

CPVC & UPVC TECHNICAL MANUAL



MOST TRUSTED PLUMBING SOLUTION



The CK Birla Group

HIL is part of the CK Birla Group, a growing US\$ 1.6 billion conglomerate that has a history of enduring relationships with renowned global companies.

With over 20,000 employees, 24 manufacturing facilities and numerous patents and awards, the Group's businesses are present across five continents.

We operate in three industry clusters: technology & automotive, home & building, and healthcare & education. Our companies are strengthened by common ownership and shared guiding principles that include a focus on long-term value, trust-based relationships and philanthropy. Each business is transforming to build on the collective strength and synergies of the Group's size and span.



Technology and Automotive

AVTEC Limited

BirlaSoft Limited

GMMCO Limited

National Engineering Industries Limited (NBC Bearings)

Neosym Limited



Home and Building

HIL Limited

Orient Cement

Orient Electricals

Orient Paper & Industries



Healthcare and Education

B.M. Birla Heart Research Centre

The Calcutta Medical Research Institute

Birla Institute of Technology, Mesra

Modern High School for Girls, Kolkata

Rukmani Birla Modern High School, Jaipur

About HIL

HIL Limited is a Business Superbrand, and a part of the CK Birla Group of companies. What was initiated with the manufacturing of cement roofing sheets has now culminated into the company being recognised as one of the foremost leaders in the Indian building material industry. HIL's biggest strength lies in its state-of-the-art manufacturing facilities and unmatched distribution network across India.

HIL now has more than 40 sales depots, and a network of more than 2500 stockists and 6500 retailers. It also has a strong foothold in the global market, including a joint venture in Nigeria, for roofing sheets and flat products.

Amongst HIL's rich legacy of brands are Charminar (roofing solutions), HYSIL (green industrial insulation products) and Aerocon (green building solutions). Aerocon is now also venturing into advanced polymer products.

We have two in-house R&D centres, in Hyderabad and Faridabad, set up as early as 1964. They are recognised by DSRI – Government of India. State-of-the-art manufacturing facilities, coupled with imported machinery, ensures the best of innovative eco-friendly products for various sectors. In addition, we at HIL follow strict quality control measures and all our products undergo stringent quality tests.



The company has a plethora of awards to its name that include Excellence in Productivity, Quality and Innovation (2009), Outstanding Entrepreneur of the Year (2011/12), the Manufacturing Today Award for Excellence in Sustainability (2013) and the CII GreenCo Golden Award (2013), amongst others. We are proud to say that we are among very few companies to hold 22 patents, worldwide, in this category.



The background of the slide is a large, light gray arrow pointing to the right, set against a solid magenta background. The arrow's tail is on the left, and its head points towards the right edge of the frame. The text 'Aerocon' is positioned within the arrow's shaft, to the right of the center.

Aerocon

Smart solutions for your dream project



About Aerocon

Aerocon is the pioneer in eco-friendly building solutions and provides a wide range of innovative and customisable solutions. These include Blocks, Panels, C-Boards and plumbing products.

Worldwide, Aerocon products are trusted by architects and builders for their superior quality and for conserving energy. Aerocon also provides platforms for creativity, that bring dream spaces to reality. The company is greatly privileged to have GVK, Vivanta, The Leela Palace, Novotel, Park Hyatt, Nokia and Infosys, among many others, as the key customers. Aerocon is also a proud partner of the Indian Institute of Architects Awards.

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

Aerocon's Pipes and Fittings are Ideal For:

- Individual Residential Units
- Apartments
- Hotels
- Resorts
- Hospitals
- Corporate and Commercial Houses
- Academic Institutes
- Swimming Pools etc.



Smart Features & Benefits



Cost-effective and easy to install

- Aerocon's pipes and fittings are lightweight 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



Resistance to chemicals, corrosion and abrasion

- Aerocon's pipes and fitting 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



Smooth internal surface

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



Perfect for external use

- Aerocon's pipes and fittings can be installed outside the building and can withstand temperature up to 60° C
- Our pipes and fittings are made using UV-resistant materials, ensuring they don't lose their mechanical properties even under greater exposure to sunlight



Energy-efficient

- Aerocon's pipes and fittings are self-insulating with lower thermal conductivity
- Our pipes are built for tough conditions with minimum offsets/looping.



Fire-resistant

- Aerocon'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



- **Antimicrobial** – Aerocon's pipes and fittings retard microbial growth and are also suitable for aggressive water, with pH levels of less than 6.5



- **Suitable for carrying drinking water** Aerocon's pipes and fittings are of Food Grade (heavy metal-free), supported by certificates from CFTRI, CIPET and RoHs (TUV)

Aerocon - CPVC

The right choice for all your plumbing needs

Introducing, Aerocon CPVC!

At Aerocon, our endeavour is to continually develop newer, better and more innovative ways to bring you the best of products and solutions, for all your needs. Concurring with our philosophy of developing eco-friendly products for a greener world, we bring you CPVC pipes and fittings – a more eco-friendly, far superior replacement for the widely used GI pipes.

A derivative of Polyvinyl Chloride (PVC), Chlorinated Polyvinyl Chloride (CPVC) is a thermoplastic produced by the chlorination of the PVC resin.

CPVC's resistance to corrosion at elevated temperatures, up to 93°C (200°F), makes it ideal for both hot and cold water applications. Furthermore, it is flexible enough for bending, thereby enabling use in a wide variety of process applications. It is also non-toxic, fire and chemical-resistant, and exhibits a higher impact and tensile strength. In addition, it has excellent resistance towards acids and bases.

Aerocon's CPVC Pipes & Fittings brings you 5 key benefits.

- True Fit® technology for 100% leak-proof joints
- Top-notch raw materials to deliver high-end quality products
- Robust manufacturing processes to deliver consistent top-quality products
- Uniquely designed corrosion-resistant brass fittings to deliver high torque-bearing capability
- A committed team to help build your dream project





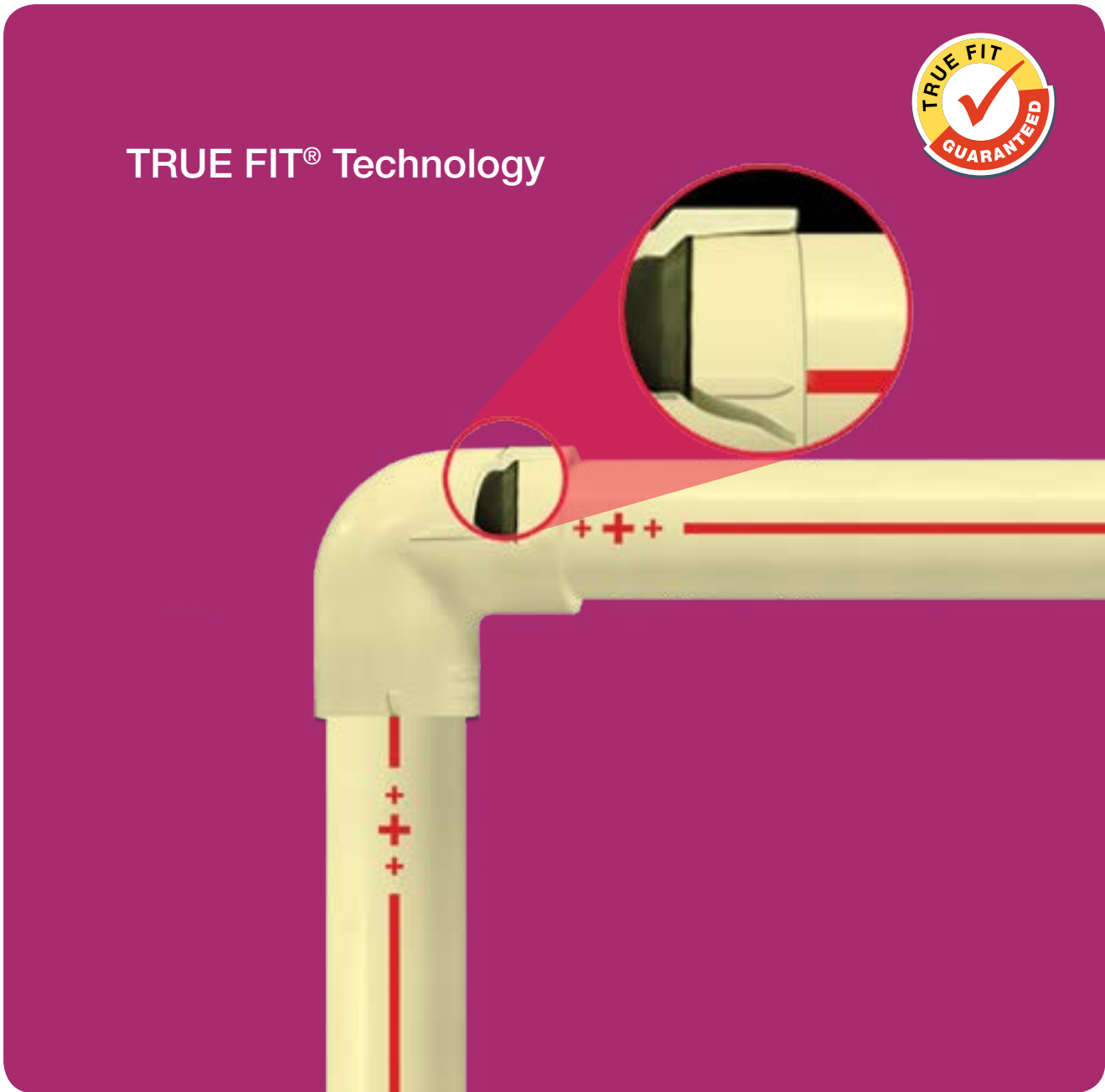
Why Aerocon - CPVC?

5 reasons why Aerocon’s CPVCs are widely sought-after

Reason 1

True Fit® technology for 100% Leak-proof Joints

Aerocon’s CPVC pipes and fittings are designed with “True Fit®” technology – a first in the country, that assures a perfect fit, making them absolutely leak-proof. We manufacture our pipes and fittings with extreme care, to ensure 100% leak-proof joints. All our pipes and fittings are designed to close tolerances, with the help of our state-of-the-art manufacturing facilities.



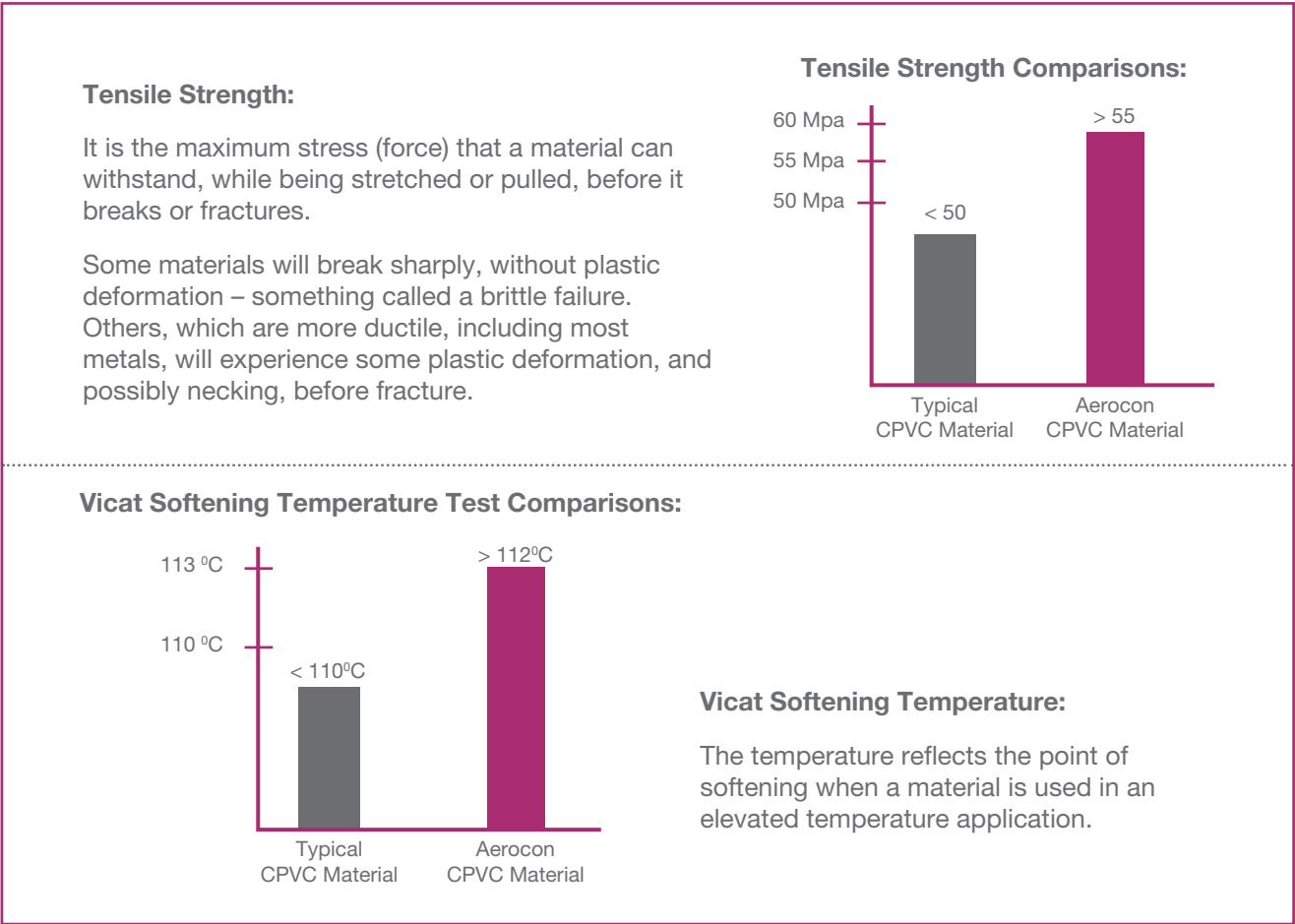
Reason 2

Top-notch Raw Materials to Deliver High-end Quality Products

Aerocon’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, with a Cell Classification of 23447, as per ASTM D1784.

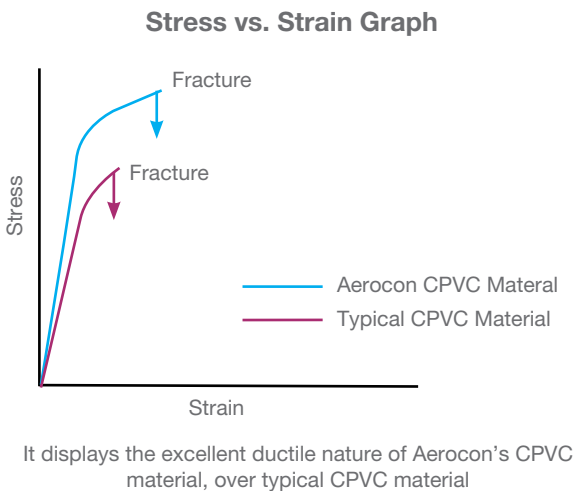
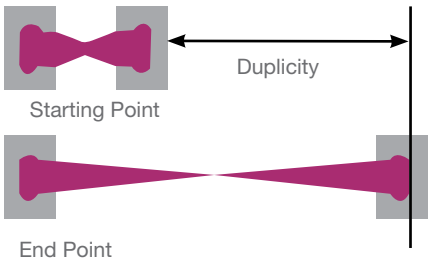
Our pipes and fittings meet or exceed the toxicological requirements of the RoHS, TUV and CFTRI, to ensure they are of food grade quality and safe to use for potable water.

Aerocon’s CPVC compound exhibits a better tensile strength, Vicat Softening Temperature (VST) and ductility, unlike typical CPVC material.



Ductility is a solid material’s ability to permanently deform through elongation, under tensile stress, without fracturing.

- Benefits of being ductile:**
- Improved strength-to-weight ratio
 - Flexible
 - High impact resistance
 - Improved machinability



Reason 3

Robust Manufacturing Processes to Deliver Consistent Top-quality Products

Our state-of-the-art technology with automation ensures quality consistency at each level. Our Quality Control Team plays the most important role in establishing various process parameters and ensure strict quality control measures at each point, for the production of world-class products.

Aerocon’s pipes and fittings pass more than 25 quality test before they are made ready to be delivered to customers. All the tests are conducted in our very own state-of-the-art testing labs. They are equipped with world-class testing equipment like the Torque Rheometer, Spectrophotometer, Tensile Strength Tester, Charpy Impact Tester and Thermocycling unit.



Torque Rheometer

The Torque Rheometer helps in continuous optimisation of properties. Furthermore, process control is carried out on a timely basis when raw materials are being converted to finished goods.

- It makes testing and checking close to production, possible
- It measures process parameters like flow, heat, stability, process temperature, speed & torque
- It helps in minimising errors during the production run
- It helps in optimising compound and process properties
- It ensures very high consistent quality in finished product

Reason 4

Uniquely Designed Corrosion-resistant Brass Fittings to Deliver High Torque-bearing Capability

Aerocon’s CPVC corrosion-resistant trans fitting incorporates specially designed corrosion-resistant brass inserts, which have a serrated internal brass surface with grooves of high precision and deep knurling. This ensures a far more superior torque-bearing capability. The brass threaded insert with two EPDM ‘O’ rings not only passes the thermocycling test requirements under ASTM D2846, but also exceeds the expectation. This innovative design ensures a very high pull-out resistance, making leakage due to thermal expansion and contraction, almost impossible. The serrated internal brass surface helps in a very strong CPVC-brass bond.

