with an approved elastomeric seal, or shall be threaded or welded joints conforming to Section 1203.3.

1203.15 Stainless Steel Tubing. Joints between stainless steel tubing or fittings shall be mechanical or welded joints conforming to Section 1203.3.

Reason Statement: Stainless steel pipe and tubing are not currently recognized in the IMC as materials for use in hydronic applications. However, these materials are often specified for use in hydronic applications and are selected due to the corrosion resistance provided by stainless steel. The inclusion of stainless steel pipe and tubing in the body of this code for hydronic applications will allow the specifier and/or installer the option to use a much more corrosive resistant material for applications where this is important to the integrity of the hydronic installation. IMC Section 1203 Joints and Connections, specifies particular materials that can be joined in hydronic applications and currently includes steel but not stainless steel. Stainless steel pipe and tubing joints are being added to replicate their use as equivalent to Sections 1203.12 Steel pipe and 1203.13 Steel tubing for joints as well as state the suitable equivalent methods of joining as stated for Steel pipe and tubing.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
The proposal of including stainless steel as another recognized material for the use in hydronic systems will not increase the cost of construction due to the fact that stainless steel piping and tubing would be only one of multiple material options the user of the code could specify.

M92-21

IMC: 1205.1

Proponents: Guy McMann, representing Colorado Association of Plumbing and Mechanical Officials (CAPMO) (gmcmann@jeffco.us)

2021 International Mechanical Code

Revise as follows:

1205.1 Where required. Shutoff valves shall be installed in hydronic piping systems in the locations indicated in Sections 1205.1.1 through 1205.1.6. Access shall be provided to all full open valves and shutoff valves.

Reason Statement: Although Section 306.1 alludes to access for devices if you want to call a valve a device, it doesn't just come out and include valves. This change will make it clear that valves will be required to have access.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This change is editorial in nature is done for consistency purposes only.

M93-21

IMC: 1210.4, TABLE 1210.4

Proponents: Michael Cudahy, representing PPFA (mikec@cmservices.com)

2021 International Mechanical Code

1210.4 Piping and tubing materials standards. Ground-source heat pump ground-loop pipe and tubing shall conform to the standards listed in Table 1210.4.

Revise as follows:

TABLE 1210.4
GROUND-SOURCE LOOP PIPE

MATERIAL	STANDARD (see Chapter 15)
Chlorinated polyvinyl chloride (CPVC)	ASTM D2846; ASTM F441; ASTM F442
Cross-linked polyethylene (PEX)	ASTM F876; ASTM F3253; CSA B137.5; CSA C448; NSF 358-3
Polyethylene/aluminum/polyethylene (PE-AL-PE) pressure pipe	ASTM F1282; CSA B137.9
High-density polyethylene (HDPE)	ASTM D2737; ASTM D3035; ASTM F714; AWWA C901; CSA B137.1; CSA C448; NSF 358-1
Polypropylene (PP-R)	ASTM F2389; CSA B137.11; NSF 358-2
Polyvinyl chloride (PVC)	ASTM D1785; ASTM D2241
Raised temperature polyethylene (PE-RT)	ASTM F2623; ASTM F2769; CSA B137.18; CSA C448; NSF 358-4

Reason Statement: ASTM F3253 is titled, "Standard Specification for *Crosslinked Polyethylene (PEX) Tubing* with Oxygen Barrier for Hot- and Cold-Water Hydronic Distribution Systems" and contains information for PEX systems for hydronic applications where an oxygen barrier is used. This standard for PEX tubing and fittings is already included in the hydronics fittings table and is missing in the piping table, so we are correcting its absence.

Bibliography: ASTM F3253 is already included in the code.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
The code change proposal will not increase or decrease the cost of construction. The proposal simply adds an additional ASTM standard for inclusion of approved PEX piping. There is not expected to be an increase or decrease in construction costs by the inclusion of another approved piping material defined by the ASTM product standard for tubing to this section of the code. This standard is for PEX tubing and fittings and is already included in the hydronics fittings table and is only missing in the piping table.

M93-21

M95-21

IMC: 1209.1

Proponents: Lance MacNevin, Plastics Pipe Institute, representing Plastics Pipe Institute (lmacnevin@plasticpipe.org)

2021 International Mechanical Code

Revise as follows:

1209.1 Materials. Piping for heating panels shall be standard-weight steel pipe, Type L copper tubing, ~~polybutylene~~ or ~~other~~ *approved* plastic pipe or tubing rated at 100 psi (689 kPa) at 180°F (82°C).

Reason Statement: Polybutylene (PB) tubing has not been manufactured for sale in the US since the late 1990s. PB was previously removed from Table 1202.4 “Hydronic Pipe” at some time before 2015.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
Polybutylene (PB) tubing has not been manufactured for sale in the US since the late 1990s. PB was previously removed from Table 1202.4 “Hydronic Pipe” at some time before 2015.

M96-21

IMC: 1209.3.3

Proponents: Lance MacNevin, Plastics Pipe Institute, representing Plastics Pipe Institute (lmacnevin@plasticpipe.org)

2021 International Mechanical Code

Delete without substitution:

~~**1209.3.3 Polybutylene joints.** Polybutylene pipe and tubing shall be installed in continuous lengths or shall be joined by heat fusion in accordance with Section 1203.9.1.~~

Reason Statement: Polybutylene (PB) tubing has not been manufactured for sale in the US since the late 1990s. PB was previously removed from Table 1202.4 “Hydronic Pipe” at some time before 2015.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
Polybutylene (PB) tubing has not been manufactured for sale in the US since the late 1990s. PB was previously removed from Table 1202.4 “Hydronic Pipe” at some time before 2015.

M97-21

IMC: 1209.6 (New), 1209.6.1 (New), TABLE 1209.6.1 (New), 1209.6.2 (New), 1209.6.3 (New)

Proponents: Lance MacNevin, Plastics Pipe Institute, representing Plastics Pipe Institute (lmacnevin@plasticpipe.org)

2021 International Mechanical Code

Add new text as follows:

1209.6 Radiant tubing placement. Hydronic tubing to be embedded for the purpose of radiant heating or cooling shall be installed in accordance with the manufacturer's instructions and with the tube layout and spacing in accordance with the system design. Individual tubing circuit lengths shall be installed with a variance of not more than ±10 percent from the design.

1209.6.1 Radiant tubing circuit length. The maximum circuit length of radiant tubing from a supply-and-return manifold shall not exceed the lengths specified by the system design or, in the absence of manufacturer's specifications, the lengths specified in Table 1209.6.1.

TABLE 1209.6.1
MAXIMUM CIRCUIT LENGTH OF RADIANT TUBING FROM A SUPPLY-AND-RETURN MANIFOLD ARRANGEMENT

NOMINAL TUBE SIZE	MAXIMUM CIRCUIT LENGTH (FEET)
1/4	125
5/16	200
3/8	250
1/2	300
5/8	400
3/4	500
1	750

For SI units: 1 foot = 304.8 mm

1209.6.2 Radiant tubing circuit tags. Each individual radiant tubing circuit shall have a tag or label securely affixed to each manifold outlet to indicate the length of each circuit and the areas served.

1209.6.3 Radiant tubing drawings. The radiant tubing drawings and design report shall be provided to the building owner or the designated representative of the building owner.

Reason Statement: Manufacturers of radiant heating and cooling tubing recognize that the proper installation of radiant heating and cooling tubing is critical to the successful operation of these systems. One of the most fundamental aspects of installation is the length of each tubing circuit, because if installed lengths are too short or too long, or not labelled, it may be impossible to balance the radiant system correctly for proper operation, comfort and efficiency. For tubing that is to be embedded, this topic is critical, yet is very inspectable and enforceable.
The circuit lengths in the proposed Table 1209.1 are based on existing industry practices, and take into account the allowable temperature gain or loss from the hydronic fluid, and the typical pressure loss in radiant circuits of those diameters. These values match those found in other codes.

The proposed language makes it clear that tubing circuit lengths are to be installed according to system design or the default Table 1209.1 and are to be inspected for such compliance.

Also, it is important for radiant tubing circuits to be tagged or labelled, and for the final drawings/design to be given to the building owner, in case the tubing routing and locations need to be identified at a later date.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
The proposed code sections are based on existing industry practices used by trained experienced professionals, and do not alter the design or construction of radiant systems.

M97-21

M98-21

IMC: 1209.7 (New), 1209.7.1 (New), TABLE 1209.7.1 (New), 1209.7.2 (New)

Proponents: Lance MacNevin, Plastics Pipe Institute, representing Plastics Pipe Institute (lmacnevin@plasticpipe.org)

2021 International Mechanical Code

Add new text as follows:

1209.7 Snow & ice melt tubing placement. Hydronic tubing to be embedded for the purpose of snow & ice melt systems shall be installed in accordance with the manufacturer's installation instructions and with the tube layout and spacing in accordance with the system design.

1209.7.1 Snow-and ice-melt tubing circuit length. The maximum circuit length of snow- and ice- melt tubing from a supply-and-return manifold shall not exceed the lengths specified by the system design or, in the absence of manufacturer's specifications, the lengths specified in Table 1209.7.1. Individual tubing circuit lengths shall be installed with a variance of not more than ±10 percent from the design.

TABLE 1209.7.1
MAXIMUM CIRCUIT LENGTH OF SNOW- AND ICE-MELT TUBING FROM A SUPPLY-AND-RETURN MANIFOLD ARRANGEMENT

NOMINAL TUBE SIZE	MAXIMUM CIRCUIT LENGTH (FEET)
1/2	140
5/8	250
3/4	325
1	475

For SI units: 1 foot = 304.8 mm

1209.7.2 Snow- and ice-melt tubing drawings. The snow- and ice-melt tubing drawings and design report shall be provided to the building owner or the designated representive of the building owner.

Reason Statement: Manufacturers of snow & ice melt (SIM) system tubing recognize that the proper installation of this tubing is critical to the successful operation of these systems. One of the most fundamental aspects of installation is the length of each tubing circuit, because if installed lengths are too short or too long, it may be impossible to balance the system correctly for proper operation, efficiency and safety. For tubing that is to be embedded, this topic is critical, yet is very inspectable and enforceable.
The circuit lengths in the proposed Table 1209.2 are based on existing industry practices, and take into account the allowable temperature loss from the hydronic fluid and the typical pressure loss in snow & ice melt circuits of those diameters. The actual lengths are based on the typical on-center spacing of tubing in a SIM system and the typical heat energy required per square foot of outdoor area. These values match those found in other codes.

The proposed language makes it clear that tubing circuit lengths are to be installed according to system design or the default Table 1209.2 and are to be inspected for such compliance.Also, it is important that the final drawings/design be provided to the building owner in case the tubing routing and locations need to be identified at a later date.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
The proposed requirements are based on existing industry practices, and match those found in other codes.

M98-21

M99-21 Part I

IMC: TABLE 1210.5, TABLE 1202.5, ASTM Chapter 15 (New)

Proponents: Michael Cudahy, representing PPFA (mikec@cmservices.com)

THIS IS A TWO PART CODE CHANGE. PART I WILL BE HEARD BY THE MECHANICAL CODE COMMITTEE. PART II WILL BE HEARD BY THE INTERNATIONAL RESIDENTIAL MECHANICAL/PLUMBING CODE COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THESE COMMITTEES

2021 International Mechanical Code

Revise as follows:

TABLE 1210.5
GROUND-SOURCE LOOP PIPE FITTINGS

PIPE MATERIAL	STANDARD (see Chapter 15)
Chlorinated polyvinyl chloride (CPVC)	ASTM D2846; ASTM F437; ASTM F438; ASTM F439; CSA B137.6
Cross-linked polyethylene (PEX)	ASTM F877; ASTM F1807; ASTM F1960; ASTM F2080; ASTM F2159; ASTM F2434; ASTM F3347; CSA B137.5; CSA C448; NSF 358-3
Polyethylene/aluminum/polyethylene (PE-AL-PE)	ASTM F1282; ASTM F2434; CSA B137.9
High-density polyethylene (HDPE)	ASTM D2683; ASTM D3261; ASTM F1055; CSA B137.1; CSA C448; NSF 358-1
Polypropylene (PP-R)	ASTM F2389; CSA B137.11; NSF 358-2
Polyvinyl chloride (PVC)	ASTM D2464; ASTM D2466; ASTM D2467; CSA B137.2; CSA B137.3
Raised temperature polyethylene (PE-RT)	ASTM D3261; ASTM F1807; ASTM F2098; ASTM F2159; ASTM F2735; ASTM F2769; ASTM F3347; CSA B137.1; CSA B137.18; CSA C448; NSF 358-4

TABLE 1202.5
HYDRONIC PIPE FITTINGS

MATERIAL	STANDARD (see Chapter 15)
Copper and copper alloys	ASME B16.15; ASME B16.18; ASME B16.22; ASME B16.24; ASME B16.26; ASME B16.51; ASSE 1061; ASTM F1974
CPVC	ASSE 1061; ASTM D2846; ASTM F438; ASTM F439
Ductile iron and gray iron	ANSI/AWWA C110/A21.10; ASTM A395; ASTM A536; ASTM F1476; ASTM F1548; AWWA C153/A21.53
Ductile iron	ANSI/AWWA C153/A21.53
Gray iron	ASTM A126
Malleable iron	ASME B16.3
PE-RT fittings	ASSE 1061; ASTM D3261; ASTM F1807; ASTM F2098; ASTM F2159; ASTM F2735; ASTM F2769; ASTM F3347; CSA B137.1; CSA B137.18
PEX fittings	ASSE 1061; ASTM F877; ASTM F1807; ASTM F1960; ASTM F2080; ASTM F2159; ASTM F3253; ASTM F3347
Plastic	ASTM D2466; ASTM D2467; ASTM D2846; ASTM F877; ASTM F2389; ASTM F2735
Steel	ASME B16.5; ASME B16.9; ASME B16.11; ASME B16.28; ASTM A53; ASTM A106; ASTM A234; ASTM A395; ASTM A420; ASTM A536; ASTM F1476; ASTM F1548

Add new standard(s) as follows:

ASTM

ASTM International
100 Barr Harbor Drive, P.O. Box C700
West Conshohocken PA 19428

F3347-20a: Standard Specification for Metal Press Insert Fittings with Factory Assembled Stainless Steel Press Sleeve for SDR9 Cross-linked Polyethylene (PEX) Tubing and SDR9 Polyethylene of Raised Temperature (PE-RT) Tubing

Staff Analysis: A review of the standards proposed for inclusion in the code, ASTM F3347: Standard Specification for Metal Press Insert Fittings with Factory Assembled Stainless Steel Press Sleeve for SDR9 Cross-linked Polyethylene (PEX) Tubing and SDR9 Polyethylene of Raised Temperature (PE-RT) Tubing, with regard to some of the key ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before March 20, 2021.

