CITY OF LOS ANGELES
CALIFORNIA

April 22, 2013

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RESEACH REPORT: RR-5721
EFFECTIVE DATE: 04/22/2013
EXPIRATION DATE: 03/01/2014

GENERAL APPROVAL –Renewal- This product consists of cross linked polyethylene (PEX) tubes and plastic fittings utilizing copper crimp rings for potable water systems ranging from 1/4 inch to 1 inch nominal diameter.

DETAILS
PEX Tubing comes in white, red, and blue colors. White tubes are approved up to 1 ¼ inch, red and blue tubes are approved up to ¾ inch. The tubes have been tested to ASTM F876 and F877. The fittings are plastic and utilize a copper crimp ring approved up to 1 inch, have been tested to standards ASTM F1807 and F2159 and PEX system standard ASTM F877.

The approval is subject to the following conditions:

1. This approval shall only apply to the provisions of the Plumbing Code.

2. PEX tubes and fittings may be installed in cold and hot potable water systems.

3. These PEX tubes meet the ASTM F 876 requirement for chlorine resistance and have a chlorine resistance factor of 5 and may be installed also in hot water systems with recirculation pumps.

4. PEX tubing is allowed in all types of buildings as permitted by LABC section 603.1.2.

5. This approval does not authorize PEX tubing to be installed in fire protection systems. Separate approval or listing is required for use in fire protection systems.

6. A permit shall be required for each installation.

7. PEX systems shall be sized using hydraulic calculations in accordance with appendix A of the Los Angeles Plumbing Code. However, systems requiring 1-1/2 inch or smaller supply may be designed according to the attached Table A. Hydraulic calculations shall be based on the inside diameter of the tubing and shall use a Hazen and Williams coefficient of C=150. Furthermore, calculations shall demonstrate that the water velocity in the fittings does not exceed the following values:
    a. Plastic fittings : 8 feet per second for hot and cold water
    b. Copper or copper alloy fittings: 8 feet per second for cold water, and 5 feet per second for hot water.

8. Plans shall be submitted to mechanical plan check and shall be approved prior to obtaining the plumbing permit.
   Exception: Systems requiring 1 ½ inch or smaller supply and designed according to the attached Table A.

9. Notwithstanding the above condition plan check is not required when replacing existing tubing with tubing of the same material and same size. (California Code of Regulations Chapter 5 Article 1 Section 17958.8)

10. PEX systems are subject to the following pressure limitations:
    a. 160 psi in cold water systems
    b. 100 psi in hot water systems

11. PEX tubing shall not be installed where water temperature exceeds 180°F

12. PEX tubing shall not be installed within the first 18 inches of piping connected to the hot water heater.

13. PEX tubing shall not be installed within 6 inches horizontally or within 12 inches vertically from any source of heat, such as gas appliance vents, light fixtures, heating appliances, etc.

14. This product has been tested for flame spread and smoke developed indexes and may be installed within ducts or plenums.

15. PEX tubing shall not be installed in locations exposing it to direct sunlight.

16. Installation shall be in accordance with manufacturer's recommendations and this research report.

17. These tubes shall not be deformed or kinked.

18. When PEX tubing is installed underground, the tubing shall be sleeved with piping or tubing approved for underground potable water systems or other material that is impermeable to solvents or petroleum products.

19. PEX tubing shall be supported at 32 inch intervals for horizontal runs, and at the base and at each floor for vertical runs. Furthermore, vertical runs shall be provided with mid-story guides.

20. Bored holes and sleeves shall provide adequate clearance between the tubing and structure to allow for free longitudinal movement.

21. Tubing passing through drilled or notched metal studs or joist or hollow shell masonry walls shall be protected from abrasion due to thermal expansion and contraction by elastomeric or plastic sleeves.

22. Tubing penetrating framing members within one inch of the exposed framing shall be protected by steel nail plates not less than 18 gauge in thickness. The steel plate shall extend along the framing a minimum of 1 ½ inches beyond the outside diameter of the pipe or tubing.

23. Penetration of fire rated walls shall be properly fire-stopped as per building code. The fire stopping shall be chemically compatible with PEX material.