Slots in the corrosion-resistant Brass Insert, where the CPVC material fills in, during the moulding process, forming an inter-locking system, enabling higher torque-bearing capability

EPDM ‘O’ Rings

V-Groove Knurling

Female Threaded Corrosion Resistant Brass Insert with 2 EPDM ‘O’ Ring

Comparison Table of Torque-bearing Capability of ½” Female Brass Insert

½” Typical Female Brass Insert	½” Aerocon Female corrosion-resistant Brass Insert
100 N/m2	185 N/m2

Corrosion-resistant Brass Insert

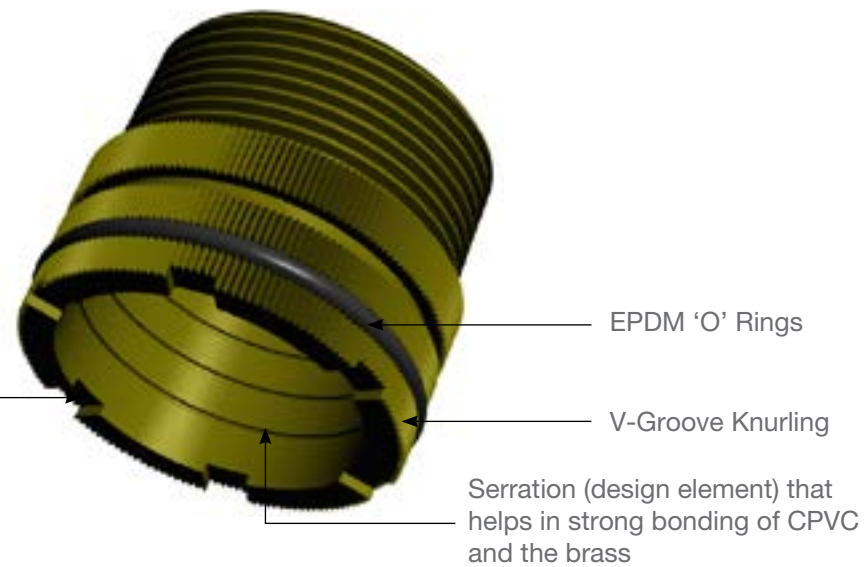
CPVC Material

2 EPDM ‘O’ Rings

Slots in the corrosion-resistant Brass Insert, where the CPVC material fills in, during the moulding process, forming an inter-locking system, enabling higher torque-bearing capability

Cross Section View of Aerocon’s Trans FTA

Slots in the corrosion-resistant Brass Insert, where the CPVC material fills in, during the moulding process, forming an inter-locking system, enabling higher torque-bearing capability



EPDM 'O' Rings

V-Groove Knurling

Serration (design element) that helps in strong bonding of CPVC and the brass

Corrosion-resistant Male Threaded Brass Insert with 2 EPDM 'O' Ring



Aerocon's CPVC Trans MTA

Corrosion-resistant Brass Insert

EPDM 'O' Ring

Brass Free CPVC Surface

EPDM 'O' Ring

Slots in the corrosion-resistant Brass Insert

Cross section view of Aerocon's CPVC Trans MTA

Reason 5

A Committed Team to Help Build Your Dream Project

We are a team of highly committed and passionate professionals, dedicated to bringing you the best of eco-friendly products, with the greatest possible quality, customised to the specific needs of your dream projects. The team is young, driven by value and carefully chosen, with a cumulative experience of more than 100 years. The team is focused on innovating newer solutions, and we achieve that by paying attention to every detail of every customer.





CPVC

Comparison Chart & Physical Properties

Comparison Chart Between GI Pipe and CPVC Pipe

PROPERTY/PARAMETER	GI	CPVC
Service Life (Years)	5-15	50
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 – No Leeching – Antimicrobial
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

Physical Properties

GENERAL	Value	Test Method
Cell Classification	23447	ASTM D1784
Maximum Service Temp	93 ° C	
Color	Tan	
Specific Gravity (g/cu.cm @ 23°C)	1.53	ASTM D792
Hardness, Rockwell	117	ASTM D785
Hazen-William Factor	C=150	
MECHANICAL	Value	Test Method
Tensile Strength, psi @ 23° C	7600	ASTM D638
Tensile Modulus of Elasticity, psi@23° C	370000	ASTM D638
Flexural Strength, psi @ 23° C	12500	ASTM D790
Flexural Modulus, psi @ 23° C	360000	ASTM D790
THERMAL	Value	Test Method
Heat Distortion Temperature	100°C	ASTM D696
Coefficient of Thermal Expansion	6.3 x 10^-5 m/m/°K	ASTM D648
ELECTRICAL	Value	Test Method
Dielectric Strength, vol/mil	1250	ASTM D149
Dielectric Constant, 60 Hz, 0 ° C	3.7	ASTM D150
FIRE PERFORMANCE	Value	Test Method
Flammability Rating	V-0, 5VB, 5VA	UL-94
Flame Spread Index	< 10	
Flame Spread	< 25	ASTM E-84/UL 723
Smoke Generation	<=50	ASTM E-84/UL 723
Flash Ignition Temp.	482 ° C	<=50
Average Time of Burning (sec)	< 5	ASTM D635
Average Extent of Burning (mm)	< 10	
Burning Rate (in/min)	Self Extinguishing	
Material Carbonises	232 ° C	
Limiting Oxygen Index (LOI)	60	ASTM D2863

Standards and Codes

Standard & Codes specifies certain requirements, test methods and methods of marking, for chlorinated polyvinyl chloride plastic pipes, for hot and cold water distribution supplies.

Aerocon CPVC Pipes		
Class of Pipe	Standard	Sizes Available
SDR 11 (Class 1)	IS 15778:2007	½” – 2”
SDR 13.5 (Class 2)	IS 15778:2007	½” – 2”
SCH 40	ASTM F 441	2½” – 4”
SCH 80	ASTM F 441	2½” – 4”

Aerocon CPVC Fittings		
Class of Fitting	Standard	Sizes Available
SDR 11	ASTM D 2846	½” – 2”
SCH 80	ASTM F 439	2½” – 4”

Orange Medium-bodied CPVC Solvents:
Meet or exceed the requirements of the ASTM F493 standards.

Brass Standards:
Composition Standard: IS 319.

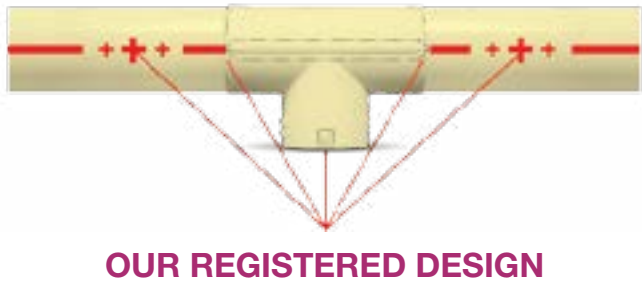
CPVC Ball Valves:
Mechanical test as per the ASTM D1970, and socket dimensions as per the ASTM D 2846 standards.



Additional Benefits of Aerocon - CPVC

Design Elements for Easy Installation

- The ‘+++’ sign on the pipes is a measurement-enabler and helps in easy cutting
- The distance between the two large ‘+’ signs is approximately one foot, which helps the plumber forecast the length of pipe during installation, without the help of a measurement tape
- The arrow mark on the fittings serves as an alignment tool with the pipe
- While installing, the colored line on the pipe must be aligned with the arrow mark to enable a ‘true fit’ joint

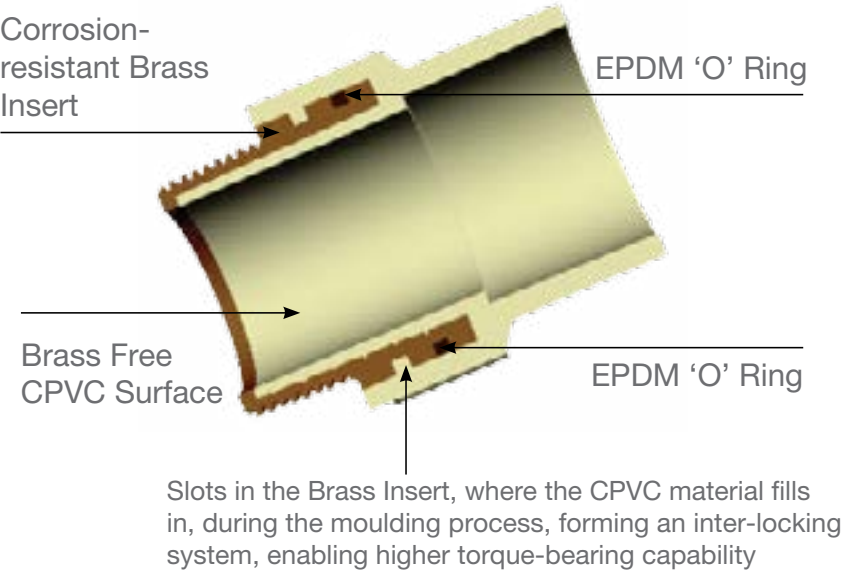


OUR REGISTERED DESIGN

Uniquely Designed Aerocon CPVC Trans MTA

Aerocon’s CPVC Trans MTA is designed in such a way that the contact between potable water and brass is significantly minimised. The surface of the brass, which usually comes in contact with potable water, is coated with a thin layer of CPVC. Therefore, the heavy metal-free property of CPVC minimises the risk of lead contamination considerably.

Moreover, the thin layer of CPVC acts as a “water locker”, meaning water doesn’t leak through minute gaps, making Aerocon’s CPVC Trans MTA 100% leak-proof.



Cross section view of Aerocon’s CPVC Trans MTA

Aerocon’s EPDM Rubber ‘O’ Rings & Washers

Aerocon’s fittings – Unions, Tank Nipple & Plastics FTA, are equipped with specially designed EPDM ‘O’ Rings & EPDM Washers. They are highly resistant towards heat, oxidation, ozone and weather aging – making the fittings ideal for potable hot and cold water applications.

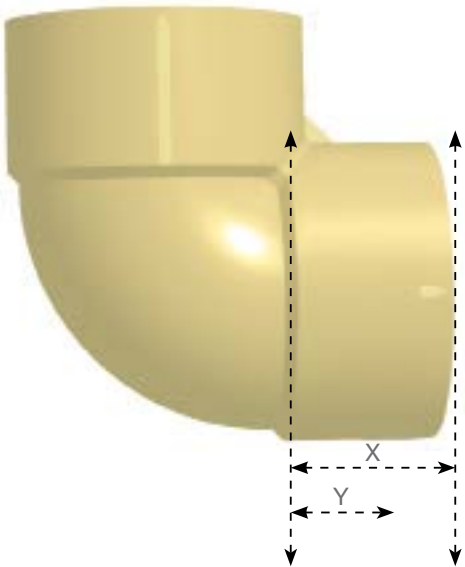


EPDM Rubber ‘O’ Rings



Washers

The Design Element on Aerocon’s Fittings that Gives a Better Grip



Aerocon’s fittings (Coupler, Elbow & Tee), sized 2½” or more, have a special design element where the length of the socket is more than the standard requirement.

This helps in providing a better grip for the pipes, ensuring a leak-proof and true fit joint.

- X -> Socket Length of Aerocon 2½” Elbow
- Y -> Socket Length of 2½” Elbow as per ASTM F 439 Standard
- X > Y, which helps in better grip

EXTRA SOCKET LENGTH FOR EXTRA GRIP

Aerocon's Orange Medium CPVC Solvent Cements & Purple Primers

Aerocon's Orange Medium Bodied CPVC Solvent Cement is ideal to fix pipes and fittings together. It meets, or even exceeds, the requirements of the ASTM D2846 & ASTM F493 standards, and is as per the environmental regulations.

Moreover, it is Lo-VOC compliant and NSF-approved. It can be used for pipes with diameters up to 6".

For sizes equal and above 2½" of SCH 40 & SCH 80, Aerocon's Purple Primer needs to be used before applying the solvent cement. Its proper use prepares the surfaces for fusion in a wide variety of weather conditions.

The right solvent cement and its quality will not only help you save a great deal on costs, but will also ensure 100% leak-proof joints.

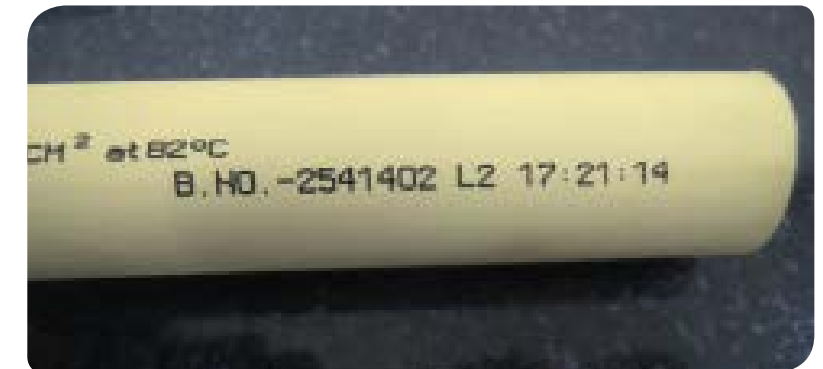


It is always advisable to invest a little more in a good quality solvent cement to ensure leak-proof joints. It helps save a great deal when it comes to the expenses of redoing luxurious bathrooms, due to leaks.

Excellent Traceability of Finished Goods

Traceability is the ability to trace the history, application or location of an item or activity, by means of recorded identification. Traceability involves the use of tracking and tracing systems and processes that match the attributes of incoming raw materials to outgoing product specifications for the purpose of improving business and/or product performance.

Mentioning "Time of Manufacturing" along with "Date of Manufacturing" on the packaging materials of finished goods, i.e. pipes & fittings, is a new initiative taken by our company – the first in the Indian Plumbing Industry. This helps in excellent traceability and root-cause analysis in case of any customer complaints.



Date & Time of Manufacturing – A First in the Industry

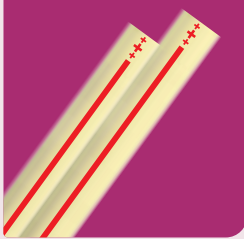


Product Range - CPVC

CPVC Product Range

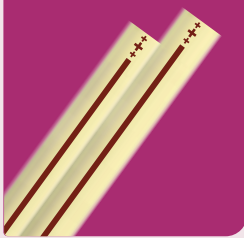
CPVC Pipes in SDR 11 & 13.5 as per IS 15778(ASTM D 2846), Fittings in SDR 11 as per ASTM D 2846 in CTS (Copper Tube Standard) and Solvents as per ASTM F 493

CPVC ISI Pipes SDR 11
(3 & 5 metres)



Size (inch)	Size (mm)	Std. Packing	Part No. 3 mtr.	Part No. 5 mtr.
½"	11	100	96000000	96000263
¾"	20	50	96000001	96000264
1"	25	25	96000002	96000265
1¼"	32	15	96000003	96000266
1½"	40	10	96000004	96000267
2"	50	10	96000005	96000268

CPVC ISI Pipes SDR 13.5
(3 & 5 metres)



Size (inch)	Size (mm)	Std. Packing	Part No. 3 mtr.	Part No. 5 mtr.
½"	15	100	96000006	96000269
¾"	20	50	96000007	96000270
1"	25	25	96000008	96000271
1¼"	32	15	96000009	96000272
1½"	40	10	96000010	96000273
2"	50	10	96000011	96000274

Elbow 90°



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
½"	15	96000036	100	500
¾"	20	96000037	60	420
1"	25	96000038	25	200
1¼"	32	96000039	15	105
1½"	40	96000040	10	60
2"	50	96000041	5	30

Elbow 45°



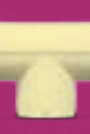
Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
½"	15	98000263	200	600
¾"	20	96000341	100	200
1"	25	96000342	25	250
1¼"	32	98000240	30	150
1½"	40	98000241	15	90
2"	50	98000242	8	40

Reducing Elbow



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
¾"x½"	20x15	96000324	60	300
1"x½"	25x15	96000325	25	250
1"x¾"	25x20	96000244	25	250
1¼"x½"	32x15	96000476*	25	125
1¼"x¾"	32x20	96000477*	20	100
1¼"x1"	32x25	96000478*	15	75

Tee



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
½"	15	96000042	100	300
¾"	20	96000043	50	150
1"	25	96000044	25	150
1¼"	32	96000045	15	75
1½"	40	96000046	10	20
2"	50	96000047	2	10

Trans Elbow



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
½"	15	96000095	15	150
¾"	20	96000334	25	125
¾"x½"	20x15	96000094	25	125
1"	25	96000333	20	80
1"x½"	25x15	96000096	15	75
1¼"	32	96000332	5	80

Trans Tee



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
½"	15	96000086	10	150
¾"	20	96000330	20	120
¾"x½"	20x15	96000088	15	75
1"x½"	25x15	96000087	10	60
1"x¾"	25x20	96000331	15	75

PB – Poly Bags; CB – Carton Box. * New SKU's.

