

Safely testing your PVC and CPVC piping system

by Reese Sumrall Jr.

You've just installed a new PVC or CPVC plastic pipe and fittings system. The cement joints have been adequately cured and you are ready to test and inspect the system for leaks.

Air testing can be dangerous

The most common test method is to use water under moderate pressure. However, installers sometimes opt for testing with air pressure because it is quicker and easier. But air testing, if done improperly, can be hazardous.

Air is a compressible gas that can store far more energy than water when put under pressure because it can release this energy so rapidly. This raises the possibility of an explosion. The most common cause of failure is to employ too much air pressure, which can result in an explosion. Other testing mistakes that can cause failures are:



When testing your PVC and CPVC pipe and fittings installations, water testing is a safer and more reliable method than air testing.

- Applying pressure over 6 psi to the system.
- Using a gauge graduated to more than three times the test pressure.
- Failing to vent trapped air.
- Failure to depressurize the system.
- Failure to remove the test plugs with caution.

All can cause piping to fail risking an explosion that can cause serious personal injury or death and property damage.

Proper recommendations for water testing

It is important to know that pipe and fitting manufacturers do not recommend air testing and cannot be held liable for any injuries occurring during the air testing of their product. Most PVC and CPVC piping component manufacturers have statements in their literature cautioning against using air or gases to test their products.

They also caution against using their product to store or convey air or other gases or failing to vent trapped air. It is increasingly common for such practices to void any warranties. Many accidents have been reported as a result of air testing or trapped air. Most manufacturers of plastic pipe and fittings have had to investigate field failures caused by either air testing or trapped air.

Overall, water testing is a safer, more reliable and more accurate method for testing plastic piping systems. Because

PVC and CPVC pipe and fittings are designed to convey liquids, most companies recommend testing with water. The purpose of the test is to locate any leaks at the joints and correct these prior to putting the system into operation. Because it is important to visually inspect the joints, a water test must be conducted prior to closing in the piping or back filling underground piping.

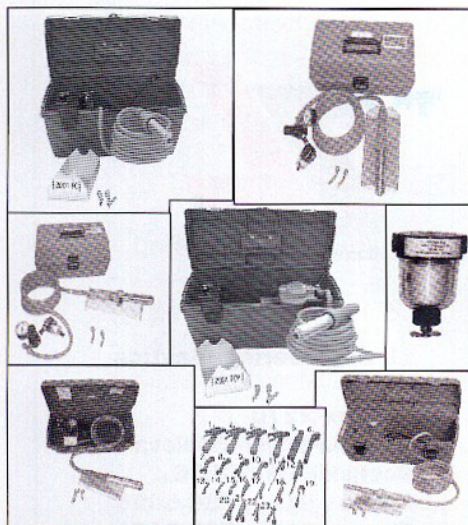
If there is a leak in the system, it will always be easier to locate when testing with water; air leaks can be hard to find. Air tests have a built-in inaccuracy that is hard to control. The system pressure changes with temperature; whereas, a water pressure test is not as sensitive to temperature variations.

To properly water test, plugs should be inserted through test tees to isolate each section being tested. All other openings should be plugged or capped with test plugs or test caps. Then fill the system being tested with water to the highest point. The hydrostatic pressure created as the water fills the vertical pipe increases as the water height climbs. Filling the system slowly should allow any air in the system to escape as the water rises in the vertical pipe. All air trapped in the system must be expelled prior to the beginning of the test. Failure to remove entrapped air may give faulty test results.

If a leak is found, the joint must be cut out and discarded. A new section can be installed using couplings. Once the system has been successfully tested, it should be drained and the next section should be prepared for testing.

When it comes to testing pipe and fitting installations, water testing is a safer, more thorough method than air testing. Taking a few extra minutes to properly test piping systems with water pays off in error-proof installation and a safer job site. Your salespeople should convey this information to their contracting customers to aid them in safely testing your PVC and CPVC piping systems. ■

Reese Sumrall Jr. is technical manager for Charlotte Pipe and Foundry Company, Plastics Division. For further information, contact Charlotte Pipe and Foundry Company, P.O. Box 35430, Charlotte, NC 28235 USA; (800) 438-6091, fax (800) 553-1605, e-mail: info@charlottepipe.com, www.charlottepipe.com.



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