



## **Solvent-Cementing Joints for PVC Rigid Nonmetallic Conduit, Duct, and Fittings**

Most forms of PVC conduit, duct, and fittings are meant to be assembled or joined by means of solvent-cementing of the integral bells or PVC couplings. Solvent cements contain chemicals which dissolve the surface of the PVC, softening it. As the chemicals evaporate, they leave a PVC resin behind which fuses the mating surfaces.

### **To Prime or Not to Prime?**

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The National Electrical Code (NEC®) does not require primer to be used in the joining of PVC conduit. However, under some conditions, primer can aid in the ease of assembly and enhance the quality of the joints. Primers are a form of chemical cleaner that may be used to remove surface impurities, soften, and dissolve the joining surfaces in order to better prepare them for solvent-cementing.

### **Selection of Solvent Cement**

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Solvent cements intended for use with PVC conduit and duct should meet all the applicable requirements of ASTM D 2564, "Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems." Since they are available in a wide range of viscosities and wet film thicknesses, the nature of the particular project must be considered when trying to decide between a regular, medium, or heavy-bodied cement.

## Storage of Solvent Cement

PVC solvent cements have a limited shelf life and should be stored at a temperature between 40° and 70° F. Consult the solvent cement manufacturer for specific shelf life information and storage recommendations.

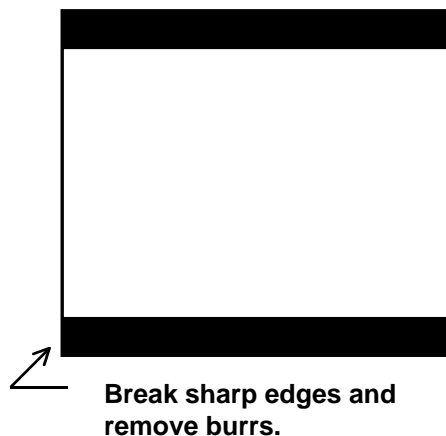
Solvent cement is unsuitable for use if it exhibits any sign of gelation. Do not try to restore the viscosity by adding solvents or thinners. Properly dispose of the solvent cement and obtain a fresh supply.

## Cutting Conduit or Duct

Cut conduit or duct square with its longitudinal axis using a saw or other suitable tool. Care must be taken to assure that all burrs or ridges are removed from the conduit or duct end as a result of cutting. A knife, file, or abrasive paper can be used to remove burrs and apply a slight chamfer to the cut end. Failure to remove ridges or burrs could result in the cement being scraped from the socket surface and cause the joint to fail. Ridges or burrs could also damage the conductors or cables being installed.

### **Cutting Conduit or Duct**

**Acceptable method**



## Cleaning

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Surfaces to be joined must be free from dirt, moisture, oil and other foreign material. Wipe surfaces with a clean dry cloth. If the surfaces require further cleaning, a chemical or mechanical cleaner must be used. Mechanical cleaners include fine abrasive paper or cloth (180 grit or finer) or clean, oil-free steel wool. Chemical cleaners include those recommended by the conduit, duct, fittings, or cement manufacturer or a primer meant for use with PVC.

## Application Procedure

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1. Test dry fit of the joint to assure that the conduit or duct and fitting can be joined.
2. If using primer, apply it to the inside socket surface. Use a scrubbing motion to ensure penetration. Then apply primer to the male end to the depth of the fitting socket. Finally, apply primer again to the inside socket surface.
3. Without delay, apply cement lightly but uniformly to the inside socket surface. Take care to keep excess cement out of the socket or bell-to-pipe transition area. Apply cement to the outer surface of the male end.
4. Immediately after applying the cement to the conduit or duct, while both the joining surfaces are soft and wet with solvent cement, forcefully bottom the male end of the pipe in the socket turning 1/4 turn. This distributes the cement evenly.
5. After assembly, wipe excess cement from the conduit or duct at the end of the fitting socket. A properly made joint will normally show a bead around its entire circumference.

## Assembly Precautions

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PVC solvent cement is fast drying and must be applied as quickly as possible. Assembly should be made within 20 seconds after the last application of cement. If there is any sign of drying of the cemented surfaces, they should be recoated. Hold the assembly in place for approximately 1 minute to prevent the conduit or duct from backing out of the fitting socket. Care should be taken not to disturb or apply any force to newly assembled joints. The integrity of joints can be compromised by early handling. Recommended set time is related to temperature as follows:

30 minutes minimum at 60° to 100°F  
1 hour minimum at 40° to 60°F  
2 hours minimum at 20° to 40°F  
4 hours minimum at 0° to 20°F

## Atmospheric Considerations

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Under conditions of high humidity, quick application of solvent cement is important to minimize condensation of moisture from the air on the cement surface. Temperatures of the mating surfaces should not exceed 110°F at the time of assembly. The temperature may be reduced by swabbing the surface to be cemented with a wet rag provided the conduit or duct is thoroughly dry before cement is applied.

At temperatures below freezing, solvent cements penetrate and soften PVC slower than in warmer weather. As solvent cements and primers are highly flammable, do not use open flame or electric heaters to warm them. Care should be taken to remove moisture such as ice and snow from pipe and fitting surfaces before applying cements and primers. In cold weather, use primers to soften joining surfaces before applying cement.

Source: ASTM D 2855, "Making Solvent-Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and Fittings."

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