



ASA Piping Systems Code Committee -
 Summary Report on 2021 Proposed UPC and UMC Code Changes Impacting Scope of the
 Committee

ASA TOOK POSITIONS ON PROPOSALS HIGHLIGHTED THIS COLOR

UNIFORM PLUMBING CODE				
Item #	Section(s)	Summary of Proposed Revision	TC Position	Comments
014	Definitions	Gas Piping. An installation of pipe, valves, or fittings that are used to convey fuel gas, installed on a premise or in a building, but shall not include: (1) A portion of the service piping. (2) An approved piping connection 6 feet (1829 mm) or less in length an existing gas outlet and a gas appliance in the same room with the outlet.	Accept	UPC Committee Discussion: General agreement the revision provided clarity. Vote was 24 yes to 0 no
020	Definitions	Add following definition: <u>Mid-Story Guide.</u> A support designed to keep piping in alignment, located half-way between floors or a floor and ceiling.	Accept as Modified	UPC Committee Discussion: Proposed modification to change “half-way” to “mid-way”.
024	Definitions	<u>Thermoplastic.</u> A type of plastic made of polymer resins that becomes soft and pliable when heated, reverting to its original hard form when cooled. This type of plastic material is used when joining pipe and fittings utilizing heat-fusion welding methods. Thermoplastic pipe and fittings do not show property changes when they are heated and cooled multiple times.	Reject	UPC Committee Discussion: Definition only relates to heat fusion and the proposed definition is not consistent with existing ASTM standards.
025	Definitions	Vacuum Relief Valve. A device that <u>automatically allows air to enter the piping system to prevent conditions that could siphon water from the system and prevent</u> excessive vacuum in a pressure vessel.	Reject	UPC Committee Discussion: Revision is confusing
029	3. General Regulations	301.2.4 Cast-Iron Soil Pipe, Fittings, and Hubless Couplings. Cast-iron soil pipe, fittings, and hubless couplings shall be in accordance with ASTM C1277, and CISPI 310 <u>or ASTM F1476</u> for couplings and ASTM A888, ASTM A74, and CISPI 301 for pipes and fittings.	Reject	ASA Position: Oppose. ASTM F1476 provides no additional value. The ASTM standard does not include any dimensions or details related to the couplings. These couplings appear to be



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		<p>313.0 Hangers and Supports 313.8 Pipe Anchorage. <u>Anchorage shall be provided to restrain drainage piping from axial movement.</u> 313.9 Location. <u>For pipe sizes more 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 and restrained shall be utilized.</u></p>		<p>based on piping based on IPS ODs and cast iron soil pipes do not have IPS ODs.</p> <p>UPC Committee Discussion: Motion rejected based on unanimous consents</p>
031	3. General Regulations	<p>301.6 Tall Wood (Mass Timber) Buildings. <u>Plumbing systems installed in Type IV-A, Type IV-B, or Type IV-C tall wood (mass timber) buildings, shall comply with the following:</u></p> <ul style="list-style-type: none"> a. <u>Be designed by a licensed plumbing contractor or a registered design professional in accordance with this code and the building code.</u> b. <u>Have a flame-spread index of not more than 25 and a smoke developed index of not more than 50, where tested in accordance with ASTM E84 or UL 723.</u> c. <u>Be designed to accommodate expansion, contraction, and differential movement between parts of a mass timber building.</u> 	Approve as Modify	<p>UPC Committee Discussion: Concern about being too restrictive and potentially being too confusing such as the potential of plumbing systems having to comply with ASTM E34. Motion to modify with the deletion of the Types 15 yes to 8 no</p>
032 and 040	3. General Regulations	New section being added related to protecting plumbing where expansive soil is identified.	Reject	<p>UPC Committee Discussion: General comments is it does not belong in the plumbing code. Significant number of public comments in support with the major reason being to prevent liability of the design engineer. Plumber side talked about relying on the soil engineers because they do not have the expertise; it belongs in the Building Code.</p>
035	3. General Regulations	<p>310.0 Prohibited Fittings and Practices. 310.1 Fittings. <u>No double hub fitting, single or double tee branch, single or double tapped tee branch, side inlet quarter bend, running thread, band, or saddle shall be used as a drainage fitting except that b sanitary tapped tee shall be permitted to be used on a vertical line as a fixture connection.</u></p>	Approve	<p>UPC Committee Discussion: No discussion, vote was unanimous by consent</p>



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036	3. General Regulations	310.9 ABS and PVC Transition Joints. Except as provided in Section 704.5.9 PVC and ABS pipe and fittings shall <u>not be solvent welded to any other unlike material.</u>	Approve	UPC Committee Discussion: Accepted by consent approval
037	3. General Regulations	310.9 Female Plastic Connections. Female plastic threaded connections shall <u>not be allowed to be used when threaded onto a male metallic connection.</u>	Approve	UPC Committee Discussion: Accepted by consent approval
039	3. General Regulations	312.0 Protection of Piping, Materials, and Structures. 312.9 Steel Nail Plates. Plastic and copper or copper alloy piping penetrating framing members to within 1 inch (25.4 mm) of the exposed framing shall be protected by steel nail plates not less than No. 18 gauge (0.0478 inches) (1.2 mm) in thickness. The steel nail plate shall extend along the framing member not less than 1 1/2 inches (38 mm) beyond the outside diameter of the pipe or tubing. <u>Steel nail plates shall comply with IAPMO IGC 193. Exception See Fuel gas piping shall be protected in accordance with Section 1210.4.3.</u>	Approve as Modified	UPC Committee Discussion: Motion to amend by striking first sentence referencing IAPMO IGC 193 based on being overly restrictive by not allowing use of 18 gauge obtained in the field. Accepted based on consent approval.
041	3. General Regulations	313.0 Hangers, and Supports, and Anchor 313.1 General. Piping, fixtures, appliances, and appurtenances shall be supported in accordance with this code, the manufacturer's installation instructions, and in accordance with the Authority Having Jurisdiction. <u>Seismic restraints shall be in accordance with the building code.</u> 313.2 Material. Hangars, supports, and anchors shall be of sufficient strength to support the weight of the pipe and its contents. Piping shall be isolated from incompatible materials.	Approve	UPC Committee Discussion: Motion to approve and reject items 42 and 29. Approved by unanimous consent.
042	3. General Regulations	Adds requirements for seismic support of hangars and supports.	Reject	UPC Committee Discussion: Motion to reject based on acceptance of item 41. Overly restrictive.
043	3. General Regulations	314.0 Trenching, Excavation, and Backfill. 314.2 Tunneling and Driving. Tunneling and driving shall be permitted to be done in yards, courts, or driveways of a building site. Where sufficient depth is available to permit, tunnels shall be permitted to be used between open-cut trenches. <u>The length of the tunneling shall be the distance required to clear the obstacle above.</u>	Reject	UPC Committee Discussion: Motion to accept as modified by striking 314.2.1 based on the text not under the plumbing scope. Motion was changes to reject proposal as submitted. Approved by unanimous consent.



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		<p>Tunnels shall have a clear height of 2 feet (610 mm) above the pipe and shall be limited in length to one-half the depth of the trench, with a maximum length of 8 feet (2438 mm). Where pipes are driven, the drive pipe shall be not less than one size larger than the pipe to be laid.</p> <p>314.2.1 Tunnels. <u>Pipe installed in tunnels via tunneling or jacking shall be protected from uneven loading. Supporting structures, walls, and ceilings shall be designed to withstand the earth loads and account for earth movement and settling.</u></p>		
045	3. General Regulations	<p>Add new text</p> <p>321.0 Trenchless Methodology. 321.1 General. <u>Trenchless methodology for replacement or replacement or rehabilitation of drainage piping, building sewers or building storm sewers in accordance with Section 321.2 or Section 321.3</u> 321.2 Cured-In-Place Pipe. <u>Cured-in-place pipe materials shall be in accordance with Section 715.3.</u> 321.3 Pipe Bursting. <u>Pipe bursting trenchless methodology shall use high density polyethylene (HDPE) in compliance with ASTM F714.</u></p>	Reject	<p>UPC Committee Discussion: Motion to reject based on the new sections are already covered in Section 715.3. Would be in conflict with ASTM F714 as it is only for building sewers or building storm sewers. Also, Chapter 3 is for general requirements and not for specific requirements. Motion to reject approved by consent approval.</p>
133	6. Water Supply and Distribution	<p>604.1 Pipe, Tube, and Fittings. Pipe, tube, fittings, solvent cement, thread sealants, solders, and flux used in potable water systems intended to supply drinking water shall comply with NSF 61. Where <u>copper alloys pipe</u> fittings and valves <u>are made from copper alloys</u> containing more than 15 percent zinc by weight <u>and are</u> used in plastic piping systems, <u>they</u> shall be <u>resistant to dezincification and stress corrosion cracking</u> in compliance with NSF 14.</p>	Reject	<p>UPC Committee Discussion: Motion to accept was rejected by a vote of 19 no to 2 yes. Motion to reject so to keep the dezincification language in the code. Motion to reject was approved by consent.</p>
135	6. Water Supply and Distribution	<p>Add following standards to Table 604.1 Materials for Building Supply and Water Distribution Piping and Fittings: AWWA C606, CSA B242, IAPMO PS 53</p>	Reject	<p>UPC Committee Discussion: Motion to reject based on consent approval.</p>
136	6. Water Supply and Distribution	<p>Add ASTM F1476 to table 604.1 Materials for Building Supply and Water Distribution Piping and Fittings</p>	Reject	<p>ASA Position: <u>Oppose:</u> ASSE 1079 is the national industry standard that covers all these types of joints and ASTM F1476 provides</p>



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				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. These couplings appear to be based on piping based on IPS ODs and cast iron soil pipes do not have IPS ODs. UPC Committee Discussion: Motion to reject based on reasons similar to ASA Position.
137	6. Water Supply and Distribution	Add IAPMO IGC 353 - Branch Connectors to Table 604.1 – Materials for Building Supply and Water Distribution Piping and Fittings in the material row for stainless steel. Also add IAPMO document to Table 1701.1 – Referenced Standards	Reject.	UPC Committee Discussion: Motion to reject based on it not being applicable building water supply.
138	6. Water Supply and Distribution	Add ASTM F3347 – Metal Press Insert Fittings with Factory Assembled Stainless Steel Press Sleeve for SDR9 Cross-Linked PEX Tubing and SDR9 P-RT Tubing and ASTM F3348 – Standard Specification for Plastic Press Insert Fittings with Factory Assembled Stainless Steel Press Sleeve for SDR9 PEX Tubing and SDR9 PE_RT Tubing to Table 604.1 – Materials for Building Supply and Water Distribution Piping and Fittings and to Table 1701.1 – Referenced Standards.	Reject	UPC Committee Discussion: Concern raised about the table showing both Building Supply and Water Distribution is checked and ASTM F3347 is not scoped for both. It was noted that there are other standards already in the table just for Water Distribution. Motion to reject passed with a vote of 13 yes, 6 no and 3 abstentions.
139	6. Water Supply and Distribution	Revise Exception section of 604.2 Lead Content: Exceptions: (1) Pipes, pipe fittings, plumbing fittings, or fixtures or backflow preventers used for nonpotable services such as manufacturing, industrial processing, irrigation, outdoor watering, or any other uses where the water is not used for human consumption.	Reject	UPC Committee Discussion: Motion to reject based on it not being consistent with Federal Regulations. Motion passed with a vote of 21 yes to 2 no
140	6. Water Supply and Distribution	604.0 Materials. 604.5 Flexible Connectors. Flexible water connectors shall be installed in readily accessible locations, and where under continuous pressure shall	Reject	ASA Position: Oppose UPC Committee Discussion:



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		<p>comply with ASME A112.18.6/CSA B125.6. Flexible water connectors with an excess flow shutoff device shall comply with CSA B125.5/IAPMO Z600.</p> <p>604.12 Flexible Corrugated Connectors. Flexible corrugated connectors of copper, copper alloy, or stainless steel water connectors shall be installed in readily accessible locations and shall comply with ASME A112.18.6/CSA B125.6. Flexible water connectors with an excess flow shutoff device shall comply with CSA B125.5/IAPMO Z600.</p> <p><u>Such connectors</u> shall be limited to the following connector lengths:</p> <p>321.0 Fixture Connectors – 30 inches (762 mm)</p> <p>322.0 Washing Machine Connectors – 72 inches (1829 mm)</p> <p>323.0 Dishwasher and Icemaker Connectors – 120 inches (3048 mm)</p> <p style="padding-left: 20px;">(1) Fixture Connectors – 30 inches (762 mm)</p> <p style="padding-left: 20px;">(2) Washing Machine Connectors – 72 inches (1829 mm)</p> <p style="padding-left: 20px;">(3) Dishwasher and Icemaker Connectors – 120 inches (3048 mm)</p> <p style="padding-left: 20px;"><u>(4) Other Connections – 48 inches (1220 mm)</u></p>		Motion to reject based on attempting to take requirements for corrugated connectors and apply to all connectors with a lack of technical justification and no background to support 48 in. Motion accepted based on consent approval.
141	6. Water Supply and Distribution	<p>604.0 Materials.</p> <p>604.13 Water Heater Connectors. Flexible metallic (copper and stainless steel), reinforced flexible, braided stainless steel, or polymer braided with EPDM core connectors that connect a water heater to the piping system shall comply with ASME A112.18.6/CSA B125.6. Copper, copper alloy, or stainless steel flexible connectors shall not exceed 24 inches (610 mm). PEX, PEX-AL-PEX, PE-AL-PE, or PE-RT tubing shall not be installed within the first 18 inches (457 mm) of piping connected to a water heater.</p> <p><u>Exception: PEX, PEX-AL-PEX, PE-AL-PE, or PE-RT tubing shall be permitted to be connected directly to tankless water heaters intended for domestic water applications.</u></p>	Reject	<p>ASA Position: Oppose</p> <p>UPC Committee Discussion: Motion to reject passed based on a vote of 13 yes to 11 no.</p>
142	6. Water Supply and Distribution	<p>605.0 Joints and Connections.</p> <p>605.1 Copper or Copper Alloy Pipe, Tubing and Joints. (remaining text unchanged)</p>	Reject	<p>ASA Position: <u>Oppose:</u> ASSE 1079 is the national industry standard that covers all these types of joints and ASTM F1476 provides</p>



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		<p>605.1.3 Mechanical Joints. Mechanical joints shall include, but are not limited to, compression, flanged, grooved, pressed, and push fit fittings.</p> <p style="text-align: center;"><u>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 and restrained, or approved joint designed for the specific application.</u></p> <p>605.2 CPVC Plastic Pipe and Joints. (remaining text unchanged)</p> <p>605.2.1 Mechanical Joints. Mechanical joints shall include compression, flanged, grooved and push fit fittings. <u>A mechanical joint shielded coupling for CPVC plastic shall have a metallic shield that complies with ASTM F1476 Type II Class 2 flexible and restrained or Type II Class 3 flexible and unstrained. The elastomeric seal shall comply with NSF/ANSI/CAN 61 or other suitable material that will cater for the effluent within the pipework system. The coupling shall be installed in accordance with manufacturer's installation instructions. The mechanical joint shall be treated as a permanent pipe seal.</u></p> <p>Additional revisions consistent with the above proposed for 605.3, 605.4, 605.5, 605.6 and 605.11</p>		<p>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.</p> <p>UPC Committee Discussion: Motion to reject based on fitting is not a fitting standard, contains non-mandatory language; does not include sizing and it is only a performance standard and there is no center stop.</p>
143	6. Water Supply and Distribution	<p>Place the following new sentence at the end of Section 605.1.3.3 Push Fittings:</p> <p><u>Fittings used in potable water systems intended to supply drinking water shall comply with NSF 61.</u></p>	Reject	<p>UPC Committee Discussion: Motion to reject based on the requirement already covered under 604.1 and is already covered in the product standard. Motion passed by consent.</p>
144	6. Water Supply and Distribution	<p>Add the color "green" to item 605.2.2 Solvent Cement Joints as an acceptable color of solvent cement not requiring a primer for CPVC joint.</p>	Accept	<p>UPC Committee Discussion: Motion accepted by consent.</p>
145	6. Water Supply and Distribution	<p>Add <u>Follow ASTM D2855 for two-step joining and ASTM F3328 for one-step joining</u> to item 605.2.2 Solvent Cement Joints and 605.3.1 Solvent Cement Joints.</p>	Reject	<p>UPC Committee Discussion: Concern with installers having to obtain the actual standards to make sure they are doing it right. Motion to</p>



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				accept failed by a vote of 5 yes to 19 no. Motion to reject motion based on current information provided is adequate. Motion passed based on a vote of 20 yes to 2 no.
146	6. Water Supply and Distribution	<p>605.0 Joints and Connections.</p> <p>605.12 PVC Plastic Pipe and Joints. PVC plastic pipe and fitting joining methods shall be installed in accordance with the manufacturer's installation instructions and shall comply with Section 605.12.1 through Section 605.12.3. PVC piping shall not be exposed to direct sunlight.</p> <p>Exception: Piping that is exposed to sunlight shall be unless the piping does not exceed 24 inches (610 mm) and wrapped with not less than 0.04 of an inch (1.02 mm) thick tape or otherwise protected from UV degradation.</p>	Reject	<p>UPC Committee Discussion:</p> <p>Motion to reject based on concern substantiation did not justify change; no definition on degree of sunlight; and there would be no limit on taping requirements. Motion passed based on consent.</p>
147	6. Water Supply and Distribution	<p>605.12.2 Solvent Cement Joints. Solvent cement joints for PVC pipe and fittings shall be clean from dirt and moisture. Pipe shall be cut square and pipe shall be deburred. Where surfaces to be joined are cleaned and free of dirt, moisture, oil, and other foreign material, apply primer purple in color that complies with ASTM F656. Primer shall be applied to the surface of the pipe and fitting is softened. Solvent cement that complies with ASTM D2564 shall be applied to all joint surfaces. Joints shall be made while both the inside socket surface and outside surface of pipe are wet with solvent cement. <u>Two-step joining methods shall be in accordance with ASTM D2855.</u> Hold joint in place and undisturbed for 1 minute after assembly.</p>	Reject	<p>UPC Committee Discussion:</p> <p>Concern with installers having to obtain the actual standards to make sure they are doing it right. Motion to accept failed by a vote of 21 no to 2 yes and 1 abstention. Motion to reject motion based on current information provided is adequate. Motion to reject passed based on a vote of 21 yes to 2 no.</p>
150	6. Water Supply and Distribution	<p>605.16.2 Plastic Pipe to Other Materials. Where connecting plastic pipe to other types of piping, approved types of adapter or transition fittings designed for the specific transition intended shall be used <u>including stepped gasketed mechanical couplings.</u></p> <p>605.16.3 Stainless Steel to Other Materials. Where connecting stainless steel pipe to other types of piping, mechanical joints couplings of the compression type, gasketed mechanical coupling dielectric fitting, or dielectric union in accordance with ASSE 1079 and designed for the specific transition intended shall be used.</p>	Reject	<p>ASA Position:</p> <p><u>Oppose:</u> Adding terms that are not defined. Added verbiage does not add value and current terms and definitions used in the UPC are appropriate.</p> <p>UPC Committee Discussion:</p> <p>Motion to reject passed based on consent approval.</p>



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174	7. Sanitary Drainage	Add ASTM 1476 – Performance of Gasketed Mechanical Couplings for Use in Piping Applications to Table 1701.1 for Referenced Standards	Reject	<p>ASA Position: <u>Oppose:</u> 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. These couplings appear to be based on piping based on IPS ODs and cast iron soil pipes do not have IPS ODs.</p> <p>UPC Committee Discussion: Motion to reject based on reasons similar to ASA Position.</p>
176	7. Sanitary Drainage	<p>Add following to 705.1 Mechanical Joints –</p> <p><u>A mechanical joint shielded coupling for joining ABS and ABS co-extruded plastic pipe shall comply with ASTM 1476 Type II Class 2 flexible and restrained or Type II Class 3 flexible and unstrained. The mechanical shield shall comply with either 304 or 316L stainless steel with alloy steel coated or 316 / 316L stainless steel fasteners. The coupling shall be installed in accordance with manufacturer's installation instructions.</u></p> <p>Add following to 705.2 Cast-Iron Pipe and Joints, 705.2.2 Mechanical Joints and Compression Joints.</p> <p><u>A mechanical joint shielded coupling for hubless cast iron pipe and fittings shall have a metallic shield that complies with ASTM A1056, ASTM C1277, ASTM C1540, ASTM F1476 or CISPI 310 Type II Class 2 flexible and restrained or Type II Class 3 Flexible and unstrained. The elastomeric seal shall comply with ASTM C564. The coupling shall be installed in accordance with manufacturer's installation instructions.</u></p>	Reject	<p>ASA Position: <u>Oppose:</u> 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. These couplings appear to be based on piping based on IPS ODs and cast iron soil pipes do not have IPS ODs.</p> <p>UPC Committee Discussion: Motion to reject based on reasons similar to ASA Position.</p>



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		<p>Add following to 705.3 Copper or Copper Alloy Pipe and Joints, 705.3.2 Mechanical Joints</p> <p style="text-align: center;"><u>Mechanical joints for copper or copper alloy piping shall be made with a mechanical coupling with groove end piping, r ASTM F1476 Type II Class 2 flexible and restrained, or approved joint designed for the specific application.</u></p>		
178	7. Sanitary Drainage	<p>705.0 Joints and Connections.</p> <ul style="list-style-type: none"> • <u>Polyolefin Pipe (DWV) and Joints.</u> Joints between polyolefin plastic pipe and fittings shall be installed in accordance with the manufacturer’s installation instructions and shall comply with Section 705.7.1 or Section 705.7.2. • <u>Heat-fusion Joints.</u> Heat-fusion joints for polyolefin pipe and tubing joints shall be installed with socket- type heat-fused polyolefin fittings or electrofusion polyolefin fittings. Joint surfaces shall be clean and free from moisture. The joint shall be undisturbed until cool. Joints shall be made in accordance with ASTM F3371. • <u>Mechanical Joints.</u> Mechanical joints shall be designed to provide a permanent seal and shall be of the mechanical or push-on joint type. The push-on join shall include an elastomeric gasket and shall provide a compressive force against the spigot and socket after assembly to provide a permanent seal. Joints shall be made in accordance with ASTM F3371. 	Reject	<p>UPC Committee Discussion: Motion to reject based on unclear on limitations and if fittings are included and scope of standard is not clear. Motion passed based on consent approval.</p>
190	7. Sanitary Drainage	<p>712.4 Deflection Testing. All plastic storm and sanitary drainage piping greater than or equal to 8 inches (200 mm) in diameter shall be deflection tested. Deflection test shall be conducted no sooner than 30 days after completion of final backfill and compaction testing. The maximum allowable deflection shall be 5 percent unless stated otherwise in the project specifications. All lines shall be cleaned or flushed prior to testing. The deflection test shall be performed on entire length of installed flexible pipeline upon completion of work adjacent to and over the pipeline, including</p>	Reject	<p>UPC Committee Discussion: Motion to reject based on test being targeted to specific materials when other materials might have deflection issues and requirements appear to be onerous. Motion to reject was approved by a vote of 20 yes to 1 no</p>



