



**Flowkem<sup>®</sup>**  
*Inspire A Better Tomorrow*



*Welcome*



**FLOWKEM POLY PLAST PRIVATE LIMITED**

C PVC PIPE & FITTINGS

U PVC PIPE & FITTINGS

SWR PIPE & FITTINGS

R PVC PIPE & FITTINGS

[www.flowkempipes.com](http://www.flowkempipes.com)

## Water

Water is an essential nutrient and plays a key role in the human body. We can survive up to several weeks without food, but only a few days without water. Every system in the body, from cells and tissues, to vital organs requires water to function.

Ensuring that lost fluids are replenished in a timely manner and that our bodies are correctly hydrated is essential for good health and for the body to operate.



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# About Flowkem

Flowkem started the journey from manufacturing Ball- valves and was incorporated in 2014 with a vision to provide best quality pipes and fittings across the country. Today we are an ISO 9001:2015 certified organisation whose aim is to make quality products available to every household and industry at best prices in the country.

Our manufacturing facility located at Ahmedabad (Gujarat) is equipped with modern and state of art machinery and infrastructure, covering a total area of 16 acres of which 22000 square meters of constructed area with 05 extrusion machines and 55 Injection moulding machines. Our products are produced in accordance with the Indian standards set by Bureau of Indian Standards (BIS) and other approving agencies.

We manufacture CPVC, UPVC, SWR pipes and fittings & Agriculture Pipes and Moulded fittings. The pipes and fittings are available in various sizes, pressure classes and diameters fit for diversified applications in both agricultural as well as non-agricultural sectors including housing, industrial and construction.

Under the leadership of Mr. Shailesh Patel, Managing Director, Flowkem has expanded into the plumbing industry. He is a person of great vision, exemplary talents and many achievements. His energy and enthusiasm have brought the Company to achieve many milestones. Beginning the journey from manufacturing Ball-valves in 2002 to venturing into plumbing and drainage systems, Flowkem has grown to be one of the popular brands in many markets in India.

We are growing at a fast pace and working with numerous channel partners across India which help us in reaching customers effectively. We also have an efficient marketing & sales infrastructure supported by professional team.

FLOWKEM aims to create its niche in plumbing and other water solution products. The customers' satisfaction is the most important goal for FLOWKEM.

# Certifications



भारतीय मानक ब्यूरो  
BUREAU OF INDIAN STANDARDS

अहमदाबाद शाखा कार्यालय : 'पुष्पाक' तीसरी मंजिल, खारपुर,  
अहमदाबाद - 380 001.  
Ahmedabad Branch Office : 'PUSHPAK' 3rd Floor, Kharpur,  
Ahmedabad-380 001.

URL : <http://www.bis.org.in>  
Email : [abo@bis.org.in](mailto:abo@bis.org.in)

दूरभाष } 2560 0221, 2560 0187  
2560 1348, 2560 1349  
Phone } 2560 1265, 2560 1607

फैक्स } 079-25601440  
Fax }

## REGISTERED

Our Ref: AHBO /L-7200018291

Dated: 11 Jan 2016

M/s FLOWKEM POLYPLAST PVT LIMITED  
PLOT NO. A-44, SWAGAT INDUSTRIAL PARK,  
KUJAD BAKROL ROAD VILLAGE BAKROL BUJRANG,  
TAL DASKROI  
DISTT AHMEDABAD 382430

Dear Sir,

This has reference to BIS certification Mark Licence No. 7200018291 granted to you for use of Standard Mark on your product CHLORINATED PVC PIPES FOR POTABLE HOT AND COLD WATER DISTRIBUTION SUPPLIES as per IS 15778 : 2007 and your letter dated 04.01.2015 regarding inclusion of brand name.

While processing your case for inclusion, it is observed that you have not submitted a copy of the Agreement with brand owner clearly bringing out the responsibility and liability of brand owner as well as the licensee respectively, in case of product deficiency and the manner of product recall. Please note that the sharing of the responsibility and liability in the Agreement shall rest both with the brand owner as well as the licensee.

You are, therefore, requested to send the agreement to process your case at the earliest.

Thanking you,

Yours faithfully,

(Devansh Deolekar)  
Scientist -B

मुख्यालय : मानक भवन, 9 बहादुर शाह जफर मार्ग, नई दिल्ली - 110002.

HEAD OFFICE : MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG, NEW DELHI - 110002.

\*For Training needs, please contact National Institute of Training for Standardization, A-20 & 21 Institutional Area, Sector 62 Noida-201307 at Telephone(s) 0120-2402201 to 05, 4670232, Tel/Fax No. 0120-2402202-03, or e-mail [hnits@bis.org.in](mailto:hnits@bis.org.in), [nits@bis.org.in](mailto:nits@bis.org.in).\*



भारतीय मानक ब्यूरो  
BUREAU OF INDIAN STANDARDS

अहमदाबाद शाखा कार्यालय : तीसरी मंजिल, खारपुर, तीसरी मंजिल, खारपुर, अहमदाबाद - 380 014.  
Ahmedabad Branch Office : 13 Floor, Navjwan Anant Jyanti Bhavan, Behind Gujarat Vidyapeeth, Off Ashram Road, Ahmedabad - 380 014.

URL : <http://www.bis.org.in>  
Email : [ahbo@bis.gov.in](mailto:ahbo@bis.gov.in)

दूरभाष } 27540317, 27540318  
27540319, 27540320  
Phone }

फैक्स } 079-27540636  
Fax }

## REGISTERED A/D

Our Ref :CML-7200102280

Dated: 02 Nov 2017

Subject: Grant of BIS Certification Marks Licence No. CML-7200102280  
as per IS 13592 : 2013

FLOWKEM POLYPLAST PVT LTD,  
A-44, SWAGAT INDUSTRIAL PARK,  
A-11 Shrinathji Estate KUJAD BAKROL ROAD,  
VILLAGE : BAKROL, BUJRANG TAL: DASKROI,  
Distt : Ahmedabad - 382430  
Gujarat.

Dear Sir,

With reference to your application, we are pleased to inform you that it has been decided to grant you a licence to use the Standard Mark in respect of the following:

Product: UPVC pipes for soil and waste discharge systems inside buildings including ventilation and rainwater system

IS No : IS 13592 : 2013

Type/Size/Grade/Variety covered under licence :

Unplasticized Poly(vinyl Chloride (PVC-U) Pipes for Soil and Waste Discharge System Inside and Outside Buildings Including Ventilation and Rainwater System with Plain end, Socket for solvent cementing and Grooved socketed for Nominal OD 75mm and 110mm, of Type-A and Type-B

2. The number assigned to this licence is CML- 7200102280 which has been made operative from 10/10/2017 and is valid upto 09/10/2018. The licence number should invariably be referred to in your future correspondence.

3. According to sub-regulation (2) of Regulation 6 of Bureau of Indian Standards (Certification) Regulation, 1988, the licence fee of Rs 2000/- and the marking fee of Rs. 57000/- as stipulated in the Second Schedule of this licence is payable by you with effect from 10/10/2017 for the period of validity of the licence.

Goods and Service tax @ 18 % as applicable shall also be charged.

मुख्यालय : मानक भवन, 9 बहादुर शाह जफर मार्ग, नई दिल्ली - 110002.  
HEAD OFFICE : MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG, NEW DELHI - 110002.

\*For Training Needs, please contact National Institute of Training for Standardization, A-20 & 21 Institutional Area, Sector 62 Noida-201307 at Telephone(s) 0120-24-2201 to 05, 4670232, Tel/Fax No. 0120-24-22-0-03, or e-mail : [hnits@bis.org.in](mailto:hnits@bis.org.in), [nits@bis.org.in](mailto:nits@bis.org.in).\*



भारतीय मानक ब्यूरो

BUREAU OF INDIAN STANDARDS

(उत्पादन, वापस, खाद्य और सार्वजनिक वितरण विभाग)

मानक विभाग  
(Ministry of Consumer Affairs, Food & Public Distribution)  
Government of India



अहमदाबाद शाखा कार्यालय  
तीसरा मंज, नवजीवन अमृत जयंती भवन,  
गुजरात विद्यापीठ के पीछे, अंधा आश्रम रोड,  
अहमदाबाद - 380 014.

Ahmedabad Branch Office  
B Floor, Navjivan Anant Jayanti Bhavan,  
Behind Gujarat Vidyapeeth, Off Ashram  
Road, Ahmedabad - 380 014.

URL : <http://www.bis.org.in>  
Email : [ahbo@bis.gov.in](mailto:ahbo@bis.gov.in)

दूरभाष } 27540317, 27540318  
फोन } 27540319, 27540320

फैक्स } 079-27540638

**SPEED POST / EMAIL**

Our Ref: AHBO /L-7200051693

Dated: 25 Jun 2018

M/s FLOWKEM POLYPLAST  
PLOT NO.A-45, SWAGAT INDUSTRIAL PARK,  
KUJAD-BAKROL ROAD, VILL: BAKROL BUJRANG,  
TA: DASKROI,  
Distt : Ahmedabad 382430

Dear Sir,

This has reference to BIS certification Mark Licence No. 7200051693 granted to you for use of Standard Mark on your product INJECTION MOULDED PVC FITTINGS WITH SOLVENT CEMENT JOINTS FOR WATER SUPPLIES: PART 1 GENERAL REQUIREMENTS as per IS 7834 : Part 1 : 1987 which was valid upto 08/06/2018.

