



STANDARD

CPVC PIPE CPVC FITTINGS

IS : 15778 IS : 17546 & ASTM D 2846

cftri
CERTIFIED
Suitable for drinking water application

MADE FROM
SEKISUI
RAW MATERIAL

Ideal for Hot & Cold Water Application

OVERVIEW

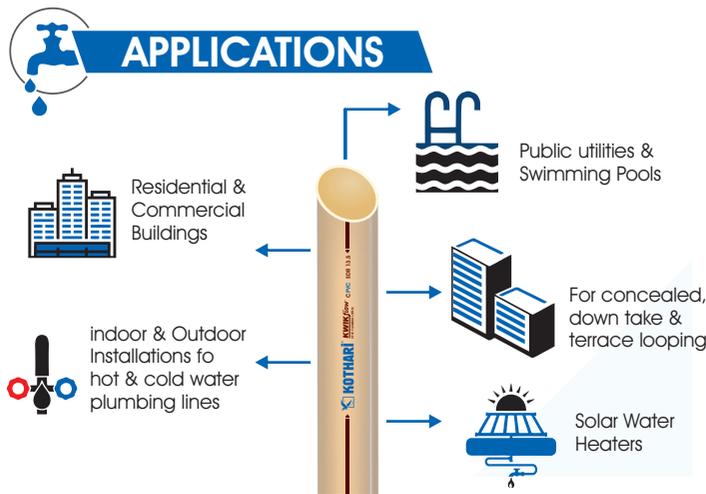
Invented in 1959, used all over the world, established as a trusted product and now brought to you by KOTHARI PIPES, KWIKflow CPVC Plumbing systems are built to last for generations. Designed for a service life of 50 years, these CPVC Pipes & Fittings can stand with temperatures up to 93° C and are ideal for Hot and Cold water applications. KOTHARI KWIKflow Advantages means low bacterial growth and therefore, safe and hygienic water, It is fire retardant and does not support combustion. More over, it has high tensile strength and unparalleled UV resistance.

PRODUCT RANGE

Pipe : 15 to 300 mm (1/2" to 12" inch) **Fittings :** 15 to 100 mm (1/2" to 4" inch)

STANDARDS

Pipes				Fittings			
Size (mm)	Class	Standard	End Connection	Size (mm)	Class	Standard	End Connection
15 to 50	SDR 11	IS 15778	Solvent Cement Joint	15 to 50	SDR 11	ASTM D 2856 & IS 17546	Solvent Cement Sockets Joint for transition joints, fittings with plastic threads & metal threaded inserts.
15 to 50	SDR 13.5	IS 15778					
65 to 150	SCH 40	ASTM F 441		65 to 100	SCH 40	ASTM F 438	
65 to 150	SCH 80	ASTM F 441			SCH 80	ASTM F 439	



KOTHARI PIPES **U** Unique **S** Selling **P** Proposition

- Brass Insert with dual O-Ring**
 - Hex type heavy design inserts, which can tolerate heavy torque. Special quality brass material ensures long service life of threads.
 - O-ring made of EPDM used with brass inserts for avoiding leakage.
 - Knurling provided for inserts for firm gripping with CPVC material during moulding process, which ensures high torque.
- ISI Marked Fitting**
- Alignment line Design Registered with Kothari**

Alignment line on CPVC pipe

Colour Coding (Printing on Pipes)	Type of PIPE	Colour	Image
	SDR 11	Red strip	
	SDR 13.5	Brown strip	

FEATURES AND BENEFITS

- 50 Years** 50 Year's Life Span
- Lowest Bacterial Growth**
- Raw Material** Manufactured from Imported Compound
- UV resistant**
- Suitable for use up to 93°C**
- Low thermal expansion**
- Freedom from toxicity, odours and tastes**
- High tensile and impact strength**