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		<p>backfilling, placement of fill, grading, paving, placement of concrete, and any other superimposed loads. Deflection of pipe in the installed pipeline under external loads shall not exceed limits as percent of the average inside diameter of pipe. Use a laser profiler or mandrel to determine if allowable deflection has been exceeded.</p> <p>712.4.1 Laser Profiler. The pipe interior shall be inspected with laser profiling equipment accompanied with video surveillance. Low barrel distortion video equipment shall be utilized for pipe sizes 48 inches (1219 mm) or less. A camera with suitable lighting shall be used to allow a clear picture of the entire periphery of the pipe interior. The camera shall be centered in the pipe both vertically and horizontally. The camera shall be able to pan and tilt to a 90 degree (1.57 rad) angle with the axis of the pipe rotating 360 degrees (6.28 rad). Use equipment to move the camera through the pipe that will not obstruct the camera's view or interfere with proper documentation of the pipe's condition. The video image shall be clear, focused, and relatively free from roll static or other image distortion qualities that would prevent the reviewer from evaluating the condition of the pipe. For initial post installation inspections for pipe sizes larger than 48 inches (1219 mm), a visual inspection shall be completed of the pipe interior.</p> <p>712.4.2 Mandrel. The mandrel shall be passed through each run of pipe by pulling it by hand. If deflection readings in excess of the allowable deflection of average inside diameter of pipe are obtained, stop and begin test from the opposite direction. The mandrel shall meet the pipe manufacture's recommendations and the following requirements. The mandrel shall be rigid, nonadjustable, have a minimum of 9 fins, pulling rings at each end, and is engraved with the nominal pipe size and mandrel outside diameter. The mandrel shall be 5 percent less than the certified-actual pipe diameter. The Authority Having Jurisdiction shall verify the outside diameter (OD) of the contractor provided mandrel through the use of Contractor provided proving rings.</p>		
193	7. Sanitary Drainage	<p>715.3 Existing Sewers. Replacement of existing building sewer and building storm sewers using trenchless methodology and materials shall be installed in accordance with ASTM F1216, ASTM F1743, ASTM F2561, ASTM F2599, or ASTM F3240.</p>	Reject	<p>UPC Committee Discussion: Move to reject based on action taken in 196 and not add ASTM F1743 due to existence of non-mandatory language. Motion passed based on consent.</p>



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194	7. Sanitary Drainage	<p>715.3.1 Cured-In-Place Pipe Material. <u>Cured-in-place pipe materials shall be comprised of a specific textile tube combined with a specific resin system at a specific wall thickness that shall be listed (third-party certified) by a listing agency (accredited conformity assessment body) as complying with this code and the approved applicable recognized standards referenced in this code.</u></p> <p>715.3.2 Post-Installation Inspection. <u>The installed replacement pipe shall be inspected internally by a recorded video camera survey. The video survey shall be submitted to the Authority Having Jurisdiction prior to acceptance of the work. Any defects identified shall be repaired or replaced as approved by the Authority Having Jurisdiction in accordance with applicable standards and this code.</u></p>	Reject	<p>UPC Committee Discussion: Move to reject based on action taken in 196. Motion passed based on consent.</p>
195	7. Sanitary Drainage	<p>715.3 Trenchless Lining or Replacement of Existing Sewers. <u>Replacement of existing building sewer and building storm sewers using trenchless methodology and materials Trenchless or replacement of existing sew shall be in accordance with the Section 715.3.1 or Section 715.3.2.</u></p> <p>715.3.1 Sewer Pipe Lining. <u>The trenchless installation of resin-impregnated flexible tubing to line existing building sewers and building storm sewers shall be installed in accordance with ASTM F1216, ASTM F2561, ASTM F2599, or ASTM F3240.</u></p> <p>715.3.2 Sewer Pipe Replacement. <u>The trenchless installation of polyethylene (PE) pipe using the pipe bursting method to replace existing building sewers and building storm sewers shall comply with ASTM F714, ASTM F894 and installed in accordance with IAPMO IS 26.</u></p>	Approve as Modified	<p>UPC Committee Discussion: Move to modify to include the addition of IAPMO IS 26 to table 1701.2 and delete the rest of the proposal based on the action taken in 196.</p>
196	7. Sanitary Drainage	<p>715.3 Existing Sewers. <u>Where permitted by the Authority Having Jurisdiction, in accordance with Section 301.3, trenchless methods of rehabilitation Replacement of existing building sewer and building storm sewers using trenchless methodology and materials shall be installed in accordance with the standards listed in Chapter 17. ASTM F1216, ASTM F2561, ASTM F2599, or ASTM F3240.</u></p>	Approve as Modified	<p>UPC Committee Discussion: Motion to amend to delete in "accordance with Section 301.3" and deletion of "the standards listed in Chapter 17." Modification adds two sub items, 715.3.1 <u>Sewer Pipe Lining</u> related to resin-impregnated flexible tubing and 715.3.2 <u>Sewer Pipe Replacement</u> related to PE pipe using the pipe bursting method, with a reference to standards listed in Table 1701.2 in each of the new sections. It was</p>



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				<p>noted that 1701.2 is not currently referenced in the code and is only provided as a reference to code officials if they so choose to use. Modification was further amended to remove the “shall” related to table 1701.2 and replace with “see applicable standards listed in table 1701.2”</p> <p>Motion to approve as modified passed with a vote of 21 yes to 3 no.</p>
198	8. Indirect Wastes	<p>803.3 Pipe Size and Length. Except as hereinafter provided, the size of indirect waste piping shall be in accordance with other sections of this code applicable to drainage and vent piping. No vent from indirect waste piping shall combine with a sewer-connected vent, but. <u>Vents from indirect waste piping</u> shall extend separately to the outside air. Indirect waste pipes exceeding 5 feet (1524 mm), but less than 15 feet (4572 mm) in length shall be directly trapped, but such traps need not be vented.</p>	Approve	<p>UPC Committee Discussion: Motion to accept as submitted passed based on consent.</p>
199	8. Indirect Wastes	<p>Add exception to 803.3 Pipe Size and Length</p> <p><u>Exceptions:</u> <u>(1) Refrigeration coils and ice-maker machines shall not be limited in length.</u> <u>(2) The trap, drain, and vent shall comply with the sizing requirements of Section 702.0, Section 703.0 and Section 904.0 if the indirect waste piping exceeds 15 feet (4572 mm) in length.</u></p>	Reject	<p>UPC Committee Discussion: Motion to reject based in the substantiation not technically supporting the change. Motion passed based on consent approval.</p>
248	12. Fuel Gas Piping	<p>1208.6.4.5 Corrugated Stainless Steel Tubing. Corrugated stainless steel tubing shall be listed in accordance with CSA LC 1. [NFPA 54:5.6.3.6] <u>Corrugated stainless steel tubing shall also comply with IAPMO IGC 201 when a listed encasement system is required.</u></p>	Reject	<p>UPC Committee Discussion Move to reject since it may be interpreted that product could be used underground without a sleeve. It was interpreted that the IGC referenced does not always require a sleeve. Motion to reject based on consent vote.</p>



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249	12. Fuel Gas Piping	<p>1210.1.3 Protection Against Corrosion. (remaining text unchanged)</p> <p>1210.1.3.2 Underground Piping. Underground piping shall comply with one or more of the following unless approved technical justification is provided to demonstrate that protection is unnecessary:</p> <p>(1) The piping shall be made of corrosion resistant material that is suitable for the environment in which it will be installed.</p> <p>(2) Pipe shall have a factory applied, electrically insulating coating. Fittings and joints between sections of coated pipe shall be coated in accordance with the coating manufacturer's instructions.</p> <p>(3) The piping shall have a cathodic protection system installed, and the system shall be maintained in accordance with Section 1210.1.3.3 or Section 1210.1.3.6</p> <p>1210.1.3.2 Underground Piping. Underground metallic gas piping shall be protected from corrosion by approved <u>coatings or wrapping materials</u>. <u>Gas pipe protective coatings shall be in accordance with the following:</u></p> <p><u>(1) Approved types, factory-applied, and conform to approved standards.</u></p> <p><u>(2) Field wrapping shall provide equivalent protection and is restricted to those sections and fittings that are necessarily stripped for threading or welding.</u></p> <p><u>(3) Risers shall be coated or wrapped to a point at least 6 in above ground.</u></p>	Reject	<p>ASA Position: Oppose</p> <p>UPC Committee Discussion Rejected</p>
251	12. Fuel Gas Piping	<p>1215.2.1 Natural Gas Piping Systems. Table 1215.2(1) through Table 1215.2(23) <u>or sizing tables included in a listed piping system manufacturers' installation instructions</u> shall be used in conjunction with one of the methods described in Section 1215.1.1 through Section 1215.1.3 for piping materials other than non-corrugated stainless steel tubing. Section 1215.3 shall be used in conjunction with one of the methods described in Section 1215.1 through Section 1215.1.3 for non-corrugated stainless steel tubing. [[NFPA 54:6.2.1, 6.2.2]]</p> <p>1215.2.2 Propane Piping Systems. Table 1215.2(24) through Table 1215.2(36) <u>or sizing tables included in a listed piping system manufacturers' installation instructions</u> shall</p>	Reject	<p>UPC Committee Discussion: Proponents noted this is already required under 1208.4.2. Motion to reject based on consent vote.</p>



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		be used in conjunction with one of the methods described in Section 1215.1.1 through Section 1215.1.3 for piping materials other than non-corrugated stainless steel tubing. Section 1215.3 shall be used in conjunction with one of the methods determined through Section 1215.1.3 for non-corrugated stainless steel tubing. {{NFPA 54:6.3.1, 6.3.2}}		
254	12. Fuel Gas Piping	Adds corrugated medical tubing (CMT) under section 1318.4 Tubes for Medical Gas Systems.	Reject	<p>ASA Position Support</p> <p>UPC Committee Discussion: Motion to reject based on the fact that the ability to purge from brazing operations have not been proved. It was noted that CMT is already accepted under NFPA 99 where it was extracted. Proponent noted the piping is purged with nitrogen before leaving the manufacturing facility and the current product standards provided a purge test. Motion to reject passed on a vote of 8 yes to 7 no and 4 abstentions</p>



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072	3. General Regulations	310.3 Condensate Waste Pipe Material and Sizing. (remaining text unchanged) 310.3. Material. Condensate waste pipes shall be constructed of DWV materials in accordance with the plumbing code.	Reject	ASA Position: Oppose. DWV materials eliminate use of pipe sizing below 2 in. UMC Discussion: Motion to reject passed based on unanimous consent.
076	3. General Regulations	310.7 Female Plastic Fittings Connections. Female plastic screwed fittings shall be used with plastic male fittings and e threads. <u>Female plastic threaded connections shall not be allowed to be used when threaded onto a male metallic connection.</u>	Approve	UMC Discussion: Motion to modify. Modification is to add the following: "Tapered female plastic screwed ... used with tapered plastic male ... Tapered female plastic threaded adapter connections..." Motion to modify rejected. Motion to accept passed based on unanimous consent.
077	3. General Regulations	310.7.1 ABS/PVC Transition Connections. <u>Except as provided in the plumbing code, PVC and ABS pipe and fittings shall not be solvent welded to any other unlike material.</u>	Approve	ASA Position: Oppose. Lack of clarity and text not needed. UMC Discussion: Noted current wording was approved by UPC. PPFA expressed concern it could be interpreted that ABS could be joined to PVC which is not acceptable. Motion passed based on unanimous consent.
080	3. General Regulations	313.0 Hangers, and Supports, and Anchor 313.1 General. Piping, tubing, appliances, and appurtenances shall be supported in accordance with this code, the manufacturer's installation instructions, and in accordance with the Authority Having Jurisdiction. <u>Seismic restraints shall be as required by the building code.</u> 313.2 Material. Hangers, supports, and anchors shall be of sufficient strength to support the weight of the pipe or tubing and its contents. Piping or tubing shall be isolated from incompatible materials.	Accept	UMC Discussion: Motion to accept passed based on unanimous consent.



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081	3. General Regulations	313.0 Hangers and Supports. 313.1 General. Piping, tubing, appliances, and appurtenances shall be supported in accordance with this code, the manufacturer’s installation instructions, and in accordance with the Authority Having Jurisdiction. <u>Pipe hangers, supports, and anchors used for fuel gas shall be in accordance with Section 1310.3.5. Pipe support hangers and hooks shall comply with IAPMO PS 95.</u>	Reject	UMC Discussion: Motion to reject based on proposal is specific to fuel gas and should not be in the general section. Motion passed based on unanimous consent.
086	3. General Regulation	316.0 Protection of Piping, Tubing, Materials, and Structures. 316.6 Steel Nail Plates. Plastic piping or tubing, copper or copper alloy piping or tubing, and ducts penetrating framing members to within 1 inch (25.4 mm) of the exposed framing shall be protected by steel nail plates not less than No. 18 gauge (0.0478 inches) (1.2141 mm) in thickness. The steel nail plate shall extend along the framing member not less than 1 1/2 inches (38 mm) beyond the outside diameter of the pipe or tubing. <u>Steel nail plates shall be in accordance with IAPMO IGC 193. Fuel gas piping shall be protected in accordance with Exception. See Section 1310.4.3.</u>	Reject	UMC Discussion: Motion to reject. No reason to reference a standard as long as the plate is 18 gauge; would limit ability to make plates in the field. Motion passed with a vote of 21 yes, 2 no and 1 abstention.
141	6. Duct Systems	<u>602.2.5 Water Distribution Piping. Nonmetallic water distribution piping in plenums shall be listed and labeled for use in plenums. Piping shall have a flame spread distance not exceeding 5 feet (1524 mm), an average optical density not exceeding 0.15 and, a peak optical density not exceeding 0.5, where tested in accordance with UL 2846, or shall have a flame spread index not to exceed 25 and a smoke developed index not to exceed 50, where tested as a composite product in accordance with ASTM E84 or UL 723.</u>	Reject	ASA Position: Support UMC Discussion: Accept as submitted failed with a vote of 7 yes to 20 no. Motion to reject passed with a vote of 20 yes to 6 no Motion to reject passed based on a vote of 20 yes to 6 no
143	6. Duct Systems	602.2 Combustibles Within Ducts or Plenums. Materials exposed within ducts or plenums shall be noncombustible or shall have a flame spread index not to exceed 25 and a smoke-developed index not to exceed 50, where tested as a composite product in accordance with ASTM E84 or UL 723. <u>Plastic piping Combustible materials</u> installed in plenums of ASTM E84	Reject	ASA Position: Support UMC Discussion:



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		or UL 723. Mounting methods, supports and sample sizes of materials for testing that are not specified in ASTM E84 or UL 723 shall be prohibited.		Motion accept failed based on a vote of failed based on a vote of 6 yes to 20 no. Motion to reject passed 22 yes to 5 no.
221	11. Refrigeration	Delete requirement from 1109.1 stating "Refrigerant piping shall be metallic."	Reject	UMC Discussion: Motion to reject based on future materials should be addressed when they arise. Concern was noted that the last sentence should be deleted and it was noted that item 223 actually proposes a new material and product standard for refrigerant piping. Also, the term "metallic" is inappropriately used. Motion passed 26 yes to 2 no
222	11. Refrigeration	1109.0 Refrigeration Piping, Containers, and Valves. 1109.1 Materials. Materials used in the construction and hall be suitable for conveying the refrigerant used. Materials shall not be used that will deteriorate because of the refrigerant, lubricant, or their combination in presence of air or moisture to a degree that poses a safety hazard. [ASHRAE 15:9.1.1] Refrigerant piping shall be metallic. <u>Materials for refrigerant piping, tubing, and fittings shall be acceptable to the Authority Having Jurisdiction and shall comply with the applicable standards in Table 1109.1 or other approved standards.</u> New table 1109.1 creating providing ASME and ASTM standards for aluminum, copper/copper alloy and steel piping/tubing and fittings.	Approved as Modified	UMC Discussion: Motion to approve. It was noted by UL that the phrase "or other approved standards" is open ended. Motion was withdrawn and a motion to modify was made to strikeout "or other approved standards" and to strike out "shall be acceptable to the Authority Having Jurisdiction and" Motion accepted based on unanimous consent.
223	11. Refrigeration	1109.0 Refrigerant Piping, Containers, and Valves. 1109.1 Materials. <u>1109.1.3 Polyethylene of Raised Temperature/Aluminum/Polyethylene of Raised Temperature (PERT/AL/PERT) Linesets. PE-RT/AL/PE-RT piping shall be approved for the intended use and shall comply with ASTM F3346.</u>	Reject	UMC Discussion: Motion to reject based on concern with A2L refrigerant and the standard appears to need to be more robust. Motion passed based on unanimous consent.
225	11. Refrigeration	1109.0 Refrigeration Piping, Containers, and Valves.	Accept	UMC Discussion: Motion to accept passed based on a vote of 13 yes, 11 no, and 1 abstention.



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		1109.2 Joints. Iron or steel pipe joints shall be of approved threaded, flanged, or welded types. Exposed threads shall be tinned or coated with an approved corrosion inhibitor. Copper or copper alloy pipe joints of iron pipe size shall be of approved threaded, flanged, press-connect or brazed types. Copper tubing joints and connections shall be connected by approved flared, lapped, swaged, or brazed joints, soldered joints, or mechanical joints that comply with UL 207 either individually or as part of an assembly or a system by an approved nationally recognized laboratory. Piping and tubing shall be installed so as to prevent vibration and strains at joints and connections.		
254	12. Hydronics	Add ASTM F2165, ASTM F3347, ASTM F3348 to Table 1210.1 Materials for Hydronic System Piping, Tubing, and Fittings.	Accept	UMC Discussion: Motion to accept passed by unanimous consent.
256	12. Hydronics	Add IAPMO IGC 353 to Table 1210.1 Materials for Hydronic System Piping, Tubing, and Fittings.	Reject	ASA Position: Support UMC Discussion: Motion to Accept failed based on a vote of 6 yes, 13 no and 2 abstentions. Motion to reject based on rejection in the UPC based on the scope of the standard not covering potable water. However, it was noted by proponent that the scope is ok with hydronics. Motion passed based on unanimous consent. Issue is apparently turbulence which was soundly shot down but still was rejected.
257	12. Hydronics	Add IAPMO PS 117 to Table 1210.1 Materials for Hydronic System Piping, Tubing, and Fittings.	Accept	UMC Discussion: Motion to accept passed by unanimous consent.
261	12. Hydronics	1210.0 Materials.	Reject	UMC Discussion:



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		1210.4 Oxygen Diffusion Corrosion. PEX and PE-RT tubing in closed hydronic systems shall contain an oxygen barrier <u>with an oxygen permeation rate not to exceed 4.59 E-4 grains per square foot per day (0.32 mg/m²/day) at 104°F (40°C).</u>		Motion to reject based on language being unenforceable and probable best to include in the product standard. Motion passed based on unanimous consent.
262	12. Hydronics	1211.12 Joints and Connections. 2.12 Polyvinyl Chloride (PVC) Pipe. (remaining text unchanged) (1) (remaining text unchanged) (2) Solvent cement joints for PVC pipe and fittings shall be clean from dirt and moisture. Pipe shall be cut square and pipe shall be deburred. Where surfaces to be joined are cleaned and free of dirt, moisture, oil, and other foreign material, apply primer purple in color in accordance with ASTM F656. Primer shall be applied until the surface of the pipe and fitting is softened. Solvent cements in accordance with ASTM D2564 shall be applied to all joint surfaces. Joints shall be made while both the inside socket surface and outside surface of pipe are wet with solvent cement. <u>Two-step joining methods shall be in accordance with ASTM D2855.</u> Hold joint in place and undisturbed for 1 minute after assembly.	Reject	ASA Position: Support UMC Discussion: Motion to reject passed with a vote of 16 yes and 8 no.
264	12. Hydronics	1211.14 Joints Between Various Materials. (remaining text unchanged) 1211.14.2 Plastic Pipe to Other Materials. Where connecting plastic pipe to other types of piping, approved types of adapter or transition designed for the specific transition intended shall be used. <u>Except as provided in the plumbing code, PVC and ABS pipe and fittings shall not be solvent welded to any other unlike material.</u>	Accept	UMC Discussion Motion to accept as submitted passed based on unanimous consent.
266	12. Hydronics	1211.5 Cross-Linked Polyethylene (PEX) Pipe. Joints between cross-linked polyethylene (PEX) pipe and fittings shall be installed with fittings for PEX tubing that comply with the applicable standards referenced in Table 1210.1. PEX tubing labeled in accordance with ASTM F876 <u>or ASTM F3253</u> shall be marked with the applicable standard designation for the fittings specified for	Accept	UMC Discussion Motion to accept as submitted passed based on unanimous consent.



