

**REVISION RECORD
FOR THE STATE OF CALIFORNIA**

EMERGENCY SUPPLEMENT

January 1, 2011

2010 Title 24, Part 5, California Plumbing Code

PLEASE NOTE: The date of this supplement is for identification purposes only. See the History Note Appendix for the adoption and effective dates of the provisions.

It is suggested that the section number, as well as the page number be checked when inserting this material and removing the superseded material. In case of doubt, rely on the section numbers rather than the page numbers because the section numbers must run consecutively.

It is further suggested that the superseded material be retained with this revision record sheet so that the prior wording of any section can be easily ascertained.

Please keep the removed pages with this revision page for future reference.

NOTE

Due to the fact that the application date for a building permit establishes the California Building Standards Code provisions that are effective at the local level, which apply to the plans, specifications, and construction for that permit, it is strongly recommended that the removed pages be retained for historical reference.

Part 5

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backflow preventer for carbonated beverage dispensers and carbonated beverage dispensing systems shall have the water supply protected with a vented backflow preventer for carbonated beverage dispensers.

603.4.13 Water Treatment Units. Reverse osmosis drinking water treatment units shall meet the requirements of the applicable standards referenced in Table 14-1. Waste or discharge from reverse osmosis or other types of water treatment units shall enter the drainage system through an airgap.

603.4.14 Backflow preventers shall not be located in any area containing fumes that are toxic, poisonous, or corrosive.

603.4.15 Deck-mounted or equipment-mounted vacuum breakers shall be installed in accordance with their listing and the manufacturer's instructions, with the critical level not less than one (1) inch (25.4 mm) above the flood-level rim.

603.4.16 Protection from Fire Systems.

Note: Fire Protection Systems has not been adopted by the State Fire Marshal. This section cannot be adopted or enforced pursuant to California Health and Safety Code 13114.7(a), which is being cited for reference.

California Health and Safety Code 13114.7

(a) *For the purposes of this section the following are definitions of class I and class II systems:*

- (1) *American Water Works Association (A.W.W.A) Manual No. M-14 class 1 – Automatic fire sprinkler systems with direct connection from public water mains only; no pumps, tanks, or reservoirs; no physical connection from other water supplies; no antifreeze or additives of any kind; and all sprinkler drains discharging to the atmosphere or other safe outlets.*
- (2) *American Water Works Association (A.W.W.A) Manual No. M-14 class 2 – Automatic fire sprinkler systems which are the same as class 1, except that booster pumps may be installed in the connections from the street mains.*

(b) *Automatic fire sprinkler systems described in subdivision (a) shall not required any backflow protection equipment at the service connection other than required by standards for those systems contained in the publication of the National Fire Protection Association entitled "Installation of Sprinkler Systems" (NFPA Pamphlet No. 13, 1980 edition).*

603.4.17 Special Equipment, Water Supply Protection.

Vacuum breakers for washer-hose bedpans shall be located not less than five (5) feet (1,524 mm) above the floor. Hose connections in health care or laboratory areas shall be not less than six (6) feet (1,829 mm) above the floor.

603.4.18 Portable cleaning equipment, dental vacuum pumps, and chemical dispensers shall be protected from backflow by an airgap, an atmospheric vacuum breaker, a spill-resistant vacuum breaker, or a reduced pressure principle backflow preventer.

603.4.19 Combination stop-and-waste valves or cocks shall not be installed underground. ←

603.4.20 Pure Water Process Systems. The water supply to a pure water process system, such as dialysis water systems, semiconductor washing systems, and similar process piping systems, shall be protected from back-pressure and back-siphonage by a reduced-pressure principle backflow preventer.

603.4.20.1 Dialysis Water Systems. The individual connections of the dialysis related equipment to the dialysis pure water system shall not require additional backflow protection.

603.4.21 Plumbing Fixture Fittings. Plumbing fixture fittings with integral backflow protection shall comply with ASME A112.18.1/CSA B 125.1, *Standard for Plumbing Supply Fittings*.

603.4.22 Potable water supply to swimming pools, spas and hot tubs shall be protected by an airgap or a reduced pressure principle backflow preventer in accordance with the following:

- (1) The unit is equipped with a submerged fill line; or
- (2) The potable water supply is directly connected to the unit circulation system.