DIMENSIONS

Nominal Bore		Outside Diameter		SDR - 11				SDR - 13.5			
				Wall Thickness		Working Pressure		Wall Thickness		Working Pressure	
		Min	Max	Min	Max	At 27°C	At 82°C	Min	Max	At 27°C	At 82°C
(mm)	(inch)	(mm)	(mm)	(mm)	(mm)	(Kg/cm ²)	(Kg/cm ²)	(mm)	(mm)	(Kg/cm ²)	(Kg/cm ²)
15	1/2	15.80	16.00	1.70 [#]	2.20 [#]	28.14	6.93	1.40 [#]	1.90 [#]	22.22	5.60
20	3/4	22.10	22.30	2.00	2.50	28.14	6.93	1.70	2.20	22.22	5.60
25	1	28.50	28.70	2.60	3.10	28.14	6.93	2.10	2.60	22.22	5.60
32	1 1/4	34.80	35.00	3.20	3.70	28.14	6.93	2.60	3.10	22.22	5.60
40	1 1/2	41.20	41.40	3.80	4.30	28.14	6.93	3.10	3.60	22.22	5.60
50	2	53.90	54.10	4.90	5.50	28.14	6.93	4.00	4.60	22.22	5.60

Nominal Bore		Outside Diameter		Schedule 40				Schedule 80			
				Wall Thickness		Working Pressure		Wall Thickness		Working Pressure	
		(mm)		Min	Max	At 23°C	At 82°C	Min	Max	At 23°C	At 82°C
(mm)	(inch)	(mm)		(mm)	(mm)	(Kg/cm ²)	(Kg/cm ²)	(mm)	(mm)	(Kg/cm ²)	(Kg/cm ²)
65	2 1/2	73.00 (+/- 0.18)		5.16	5.77	21.10	5.30	7.01	7.85	29.57	7.34
80	3	88.90 (+/- 0.20)		5.49	6.15	18.25	4.58	7.62	8.53	26.00	6.32
100	4	114.30 (+/- 0.23)		6.02	6.73	15.49	3.87	8.56	9.58	22.53	5.60
150	6	168.30 (+/- 0.28)		7.11	7.97	12.64	3.16	10.97	12.29	19.68	4.89

Note : Dimensions with '#' are not function of SDR Fittings are suitable for corresponding pipe pressure rating

PRODUCT AVAILABILITY, PRESSURE RATING AND STANDARDS

GRADE	DIAMETER	STANDARD		OPERATING PRESSURE KG/CM ²	
		PIPES	FITTINGS	27°C	82°C
SDR 11	1/2" to 2"	IS:15778:2007	IS : 17546	28.1	6.93
SDR 13.5	1/2" to 2"		ASTM D 2846	22.23	5.61

HORIZONTAL AND VERTICAL SPACING

According to plumbing codes & building codes a typical hot & cold water distribution system operating at 70-C requires support for sizes 1/2" to 1" horizontal line at every 90 cm and for sizes greater than 1" sizes at every 120cm. However, the following spacing given in below table are based on conservative engineering assumptions & recommended to be used at respective temperatures indicated.

PIPE DERATING FACTOR

KOTHARI KWIKFLOW CPVC Plumbing System's ability to perform even at increased temperatures gives them a better derating factor. Another reason why Kwikflow CPVC Plumbing systems come with a promise of years of life.

WORKING TEMPERATURE	DE-RATING FACTOR
°C	
23 – 27	1.00
32	0.91
38	0.82
49	0.65
60	0.50
71	0.44
82	0.25
93	0.20

The Pressure de-rating factor is same for all CPVC Pipes Sizes

HORIZONTAL AND VERTICAL SPACING TABLE

Size (in)	Size (mm)	68°F (ft)	20°C (mtr)	122°F (ft)	50°C (mtr)	158°F (ft)	70°C (mtr)	176°F (ft)	80°C (mtr)
1/2	12.70	5.5	1.7	4.5	1.4	3.0	0.9	2.5	0.8
3/4	19.05	5.5	1.7	5.0	1.5	3.0	0.9	2.5	0.8
1	25.40	6.0	1.8	5.5	1.7	3.5	1.1	3.0	0.9
1 1/4	31.75	6.5	2.0	6.0	1.8	3.5	1.1	3.0	0.9
1 1/2	38.10	7.0	2.1	6.0	2.0	3.5	1.1	3.5	1.1
2	50.80	7.0	2.1	6.5	2.0	4.0	1.2	5.5	1.1

Pipe should not be anchored tightly by support, but secured in manner to allow for movement caused by thermal expansion contraction. Ensure supports and hangers shall not have sharp edges. Use supports and hangers which are chemically compatible with CPVC material.