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		use with the tubing. Mechanical joints shall be installed in accordance with the manufacturer’s installation instructions.		
268	12. Hydraulics	<p>1217.3 Radiant Cooling Systems. Radiant cooling systems shall be designed to minimize the potential for condensation. To prevent condensation on any cooled radiant cooling system shall be not less than 3°F (2°C) above the anticipated space dewpoint temperature, or in accordance with the manufacturer’s recommendation.</p> <p>1217.4 Chilled Water Supply/Distribution Piping. Chilled water piping, valves, and fittings, <u>and manifolds</u> shall be insulated and vapor sealed to prevent surface condensation.</p> <p><u>Exception: Piping, valves, fittings, and manifolds used to supply radiant cooling systems and where the water temperature is above the space dewpoint temperature shall not require insulation.</u></p>	Reject	UMC Discussion Motion to reject passed based on unanimous consent.
273	12. Hydraulics	<p>1221.0 Piping Installation.</p> <p>1221.2 Embedded Piping Materials and Joints. (remaining text unchanged)</p> <p>1221.2.3 Plastics. Plastic pipe and tubing shall be installed in continuous lengths or shall be joined by heat fusion methods, <u>solvent cement</u>, or other approved fittings in accordance with Table 1210.1 and the manufacturer’s installation instructions.</p> <p>Exception: Solvent cement joints.</p>	Reject	<p>ASA Position Support</p> <p>UMC Discussion Anecdotal testimony from UMC members indicated field issues with solvent cement joints. Motion to reject passed based on unanimous consent.</p>
275	13. Fuel Gas Piping	<p>1301.0 Scope of Gas Piping.</p> <p>1301.1 Applicability. The regulations of this chapter shall govern the installation of fuel gas piping in or in connection with a building, structure or within the property lines of premises up to 5 pounds-force per square inch (psi) (34 kPa) for natural gas and 10 psi (69 kPa) for undiluted propane, other than service pipe. Fuel oil piping systems shall be installed in accordance with NFPA 31 <u>and the manufacturer’s installation instructions.</u> <u>Above-ground piping systems shall be listed and labeled in accordance with</u></p>	Reject	UMC Discussion Motion to reject passed based on unanimous consent. Issue with the phrase “listed and labeled” and some were not aware of UL 971A.



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		<u>UL 1369. Metallic underground piping systems shall be listed and labeled in accordance with UL 971A. Non-metallic underground piping systems shall be listed and labeled in accordance with UL 971.</u>		
281	13. Fuel Gas Piping	Add IAPMO PS 95-2018 – Pipe Support Hangers and Hooks to 1310.0 Gas Piping Installation 1310.3 Installation of Aboveground Piping, 1310.3.5 Hangers, Supports, and Anchors.	Accept as Modified	UMC Discussion: Motion to accept as Modified. Modified to delete last sentence and simply add “or IAPMO PS 95” after MSS SP-58. Motion passed based on unanimous consent.



2021

**UPC[®] TECHNICAL
COMMITTEE MEETING
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VIRTUAL MEETING | **MAY 3 - 7, 2021**



CODES ADMINISTRATION

Proposals

Item #: 014

UPC 2024 Section: 209.0

SUBMITTER: Karan Kapila
Self

RECOMMENDATION:
Revise text

209.0 – G –

Gas Piping. An installation of pipe, valves, or fittings that are used to convey fuel gas, installed on a premise or in a building, ~~but shall not include:~~

~~(1) A portion of the service piping.~~

~~(2) An approved piping connection 6 feet (1829 mm) or less in length an existing gas outlet and a gas appliance in the same room with the outlet.~~

(below shown for reference only)

1202.0 Coverage of Piping System.

1202.1 General. Coverage of piping systems shall extend from the point of delivery to the appliance connections. For other than undiluted liquefied petroleum gas (LP-Gas) systems, the point of delivery shall be the outlet of the service meter assembly or the outlet of the service regulator or service shutoff valve where no meter is provided. For undiluted LP-Gas systems, the point of delivery shall be considered to be the outlet of the final pressure regulator, exclusive of line gas regulators where no meter is installed. Where a meter is installed, the point of delivery shall be the outlet of the meter. [NFPA 54:1.1.1.1(A)]

1212.0 Appliance and Equipment Connections to Building Piping.

1212.3.1 Indoor. Indoor gas hose connectors shall be used only to connect laboratory, shop, and ironing appliances requiring mobility during operation and installed in accordance with the following:

(1) An appliance shutoff valve shall be installed where the connector is attached to the building piping.

(2) The connector shall be of minimum length and shall not exceed 6 feet (1829 mm).

(3) The connector shall not be concealed and shall not extend from one room to another or pass through wall partitions, ceilings, or floors. [NFPA 54:9.6.2(1)]

SUBSTANTIATION:

The change is removing the term “shall” from the definition for “Gas Piping” as the IAPMO Manual of Style indicates that definitions shall not be written in mandatory language.

The language in (1) is not necessary as it is already covered under the 1202.1 (General) indicating that gas piping systems extend from the point of delivery.

The change also removes (2), the “limit of 6 feet” and “within the same room” for gas connectors as it does not belong in a definition. Furthermore, the limit of 6 feet is already addressed in Section 1212.3.1 (Indoor) for nonmetallic gas hose connectors.



CODES ADMINISTRATION

Proposals

Item #: 020

UPC 2024 Section: 215.0

SUBMITTER: Shane Peters
City of Santa Monica

RECOMMENDATION:
Add new text

215.0 – M –

Mid-Story Guide. A support designed to keep piping in alignment, located half-way between floors or a floor and ceiling.

SUBSTANTIATION:

The term is used several times in Table 313.3 but not defined in the code. This will assist the end user on the intent of such term.



CODES ADMINISTRATION

Proposals

Item #: 024

UPC 2024 Section: 222.0

SUBMITTER: Bruce A Pfeiffer
Retired - City of Topeka

RECOMMENDATION:
Add new text

222.0 -T-

Thermoplastic. A type of plastic made of polymer resins that becomes soft and pliable when heated, reverting to its original hard form when cooled. This type of plastic material is used when joining pipe and fittings utilizing heat-fusion welding methods. Thermoplastic pipe and fittings do not show chemical property changes when they are heated and cooled multiple times.

SUBSTANTIATION:

With thermoplastic pipe and fittings becoming more prominent in the industry, a definition is needed in the UPC to describe the properties of the material and how it is being used.



CODES ADMINISTRATION

Proposals

Item #: 025

UPC 2024 Section: 224.0

SUBMITTER: Adam Segura
Self

RECOMMENDATION:
Revise text

224.0 – V –

Vacuum Relief Valve. A device that automatically allows air to enter the piping system to prevents conditions that could siphon water from the system and prevent excessive vacuum in a pressure vessel.

SUBSTANTIATION:

The proposed language broadens the definition of a vacuum relief valve as used in a plumbing system. The valve is not only protecting the pressure vessel from excessive vacuum, but also preventing conditions that could siphon the water from system and possibly cause damage to water heater and equipment.



CODES ADMINISTRATION

Proposals

Item #: 029

UPC 2024 Section: 301.2.4, 313.8, 313.9, Table 1701.1, Table 1701.2

SUBMITTER: Mr John Wilson
Taylor Kerr Engineering Ltd (Teekay Couplings)

RECOMMENDATION:
Revise text

301.0 General.

301.2.4 Cast-Iron Soil Pipe, Fittings, and Hubless Couplings. Cast-iron soil pipe, fittings, and hubless couplings shall be third party certified in accordance with ASTM C1277, and CISPI 310 or ASTM F1476 for couplings and ASTM A888, ASTM A74, and CISPI 301 for pipes and fittings.

313.0 Hangers and Supports.

313.8 Pipe Anchorage. Anchorage shall be provided to restrain drainage piping from axial movement.
313.9 Location. For pipe sizes more 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 and restrained shall be utilized.

**TABLE 1701.1
REFERENCED STANDARDS**

STANDARD NUMBER	STANDARD TITLE	APPLICATION	REFERENCED SECTION
ASTM F1476-2007(R2019)	Performance of Gasketed Mechanical Couplings for Use in Piping Applications	Joints	301.2.4

(portions of table not shown remain unchanged)

Note: ASTM F1476 meets the requirements for mandatory referenced standards in accordance with Section 3-3.7.1 of IAPMO's Regulations Governing Committee Projects.

**TABLE 1701.2
STANDARDS, PUBLICATIONS, PRACTICES, AND GUIDES**

DOCUMENT NUMBER	DOCUMENT TITLE	APPLICATION
ASTM F1476-2007(R2013)	Performance of Gasketed Mechanical Couplings for Use in Piping Applications	Joints

(portions of table not shown remain unchanged)

SUBSTANTIATION:

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 updated. 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.



CODES ADMINISTRATION

Proposals

Item #: 031

UPC 2024 Section: 301.6

SUBMITTER: Phillip H Ribbs
PHR Consultants

RECOMMENDATION:
Add new text

301.0 General.

301.6 Tall Wood (Mass Timber) Buildings. Plumbing systems installed in Type IV-A, Type IV-B, or Type IV-C tall wood (mass timber) buildings, shall comply with the following:

- (1) Be designed by a licensed plumbing contractor or a registered design professional in accordance with this code and the building code.
- (2) Have a flame-spread index of not more than 25 and a smoke developed index of not more than 50, where tested in accordance with ASTM E84 or UL 723.
- (3) Be designed to accommodate expansion, contraction, and differential movement between parts of a mass timber building.

SUBSTANTIATION:

The building codes include Type IV tall wood building (also known as mass timber construction) which are constructed with fire resistive ratings of either three or two hours. Proposed Section 301.6 provides information and direction for fire resistive ratings associated with mass timber construction.

Additionally, the language is adding prescriptive requirements for allowance of expansion and contraction of mass timber buildings either during or after completion of construction. Current studies are monitoring the moisture performance of mass timber building during construction utilizing monitors, and there is indication that the mass timber expands during construction and contracts over time. Proposed Section 301.6 provides guidance for the plumbing system design within wood buildings constructed of Type IV-A , Type IV-B , or Type IV-C.



CODES ADMINISTRATION

Proposals

Item #: 032

UPC 2024 Section: 305.8, 305.8.1, 305.8.2

SUBMITTER: Robert Nicholas (Don Illingworth & Assoc., Inc., Structural Engineers Association of Texas); R. Craig McKee, P.E. (Huckabee, Inc.)

RECOMMENDATION:
Add new text

305.0 Damage to Drainage System or Public Sewer.

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 Section 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 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.

SUBSTANTIATION:

The UPC currently does not 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 14 page supporting document.

Supporting document(s) has been provided to the Technical Committee for review.



CODES ADMINISTRATION

Proposals

Item #: 035

UPC 2024 Section: 310.1

SUBMITTER: Bruce A Pfeiffer
Retired - City of Topeka

RECOMMENDATION:
Revise text

310.0 Prohibited Fittings and Practices.

310.1 Fittings. No double hub fitting, single or double tee branch, single or double tapped tee branch, side inlet quarter bend, running thread, band, or saddle shall be used as a drainage fitting, ~~except that a double hub sanitary tapped tee shall be permitted to be used on a vertical line as a fixture connection.~~

SUBSTANTIATION:

According to representatives of the Cast Iron Soil Pipe Institute (CISPI), the double hub sanitary tapped tee has not been made for 75 years. The reference to this fitting needs to be removed from the Code.



CODES ADMINISTRATION

Proposals

Item #: 036

UPC 2024 Section: 310.9

SUBMITTER: Arnie Rodio
Self

RECOMMENDATION:
Add new text

310.0 Prohibited Fittings and Practices.

310.9 ABS and PVC Transition Joints. Except as provided in Section 705.9.4, PVC and ABS pipe and fittings shall not be solvent welded to any other unlike material.

(below shown for reference only)

705.9.4 Transition Joint. A solvent cement transition joint between ABS and PVC building drain and building sewer shall be made using listed transition solvent cement in accordance with ASTM D3138.

SUBSTANTIATION:

The current language under Section 705.9.4 allows for a single transition from ABS to PVC or PVC to ABS exterior of the structure. Transition glue is not being represented to be allowable to make transition joints between ABS and PVC anywhere in the building. This code change clarifies that this practice is not approved. I have seen residences where the below slab plumbing was PVC and then the above slab plumbing all PVC with the joints being made with transition glue. This is an improper use of the product. There is a separate code change to place this proposed change in Section 705.10.3; however, it is also important that this be in the general regulations as a prohibited practice.



CODES ADMINISTRATION

Proposals

Item #: 037

UPC 2024 Section: 310.9

SUBMITTER: Arnie Rodio
Self

RECOMMENDATION:
Add new text

310.0 Prohibited Fittings and Practices.

310.9 Female Plastic Connections. Female plastic threaded connections shall not be allowed to be used when threaded onto a male metallic connection.

SUBSTANTIATION:

It is common practice for installers to use female plastic fittings in installations where a male metal outlet is. This is common on condensate pans and HVAC units. It is often use at water services where a metal nipple is used. This issue is that this type of installation often cracks and then leaks or floods. When the female fitting is over tightened (which is hard not to do as there is no way to really torque it) it creates a stress on the fitting. Plastic products relieve stress by cracking. It is also important that this be in the general regulations as a clearly prohibited practice.



CODES ADMINISTRATION

Proposals

Item #: 039

UPC 2024 Section: 312.9, Table 1701.1, Table 1701.2

SUBMITTER: Bruce A Pfeiffer
Retired - City of Topeka

RECOMMENDATION:
Revise text

312.0 Protection of Piping, Materials, and Structures.

312.9 Steel Nail Plates. Plastic and copper or copper alloy piping penetrating framing members to within 1 inch (25.4 mm) of the exposed framing shall be protected by steel nail plates not less than No. 18 gauge (0.0478 inches) (1.2 mm) in thickness. The steel nail plate shall extend along the framing member not less than 1 1/2 inches (38 mm) beyond the outside diameter of the pipe or tubing. Steel nail plates shall comply with IAPMO IGC 193. Exception: See Fuel gas piping shall be protected in accordance with Section 1210.4.3.

**TABLE 1701.1
REFERENCED STANDARDS**

STANDARD NUMBER	STANDARD TITLE	APPLICATION	REFERENCED SECTION
IAPMO IGC 193-2020	Safety Plates, Plate Straps, Notched Plates and Safety Collars	Miscellaneous	312.9

(portions of table not shown remain unchanged)

Note: IAPMO IGC 193 meets the requirements for a mandatory referenced standard in accordance with Section 3-3.7.1 of IAPMO's Regulations Governing Committee Projects.

**TABLE 1701.2
STANDARDS, PUBLICATIONS, PRACTICES, AND GUIDES**

DOCUMENT NUMBER	DOCUMENT TITLE	APPLICATION
IAPMO IGC 193-2010	Safety Plates, Plate Straps, Notched Plates and Safety Collars	Miscellaneous

(portions of table not shown remain unchanged)

SUBSTANTIATION:

The section is being revised to add the existing standard for safety plates for the protection of concealed pipes running through the framing of a building. These plates are used in the industry on a daily basis and the standard will ensure such plates meet minimum safety requirements. Additionally, fuel gas tubing is required to be protected by specific requirements in Section 1210.4.3 which may include steel plates. Therefore, not an exception.



CODES ADMINISTRATION

Proposals

Item #: 040

UPC 2024 Section: 312.13, 312.13.1, 312.13.2

SUBMITTER: R. Craig McKee, PE
Huckabee, Inc.

RECOMMENDATION:
Add new text

312.0 Protection of Piping, Materials, and Structures.

312.13 Expansive Soil. Where expansive soil is identified but not removed under foundations, plumbing shall be protected in accordance with Section 312.13.1 or Section 312.13.2.

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

312.13.2 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.

Exception: It shall be permitted to bury plumbing that provides drainage of an under-floor space.

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 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 voidspace unless the under-floor space is a crawlspace with access to allow inspection of plumbing after lifting.

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

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

SUBSTANTIATION:

The UPC currently does not 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.

Supporting document(s) has been provided to the Technical Committee for review.



CODES ADMINISTRATION

Proposals

Item #: 041

UPC 2024 Section: 313.0, 313.1, 313.2

SUBMITTER: Phillip H Ribbs
PHR Consultants

RECOMMENDATION:
Revise text

313.0 Hangers, ~~and~~ Supports, ~~and~~ Anchors.

313.1 General. Piping, fixtures, appliances, and appurtenances shall be supported in accordance with this code, the manufacturer's installation instructions, and in accordance with the Authority Having Jurisdiction. Seismic restraints shall be in accordance with the building code.

313.2 Material. Hangers, supports, and anchors shall be of sufficient strength to support the weight of the pipe and its contents. Piping shall be isolated from incompatible materials.

SUBSTANTIATION:

The proposed text is adding seismic restraints to ensure these provisions are not overlooked when designing or working in areas prone to seismic conditions. Additionally, "anchors" is being added to the title as the subsections also include anchors.



Proposals

Item #: 042

UPC 2024 Section: 313.5

SUBMITTER: Armando Barragan
Self

RECOMMENDATION:
Add new text

313.0 Hangers and Supports.

313.4 Seismic-Support. Where required by the building code, seismic restraints, anchorage, supports, and bracing for plumbing piping shall be provided in accordance with the building code.

313.5 Horizontal Restraints. Drainage piping that makes a horizontal-to-horizontal change in direction greater than 45 degrees (0.79 rad) shall be supported by one of the following methods or by other approved means:

(1) Suspended drainage piping 4 inches (102 mm) or larger shall be rigidly supported by bracing or similar restraint to resist the pipe movement in the direction of flow.

(2) Drainage piping 4 inches (102 mm) or larger supported in trenches shall be restraints to prevent separation of fittings using thrust blocking or similar restraint.

313.6 Axial Movement. Drainage piping shall be anchored or similarly restrained to prevent axial movement between joints.

(renumber remaining sections)

SUBSTANTIATION:

There are currently no provisions that speak on the thrust forces from the momentum of the waste within drainage piping. The combination of the mass and velocity can create a force that can quite large and can cause damage to the piping, fittings, or surrounding. These provisions need to be taken into account when the drainage piping makes sharp turns beyond a 45 degree angle. Additionally, there needs to be a reference for protection against seismic forces.



CODES ADMINISTRATION

Proposals

Item #: 043

UPC 2024 Section: 314.2, 314.2.1

SUBMITTER: Armando Barragan
Self

RECOMMENDATION:
Revise text

314.0 Trenching, Excavation, and Backfill.

314.2 Tunneling and Driving. Tunneling and driving shall be permitted to be done in yards, courts, or driveways of a building site. Where sufficient depth is available to permit, tunnels shall be permitted to be used between open-cut trenches. The length of the tunneling shall be the distance required to clear the obstacle above.

Tunnels shall have a clear height of 2 feet (610 mm) above the pipe and shall be limited in length to one-half the depth of the trench, with a maximum length of 8 feet (2438 mm). Where pipes are driven, the drive pipe shall be not less than one size larger than the pipe to be laid.

314.2.1 Tunnels. Pipe installed in tunnels via tunneling or jacking shall be protected from uneven loading. Supporting structures, walls, and ceilings shall be designed to withstand the earth loads and account for earth movement and settling.

SUBSTANTIATION:

Where pipe is to be installed by jacketing or tunneling to clear a slab, driveway, or other paved area, such tunnels should not be longer than necessary, as it is difficult to refill with the appropriate backfill in longer tunnels.

Furthermore, a new section is being added to address the earth loads that must be taken into account for any tunneling and to account for any earth settlement in order to protect the piping within.



CODES ADMINISTRATION

Proposals

Item #: 045

UPC 2024 Section: 321.0 – 321.3

SUBMITTER: Joanne Carroll
Subtegitic Group Inc.

RECOMMENDATION:
Add new text

321.0 Trenchless Methodology.

321.1 General. Trenchless methodology for shall be permitted for replacement or rehabilitation of drainage piping, building sewers or building storm sewers in accordance with Section 321.2 or Section 321.3.

321.2 Cured-In-Place Pipe. Cured-in-place pipe materials shall be in accordance with Section 715.3.

321.3 Pipe Bursting. Pipe bursting trenchless methodology shall use high density polyethylene (HDPE) in compliance with ASTM F714.

Note: ASTM F714 meets the requirements for a mandatory referenced standard in accordance with Section 3-3.7.1 of IAPMO's Regulations Governing Committee Projects.

SUBSTANTIATION:

There are instances where under slab and buried piping requires replacement or repair and excavation is difficult or even impossible. The addition of this section will provide clarity for the use of trenchless methodology in accordance with existing referenced standards in the code.



CODES ADMINISTRATION

Proposals

Item #: 133

UPC 2024 Section: 604.1

SUBMITTER: Pennie Feehan
Pennie L Feehan Consulting
Rep. Copper Development Association

RECOMMENDATION:
Revise text

604.0 Materials.

604.1 Pipe, Tube, and Fittings. Pipe, tube, fittings, solvent cement, thread sealants, solders, and flux used in potable water systems intended to supply drinking water shall comply with NSF 61. Where ~~copper alloys pipe~~ fittings and valves ~~are made from copper alloys~~ containing more than 15 percent zinc by weight ~~and are~~ used in plastic piping systems, ~~they~~ shall be ~~resistant to dezincification and stress corrosion cracking~~ in compliance with NSF 14.

Materials used in the water supply system, except valves and similar devices, shall be of a like material, except where otherwise approved by the Authority Having Jurisdiction.

Materials for building water piping and building supply piping shall comply with the applicable standards referenced in Table 604.1.

SUBSTANTIATION:

The original sentence is confusing and wordy. This code section was created because of a manufacturing issue that has been corrected in NSF 14 - Plastics Piping System Components and Related Materials, Section 5.8.