Reducing Tee



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
¾"x¾"x½"	20x20x15	96000329	50	150
1"x1"x½"	25x25x15	96000316	30	180
1"x1"x¾"	25x25x20	96000243	30	180
1¼"x1¼"x½"	32x32x15	96000318	15	75
1¼"x1¼"x¾"	32x32x20	96000252	15	75
1¼"x1¼"x1"	32x32x25	96000317	15	75
1½"x1½"x½"	40x40x15	96000493*	10	20
1½"x1½"x¾"	40x40x20	96000494*	10	20
1½"x1½"x1"	40x40x25	96000495*	10	20
1½"x1½"x1¼"	40x40x32	96000496*	10	20
2"x2"x½"	50x50x15	96000512*	2	10
2"x2"x¾"	50x50x20	96000513*	2	10
2"x2"x1"	50x50x25	96000514*	2	10
2"x2"x1¼"	50x50x32	96000515*	2	10
2"x2"x1½"	50x50x40	96000516*	2	10

Cross Tee



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
¾"	20	96000343	50	200
1"	25	96000344	25	100

Plastic FTA



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
½"	15	96000482*	50	400
¾"	20	96000064	50	300
¾"x½"	20x15	96000065	50	350
1"	25	96000063	25	200
1¼"	32	96000062	15	60
1½"	40	96000314	15	90
2"	50	96000315	10	50

Trans FTA



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
½"	15	96000081	25	200
¾"	20	96000082	10	150
¾"x½"	20x15	96000083	25	150
1"	25	96000085	10	100
1"x½"	25x15	96000084	15	150
1"x¾"	25x20	96000347	15	150
1¼"	32	96000238	5	50
1½"	40	96000239	4	32
2"	50	96000240	3	24

Hexagonal Trans FTA



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
¾"	20	96000292	10	100
¾"x½"	20x15	96000294	20	160
1"	25	96000288	10	60
1¼"	32	96000290	5	35

Plastic MTA



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
½"	15	96000481*	75	600
¾"	20	96000058	50	300
¾"x½"	20x15	96000059	50	350
1"	25	96000061	40	240
1¼"	32	96000060	25	200
1½"	40	96000312	30	120
2"	50	96000313	10	60

Trans MTA



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
½"	15	96000089	10	150
¾"	20	96000090	10	150
¾"x½"	20x15	96000091	15	150
1"	25	96000092	10	100
1"x½"	25x15	96000345	10	150
1"x¾"	25x20	96000346	10	100
1¼"	32	96000093	5	50
1½"	40	96000230	4	32
2"	50	96000231	3	24

Hexagonal Trans MTA



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
¾"	20	96000291	15	150
¾"x½"	20x15	96000293	20	160
1"	25	96000287	10	80
1¼"	32	96000289	5	40

Tank Nipple



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
½"	15	96000097	25	200
¾"	20	96000098	20	160
1"	25	96000099	10	100
1¼"	32	96000100	6	60
1½"	40	96000234	5	40
2"	50	96000235	4	32

Tank Nipple (Soc)



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
¾"	20	96000517*	25	200
1"	25	96000518*	10	100

Transition Bushing



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
½"	15	96000479*	75	600
¾"	20	96000480*	50	300
1"	25	96000489*	30	210
1¼"	32	96000490*	20	120
1½"	40	96000491*	10	80
2"	50	96000492*	10	50

Reducing Bush



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
¾"x½"	20x15	96000066	50	500
1"x½"	25x15	96000068	50	400
1"x¾"	25x20	96000067	50	400
1¼"x½"	32x15	96000071	40	200
1¼"x¾"	32x20	96000070	40	200
1¼"x1"	32x25	96000069	40	200
1½"x½"	40x15	96000073	10	80
1½"x¾"	40x20	96000075	10	80
1½"x1"	40x25	96000074	10	80
1½"x1¼"	40x32	96000072	10	80
2"x½"	50x15	96000079	10	50
2"x¾"	50x20	96000080	10	50
2"x1"	50x25	96000077	10	50
2"x1¼"	50x32	96000078	10	50
2"x1½"	50x40	96000076	10	50

PB – Poly Bags; CB – Carton Box. * New SKU's.



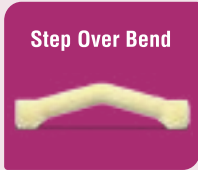
Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
½"	15	96000048	100	400
¾"	20	96000049	100	300
1"	25	96000050	50	300
1¼"	32	96000051	25	200
1½"	40	96000052	10	50
2"	50	96000053	10	50



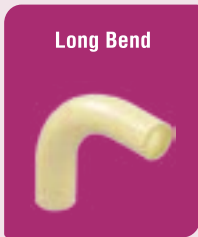
Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
½"	15	98000205	10	100
¾"	20	96000305	10	100
1"	25	96000306	10	60
1¼"	32	96000307	10	50
1½"	40	96000308	5	25
2"	50	96000309	5	10



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
¾"x½"	20x15	96000390	50	300
1"x½"	25x15	96000242	50	250
1"x¾"	25x20	96000241	50	400
1½"x1¼"	40x32	96000323	25	125
1¼"x½"	32x15	96000421	25	100
1¼"x¾"	32x20	96000311	50	300
1¼"x1"	32x25	96000310	25	200
1½"x½"	40x15	96000497*	10	50
1½"x¾"	40x20	96000498*	10	50
1½"x1"	40x25	96000499*	10	50
2"x½"	50x15	96000507*	10	50
2"x¾"	50x20	96000508*	10	50
2"x1"	50x25	96000509*	10	50
2"x 1¼"	50x32	96000510*	10	50
2"x 1½"	50x40	96000511*	10	50



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
½"	15	96000197	15	120
¾"	20	96000114	10	70
1"	25	96000115	5	35



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
½"	15	96000441	20	160
¾"	20	96000442	25	100
1"	25	96000443	10	80
1¼"	32	96000444	5	20
1½"	40	96000445	4	24
2"	50	96000446	1	10



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
½"	15	98000256	1	100
¾"	20	98000257	1	75
1"	25	98000258	1	45
1¼"	32	98000259	1	25
1½"	40	98000260	1	16
2"	50	98000261	1	12



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
½"	15	98000310	1	20
¾"	20	98000284	1	20
1"	25	98000286	1	20

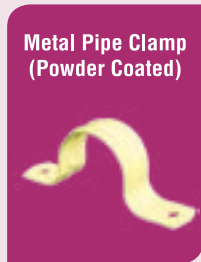
1 Step Solvent (1/2" - 2")



Size (in Oz)	ml	Part No.	Std. Packing PB	Std. Packing CB
½ Oz	15 ml	98000282	---	144
1 Oz	29.5ml (Tube)	98000225	---	72
2 Oz	59ml (Tube)	98000126	---	72
4 Oz	118ml	98000122	---	96
8 Oz	237ml	98000123	---	48
16 Oz	473ml	98000210	---	24
32 Oz	946ml	98000211	---	12



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
½"	15	98000243	25	300
¾"	20	98000312*	25	200

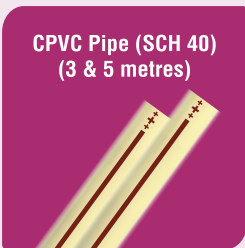


Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
½"	15	98000116	200	800
¾"	20	98000117	150	600
1"	25	98000207	100	400
1¼"	32	98000208	100	300
1½"	40	98000120	50	250
2"	50	98000209	50	150



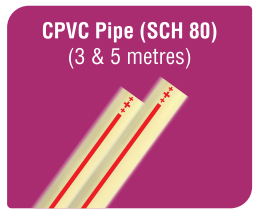
Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
½"	15	96000483	5	5
¾"	20	96000484	6	6
1"	25	96000485	3	3
1¼"	32	96000486	3	3
1½"	40	96000487	2	2
2"	50	96000488	2	2

CPVC Pipes in SCH 40 and SCH 80 as per ASTM F 441 & Fittings in SCH 80 as per ASTM F 439 (above 2")



Size (inch)	Size (mm)	Std. Packing	Part No. 3 mtr.	Part No. 5 mtr.
2½"	65	5	96000397	96000409
3"	80	3	96000398	96000410
4"	100	2	96000399	96000411
6"	150	1	96000521	96000522

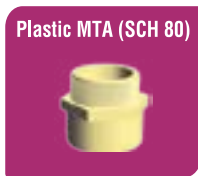
PB – Poly Bags; CB – Carton Box. * New SKU's, 6" SKU's are available only on demand.



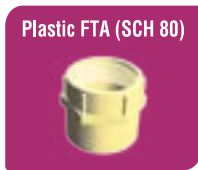
Size (inch)	Size (mm)	Std. Packing	Part No. 3 mtr.	Part No. 5 mtr.
2½"	65	5	96000403	96000415
3"	80	3	96000404	96000416
4"	100	2	96000405	96000417
6"	150	1	96000523	96000524



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
2½"	65	96000348	2	14
3"	80	96000354	1	6
4"	100	96000355	1	4
6"	150	98000287	1	1



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
2½"	65	96000358	2	20
3"	80	96000359	1	8
4"	100	96000360	1	6



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
2½"	65	96000391	2	20
3"	80	96000392	1	8
4"	100	96000393	1	6



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
2½"	65	96000469	1	8
3"	80	96000470	1	6
4"	100	96000471	1	3



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
3"x2½"	80x65	96000364	2	20
4"x2½"	100x65	96000378	1	8
4"x3"	100x80	96000379	1	8
6"x4"	150x100	98000290	1	4



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
2½"(IPS) x 2"(CTS)	65x50	96000382	2	12
3"(IPS) x 2"(CTS)	80x50	96000383	2	12
4"(IPS) x 2"(CTS)	100x50	96000366	1	6



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
2½"	65	96000384	2	10
3"	80	96000386	1	6
4"	100	96000368	1	3
6"	150	98000288	1	1



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
2½"	65	96000350	4	20
3"	80	96000370	1	6
4"	100	96000371	1	4



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
2½"	65	96000374	2	16
3"	80	96000352	1	8
4"	100	96000440	1	4
6"	150	98000289	1	4

2 Step Solvent (2 1/2" - 6")



Size (in Oz)	ml	Part No.	Std. Packing PB	Std. Packing CB
16 Oz	473ml	98000270	---	24



Size (in Oz)	ml	Part No.	Std. Packing PB	Std. Packing CB
16 Oz	473ml	98000280	1	24

PB – Poly Bags; CB – Carton Box. * New SKU's, 6" SKU's are available only on demand.



Cost-effective and easy to install



Resistance to chemicals, corrosion and abrasion



Smooth internal surface



Energy-Efficient



Fire-resistant



Antimicrobial



Suitable for carrying drinking water



Perfect for external use



Central Food Technological Research Institute



ROHS by TUV



CIPET



Shriram Institute for Industrial Research



IS 15778:2007



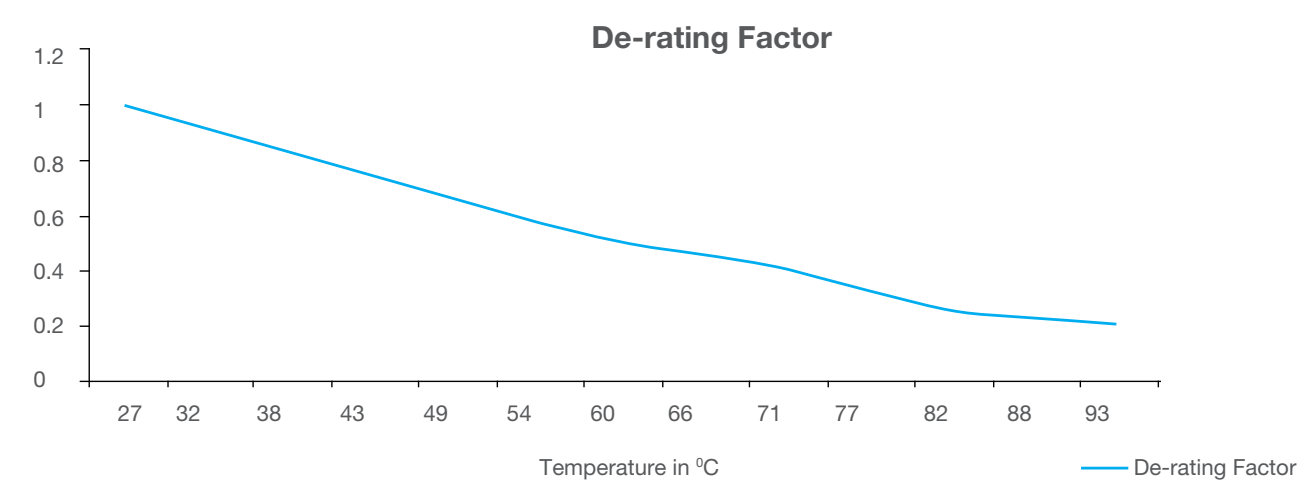
ISO 9001:2008



Temperature De-rating Factor

Elevated temperature fluid mediums require the de-rating of a thermoplastic pipe, with a maximum internal pressure rating of 27°C. To determine the maximum internal pressure rating at an elevated temperature, simply multiply the pipe pressure rating at 27°C by the factor specified for the desired temperature.

Temperature in °C	27	32	38	43	49	54	60	66	71	77	82	88	93
De-rating Factor	1	0.91	0.82	0.73	0.65	0.57	0.50	0.4	0.40	0.3	0.25	0.22	0.20



Technical Details – Dimensions

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	2.5	22.0	22.4
1	25	2.6	3.1	28.4	28.8
1 ¼	32	3.2	3.7	34.7	35.1
1 ½	40	3.8	4.3	41.1	41.5
2	50	4.9	5.5	53.9	54.3

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	22.0	22.4
1	25	2.1	2.6	28.4	28.8
1 ¼	32	2.6	3.1	34.7	35.1
1 ½	40	3.1	3.6	41.1	41.5
2	50	4	4.6	53.9	54.3

CPVC pipe as per ASTM F441 (SCH 40)					
Size (inches)	Size (mm)	OD (mm)		Wall Thickness (mm)	
		Min.	Max.	Min.	Max.
2 ½	65	72.82	73.18	5.16	5.77
3	80	88.70	89.10	5.49	6.17
4	100	114.07	114.53	6.02	6.73

CPVC pipe as per ASTM F441 (SCH 80)					
Size (inches)	Size (mm)	OD (mm)		Wall Thickness (mm)	
		Min.	Max.	Min.	Max.
2 ½	65	72.82	73.18	7.01	7.85
3	80	88.70	89.10	7.62	8.53
4	100	114.07	114.53	8.56	9.58

Working Pressure of CPVC Pipes

Working Pressure (in Kg/cm²) for CPVC Pipes (½” to 2”)			
Temperature in °C	De-rating Factor	SDR 11	SDR 13.5
27	1	28.14	22.23
32	0.91	25.61	20.23
38	0.82	23.08	18.23
43	0.73	20.54	16.23
49	0.65	18.29	14.45
54	0.57	16.04	12.67
60	0.50	14.07	11.11
66	0.45	12.66	10.00
71	0.40	11.26	8.89
77	0.32	9.01	7.11
82	0.25	7.04	5.56
88	0.22	6.19	4.89
93	0.20	5.63	4.45

Working Pressure (in Kg/cm²) for CPVC Pipes (2½” 3”, 4”) at 23°C			
Size (in)	Size (mm)	SCH 40	SCH 80
2½	65	21.09	29.53
3	80	18.28	26.01
4	100	15.47	22.50

Burst Pressure Ratings

Size (inches)	Size (mm)	Burst Pressure for Pipes in Kg/cm² for 60 to 70 sec. at 23 °c (Aerocon's Internal Specification)	
		SDR-11	SDR-13.5
½	15	102.95	83.03
¾	20	85.14	71.31
1	25	86.00	68.15
1¼	32	86.81	69.22
1½	40	87.14	69.79
2	50	85.82	68.80

Size (inches)	Size (mm)	Burst Pressure for Fittings in Kg/cm² (According to IS 15778: 2007 for 60 to 70 sec. at 23 °c)
½	15	87.5
¾	20	70.00
1	25	70.00
1¼	32	70.00
1½	40	70.00
2	50	70.00

Size (inches)	Size (mm)	Burst Pressure for Pipes in Kg/cm² (According to ASTM F 441 in SCH 40 & SCH 80)	
		SCH 40	SCH 80
2½	65	68.20	95.62
3	80	59.06	84.37
4	100	49.92	73.12

Size (inches)	Size (mm)	Burst Pressure for Fittings in Kg/cm² (According to ASTM F 439 in SCH 80 at 23 °C)
2½	65	95.62
3	80	84.37
4	100	73.12



Installation Guidelines - CPVC

Installation Guide

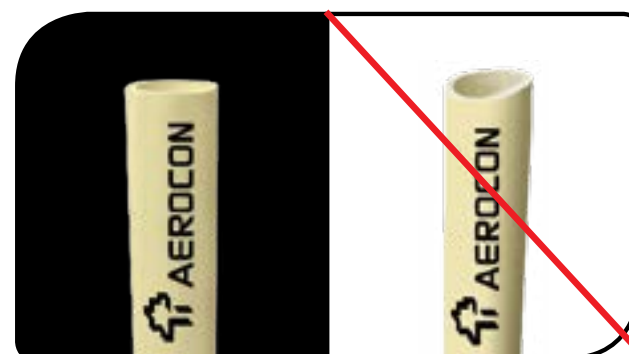
A few simple steps must be followed for 100% leak-proof, efficient and productive joints.



Aerocon Pipes and Fittings is designed with precise tolerance. They are architected using a system called “True Fit”, which enables a perfect fit and leak-proof joints.

Step-1: Cutting the Pipe

- Aerocon’s 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 within the jointing surface of pipes & fittings



Square 90-degree cut

Wrong cutting

Step-2: Deburring/Beveling

- 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, filings and flares



Full engagement of pipes and fittings



IMPORTANT!