M99-21 Part I

M99-21 Part II

IRC: TABLE P2906.6, TABLE M2101.1, ASTM Chapter 44 (New)

Proponents: Michael Cudahy, representing PPFA (mikec@cmservices.com)

2021 International Residential Code

Revise as follows:

TABLE P2906.6
PIPE FITTINGS

MATERIAL	STANDARD
Acrylonitrile butadiene styrene (ABS) plastic	ASTM D2468
Cast iron	ASME B16.4
Chlorinated polyvinyl chloride (CPVC) plastic	ASSE 1061; ASTM D2846; ASTM F437; ASTM F438; ASTM F439; CSA B137.6
Copper or copper alloy	ASME B16.15; ASME B16.18; ASME B16.22; ASME B16.26; ASME B16.51; ASSE 1061; ASTM F3226
Cross-linked polyethylene/aluminum/high-density polyethylene (PEX-AL-HDPE)	ASTM F1986
Fittings for cross-linked polyethylene (PEX) plastic tubing	ASSE 1061; ASTM F877; ASTM F1807; ASTM F1960; ASTM F2080; ASTM F2098; ASTM F2159; ASTM F2434; ASTM F2735; ASTM F3347; CSA B137.5
Gray iron and ductile iron	AWWA C110/A21.10; AWWA C153/A21.53
Malleable iron	ASME B16.3
Insert fittings for Polyethylene/aluminum/polyethylene (PE-AL-PE) and cross-linked polyethylene/aluminum/cross-linked polyethylene (PEX-AL-PEX)	ASTM F1281; ASTM F1282; ASTM F1974; CSA B137.9; CSA B137.10
Polyethylene (PE) plastic	ASTM D2609; CSA B137.1
Fittings for polyethylene of raised temperature (PE-RT) plastic tubing	ASSE 1061; ASTM D2683; ASTM D3261; ASTM F1055; ASTM F1807; ASTM F2098; ASTM F2159; ASTM F2735; ASTM F2769; ASTM F3347; CSA B137.18
Polypropylene (PP) plastic pipe or tubing	ASTM F2389; CSA B137.11
Polyvinyl chloride (PVC) plastic	ASTM D2464; ASTM D2466; ASTM D2467; CSA B137.2; CSA B137.3
Stainless steel (Type 304/304L) pipe	ASTM A312; ASTM A778
Stainless steel (Type 316/316L) pipe	ASTM A312; ASTM A778
Steel	ASME B16.9; ASME B16.11; ASME B16.28

TABLE M2101.1
HYDRONIC PIPING AND FITTING MATERIALS

MATERIAL	USE CODE[a]	STANDARD[b]	JOINTS	NOTES
Acrylonitrile butadiene styrene (ABS) plastic pipe	1, 5	ASTM D1527, ASTM F2806, ASTM F2969	Solvent cement joints	—
Chlorinated poly (vinyl chloride) (CPVC) pipe and tubing	1, 2, 3	ASTM D2846	Solvent cement joints, compression joints and threaded adapters	—
Copper and copper-alloy pipe	1	ASTM B42, ASTM B43, ASTM B302	Brazed, soldered and mechanical fittings threaded, welded and flanged	—
Copper and copper-alloy tubing (Type K, L or M)	1, 2	ASME B16.51, ASTM B75, ASTM B88, ASTM B135, ASTM B251, ASTM B306	Brazed, soldered, press-connected and flared mechanical fittings	Joints embedded in concrete shall be brazed
Cross-linked polyethylene (PEX)	1, 2, 3	ASTM F876; ASTM F3253	(See PEX fittings)	Install in accordance with manufacturer's instructions
Cross-linked polyethylene/ aluminum/cross-linked polyethylene (PEX-AL-PEX) pressure pipe	1, 2	ASTM F1281 or CAN/CSA B137.10	Mechanical, crimp/insert	Install in accordance with manufacturer's instructions
PEX fittings	—	ASTM F877, ASTM F1807, ASTM F1960, ASTM F2098, ASTM F2159, ASTM F2735, ASTM F3253; ASTM F3347	Copper crimp/insert fittings, cold expansion fittings, stainless steel clamp, insert fittings	Install in accordance with manufacturer's instructions
Polybutylene (PB) pipe and tubing	1, 2, 3	ASTM D3309	Heat-fusion, crimp/insert and compression	Joints in concrete shall be heat-fused
Polyethylene/aluminum/polyethylene (PE-AL-PE) pressure pipe	1, 2, 3	ASTM F1282, CSA B137.9	Mechanical, crimp/insert	—
Polypropylene (PP)	1, 2, 3	ISO 15874, ASTM F2389	Heat-fusion joints, mechanical fittings, threaded adapters, compression joints	—
Raised temperature polyethylene (PE-RT)	1, 2, 3	ASTM F2623, ASTM F2769, CSA B137.18	Copper crimp/insert fitting, stainless steel clamp, insert fittings	—
Raised temperature polyethylene (PE-RT) fittings	1, 2, 3	ASTM D3261, ASTM F1807, ASTM F2098, ASTM F2159, ASTM F2735, ASTM F2769, ASTM F3347; CSA B137.18	Copper crimp/insert fitting, stainless steel clamp, insert fittings	—
Steel pipe	1, 2	ASTM A53, ASTM A106	Brazed, welded, threaded, flanged and mechanical fittings	Joints in concrete shall be welded. Galvanized pipe shall not be welded or brazed.
Steel tubing	1	ASTM A254	Mechanical fittings, welded	—

For SI: °C = [(°F) – 32]/1.8.

a. Use code:

1. Above ground.
2. Embedded in radiant systems.
3. Temperatures below 180°F only.
4. Low temperature (below 130°F) applications only.
5. Temperatures below 160°F only.

b. Standards as listed in Chapter 44.

Add new standard(s) as follows:

ASTM

ASTM International
100 Barr Harbor Drive, P.O. Box C700
West Conshohocken PA 19428

ASTM F3347: Standard Specification for Metal Press Insert Fittings with Factory Assembled Stainless Steel Press Sleeve for SDR9 Cross-linked Polyethylene (PEX) Tubing and SDR9 Polyethylene of Raised Temperature (PE-RT) Tubing

Reason Statement: ASTM F3347 is titled, "Standard Specification for Metal Press Insert Fittings with Factory Assembled Stainless Steel Press Sleeve for SDR9 Cross-linked Polyethylene (PEX) Tubing and SDR9 Polyethylene of Raised Temperature (PE-RT) Tubing" and contains information for metallic fittings for both PEX and PERT systems intended for use in residential and commercial, hot and cold, potable water distribution systems as well as sealed central heating, including under-floor heating/cooling systems, and residential fire sprinkler systems.

Bibliography: ASTM F3347 Standard Specification for Metal Press Insert Fittings with Factory Assembled Stainless Steel Press Sleeve for SDR9 Cross-linked Polyethylene (PEX) Tubing and SDR9 Polyethylene of Raised Temperature (PE-RT) Tubing

Cost Impact: The code change proposal will not increase or decrease the cost of construction
The code change proposal will not increase or decrease the cost of construction. The proposal simply adds an additional ASTM standard for inclusion of approved PEX and PERT fitting products and is therefore not expected to either raise or lower the cost of construction by offering another potential product to the application, it only increases additional options.

M99-21 Part II

M100-21 Part I

IMC: TABLE 1210.5, TABLE 1202.5, ASTM Chapter 15 (New)

Proponents: Michael Cudahy, representing PPFA (mikec@cmservices.com)

THIS IS A TWO PART CODE CHANGE. PART 1 WILL BE HEARD BY THE MECHANICAL CODE COMMITTEE. PART 2 WILL BE HEARD BY THE INTERNATIONAL RESIDENTIAL MECHANICAL/PLUMBING CODE COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THESE COMMITTEES.

2021 International Mechanical Code

Revise as follows:

TABLE 1210.5
GROUND-SOURCE LOOP PIPE FITTINGS

PIPE MATERIAL	STANDARD (see Chapter 15)
Chlorinated polyvinyl chloride (CPVC)	ASTM D2846; ASTM F437; ASTM F438; ASTM F439; CSA B137.6
Cross-linked polyethylene (PEX)	ASTM F877; ASTM F1807; ASTM F1960; ASTM F2080; ASTM F2159; ASTM F2434; ASTM F3348; CSA B137.5; CSA C448; NSF 358-3
Polyethylene/aluminum/polyethylene (PE-AL-PE)	ASTM F1282; ASTM F2434; CSA B137.9
High-density polyethylene (HDPE)	ASTM D2683; ASTM D3261; ASTM F1055; CSA B137.1; CSA C448; NSF 358-1
Polypropylene (PP-R)	ASTM F2389; CSA B137.11; NSF 358-2
Polyvinyl chloride (PVC)	ASTM D2464; ASTM D2466; ASTM D2467; CSA B137.2; CSA B137.3
Raised temperature polyethylene (PE-RT)	ASTM D3261; ASTM F1807; ASTM F2098; ASTM F2159; ASTM F2735; ASTM F2769; ASTM F3348; CSA B137.1; CSA B137.18; CSA C448; NSF 358-4

TABLE 1202.5
HYDRONIC PIPE FITTINGS

MATERIAL	STANDARD (see Chapter 15)
Copper and copper alloys	ASME B16.15; ASME B16.18; ASME B16.22; ASME B16.24; ASME B16.26; ASME B16.51; ASSE 1061; ASTM F1974
CPVC	ASSE 1061; ASTM D2846; ASTM F438; ASTM F439
Ductile iron and gray iron	ANSI/AWWA C110/A21.10; ASTM A395; ASTM A536; ASTM F1476; ASTM F1548; AWWA C153/A21.53
Ductile iron	ANSI/AWWA C153/A21.53
Gray iron	ASTM A126
Malleable iron	ASME B16.3
PE-RT fittings	ASSE 1061; ASTM D3261; ASTM F1807; ASTM F2098; ASTM F2159; ASTM F2735; ASTM F2769; ASTM F3348; CSA B137.1; CSA B137.18
PEX fittings	ASSE 1061; ASTM F877; ASTM F1807; ASTM F1960; ASTM F2080; ASTM F2159; ASTM F3253; ASTM F3348
Plastic	ASTM D2466; ASTM D2467; ASTM D2846; ASTM F877; ASTM F2389; ASTM F2735
Steel	ASME B16.5; ASME B16.9; ASME B16.11; ASME B16.28; ASTM A53; ASTM A106; ASTM A234; ASTM A395; ASTM A420; ASTM A536; ASTM F1476; ASTM F1548

Add new standard(s) as follows:

ASTM

ASTM International
100 Barr Harbor Drive, P.O. Box C700
West Conshohocken PA 19428

ASTM F3348-20b: Standard Specification for Plastic Press Insert Fittings with Factory Assembled Stainless Steel Press Sleeve for SDR9 Cross-linked Polyethylene (PEX) Tubing and SDR9 Polyethylene of Raised Temperature (PE-RT) Tubing

Staff Analysis: A review of the standards proposed for inclusion in the code, ASTM F3348-20b: Standard Specification for Plastic Press Insert Fittings with Factory Assembled Stainless Steel Press Sleeve for SDR9 Cross-linked Polyethylene (PEX) Tubing and SDR9 Polyethylene of Raised Temperature (PE-RT) Tubing, with regard to some of the key ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before March 20, 2021.

M100-21 Part I

M100-21 Part II

IRC: TABLE M2101.1, ASTM Chapter 44 (New)

Proponents: Michael Cudahy, representing PPFA (mikec@cmservices.com)

2021 International Residential Code

Revise as follows:

TABLE M2101.1
HYDRONIC PIPING AND FITTING MATERIALS

MATERIAL	USE CODE[a]	STANDARD[b]	JOINTS	NOTES
Acrylonitrile butadiene styrene (ABS) plastic pipe	1, 5	ASTM D1527, ASTM F2806, ASTM F2969	Solvent cement joints	—
Chlorinated poly (vinyl chloride) (CPVC) pipe and tubing	1, 2, 3	ASTM D2846	Solvent cement joints, compression joints and threaded adapters	—
Copper and copper-alloy pipe	1	ASTM B42, ASTM B43, ASTM B302	Brazed, soldered and mechanical fittings threaded, welded and flanged	—
Copper and copper-alloy tubing (Type K, L or M)	1, 2	ASME B16.51, ASTM B75, ASTM B88, ASTM B135, ASTM B251, ASTM B306	Brazed, soldered, press-connected and flared mechanical fittings	Joints embedded in concrete shall be brazed
Cross-linked polyethylene (PEX)	1, 2, 3	ASTM F876; ASTM F3253	(See PEX fittings)	Install in accordance with manufacturer's instructions
Cross-linked polyethylene/ aluminum/cross-linked polyethylene (PEX-AL-PEX) pressure pipe	1, 2	ASTM F1281 or CAN/CSA B137.10	Mechanical, crimp/insert	Install in accordance with manufacturer's instructions
PEX fittings	—	ASTM F877, ASTM F1807, ASTM F1960, ASTM F2098, ASTM F2159, ASTM F2735, ASTM F3253; ASTM F3348	Copper crimp/insert fittings, cold expansion fittings, stainless steel clamp, insert fittings	Install in accordance with manufacturer's instructions
Polybutylene (PB) pipe and tubing	1, 2, 3	ASTM D3309	Heat-fusion, crimp/insert and compression	Joints in concrete shall be heat-fused
Polyethylene/aluminum/polyethylene (PE-AL-PE) pressure pipe	1, 2, 3	ASTM F1282, CSA B137.9	Mechanical, crimp/insert	—
Polypropylene (PP)	1, 2, 3	ISO 15874, ASTM F2389	Heat-fusion joints, mechanical fittings, threaded adapters, compression joints	—
Raised temperature polyethylene (PE-RT)	1, 2, 3	ASTM F2623, ASTM F2769, CSA B137.18	Copper crimp/insert fitting, stainless steel clamp, insert fittings	—
Raised temperature polyethylene (PE-RT) fittings	1, 2, 3	ASTM D3261, ASTM F1807, ASTM F2098, ASTM F2159, ASTM F2735, ASTM F2769, ASTM F3348; CSA B137.18	Copper crimp/insert fitting, stainless steel clamp, insert fittings	—
Steel pipe	1, 2	ASTM A53, ASTM A106	Brazed, welded, threaded, flanged and mechanical fittings	Joints in concrete shall be welded. Galvanized pipe shall not be welded or brazed.
Steel tubing	1	ASTM A254	Mechanical fittings, welded	—

For SI: °C = [(°F) – 32]/1.8.

a. Use code:

1. Above ground.
2. Embedded in radiant systems.
3. Temperatures below 180°F only.
4. Low temperature (below 130°F) applications only.
5. Temperatures below 160°F only.

b. Standards as listed in Chapter 44.

Add new standard(s) as follows:

ASTM

ASTM International
100 Barr Harbor Drive, P.O. Box C700
West Conshohocken PA 19428

F3348-18: Standard Specification for Plastic Press Insert Fittings with Factory Assembled Stainless Steel Press Sleeve for SDR9 Cross-linked Polyethylene (PEX) Tubing and SDR9 Polyethylene of Raised Temperature (PE-RT) Tubing

Reason Statement: ASTM F3348 is titled, "Standard Specification for Plastic Press Insert Fittings with Factory Assembled Stainless Steel Press Sleeve for SDR9 Cross-linked Polyethylene (PEX) Tubing and SDR9 Polyethylene of Raised Temperature (PE-RT) Tubing" and contains information on plastic fittings for PEX and PERT systems and should be included in the fittings table. The fittings are intended for use in residential and commercial, hot and cold, potable water distribution systems as well as sealed central heating, including under-floor heating/cooling systems, and residential fire sprinkler systems.

Bibliography: ASTM F3348 Standard Specification for Plastic Press Insert Fittings with Factory Assembled Stainless Steel Press Sleeve for SDR9 Cross-linked Polyethylene (PEX) Tubing and SDR9 Polyethylene of Raised Temperature (PE-RT) Tubing

Cost Impact: The code change proposal will not increase or decrease the cost of construction
The code change proposal will not increase or decrease the cost of construction. The proposal simply adds an additional ASTM standard for inclusion of approved PEX and PERT fitting products and is therefore not expected to either raise or lower the cost of construction by offering another potential product to the application, it only increases additional options.

M100-21 Part II

IPC

2021 GROUP A PROPOSED CHANGES TO THE I-CODES

April 11 – May 5, 2021
Virtual Committee Action Hearings

ICC
INTERNATIONAL CODE COUNCIL®

P7-21

IPC: 305.8 (New), 305.8.1 (New), 305.8.2 (New)

Proponents: CRAIG MCKEE, Huckabee, INC, representing Huckabee, Inc (cmckee@huckabee-inc.com)

2021 International Plumbing Code

Add new text as follows:

305.8 Expansive Soil. Where expansive soil is identified but not removed under foundations, plumbing shall be protected in accordance with Section 305.8.1 or 305.8.2.

