1. Scope

ProJoint Pressure Solvent Cement is a gap filling solvent cement formulated for jointing pressure and non-pressure PVC-U pipe systems, ranging from OD d12 – d400mm:

- +GF+ Schedule 80 PVC pipe and fittings (Interference Fit)
- +GF+ Schedule 40 PVC pipe and fittings (Interference Fit)
- +GF+ Metric PVC-U pipe and fittings (Parallel fit)
- +GF+ British Standard PVC-U pipe and fittings (Parallel fit)

Suitable for drinking water, wastewater applications, and dilute chemical applications only. Refer to GF for use with concentrated chemical applications.

2. Principles of Solvent Welding

Solvent welding +GF+ PVC pipe and fittings allows jointing of plastic piping systems. This fusion creates a strong chemical bond as the pipe and fitting are chemically softened by the solvent and then allowed to re-mesh their chemical structures. This process creates a bond which is both strong and leak tight.

- The joining surfaces must be amply softened by the primer and made semi-fluid
- Sufficient solvent cement must be applied to fill the gap between the pipe and fitting
- Assembly of the pipe and fitting must be made when both surfaces are still wet and solvent cement assembly is still fluid.
- Joint strength develops as the cement dries between the two softened PVC layers. The interference between the two surfaces causes the molecular structure to fuse together while the cement fills in gaps between the two surfaces.

The mating surfaces must be pre-softened by applying ProJoint primer to both surfaces before using ProJoint solvent cement. The application of this primer causes the material structure to soften in order to fuse together. This is achieved by proper application of the primer to each mating surface. In extreme conditions, additional applications of primer may be needed.

Sufficient ProJoint solvent cement must be applied to both surfaces to fill in any gap between the mating surfaces. In addition to gap filling, the solvent cement will penetrate each surface, remaining wet while the joint is assembled. Once dry, the cement will complete the bond between both surfaces. Once the primed surfaces are softened, and the wet cement applied, the components will be assembled. As the joining surfaces come together, the softened surfaces and cement will mix into a solvent cement layer, chemically bonding the surfaces together. The joint must not be disturbed especially during the set time.

The surfaces must remain in contact and held steady as the solvent dissipates during the curing time. The Solvent Cement Layer and the material surfaces will dry and harden. This hardening finalizes the chemical bond between the surfaces and producing a strong, leak-tight joint.

3. Tools for Solvent Cement Jointing

- ProJoint Solvent Cement
- ProJoint Primer Solvent
- Gloves, safety glasses, and personal protective equipment
- Marking pens and tape measures
- Appropriate pipe cutter or saw
- Deburring and chamfering tools
- Lint-free cloth
- Mixing Spatula
- Tin opener
- Brush

Brush	Dimension
Round brush ø 4 mm	Fitting 6–10 mm
Round brush ø 8 mm	Fitting 12–32 mm
Flat brush 1“, 25 x 3 mm	Fitting 40–63 mm
Flat brush 2“, 50 x 5 mm	Fitting 75–225 mm
Flat brush 3“, 75 x 6 mm	Fitting 250–400 mm

4. Solvent Cement Jointing

Before installation, carefully inspect each length of pipe and fittings for damage. Slowly rotate the pipe, run your fingertips around the pipe, examining closely for nicks, cracks, splits, dents or other marks that could indicate the pipe has been damaged. Cementing should be performed at an ambient temperature of 5°C to 35°C.

4.1 Pipe Cutting

Cut the PVC pipe at a right angle using a pipe cutting tool.

4.2 Pipe Chamfering

Chamfer the end of the pipe with the chamfer device according to the following table.

Pipe OD (mm)	Bevel (mm)
6 – 16	1 – 2
10 – 55	2-3
63- 225	3-6
250- 400	6-8

Well chamfered pipe will minimize solvent cement from being scraped off the pipe surface during insertion into the fitting socket.

4.3 Deburring Pipe

Remove any burrs or raised beads on the outside diameter of the pipe. Remove inside diameter burrs or raised beads with an internal deburring tool or knife. Burrs can create channels into pre-softened surfaces or can create gaps across the mating surfaces.