- Burrs, filings & flares can:**
- Prevent proper contact between pipes & fittings during assembly
 - Can restrict & disturb flow of water
 - Score & channel in socket ID may create leak potential
 - Removing flares will minimise chances of pushing solvent cement to the bottom of the joints

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.



Step-4: Solvent Cement Jointing & Assembly



- Apply a thin coat of Aerocon Orange Medium 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. Use the Dauber applicator, supplied with the can
- Select proper cement for the work, pipe cleaner and primer. Choose a dauber/applicator that is sized properly. Daubers, brushes or applicators should be 1/2 the diameter of the fittings being joined (1” brush/applicator for 2” pipe). This reduces the time required to apply the cement, resulting in better joints

NOTE: For sizes equal and above 2½” of SCH 40 & SCH 80, Aerocon’s Purple Primer must be used before applying the solvent cement. Its proper use prepares the surfaces for fusion in a wide variety of weather conditions.



- 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. Allow the cement to set (approx. 15 minutes) before handling the assembly



- Wipe off any excess cement with clean dry cloth
- Allow the Aerocon Orange Medium 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





Delaying the assembly of pipes & fittings can lead to dry joints.

IMPORTANT!

While assembling the pipes and fittings, a common failure may occur – “dry joint”. This happens when the assembly is delayed and in this case, the cement will “flash-off” its solvents and fail to weld the plastics.

Aerocon’s Orange Medium CPVC Solvent Consumption

Solvent cements are at the core of CPVC plumbing and their quality is of vital importance in the strength of the joint. The following table shows the consumption of solvent cements and the approximate number of joints which can be made per litre of Aerocon Orange Medium CPVC Solvent Cement.

Consumption of solvent cement:

Pipe Size (inch)	½	¾	1	1 ¼	1½	2	2½	3	4
Pipe Size (mm)	15	20	25	32	40	50	65	75	100
No. of fittings per litre	1200	750	500	450	325	225	50	40	30

Average Handling/Set Times for Aerocon’s Orange Medium CPVC Solvent

HANDLING/SET SCHEDULE			
Temperature	Pipe Size ½” to 1¼”	Pipe Size 1½” to 3”	Pipe Size 4”
16°C-38°C	2 minutes	5 minutes	30 minutes
4°C-16°C	5 minutes	10 minutes	2 Hours
0°C-4°C	10 minutes	15 minutes	12 hours

*The handling/set schedule is the time required before handling joint. In case of damp/humid weather or loose fitting joints, allow 50% additional cure time.

Average Joint Cure Times for Aerocon’s Orange Medium CPVC Solvent

JOINT/CURE SCHEDULE						
Relative Humidity 60% or less	Cure Time for Pipe Size ½” to 1¼”		Cure Time for Pipe Size 1½” to 3”		Cure Time for Pipe Size 4”	
Temperature during assembly and cure periods	Up to 12.65 Kg/cm²	12.65 Kg/cm² above	Up to 12.65 Kg/cm²	12.65 Kg/cm² above	Up to 12.65 Kg/cm²	12.65 Kg/cm² above
16°C-38°C	15 minutes	6 Hrs.	30 minutes	12 Hrs.	1½ Hrs.	24 Hrs.
4°C-16°C	20 minutes	12 Hrs.	45 minutes	24 Hrs.	4 Hrs.	48 Hrs.
0°C-4°C	30 minutes	48 Hrs.	1 Hr.	96 Hrs.	3 Days	8 Days

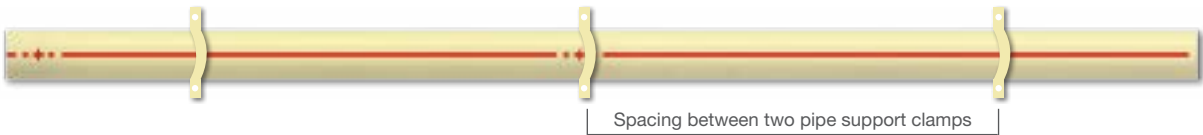
*The joint cure schedule shows the required time to allow before pressurising a system. In case of damp/humid weather or loose fitting joints, allow 50% additional cure time.

***All data is based on laboratory testing. Charts should be used as a general guide, as conditions in the field may vary.

NOTE: When the system is to be concealed, it should be pressure tested before concealment.

Horizontal and Vertical Supports

Pipe clamps are used for anchoring the pipes to the structural element of the building. Proper support spacing is critical to ensure that the deflection is kept to a minimum. Support location and spacing depends on the pipe diameter, operating temperature of the system and the location of any concentrated stress loads (valves, flanges, etc.). Hangers used must have an adequate load-bearing surface, free from any rough or sharp edges that could damage the pipe during use. Hangers must not restrict linear movement of the system due to the effects of thermal expansion and contraction, as a result of temperature changes. Furthermore, over-tightening must be avoided.



Recommended Support System for CPVC

Size (inch)	Recommended Support Spacing in (Ft.)						
	27°C	38°C	49°C	60°C	71°C	82°C	93°C
½	3.9	3.9	3.9	3.9	3.6	3.6	3.6
¾	4.6	4.3	4.3	4.3	4.3	3.9	3.9
1	4.9	4.9	4.9	4.6	4.6	4.6	4.3
1¼	5.6	5.2	5.2	5.2	4.9	4.9	4.6
1½	5.9	5.6	5.6	5.6	5.2	5.2	4.9
2	6.6	6.2	6.2	5.9	5.9	5.6	5.6
2½	6.7	6.5	6.5	6.4	6.4	5.8	6.0
3	6.9	6.8	6.7	6.6	6.5	6.4	6.2
4	7.4	7.3	7.2	7.1	7	6.8	6.4

Thermal Expansion and the Expansion Loop

A great deal of consideration must be given to the design of the system, due to the effects of thermal expansion and contraction. Temperature variations above and below the installation temperature cause CPVC pipes to change in length, just like other pipes. They expand and contract 4.5-5 times more than steel or iron pipes. The extent of the expansion or contraction depends on the coefficient of linear expansion of the piping material, the length of the pipe between directional changes and the temperature differential.

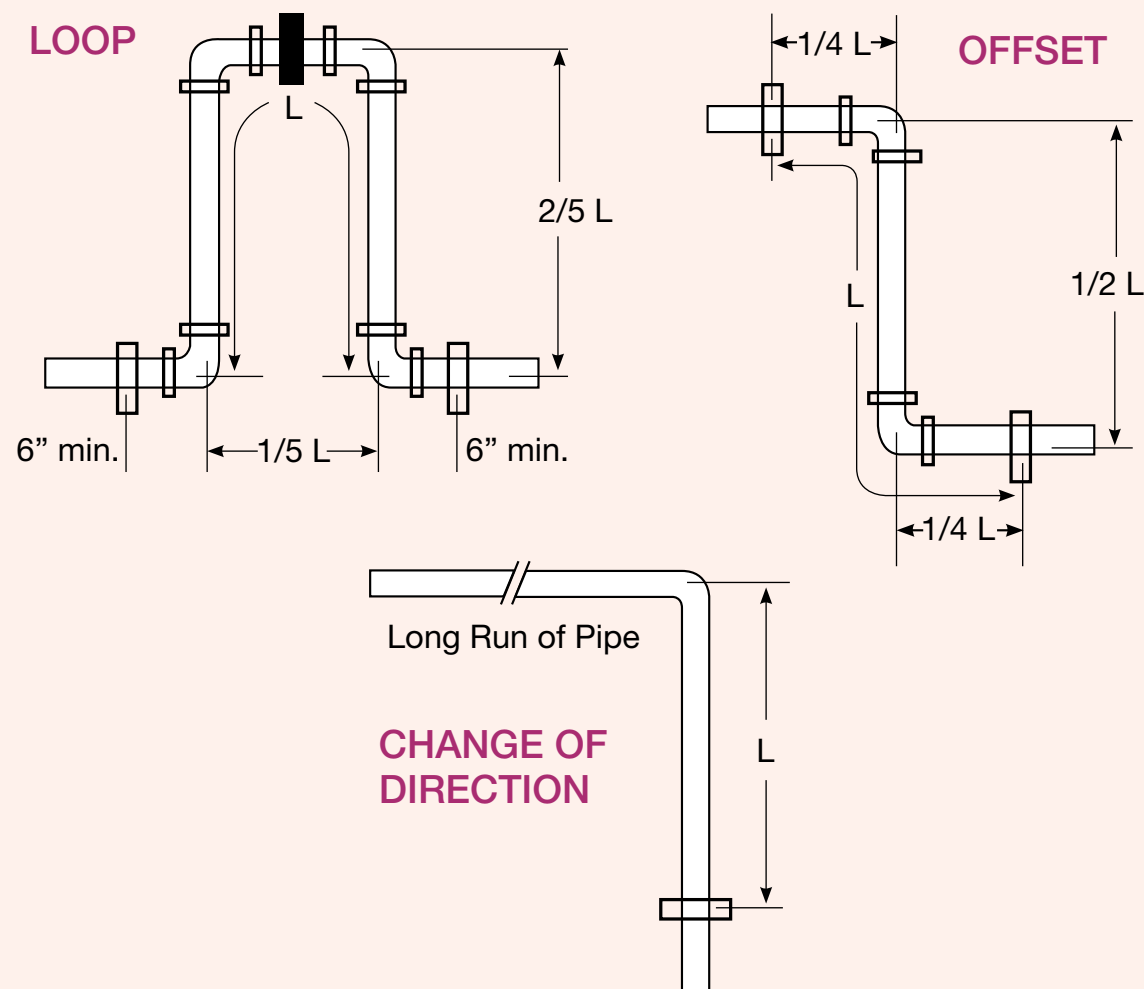
However, the resultant stress generated by thermal expansion is lesser for thermoplastic than steel. This is due to CPVC's lower modulus of elasticity in comparisons to metal pipes, and over time, stress relaxation will occur.

CPVC pipes, regardless of their diameters, will expand about 7.5 cm per 30 mtrs., for a 40°C temperature change. Therefore, provisions must be made for this movement. Using the expansion loop, thermal expansion can be taken care of by the change in direction of supply lines. If not done, cracks may appear in the joint, which will ultimately lead to leaks.

Expansion is mainly a concern in hot water lines. As mentioned, thermal expansion can be accommodated with changes in direction. However, a long straight run may require an offset or loop. Generally the temperature change experienced is not more than 38°C. The chart below can be used to determine the size of an expansion joint needed to compensate for movement, when a temperature change of 27°C is experienced.



Expansion Loop and Offset Configurations



Length of Expansion Loop (in inches) Required for a 27°C Temperature Change

Length of Run (in Ft.)				
Pipe Size (in Inches)	40 Ft.	60 Ft.	80 Ft.	100 Ft.
1/2	22	27	31	34
3/4	26	32	36	41
1	29	36	41	46
1 1/4	32	40	46	51
1 1/2	35	43	50	56
2"	40	49	57	64

Loop length for other temperatures and run length can be calculated using the following equations:

Expansion Loop Formula

$$L = \sqrt{\frac{3 E D (\Delta L)}{2 S}}$$

Where:

L = Loop length (in.)

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.)

Thermal Expansion Formula

$$\Delta L = L_p C T$$

Where:

ΔL = Change in length due to change in temperature (in.)

L_p = Length of pipe (in.)

C = Coefficient of thermal expansion (in./in./F)
= 3.4 x 10 in./in./F for CPVC

T = Change in temperature (F)



Pipe Insulations

In air-conditioned buildings, CPVC hot and cold water supply lines don't need to be insulated, because of their low coefficient of thermal conductivity.

CPVCs carrying water 82°C in temperature, will have an outside surface temperature of 65°C in air-conditioned rooms. Copper pipes on the other hand, will have an outside temperature equal to that of the water.

Under most conditions copper pipes drip with water below 15°C, but CPVC pipes will remain free from condensation.

Evidently, insulation need not be recommended for CPVC pipes, however, designer-recommend insulations can be used for their environmental benefits.

Recommended insulating material for CPVC pipes:

- Expanded rock wools
- Polystyrene gypsum articles
- Slag wool pallets
- Hessian (cloth)
- Glass fibre
- Mineral wools

Recommended thickness of insulation:

CPVC open lines: 7 mm

CPVC concealed lines: 5 mm

Thread Sealant

Threaded CPVC plastic and trans fittings must be used with a suitable thread sealant, to ensure leak-proof joints. Thread sealants must be carefully chosen as some chemically attack the CPVC material and may cause cracks. Polytetrafluoroethylene (PTFE) tape is the most preferable thread sealant and is widely accepted all over the world.

Water Heater Connections

CPVC pipes must not come in contact with heat producing sources. All CPVC piping from water heaters, including down-takes (vertical rises) should be insulated. To maintain high thermal efficiency, it is recommended that the pipes be insulated with a thin layer of PU foam – may be spirally wound around the pipe, to provide adequate insulation.

It is important to note that insulation materials degrade on long-term exposure to water. It is advisable to cover the insulation with aluminium foil for protection. Aerocon recommends only CPVC SDR 11 pipes, with water heater main lines. Only brass insert-type fittings must be used for all connections with solar water heaters. Proper support spacing must be ensured, as specified in the “Horizontal and Vertical Supports” section.

On gas water heaters, there must be at least 12 inches of clearance between the exhaust flue and the CPVC piping. 12-inch metal nipples or appliance connectors should be used directly, to ensure the CPVC tubing does not get damaged by the build-up of excessive radiant heat from the flue. Furthermore, solar water heaters must be installed with thermo-regulating valves.

Under-slab Installation Guidelines

Aerocon's CPVC pipes and fittings are highly flexible in nature, and therefore extra care must be taken to ensure proper burial conditions. The stiffness of the piping system is affected by the sidewall support, soil complication and the condition of the trench. Trench bottoms must be smooth and regular, in either undisturbed soil or a layer of compacted backfill. Pipes must lie evenly on this surface throughout the entire length of its barrel.

Trenching

- Excavate the trench, ensuring the sides are stable under all working conditions
- The trench should be wide enough to provide adequate room for joining the pipes in the trench shaking the pipe from side to side, to compensate for expansion and contraction filling and compacting the side fills
- The space between the pipe and trench wall must be wider than the compaction equipment used in the compaction of the backfill. Minimum width must not be less than the greater of either the pipe outside diameter plus 16 inches, or the pipe outside diameter times 1.25 plus 12 inches. The trench width may be different, if approved by the design engineer
- Install the foundation and bedding as needed by the engineer, according to the conditions of the trench bottom. Provide firm, stable and uniform bedding for the pipes. Provide a minimum of 4 inches of bedding. In case any rock or unyielding material is encountered in the bottom of the trench, provide 6 inches
- Plastic pipes should always be installed at least below the frost level

Bedding and Backfilling

- Sub-soil conditions vary from place to place, therefore, the pipe backfill should be stable and provide protection
- The pipe should be surrounded with an aggregate material that can easily be worked around the sides of the pipe. Backfilling must be performed in layers of 6 inches, with each layer being sufficiently compacted to 85-95%
- A mechanical tamper is recommended for compacting a sand and gravel backfill that contains a significant proportion of fine-grained material like silt and clay. If a tamper is not available, it must be done by hand
- The trench should be completely filled. The backfill should be spread in uniform layers to prevent any unfilled spaces or voids. Large rocks, stones, frozen clods and other debris must be removed

In-slab Installation

Aerocon's CPVC pipes can be installed and embedded in concrete slabs, as they do not react to concrete or stucco and are inert to acidic soil conditions.

Do's

- Use a clean cloth to clean the pipes & fittings, before installation
- In case of any cracks in the pipe, cut off a minimum of 25 mm beyond the edge of the crack
- Cut the pipe as a square (perpendicular) before making a joint
- Deburr & bevel – ensure no sharp edges are in contact with the fittings surface while inserting the pipe
- Take the right precautions for installations in solar water heaters and boilers. Follow Aerocon's recommendations and check the dry fitment
- Apply the recommended Aerocon Orange Medium CPVC Solvent Cement on the pipe surface before inserting it into the fitting. For sizes 2½" and above, of SCH 40 and SCH 80, Aerocon's Purple Primer needs to be used before applying the solvent cement
- Assemble the pipes and fittings quickly after applying the solvent cement
- Rotate the pipe 90°-180°, to spread the Aerocon Orange Medium CPVC Solvent Cement evenly in the joint, while pushing the pipe into the fitting. Hold for 30 seconds
- Ensure the pipes and fittings are properly aligned, to avoid stress on the joints
- Ensure no air is trapped once the installation is completed
- Provide vertical and horizontal supports, as recommended
- Use Teflon tapes only as a thread sealant
- Before the conceal work is completed, conduct hydraulic pressure testing after installation, to detect any leaks or faults, by using Aerocon's Plastic End Plug
- Before pressure testing, wait for the appropriate cure time, fill the lines slowly and bleed air from the system
- Keep the solvent cement container closed when it's not in use
- Strictly keep the solvent cement away from sparks and open flames while in use, because it is volatile in nature and can catch fire easily
- While using and handling the solvent cement, primer and cleaners, proper ventilation & good work practices will minimise any health risk

Don't's

- Don't use dull or damaged cutters for cutting the pipes
- Don't use metal hooks or nails to support/hold/put pressure on the pipes. Don't use straps and hangers with rough/sharp edges or tighten the straps over the pipes
- Don't expose the pipe to an open flame while trying to bend it
- Don't drop pipes on their edges or on heavy objects, and don't walk on them
- Don't use air or gases for pressure testing
- Don't use any other petroleum or solvent-based sealant, adhesive, lubricant or fire stop material on the CPVC pipes and fittings
- Don't use the CPVC pipes and fittings for pneumatic applications
- Don't use CPVC plastic threaded fittings for hot water above 60°C
- Don't use threads to join the CPVC brass fittings or plastic threaded fittings
- Don't smoke cigarettes while using the solvent. Its fumes can catch fire and cause severe injuries
- Don't let the solvent cement come in contact with skin or eyes

FOLLOWING THESE SIMPLE AND EASY
DOS AND DON'TS
WILL HELP YOU ENSURE 100%
TRUE FIT & LEAK-PROOF INSTALLATION.

