
TECHNICAL BULLETIN TB211

PRESSURE TESTING OF RAUPEX[®] PIPE

Product: RAUPEX Pipe/Fittings

Date: 17 June 2014 (supersedes 06 November 2009)

REHAU has a detailed pressure test procedure for testing RAUPEX pipe and EVERLOC[®] fittings, or other fittings that are permitted for use with RAUPEX pipe (ASTM F1807 brass crimp rings fittings) as set forth below. The recommended pressure test procedure applies to the following applications of these products:

- Domestic plumbing: Residential, commercial and manufactured housing
- Radiant floor heating (RFH): All applications
- Snow and ice melting (SIM): All applications
- General hydronics: All applications
- Fire protection: All applications (Also see TB225)

The following recommended pressure test procedure also applies to both compressed air and hydrostatic (water) testing:

General Recommendations

- For RFH and SIM systems, a pressure test must always be performed on the system prior to and during the installation of the thermal mass to ensure that RAUPEX pipe and connections are leak-free. For dry systems (example: joist space), a pressure test must be performed after installation and up to the time that the system is put in operation.
- Tests shall comply with local codes where applicable and, where required, shall be witnessed by the building official.
- Use an air test if water could freeze in the system, or when convenient.
- Do not exceed 150 psi (1030 kPa) for the RAUPEX pipe. Air temperature will affect the gauge pressure, so perform all pressure tests at a constant temperature. Verify maximum pressure requirements for other systems prior to performing the test.

REHAU recommends that compressed air tests not be used with plastic fittings, valves or manifolds.

The recommended **REHAU Pressure Test Procedure**, for pipe and fittings:

- Perform a preliminary pressure test pressurizing the system to the greater of 1.5 times the maximum operating pressure, or 100 psi (690 kPa), for 30 minutes.
- As the piping expands, restore pressure, first at 10 minutes into the test and again at 20 minutes.
- At the end of the 30 minute preliminary test, pressure must not fall by more than 5 psi from the maximum, and there shall be no leakage.

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- After performing the preliminary test, perform the main pressure test immediately. The main pressure test shall last at least 2 hours. The test pressure should be restored and must not fall more than 3 psi after 2 hours. No leakage should be detected.
- It is recommended to maintain test pressure on the system during further construction, where practical, to immediately identify any damage. If a water (hydrostatic) test is used, protect the water from freezing or drain water from pipes.

Beyond REHAU's recommended test procedure, some authorities having jurisdiction require the system to be tested at a higher pressure of 200 psi for 2 hours. To ensure the safety of this test procedure, REHAU has successfully completed independent third-party testing to verify that testing at this pressure is appropriate when using RAUPEX pipes and EVERLOC® fittings.

Therefore, testing using air or water at pressures up to 200 psi at temperatures up to 120°F (1380 kPa @ 49°C) and lasting up to 48 hours is possible. Where applicable, the pressure test shall comply with local codes and be witnessed by the authority having jurisdiction.

Safety

As a flexible thermoset plastic material, when RAUPEX pipe fails (bursts), it does so in a ductile mode, meaning that the pipe will swell and then split, with no separation of fragments. The minimum burst rating of RAUPEX pipe is 480 psi (3310 kPa at 73.4°F [23°C]), but it typically exceeds this requirement by more than 50%. Failure of RAUPEX pipe during a pressure test described above (maximum 150 psi) is highly unlikely, and failure should not result in dangerous separation of the pipe.

In a letter to REHAU (available upon request), the Plastics Pipe Institute (PPI) recognizes that PEX pipes “are flexible, and fail in a ductile mode with no shards separating from the pipe.” The PPI defers to the manufacturer for application suitability determination.

REHAU can provide a detailed lab report (available upon request) stating that failure of RAUPEX pipes is ductile, with no shards separating from the pipe. This report also demonstrates that the minimum burst pressure of RAUPEX pipes (1/2, 3/4 and 1 in.) is above 750 psi (5170 kPa at 73.4°F [23°C]). In all cases, pipes were tested with assembled brass EVERLOC fittings that did not leak or separate.

Therefore, REHAU DOES recommend the use of compressed air tests on RAUPEX pipe, following the above procedures, when used with brass fittings such as EVERLOC compression sleeve fittings (ASTM F2080) or brass crimp ring fittings (ASTM F1807). REHAU recommends that compressed air tests not be used with plastic fittings, valves or manifolds.