CODES ADMINISTRATION

Proposals

Item #: 135

UPC 2024 Section: Table 604.1, Table 1701.1, Table 1701.2

SUBMITTER: Bruce A Pfeiffer
Retired - City of Topeka

RECOMMENDATION:
Revise text

**TABLE 604.1
MATERIALS FOR BUILDING SUPPLY AND WATER DISTRIBUTION
PIPING AND FITTINGS**

MATERIAL	BUILDING SUPPLY PIPE AND FITTINGS	WATER DISTRIBUTION PIPE AND FITTINGS	REFERENCED STANDARD(S) PIPE	REFERENCED STANDARD(S) FITTINGS
Copper and Copper Alloys	X	X	ASTM B42, ASTM B43, ASTM B75, ASTM B88, ASTM B135, ASTM B251, ASTM B302, ASTM B447	ASME B16.15, ASME B16.18, ASME B16.22, ASME B16.26, ASME B16.50 ² , ASME B16.51, ASSE 1061, ASTM F3226, AWWA C606 , CSA B242 , IAPMO PS 53 , IAPMO PS 117
CPVC	X	X	ASTM D2846, ASTM F441, ASTM F442, CSA B137.6	ASSE 1061, ASTM D2846, ASTM F437, ASTM F438, ASTM F439, ASTM F1970, CSA B137.6, IAPMO PS 53
Ductile-Iron	X	X	AWWA C151	ASME B16.4, AWWA C110, AWWA C153, AWWA C606 , CSA B242 , IAPMO PS 53
Galvanized Steel	X	X	ASTM A53	AWWA C606 , CSA B242 , IAPMO PS 53
Malleable Iron	X	X	—	ASME B16.3, AWWA C606 , IAPMO PS 53
PVC	X ¹	—	ASTM D1785, ASTM D2241, AWWA C900	ASTM D2464, ASTM D2466, ASTM D2467, ASTM F1970, AWWA C907, IAPMO PS 53
Stainless Steel	X	X	ASTM A269, ASTM A312, ASTM A554, ASTM A778	ASTM F3226, CSA B242 , IAPMO PS 53 , IAPMO PS 117

(portions of table not shown remain unchanged)

**TABLE 1701.1
REFERENCED STANDARDS**

STANDARD NUMBER	STANDARD TITLE	APPLICATION	REFERENCED SECTION
AWWA C606-2015	Grooved and Shouldered Joints	Joints	Table 604.1
CSA B242-2005 (R2016)	Groove- and Shoulder-Type Mechanical Pipe Couplings	Fittings	Table 604.1
IAPMO PS 53-2020	Grooved Mechanical Pipe Couplings and Grooved Fittings	Fittings	Table 604.1

(portions of table not shown remains unchanged)

Note: AWWA C606, CSA B242, and IAPMO PS 53 meet the requirements for mandatory referenced standards in accordance with Section 3-3.7.1 of IAPMO's Regulations Governing Committee Projects.

**TABLE 1701.2
STANDARDS, PUBLICATIONS, PRACTICES, AND GUIDES**

DOCUMENT NUMBER	DOCUMENT TITLE	APPLICATION
AWWA C606-2015	Grooved and Shouldered Joints	Joints
CSA B242-2005 (R2016)	Groove- and Shoulder-Type Mechanical Pipe Couplings	Fittings
IAPMO PS 53-2016a	Grooved Mechanical Pipe Couplings and Grooved Fittings	Joints

(portions of table not shown remains unchanged)

SUBSTANTIATION:

These fitting standards cover grooved mechanical pipe couplings and grooved fittings for pressure applications. These types of fittings are not currently covered in the codes, but are widely used in the industry for water distribution applications.





CODES ADMINISTRATION

Proposals

Item #: 136

UPC 2024 Section: Table 604.1, Table 1701.1, Table 1701.2

SUBMITTER: Mr John Wilson
Taylor Kerr Engineering Ltd (Teekay Couplings)

RECOMMENDATION:
Revise text

TABLE 604.1
MATERIALS FOR BUILDING SUPPLY AND WATER DISTRIBUTION PIPING AND FITTINGS

MATERIAL	BUILDING SUPPLY PIPE AND FITTINGS	WATER DISTRIBUTION PIPE AND FITTINGS	REFERENCED STANDARD(S) PIPE	REFERENCED STANDARD(S) FITTINGS
Copper and Copper Alloys	X	X	ASTM B42, ASTM B43, ASTM B75, ASTM B88, ASTM B135, ASTM B251, ASTM B302, ASTM B447	ASME B16.15, ASME B16.18, ASME B16.22, ASME B16.26, ASME B16.50 ² , ASME B16.51, ASSE 1061, ASTM F1476 , ASTM F3226, IAPMO PS 117
CPVC	X	X	ASTM D2846, ASTM F441, ASTM F442, CSA B137.6	ASSE 1061, ASTM D2846, ASTM F437, ASTM F438, ASTM F439, ASTM F1476 , ASTM F1970, CSA B137.6
Ductile-Iron	X	X	AWWA C151	ASME B16.4, ASTM F1476 , AWWA C110, AWWA C153
Galvanized Steel	X	X	ASTM A53	— ASTM F1476
PE	X ¹	—	ASTM D2239, ASTM D2737, ASTM D3035, AWWA C901, CSA B137.1	ASTM D2609, ASTM D2683, ASTM D3261, ASTM F1055, ASTM F1476 , CSA B137.1
PP	X	X	ASTM F2389, CSA B137.11	ASTM F1476 , ASTM F2389, CSA B137.11

PVC	X ¹	—	ASTM D1785, ASTM D2241, AWWA C900	ASTM D2464, ASTM D2466, ASTM D2467, <u>ASTM F1476</u> , ASTM F1970, AWWA C907
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Notes:

¹ For building supply or exterior cold-water applications, not for water distribution piping.

² For brazed fittings only

(portions of table not shown remains unchanged)

**TABLE 1701.1
REFERENCED STANDARDS**

STANDARD NUMBER	STANDARD TITLE	APPLICATION	REFERENCED SECTION
<u>ASTM F1476-2007</u> <u>(R2019)</u>	<u>Performance of Gasketed Mechanical Couplings for Use in Piping Applications</u>	<u>Joints</u>	<u>705.8.1</u>

(portions of table not shown remains unchanged)

Note: ASTM F1476 meets the requirements for a mandatory referenced standard in accordance with Section 3-3.7.1 of IAPMO's Regulations Governing Committee Projects.

**TABLE 1701.2
STANDARDS, PUBLICATIONS, PRACTICES, AND GUIDES**

DOCUMENT NUMBER	DOCUMENT TITLE	APPLICATION
<u>ASTM F1476-2007</u> <u>(R2013)</u>	<u>Performance of Gasketed Mechanical Couplings for Use in Piping Applications</u>	<u>Joints</u>

(portions of table not shown remains unchanged)

SUBSTANTIATION:

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 updated. 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.



CODES ADMINISTRATION

Proposals

Item #: 137

UPC 2024 Section: Table 604.1, Table 1701.1

SUBMITTER: Mark Fasel
Viega LLC

RECOMMENDATION:
Revise text

**TABLE 604.1
MATERIALS FOR BUILDING SUPPLY AND WATER DISTRIBUTION PIPING AND FITTINGS**

MATERIAL	BUILDING SUPPLY PIPE AND FITTINGS	WATER DISTRIBUTION PIPE AND FITTINGS	REFERENCED STANDARD(S) PIPE	REFERENCED STANDARD(S) FITTINGS
Stainless Steel	X	X	ASTM A269, ASTM A312, ASTM A554, ASTM A778	ASTM F3226, IAPMO IGC 353 , IAPMO PS 117

(portions of table not shown remains unchanged)

**TABLE 1701.1
REFERENCED STANDARDS**

STANDARD NUMBER	STANDARD TITLE	APPLICATION	REFERENCED SECTION
IAPMO IGC 353-2019^{e1}	Branch Connectors	Connectors	Table 604.1

(portions of table not shown remains unchanged)

Note: IAPMO IGC 353 meets the requirements for a mandatory referenced standard in accordance with Section 3-3.7.1 of IAPMO's Regulations Governing Committee Projects.

SUBSTANTIATION:

The IAPMO IGC 353 Branch Connectors standard was developed for branch connectors NPS 1 1/2" - 6 inches.

Branch connectors are defined within the standard as a permanent fitting or connection that allows a NPT threaded branch connection to be added to existing piping.

Branch connectors covered by IAPMO IGC 353 shall include:

- (a) Saddle like permanent connection mechanically fixed in place to the host pipe; and
- (b) leak tight seal realized through the compression of a sealing element between the outer surface of the pipe and body or flange of the branch connector.

Note: One method of mechanically fixing the branch connection is via a swaging action which secures the fitting by mechanically deforming a flange of metal attached to the branch connector so that it matches the contour of the inside surface of a host pipe as indicated in Section 1.1.2 of IAPMO IGC 353.

Section 4.2.1 of the standard requires that materials and components of a branch connector intended to convey or dispense water for human consumption through drinking or cooking shall comply with the applicable requirements of NSF/61 and the applicable low-lead requirements.

The addition of this standard to the Materials for building supply and water distribution piping and fittings table provides a consensus developed standard branch connector fittings can be listed to for use in potable water applications with stainless steel pipe.



CODES ADMINISTRATION

Proposals

Item #: 138

UPC 2024 Section: Table 604.1, Table 1701.1

SUBMITTER: Michael Cudahy
PPFA

RECOMMENDATION:
Revise text

**TABLE 604.1
MATERIALS FOR BUILDING SUPPLY AND WATER DISTRIBUTION PIPING AND FITTINGS**

MATERIAL	BUILDING SUPPLY PIPE AND FITTINGS	WATER DISTRIBUTION PIPE AND FITTINGS	REFERENCED STANDARD(S) PIPE	REFERENCED STANDARD(S) FITTINGS
PE-RT	X	X	ASTM F2769, CSA B137.18	ASSE 1061, ASTM D3261, ASTM F1055, ASTM F1807, ASTM F2098, ASTM F2159, ASTM F2735, ASTM F2769, ASTM F3347 , ASTM F3348 , CSA B137.18
PEX	X	X	ASTM F876, CSA B137.5, AWWA C904 ¹	ASSE 1061, ASTM F877, ASTM F1807, ASTM F1960, ASTM F2080, ASTM F2159, ASTM F2735, ASTM F3347 , ASTM F3348 , CSA B137.5

(portions of table not shown remains unchanged)

**TABLE 1701.1
REFERENCED STANDARDS**

STANDARD NUMBER	STANDARD TITLE	APPLICATION	REFERENCED SECTION
ASTM F3347-2020a	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	Fittings	Table 604.1
ASTM F3348-2020b	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	Fittings	Table 604.1

(portions of table not shown remains unchanged)

Note: ASTM F3347 and ASTM F3348 meet the requirements for mandatory referenced standards in accordance with Section 3-3.7.1 of IAPMO's Regulations Governing Committee Projects.

SUBSTANTIATION:

Proposal adds ASTM F3347, 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 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 to the Piping System table.



CODES ADMINISTRATION

Proposals

Item #: 139

UPC 2024 Section: 604.2

SUBMITTER: Cameron Rapoport
Watts Water Technologies

RECOMMENDATION:
Revise text

604.0 Materials.

604.2 Lead Content. The maximum allowable lead content in pipes, pipe fittings, plumbing fittings, and fixtures intended to convey or dispense water for human consumption shall be not more than a weighted average of 0.25 percent with respect to the wetted surfaces of pipes, pipe fittings, plumbing fittings, and fixtures. For solder and flux, the lead content shall be not more than 0.2 percent where used in piping systems that convey or dispense water for human consumption.

Exceptions:

- (1) Pipes, pipe fittings, plumbing fittings; ~~or fixtures or back-flow preventers~~ used for nonpotable services such as manufacturing, industrial processing, irrigation, outdoor watering, or any other uses where the water is not used for human consumption.
- (2) Flush valves, fill valves, flushometer valves, tub fillers, shower valves, service saddles, or water distribution main gate valves that are 2 inches (50 mm) in diameter or larger.

SUBSTANTIATION:

Backflow preventers that are intended to convey water for use in non-potable services are in contact with potable water on the upstream side. Authorities Having Jurisdiction are increasingly requiring lead free backflow preventers in these applications (i.e. irrigation, fire) for this reason. This language would align with inspectors and increase water safety with respect to lead contact.



CODES ADMINISTRATION

Proposals

Item #: 140

UPC 2024 Section: 604.5, 604.12

SUBMITTER: Shane Peters
City of Santa Monica

RECOMMENDATION:
Revise text

604.0 Materials.

~~604.5 Flexible Connectors. Flexible water connectors shall be installed in readily accessible locations, and where under continuous pressure shall comply with ASME A112.18.6/CSA B125.6. Flexible water connectors with an excess flow shutoff device shall comply with CSA B125.5/IAPMO Z600.~~

~~604.12 Flexible Corrugated Connectors. Flexible corrugated connectors of copper, copper alloy, or stainless steel water connectors shall be installed in readily accessible locations and shall comply with ASME A112.18.6/CSA B125.6. Flexible water connectors with an excess flow shutoff device shall comply with CSA B125.5/IAPMO Z600. Such connectors shall be limited to the following connector lengths:~~

- ~~(1) Fixture Connectors – 30 inches (762 mm)~~
- ~~(2) Washing Machine Connectors – 72 inches (1829 mm)~~
- ~~(3) Dishwasher and Ice maker Connectors – 120 inches (3048 mm)~~
- ~~(4) Other Connections – 48 inches (1220 mm).~~

SUBSTANTIATION:

The change deletes Section 604.5 and relocates the language to Section 604.12. The existing language of Section 604.12 was added in 2000 (see original proposal and reason statement in at the end of the substantiation) while the field of flexible water connectors was still developing. The term “corrugated” still used in the section title now seems archaic for the current application described.

Corrugated connectors (see images below) are distinctive in appearance, were a very small portion of the market (perhaps is even smaller now) and were primarily developed for larger diameter connections. Certainly not for the relatively small and flexible diameters that serve fixture connectors, dishwasher and icemaker connections. They are not well suited for close radius change of directions like the 180° change required for most clothes washer connections.

All the Flexible Corrugated Connectors are listed to ASME A112.18.6/CSA B125.6.

Explanation:

1. Removes the specific materials section included and opens it to any material meeting the standard.
2. Removes the dubious statement “where under continuous pressure shall comply with...” They should comply with the standard whether under pressure or not.
- 3 Water Heater Connectors are still in the following section



604.11 Flexible Corrugated Connectors. Flexible corrugated connectors of copper or stainless steel shall be limited to the following connector lengths:

Water Heater Connectors – twenty-four inches (609 mm)

Fixture Connectors – thirty inches (762 mm)

Washing Machine Connectors – seventy-two inches (1827 mm)

Dishwasher and Icemaker Connectors – one hundred twenty inches (3048 mm)

Proponent: P.J. Higgins & Associates, Inc.

Reason for Code Revision:

Working with the listees, the Plumbing Research Committee has recommended these requirements for corrugated flexible connectors. The intent of this change is to limit the length of flexible supplies to a reasonable length, which may be found in field installations, and to prevent the flexible supply from being used as a branch line.

Code Committee's Recommendation:

Adopt Item 72



CODES ADMINISTRATION

Proposals

Item #: 141

UPC 2024 Section: 604.13

SUBMITTER: Lance MacNevin
Plastics Pipe Institute

RECOMMENDATION:
Revise text

604.0 Materials.

604.13 Water Heater Connectors. Flexible metallic (copper and stainless steel), reinforced flexible, braided stainless steel, or polymer braided with EPDM core connectors that connect a water heater to the piping system shall comply with ASME A112.18.6/CSA B125.6. Copper, copper alloy, or stainless steel flexible connectors shall not exceed 24 inches (610 mm). PEX, PEX-AL-PEX, PE-AL-PE, or PE-RT tubing shall not be installed within the first 18 inches (457 mm) of piping connected to a water heater.

Exception: PEX, PEX-AL-PEX, PE-AL-PE, or PE-RT tubing shall be permitted to be connected directly to tankless water heaters intended for domestic water applications.

SUBSTANTIATION:

PPI has conducted significant research on the topic of direct connection of plastic piping materials to tankless water heaters. The findings of the research were published in 2020 as "PPI Recommendation H: Direct Connection of Plastic Piping Materials to Tankless Water Heaters for Domestic (i.e. residential) Applications" published at <https://plasticpipe.org/pdf/recommendation-h-direct-connection-tankless.pdf>

The core findings are summarized in this paragraph: "Piping systems using the materials CPVC, PE-RT, PEX, and PP, which carry a pressure/ temperature rating of 100 psi at 180°F (690 kPa @ 82°C), and which are intended and certified for hot and cold potable water distribution systems according to industry standards and relevant codes, may be connected directly to tankless water heaters which are intended for domestic (i.e. residential) applications, unless prohibited by local plumbing code or the specific water heater manufacture."

Therefore, there is no reason to prohibit direct connection of these piping materials to tankless water heaters intended for domestic water applications. The proposed Exception will bring the UPC into harmonization with current industry practices which are supported in PPI Recommendation H.

The term "domestic" is well-established within this code. See definition for "Water Heater" in Chapter 2, Section 414.1, Section 609.12, and Table 610.3 as examples.



CODES ADMINISTRATION

Proposals

Item #: 142

UPC 2024 Section: 605.1.3, 605.2.1, 605.3.2, 605.4.1, 605.5.1, 605.6.2, 605.11.2, 605.12.1, 605.13.1, Table 1701.1, Table 1701.2

SUBMITTER: Mr John Wilson
Taylor Kerr Engineering Ltd (Teekay Couplings)

RECOMMENDATION:
Revise text

605.0 Joints and Connections.

605.1 Copper or Copper Alloy Pipe, Tubing, and Joints. (remaining text unchanged)

605.1.3 Mechanical Joints. Mechanical joints shall include, but are not limited to, compression, flanged, grooved, pressed, and push fit fittings.

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 and restrained, or approved joint designed for the specific application.

605.2 CPVC Plastic Pipe and Joints. (remaining text unchanged)

605.2.1 Mechanical Joints. Mechanical joints shall include compression, flanged, grooved and push fit fittings.

A mechanical joint shielded coupling for CPVC plastic shall have a metallic shield that complies with ASTM F1476 Type II Class 2 flexible and restrained or Type II Class 3 flexible and unstrained. The elastomeric seal shall comply with NSF/ANSI/CAN 61 or other suitable material that will cater for the effluent within the pipework system. The coupling shall be installed in accordance with manufacturer's installation instructions. The mechanical joint shall be treated as a permanent pipe seal.

605.3 CPVC/AL/CPVC Plastic Pipe and Joints. (remaining text unchanged)

605.3.1 Solvent Cement. (remaining text unchanged)

605.3.2 Mechanical Joints. Mechanical joints shall include flanged, grooved, flexible and restrained couplings and push fit fittings.

605.4 Ductile Iron Pipe and Joints. (remaining text unchanged)

605.4.1 Mechanical Joints. Mechanical joints for ductile iron pipe and fittings shall consist of a bell that is cast integrally with the pipe or fitting and provided with an exterior flange having bolt holes and a socket with annular recesses for the sealing gasket and the plain end of the pipe or fitting. The elastomeric gasket shall comply with AWWA C111. Lubricant recommended for potable water application by the pipe manufacturer shall be applied to the gasket and plain end of the pipe.

A mechanical joint shielded coupling for jointing ductile iron pipe should conform to ASTM F1476 Type II Class 2 flexible and restrained or Type II Class 3 flexible and unstrained, or AWWA C227 bolted split-sleeve coupling. Mechanical shields shall comply with either 304 or 316L stainless steel with alloy steel coated or 316 / 316L stainless steel fasteners. The elastomeric gasket shall comply with NSF/ANSI/CAN 61. The coupling shall be installed in accordance with manufacturer's installation instructions.

605.5 Galvanized Steel Pipe and Joints. (remaining text unchanged)

605.5.1 Mechanical Joints. Mechanical joints shall be made with an approved and listed elastomeric gasket.

Mechanical Joints shall be made with an elastomeric gasket or to ASTM F1476 Type II Class 2 flexible and restrained or Type II Class 3 flexible and unstrained. The elastomeric seal shall comply or shall comply with NSF/ANSI/CAN 61.

605.6 PE Plastic Pipe/Tubing and Joints. (remaining text unchanged)

605.6.2 Mechanical Joints. Mechanical joints between PE pipe or tubing and fittings shall include insert and mechanical compression fittings that provide a pressure seal resistance to pullout. Joints for insert fittings shall be made by cutting the pipe square, using a cutter designed for plastic piping, and removal of sharp edges. Two stainless steel clamps shall be placed over the end of the pipe. Fittings shall be checked for proper size based on the diameter of the pipe. The end of pipe shall be placed over the barbed insert fitting, making contact with the fitting shoulder. Clamps shall be positioned equal to 180 degrees (3.14 rad) apart and shall be tightened to provide a leak tight joint. Compression type couplings and fittings shall be permitted for use in joining PE piping and tubing. Stiffeners that extend beyond the clamp or nut shall be prohibited. Bends shall be not less than 30 pipe diameters, or the coil radius where bending with the coil. Bends shall not be permitted closer than 10 pipe diameters of a fitting or valve. Mechanical joints shall be designed for their intended use.

Mechanical Joints shall be made with an elastomeric gasket or to ASTM F1476 Type II Class 2 flexible and restrained or Type II Class 3 flexible and unstrained. The elastomeric seal shall comply with NSF/ANSI/CAN 61. The coupling shall be installed in accordance with manufacturer's installation instructions.

605.11 Polypropylene (PP) Piping and Joints. (remaining text unchanged)

605.11.2 Mechanical and Compression Sleeve Joints. Mechanical and compression sleeve joints shall be installed in accordance with the manufacturer's installation instructions.

Mechanical Joints shall be made with an elastomeric gasket or to ASTM F1476 Type II Class 2 flexible and restrained or Type II Class 3 flexible and unstrained. The elastomeric seal shall comply with NSF/ANSI/CAN 61. The coupling should be installed in accordance with manufacturer's installation instructions.

605.12 PVC Plastic Pipe and Joints. (remaining text unchanged)

605.12.1 Mechanical Joints. Mechanical joints shall be designed to provide a permanent seal and shall be of the mechanical or push-on joint. The mechanical joint shall include a pipe spigot that has a wall thickness to withstand without deformation or collapse; the compressive force exerted where the fitting is tightened. The push-on joint shall have a minimum wall thickness of the bell at any point between the ring and the pipe barrel. The elastomeric gasket shall comply with ASTM D3139, and be of such size and shape as to provide a compressive force against the spigot and socket after assembly to provide a positive seal.

Mechanical gasketed couplings with stainless steel casing shield and elastomer gasket ASTM F1476 Type II Class 2 flexible and restrained or Type II Class 3 flexible and unrestrained, shall be designed for its intended use.