You are advised to submit dues of Rs. 3,55,883.00 + 18% GST against your renewal application dated 08.06.2018. Please note that dues are already initiated in manakonline portal to you.

Thanking you,

Yours faithfully,

(Ravindra Benwal)  
Scientist -B

मुख्यालय : मानक भवन, 9 बहादुर शाह जफर मार्ग, नई दिल्ली - 110002.

HEAD OFFICE : MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG, NEW DELHI - 110002.

\*For Training Needs, please contact National Institute of Training for Standardization, A-20 & 21 Institutional Area, Sector 60 Noida-201307 at Telephone(s) 0120-24-2201 to 05, 467023, Tel/Fax No. 0120-24-22-2-03, or e-mail : [nits@bis.org.in](mailto:nits@bis.org.in), [nits@bis.org.in](mailto:nits@bis.org.in).\*



भारतीय मानक ब्यूरो

BUREAU OF INDIAN STANDARDS

अहमदाबाद शाखा कार्यालय : तीसरा मंज, नवजीवन अमृत जयंती भवन,  
गुजरात विद्यापीठ के पीछे, अंधा आश्रम रोड,  
अहमदाबाद - 380 014.

Ahmedabad Branch Office : B Floor, Navjivan Anant Jayanti Bhavan,  
Behind Gujarat Vidyapeeth, Off Ashram  
Road, Ahmedabad - 380 014.

URL : <http://www.bis.org.in>  
Email : [ahbo@bis.gov.in](mailto:ahbo@bis.gov.in)

दूरभाष } 27540317, 27540318  
फोन } 27540319, 27540320

फैक्स } 079-27540638

**REGISTERED A/D**

Our Ref:CM/L-7200102078

Dated :16 Oct 2017

Subject: Grant of BIS Certification Marks Licence No. CML-7200102078  
as per IS 14735 : 1999

FLOWKEM POLYPLAST PVT LTD,  
A-44, SWAGAT INDUSTRIAL PARK,  
A-11 SHRINATHJI ESTATE,  
KUJAD BAKROL ROAD, VILLAGE: BAKROL,  
BUJRANG TAL: DASKROI,  
DISTT : AHMEDABAD - 382430  
GUJARAT

Dear Sir,

With reference to your application, we are pleased to inform you that it has been decided to grant you a licence to use the Standard Mark in respect of the following:

Product: **Unplasticized Polyvinyl Chloride (UPVC) Injection Moulded Fittings for Soil and Waste Discharge System for Inside and Outside Buildings Including Ventilation and Rain Water System**

IS No : IS 14735 : 1999

Type/Size/Grade/Variety covered under licence :

- 1) 75MM, 110MM and 160MM DN BEND 45° with socket for solvent cement jointing and Groove socket without door,
- 2) 110MM X 75MM DN REDUCER with socket for solvent cement jointing and Groove socket,
- 3) 75MM & 110MM DN SINGLE Y 45° with Groove socket with and without door,
- 4) 75MM & 110MM DN SINGLE Y 45° socket for solvent cement jointing with and without door,
- 5) 75MM, 110MM and 160MM DN BEND 87.5° with socket for solvent cement jointing and Groove socket with and without door,
- 6) 75MM, 110MM and 160MM DN COUPLER with socket for solvent cement jointing and Groove socket,
- 7) 75MM, 110MM and 160MM DN SINGLE TEE 87.5° with socket for solvent cement jointing and Groove socket with and without door and
- 8) 75MM DN NAHANI TRAP(WITH JALI)

मुख्यालय : मानक भवन, 9 बहादुर शाह जफर मार्ग, नई दिल्ली - 110002.

HEAD OFFICE : MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG, NEW DELHI - 110002.

\*For Training Needs, please contact National Institute of Training for Standardization, A-20 & 21 Institutional Area, Sector 60 Noida-201307 at Telephone(s) 0120-24-2201 to 05, 467023, Tel/Fax No. 0120-24-22-2-03, or e-mail : [nits@bis.org.in](mailto:nits@bis.org.in), [nits@bis.org.in](mailto:nits@bis.org.in).\*



Factory Images Ext. and Moulding as well as Aerial view of factory.

## 10 ASSURANCES

\*<sub>01</sub>

STATE OF ART  
MANUFACTURING FACILITIES



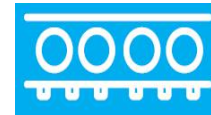
\*<sub>02</sub>

ADVANCED MACHINERY  
FOR CONDESCENDING QUALITY



\*<sub>03</sub>

ADVANCED MATERIAL  
HANDLING SYSTEMS



\*<sub>04</sub>

100% INCOMING RAW & PACKING  
MATERIALS INSPECTIONS



\*<sub>05</sub>

HIGH DIMENSIONAL ACCURACY  
TO MAINTAIN QUALITY OF  
EACH PIECE, TO ENSURE  
A PRODUCT DEFFECT FREE



\*  
06

STRICT QUALITY  
CHECKS AT EVERY STAGE  
OF PRODUCTION



\*  
07

100% FINISHED GOODS  
INSPECTION



\*  
08

MULTIPLE QUALITY CHECKS  
FOR CPVC MOULDED BRASS  
FITTINGS THAT DISPATCHES FROM  
THE FLOWKEM FACTORY



\*  
09

LAB TESTS PERFORMED  
FOR EVERY BATCH PRODUCED



\*  
10

ROUTINE TEST CARRIED OUT AT  
EXTERNAL LAB LIKE BIS & CIPET



## What is CPVC?

. Chlorinated polyvinyl chloride (CPVC) is a thermoplastic produced by chlorination of polyvinyl chloride (PVC) resin used for hot and cold water lines. CPVC is the first choice of material for potable water supply across the world and is in use across the world for more than 50 years. It is ideal for use in hot and cold water applications in villas and individual homes, residential apartments, office complexes, commercial buildings, hotels and hospitals

**CPVC offers eight primary advantages that can, and have improved the bottom line of industrial process water applications worldwide.**

### 1. Corrosion Resistance

Corrosion is a common, ongoing problem in industrial environments. CPVC pipe and fittings demonstrate superior resistance to internal and external corrosion, virtually eliminating process leaks, flow restrictions and ultimately, premature pipe failure.

Unlike metallic systems, CPVC industrial piping will never pit or scale, as it is inert to most mineral acids, bases, salts and aliphatic hydrocarbons. CPVC is formulated to stand up to many of the same aggressive chemicals that corrode steel, and it does so in extreme temperature environments.

### 2. Ease of Installation

CPVC pipe and fittings are installed using a simple two-step solvent-cementing process, which creates a highly reliable joint by chemically fusing the pipe to the fitting. When properly installed, a solvent-cemented CPVC joint becomes the strongest part of the entire system, offering more durability than either the pipe or fitting alone.

Also, CPVC is lightweight, weighing roughly one-eighth the weight of comparably sized steel piping. This means fewer complex tools, faster installation and simplified maintenance, reducing labour time. In addition, CPVC installation does not require electricity, which is ideal for applications where power isn't consistently available.

### 3. Little or No Maintenance Required

A CPVC piping system requires little or no maintenance when properly installed. In addition, external pipe coatings are not necessary because CPVC remains unaffected by even the most aggressive soil and air conditions.

However, should a portion of the piping need replacing, a repair can be made easily without the need for a welder or lifting device to hoist equipment into place.

### 4. Optimum Flow Rates

CPVC industrial piping has a smooth inner surface that resists scaling and fouling, which minimizes friction pressure losses in the fluid flow from the beginning. This means, CPVC piping offers optimum flow rates allowing more liquid to moved using smaller pumps and less energy.

#### 4. Optimum Flow Rates

CPVC industrial piping has a smooth inner surface that resists scaling and fouling, which minimizes friction pressure losses in the fluid flow from the beginning. This means, CPVC piping offers optimum flow rates allowing more liquid to be moved using smaller pumps and less energy.

*Pictured here: a metal pipe exhibiting both internal and external corrosion and CPVC pipe exhibiting no signs of corrosion after years of service.*



#### 5. Low Flame and Smoke

It must be forced to burn due to its very high Limiting Oxygen Index (LOI) of 60. LOI is the percentage of oxygen needed in an atmosphere to support combustion. Since the Earth's atmosphere contains only 21% oxygen, CPVC will not burn unless a flame is constantly applied, and stops burning when the ignition source is removed.

#### 6. Long Service Life

CPVC starts with a C-factor of 150 and maintains that interior surface smoothness throughout its life by resisting the effects of corrosives. This leads to greater efficiency and reduced costs to facilities because smaller pipes, smaller pumps and less energy can be used to move fluids at the same rate.

