

AKG[®]

Piping Solutions for a Better Future

OUR PRODUCT RANGE:

- CPVC Plumbing Pipes & Fittings
- Agriculture Pressure Pipes & Fittings
- SWR Pipes & Fittings
- uPVC Lead Free Pipes & Fittings
- PVC Well Casing and Screen Pipes
- uPVC Underground Drainage System

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Piping Solutions for a Better Future



An ISO 9001:2008 Company

CPVC Piping Systems Catalogue

CPVC Pipes and fittings for
next generation homes





Bringing Smart and Next Gen Water Solutions

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About us

AKG is a pioneer in eco-friendly Plastic Piping solutions and provides a wide range of innovative and customisable plumbing products.

AKG products are trusted by architects and builders for their superior quality and for conserving energy. The company is greatly privileged to have supply in various prestigious Govt. and private Organization like CPWD, UPJN, GWSSB, NTPC, NPCIL, L&T etc.

Due to a high demand for eco-friendly solutions, AKG ensures the use of recycled materials for its products. AKG's commitment to continually develop newer and smarter solutions has led to the development of its latest category-CPVC Pipes & Fittings.

AKG CPVC PLUMBING SYSTEM

A derivative of Polyvinyl Chloride (PVC), Chlorinated Polyvinyl Chloride (CPVC) is a thermoplastic produced by the chlorination of the PVC resin. AKG CPVC plumbing system is manufactured using world's best Japanese material and Austrian technology & is a safe, long lasting and cost effective solution for hot and cold water. This system is suitable for all plumbing and potable water applications. The pipes and fittings are made of chlorinated polyvinyl chloride and it is available in complete range from ½" to 4". The pipes are available in SDR 11 and SDR 13.5 whereas fittings are available in SDR 11 pressure class. Threaded inserts in the transition fittings are made from brass to withstand chemical corrosion even at the elevated temperatures.

AKG CPVC Pipes and fittings are manufactured according to IS-15778:2007 and ASTM D-2846 respectively. The choice of the raw material, the structural accuracy and the strict quality control imparts a high degree of reliability to AKG CPVC Pipes & Fittings making them most suitable, easy and economic solution for transportation and distribution of potable water. It has numerous advantages over G.I. and other conventional Piping system.

AREAS OF APPLICATION

- High Rise Residential Buildings, Complexes and Societies.
- Commercial and Industrial Installations .
- Chemical and Pharma Industries.
- Food and Beverages.
- Hospitals.
- Hotels.
- Water Treatment Plants.
- Solar Water Heaters.
- Metal Treatment.
- Pulp and Paper Industries.

PROPERTIES

GENERAL	Value (S.I Unit)
Specific Gravity	1.52
Hazen-William Factor	C=150
MECHANICAL	Value
Tensile Strength	55 N/mm ²
Tensile Modulus	2500 N/mm ²
Flexural Strength	104 N/mm ²
Flexural Modulus	2860 N/mm ²
THERMAL	Value
Heat Distortion Temperature	103° C
Coefficient of Thermal Expansion	6.1 x 10 ⁻² m/m/K
ELECTRICAL	Value
Dielectric Strength	1250 V/mil
Dielectric Constant	3.7
FIRE PERFORMANCE	Value
Flammability Rating	V-0, 5VB, 5VA
Average Time of Burning (Sec)	< 5
Burning Rate (in/min)	Self Extinguish
Limiting Oxygen Index (LOI)	60%



BENEFITS OF AKG CPVC PLUMBING SYSTEM



Cost-effective and easy to install

- AKG's pipe and fittings are light-weight and cost-effective, with low maintenance, labour and shipping costs.
- No electric/heat source is required for installation.
- A simple cutter, chamfering tool and CPVC solvent are the only requirements for 100% leak-proof jointing



Tough, Rigid Material

- AKG[®] CPVC pipe has a much higher strength than other thermoplastics used in plumbing. This means that CPVC needs less hangers and supports.
- AKG[®] CPVC pipe has a higher pressure bearing capability leading to the same flow rate with a smaller pipe size.



