

Jointing technology

Solvent cement jointing

Instructions for Tangit solvent cement jointing of PVC-C dimension d16 to d225

General

Solvent cement jointing calls for adequate technical know-how, which can be acquired in the appropriate training courses. Your GF representative will gladly provide you with information about training possibilities.

NOTICE

Chemical resistance

Selecting applicable solvent cement

- Please consider the appropriate recommendations in the chapter "Chemical Resistance" to the use of Tangit and/or Dytex.

Dimensions and tolerances

The dimensions of GF pipes, fittings and valves conform generally to the various national standards as well as to ISO 727-1 concerning dimensions of sockets. Our fittings and valves can be used with any PVC-C pipes whose outside diameter tolerance conforms to ISO 11922-1.

According to ISO 727-1 the following minimal cement lengths are as shown in the table:

Pipe outside diameter - Socket inside diameter d (mm)	Minimal cement length L (mm)
16	13.0
20	15.0
25	17.5
32	21.0
40	25.0
50	30.0
63	36.5
75	42.5
90	50.0
110	60.0
125	67.5
140	75.0
160	85.0
200	105.0
225	117.5

The following instructions for cementing of piping components made from PVC-C is based on the guideline DVS 2204-5.

Tools and equipment

Pipe cutter Type KRA	d10 - 63 d50 - 110 d110 - 160	790 109 001 790 109 002 790 109 003
Pipe cutter type KS 355	230 V / 50 - 60 Hz	790 202 001
Chamfering tool	d16-75 d32-200	799 495 145 799 495 146
Cleaner	1 litre tin	799 298 010
Tangit PVC-C solvent cement	0.70 kg tin	799 298 027
Brush sizes		
Pipe outside diameter in mm	Brush	
16-32	Round brush ø8 mm	799 299 002
40-63	Flat brush 1" 25 x 3 mm	799 299 003
75-225	Flat brush 2" 50 x 5 mm	799 299 004
Tin lid		799 298 028
White absorbent paper	commercially available	
Solvent resistant protecting gloves,	commercially available	
Safety glasses		



Solvent cementing equipment

PVC-C Tangit and cleaner: Amounts required

Pipe diameter d (mm)	PVC-C Tangit amount per 100 joints (kg)	PVC-C Tangit number of joints per tin 1 kg
16	0.4	250
20	0.5	200
25	0.6	166
32	0.8	125
40	1.1	91
50	1.5	72
63	1.7	59
75	2.2	45
90	4.0	25
110	8.0	12
140	13.0	7
160	19.0	5
200	24.0	4
225	26.0	3.5

Pipe diameter d (mm)	Tangit cleaner amount per 100 joints (litre)	Tangit cleaner number of joints per tin 1 litre
16	0.2	500
20	0.3	333
25	0.4	250
32	0.5	200
40	0.7	143
50	0.9	111
63	1.1	91
75	1.3	77
90	1.4	71
110	1.7	59
140	2.1	48
160	2.5	40
200	3.5	29
225	4.5	22

Note: The quantities specified above are to be understood as practice-orientated maximum values. In principle the quantities depend on gap dimensions, temperatures, working technique.

Preparations



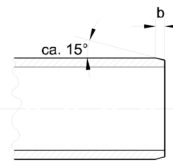
Cutting the pipe to length



Chamfering the pipe

The pipe must be cut off at right angles. Remove the inside edges and chamfer the outside ones as illustrated in the sketch. Only then is an optimal solvent cemented joint possible.

Important: Well-chamfered pipe ends prevent the layer of cement from being removed as the pipe is inserted into the fitting.



Pipe outside diameter mm	b
16 mm	1 - 2 mm
20 - 50 mm	2 - 3 mm
≥ 63 mm	3 - 6 mm



Marking the jointing length

Wipe the outside of the pipe and the inside of the socket with a clean cloth to remove obvious dirt. Marking the jointing length on the pipe end makes it possible to check afterwards whether the pipe has been inserted to the full extent of the socket.

Note: If the outside diameter of the pipe and the inside diameter of the socket are at opposite extremes of their tolerances, then the pipe cannot be inserted dry into the fitting socket. This will only become possible once the cement has been applied.



Checking the cement

The Tangit PVC-C cement is supplied ready for use. Stir thoroughly before using! Cement of the correct consistency will run evenly from a wooden spatula held at a slant. Cement which no longer runs smoothly is unusable. The cement must not be thinned.

For more information please consult the safety datasheets under the following link:
www.sdb.henkel.de/index.cfm

Cement and cleaner should be stored in a cool, dry place (5 – 35 °C)! Under these conditions the cement and cleaner are durable for 24 months starting from the date of filling (imprinted on the tin).

Cementing

Clean the outside of the pipe end and the inside of the socket **thoroughly** with Tangit cleaner and absorbent paper. Use a fresh piece of paper for each component. Remove any condensation which may have formed on the parts.

Important: Pipe end and fitting socket must be dry and free from grease and dirt and must not be touched after cleaning.



