



GENERAL

Solvent Cementing Guide for Non-Pressure Pipe & Fittings

Proper solvent cementing
applications and procedures

Westlake
Pipe & Fittings



Solvent Cementing Guide for Non-Pressure Pipe and Fittings

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Introduction

This guide is intended for use by installers, supervisors, and inspectors responsible for the Solvent Cementing of Westlake Pipe & Fittings' Non-Pressure Pipe and Fittings. This document serves as a supplement to basic solvent cementing knowledge. It provides guidelines for correct procedures of solvent cementing both Pipe and Fittings. If used correctly, the information in this booklet can help maximize product performance and minimize the possibility of field problems.

This booklet is not intended to assume the authority of the Design Engineer. Nor does it supercede instructions provided by other solvent cement suppliers, if those products are used. System requirements and actual field conditions will vary significantly. The sole responsibility for all design and installation decisions lies with the Design Engineer.

All Local Health and Safety Regulations must be followed.

General

- Use solvent cement and primer prior to expiration date.
- Above 0°C ambient temperature, joints may be assembled without the use of primer, provided adequate penetration and softening of the pipe or fitting surface can be achieved with solvent cement alone.

Pipe and Fitting Preparation

Pipe Cutting:

Cut pipe as square as possible. **Do not use a diagonal cut**, as it reduces the bonding area in the joint. See Figure 1.



Figure 1.

Remove burrs from the inside and outside of the pipe end, as these will hinder the integrity of the joint. All sharp edges should be removed from the inside and outside edges of the pipe to prevent the pipe from pushing the solvent cement into the fitting socket, thereby causing a weak spot to form. The pipe end should be chamfered, as shown in Figure 2. **Do not use sandpaper.**



Figure 2.

Joint Preparation

All dirt, grease and moisture should be removed from the pipe and socket by thoroughly wiping with a clean, dry cloth.

Dry fit pipe and fitting joints prior to cementing. For proper interference fit, the pipe should go easily into the socket approximately $\frac{1}{3}$ to $\frac{2}{3}$ of the socket depth. **If there is no interference fit, DO NOT use those fittings.**

The applicator should be sized according to the size of pipe and fittings being joined. The brush width of the applicator should be equal to approximately $\frac{1}{2}$ of the pipe diameter.

Joint Construction

With Primer:

1. Primer is used to penetrate and soften the surfaces so that they will fuse together under a wide variety of conditions. The penetration or softening can be checked by dragging the edge of a knife or sharp object over the coated surface. If a few thousandths of an inch of the primed surface can be scratched or scraped away, proper penetration has occurred. Varying weather conditions affect priming and cementing action and may require more time or repeated applications to either or both surfaces.
2. Using the correct applicator size, aggressively work the primer into the socket, keeping the surface and applicator wet until the surface has softened, re-dipping the applicator as required. When the surface is primed, remove any puddles of primer from the socket.
3. Aggressively work the primer on to the end of the pipe, to a point $\frac{1}{2}$ " beyond the depth of the socket.
4. Perform a second application of primer in the socket.
5. While the surfaces are still wet, the appropriate solvent cement should then be applied.
6. Using the correct applicator size, aggressively work a full, even layer of cement onto the pipe end to a point equal to the depth of the socket. Do not brush out to a thin paint type layer, as this will dry within a few seconds.
7. Aggressively work a medium layer of cement into the fitting socket; avoid puddling cement in the socket. On the pipe end, do not coat beyond the socket depth or allow cement to run down into the pipe beyond the socket.

Joint Construction (cont'd)

8. Apply a second full, even layer of cement on the pipe.
9. Immediately, while the cement is still wet, assemble the joint. Use enough force to ensure that the pipe is fully inserted into the socket. Twist the pipe a $\frac{1}{4}$ turn as it is being inserted.
10. Hold the joint together for approximately 30 seconds to avoid push out.
11. After assembly, inspect the joint to ensure that there is a ring or bead of cement completely around the juncture of the pipe and socket. If there are voids in this ring, sufficient cement was not applied and the joint may be defective.
12. Wipe off the excess cement without disturbing the joint.
13. Handle newly cemented joints with care until initial set has taken place. **Follow set and cure times before handling or testing the system.**

Without Primer

1. The penetration or softening by solvent cement alone can be checked by applying a normal layer of solvent cement to a scrap piece of pipe and dragging the edge of a knife or sharp object over the coated surface. If a few thousandths of an inch of the coated surface can be scratched or scraped away, proper penetration has occurred and the solvent cement can be used without an application of primer. Varying weather conditions affect cementing action and may require more time and repeated applications to either or both surfaces or the use of primer.
2. Using the correct applicator size, aggressively work a full, even layer of cement onto the pipe end to a point equal to the depth of the socket. Do not brush out to a thin paint type layer, as this will dry within a few seconds. Do not coat beyond the socket depth or allow cement to run down into the pipe beyond the socket.
3. Aggressively work a medium layer of cement into the fitting socket; avoid puddling cement in the socket.
4. Apply a second full, even layer of cement on the pipe to a point equal to the depth of the socket.
5. Immediately, while the cement is still wet, assemble the joint. Use enough force to ensure that the pipe is fully inserted into the socket. Twist the pipe a $\frac{1}{4}$ turn as it is being inserted.