Fire-resistant

- AKG's pipes and fittings come with an integral flame retarding property, with a very high Limiting Oxygen Index (LOI) of 60 and therefore can't support or sustain combustion.



Smooth internal surface

- Absence of scaling, pitting and leaching ensures smooth and full bore flow, with no water pressure loss and noise.



Resistance to chemicals, corrosion and Abrasion

- AKG's pipes and fittings do not break down even under the harshest of water and service conditions.
- Our pipes and fittings can even be buried directly under concrete slabs, as they don't react chemically with concrete



Hot Water Compatible

- AKG[®] CPVC pipe is compatible with both hot and cold water. It can withstand very high temperature compared to any other thermoplastic plumbing systems. Many solar and electric water heaters have CPVC piping system for heat efficiency and lower installation cost.



Perfect for external use

- AKG's CPVC pipes and fittings are made using UV resistance material ensuring they don't lose their mechanical properties even under greater exposure to sunlight.



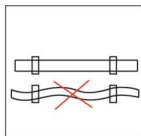
Suitable for carrying drinking water

- AKG's pipes and fittings are (heavy metal-free) supported by certification from CIPET & unaffected by chlorine in water.



Antimicrobial

- AKG's pipe and fitting retard microbial growth and are also suitable for aggressive water with pH levels of less than 6.5.



Low Thermal Expansion

- AKG[®] CPVC pipes have a lower coefficient of thermal expansion than alternative plastics, reducing the amount that the pipe expands when hot water is running again reducing unsightly 'looping' of the pipe.

COMPARISON CHART BETWEEN GI PIPE AND CPVC PIPE

CPVC piping system is superior in comparison to all other conventional piping system due to the numerous advantages offered by them. Historically GI Pipes have been the preferred choice for internal as well as external plumbing. However GI Pipes & fittings are prone to corrosion scaling & health hazards. A precise comparison between CPVC Piping & GI piping is as follows:

PROPERTY / PARAMETER	GI	CPVC
Standard Length (Metres)	6	3&5
Joining Method	Threaded Joint	Solvent Cement
Skill	Requires Expert Plumber	Easy to install
Joining Time	Few Hours	Few Seconds
Strength of Joints	Weak to Average	Strong to very strong
Line Commissioning Time	Takes More Time	Takes less Time
Corrosion Resistance	Very Weak	Non-corrosive
Chemical Resistance	Poor	Excellent
Installation Convenience	Difficult	Easy & Simple
Joining Reliability	Good	Excellent
Hygiene	Unhygienic Due to Formation of Zinc Oxide	Food Grade, Retards Microbial Growth, Anti Microbial
Inner Surface Smoothness	Not Smooth	Excellent Smoothness
Repair & Maintenance	Troublesome	Very Easy
Leak-proof Joints	Average-Leaks with Time	100% Leak Proof
Eco-Friendliness	No	Yes
Scaling, Pitting and leaching	Very High	Negligible

CPVC PIPES



IS 15778:2007



CPVC pipes as per IS 15778 :2007 (SDR 11)

Size Inches	Size mm	Wall Thickness (mm)		OD (mm)	
		Min	Max	Min	Max
½"	15	1.7*	2.2*	15.8	16.0
¾"	20	2.0	2.5	22.1	22.3
1"	25	2.6	3.1	28.5	28.7
1 ¼"	32	3.2	3.7	34.8	35.0
1 ½"	40	3.8	4.3	41.2	41.4
2"	50	4.9	5.5	53.9	54.1

CPVC pipes as per IS 15778:2007 (SDR 13.5)

Size Inches	Size mm	Wall Thickness (mm)		OD (mm)	
		Min	Max	Min	Max
½"	15	1.4*	1.9*	15.8	16.0
¾"	20	1.7	2.2	22.1	22.3
1"	25	2.1	2.6	28.5	28.7
1 ¼"	32	2.6	3.1	34.8	35.0
1 ½"	40	3.1	3.6	41.2	41.4
2"	50	4.0	4.6	53.9	54.1

CPVC pipes as per ASTM F441 (SCH 40)