305.8.1 Non-Isolated Foundations. Under foundations with slabs that are structurally supported by a subgrade, it shall be permitted for plumbing to be buried.

305.8.2 Isolated Foundations. Under foundations with a slab or framing that structurally spans over an under-floor space which isolates the slab from the effects of expansive soil swelling and shrinking, the plumbing system shall be suspended so that piping, fittings, hangers and supports are isolated, by adequate void space, from the effects of expansive soil swelling and shrinking.

To protect the void space, soil shall be sloped, benched or retained in accordance with an approved design methodology.

It shall not be permitted for the piping, fittings, hangers and supports below the slab or below the framing to be in contact with soil or any assemblage of materials that is in contact with soil within the active zone. It shall not be permitted for a slab and plumbing to be lifted as an assembly to create the void space unless the under-floor space has a crawl space with access to allow inspection and repair of plumbing after lifting.

Exception: It shall be permitted for the piping, fittings, hangers, and supports below the slab or below the framing to be in contact with structural elements of the foundation that are designed to resist the effects of expansive soil swelling and shrinking.

Organic materials shall not be used for hangers, supports and soil retention systems. Materials subject to corrosion shall not be used for hangers, supports and soil retention systems unless protected in an approved manner.

Where piping transitions to a buried condition beyond the perimeter of the foundation, an adequately flexible fittings shall be provided in the piping system to accommodate the effects of expansive soil swelling and shrinking.

Reason Statement: Currently, the IPC does not explicitly require protection of plumbing hangers and supports from expansive soil. In some instances, millions of dollars of damages per facility to plumbing have been caused by expansive soil. This proposed change would require protection of plumbing, hangers, and supports from expansive soil under buildings to avoid these cases. Refer to the attached 14 page document for additional supporting information.

Cost Impact: The code change proposal will increase the cost of construction
Generally speaking, the following are estimated cost impacts:

- There will be no cost increase or decrease for buildings where there is no expansive soil or expansive soil is removed.
- There will be no cost increase or decrease for buildings where there is expansive soil but the foundation is a slab-on-ground.
- There will be no cost increase or decrease for buildings where there is expansive soil with a foundation over a crawl space, suspended and isolated utilities and flexible expansion joints at the transitions where plumbing becomes buried.
- There will be no cost increase or decrease for buildings where there is expansive soil with a foundation over carton voidforms, suspended and isolated utilities and flexible expansion joints at the transitions where plumbing becomes buried.
- There might possibly be a minor cost decrease, less than approximately 0.1% of the total initial cost of construction for example, for buildings where there is expansive soil with a foundation over carton voidforms, and the original design included proprietary systems that claim to provide a void but actually can impose loads onto the plumbing, hangers and/or supports, and where flexible expansion joints are not included at the transitions.
- There will be a relatively minor increase in the initial construction cost, less than approximately 0.1% of the total initial cost of construction for example, for buildings where there is expansive soil with a foundation over a crawl space, and the original design included a few areas with buried utilities and no flexible expansion joints at the transitions. However, for many cases there will be a reduction in maintenance costs that will more than offset the initial construction cost increase.
- There will be a definite increase in the initial construction cost, possibly approximately 1% of the total initial cost of construction for example, for buildings where there is expansive soil with a slab-on-void foundation, and the original design included buried utilities. However, for many cases there will be a reduction in maintenance costs that will more than offset the initial construction cost increase.

P8-21

IPC: 305.8 (New), 305.8.1 (New), 305.8.2 (New)

Proponents: Robert Nicholas, representing Structural Engineer Association of Texas (Robert@DiEngineers.com)

2021 International Plumbing Code

Add new text as follows:

305.8 Expansive Soil. Where expansive soil is identified but not removed under foundations, plumbing shall be protected in accordance with Section 305.8.1 or 305.8.2.

305.8.1 Non-Isolated Foundations. Under foundations with slabs that are structurally supported by a subgrade, it shall be permitted for plumbing to be buried.

305.8.2 2 Isolated Foundations. Under foundations with a slab or framing that structurally spans over an under-floor space which isolates the slab from the effects of expansive soil swelling and shrinking, the plumbing shall be suspended so that plumbing, hangers and supports are isolated, by adequate voidspace, from the effects of expansive soil swelling and shrinking.

To protect the voidspace, soil shall be sloped, benched or retained in accordance with an approved design methodology. It shall not be permitted for the plumbing, hangers and supports below the slab or below the framing to be in contact with soil or any assemblage of materials that is in contact with soil within the active zone. It shall not be permitted for a slab and plumbing to be lifted as an assembly to create the voidspace unless the under-floor space is a crawlspace with access to allow inspection of plumbing after lifting.

Materials subject to decay shall not be used for hangers, supports and soil retention systems. Materials subject to corrosion shall not be used for hangers, supports and soil retention systems unless protected in an approved manner.

Where plumbing transitions to a buried condition beyond the perimeter of the foundation, an adequately flexible expansion joint shall be provided in the plumbing.

Reason Statement: Currently, the IPC does not explicitly require protection of piping, fittings, hangers, and supports from expansive soil. In some instances, millions of dollars of damages per facility to plumbing have been caused by expansive soil. This proposed change would require protection of piping, fittings, hangers, and supports from expansive soil under buildings to avoid these cases. Refer to the attached 14 page supporting document.

Cost Impact: The code change proposal will increase the cost of construction
Generally speaking, the following are estimated cost impacts:

- There will be no cost increase or decrease for buildings where there is no expansive soil or expansive soil is removed.
- There will be no cost increase or decrease for buildings where there is expansive soil but the foundation is a slab-on-ground. There will be no cost increase or decrease for buildings where there is expansive soil with a foundation over a crawl space, suspended and isolated utilities and flexible expansion joints at the transitions where plumbing becomes buried.
- There will be no cost increase or decrease for buildings where there is expansive soil with a foundation over carton void forms, suspended and isolated utilities and flexible expansion joints at the transitions where plumbing becomes buried.
- There might possibly be a minor cost decrease, less than approximately 0.1% of the total initial cost of construction for example, for buildings where there is expansive soil with a foundation over carton void forms, and the original design included proprietary systems that claim to provide a void but actually can impose loads onto the plumbing, hangers and/or supports, and where flexible expansion joints are not included at the transitions.
- There will be a relatively minor increase in the initial construction cost, less than approximately 0.1% of the total initial cost of construction for example, for buildings where there is expansive soil with a foundation over a crawl space, and the original design included a few areas with buried utilities and no flexible expansion joints at the transitions. However, for many cases there will be a reduction in maintenance costs that will more than offset the initial construction cost increase.
- There will be a definite increase in the initial construction cost, possibly approximately 1% of the total initial cost of construction for example, for buildings where there is expansive soil with a slab-on-void foundation, and the original design included buried utilities. However, for many cases there will be a reduction in maintenance costs that will more than offset the initial construction cost increase.

P9-21

IPC: 306.2.4 (New)

Proponents: Ted Williams, representing American Gas Association (twilliams@aga.org)

2021 International Plumbing Code

Add new text as follows:

306.2.4 Tracer wire. For plastic sewer piping, an insulated copper tracer wire or other approved conductor shall be installed adjacent to and over the full length of the piping. Access shall be provided to the tracer wire or the tracer wire shall terminate at the cleanout between the building drain and building sewer. The tracer wire size shall be not less than 14 AWG and the insulation type shall be listed for direct burial.

Reason Statement: The new provision that applies to buried plastic sewer piping requires a tracer wire in close proximity of the non-metallic sewer piping to assist in identifying the location of the buried pipe to avoid damaging the pipe when digging in the area of the underground pipe. This will help ensure that there will be no 3rd party damage during excavation in the area where the piping is located along with other utilities that may be in the same trench.

Cost Impact: The code change proposal will increase the cost of construction
Adding tracer wire to installations will contribute a minor cost of line installation.

P10-21

IPC: TABLE 308.5

Proponents: Pennie L Feehan, Pennie L Feehan Consulting, representing Copper Development Association (penniefeehan@me.com)

2021 International Plumbing Code

Revise as follows:

TABLE 308.5
HANGER SPACING

Portions of table not shown remain unchanged.

PIPING MATERIAL	MAXIMUM HORIZONTAL SPACING (feet)	MAXIMUM VERTICAL SPACING (feet)
Acrylonitrile butadiene styrene (ABS) pipe	4	10[b]
Aluminum tubing	10	15
~~Brass pipe~~	~~10~~	~~10~~
Cast-iron pipe	5[a]	15
Chlorinated polyvinyl chloride (CPVC) pipe and tubing, 1 inch and smaller	3	10[b]
Chlorinated polyvinyl chloride (CPVC) pipe and tubing, $1^1/_4$ inches and larger	4	10[b]
Copper or copper-alloy pipe	12	10
Copper or copper-alloy tubing, $1^1/_4$-inch diameter and smaller	6	10
Copper or copper-alloy tubing, $1^1/_2$-inch diameter and larger	10	10
Cross-linked polyethylene (PEX) pipe, 1 inch and smaller	2.67 (32 inches)	10[b]
Cross-linked polyethylene (PEX) pipe, $1^1/_4$ inches and larger	4	10[b]
Cross-linked polyethylene/aluminum/cross-linked polyethylene (PEX-AL-PEX) pipe	2.67 (32 inches)	4
Lead pipe	Continuous	4
Polyethylene/aluminum/polyethylene (PE-AL-PE) pipe	2.67 (32 inches)	4
Polyethylene of raised temperature (PE-RT) pipe, 1 inch and smaller	2.67 (32 inches)	10[b]
Polyethylene of raised temperature (PE-RT) pipe, $1^1/_4$ inches and larger	4	10[b]
Polypropylene (PP) pipe or tubing, 1 inch and smaller	2.67 (32 inches)	10[b]
Polypropylene (PP) pipe or tubing, $1^1/_4$ inches and larger	4	10[b]
Polyvinyl chloride (PVC) pipe	4	10[b]
Stainless steel drainage systems	10	10[b]
Steel pipe	12	15

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

a. The maximum horizontal spacing of cast-iron pipe hangers shall be increased to 10 feet where 10-foot lengths of pipe are installed.

b. For sizes 2 inches and smaller, a guide shall be installed midway between required vertical supports. Such guides shall prevent pipe movement in a direction perpendicular to the axis of the pipe.

Reason Statement: This line is not necessary because brass is a copper alloy and is covered under the copper alloy lines.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This code change proposal will not increase the cost of construction.

P10-21

P11-21

IPC: 308.6

Proponents: James Walls, CISPI, representing CISPI (jwalls@cispi.org)

2021 International Plumbing Code

Revise as follows:

308.6 Sway bracing. Where *horizontal drainage or waste pipes* 4 inches (102 mm) and larger are suspended in excess of 18 inches measured from the top of the horizontal piping being supported to the point of support,- these pipes and fittings shall be braced to prevent horizontal movement. ~~convey drainage or waste, and where a pipe fitting in that piping changes the flow direction greater than 45 degrees (0.79 rad), rigid bracing or other rigid support arrangements shall be installed to resist movement of the upstream pipe in the direction of pipe flow. A change of flow direction into a vertical pipe shall not require the upstream pipe to be braced.~~

Reason Statement: This proposed change removes language not related to sway bracing. Section 308.7 and 308.7.1 of this code includes thrust restraints at changes of direction for piping greater than 4 inches. This change removes conflicting information and clarifies the intent of sway bracing requirements.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
There are no additional cost with this change.

P12-21

IPC: 308.7.1

Proponents: John Wilson, Teekay Couplings, representing Teekay Couplings (john.wilson@teekaycouplings.com)

2021 International Plumbing Code

Revise as follows:

308.7.1 Location. For pipe sizes greater than 4 inches (102 mm), restraints shall be provided for drainpipes at all changes in direction and at all changes in diameter greater than two pipe sizes. Braces, blocks, rodding or other suitable methods as specified by the coupling manufacturer for ASTM F1476 Type II Class 2 flexible & restrained shall be utilized.

Reason Statement: The ASTM F1476 specification provides the performance characteristics and qualification tests required for gasketed mechanical couplings (GMC) including groove-type mechanical couplings for grooved end pipe, mechanical restraint couplings for plain end pipe and mechanical compression couplings for plain end pipe. These couplings are for use at temperatures within the recommended temperature range of their respective gaskets. Couplings manufactured to perform to this standard are utilised around the world for many pipework systems for civils, water, oil & gas, marine, plumbing and mechanical installations with a wide range of pipe materials. Gasketed mechanical pipe couplings allow pipes to be permanently joined without the need for welding, soldering or brazing, eliminating the need for on-site hot work. No pipe threading, grooving, or alternative preparation is required. This gives the system designer and contractor access to a widely used and accepted modern construction method in today's industry. Health and safety benefits come from the simple tools required and the use of plain end pipe. There is no heating, welding or manipulation of material on site, so handling is easy and safe. The coupling is light in weight, has no loose parts and all materials are REACH and RoHS compliant and manufactured under an ISO 9001 quality programme. Gaskets are NSF 61 compliant. The high-level performance of GMCs allows gravity systems to be uprated. For example, where CISPI 310 states that thrust restraint systems are required, a GMC can fulfil the regulation. Global manufacturers of hubless cast iron utilize GMCs in sensitive locations as part of their overall systems.

Bibliography: ASTM F1476-2007(R2019)

Cost Impact: The code change proposal will decrease the cost of construction
Using Gasketed Mechanical couplings to provide the Axial restraint should reduce the amount additional work and materials required, and speed up installation time.

P14-21

IPC: 312.4 (New)

Proponents: Joseph J. Summers Chair of the PMGCAC, representing Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

2021 International Plumbing Code

Add new text as follows:

312.4 Drainage and vent vacuum test. The portion of the drainage and vent system under test shall be evacuated of air by a vacuum type pump to achieve a uniform gauge pressure of negative 5 pounds per square inch or a negative 10 inches of mercury column (negative 34 kPa). This pressure shall be held without the removal of additional air for a period of 15 minutes. Any adjustments to the test pressure required because of changes in ambient temperatures or the seating of gaskets shall be made prior to the beginning of the test period.

Reason Statement: In the last code cycle, P11-18 Part II was approved for the IRC to include vacuum testing as an option. This proposal is to provide consistency with the IRC. This alternate test is a means for testing piping systems when the ambient temperatures are below freezing where water cannot be used for the test. There is no safety hazard in testing with a vacuum. The equipment to perform the test is readily available on the market and many contractors have this equipment to perform the test among their tools at present. This allowance will actually help to mitigate the cost of construction delays and prevent potential damage to piping systems when water is used for where air cannot be used for testing.
This proposal is submitted by the ICC Plumbing/Mechanical/Gas Code Action Committee (PMG CAC). The PMG CAC was established by the ICC Board of Directors in July 2011 to pursue opportunities to improve and enhance assigned International Codes or portions thereof. In 2020, the PMG CAC has held several virtual meetings open to any interested party. Numerous interested parties attended the committee meetings and offered their input. Related documentation and reports are posted on the PMG CAC website at: https://www.iccsafe.org/products-and-services/i-codes/code-development-process/pmg-code-action-committee-pmgcac/ Reference PMGCAC Working Document Item 16.

Cost Impact: The code change proposal will decrease the cost of construction
Providing more alternatives for complying with the code usually lowers the cost of construction. This would be especially true for geographic locations having freezing temperatures where water could not be used for testing without the added cost of antifreeze and the subsequent disposal costs.