THERMAL EFFECT

THERMAL EXPANSION & CONTRACTION

Like all piping materials CPVC expands when heated & contracts when cooled. Regardless of pipe diameter CPVC will expand about 75mm per 30 meter length when subjected to 40° C temperature variations. Hence allowances must be made for resulting change in movement. The fact that CPVC has higher thermal expansion than metal and sometimes cause unwanted concern. The stresses developed in CPVC pipe are generally much smaller than those developed in metal pipe for equal temperature changes because of the difference in elastic modulus. Generally thermal expansion contraction can be accommodated with change in direction: however a long straight run may require an offset or expansion loop. Only one expansion loop properly sized is required in any single length straight run, regardless of its total length. If more convenient, two or more properly sized expansion loop can be used. For convenience, loop or offset lengths have been calculated for different pipe sizes and different run lengths with a temperature increase AT of 44°C (80°F). The results are shown in Table A for CTS pipes & Table B for IPS pipe. The results, shown in Table A & Table B are presented simply as a handy guide for quick and easy determinations of acceptable loop lengths for the approximate conditions.

THERMAL EXPANSION FORMULA

$$\Delta L = L_P \cdot C \cdot \Delta T \quad \text{-----(Eq. 1)}$$

WHERE :

- ΔL = Change in length due to change in temperature (inch)
- L_P = Length of pipe (inch)
- C = Coefficient of thermal expansion (inch/inch/°F)
= For CPVC = 3.4×10^{-5} inch/inch/°F
- ΔT = Change in temperature (°F)

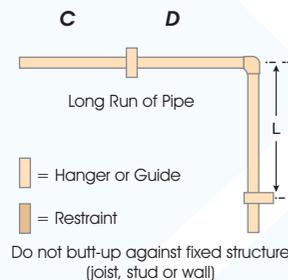
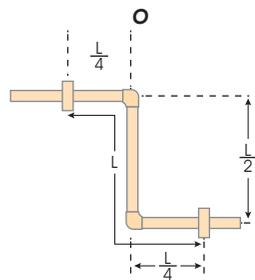
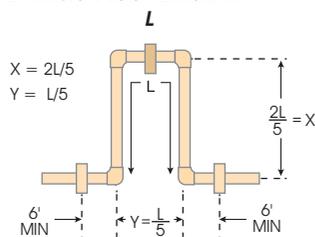
EXPANSION LOOP FORMULA

$$L = \sqrt{\frac{3 \cdot E \cdot D \cdot (\Delta L)}{2S}} \quad \text{-----(Eq. 2)}$$

WHERE :

- L = Loop length (inch)
- E = Modulus of elasticity at maximum temperature (psi)
- S = Working stress at maximum temperature (psi)
- D = Outside diameter of Pipe (in)
- ΔL = Change in length due to change in temperature (in.)