Size Inches	Size mm	Wall Thickness (mm)		OD (mm)	
		Min	Max	Min	Max
2½"	65	5.16	5.77	72.82	73.18
3"	80	5.49	6.17	88.70	89.10
4"	100	6.02	6.73	114.07	114.53

CPVC pipes as per ASTM F 441 (SCH 80)

Size Inches	Size mm	Wall Thickness (mm)		OD (mm)	
		Min	Max	Min	Max
2½"	65	7.01	7.85	72.82	73.18
3"	80	7.62	8.53	88.70	89.10
4"	100	8.56	9.58	114.07	114.53


Reducing Bush

Sizes	
Inches	mm
½" x ¾"	20x15
1" x ¾"	25x15
1" x ¾"	25x20
1 ¼" x ¾"	32x15
1 ¼" x ¾"	32x20
1 ¼" x 1"	32x25
1 ½" x ¾"	40x15
1 ½" x ¾"	40x20
1 ½" x 1"	40x25
2" x ¾"	50x15
2" x ¾"	50x20
2" x 1"	50x25
2" x 1 ¼"	50x32
2" x 1 ½"	50x40




Reducing Coupler

Sizes	
Inches	mm
½" x ¾"	20x15
1" x ¾"	25x15
1" x ¾"	25x20
1 ¼" x ¾"	32x15
1 ¼" x ¾"	32x20
1 ¼" x 1"	32x25
1 ½" x ¾"	40x15
1 ½" x ¾"	40x20
1 ½" x 1"	40x25
1 ½" x 1 ¼"	40x32
2" x ¾"	50x15
2" x ¾"	50x20
2" x 1"	50x25
2" x 1 ¼"	50x32
2" x 1 ½"	50x40



Reducing Tee

Sizes	
Inches	mm
½" x ¾"	20x15
1" x ¾"	25x15
1" x ¾"	25x20
1 ¼" x ¾"	32x15
1 ¼" x ¾"	32x20
1 ¼" x 1"	32x25
1 ½" x ¾"	40x15
1 ½" x ¾"	40x20
1 ½" x 1"	40x25
1 ½" x 1 ¼"	40x32
2" x ¾"	50x15
2" x ¾"	50x20
2" x 1"	50x25
2" x 1 ¼"	50x32
2" x 1 ½"	50x40



Male Threaded Adapter (Plastic)

Sizes	
Inches	mm
½"	15
¾"	20
1"	25
1 ¼"	32
1 ½"	40
2"	50



Female Threaded Adapter (plastic)

Sizes	
Inches	mm
½"	15
¾"	20
1"	25
1 ¼"	32
1 ½"	40
2"	50




End Cap

Sizes	
Inches	mm
½"	15
¾"	20
1"	25
1 ¼"	32
1 ½"	40
2"	50




Elbow 45°

Sizes	
Inches	mm
½"	15
¾"	20
1"	25
1 ¼"	32
1 ½"	40
2"	50




Reducing Elbow

Sizes	
Inches	mm
½" x ¾"	20x15
1" x ¾"	20x15
1" x ¾"	25x20



End Plug

Sizes	
Inches	mm
½"	15














Step Over Bend

1/2"
3/4"
1"




CPVC FITTINGS (ASTM D 2846)