Aerocon - UPVC

The right choice for all your plumbing needs

Introducing, Aerocon UPVC!

At Aerocon, our endeavour is to continually develop newer, better and more innovative ways to bring you the best of products and solutions, for all your needs. Concurring with our philosophy of developing eco-friendly products for a greener world, we bring you UPVC pipes and fittings – a more eco-friendly, far superior replacement for the widely used GI pipes.

UPVC's can be used upto 60°C (140°F), makes it ideal for cold water applications. Furthermore, it is flexible enough for bending, thereby enabling use in a wide variety of process applications. It is also non-toxic, fire and chemical-resistant, and exhibits a higher impact and tensile strength. In addition, it has excellent resistance towards acids and bases.

Aerocon's UPVC Pipes & Fittings brings you 5 key benefits.

- True Fit® technology for 100% leak-proof joints
- Top-notch raw materials to deliver high-end quality products
- Robust manufacturing processes to deliver consistent top-quality products
- Uniquely designed corrosion-resistant brass fittings to deliver high torque-bearing capability
- A committed team to help build your dream project



UPVC

Comparison Chart & Physical Properties

Comparison Chart Between GI Pipe and UPVC Pipe

S.N.PROPERTY/PARAMETER	Galvani alvanialvani zed Iron	UPVC
Service Life (Years)	max 10	50
Standard Length (Meter)	6	3 & 6
Joining Method	Threaded Joint	Solvent Cement
Skill	Requires Expert Plumber	Easy to install
Joining time	Few hours	Few minutes
Strength of Joints	Surface Homogeneity	Surface Homogeneity
Minimum Labor	2 Persons Required	1 Persons Required
Corrosion Resistant	Very Weak	Non corrosive
Chemical Resistance	Poor	very good
Installation convenience	Difficult	Excellent
Joining Reliability	Good	Excellent
Hygienic Factor	Unhygienic due to Zinc oxide Formation	Food Grade – No Leeching – Antimicrobial
Inner Surface Smoothness	Semi Smooth	Excellent smoothness
Easiness in Repair & Maintenance	Troubleness	Very easy
Joint Leak Proffness	Average-Leaks With Time	100% Leak Proof Entire Service Life
Eco-Friendliness	No	Yes

Standards and Codes

Standard & Codes specifies certain requirements, test methods and methods of marking, for chlorinated polyvinyl chloride plastic pipes, for cold water distribution supplies

Aerocon UPVC Pipes		
Class of Pipe	Standard	Sizes Available
SCH 40	ASTM D 1785	½” – 4”
SCH 80	ASTM D 1785	½” – 4”

Aerocon UPVC Fittings		
Class of Fitting	Standard	Sizes Available
SCH 80	ASTM D 2467	½” – 4”

Blue Medium-bodied UPVC solvents:
Meet or exceed the requirements of the ASTM D 2564 standards.

Composition of Brass inserts are as per IS 319

UPVC Ball Valves:
Meets requirement of ASTM F 1970 and ASTM D 2467

Physical Properties

UPVC PIPE		
GENERAL	Value	Test Method
Cell Classification	12454	ASTM D1784
Maximum Service Temp	60°C	
Color	White	
Specific Gravity (g/cu.cm @ 23°C)	1.44 +/- 0.02	ASTM D792
Hardness, Rockwell	110 -120	ASTM D785
MECHANICAL	Value	Test Method
Tensile Strength, psi @ 23° C	7107	ASTM D638
Tensile Modulus of Elasticity, psi@23° C	410000	ASTM D638
Flexural Strength, psi @ 23° C	13996	ASTM D790
Flexural Modulus, psi @ 23° C	400000	ASTM D790
THERMAL	Value	Test Method
Heat Distortion Temperature under load (264psi, annealed)	74°C	ASTM D648
Coefficient of Linear Expansion	6.0-8.0X10^-5	ASTM D696
ELECTRICAL	Value	Test Method
Dielectric Strength, volt/mm	>1000	ASTM D149
Dieletric Constant, 60 Hz, 0 ° C	3	ASTM D150
FIRE PERFORMANCE	Value	Test Method
Flammability Rating	V-0	UL-94
Flame Spread Index	< 10	
Average Time of Burning (sec)	< 5	ASTM D635
Average Extent of Burning (mm)	< 10	
Burning Rate (mm/min)	Self Extinguishing	
Limiting Oxygen Index (LOI)	45	ASTM D2863

UPVC FITTING		
GENERAL	Value	Test Method
Cell Classification	12454	ASTM D1784
Maximum Service Temp	60°C	
Color	White	
Specific Gravity (g/cu.cm @ 23°C)	1.42 +/- 0.02	ASTM D792
Hardness, Rockwell	110 -120	ASTM D785
MECHANICAL	Value	Test Method
Tensile Strength, psi @ 23° C	7701	ASTM D638
Tensile Modulus of Elasticity, psi@23° C	420000	ASTM D638
Flexural Strength, psi @ 23° C	12995	ASTM D790
Flexural Modulus, psi @ 23° C	420000	ASTM D790
THERMAL	Value	Test Method
Heat Distortion Temperature	77°C	ASTM D648
Coefficient of Linear Expansion	6.0-8.0X10^-5	ASTM D696
ELECTRICAL	Value	Test Method
Dielectric Strength, volt/mm	>1000	ASTM D149
Dieletric Constant, 60 Hz, 0 ° C	3	ASTM D150
FIRE PERFORMANCE	Value	Test Method
Flammability Rating	V-0	UL-94
Flame Spread Index	< 10	
Average Time of Burning (sec)	< 5	ASTM D635
Average Extent of Burning (mm)	< 10	
Burning Rate (in/min)	Self Extinguishing	
Limiting Oxygen Index (LOI)	45	ASTM D2863

Why Aerocon - UPVC?

5 reasons why Aerocon's UPVCs are widely sought-after

Reason 1

TrueFiT® technology for 100% Leak-proof Joints

Aerocon's UPVC pipes and fittings are designed with “TrueFiT®” technology – a first in the country, that assures a perfect fit, making them absolutely leak-proof. We manufacture our pipes and fittings with extreme care, to ensure 100% leak-proof joints. All our pipes and fittings are designed to close tolerances, with the help of our state-of-the-art manufacturing facilities.

Addition of chamfering technology for size 2.5” (Pictorial representation & theory)



Reason 2

Top-notch Raw Materials to Deliver High-end Quality Products

Aerocon's UPVC pipes and fittings are produced from a specially formulated compound. The material used is a special, virgin, heavy metal-free unplasticised polyvinyl chloride (UPVC) compound, with a Cell Classification of 12454, as per ASTM D1784.

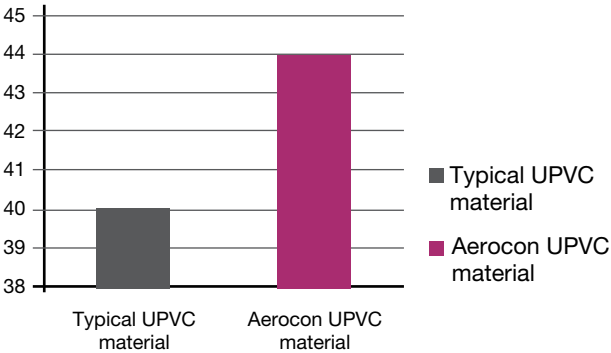
Our pipes and fittings meet or exceed the toxicological requirements of the RoHS, TUV and CFTRI, to ensure they are of food grade quality and safe to use for potable water. Aerocon's UPVC compound exhibits a better tensile strength, Vicat Softening Temperature (VST) and ductility, unlike typical UPVC material.

Tensile strength

It is the maximum stress (force) that a material can withstand, while being stretched or pulled, before it breaks or fractures.

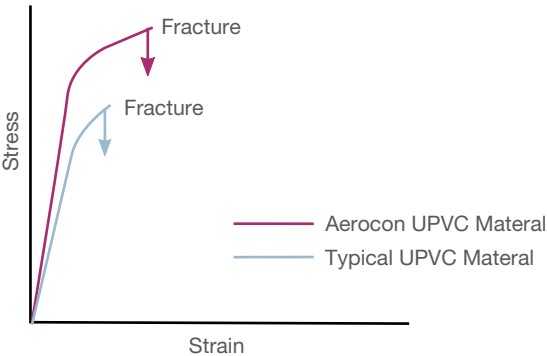
Some materials will break sharply, without plastic deformation – something called a brittle failure. Others, which are more ductile, including most metals, will experience some plastic deformation, and possibly necking, before fracture.

Tensile strength (Mpa)



UPVC	Tensile strength (Mpa)
Typical UPVC material	40
Aerocon UPVC material	44

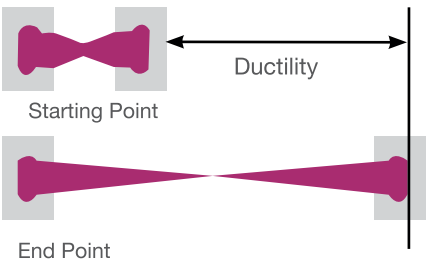
Stress vs. Strain Graph



It displays the excellent ductile nature of Aerocon's UPVC material, over typical UPVC material

Benefits of being ductile:

- Improved strength-to-weight ratio
- Flexible
- High impact resistance
- Improved machinability



Reason 3

Robust Manufacturing Processes to Deliver Consistent Top-quality Products

Our state-of-the-art technology with automation ensures quality consistency at each level. Our Quality Control Team plays the most important role in establishing various process parameters and ensure strict quality control measures at each point, for the production of world-class products.

Aerocon's pipes and fittings pass more than 25 quality test before they are made ready to be delivered to customers. All the tests are conducted in our very own state-of-the-art testing labs. Which are equipped with world-class testing equipment like the Torque Rheometer, Spectrophotometer, Tensile Strength Tester, Charpy Impact Tester and Thermocycling unit.

The Torque Rheometer helps in continuous optimisation of properties. Furthermore, process control is carried out on a timely basis when raw materials are being converted to finished goods.

- It makes testing and checking close to production, possible
- It measures process parameters like flow, heat, stability, process temperature, speed & torque
- It helps in minimising errors during the production run
- It helps in optimising compound and process properties
- It helps in optimising compound and process properties



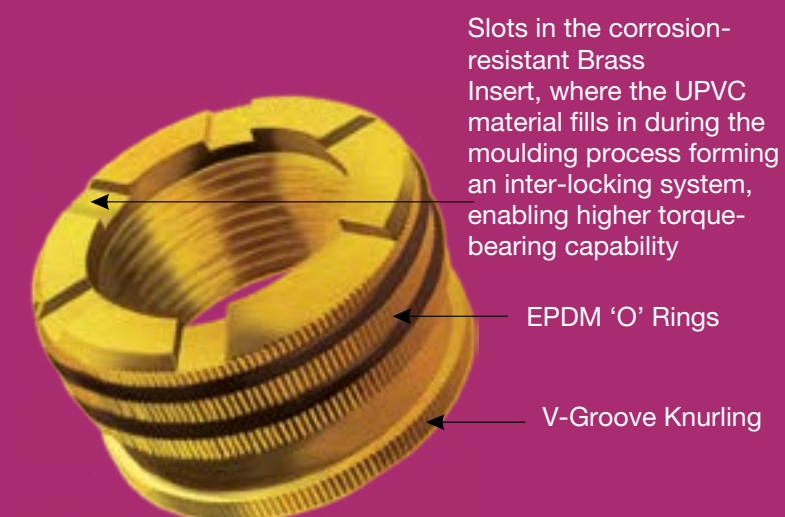
Torque Rheometer

Reason 4

Uniquely Designed Corrosion-resistant Brass Fittings to Deliver High Torque-bearing Capability

Aerocon's UPVC corrosion-resistant trans fitting incorporates specially designed corrosion-resistant brass inserts, which have a serrated internal brass surface with grooves of high precision and deep knurling. This ensures a far more superior torque-bearing capability.

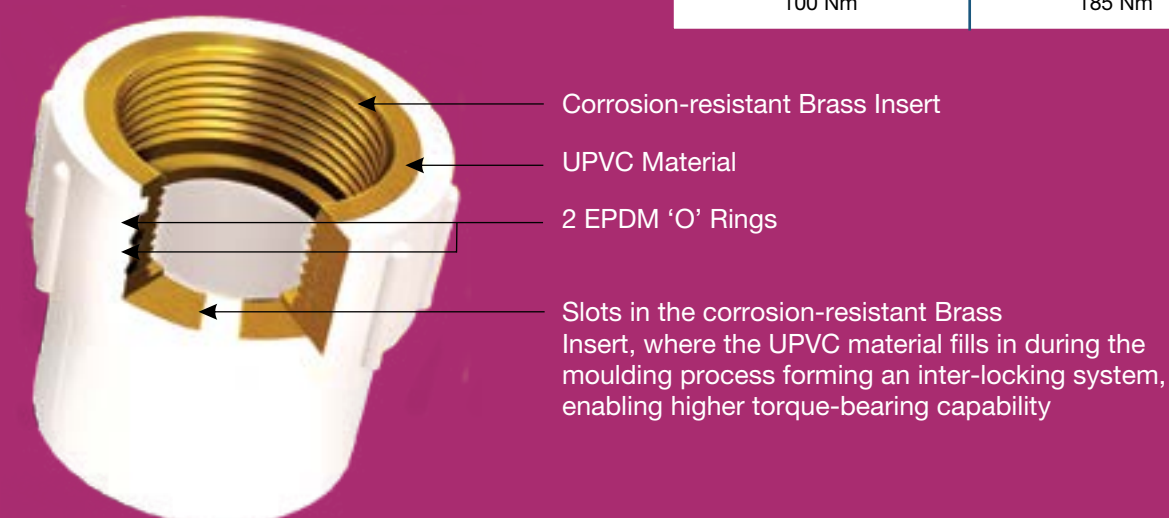
This innovative design ensures a very high pull-out resistance, making leakage due to thermal expansion and contraction, almost impossible. The serrated internal brass surface helps in a very strong UPVC-brass bond.



Female Threaded Corrosion Resistant Brass Insert with 2 EPDM 'O' Ring

Comparison Table of Torque-bearing Capability of 1/2" Female Brass Insert

1/2" Typical Female Brass Insert	1/2" Aerocon Female Corrosion-resistant Brass Insert
100 Nm	185 Nm



Cross Section View of Aerocon's Trans FTA

Reason 5

A Committed Team To Help Built Your Dream Project

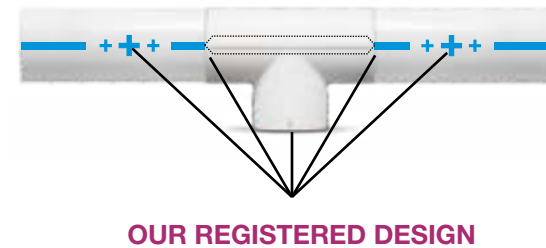
We are a team of highly committed and passionate professionals, dedicated to bringing you the best of eco-friendly products, with the greatest possible quality, customised to the specific needs of your dream projects. The team is young, driven by value and carefully chosen, with a cumulative experience of more than 100 years. The team is focused on innovating newer solutions, and we achieve that by paying attention to every detail of every customer



Additional Benefits of Aerocon - UPVC

Design Elements for Easy Installation

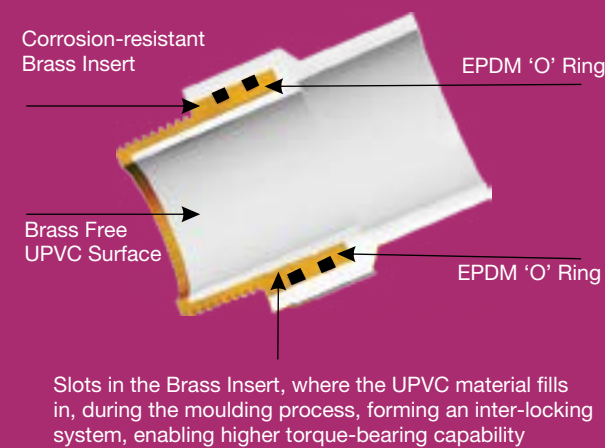
- The '+++' sign on the pipes is a measurement-enabler and helps in easy cutting
- The distance between the two large '+' signs is approximately one foot, which helps the plumber forecast the length of pipe during installation, without the help of a measurement tape
- The arrow mark on the fittings serves as an alignment tool with the pipe
- While installing, the colored line on the pipe must be aligned with the arrow mark to enable a TrueFIT® joint



Uniquely Designed Aerocon UPVC Trans MTA

Aerocon's UPVC Trans MTA is designed in such a way that the contact between potable water and brass is significantly minimised. The surface of the brass, which usually comes in contact with potable water, is coated with a thin layer of UPVC. Therefore, the heavy metal-free property of UPVC minimises the risk of lead contamination considerably.