P59-21

IPC: 604.8

Proponents: Chris Haldiman, representing Watts Water Technologies (chris.haldiman@wattswater.com)

2021 International Plumbing Code

Revise as follows:

604.8 Water pressure-reducing valve or regulator. Where static water pressure in the water supply piping ~~within a building~~ exceeds 80 psi (552 kPa) ~~static~~, an *approved-type* strainer and ~~water~~ pressure~~-reducing valve~~ regulator conforming to ASSE 1003 or CSA B356 and NSF 61.~~with strainer~~ shall be installed to reduce the pressure in the building water distribution piping to not greater than 80 psi (552 kPa) static. Pressure regulator sizes equal to or greater than 1 1/2 inches (40mm) shall not require a strainer. For line sizes greater than 3 inches {76 mm), an automatic control such as a pressure regulating valve shall be utilized. Such regulators shall control the pressure to water outlets in the building except where otherwise approved by the code official.

Exception: Service lines to sill cocks and outside hydrants, and main supply risers where pressure from the mains is reduced to 80 psi (552 kPa) or less at individual fixtures.

Reason Statement: Adding of "and NSF61" – For consistency purposes when stating the requirements for components being used in potable water distribution systems. An example of this are 608.12, "Where in contact with potable water intended for drinking water, water tanks, coatings for the inside of tanks and liners for water tanks shall conform to NSF 61."
Adding of "For line sizes greater than 3", an Automatic Control (Pressure Regulating) Valve shall be utilized." – For line sizes 3" or larger, Direct Acting Valves are not cost conducive nor the optimized device for this application. Where direct acting regulators will have volume losses and introduce a turbulent flow path, ACV's will sustain

Cost Impact: The code change proposal will increase the cost of construction
This proposal would require the use of automatic pressure regulators for larger piping designs. This would improve the operating conditions of the system and increase safety from pressure fluctuations.

P63-21 Part I

IPC: TABLE 605.5, ASTM Chapter 15 (New)

Proponents: Lisa Reiheld, Viega LLC, representing Viega LLC (lisa.reiheld@viega.us)

THIS IS A 2 PART PROPOSAL. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC-P&M COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THESE COMMITTEES.

2021 International Plumbing Code

Revise as follows:

TABLE 605.5
PIPE FITTINGS

MATERIAL	STANDARD
Acrylonitrile butadiene styrene (ABS) plastic	ASTM D2468
Cast iron	ASME B16.4
Chlorinated polyvinyl chloride (CPVC) plastic	ASSE 1061; ASTM D2846; ASTM F437; ASTM F438; ASTM F439; CSA B137.6
Copper or copper alloy	ASME B16.15; ASME B16.18; ASME B16.22; ASME B16.26; ASME B16.51; ASSE 1061; ASTM F1476; ASTM F1548; ASTM F3226
Cross-linked polyethylene/aluminum/high-density polyethylene (PEX-AL-HDPE)	ASTM F1986
Fittings for cross-linked polyethylene (PEX) plastic tubing	ASSE 1061; ASTM F877; ASTM F1807; ASTM F1960; ASTM F2080; ASTM F2098; ASTM F2159; ASTM F2434; ASTM F2735; CSA B137.5
Fittings for polyethylene of raised temperature (PE-RT) plastic tubing	ASSE 1061; ASTM D3261; ASTM F1807; ASTM F2098; ASTM F2159; ASTM F2735; ASTM F2769; CSA B137.18
Gray iron and ductile iron	ASTM F1476; ASTM F1548; AWWA C110/A21.10; AWWA C153/A21.53;
Insert fittings for polyethylene/aluminum/polyethylene (PE-AL-PE) and cross-linked polyethylene/aluminum/cross-linked polyethylene (PEX-AL-PEX)	ASTM F1281; ASTM F1282; ASTM F1974; CSA B137.9; CSA B137.10
Malleable iron	ASME B16.3
Metal (brass) insert fittings for polyethylene/aluminum/polyethylene (PE-AL-PE) and cross-linked polyethylene/aluminum/cross-linked polyethylene (PEX-AL-PEX)	ASTM F1974
Polyethylene (PE) plastic pipe	ASTM D2609; ASTM D2683; ASTM D3261; ASTM F1055; CSA B137.1
Polypropylene (PP) plastic pipe or tubing	ASTM F2389; CSA B137.11
Polyvinyl chloride (PVC) plastic	ASTM D2464; ASTM D2466; ASTM D2467; CSA B137.2; CSA B137.3
Stainless steel (Type 304/304L)	ASTM A269; ASTM A312; ASTM A554; ASTM A778; ASTM F1476; ASTM F1548; ASTM F3226
Stainless steel (Type 316/316L)	ASTM A269; ASTM A312; ASTM A554; ASTM A778; ASTM F1476; ASTM F1548; ASTM F3226
Steel	ASME B16.9; ASME B16.11; ASME B16.28; ASTM F1476; ASTM F1548; ASTM F3226

Add new standard(s) as follows:

ASTM

ASTM International
100 Barr Harbor Drive, P.O. Box C700
West Conshohocken PA 19428-2959

A554-16: Standard Specification for Welded Stainless Steel Mechanical Tubing

Staff Analysis: A review of the standard(s) proposed for inclusion in the code, ASTM A554-16 with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before March 20, 2021.

P63-21 Part I

P63-21 Part II

IRC: TABLE P2906.6, ASTM Chapter 44 (New)

Proponents: Lisa Reiheld, Viega LLC, representing Viega LLC (lisa.reiheld@viega.us)

2021 International Residential Code

Revise as follows:

TABLE P2906.6
PIPE FITTINGS

MATERIAL	STANDARD
Acrylonitrile butadiene styrene (ABS) plastic	ASTM D2468
Cast iron	ASME B16.4
Chlorinated polyvinyl chloride (CPVC) plastic	ASSE 1061; ASTM D2846; ASTM F437; ASTM F438; ASTM F439; CSA B137.6
Copper or copper alloy	ASME B16.15; ASME B16.18; ASME B16.22; ASME B16.26; ASME B16.51; ASSE 1061; ASTM F3226
Cross-linked polyethylene/aluminum/high-density polyethylene (PEX-AL-HDPE)	ASTM F1986
Fittings for cross-linked polyethylene (PEX) plastic tubing	ASSE 1061; ASTM F877; ASTM F1807; ASTM F1960; ASTM F2080; ASTM F2098; ASTM F2159; ASTM F2434; ASTM F2735; CSA B137.5
Gray iron and ductile iron	AWWA C110/A21.10; AWWA C153/A21.53
Malleable iron	ASME B16.3
Insert fittings for Polyethylene/aluminum/polyethylene (PE-AL-PE) and cross-linked polyethylene/aluminum/cross-linked polyethylene (PEX-AL-PEX)	ASTM F1281; ASTM F1282; ASTM F1974; CSA B137.9; CSA B137.10
Polyethylene (PE) plastic	ASTM D2609; CSA B137.1
Fittings for polyethylene of raised temperature (PE-RT) plastic tubing	ASSE 1061; ASTM D2683; ASTM D3261; ASTM F1055; ASTM F1807; ASTM F2098; ASTM F2159; ASTM F2735; ASTM F2769; CSA B137.18
Polypropylene (PP) plastic pipe or tubing	ASTM F2389; CSA B137.11
Polyvinyl chloride (PVC) plastic	ASTM D2464; ASTM D2466; ASTM D2467; CSA B137.2; CSA B137.3
Stainless steel (Type 304/304L) pipe	ASTM A269; ASTM A312; ASTM A554; ASTM A778 ; ASTM F3226
Stainless steel (Type 316/316L) pipe	ASTM A269; ASTM A312; ASTM A554; ASTM A778; ASTM F3226
Steel	ASME B16.9; ASME B16.11; ASME B16.28; ASTM F3226

Add new standard(s) as follows:

ASTM

ASTM International
100 Barr Harbor Drive, P.O. Box C700
West Conshohocken PA 19428

A554-16
:
Standard Specification for Welded Stainless Steel Mechanical Tubing

Staff Analysis: A review of the standard(s) proposed for inclusion in the code, ASTM A554-16 with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before March 20, 2021.

Reason Statement: ASTM A269 and A554 are standards for Stainless tubing equivalent with existing ASTM A312 and A778 standards and should be included to allow for additional material standards. ASTM F3226 *Standard Specification for Metallic Press-Connect Fittings for Piping and Tubing Systems* is equivalent to other standards already listed for this material, is included for other materials in this table, and should be added to Steel to increase the options for materials to be used in water supply fitting installations.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
Adding an additional standard option for steel pipe fittings to be listed to will not increase or decrease the cost of construction. If anything, it has potential to decrease the cost since this increases the number of suppliers of fittings that can be purchased.

P63-21 Part II

P71-21

IPC: 605.12.2

Proponents: John Wilson, representing Teekay Couplings (john.wilson@teekaycouplings.com)

2021 International Plumbing Code

Revise as follows:

605.12.2 Mechanical joints. Mechanical joints shall be installed in accordance with the manufacturer's instructions.

Mechanical joints for copper or copper alloy piping shall be made with a mechanical coupling with groove end piping, or ASTM F1476 Type II Class 2 flexible & restrained, or approved joint designed for the specific application.

Reason Statement: The ASTM F1476 specification provides the performance characteristics and qualification tests required for gasketed mechanical couplings (GMC) including groove-type mechanical couplings for grooved end pipe, mechanical restraint couplings for plain end pipe and mechanical compression couplings for plain end pipe. These couplings are for use at temperatures within the recommended temperature range of their respective gaskets. Couplings manufactured to perform to this standard are utilized around the world for many pipework systems for civils, water, oil & gas, marine, plumbing and mechanical installations with a wide range of pipe materials. Gasketed mechanical pipe couplings allow pipes to be permanently joined without the need for welding, soldering or brazing, eliminating the need for on-site hot work. No pipe threading, grooving, or alternative preparation is required. This gives the system designer and contractor access to a widely used and accepted modern construction method in today's industry. Health and safety benefits come from the simple tools required and the use of plain end pipe. There is no heating, welding or manipulation of material on site, so handling is easy and safe. The coupling is light in weight, has no loose parts and all materials are REACH and RoHS compliant and manufactured under an ISO 9001 quality programme. Gaskets are NSF 61 compliant. The high-level performance of GMCs allows gravity systems to be uprated. For example, where CISPI 310 states that thrust restraint systems are required, a GMC can fulfil the regulation. Global manufacturers of hubless pipe systems utilize GMCs in sensitive locations as part of their overall systems.

Bibliography: ASTM F1476-2007(R2019)

Cost Impact: The code change proposal will not increase or decrease the cost of construction
The inclusion of Gasketed Mechanical Couplings to ASTM F1476, will enhance the performance and ease of installation of pipe systems. Allowing excellent pressure and axial thrust restraint performance additional system security when rapid installation is required. These pipe couplings successfully are utilized globally on pipe systems. Reducing pipework failures. No Hot works or special tooling is required

P74-21 Part I

IPC: 605.14.2, ASTM Chapter 15 (New)

Proponents: Michael Cudahy, PPFA, representing PPFA (mikec@cmservices.com)

THIS IS A 2 PART PROPOSAL. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC-P&M COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THESE COMMITTEES.

2021 International Plumbing Code

Revise as follows:

605.14.2 Solvent cementing. Joint surfaces shall be clean and free from moisture. Joints shall be made in accordance with the pipe manufacturer's installation instructions. Solvent-cemented joints shall be permitted above or below ground.
Where such instructions require that a primer be used, the primer shall be applied to the joint surfaces and a solvent cement orange in color and conforming to ASTM F493 shall be applied to the joint surfaces. The joint shall be made while the cement is fluid and in accordance with ASTM D2855.
Where such instructions allow for a one-step solvent cement, yellow in color and conforming to ASTM F493, to be used, the joint surfaces shall not require application of a primer before the solvent cement is applied. The joint shall be made while the cement is wet and in accordance with ~~ASTM D2846 or ASTM F493.~~ ASTM F3328.
~~Solvent-cemented joints shall be permitted above or below ground.~~

Add new standard(s) as follows:

ASTM

ASTM International
100 Barr Harbor Drive, P.O. Box C700
West Conshohocken PA 19428-2959

ASTM D2855-15: Standard Practice for the Two-Step (Primer and Solvent Cement) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets

F3328-18: Standard Practice for the One-Step (Solvent Cement Only) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets

Staff Analysis: A review of the standard(s) proposed for inclusion in the code, ASTM F3328-18 with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before March 20, 2021.

P74-21 Part II

IRC: P2906.9.1.2, P2906.9.1.3, ASTM Chapter 44 (New)

Proponents: Michael Cudahy, PPFA, representing PPFA (mikec@cmservices.com)

2021 International Residential Code

Revise as follows:

P2906.9.1.2 CPVC plastic pipe. Joint surfaces shall be clean and free from moisture. Joints shall be made in accordance with the pipe, fitting or solvent cement manufacturer's installation instructions.
Solvent cement joints shall be permitted above or below ground.
Where such instructions require a primer to be used, an *approved* primer shall be applied, and a solvent cement, orange in color and conforming to ASTM F493, shall be applied to joint surfaces. The joint shall be made while the cement is wet, and in accordance with ASTM D2855.
Where such instructions allow for a one-step solvent cement, yellow or red in color and conforming to ASTM F493, to be used, the joint surfaces shall not require application of a primer before the solvent cement is applied. The joint shall be made while the cement is wet, and in accordance with ~~ASTM D2846 or ASTM F493.~~ ASTM F3328
~~Solvent cement joints shall be permitted above or below ground.~~

P2906.9.1.3 CPVC/AL/CPVC pipe. Joint surfaces shall be clean and free from moisture, and an *approved* primer shall be applied. Solvent cement, orange in color and conforming to ASTM F493, shall be applied to all joint surfaces. The joint shall be made while the cement is wet, and in accordance with ~~ASTM D2846 or ASTM F493.~~ ASTM D2855. Solvent-cemented joints shall be installed above or below ground.

Exception: A primer shall not be required where all of the following conditions apply:

1. The solvent cement used is third-party certified as conforming to ASTM F493.
2. The solvent cement used is yellow in color.
3. The solvent cement is used only for joining $^1/_2$-inch (12.7 mm) through 1-inch (25 mm) diameter CPVC/AL/CPVC pipe and CPVC fittings.
4. The CPVC fittings are manufactured in accordance with ASTM D2846.
5. The joint is made in accordance with ASTM F3328.

Add new standard(s) as follows:

ASTM

ASTM International
100 Barr Harbor Drive, P.O. Box C700
West Conshohocken PA 19428

D2855-20: Standard Practice for the Two-Step (Primer and Solvent Cement) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets

F3328-19: Standard Practice for the One-Step (Solvent Cement Only) Method of Joining Poly(Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets

Staff Analysis: A review of the standard(s) proposed for inclusion in the code, ASTM D2855-20 and ASTM D3328-19 with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before March 20, 2021.

Reason Statement: Add the ASTM D2855 and ASTM F3328 standards to the CPVC and CPVC composite solvent cementing joining section.

ASTM D2855-15 is, "Standard Practice for the Two-Step (Primer and Solvent Cement) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets"

ASTM F3328-18 is, "Standard Practice for the One-Step (Solvent Cement Only) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets"

These standards are the standards that represent how the joint is made in the two-step (primer and cement) or one-step (cement) process. ASTM D2846 and ASTM F493 are intended for the chlorinated poly(vinyl chloride) plastic hot- and cold-water distribution system and CPVC cement.

Bibliography: ASTM F3328 Standard Practice for the One-Step (Solvent Cement Only) Method of Joining Poly(Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets

ASTM D2855 Standard Practice for the Two-Step (Primer and Solvent Cement) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets

Cost Impact: The code change proposal will not increase or decrease the cost of construction
The inclusion of the standards is not expected to increase or decrease the costs of construction, but only to ensure the joints are correctly made, if by one step, or two step methods.

P75-21 Part I

IPC: 605.14.2

Proponents: Forest Hampton, Lubrizol, Inc., representing Lubrizol, Inc. (forest.hampton@lubrizol.com)

THIS IS A 2 PART PROPOSAL. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC-P&M COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THESE COMMITTEES.