24. Only approved fittings and manifolds shall be used.

25. Transition from PEX tubing to other types of piping shall be by means of approved transition fittings.

26. No headers, joins or field splices shall be permitted in or under the slab.

27. For alterations and additions in existing buildings where no associated building-electrical permit has been obtained, a miscellaneous electrical permit shall be obtained to verify the electrical grounding.

28. All installations of PEX tubes where it is the initial pluming piping installed in new constructions 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.

29. At the time of fill, each fixture shall have a removable tag stating:

    "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."

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

31. 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).

32. New or repaired potable water systems shall be disinfected prior to use whenever required by the field inspector. Prior to utilization of newly constructed or altered potable water piping systems, all affected potable water piping shall be disinfected using the procedure described below:

    A. The pipe system shall be flushed with clean, potable water until only potable water appears at the points of outlet.

    B. The system or parts thereof shall be filled with a water-chlorine solution containing at least fifty (50) parts per million of chlorine, and the system or part thereof shall be valved off and allowed to stand for twenty-four (24) hours; or, the system or part thereof shall be filled with a water-chlorine solution containing at least two hundred (200) parts per million of chlorine and allowed to stand for three (3) hours.

    C. Following the allowed standing time, the system shall be flushed with clean potable water until the chlorine residual in the water coming from the system does not exceed the chlorine residual in the flushing water.

D. The procedure shall be repeated if it is shown by bacteriological examination made by an approved agency that contamination persists in the system.

33. Tubing shall be identified with continuous printed letters as follows:

a. Manufacturer's name or trade mark
b. ASTM F876/F877
c. Chorine ratings
d. temperature and pressure ratings,
e. nominal size,
f. NSF-PW.

DISCUSSION

These products have been tested in compliance with ASTM Standards F876, F877, F2159, and ANSI/NSF Standards 14 and 61, and comply with the led free California State Health and Safety Code Section 116875 for fittings or fixtures used to convey or dispense water for human consumption. A current production sample was examined by the Mechanical Testing Laboratory and is equivalent to that prescribed by the Los Angeles Municipal Code in quality, strength, effectiveness, durability, and safety.

For this General Approval to be valid on any individual construction project in the City of Los Angeles, an engineer or inspector of the Department of Building and Safety must make a determination that all conditions of the General Approval required to provide equivalency have been met in the case of each construction project under consideration.

This approval is granted under Sections 94.301, 94.313, 94.603, 94.604, 94.608 and 94.610 of the Los Angeles Plumbing Code, 2008 Edition; Section 95.105, 95.1204, 95.1205, 95.1206, 95.1207, and Appendix B of the Los Angeles Mechanical Code, 2008 Edition.

Approved by:

Thomas Liu
Engineering Bureau

Concurred by:

Plumbing / Mechanical Inspection

TABLE A
FIXTURE UNIT TABLE FOR DETERMINING WATER PIPE SIZES IN PEX SYSTEMS
This table may be used in lieu of providing calculations for systems having 1-1/2 or smaller supply and
This table shall be used with the same procedure and rules as Table 6-6 of the Los Angeles Municipal Code

Pressure range: 30 to 80 psi available static pressure after head losses
Meter Sizes: ¾, 1 or 1 ½ inch
Maximum developed length: 200 feet or less

Building Supply and Branch Lines (inches)	½	¾	1	1 ¼	1 ½
PEX Tubing utilizing brass inserts: Hot water	0	3	7	12	16
PEX Tubing utilizing brass inserts: Cold water	1	6	12	20	30
PEX Tubing utilizing plastic inserts with one copper crimp: Hot and cold water	1	4	8	N/A	N/A
PEX Tubing utilizing cold expansion plastic inserts with PEX reinforcement: Hot and cold water	1	7	13	24	36

