1. Read this book and directions on the can.

2. Assemble materials needed.

3. Cut pipe square.

- Check primer & cement expiration dates.

- Expose parts to the open air for an hour in order to acclimate them to the local weather conditions. Provide protection from excessively hot or extremely cold environments.

- Always use the proper tools for cutting PVC pipe, such as a saw & miter box, wheel cutter or a pipe cutter. These tools insure a square (90°) cut.
4. **Remove Burrs and Bevel Outside Rim.**

Remove Burrs and Bevel outside rim carefully.

**OR:**

Use De-burring and Beveling tools.

- **De-burr with a Knife or De-burring Tool**
- **Bevel edges to 10° - 15° so the pipe will fit snugly into the socket.**

5. **Clean Pipe and Fittings.**

Wipe off all joining surfaces with a clean, dry rag.

Dust, dirt, grease (even fingerprints) and moisture can interfere with the penetration and bonding properties of primer and solvent cement.

6. **Check Dry Fit.**

A good fit is insured when using ASTM standards and code approvals.

- **Full Interference Fit**
- **Net Fit**
- **Rough End-Cut**
- **Loose Fit**

7. **Use the Correct Applicator Size for the Job.**

Use the correct applicator size for the job.

**Use an applicator at least ½ the size of pipe.**
Without softening, most solvent cements will not bond properly. Use 2 to 3 thick coats.

* Some cements are "one-step" and require no primer. This type of cement is used with some CPVC, ABS and Styrene plastics.

**Check Penetration.**

Apply Primer
Fitting ➔ Pipe ➔ Fitting

Apply Solvent Cement
(Pipe ➔ Fitting ➔ Pipe)
While the primer is still wet and...

Apply Solvent Cement
(Pipe ➔ Fitting ➔ Pipe)

Apply Solvent Cement
While the primer is still wet and...

Work into surface to soften.

Wet Primer

...Work cement onto pipe using a circular motion. Follow with a thin coat in the fitting. Repeat. Keep applicator in can when not in use.

Wet Primer

Don’t let cement puddle inside fittings or run down inside the pipe.

Wet Primer

Dont’ let cement puddle inside fittings or run down inside the pipe.

Work quickly!

Work quickly!

45

Don’t let cement puddle inside fittings or run down inside the pipe.

Use of the proper applicator will speed up your work and help lay down a generous and even coat of solvent primer and cement.

Additional holding or restraint of pipe may be required on larger sizes.
12...While cement is still wet, push and twist (1/4 turn) socket on to pipe until it bottoms out.

Hold parts together for about 30 seconds to avoid push-out.

Don't let go! Keep pressure on pipe and fitting until cement sets. See page 26 recommended set schedules.

13 Remove excess cement. (Use disposable material)

If left on exposed pipe, the softening effect of excess solvent could permanently distort or weaken pipe.

14 Flush entrapped solvent cement vapors.

Solvents evaporate through the system and walls. Softening both pipe and fittings. Some softening will remain until solvents have fully evaporated.

Fill with water and thoroughly flush before capping off or closing.

Avoid pressurization of system until adequately cured. If there is a strong smell of solvents in the piping, vapors are being generated.

15 Wait for joints to set before disturbing.

See page 26 for recommended cure times.
After cement has set, carefully lay assembly in final position...

...and DON'T drop it!

Snake pipe to allow for thermal expansion/contraction.

Lay the pipe in a slight S-curve. Do NOT lay it perfectly straight.

Shade pipe with backfill.

Leave all joints exposed.

Wait for full cure...

Remember...

Joint size, extreme temperature (hot or cold) and humidity all have an effect on solvent cement cure times.

See page 26 for recommended cure times.
Bring system up to its operating temperature before testing.

This can be done by...
1) shading with back fill
2) filling system with water of correct temperature
3) letting the system "settle in" overnight

Pressure test system... do not use compressed air or gas.

WARNING: Do not use compressed air or gas to test any PVC or CPVC thermoplastic piping product or system, and do not use devices propelled by compressed air or gas to clear the systems. These practices may result in explosive fragmentation of system piping and components causing bodily injury or death.

All air must be bled from the system during the initial fluid fill. Pressure testing of the system must not be made until all solvent cement joints have properly cured. Initial pressure testing must be made at approximately 10% of the system hydrostatic pressure rating to identify potential problems prior to testing at higher pressures.

For threaded connections...

Apply to male threads only

Spears® recommends the use of Blue 7S thread sealant.

Use of incompatible paste sealants may result in stress cracking in plastic pipe and fittings.

If you must use tape, use it correctly...

Always cover end of fitting at the start to prevent thread seizing prior to proper joint makeup.