605.13 Stainless Steel Pipe and Joints. (remaining text unchanged)

605.13.1 Mechanical Joints. Mechanical joints shall be designed for their intended use. Such joints shall include compression, flanged, grooved, press-connect, and threaded.

Mechanical joints between stainless steel pipe and fittings shall be of the compression, grooved coupling, hydraulic press-connect fittings, flanged or ASTM F1476 Type II Class 2 flexible and restrained or Type II Class 3 flexible and unstrained for plain ended pipes and fittings.

**TABLE 1701.1
REFERENCED STANDARDS**

STANDARD NUMBER	STANDARD TITLE	APPLICATION	REFERENCED SECTION
<u>ASTM F1476-2007(R2019)</u>	<u>Performance of Gasketed Mechanical Couplings for Use in Piping Applications</u>	<u>Joints</u>	<u>605.1.3, 605.2.1, 605.3.2, 605.4.1, 605.5.1, 605.6.2, 605.11.2, 605.12.1, 605.13.1</u>
<u>AWWA C227-2017</u>	<u>Bolted, Split-Sleeve Couplings</u>	<u>Joints</u>	<u>605.4.1</u>

(portions of table not shown remains unchanged)

Note: ASTM F1476, AWWA C227, and NSF/ANSI/CAN 61 meet the requirements for mandatory referenced standards in accordance with Section 3-3.7.1 of IAPMO's Regulations Governing Committee Projects.

**TABLE 1701.2
STANDARDS, PUBLICATIONS, PRACTICES, AND GUIDES**

DOCUMENT NUMBER	DOCUMENT TITLE	APPLICATION
ASTM F1476-2007(R2013)	Performance of Gasketed Mechanical Couplings for Use in Piping Applications	Joints

(portions of table not shown remains unchanged)

SUBSTANTIATION:

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 updated. 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.



CODES ADMINISTRATION

Proposals

Item #: 143

UPC 2024 Section: 605.1.3.3

SUBMITTER: Tyler Leighton
Watts Water Technologies

RECOMMENDATION:
Revise text

605.0 Joints and Connections.

605.1.3 Mechanical Joints. (remaining text unchanged)

605.1.3.3 Push Fit Fittings. Removable and nonremovable push fit fittings for copper or copper alloy tubing or pipe that employ quick assembly push fit connectors shall comply with ASSE 1061. Push fit fittings for copper or copper alloy pipe or tubing shall have an approved elastomeric o-ring that forms the joint. Pipe or tubing shall be cut square, chamfered, and reamed to full inside diameter. The tubing shall be fully inserted into the fitting, and the tubing marked at the shoulder of the fitting. The fitting alignment shall be checked against the mark on the tubing to ensure the tubing is inserted into the fitting and gripping mechanism has engaged on the pipe. [Fittings used in potable water systems intended to supply drinking water shall comply with NSF 61.](#)

SUBSTANTIATION:

The purpose of requiring NSF 61 and NSF 372 is to ensure the health and safety of everyone using these fittings in potable water applications. The provisions are consistent with those found in Section 604.1.



CODES ADMINISTRATION

Proposals

Item #: 144

UPC 2024 Section: 605.2.2

SUBMITTER: Forest Hampton
Lubrizol, Inc.

RECOMMENDATION:
Revise text

605.0 Joints and Connections.

605.2 CPVC Plastic Pipe and Joints. (remaining text unchanged)

605.2.2 Solvent Cement Joints. Solvent cement joints for CPVC pipe and fittings shall be clean from dirt and moisture. Solvent cements shall comply with ASTM F493, requiring the use of a primer shall be orange in color. The primer shall be colored and shall comply with ASTM F656. Listed solvent cement that complies with ASTM F493 and that does not require the use of primers, yellow, green, or red in color, shall be permitted for pipe and fittings that comply with ASTM D2846, 1/2 of an inch (15 mm) through 2 inches (50 mm) in diameter or ASTM F442, 1/2 of an inch (15 mm) through 3 inches (80 mm) in diameter. Apply primer where required inside the fitting and to the depth of the fitting on pipe. Apply liberal coat of cement to the outside surface of pipe to depth of fitting and inside of fitting. Place pipe inside fitting to forcefully bottom the pipe in the socket and hold together until joint is set.

SUBSTANTIATION:

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.



Proposals

Item #: 145

UPC 2024 Section: 605.2.2, 605.3.1, Table 1701.1, Table 1701.2

SUBMITTER: Michael Cudahy
PPFA

RECOMMENDATION:
Revise text

605.0 Joints and Connections.

605.2 CPVC Plastic Pipe and Joints. (remaining text unchanged)

605.2.2 Solvent Cement Joints. Solvent cement joints for CPVC pipe and fittings shall be clean from dirt and moisture. Solvent cements shall comply with ASTM F493, requiring the use of a primer shall be orange in color. The primer shall be colored and shall comply with ASTM F656. Listed solvent cement that complies with ASTM F493 and that does not require the use of primers, yellow or red in color, shall be permitted for pipe and fittings that comply with ASTM D2846, 1/2 of an inch (15 mm) through 2 inches (50 mm) in diameter or ASTM F442, 1/2 of an inch (15 mm) through 3 inches (80 mm) in diameter. Apply primer where required inside the fitting and to the depth of the fitting on pipe. Apply liberal coat of cement to the outside surface of pipe to depth of fitting and inside of fitting. [Follow ASTM D2855 for two-step joining and ASTM F3328 for one-step joining.](#) Place pipe inside fitting to forcefully bottom the pipe in the socket and hold together until joint is set.

605.3 CPVC/AL/CPVC Plastic Pipe and Joints. (remaining text unchanged)

605.3.1 Solvent Cement Joints. Solvent cement joints for CPVC/AL/CPVC pipe and fittings shall be clean from dirt and moisture. Solvent cements that comply with ASTM F493, requiring the use of a primer shall be orange in color. The primer shall be colored and shall comply with ASTM F656. Listed solvent cement that complies with ASTM F493 and that does not require the use of primers, yellow in color, shall be permitted to join pipe that comply with ASTM F2855 and fittings that comply with ASTM D2846, 1/2 of an inch (15 mm) through 2 inches (50 mm) in diameter. Apply primer where required inside the fitting and to the depth of the fitting on pipe. Apply liberal coat of cement to the outside surface of pipe to depth of fitting and inside of fitting. [Follow ASTM D2855 for two-step joining and ASTM F3328 for one-step joining.](#) Place pipe inside fitting to forcefully bottom the pipe in the socket and hold together until joint is set.

**TABLE 1701.1
REFERENCED STANDARDS**

STANDARD NUMBER	STANDARD TITLE	APPLICATION	REFERENCED SECTION
ASTM D2855-2020	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	Joints	605.2.2, 605.3.1
ASTM F3328-2018	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	Joints	605.2.2, 605.3.1

(portions of table not shown remains unchanged)

Note: ASTM D2855 and ASTM F3328 meet the requirements for mandatory referenced standards in accordance with Section 3-3.7.1 of IAPMO's Regulations Governing Committee Projects.

**TABLE 1701.2
STANDARDS, PUBLICATIONS, PRACTICES, AND GUIDES**

DOCUMENT NUMBER	DOCUMENT TITLE	APPLICATION
ASTM D2855-2015	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	Joints

(portions of table not shown remain unchanged)

SUBSTANTIATION:

There are two standards for solvent cement joining; 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."



CODES ADMINISTRATION

Proposals

Item #: 146

UPC 2024 Section: 605.12

SUBMITTER: Karan Kapila
Self

RECOMMENDATION:
Revise text

605.0 Joints and Connections.

605.12 PVC Plastic Pipe and Joints. PVC plastic pipe and fitting joining methods shall be installed in accordance with the manufacturer's installation instructions and shall comply with Section 605.12.1 through Section 605.12.3. PVC piping shall not be exposed to direct sunlight.

Exception: Piping that is exposed to sunlight shall be ~~unless the piping does not exceed 24 inches (610 mm) and is~~ wrapped with not less than 0.04 of an inch (1.02 mm) thick tape or otherwise protected from UV degradation.

SUBSTANTIATION:

As written, the section on UV protection of PVC pipe and fittings is very confusing. The portion is being separated into its own section and re-written for clarity. There is no need to put a 24 inch limit as any exposed PVC pipe shall be protected. This change will clarify the intent of the section.



CODES ADMINISTRATION

Proposals

Item #: 147

UPC 2024 Section: 605.12.2, Table 1701.1

SUBMITTER: Michael Cudahy
PPFA

RECOMMENDATION:
Revise text

605.0 Joints and Connections.

605.12 PVC Plastic Pipe and Joints. (remaining text unchanged)

605.12.2 Solvent Cement Joints. Solvent cement joints for PVC pipe and fittings shall be clean from dirt and moisture. Pipe shall be cut square and pipe shall be deburred. Where surfaces to be joined are cleaned and free of dirt, moisture, oil, and other foreign material, apply primer purple in color that complies with ASTM F656. Primer shall be applied to the surface of the pipe and fitting is softened. Solvent cement that complies with ASTM D2564 shall be applied to all joint surfaces. Joints shall be made while both the inside socket surface and outside surface of pipe are wet with solvent cement. Two-step joining methods shall be in accordance with ASTM D2855. Hold joint in place and undisturbed for 1 minute after assembly.

**TABLE 1701.1
REFERENCED STANDARDS**

STANDARD NUMBER	STANDARD TITLE	APPLICATION	REFERENCED SECTION
ASTM D2855-2020	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	Miscellaneous	605.12.2

(portions of table not shown remain unchanged)

Note: ASTM D2855 meets the requirements for mandatory reference standards in accordance with Section 3-3.7.1 of IAPMO's Regulations Governing Committee Projects.

SUBSTANTIATION:

The standard for solvent cement joining is 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"



Proposals

Item #: 150

UPC 2024 Section: 605.16.2, 605.16.3

SUBMITTER: Mr John Wilson
Taylor Kerr Engineering Ltd (Teekay Couplings)

RECOMMENDATION:
Revise text

605.0 Joints and Connections.

605.16 Joints Between Various Materials. (remaining text unchanged)

605.16.2 Plastic Pipe to Other Materials. Where connecting plastic pipe to other types of piping, approved types of adapter or transition fittings designed for the specific transition intended shall be used including stepped gasketed mechanical couplings.

605.16.3 Stainless Steel to Other Materials. Where connecting stainless steel pipe to other types of piping, mechanical joints couplings of the compression type, gasketed mechanical coupling-dielectric fitting, or dielectric union in accordance with ASSE 1079 and designed for the specific transition intended shall be used.

SUBSTANTIATION:

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 updated. 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.



CODES ADMINISTRATION

Proposals

Item #: 174

UPC 2024 Section: Table 701.2, Table 1701.1, Table 1701.2

SUBMITTER: Mr John Wilson
Taylor Kerr Engineering Ltd (Teekay Couplings)

RECOMMENDATION:
Revise text

TABLE 701.2
MATERIALS FOR DRAIN, WASTE, VENT PIPE AND FITTINGS

MATERIAL	UNDERGROUND DRAIN, WASTE, VENT PIPE AND FITTINGS	ABOVEGROUND DRAIN, WASTE, VENT PIPE AND FITTINGS	BUILDING SEWER PIPE AND FITTINGS	REFERENCED STANDARD(S) PIPE	REFERENCED STANDARD(S) FITTINGS
ABS (Schedule 40)	X	X	X	ASTM D2661, ASTM D2680*	ASME A112.4.4, ASTM D2661, ASTM D2680*, ASTM F1476
Cast-Iron	X	X	X	ASTM A74, ASTM A888, CISPI 301	ASME B16.12, ASTM A74, ASTM A888, ASTM F1476 , CISPI 301
Co-Extruded ABS (Schedule 40)	X	X	X	ASTM F628	ASME A112.4.4, ASTM D2661, ASTM D2680*, ASTM F1476
Co-Extruded Composite (Schedule 40)	X	X	X	ASTM F1488	ASME A112.4.4, ASTM D2661, ASTM D2665, ASTM F794*, ASTM F1476 , ASTM F1866
Co-Extruded PVC (Schedule 40)	X	X	X	ASTM F891, ASTM F1760	ASME A112.4.4, ASTM D2665, ASTM F794*, ASTM F1336*, ASTM F1476 , ASTM F1866
Copper and Copper Alloys (Type DWV)	X	X	X	ASTM B43, ASTM B75, ASTM B251, ASTM B302, ASTM B306	ASME B16.23, ASME B16.29, ASTM F1476
Galvanized Malleable Iron	—	X	—	—	ASME B16.3, ASTM F1476
Galvanized Steel	—	X	—	ASTM A53	— ASTM F1476

Polyethylene	—	—	X	ASTM F714, ASTM F894	— ASTM F1476
PVC (Schedule 40)	X	X	X	ASTM D1785, ASTM D2665, ASTM F794*	ASME A112.4.4, ASTM D2665, ASTM F794*, ASTM F1476 , ASTM F1866
PVC (Sewer and Drain)	—	—	X	ASTM D2729	ASTM D2729, ASTM F1476
PVC PSM	—	—	X	ASTM D3034	ASTM D3034, ASTM F1476
Stainless Steel 304	—	X	—	ASME A112.3.1	ASME A112.3.1, ASTM F1476
Stainless Steel 316L	X	X	X	ASME A112.3.1	ASME A112.3.1, ASTM F1476
Vitrified Clay (Extra strength)	—	—	X	ASTM C700	ASTM C700, ASTM F1476

* For building sewer applications.

**TABLE 1701.1
REFERENCED STANDARDS**

STANDARD NUMBER	STANDARD TITLE	APPLICATION	REFERENCED SECTION
ASTM F1476-2007(R2019)	Performance of Gasketed Mechanical Couplings for Use in Piping Applications	Joints	Table 701.2

(portions of table not shown remains unchanged)

Note: ASTM F1476 meets the requirements for a mandatory referenced standard in accordance with Section 3-3.7.1 of IAPMO's Regulations Governing Committee Projects.

**TABLE 1701.2
STANDARDS, PUBLICATIONS, PRACTICES, AND GUIDES**

DOCUMENT NUMBER	DOCUMENT TITLE	APPLICATION
ASTM F1476-2007(R2013)	Performance of Gasketed Mechanical Couplings for Use in Piping Applications	Joints

(portions of table not shown remains unchanged)

SUBSTANTIATION:

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 updated. 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.



CODES ADMINISTRATION

Proposals

Item #: 176

UPC 2024 Section: 705.1.1, 705.2.2, 705.3.2, 705.4.1, 705.5.2, 705.6.1, 705.7.1, 705.8.1, 705.10.1, Table 1701.1, Table 1701.2

SUBMITTER: Mr John Wilson
Taylor Kerr Engineering Ltd (Teekay Couplings)

RECOMMENDATION:
Revise text

705.0 Joints and Connections.

705.1 ABS and ABS Co-Extruded Plastic Pipe and Joints. (remaining text unchanged)

705.1.1 Mechanical Joints. Mechanical joints shall be designed to provide a permanent seal and shall be of the mechanical or push-on joint. The push-on joint shall include an elastomeric gasket that complies with ASTM D3212 and shall provide a compressive force against the spigot and socket after assembly to provide a permanent seal.

A mechanical joint shielded coupling for joining ABS and ABS co-extruded plastic pipe shall comply with ASTM F1476 Type II Class 2 flexible and restrained or Type II Class 3 flexible and unstrained. The mechanical shield shall comply with either 304 or 316L stainless steel with alloy steel coated or 316 / 316L stainless steel fasteners. The coupling shall be installed in accordance with manufacturer's installation instructions.

705.2 Cast-Iron Pipe and Joints. (remaining text unchanged)

705.2.2 Mechanical Joints and Compression Joints. Mechanical joints for cast-iron pipe and fittings shall be of the elastomeric compression type or mechanical joint couplings. Compression type joints with an elastomeric gasket for cast-iron hub and spigot pipe shall comply with ASTM C564 and be tested in accordance with ASTM C1563. Hub and spigot shall be clean and free of dirt, mud, sand, and foreign materials. Cut pipe shall be free from sharp edges. Fold and insert gasket into the hub. Lubricate the joint following manufacturer's instructions. Insert spigot into hub until the spigot end of the pipe bottom out in the hub. Use the same procedure for the installation of fittings.

A mechanical joint shielded coupling type for hubless cast-iron pipe and fittings shall have a metallic shield that complies with ASTM A1056, ASTM C1277, ASTM C1540, or CISPI 310. The elastomeric gasket shall comply with ASTM C564. Hubless cast-iron pipe and fittings shall be clean and free of dirt, mud, sand, and foreign materials. Cut pipe shall be free from sharp edges. Gasket shall be placed on the end of the pipe or fitting and the stainless steel shield and clamp assembly on the end of the other pipe or fitting. Pipe or fittings shall be seated against the center stop inside the elastomeric sleeve. Slide the stainless steel shield and clamp assembly into a position centered over the gasket and tighten. Bands shall be tightened using an approved calibrated torque wrench specifically set by the manufacturer of the couplings.

A mechanical joint shielded coupling for hubless cast iron pipe and fittings shall have a metallic shield that complies with ASTM A1056, ASTM C1277, ASTM C1540, ASTM F1476 or CISPI 310 Type II Class 2 flexible and restrained or Type II Class 3 Flexible and unstrained. The elastomeric seal shall comply with ASTM C564. The coupling shall be installed in accordance with manufacturer's installation instructions.

705.3 Copper or Copper Alloy Pipe (DWV) and Joints. (remaining text unchanged)

705.3.2 Mechanical Joints. Mechanical joints in copper or copper alloy piping shall be made with a mechanical coupling with grooved end piping or approved joint designed for the specific application.

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 and restrained, or approved joint designed for the specific application.

705.4 Galvanized Steel Pipe and Joints. (remaining text unchanged)

705.4.1 Mechanical Joints. Mechanical joints shall be made with an elastomeric gasket. Mechanical joints shall be made with an elastomeric gasket or to ASTM F1476 Type II Class 2 flexible and restrained or Type II Class 3 flexible and un-strained.

705.5 Polyethylene (PE) Sewer Pipe. (remaining text unchanged)

705.5.2 Mechanical Joints. A mechanical joint shielded coupling for polyethylene pipe and fittings shall have a metallic shield that complies with ASTM F1476 Type II Class 3 flexible and unstrained. The coupling shall be installed in accordance with manufacturer's installation instructions.

705.6 PVC and PVC Co-Extruded Plastic Pipe and Joining Methods. (remaining text unchanged)

705.6.1 Mechanical Joints. Mechanical joints shall be designed to provide a permanent seal and shall be of the mechanical or push-on joint type. The push-on joint shall include an elastomeric gasket that complies with ASTM D3212 and shall provide a compressive force against the spigot and socket after assembly to provide a permanent seal.

A mechanical joint shielded coupling for PVC and co-extruded plastic shall have a metallic shield that complies with ASTM F1476 Type II Class 2 flexible and restrained or Type II Class 3 flexible and unstrained. The elastomeric seal shall be compatible the effluent within the pipework system. The coupling shall be installed in accordance with manufacturer's installation instructions. The mechanical joint shall be treated as a permanent pipe seal and not a temporary pipe joint.

705.7 Stainless Steel Pipe and Joints. (remaining text unchanged)

705.7.1 Mechanical Joints. Mechanical joints between stainless steel pipe and fittings shall be of the compression, grooved coupling, hydraulic press-connect fittings, or flanged.

Mechanical Joints between stainless steel pipe and fittings shall be of the compression, grooved coupling, hydraulic press-connect fittings, flanged or ASTM F1476 Type II Class 2 flexible & restrained or Type II class 3 flexible and un-strained for plain ended pipes and fittings.

705.8 Vitrified Clay Pipe and Joints. (remaining text unchanged)

705.8.1 Mechanical Joints. Mechanical joints shall be designed to provide a permanent seal and shall be of the mechanical or push-on joint type. The push-on joint shall include an elastomeric gasket that complies with ASTM C425 and shall provide a compressive force against the spigot and socket after assembly to provide a permanent seal.

Mechanical Joints shall be designed to provide a permanent seal and be of the mechanical or push fit type of joint or ASTM F1476 Type II Class 3 flexible and un-restrained. The push on joint shall include an elastomeric gasket that complies with ASTM C425 and shall provide a compressive force against the spigot and socket after assembly to provide a permanent seal.

705.10 Joints Between Various Materials. Joints between various materials shall be installed in accordance with the manufacturer's installation instructions and guidelines and with Section 705.10.1 through Section 705.10.4.

Mechanical couplings used to join different materials shall comply with ASTM C1173 for belowground use; or ASTM C1460 for aboveground use, or ASTM C1461 for aboveground and or ASTM C1461 or ASTM F1476 Type II Class 3 flexible and unrestrained for both aboveground or belowground use.

705.10.1 Copper or Copper Alloy Pipe to Cast-Iron Pipe. Joints from copper or copper alloy pipe or tubing-tube to cast-iron pipe shall be made with a listed compression-type joint or copper alloy ferrule or stepped mechanical coupling that complies with ASTM F1476 Type II Class 3 flexible and unrestrained. The copper or copper alloy pipe or tubing shall be soldered or brazed to the ferrule, and the ferrule shall be joined to the cast iron hub by a compression or caulked joint.

**TABLE 1701.1
REFERENCED STANDARDS**

STANDARD NUMBER	STANDARD TITLE	APPLICATION	REFERENCED SECTION
<u>ASTM F1476-2007(R2019)</u>	<u>Performance of Gasketed Mechanical Couplings for Use in Piping Applications</u>	<u>Joints</u>	<u>705.1.1, 705.2.2, 705.3.2, 705.4.1, 705.5.2, 705.6.1, 705.7.1, 705.8.1, 705.10.1</u>

(portions of table not shown remains unchanged)

Note: ASTM A1056, ASTM C425, ASTM C564, ASTM C1277, ASTM C1461, ASTM C1540, ASTM F1476, and CISPI 310 meet the requirements for mandatory referenced standards in accordance with Section 3-3.7.1 of IAPMO's Regulations Governing Committee Projects.