CPVC industrial piping can also withstand long-term exposure to even the harshest environments without significant adverse effects, making it ideal for long-term outdoor installations.

#### 7. Lowest bacterial growth

As compared to other piping systems (steel, copper, polypropylene, other thermoplastics) the bacterial growth in Flowkem CPVC is much lower.

#### 8. Fire Retardant

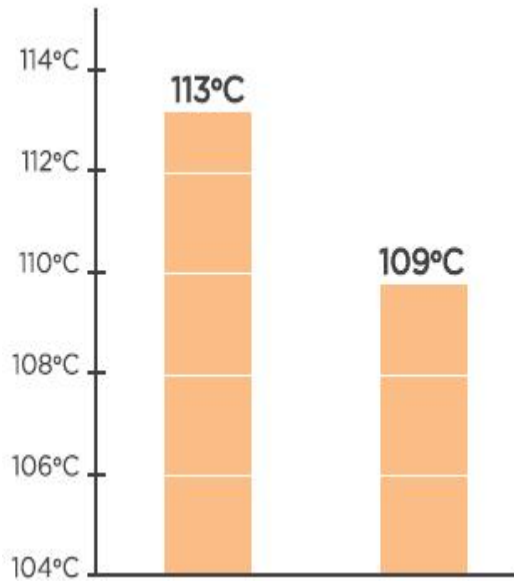
Characteristic of Flowkem CPVC is its outstanding fire safety profile. It will not burn unless an external flame source is present and will not sustain ignition once the flame source is removed. It has:

- High ignition temperature
- Low toxicity
- Low heat of combustion

### Why Only Flowkem CPVC Pipes?

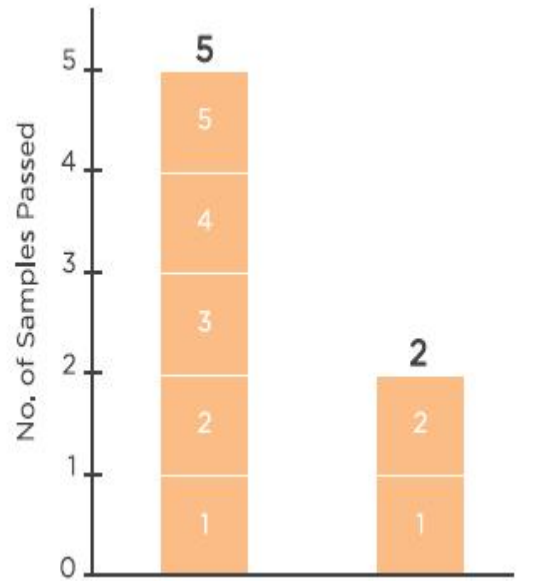
#### THE SUPERIOR HOT/COLD WATER DISTRIBUTION SYSTEM

When you specify Flowkem CPVC pipes and fittings, you benefit from the most experienced installation and support network in the industry. Let us help you specify the pipes, fittings, solvent cements and installation technologies that meet your most stringent standards for reliability and performance.



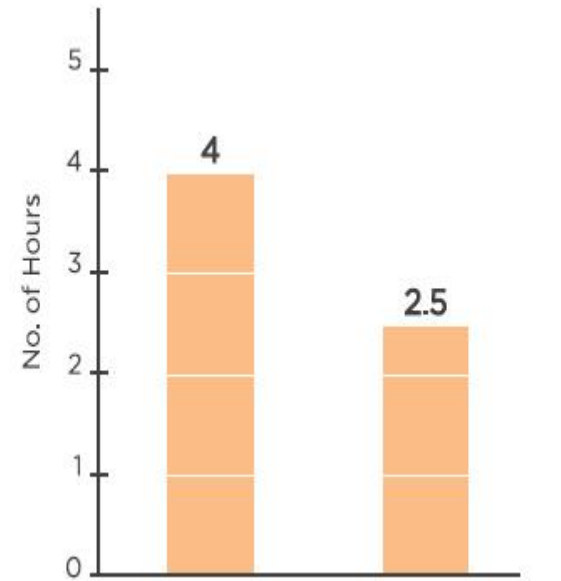
FLOWKEM CPVC PIPES  
VICAT SOFTENING POINT  
(VSP)

NON STD. CPVC PIPES  
VICAT SOFTENING POINT  
(VSP)



FLOWKEM CPVC PIPES  
100% FLATTENING  
TEST

NON STD. CPVC PIPES  
FLATTENING  
TEST



FLOWKEM CPVC PIPES  
SUSTAINED PRESSURE  
TEST@ 82°C

NON STD. CPVC PIPES

### Standards and Codes

#### STANDARDS FOR PIPES AND FITTINGS

CPVC pipes and Fittings are manufactured in sizes from 1/2" to 2"

<i>Class of pipes/Fittings</i>	<i>Standard</i>	<i>Sizes available</i>	<i>Class of pipes/Fittings</i>	<i>Standard</i>	<i>Sizes available</i>
<i>Class-1/ SDR 11 Pipe</i>	<i>IS 15778</i>	<i>1/2" to 2"</i>	<i>SDR 11 Fittings</i>	<i>ASTM D 2846</i>	<i>1/2" to 2"</i>
	<i>ASTM D 2846</i>				
<i>Class-1/ SDR 13.5 Pipe</i>	<i>IS 15778</i>	<i>1/2" to 2"</i>			
	<i>ASTM D 2846</i>				

## Basic Properties of Flowkem CPVC Pipes

Sl.No.	Property	Test	Condition	English Units	S.I. Units
<b>General</b>					
1	Specific Gravity	ASTM D792	73°F/23°C	1.52	1.52
2	Specific Volume		73°F/23°C	0.645 cm <sup>3</sup> /g	0.645 cm <sup>3</sup> /g
3	Water Absorption	ASTM D570	73°F/23°C	0.03%	0.03%
			212°F/100°C	0.55%	0.55%
4	Rockwell Hardness	ASTM D785	73°F/23°C	119	-
5	Cell Classification	ASTM D1784	-	23447	-
<b>Mechanical</b>					
1	Izod impact	ASTM D256	73°F/23°C	1.5 ft lbs/in. o.n	80 J/m o.n
2	Tensile Strength	ASTM D638	73°F/23°C	7687 PSI	53 N/mm <sup>2</sup>
3	Tensile Modulus	ASTM D638	73°F/23°C	350,000 psi	2414 N/mm <sup>2</sup>
4	Flexural strength	ASTM D790	73°F/23°C	15,000 psi	103 N/mm <sup>2</sup>
5	Flexural modulus	ASTM D790	73°F/23°C	410,000 psi	2827 N/mm <sup>2</sup>
6	Compressive strength	ASTM D695	73°F/23°C	10,000 psi	69 N/mm <sup>2</sup>
7	Compressive Modulus	ASTM D695	73°F/23°C	196,000 psi	1338 N/mm <sup>2</sup>
<b>Thermal Properties</b>					
1	Expansion	ASTM D696	-	3.4 x 10 <sup>-5</sup>	6.1x10 <sup>-2</sup>
				in/in/°F	m/m/k
2	Thermal Conductivity	ASTM C177	-	0.95 BTU in/hr/ft <sup>2</sup> /°F	0.14Wm/K/m <sup>2</sup>
3	Heat Distortion Temperature	ASTM D648	-	217°F	103°C
4	Heat capacity	DSC	73°F/23°C	0.21 BTU/lb°F	0.90 J/gK
			212°F/100°C	0.26 BTU/lb°F	1.10 J/gK
<b>Flammability</b>					
1	Flammability rating	UL94	-	0.062 in/0.157cm	V-0,5VB, 5VA
2	Flame spread	ASTM E84	-	15	-
3	Smoke developed	ASTM E84	-	70-125	-
4	Limiting oxygen index	ASTM D2863	-	60%	-
<b>Electrical</b>					
1	Dielectric Strength	ASTM D147	-	1250 V/mil	492,000 V/cm
2	Dielectric Constant	ASTM D150	60 Hz, 30°F/-1°C	3.7	3.7
3	Power Factor	ASTM D150	1000 Hz	0.007%	0.007%
4	Volume Resistivity	ASTM D257	73°F/23°C	3.4x10 <sup>15</sup>	3.4x10 <sup>15</sup>
				ohm/cm	ohm/cm

# Technical specification

## Dimensional details and Pressure Ratings of SDR 11 (Class 1) CPVC Pipes as per IS 15778



Nominal Size		Outside Diameter (mm)		Wall Thickness (mm)		Pressure Rating at 27°C		Pressure Rating at 82°C	
(inch)	(mm)	Average	Tolerance	(mm)	Tolerance	(kg/cm <sup>2</sup> )	(MPa)	(kg/cm <sup>2</sup> )	(MPa)
½	15	15.90	±0.1	1.95	±0.25	28.14	2.76	6.93	0.68
¾	20	22.20	±0.1	2.25	±0.25	28.14	2.76	6.93	0.68
1	25	28.60	±0.1	2.85	±0.25	28.14	2.76	6.93	0.68
1¼	32	34.90	±0.1	3.45	±0.25	28.14	2.76	6.93	0.68
1½	40	41.30	±0.1	4.05	±0.25	28.14	2.76	6.93	0.68
2	50	54.00	±0.1	5.20	±0.30	28.14	2.76	6.93	0.68