Joint Construction (cont'd)

- 6. Hold the joint together for approximately 30 seconds to avoid push out.
- 7. After assembly, inspect the joint to ensure that there is a ring or bead of cement completely around the juncture of the pipe and socket. If there are voids in this ring, sufficient cement was not applied and the joint may be defective.
- 8. Wipe off the excess cement without disturbing the joint.
- 9. Handle newly cemented joints with care until initial set has taken place. Follow set and cure times before handling or testing the system.



Set Times

Average Initial Set Times			
Temperature range	1½" - 2"	2½" - 8"	10" - 12"
15°C to 40°C	5 Minutes	30 Minutes	2 Hours
5°C to 15°C	10 Minutes	2 Hours	8 Hours
-16°C to 5°C	15 Minutes	12 Hours	24 Hours

Joint Cure Schedule

Average Joint Cure Schedule			
Relative Humidity 60% or Less	Cure Time Pipe Sizes 1½" - 2"	Cure Time Pipe Sizes 2½" - 8"	Cure Time Pipe Sizes 10" - 12"
Temperature Range During Assembly and Cure Periods			
15°C to 40°C	30 Minutes	1½ Hours	48 Hours
5°C to 15°C	45 Minutes	4 Hours	96 Hours
-16°C to 5°C	1 Hour	72 Hours	8 Days

In damp or humid weather allow 50% more cure time.

Joint Construction (cont'd)

Estimated Solvent Cement Requirements

Average Number of Joints Per Litre of Solvent Cement									
Pipe/Fitting Diameter	1½"	2"	2½"	3"	4"	6"	8"	10"	12"
Number of Joints	90	60	40	40	30	10	5	2-3	1-2

Estimated Primer Requirements

Average Number of Joints Per Litre of Primer									
Pipe/Fitting Diameter	1½"	2"	2½"	3"	4"	6"	8"	10"	12"
Number of Joints	180	120	80	80	60	20	10	4-6	2-4



Solvent Cementing

Solvent Cementing in Cold Weather:

- Store pipe and fittings in a heated area. Prefabricate as much of the system as possible in a heated area.
- When not in use, store sealed solvent cement and primer between 5°C and 21°C. **Do not use open flame or electric heaters to warm cements and primers.**
- Take care to remove moisture, ice and snow from the mating surfaces.

Solvent Cementing (cont'd)

Solvent Cementing in Hot Weather:

- At the time of assembly, the surface temperature of the mating surfaces should not exceed 45°C. Shade or shelter the joint surfaces from direct sunlight for at least 1 hour prior to joining and during the joining process. If necessary, swab the mating surfaces with clean, wet rags to reduce the surface temperature (thoroughly dry surfaces before applying primer or cement).
- Apply cement quickly and join pipe to fitting as quickly as possible after applying the cement.
- Keep solvent cement container closed or covered when not in use, to minimize solvent loss.

Solvent Cementing in Wet Conditions:

- Mating surfaces must be dry when the joint is made.
- Work under a cover or canopy to keep rain off pipe and fittings.
- Work quickly after drying the pipe and fitting to avoid condensation.
- Allow a longer cure time before the system is tested or used.

Storage and Handling

- Solvent cement and primer contain highly flammable solvents. Follow all specific safety precautions provided on container label and Material Safety Data Sheet (MSDS).
- Keep primer and solvent cement away from heat, sparks and open flame.
- Storage:
 - Keep containers tightly closed except when in use.
 - Containers display manufactured date on bottom of the can.
 - Generally, solvent cement can be used up to 2 years from manufactured date.
 - Generally, primers can be used up to 3 years from manufactured date.

Storage and Handling ^(cont'd)

- If solvent cement or primer are “Jelly-like” upon opening the can, do **NOT** use.
- Ensure proper ventilation of work area and avoid inhaling solvent vapours.
- Where the possibility of splashing exists, wear proper eye protection or a face shield.
- Avoid contact with skin.
- Do not attempt to thin or dilute solvent cements or primers.
- When not in use, store sealed solvent cement and primer between 5°C and 21°C. Do not use open flame or electric heaters to warm cements and primers.