604.0 Materials.

604.1 All pipe, tube, and fittings carrying water used in potable water systems intended to supply drinking water shall meet the requirements of NSF 61, *Standard for Drinking Water System Components*, as found in Table 14-1. 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 be in accordance with the applicable standards referenced in Table 6-4.

Exceptions:

- (1) **[OSHPD 1, 2, 3 & 4]** *Use of CPVC is not permitted for applications under authority of the Office of Statewide Health Planning and Development.*

604.1.1 Local Authority to Approve CPVC Pipe Within Residential Buildings Under Specified Conditions. <

[HCD 1 & HCD 2] *The local responsible building official of any city, county, or city and county, shall authorize by permit the use of CPVC for hot and cold water distribution systems within the interior of residential buildings provided all of the following conditions are satisfied:*

- (a) **Permit Conditions.** *Any building permit issued pursuant to Section 604.1.1 shall be conditioned on compliance with the mitigation measures set forth in this section.*
- (b) **Approved Materials.** *Only CPVC plumbing material listed as an approved material and installed in accordance with this code may be used.*
- (c) **Installation and Use.** *Any installation and use of CPVC plumbing material pursuant to this section*

TABLE 6-4
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
Asbestos-Cement	X ¹		ASTM C 296, AWWA C400	
Brass	X	X	ASTM B 43, ASTM B 135	
Copper	X	X	ASTM B 42, ASTM B 75, ASTM B 88, ASTM B 251, ASTM B 302, ASTM B 447	ASME B16.15, ASME B16.18, ASME B16.22, ASME B16.26
CPVC	X	X	ASTM D 2846, ASTM F 441, ASTM F 442	ASTM D 2846, ASTM F 437, ASTM F 438, ASTM F 439, ASTM F 1970
Ductile-Iron	X	X	AWWA C151	ASME B16.4, AWWA C110, AWWA C153
Galvanized Steel	X	X	ASTM A 53	
Malleable Iron	X	X		ASME B16.3
PE	X ¹		ASTM D 2239, ASTM D 2737, ASTM D 3035, AWWA C 901, CSA B137.1	ASTM D 2609, ASTM D 2683, ASTM D 3261, ASTM F 1055, CSA B137.1
PE-AL-PE	X	X	ASTM F 1282, CSA B137.9	ASTM F 1282, ASTM F 1974, CSA B137.9
PEX ^{2,3}	X	X	ASTM F 876 , ASTM F 877, CSA B137.5	ASTM F 877, ASTM F 1807, ASTM F 1960, ASTM F 1961, ASTM F 2080, ASTM F 2159, CSA B137.5
PEX-AL-PEX ⁴	X	X	ASTM F 1281, ASTM F 2262, CSA B137.10	ASTM F 1281, ASTM F 1974, ASTM F 2434, CSA B137.10
PVC	X ¹		ASTM D 1785, ASTM D 2241, AWWA C900	ASTM D 2464, ASTM D 2466, ASTM D 2467, ASTM F 1970
Stainless Steel	X	X	ASTM A 269, ASTM A 312	

¹ For Building Supply or cold-water applications.

² When PEX tubing is placed in soil and is used in potable water systems intended to supply drinking water to fixtures or appliances, the tubing or piping shall be sleeved with a material approved for potable water use in soil or other material that is impermeable to solvents or petroleum products.

³ PEX tubing shall meet or exceed the requirements of ASTM F876-08 or an equivalent or more stringent standard when used in continuously recirculating hot water systems and the PEX tubing is exposed to the hot water 100% of the time.

⁴ [For BSC, DSA/SS, & HCD] The use of PEX-AL-PEX in potable water supply systems is not adopted.

shall comply with all applicable requirements of this code and Section 1.2 of Appendix I of this code, Installation Standard for CPVC Solvent Cemented Hot and Cold Water Distribution Systems, IAPMO IS 20-2006.

(d) **Certification of Compliance.** Prior to issuing a building permit pursuant to Section 604.1.1, the building official shall require as part of the permitting process that the contractor, or the appropriate plumbing subcontractors, provide written certification: (1) that is required in subdivision (e), and (2) that he or she will comply with the flushing procedures and worker safety measures set forth in Section 1.2 of Appendix I of this code, Installation Standard for CPVC Solvent Cemented Hot and Cold Water Distribution Systems, IAPMO IS 20-2006.