## Dimensional details and Pressure Ratings of SDR 13.5 (Class 2) CPVC Pipes as per IS 15778

Nominal Size		Mean Outside Diameter (mm)		Wall Thickness (mm)		Pressure Rating at 27°C		Pressure Rating at 82°C	
(inch)	(mm)	Average	Tolerance	(mm)	Tolerance	(kg/cm <sup>2</sup> )	(MPa)	(kg/cm <sup>2</sup> )	(MPa)
½	15	15.9	±0.1	1.65	±0.25	22.23	2.18	5.61	0.55
¾	20	22.2	±0.1	1.95	±0.25	22.23	2.18	5.61	0.55
1	25	28.6	±0.1	2.35	±0.25	22.23	2.18	5.61	0.55
1¼	32	34.9	±0.1	2.85	±0.25	22.23	2.18	5.61	0.55
1½	40	41.3	±0.1	3.35	±0.25	22.23	2.18	5.61	0.55
2	50	54.0	±0.1	4.25	±0.25	22.23	2.18	5.61	0.55



# QC Checks SOP at Flowkem

HOURLY INSPECTION OF WORKMANSHIP, FINISH, VISUAL APPEARANCE, DIMENSIONS, PRINTING & PACKAGING. VISUALLY AND DIMENSIONALLY PASSED PIPES ARE TESTED IN LABORATORY FOR EACH BATCH.

## LABORATORY TESTS

FLATTENING TEST.

DENSITY.

HYDROSTATIC SUSTAINED PRESSURE TEST AT 82°C.

RESISTANCE TO EXTERNAL BLOWS AT 0°C.

REVERSION TEST AT 150°C.

VICAT SOFTENING TEMPERATURE TEST.

OPACITY TEST.

TENSILE STRENGTH.

HYDROSTATIC PRESSURE TEST AT 20°C.

THERMAL STABILITY BY HYDROSTATIC PRESSURE TEST AT 95°C

EFFECT ON WATER TEST.

MALFUNCTION TEMPERATURE TEST AT 95°C.

## Handling and Storage

### # Proper Handling of Pipes

\*Please check and inspect the pipes on receipt. The pipes should be checked for any forms of transport damage due to shift in loads or improper handling/treatment. Visually examine the ends of pipes for any cracks or damage.

\*The pipes should be handled with care. The tendency to throw or drop the pipes to the floor should be avoided. Do not drag or push the pipes from a truck bed. Contact of the pipes with any sharp object should be totally avoided.

### Storage of Pipes

\* As we know that CPVC pipes can be damaged if mishandled or improperly stored. For this reason, plumbers should keep the following suggestions in mind when bringing CPVC piping onto the job site.

\* Unlike other plastic piping, CPVC pipe can withstand the harmful effects of ultraviolet (UV) rays. Long UV exposure weakens other plastic piping, including polypropylene (PPR) or green pipe. Flowkem CPVC is engineered with specialized additives that protect the material from the sun's rays. Although some exposure to UV won't damage piping, we still recommend covering piping with a non-transparent material when storing outside for long periods of time. This will help protect piping from the discolouring effects that UV rays can have on its surface.

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### **Additionally, keep these considerations in mind when storing CPVC pipes on the job site:**

- Keep pipes and fittings out of areas where they may get run over by power equipment.
- Find a flat area, free of sharp jagged rocks or debris, and that is relatively protected.
- Never set anything heavy, sharp or rough on top of the piping.

## Solvent Cementing Instructions

### CPVC SOLVENT CEMENT

FLOWKEM CPVC Solvent Cement Yellow – Medium Bodies for use with CPVC PIPE AND FITTINGS Through 4" Dia INTERFERENCE FIT FOR HOTT & COLD WATER UP TO 82° C (180°F)  
ASTMF – 493 & D – 2846 Approved by NSF & Meets the requirements for low VOC (Volatile organic compound).

### Direction for use

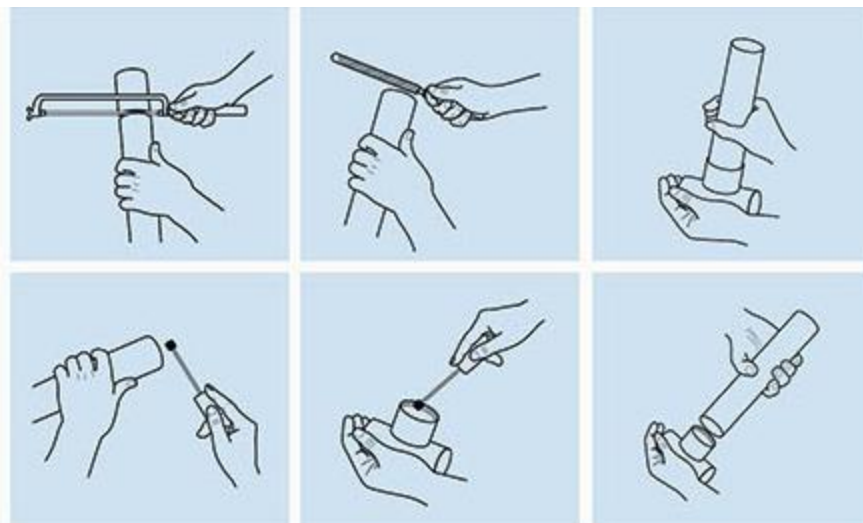
- Shake can well before use.
- Clean end of pipe and inside of fitting with dry cloth.
- Cut pipe square with hand saw or pipe cutter and remove burrs inside and out.
- Check dry fit of pipe and fittings.
- Pipe should enter in the fitting at least 1/3 of the way without forcing. Apply on adequate coat of cement in the fitting socket and at the end of the pipe using dauber supplied with can.
- Immediately insert pipe into the fitting socket with a slight twisting motion until it reaches in to the bottom in the fitting socket.
- Hold joint together for 30 second, ensuring pipe is not pushed out.
- Wipe of excess cement from joint.
- Allow about 15 minutes curing time before handling.

### Safety Precautions:

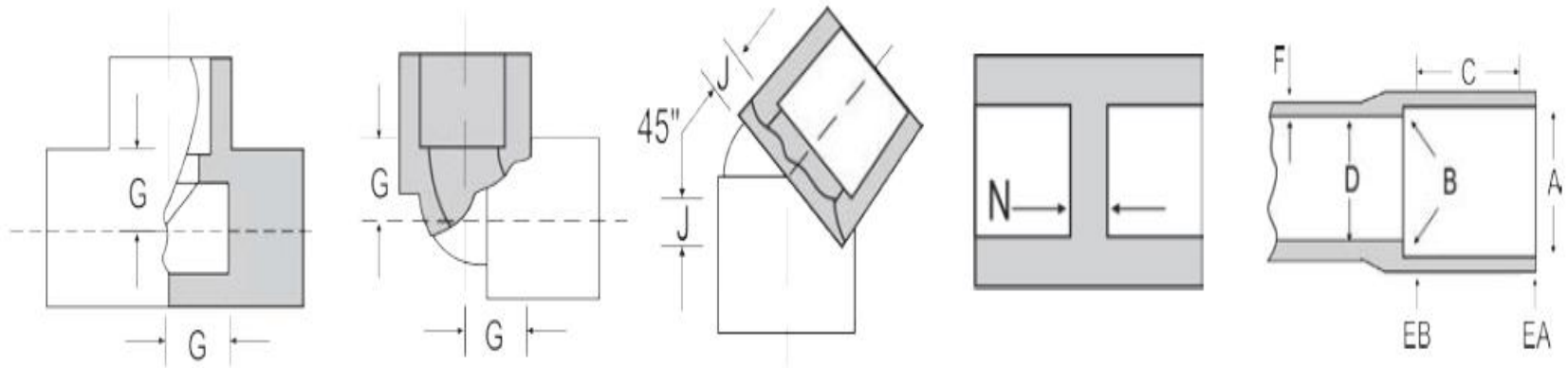
- Use only in a well-ventilated area.
- Avoid contact with skin and eyes, in case of eyes and skin contact flush with plenty of water. If irritation persists, get medical assistance.
- Do not use or store near heat, spark and flame.
- use gloves and safety glasses. Store and use of at temperature below 40°c keep container closed when not in use.

## Instructions

FLOWKEM CPVC pipes are best joined using Flowkem solvent cement, Which is a single step fast setting solvent cement. The bonding takes place due to chemical fusion of the muffing surfaces. The solvent cement eliminates the need for any electric or heat surface for joining. It is necessary to cut the pipe, then it should be done with a fine footed handsaw.



