

## ASSEMBLY INSTRUCTIONS

### FOR

### Unitec PVC Adhesive

#### OPERATION AND ASSEMBLY INSTRUCTIONS FOR PVC pipe mounting

##### **The Cement**

Unitec PVC cement is made on the basis of NMP. A solvent which is totally miscible with water. This means that the adhesive must always be used in accordance with the technical data and the limitations that apply to the product.

It is always recommended to check that the conditions to be worked in are reasonable, and that the occupational hygiene requirements are met.

##### **OCCUPATIONAL HYGIENE**

The solvent NMP has a degreasing effect on the skin, so it is recommended to use gloves made of nitrile rubber or butyl rubber.

Because the glue is 100% miscible with water, it is recommended to always have a bucket of water available for washing, since the adhesive is fully neutralized and thereby rinsing with water protects the skin if it has been in contact with the adhesive

##### **PREPARATION OF WORK**

The tubes are cut to length with perpendicular cut and deburred.

Pipe ends and fittings have to be cleaned thoroughly with clean, dry paper.

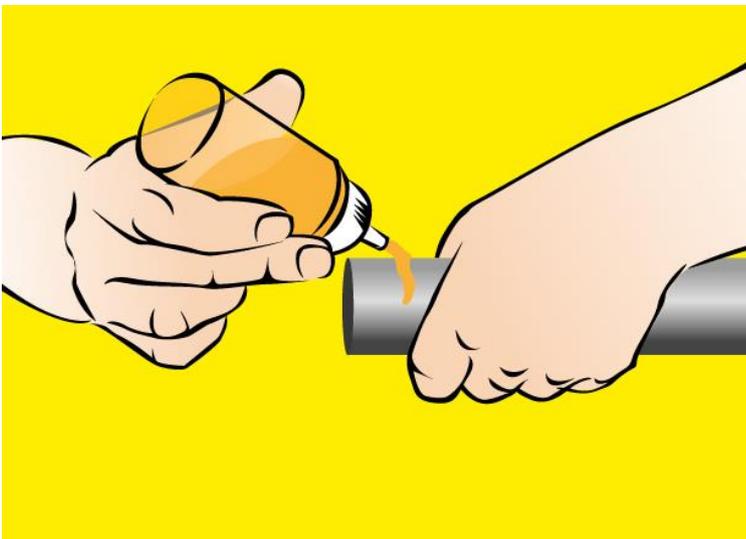
It is not necessary to use cleaning materials or solvents

It is usually not necessary to use sandpaper, unless fittings too tight on the tube. The tolerance between pipe and fittings must allow space for the glue.

##### **BONDING WITH Unitec PVC**

The adhesive bottle is provided with an applicator nozzle. When the tip is cut, it can be used to apply the adhesive.

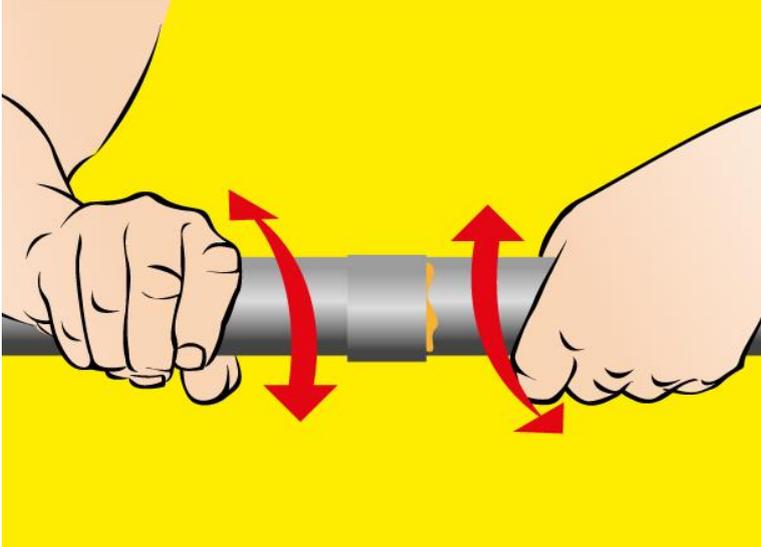
The tip is cut corresponding to the nozzle opening to be used, and the adhesive is applied:



