

Installing plastic pipes

Testing



Preparation

Before the pressure test can be performed, all the solvent welded joints in the installation must be cured for a safe period following completion of the last welded joint. Fusion welded joints must be cooled for a minimum period of 1 hour following completion of the last joint. Ensure that all threaded and flanged connections have been correctly tightened, and that no stresses exist at these locations. The piping system should also be protected against direct UV radiation, as changes in temperature can cause pressure drops during testing, as well as possible damage to the piping system at elevated temperatures.

The time taken for a solvent welded joint to cure can depend upon a number of factors, including the tightness of fit as well as the ambient temperature and humidity. In general terms, joints will cure faster on tighter fitting assemblies in warmer, drier conditions, whereas looser fit joints made in cooler and/or humid conditions will cure slower.

As a general guide it is recommended that (wherever possible) joints be left for 24 hours to cure before pressure is applied. However, where this is not possible, consideration may be given to the above factors before determining when joints are put into service. Given average conditions and a working temperature not exceeding 20°C, a safe guide is to allow a cure time of not less than 1 hour for each bar of working pressure for pipe sizes up to 4" (100mm), and 1½ hours for each bar for larger sizes.

Testing Guidelines

There are several important guidelines that must be adhered to when testing a plastic piping system:

- The piping system must be tested with liquid (normally water). **The use of gas or compressed air is not permitted as a test medium.**
- The system needs to be fully vented during filling so that no air pockets remain.
- The testing liquid should be at a maximum temperature of 23°C.
- The pump should be installed at the lowest point in the piping system.
- Suitable pressure gauges appropriate to the testing requirements should be used.
- The pressure gauge should be fitted at the lowest point in the piping system, such as between the isolation valve and the pipe to be tested.
- The pressure should be raised continuously up to the specified test pressure at a rate of 1 bar per minute

Test Method

Divide the system into sections (if appropriate). Fill the system with cold water, taking care to fully vent the air. During filling and prior to applying any pressure, check the system for any obvious leaks. When the system is full, raise the test pressure in the first instance to 3 bar (50 psi) and hold at this level for at least 10 minutes. If the pressure gauge shows any fall, make further inspections to identify the problem. If the pressure remains constant, slowly raise the test pressure until a level of 1½ times the maximum working pressure is reached. The pressure gauge should not show any fall during the minimum specified period (usually one hour).

If leaks are found at any stage, the system must be de-pressurised and drained. It is not possible to make a repair to a leaking pipe or fitting, therefore such components must be cut out, discarded and replaced with new items. Allow all new joints to fully cure or cool for the required period before re-testing.

Test Results

After the pressure test has been successfully completed, all parameters should be recorded in the certification, including:

- Test pressure
- Test Period
- Pressure drop during the main test (if any)
- Clients name/project details
- Tested piping material and dimension
- Date of the pressure test
- Name of the person witnessing the test

Post Test Checks

Once the test has been satisfactorily concluded, all threaded connections, union joints, flange connections and pipe clips should be inspected and tightened where appropriate.

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Caution

Compressed air and other gases should never be used in testing. Care must be taken to ensure the complete venting of all entrapped air when filling the system with water and other liquids used in testing. During testing, any slow build-up of gauge pressure on a completely liquid filled line shows some trapped air in the system. In this case the pressure should immediately be released and the line re-bled. Failure to do this can cause a catastrophic failure should a decompressing gas suddenly accelerate the solid water column if a faulty joint separates.