## Technical specification




### Minimum Dimensions from Center to End of Socket (Laying Length) for CPVC 4120, SDR 11 Plastic Fittings

Nominal Size (inch)	"G" min. in (mm)	"J" min. in (mm)	"N" min. in (mm)
1/2	0.382 (9.70)	0.183 (4.65)	0.102 (2.59)
3/4	0.507 (12.88)	0.235 (5.97)	0.102 (2.59)
1	0.633 (16.08)	0.287 (7.29)	0.102 (2.59)
1 1/4	0.758 (19.25)	0.339 (8.61)	0.102 (2.59)
1 1/2	0.884 (22.45)	0.391 (9.93)	0.102 (2.59)
2	1.134 (28.83)	0.495 (12.57)	0.102 (2.59)


## Tapered socket dimensions for CPVC 4120, SDR 11, Plastic Fittings.

Nominal Size	Socket Entrance Diameter, in (mm)		Socket Bottom Diameter, in (mm)		Socket Length in (mm)	Inside Diameter in (mm)	Wall Thickness in (mm)		
	'A' Average	'A' Tolerance	'B' Average	'B' Tolerance			'C' min	'D' min.	Socket Entrance "EA" min.
1/2	0.633 (16.08)	±0.003 (±0.08)	0.619 (15.72)	±0.003 (±0.08)	0.500 (12.70)	0.489 (12.42)	0.068 (1.73)	0.102 (2.59)	0.128 (3.25)
3/4	0.884 (22.45)	±0.003 (±0.08)	0.870 (22.10)	±0.003 (±0.08)	0.700 (17.78)	0.715 (18.16)	0.080 (2.03)	0.102 (2.59)	0.128 (3.25)
1	1.135 (28.83)	±0.003 (±0.08)	1.121 (28.47)	±0.003 (±0.08)	0.900 (22.86)	0.921 (23.39)	0.102 (2.59)	0.102 (2.59)	0.128 (3.25)
1 1/4	1.386 (35.20)	±0.003 (±0.08)	1.372 (34.85)	±0.003 (±0.08)	1.100 (27.94)	1.125 (28.58)	0.125 (3.18)	0.125 (3.18)	0.156 (3.96)
1 1/2	1.640 (41.66)	±0.004 (±0.10)	1.622 (41.20)	±0.004 (±0.10)	1.300 (33.02)	1.329 (33.76)	0.148 (3.76)	0.148 (3.76)	0.185 (4.70)
2	2.141 (54.38)	±0.004 (±0.10)	2.123 (53.92)	±0.004 (±0.10)	1.700 (43.18)	1.739 (44.170)	0.193 (4.90)	0.193 (4.90)	0.241 (6.12)


## Fittings –Details

	Size (mm)	Size (In.)	Part No.
<b>ELBOW 90°</b> 	15	½"	11E15000
	20	¾"	11E20000
	25	1"	11E25000
	32	1 ¼"	11E32000
	40	1 ½"	11E40000
	50	2"	11E50000

	Size (mm)	Size (In.)	Part No.
<b>COUPLIN (COUPLER)</b> 	15	½"	11CUP150
	20	¾"	11CUP200
	25	1"	11CUP250
	32	1 ¼"	11CUP320
	40	1 ½"	11CUP400
	50	2"	11CUP500

	Size (mm)	Size (In.)	Part No.
<b>F. T. A.</b> 	15	½"	11FTA150
	20	¾"	11FTA200
	25	1"	11FTA250
	32	1 ¼"	11FTA320
	40	1 ½"	11FTA400
	50	2"	11FTA500
20*15	¾" x ½"	11FT2015	


	Size (mm)	Size (In.)	Part No.
<b>EQUAL TEE</b> 	15	½"	11T15000
	20	¾"	11T20000
	25	1"	11T25000
	32	1 ¼"	11T32000
	40	1 ½"	11T40000
	50	2"	11T50000

	Size (mm)	Size (In.)	Part No.
<b>REDUCER COUPLER</b> 	20*15	¾" X ½"	11RC2015
	25*15	1" X ½"	11RC2515
	25*20	1" X ¾"	11RC2520
	32*15	1 ¼" X ½"	11RC3215
	32*20	1 ¼" X ¾"	11RC3220
	32*25	1 ¼" X 1"	11RC3225
	40*15	1 ½" X ½"	11RC4015
	40*20	1 ½" X ¾"	11RC4020
	40*25	1 ½" X 1"	11RC4025
	40*32	1 ½" X 1 ¼"	11RC4032
	50*15	2" X ½"	11RC5015
	50*20	2" X ¾"	11RC5020
	50*25	2" X 1"	11RC5025
	50*32	2" X 1 ¼"	11RC5032
	50*40	2" X 1 ½"	11RC5040

	Size (mm)	Size (In.)	Part No.
<b>REDUCER BUSH</b> 	20*15	¾" X ½"	11RB2015
	25*15	1" X ½"	11RB2515
	25*20	1" X ¾"	11RB2520
	32*15	1 ¼" X ½"	11RB3215
	32*20	1 ¼" X ¾"	11RB3220
	32*25	1 ¼" X 1"	11RB3225
	40*15	1 ½" X ½"	11RB4015
	40*20	1 ½" X ¾"	11RB4020
	40*25	1 ½" X 1"	11RB4025
	40*32	1 ½" X 1 ¼"	11RB4032
	50*15	2" X ½"	11RB5015
	50*20	2" X ¾"	11RB5020
	50*25	2" X 1"	11RB5025
	50*32	2" X 1 ¼"	11RB5032
	50*40	2" X 1 ½"	11RB5040

	Size (mm)	Size (In.)	Part No.
<b>M. T. A.</b> 	15	½"	11MTA150
	20	¾"	11MTA200
	25	1"	11MTA250
	32	1 ¼"	11MTA320
	40	1 ½"	11MTA400
	50	2"	11MTA500
	20*15	¾" x ½"	11MT2015

	Size (mm)	Size (In.)	Part No.
<b>UNION</b> 	20	¾"	11UN2000
	25	1"	11UN2500
	32	1 ¼"	11UN3200
	40	1 ½"	11UN4000
	50	2"	11UN5000

	Size (mm)	Size (In.)	Part No.
<b>REDUCER TEE</b> 	20*15	¾" X ½"	11RT2015
	25*15	1" X ½"	11RT2515
	25*20	1" X ¾"	11RT2520
	32*15	1 ¼" X ½"	11RT3215
	32*20	1 ¼" X ¾"	11RT3220
	32*25	1 ¼" X 1"	11RT3225
	40*15	1 ½" X ½"	11RT4015
	40*20	1 ½" X ¾"	11RT4020
	40*25	1 ½" X 1"	11RT4025
	40*32	1 ½" X 1 ¼"	11RT4032
	50*15	2" X ½"	11RT5015
	50*20	2" X ¾"	11RT5020
	50*25	2" X 1"	11RT5025
	50*32	2" X 1 ¼"	11RT5032
	50*40	2" X 1 ½"	11RT5040

Size (mm)	Size (In.)	Part No.
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**3 IN 1 MIXER ADAPTOR ALL TOP**



20*15	3/4" X 1/2"	11MAT2015
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**3 IN 1 MIXER ADAPTOR TOP AND BOTTOM**



20*15	3/4" X 1/2"	11MTB2015
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**3 IN 1 MIXER ADAPTOR TOP AND SIDE**



20*15	3/4" X 1/2"	11MTS2015
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**REDUCER ELBOW**



20*15	3/4" X 1/2"	11RE2015
25*15	1" X 1/2"	11RE2515
25*20	1" X 3/4"	11RE2520

**TANK NIPPLE**



20	3/4"	11TN2000
25	1"	11TN2500
32	1 1/4"	11TN3200
40	1 1/2"	11TN4000
50	2"	11TN5000

**TANK NIPPLE PLAIN**



20	3/4"	11TNP200
25	1"	11TNP250
32	1 1/4"	11TNP320
40	1 1/2"	11TNP400

Size (mm)	Size (In.)	Part No.
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**END CAP**



15	3/8"	11EC1500
20	3/4"	11EC2000
25	1"	11EC2500
32	1 1/4"	11EC3200
40	1 1/2"	11EC4000
50	2"	11EC5000

**CROSS TEE**



20	3/4"	11CR2000
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**BRASS F. T. A.**



20*15	3/4" X 1/2"	11BF2015
25*15	1" X 1/2"	11BF2515
20*20	3/4" X 3/4"	11BF2020
25*20	1" X 3/4"	11BF2520
25*25	1" X 1"	11BF2525
32*32	1 1/4" X 1 1/4"	11BF3232
40*40	1 1/2" X 1 1/2"	11BF4040
50*50	2" X 2"	11BF5050

**BRASS M. T. A.**



20*15	3/4" X 1/2"	11BM2015
20*20	3/4" X 3/4"	11BM2020
25*15	1" X 1/2"	11BM2515
25*20	1" X 3/4"	11BM2520
25*25	1" X 1"	11BM2525
32*32	1 1/4" X 1 1/4"	11BM3232
40*40	1 1/2" X 1 1/2"	11BM4040
50*50	2" X 2"	11BM5050

**LONG PLUG**



15	1/2"	11LP1500
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Size (mm)	Size (In.)	Part No.
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**TANK NIPPLE PLAIN**