**TABLE 1701.2
STANDARDS, PUBLICATIONS, PRACTICES, AND GUIDES**

DOCUMENT NUMBER	DOCUMENT TITLE	APPLICATION
<u>ASTM F1476-2007(R2013)</u>	<u>Performance of Gasketed Mechanical Couplings for Use in Piping Applications</u>	<u>Joints</u>

(portions of table not shown remains unchanged)

SUBSTANTIATION:

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 updated. 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.



CODES ADMINISTRATION

Proposals

Item #: 178

UPC 2024 Section: 705.7 – 705.7.2, Table 1701.1

SUBMITTER: William E Chapin
Professional Code Consulting, LLC

RECOMMENDATION:
Add new text

705.0 Joints and Connections.

705.7 Polyolefin Pipe (DWV) and Joints. Joints between polyolefin plastic pipe and fittings shall be installed in accordance with the manufacturer’s installation instructions and shall comply with Section 705.7.1 or Section 705.7.2.

705.7.1 Heat-fusion Joints. Heat-fusion joints for polyolefin pipe and tubing joints shall be installed with socket-type heat-fused polyolefin fittings or electrofusion polyolefin fittings. Joint surfaces shall be clean and free from moisture. The joint shall be undisturbed until cool. Joints shall be made in accordance with ASTM F3371.

705.7.2 Mechanical Joints. Mechanical joints shall be designed to provide a permanent seal and shall be of the mechanical or push-on joint type. The push-on joint shall include an elastomeric gasket and shall provide a compressive force against the spigot and socket after assembly to provide a permanent seal. Joints shall be made in accordance with ASTM F3371.

(renumber remaining sections)

**TABLE 1701.1
REFERENCED STANDARDS**

STANDARD NUMBER	STANDARD TITLE	APPLICATION	REFERENCED SECTION
ASTM F3371-2019	Polyolefin Pipe and Fittings for Drainage, Waste, and Vent Applications	Piping	705.7.1, 705.7.2

(portions of table not shown remains unchanged)

Note: ASTM F3371 meets the requirements for a mandatory referenced standard in accordance with Section 3-3.7.1 of IAPMO’s Regulations Governing Committee Projects.

SUBSTANTIATION:

ASTM F3371 was developed and published as it includes the same requirements as ASTM F1412 minus the chemical resistance testing. Also, note that other ASTM for DWV application do not include a chemical resistance test. Under the scope of ASTM F3371, two polyolefins materials are covered; polyethylene (PE) and polypropylene (PP).



CODES ADMINISTRATION

Proposals

Item #: 190

UPC 2024 Section: 712.4 – 712.4.2

SUBMITTER: Riley Dvorak
Forterra

RECOMMENDATION:
Add new text

712.0 Testing.

712.4 Deflection Testing. All plastic storm and sanitary drainage piping greater than or equal to 8 inches (200 mm) in diameter shall be deflection tested. Deflection test shall be conducted no sooner than 30 days after completion of final backfill and compaction testing. The maximum allowable deflection shall be 5 percent unless stated otherwise in the project specifications. All lines shall be cleaned or flushed prior to testing. The deflection test shall be performed on entire length of installed flexible pipeline upon completion of work adjacent to and over the pipeline, including backfilling, placement of fill, grading, paving, placement of concrete, and any other superimposed loads. Deflection of pipe in the installed pipeline under external loads shall not exceed limits as percent of the average inside diameter of pipe. Use a laser profiler or mandrel to determine if allowable deflection has been exceeded.

712.4.1 Laser Profiler. The pipe interior shall be inspected with laser profiling equipment accompanied with video surveillance. Low barrel distortion video equipment shall be utilized for pipe sizes 48 inches (1219 mm) or less. A camera with suitable lighting shall be used to allow a clear picture of the entire periphery of the pipe interior. The camera shall be centered in the pipe both vertically and horizontally. The camera shall be able to pan and tilt to a 90 degree (1.57 rad) angle with the axis of the pipe rotating 360 degrees (6.28 rad). Use equipment to move the camera through the pipe that will not obstruct the camera's view or interfere with proper documentation of the pipe's condition. The video image shall be clear, focused, and relatively free from roll static or other image distortion qualities that would prevent the reviewer from evaluating the condition of the pipe. For initial post installation inspections for pipe sizes larger than 48 inches (1219 mm), a visual inspection shall be completed of the pipe interior.

712.4.2 Mandrel. The mandrel shall be passed through each run of pipe by pulling it by hand. If deflection readings in excess of the allowable deflection of average inside diameter of pipe are obtained, stop and begin test from the opposite direction. The mandrel shall meet the pipe manufacture's recommendations and the following requirements. The mandrel shall be rigid, nonadjustable, have a minimum of 9 fins, pulling rings at each end, and is engraved with the nominal pipe size and mandrel outside diameter. The mandrel shall be 5 percent less than the certified-actual pipe diameter. The Authority Having Jurisdiction shall verify the outside diameter (OD) of the contractor provided mandrel through the use of Contractor provided proving rings.

SUBSTANTIATION:

Currently there are no limiting criteria for deflection of flexible storm and sanitary sewer pipes within the UPC. Deflection testing of flexible products serves to ensure owners and designers that compaction around the pipe has been completed to a satisfactory level and that no construction activities have damaged the pipe. Over-deflection is an indication that the pipe was not installed to the expected level of quality and subsequently may not last its intended service life.

Deflection testing is a very common practice for storm and sanitary sewers in countless local standards and almost every national specification for these types of products. It should be an especially important consideration for pipes within the jurisdiction of the UPC. Deflection testing is ultimately a relatively inexpensive quality assurance test that provides value-added to owners ensuring them that the pipes installed properly.

The verbiage proposed is from the United Facilities Guide Specifications 33 40 00 Section 3.9.1.4 modified slightly to fit this Plumbing Code section and format.

Supporting document(s) has been provided to the Technical Committee for review.



CODES ADMINISTRATION

Proposals

Item #: 193

UPC 2024 Section: 715.3, Table 1701.1, Table 1701.2

SUBMITTER: Grant Whittle
Nu Flow Technologies

RECOMMENDATION:
Revise text

715.0 Building Sewer Materials.

715.3 Existing Sewers. Replacement of existing building sewer and building storm sewers using trenchless methodology and materials shall be installed in accordance with ASTM F1216, [ASTM F1743](#), ASTM F2561, ASTM F2599, or ASTM F3240.

**TABLE 1701.1
REFERENCED STANDARDS**

STANDARD NUMBER	STANDARD TITLE	APPLICATION	REFERENCED SECTION
ASTM F1743-2017	Rehabilitation of Existing Pipelines and Conduits by Pulled-in-Place Installation of Cured-in-Place Thermosetting Resin Pipe (CIPP)	Piping, Plastic	715.3

(portions of table not shown remain unchanged)

Note: ASTM F1743 does not meet the requirements for a mandatory referenced standard in accordance with Section 3-3.7.1 of IAPMO's Regulations Governing Committee Projects.

**TABLE 1701.2
STANDARDS, PUBLICATIONS, PRACTICES, AND GUIDES**

DOCUMENT NUMBER	DOCUMENT TITLE	APPLICATION
ASTM F1743-2017	Rehabilitation of Existing Pipelines and Conduits by Pulled-in-Place Installation of Cured-in-Place Thermosetting Resin Pipe (CIPP)	Piping, Plastic

(portions of table not shown remain unchanged)

SUBSTANTIATION:

ASTM F1743 is currently included in Table 1701.2 as a non-mandatory reference. ASTM F1743 has comparable performance property requirements as the alternatively mandated installation practices. Furthermore, Pull-in-Place installation is one of, if not the most, widely practiced installation methods in the plumbing and mechanical pipe sector.



CODES ADMINISTRATION

Proposals

Item #: 194

UPC 2024 Section: 715.3.1, 715.3.2

SUBMITTER: Joanne Carroll
Subtegit Group Inc.

RECOMMENDATION:
Add new text

715.0 Building Sewer Materials.

715.3 Existing Sewers. Replacement of existing building sewer and building storm sewers using trenchless methodology and materials shall be installed in accordance with ASTM F1216, ASTM F2561, ASTM F2599, or ASTM F3240.

715.3.1 Cured-In-Place Pipe Material. Cured-in-place pipe materials shall be comprised of a specific textile tube combined with a specific resin system at a specific wall thickness that shall be listed (third-party certified) by a listing agency (accredited conformity assessment body) as complying with this code and the approved applicable recognized standards referenced in this code.

715.3.2 Post-Installation Inspection. The installed replacement pipe shall be inspected internally by a recorded video camera survey. The video survey shall be submitted to the Authority Having Jurisdiction prior to acceptance of the work. Any defects identified shall be repaired or replaced as approved by the Authority Having Jurisdiction in accordance with applicable standards and this code.

SUBSTANTIATION:

This addition provides improved efficiencies for code enforcement by including third-party certification for cured-in-place pipe materials. With this addition code officials can easily determine if materials compliant with the code are being used. Because trenchless methodology does not uncover the existing pipe, the addition of post-installation inspection is key to enforcement of the code and verification of compliance of the installed replacement pipe with the code. Although this requirement is included in all of the referenced standards, the addition of this subsection in the code makes the code more user friendly and can improve efficiencies during enforcement. In summary, acceptance of this change will remove confusion in the industry surrounding the use of trenchless methodology and will provide clarity and improve efficiencies for enforcement of the code as it pertains to the use of trenchless methodology and cured-in-place pipe materials to replace or repair buried piping.



CODES ADMINISTRATION

Proposals

Item #: 195

UPC 2024 Section: 715.3 – 715.3.2, Table 1701.1

SUBMITTER: Bruce A Pfeiffer
Retired - City of Topeka

RECOMMENDATION:
Revise text

715.0 Building Sewer Materials.

715.3 Trenchless Lining or Replacement of Existing Sewers. ~~Replacement of existing building sewer and building storm sewers using trenchless methodology and materials. Trenchless or replacement of existing sewers shall be in accordance with the Section 715.3.1 or Section 715.3.2.~~

715.3.1 Sewer Pipe Lining. ~~The trenchless installation of resin-impregnated flexible tubing to line existing building sewers and building storm sewers shall be installed in accordance with ASTM F1216, ASTM F2561, ASTM F2599, or ASTM F3240.~~

715.3.2 Sewer Pipe Replacement. ~~The trenchless installation of polyethylene (PE) pipe using the pipe bursting method to replace existing building sewers and building storm sewers shall comply with ASTM F714, ASTM F894 and installed in accordance with IAPMO IS 26.~~

**TABLE 1701.1
REFERENCED STANDARDS**

STANDARD NUMBER	STANDARD TITLE	APPLICATION	REFERENCED SECTION
IAPMO IS 26-2019^{e2}	Trenchless Insertion of Polyethylene (PE) Pipe for Sewer Laterals	Piping	715.3.2

(portions of table not shown remain unchanged)

Note: ASTM F714, ASTM F894, and IAPMO IS 26 meet the requirements for mandatory reference standards in accordance with Section 3-3.7.1 of IAPMO's Regulations Governing Committee Projects.

SUBSTANTIATION:

The replacement of existing sewer pipe with Polyethylene (PE) pipe as part of a trenchless pipe bursting methodology is addressed in the standards found in Table 701.2 (ASTM F714-13) and in the Installation Standards, IS 26-2019, but is not mentioned in the body of the Code. Many jurisdictions believe that pipe lining is the only trenchless method of sewer repair/replacement allowed by Code. This new section explains the difference between the two types of products and the standards by which they need to be installed.



CODES ADMINISTRATION

Proposals

Item #: 196

UPC 2024 Section: 715.3, Table 1701.1, Table 1701.2

SUBMITTER: Arnie Rodio
Self

RECOMMENDATION:
Revise text

715.0 Building Sewer Materials.

715.3 Existing Sewers. ~~Where permitted by the Authority Having Jurisdiction, in accordance with Section 301.3, trenchless methods of rehabilitation Replacement~~ of existing building sewer and building storm sewers ~~using trenchless methodology and materials~~ shall be installed in accordance with ~~the standards listed in Chapter 17. ASTM F1216, ASTM F2561, ASTM F2599, or ASTM F3240.~~

**TABLE 1701.1
REFERENCED STANDARDS**

STANDARD NUMBER	STANDARD TITLE	APPLICATION	REFERENCED SECTION
ASTM F1216-2016	Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube	Piping	715.3
ASTM F2561-2017	Rehabilitation of a Sewer Service Lateral and Its Connection to the Main Using a One Piece Main and Lateral Cured-in-Place Liner	Piping	715.3
ASTM F2599-2016	The Sectional Repair of Damaged Pipe by Means of an Inverted Cured-In-Place Liner	Piping	715.3
ASTM F3240-2017	Installation of Seamless Molded Hydrophilic Gaskets (SMHG) for Long-Term Watertightness of Cured-in-Place Rehabilitation of Main and Lateral Pipelines	Piping	715.3

(portions of table not shown remain unchanged)

**TABLE 1701.2
STANDARDS, PUBLICATIONS, PRACTICES, AND GUIDES**

DOCUMENT NUMBER	DOCUMENT TITLE	APPLICATION
ASTM F1216-2016	Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube	Piping
ASTM F2561-2020	Rehabilitation of a Sewer Service Lateral and Its Connection to the Main Using a One Piece Main and Lateral Cured-in-Place Liner	Piping
ASTM F2599-2020	The Sectional Repair of Damaged Pipe by Means of an Inverted Cured-In-Place Liner	Piping
ASTM F3240-2019^{e1}	Installation of Seamless Molded Hydrophilic Gaskets (SMHG) for Long-Term Watertightness of Cured-in-Place Rehabilitation of Main and Lateral Pipelines	Piping

(portions of table not shown remain unchanged)

SUBSTANTIATION:

There is nothing in the current language of this section that requires a permit. Language is being added to require permits and inspections by the AHJ. These standards contain a section on "significance in use" which does not address installers. These standards are installation standards, and in order to properly enforce, the AHJ would have to be present during the entire installation. For example, it is required that the cleaning of the line prior to the installation would require inspection; there are provision in the standards which need to be addressed by the AHJ.

ASTM F1216 is not written in mandatory language. All the other standards reference ASTM F1216 which is not enforceable, therefore should all be moved to Table 1701.2.

The standards ASTM F2599, ASTM F3240, and ASTM F2561 places undue responsibility and liability on the AHJ. These standards all contain a Section 1.4 which indicates the following: "1.4 This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use."



CODES ADMINISTRATION

Proposals

Item #: 198

UPC 2024 Section: 803.3

SUBMITTER: Samantha Liu
Self

RECOMMENDATION:
Revise text

803.0 Indirect Waste Piping.

803.3 Pipe Size and Length. Except as hereinafter provided, the size of indirect waste piping shall be in accordance with other sections of this code applicable to drainage and vent piping. No vent from indirect waste piping shall combine with a sewer-connected vent, ~~but~~ **Vents from indirect waste piping** shall extend separately to the outside air. Indirect waste pipes exceeding 5 feet (1524 mm), but less than 15 feet (4572 mm) in length shall be directly trapped, but such traps need not be vented.

Indirect waste pipes less than 15 feet (4572 mm) in length shall be not less than the diameter of the drain outlet or tailpiece of the fixture, appliance, or equipment served, and in no case less than 1/2 of an inch (15 mm). Angles and changes of direction in such indirect waste pipes shall be provided with cleanouts to permit flushing and cleaning.

SUBSTANTIATION:

As written, the text on vents gives the provision followed by an exception. Placing a period and stating exactly what is needed will remove any confusion. This change will clarify the intent of the section. Indirect waste pipes must vent separately to the outside.



Proposals

Item #: 199

UPC 2024 Section: 803.3

SUBMITTER: Samantha Liu
Self

RECOMMENDATION:
Revise text

803.0 Indirect Waste Piping.

803.3 Pipe Size and Length. Except as hereinafter provided, the size of indirect waste piping shall be in accordance with other sections of this code applicable to drainage and vent piping. No vent from indirect waste piping shall combine with a sewer-connected vent, but shall extend separately to the outside air. Indirect waste pipes exceeding 5 feet (1524 mm), but less than 15 feet (4572 mm) in length shall be directly trapped, but such traps need not be vented.

Indirect waste pipes less than 15 feet (4572 mm) in length shall be not less than the diameter of the drain outlet or tailpiece of the fixture, appliance, or equipment served, and in no case less than 1/2 of an inch (15 mm). Angles and changes of direction in such indirect waste pipes shall be provided with cleanouts to permit flushing and cleaning.

Exceptions:

(1) Refrigeration coils and ice-maker machines shall not be limited in length.

(2) The trap, drain, and vent shall comply with the sizing requirements of Section 702.0, Section 703.0 and Section 904.0 if the indirect waste piping exceeds 15 feet (4572 mm) in length.

(below shown for reference only)

702.0 Fixture Unit Equivalent.

703.0 Size of Drainage Piping.

904.0 Size of Vents.

SUBSTANTIATION:

There is great confusion regarding indirect waste pipe length limitations, when to trap, and when to vent. Section 801.3 is easily overlooked regarding the exception to the 15 foot limitation and causes confusion in Section 803.3 as refrigeration coils and ice makers do not apply. Furthermore, Section 801.3.1 limits indirect waste to 15 feet, adding to the confusion as to what to do beyond the 15 feet. The addition of the exceptions intends to clarify the intent between Sections 803.3 and Section 801.3.1.



CODES ADMINISTRATION

Proposals

Item #: 248

UPC 2024 Section: 1208.6.4.5, Table 1701.1

SUBMITTER: Robert Torbin
OmegaFlex

RECOMMENDATION:
Revise text

1208.6.4 Metallic Tubing. (remaining text unchanged)

1208.6.4.5 Corrugated Stainless Steel Tubing. Corrugated stainless steel tubing shall be listed in accordance with CSA LC 1. [NFPA 54:5.6.3.6] Corrugated stainless steel tubing shall also comply with IAPMO IGC 201 when a listed encasement system is required.

**TABLE 1701.1
REFERENCED STANDARDS**

STANDARD NUMBER	STANDARD TITLE	APPLICATION	REFERENCED SECTION
<u>IAPMO IGC 201-2018^{e1}</u>	<u>Polyethylene Sleeved-Corrugated Stainless-Steel Tubing for use in Fuel Gas Piping Systems</u>	<u>Gas Tubing</u>	<u>1208.6.4.5</u>

(portions of table not shown remain unchanged)

SUBSTANTIATION:

The proposed standard covers polyethylene sleeved-corrugated stainless steel tubing (CSST) which is used in fuel gas systems. PE sleeved CSST have been tested and installed for over 10 years and continues to be installed today. Reference to the proper standard for this product will ensure public health and safety by clearly identifying products that are approved for this application assisting to the installers, inspectors, and other end users of the code.



Proposals

Item #: 249

UPC 2024 Section: 1210.1.3.2

SUBMITTER: Shane Peters
City of Santa Monica

RECOMMENDATION:
Revise text

1210.0 Gas Piping Installation.

1210.1 Piping Underground. (remaining text unchanged)

1210.1.3 Protection Against Corrosion. (remaining text unchanged)

~~1210.1.3.2 Underground Piping. Underground piping shall comply with one or more of the following unless approved technical justification is provided to demonstrate that protection is unnecessary:~~

~~(1) The piping shall be made of corrosion-resistant material that is suitable for the environment in which it will be installed.~~

~~(2) Pipe shall have a factory-applied, electrically insulating coating. Fittings and joints between sections of coated pipe shall be coated in accordance with the coating manufacturer's instructions.~~

~~(3) The piping shall have a cathodic protection system installed, and the system shall be maintained in accordance with Section 1210.1.3.3 or Section 1210.1.3.6. [NFPA 54:7.1.3.2]~~

1210.1.3.2 Underground Piping. Underground metallic gas piping shall be protected from corrosion by approved coatings or wrapping materials. Gas pipe protective coatings shall be in accordance with the following:

(1) Approved types, factory-applied, and conform to approved standards.

(2) Field wrapping shall provide equivalent protection and is restricted to those sections and fittings that are necessarily stripped for threading or welding.

(3) Risers shall be coated or wrapped to a point at least 6 inches (152 mm) above ground.

SUBSTANTIATION:

The above recommended language gives specific direction on how to protect underground gas piping. The current section is not clear as to what requirements are required.



Proposals

Item #: 251

UPC 2024 Section: 1215.2.1, 1215.2.2

SUBMITTER: Jonathan D Sargeant
Omegaflex

RECOMMENDATION:
Revise text

1215.0 Required Gas Piping Size.

1215.2 Sizing of Gas Piping Systems. (remaining text unchanged)

1215.2.1 Natural Gas Piping Systems. Table 1215.2(1) through Table 1215.2(23) [or sizing tables included in a listed piping system manufacturers' installation instructions](#) shall be used in conjunction with one of the methods described in Section 1215.1.1 through Section 1215.1.3 for piping materials other than non-corrugated stainless steel tubing. Section 1215.3 shall be used in conjunction with one of the methods described in Section 1215.1.1 through Section 1215.1.3 for non-corrugated stainless steel tubing. ~~{NFPA 54:6.2.1, 6.2.2}~~

1215.2.2 Propane Piping Systems. Table 1215.2(24) through Table 1215.2(36) [or sizing tables included in a listed piping system manufacturers' installation instructions](#) shall be used in conjunction with one of the methods described in Section 1215.1.1 through Section 1215.1.3 for piping materials other than non-corrugated stainless steel tubing. Section 1215.3 shall be used in conjunction with one of the methods described in Section 1215.1.1 through Section 1215.1.3 for non-corrugated stainless steel tubing. ~~{NFPA 54:6.3.1, 6.3.2}~~

(for information only)

1208.4.2 Sizing Methods. Gas piping shall be sized in accordance with one of the following:

- (1) Pipe sizing tables or sizing equations in this chapter.
- (2) Other approved engineering methods.
- (3) Sizing tables included in a listed piping system manufacturer's installation instructions. [NFPA 54:5.4.3]

SUBSTANTIATION:

To make Section 1215.2.1 and Section 1215.2.2 consistent with Section 1208.4.2. Sizing Methods Include the tables in CSST manufacturers' design and installation guides.