**1:** Apply a ring of glue on the pipe element about 5 mm from the edge.

**2:** Then apply a ring of glue in fittings, also about 5 mm from the edge.

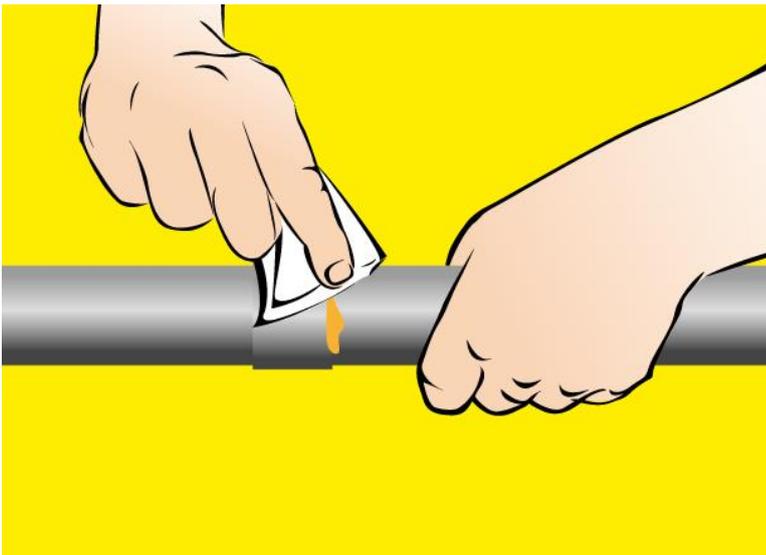
**Note:** The volume of glue necessary is dependent on pipe diameter and tolerances, thus the number needed volume of cement on pipes and fittings must be determined from case to case. BUT, the bond gap must be filled out completely!



**3:** Assemble the parts with one pushig/turning movement until the stop or measured depth.

**4:** Continue the turning movement until you feel increasing resistance.

**NOTE:** The increasing resistance indicates that the adhesive will "grab", but does not imply that the curing is completed. It should be noted that the bond will be destroyed if the adhesive joint is overloaded mechanically before curing is finished.



**5:** If there is excess glue, wipe it off with a piece of dry absorbent paper. Excess glue on the inside of a pipe system is neutralized by flushing with plenty of water.

**OBS:** At larger bonding tasks or vertical joints, it may be difficult to ascertain whether there is excess glue inside the joints. It is therefore strongly recommended to always flush the piping with

plenty of water, whereby the excess glue is neutralized. If the assembly includes reduction inserts, these must always be adhered to the tube, after which fittings can be installed. This is to prevent a recent assembly from being overloaded during assembly of the next session.

**6:** Please remember to adjust the alignment of fittings and components to be fitted exactly with the last turning movements. If you try to adjust after the adhesive has cured, the bond will be destroyed.

**7:** Tube assemblies with diameters up to about 65 mm are usually nicely round and with good tolerances, ensuring that the gluing process is progressing well. Pipes and fittings with larger diameters must always be checked to ensure that the items are round, and that the tolerances are sufficiently small to ensure good bond strength of the finished part.

**NOTE: THE GLUE CAN NOT BE USED FOR BONDING OF ISSUES WHICH HAVE GREATER TOLERANCE THAN STATED IN THE STANDARDS FOR PVC**

### **TUBES AND FITTINGS.**

(Pipe and fittings producers inform about the tolerances applying to individual diameters of pipes and fittings). If larger pipe diameters are glued, the surplus of glue is usually also higher, and it is recommended to carefully remove / neutralize excess adhesive by flushing with plenty of water. Excess adhesive outside is removed by wiping with paper towels.

Excess glue on the inside of a pipe system is neutralized by flushing with plenty of water. If the excess adhesive is not removed/neutralized, the solvent NMP, which is in the glue, weakens the pipe system, because the solvent will continue to be active.

Excess glue that is left in the edge of an assembly will, due to absorption of moisture from the environment, become white as glue containing PVC precipitates. The adhesive is then cured.