EXPANSION LOOP DIAGRAM

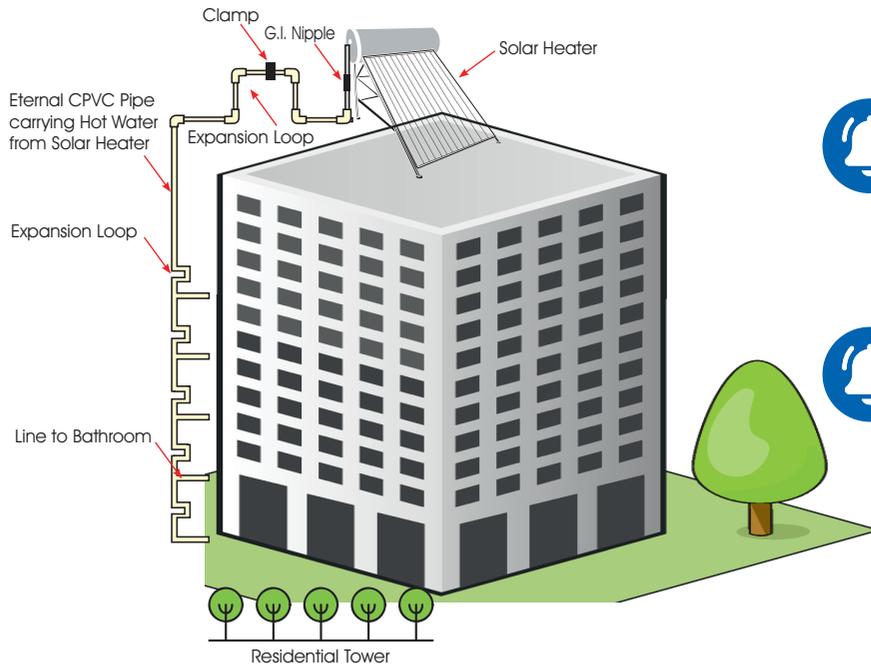


EXPANSION AND CONTRACTION

For CPVC pipes which are not embedded inside the wall but are carrying hot water from boiler/solar water heater etc. it is important to make provision for expansion loop for every 12feet run of the pipe, between two fixed joints.

For longer lines and longer distances, kindly refer to below link for calculations or call our executive.

CARRYING HOT WATER FROM SOLAR HEATING SYSTEM



CORRECT INSTALLATION IN SOLAR WATER HEATER LINES

It is not recommended to directly connect CPVC Pipes to the water heater outlet.



One meter long metal nipple should be connected directly to the heater so that the CPVC pipe is not damaged by the build up of excessive radiant heat from the flue.

HEAT LOSS PREVENTION

In closed loop systems or plumbing systems with long run lengths, in order to conserve energy, it is recommended to use appropriate and compatible thermal insulation material.

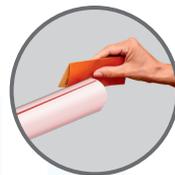


INSTALLATION PROCEDURE KOTHARI KWIKFLOW CPVC PIPES & FITTINGS



CUTTING

Easily cut with a wheel type plastic pipe cutter or hacksaw blade. Cutting pipe as squarely as possible provides optimal bonding area within a joint.



DEBURRING / BEVELING

Burrs and filings should be removed from the outside and inside of the pipe. Debarking tool, pocket knife or file are suitable for this.



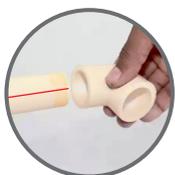
FITTING PREPARATION

The pipe should make contact with the socket wall from 1/3 to 2/3 of the way into the fitting socket.



SOLVENT CEMENT APPLICATION

Use only CPVC solvent cement or an all - purpose solvent cement conforming to ASTM F493 otherwise it may result in joint failure.



ASSEMBLY

Immediately insert the pipe into the fitting socket, rotate the pipe 1/4 to 1/2 turn while inserting. This motion ensures an even distribution of solvent cement within the joint.



SET AND CURE

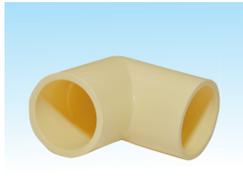
Curing time is shorter for drier environments, smaller sizes and higher temperatures. It requires 10 to 20 minutes for perfect joint.

CPVC FITTINGS

SDR 11, SCH 40, SCH 80



COUPLER



ELBOW 90°



ELBOW 45°



END CAP



EQUAL TEE



UNION



STEP OVER BEND



M.T.A. (MAPT)



CROSS TEE



F.T.A. (FAPT)



TANK NIPPLE



**TANK NIPPLE
 (Plain with One
 side Pipe Fit)**



**PLUG
 THREADED END**



**BRASS ELBOW
 90°**



REDUCER M.T.A.



**REDUCING
 ELBOW**



**REDUCER
 COUPLER**



REDUCER TEE



BRASS TEE



**REDUCER
 BUSH**



**HEXA
 BRASS M.T.A.**



**HEXA BRASS
 F.T.A.**



BRASS F.T.A.