CODES ADMINISTRATION

Proposals

Item #: 254

UPC 2024 Section: 1318.4 - 1318.4.2, 1319.1, 1319.1.1, 1320.2.1- 1320.2.3, 1324.4.3, 1323.10.1, Table 1701.1

SUBMITTER: Jonathan D Sargeant
Omegaflex

RECOMMENDATION:
Revise text

1318.0 Piping Materials for Field-Installed Positive Pressure Medical Gas Systems.

1318.4 Tubes for Medical Gas Systems. Tubes shall be one of the following:

(1) Hard-drawn seamless copper in accordance with ASTM B819, medical gas tube, Type L, except Type K shall be used where operating pressures are above a gauge pressure of 185 psi (1276 kPa) and the pipe sizes are larger than DN80 [(NPS 3) (31/8 inches O.D.)].

(2) Listed corrugated medical tubing (CMT) fabricated from copper alloy No. 5100 strip, meeting ASTM B103/B103M, with a design margin of 3.5, externally coated with nonmetallic sheath marked with the manufacturer's marking. The listing shall include testing to demonstrate that CMT systems can be consistently gas-purged with results equivalent to comparable medical gas copper tubing. [NFPA 99:5.1.10.1.4]

1318.4.1 Flame Spread Index. CMT shall have a flame spread index of 25 or less and a smoke developed index of 50 or less as determined by ASTM E84. [NFPA 99:5.1.10.1.5]

1318.4.2 CMT, Manufacturer Markings. CMT shall be identified by the manufacturer as suitable for oxygen service at a minimum of every 3 feet (914 mm). [NFPA 99:5.1.10.1.6]

1319.0 Piping Materials for Field-Installed Medical-Surgical Vacuum Systems.

1319.1 Tubes for Medical Vacuum Systems. Piping for vacuum systems shall be constructed of any of the following:

(1) Hard-drawn seamless copper tube in accordance with the following:

- (a) ASTM B88, copper tube (Type K, Type L, or Type M)
- (b) ASTM B280, copper ACR tube
- (c) ASTM B819, copper medical gas tubing (Type K or Type L)

(2) Stainless steel tube in accordance with the following:

- (a) ASTM A269 TP304L or 316L
- (b) ASTM A312 TP304L or 316L
- (c) ASTM A312 TP 304L/316L, Schedule 5S pipe, and ASTM A403 WP304L/316L, Schedule 5S fittings

(3) CMT meeting the requirements of 1318.4(2). [NFPA 99:5.1.10.2.1]

1319.1.1 Vacuum Tube Marking Where Required. If copper or CMT vacuum tubing is installed along with any medical gas tubing, the vacuum tubing shall, prior to installation, be prominently labeled or otherwise identified to preclude using materials or installation procedures in the medical gas system that are not suitable for oxygen service. [NFPA 99:5.1.10.2.2.1]

(renumber remaining sections)

1320.0 Joints and Connections.

1320.2 Changes in Direction. (remaining text unchanged)

1320.2.1 CMT, Changes in Direction. Positive pressure patient gas systems, medical support gas systems, vacuum systems, and WAGD systems constructed of CMT shall have turns, offsets, and other changes in direction

made by bending the tubing up to the minimum bend radius or by fittings in accordance with Section 1320.2 [NFPA 99:5.1.10.3.2]

1320.2-1320.2.2 Medical Vacuum Systems. (remaining text unchanged)

1320.2.3 CMT, Prohibited Connections. Branch connections made using mechanically formed, drilled, and extruded tee-branch connections shall be prohibited in CMT systems. [NFPA 99:5.1.10.3.4]

1323.0 Installation of Piping and Equipment.

1323.4 Pipe Support. (remaining text unchanged)

1323.4.3 CMT. Supports for CMT shall be in accordance with the CMT manufacturer's installation instructions. [NFPA 99:5.1.10.11.4.4]

(renumber remaining sections)

1323.10 Qualifications of Installers. (remaining text unchanged)

1323.10.1 CMT. CMT systems shall be installed by ASSE 6010-qualified installers using the CMT manufacturer's instructions. [NFPA 99:5.1.10.11.10.3]

(renumber remaining sections)

**TABLE 1701.1
REFERENCED STANDARDS**

STANDARD NUMBER	STANDARD TITLE	APPLICATION	REFERENCED SECTION
<u>ASSE 6010-2018</u>	<u>Medical Gas Systems Installers</u>	<u>Medical Gas Systems</u>	<u>1323.10.1</u>
<u>ASTM B103/B103M-2019</u>	<u>Phosphor Bronze Plate, Sheet, Strip, and Rolled Bar</u>	<u>Piping</u>	<u>1318.4(2)</u>

(portions of table not shown remains unchanged)

Note: ASSE 6010, ASTM B103/B103M, and ASTM E84 meet the requirements for mandatory referenced standards in accordance with Section 3-3.7.1 of IAPMO's Regulations Governing Committee Projects.

SUBSTANTIATION:

Corrugated medical tubing (CMT) is a listed product that significantly reduces the number of fittings required to install medical gas systems and improves the seismic resiliency of those systems. This proposal will add CMT language that currently exists in the 2018 and 2021 editions of the NFPA 99 Health Care Facilities Code to Chapter 13, and add corrugated medical tubing to the list of products available for use in constructing medical gas systems. The proposal also requires CMT installation be performed by an ASSE qualified installer.



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CODES ADMINISTRATION

Proposals

Item #: 072

UMC 2024 Section: 310.3.2

SUBMITTER: Arnie Rodio
Self

RECOMMENDATION:
Add new text

310.0 Condensate Wastes and Control.

310.3 Condensate Waste Pipe Material and Sizing. (remaining text unchanged)

310.3.2 Material. Condensate waste pipes shall be constructed of DWV materials in accordance with the plumbing code.

SUBSTANTIATION:

There is currently no direction for acceptable piping material for condensate waste pipe in the code. This code change adds provisions for condensate waste pipe materials to assist the installer and AHJ with installation of condensate waste pipe. The UPC, Table 701.2, lists the acceptable materials for condensate lines.



CODES ADMINISTRATION

Proposals

Item #: 076

UMC 2024 Section: 310.7

SUBMITTER: Arnie Rodio
Self

RECOMMENDATION:
Revise text

310.0 Condensate Wastes and Control.

310.7 Female Plastic Fittings Connections. Female plastic screwed fittings shall be used with plastic male fittings and plastic male threads. Female plastic threaded connections shall not be allowed to be used when threaded onto a male metallic connection.

SUBSTANTIATION:

It is common practice for installers to use female plastic fittings in installations where a male metal outlet is. This is common on condensate pans and HVAC units. It is often use at water services where a metal nipple is used. This issue is that this type of installation often cracks and then leaks or floods. When the female fitting is over tightened (which is hard not to do as there is no way to really torque it) it creates a stress on the fitting. Plastic products relieve stress by cracking. It is also important that this be in the general regulations as a clearly prohibited practice.



CODES ADMINISTRATION

Proposals

Item #: 077

UMC 2024 Section: 310.7.1

SUBMITTER: Arnie Rodio
Self

RECOMMENDATION:
Add new text

310.0 Condensate Wastes and Control.

310.7.1 ABS/PVC Transition Connections. Except as provided in the plumbing code, PVC and ABS pipe and fittings shall not be solvent welded to any other unlike material.

SUBSTANTIATION:

The current language allows for a single transition from ABS to PVC or PVC to ABS exterior of the structure. Transition glue is not being represented to be allowable to make transition joints between ABS and PVC anywhere in the building. This code change clarifies that this practice is not approved. I have seen residences where the below slab plumbing was PVC and then the above slab plumbing all PVC with the joints being made with transition glue. This is an improper use of the product. It is important that this be in the general regulations as a prohibited practice.



CODES ADMINISTRATION

Proposals

Item #: 080

UMC 2024 Section: 313.0 - 313.2

SUBMITTER: Phillip H Ribbs
PHR Consultants

RECOMMENDATION:
Revise text

313.0 Hangers, ~~and~~ Supports, ~~and~~ Anchors.

313.1 General. Piping, tubing, appliances, and appurtenances shall be supported in accordance with this code, the manufacturer's installation instructions, and in accordance with the Authority Having Jurisdiction. Seismic restraints shall be as required by the building code.

313.2 Material. Hangers, supports, and anchors shall be of sufficient strength to support the weight of the pipe or tubing and its contents. Piping or tubing shall be isolated from incompatible materials.

SUBSTANTIATION:

The proposed text is adding seismic restraints to ensure these provisions are not overlooked when designing in areas prone to seismic conditions. Additionally, Section 313.0 and Section 313.2 are being modified as the sections address hangers, supports, and anchors.



CODES ADMINISTRATION

Proposals

Item #: 081

UMC 2024 Section: 313.1, Table 1701.1

SUBMITTER: David Dias
Sheet Metal Workers Local 104

RECOMMENDATION:
Revise text

313.0 Hangers and Supports.

313.1 General. Piping, tubing, appliances, and appurtenances shall be supported in accordance with this code, the manufacturer's installation instructions, and in accordance with the Authority Having Jurisdiction. Pipe hangers, supports, and anchors used for fuel gas shall be in accordance with Section 1310.3.5. Pipe support hangers and hooks shall comply with IAPMO PS 95.

(below shown for reference only)

1310.3.5 Hangers, Supports, and Anchors. 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 equipment and shall not be supported by other piping. Pipe hangers and supports shall conform to the requirements of MSS SP-58. [NFPA 54:7.2.6.1]

**TABLE 1701.1
REFERENCED STANDARDS**

STANDARD NUMBER	STANDARD TITLE	APPLICATION	REFERENCED SECTION
<u>IAPMO PS 95-2018^{e3}</u>	<u>Pipe Support Hangers and Hooks</u>	<u>Hangers and Supports</u>	<u>313.1</u>

(portions of table not shown remain unchanged)

Note: IAPMO PS 95 meets the requirements for mandatory reference standards in accordance with Section 3-3.7.1 of IAPMO's Regulations Governing Committee Projects.

SUBSTANTIATION:

Pipe hangers and supports must meet the requirements of Section 1310.3.5 for fuel gas piping, which references MSS SP-58, or IAPMO PS 95 for support handers and hooks. Therefore, a reference to Section 1310.3.5 and the IAPMO PS 95 standard are being added for completeness.



CODES ADMINISTRATION

Proposals

Item #: 086

UMC 2024 Section: 316.6, Table 1701.1

SUBMITTER: Bruce A Pfeiffer
Retired - City of Topeka

RECOMMENDATION:
Revise text

316.0 Protection of Piping, Tubing, Materials, and Structures.

316.6 Steel Nail Plates. Plastic piping or tubing, copper or copper alloy piping or tubing, and ducts penetrating framing members to within 1 inch (25.4 mm) of the exposed framing shall be protected by steel nail plates not less than No. 18 gauge (0.0478 inches) (1.2141 mm) in thickness. The steel nail plate shall extend along the framing member not less than 1 1/2 inches (38 mm) beyond the outside diameter of the pipe or tubing. Steel nail plates shall be in accordance with IAPMO IGC 193. Fuel gas piping shall be protected in accordance with ~~Exception: See~~ Section 1310.4.3.

**TABLE 1701.1
REFERENCED STANDARDS**

STANDARD NUMBER	STANDARD TITLE	APPLICATION	REFERENCED SECTION
<u>IAPMO IGC 193-2019</u>	<u>Safety Plates, Plate Straps, Notched Plates and Safety Collars</u>	<u>Safety Plates</u>	<u>316.6</u>

(portions of table not shown remain unchanged)

Note: IAPMO IGC 193 meets the requirements for mandatory reference standards in accordance with Section 3-3.7.1 of IAPMO's Regulations Governing Committee Projects.

SUBSTANTIATION:

The section is being revised to add the existing standard for safety plates for the protection of concealed pipes running through the framing of a building. These plates are used in the industry on a daily basis and the standard will ensure such plates meet minimum safety requirements. Additionally, fuel gas tubing is required to be protected by specific requirements in Section 1310.4.3 which may include steel plates. Therefore, not an exception.



CODES ADMINISTRATION

Proposals

Item #: 141

UMC 2024 Section: 602.2, 602.2.5, Table 1701.1

SUBMITTER: Michael Cudahy
PPFA

RECOMMENDATION:
Revise text

602.0 Material.

602.2 Combustibles Within Ducts or Plenums. Materials exposed within ducts or plenums shall be noncombustible or shall have a flame spread index not to exceed 25 and a smoke-developed index not to exceed 50, where tested as a composite product in accordance with ASTM E84 or UL 723. Plastic piping installed in plenums shall be tested in accordance with all requirements of ASTM E84 or UL 723. Mounting methods, supports and sample sizes of materials for testing that are not specified in ASTM E84 or UL 723 shall be prohibited.

Exceptions:

- (1) through (4) (remaining text unchanged)
- (5) Products listed and labeled for installation within plenums in accordance with Section 602.2.1 through Section ~~602.2.3~~ **602.2.5**.
- (6) through (8) (remaining text unchanged)

602.2.5 Water Distribution Piping. Nonmetallic water distribution piping in plenums shall be listed and labeled for use in plenums. Piping shall have a flame spread distance not exceeding 5 feet (1524 mm), an average optical density not exceeding 0.15 and, a peak optical density not exceeding 0.5, where tested in accordance with UL 2846, or shall have a flame spread index not to exceed 25 and a smoke developed index not to exceed 50, where tested as a composite product in accordance with ASTM E84 or UL 723.

**TABLE 1701.1
REFERENCED STANDARDS**

STANDARD NUMBER	STANDARD TITLE	APPLICATION	REFERENCED SECTION
UL 2846-2014	Fire Test of Plastic Water Distribution Plumbing Pipe for Visible Flame and Smoke Characteristics (with revisions through December 20, 2016)	Surface Burning Test, Plastic Pipe	602.2.5

(portions of table not shown remain unchanged)

Note: ASTM E84, UL 723, and UL 2846 meet the requirements for mandatory reference standards in accordance with Section 3-3.7.1 of IAPMO's Regulations Governing Committee Projects.

SUBSTANTIATION:

Adds new section for inclusion of UL 2846, Fire Test of Plastic Water Distribution Plumbing Pipe for Visible Flame and Smoke Characteristics, as an alternative plenum test standard to ASTM E84 / UL 723. This is similar to other standards in the UMC which are product specific, such as; UL 1887 (602.2.2 Fire Sprinkler Piping) and UL 1820 (602.2.3 Pneumatic Tubing). The UL 2846 standard has been in the IMC since the 2014 version.



CODES ADMINISTRATION

Proposals

Item #: 143

UMC 2024 Section: 602.2

SUBMITTER: Michael Cudahy
Plastic Pipe & Fittings Association

RECOMMENDATION:
Revise text

602.0 Material.

602.2 Combustibles Within Ducts or Plenums. Materials exposed within ducts or plenums shall be noncombustible or shall have a flame spread index not to exceed 25 and a smoke-developed index not to exceed 50, where tested as a composite product in accordance with ASTM E84 or UL 723. ~~Plastic piping Combustible materials~~ installed in plenums shall be tested in accordance with all requirements of ASTM E84 or UL 723. ~~Mounting methods, supports and sample sizes of materials for testing that are not specified in ASTM E84 or UL 723 shall be prohibited.~~

Exceptions:

(1) through (8) (remain unchanged)

SUBSTANTIATION:

The language, being specific to only plastic piping suggests other combustible materials may not be required to be tested in accordance with or to all requirements of ASTM E84 or UL 723. The last sentence is redundant to the previous.



CODES ADMINISTRATION

Proposals

Item #: 221

UMC 2024 Section: 1109.1

SUBMITTER: William E Chapin
Professional Code Consulting, LLC

RECOMMENDATION:
Revise text

1109.0 Refrigeration Piping, Containers, and Valves.

1109.1 Materials. Materials used in the construction and installation of refrigerating systems shall be suitable for conveying the refrigerant used. Materials shall not be used that will deteriorate because of the refrigerant, lubricant, or their combination in presence of air or moisture to a degree that poses a safety hazard. [ASHRAE 15:9.1.1] ~~Refrigerant piping shall be metallic.~~

SUBSTANTIATION:

The first two sentences of this section clearly states that materials must be safe and reliable for refrigerant systems. The last sentence of this section is overly restrictive by prohibiting current and future piping materials that are tested and listed for conveying refrigerant safely. Additional code change proposals are being introduced this cycle to allow materials have been used for refrigerant systems around the world for decades.



CODES ADMINISTRATION

Proposals

Item #: 222

UMC 2024 Section: 1109.1, Table 1109.1, Table 1701.1

SUBMITTER: Phil Pettit
Control Air Conditioning Corporation
Rep. Self

RECOMMENDATION:
Revise text

1109.0 Refrigeration Piping, Containers, and Valves.

1109.1 Materials. Materials used in the construction and installation of refrigerating systems shall be suitable for conveying the refrigerant used. Materials shall not be used that will deteriorate because of the refrigerant, lubricant, or their combination in presence of air or moisture to a degree that poses a safety hazard. [ASHRAE 15:9.1.1] Refrigerant piping shall be metallic. Materials for refrigerant piping, tubing, and fittings shall be acceptable to the Authority Having Jurisdiction and shall comply with the applicable standards in Table 1109.1 or other approved standards.

**TABLE 1109.1
MATERIALS FOR REFRIGERANT PIPING, TUBING, AND FITTINGS**

MATERIAL	STANDARDS	
	PIPING/TUBING	FITTINGS
Aluminum	<u>ASTM B210, ASTM B491</u>	<u>ASTM B361</u>
Copper/copper alloy	<u>ASTM B42, ASTM B43, ASTM B68, ASTM B75, ASTM B88, ASTM B280, ASTM B302, ASTM B819, ASTM B1003</u>	<u>ASME B16.15, ASME B16.18, ASME B16.22, ASME B16.24, ASME B16.26, ASME B16.50</u>
Steel	<u>ASTM A53, ASTM A106, ASTM A254, ASTM A333, ASTM A334</u>	<u>ASTM A105, ASTM A181, ASTM A193, ASTM A234, ASTM A420, ASTM A707</u>

**TABLE 1701.1
REFERENCED STANDARDS**

STANDARD NUMBER	STANDARD TITLE	APPLICATION	REFERENCED SECTIONS
<u>ASME B16.50-2018</u>	<u>Wrought Copper and Copper Alloy Braze-joint Pressure Fittings</u>	<u>Piping</u>	<u>Table 1109.1</u>
<u>ASTM A105/A105M-2021</u>	<u>Carbon Steel Forgings for Piping Applications</u>	<u>Piping</u>	<u>Table 1109.1</u>
<u>ASTM A181/A181M-2014 (R2020)</u>	<u>Carbon Steel Forgings, for General-Purpose Piping</u>	<u>Piping</u>	<u>Table 1109.1</u>
<u>ASTM A193/A193M-2020</u>	<u>Alloy-Steel and Stainless Steel Bolting for High Temperature or High Pressure Service and Other Special Purpose Applications</u>	<u>Fittings</u>	<u>Table 1109.1</u>
<u>ASTM A234/A234M-2019</u>	<u>Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service</u>	<u>Fittings</u>	<u>Table 1109.1</u>
<u>ASTM A333/A333M-2018</u>	<u>Seamless and Welded Steel Pipe for Low-Temperature Service and Other Applications with Required Notch Toughness</u>	<u>Piping</u>	<u>Table 1109.1</u>
<u>ASTM A334/A334M-2004a (R2016)</u>	<u>Seamless and Welded Carbon and Alloy-Steel Tubes for Low-Temperature Service</u>	<u>Piping</u>	<u>Table 1109.1</u>
<u>ASTM A707/A707M-2019</u>	<u>Forged Carbon and Alloy Steel Flanges for Low-Temperature Service</u>	<u>Fittings</u>	<u>Table 1109.1</u>
<u>ASTM B68/B68M-2019</u>	<u>Seamless Copper Tube, Bright Annealed</u>	<u>Piping</u>	<u>Table 1109.1</u>
<u>ASTM B361-2016</u>	<u>Factory-made Wrought Aluminum and Aluminum-alloy Welding Fittings</u>	<u>Fittings</u>	<u>Table 1109.1</u>
<u>ASTM B491/ASTM B491M-2015</u>	<u>Aluminum and Aluminum-Alloy Extruded Round Tubes for General-Purpose Applications</u>	<u>Piping</u>	<u>Table 1109.1</u>
<u>ASTM B819-2019</u>	<u>Seamless Copper Tube for Medical Gas Systems</u>	<u>Piping</u>	<u>Table 1109.1</u>

(portions of table not shown remain unchanged)

Note: The ASME and ASTM standards meet the requirements for mandatory reference standards in accordance with Section 3-3.7.1 of IAPMO's Regulations Governing Committee Projects.

SUBSTANTIATION:

The first step in refrigerant piping design and installation is to gather product and jobsite information. Installing a new HVAC system requires skill and knowledge of appropriate procedures in electrical wiring, controls wiring, and pipework, including the refrigeration piping and fittings. Proper refrigeration piping installation practices requires the use of proper and rated materials for the installation. The new table provides an easy to reference list of acceptable standards for each application to assist the AHJ in approving refrigerant piping.



CODES ADMINISTRATION

Proposals

Item #: 223

UMC 2024 Section: 1109.1.3, Table 1701.1

SUBMITTER: William E Chapin
Professional Code Consulting, LLC

RECOMMENDATION:
Add new text

1109.0 Refrigeration Piping, Containers, and Valves.
1109.1 Materials.

1109.1.3 Polyethylene of Raised Temperature/Aluminum/Polyethylene of Raised Temperature (PERT/AL/PERT) Linesets. PE-RT/AL/PE-RT piping shall be approved for the intended use and shall comply with ASTM F3346.

(renumber remaining sections)

**TABLE 1701.1
REFERENCES STANDARDS**

STANDARD NUMBER	STANDARD TITLE	APPLICATION	REFERENCED SECTION
ASTM F3346-2019	Standard Specification for Polyethylene of Raised Temperature/Aluminum/Polyethylene of Raised Temperature (PERT/AL/PE-RT) Composite Pressure Pipe	Piping	1109.1.3

(portions of table not shown remain unchanged)

Note: ASTM F3346 meets the requirements for mandatory reference standards in accordance with Section 3-3.7.1 of IAPMO's Regulations Governing Committee Projects.