**8:** Curing times for gluing with Unitec PVC depend on several factors:

A: Amount of glue

B: Moisture

C: Temperature

D: The joint size

A: The quantity of glue should always be kept as low as possible, just enough to fill the joint.

B: Moisture has great influence on the glue drying time. It is recommended to use the glue at 50-70% RH. Higher humidity does not damage the curing of the glue, but accelerates the curing process. The adhesive open time (the time elapsed from applying till curing starts) becomes much shorter, when the humidity becomes higher.

### **NOTE:**

RH below 40% extends the curing time with 2-3 hours, so in this case it is particularly important to flush with water. At too long curing times flexible PVC tubing, and in particular thin PVC fittings can be dissolved by NMP, which causes deformation and consequent poor adhesion. If brush or other application equipment is used, make sure that it is dry.

Unitec PVC should always be stored in a tightly closed container, and the air must always be pressed out of the bottle.

C: The glue can be used from 0 ° to + 80 ° C, but works best at + 10 ° C to + 40 ° C. The curing time is shortened at higher temperatures.

D: Standard tolerances between pipe, fittings and components must be observed. Too large tolerances will weaken the bond, and the curing time can be extended considerably. If the items are not cylindrical, they must be adjusted to allow room for the adhesive in the joint.

#### **CURING TIMES:**

When gluing pipe systems made of PVC carrying water, the following general hardening progress is indicated:

1 hour after gluing glue can withstand a pressure of 2 bar

2 hours after gluing glue can withstand a pressure of 3 bar

3 hours after gluing glue can withstand a pressure of 4 bar

The pressure may hereafter be increased with 1 bar each hour, until the maximum operating pressure for the pipe is reached. The specified curing process described under "Bonding with Unitec PVC" must be regarded as indicative for a diameter up to max. 65 mm. On larger larger diameters a hardening time of at least 24 hours is recommended before the system is pressure tested.

If the joint must meet requirements according to specific standards, the curing time must be consistent with the standard requirements.

#### **9: Final actions**



Squeeze the air out of the bottle and replace the cover so the glue does not harden in the bottle.

For further information please refer to the following technical data.

## **Unitec PVC TECHNICAL DATA**

### **PRODUCT DESCRIPTION:**

Unitec PVC is a patented special adhesive for bonding PVC, where long open time and good gap filling properties are desired

Unitec PVC can be used only for PVC plastic.

Unitec PVC supplied ready to use and must not be diluted.

### **WORKING CONDITIONS (GENERAL)**

Working temperature: 0 ° to + 80 ° C

Humidity: 30-80% RH (see section 8 B)

### **Physical Data**

Boiling point: 202 ° C

Freezing point: -24 ° C

Solubility in water: 100%

Solids content: 18-20%

Solvent: NMP (N-Methyl-2-pyrrolidone)

Thixotropic: Yes

Flash point: 95 ° C

Auto-ignition: 346 ° C

Relative Evaporation Rate: 0.05

Saturation / 20 ° C: 525 ppm

### **Reactivity**

Do not mix Unitec PVC with other chemicals. By reaction with oxidants toxic fumes are produced.

### **CHEMICAL RESISTANCE**

Unitec PVC can normally be used for bonding chemical-loaded systems, corresponding to the scope of PVC. However, the information above is given on the basis of tests and experiences and since we have no knowledge about all details in the final use of the product we recommend a trial installation to ensure that the specification of the product matches the physical demands..

Unitec PVC must not be mixed with, or have contact with water before gluing, as this will cause the adhesive to be completely neutralized (cured).

Unitec PVC is delivered ready for use, and must not be mixed with other adhesives or solvents.

### **AT FIRE**

At brand Unitec PVC may form toxic fumes. Avoid inhalation!. Extinguishing with water, carbon dioxide, foam or powder.

**CERTIFICATES:** DIN 16970 – ASTM D 2564-80 pkt. 6.3.3. – NS 2944 pkt. 6.4. - BS 4346: part 3 (1982) - BS 6920 (potable water).

**USE:** Please refer to the text above.