Basic Principles of solvent cement welding

Solvent cement welding is one of the most commonly used jointing techniques for above ground piping. It is a reliable, safe and efficient method of installing PVC-U, PVC-C and ABS piping systems. To make a joint, the outside of the pipe and the inside of the fitting are coated with a chemically active solvent cement, softening and making liquid the surface area to be joined. When joined together the two parts bond almost immediately, and the cement cures to give a joint that is stronger than the pipe itself.

Achieving consistent high quality solvent cement joints requires a systematic approach to the cutting, preparation and assembly of the joint. Most joint failures occur because of dry-joints (lack of solvent cement), however most of the recurring problems can be addressed with training which is available free of charge by contacting our technical department.

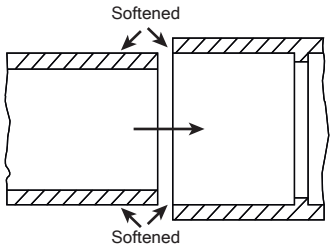
To consistently make good joints, the following should be carefully understood:

- The joining surfaces must be softened and made semi-fluid
- Sufficient cement must be applied
- Assembly of the joint must occur while the surfaces are still wet and fluid
- Joint strength develops as the cement dries. In the tight part of the joint the surfaces will tend to fuse together, while in the loose part of the joint the cement will bond to both surfaces.

Making a good solvent welded joint

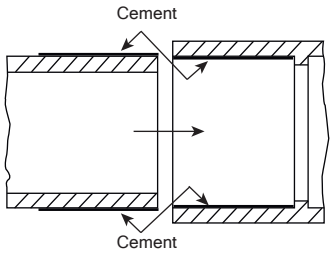
Softening and penetration

These areas must be softened and penetrated by the solvent-based cement.



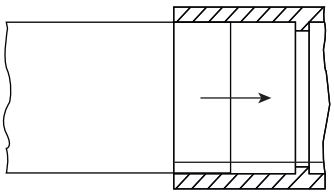
Sufficient application of cement

It is crucial to apply sufficient cement to fill any gaps and to ensure that the joining surfaces are penetrated so that they remain fluid until the joint is assembled.



Assembly while wet

If the cement coating on the pipe and fittings is wet and fluid when assembly takes place, they will tend to flow together and become one layer. If the surfaces are soft they will fuse together in the tight part of the joint.



Developing joint strength

As the solvent dissipates, the cement layer and the softened material will harden with a corresponding increase in joint strength. In the tight (fused) part of the joint the strength will develop more quickly than in the looser (bonded) part of the joint. A good joint will take the required working pressure long before the joint is fully cured and final strength is obtained.