**CPVC 3 in 1 Wall
 Mixer Adaptor with
 Brass Elbow**



**CPVC
 BALL VALVE**



BLIND FLANGE



FLANGE WITH SOCKET



TRANSITION BUSH

SDR 11



**FABRICATED
 LONG BEND 90°**



**FABRICATED
 CROSS OVER BEND**

GENERAL GUIDELINE FOR ALL INSTALLATIONS

DO

1. Install product according Kothari kwikflow Installation instructions and manual and follow recommended safe work practices.
2. Keep Pipe and Fittings in original packaging until needed and store pipes in covered areas.
3. Use tools designed for use with plastic pipe and fittings.
4. Cut-off minimum 25 mm beyond the edge of the crack in case any crack is discovered on the pipe.
- 4A. Pipe may be cut quickly and efficiently by several methods. Wheel-type plastic tubing cutters are preferred. Ratchet type cutters or fine tooth saws are another option. However, when using the ratchet cutter, be certain to score the exterior wall by rotating the cutter blade in a circular motion around the pipe. Do this before applying significant downward pressure to finalise the cut. This step leads to a square cut. In addition, make sure ratchet cutter blades are sharp. Cutting pipe as squarely as possible provides optimal bonding area within a joint.
- 4B. Burrs and filings can prevent proper contact between the tube and fittings during assembly and should be removed from the outside and inside of the pipe. A chamfering tool is preferred, but a pocket knife or file is also suitable for this purpose.
- 4C. Use only CPVC solvent cement or an all purpose solvent cement conforming to ASTM F493 otherwise it may result in joint failure.
5. Always conduct hydraulic pressure testing after installation to detect any leaks and faults. Wait for appropriate cure time before pressure testing. Fill lines slowly and remove air from the system prior to pressure testing.
6. Rotate the pipe Y4 to 1/2 turn to spread the CPVC Solvent Cement evenly in the joint while pushing the Pipe into Fitting.
7. Use Teflon tapes with threaded fittings.
8. Ensure that there are no sharp edges in contact with the pipe while embedding the pipes on the walls or in the floors.
- 8A. When making a transition connection to metal threads, use a special transition fitting or CPVC male threaded adapter whenever possible. Do not over-torque plastic threaded connections. Head tight plus one-half turn should be adequate.
9. Provide Vertical & Horizontal Supports as recommended using the Plastic Straps only.
10. Apply a water-based paint only on exposed pipes & fittings.
11. Visually inspect all joints for proper cementing at the end of shift or day. A Visual inspection of the complete system is also recommended during pressure testing.
12. When connecting to a gas water heater, CPVC pipe should not be located within 50 cm of the duct. For water heaters lacking reliable temperature control, this distance may be increased up to 1 m. A metal nipple or flexible appliance connector should be utilized. This measure eliminates the potential for damage to plastic piping that might result from excessive radiant heat from the duct.
13. Use of a brass/CPVC transition adapter when connecting CPVC to a water heater will help facilitate water heater replacement in the future.
14. Pressure test CPVC systems in accordance with local code requirements.

DON'T

1. Do not use Metal Hooks or Nails to support / hold or put pressure on the pipes. Do not use straps & hangers with rough or sharp edges. Do not tighten the straps over the pipes.
2. Never expose the pipe to Open Flame while trying to bend it.
3. Do not drop pipes on edges from heights. Do not drop heavy objects on pipes or walk on pipes.
4. Do not dilute Solvent Cement with Thinner/MTO or any other liquid etc.
5. Do not use air or gases for pressure testings.
6. Do not use any other petroleum or solvent - based sealant, adhesive, lubricant or fire hazard material on CPVC pipes and fittings.
7. Do not use CPVC Pipes & Fittings for pneumatic applications.



KOTHARI GROUP - Solapur warrants to the original owner that the product will be free from manufacturing defect and confirm to current applicable KOTHARI standards under normal use. Buyer's remedy for breach of this warranty is limited to replacement of or credit for the defective product. This warranty excludes any expense for removal or reinstallation of any defective product and any other incidental, consequential or punitive damages.

The limited warranty only applicable if KOTHARI KWIKflow Pipes, Fittings & KOTHARI CPVC solvent cement are used.