Moreover, the thin layer of UPVC acts as a "water locker", meaning water doesn't leak through minute gaps, making Aerocon's UPVC Trans MTA 100% leak-proof.



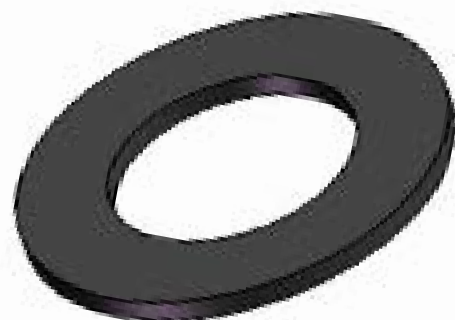
Cross Section view of Aerocon's UPVC Trans MTA

Aerocon's EPDM Rubber 'O' Rings & Washers

Aerocon's fittings – Unions, Tank Nipple & Plastics FTA, are equipped with specially designed EPDM 'O' Rings & EPDM Washers. They are highly resistant towards heat, oxidation, ozone and weather aging – making the fittings ideal for potable hot and cold water applications.

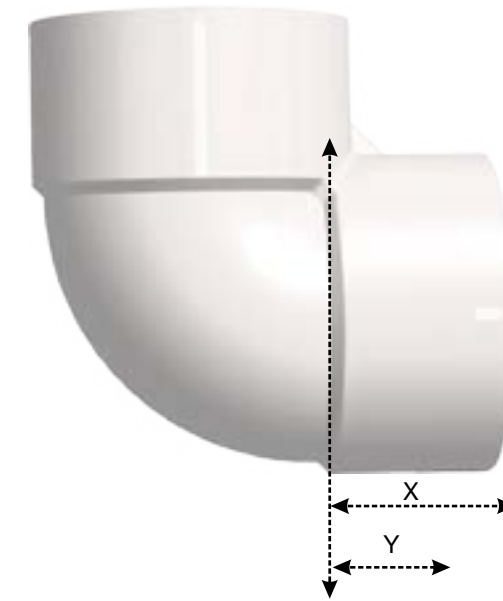


EPDM Rubber 'O' Ring



Washers

The Design Element on Aerocon's Fittings that Gives a Better Grip



Aerocon's fittings (Coupler, Elbow & Tee) Size 3" or more, have a special design element where the length of the socket is more than the standard requirement

This helps in providing a better grip for the pipes, ensuring a leak-proof and true fit joint.

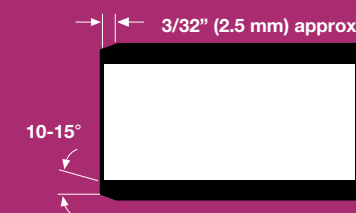
X -> Socket Length of Aerocon 3" Elbow

Y -> Socket Length of 3" Elbow as per ASTM D 2467 Standard

X > Y which helps in better grip

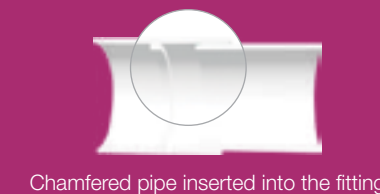
EXTRA SOCKET LENGTH FOR EXTRA GRIP

Pre Chamfered larger dia pipes - first in the industry to ensure Uniform spreading of solvent cement for a TrueFIT® joints

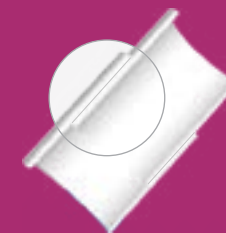


Cross Section View

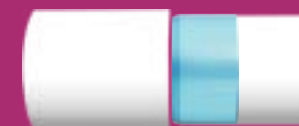
A chamfer (bevel) of about 10° to 15° is added to a depth of approximately 3/32"(2.5mm) to AEROCON UPVC higher dia pipes (2 1/2", 3" & 4") to permit leak proof joint & easier insertion of pipe into socket.



Chamfered pipe inserted into the fitting



Gap created by chamfered pipe to allow the solvent cement to backflow



Uniform spreading of solvent

Aerocon Chamfered Pipes Non Chamfered Pipes:

Chamfered edge will prevent wiping out of the solvent cement and facilitates back flow for a TrueFIT® joint.

Joint strength obtained in Aerocon chamfered pipes and fittings is comparatively high and ensures longer life.

Chamfered Aerocon pipe helps in maintaining concentricity with the fitting to enable trouble free installation

In a typical non chamfered higher dia pipe, 90° edge will wipe out the solvent on the fitting surface, which accumulates at the joint periphery resulting in decreased effective dia and dry joint.

Joint strength obtained in typical non chamfered higher dia pipes and fittings is low and has high possibility for leakage.

For non chamfered pipe, concentricity with the fitting is not easily achieved. Hence causes trouble during installation.

Aerocon's Blue Medium UPVC Solvent Cements & Purple Primers

Aerocon's Blue Medium Bodied UPVC Solvent Cement is ideal to fix pipes and fittings together. It meets, or even exceeds, the requirements of the ASTM D 2564 standards, and is as per the environmental regulations.

Moreover, it is Lo-VOC compliant and NSF-approved. It can be used for pipes with diameters up to 6".

For sizes equal and above 2½" of SCH 40 & SCH 80, Aerocon's Purple Primer needs to be used before applying the solvent cement. Its proper use prepares the surfaces for fusion in a wide variety of weather conditions to get leak proof operation & true fit joint.

The right solvent cement and its quality will not only help you save a great deal on costs, but will also ensure 100% leak-proof joints.

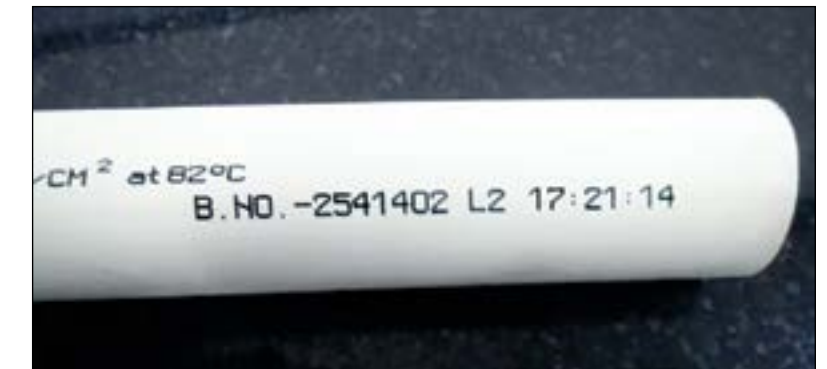


It is always advisable to invest a little more in a good quality solvent cement to ensure leak-proof joints. It helps save a great deal when it comes to the expenses of redoing luxurious bathrooms, due to leaks.

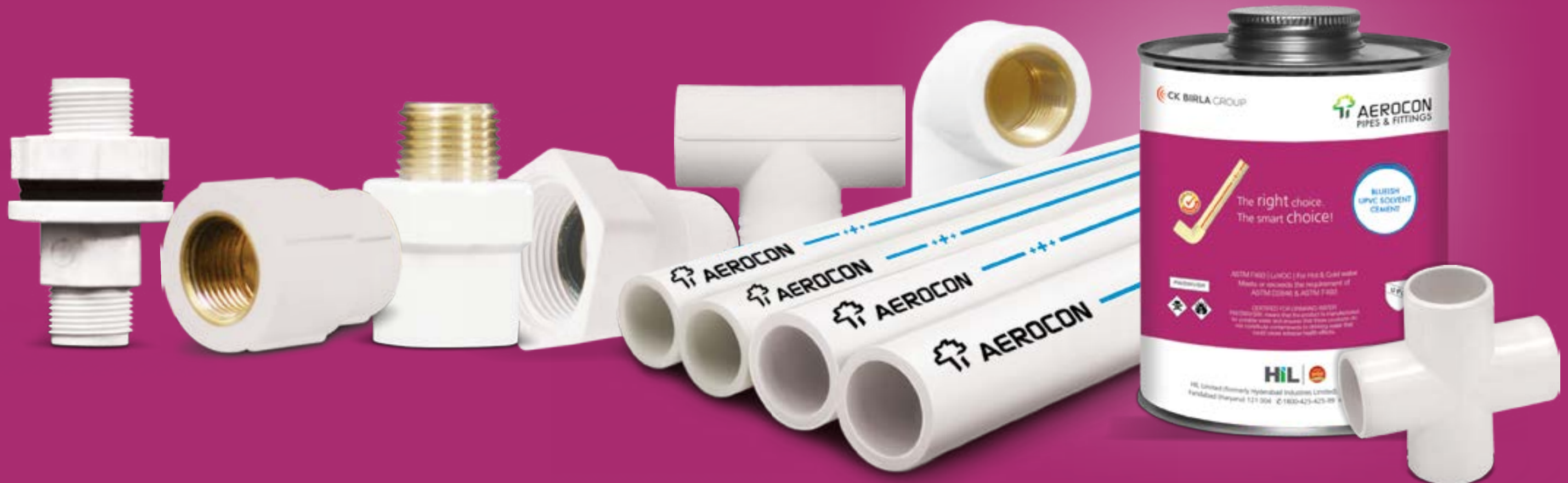
Excellent Traceability of Finished Goods

Traceability is the ability to trace the history, application or location of an item or activity, by means of recorded identification. Traceability involves the use of tracking and tracing systems and processes that match the attributes of incoming raw materials to outgoing product specifications for the purpose of improving business and/or product performance.

Mentioning "Time of Manufacturing" along with "Date of Manufacturing" on the packaging materials of finished goods, i.e. pipes & fittings, is a new initiative taken by our company – the first in the Indian Plumbing Industry. This helps in excellent traceability and root-cause analysis in case of any customer complaints.



Date & Time of Manufacturing - A First in the Industry



Product Range - UPVC

UPVC Product Range

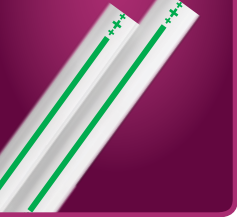
UPVC Pipes in SCH 40 & 80 as per ASTM D 1785, Fittings in SCH 80 as per ASTM D 2467 and Solvents as per ASTM D 2564

UPVC PIPE SCH 40 (3 & 6 metres)



Size (inch)	Size (mm)	Part No. 3 mtr.	Std. Packing (3 mtr.)	Part No. 6 mtr.	Std. Packing (6 mtr.)
½"	15	96000012	40	96000018	25
¾"	20	96000013	25	96000019	20
1"	25	96000014	20	96000020	15
1 ¼"	32	96000015	15	96000021	10
1 ½"	40	96000016	10	96000022	10
2"	50	96000017	5	96000023	5
2 ½"	65	96000400	5	96000412	5
3"	80	96000401	3	96000413	3
4"	100	96000402	2	96000414	2

UPVC PIPE SCH 80 (3 & 6 metres)



Size (inch)	Size (mm)	Part No. 3 mtr.	Std. Packing (3 mtr.)	Part No. 6 mtr.	Std. Packing (6 mtr.)
½"	15	96000024	40	96000030	25
¾"	20	96000025	25	96000031	20
1"	25	96000026	20	96000032	15
1 ¼"	32	96000027	15	96000033	10
1 ½"	40	96000028	10	96000034	10
2"	50	96000029	5	96000035	5
2 ½"	65	96000406	5	96000418	5
3"	80	96000407	3	96000419	3
4"	100	96000408	2	96000420	2



Heavy Metal Free



Antimicrobial

Elbow 90°



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
½"	15	96000116	50	300
¾"	20	96000117	40	200
1"	25	96000118	20	120
1 ¼"	32	96000119	10	60
1 ½"	40	96000120	8	48
2"	50	96000121	5	30
2 ½"	65	96000349	2	14
3"	80	96000356	1	6
4"	100	96000357	1	4

Elbow 45°



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
½"	15	96000335	50	200
¾"	20	96000336	40	200
1"	25	96000337	25	150
1 ¼"	32	96000338	5	80
1 ½"	40	96000339	5	50
2"	50	96000340	3	36

Tee



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
½"	15	96000122	50	200
¾"	20	96000123	25	125
1"	25	96000125	15	75
1 ¼"	32	96000127	10	50
1 ½"	40	96000128	5	30
2"	50	96000129	2	10
2 ½"	65	96000385	2	10
3"	80	96000387	1	6
4"	100	96000369	1	3

Reducing Tee



Reducing Elbow



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
¾"x½"	20 x 15	96000124	25	150
1"x½"	25 x 15	96000126	15	75
1¼"x½"	32 x 15	96000326	10	50
1¼"x¾"	32 x 20	96000327	10	50
1¼"x1"	32 x 25	96000328	10	50
1"x¾"	25x20	96000500*	15	75
1½"x½"	40x15	96000526*	5	30
1½"x¾"	40X20	96000527*	5	30
1½"x1"	40x25	96000528*	5	30
1½"x1¼"	40x32	96000529*	5	30
2"x½"	50x15	96000530*	2	10
2"x¾"	50x20	96000531*	2	10
2"x1"	50x25	96000532*	2	10
2"x1¼"	50x32	96000533*	2	10
2"x1½"	50x40	96000534*	2	10

Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
¾"x½"	20x15	96000550*	40	200
1"x ½"	25x15	96000551*	20	120
1"x¾"	25x20	96000552*	20	120

* SKU's available on demand.

Plastic MTA



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
½"	15	96000139	50	300
¾"x½"	20 x 15	96000140	25	200
¾"	20	96000141	50	400
1"	25	96000142	25	200
1 ¼"	32	96000389	15	60
2"	50	96000322	10	60
1 ½"	40	96000321	20	100
2 ½"	65	96000361	2	20
3"	80	96000362	1	8
4"	100	96000363	1	6

Plastic FTA



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
½"	15	96000143	50	500
¾"	20	96000144	40	280
1"	25	96000145	20	180
1 ¼"	32	96000388	10	60
1 ½"	40	96000319	20	80
2"	50	96000320	6	60
2 ½"	65	96000394	2	20
3"	80	96000395	1	8
4"	100	96000396	1	6

Trans Elbow



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
½"	15	96000175	25	150
¾"x½"	20 x 15	96000176	20	120
¾"	20	96000177	20	100
1"x½"	25 x 15	96000178	10	50

Trans Tee



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
½"	15	96000172	20	200
¾"x½"	20 x 15	96000173	15	120
1"x½"	25 x 15	96000174	15	75

Trans FTA



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
½"	15	96000161	20	200
¾"	20	96000162	15	150
¾"x½"	20 x 15	96000163	15	150
1"	25	96000164	8	80
1 ¼"	32	96000166	6	48
1 ½"	40	96000245	4	32
2"	50	96000246	3	24

Trans MTA



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
1/2"	15	96000168	20	160
¾"x½"	20 x 15	96000169	2 0	160
¾"	20	96000170	15	150
1"x½"	25 x 15	96000171	10	100
1"	25	96000165	8	80
1 ¼"	32	96000167	6	60
1 ½"	40	96000232	4	32
2"	50	96000233	3	24

Union



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
½"	15	96000194	10	100
¾"	20	96000195	10	100
1"	25	96000196	10	60
1¼"	32	96000284	10	50
1½"	40	96000285	6	30
2"	50	96000286	4	20

Tank Nipple



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
½"	15	96000179	25	200
¾"	20	96000180	20	160
1"	25	96000181	10	100
1 ¼"	32	96000190	6	60
1 ½"	40	96000236	5	40
2"	50	96000237	4	32

SOC Tank Nipple



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
¾"	20	96000519	20	160
1	25	96000520	10	100

Socket



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
½"	15	96000130	50	200
¾"	20	96000131	50	100
1"	25	96000132	25	75
1 ¼"	32	96000133	10	50
1 ½"	40	96000134	10	70
2"	50	96000135	6	48
2 ½"	65	96000375	2	16
3"	80	96000353	1	8
4"	100	96000454	1	4

Reducing Bush

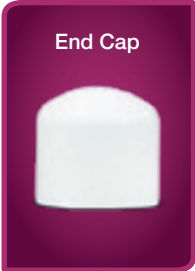


Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
¾"x½"	20 x 15	96000146	50	400
1"x¾"	25 x 20	96000147	50	200
1"x½"	25 x 15	96000148	50	200
1 ¼"x1"	32 x 25	96000149	15	120
1 ¼"x¾"	32 x 20	96000150	15	120
1 ¼"x½"	32 x 15	96000151	15	120
1 ½"x1¼"	40 x 32	96000152	10	80
1 ½"x1"	40 x 25	96000153	10	80
1 ½"x¾"	40 x 20	96000154	15	90
1 ½"x½"	40 x 15	96000155	15	90
2"x1 ½"	50 x 40	96000156	10	100
2"x1¼"	50 x 32	96000157	10	100
2"x1"	50 x 25	96000158	10	40
2"x¾"	50 x 20	96000159	10	40
2"x½"	50 x 15	96000160	10	50
2 ½"x2"	65 x 50	96000376	4	36
3"x2"	80 x 50	96000377	4	16
3"x2 ½"	80 x 65	96000365	4	16
4" x 3"	100x80	96000381	1	8
4" x 2 ½"	100x65	96000380	1	8
4" x 2"	100x50	96000367	1	8

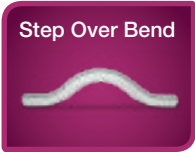
* SKU's available on demand.



