SOLVENT WELDING INSTRUCTIONS

SOLVENT WELDING

Solvent welding (cement jointing) is the longitudinal joining system for rigid PVC-U pipes and fittings. The solvent cement, obtained by dissolving PVC-U polymer in a solvent mixture, softens the walls of the pipe and the fitting so that the material of the two parts combines chemically and is welded. The joint is permanent, with chemical and mechanical strength equal to that of the parts joined. The cement must be chosen for the thermoplastic resin to be welded and used only to join pipes, fittings and valves of the same material.

Before starting, check the condition of the equipment and of the parts to be joined, and in particular the uniformity, fluidity and expiry date of the solvent cement.

PROCEDURE

1. Cut the pipe perpendicular to its axis to obtain a clean, square section, preferably with a wheeled pipe cutter designed for thermoplastic pipes (Fig. 1).
2. Chamfer the outer edge of the pipe at an angle of 15° so that it enters the socket of the fitting correctly. Chamfering is essential: without it the solvent cement can be scraped off the surface of the fitting and the joint compromised. Use a suitable chamfering tool (Fig. 2).
3. Measure the depth of the socket to the internal shoulder and mark the same distance on the end of the pipe (Fig. 3 and 4). See the table “Socket depth, cement and chamfer length”.
4. Using a clean paper towel or an applicator soaked in cleaner-primer, remove all traces of dirt and grease from the outer surface of the pipe over the whole cementing length, and from the inside of the socket, leaving the surfaces softened (Fig. 5). Let the surfaces dry for a few minutes before applying the solvent cement. The cleaner-primer also softens and prepares the surfaces to receive the cement, which is necessary for a sound joint.
5. Apply the solvent cement evenly and lengthwise to both parts (outer surface of the pipe and inner surface of the socket) with an applicator or a coarse brush of suitable size, not smaller than half the pipe diameter (see the table of brushes and applicators). Cover the whole marked length of the pipe (Fig. 6) and the whole depth of the socket up to the internal shoulder (Fig. 7).
6. Insert the pipe fully into the fitting immediately and without rotation. Only then may the two parts be turned slightly (not more than 1/4 of a turn between pipe and fitting) to spread the cement evenly (Fig. 8).
7. Insert the pipe as quickly as possible (within 20-25 seconds is recommended). Depending on the outside diameter, insertion is done by hand by one person for diameters below 90 mm, by two people from d 90 to below d 160 mm, and with mechanical pipe pullers for diameters above 160 mm.
8. Immediately after full insertion, hold the joined parts under pressure for a few seconds. Then remove excess cement from the outer surfaces, and from the inner surfaces where possible, with crepe paper or a clean cloth (Fig. 9).
9. Leave the joint to stand so that the solvent cement sets naturally without unnecessary stress. Minimum setting times: before handling the joint, 5 to 10 minutes at ambient temperatures above 10 °C and 15 to 20 minutes below 10 °C; for repair joints not subject to hydraulic testing, on pipes of any size or pressure, 1 hour for each atmosphere of applied pressure; for joints subject to pressure testing up to PN 16, on pipes and fittings of any diameter, at least 24 hours.

The setting times apply at an ambient temperature of about 25 °C. For particular climatic conditions (humidity, temperature, etc.) consult the solvent cement manufacturer.

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Fig. 1



Fig. 2



Fig. 3



Fig. 4



Fig. 5



Fig. 6



Fig. 7



Fig. 8



Fig. 9

WARNINGS

- If the outside diameter of the pipe and the inside diameter of the socket are at opposite extremes of their tolerances, the dry pipe cannot be inserted into the dry socket. Insertion is only possible after cleaner and solvent cement have been applied to both parts.
- The solvent cement is made from the same PVC resin as the pipes, fittings and valves. Unless otherwise specified it must be usable with the following tolerances: maximum interference 0.2 mm, maximum clearance 0.6 mm.
- Wear gloves and safety glasses when using cleaner and solvent cement.
- Work in a well-ventilated place to avoid pockets of evaporated solvent, which can irritate the respiratory tract and eyes.

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- The solvents are volatile: close the containers immediately after use.
- Solvent vapours can form flammable mixtures: remove ignition sources (welding work, electrostatic charges, etc.) from the work area and do not smoke. Follow the instructions of the solvent cement manufacturer printed on the packaging.
- Make the joints at ambient temperatures between +5 °C and +40 °C so that the performance of the cleaner and cement is not impaired.
- The quantity of solvent cement needed depends on several factors (ambient conditions, pipe size, cement viscosity, experience of the operator). The table of theoretical solvent cement consumption gives approximate quantities.
- After completing all the joints and before putting the line into service, make sure the inside of the pipes and fittings is free of solvent traces and vapours, to avoid contaminating the conveyed fluid.

Specifications are subject to change without notice.