Never combine tape and paste!
practices may result in explosive fragmentation of system piping and components causing bodily harm or death, and do not use devices propelled by compressed air or gas to clear the systems. These practices also may result in explosive fragmentation of system piping and components causing bodily harm or death. All air must be bled from the system during the initial field fill. Pressure testing of the system must not be made until all solvent cement joints have properly cured. Initial pressure testing must be made at approximately 10% of the system hydrostatic pressure rating to identify potential problems prior to testing at higher pressures.

**WARNING:** Do not use compressed air or gas to test any PVC or CPVC thermoplastic piping product. These figures are estimates based on our laboratory tests. Due to the many variables in the field, these figures should be used as a general guide only.

### Average Joint Cure Schedule for PVC/CPVC Solvent Cements

<table>
<thead>
<tr>
<th>Temperature Range</th>
<th>Pipe Sizes</th>
<th>Cure Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>60° - 100°F</td>
<td>½&quot; to 1¼&quot;</td>
<td>up to 100 psi</td>
</tr>
<tr>
<td></td>
<td>1½&quot; to 2&quot;</td>
<td>up to 100 psi</td>
</tr>
<tr>
<td></td>
<td>3&quot; to 4&quot;</td>
<td>up to 100 psi</td>
</tr>
<tr>
<td></td>
<td>6&quot; to 10&quot;</td>
<td>up to 100 psi</td>
</tr>
<tr>
<td></td>
<td>12&quot; to 15&quot;</td>
<td>up to 100 psi</td>
</tr>
<tr>
<td></td>
<td>18&quot; +</td>
<td>up to 100 psi</td>
</tr>
</tbody>
</table>

Note: Initial set schedule is the necessary time to allow before the joint can be carefully handled. In damp or humid weather allow 50% more set time.

### Average Number of Joints per Quart of Cement

<table>
<thead>
<tr>
<th>Pipe Diameter</th>
<th>Number of Joints</th>
</tr>
</thead>
<tbody>
<tr>
<td>½&quot; to 1¼&quot;</td>
<td>200</td>
</tr>
<tr>
<td>1½&quot; to 2&quot;</td>
<td>125</td>
</tr>
<tr>
<td>3&quot; to 4&quot;</td>
<td>60</td>
</tr>
<tr>
<td>6&quot; to 10&quot;</td>
<td>40</td>
</tr>
<tr>
<td>12&quot; to 15&quot;</td>
<td>30</td>
</tr>
<tr>
<td>18&quot; +</td>
<td>10</td>
</tr>
</tbody>
</table>

Note: Joint cure schedule is the necessary time to allow before pressurizing system. In damp or humid weather allow 50% more cure time.

### Average Initial Set Schedule for PVC/CPVC Solvent Cements

<table>
<thead>
<tr>
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<th>Pipe Sizes</th>
<th>Cure Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>60° - 100°F</td>
<td>½&quot; to 1¼&quot;</td>
<td>2 minutes</td>
</tr>
<tr>
<td></td>
<td>1½&quot; to 2&quot;</td>
<td>5 minutes</td>
</tr>
<tr>
<td></td>
<td>3&quot; to 4&quot;</td>
<td>10 minutes</td>
</tr>
<tr>
<td></td>
<td>6&quot; to 10&quot;</td>
<td>15 minutes</td>
</tr>
<tr>
<td></td>
<td>12&quot; to 15&quot;</td>
<td>30 minutes</td>
</tr>
<tr>
<td></td>
<td>18&quot; +</td>
<td>45 minutes</td>
</tr>
</tbody>
</table>

Note: Joint cure schedule is the necessary time to allow before pressurizing system. In damp or humid weather allow 50% more cure time.

### Average Number of Joints per Quart of Cement

<table>
<thead>
<tr>
<th>Pipe Diameter</th>
<th>Number of Joints</th>
</tr>
</thead>
<tbody>
<tr>
<td>½&quot; to 1¼&quot;</td>
<td>400</td>
</tr>
<tr>
<td>1½&quot; to 2&quot;</td>
<td>200</td>
</tr>
<tr>
<td>3&quot; to 4&quot;</td>
<td>125</td>
</tr>
<tr>
<td>6&quot; to 10&quot;</td>
<td>60</td>
</tr>
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<td>12&quot; to 15&quot;</td>
<td>40</td>
</tr>
<tr>
<td>18&quot; +</td>
<td>30</td>
</tr>
</tbody>
</table>

Note: Joint cure schedule is the necessary time to allow before pressurizing system. In damp or humid weather allow 50% more cure time.

### NOT FOR USE WITH COMPRESSED AIR OR GAS

**WARNING:** Do not use compressed air or gas to test any PVC or CPVC thermoplastic piping product, or system, and do not use devices propelled by compressed air or gas to clear the systems. These practices may result in explosive fragmentation of system piping and components causing bodily injury or death. All air must be bled from the system during the initial field fill. Pressure testing of the system must not be made until all solvent cement joints have properly cured. Initial pressure testing must be made at approximately 10% of the system hydrostatic pressure rating to identify potential problems prior to testing at higher pressures.