Cleaning the pipe and socket

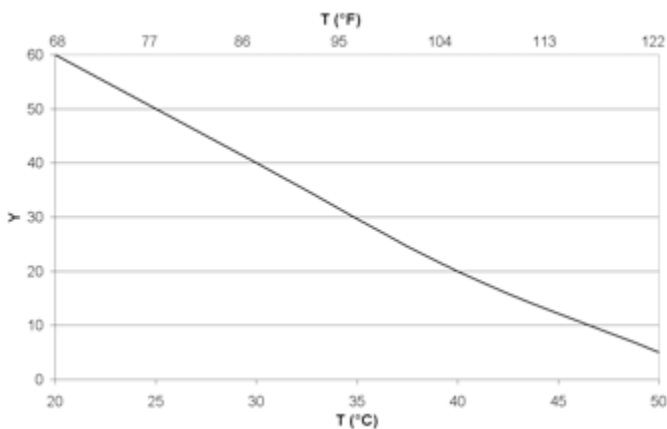
The PVC-C cleaner should soften the outside of the pipe. Special attention should be paid that the PVC-C has softened ("finger-nail check"). If this is not the case, to aid the softening, emery cloth or medium glasspaper, grade \geq K80, can be used to roughen the joint surface, repeat the cleaning process after roughening.

PVC-C pipes should be cemented at temperatures between $+5\text{ }^{\circ}\text{C}$ and $+40\text{ }^{\circ}\text{C}$. Take the following protective measures if the temperatures deviate from the above:

At lower temperatures, condensation or ice water which may have formed must be removed, e. g. with warm air. Cement and cleaner should be stored at room temperature.

Avoid uneven overheating (\rightarrow shorten the opening time) when cementing at higher temperatures by protecting the jointing area from direct sunlight.

The quick curing time of the cement necessitates that the joint is made within the opening time after application of the cement has started. The opening time of the PVC-C cement varies with the ambient temperature and the thickness of the cement applied:



T Temperature in $^{\circ}\text{C}$, $^{\circ}\text{F}$

Y Opening time [sec]

Begin by applying a normal layer of cement to the fitting socket and then a thicker one to the pipe end with firm brush pressure. **Work in well.** The brush strokes should always be in an axial direction.

To ensure that both jointing surfaces are completely covered with a smooth, even layer of cement, the brush should be generously loaded with cement.

The joints can be made singlehanded for pipes with diameters up to $d63\text{ mm}$.

For $d75\text{ mm}$ and larger pipes, two people are needed to apply the cement to the pipe end and fitting socket simultaneously in order to avoid exceeding the maximum opening time of the cement.



Applying the cement

After the cement has been applied, insert the pipe to the full depth of the socket immediately without twisting and bring them into the correct alignment. Ensure that the outlet of the fitting is in the correct position. Hold them briefly in this position to allow the cement to set. Wait at least 10 minutes before the next joint, extend the waiting time at temperatures under $10\text{ }^{\circ}\text{C}$ to 30 minutes.

Remove any surplus cement immediately, using absorbent paper.

A bead of excess solvent cement around the complete external circumference of the joint and a slightly smaller bead again around the complete internal circumference show that the joint has been performed correctly.

After use, clean the brush of excess cement with dry absorbent paper and then clean thoroughly using TANGIT cleaner. Brushes must be dry before being re-used (shake out).



Replace the lid of the cement tin during work breaks

Replace the lid of the cement tin after use to prevent the solvent evaporating. Using the conical lid, allows leaving the brush in the cement tin during breaks.

Both solvent cement and cleaner dissolve PVC-C. Pipes and fittings must therefore not be laid on or allowed to come into contact with spilled cement or paper containing cement residues.

Do not close off cement pipelines during the drying process. This is particularly important at temperatures below +5 °C, when there is otherwise a danger of damaging the material.

After the drying process (see waiting times in the following table) the pipelines can be filled. To remove extant solvent vapour, it is recommended to flush the pipeline before use.

For pipes that are not put into immediate use, it is recommended, after careful cleaning, to fill them with water and flush regularly.

Do not use compressed air for flushing.

Drying period and pressure testing

The length of drying period before the joint may be subjected to testing or operating pressure depends on the ambient temperature and the tolerances.

Generally the waiting time after the last joint until the pressure test at a testing pressure of 15 bar (PN10) must be at least 15 hours, a testing pressure of 21 bar (PN16) must be at least 24 hours. If the pipe is only subjected to the operating pressure, e. g. after adaptation or repair work, the following rule of thumb for the waiting time applies:

1 hour waiting time per bar operating pressure.

For temperatures above 20 °C the test pressure must be reduced according to the requirements given in the chapter "Final testing and commissioning".

Safety precautions

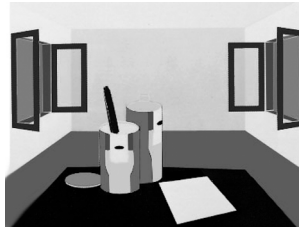
Tangit cement and Tangit cleaner contain highly volatile solvents. This makes good ventilation or adequate fume extraction essential in closed spaces. Since the solvent fumes are heavier than air, extraction must occur at floor level, or at least below the working level. Place paper which has been used for cleaning or for the removal of surplus cement into closed containers to minimise the amount of solvent fumes in the air.

Cement and cleaner are inflammable. Extinguish open fires before commencing work. Switch off unprotected electrical apparatus, electric heaters, etc. Avoid static charge. Do not smoke! Discontinue any welding operations. Furthermore, observe all instructions issued by the solvent cement manufacturer (e. g. label of the tin and any supplementary documentation).

Protect pipes and fittings from spilled solvent cement, cleaner and absorbent paper which has been used to wipe off cement. Do not dispose of surplus solvent cement or cleaner in drainage systems.

The use of protective gloves is recommended to avoid contact with skin. If the cement or the cleaner get in contact with eyes, rinse immediately with water. Consult a doctor! Immediately change clothes that have solvent cement on them.

Always obey the safety regulations issued by the authorities responsible.



Adequate ventilation of the workplace



No open flames when cementing. No smoking.