4.4 Dry Fit Check

Check the pipe and the fitting for dry fit before solvent cementing.

Interference fittings
Fitting should slip on the end of pipe becoming tight at about or one-thirds of the socket depth. Too tight of an interference fit is not desirable as the joint may not have full penetration, causing the pipe to push out the socket. Too loose of an interference fit is also not desirable as the interference of the surfaces causes the force which bonds the mating surfaces, requiring additional application of cement. If there is little interference during dry fitting, a second application of cement should be applied to the pipe end.

Parallel Fit Fittings

If the outside diameter of the pipe and the inside diameter of the socket are at opposite extremes of their tolerances, then the pipe cannot be inserted dry into the fitting socket. Insertion will only become possible once the cement has been applied.

Mechanical machining of the pipe surface may be necessary in individual cases. The jointing surfaces can be roughened evenly with emery cloth of grain 80 or finer, observing the maximum permitted gaps.

4.5 Marking the insertion depth

Mark the cementing length of the fitting on the pipe end using the folding ruler and marking pen; this allows for checking the required application of adhesive and whether the pipe has been completely inserted. Measure the fitting socket depth and mark this distance on the pipe surface. Add 50mm to this distance and make a second mark on the pipe surface. The first mark should be covered during application of both primer and the solvent cement.

4.6 Checking the cement

Ensure ProJoint solvent cement is within the expiration date marked on the tin. ProJoint cement is supplied ready for use. Stir thoroughly with a screwdriver or mixing spatula prior to use. Cement of the correct consistency will run evenly from a wooden spatula after vigorous stirring. Cement with gelled lumps, or no longer runs smoothly off the mixing spatula is not suitable for use. The cement must not be thinned with ProJoint Primer solvent.

4.7 Cleaning & Priming pipe and fitting

With a clean dry rag, remove any dirt, grease, shavings, or moisture from the inside and outside of the pipe and fitting. Any moisture or contaminants could cause poor joint fusion.

Clean the pipe and socket cementing surfaces thoroughly with ProJoint Primer soaked in a clean rag until the PVC surface has been softened. Always use a clean rag for each component. Remove any condensation that may have formed on the parts.

Pipe may have a waxy surface. To ensure proper jointing in such a case, the cleaning process must be repeated until the pipe surface becomes visibly matt in appearance.

4.8 Applying the cement

Using firm brush pressure, apply an even, closed cement layer brushing in axial direction, first in the fitting, then on the pipe. Use a thin layer of cement in the fitting to avoid excessive bead formation inside the pipe, apply a generous amount on the pipe end, however, avoid application of excess cement puddling into the pipe bore.

Joint sizes > d90 require two people to apply the cement to the pipe end and fitting socket simultaneously in order to avoid exceeding the maximum working time of the cement.

Joint sizes ≥ d250, the cement is poured directly from the can into the middle of the cementing surface and distributed first radially and then axially over the entire area with a large brush until an even layer is applied. The minimum thickness layer in the fitting area is 1 mm, while a heavier coat is applied at the pipe end. Cementing these dimensional ranges must be performed by at least two people.

4.9 Assembling the pipe and fitting

Whilst both surfaces are still wet with solvent cement, immediately push pipe and fitting together to the stop or the full length of the socket (check insertion depth on the pipe) without twisting or misalignment and hold in position for at least 30 seconds to avoid the pipe from pushing out of the joint, allowing the cement to set. If using a pipe puller, leave the tension on the puller for this duration. Do not disturb the prepared joint for 5 minutes.

4.10 Joint Inspection and Clean Up

After assembly, the joint should have a bead of solvent cement completely around the fitting socket entrance. If the bead is not continuous around the socket shoulder, it may indicate the insufficient cement was applied, or the wet applied cement has dried out, therefore the joint should be cut out and replaced. Cement in excess of the bead can be wiped off with a rag.

To ensure the pipe is fully inserted into the fitting socket, measure the distance between the second mark on the pipe and the lip of the fitting. The measurement should be 50mm.

4.11 Pressure Testing

Allow the joint to cure for 24 hours before conducting hydrostatic pressure testing.