(e) **Worker Safety.** Any contractor applying for a building permit that includes the use of CPVC plumbing materials authorized pursuant to this section shall include in the permit application a signed written certification stating that:

(1) They are aware of the health and safety hazards associated with CPVC plumbing installations;

(2) They have included in their Injury and Illness Prevention Plan the hazards associated with CPVC plumbing pipe installations; and

(3) The worker safety training elements of their Injury and Illness Prevention Plan meet the Department of Industrial Relation's guidelines.

(f) **Findings of Compliance.** The building official shall not give final permit approval of any CPVC plumbing materials installed pursuant to Section 604.1.1 unless he or she finds that the material has been installed in compliance with the requirements of this code and that the installer has complied with the requirements in Section 1.2.1 of Appendix I of this code, Installation Standards for CPVC Solvent Cemented Hot and Cold Water Distribution Systems, IAPMO IS 20-2006.

(g) **Penalties.** Any contractor or subcontractor found to have failed to comply with the flushing requirements of Section 1.2.1 of Appendix I of this code or the ventilation and glove requirements of Section 1.2.2 of Appendix I of this code, Installation Standards for CPVC Solvent Cemented Hot and Cold Water Distribution Systems, IAPMO IS 20-2006 shall be subject to the penalties in Health and Safety Code, Division 13,

Part 1.5, Chapter 6 (Section 17995 et. seq.). In addition, if during the conduct of any building inspection the building official finds that the ventilation and glove requirements of Section 1.2.2 of Appendix I of this code, "Special Requirements for CPVC Installation within Residential Buildings," are being violated, such building officials shall cite the contractor or subcontractor for that violation.

604.1.2 PEX. All installations of PEX pipe where it is the initial plumbing piping installed in new construction shall be flushed twice over a period of at least one week. The pipe system shall be first flushed for at least 10 minutes and then filled and allowed to stand for no less than 1 week, after which all the branches of the pipe system must be flushed long enough to fully empty the contained volume. This provision shall not apply to the installation of PEX pipe where it replaces an existing pipe system of any material.

(1) At the time of fill, each fixture shall have a removable tag applied stating:

(a) "This new plumbing system was first filled and flushed on _____ (date) by _____ (name). The State of California requires that the system be flushed after standing at least one week after the fill date specified above. If this system is used earlier than one week after the fill date, the water must be allowed to run for at least two minutes prior to use for human consumption. This tag may not be removed prior to the completion of the required second flushing, except by the building owner or occupant."

(2) Prior to issuing a building permit to install PEX pipe, the building official shall require as part of the permitting process that the contractor, or the appropriate plumbing subcontractors, provide written certification that he or she will comply with the flushing procedures set forth in the Code.

(3) The building official shall not give final permit approval of any PEX plumbing installation unless he or she finds that the material has been installed in compliance with the requirements of the Code, including the requirements to flush and tag the systems.

(4) Any contractor or subcontractor found to have failed to comply with the PEX flushing requirements shall be subject to the penalties in Health and Safety Code, Division 13, Part 1.5, Chapter 6 (Section 17995, et seq.).

604.2 Copper tube for water piping shall have a weight of not less than Type L.

Exception: Type M copper tubing shall be permitted to be used for water piping when piping is above ground in, or on, a building or underground outside of structures.

604.3 Hard-drawn copper tubing for water supply and distribution in addition to the required incised marking, shall be marked in accordance with ASTM B 88 *Seamless Copper Water Tube* as referenced in Table 14-1. The colors shall be: Type K, green; Type L, blue; Type M, red.

604.4 Listed flexible copper water connectors shall be installed in readily accessible locations, unless otherwise listed.

604.5 Cast-iron fittings up to and including two (2) inches (51 mm) in size, when used in connection with potable water piping, shall be galvanized.

604.6 Malleable iron water fittings shall be galvanized.

604.7 Piping and tubing that has previously been used for any purpose other than for potable water systems shall not be used.

604.8 Approved plastic materials shall be permitted to be used in water service piping, provided that where metal water service piping is used for electrical grounding purposes, replacement piping therefore shall be of like materials.