<p>ELBOW 90°</p> 	<p>Sizes</p> <table border="1"> <thead> <tr> <th>Inches</th> <th>mm</th> </tr> </thead> <tbody> <tr><td>1/2"</td><td>15</td></tr> <tr><td>3/4"</td><td>20</td></tr> <tr><td>1"</td><td>25</td></tr> <tr><td>1 1/4"</td><td>32</td></tr> <tr><td>1 1/2"</td><td>40</td></tr> <tr><td>2"</td><td>50</td></tr> </tbody> </table>	Inches	mm	1/2"	15	3/4"	20	1"	25	1 1/4"	32	1 1/2"	40	2"	50	<p>EQUAL TEE</p> 	<p>Sizes</p> <table border="1"> <thead> <tr> <th>Inches</th> <th>mm</th> </tr> </thead> <tbody> <tr><td>1/2"</td><td>15</td></tr> <tr><td>3/4"</td><td>20</td></tr> <tr><td>1"</td><td>25</td></tr> <tr><td>1 1/4"</td><td>32</td></tr> <tr><td>1 1/2"</td><td>40</td></tr> <tr><td>2"</td><td>50</td></tr> </tbody> </table>	Inches	mm	1/2"	15	3/4"	20	1"	25	1 1/4"	32	1 1/2"	40	2"	50	<p>COUPLER</p> 	<p>Sizes</p> <table border="1"> <thead> <tr> <th>Inches</th> <th>mm</th> </tr> </thead> <tbody> <tr><td>1/2"</td><td>15</td></tr> <tr><td>3/4"</td><td>20</td></tr> <tr><td>1"</td><td>25</td></tr> <tr><td>1 1/4"</td><td>32</td></tr> <tr><td>1 1/2"</td><td>40</td></tr> <tr><td>2"</td><td>50</td></tr> </tbody> </table>	Inches	mm	1/2"	15	3/4"	20	1"	25	1 1/4"	32	1 1/2"	40	2"	50						
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UNIQUE SALIENT FEATURES OF AKG CPVC PLUMBING SYSTEM.

1: Top-notch Raw Materials

AKG's CPVC pipes and fittings are produced from a specially formulated compound. The material used is a special, virgin, heavy metal-free chlorinated polyvinyl chloride (CPVC) compound. Pipes and fittings meet or exceed the toxicological requirements, they are of food grade quality and safe to use for potable water. AKG's CPVC compound exhibits a better tensile strength, Vicat Softening Temperature (VST) and ductility.

2: Uniquely Designed Corrosion-resistant Brass Fittings to Deliver High Torque-Bearing Capability

Design	Advantages
1. Serrated internal brass surface with grooves of high precision and deep knurling.	1. High torque bearing capacity & strong CPVC brass bond.
2. Brass threaded insert with two EPDM 'O' rings.	2. High pull out resistance making leakage due to thermal expansion or contraction impossible.

AKG's CPVC FTA(Round)
Corrosion resistant
Female threaded Brass
Insert with 2 EPDM 'O'
Ring

Cross Section View of AKG's Trans FTA

AKG's CPVC MTA(Hex)
Corrosion resistant
Male threaded Brass
Insert with 2 EPDM 'O'
Ring

AKG's CPVC FTA(Hex)
Corrosion resistant
Female threaded Brass
Insert with 2 EPDM 'O'
Ring



3: Leak-Proof technology for 100% Leak-proof Joints:

We manufacture our pipes and fittings ensuring 100% leak proof by using the state of art-material and technology. AKG's CPVC pipes and fittings are well designed which assures a complete leak proof piping system.

4: Testing & Quality Control

Each and every lot of AKG make CPVC Pipe (IS 15778:2007) & fittings (ASTM D-2846) are tested as per scheme of testing & Inspection prescribed by Bureau of Indian Standards (BIS). We have complete testing facilities for carrying out all the tests as per IS 15778:2007 & ASTM D-2846. The following tests are routinely performed on CPVC Pipes & fittings manufactured by us.

Details of Test	Testing Equipments
Visual Inspection	Naked eye examination
Marking	Naked eye examination
Dimensional	
(a) Diameter at any point	Vernier Calliper
(b) Wall Thickness	Micrometer
(c) Effective Length	Measuring Tape
Opacity	Opacity Testing Equipment
Reversion Test	Reversion Oil Bath / Oven
Vicat Softening Temperature	VST Machine
Density	Density Apparatus
Hydrostatic Pressure Test	Hydrostatic Pressure Testing Machine
Thermal Stability Test	Hydrostatic Pressure Testing Machine
Resistance to External Blow at 0°C	Impact Testing Machine
Flattening Test	Flattening Test Equipment
Tensile Strength	UTM Machine

JOINTING PROCEDURE

A few simple steps must be followed for 100% leak-proof, efficient and productive joints. AKG Pipes and Fittings are designed with precise tolerance. Which enables a perfect fit and leak-proof joints.