2021 International Plumbing Code

Revise as follows:

605.14.2 Solvent cementing. Joint surfaces shall be clean and free from moisture. Joints shall be made in accordance with the pipe manufacturer's installation instructions. Where such instructions require that a primer be used, the primer shall be applied to the joint surfaces and a solvent cement orange in color and conforming to ASTM F493 shall be applied to the joint surfaces. Where such instructions allow for a one-step solvent cement, yellow or green in color and conforming to ASTM F493, to be used, the joint surfaces shall not require application of a primer before the solvent cement is applied. The joint shall be made while the cement is wet and in accordance with ASTM D2846 or ASTM F493. Solvent-cemented joints shall be permitted above or below ground.

P75-21 Part II

IRC: P2906.9.1.2

Proponents: Forest Hampton, representing Lubrizol, Inc. (forest.hampton@lubrizol.com)

2021 International Residential Code

Revise as follows:

P2906.9.1.2 CPVC plastic pipe. Joint surfaces shall be clean and free from moisture. Joints shall be made in accordance with the pipe, fitting or solvent cement manufacturer's installation instructions. Where such instructions require a primer to be used, an *approved* primer shall be applied, and a solvent cement, orange in color and conforming to ASTM F493, shall be applied to joint surfaces. Where such instructions allow for a one-step solvent cement, yellow<u>, green,</u> or red in color and conforming to ASTM F493, to be used, the joint surfaces shall not require application of a primer before the solvent cement is applied. The joint shall be made while the cement is wet, and in accordance with ASTM D2846 or ASTM F493. Solvent cement joints shall be permitted above or below ground.

Reason Statement: Currently, it can be difficult to see the yellow solvent cement ring on a tan CTS CPVC joint during inspection. A high contrast cement has been asked for from the field to aid in the inspection of CPVC joints. The color green was chosen because of its high contrast against the tan pipe and fittings and green is not currently used to identify any other type of cement.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
The addition of another one-step solvent cement color will not change the cost of construction.

P76-21 Part I

IPC: 605.15.2, ASTM Chapter 15 (New)

Proponents: Michael Cudahy, representing PPFA (mikec@cmservices.com)

THIS IS A 2 PART PROPOSAL. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC-P&M COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THESE COMMITTEES.

2021 International Plumbing Code

Revise as follows:

605.15.2 Solvent cementing. Joint surfaces shall be clean and free from moisture, and an approved primer shall be applied. Solvent cement, orange in color and conforming to ASTM F493, shall be applied to joint surfaces. The joint shall be made while the cement is wet, and in accordance with ~~ASTM D2846 or ASTM F493~~ ASTM D2855. Solvent cement joints shall be permitted above or below ground.

Exception: A primer is not required where all of the following conditions apply:

1. The solvent cement used is third-party certified as conforming to ASTM F493.
2. The solvent cement used is yellow in color.
3. The solvent cement is used only for joining $^{1}/_{2}$-inch (12.7 mm) through 2-inch-diameter (51 mm) CPVC/AL/CPVC pipe and CPVC fittings.
4. The CPVC fittings are manufactured in accordance with ASTM D2846.
5. The joint is made in accordance with ASTM F3328.

Add new standard(s) as follows:

ASTM

ASTM International
100 Barr Harbor Drive, P.O. Box C700
West Conshohocken PA 19428-2959

D2855-20: Standard Practice for the Two-Step (Primer and Solvent Cement) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly(Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets

F3328-19: Standard Practice for the One-Step (Solvent Cement Only) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets

Staff Analysis: A review of the standard(s) proposed for inclusion in the code, ASTM F3328-19 and ASTM D2855-20 with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before March 20, 2021.

P76-21 Part I

P76-21 Part II

IRC: P2906.9.1.3, ASTM Chapter 44 (New)

Proponents: Michael Cudahy, representing PPFA (mikec@cmservices.com)

2021 International Residential Code

Revise as follows:

P2906.9.1.3 CPVC/AL/CPVC pipe. Joint surfaces shall be clean and free from moisture, and an *approved* primer shall be applied. Solvent cement, orange in color and conforming to ASTM F493, shall be applied to all joint surfaces. The joint shall be made while the cement is wet, and in accordance with ~~ASTM D2846 or ASTM F493~~ ASTM D2855. Solvent-cemented joints shall be installed above or below ground.

Exception: A primer shall not be required where all of the following conditions apply:

1. The solvent cement used is third-party certified as conforming to ASTM F493.
2. The solvent cement used is yellow in color.
3. The solvent cement is used only for joining $^1/_2$-inch (12.7 mm) through 1-inch (25 mm) diameter CPVC/AL/CPVC pipe and CPVC fittings.
4. The CPVC fittings are manufactured in accordance with ASTM D2846.
5. The joint is made in accordance with ASTM F3328.

Add new standard(s) as follows:

ASTM

ASTM International
100 Barr Harbor Drive, P.O. Box C700
West Conshohocken PA 19428

D2855-20: Standard Practice for the Two-Step (Primer and Solvent Cement) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly(Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets

F3328-19: Standard Practice for the One-Step (Solvent Cement Only) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets

Staff Analysis: A review of the standard(s) proposed for inclusion in the code, ASTM F3328-19 and ASTM D2855-20 with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before March 20, 2021.

Reason Statement: There are sections of the IPC and IRC allowing either two- or one-step use of PVC and CPVC cements in limited circumstances. The sections currently refer to inappropriate standards and the one and two step joining standards, ASTM F3328 and ASTM D2855, would be more appropriate to add.

For reference, these are the titles of the standards being changed in the proposal;

ASTM D2855-15 is, “Standard Practice for the Two-Step (Primer and Solvent Cement) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets”

ASTM F3328-18 is, “Standard Practice for the One-Step (Solvent Cement Only) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets”

ASTM F493 -14 is, “Standard Specification for Solvent Cements for Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe and Fittings”

ASTM D2846/D2846M-19a is, “Standard Specification for Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Hot-and Cold-Water Distribution Systems”

Bibliography: ASTM D2855 “Standard Practice for the Two-Step (Primer and Solvent Cement) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets”
ASTM F3328 “Standard Practice for the One-Step (Solvent Cement Only) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets”

Cost Impact: The code change proposal will not increase or decrease the cost of construction
The proposal adds standards on properly making one or two step solvent cement joints and is not expected to increase or decrease the cost of construction.

P82-21

IPC: 605.23

Proponents: John Wilson, representing Teekay Couplings (john.wilson@teekaycouplings.com)

2021 International Plumbing Code

Revise as follows:

605.23 Joints between different materials. Joints between different piping materials shall be made with a mechanical joint of the compression or mechanical-sealing type, or shall be made in accordance with Section 605.23.1, 605.23.2 or 605.23.3. Connectors or adapters shall have an elastomeric seal conforming to ASTM F477or NSF 61. Joints shall be installed in accordance with the manufacturer's instructions.

Reason Statement: The ASTM F1476 specification provides the performance characteristics and qualification tests required for gasketed mechanical couplings (GMC) including groove-type mechanical couplings for grooved end pipe, mechanical restraint couplings for plain end pipe and mechanical compression couplings for plain end pipe. These couplings are for use at temperatures within the recommended temperature range of their respective gaskets. Couplings manufactured to perform to this standard are utilized around the world for many pipework systems for civils, water, oil & gas, marine, plumbing and mechanical installations with a wide range of pipe materials. Gasketed mechanical pipe couplings allow pipes to be permanently joined without the need for welding, soldering or brazing, eliminating the need for on-site hot work. No pipe threading, grooving, or alternative preparation is required. This gives the system designer and contractor access to a widely used and accepted modern construction method in today's industry. Health and safety benefits come from the simple tools required and the use of plain end pipe. There is no heating, welding or manipulation of material on site, so handling is easy and safe. The coupling is light in weight, has no loose parts and all materials are REACH and RoHS compliant and manufactured under an ISO 9001 quality programme. Gaskets are NSF 61 compliant. The high-level performance of GMCs allows gravity systems to be uprated. For example, where CISPI 310 states that thrust restraint systems are required, a GMC can fulfil the regulation. Global manufacturers of hubless pipe systems utilize GMCs in sensitive locations as part of their overall systems.

Bibliography: ASTM F1476-2007(R2019) / NSF ANSI CAN 61

Cost Impact: The code change proposal will not increase or decrease the cost of construction
The inclusion of Gasketed Mechanical Couplings to ASTM F1476, will enhance the performance and ease of installation of pipe systems. Allowing excellent pressure and axial thrust restraint performance additional system security when rapid installation is required. These pipe couplings successfully are utilized globally on pipe systems. Reducing pipework failures. No Hot works or special tooling is required

P84-21

IPC: 605.23.3

Proponents: John Wilson, representing Teekay Couplings (john.wilson@teekaycouplings.com)

2021 International Plumbing Code

Revise as follows:

605.23.3 Stainless steel. Joints between stainless steel and different piping materials shall be made with a mechanical joint of the compression or mechanical sealing type that complies with Type II Class 3 of ASTM F1476, ~~or~~ a dielectric fitting or a dielectric union conforming to ASSE 1079.

Reason Statement: The ASTM F1476 specification provides the performance characteristics and qualification tests required for gasketed mechanical couplings (GMC) including groove-type mechanical couplings for grooved end pipe, mechanical restraint couplings for plain end pipe and mechanical compression couplings for plain end pipe. These couplings are for use at temperatures within the recommended temperature range of their respective gaskets. Couplings manufactured to perform to this standard are utilized around the world for many pipework systems for civils, water, oil & gas, marine, plumbing and mechanical installations with a wide range of pipe materials. Gasketed mechanical pipe couplings allow pipes to be permanently joined without the need for welding, soldering or brazing, eliminating the need for on-site hot work. No pipe threading, grooving, or alternative preparation is required. This gives the system designer and contractor access to a widely used and accepted modern construction method in today's industry. Health and safety benefits come from the simple tools required and the use of plain end pipe. There is no heating, welding or manipulation of material on site, so handling is easy and safe. The coupling is light in weight, has no loose parts and all materials are REACH and RoHS compliant and manufactured under an ISO 9001 quality programme. Gaskets are NSF 61 compliant. The high-level performance of GMCs allows gravity systems to be uprated. For example, where CISPI 310 states that thrust restraint systems are required, a GMC can fulfil the regulation. Global manufacturers of hubless pipe systems utilize GMCs in sensitive locations as part of their overall systems.

Bibliography: ASTM F1476-2007(R2019)

Cost Impact: The code change proposal will not increase or decrease the cost of construction
The inclusion of Gasketed Mechanical Couplings to ASTM F1476, will enhance the performance and ease of installation of pipe systems. Allowing excellent pressure and axial thrust restraint performance additional system security when rapid installation is required. These pipe couplings successfully are utilized globally on pipe systems. Reducing pipework failures. No Hot works or special tooling is required

P85-21

IPC: 606.1

Proponents: Guy McMann, representing Colorado Association of Plumbing and Mechanical Officials (CAPMO) (gmcmann@jeffco.us)

2021 International Plumbing Code

Revise as follows:

606.1 Location of full-open valves. *Full-open valves* shall be installed in the following locations:

1. On the building water service pipe from the public water supply near the curb.
2. On the water distribution supply pipe at the entrance into the structure.

    2.1. In multiple-tenant buildings, <u>three stories and fewer,</u> where a common water supply piping system is installed to supply other than one- and two-family dwellings, a main shutoff valve shall be provided for each tenant.

3. On the discharge side of every water meter.
4. On the base of every water riser pipe in occupancies other than multiple-family residential *occupancies* that are two stories or less in height and in one- and two-family residential *occupancies*.
5. On the top of every water down-feed pipe in *occupancies* other than one- and two-family residential *occupancies*.
6. On the entrance to every water supply pipe to a dwelling unit, except where supplying a single fixture equipped with individual stops.
7. On the water supply pipe to a gravity or pressurized water tank.
8. On the water supply pipe to every water heater.

Reason Statement: This new language clarifies that this was intended to apply to smaller strip malls and the like. It was not intended to apply to high rise buildings as the text suggests.

Cost Impact: The code change proposal will decrease the cost of construction
This language will eliminate the need for high rise building to have separate shutoffs.

P89-21

IPC: 607.2.1 (New)

Proponents: Joseph J. Summers, representing Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

2021 International Plumbing Code

Add new text as follows:

607.2.1 Commercial energy provisions. In occupancies that are required to comply with the Commercial provisions of the International Energy Conservation Code, the developed length of hot or tempered water piping shall limited in accordance with Sections C404.5.1 through C404.5.2.1 of that code.

Reason Statement: Requirements for hot water pipe sizing and lengths has been in the Commercial Provisions of the Energy code for several edition. Because the IPC did not have a pointer to the requirements, the requirements were sometimes overlooked. Adding the pointer clarifies the cod.
This proposal is submitted by the ICC Plumbing/Mechanical/Gas Code Action Committee (PMG CAC). The PMG CAC was established by the ICC Board of Directors in July 2011 to pursue opportunities to improve and enhance assigned International Codes or portions thereof. In 2020, the PMG CAC has held several virtual meetings open to any interested party. Numerous interested parties attended the committee meetings and offered their input. Related documentation and reports are posted on the PMG CAC website at: https://www.iccsafe.org/products-and-services/i-codes/code-development-process/pmg-code-action-committee-pmgcac/ Reference PMGCAC Working Document Item 9.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
The requirement for hot water pipe sizing is already in the current code. This proposal only adds a pointer to the requirements and as such, there is no additional labor or materials to impact the cost of construction.

P110-21

IPC: TABLE 702.4

Proponents: John Wilson, representing Teekay Couplings (john.wilson@teekaycouplings.com)

2021 International Plumbing Code

Revise as follows:

TABLE 702.4
PIPE FITTINGS

MATERIAL	STANDARD
Acrylonitrile butadiene styrene (ABS) plastic pipe in IPS diameters	ASME A112.4.4; ASTM D2661; ASTM F628; CSA B181.1; ASTM F1476
Acrylonitrile butadiene styrene (ABS) plastic pipe in sewer and drain diameters	ASTM D2751; ASTM F1476
Cast iron	ASME B16.4; ASME B16.12; ASTM A74; ASTM A888; CISPI 301; ASTM F1476
Copper or copper alloy	ASME B16.15; ASME B16.18; ASME B16.22; ASME B16.23; ASME B16.26; ASME B16.29; ASTM F1476
Glass	ASTM C1053
Gray iron and ductile iron	AWWA C110/A21.10; ASTM F1476
Polyethylene	ASTM D2683; ASTM F1476
Polyolefin	ASTM F1412; CSA B181.3
Polyvinyl chloride (PVC) plastic in IPS diameters	ASME A112.4.4; ASTM D2665; ASTM F1866; ASTM F1476
Polyvinyl chloride (PVC) plastic pipe in sewer and drain diameters	ASTM D3034 : ASTM F1476
Polyvinyl chloride (PVC) plastic pipe with a 3.25-inch O.D.	ASTM D2949
Polyvinylidene fluoride (PVDF) plastic pipe	ASTM F1673; CSA B181.3; ASTM F1476
Stainless steel drainage systems, Types 304 and 316L	ASME A112.3.1; ASTM F1476
Steel	ASME B16.9; ASME B16.11; ASME B16.28 ; ASTM F1476
Vitrified clay	ASTM C700 ; ASTM F1476

For SI: 1 inch = 25.4 mm.