20	3/4"	11TNP200
25	1"	11TNP250
32	1 1/4"	11TNP320
40	1 1/2"	11TNP400

**BRASS ELBOW**



20*15	3/4" X 1/2"	11BE2015
25*15	1" X 1/2"	11BE2515
20*20	3/4" X 3/4"	11BE2020
25*20	1" X 3/4"	11BE2520
25*25	1" X 1"	11BE2525

**Q. TURN CONCEALED VALVE WITH CERAMIC DISC**



20	3/4"	11QCV200
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**CONCEALED VALVE**



15	1/2"	11CV1500
20	3/4"	11CV2000
25	1"	11CV2500

**LONG HANDLE BALL VALVE**



15	1/2"	11BV1500
20	3/4"	11BV2000
25	1"	11BV2500
32	1 1/4"	11BV3200
40	1 1/2"	11BV4000
50	2"	11BV5000

Size (mm)	Size (In.)	Part No.
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**BRASS TEE**



20*15	¾" X ½"	11BT2015
25*15	1" X ½"	11BT2515
20*20	¾" X ¾"	11BT2020
25*20	1" X ¾"	11BT2520

**LONG BEND 90°**



15	½"	11LB1500
20	¾"	11LB2000
25	1"	11LB2500
32	1 ¼"	11LB3200
40	1 ½"	11LB4000
50	2"	11LB5000

**SOLVENT**



15	ML	Tube	11SC1500
25	ML	Tube	11SC2950
59	ML	Tube	11SC5900
118	ML	Can	11SC1180
237	ML	Can	11SC2370
475	ML	Can	11SC4750
950	ML	Can	11SC9500

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



20 x 15	¾" x ½"	11HBF2015
20	¾"	11HBF2000
25	1"	11HBF2500
32	1 ¼"	11HBF3200
40	1 ½"	11HBF4000
50	2"	11HBF5000

Size (mm)	Size (In.)	Part No.
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**ELBOW 45°**



20	¾"	11E45200
25	1"	11E45250
32	1 ¼"	11E45320
40	1 ½"	11E45400

**POWDER COATED METAL CLAMP**



15	½"	11MC1500
20	¾"	11MC2000
25	1"	11MC2500
32	1 ¼"	11MC3200
40	1 ½"	11MC4000
50	2"	11MC5000

**STEP OVER BEND**



20	¾"	11SOB200
25	1"	11SOB250

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



20 x 15	¾" x ½"	11HBM2015
20	¾"	11HBM2000
25 x 15	1" x ½"	11HBM2515
25 x 20	1" x ¾"	11HBM2520
25	1"	11HBM2500
32	1 ¼"	11HBM3200
40	1 ½"	11HBM4000
50	2"	11HBM5000

## Thermal Expansion and Contraction

CPVC Pipes will expand about 1 inch per 50 feet of straight pipe for every 50°F increase in temperature.

The most important factor in determining how much expansion or contraction will occur in CPVC Piping system is the temperature of the pipe at the time of installation. If the pipe is installed in unusually cold weather the pipe will be shorter at installation than it will when it is in service. This can be a major factor in hot water lines where a 50-foot long run of pipe installed at 20 °F would expand up to 2" when in service at 120°F.

While hot water lines are most likely to be affected by expansion and contraction, cold water lines can also be affected when the installation was done at unusually high or low temperatures.

When not properly accounted for, thermal expansion can place excess stress on the system. In the example above, a 100°F change in temperature on a 50-foot run would be the equivalent of about 1200 pounds per square inch of compressive stress on the pipe or fitting.

This force can lead to problems such as cracked fittings and distorted or cracked pipes. In many cases, these problems can take years to develop because the system will withstand the excessive stress for some period of time before failing.

### Expansion and Contraction Solutions

To avoid these problems, always allow for expansion and contraction by following these simple best practices:

Do not restrict the natural movement of the pipe in the direction of expansion and contraction.

Always leave adequate spacing between elbows and hangers/restraints.

Never butt-up elbows against studs which restrict their ability to move freely.

Ensure all holes and grommets used for pipe penetrations allow for lateral movement of the pipe without abrasion.

Read and follow the manufacturer's installation instructions.

## FLUID MECHANICS FOR CPVC PIPES

### Linear Velocity of Fluid Flow

The linear velocity of a flowing fluid in a pipe is calculated from:

$$v = \frac{0.4085g}{d^2}$$

Where : v= Linear fluid flow velocity in feet per second

d= inside diameter of pipe in inches

g= Flow rate in gallons per minute

The values in the table below are accurate for all fluids.

Linear fluid flow velocity in a system should generally be limited to 5 ft./s. for industrial applications, particularly for pipe sizes 6-inch or greater.

### Hazen-Williams C Factor/ FRICTION LOSS IN PIPES

A great advantage that Flowkem CPVC pipes enjoys over metallic pipe is a smooth inner surface, which is resistant to scaling and fouling. This means that friction pressure losses in the fluid flow are minimized from the beginning and do not significantly increase as the system ages, as can be the case with metal pipes subject to scaling.





The Hazen-Williams formula is the generally accepted method of calculating friction head losses in piping systems. The friction head loss values in the fluid flow tables below are based on this formula, and CPVC piping's surface roughness constant of C = 150. For reference, the surface roughness constants for both new and old piping materials are given beside.

$$f = 0.2083 \times \left( \frac{100}{C} \right)^{1.852} \frac{g^{1.852}}{d^{4.8655}}$$

Where : f= Friction head in feet of water per 100 feet of pipe  
 d= inside diameter of pipe in inches  
 g= Flow rate in gallons per minute  
 c= pipe surface roughness constant  
 Note : one foot of water = 0.4335 psi

CONSTANT (C)	TYPE OF PIPE
150	CPVC pipe, new-40 years old
130-140	Steel / cast iron pipe, new
125	Steel pipe, old
120	Cast iron, 4 - 12 years old
110	Galvanize steel; cast iron, 13 - 20 years old
60-80	Cast iron, worn / pitted

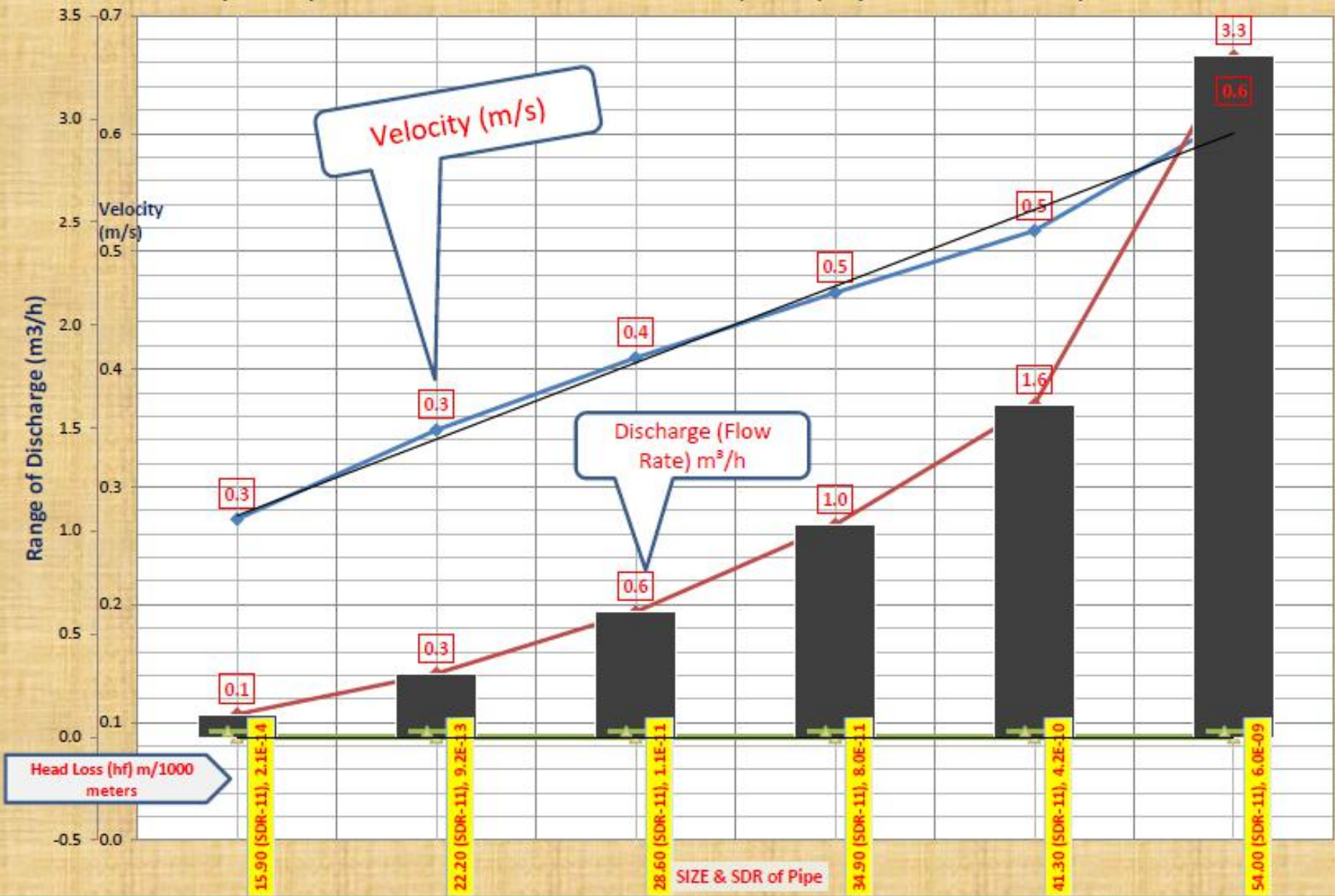
### Friction Head Loss in Fittings

Friction losses through fittings are calculated from the equivalent length of straight pipe that would produce the same friction loss in the fluid. The equivalent lengths of pipe for common fittings are given below:

Nominal size (inch)	90° Standard Elbow	45° Standard Elbow	Standard Tee Run flow	Standard Tee Branch Flow
1/2"	1.55	0.83	1.04	3.11
3/4"	2.06	1.10	1.37	4.12
1"	2.62	1.40	1.75	5.25
1-1/4"	3.45	1.84	2.30	6.90
1-1/2"	4.03	2.15	2.68	8.05
2"	5.17	2.76	3.45	10.30
2-1/2"	6.10	3.30	4.10	12.20
3"	7.60	4.10	5.10	15.20
4"	10.00	5.30	6.70	20.00

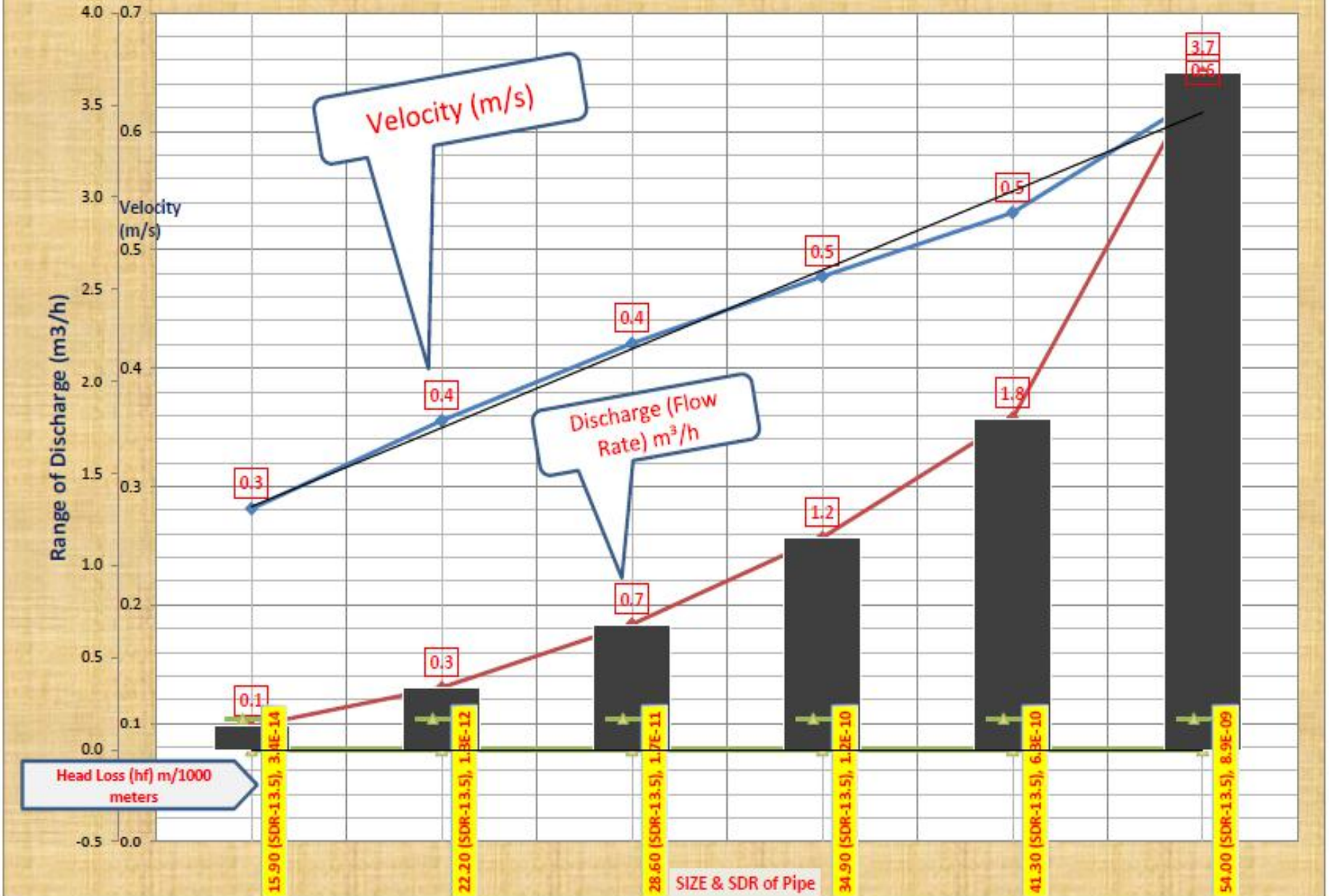
# VELOCITY, DISCHARGE AND FRICTION LOSS FOR SDR 11 CPVC PIPES

Graphical representation of water flow for CPVC PIPE (SDR-11) as per Hazen-Williams Equations



# VELOCITY, DISCHARGE AND FRICTION LOSS FOR SDR 13.5 CPVC PIPES

Graphical representation of water flow for CPVC PIPE (SDR-13.5) as per Hazen-Williams Equations



Note : For the calculation of Slope of Hydraulic Gradient (S), considered height(H) 1 meter. (Drop by length of pipe) and Pipe length (L) 100 meters.

For the calculated data of velocity, flow rates and head loss due to friction, please contact our technical Team.

## Water Hammer - Maximum Surge Pressure

Whenever a flow rate of a fluid in a pipe is changed, there is a surge in pressure known as water hammer. The longer the line and faster the fluid is moving, the greater this hydraulic shock will be.

Water hammer may be caused by opening or closing a valve, starting or stopping a pump, or the movement of entrapped air through the pipe.

The maximum water hammer surge pressure may be calculated using the following formula:

$$P_{wh} = \frac{\rho \Delta V}{144g_c} \left[ \frac{\rho}{144g_c} \left( \frac{1 + d}{K b E} \right) \right]^{-\frac{1}{2}}$$

Where :  $P_{wh}$ = Maximum surge pressure ,psi

$\rho$  = Fluid density

$\Delta V$ = Change in velocity

$g_c$ = Gravitational constant

$K$ = Bulk modulus of elasticity of fluid

$b$ = Pipe wall thickness ,

$d$ = Pipe inside diameter

$E$ = Pipe material bulk modulus of elasticity

The values in the following fluid flow tables are based on this formula at 73°F (23°C) with the assumption that water flowing at a given rate of gallons per minute is suddenly and completely stopped. At 180°F (82.2°C), the surge pressure is approximately 15% less. The value for fluids other than water may be approximated by multiplying by the square root of the fluid's specific gravity.

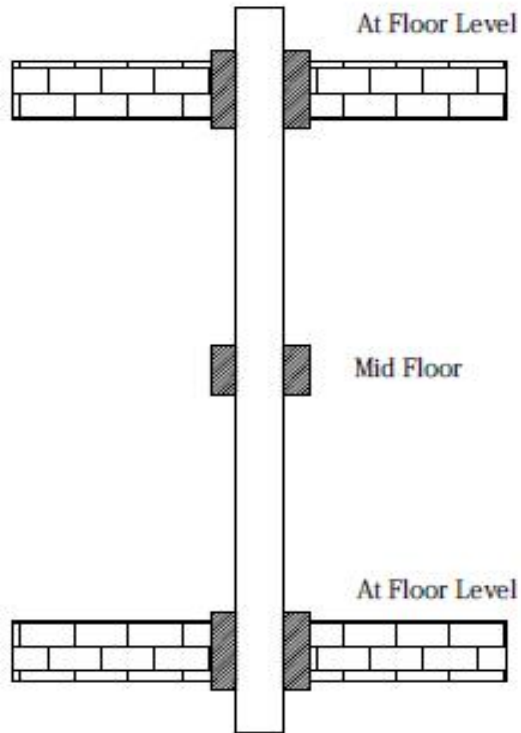
## Horizontal and Vertical Spacing in Installation

A typical hot and cold water distribution system operating at 60° - 70°C requires support for horizontal lines every 60 cm for diameters below 32 mm and every 120 cm on larger sizes.