Exception: Where a grounding system acceptable to the Authority Having Jurisdiction is installed, inspected, and approved, metallic pipe shall be permitted to be replaced with nonmetallic pipe. Plastic materials for water service piping outside underground shall have a blue insulated copper tracer wire or other approved conductor installed adjacent to the piping. Access shall be provided to the tracer wire or the tracer wire shall terminate above ground at each end of the nonmetallic piping. The tracer wire size shall be not less than 18 AWG and the insulation type shall be suitable for direct burial.

604.9 Solder shall conform to the requirements of Section 316.1.3.

604.10 Water pipe and fittings with a lead content which exceeds eight (8) percent shall be prohibited in piping systems used to convey potable water.

Note: On or after January 1, 2010, see Section 116875 of the Health and Safety Code for the lead content of pipes, pipe or plumbing fittings, or fixtures intended to convey or dispense water for human consumption.

604.11 PEX. Cross-linked polyethylene (PEX) tubing conforming to ASTM F 877, *Standard for Crosslinked Polyethylene (PEX) Plastic Hot- and Cold -Water Distribution Systems*, shall be marked with the appropriate standard designation(s) for the fittings specified for use with the tubing. Such marking shall not be required for PEX tubing conforming to only ASTM F 876, *Crosslinked Polyethylene (PEX) Tubing*. PEX tubing shall be installed in compliance with the provisions of this section. All PEX pipe installed in California must provide at least 30-day UV protection. **[OSHPD 1, 2, 3, & 4]** Installation and use of PEX tubing shall be in accordance with manufacturer's standards. PEX piping shall not be used for any application that would result in noncompliance with any provisions of the California Building Standards Code.

604.11.1 PEX Fittings. Fittings used with PEX tubing shall be manufactured to and marked in accordance with the standards for the fittings referenced in Table 14-1. *Brass fittings used with PEX tubing shall meet or exceed NSF 14-2009 standards to prevent dezincification and stress crack corrosion. [OSHPD 1, 2, 3, & 4]* Installation and use of PEX tubing shall be in accordance with manufacturer's standards. PEX piping shall not be used for any application that would result in noncompliance with any provisions of the California Building Standards Code.

604.11.2 Water Heater Connections. PEX tubing shall not be installed within the first eighteen (18) inches (457 mm) of piping connected to a water heater.

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

Water Heater Connectors – twenty-four (24) inches (610 mm).

Fixture Connectors – thirty (30) inches (762 mm).

Washing Machine Connectors – seventy-two (72) inches (1,829 mm).

Dishwasher and Icemaker Connectors – one-hundred and twenty (120) inches (3,048 mm).

604.13 PEX-AL-PEX and PE-AL-PE. Crosslinked polyethylene-aluminum-crosslinked polyethylene (PEX-AL-PEX) and polyethylene-aluminum-polyethylene (PE-AL-PE) composite pipe shall be marked with the applicable standard referenced in Table 14-1 for which the piping has been listed or approved. PEX-AL-PEX and PE-AL-PE piping shall be installed in compliance with the provisions of this section.

|| *[HCD 1 & HCD 2, BSC] PEX-AL-PEX is not adopted for use in potable water supply and distribution systems.*

604.13.1 PEX-AL-PEX and PE-AL-PE. Fittings used with PEX-AL-PEX and PE-AL-PE piping shall be manufactured to and marked in accordance with the standard for the fittings referenced in Table 14-1.

|| *[HCD 1 & HCD 2, BSC] PEX-AL-PEX is not adopted for use in potable water supply and distribution systems.*

604.13.2 Water Heater Connections. PEX-AL-PEX or PE-AL-PE tubing shall not be installed within the first eighteen (18) inches (457 mm) of piping connected to a water heater.

|| *[HCD 1 & HCD 2, BSC] PEX-AL-PEX is not adopted for use in potable water supply and distribution systems.*

604.14 Water Heater Connectors. Flexible metallic water heater connectors or reinforced flexible water heater connectors connecting water heating to the piping system shall be in compliance with the applicable standards referenced in Table 14-1.

