

# Jointing technology

## Solvent cement jointing

### Instructions for Tangit solvent cement jointing of ABS dimension d20 to d315

#### 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.

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 ABS 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)
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
250	130.0
280	145.0
315	162.5

#### Recommendation for solvent cement jointing of ABS fittings of dimensions 250 - 315 mm

ABS solvent cement fittings d250 to d315 from GF are designed and tested for a nominal pressure of PN6 (6 bar).

Our experience and tests reveal that pipes above d250 can be slightly oval, which can produce a heightened cementing gap. GF therefore recommends that pipes from dimensions d250 should be operated at max. 6 bar working pressure.

Please note the special remarks for dimensions 250 - 315 in the following jointing instructions.

## 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 ABS solvent cement	0.65 kg tin	799 298 022
<b>Brush sizes</b>		
Pipe outside diameter in mm	Brush	
20-32	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
250-315	Flat brush 3" 75 x 6 mm	799 298 005
Tin lid		799 298 028
White absorbent paper	commercially available	
Solvent resistant protecting gloves,	commercially available	
Safety glasses		



Solvent cementing equipment

## ABS Tangit and cleaner: Amounts required

Pipe diameter d (mm)	ABS Tangit amount per 100 joints (kg)	ABS Tangit number of joints per tin 0.650 kg
20	0.35	186
25	0.40	163
32	0.45	144
40	0.60	108
50	0.90	72
63	1.10	59
75	1.25	52
90	1.70	38
110	2.50	26
140	5.00	13
160	6.50	10
200	10.0	6
225	12.5	5
250	16.0	4
280	19.0	3
315	26.5	2

Pipe diameter d (mm)	Tangit cleaner amount per 100 joints (litre)	Tangit cleaner number of joints per tin 1 litre
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
250	5.5	18
280	6.5	15
315	10.2	10

**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



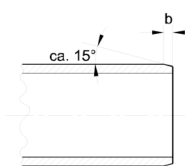
Cutting the pipe to length



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	b
20 - 50 mm	2 - 3 mm
63 - 225 mm	3 - 6 mm
250 - 315 mm	6 - 8 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 ABS 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](http://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 ABS cleaner and absorbent paper.

Use a fresh piece of paper for each component. If the surfaces are free from grease, cleaning with absorbent paper and Tangit cleaner is not absolutely necessary for ABS.

But 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

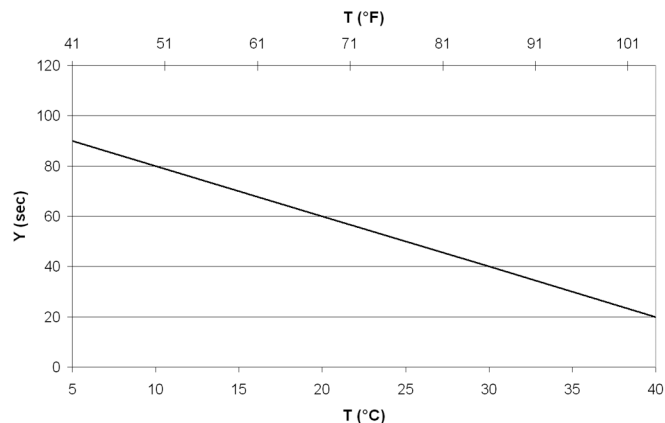
ABS pipes should be cemented at temperatures between +5 °C and +40 °C. Take the following protective measures if the temperatures deviate from the above:

Installation at low temperatures requires utmost care. Since Tangit ABS cures physically by evaporation, hardening may be slowed down considerably. Special installation techniques are therefore required at temperatures below +5°C.

Cement and cleaner should be stored at room temperature. To remove condensation or ice water which may have formed, pipe ends and sockets to be bonded are warmed to +25 to +30°C by means of a suitable hot-air blower (explosion proof) and then bonding is done as described. The finished joint must be kept at +25 to +30°C according to the waiting times mentioned in the following before the next cementing.

Avoid uneven overheating (→ 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 ABS cement varies with the ambient temperature and the thickness of the cement applied:



T Temperature in °C / °F

Y Opening time [sec]

Begin by applying a normal layer of cement to the fitting 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.



Applying the cement

## Range of dimension up to d63

### Apply cement

The cement joints can be produced by one person.

### Jointing

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.

### Waiting time between cementing

Wait at least 10 minutes before the next joint, extend the waiting time at temperatures under 10 °C or above 30 °C to 15 minutes.

---

## Range of dimension d75 to d140

### Apply cement

The fitting socket and end of pipe should be coated with cement simultaneously by two persons, otherwise the opening time of the cement cannot be observed.

### Jointing

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.

### Waiting time between cementing

Wait at least 10 minutes before the next joint, extend the waiting time at temperatures under 10 °C or above 30 °C to 15 minutes.

---

## Range of dimension d160 to d225

### Apply cement

The fitting socket and end of pipe should be coated with cement simultaneously by two persons, otherwise the opening time of the cement cannot be observed.

### Jointing

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.