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
1/2"	15	98000243	25	300



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
1/2"	15	96000136	50	300
3/4"	20	96000137	30	240
1"	25	96000138	15	150
1 1/4"	32	96000302	10	130
1 1/2"	40	96000303	10	60
2"	50	96000304	10	50
2 1/2"	65	96000351	4	20
3"	80	96000372	1	6
4"	100	96000373	1	4



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
1/2"	15	96000191*	10	100
3/4"	20	96000192*	8	64
1"	25	96000193*	5	40



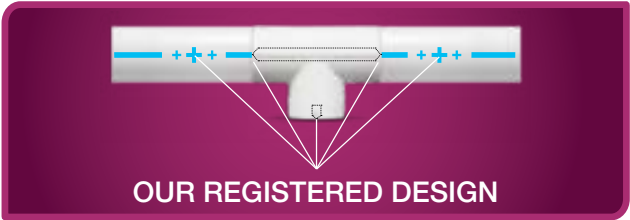
Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
1/2"	15	98000212	1	100
3/4"	20	98000213	1	66
1"	25	98000132	1	40
1 1/4"	32	98000214	1	25
1 1/2"	40	98000215	1	16
2"	50	98000216	1	12



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
2 1/2"	65	98000304	1	1
3"	80	98000305	1	1
4"	100	98000306	1	1



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
1/2"	15	96000448	10	50
3/4"	20	96000449	10	30
1"	25	96000450	5	35
1 1/4"	32	96000451	4	20
1 1/2"	40	96000452	2	10
2"	50	96000453	1	8



OUR REGISTERED DESIGN



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
3/4"x1/2"	20x15	96000501*	50	100
1"x1/2"	25x15	96000502*	25	75
1"x3/4"	25x20	96000503*	25	75
1 1/4"x1/2"	32x15	96000504*	10	50
1 1/4"x3/4"	32x20	96000505*	10	50
1 1/4"x1"	32x25	96000506*	10	50
1 1/2"x1/2"	40x15	96000541*	10	70
1 1/2"x3/4"	40x20	96000542*	10	70
1 1/2"x1"	40x25	96000543*	10	70
1 1/2"x1 1/4"	40x32	96000544*	10	70
2"x1/2"	50x15	96000545*	6	48
2"x3/4"	50x20	96000546*	6	48
2"x1"	50x25	96000547*	6	48
2"x1 1/4"	50x32	96000548*	6	48
2"x1 1/2"	50x40	96000549*	6	48



Size (inch)	Size (mm)	Part No.	Std. Packing
1/2"	15	98000217	150
3/4"	20	98000218	150
1"	25	98000219	100
1 1/4"	32	98000139	50
1 1/2"	40	98000220	50
2"	50	98000221	50



Size (inch)	Size (mm)	Part No.	Std. Packing PB	Std. Packing CB
2 1/2"	65	96000472	1	8
3"	80	96000474	1	6
4"	100	96000475	1	3

1 Step Solvent (1/2" - 2")



Size (in Oz)	Size (ml)	Part No.	Std. Packing PB	Std. Packing CB
1	29.5	98000224	12	72
2	59	98000149	12	72
4	118	98000145	24	96
8	237	98000146	24	48
16	473	98000222	24	24
32	946	98000223	12	12

2 Step Solvent (2 1/2" - 4")

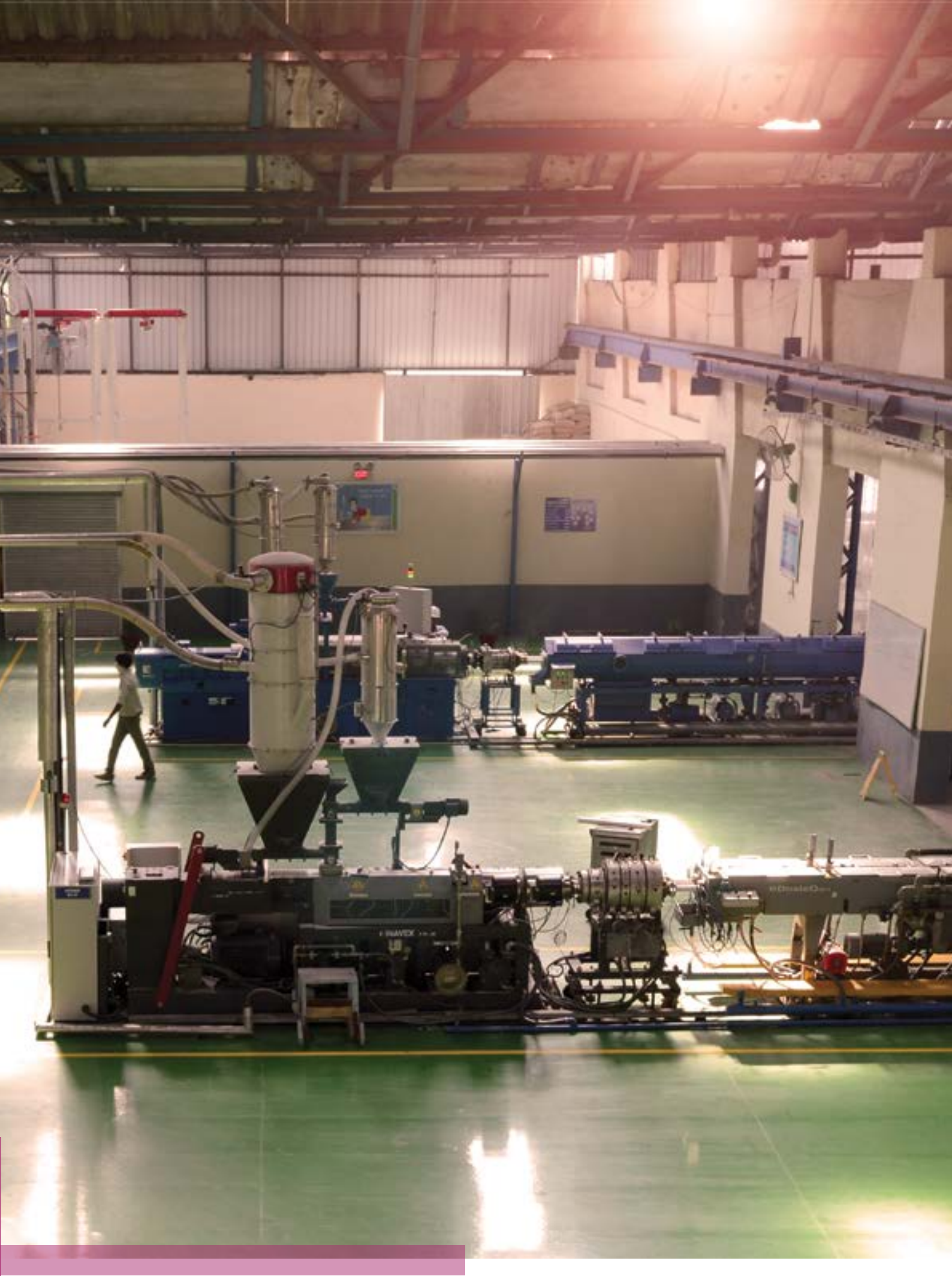


Size (in Oz)	Size (ml)	Part No.	Std. Packing PB	Std. Packing CB
16	473	98000280	24	24



Size (in Oz)	Size (ml)	Part No.	Std. Packing PB	Std. Packing CB
16	473	98000270	24	24

* SKU's available on demand.





Technical Details – Dimensions

UPVC PIPE AS PER ASTM D 1785 (SCH-40)					
Size (inch)	Size (mm)	Wall thickness (mm)		OD (mm)	
½"	15	2.77	3.28	21.24	21.44
¾"	20	2.87	3.38	26.57	26.77
1"	25	3.38	3.89	33.27	33.53
1¼"	32	3.56	4.07	42.03	42.19
1½"	40	3.68	4.19	48.11	48.41
2"	50	3.91	4.42	60.17	60.47
2½"	65	5.16	5.77	72.84	73.20
3"	80	5.49	6.15	88.70	89.10
4"	100	6.02	6.73	114.07	114.53

UPVC PIPE AS PER ASTM D 1785 (SCH-80)					
Size (inch)	Size (mm)	Wall thickness (mm)		OD (mm)	
½"	15	3.73	4.24	21.24	21.44
¾"	20	3.91	4.42	26.57	26.77
1"	25	4.55	5.08	33.27	33.53
1¼"	32	4.85	5.43	42.03	42.19
1½"	40	5.08	5.69	48.11	48.41
2"	50	5.54	6.2	60.17	60.47
2½"	65	7.01	7.85	72.84	73.20
3"	80	7.62	8.53	88.70	89.10
4"	100	8.56	9.58	114.07	114.53

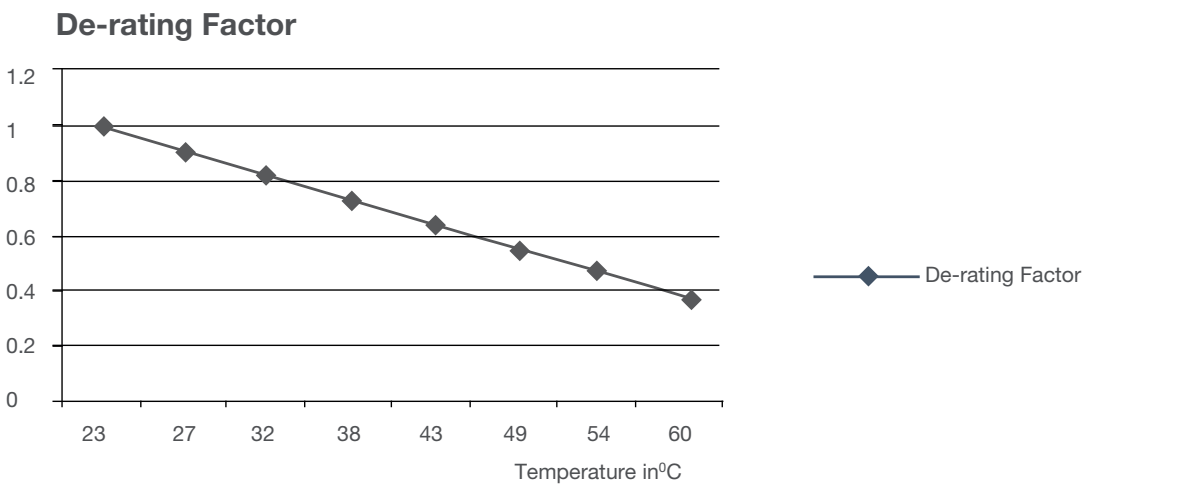
Working Pressure For UPVC Pipes Schedule 40 (as per ASTM D 1785)										
Size inch (mm)		½" (15)	¾" (20)	1" (25)	1¼" (32)	1½" (40)	2" (50)	2½" (65)	3" (80)	4" (100)
Temperature°C	Derating factor	Working Pressure (Kg/cm²)								
23°C	1.00	42.22	33.75	31.61	26.00	23.25	19.68	21.11	18.25	15.50
27°C	0.90	37.99	30.38	28.45	23.40	20.92	17.71	19.00	16.43	13.95
32°C	0.75	31.66	25.31	23.71	19.50	17.44	14.76	15.83	13.69	11.62
38°C	0.62	26.17	20.93	19.60	16.12	14.41	12.20	13.09	11.32	9.61
43°C	0.50	21.11	16.88	15.81	13.00	11.62	9.84	10.55	9.13	7.75
49°C	0.40	16.89	13.50	12.64	10.40	9.30	7.87	8.44	7.30	6.20
54°C	0.30	12.66	10.13	9.48	7.80	6.97	5.90	6.33	5.48	4.65
60°C	0.22	9.29	7.43	6.95	5.72	5.11	4.33	4.64	4.02	3.41

Working Pressure For UPVC Pipes Schedule 80 (as per ASTM D 1785) & Fittings (as per ASTM D2467-06, CLASSE 12454, 13354, 11443)										
Size inch (mm)		½" (15)	¾" (20)	1" (25)	1¼" (32)	1½" (40)	2" (50)	2½" (65)	3" (80)	4" (100)
Temperature°C	Derating factor	Working Pressure (Kg/cm²)								
23°C	1.00	59.75	48.54	44.25	36.61	33.04	28.14	29.57	26.00	22.54
27°C	0.90	53.78	43.68	39.83	32.95	29.75	25.33	26.65	23.40	20.28
32°C	0.75	44.82	36.40	33.19	27.46	24.78	21.11	22.18	19.50	16.90
38°C	0.62	37.05	30.09	27.44	22.70	20.48	17.45	18.33	16.12	13.97
43°C	0.50	29.88	24.27	22.13	18.30	16.52	14.07	14.79	13.00	11.27
49°C	0.40	23.90	19.42	17.70	14.64	13.22	11.26	11.83	10.40	9.01
54°C	0.30	17.93	14.56	13.28	10.98	9.91	8.44	8.87	7.80	6.76
60°C	0.22	13.15	10.68	9.74	8.05	7.27	6.19	6.51	5.72	4.96

Temperature De-rating Factor

Elevated temperature fluid mediums require the de-rating of a thermoplastic pipe, with a maximum internal pressure rating of 27°C. To determine the maximum internal pressure rating at an elevated temperature, simply multiply the pipe pressure rating at 27°C by the factor specified for the desired temperature.

Operating Temperature in °C	23	27	32	38	43	49	54	60
De-rating Factor	1	0.9	0.81	0.7	0.6	0.6	0.5	0.4



Burst Pressure Ratings

Size (inch)	Size (mm)	Burst pressure for pipes(as per ASTM D 1785) in Kg/cm ² for 60 to 70 sec at 23±2° C	
		SCH-40	SCH-80
½"	15	134.29	191.30
¾"	20	108.29	154.69
1"	25	101.26	142.04
1¼"	32	83.00	116.76
1½"	40	74.54	106.15
2"	50	62.61	90.65
2½"	65	68.22	95.65
3"	80	59.04	84.33
4"	100	49.97	73.11

Size (inch)	Size (mm)	Burst pressure for fittings(as per ASTM D 2467-06, CLASSE 12454, 13354, 11443) in Kg/cm² for 60 to 70 sec at 23±2°C SCH-80
½"	15	191.19
¾"	20	154.69
1"	25	142.04
1¼"	32	116.65
1½"	40	106.15
2"	50	90.65
2½"	65	95.65
3"	80	84.33
4"	100	73.11

Installation Guidelines - UPVC

Installation Guideline

A few simple steps must be followed for 100% leak-proof, efficient and productive joints.



Aerocon Pipes and Fittings is designed with precise tolerance. They are architected using a system called “True Fit”, which enables a perfect fit and leak-proof joints.

Step-1: Cutting the Pipe

- Aerocon's 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 within the jointing surface of pipes & fittings



Square 90-degree cut

Wrong cutting

Step-2: Deburring/Beveling

- 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, filings and flares



Full engagement of pipes and fittings



IMPORTANT!

- Burrs, filings & flares can:
- Prevent proper contact between pipes & fittings during assembly
 - Can restrict & disturb flow of water
 - Score & channel in socket ID may create leak potential
 - Removing flares will minimise chances of pushing solvent cement to the bottom of the joints

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.



Step-4: Solvent Cement Jointing & Assembly



- Apply a thin coat of Aerocon Blue Medium UPVC 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. Use the Dauber applicator, supplied with the can
- Select proper cement for the work, pipe cleaner and primer. Choose a dauber/applicator that is sized properly. Daubers, brushes or applicators should be ½ the diameter of the fittings being joined (1" brush/ applicator for 2" pipe). This reduces the time required to apply the cement, resulting in better joints

NOTE: For sizes equal and above 2½" of SCH 40 & SCH 80, Aerocon's Purple Primer must be used before applying the solvent cement. Its proper use prepares the surfaces for fusion in a wide variety of weather conditions.



- 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. Allow the cement to set (approx. 15 minutes) before handling the assembly
- Wipe off any excess cement with clean dry cloth
- Allow the Aerocon Blue Medium UPVC 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!

While assembling the pipes and fittings, a common failure may occur – “dry joint”. This happens when the assembly is delayed and in this case, the cement will “flash-off” its solvents and fail to weld the plastics.

Aerocon's Blue Medium UPVC Solvent Consumption

Solvent cements are at the core of UPVC plumbing and their quality is of vital importance in the strength of the joint. The chart shows the consumption of solvent cements and the approximate number of joints which can be made per litre of Aerocon Blue Medium UPVC Solvent Cement.

Consumption of solvent cement:

Pipe Size (inch)	½	¾	1	1 ¼	1½	2	2½	3	4
Pipe Size (mm)	15	20	25	32	40	50	65	80	100
No. of fittings per litre	1200	750	500	450	325	225	50	40	30

Average Handling/Set Times for Aerocon's Blue Medium UPVC Solvent

HANDLING/SET SCHEDULE			
Temperature	Pipe Size ½" (15) to 1¼" (32)	Pipe Size 1½" (40) to 3" (80)	Pipe Size 4" (100)
16°C-38°C	2 minutes	5 minutes	30 minutes
4°C-16°C	5 minutes	10 minutes	2 Hours
0°C-4°C	10 minutes	15 minutes	12 hours

The handling/set schedule is the time required before handling joint. In case of damp/humid weather or loose fitting joints, allow 50% additional cure time.