SUBSTANTIATION:

ASTM F3346 was published in 2019. The standard includes all of the design and testing requirements of other existing composite piping standards and includes requirements for testing in accordance with UL 207 for each refrigerant intended to be used.



CODES ADMINISTRATION

Proposals

Item #: 225

UMC 2024 Section: 1109.2, Table 1701.1

SUBMITTER: Donald (DJ) Berger
Self

RECOMMENDATION:
Revise text

1109.0 Refrigeration Piping, Containers, and Valves.

1109.2 Joints. Iron or steel pipe joints shall be of approved threaded, flanged, or welded types. Exposed threads shall be tinned or coated with an approved corrosion inhibitor. Copper or copper alloy pipe joints of iron pipe size shall be of approved threaded, flanged, ~~press-connect~~ or brazed types. Copper tubing joints and connections shall be connected by approved flared, lapped, swaged, or brazed joints ~~soldered joints, or mechanical joints that comply with UL 207 either individually or as part of an assembly or a system by an approved nationally recognized laboratory.~~ Piping and tubing shall be installed so as to prevent vibration and strains at joints and connections.

**TABLE 1701.1
REFERENCED STANDARDS**

STANDARD NUMBER	STANDARD TITLE	APPLICATION	REFERENCED SECTION
UL 207-2009	Refrigerant-Containing Components and Accessories, Nonelectrical (with revisions through June 27, 2014)	Refrigeration Components	1109.2

(portions of table not shown remain unchanged)

SUBSTANTIATION:

Section 1109.2 of the UMC originally listed only those joint types for refrigeration piping which have been time tested for soundness. Fittings for each joining process were required to be manufactured in accordance with recognized ASME and ASTM Standards, with the intent of the code being a leak-free piping system installed to safely contain the refrigerant within it.

The use of press-connect technology on copper or copper alloy pipe joints of iron pipe size, as well as the use of press-connect technology on copper tubing joints and connections, was introduced into the 2018 UMC through ROP #154 and finally approved into the UMC as being tested per the industry standard, UL 207. It is my intention to substantiate that UL 207 was misapplied for the allowance of press-connect technology into this section of the 2021 UMC.

The Scope: Section 1.1 of the UL 207-2009 Refrigerant-Containing Components and Accessories, Nonelectrical (with revisions through June 27, 2014) clearly states which nonelectrical refrigerant-containing components and accessories are covered by the requirements of the UL 207. The subsequent paragraph of the Scope; Section 1.2 (a), clearly states "These requirements do not apply to: Electrical valves and electric refrigeration controllers, hermetic refrigerant motor compressors, tubing fittings such as flare or compression type fittings, and the like, which are covered in or as part of separate, individual requirements."

There is an existing ASME B16.51 Copper and Copper Alloy Press-Connect Pressure Fittings Standard listed in the 2021 UMC, but that standard does not include ASTM B280 copper and copper alloy piping or the use of press-connect technology as a joining process for refrigeration piping.

As press-connect technology for fittings would be covered by other recognized standards, such as the ASME B31.5 Refrigeration Piping and Heat Transfer Components, it is my opinion that the UL 207 was incorrectly substantiated by the Submitter of the original proposal.

Additionally, Section 1109.1 Materials, of the 2021 UMC clearly states “Refrigerant piping shall be metallic.” As press-connect fittings rely upon a non-metallic elastomeric seal to contain refrigerant, press-connect technology for refrigerant piping applications would be considered as non-compliant with the requirements of the 2021 UMC.

As the UMC Technical Committee did not recognize the error in the Submitter’s substantiation, I am requesting the UMC Technical Committee to consider my substantiation for this proposal.

UL 207-2009, Refrigerant Containing Components and Accessories, Nonelectrical (with revisions through June 27, 2014), was incorrectly referenced for this section of the 2021 UMC. As there are no additional sections of the 2021 UMC that reference this standard, there is no reason to retain it in the code. Therefore, UL 207 should be deleted from Table 1701.1.



CODES ADMINISTRATION

Proposals

Item #: 254

UMC 2024 Section: Table 1210.1, Table 1701.1

SUBMITTER: Lance MacNevin, P.Eng.
Chair, USHGC Technical Committee

RECOMMENDATION:
Revise text

**TABLE 1210.1
MATERIALS FOR HYDRONIC SYSTEM PIPING, TUBING, AND FITTINGS**

MATERIAL	STANDARDS	
	PIPING/TUBING	FITTINGS
Polyethylene (PE)	ASTM D1693, ASTM D2513, ASTM D2683, ASTM D2737, ASTM D3035, ASTM D3350, ASTM F714, ASTM F2165 , AWWA C901, CSA B137.1, NSF 358-1	ASTM D2609, ASTM D2683, ASTM D3261, ASTM F1055, ASTM F2165 , CSA B137.1, NSF 358-1
Cross-Linked Polyethylene (PEX)	ASTM F876, ASTM F2165 , ASTM F3253, CSA B137.5, NSF 358-3	ASSE 1061, ASTM F877, ASTM F1055, ASTM F1807, ASTM F1960, ASTM F2080, ASTM F2098, ASTM F2159, ASTM F2165 , ASTM F2735, ASTM F3253, ASTM F3347 , ASTM F3348 , CSA B137.5, NSF 358-3
Polypropylene (PP)	ASTM F2165 , ASTM F2389, CSA B137.11, NSF 358-2	ASTM F2165 , ASTM F2389, CSA B137.11, NSF 358-2
Raised Temperature Polyethylene (PE-RT)	ASTM F2165 , ASTM F2623, ASTM F2769, CSA B137.18	ASSE 1061, ASTM F1807, ASTM F2159, ASTM F2165 , ASTM F2735, ASTM F2769, ASTM D3261, ASTM F1055, CSA B137.18
Cross-Linked Polyethylene/Aluminum/Cross-Linked Polyethylene (PEX-AL-PEX)	ASTM F1281, ASTM F2165 , CSA B137.10	ASTM F1281, ASTM F1974, ASTM F2165 , ASTM F2434, CSA B137.10
Polyethylene/Aluminum/Polyethylene (PE-AL-PE)	ASTM F1282, ASTM F2165 , CSA B137.9	ASTM F1282, ASTM F1974, ASTM F2165 , CSA B137.9

Notes:

¹ Ductile and gray iron.

² Only type K, L, or M tubing allowed to be installed.

**TABLE 1701.1
REFERENCED STANDARDS**

STANDARD NUMBER	STANDARD TITLE	APPLICATION	REFERENCED SECTION
<u>ASTM F2165-2019</u>	<u>Flexible Pre-Insulated Plastic Piping</u>	<u>Piping</u>	<u>Table 1210.1</u>
<u>ASTM F3347-2020a</u>	<u>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</u>	<u>Fittings</u>	<u>Table 1210.1</u>
<u>ASTM F3348-2020b</u>	<u>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</u>	<u>Fittings</u>	<u>Table 1210.1</u>

(portions of table not shown remain unchanged)

Note: The ASTM standards meet the requirements for mandatory reference standards in accordance with Section 3-3.7.1 of IAPMO's Regulations Governing Committee Projects.

SUBSTANTIATION:

Additional approved standards are being added to Table 1210.1 regarding materials for hydronic system piping, tubing, and fittings. The standards being added have been vetted for correct application. The change correlates with the actions taken by the USHGC Technical Committee.



CODES ADMINISTRATION

Proposals

Item #: 256

UMC 2024 Section: Table 1210.1, Table 1701.1

SUBMITTER: Mark Fasel
Viega LLC

RECOMMENDATION:
Revise text

**TABLE 1210.1
MATERIALS FOR HYDRONIC SYSTEM PIPING, TUBING, AND FITTINGS**

MATERIAL	STANDARDS	
	PIPING/TUBING	FITTINGS
Stainless Steel	ASTM A269, ASTM A312, ASTM A554, ASTM A778	ASTM F1476, ASTM F1548, ASTM F3226, IAPMO IGC 353 , IAPMO PS 117

(portions of table not shown remain unchanged)

**TABLE 1701.1
REFERENCED STANDARDS**

STANDARD NUMBER	STANDARD TITLE	APPLICATION	REFERENCED SECTION
IAPMO IGC 353-2019^{e1}	Branch Connectors	Branch Connectors	Table 1210.1

(portions of table not shown remain unchanged)

Note: IAPMO IGC 353 meets the requirements for mandatory reference standards in accordance with Section 3-3.7.1 of IAPMO's Regulations Governing Committee Projects.

SUBSTANTIATION:

The IAPMO IGC 353 Branch Connectors standard was developed for branch connectors NPS 1 1/2" - 6 inches. Branch connectors are defined within the standard as a permanent fitting or connection that allows a NPT threaded branch connection to be added to existing piping. Branch connectors covered by IAPMO IGC 353 shall include (a) Saddle like permanent connection mechanically fixed in place to the host pipe; and (b) leak tight seal realized through the compression of a sealing element between the outer surface of the pipe and body or flange of the branch connector. Note: One method of mechanically fixing the branch connection is via a swaging action which secures the fitting by mechanically deforming a flange of metal attached to the branch connector so that it matches the contour of the inside surface of a host pipe as indicated in Standard Section 1.1.2.

The body of branch connectors covered by this Standard shall be made of carbon steel, stainless steel, copper nickel or other materials with similar strength properties.

Branch connectors meet the current definition of Mechanical Joint as provided in the code: Joint, Mechanical. General form for gastight or liquid-tight joints obtained by the joining of parts through a positive holding mechanical construction.

The addition of this standard to the Materials for hydronic system piping, tubing and fittings table will provide a consensus standard listing requirement for these type of fittings that have been proven through the variety of testing that is mandatory to obtain the listing.



CODES ADMINISTRATION

Proposals

Item #: 257

UMC 2024 Section: Table 1210.1

SUBMITTER: Mark Fasel
Viega LLC

RECOMMENDATION:
Revise text

**TABLE 1210.1
MATERIALS FOR HYDRONIC SYSTEM PIPING, TUBING, AND FITTINGS**

MATERIAL	STANDARDS	
	PIPING/TUBING	FITTINGS
Steel	ASTM A53, ASTM A106, ASTM A254	ASME B16.5, ASME B16.9, ASME B16.11, ASTM A420, IAPMO PS 117

(portions of table not shown remain unchanged)

Note: IAPMO PS 117 meets the requirements for mandatory reference standards in accordance with Section 3-3.7.1 of IAPMO's Regulations Governing Committee Projects.

SUBSTANTIATION:

The inclusion of IAPMO PS 117 to the steel material fittings column was an oversight during the 2021 code development cycle. It was added to stainless steel but not steel. This proposal is to include IAPMO PS 117 into the standard/fitting section of Steel material as Steel is a material covered by this standard and used often in hydronic piping systems.

IAPMO PS 117 is currently referenced in the standard fittings column for copper/copper alloy and stainless steel in this table. The inclusion of this referenced standard in Steel will cover match what has been completed in the 2021 IAPMO USHGC and will align the codes.



CODES ADMINISTRATION

Proposals

Item #: 261

UMC 2024 Section: 1210.4

SUBMITTER: Lance MacNevin, P.Eng.
Chair, USHGC Technical Committee

RECOMMENDATION:
Revise text

1210.0 Materials.

1210.4 Oxygen Diffusion Corrosion. PEX and PE-RT tubing in closed hydronic systems shall contain an oxygen barrier with an oxygen permeation rate not to exceed 4.59 E-04 grains per square foot per day (0.32 mg/m²/day) at 104°F (40°C).

Exception: Closed hydronic systems without ferrous components in contact with the hydronic fluid.

SUBSTANTIATION:

PEX and PE-RT tubing used for hydronic applications requires an oxygen barrier to prevent diffusion of oxygen molecules into the water through the piping walls. An oxygen barrier also prevents corrosion of any cast iron components or parts such as circulator pumps, fill valves and boiler heating elements. The barrier allows for PEX and PE-RT use in hot water hydronic heating applications such as radiator heating, fan coils, and radiant floor heating. The revision of this section is necessary as it provides a maximum limit for oxygen permeation through the tubing.

The change correlates with the actions taken by the USHGC Technical Committee. This is necessary to ensure correlation between the codes.



CODES ADMINISTRATION

Proposals

Item #: 262

UMC 2024 Section: 1211.12, Table 1701.1

SUBMITTER: Michael Cudahy
PPFA

RECOMMENDATION:
Revise text

1211.0 Joints and Connections.

1211.12 Polyvinyl Chloride (PVC) Pipe. (remaining text unchanged)

(1) (remaining text unchanged)

(2) Solvent cement joints for PVC pipe and fittings shall be clean from dirt and moisture. Pipe shall be cut square and pipe shall be deburred. Where surfaces to be joined are cleaned and free of dirt, moisture, oil, and other foreign material, apply primer purple in color in accordance with ASTM F656. Primer shall be applied until the surface of the pipe and fitting is softened. Solvent cements in accordance with ASTM D2564 shall be applied to all joint surfaces. Joints shall be made while both the inside socket surface and outside surface of pipe are wet with solvent cement. Two-step joining methods shall be in accordance with ASTM D2855. Hold joint in place and undisturbed for 1 minute after assembly.

(3) (remaining text unchanged)

**TABLE 1701.1
REFERENCED STANDARDS**

STANDARD NUMBER	STANDARD TITLE	APPLICATION	REFERENCED SECTION
ASTM D2855-2020	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	Miscellaneous	1211.12(2)

(portions of table not shown remain unchanged)

Note: ASTM D2855 meets the requirements for mandatory reference standards in accordance with Section 3-3.7.1 of IAPMO's Regulations Governing Committee Projects.

SUBSTANTIATION:

The standard for two step solvent cement joining is 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."



CODES ADMINISTRATION

Proposals

Item #: 264

UMC 2024 Section: 1211.14.2

SUBMITTER: Arnie Rodio
Self

RECOMMENDATION:
Revise text

1211.0 Joints and Connections.

1211.14 Joints Between Various Materials. (remaining text unchanged)

1211.14.2 Plastic Pipe to Other Materials. Where connecting plastic pipe to other types of piping, approved types of adapter or transition fittings designed for the specific transition intended shall be used. Except as provided in the plumbing code, PVC and ABS pipe and fittings shall not be solvent welded to any other unlike material.

SUBSTANTIATION:

The current language allows for a single transition from ABS to PVC or PVC to ABS exterior of the structure. Transition glue is not being represented to be allowable to make transition joints between ABS and PVC anywhere in the building. This code change clarifies that this practice is not approved. I have seen residences where the below slab plumbing was PVC and then the above slab plumbing all PVC with the joints being made with transition glue. This is an improper use of the product. While there is a code change to place this change in Chapter 3 as a prohibited practice it is also important that this be in this section as a prohibited practice to aid the end user and AHJ.



CODES ADMINISTRATION

Proposals

Item #: 266

UMC 2024 Section: 1211.5

SUBMITTER: Lance MacNevin, P.Eng.
Plastics Pipe Institute

RECOMMENDATION:
Revise text

1211.0 Joints and Connections.

1211.5 Cross-Linked Polyethylene (PEX) Pipe. Joints between cross-linked polyethylene (PEX) pipe and fittings shall be installed with fittings for PEX tubing that comply with the applicable standards referenced in Table 1210.1. PEX tubing labeled in accordance with ASTM F876 or ASTM F3253 shall be marked with the applicable standard designation for the fittings specified for use with the tubing. Mechanical joints shall be installed in accordance with the manufacturer's installation instructions.

Note: ASTM F3253 meets the requirements for mandatory reference standards in accordance with Section 3-3.7.1 of IAPMO's Regulations Governing Committee Projects.

SUBSTANTIATION:

ASTM F3253 "Standard Specification for Crosslinked Polyethylene (PEX) Tubing with Oxygen Barrier for Hot- and Cold-Water Hydronic Distribution Systems" was first published in 2017. ASTM Specification F3253 was added into the UMC Table 1210.1 "Materials for Hydronic System Piping, Tubing, and Fittings" in the 2021 edition. It was an oversight that PEX tubing produced in accordance with ASTM F3253 was not added into Section 1211.5 at that time.

This revision will clarify that PEX tubing made to ASTM Specification F3253 must comply with the labelling requirements stated within Section 1211.5.



Proposals

Item #: 268

UMC 2024 Section: 1217.3, 1217.4

SUBMITTER: Lance MacNevin, P.Eng.
Chair, UMC Radiant Cooling Working Group

RECOMMENDATION:
Revise text

1217.0 Radiant Heating and Cooling.

1217.3 Radiant Cooling Systems. Radiant cooling systems shall be designed to minimize the potential for condensation. To prevent condensation on any cooled radiant surface, the supply water temperature for a radiant cooling system shall be not less than 3°F (2°C) above the anticipated space dewpoint temperature, or in accordance with the manufacturer's recommendation.

1217.4 Chilled Water Supply/Distribution Piping. Chilled water piping, valves, ~~and~~ fittings, and manifolds shall be insulated and vapor sealed to prevent surface condensation.

Exception: Piping, valves, fittings, and manifolds used to supply radiant cooling systems and where the water temperature is above the space dewpoint temperature shall not require insulation.

(renumber remaining sections)

SUBSTANTIATION:

The UMC Radiant Cooling Working Group was formed in January 2020 by members of ASHRAE TC 6.5, Radiant Heating and Cooling, to address concerns with existing UMC language in Section 1217.3. The working group met through a series of calls throughout 2020 to finalize the language submitted in this proposal.

Proposal 2:

The requirements of the proposed Section 1217.4 were previously grouped into Section 1217.3 but have been separated for clarity. Manifolds are being added as another part of the distribution system which are common to radiant systems.

The UMC Radiant Cooling Working Group proposes that an exception to the 1217.4 insulation requirements be added to clarify that insulation is not required for radiant cooling systems where the piping system will always operate above the dewpoint. The insulation requirements have been amended such that only piping, valves, fittings, and manifolds subject to condensation (below dewpoint) requires vapor sealed insulation. For example, a high temperature cooling system (e.g., Radiant cooling) operating with a water temperature above the dewpoint supplied from a cooling tower.



CODES ADMINISTRATION

Proposals

Item #: 273

UMC 2024 Section: 1221.2.3

SUBMITTER: Michael Cudahy
PPFA

RECOMMENDATION:
Revise text

1221.0 Piping Installation.

1221.2 Embedded Piping Materials and Joints. (remaining text unchanged)

1221.2.3 Plastics. Plastic pipe and tubing shall be installed in continuous lengths or shall be joined by heat fusion methods, solvent cement, or other approved fittings in accordance with Table 1210.1 and the manufacturer's installation instructions.

~~**Exception:** Solvent cement joints.~~

SUBSTANTIATION:

Like welding for steel and brazing for copper, solvent cementing is the optimal joining method for PVC and CPVC plastic piping systems. While use of those materials in hydronics is less frequent than other piping materials, it should not be specifically excepted.



CODES ADMINISTRATION

Proposals

Item #: 275

UMC 2024 Section: 1301.1, Table 1701.1

SUBMITTER: John Taecker
UL LLC

RECOMMENDATION:
Revise text

1301.0 Scope of Gas Piping.

1301.1 Applicability. The regulations of this chapter shall govern the installation of fuel gas piping in or in connection with a building, structure or within the property lines of premises up to 5 pounds-force per square inch (psi) (34 kPa) for natural gas and 10 psi (69 kPa) for undiluted propane, other than service pipe. Fuel oil piping systems shall be installed in accordance with NFPA 31 and the manufacturer's installation instructions. Above-ground piping systems shall be listed and labeled in accordance with UL 1369. Metallic underground piping systems shall be listed and labeled in accordance with UL 971A. Non-metallic underground piping systems shall be listed and labeled in accordance with UL 971.

**TABLE 1701.1
REFERENCED STANDARDS**

STANDARD NUMBER	STANDARD TITLE	APPLICATION	REFERENCED SECTIONS
UL 971-1995	Nonmetallic Underground Piping for Flammable Liquids (with revisions through March 2, 2006)	Gas Piping	1301.1
UL 971A-2006	Outline of Investigation for Metallic Underground Fuel Pipe	Gas Piping	1301.1
UL 1369-2018	Aboveground Piping for Flammable and Combustible Liquids (with revisions through August 25, 2020)	Gas Piping	1301.1

(portions of table not shown remain unchanged)

Note: UL 1369 meets the requirements for mandatory reference standards in accordance with Section 3-3.7.1 of IAPMO's Regulations Governing Committee Projects.

Note: UL 971 and UL 971A were not developed via an open process having a published development procedure in accordance with Section 3-3.7.1.2 of IAPMO's Regulations Governing Committee Projects.

SUBSTANTIATION:

Applicable standards for above ground and below ground piping are being added to Section 1301.1 to clarify the requirements for such applications to aid the code official in verifying safe installation for such systems.



CODES ADMINISTRATION

Proposals

Item #: 281

UMC 2024 Section: 1310.3.5, Table 1701.1

SUBMITTER: David Dias
Sheet Metal Workers Local 104

RECOMMENDATION:
Revise text

1310.0 Gas Piping Installation.

1310.3 Installation of Aboveground Piping.

1310.3.5 Hangers, Supports, and Anchors. 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 equipment and shall not be supported by other piping. Pipe hangers and supports shall conform to the requirements of MSS SP-58. [NFPA 54:7.2.6.1] Pipe support hangers and hooks shall comply with IAPMO PS 95.

**TABLE 1701.1
REFERENCED STANDARDS**

STANDARD NUMBER	STANDARD TITLE	APPLICATION	REFERENCED SECTION
<u>IAPMO PS 95-2018^{e3}</u>	<u>Pipe Support Hangers and Hooks</u>	<u>Hangers and Supports</u>	<u>1310.3.5</u>

(portions of table not shown remain unchanged)

Note: IAPMO PS 95 meets the requirements for mandatory reference standards in accordance with Section 3-3.7.1 of IAPMO's Regulations Governing Committee Projects.

SUBSTANTIATION:

Pipe hangers and supports can meet either the requirements of MSS SP-58 or IAPMO PS 95. Therefore, a reference to the IAPMO standard is being added for completeness.