LIST OF APPROVED MODELS

Tubing: WHITE		
Finished #	**Item Description**	**MATERIAL DESIGNATION CODE PER F876-09**
588574	3/8 white Superpex PEX tubing x 20 foot coil	PEX 5306
588392	3/8 white Superpex PEX tubing x 100 foot coil	PEX 5306
588400	3/8 white Superpex PEX tubing x 500 foot coil	PEX 5306
588418	3/8 white Superpex PEX tubing x 1000 foot coil	PEX 5306
588707	1/2 white Superpex PEX tubing x 20 foot length	PEX 5306
588855	1/2 white Superpex PEX tubing x 100 foot coil	PEX 5306
588871	1/2 white Superpex PEX tubing x 300 foot coil	PEX 5306
588889	1/2 white Superpex PEX tubing x 500 foot coil	PEX 5306
588897	1/2 white Superpex PEX tubing x 1000 foot coil	PEX 5306
588798	3/4 white Superpex PEX tubing x 20 foot length	PEX 5306
588939	3/4 white Superpex PEX tubing x 100 foot coil	PEX 5306
588954	3/4 white Superpex PEX tubing x 300 foot coil	PEX 5306
588962	3/4 white Superpex PEX tubing x 500 foot coil	PEX 5306
588970	3/4 white Superpex PEX tubing x 1000 foot coil	PEX 5306
587147	1 white Superpex PEX tubing x 20 foot length	PEX 5306
587154	1 white Superpex PEX tubing x 100 foot coil	PEX 5306
587162	1 white Superpex PEX tubing x 300 foot coil	PEX 5306
587170	1 white Superpex PEX tubing x 500 foot coil	PEX 5306
587345	1 1/4 white Superpex PEX tubing x 100 foot coil	PEX 5306
587352	1 1/4 white Superpex PEX tubing x 200 foot coil	PEX 5306

Tubing: RED		
Finished #	**Item Description**	**MATERIAL DESIGNATION CODE PER F876-09**
587881	3/8 red Superpex PEX tubing x 100 feet coil	PEX 5306
587899	3/8 red Superpex PEX tubing x 500 feet coil	PEX 5306
587907	3/8 red Superpex PEX tubing x 1000 feet coil	PEX 5306
589903	1/2 red Superpex PEX tubing x 20 foot length	PEX 5306
589804	1/2 red Superpex PEX tubing x 100 feet coil	PEX 5306
589820	1/2 red Superpex PEX tubing x 300 feet coil	PEX 5306
589838	1/2 red Superpex PEX tubing x 500 feet coil	PEX 5306
589846	1/2 red Superpex PEX tubing x 1000 feet coil	PEX 5306
589911	3/4 red Superpex PEX tubing x 20 foot length	PEX 5306
589853	3/4 red Superpex PEX tubing x 100 feet coil	PEX 5306
589879	3/4 red Superpex PEX tubing x 300 feet coil	PEX 5306
589887	3/4 red Superpex PEX tubing x 500 feet coil	PEX 5306
589937	3/4 red Superpex PEX tubing x 1000 feet coil	PEX 5306

Tubing: BLUE		
Finished #	**Item Description**	**MATERIAL DESIGNATION CODE PER F876-09**
587840	3/8 blue Superpex PEX tubing x 100 feet coil	PEX 5306
587857	3/8 blue Superpex PEX tubing x 500 feet coil	PEX 5306
587865	3/8 blue Superpex PEX tubing x 1000 feet coil	PEX 5306

589663	1/2 blue Superpex PEX tubing x 20 foot length	PEX 5306
589705	1/2 blue Superpex PEX tubing x 100 feet coil	PEX 5306
589721	1/2 blue Superpex PEX tubing x 300 feet coil	PEX 5306
589739	1/2 blue Superpex PEX tubing x 500 feet coil	PEX 5306
589747	1/2 blue Superpex PEX tubing x 1000 feet coil	PEX 5306
589671	3/4 blue Superpex PEX tubing x 20 foot length	PEX 5306
589754	3/4 blue Superpex PEX tubing x 100 feet coil	PEX 5306
589770	3/4 blue Superpex PEX tubing x 300 feet coil	PEX 5306
589788	3/4 blue Superpex PEX tubing x 500 feet coil	PEX 5306
589929	3/4 blue Superpex PEX tubing x 1000 feet coil	PEX 5306