Reason Statement: The ASTM F1476 specification provides the performance characteristics and qualification tests required for gasketed mechanical couplings (GMC) including groove-type mechanical couplings for grooved end pipe, mechanical restraint couplings for plain end pipe and mechanical compression couplings for plain end pipe. These couplings are for use at temperatures within the recommended temperature range of their respective gaskets. Couplings manufactured to perform to this standard are utilized around the world for many pipework systems for civils, water, oil & gas, marine, plumbing and mechanical installations with a wide range of pipe materials. Gasketed mechanical pipe couplings allow pipes to be permanently joined without the need for welding, soldering or brazing, eliminating the need for on-site hot work. No pipe threading, grooving, or alternative preparation is required. This gives the system designer and contractor access to a widely used and accepted modern construction method in today's industry. Health and safety benefits come from the simple tools required and the use of plain end pipe. There is no heating, welding or manipulation of material on site, so handling is easy and safe. The coupling is light in weight, has no loose parts and all materials are REACH and RoHS compliant and manufactured under an ISO 9001 quality programme. Gaskets are NSF 61 compliant. The high-level performance of GMCs allows gravity systems to be uprated. For example, where CISPI 310 states that thrust restraint systems are required, a GMC can fulfil the regulation. Global manufacturers of hubless pipe systems utilize GMCs in sensitive locations as part of their overall systems.

Bibliography: ASTM F1476-2007(R2019)

Cost Impact: The code change proposal will decrease the cost of construction
The inclusion of Gasketed Mechanical Couplings to ASTM F1476, will enhance the performance and ease of installation of pipe systems.
Allowing higher pressure performance additional system security when storm surge or blockages occur. These pipe couplings successfully are utilized globally on Pipe systems. Reducing pipework failures due to accidental surge or static pressure. No Hot works or special tooling is required.

P110-21

P111-21

IPC: 702.6, 901.3, TABLE 702.6 (New), 902.1.1 (New), ASTM Chapter 15 (New)

Proponents: Brian Helms, Charlotte Pipe and Foundry, representing Charlotte Pipe and Foundry (brian.helms@charlottepipe.com)

2021 International Plumbing Code

Revise as follows:

702.6 Chemical waste drainage system. A chemical wastedrainage system , including its vent system, shall be completely ~~separated~~ independent from the sanitary drainage system. Separate drainage systems for chemical waste and vent pipes shall conform to one of the standards indicated in Table 702.6. The chemical waste shall be treated in accordance with Section 803.2 before discharging to the sanitary drainage system. ~~Separate drainage systems for chemical wastes and vent pipes shall be of an *approved* material that is~~ Chemical waste drainage system pipe and fitting materials shall be resistant to temperature, corrosion and degradation for the concentrations of chemicals involved per manufacturer recommendations.

901.3 Chemical waste drainage vent systems. The vent system for a chemical waste drainage system shall be independent of ~~the sanitary vent system and shall terminate separately~~ any sanitary drainage vent system. The termination of a chemical waste drainage vent system shall be through the roof to the outdoors or to an air admittance valve that complies with ASSE 1049. Air admittance valves for chemical waste drainage systems shall be constructed of one of the materials ~~*approved* in accordance with Section~~ listed in table 702.6 and shall be tested for chemical resistance in accordance with ASTM F1412.

Add new text as follows:

TABLE 702.6
CHEMICAL WASTE DRAINAGE SYSTEM PIPE AND FITTINGS

MATERIAL	STANDARD
Chlorinated polyvinyl chloride (CPVC)	ASTM F2618
Borosilicate glass	ASTM C1053
High silicon iron	ASTM A518/A518M
Polypropylene (PP)	ASTM F1412
Polyvinylidene flouride (PVDF)	ASTM F1673

902.1.1 Chemical waste drainage system vents. The pipe and fitting materials for a chemical waste drainage vent system shall be in accordance with Section 702.6. The methods utilized for construction and installation of such venting system shall be in accordance with the pipe and fitting manufacturers' instructions.

Add new standard(s) as follows:

ASTM

ASTM International
100 Barr Harbor Drive, P.O. Box C700
West Conshohocken PA 19428-2959

F2618-19 : Standard Specification for Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Fittings for Chemical Waste Drainage Systems

A518/A518M-99(2018): Standard Specification for Corrosion-Resistant High-Silicon Iron Castings

Staff Analysis: A review of the standard(s) proposed for inclusion in the code, ASTM A518/A518M-99(2018) and ASTM F2618-19 with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before March 20, 2021.

Reason Statement: Chemical waste drainage applications are very different from sanitary drainage applications regulated in Chapter 7. Chemical waste drainage applications can vary in complexity and may be included projects ranging from K-12 chemistry labs to biomedical facilities. Many chemical waste drainage applications require pipe and fitting systems that have both higher temperature capability and resistance to a variety of chemicals and substances that typical DWV are not suitable for. Pipe and fitting materials that are manufactured to standards for chemical waste drainage applications are specifically designed to convey waste that may be detrimental to DWV and other non-pressure systems and that may be harmful to the health and safety of the public.
The code currently provides very specific direction on allowable materials for sanitary drainage systems but is not as specific for chemical waste in 702.6. Currently, the code states that these systems have to be separated from the sanitary system in section 702.6 and even gives direction on system design in section 803.2, but is very vague on what materials are acceptable for chemical waste applications.

Section 702.6 currently requires an "approved" material for chemical waste systems. By definition in Chapter 2, "approved" means that the material should be "acceptable to the code official." This proposal removes this statement as well as the responsibility of the official to determine whether the materials used are suitable for both temperature and chemical resistance requirements that can be unique to each project. Instead this proposal replaces this language with the addition of a table that includes ALL piping systems manufactured to standards specifically for chemical waste drainage and that are also third party listed for these applications for easy enforcement of the code.

Since no single piping system is chemically resistant to every chemical and substance that man has made, manufacturers recommendations regarding chemical resistance, temperature capability and installation should be referenced by the installer or designer when choosing a material for chemical waste drainage. References to manufacturers recommendations have been included in this proposal.

This proposal also adds new text for chemical waste drainage system vents as well. Materials used for venting chemical waste drainage systems are exposed to the same chemicals and substances (in gas form) that the drainage system is and should be held to the same requirements.

The current requirements for chemical waste drainage systems are too vague and unenforceable. This code change proposal clarifies the code requirements by revising section 702.6 and adding a table for allowable materials for chemical waste drainage applications. In addition, it revises section 901.3 and adds new text for chemical waste vent materials.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This code change proposal will not increase or decrease the cost of construction because it is intended to clarify allowable, third party certified products appropriate for chemical waste drainage applications.

P111-21

P114-21

IPC: 705.5.2

Proponents: John Wilson, representing Teekay Couplings (john.wilson@teekaycouplings.com)

2021 International Plumbing Code

Revise as follows:

705.5.2 Mechanical joints. ~~Mechanical joints shall be installed in accordance with the manufacturer's instructions.~~
Mechanical joints for copper or copper alloy piping shall be made with a mechanical coupling for groove end piping, a coupling that complies with Type II Class 2 of ASTM F1476 or *approved* coupling designed for the specific application. Joints shall be installed in accordance with the manufacturer's instructions.

Reason Statement: The ASTM F1476 specification provides the performance characteristics and qualification tests required for gasketed mechanical couplings (GMC) including groove-type mechanical couplings for grooved end pipe, mechanical restraint couplings for plain end pipe and mechanical compression couplings for plain end pipe. These couplings are for use at temperatures within the recommended temperature range of their respective gaskets. Couplings manufactured to perform to this standard are utilised around the world for many pipework systems for civils, water, oil & gas, marine, plumbing and mechanical installations with a wide range of pipe materials. Gasketed mechanical pipe couplings allow pipes to be permanently joined without the need for welding, soldering or brazing, eliminating the need for on-site hot work. No pipe threading, grooving, or alternative preparation is required. This gives the system designer and contractor access to a widely used and accepted modern construction method in today's industry. Health and safety benefits come from the simple tools required and the use of plain end pipe. There is no heating, welding or manipulation of material on site, so handling is easy and safe. The coupling is light in weight, has no loose parts and all materials are REACH and RoHS compliant and manufactured under an ISO 9001 quality programme. Gaskets are NSF 61 compliant. The high-level performance of GMCs allows systems to be uprated. Global manufacturers and installers of Copper piping utilize GMCs many locations as part of their overall systems.

Bibliography: ASTM F1476-2007(R2019)

Cost Impact: The code change proposal will decrease the cost of construction
The Use of Gasketed Mechanical Couplings will allow for non hot works to be carried out on sites, thus reducing danger of fire and explosion due to heat, or will allow for quick installation of pipework using simple tooling.

P115-21

IPC: 705.8.2

Proponents: John Wilson, representing Teekay Couplings (john.wilson@teekaycouplings.com)

2021 International Plumbing Code

Revise as follows:

705.8.2 Mechanical joints. Joints shall be made with an *approved* elastomeric seal. Mechanical joints between stainless steel pipe and fittings shall be of the compression type, grooved coupling type, hydraulic press-connect fitting type, flanged type or, for plain end piping and fittings, a type that complies with either Type II Class 2 or Type II class 3 of ASTM F1476. Mechanical joints shall be installed in accordance with the manufacturer's instructions

Reason Statement: The ASTM F1476 specification provides the performance characteristics and qualification tests required for gasketed mechanical couplings (GMC) including groove-type mechanical couplings for grooved end pipe, mechanical restraint couplings for plain end pipe and mechanical compression couplings for plain end pipe. These couplings are for use at temperatures within the recommended temperature range of their respective gaskets. Couplings manufactured to perform to this standard are utilised around the world for many pipework systems for civils, water, oil & gas, marine, plumbing and mechanical installations with a wide range of pipe materials. Gasketed mechanical pipe couplings allow pipes to be permanently joined without the need for welding, soldering or brazing, eliminating the need for on-site hot work. No pipe threading, grooving, or alternative preparation is required. This gives the system designer and contractor access to a widely used and accepted modern construction method in today's industry. Health and safety benefits come from the simple tools required and the use of plain end pipe. There is no heating, welding or manipulation of material on site, so handling is easy and safe. The coupling is light in weight, has no loose parts and all materials are REACH and RoHS compliant and manufactured under an ISO 9001 quality programme. Gaskets are NSF 61 compliant. The high-level performance of GMCs allows gravity systems to be uprated. For example, where CISPI 310 states that thrust restraint systems are required, a GMC can fulfil the regulation. Global pipe manufacturers and contractors utilize GMCs in sensitive locations as part of their overall systems.

Bibliography: ASTM F1476-2007(R2019)

Cost Impact: The code change proposal will decrease the cost of construction
Gasketed mechanical pipe couplings allow pipes to be permanently joined without the need for welding, soldering or brazing, eliminating the need for on-site hot work. No pipe threading, grooving, or alternative preparation is required. This gives the system designer and contractor access to a widely used and accepted modern construction method in today's industry. Health and safety benefits come from the simple tools required and the use of plain end pipe. There is no heating, welding or manipulation of material on site, so handling is easy and safe.

P117-21 Part I

IPC: 705.10.2, ASTM Chapter 15 (New)

Proponents: Michael Cudahy, PPFA, representing PPFA (mikec@cmservices.com)

THIS IS A 2 PART PROPOSAL. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC-P&M COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THESE COMMITTEES.

2021 International Plumbing Code

Revise as follows:

705.10.2 Solvent cementing. Joint surfaces shall be clean and free from moisture. A purple primer that conforms to ASTM F656 shall be applied. Solvent cement not purple in color and conforming to ASTM D2564, CSA B137.3, CSA B181.2 or CSA B182.1 shall be applied to all joint surfaces. The joint shall be made while the cement is wet and shall be in accordance with ASTM D2855. Solvent-cement joints shall be permitted above or below ground.

Exception: A primer is not required where both of the following conditions apply:

1. The solvent cement used is third-party certified as conforming to ASTM D2564.
2. The solvent cement is used only for joining PVC drain, waste and vent pipe and fittings in nonpressure applications in sizes up to and including 4 inches (102 mm) in diameter.
3. The joint is made in accordance with ASTM F3328.

Add new standard(s) as follows:

ASTM

ASTM International
100 Barr Harbor Drive, P.O. Box C700
West Conshohocken PA 19428-2959

F3328-19: Standard Practice for the One-Step (Solvent Cement Only) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets

Staff Analysis: A review of the standard(s) proposed for inclusion in the code, ASTM F3328-19 with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before March 20, 2021.

P117-21 Part II

IRC: P3003.9.2, ASTM Chapter 44 (New)

Proponents: Michael Cudahy, PPFA, representing PPFA (mikec@cmservices.com)

2021 International Residential Code

Revise as follows:

P3003.9.2 Solvent cementing. Joint surfaces shall be clean and free from moisture. A purple primer, or other *approved* primer, that conforms to ASTM F656 shall be applied. Solvent cement not purple in color and conforming to ASTM D2564, CSA B137.3 or CSA B181.2 shall be applied to all joint surfaces. The joint shall be made while the cement is wet, and shall be in accordance with ASTM D2855. Solvent-cement joints shall be installed above or below ground.

Exception: A primer shall not be required where all of the following conditions apply:

1. The solvent cement used is third-party certified as conforming to ASTM D2564.
2. The solvent cement is used only for joining PVC drain, waste and vent pipe and fittings in nonpressure applications in sizes up to and including 4 inches (102 mm) in diameter
3. The joint is made in accordance with ASTM F3328.

Add new standard(s) as follows:

ASTM

ASTM International
100 Barr Harbor Drive, P.O. Box C700
West Conshohocken PA 19428

F3328-19: Standard Practice for the One-Step (Solvent Cement Only) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets

Staff Analysis: A review of the standard(s) proposed for inclusion in the code, ASTM F3328-19 with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before March 20, 2021.

Reason Statement: ASTM F3328-18 is titled, “Standard Practice for the One-Step (Solvent Cement Only) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets” and is intended to instruct users on how to make one step joints in PVC and CPVC.

Bibliography: ASTM F3328 Standard Practice for the One-Step (Solvent Cement Only) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets

Cost Impact: The code change proposal will not increase or decrease the cost of construction
The use of an ASTM instructional type standard is not expected to raise or lower the costs of construction.

P119-21

IPC: 705.12.2

Proponents: John Wilson, representing Teekay Couplings (john.wilson@teekaycouplings.com)

2021 International Plumbing Code

Revise as follows:

705.12.2 Mechanical joints. ~~Mechanical joints in drainage piping shall be made with an elastomeric seal conforming to ASTM C1173, ASTM D3212 or CSA B602. Mechanical joints shall be installed in accordance with the manufacturer's instructions.~~
Mechanical joints on drainage pipe shall be made with an elastomeric seal conforming to ASTM C1173, ASTM D3212, CSA B602 or NSF 61.
A mechanical joint shielded coupling for polyethylene pipe and fittings shall have a metallic shield that complies with either Type II Class 2 or Type II Class 3 of ASTM F1476. The coupling shall be designed and manufactured to suit the pipe outside diameter. The coupling shall be installed in accordance with manufacturer's instructions and tightened, using a calibrated torque wrench, to the torque indicated by the manufacturer.

Reason Statement: The ASTM F1476 specification provides the performance characteristics and qualification tests required for gasketed mechanical couplings (GMC) including groove-type mechanical couplings for grooved end pipe, mechanical restraint couplings for plain end pipe and mechanical compression couplings for plain end pipe. These couplings are for use at temperatures within the recommended temperature range of their respective gaskets. Couplings manufactured to perform to this standard are utilised around the world for many pipework systems for civils, water, oil & gas, marine, plumbing and mechanical installations with a wide range of pipe materials. Gasketed mechanical pipe couplings allow pipes to be permanently joined without the need for welding, soldering or brazing, eliminating the need for on-site hot work. No pipe threading, grooving, or alternative preparation is required. This gives the system designer and contractor access to a widely used and accepted modern construction method in today's industry. Health and safety benefits come from the simple tools required and the use of plain end pipe. There is no heating, welding or manipulation of material on site, so handling is easy and safe. The coupling is light in weight, has no loose parts and all materials are REACH and RoHS compliant and manufactured under an ISO 9001 quality programme. Gaskets are NSF 61 compliant. The high-level performance of GMCs allows gravity systems to be uprated. For example, where CISPI 310 states that thrust restraint systems are required, a GMC can fulfil the regulation. Global manufacturers of hubless pipe systems utilize GMCs in sensitive locations as part of their overall systems.