### Waiting time between cementing

Wait at least 30 minutes before the next joint, extend the waiting time at temperatures under 10 °C or above 30 °C to 60 minutes.

---

## Range of dimension d250 to d315

### Apply cement

Deviating from the usual method of application, pour the cement directly from the tin onto the middle of the cementing surface and distribute first radially and then axially all over with a flat brush. Make sure that the cement layer is consistent and covers the entire surface as appropriate for the larger tolerances. Apply a thinner layer of Tangit in the fitting than on the pipe ends. The cementing of pipe work in this range of dimensions should be carried out by at least 2 persons. The minimum thickness of the cement layer for fittings is 1 mm, apply more generously on the pipe ends.

### Jointing

After applying the cement, the pipe and fitting should be slowly pushed together to the stop or the mark without twisting by 3-4 persons and aligned. Ensure that the outlet end of the fitting is in the correct position. Hold the joint in this position for 1 minute.

### Waiting time between cementing

A waiting time of 1 hours should be observed before further jointing; this time should be increased to 2 hours at temperatures below 10 °C or above 30 °C.

---



Replace the lid of the cement tin during work breaks

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

Solvent cement dissolves ABS. 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.

To ensure the traceability (if necessary) of the used Tangit ABS batch, place the batch marking on the test report. This batch marking is attached to each dispatch unit. If several batches are used in one project, place one marking from each batch on the test report.

## Tangit ABS



Charge/Batch-No.: \_\_\_\_\_

Abfülldatum/Filling date: \_\_\_\_\_

Diese Chargenkenzeichnung ist auf dem Prüf-/Abnahmeprotokoll anzubringen. / Put this product identification on the final test report.



## Drying period and pressure testing

The length of the drying period before the joint may be subjected to testing or operating pressure depends on the ambient temperature, the dimension and the tolerances. The following tables shows the different waiting times.

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

### Internal pressure test or leak tightness test with gas/air

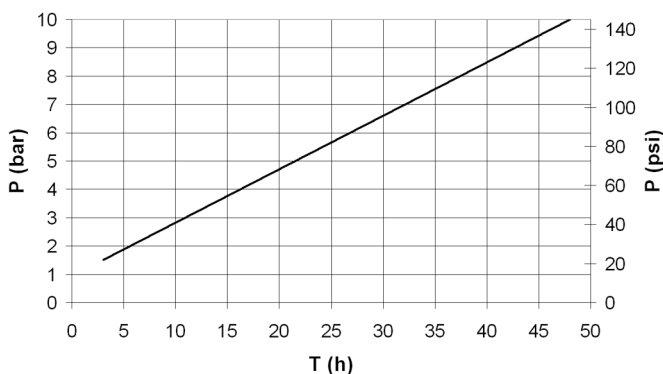
Due to the risk of a pressure test with a compressible test medium this pressure test shall be carried out only in exceptional cases! Please consult also the safety precautions given in the chapter "Internal pressure test of ABS pipelines". The following diagram shows the waiting time depending on the test pressure for a ambient temperature between 10 to 30 °C:

#### Range of dimension d20 to and including d225

Ambient Temperature	Waiting time
10 ° to 30 °C	at least 24 hours
- below 10 °C - above 30 °C	at least 48 hours

#### Range of dimension d250 to and including d315

Ambient Temperature	Waiting time
10 ° to 30 °C	at least 48 hours
- below 10 °C - above 30 °C	at least 72 hours



Ambient temperature between 10 to 30 °C

P Test pressure in bar, psi

T Waiting time after last joint in hour

### Repair works

If the pipeline is only subjected to the operating pressure with fluids, e. g. after adaptation or repair works, the following rule of thumb for the waiting time applies, which is depending on the diameter:

#### Dimension d20 up to d140

Ambient Temperature	Waiting time for testing with fluids (non compressible)
10 ° to 30 °C	1-hour waiting time per 1 bar operating pressure.
- below 10 °C - above 30 °C	2-hour waiting time per 1 bar operating pressure.

#### Dimension d160 up to d225

Ambient Temperature	Waiting time for testing with fluids (non compressible)
10 ° to 30 °C	2-hour waiting time per 1 bar operating pressure.
- below 10 °C - above 30 °C	4-hour waiting time per 1 bar operating pressure.

#### Dimension d250 up to d315

Ambient Temperature	Waiting time for testing with fluids (non compressible)
10 ° to 30 °C	4-hour waiting time per 1 bar operating pressure.
- below 10 °C - above 30 °C	8-hour waiting time per 1 bar operating pressure.

## Safety precautions

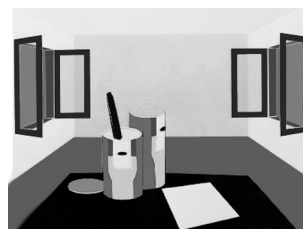
Tangit cement and cleaner contain highly volatile solvents. This makes good ventilation or adequate fume extraction essential in closed spaces. Since the solvent fumes are heavier than air, extraction must occur at floor level, or at least below the working level. Place paper which has been used for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