Insert Fitting: TEE

Finished #	Item Description	MATERIAL DESIGNATION CODE PER F876-09
503169	1/2 x 1/2 x 3/4 tee, Polyalloy PEX insert fitting	Plastic with copper crimp ring
503102	1/2 x 1/2 x 1/2 tee, Polyalloy PEX insert fitting	Plastic with copper crimp ring
503110	3/4 x 3/4 x 3/4 tee, Polyalloy PEX insert fitting	Plastic with copper crimp ring
503193	3/4 x 3/4 x 1/2 tee, Polyalloy PEX insert fitting	Plastic with copper crimp ring
503185	3/4 x 1/2 x 3/4 tee, Polyalloy PEX insert fitting	Plastic with copper crimp ring
503177	3/4 x 1/2 x 1/2 tee, Polyalloy PEX insert fitting	Plastic with copper crimp ring
*503219 (1)	1 x 1 x 3/4 tee, Polyalloy PEX insert fitting	Plastic with copper crimp ring
*503201 (2)	1 x 1 x 1 tee, Polyalloy PEX insert fitting	Plastic with copper crimp ring

*NOTE:
(1) Item is purchased, make is National Craft Industries Inc., Part T-886-W/B
(2) Item is purchased, make is National Craft Industries Inc., Part T-888-W/B

Insert Fitting: ELBOW

Finished #	Item Description	MATERIAL DESIGNATION CODE PER F876-09
503300	1/2 x 1/2 90° elbow, Polyalloy PEX insert fitting	Plastic with copper crimp ring
503367	3/4 x 1/2 90° elbow, Polyalloy PEX insert fitting	Plastic with copper crimp ring
503318	3/4 x 3/4 ° elbow, Polyalloy PEX insert fitting	Plastic with copper crimp ring
*503375 (3)	1 x 1 90° elbow, Polyalloy PEX insert fitting	Plastic with copper crimp ring

*NOTE:
(3) Item is purchased, make is National Craft Industries Inc., Part E-808-W/B

Insert Fitting: Coupling

Finished #	Item Description	MATERIAL DESIGNATION CODE PER F876-09
503011	1/2 x 1/2 coupling, Polyalloy PEX insert fitting	Plastic with copper crimp ring
503037	3/4 x 1/2 coupling, Polyalloy PEX insert fitting	Plastic with copper crimp

		ring
503029	3/4 x 3/4 coupling, Polyalloy PEX insert fitting	Plastic with copper crimp ring
*503466 (4)	1 x 3/4 coupling, Polyalloy PEX insert fitting	Plastic with copper crimp ring
*503458 (5)	1 x 1 coupling, Polyalloy PEX insert fitting	Plastic with copper crimp ring
*NOTE: (4) Item is purchased, make is National Craft Industries Inc., Part C-860-WB (5) Item is purchased, make is National Craft Industries Inc., Part C-880-WB		

Insert Fitting: PLUG		
Finished #	**Item Description**	**MATERIAL DESIGNATION CODE PER F876-09**
503404	1/2 plug, Polyalloy PEX insert fitting	Plastic with copper crimp ring
503417	3/4 plug, Polyalloy PEX insert fitting	Plastic with copper crimp ring
*503425 (6)	1 plug, Polyalloy PEX insert fitting	Plastic with copper crimp ring
*NOTE: (6) Item is purchased, make is National Craft Industries Inc., Part P-800-W/B		

Insert Fitting: MPT		
Finished #	**Item Description**	**MATERIAL DESIGNATION CODE PER F876-09**
503045	1/2 PEX x 1/2 MPT, Polyalloy PEX insert fitting	Plastic with copper crimp ring
503078	1/2 PEX x 3/4 MPT, Polyalloy PEX insert fitting	Plastic with copper crimp ring
503086	3/4 PEX x 1/2 MPT, Polyalloy PEX insert fitting	Plastic with copper crimp ring
503052	3/4 PEX x 3/4 MPT, Polyalloy PEX insert fitting	Plastic with copper crimp ring

Insert Fitting: OTHER		
Finished #	**Item Description**	**MATERIAL DESIGNATION CODE PER F876-09**
*503060 (7)	1/2 Faucet adapter (Swivel with washer), Polyallo y PEX insert fitting	Plastic with copper crimp ring
*NOTE: (7) Item is purchased, make is National Craft Industries Inc., Part C-4I0-W/B-02		