

## UPVC High Pressure Water Supply Piping System Installation Procedure

Prior to installation of uPVC High Pressure Water Supply Piping System, the supervisor and foreman will verify and ensure that all the safety requirements have been complied with and are in place. The supervisor will verify that all relevant approved latest revisions of shop drawings, technical submittals, inspection and test plans are in the work place for installation reference. This also includes installation procedures.

The supervisor and foreman will inspect all the water supply piping materials delivered to the work place and ensure that these are the required materials and also for damage or defect. Materials found not to be as per requirement or with damage or defect will be set aside. These will be properly labelled and returned to the warehouse. These will also be reported in a Non-Conformance Report to the QA/QC Engineer.

To ensure that deterioration of the material does not occur during storage, it is imperative that the following recommendations are adhered to.

Storage of **water supply piping** material shall be on the elevated rack above Ground level minimum 300mm.

uPVC High Pressure Pipes should be stored on a well space secured area which separate the material from other stored equipment to avoid mixed up and accidental clashing with other materials which may result to damage.

*UPVC High Pressure Pipes* should be protected from weather elements by means of placing tarpaulins or similar sheets over them securely fixed to the timber support posts.

The supervisor and foreman will orient and familiarize all the plumbers and labours involved in the installations regarding the relevant approved shop drawings, technical submittals, installation procedures and details, acceptance criteria and safety requirements.

The supervisor and foreman will examine surfaces to receive water supply system works for compliance with installation tolerances and other required conditions, as described in the installation

requirement. Installation will not proceed until unsatisfactory conditions have been corrected.

### **Installation of uPVC High Pressure Water Supply Piping System**

- Unless otherwise specified, all installation shall be according approved shop drawings and contract specifications. Drawing plans, schematics, and diagrams indicate general location and arrangement of water supply piping system. Trench will be excavated by the civil contractor according to the approval levels.
- Install water supply piping as indicated unless deviations to layout are approved on coordination drawings. Pipe will be laid on uniform bedding material laid at the appropriate grade. Thrust block will be installed at locations where pipes change direction. Ensure that the two pipes are aligned correctly and then the pipes to be jointed using solvent welding process.
- Cut the pipe at right angle to the pipe axis using suitable sharp pipe cutter. The pipe may be cut quickly and efficiently by wheel-type plastic tubing cutter or Ratchet type cutters or fine tooth saws. Remove burrs and filings from the outside and inside of the tube. Clean the pipe and the fitting with dry cloth, in order to avoid any dust or sand that might affect the quality of the joint. Clean the spigot and socket area with a dry cloth to remove all dirt and moisture from spigot & socket.
- Apply cleaner solution to the outside surface of the pipe and to the outside surface of the fitting. Cleaner will prepare the surface for jointing for better quality joint. Using suitably sized brush, apply a thin even coat of solvent cement to the internal surface of the fitting socket first then to the pipe spigot. Excess solvent cement must be avoided as pools of solvent cement will continue to attack the PVC and weaken the pipe. Excess solvent cement will accumulate inside the system and may cause a reduction in the joint cross section.
- While both surface are still wet with solvent cement, insert the pipe into the fitting in a single movement. Do not stop halfway, since the bond will start to set immediately and it will be almost impossible to insert further. For a better distribution of the solvent cement, twist the pipe  $\frac{1}{4}$  turn during insertion into the socket. Wipe any excess cement from the pipe and leave the joint to dry completely.

- Leave the system for at least 12 hours before pressure testing. Connect the pipe by flanges adapter to the incoming main pipe with water meter chamber through the manhole. Ensure all pipes passing through exterior walls, the opening shall be sealed with approved waterproofing material or approved caulking compound to seal against water, air & sand.
- In process works shall be monitored for quality of workmanship and installation against approved construction drawings by the relevant Site Engineer, Supervisor and QA/QC Engineer.

### **Pressure Testing of uPVC High Pressure Water Supply Piping System**

The following procedure to be adopted on site for Pressure testing.

1. All draw off points have to be plugged with stopper and shut off main valve to section of pipe to be tested. Connect pressure gauge to the lower section of pipeline. Start filling in water into pipes by using hand pump. The valve located at higher section of the pipe has to be opened periodically to release air out from the pipeline when water is being pumped. Subject piping to static water pressure of 1.5 times of operating pressure (150 psig/10 bar) without exceeding pressure rating of pipe.
2. Maintain the pressure inside the pipeline for 4 hours and inspect for leakages at pipe joint and pipe body. The final pressure reading at the pressure gauge should not drop more than 5% from the initial test pressure. Once water test has been successfully carried out, remove all stoppers and drain off water from the pipeline. Cover all open ends of pipes and fittings to prevent debris from going into pipeline.