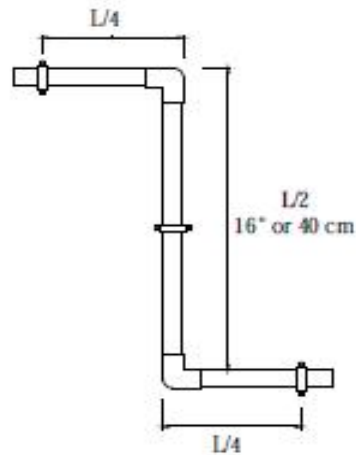
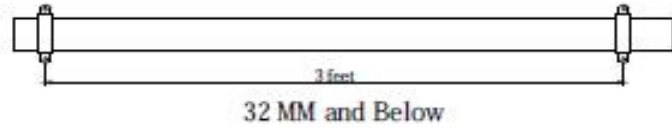
However the following spacing are based on assumptions and can be used at water temperatures indicated below.

Nominal Size(inch)	Size (mm)	20°C feet	68°F mtr.	50°C feet	122°F mtr.	70°C feet	158°F mtr.	80°C feet	176°F mtr
½"	12.70	5.5	1.7	4.5	1.4	3.0	0.9	2.5	0.8
¾"	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 ¼"	31.75	6.5	2.0	6.0	1.8	3.5	1.1	3.0	0.9
1 ½"	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
2 ½"	63.50	8.0	2.4	7.5	2.3	4.5	1.4	4.0	1.2
3"	76.20	8.0	2.4	7.5	2.3	4.5	1.4	4.0	1.2
4"	101.60	9.0	2.7	8.5	2.6	4.5	1.4	4.5	1.4

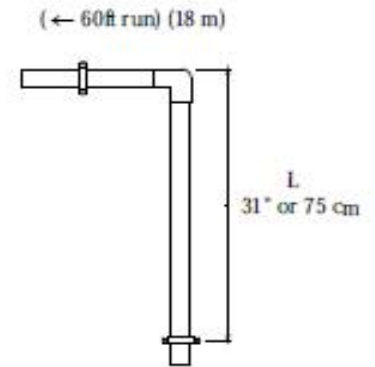
*VERTICAL PIPE*



*HORIZONTAL PIPE*



*OFFSET*



*CHANGE IN DISTANCE*

Do not butt up against fixed structures

# Derating Factor

## TEMPERATURE CORRECTION/DERATING FACTORS

Operating Temperature	°F	70	80	90	100	110	115	120	125	130	140	150	160	170	180
	°C	21	27	32	38	43	46	49	52	54	60	66	71	77	82
CPVC		1	1	0.91	0.82	0.77	0.74	0.65	0.64	0.62	0.5	0.47	0.4	0.32	0.25
NOTE	To obtain working pressure at temperature between the ranges mentioned above, the values at 27°C should be multiplied by the respective correcting or derating factor. For example, the working pressure at 60°C for 25mm X Class 2 (SDR 13.5) pipe will be ( 21.8 kg/cm <sup>2</sup> X 0.5) 10.9 kg/cm <sup>2</sup> .														
	CPVC PIPES AS PER IS 15778:2007														
Temperature in °C	21	27	32	38	43	46	49	52	54	60	66	71	77	82	
Pressure for SDR 11	27.6	27.6	25.1	22.6	21.3	20.4	17.9	17.7	17.1	13.8	13	11	8.8	6.9	
Pressure for SDR 13.5	21.8	21.8	19.8	17.9	16.8	16.1	14.2	14	13.5	10.9	10.2	8.7	7	5.5	

## FIELD OF APPLICATION

The boom in the building and construction industry, especially in the housing and commercial building sector. The choice of piping systems for water utilities is based on overall long term value. They must deliver on factors like long term costs, reliability, versatility, environmental effect, drinking water safety and public health. CPVC Piping systems are the ideal choice, because they are corrosion resistant, durable, smooth, friction free, resistant to bacterial growth and environment friendly.

## Wide Range of Applications

The excellent qualities of CPVC Pipes make them ideal for

- Most suitable for carrying drinking water
- Hot and cold water distribution in residential, industrial and public projects.
- Carrying drinking water and food liquids
- Water and waste water treatment systems
- Transportation of chemical and hot corrosive fluids, which includes a wide variety of inorganic acids, bases used in chemical processing
- Use in industries like metal finishing, plating and treatment, pulp and paper, air pollution control, mining, aerospace, textile, food and beverage processing, fine sprinkler piping and municipal projects. Etc.....

**Note:** Not suitable for compressed air and gases.

## Frequently Asked Questions

### Q. 1. Is Flowkem CPVC Pipes and fittings UV protected?

**Ans.** Yes! NSF approved CPVC compound (Supplied by **ARKEMA**, material imported from France) used for manufacturing of CPVC Pipes & Fittings is already UV protected.

### Q. 2. How to repair the punctures in the wall of chasing/concealed installation?

**Ans.** Repair of punctured and damaged pipe due to drilling/chiselling can be done by removing the cement plaster and using the pipe repair piece supplied by company. Thoroughly clean the area of pipe damaged and makes it dry. Apply solvent cement on the surface of pipe at the damaged portion in the entire circumference. Also apply solvent cement on the inner surface of the pipe repair piece and snap on the over damaged area. Tie a small piece of string/binding wire around the repair piece and pipe for some time to allow to set. It is an unique system available with CPVC pipe where the damaged pipe need to be cut or shifted back and forth for repair. **Do pressure test before replastering.**

### Q. 3. Do we need to insulate the CPVC pipes?

**Ans.** Thermal conductivity of CPVC pipes and fittings is **0.14 W/MK** whereas of copper is 400 W/MK. Since CPVC is a very bad conductor of heat, light insulation is recommended only for installations where there is a continuous flow of hot water e.g. solar/ centralized heaters. In bathrooms with independent heaters within 3 meters location insulation may not be necessary. Please ensure that the insulation material or glue being used to hold the insulation material does not contain any phthalate plasticizer as it is not compatible with CPVC and can cause failure to plumbing system in the long run.

### Q. 4. How to prevent the damage due to drilling/hammering?

**Ans.** After concealing, like any other plastic/ copper pipes/ CPVC pipes and fittings are prone to damage and punctures due to drilling/hammering or chiseling. To avoid such accidents, piping route/layout diagrams and proper instruction may be given to the customer, tiling, carpentry and electrician-teams. Also contrasting color may be added to the cement mortar used to fill the chasings



**Q. 5. Why to give the expansion loops in the solar heater hot water line?**

**Ans.** For CPVC pipes which are not embedded inside the wall but are carrying hot water from boiler/solar water heater, etc. it is most important to use ready-made expansion loop .Use one readymade loop for every 9-12 ft. run of the pipe, between two fixed joints. The loops are designed for a max and min differential temp of 70°C. For longer lines and longer distances between the fixed joints expansion loops can be made at site with calculations as per manual or existing available loops can be used after every 12 feet length of pipe.

**Q. 6. Can we use the combination of CPVC and UPVC piping system?**

**Ans.**It is humbly advised to use CPVC pipes in all internal plumbing for both Hot and Cold water line. There has been an instance of the non-return valve failure or pressure differential in Hot and Cold water line due to which hot water has entered in the cold line. If the cold water line pipe is not temperature resistant then it will lead to leakage or bursting causing huge loss and inconvenience to the customer.

**Q. 7. At what distance do we need to clamp the pipes?**

**Ans.** 16" OR 40 cm.

**Q. 8. Is water passing through the adhesive joints safe for drinking?**

**Ans.** Yes! If it is made from NSF approved CPVC compound. NSF is an independent non-government body in USA for water purity standards and certifies the piping system including solvent joint to be used for potable drinking water.

**Q. 9. How to support the pipe line during wall chase installation?**

**Ans.** The installation may be supported with the help of pre-drilled 15 mm thick plywood piece, 6" long by 2" wide. After fixing the pipe in the wall chasing it-may be supported by fixing the plywood piece over the pipe and the chasing. Only 3 to 4 such supports may be needed in one toilet/bathroom installation. During installation it is best to avoid contact between pipes and nails. Properly align and firmly grout all threaded fittings inside the chasing with strong mix of cement and sand. Pipe line ends or elbows should be laid at least 2.5 cms. Inside the wall surface.

**Q. 10. Protection against household hot water storage geyser temperature and safety mechanism malfunctions?**

**Ans.** Some plumbing codes contain detailed requirements for connections to gas or electric storage type water heaters. Determine whether your code has such requirements and satisfy them. CPVC can be piped to the electric water heaters with special metal-to-CPVC transition fittings. For wall mounted electrical geyser connection always keep the inlet valve open and use flexible plastic hose pipe to connect geyser inlet to CPVC piping system.

On gas water heaters there should be at least 6 inches of clearance between the exhaust flue and any CPVC piping. Twelve inch long metal nipple or appliance connector 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. An approved temperature/ pressure (T/P) relief valve should be installed so that the probe or sensing element is in the water at the top of the heater. CPVC is approved by all the model codes for use as relief valve drain line piping. Use a metal-to-CPVC transition fitting to connect to the relief valve and continue the pipe full size to the outlet. For horizontal runs, slope the pipe toward the outlet and support it at three-foot centers or closer. The pipe must discharge to the atmosphere at an approved location. Do not use CPVC pipe and fittings with commercial-type non-storage water heaters.

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