Average Joint Cure Times for Aerocon's Blue Medium UPVC Solvent

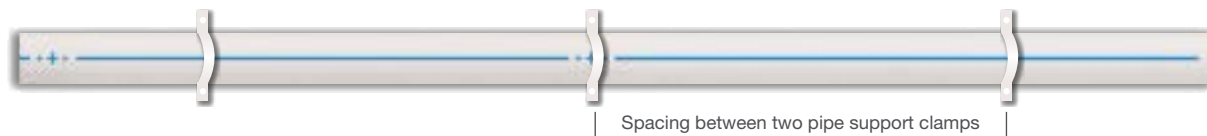
JOINT/CURE SCHEDULE						
Relative Humidity 60% or less	Cure Time for Pipe Size ½" (15) to 1¼" (32)		Cure Time for Pipe Size 1½" (40) to 3" (80)		Cure Time for Pipe Size 4" (100)	
Temperature during assembly and cure periods	Up to 12.65 Kg/cm²	12.65 Kg/cm² above	Up to 12.65 Kg/cm²	12.65 Kg/cm² above	Up to 12.65 Kg/cm²	12.65 Kg/cm² above
16°C-38°C	13 minutes	6 Hrs.	30 minutes	12 Hrs.	1½ Hrs.	24 Hrs.
4°C-16°C	20 minutes	12 Hrs.	45 minutes	24 Hrs.	4 Hrs.	48 Hrs.
0°C-4°C	30 minutes	48 Hrs.	1 Hr.	96 Hrs.	3 Days	8 Days

The joint cure schedule shows the required time to allow before pressurising a system. In case of damp/humid weather or loose fitting joints, allow 50% additional cure time. All data is based on laboratory testing. Charts should be used as a general guide, as conditions in the field may vary.

NOTE: When the system is to be concealed, it should be pressure tested before concealment.

Horizontal and Vertical Supports

Pipe clamps are used for anchoring the pipes to the structural element of the building. Proper support spacing is critical to ensure that the deflection is kept to a minimum. Support location and spacing depends on the pipe diameter, operating temperature of the system and the location of any concentrated stress loads (valves, flanges, etc.). Hangers used must have an adequate load-bearing surface, free from any rough or sharp edges that could damage the pipe during use. Hangers must not restrict linear movement of the system due to the effects of thermal expansion and contraction, as a result of temperature changes. Furthermore, over-tightening must be avoided.



Recommended Support System for UPVC

Size inch(mm)	Recommended Support Spacing in (Ft.)				
	15°C	27°C	38°C	49°C	60°C
½" (15)	4.4	4.3	4.2	4.1	4
¾" (20)	4.8	4.7	4.6	4.5	4.4
1" (25)	5.3	5.2	5.1	5	4.8
1¼" (32)	5.9	5.8	5.7	5.5	5.3
1½" (40)	6.2	6.1	6	5.9	5.6
2" (50)	6.8	6.7	6.6	6.4	6.2
2½" (65)	7.5	7.4	7.3	7.1	6.8
3" (80)	8.2	8	7.9	7.8	7.4
4" (100)	9.1	8.9	8.8	8.6	8.2

Thermal Expansion and the Expansion Loop

A great deal of consideration must be given to the design of the system, due to the effects of thermal expansion and contraction. Temperature variations above and below the installation temperature cause UPVC pipes to change in length, just like other pipes. They expand and contract 4.5-5 times more than steel or iron pipes. The extent of the expansion or contraction depends on the coefficient of linear expansion of the piping material, the length of the pipe between directional changes and the temperature differential.

However, the resultant stress generated by thermal expansion is lesser for thermoplastic than steel. This is due to UPVC's lower modulus of elasticity in comparisons to metal pipes, and over time, stress relaxation will occur.

UPVC pipes, regardless of their diameters, will expand about 7.5 cm per 30 mtrs., for a 40°C temperature change. Therefore, provisions must be made for this movement. Using the expansion loop, thermal expansion can be taken care of by the change in direction of supply lines. If not done, cracks may appear in the joint, which will ultimately lead to leaks.

Expansion is mainly a concern in hot water lines. As mentioned, thermal expansion can be accommodated with changes in direction. However, a long straight run may require an offset or loop. Generally the temperature change experienced is not more than 38°C. The chart below can be used to determine the size of an expansion joint needed to compensate for movement, when a temperature change of 27°C is experienced.

Fundamentals of adjusting for expansion & contraction of above-ground horizontal pipe

Fundamentals of Adjusting for Expansion and Contraction of Above - Ground Horizontal Pipe.

	Long straight sections	Straight sections 13 to 23 feet long	Straight sections 7 to 13 feet long	Straight sections 7 feet or less
Absorbing expansion and contraction in straight sections	U-type 2 1/2" - 4" dia 23'-46" Loop-type 1/2" - 2" dia 23'-33" Flex-bend 1/2" - 1" dia 23'-49"	In accordance with the method of absorbing expansion and contraction in bending sections	In accordance with the method of absorbing expansion and contraction in bending sections	Adjusting for expansion and contraction is not necessary.
Absorbing expansion and contraction in bending sections	Flex-bend 1/2" - 1" dia 11 1/2"	Bend 12" or less 12" or less Full size Bend 12" or less 12" or less 25' 1/2" - 1" dia	Elbow 13" or less Elbow 13" or less	Using an elbow
Location of branch points on the main pipe and absorbing expansion and contraction in the branch sections.	Long distance from anchored point to branch point Main pipe Usage of 3 pcs of elbow Main pipeline Flex-bend 1/2" - 1" dia	Distance of 13' to 23' from anchored point to branch point Main pipe Usage of 1 pc. of bend and 1 pc. of elbow (Remarks) Be sure to use bend on the main pipe side	Distance of 7' to 13' from anchored point to branch point Elbow Elbow Usage of 2 pcs of elbow	Adjusting for expansion and contraction is not necessary
Location of branch	Anchored point Expansion joint Anchored point Expansion joint Anchored point Branch as near as possible to anchored points.			

Fundamentals of Adjusting for Expansion and Contraction of Above - Ground Vertical Pipe.

	Long vertical pipes	Vertical pipes of 13 to 23 feet long	Vertical pipes of 7 to 13 feet long	Vertical pipes of 7 feet or less
Sections to absorb expansion and contraction	U-type expansion joint Under 4' floors or 32"	180° Bend Under 23' 90° Bend	Elbow return method 1'-1 1/2" Under 13'	Adjusting for expansion and contraction is not necessary
Absorbing expansion and contraction in straight sections	Application of 2 1/2" to 4" dia.	Application of 1/2" to 2" dia.	Application of full size	
Absorbing expansion and contraction in bending sections	Flex-bend Application of 1/2" to 1" dia. Under 4' floors or 32"	Application of 1/2" to 2" dia. Under 4' floors or 32"	Application of full size Under 23'	Adjusting for expansion and contraction is not necessary
Branching on vertical pipes	Flex-bend	Flex-bend		Adjusting for expansion and contraction is not necessary



Length of Expansion Loop (in inches) Required for a 27°C Temperature Change

PVC Expansion Loops						
PVC		Length of Run				
		20 Ft	40 Ft	60 Ft	80 Ft	100 Ft
Size (inch)	Size (mm)	Length of expansion loop (inch)				
1/2"	15	15	22	27	31	34
3/4"	20	18	24	30	34	38
1"	25	20	27	33	38	43
1 1/4"	32	23	30	37	43	48
1 1/2"	40	25	33	40	46	51
2"	50	28	36	45	51	58

Loop length for other temperatures and run length can be calculated using following equations:

Expansion loop formula:

$$L = \sqrt{\frac{3 E D (\Delta L)}{2 S}}$$

Where:

L = Loop length (in.)

E = Modulus of elasticity at maximum temperature (psi)

S = Working stress at maximum temperature (psi)

D = Outside diameter of pipe (in.)

Δ L = Change in length due to change in temperature (in.)

Thermal expansion formula:

$$\Delta L = L p C T$$

Where:

Δ L = Change in length due to change in temperature (in.)

L = Length of pipe (in.)

C = Coefficient of thermal expansion (in./in./F)

= 2.8 X 10⁻⁵ in/in/degree F

T = Change in temperature (degree F)

Pipe Insulations

In air-conditioned buildings, UPVC water supply lines don't need to be insulated, because of their low coefficient of thermal conductivity.

UPVCs carrying water 82°C in temperature, will have an outside surface temperature of 65°C in air-conditioned rooms. Copper pipes on the other hand, will have an outside temperature equal to that of the water.

Under most conditions copper pipes drip with water below 15°C, but UPVC pipes will remain free from condensation.

Evidently, insulation need not be recommended for UPVC pipes, however, designer-recommend insulations can be used for their environmental benefits.

Recommended insulating material for UPVC pipes:

- Expanded rock wools
- Polystyrene gypsum articles
- Slag wool pallets
- Hessian (cloth)
- Glass fibre
- Mineral wools

Recommended thickness of insulation:

UPVC open lines: 7 mm

UPVC concealed lines: 5 mm

Thread Sealant

Threaded UPVC plastic and trans fittings must be used with a suitable thread sealant, to ensure leak-proof joints. Thread sealants must be carefully chosen as some chemically attack the UPVC material and may cause cracks. Polytetrafluoroethylene (PTFE) tape is the most preferable thread sealant and is widely accepted all over the world.



Under-slab Installation Guidelines

Aerocon's UPVC pipes and fittings are highly flexible in nature, and therefore extra care must be taken to ensure proper burial conditions. The stiffness of the piping system is affected by the sidewall support, soil complication and the condition of the trench. Trench bottoms must be smooth and regular, in either undisturbed soil or a layer of compacted backfill. Pipes must lie evenly on this surface throughout the entire length of its barrel.

Trenching

- Excavate the trench, ensuring the sides are stable under all working conditions
- The trench should be wide enough to provide adequate room for joining the pipes in the trench shaking the pipe from side to side, to compensate for expansion and contraction filling and compacting the side fills
- The space between the pipe and trench wall must be wider than the compaction equipment used in the compaction of the backfill. Minimum width must not be less than the greater of either the pipe outside diameter plus 16 inches, or the pipe outside diameter times 1.25 plus 12 inches. The trench width may be different, if approved by the design engineer
- Install the foundation and bedding as needed by the engineer, according to the conditions of the trench bottom. Provide firm, stable and uniform bedding for the pipes. Provide a minimum of 4 inches of bedding. In case any rock or unyielding material is encountered in the bottom of the trench, provide 6 inches
- Plastic pipes should always be installed at least below the frost level

Bedding and Backfilling

- Sub-soil conditions vary from place to place, therefore, the pipe backfill should be stable and provide protection
- The pipe should be surrounded with an aggregate material that can easily be worked around the sides of the pipe. Backfilling must be performed in layers of 6 inches, with each layer being sufficiently compacted to 85-95%
- A mechanical tamper is recommended for compacting a sand and gravel backfill that contains a significant proportion of fine-grained material like slit and clay. If a tamper is not available, it must be done by hand
- The trench should be completely filled. The backfill should be spread in uniform layers to prevent any unfilled spaces or voids. Large rocks, stones, frozen clods and other debris must be removed

In-slab Installation Guidelines

Aerocon's UPVC pipes can be installed and embedded in concrete slabs, as they do not react to concrete or stucco and are inert to acidic soil conditions.

Do's

1. Install product according to 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 incase any crack is discovered on the pipe.
 - A. 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 finalize the cut. This step leads to a square cut. In addition, make sure ratchet cutter blades are sharp. Cutting tubing as squarely as possible provides optimal bonding area within a joint.
 - B. 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 tube. A chamfering tool is preferred, but a pocket knife or file is also suitable for this purpose.
 - C. Use UPVC Cement only. Use only UPVC Cement or an all purpose cement conforming to ASTM D-2564 or joint failure may result.
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 bleed air from the system prior to pressure testing.
6. Rotate the pipe 90° to 180° to spread the UPVC 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.
 - A. When making a transition connection to metal threads, use a special transition fitting or UPVC 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.
13. Pressure test UPVC systems in accordance with local code requirements.

Don't's

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 Thinners /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 stop material on UPVC pipes and fittings.
7. Do not use UPVC Pipes & Fittings for pneumatic applications.

**FOLLOWING THESE SIMPLE AND EASY
DOS AND DON'TS
WILL HELP YOU ENSURE 100%
TrueFit® & LEAK-PROOF INSTALLATION.**

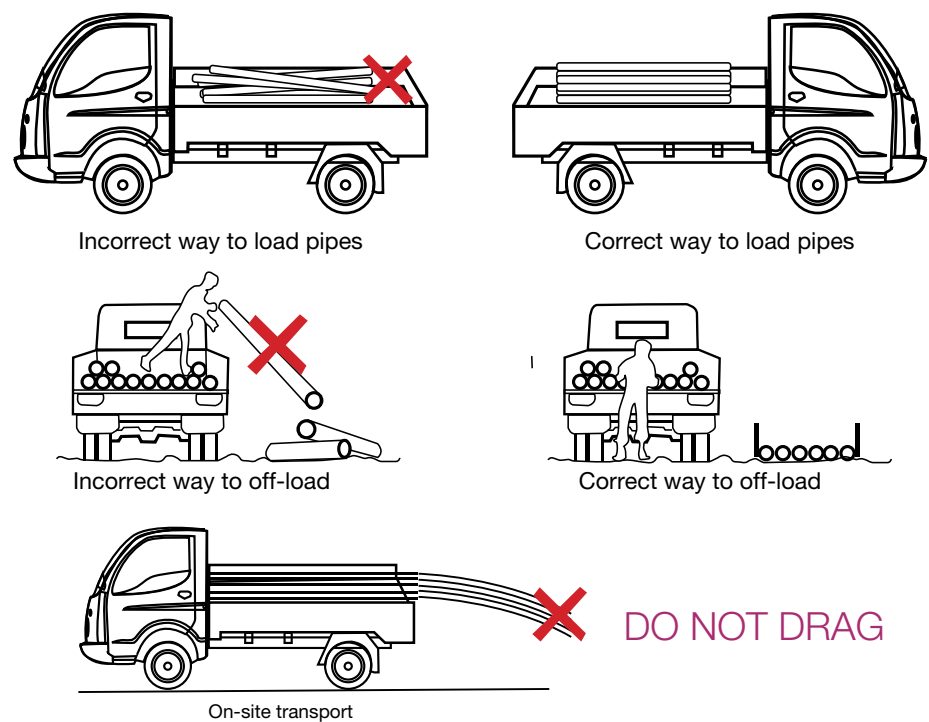
Handling and Storage

Handling and Storage

Handling

- Aerocon’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 corners of truck beds, loading docks and buildings, forks and forklift trucks, rocks, etc.
- The impact resistance and flexibility of the CPVC & UPVC pipes reduce in lower temperature conditions. The impact strength of both types 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 bed

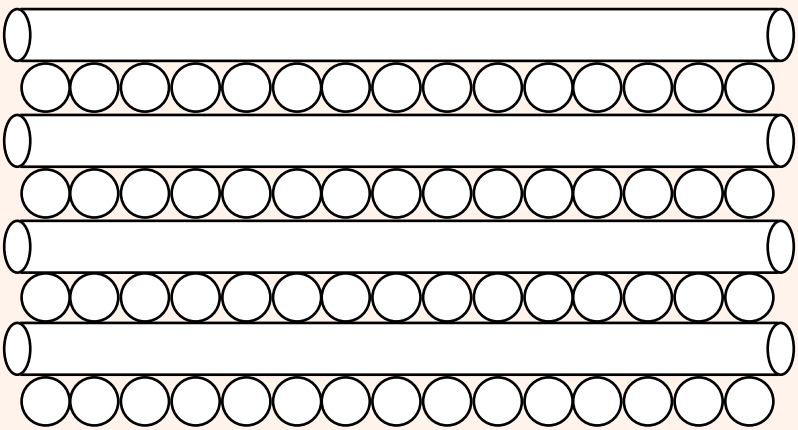
Handling and Storing On-site



Storage

- During storage, choose a flat and dry location to minimise dirt and foreign matter accumulation in the bore and belled end. The storage area must be free from sharp objects
- CPVC & UPVC pipes need to be stacked in such a way that one set is perpendicular to the other arranged on top of it (refer to the image below). 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, the spacing of the supports should not exceed 3 feet
- Never combine the CPVC & UPVC fittings inventory and metallic materials. Do not store the fittings near an open flame or any other source of extreme heat

Indoor Storage



One stack of CPVC & UPVC pipes of same size and same schedule, with each set of pipes placed perpendicular to one another.





Certifications



CFTRI Certificate

The Central Food Technology Research Institute has certified that Aerocon CPVC & UPVC Pipes and Fittings is of Food Grade – hygienic and safe, and can be used for transportation, filling and storing of drinking water at room temperature.



RoHS Certificate

TUV has certified that Aerocon Pipes and Fittings has passed its RoHS test and is devoid of harmful and toxic substances. It is hygienic and safe, and in compliance with international standards.



CIPET Certificate

The Central Institute of Plastics Engineering and Technology has certified that Aerocon Pipe and Fittings has successfully passed all tests recommended, and is of premium quality.



Shriram Certificate

The Shriram Institute of Industrial Research has certified that Aerocon Pipes and Fittings has passed all the tests recommended.



HIL Limited,

7th Floor, SLN Terminus, Gachibowli
Kondapur Road, Hyderabad - 500 032. India.
Ph: +91 40 30999 000, Fax: +91 40 2370 2400
Toll Free: 1800 4254 2599, Email: info@hil.in