[1]



[2]



[3]



Step-1: Cutting the pipe

- Pipes can be easily cut with a wheel cutter, ratchet cutter or power hacksaw though our recommended tool would be a wheel cutter.
- Be sure to score the pipe first to get best results and to ensure clean square cuts.
- Always use the right cutter wheel. Cutter wheels & blades should always be sharp & well maintained
- Square cuts will ensure full engagement with fittings and maximise the bonding surface with the joining surface of pipes & fittings.

Step-2 Deburring

- A reamer is preferred, though a file or pocket knife may also be used. The ID and OD of the pipes should be reamed to remove burrs fillings and flares

Important

Burrs, fillings & flares can

- Prevent proper contact between pipes & fittings during assembly
- Restrict & disturb flow of water.
- Score & channel in socket ID may create leak potential.

Step-3: Fittings Preparation

- Wipe clean any dirt or moisture from the surface of the fittings & pipes
- For a dry fit, the contact point between the pipes and fittings should be about 40-80% into the fittings. This is commonly referred to as the interference fit. After applying the solvent cement, the pipe must reach the bottom of the fitting without any resistance for the fit to be correct.



[4]



Step-4 Solvent Cement Jointing & Assembly

- Apply a thin coat of CPVC solvent cement into the socket and a full even coat on the pipe to the depth of socket bottom. Do not puddle cement in the socket.

- Insert the pipe into the socket quickly while the cement is still wet. If it has dried, re-coat the pipe and fitting. If possible, twist the pipe a quarter turn. This will allow the cement to cover any dry spot. Make sure the pipe goes all the way to the bottom of the fitting. Hold the pipe and fitting together (30 seconds to a minute), to make sure the pipe does not push out.
- Wipe off any excess cement with clean dry cloth.
- Allow the CPVC solvent cement to cure before applying water (fluid) pressure. The cure time depends on temperature, humidity etc. Follow the cement recommendation. Under normal conditions, allow it to cure for 24 hours.

Important Note:

- Always conduct hydraulic pressure testing after installation to detect any leaks and faults. Fill lines slowly and bleed air from the system prior to pressure testing.
- Use only CPVC Cement or an all purpose cement conforming to ASTM F-493 to avoid jointing failure. Allow the cement to set (approx 15 minutes) before handling the assembly.

Approximate Number of Joints that can be made with CPVC Solvent Cement

Normal Size	(Inch)	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"
	(mm)	15	20	25	32	40	50
Approx. Number of Joints Per Can	50ml	35	23	15	14	10	07
	118ml	82	55	34	33	23	17
of Joints Per Can	237ml	164	110	68	66	46	34
	473ml	328	220	136	132	92	68
	946ml	656	440	272	264	184	136

STORAGE & HANDLING

Storage

- Keep pipe and fittings in original packing and store pipes in covered area, until needed.
- Don't drop heavy objects on pipes or walk on pipe
- During storage choose a flat and dry location to minimize dirt & foreign matter accumulation in the bore and belled end. The storage area must be free from sharp objects.
 - CPVC pipes need to be stacked in such a way that one set is perpendicular to the other arranged on top of it. Ensure only one size and schedule of pipes is stored in one complete stack. the pipes should receive proper ventilation and must be protected from the Sun. This will reduce the effects of UV rays and prevent heat build-up.
 - If the pipes are stored in racks, they must be continuously supported, length-wise. If this is not possible spacing of the supports should not exceed 3 feet.
- Never combine the CPVC fittings inventory and metallic materials. Do not store the fittings near an open flame or any other source of extreme heat.
- Do not use any other petroleum or solvent -based sealant, adhesive, lubricant or fire stop material on CPVC pipes and fittings.

Handling

- AKG's pipes and fittings must be loaded and unloaded with utmost care and effort. They must not come in severe contact with sharp objects like the corner of truck beds, loading docks and buildings, forks and forklift trucks etc.
- The impact resistance and flexibility of the CPVC pipes reduce in lower temperature conditions. The impact strength of piping material will decrease below 0°C. Extreme care must be taken while unloading and handling pipes in cold water.
- Pipes must never be dragged or pushed from the truck
- Do not dilute Solvent Cement with Thinners/MTO or any liquid etc.