Bibliography: ASTM F1476-2007(R2019)

Cost Impact: The code change proposal will not increase or decrease the cost of construction
The inclusion of Gasketed Mechanical Couplings to ASTM F1476 will enhance the performance of hubless cast iron pipe systems. Allowing higher pressure performance and give additional system security when storm surge or blockages occur. These pipe couplings successfully are utilized globally on Hub less Pipe systems. Reducing pipework failures due to accidental surge or static pressure.

P124-21

IPC: 705.16, 705.2.4 (New), 705.10.5 (New)

Proponents: Joseph Summers, Chair, representing Chair of PMGCAC (PMGCAC@iccsafe.org)

2021 International Plumbing Code

Revise as follows:

705.16 Joints between different materials. Joints between different piping materials shall be made with a mechanical joint ~~of the compression or mechanical sealing type~~ conforming to ASTM C1173, ASTM C1460 or ASTM C1461. Connectors and adapters shall be *approved* for the application and such joints shall have an elastomeric seal conforming to ASTM C425, ASTM C443, ASTM C564, ASTM C1440, ASTM F477, CSA A257.3M or CSA B602, or as required in Sections 705.16.1 through 705.16.7. Joints between glass pipe and other types of materials shall be made with adapters having a TFE seal. Joints shall be installed in accordance with the manufacturer's instructions.

Add new text as follows:

705.2.4 Mechanical joints above ground. Mechanical joint couplings used above ground to connect ABS pipe to ABS pipe shall be of the shielded type and shall be marked by the manufacturer as being recommended for the application.

705.10.5 Mechanical joints above ground. Mechanical joint couplings used above ground to connect PVC pipe to PVC pipe shall be of the shielded type and shall be marked by the manufacturer as being recommended for the application.

Reason Statement: This proposal has two purposes:
The change in Section 705.16 removes contradictory information on coupling types. A coupling cannot be both mechanical and a compression joint. Removing the existing language does not prohibit the use of compression gaskets which are already covered by the elastomeric gasket standards referenced.

The addition of new sections 705.2.4 and 705.10.5 is to clear up questions as to whether mechanical joint couplings can be used to connect the same types of piping material, specifically PVC to PVC and ABS to ABS. Section 705.16 speaks to using mechanical couplings to connect different piping materials. Examples are, galvanized steel-to-PVC, and cast iron-to-PVC. The obvious question is: If one end of elastomeric-type mechanical coupling is suitable to install on a PVC pipe, why wouldn't the other end be suitable to be installed on a PVC pipe? Mechanical couplings made for connecting the same sizes of steel and PVC pipes are dimensionally identical on both ends. Several manufacturers of these type of couplings mark their same size (on both ends) couplings suitable for PL-ST to PL-ST. For example:

1-1/2 inch CI, PL or ST to 1-1/2 inch CI, PL or ST

2 inch CI, PL or ST to 2 inch CI, PL or ST

3 inch PL, ST or XHCI to 3 inch PL, ST or XHCI

4 inch PL, ST or XHCI to 4 inch PL, ST or XHCI

6 inch PL, ST or XHCI to 6 inch PL, ST or XHCI

There are many situations where use of this type of coupling is necessary to perform the work. Examples are "cutting in" a wye into a stack or horizontal drain for the addition of fixtures and repairing a broken section of piping. Is it likely that someone would install a new piping system using these mechanical couplings? No because the cost of these couplings are much more than solvent-welded couplings.

This proposal is submitted by the ICC Plumbing/Mechanical/Gas Code Action Committee (PMG CAC). The PMG CAC was established by the ICC Board of Directors in July 2011 to pursue opportunities to improve and enhance assigned International Codes or portions thereof. In 2020, the PMG CAC has held several virtual meetings open to any interested party. Numerous interested parties attended the committee meetings and offered their input. Related documentation and reports are posted on the PMG CAC website at: https://www.iccsafe.org/products-and-services/i-codes/code-development-process/pmg-code-action-committee-pmgcac/ Reference PMGCAC Working Document Item 23.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
The proposal only clarifies the code. Clarifications of existing requirements do not change material or labor costs and therefore, do not impact the

cost of construction.

P124-21

P128-21

IPC: 705.16.7

Proponents: John Wilson, representing Teekay Couplings (john.wilson@teekaycouplings.com)

2021 International Plumbing Code

Revise as follows:

705.16.7 Stainless steel drainage systems to other materials. Joints between stainless steel drainage systems and other piping materials shall be made with *approved* mechanical couplings and include or stepped mechanical coupling that complies with ASTM F1476 Type II Class 3 flexible and un-restrained.

Reason Statement: The ASTM F1476 specification provides the performance characteristics and qualification tests required for gasketed mechanical couplings (GMC) including groove-type mechanical couplings for grooved end pipe, mechanical restraint couplings for plain end pipe and mechanical compression couplings for plain end pipe. These couplings are for use at temperatures within the recommended temperature range of their respective gaskets. Couplings manufactured to perform to this standard are utilized around the world for many pipework systems for civils, water, oil & gas, marine, plumbing and mechanical installations with a wide range of pipe materials. Gasketed mechanical pipe couplings allow pipes to be permanently joined without the need for welding, soldering or brazing, eliminating the need for on-site hot work. No pipe threading, grooving, or alternative preparation is required. This gives the system designer and contractor access to a widely used and accepted modern construction method in today's industry. Health and safety benefits come from the simple tools required and the use of plain end pipe. There is no heating, welding or manipulation of material on site, so handling is easy and safe. The coupling is light in weight, has no loose parts and all materials are REACH and RoHS compliant and manufactured under an ISO 9001 quality programme. Gaskets are NSF 61 compliant. The high-level performance of GMCs allows gravity systems to be uprated. For example, where CISPI 310 states that thrust restraint systems are required, a GMC can fulfil the regulation. Global manufacturers of hubless pipe systems utilize GMCs in sensitive locations as part of their overall systems.

Bibliography: ASTM F1476-2007(R2019)

Cost Impact: The code change proposal will decrease the cost of construction
The inclusion of Gasketed Mechanical Couplings to ASTM F1476, will enhance the performance of hubless pipe systems.
Allowing higher pressure performance additional system security when storm surge or blockages occur. These pipe couplings successfully are utilized globally on Hub less Pipe systems. Reducing pipework failures due to accidental surge or static pressure. No Hot works or special tooling is required.

P129-21 Part I

IPC: 202 (New), 718.1, 718.2 (New), 718.3 (New), 718.3.1 (New), 718.4 (New), 718.5 (New), 718.6 (New), 718.7 (New), 718.7.1 (New), 718.8 (New), 718.9 (New), 718.10 (New), ASTM Chapter 15 (New)

Proponents: Joanne Carroll, Subtegic Group Inc., representing HammerHead Trenchless (jcarroll@subtegic.com)

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC-P&M COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THESE COMMITTEES.

2021 International Plumbing Code

Add new definition as follows:

CURED-IN-PLACE PIPE. A plastic piping system of a particular design with a wall structure which is uniquely defined for each diameter and wall thickness combination, produced from a specific textile tube saturated with a specific thermosetting resin and installed by a specific process used to rehabilitate damaged or deteriorated pipe in-place by insertion of the cured-in-place pipe material within the existing pipe.

Revise as follows:

718.1 General ~~Cure-in-place~~. This section shall govern the rehabilitation of building sewers and buried building drains using cured-in-place pipe. ~~Sectional cure-in-place rehabilitation of *building sewer* piping and sewer service lateral piping shall be in accordance with ASTM F2599. Main and lateral cure-in-place rehabilitation of *building sewer* and sewer service lateral pipe and their connections to the main sewer pipe shall be in accordance with ASTM F2561. Hydrophilic rings or gaskets in cure-in-place rehabilitation of *building sewer* piping and sewer service laterals shall be in accordance with ASTM F3240 to ensure water tightness and elimination of ground water penetration.~~

Add new text as follows:

718.2 Applicability. The rehabilitation of existing building sewers and buried building drains shall be limited to gravity piping 3 inches (76 mm) in diameter and larger. The rehabilitated pipe shall meet the drainage load requirements of the existing piping.

718.3 Pre-installation requirements. Prior to commencement of the rehabilitation, the existing piping sections to be rehabilitated shall be cleaned to remove solid debris and deposits that will interfere with the installation and finished quality of the cured-in-place pipe. After the cleaning process has occurred and water has been flushed through the system, the piping shall be inspected internally by a recorded video camera survey.

718.3.1 Pre-installation inspection. The existing piping shall be inspected internally by a recorded video camera survey. The survey shall include notations of the cleanouts and fitting locations, the length and the approximate depth of the existing piping.

718.4 Permitting. Prior to permit issuance, the code official shall review and evaluate the pre-installation recorded video camera survey to determine if the existing piping is able to be rehabilitated with cured-in-place pipe in accordance with the proposed cured-in-place pipe system's third-party certification showing conformance to NSF 14, applicable installation requirements of referenced standards and this code.

718.5 Prohibited applications. Where review of the pre-installation recorded video camera survey reveals that the existing piping is not installed correctly or defects exist that prevent the insertion and expansion of the cured-in-place pipe material, rehabilitation with cured-in-place pipe shall not be permitted until the defective portions of piping have been repaired with pipe and fittings in accordance with this code. Defects include, but are not limited to, back grade or insufficient slope.

718.6 Rehabilitation materials. The cured-in-place pipe materials shall be manufactured in compliance with applicable standards and certified as required in Section 303. Cured-in-place pipe specimens for testing shall consist of a specific textile tube and specific resin system manufactured at a specific thickness. The cured-in-place pipe materials shall be third-party listed and labeled.

718.7 Installation. The installation of cured-in-place pipe materials shall be performed in accordance with the current listing as required in 718.6, manufacturer's installation instructions, this code and applicable referenced standards including ASTM F1216, ASTM F1743, ASTM F2599, or ASTM F2561. Hydrophilic o-rings or gaskets used in cured-in-place pipe shall be in accordance with ASTM F3240.

718.7.1 Material data report. The installer shall record the data as required by the cured-in-place pipe manufacturer and applicable standards. The recorded data shall include but is not limited to the location of the project, cured-in-place pipe tube and resin type with batch and lot numbers, amount of product installed and conditions of the installation. A copy of the data report shall be provided to the code official prior to final approval.

718.8 Post-installation recorded video camera survey. The completed, rehabilitated piping system shall be inspected internally by a recorded video camera survey. The video survey shall be submitted to the code official prior to finalization of the permit. The video survey shall be reviewed and evaluated to provide verification that terminations of the cured-in-place pipe are smooth so as not to interfere with flow or collect debris, and that the cured-in-place pipe has been installed forming a tight interference fit to the existing pipe, and that no infiltration of groundwater, obstruction of flow or other defects exist which adversely affect the piping system in compliance with all laws and other provisions of this code. Any defects identified shall be repaired or replaced as approved by the authority having jurisdiction in accordance with applicable standards and this code.

718.9 Certification. A certification shall be provided in writing to the code official, from the permit holder, that the cured-in-place pipe has been installed in accordance with the current listing required in Section 718.6, manufacturer's installation instructions, the applicable standards and this

code.

718.10 Approval. Upon verification of compliance with the requirements of Sections 718.1 through 718.9, the code official shall approve the installation.

Add new standard(s) as follows:

ASTM

ASTM International
100 Barr Harbor Drive, P.O. Box C700
West Conshohocken PA 19428-2959

F1216 - 16: Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube

F1743 - 17: Standard Practice for Rehabilitation of Existing Pipelines and Conduits by Pulled-in-Place Installation of Cured-in-Place Thermosetting Resin Pipe (CIPP)

Staff Analysis: A review of the standards proposed for inclusion in the code, ASTM F1216 –16 and ASTM F1743 - 17 with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before March 20, 2021.

P129-21 Part I

P129-21 Part II

IRC: R202 (New), P3012 (New), P3012.1 (New), P3012.2 (New), P3012.3 (New), P3012.3.1 (New), P3012.4 (New), P3012.5 (New), P3012.6 (New), P3012.7 (New), P3012.7.1 (New), P3012.10 (New), P3012.8 (New), P3012.9 (New), ASTM Chapter 44 (New)

Proponents: Joanne Carroll, Subtegic Group Inc., representing HammerHead Trenchless (jcarroll@subtegic.com)

2021 International Residential Code

Add new definition as follows:

CURED-IN-PLACE PIPE. A plastic piping system of a particular design with a wall structure which is uniquely defined for each diameter and wall thickness combination, produced from a specific textile tube saturated with a specific thermosetting resin and installed by a specific process used to rehabilitate damaged or deteriorated pipe in-place by insertion of the cured-in-place pipe material within the existing pipe.

Add new text as follows:

P3012 Rehabilitation of Underground Building Sewers and Building Drains by the Cured-In-Place Pipe Method.

P3012.1 General. This section shall govern the rehabilitation of building sewers and buried building drains using cured-in-place pipe.

P3012.2 Applicability. The rehabilitation of existing building sewers and buried building drains shall be limited to gravity piping 3 inches (76 mm) in diameter and larger. The rehabilitated pipe shall meet the drainage load requirements of the existing piping.

P3012.3 Pre-installation requirements. Prior to commencement of the rehabilitation, the existing piping sections to be rehabilitated shall be cleaned to remove solid debris and deposits that will interfere with the installation and finished quality of the cured-in-place pipe. After the cleaning process has occurred and water has been flushed through the system, the piping shall be inspected internally by a recorded video camera survey.

P3012.3.1 Pre-installation inspection. The existing piping shall be inspected internally by a recorded video camera survey. The survey shall include notations of the clean outs and fitting locations, the length and the approximate depth of the existing piping.

P3012.4 Permitting. Prior to permit issuance, the code official shall review and evaluate the pre-installation recorded video camera survey to determine if the existing piping is able to be rehabilitated with cured-in-place pipe in accordance with the proposed cured-in-place pipe system's third-party certification showing conformance to NSF 14, applicable installation requirements of referenced standards and this code.

P3012.5 Prohibited applications. Where review of the pre-installation recorded video camera survey reveals that the existing piping is not installed correctly or defects exist that prevent the insertion and expansion of the cured-in-place pipe material, rehabilitation with cured-in-place pipe shall not be permitted until the defective portions of piping have been repaired with pipe and fittings in accordance with this code. Defects include, but are not limited to, back grade or insufficient slope.

P3012.6 Rehabilitation materials. The cured-in-place pipe materials shall be manufactured in compliance with applicable standards and certified as required in Section 303. Cured-in-place pipe specimens for testing shall consist of a specific textile tube and specific resin system manufactured at a specific thickness. The cured-in-place pipe materials shall be third-party listed and labeled.

P3012.7 Installation. The installation of cured-in-place pipe materials shall be performed in accordance with the current listing as required in P3012.6, manufacturer's installation instructions, this code and applicable referenced standards including ASTM F1216, ASTM F1743, ASTM F2599, or ASTM F2561. Hydrophilic o-rings or gaskets used in cured-in-place pipe shall be in accordance with ASTM F3240.

P3012.7.1 Material data report. The installer shall record the data as required by the cured-in-place pipe manufacturer and applicable standards. The recorded data shall include but is not limited to the location of the project, cured-in-place pipe tube and resin type with batch and lot numbers, amount of product installed and conditions of the installation. A copy of the data report shall be provided to the code official prior to final approval.

P3012.10 Approval. Upon verification of compliance with the requirements of Sections P3012.1 through P3012.9, the code official shall approve the installation.