605.0 Valves.

605.1 Valves up to and including two (2) inches (51 mm) in size shall be brass or other approved material. Sizes exceeding two (2) inches (51 mm) shall be permitted to have cast-iron or brass bodies. Each gate or ball valve shall be a fullway type with working parts of non-corrosive material. Valves carrying water used in potable water systems intended to supply drinking water shall meet the requirements of NSF 61, *Standard for Drinking Water System Components*, as referenced in Table 14-1.

605.2 A fullway valve controlling outlets shall be installed on the discharge side of each water meter and on each unmetered water supply. Water piping supplying more than one (1) building on any one (1) premises shall be equipped with a separate fullway valve to each building, so arranged that the water supply can be turned on or off to any individual or separate building provided; however, that supply piping to a single-family residence and building accessory thereto shall be permitted to be controlled on one (1) valve. Such shutoff valves shall be

accessible at all times. A fullway valve shall be installed on the discharge piping from water supply tanks at or near the tank. A fullway valve shall be installed on the cold water supply pipe to each water heater at or near the water heater.

605.3 In multidwelling units, one (1) or more shutoff valves shall be provided in each dwelling unit so that the water supply to any plumbing fixture or group of fixtures in that dwelling unit can be shut off without stopping water supply to fixtures in other dwelling units. These valves shall be accessible in the dwelling unit that they control.

605.4 Valves used to control two (2) or more openings shall be fullway gate valves, ball valves, or other approved valves designed and approved for the service intended.

605.5 A control valve shall be installed immediately ahead of each water-supplied appliance and immediately ahead of each slip joint or appliance supply.

Parallel water distribution systems shall provide a control valve either immediately ahead of each fixture being supplied or installed at the manifold and shall be identified with the fixture being supplied.

605.6 Required shutoff or control valves shall be accessible.

605.7 A single control valve shall be installed on a water supply line ahead of any automatic metering valve that supplies a battery of fixtures.

605.8 [OSHPD 1, 2, 3, & 4] *Each riser or branch shall be provided with an accessible sectionalizing valve in hot-and cold-water systems to permit servicing or replacement of piping or equipment. Stop valves shall be provided at each fixture.*

606.0 Joints and Connections.

606.1 Types of Joints.

606.1.1 Flared Joints. Flared joints for soft copper water tubing shall be made with fittings meeting approved standards. The tubing shall be reamed to the full bore, resized to round, and expanded with a proper flaring tool.

606.1.2 Mechanical Joints. Mechanical joints for cast-iron water pipe shall conform to nationally recognized standards.

606.1.3 Mechanically Formed Tee Fittings. Mechanically extracted collars shall be formed in a continuous operation consisting of drilling a pilot hole and drawing out the tube surface to form a collar having a height not less than three (3) times the thickness of the branch tube wall.

The branch tube shall be notched to conform with the inner curve of the run tube and shall have two (2) dimple/depth stops to ensure that penetration of the branch tube into the collar is of sufficient depth for brazing and that the branch tube does not obstruct the flow in the main line tube. Dimple/depth stops shall be in line with the run of the tube. The second dimple shall be one-quarter (1/4) inch (6.4 mm) above the first and shall serve as a visual point of inspection.

Joints shall be brazed in accordance with Section 316.1.7. Soldered joints shall not be allowed.

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HISTORY NOTE APPENDIX

California Plumbing Code (Title 24, Part 5, California Code of Regulations)

For prior history, see the History Note Appendix to the California Plumbing Code, 2007 Triennial Edition effective January 1, 2008.

1. (BSC 05/09, DSA-AC 03/09, DSA-SS 04/09, HCD 03/09, OSHPD 02/09, SFM 02/09) Adoption by reference of the 2009 Uniform Plumbing Code (UPC) with necessary state amendments and repeal of the 2006 edition of the UPC. Effective on January 1, 2011.

2. Erratum to correct errors and omissions.

3. (BSC EF 01/10, HCD EF 01/10, OSHPD EF 02/10, DSA-SS EF 01/10, AGR EF 01/10, DPH EF 01/10) Chapter 6, Table 6-4 footnotes 1, 2, 3, Sections 604.1, 604.1.2, 604.11, 604.11.1, 604.11.2, 604.13, 604.13.1, 604.13.2. Effective on January 1, 2011.