P3012.8 Post-installation recorded video camera survey. The completed, rehabilitated piping system shall be inspected internally by a recorded video camera survey. The video survey shall be submitted to the code official prior to finalization of the permit. The video survey shall be reviewed and evaluated to provide verification that terminations of the cured-in-place pipe are smooth so as not to interfere with flow or collect debris, and that the cured-in-place pipe has been installed forming a tight interference fit to the existing pipe, and that no infiltration of groundwater, obstruction of flow or other defects exist which adversely affect the piping system in compliance with all laws and other provisions of this code. Any defects identified shall be repaired or replaced as approved by the authority having jurisdiction in accordance with applicable standards and this code.

P3012.9 Certification. A certification shall be provided in writing to the code official, from the permit holder, that the cured-in-place pipe has been installed in accordance with the current listing required in Section P3012.6, manufacturer's installation instructions, the applicable standards and this code.

Add new standard(s) as follows:

ASTM

ASTM International
100 Barr Harbor Drive, P.O. Box C700
West Conshohocken PA 19428

F1216-16: Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube

F1743 - 17: Standard Practice for Rehabilitation of Existing Pipelines and Conduits by Pulled-in-Place Installation of Cured-in-Place Thermosetting Resin Pipe (CIPP)

F2599-20: Standard Practice for Sectional Repair of Damaged Pipe By Means of an Inverted Cured-In-Place Liner

F2561-20: Standard Practice for Rehabilitation of a Sewer Service Lateral and Its Connection to the Main Using a One Piece Main and Lateral Cured-in-Place Liner

F3240-19e1 : Standard Practice for Installation of Seamless Molded Hydrophilic Gaskets (SMHG) for Long-Term Watertightness of Cured-in-Place Rehabilitation of Main and Lateral Pipelines

Staff Analysis: A review of the standards proposed for inclusion in the code, ASTM F1216 –16, ASTM F1743-17. ASTM F2599-20, ASTM F2561-20 and F3240-19e1 with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before March 20, 2021.

Reason Statement:
Proposal IPC

The proposal adds requirements for cured-in-place pipe materials and detailed installation and quality management practices for the specialized rehabilitation of existing piping that will provide not only clarity but improve efficiencies for code officials and those providing administration and enforcement of the code. Acceptance of this proposal will also remove confusion in the industry surrounding the use of cured-in-place pipe for the rehabilitation of building sewers and buried building drains. Adding specific requirements consistent with format of prior sections for specialized construction (Sections 716 and Section 717) this revision makes the section user friendly while providing clear requirements for the enforcement and use of cured-in-place pipe.

Proposal IRC

There are instances where under slab and buried piping requires replacement or repair and excavation is difficult or even impossible. The proposal adds a new section to the IRC consistent with a proposal to revise the existing Section 718 in the IPC. The section provides instruction on the rehabilitation of existing buried sewer piping by the cured-in-place pipe trenchless method. This trenchless method provides for the rehabilitation or renewal of existing deteriorated pipe with minimal or no excavation. The proposal includes requirements for cured-in-place pipe materials and detailed installation and quality management practices for the specialized rehabilitation of existing piping that will provide clear and efficient enforcement for those providing administration and enforcement of the code. Consistent with format of prior sections for specialized construction in the IPC (Sections 716 and Section 717) this revision makes the section user friendly while providing clear requirements for the enforcement and use of cured-in-place pipe.

Cost Impact: The code change proposal will decrease the cost of construction
The code change proposal will decrease the cost of construction by allowing more materials that are compliant with the code to be considered while improving quality of the work through the requirements for materials and verification of performance by certification through an approved agency. The requirement for certification of materials will increase choices and may offer cost savings.

P133-21 Part I

IPC: 202 (New), 1003.1 (New), 1003.2 (New), 1003.3 (New), 1003.4 (New), ASME Chapter 15 (New)

Proponents: Gary Duren, representing self (codecompliance1@aol.com)

THIS IS A 2 PART PROPOSAL. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC-P&M COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THESE COMMITTEES.

2021 International Plumbing Code

Add new definition as follows:

SANITARY WASTE VALVE. A device conforming to ASME A112.18.8 used as an alternate to a water-filled tubular waste trap that provides protections of the property from foul air in the sewer.

Add new text as follows:

1003.1 General. Sanitary waste valve shall be permitted to be installed as an alternate to the liquid seal tubular traps required in Section 1002. Sanitary waste valves shall conform to ASME A112.18.8.

1003.2 Installation. Sanitary waste valves shall be installed in accordance with the requirements of this section and the manufacturer's instructions.

1003.3 Where permitted. Sanitary waste valves shall be permitted to be installed as an alternate to 1 1/4 inch (32 mm) and 1 1/2 inch (38mm) tubular traps. Where a sanitary waste valve is installed on the outlet of a food waste grinder, the device shall be installed in the vertical orientation.

1003.4 Location. Sanitary waste valves shall be permitted to be installed as an alternate where tubular traps are required for sinks, lavatories, laundry trays, tubs, showers or similar fixtures. Sanitary waste valves shall not be used on urinals. Sanitary waste valves shall be provided with access.

Add new standard(s) as follows:

ASME

American Society of Mechanical Engineers
Two Park Avenue
New York NY 10016-5990

ANSI/ASME A112.18.8-2020: Sanitary Waste Valves for Plumbing Drainage Systems

Staff Analysis: A review of the standard(s) proposed for inclusion in the code, ASME A112.18.8-2020 with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before March 20, 2021.

P133-21 Part II

IRC: 202 (New), P3202 (New), P3202.1 (New), P3202.2 (New), P3202.3 (New), P3202.4 (New), ASME Chapter 44 (New)

Proponents: Gary Duren, representing self (codecompliance1@aol.com)

2021 International Residential Code

Add new definition as follows:

SANITARY WASTE VALVE. A device conforming to ASME A112.18.8 used as an alternative to a water-filled tubular waste trap that provides protections of the property from foul air in the sewer.

Add new text as follows:

P3202 SANITARY WASTE VALVES.

P3202.1 General. Sanitary waste valve shall be permitted to be installed as an alternate to the liquid seal tubular traps required in Section P3201. Sanitary waste valves shall conform to ASME A112.18.8.

P3202.2 Installation. Sanitary waste valves shall be installed in accordance with the requirements of this section and the manufacturer's instructions.

P3202.3 Where permitted. Sanitary waste valves shall be permitted to be installed as an alternate to 1 1/4 inch (32 mm) and 1 1/2 inch (38 mm) tubular traps. Where a sanitary waste valve is installed on the outlet of a food waste grinder, the device shall be installed in the vertical orientation.

P3202.4 Location. Sanitary waste valves shall be permitted to be installed as an alternate where tubular traps are required for sinks, lavatories, laundry trays, tubs showers or similar fixtures. Sanitary waste valves shall not be used on urinals. Sanitary waste valves shall be accessible.

Add new standard(s) as follows:

ASME

American Society of Mechanical Engineers
Two Park Avenue
New York NY 10016-5990

ANSI/ASME A112.18.8 - 2020
:
Sanitary Waste Valves for Plumbing Drainage Systems

Reason Statement: PURPOSE

This group of code changes is being introduced to improve the efficacy of the drain waste and vent system by providing a more sanitary option to the ancient practice of requiring water reservoir p-traps as the exclusive method of preventing sewer gas from entering occupied spaces. Public health and safety is thereby improved by allowing an alternate solution which reduces the risk of foul odor and disease spreading via the DWV system. The cost of construction is not negatively impacted.

BACKGROUND

Foul air routinely enters the occupied building space when p-traps lose their water seal. Such losses are a serious area of public health concern since in recent years important research has been published that directly links the spread of harmful pathogens via the DWV piping system. The research demonstrates that there are essentially two primary means by which harmful pathogens are spread in occupied building spaces via the *conventional* water-reservoir-trap-based DWV system:

1. Evaporation, lack of use or over/under-pressure conditions caused by the routine discharge of a water closet depletes the water level within the trap to a point where waste water is aerosolized and released into the air currents present in buildings.[*Gormley et al*]

2. Water reservoirs within traps have been shown to spread pathogens via "biological slime" creeping up the drainage pipes into the adjacent sinks.[*Mathers, et al*]

The age old mantra of the Plumbing Industry is: "Plumbers Protect the Health of the Nation". If this is true, now it is time to introduce an alternative to the ancient water reservoir traps into the code. ANSI/ASME A112.18.8 -2020 compliant Sanitary Waste Valves (SWV) provide an effective alternate to 1-1/4" and 1-1/2" tubular water reservoir p-traps.

Since SWV's *do not* retain water or other waste they are inherently more sanitary than water filled p-traps. The ASME A112.18.8-2020 Standard has

been strengthened following comments at previous code cycles and now provides a 100% higher level of protection against sewer gas intrusion than is provided by water filled tubular traps currently required.

Complete copies of the latest research referenced abpve and additional educational materials are available at *PlumbingResearchGroup.org*

Proponent respectfully requests that the Committee improve the efficacy of the UPC by permitting the use of ANSI/ASME A112.18.8-20 compliant sanitary waste valves as an alternate to accessible tubular traps and improve the plumbing code. In support of this request, please consider the following statements:

SUPPORTING STATEMENT

Sanitary Waste Valves Intended for Use as an Alternate to 1-1/4 and 1-1/2 Tubular P-traps.

It is clearly the intent of the plumbing code that there is a water seal at every plumbing fixture outlet. The exclusive water reservoir sealing that the code currently requires has inherent physical limitations against pressure fluctuations within the DWV system. The most significant pressure fluctuations occur within the waste system upon the discharge of one or more water closets. It is well known and documented that water traps are subject to failure (full or partial loss of the two inch water seal) due to excessive positive or negative pressure excursions and also loss of the water seal can and routinely does occur due to evaporation especially in conditions of low use or high ambient temperature.

When considering acceptance of an alternate a code official must determine that the alternate meets the intent of the current code, by demonstrating equivalency in terms of strength, effectiveness, safety, and performance: Sanitary Waste Valves comply with the code in the following ways

1. A Sanitary Waste Valve conforming to ANSI/ASME A112.18.8 is equal in strength to conventional tubular water traps since the material requirements of ASTM F409 are part of the standard.

The strength of a trap is determined by the materials used in construction and by its resistance to pressure fluctuations in the sanitary drainage system produced by flowing water.

2. A Sanitary Waste Valve conforming to ANSI/ASME A112.18.8 is more effective than a conventional tubular trap in terms of sanitation and over/under-pressure resistance.

Water traps not only retain water, they retain waste solids and other potentially dangerous bacteriological, fungal and viral pathogens. They are in effect miniature septic systems. Depending on the frequency of use and the location of the trap these solids may decay or harmful pathogens can breed, multiply and spread to surrounding areas. In food prep sinks this may cause food contamination and/or food-borne illness to occur.

A Sanitary Waste Valve is not a trap since by definition it does not significantly retain liquid (water) or foreign particles so there is not the same scope to provide a breeding ground for potentially dangerous bacteriological and harmful viral pathogens. Since a Sanitary Waste Valve has a greater resistance against pressures excursions the effectiveness of its sealing ability is greater and thereby safer over a conventional water reservoir trap, even in the fixture it serves is infrequently or never used.

3. A Sanitary Waste Valve conforming to ANSI/ASME A112.18.8 is actually safer than a conventional tubular trap in that conventional traps are subject to loss of water seal by evaporation or siphonage and the SWV is not.

Studies by Professor JA Swaffield *et al* of Heriot-Watt University, Edinburgh, Scotland have shown how the SARS virus was spread in 2003 throughout Amoy Gardens, a high-rise residential structure located in Hong Kong. Part of the causal effect was the failure of water traps due to evaporation, and/or losses from pressure excursions. A Sanitary Waste Valve is not subject to evaporation. A Sanitary Waste Valve is much more effective than a water trap in resisting positive and negative pressure fluctuations.

4. A Sanitary Waste Valve that conforms to ANSI/ASME A112.18.8 performance is at a minimum equal to a tubular trap in regard to reliability, connectivity, material durability and flow capacity.

The referenced Standard contains prescriptive requirements to insure that a compliant/listed Sanitary Waste Valve meets the flow capacity and material requirements of conventional code-required 1-1/4 and 1-1/2 tubular traps. Specifically the Standard requires that the Sanitary Waste Valve must reliably and repeatedly withstand a 4” water gage back-pressure test, which is significantly beyond the capability of a fully replenished p-trap

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This is only a option that is not mandated by the code and as such, there is impact to construction cost.

P133-21 Part II

IFGC

2021 GROUP A PROPOSED CHANGES TO THE I-CODES

April 11 – May 5, 2021
Virtual Committee Action Hearings

ICC
INTERNATIONAL CODE COUNCIL®

FG2-21

IFGC: 404.6

Proponents: Ted Williams, American Gas Association, representing American Gas Association (twilliams@aga.org)

2021 International Fuel Gas Code

Delete and substitute as follows:

~~**404.6 Underground penetrations prohibited.** Gas *piping* shall not penetrate building foundation walls at any point below grade. Gas *piping* shall enter and exit a building at a point above grade and the annular space between the pipe and the wall shall be sealed.~~

404.6 Piping through foundation wall. Underground piping where installed below grade through the foundation or basement wall of a building shall be encased in a protective pipe sleeve. The annular space between the gas piping and the sleeve shall be sealed.

Reason Statement: The current text for Section 404.6, adopted into the 2015 edition, prohibits gas piping from penetrating a foundation or basement wall below grade. This text, a change from previous editions of the IFGC, was adopted without substantial or data-based evidence that such penetrations have resulted in a safety concern. Below grade penetrations have a long been permitted and have proven to be a safe installation method. The revised language would reinstate this allowance. At least one U. S. state, Georgia, has amended the IFGC to delete the prohibition and allow below grade penetration as previously permitted and as proposed in this revised text. The State of Georgia code text is as follows: "404.6 Piping through foundation wall. Underground piping where installed below grade through the foundation or basement wall of a building, shall be encased is a protective pipe sleeve. The annular space between the gas piping and the sleeve shall be sealed." Additionally, allowing below grade penetrations removes a potential safety hazard introduced by requiring exposed pipe work exterior to the building when it would otherwise not be required and where it might be ruptured upon contact.

Cost Impact: The code change proposal will decrease the cost of construction
The return to allowing below grade foundation penetrations will reduce costs by avoiding more expensive piping runs from below grade outside of the foundation to above grade wall penetrations, and return of piping to below grade elevation within the building to serve appliances and equipment. Below grade installation of appliances and equipment is a predominant installation location for buildings with basements.

FG3-21

IFGC: 407.2

Proponents: William Chapin, representing Professional Code Consulting, LLC (bill@profcc.us)

2021 International Fuel Gas Code

Revise as follows:

407.2 Design and installation. *Piping* shall be supported with ~~metal~~ pipe hooks, ~~metal~~ pipe straps, ~~metal~~ bands, ~~metal~~ brackets, ~~metal~~ hangers or building structural components, suitable for the size of *piping*, of adequate strength and quality, and located at intervals so as to prevent or damp out excessive vibration. *Piping* shall be anchored to prevent undue strains on connected *appliances* and shall not be supported by other *piping*. Pipe hangers and supports shall conform to the requirements of MSS SP-58 and shall be spaced in accordance with Section 415. Supports, hangers and anchors shall be installed so as not to interfere with the free expansion and contraction of the *piping* between anchors. The components of the supporting *equipment* shall be designed and installed so that they will not be disengaged by movement of the supported *piping*.

Reason Statement: This section explicitly requires all components used be of adequate strength, etc. With the plethora of materials invented over the past 100 years, there is no reason for the code to restrict some components to metal. Metal can be abrasive to piping materials and may cause damage over time with the free expansion and contraction of piping.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
Choice of materials for hanging and space will not have a significant impact on the cost of construction.